Aspen 1-New Brighton

Project# P09-038/M09-032

State Clearinghouse # 2010072058

Draft Environmental Impact Report
Volume II
Appendices D-J

PREPARED FOR THE
CITY OF SACRAMENTO

JULY 2012

RANEY
PLANNING & MANAGEMENT, INC.
1501 SPORTS DRIVE, SACRAMENTO, CA 95834

APPENDIX D

RESOLUTION NO. LAFC 2009-02-0401-05-08

THE SACRAMENTO LOCAL AGENCY FORMATION COMMISSION

MAKING DETERMINATIONS FOR THE MUNICIPAL SERVICES REVIEW AND APPROVING THE CITY OF SACRAMENTO SPHERE OF INFLUENCE AMENDMENT ASPEN 1 – TEICHERT

(APNS: 063-0014-001, 063-0014-002, 063-0014-003, 063-0014-005 & 063-0014-006)
(LAFC 05-08)

WHEREAS, the Sacramento Local Agency Formation Commission ("Commission" or "LAFCo") is the sole entity authorized to approve a Sphere of Influence ("SOI") pursuant to the Cortese-Knox-Hertzberg Local Government Reorganization Act of 2000;

WHEREAS, pursuant to Government Code section 56425, subdivision (a), in order to carry out its purposes and responsibilities for planning and shaping the logical and orderly development and coordination of local government agencies so as to advantageously provide for the present and future needs of the county and its communities, the commission shall develop and determine the SOI for each local governmental agency within the county;

WHEREAS, the Commission is required to update the SOI for each local government agency within the county every five years;

WHEREAS, in determining the SOI of each local government agency, the Commission shall consider and prepare a written statement of its determinations with respect to its approval of the SOI;

WHEREAS, pursuant to Government Code section 56428, the City of Sacramento ("City") submitted an application to the Commission for an amendment of the City's SOI and the application requested no other Commission actions at this time;

WHEREAS, the Commission's Executive Officer examined the application and found it to be sufficient;

WHEREAS, a Notice of Intent to Adopt a Negative Declaration ("Negative Declaration") was prepared and released for public comment on December 9, 2008;

WHEREAS, pursuant to Government Code section 56430, a draft Municipal Services Review ("MSR") was prepared and released in July 2008;

WHEREAS, the Commission provided a public comment review period of the draft MSR from July 2008 until March 4, 2009;

WHEREAS, the Commission, incorporating appropriate public comments, prepared the final MSR on March 4, 2009;

WHEREAS, the Commission discussed and provided an opportunity for public comments on the SOI Amendment, Negative Declaration, and the MSR at the March 4, 2009 public hearing;

WHEREAS, the Commission has undertaken a comprehensive analysis of the City's SOI Amendment; and

WHEREAS, public agencies have reviewed and comments on the SOI Amendment and MSR;

NOW, THEREFORE, the SACRAMENTO LOCAL AGENCY FORMATION COMMISSION does hereby find, determine, resolve and order as follows:

1. Notice as required by law has been given.

2. The boundaries of the SOI Amendment are represented in Exhibit A and Exhibit B (legal description) attached hereto and incorporated herein.

3. The Commission, through its Executive Officer, conducted an Initial Study and, based on the Initial Study, determined that the SOI Amendment will not have a significant effect on the environment.

4. Based on the determination that the SOI Amendment will not have a significant effect on the environment, the Commission caused a Negative Declaration to be prepared, which the Commission adopts and certifies as complying with CEQA.

5. The SOI Amendment area is uninhabited and largely undeveloped.

6. The SOI Amendment of the City is approved as set forth in the application, which contemplates the extension of the City's SOI to include approximately 28 acres south of Jackson Highway (State Route 16) and west of South Watt Avenue. The SOI Amendment area is located in the unincorporated portion of Sacramento County, and is surrounded on two sides by the City.

7. The SOI Amendment area consists of 5 parcels which are predominantly vacant. A utility shed and minor utility improvements are the only developments onsite. The SOI Amendment area is part of a larger aggregate mining operation to the west.

8. Surrounding land uses include vacant land and residential uses to the north, vacant land and industrial uses to the east and west, and industrial uses to the south. Regional access to the SOI Amendment area is provided by State Route 16. Local access to the SOI Amendment area is provided by South Watt Avenue.

9. The Commission determines that the SOI Amendment is consistent with the Commission's purpose and responsibility for planning, shaping and coordinating the logical and orderly development of local governmental agencies so as to advantageously provide for the present and future needs of the county and its communities. In making this determination, the Commission has considered:

   a. The Executive Officer's Reports;

   b. The MSR, date March 2009, which the Commission deems is consistent with LAFCo policies and is adequate;

c. The Initial Study and Negative Declaration;

d. All oral and written comments; and

e. Public agency comments, staff reports and other pertinent information in the Commission's record of proceedings.

10. In accordance with Government Code section 56425, and based upon the entire record, the Commission makes the following determinations and findings in approving the SOI Amendment:

    a. *The present and planned land uses in the area, including agricultural and open-space lands.* The present land uses in the area do not include prime agricultural and open-space lands. The area is currently designated in the City's 1988 General Plan as Heavy Commercial or Warehouse. It is currently being used as a large aggregate mining operation.

    b. *The present and probable need for public facilities and services in the area.* The SOI Amendment will not require the immediate need for additional public facilities or services. In the future, should development occur, there will be a need for public facilities and services consistent with the future development.

    c. *The present capacity of public facilities and adequacy of public services that the agency provides or is authorized to provide.* The City has the capacity to provide adequate municipal services to the SOI Amendment area. However, since the SOI Amendment will not change the current service providers, the minimal services currently provided to the undeveloped area are adequate.

    d. *The existence of any social or economic communities of interest in the area.* The SOI Amendment area is undeveloped and does not contain any social or economic communities of interest. Additionally, there are no social or economic communities of interest nearby that would be adversely affected the by SOI Amendment.

11. The Commission has reviewed the following facts and made the following determinations:

    a. The SOI Amendment is consistent with growth demand and natural geographic boundaries.

    b. The SOI Amendment meets the need to provide municipal services to planned urbanized areas, and the City has the capacity to provide adequate governmental services and controls to the area.

    c. The SOI Amendment will have a beneficial effect on the immediately surrounding community and will not adversely affect the local governmental structure of the county or adjacent territory.

d. The SOI Amendment conforms to the adopted Commission policies on providing planned, orderly, efficient patterns of urban development.

e. The SOI Amendment contains definite and certain boundaries, and it does not create islands or corridors of unincorporated territory.

f. The City has the ability to provide services in the SOI Amendment area and sufficient revenue for those services.

g. The SOI Amendment area is located within the County's General Plan Urban Service Boundary.

12. In adopting the SOI Amendment the Commission determines that the Capital Region Compact developed by Valley Vision is a model for municipalities developing civic standards. The Commission acknowledges that the City has endorsed the Capital Region Compact developed by Valley Vision and also endorsed by six counties and fifteen cities in the region.

FURTHERMORE, in accepting the MSR, the Commission has considered the policies set forth in Government Code section 56430. Pursuant to Government Code section 56430, the Commission finds and determines that:

1. The Executive Officer presented the MSR on March 4, 2009, to the Commission, and the Commission accepted it.

2. The City has provided for its infrastructure needs and this determination is based upon the Executive Officer's Reports and the information received from the City.

3. Growth and population projections for the affected area have been provided by the affected entities, as set forth in the MSR and the Record of Proceedings.

4. The City operates at an efficient level and utilizes cost avoidance opportunities when available, as demonstrated in the MSR and the Record of Proceedings.

5. The City's rates and fees are reasonable compared to other comparable cities' and demonstrates efficient management of its rate structuring opportunities, as set forth in the MSR and the Record of Proceedings.

6. The City maximizes its opportunities to share facilities where possible, as set forth in the MSR and the Record of Proceedings.

7. The City's organizational structure allows for reorganization of service providers as demonstrated by the MSR and the Record of Proceedings.

8. Based upon its current fees and rates and management structure, the City has demonstrated management efficiencies.

9. The City is governed by eight locally elected City Council members and one Mayor.

10. The MSR is current as it was finalized in March 2009.

11. In the MSR, the City demonstrated a projected need for service based upon population projections and the inadequacy of the City's infill capacity to accommodate expected growth. The MSR is consistent with the City's annexation policy. These findings are based upon this Resolution, the Record of Proceedings, the Executive Officer's Reports, the MSR, and the Sacramento Area Council of Governments ("SACOG") Blueprint.

12. The MSR includes determinations with respect to each of the following: (1) infrastructure needs or deficiencies; (2) Growth and population projections for the affected area; (3) Financing constraints and opportunities; (4) Cost avoidance opportunities; (5) Opportunities for rate restructuring; (6) Opportunities for shared facilities; (7) Government structure options, including advantages and disadvantages of consolidation or reorganization of service providers; (8) Evaluation of management efficiencies; and (9) Local accountability and governance.

13. In the MSR, the Commission comprehensively reviewed all of the agencies that provide the identified service or services within the designated geographic area.

14. The MSR includes statements for each existing district specifying the functions or classes of services provided by those districts. The MSR also establishes the nature, location, and extent of any functions or classes of services provided by existing districts.

15. The City is the subject agency that will be the most logical and efficient provider of services to the SOI Amendment area. This finding is based upon finding 13 above, the Record of Proceedings, the Executive Officer's Report, the MSR, and the SACOG Blueprint.

16. The MSR prepared by the City and the Commission includes an assessment of services and providers and states how providers will implement the proposed development contemplated by the SOI Amendment.

17. The MSR concludes that adequate services, including water, wastewater, circulation and roadways, animal care, code enforcement, law enforcement, fire protection, solid waste and recycling, drainage and flood control, parks and recreation, libraries, and electricity and natural gas will be provided within the timeframe needed by the inhabitants of the area included within the SOI Amendment area.

18. Existing land use and a reasonable projection of land uses which would occur if services were provided consistent with the MSR are considered in the MSR.

19. Maps indicating existing and proposed facilities and the timing of proposed facilities are included in the MSR.

20. The nature of each service to be provided is discussed in detail in the MSR. It discusses how water, wastewater, circulation and roadways, animal care, code enforcement, law enforcement, fire protection, solid waste, drainage and flood control, parks and recreation, libraries, and electricity and natural gas will be provided within the timeframe needed by the inhabitants of the area included within the SOI Amendment area.

21. The service level capacity to be provided is discussed in detail in the MSR.

22. The anticipated service level to be provided is discussed in detail in of the MSR.

23. All actions, improvements, or construction necessary to reach required service levels, including costs and financing methods, is discussed in detail in the MSR.

24. The Commission has reviewed and continues to have access to all district enabling legislation pertinent to the provision of services and annexations, including the Cortese-Knox-Hertzberg Act (Government Code sections 56000-57550) and the Municipal Utilities District Act (Public Utilities Code sections 11501-14403.5 and specifically, sections 12801-12827).

25. The MSR identifies possible savings occurring as a result of the action. The report prepared for the SOI Amendment discusses projected revenues, costs, and benefits associated with the proposed annexation.

26. Existing and five-year population projections are incorporated by reference from the City's Application throughout the MSR's various analyses of infrastructure circumstances and requirements.

27. Based upon the conclusions in the MSR, the Record of Proceedings, and the Executive Officer's Reports, the Commission concludes that the City will be able to efficiently assure reliable services at an acceptable cost to the subject territory.

FURTHERMORE, the Commission does hereby resolve that it is necessary and appropriate to apply certain conditions to the approval of the SOI Amendment. Accordingly, approval of the SOI Amendment is conditioned upon the following:

1. Prior to the Commission's consideration of an application for annexation, the City, in addition to providing those services required by law, shall ensure provision of the following services to the annexed territory: Animal Control and Regulation Services; Building and Building Inspection; Code Enforcement; Police/Law Enforcement Services; Planning; Public Works; Site Development Services; Traffic and Safety Lighting Maintenance; Street, Road, and Landscape Maintenance.

2. Prior to the Commission's consideration of an application for annexation, and to ensure timely availability of water, the Commission notifies the City that annexation will need to demonstrate the availability of water and imposes the following condition which is consistent with City, Commission, and County policies regarding water availability:

a. The needs of existing water users shall be met prior to the provision of water for new development requiring annexation, including, if necessary, the provision of replacement water in the event that existing water sources are unavailable to such existing users due to contamination or any other reason.

3. Prior to Commission approval of any application to annex property within the SOI Amendment area, the City, or other applicants, shall meet and confer with the Cordova Recreation & Park District, the Sacramento Metropolitan Fire District, and any other affected special districts, regarding impacts to the districts and their operations. This process shall identify potential impacts from the proposed annexation upon the districts, including but not limited to fiscal and operational impacts, assessments, bonded indebtedness, loss of property tax revenues and other impacts proposed relating to any proposed changes of organization or services. The process will also identify any unresolved issues carried over from previous annexations (e.g., Airgas). In addition, the Commission will fully analyze and consider these impacts prior to approval of any annexation to determine appropriate mitigation measures or conditions of annexation.

4. Prior to annexation of property within the SOI Amendment area, the City, with the cooperation of the County of Sacramento, shall prepare a plan to address the necessary improvements to the local roadway network of each jurisdiction to mitigate the impacts associated with development within the SOI Amendment area as well as accommodate the regional mobility needs associated with the anticipated growth envisioned in the Sacramento County General Plan update. The plan – to be submitted with the annexation application - should include a list of improvements, description of the responsible jurisdiction, phasing plan, and a clearly defined financing mechanism. The plan should consider the County's proposal (that is currently undergoing environmental review) for an urban interchange at Jackson Highway / South Watt Avenue and bus rapid transit on South Watt Avenue and Jackson Highway.

5. In adopting the SOI Amendment, the Commission encourages the City, prior to future sphere of influence amendments or annexations, to develop and implement policies and programs to create permanent open space buffers or permanent community separators between the City, environmentally sensitive areas, and designated farmland of statewide importance. Such a municipal separator or buffer would promote the orderly development of land, permanent preservation of open space, and maintain the distinct identity of all municipal communities.

6. Subject to the conditions set forth above, the SOIA proposed by the Resolution and Proposal submitted, is hereby approved as follows:

   a. The boundaries of the City of Sacramento SOI shall be amended to include the SOI Amendment area as set forth in Exhibit B attached hereto and incorporated herein.

BE IT FURTHER RESOLVED by the Sacramento Local Agency Formation Commission that the Executive Officer is directed to complete appropriate proceedings in compliance with this resolution and state law and that the Executive Officer of this Commission is authorized and directed to:

1 Prepare and make the filings as required under state law including filing of a Notice of Determination pursuant to CEQA;

2 Mail a certified copy of this Resolution to the City Clerk of the City of Sacramento and to those affected governmental agencies whose boundaries are affected by the Resolution; and

3 File a certified copy of this Resolution with the Clerk of the Board of Supervisors of the County of Sacramento.

ON A MOTION made by Commissioner Tooker, seconded by Commissioner Rose, the foregoing Resolution No. LAFC **2009-02-0401-05-08** was adopted by the ***SACRAMENTO LOCAL AGENCY FORMATION COMMISSION***, on this **1st day of April 2009**, by the following vote, to wit:

AYES: Tooker, Jones, Fong, Rose, Budge, Yee

NOES:

ABSTAIN:

ABSENT: Peters

By: Jimmie R Yee
Jimmie Yee, Chair
SACRAMENTO LOCAL AGENCY FORMATION COMMISSION

ATTEST:

Diane Thorpe
Diane Thorpe
Commission Clerk

Attachment: Sphere of Influence Boundaries – Exhibit A
Legal Description and Map – Exhibit B

EXHIBIT A

SPHERE OF INFLUENCE BOUNDARIES

EXHIBIT "A"

SPHERE OF INFLUENCE

The land described herein is situated in the County of Sacramento, State of California, and described as follows:

All that portion of the west half of Section 19, Township 8 North, Range 6 East, M.D.M., described as follows:

BEGINNING at the point of intersection of the centerline of Jackson Road with the centerline of South Watt Avenue, said point having a California coordinate of 1958647.229 North and 6741598.993 East, NAD 83, Zone 2; thence from said **POINT OF BEGINNING** along the centerline of said South Watt Ave. the following five (5) courses:

(1) South 00°39'53" West 1021.53 feet,

(2) curving to the left on an arc of a 3000.00 foot radius curve, said arc having an interior angle of 06°19'31", an arc length of 331.19 feet and being subtended by a chord bearing South 02°29'32" East 331.02 feet,

(3) South 05°39'17" East 1954.95 feet,

(4) curving to the right on an arc of a 3000.00 foot radius curve, said arc having an interior angle of 04°59'31", an arc length of 261.38 feet and being subtended by a chord bearing South 03°09'31" East 261.30 feet and

(5) South 00°36'55" East 23.08 feet to an angle point in the existing city/county limit line; thence, along said existing city/county limit line, being also the south line of Lot 7 of the Jackman Tract,

(6) South 89°23'55" West 530.78 feet to a point on the west line of said Section 19, being also an angle point in the existing city/county limit line; thence, along said west line and said limit line

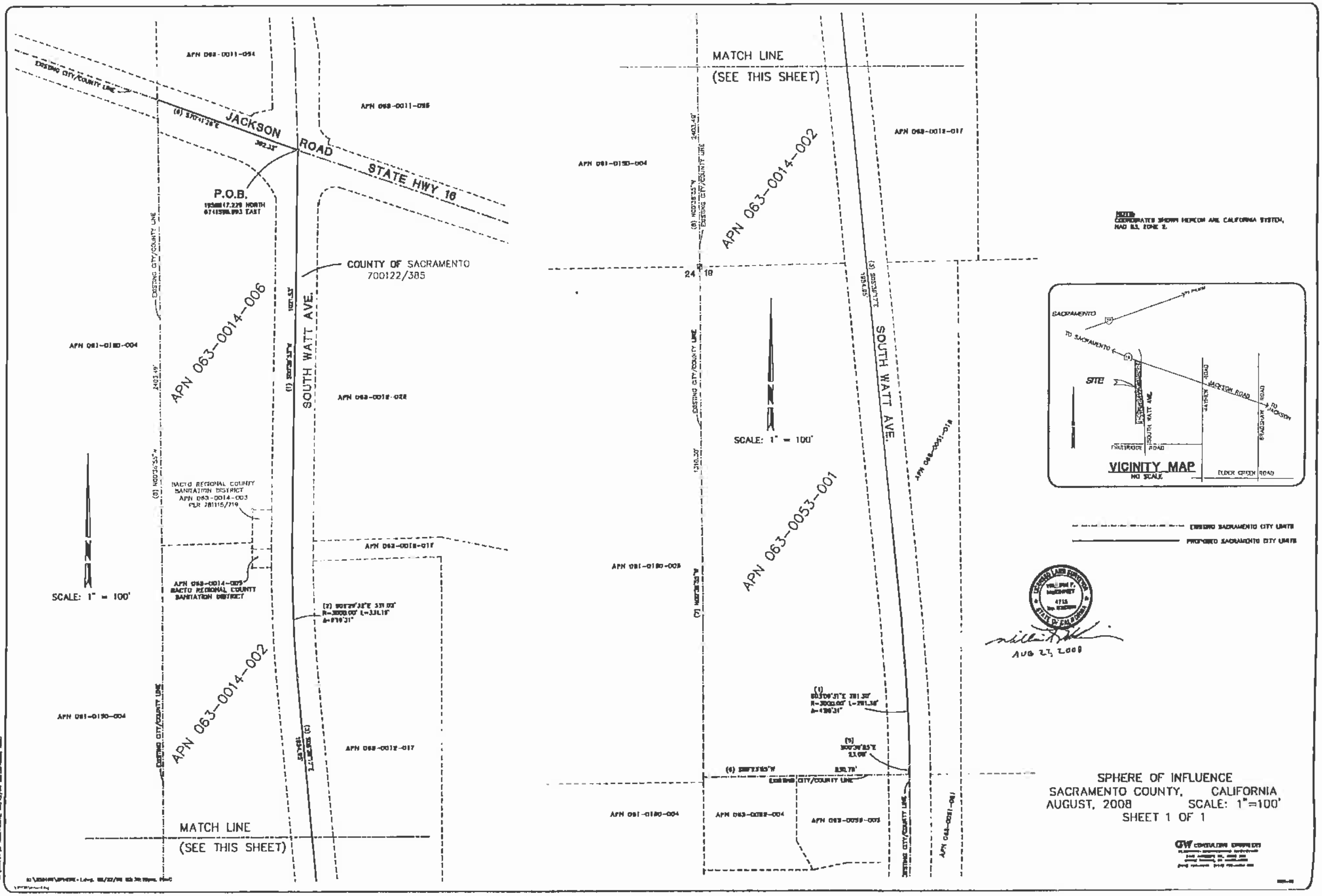
(7) North 00°36'55" West 1310.30 feet to the west quarter corner of said Section 19; thence

(8) North 00°36'55" West 2403.49 feet to an angle point in said existing city/county limit line, being also a point on the centerline of said Jackson Road; thence, leaving said limit line and along said centerline of Jackson Road,

(9) South 70°41'28" East 382.32 feet to **POINT OF BEGINNING**, containing 34.082 acres more or less.

LICENSED LAND SURVEYOR
WILLIAM F. McKINNEY
4715
Exp. 9/30/2009
STATE OF CALIFORNIA

William F. McKinney
AUG 22, 2008

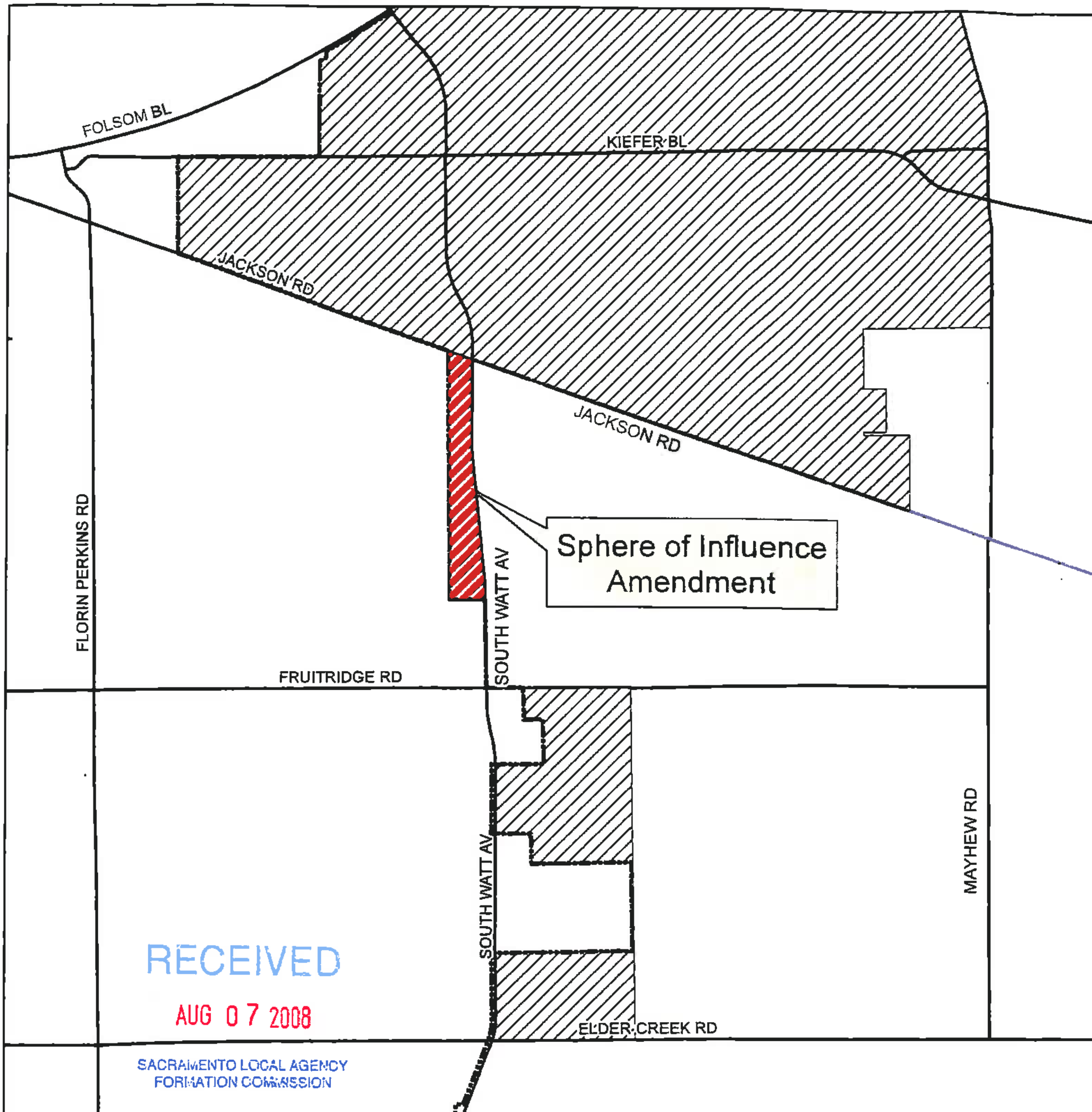


JACKSON ROAD
STATE HWY 16
SOUTH WATT AVE.
P.O.B.
COUNTY OF SACRAMENTO
700122/385
APN 063-0014-006
APN 063-0014-002
APN 063-0053-001
MATCH LINE
(SEE THIS SHEET)
SCALE: 1" = 100'
RACTO REGIONAL COUNTY SANITATION DISTRICT
VICINITY MAP
NO SCALE
SITE
SACRAMENTO
JACKSON ROAD
SOUTH WATT AVE.
EXISTING SACRAMENTO CITY LIMITS
PROPOSED SACRAMENTO CITY LIMITS
AUG 27, 2008
SPHERE OF INFLUENCE
SACRAMENTO COUNTY, CALIFORNIA
AUGUST, 2008 SCALE: 1"=100'
SHEET 1 OF 1

EXHIBIT B

LEGAL DESCRIPTION OF AFFECTED TERRITORY

MAP OF AFFECTED TERRITORY



Legend

Sphere of Influence

City Boundary

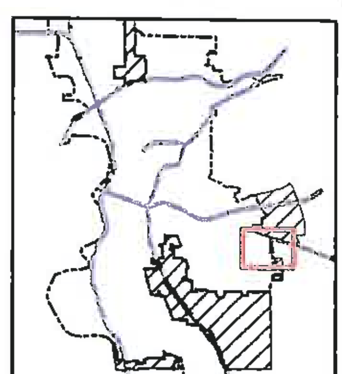
0 1,350 2,700 Feet

N

August 5, 2008

Aspen 1

Sphere of Influence Amendment



APPENDIX E

A NEW PARK COMMUNITY

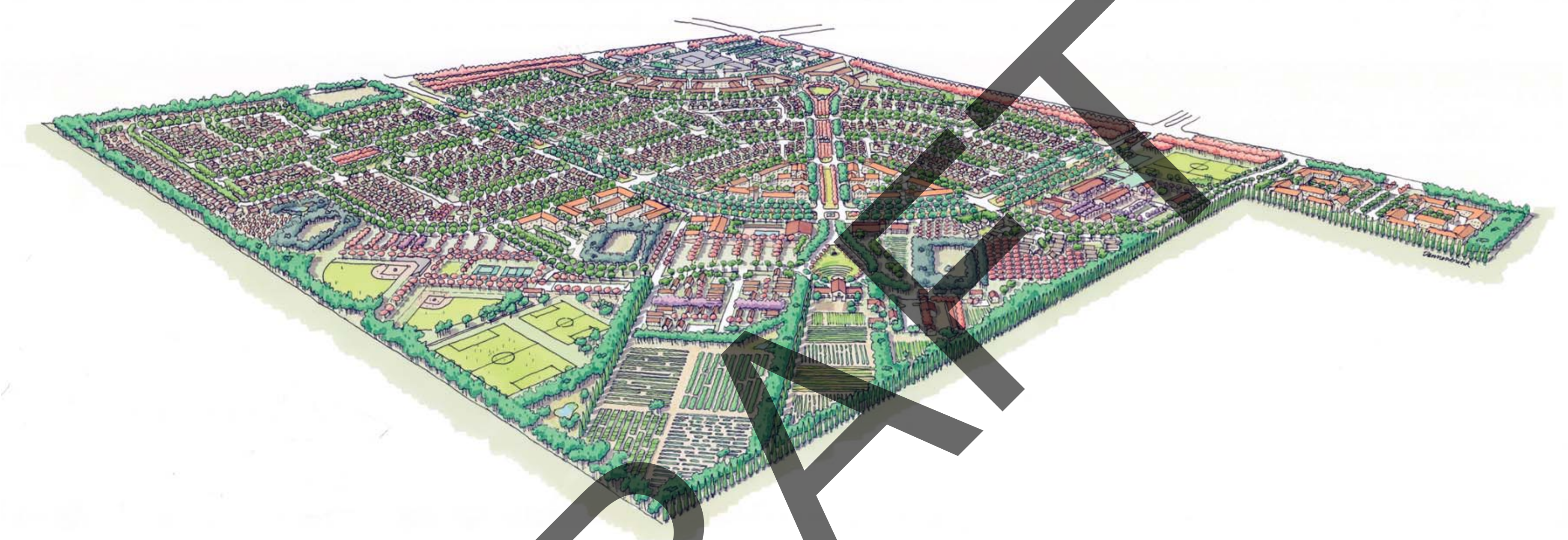
NEW BRIGHTON

PUD GUIDELINES

PREPARED BY STONEBRIDGE PROPERTIES, LLC 3600 AMERICAN RIVER DRIVE SACRAMENTO CA 95864

New Brighton PUD Guidelines

April 2011



Prepared by

STONEBRIDGE
PROPERTIES, LLC

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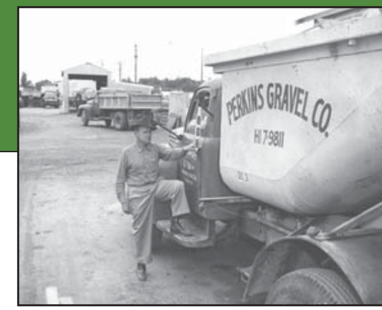
Chapter 1: Introduction

1.1 SITE HISTORY AND CONTEXT

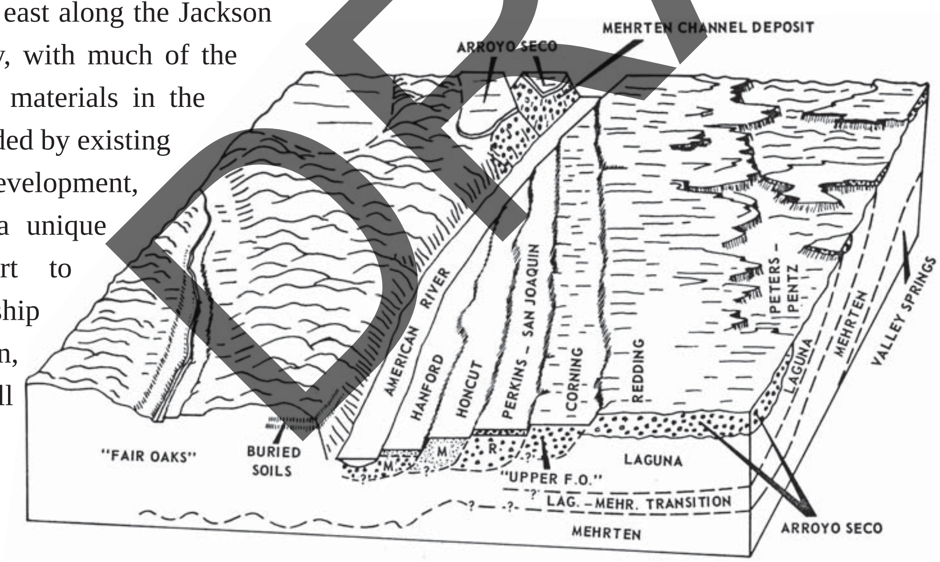
The Aspen 1-New Brighton Project (New Brighton) is located within an area historically referred to as the Brighton Township, one of 14 original townships in Sacramento County dating to the 1880's. Once dubbed the "Best Town that Doesn't Exist," the Brighton Area has a long and productive history dating back over 8,000 years, made possible by the rich bounty nature provided. The terrain is comprised of fossil rivers, which have resulted in an abundance of sand, gravel, cobble, and fertile soils that have nurtured vast and varied land uses and settlement patterns over thousands of years.

The earliest inhabitants of the property were the Valley Nisenan, Native American Indians who settled along the American River watersheds and utilized the rich abundance of fish, game, and vegetation for food; wood and tules for housing; and stone and wood for tools and trade. Nisenan society flourished prior to the exploration and settlement of Sacramento (hastened by European exploration of the area) and the Spanish Land Grant system, which gave title of the land to John Sutter. Native American methods of managing the land gave way to larger scale farming operations, which ushered in a new agricultural era to the Brighton community. The new immigrants raised cattle, maintained dairy operations, and cultivated the land for dry farming and a variety of row crops, eventually transforming the Brighton area into an agricultural cornucopia referred to as the "Strawberry Capital of the World." With the advent of rail service, roadways, and the automobile, farming operations began to expand outward from Sacramento as the need for farming in close proximity to urban areas began to fade.





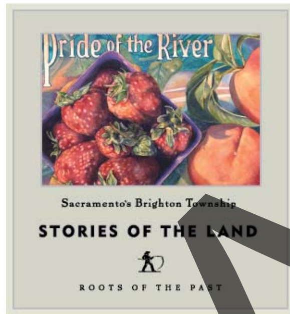
The years leading up to World War II brought numerous changes to the Brighton Area as demand increased for homes, businesses, and new roadways to serve the Sacramento region. In response to these changes, Teichert and other sand and gravel mining companies began mining operations in the area to provide the construction materials required to support the increased demand. In the years following World War II, growth in the Sacramento region continued, and mining activities progressed steadily to the east along the Jackson Highway corridor. Today, with much of the high quality construction materials in the area depleted and surrounded by existing and planned urban development, the Plan Area presents a unique opportunity for Teichert to restore the Brighton Township and create New Brighton, an innovative urban infill and reuse community.

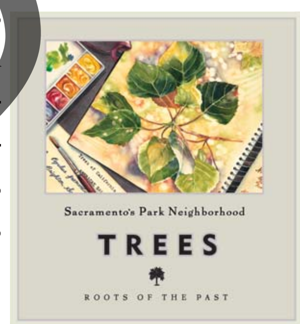


Major Land Forms and Soils Along the Lower American River

In 2004, the City of Sacramento began its General Plan update process as the Sacramento Area Council of Governments (SACOG) was in the final stages of refining its Blueprint for the region. Growth in the Sacramento region was charting a new course, with a greater emphasis on "smart growth," capitalizing on infill and reuse opportunities to reduce the region's dependence on "greenfield development" in order to accommodate a burgeoning population. During this same period, Teichert created StoneBridge Properties, LLC (StoneBridge), in order to establish a new direction for Teichert's land holdings in the region. StoneBridge's stated purpose is in part: to reinvigorate former Teichert industrial lands by master planning and building new communities with a vision for sustainable growth.

As the master plan process began, it was recognized that an appreciation and understanding of the area's history would provide an important context for appropriate community planning and design. In order to provide a comprehensive historical context, StoneBridge has prepared and published three books. The first book, *Stories of the Land*, chronicles the history of the Brighton Township. The second book, *Sacramento Park Neighborhoods*, takes an introspective look at some of Sacramento's most successful park neighborhoods and why they have withstood the test of time to remain some of the most popular and desirable communities in which to live. The third book, *Sacramento's Park Neighborhood Trees*, studies the various varieties of tree species in Sacramento's Park Neighborhoods and provides guidance for reintroduction of large tree species to new communities to create the coveted tree canopy that is Sacramento's signature landscape feature. Important considerations discovered during the creation of these books, such as historical references and successful elements from Sacramento's beloved Park Neighborhoods, are incorporated within these guidelines to provide the foundation for a highly successful new park neighborhood that embraces its historical agricultural roots through urban farming and abundant opportunities for a healthy and sustainable community.





1.2 LOCATION AND SETTING

New Brighton is a new 232± acre master-planned community situated within the City of Sacramento's eastern edge, located in close proximity to the existing neighborhoods of Rosemont and College Glen. As shown on Figure 1-1 (Vicinity Map), the Plan Area is situated at the southwest corner of South Watt Avenue and Jackson Highway and is located approximately 1.2 miles south of Highway 50 and 6.5 miles east of downtown Sacramento.

The New Brighton Planned Unit Development (PUD) is part of what is commonly referred to as Aspen 1, which is owned and operated by Teichert Land Company and is a former aggregate mine site utilized for sand and gravel extraction in the 1960's. Due to mining operations, the site is characterized by varied topography, which range in elevation from 12 feet MSL to 53 feet MSL. The subject site

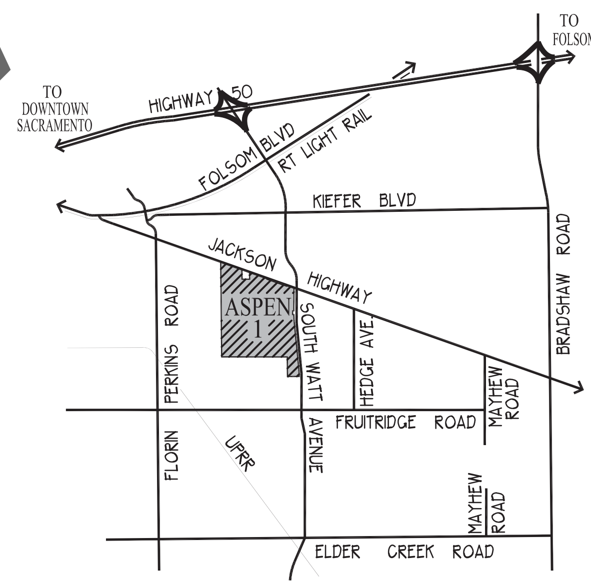


Figure 1-1: Vicinity Map

also contains an electrical transmission line which transects the site in a northwesterly-to-southwesterly direction. Since mining of the site was completed, the site has provided areas for agriculture, a nursery, and supporting uses for the Teichert Perkins Plant.

As illustrated by Figure 1-2 (General Plan Land Use Map), General Plan Land Use Designations within the Plan Area include Traditional Neighborhood Medium Density and Suburban Center. The New Brighton Special Planning District (SPD) Ordinance and these PUD Guidelines are designed to implement the General Plan Designations through the following zoning designations established by the New Brighton SPD Ordinance:

1. R-1A (Single-Family Residential Zone)
2. R-3 (Multi-Family Residential Zone)
3. RMX (Residential Mixed-Use Zone)
4. SC (Shopping Center Zone)
5. A (Agricultural Zone)
6. AOS (Agricultural Open Space Zone)

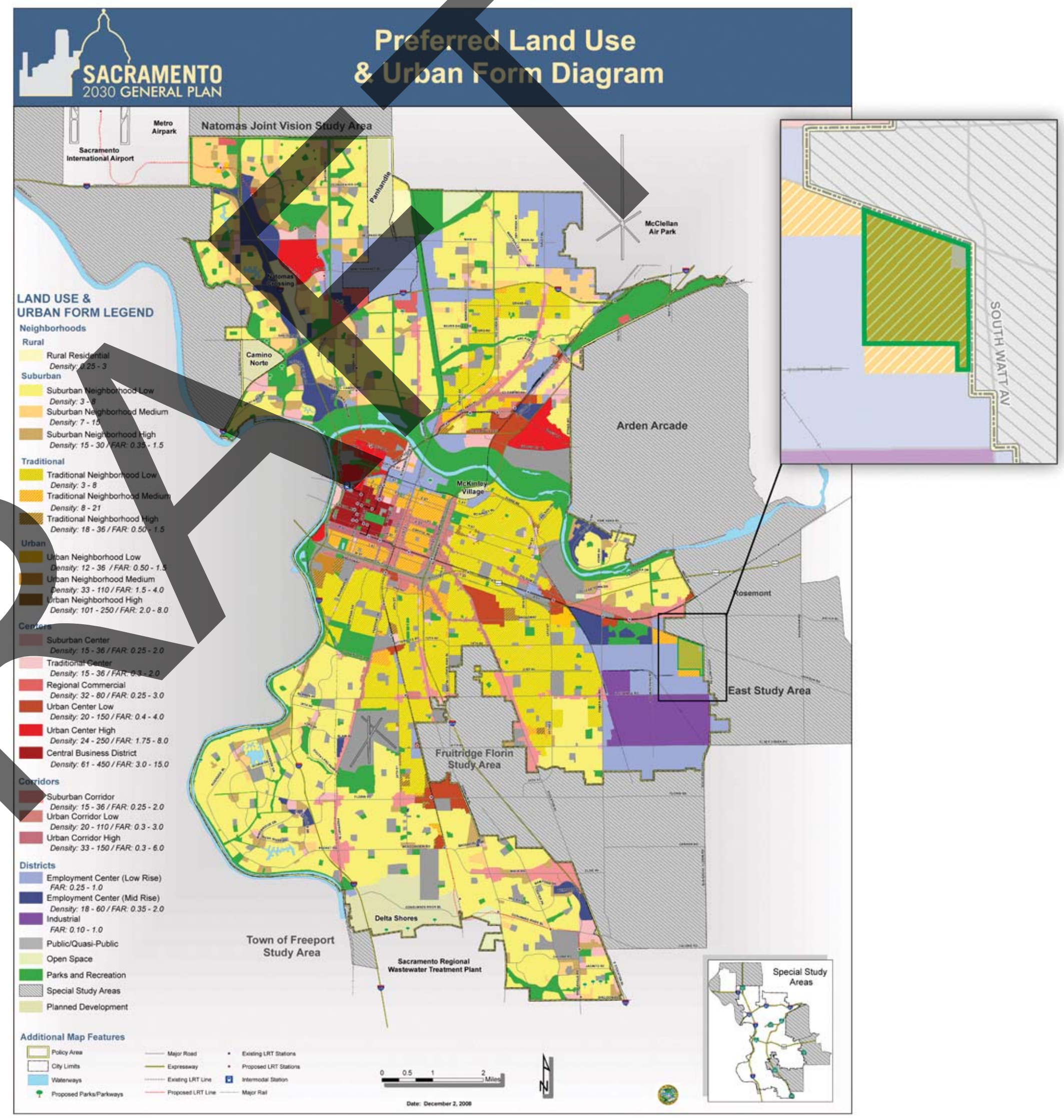


Figure 1-2: General Plan Land Use Map

1.3 PURPOSE

The purpose of this document is to work in concert with the SPD Ordinance to guide the planning and design of individual projects within the Plan Area. These PUD Guidelines provide a comprehensive overview of the design criteria and development standards required to implement the desired physical form of the community and its key features. The PUD Guidelines address land use, site design, sustainability, architecture, landscaping, circulation, and other components to create a distinguished community comprised of high quality architecture, ample open space and recreational areas, and a balanced mixture of uses.

These PUD Guidelines function to (1) implement the City of Sacramento General Plan goals for the Plan Area; (2) establish a design framework within which developers, builders, and architects/designers can conceive and produce high-quality design and construction within the development; and (3) create a design review framework by which to evaluate, critique, and approve development projects on individual sites within the Plan Area. These Guidelines will be used in conjunction with the SPD Ordinance to supplement and replace zoning standards for the property, which would otherwise apply under the City of Sacramento's Zoning Code. In addition, these Guidelines provide written and graphic descriptions of planning and design concepts based on smart growth and environmentally responsible design solutions.

Variations to these standards may be considered for projects with special project and design characteristics during the City's development review process. This document is intended to encourage and direct a high level of design quality to the project site while permitting flexibility for creative expression and innovative design solutions.

1.4 PUD GUIDELINE DOCUMENT AUTHORITY

The Plan Area consists of property within the City limits of the City of Sacramento and is subject to the land use and jurisdictional authority of the City's relevant ordinances and codes. Adoption of these PUD Guidelines is subject to the California Environmental Quality Act (CEQA) and requires consistency with the City's General Plan. The General Plan provides the overall guidance for the City's physical development by setting forth general goals, objectives, policies, and programs for the entire City planning area. The SPD Ordinance and these PUD Guidelines implement the City General Plan with specific development standards and design guidelines for the Plan Area, governing individual project applications and construction. This set of guidelines establishes a link between the General Plan and future individual project level development proposals.

1.5 PUD ADMINISTRATION OVERVIEW

1.5.1 COMPLIANCE

This project, as a Planned Unit Development, and its associated SPD Ordinance, as approved and adopted by the Sacramento City Council, will serve as a supplement to the existing Sacramento Zoning Code for the Plan Area. The City Council, Planning Commission, and City Planning Staff will use these Development Guidelines as a vehicle to review specific development proposals and to implement the project's vision and regulations. Future development proposals and plans, whether individual buildings or collectively phased projects, must comply with these Guidelines, as well as the General Plan and Zoning Code, where applicable. These Development Guidelines are intended to be used by City staff, property owners, architects, landscape architects, designers, builders, and developers in the planning and design of projects within the Plan Area.

1.5.2 CONFLICTS WITH CITY CODE

Should particular elements in these Guidelines conflict with development standards or regulations in the Sacramento Zoning Code, these Development Guidelines shall prevail. Conversely, any particular element or provision not specifically covered in these Guidelines shall be subject to the provisions of the City Zoning Code.

1.5.3 AMENDMENTS

Upon request by the applicant, the Planning Director may amend or modify the Planned Unit Development schematic plan and/or guidelines provided that the requested amendment or modification is consistent with the general intent of these Development Guidelines and does not change the density or intensity of land uses by more than 10 percent. Amendments changing the density or intensity of land uses by more than 10 percent shall be approved by the City Council.

1.6 INTERIM USE

Until interim uses as specified in the New Brighton SPD have been removed, residential land uses shall…

- Need to address noise, dust, lighting, and aesthetics per mitigation contained with the EIR once available.

1.7 DOCUMENT ORGANIZATION

The New Brighton PUD Guidelines have been prepared according to the following structure to guide future users within the Plan Area.

Chapter 1: Introduction

Chapter 1 summarizes the history and context of the Plan Area, its location and purpose, authority, and its organization and structure.

Chapter 2: Community Framework

This chapter describes the overall vision and goals for the New Brighton community, specifies the main design and planning principles, and explains the physical framework for key elements such as land use and circulation, community centers, residential land uses/densities, and open space and park elements.

Chapter 3: Parks, Open Space, and Recreation

This chapter sets forth design principles and guidelines for all open space and recreational features within the Plan Area. Guidelines for such elements as the urban farm, community gardens, community park, neighborhood parks, small "teardrop" mini-parks, medians, slope and perimeter treatment of buffer areas, and treatment within the power line easement is addressed.

Chapter 4: Landscape Design

Chapter 4 establishes the overall planting scheme for the project. Community landscape elements including street trees, project entries, park design, perimeters and slopes, edible landscape, Low Impact Development (LID) design, plant palettes, irrigation standards, fencing and wall design, paving and hardscape, lighting, street furniture, and other related measures are covered.

Chapter 5: Circulation and Streetscape

Chapter 5 sets forth the circulation master plan, which will provide a variety of interconnected modes of transportation to serve the community. Street sections designed for efficient modes of pedestrian and bicyclist travel are set forth, as are alternative street standards for LID design, trail networks and transit planning.

Chapter 6: Residential Neighborhoods

This chapter incorporates design principles, development standards, and architectural guidelines based upon historic architectural styles found within Sacramento Park neighborhoods to assist homebuilders in creating unique, memorable, meaningful, and relevant communities.

Chapter 7: Commercial Centers

Chapter 7 describes design principles and development standards for commercial areas within the Plan Area based upon historically relevant local architectural styles.

Chapter 2: Community Framework

2.1 COMMUNITY VISION

New Brighton is a new community in the City of Sacramento which draws upon its rich and varied history to establish a new park neighborhood that showcases the best elements of new community design while featuring historical references to its agrarian past.

Over centuries, this property has provided and nurtured a variety of lifecycles: originally providing homes and sustenance for the Valley Nisenan Native American culture, later becoming the agricultural breadbasket of the Sacramento Region with its rich bounty of agriculture, and subsequently for the last 50 years providing construction materials for a thriving State Capital. Once again the time has come for the property to provide for a new group of Californians, with a lifestyle of sustainable and environmentally sensitive living, shopping, employment, and renewed local agriculture with wellness as its unifying theme.

This project presents a rare opportunity for the City of Sacramento to weave an infill and reuse site into the existing fabric of the Community. By focusing high-quality development into this strategic location, the project can provide critical recreational, housing, community, and commercial services while helping to reinvigorate the area. These PUD Guidelines are presented as a vision for the transition of the area and set forth the necessary standards and guidelines to implement this vision.

The descriptions and exhibits presented in the following pages describe and illustrate the roadmap to create a new park community that is reflective of its history, environment, and the culture of its surroundings. This plan will provide new opportunities for a variety of healthy lifestyles, including opportunities to recapture elements of the earlier agrarian era of local agriculture and community gardening.

As illustrated by the conceptual land use plan on **Figure 2-1**, the proposed PUD will consist of a mixture of land uses including single-family and multi-family housing, commercial centers, urban farming areas, educational facilities, and recreational parks and open spaces. These meaningful open spaces are patterned after the most successful elements of historic and traditional Sacramento Park neighborhoods such as Land Park, McKinley Park, Curtis Park, and Oak Park. By introducing the appropriate mix of iconic architecture, civic space layout and design, small neighborhood-serving retail, and a human scale to the massing of buildings, these land uses and design principles will guide the transition of this former aggregate mining area into a vibrant mixed-use community embodying smart growth principles. With this in mind, the following set of general guiding principles will serve to implement future individual development projects according to the stated vision.

Figure 2-1: Conceptual Land Use Plan

2.2 GUIDING PRINCIPLES

GUIDING PRINCIPLE 1: PROMOTE WELLNESS

Provide abundant opportunities for health and wellness through the provision of outdoor recreational systems and access to fresh local produce.

In order to provide for the wellness of the community, a number of critical elements have been set forth within the project. Opportunities for outdoor activities are abundant, with trails, a Community Park, Neighborhood Park, and two Mini-Parks distributed throughout the community and within easy walking and biking distance of residents. In addition, the Urban Farm has been centrally located to provide residents with the option of foregoing their vehicles and instead utilizing the internal transit or trail system to obtain fresh, locally grown produce and farm products.

GUIDING PRINCIPLE 2: CREATE COMMUNITY

Establish recognizable theming and create numerous opportunities for social interaction in order to reinforce a sense of community.

The physical form of the Plan Area will utilize consistent theming which references the Plan Area's rich agricultural history and some of the best elements of Sacramento's Park neighborhoods. Upon entering the community, streetscapes will introduce lush landscaped boulevards, generously sized planter areas, and opportunities for agricultural landscapes in entry features, along perimeter slope areas, and within community gardens. Options for social interaction will come in many forms, including community events and festivals at the Urban Farm, recreational activities within the various park and open space locations, and informal encounters within the Community Commercial and Four Corners Village Center District.

GUIDING PRINCIPLE 3: REINVIGORATE EXISTING AREAS

Complete the life cycle of a former mining site by weaving it into the fabric of existing communities.

This project represents a tremendous opportunity to transform an underutilized property into an active and contributing community. The land use plan has been designed to offer important retail and employment opportunities to an underserved area, with trail and transit connections aligned to connect with off-site properties. New Brighton will also provide a wide variety of new and different housing types to the existing community. In addition, recreational areas and the Urban Farm will help establish social interaction and community involvement for residents in and around the Plan Area.

GUIDING PRINCIPLE 4: PROMOTE SUSTAINABLE PRACTICES

Incorporate environmentally sensitive design practices into the community.

The Plan Area has been designed to demonstrate sustainable design practices through a variety of measures including energy efficient design, urban forests, and Low Impact Development (LID), which are intended to reduce the overall footprint of the community. Since the Plan Area is an infill-reuse site, it provides an extraordinary opportunity to promote sustainable design practices, demonstrating options that may be incorporated into other projects within the larger community.

An urban forest plan has been included in the landscape design of the project site to provide tree varieties and locations which present numerous benefits to the Plan Area. Properly located trees and appropriate species selection can improve air quality through reduced energy usage, increased pollutant uptake, and reduced tree emissions. In addition, trees can help reduce storm water runoff velocities, reduce erosion, and in turn help improve water quality.

LID measures are integrated into the Plan Area in order to reduce storm water runoff volume through hydromodification and to improve water quality. The use of LID measures has been incorporated into many of the open space and recreational facilities within the Plan Area, including streets, medians, planter areas, parks, and the Urban Farm. Through the use of techniques such as bio-swales, infiltration strips, bio-retention, rain gardens, and modified street sections, downstream areas will benefit from reduced storm water flows and improved water quality.

GUIDING PRINCIPLE 5: INCLUDE A MIXTURE OF USES

Create a community which embraces a mixture of land uses to encourage walkability and foster alternative modes of travel.

The land use plan includes a variety of land use types and mixed densities which are intended to provide employment, commercial, recreational, and housing opportunities within easy walking distance. The spatial relationship between land uses is intended to foster neighborhood interaction and minimize vehicular trips, providing for a range of community needs within the Plan Area.

GUIDING PRINCIPLE 6: FOSTER A DISTINCTIVE BLEND OF ARCHITECTURE

Establish distinctive architectural design and character which will reinforce a strong sense of community.

An important lesson learned from an analysis of Sacramento's Park Neighborhoods is how strongly communities react and coalesce around architectural identity. Proper architectural forms establish a strong physical presence and help delineate the overall personality and essence of a community. The architectural design guidelines set forth within these PUD Guidelines draw upon the most successful examples of local and regional architecture found within Sacramento's Park Neighborhoods and set forth an architectural palette for designing an eclectic variety of public and private spaces.

GUIDING PRINCIPLE 7: ENCOURAGE ALTERNATIVE MODES OF TRAVEL

Reduce automobile trips by facilitating transportation options.

As identified by Guiding Principle 5, New Brighton has been designed to provide a variety of uses and densities within the Plan Area. Access to diverse land uses such as the Community Commercial, Urban Farm, Elementary School, and Four Corners neighborhood commercial area is provided through an interconnected transportation system designed to simplify access and reduce the need for automotive travel. Techniques used to encourage alternative modes of travel include the use of the following:

1. Properly located land uses including local-serving neighborhood retail and civic uses in proximity to residential areas.
2. A modified grid pattern street system, which utilizes shorter block sizes.
3. Shortcuts from residential areas to commercial and recreational opportunities.

4. Pedestrian-friendly street sections, which include separated sidewalks, wide planters for large street trees, and on-street bike lanes along collector roadways.

5. An off-street trail system linking the residential neighborhoods to commercial, recreational, school, and Urban Farm locations.

6. A “transit ready” street section for Rock Creek Parkway, which is capable of providing future median transit options such as a shuttle, trolley, electric vehicle, or Bus Rapid Transit (BRT).

2.3 LAND USE CONCEPT

The Land Use Plan encompasses 232 acres of former aggregate mining land which is strategically located at the southwest corner of South Watt Avenue and Jackson Highway. As discussed in the preceding section, wellness, community, reinvigoration of community through infill/reuse, sustainability, a mixture of land uses, distinctive architecture, and alternative modes of travel are the hallmarks of the Land Use Plan. These guiding principles have been incorporated into the Conceptual Land Use Plan illustrated by **Figure 2-1** and **Table 2-1** to create the foundation of a mixed-use community comprised of three land use districts. These land use districts integrate a mix of land uses that are compatible, accessible, economically efficient, and organized around major thematic elements to create a definitive “sense of place.”

The three Land Use Districts of New Brighton are as follows:

- Community Commercial District
- Four Corners Village Center District
- Traditional Neighborhoods District

These land use districts are illustrated by Figure 2-2 and their key features are described in the remaining portion of this chapter. Design guidelines and development standards for associated uses are set forth in Chapters 3 through 7 of these PUD Guidelines.

Table 2-1: Land Use Summary

Symbol	Designation	Units	Estimated Bldg. SF	Gross	Net[1] Acres	Net Density
LDR	Low Density Residential	482		86.0	59.1	8.2
HDR	High Density Residential	378		19.3	15.1	25.0
RMU	Residential Mixed Use	405	59,000	17.0	13.5	30.0
C	Commercial	50	130,000	12.4	10.8	*
UF	Urban Farm	50	33,000	26.7	23.8	*
ES	Elementary School			9.8	8.8	
P	Parks			16.6	14.5	
OS	Open Space/Medians			28.8	28.5	
	Major Roads			15.6		
	Total	1,365	222,000	232.2		

[1] *Net Acres excludes public streets, alleys, slopes, and landscape easements.*

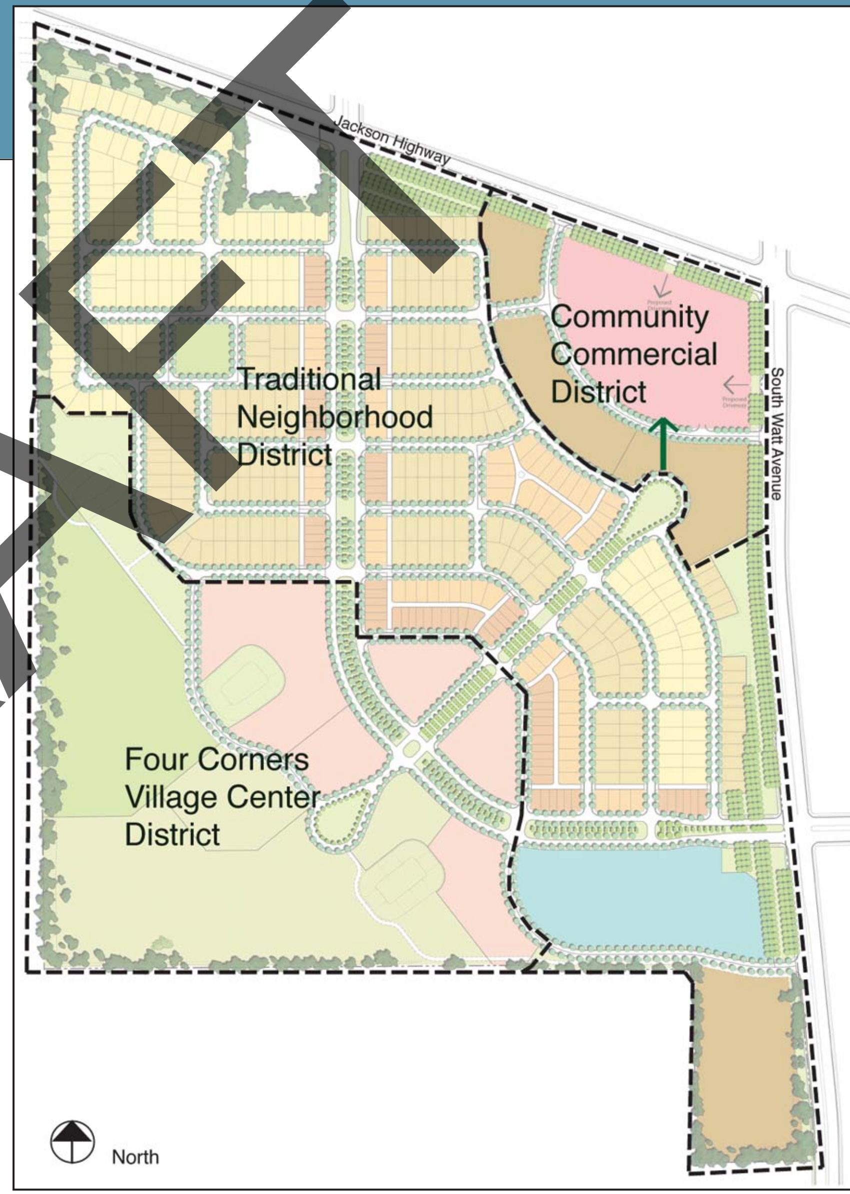


Figure 2-2: Land Use Districts

2.3.1 COMMUNITY COMMERCIAL DISTRICT

The Community Commercial District is located at the northeast corner of the community, at the junction of South Watt Avenue and Jackson Highway. This location provides tremendous visibility and accessibility from within the Plan Area as well as to travelers along the South Watt Avenue and Jackson Highway Corridors. As shown in Figure 2-3 the Land Use Plan takes advantage of this strategic location by placing the Community Commercial District along the axis of the Aspen Promenade, linking it to the Four Corners Village Center District both visually and physically. By connecting these two Districts, they form anchors at either end of the Aspen Promenade, which helps to facilitate joint use activities and easy travel between both districts.

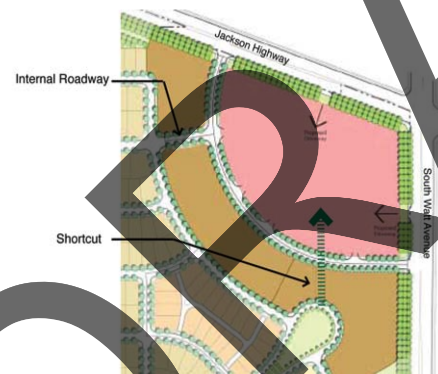


Figure 2-3: Community Commercial District

The Community Commercial District will provide a commercial and multi-family anchor to the community, with easy access to a heavily traveled corridor and transit. This concentrated node of density will help facilitate transit ridership within the Plan Area and along the planned South Watt Avenue BRT Corridor. Multi-family uses will provide synergy between the commercial and multi-family sites, which will strengthen the commercial corner and foster activity. In addition, alternative modes of travel will be facilitated by a pedestrian-friendly street section along Aspen Promenade, an internal road connection from the Plan Area to the District, a "Shortcut" (see Figure 2-4), and an off-street trail which connects the Plan Area to the Community Commercial District.

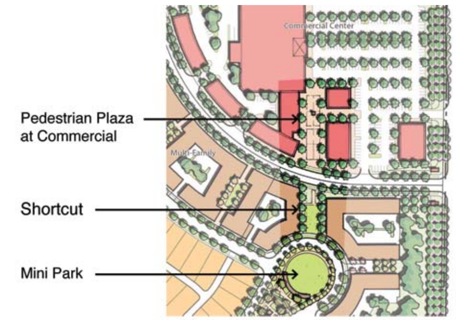


Figure 2-4: "Shortcut"

2.3.2 FOUR CORNERS VILLAGE CENTER DISTRICT

The nucleus of the Community is located at the southwest portion of the Plan Area, at the junction of the Aspen Promenade and Rock Creek Parkway. As shown in Figure 2-5, this central District has been designed to provide a lively combination of mixed uses, neighborhood-oriented services, recreational areas, and the Urban Farm which will support transit and

Figure 2-5: Four Corners Village Center District

foster community interaction. This District is notable for the concentration of uses it supports and the manner in which it relates to the remaining two Districts within the Plan Area through a combination of easy access from Rock Creek Parkway and the off-street trail system, which interconnects various neighborhoods within the Plan Area to this District.

While varied in nature, land uses within the Four Corners Village Center District will provide an appropriate level of activity and energy to reinforce the sense of a community core. Ground level land uses on the east side of Rock Creek Parkway may include high density residential, neighborhood-serving commercial, and community facilities such as an ampitheater, health club, post office, community meeting hall, agricultural supporting uses, and iconic landscape features. Second floor uses may include additional high density residential and/or office space designed to overlook this District and provide a unique lifestyle choice for a more urban residential experience.

The southwest side of Rock Creek Parkway within the Four Corners Village Center District provides a glimpse into the Urban Farm and Community Park. The Urban Farm, a key component of the land plan, provides a palpable connection to locally grown fresh produce and recaptures some of the rich agricultural history of the area through educational and cultural activities associated with farming. The Urban Farm, in conjunction with the comprehensive open space and park facilities in the District, serves to promote the guiding principles of wellness and community envisioned by the New Brighton Community.

2.3.3 TRADITIONAL NEIGHBORHOODS DISTRICT

As illustrated by Figure 2-6, the Traditional Neighborhoods District encompasses the primary core of the Plan Area. Situated between the Four Corners Village Center District to the southwest and the Community Commercial District to the northeast, this District will provide distinguished residential neighborhoods reminiscent of Sacramento's finest Park Communities. This District is comprised of residential units of various densities with neighborhoods organized according to a gridded street system with short block lengths, pedestrian-friendly streets, and large planter areas to promote walkability.

As set forth in greater detail in Chapter 6 of these PUD Guidelines, the Traditional Neighborhoods District shall provide high quality homes, rich in architectural character and varied in size and density. Homes will reinforce a strong streetscape through architectural variations as well as garage type and placement. Homes along Rock Creek Parkway will be alley loaded and shall face the street to present a strong architectural statement and frame the roadway with a stately presence, while other home sites will offer a combination of recessed garages, detached garages, and accessory dwelling units above garages to enliven the neighborhood and create a diverse and dynamic streetscape.

Figure 2-6: Traditional Neighborhoods District

Chapter 3: Parks, Recreation, and Open Space

3.1 PARKS, RECREATION, AND OPEN SPACE MASTER PLAN

This chapter sets forth the framework to establish the Plan Area as a true park community that emphasizes wellness through the establishment of a comprehensive open space and recreational system. Open Space and recreational areas provide the backbone to a successful community; and this project has incorporated a variety of parks, trails, landscaped medians, and an urban farm to serve a wide variety of interests and age groups.

The centerpiece of the Parks, Recreation, and Open Space Master Plan is the Urban Farm, which will be established to serve as the nucleus of the community. The Urban Farm provides a location to cultivate and purchase fresh produce, provide educational opportunities, and hold community events and farmers markets. Agricultural theming related to the Urban Farm extends well beyond its borders into all parts of the Plan Area through community gardens, edible landscaping, perimeter planting, wildlife attracting hedgerows, and community landscape palettes.

The Urban Farm will be tied into the overall Plan Area through a series of on-street and off-street trails, promenades, and landscaped medians, which are designed to extend the "park experience" throughout the Plan Area as illustrated by Figure 3-1. Visitors will immediately notice the distinctive nature of the community as they are greeted by parkways

Figure 3-1: Parks, Recreation, and Open Space Master Plan

which are reminiscent of roadways located within Sacramento's Park Neighborhoods. The "park experience" will extend from these large generously landscaped median areas to the greater network of park and open space areas, which include a community park, neighborhood park, several mini-parks, and trails.

Chapter 16.64 of the City of Sacramento Zoning Code calls for a minimum of 5.0 acres of parkland per 1,000 population, and the parkland calculation is summarized in Table 3-1. This project provides a total of 14.5 acres of park and recreational areas which are eligible for Quimby Credit with an additional 52.3 acres of open space and recreational areas. This area includes the 23.8 acre Urban Farm Parcel and 28.5 acres of median boulevard parks, landscaped entries, corridors along streets, shortcuts, and slope areas.

Parkland dedication requirements are typically based on zoning and maximum density; however, a small lot tentative subdivision map was included with the application, allowing the parkland requirement to be precisely calculated for these PUD Guidelines. It should be noted that if the Land Use Plan and Tentative Subdivision Map is amended, this could affect the calculation of required parkland and may require a reduction or increase in the parkland dedication or in-lieu fee obligations under the City of Sacramento Code 16.64.

Table 3-1: Quimby (Park Requirement) Calculations

Land Use	Density DU / AC	Acres (net)	Max. Units	Park Factor	Park Acres Required
RMU	30.0	13.5	405	0.0088	3.56
HDR	25.0	15.1	378	0.0088	3.33
Urban Farm	-	-	50	0.0088	0.44
Commercial	-	-	50	0.0088	0.44
SFD	8.2	59.1	482	0.0149	7.18
				Total Parkland Required	14.95
				Total Parkland Provided	14.50

Note: Parkland requirements are based on maximum units as approved on the Tentative Subdivision Map. In the event residential densities or unit counts are modified, the amount of parkland required may change requiring adherence to Chapter 16.64 of the City of Sacramento Zoning Code.

3.2 PARK, RECREATION, AND OPEN SPACE ELEMENTS

3.2.1 THE URBAN FARM

As illustrated by Figures 3-2 and 3-3, the Urban Farm is located at the southwest corner of the Plan Area, strategically placed at the intersection of Rock Creek Parkway and the Aspen Promenade. Designed to serve as the centerpiece of the community, the Urban Farm will provide a central location for residents and surrounding neighbors to obtain fresh produce and assorted agricultural goods. In addition, the Urban Farm allows for up to 50 residential units, a potential school site or related educational facilities, and a community barn which can host community events such as farmers markets, barn dances, outdoor movies, harvest festivals, and craft fairs. In order to perform the multitude of functions envisioned for the site, activities within the Urban Farm site shall conform to the following guidelines:

Urban Farm Guidelines:

A. Agricultural Activities

- The use of pesticides and herbicides shall be minimized. Sustainable farm practices shall be used, with Certified Organic Status as an option to pursue.
- The site must be designed and maintained such that fertilizers will not drain onto adjacent property.
- Reuse of stormwater and treated wastewater shall be used to the extent possible.
- The Urban Farm may be utilized for flood storage in emergency events where water may back up into the parcel to prevent Rock Creek Parkway from flooding.

Figure 3-2: Urban Farm Location

Figure 3-3: Urban Farm Conceptual Plan

- Farm equipment shall only be utilized between the hours of 7 am and 10 pm and may be subject to the requirements of the City Noise Ordinance.
- All farm-related buildings and structures must comply with building and zoning codes.
- Outdoor lighting shall be carefully designed to minimize or eliminate interference with adjacent land uses.
- Equipment shall be stored in secured buildings or fenced compounds and screened from public view.
- All chemicals and fuels must be stored in an enclosed, locked structure when the site is unattended.
- Pesticides or herbicides may be applied only in accordance with state and federal regulations.
- Animal pens must be fenced with appropriate materials, locked, and secured.

B. Buffers

- Animal pens shall be located a minimum of 100 feet from residential land uses.
- Hedgerows or other landscape screening shall be required where the urban farm abuts residential areas in order to reduce the potential for dust transmission.
- Crops must be set back a minimum of 20 feet from residential property lines, with transitional ground cover, shrubs, and trees or access roads in the area between crops and property lines.
- A landscape plan for the proposed landscaped buffer along the farm boundaries shall be prepared identifying the type and location of fencing and the location, species, sizes, and quantities of all plant material.

C. Programming (See Figure 3-3)

- Farm buildings may consist of a multipurpose barn, classrooms, offices, restaurant, and a packing house, all centrally located and designed for public visitation. Also included is private housing for caretaker/interns located away from public access.
- Water quality basins shall be incorporated into the farm to provide pollutant removal and storm water storage.
- Grounds shall be organized to clearly differentiate between areas intended for public access and areas exclusively for farming activities not open to the general public.
- The design of the site should incorporate sustainable features in crop management, in both building and landscape design.

3.2.2 COMMUNITY GARDENS

The establishment of a Community Garden is an important element of this project. The safety and vitality of a healthy community relies heavily upon the vested pride of ownership that residents have for their neighborhood. The Community Garden is a place where neighbors can invest in the beauty and vitality of their community by individually cultivating their own small plots while fostering a focal point for neighborhood gatherings and social interaction.

The Community Garden is centrally located and in close proximity to the Urban Farm as shown in Figures 3-4 and 3-5. It is anticipated the Community Garden and Urban Farm will share resources and develop an interactive relationship.

Community Garden Guidelines:

- Automobile parking will be shared with adjacent uses. The Garden will provide bike racks and storage facilities and should be linked to pedestrian trails.
- Building structures shall be minor and designed to complement surrounding uses in a manner that is consistent with the architectural guidelines of the Urban Farm.
- A tool shed or other structure for storing tools, supplies, and materials shall be incorporated into the design.

Figure 3-4: Community Garden Location

Figure 3-5: Community Garden Conceptual Plan

- Seating such as benches or picnic tables where gardeners can sit, relax, and take a break in shaded areas will be thoughtfully incorporated. Trash receptacles, drinking fountains, and restrooms will be included.
- Landscape treatment shall be consistent with the concepts developed for parks and other open space elements.
- A children's area, which can include special small plots for children, a sand box, and limited play equipment will be included in the design.
- A small outdoor meeting area such as a small amphitheater or informal group of benches will be a part of the Community Garden.

3.2.3 COMMUNITY PARK

The Community Park is strategically located in the southwestern portion of the Plan Area adjacent to the Urban Farm parcel and west of the power lines as shown in Figures 3-6 and 3-7. It is well positioned for convenient access to area roadways and is located within a half mile of most residential areas within the Plan Area. The Community Park has been designed with homes fronting onto the park, providing eyes on the street. The park is located to provide easy access from transit and bicycle routes along Rock Creek Parkway and the Class I trail system, which ties into the Community Park and Urban Farm locations.

The Park is intended to provide for higher intensity recreational uses, including sports fields for league play, but may include both active and passive uses. Potential amenities may include lighted or unlighted fields (e.g., soccer and/or baseball) with natural or artificial turf, lighted or unlighted tennis courts, basketball courts, children's play areas, group picnic facilities and shade structures, concession and/or equipment building, restroom facilities, pedestrian and bicycle trails, off-street parking, etc.

Figure 3-6: Community Park Location

Figure 3-7: Community Park Conceptual Plan

Community Park Guidelines:

- Programming of the Community Park should include elements to address the needs of a diverse community.
- Park circulation should be designed to provide pedestrian access from the surrounding neighborhoods and the Urban Farm.
- Parking facilities should provide for a variety of transportation modes, including bicycle and automobile. Bicycle racks shall be provided in convenient locations. Parking shall be located as to provide shared use opportunities with other public facilities such as adjacent schools and the Urban Farm.
- Parking will be designed in accordance with the City's current parking standards including the City's Parking Lot Tree Shading Design and Maintenance Guidelines.
- The Park site shall be designed to accommodate drainage for a ten year storm event.
- LID design features shall be incorporated into the design of the Park in order to collect and capture urban runoff and convey it through landscaped and vegetated areas prior to re-entering the underground drainage system.
- Park programming shall consider opportunities for shared facilities or conjunctive uses with the Urban Farm including such uses as outdoor learning areas, picnic, and festival areas.
- Easily accessible and adequate restrooms, drinking fountains, trash/recycling receptacles, benches, lighting, and other amenities shall be provided within the Community Park.

Figure 3-8: Neighborhood Park Location

3.2.4 NEIGHBORHOOD PARK

This project includes a Neighborhood Park located in the northwest quadrant of the Plan Area, as shown in Figures 3-8 and 3-9. This Neighborhood Park has been designed as a traditionally shaped square park to seamlessly integrate and complement the grid nature of the Land Use Plan. It is intended to provide a local gathering space for residents within the Plan Area.

The Neighborhood Park should be designed to include a variety of programming opportunities including, but not limited to, turf areas, seating, picnic facilities and shade structures, half-court basketball or volleyball, a small tot-lot or playground, and active learning areas or structures. Structures and amenities should be designed to reflect the Park Neighborhood design of the community and should be reflective of its landscape and architectural character.

Neighborhood Park Guidelines:

- Park circulation should be designed to provide pedestrian access from the surrounding neighborhoods.
- Parking for the Neighborhood Park shall be provided on adjacent streets.
- Homes should be designed to front onto the Neighborhood Park where possible; and, in instances where homes do not front on, the use of porches, windows, or other enhanced architectural treatments are acceptable.

Figure 3-9: Neighborhood Park Conceptual Plan

- LID design features shall be incorporated into the park design through the use of rain gardens, pervious surfaces, and vegetative swales.
- Park design should incorporate unique cultural elements or focal points consistent with the New Brighton history into the design to create a distinct identity.

3.2.5 MINI-PARKS

There are two teardrop shaped Mini-Parks proposed within the Plan Area at either end of Aspen Promenade as illustrated by Figure 3-10. They provide a green terminus and focal point at either end of the project's signature street, and signal an important pedestrian connection between the High Density Residential and Commercial at the northeasterly end and the mixed-use nature of the Four Corners Area and the Urban Farm at the southwesterly end of the Plan Area.

The Mini-Parks are intended to provide a local gathering space for residents for informal activities and interaction. Although they are relatively small in scale, Mini-Parks provide a useful function and can accommodate a range of activities and amenities as conceptually shown in Figures 3-11 and 3-12. Programming for Mini-Parks can be simple, but they should be designed to reflect the Park Neighborhood design of the Community in landscape palette and architectural character. The northern Mini-Park is adjacent to residential and should accommodate active and passive uses in a

Figure 3-10: Mini-Park Location

Figure 3-11: Mini-Park Conceptual Plan

Figure 3-12: Mini-Park Conceptual Plan

garden setting. These uses could include children's play areas, picnicking, tree alleys, arbors, and small shade structures. The southern Mini-Park shall be designed to be compatible with community events at the Urban Farm, with flexibility for larger gatherings such as an amphitheater, farmers market, or informal activity lawn.

Mini-Park Guidelines:

- Park circulation should be designed to provide pedestrian access from the surrounding neighborhoods and the Urban Farm.
- Parking for the Mini-Park shall be provided on adjacent streets.
- Homes should be designed to front onto the Mini-Parks where possible; and, in instances where homes do not front on, the use of porches, windows, or other enhanced architectural treatments are acceptable.
- LID design features should be incorporated into the park design through the use of rain gardens, pervious surfaces, and vegetative swales.
- Mini-Parks shall provide areas for seating, bike parking, trash receptacles, picnic areas, and shade structures.

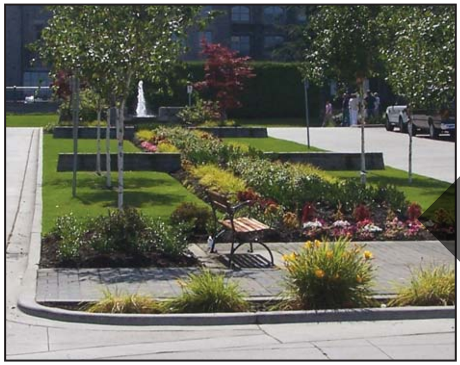
3.2.6 MEDIANS AND PROMENADES

In order to emulate the history and embody the design of Sacramento's Park Neighborhoods, generously landscaped boulevard parks have been incorporated into the Plan Area. These "boulevard" parks are intended to create signature streets which provide lush landscaping, visual and recreational opportunities, facilitation of transit, and opportunities for Low Impact Development. Located as shown in Figure 3-13, these generously proportioned landscape medians will be a significant contributor to the scenic value and unique character of the community.

Rock Creek Parkway, the main collector road through the community, provides a 74-foot wide median intended to provide a dramatic backdrop for homes and neighborhood areas along its frontage. As shown in Figure 3-14, its primary functions include facilitating future transit, pedestrian access, limited recreational opportunities, and providing areas for LID features to capture urban runoff.

Aspen Promenade, the project's primary signature street, connects the more intense commercial site and high density residential sites in the northeast corner of the site to the Four Corners and the Urban Farm in the southwest corner of the site. Designed as a 50-foot wide median reminiscent of T Street in the Elmhurst neighborhood of Sacramento, this median will be

Figure 3-13: Median Locations



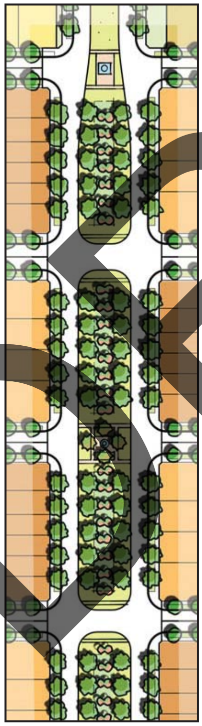


Figure 3-14: Rock Creek Parkway/Aspen Promenade Conceptual Programming

designed to accommodate water quality features and limited neighborhood programming.

Median Guidelines:

- Roadway cross sections shall conform to those shown on the approved Tentative Subdivision Maps and illustrated by Chapter 5 of these PUD Guidelines.
- LID design features shall be incorporated into the design through the use of a central linear vegetative swale system.
- Pedestrian access to the medians shall be provided by pedestrian crosswalks at designated street intersections.
- Passive uses are encouraged such as rose gardens, themed plant gardens, tree allees, or arbors with seating areas. Limited active uses such as bocci ball and horseshoes may be provided.
- Landscape treatments shall be consistent with the concepts developed for parks and other open space elements.

3.2.7 PERIMETER AND SLOPE

The total area and size of perimeter open space lands within the Plan consists of approximately 12 acres of buffer, entry, and slope landscaping that includes recreational trails and water quality features. As shown in Figures 3-15, 3-16, and 3-17, the perimeter landscape provides a clear physical identity for the plan as well as providing connections for paths and trails to link community features. Due to the topographic conditions of the site, slopes are necessary for a large portion of the perimeter. These slopes and generous entry setbacks provide opportunities for additional landscaping and buffering of adjacent arterial roadways.

Perimeter and Slope Guidelines:

- The steepness of the slope shall vary with a maximum of 2:1. Trails and steps may be used in limited areas for access to commercial facilities and community features.
- As illustrated by Figures 3-16, and 3-17 uses within the perimeter areas may include entry features, ornamental landscaping, naturally planted open space, hedgerows, orchard and/or agricultural planting, paths, walks, bicycle trails, and small pocket parks.
- All vegetation proposed for the perimeter landscape shall be designed and maintained to minimize fire hazards.

Figure 3-15: Perimeter Open Space Locations

Figure 3-16: Perimeter Open Space Locations

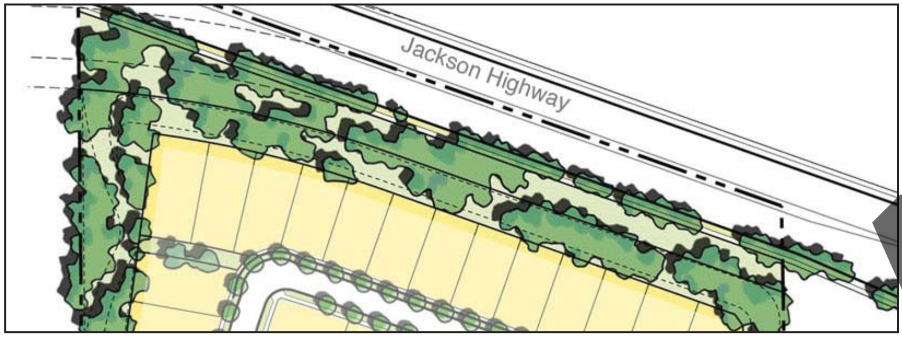


Figure 3-17: Perimeter Open Space Conceptual Plan

- Vegetated swales and water quality basins are important visual and aesthetic features of the perimeter open space and shall be designed in accordance with the project landscape guidelines.

3.2.8 ADDITIONAL OPEN SPACE AREAS

Figure 3-18 identifies additional open space areas within the Plan Area. These open space properties include portions of the land beneath the power line easement, slopes for the transmission towers, and a mid-block paseo, totaling an additional 7+ acres of designated open space. As illustrated by Figure 3-19, uses may include parking areas for the Community Park, bicycle trails, water quality systems, and landscaping of slopes for transmission towers. A block-long shortcut provides convenient and direct pedestrian access between intersections for residents north of the Community Park.

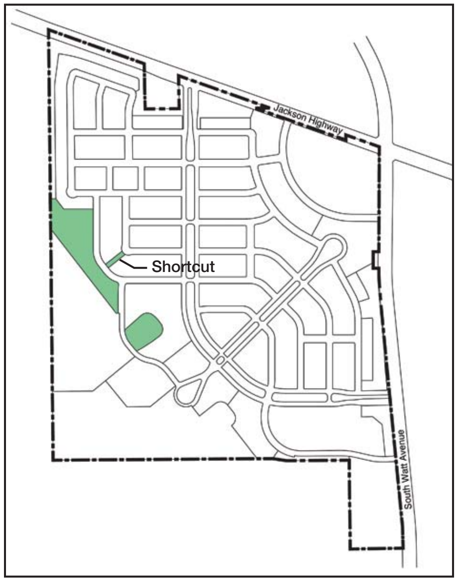


Figure 3-18: Additional Space Locations

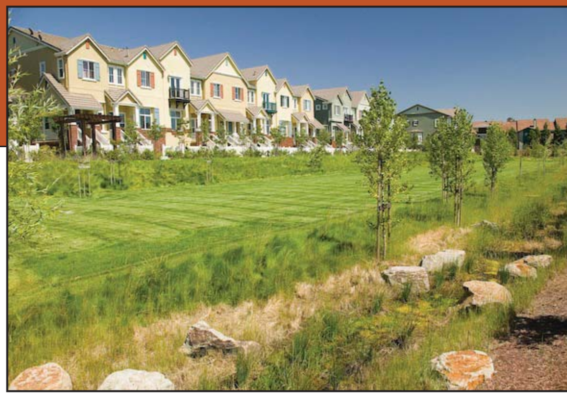


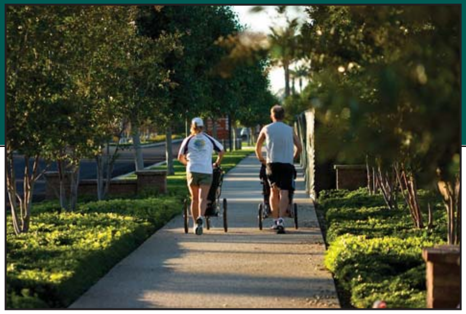
Figure 3-19: Additional Open Space Conceptual Plan

Additional Open Space Guidelines:

- Uses should include signage features for the park, naturally planted open space, orchard planted parking areas, paths, walks, bicycle trails, and small pocket parks.
- All vegetation proposed under the transmission line shall be designed and maintained to minimize any encroachment hazards in accordance with Sacramento Municipal Utility District (SMUD) and Western area Power Agency (WPA) standards for powerline easements. Access to the towers shall be maintained and may be combined with the bike trail.
- Vegetated swales and water quality basins are important visual and aesthetic features of the community open space and shall be designed in accordance with the project landscape guidelines.
- Pedestrian features such as benches and trash receptacles are to be incorporated as appropriate.
- Open space may include programmed uses such as dog parks or other uses compatible and complementary to the Community Park.

Chapter 4: Landscape Design

4.1 INTRODUCTION



This chapter has been established to work in concert with the Parks, Recreation, and Open Space Master Plan set forth in Chapter 3 to provide the necessary detail to implement the concept of a Park Community within the Plan Area. As stated throughout these PUD Guidelines, landscape is a critical component of the project's identity. As an ever-present visual element along the streets, edges, medians, and parks, landscape plays an important role in establishing the identity of the Plan Area. The landscape design for the project drew inspiration from two primary sources: first, the historic Sacramento Park Neighborhoods that are known for their tree-lined and shade-dappled streets and, second, the traditional agricultural landscape of the Sacramento Valley with its regular geometry of hedgerows, orchards and row crops.

In addition to the inspiration drawn from tree-lined streets and agricultural landscapes, the project features the incorporation of green infrastructure or LID landscape practices into the overall project design. LID principles incorporate drainage features seamlessly into the landscape through shallow surface vegetated drainage areas in order to reduce stormwater runoff velocities and volumes through hydromodification and to improve the water quality of downstream runoff.

This chapter addresses the elements found within the landscape realm and includes guidelines and standards for planting design, street trees, project entries, parks, perimeter slopes and open space, edible landscaping, LID features, plant palettes, irrigation, fences and walls, paving, lighting, and street furniture. The guidelines and standards set forth within this chapter will provide a closely coordinated, cohesive, and memorable landscape experience within the Community.

4.2 PLANTING DESIGN

An emphasis on tree planting serves as the primary focus of the landscape plans. Long-term development of shaded streets, parks, buffers, parking areas, and other locations is one of the primary determinants of community character and quality living environments. General planting guidelines are discussed below followed by a description of the primary landscape features of the project.

Planting Design Guidelines:

- Highlight the planting of long-lived species that are indigenous or well adapted to the climate and soils of the site.
- Landscape should emphasize the use of drought-tolerant, native adapted landscape species particularly in parks and other open space areas.
- Turf should be limited to parks, schools, or other active uses and/or high visibility areas. Low groundcover and native grasses should be used as an alternative to turf wherever possible.
- Avoid planting tree species with invasive root systems near utility lines and paving. Such species may be used in larger setback areas and open space areas provided there is adequate clearance.
- Planting design should consider location and orientation when adjacent to buildings to maximize solar orientation and reduce building heating and cooling.
- Encourage energy-efficient landscaping techniques by using local materials, on-site composting, and chipping to reduce green waste hauling.
- Plants should be selected for scale, color, and texture and planted in larger masses for ease of maintenance.
- Planting design should consider year-round interest and seasonal character through the careful use of flower and leaf color.
- Landscape design shall provide effective screening of parking areas, retaining walls, utility enclosures, utility cabinets, service areas, or service corridors to reduce negative visual impacts.
- Screen landscaping should incorporate evergreen plant species in order to maintain year-round leaf cover.

4.3 COMMUNITY LANDSCAPE ELEMENTS

Primary landscape components of the Plan Area including street trees, entries, parks, perimeter slopes, edible landscapes and open spaces, are set forth in the subsequent sections of this Chapter. Consistent with the Guiding Principle of promoting wellness within this PUD, opportunities for edible landscaping are provided in order to further promote the connection of community to land. All landscape elements described within this Chapter should conform to the Plant Palette provided in Table 4-1.

4.3.1 STREET TREES

Street trees are the backbone of the Plan Area's neighborhoods and tree type should be selected from the Plant Palette provided in Table 4-1 based on the hierarchy and importance of the street within the community. Street trees are utilized on every street, located within an enlarged planter strip or parkway between the curb and pedestrian walkway. In addition to the street trees, a key aspect to creating an identifiable image for the project will be landscaping at project entries.

Perimeter streets include Jackson Highway and South Watt Avenue which are inspired by the regular geometry of hedgerows orchards and row crops. The trees shall consist of multiple rows of regularly spaced trees, matched in height and appearance, to create an orchard-like appearance.

Street Tree Guidelines:

- As illustrated by Figure 4-1, street tree plantings are required along all public streets and shall be installed by the builder parallel to the curb and centered in the planter strips.
- Local streets shall be framed by regular plantings of canopy street trees and a minimum of 8-foot parkway between curb and sidewalk.
- Portions of Jackson Highway and South Watt Avenue will be planted with a dense informal evergreen planting to screen the adjacent out-parcel on Jackson Highway and buffer residential uses from South Watt Avenue.
- Rock Creek Parkway and Aspen Promenade shall have multiple rows of regularly spaced trees. They will be matched in height and form to create a traditional shaded boulevard experience. Within these large medians small pocket parks shall be provided with accent plants and detailed landscape features.
- Trees shall be planted at sufficient intervals to accommodate mature growth. Maximum spacing shall be no more than 30 feet on center.

Figure 4-1: Street Tree Plantings

- Street trees should be pruned to provide a minimum 8-foot clear space between the lower branch and the pedestrian walkway to allow for clearance for vehicles, pedestrians, and bicycle passage.
- Accent trees which provide seasonal color and visual interest should be planted at project entries and important intersections.
- Tree species may vary along primary roadways and local roads to create neighborhoods identified by particular tree species.
- Trees shall be planted from a minimum of fifteen (15) gallon containers or larger.

4.3.2 PROJECT ENTRIES

Project entries at South Watt Avenue and Jackson Highway provide an opportunity to distinguish the Plan Area from other communities in the region. As illustrated by **Figure 4-2**, primary project entries should be simple and understated with orchard tree plantings as the dominant element in order to reinforce the agricultural identity of the Plan Area. Entry design will also incorporate elements such as hardscape, pavers, signage, lighting, etc., to create a memorable landscape gateway.

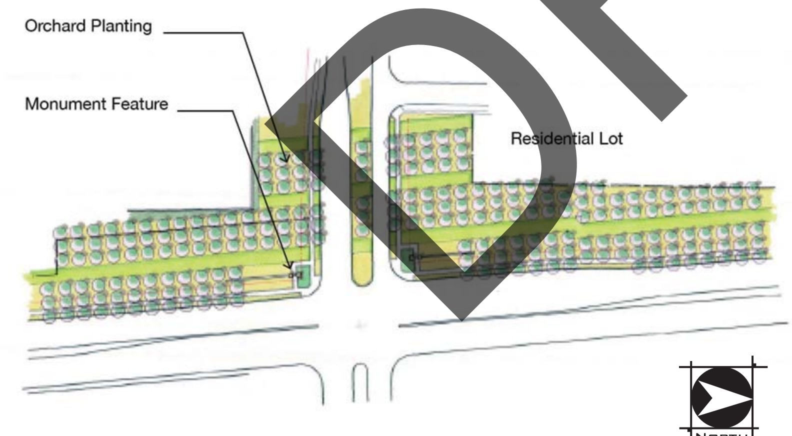


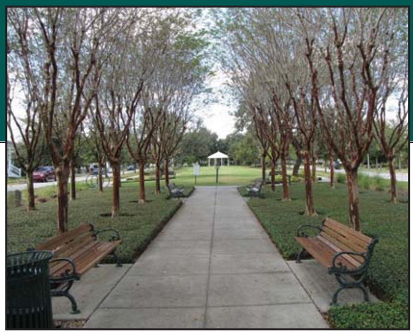
Figure 4-2: Primary Project Entries

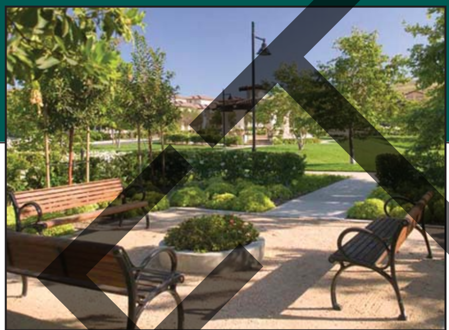
Project Entry Guidelines:

- Orchard trees, native, or ornamental grasses should be the dominant elements. Accent color can be provided with lavender, rosemary or other appropriate plant types.
- Materials should have a classic and timeless appeal, be durable and simple in form, but appropriate to the scale of Jackson Highway and South Watt Avenue.
- Additional materials should be kept to a minimum to establish a uniform identity and avoid a cluttered landscape and architectural palette.

4.3.3 PARKS

As illustrated by **Figure 4-3**, parks within New Brighton can have both formal and informal planting designs relating to adjacent uses and program requirements. The landscape will have a manicured appearance, although native-adapted and low water-using plants should be emphasized. Smaller parks will lend themselves to formal planting treatments interspersed with large graceful shade trees while larger parks such as the Community Park will provide areas for active recreation.





Park Landscape Guidelines:

- The Community Park shall have plantings that incorporate agricultural theming with small groves of trees in highly visible areas combined with informal masses of trees and plantings in and around activity areas.
- Each park shall be designed as not only a visual space that has a definite character but also one that has areas for informal activities, shaded areas, seating areas, and viewing and/or strolling gardens.
- Each park shall incorporate one unique garden or architectural feature that complements the community design such as an arbor, trellis, or sculpture. Larger parks can include gazebos, pergolas, or follies.

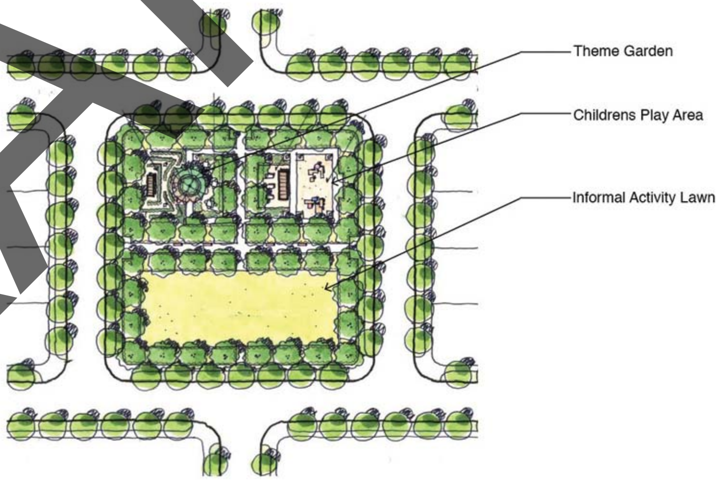


Figure 4-3: Parks

4.3.4 PERIMETERS AND SLOPES

Perimeter and slope areas provide a unique opportunity to incorporate a mixture of landscape materials suitable for agricultural production, screening, or ornamental and native-adapted landscape. Orchard-type plantings, such as olive and almond, can be utilized in many areas to complement the agrarian landscape of the Plan Area and provide agricultural products. Figures 4-4 and 4-5 illustrate design options for perimeter and slope plantings where screening or ornamental landscapes are desired and plantings utilize native-adapted and low water plants grouped in large masses to achieve a natural appearance. Grading and planting design shall be carefully coordinated to enhance the quality and character of the community.

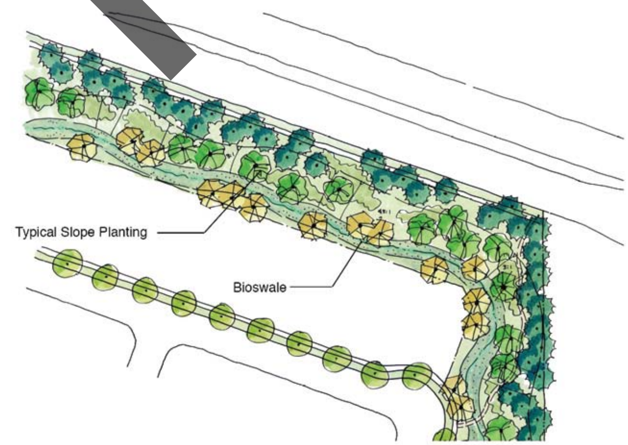


Figure 4-4: Design Options for Perimeter and Slope Plantings

Perimeter Slopes and Open Space Guidelines:

- Grading and planting design for slopes and bioretention areas shall be unified to ensure plant species respond to grade changes and moisture levels associated with the design.
- Shrubs and trees will be planted to screen adjacent uses as appropriate.
- Contoured grading shall be executed without severe breaks in slopes to achieve a natural appearance.

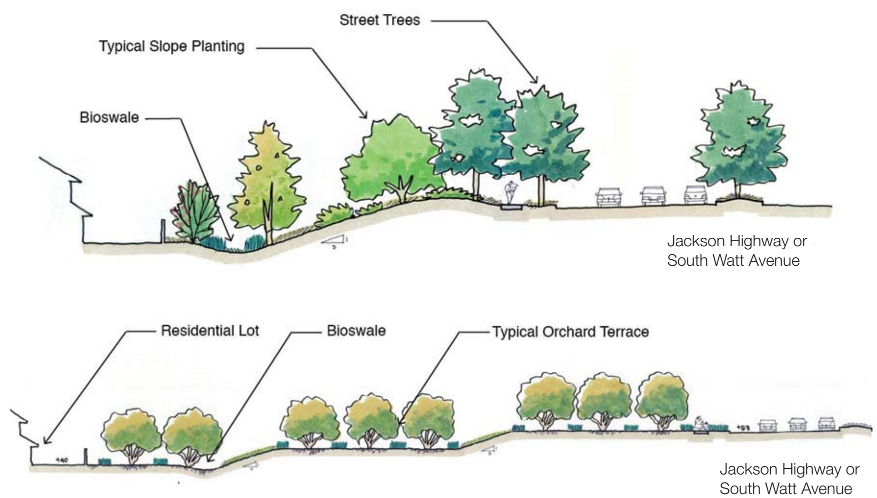


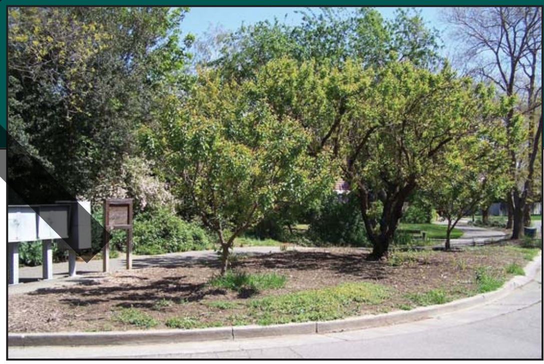
Figure 4-5: Design Options for Perimeter and Slope Plantings

- Native grasses shall be used for all slope areas where orchard or ornamental plant and tree species are not used in order to provide erosion control.
- Agricultural plant palettes should be utilized along slope areas to the extent possible.

4.3.5 EDIBLE LANDSCAPE

An important emphasis on community agriculture is intended to be reinforced by planting design and landscape throughout the Plan Area.

In addition to the urban farm and community garden, edible landscaping should be used wherever possible. Edible landscapes combine fruit and nut trees, berry bushes, vegetables, herbs, edible flowers, and ornamental plants into aesthetically pleasing designs. These designs can incorporate any garden style and can be included almost anywhere in the community landscape. The edible landscape recognizes that an aesthetically pleasing landscape and the production of fresh, delicious food can go hand-in-hand. Edible landscaping can be incorporated in school gardens, commercial and multi-family sites, trails, parks, and other spaces so that residents can enjoy the benefits of edible plants integrated into their landscapes.



Edible Landscaping Guidelines

- Edible landscape designs should resemble an ornamental garden and create balance, unity, rhythm, interconnection, and pattern in the landscape while integrating a host of food-producing plants into the design.
- Fruit trees can be grown as large trees in the landscape or trained as fences in an "espalier."
- A wide range of berry-producing shrubs and brambles (raspberries) can work well as hedges, living fences, or screens.
- Vining plants such as hardy kiwi and grape can climb along an arbor, pergola, fence line, or trellis.

- Food-producing plants should be mixed with ornamental plants. The edible landscape garden should include non-edible tree, shrub, and perennial species.

4.4 LOW IMPACT DEVELOPMENT (LID) LANDSCAPE

The term LID is one of many used to describe the practices and techniques employed to provide advanced storm water management that seeks to maintain and use vegetation and open space to optimize natural hydrologic processes to reduce stormwater runoff. Through means such as infiltration, evapotranspiration, and reuse of rainwater, LID techniques manage water and water pollutants at the source and thereby reduce or prevent urban runoff impacts to rivers, streams, lakes, coastal waters, and ground water.

As illustrated by Figure 4-6, LID features are incorporated throughout the Plan Area and they include both formal and informal plantings depending on the location of the facility. LID features are meant to be an invisible design element that presents itself as a natural, integral part of the landscape design rather than a separate uncoordinated feature.

LID features in the Plan Area include a comprehensive system of open space and landscaped areas which are intended to improve stormwater quality and reduce runoff volumes. This comprehensive system includes modified street designs as discussed in Chapter 5 of these PUD Guidelines, enlarged planter strips adjacent to all streets, large medians in Rock Creek Parkway and Aspen Promenade, and a number of open space and recreational areas intended to provide for the infiltration and reduction of stormwater flows. Figures 4-7 and 4-8 provide conceptual examples of some of the LID techniques utilized within the Plan Area.

In addition to the LID features in the medians and open space, New Brighton includes a range of creative landscape design approaches for the residential, park, and commercial areas of the project. All project areas are encouraged to incorporate the following practices:

LID Guidelines:

- Plant large canopy street trees where appropriate to intercept rainwater, encourage root uptake, and facilitate evapotranspiration.
- Construct infiltration and conveyance trenches in planting strips planted with native and/or adapted vegetation to provide detention and infiltration depending on design.
- Build bioretention systems in planting strips or in open space and perimeter landscape areas. These systems use special soil mixes that promote tree root growth, runoff treatment, and infiltration depending on design.
- Bioswale channels in Rock Creek Parkway and Aspen Promenade should resemble a native grass-lined channel, linear in nature,

complementing the formal boulevards.

- Construct interconnected vegetated swales in the large parkways and medians as a part of the roadway system.
- Residential areas should landscape with a vegetative strip to provide on-lot detention, filtering of rainwater, and groundwater recharge.
- Buildings should have disconnected gutters and downspouts from roofs and direct flows to rain gardens or bioswales.
- Use permeable pavers, porous pavement, or other permeable material for walkways and parking areas where possible.

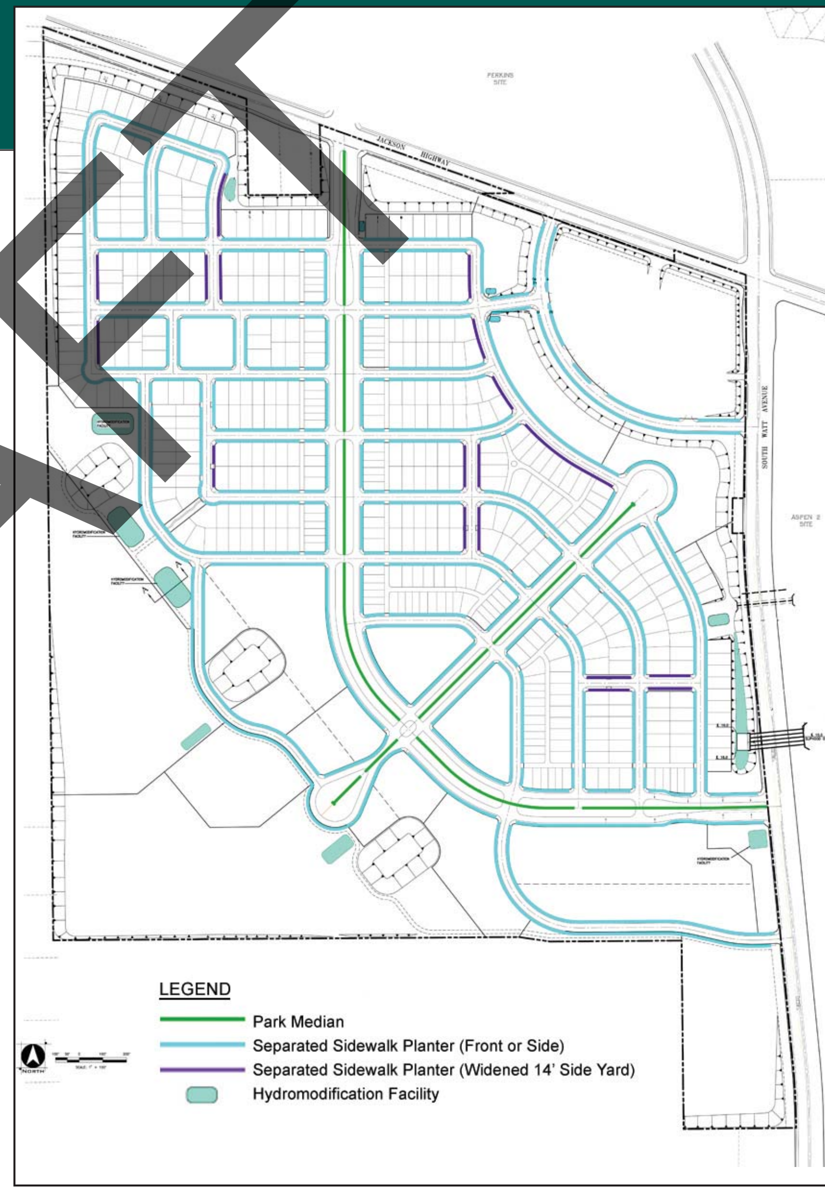
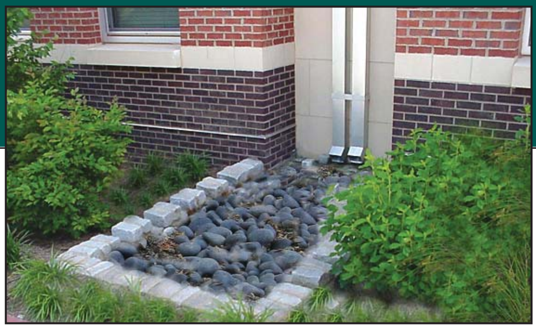
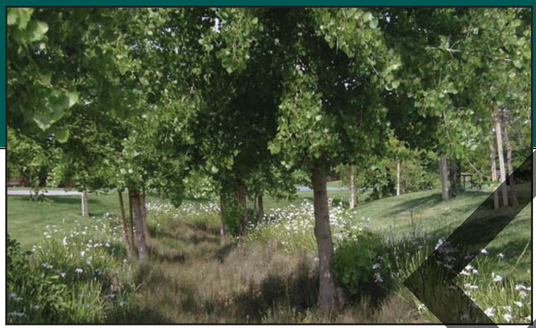


Figure 4-6: Preliminary LID Concept Plan





- Tree and plant species for bioretention and bioswale areas shall be selected from the approved plant palette shown in Table 4-1 of this chapter
- Perimeter open space edges of the project should allow for vegetated swales at the bottom of slope banks to convey stormwater into small bioretention basins.

4.5 PLANT PALETTE

Plant materials have been selected to establish a unique landscape character. These plants are particularly well suited to the soils, climate, and water requirements for the area. The list is not intended to be exhaustive but to provide a clear guide for selection. Additional plants may be used that are compatible with this list and are consistent with the intent of these PUD Guidelines.

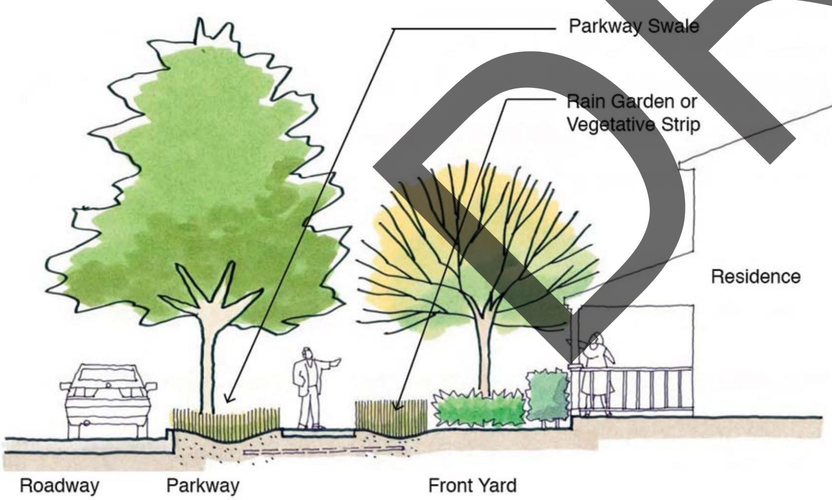


Figure 4-7: Conceptual Examples of LID Features

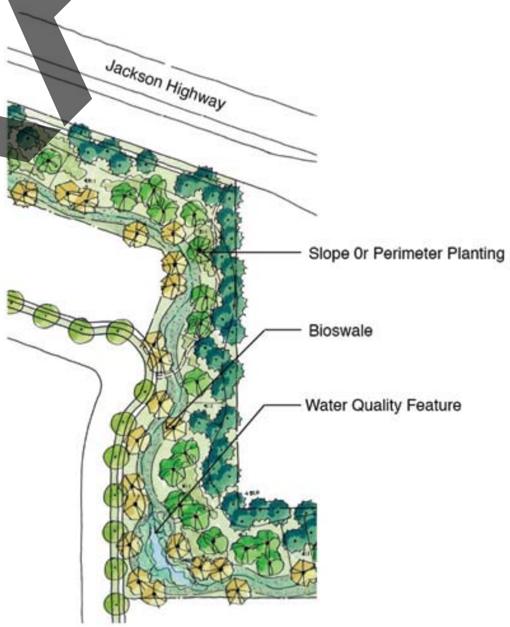


Figure 4-8: Conceptual Examples of LID Features

Table 4-1: Plant Palette

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Trees										
Acer negundo 'variegatum'	Variegated Box Elder				•		•	•		•
Acer saccharum	Sugar Maple				•		•	•		•
Aesculus californica	California Buckeye			•	•		•	•		•
Alnus rhombifolia	White Alder				•		•	•		•
Cercis canadensis	Eastern Redbud			•						
Cercis occidentalis	Western Redbud			•	•					
Citrus varieties	Oranges - Navel, Valencia, Satsuma, Mandarin, Lemon			•		•	•	•	•	
Diospyro Kaki	Persimmon			•		•		•		
Ficus Carica	Common Fig			•			•			
Fraxinus americana varietals	American Ash		•	•				•		
Fraxinus pennslyvanica varietals	Green Ash		•	•				•		
Fraxinus uhdei	Evergreen Ash		•					•		

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Ginko Biloba	Ginko		•					•		
Juglans hindsii	California Black Walnut					•	•	•		
Lagerstroemia indica	Crape Myrtle - Multi Stemmed	•		•				•	•	
Lauris nobilis	Sweet Bay	•		•				•	•	
Liquidambar styraciflua	Sweet Gum			•				•	•	
Liriodendron tulipifera	Tulip Tree		•	•				•	•	
Malus species	Crabapple	•		•		•		•	•	
Olea europaea	Olive					•	•	•	•	
Olea europaea ‘Swan Hill’	Fruitless Olive	•		•		•	•	•	•	
Phoenix canariensis	Canary Island Date Palm	•		•		•		•	•	
Pinus eldarica	Afghan Pine						•	•	•	
Pinus halepensis	Aleppo Pine						•	•	•	
Pistacia chinensis	Chinese Pistache		•		•		•	•	•	

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Platanus acerfolia	London Plane Tree		●		●					
Platanus racemosa	California Sycamore	●	●		●		●	●	●	●
Populus fremontii	Western Cottonwood				●	●	●			●
Populus nigra spp	Theve Poplar, Lombardy Poplar	●			●	●	●	●		
Prunus cascade snow	Cascade Snow Cherry					●				
Prunus dulcis	Almond					●				
Prunus serrulata	Japanese Flowering Cherry					●				
Prunus x blireiana	Flowering Plum					●				
Pryus calleryana varieties	Callery Pear	●	●	●	●	●		●	●	
Quercus agrifolia	Coast Live Oak	●	●	●	●		●	●	●	
Quercus buckleyi	Texas Red Oak		●		●			●	●	
Quercus coccinea	Scarlet Oak		●		●			●		
Quercus douglasii	Blue Oak		●		●			●	●	

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Quercus Ilex	Holly Oak	•	•		•			•	•	
Quercus lobata	Valley Oak		•		•		•	•	•	
Quercus macrocarpa	Bur Oak		•		•		•	•	•	
Quercus robur ' Skymaster'	Skymaster Oak		•		•			•	•	
Quercus ruber	English Oak	•	•		•			•	•	
Quercus rubra	Red Oak	•	•		•			•	•	
Quercus shumardii	Shumard Red Oak	•	•		•			•	•	
Quercus suber	Cork Oak		•		•		•	•		
Quercus virginiana	Southern Live Oak	•	•		•				•	
Schinus molle	California Pepper			•	•		•	•		
Taxodium mucronatum	Mexican Cypress			•	•			•		
Tillia cordata, americana	Linden	•			•				•	

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Ulmus parvifolia	Chinese Elm	●	●		●				●	
Umbellularia californica	California Bay	●	●		●	●			●	
Zelkova Serrata ‘green vase’	Green Vase Zelkova	●	●		●		●		●	
Large Shrubs										
Aesculus californica	California Buckeye			●	●	●	●	●	●	●
Arbutus spp	Madrone			●	●	●	●	●	●	●
Carpenteria californica	Bush Anemone						●			
Cercis occidentalis	Redbud			●	●	●		●	●	
Cornus spp	Dogwood			●		●		●	●	
Feijoa sellowiana	Pineapple Guava			●		●	●	●	●	
Heteromeles arbutifolia	Toyon					●	●	●	●	●
Hibiscus syriacus	Rose of Sharon			●				●	●	
Melaleuca nesophila	Pink Melaleuca			●			●	●	●	
Punica granatum	Pomegranate					●		●		
Rhus integrifolia	Lemonadeberry					●	●	●		

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Salix spp	Willow				•		•	•		
Sambucus mexicana	Blue Elderberry				•		•	•		
Medium Shrubs										
Abelia grandiflora	Glossy Abelia					•		•	•	
Alyogyne huegelii	Blue Hibiscus			•				•	•	
Brunfelsia pauciflora	Yesterday-Today-and-Tomorrow			•				•	•	
Buddlea davidii	Butterfly Bush			•				•	•	
Calliandra spp	Fairyduster, Flame Bush			•				•	•	
Ceanothus spp	Wild Lilac	•					•	•	•	
Elaeagnus pungens	Silverberry					•	•	•	•	
Grevillea noellii, rosmainifolia	Grevillea					•		•	•	
Lavandula spp	Lavender	•		•		•	•	•	•	
Lavatera spp	Rose Mallow	•				•	•	•	•	
Leonotis leonurus	Lions Tail	•				•		•	•	

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Ligustrum japonicum 'texanum'	Japanese Privet					●			●	
Lupinus albifrons	Silver Bush Lupine					●		●	●	
Mahonia aquifolium	Oregon Grape	●			●	●	●	●	●	
Myrtus communis	True Myrtle					●	●	●	●	
Pelargonium spp	Geranium	●	●			●		●	●	
Philadelphus lewisii	Mock Orange					●		●	●	
Pittosporum species	Pittosporum	●				●		●	●	
Plumbago auriculata	"Royal Cape"	●				●		●	●	
Raphiolepis indica	India Hawthorne	●	●			●		●	●	
Romneya coulteri	Matilija Poppy					●	●	●	●	
Rosa spp	Rose	●		●	●	●		●	●	
Rosmarinus officinalis varietals	Rosemary	●	●			●		●	●	
Ruellia californica	Ruellia					●		●	●	●
Teucrium sp	Germander					●		●	●	

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Viburnum species	Viburnum					•		•	•	
Xylosma congestum	Shiny Xylosma	•				•	•	•	•	
Small Shrubs										
Agapanthus spp “Storm Cloud”	Lily of the Nile	•	•			•		•	•	
Angiogozanthos flavidos	Kangaroo Paw	•		•		•		•	•	
Baccharis pilularis	Coyote Bush	•	•			•	•	•	•	
Brunfelsia pauciflora	Yesterday-Today-and-Tomorrow	•				•	•	•	•	
Buddlea davidii	Fairy Duster	•				•		•	•	
Buxus species*	Boxwood	•	•			•		•	•	
Caesalpinia pulcherrima	Spice Bush	•				•	•	•	•	
Callistemon viminalis “Little John”	Little John Bottlebush	•				•		•	•	
Calycanthus occidentalis	Western Sweetshrub	•				•	•	•	•	•
Cistus spp	Rockrose	•				•	•	•	•	
Dietes spp	Fortnight Lily	•	•		•	•		•	•	

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Erigeron spp	Buckwheat	•					•	•	•	•
Euryops pectinatus	Island Bush Snapdragon	•					•	•	•	•
Gambelia speciosa	Showy Greenbright	•					•	•	•	
Helianthemum nummularium	Rockrose	•					•	•	•	
Hemerocallis hybrids*	Daylily	•	•					•	•	
Pittospporum tobira dwarf varietals	Pittosprum	•	•					•	•	
Raphiolepis indica dwarf varietals	India Hawthorne	•	•					•	•	
Salvia spp	Sage	•	•		•		•	•	•	•
Spirea sp	Spirea	•					•	•	•	
Westringia fruticosa	Coast Rosemary		•				•	•	•	
Yucca	Yucca						•			
Grasses										
Aristida purpurea	Purple Three Awn				•	•	•	•	•	
Carex spp	Sedge	•	•		•	•	•	•	•	•

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Elymus spp	NCN				•	•	•	•	•	•
Festuca californica	California Fescue				•	•	•	•	•	•
Festuca spp	Fescue	•	•		•	•	•	•	•	
Iris douglasiana	Doulas Iris	•	•		•	•	•	•	•	•
Juncus patens	Common Rush				•	•	•	•	•	•
Juncus textills	Basket Rush				•	•	•	•	•	•
Muhlenbergia rigens	Deer Grass	•			•	•	•	•	•	•
Pennisetum spp	Fountain Grass	•			•	•	•	•	•	
Scirpus sp	Tule				•	•	•	•	•	•
Ground covers										
Arctostaphylus spp	Manzanita	•	•			•	•	•	•	
Baccharis pilularis twin Peaks	Dwarf Coyote Bush	•	•				•	•	•	
Ceanothus gloriosis	California Lilac	•	•				•	•	•	
Cotoneaster sp	Cotoneaster	•					•	•	•	

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Hypericum calycinum	St. Johns Beard	•						•	•	
Lantana spp	Lantana	•						•	•	
Lonicera japonica	Honeysuckle	•	•					•	•	
Potentilla fruticosa	Shrubby Cinquifoil	•	•					•	•	
Ribes malvaceum	Chaparral Currant	•			•		•	•	•	
Ribes speciosum	Flowering Gooseberry	•			•		•	•	•	
Rosmarinus off. Prostratus	Prostrate Rosemary	•	•					•	•	
Trachelospermum asiaticum	Asiatic Jasmine	•	•					•	•	
Trachelospermum jasminoides	Star Jasmine	•	•					•	•	
Vaccinium ovatum	Evergreen Huckleberry						•	•	•	
Vinca major	Periwinkle	•	•					•	•	
Vines										
Campsis spp	Trumpet Creeper	•				•		•	•	
Jasminum spp	Jasmine	•				•		•	•	

Chapter 4: Landscape Design

Table 4-1: Plant Palette (continued)

Botanical Name	Common Name	Parkways	Streets	Accents	Bioswales	Farm and Orchards	Open Space / Slopes	Parks	Commercial	Native or Cultivar
Lonicera japonica	Honeysuckle	•				•	•	•	•	
Parthenocissis tricuspidata	Boston Ivy					•	•	•	•	
Rosa spp	Climbing Rose	•				•	•	•	•	
Vitis spp	Wild Grape	•				•		•	•	
Wisteria chinensis	Chinese Wisteria	•				•		•	•	

4.6 IRRIGATION AND WATER CONSERVATION

The use of native and adapted plants which require low water use and possess resistance to pests and diseases is encouraged. Less watering, fertilizing, and chemical control required for landscape design reduces the need for irrigation and associated water use. The irrigation system should be designed to conserve water resources by efficiently and uniformly distributing water.

Irrigation design should be based upon the California Department of Water Resources State Model Water Efficient Landscape Ordinance (AB 1881) and the *Irrigation Association's Turf & Landscape Irrigation Best Management Practices*, 2005 edition, and tailored to the climate of the City of Sacramento.

Irrigation and Water Conservation Guidelines:

- Irrigation design shall accommodate hydrozones accordingly. For example, separate zones are required for shrub beds and turf beds. Trees should be put on a separate system when possible. Systems shall also be separated by sun exposure, i.e., north/east exposures versus south/west exposures.
- Automatic irrigation systems shall include a rain shutoff valve.
- Moisture sensors should be installed at appropriate intervals in commercial and mixed-use areas and along streetscapes to minimize overwatering.

- The reuse of stormwater and treated wastewater shall be incorporated into landscape design to the extent possible.
- Turf and groundcover should be irrigated with a conventional spray system, using head-to-head spray coverage. Misting spray heads in turf areas should be avoided.
- Shrubs and trees should be irrigated with a drip system or MPR heads to provide deeper, more even watering and promote water conservation.
- Irrigation controls should be screened from view from the street by landscaping or other attractive site materials.
- Soil should be mulched with 3-4 inches of organic material, such as wood chips, to reduce evaporation, keep the soil temperature even, and control weeds.

- Roof water collection systems should be used as much as feasible to reuse roof runoff for irrigation.

4.7 FENCES AND WALLS

Fencing and walls should be made from high quality materials and relate to the character of each unique area within the community. In general, high masonry walls along collector and arterial streets should be avoided; and in areas adjacent to open space, parks, and view corridors, fencing should be permeable to allow visual access. As shown in Figure 4-9, fencing and walls within the Plan Area are intended to distinguish project areas while creating a welcoming appearance that encourages and controls pedestrian movement between residential, commercial, and public use areas.

Fences and Walls Guidelines:

- Where noise attenuation is required along arterial roadways, berming, gabion, or drystack appearing walls should be used to avoid the use of long, uninterrupted masonry sound walls.

Articulated Fencing

Post and Rail Fencing

Low Gabion Wall

- When used, front yard fencing may consist of fencing or walls with a maximum height of three (3) feet. Materials shall be limited to stone, masonry, or finished wood product and should be used in combination with a hedge or shrub from the approved plant palette. On corner lots, front yard fencing shall be continuous along the front and side property line along a street.
- Privacy fences that occur along lot lines or between structures should not be visible from major public streets or public use areas.
- Solid fences or walls used for privacy or security may be used in either side or rear yard conditions. Fencing shall be limited to six (6) feet in height and, in areas facing a public street or alley, must incorporate a change in articulation for the top 12-18 inches of the fence.
- Design of private fences shall be compatible with the building architecture and should be consistent within each residential neighborhood or development phase. Fences or walls shall be of

Figure 4-9: Fencing and Walls within Plan Area

durable construction and shall present a "finished" appearance from adjacent properties.

- For corner lots, side yard fencing along street frontages shall be located a minimum of six and one half feet (6.5) feet from the sidewalk. In instances where a privacy fence ties into front yard fencing, a transition fence with a maximum average height of 54 inches shall be used. Figure 4-10 provides an example of a transition fence.

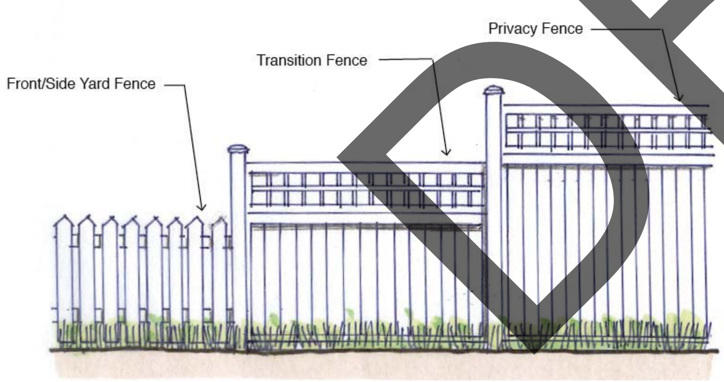
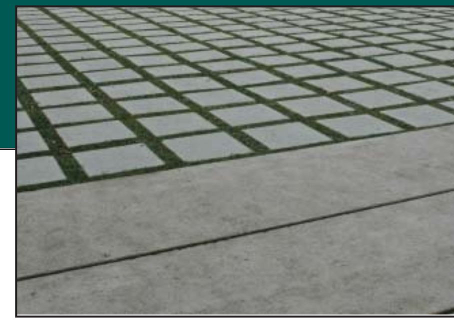


Figure 4-10: Example Transition Fence

- Fences or walls connecting two separate units, and visible from the public streets, should be of the same material and color and be compatible with the building architecture.
- To reduce their visual prominence, walls and fences should be used in combination with tree, vine, shrub, and hedge planting.
- View fences are intended to allow views of open space from private lots while providing security. View fences may consist of wood or steel posts with wood pickets, wire mesh, or decorative wrought iron and shall not exceed six (6) feet in height. View fences are required where residential uses abut open space areas and slopes when they are not adjacent to arterial roads.
- Chain link fencing is prohibited on residential properties but may be used to provide security of large public, recreation facilities, or agriculture properties. All chain link fencing shall be green or black, vinyl-clad fencing, or equivalent, with posts to match.
- Where appropriate, fencing along the perimeter of the Urban Farm shall consist of post and pole or post and rail type fencing.



4.8 PAVING AND HARDSCAPE

Paving surfaces and hardscape design should complement the design scheme of pedestrian-oriented spaces. The use of color, texture, and material add to the visual interest of pedestrian spaces, particularly in public gathering areas such as plazas and promenades and along commercial walkways. Visual appeal should be balanced with functionality and incorporate materials that provide for on-site stormwater retention and/or contribute to groundwater recharge.

Paving and Hardscape Guidelines:

- Paving surfaces on residential lots should be limited to the driveway, walkways, and patios. Alternative paving treatments and materials are encouraged such as concrete unit pavers, brick, flagstone, decomposed granite, or exposed aggregate.
- Paving suitable for residential uses that can be used to increase permeability includes: concrete-paving strips used alternately with turf or groundcovers (for driveways), pervious concrete pavers, and stone or brick paving on an aggregate base.
- Paved surfaces in commercial and mixed use areas should incorporate pervious paving treatments in plazas, parking lots, and pedestrian walkway areas.
- Pervious paving treatments must conform to ADA accessibility requirements.
- Incorporate recycled and waste products into the construction process where conventional concrete paving is used. This conserves resources and minimizes energy waste. Recycled concrete can be used as aggregate, and fly ash can be added to concrete mixes.

- In general, configure pavers in a herringbone or other pattern perpendicular to the direction of travel.
- The use of pavers, colored and stamped concrete or asphalt, or other materials is encouraged to delineate parking areas along roadways.

4.9 LIGHTING

Lighting throughout the Plan Area is an integral part of the overall community image. In addition to ensuring the safety of residents and users, lighting shall serve to highlight important community elements including Rock Creek Parkway, Aspen Promenade, neighborhood and community parks, pedestrian paths, and off-street trails. Landscape lighting shall be limited to important landscape areas, entry and sign features, or pedestrian use areas. Efficient lighting design can improve nighttime visibility by avoiding glare, minimize building and site light trespass onto neighboring property, and reduce sky glow, in order to increase visibility of the night sky.

Lighting Guidelines:

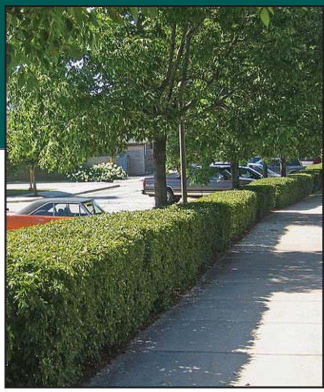
- Typical streetlights throughout the Plan Area shall utilize ornamental pedestrian-scale fixtures. Fixture styles and colors shall be compatible with architectural elements of the community, and the color of light poles and fixtures shall be consistent throughout the Plan Area.
- Off-street trail systems and pedestrian shortcuts shall utilize low level lighting sources such as lighted bollards or other comparable solutions.
- Lighting shall be designed and located to minimize ambient light levels throughout the community while maintaining consistency with public safety standards.
- Lighting shall be designed to minimize glare and the direct view of light sources. No lighting shall blink, flash, or be of unusually high intensity or brightness.
- Light should be generated by efficient light sources to save energy and minimize operating costs.
- Athletic field and court lighting shall be planned to minimize illumination of neighboring uses.

4.10 SITE FURNITURE

Site furniture, water features, and public art add a level of detail and design that enlivens public spaces and provides opportunities for people to gather and interact. Correctly placed and well-designed site amenities enhance the usability and appearance of community spaces including parks, trails, transit stops, streets, plazas, courtyards, and building entries. Seating, tables, bollards, bicycle racks, trash receptacles, flagpoles, lighting standards, and tree grates should be considered as part of the initial site design. Site furniture should be compatible in size, design, and color with the surrounding architecture and landscape design but not dominate the landscape.

Site Furniture Guidelines:

- Slight variety in product types within the same family of styles is encouraged to maintain continuity in design but avoid an overly commercial feel. Urban areas should be more modern whereas furniture in natural areas can incorporate wood.
- Furnishings should be designed and selected for safety, ease of maintenance, and replacement.
- A variety of seating types should be provided for different public spaces, including café seating, benches, seat walls, and movable seating.
- Seating should be coordinated with shade trees and/or structures.
- Water features are encouraged as a visual and acoustic element.
- Public art should be incorporated into project site design in a variety of ways such as murals, street furniture, play equipment, signage and sculpture.



4.11 PARKING LOT LANDSCAPING

Landscaping is incorporated into the design of parking lots to soften paved areas, reduce heat during the summer months, and provide shade and wayfinding. Landscaping, low screen walls, landscaped berms, and other design elements should be used to screen parking areas from streets. Landscape helps filter pollutants from the air, reduces the visual impact of large expanses of parking areas, and reduces heat gain.

Parking Lot Landscape Guidelines:

- Parking lots should be planted with trees to provide a minimum of 50% shading after 15 years in conformance with all applicable City of Sacramento codes.
- Pedestrian routes through parking lots should be clearly designated with paving and landscaping. Entryways to major building entries should also be clearly visible.
- Parking lots should be surrounded by a continuous hedge or shrub planting no more than 42 inches in height.
- Sight distance requirements should be maintained at parking lot entries.
- Pervious pavements and surfaces shall be utilized in conjunction with agricultural planting palettes to the extent possible for parking lot design.
- Various techniques such as berming and the use of recessed parking areas is encouraged to reduce the visual impact of parking areas.
- The use of all weather surfaces such as decomposed granite or compacted aggregate base is encouraged in parking areas within the Urban Farm.
- Electric car charging facilities should be included in all commercial and multi-family parking lots. When possible, the use of solar charged electric vehicle chargers shall be utilized.

Chapter 5: Circulation

5.1 CIRCULATION MASTER PLAN

The circulation network provides a hierarchy of streets and travel ways designed to support the wide range of uses and activities within the Plan Area as depicted on **Figure 5-1**. The network of streets, bikeways, trails, transit, and pedestrian walks was developed to foster easy connectivity for residents and visitors traveling between neighborhoods and to reduce the need for automotive travel within the Plan Area and the larger community.

The modified grid system of streets allows for the efficient dispersal of vehicular traffic; however, median breaks and stop controls are strategically placed to discourage speeding and cut-through traffic and to encourage longer distance automobile travel to gravitate toward Rock Creek Parkway, which is the main collector street.

In order to facilitate pedestrian walkability, block lengths typically average 500 feet, which results in a pedestrian-scaled street pattern designed to encourage walking and increase the opportunity for interaction between neighbors. In addition, pedestrian and bicyclist use is facilitated by an interconnected network of on-street and off-street trails, street crossings, and shortcuts to simplify alternative modes of travel within the Plan Area.

Figure 5-1: Conceptual Circulation Network

All roadways will be built with separated sidewalks; and, in an effort to accommodate larger tree species and reduce future maintenance conflicts, planter strips have been widened from the City standard. Shaded pedestrian walks, streets, and front yard areas will provide a comfortable, human-scale environment and will promote the Park Neighborhood feel intended for the Plan Area. As described in the preceding Chapter 4, the aesthetically pleasing tree-lined streets and boulevards will have the added benefit of providing an Urban Forest, which reduces energy usage and improves air quality through a carefully selected plant palette.

5.2 DESIGN PRINCIPLES

The framework for the circulation system set forth in this Chapter is based upon the following design principles:

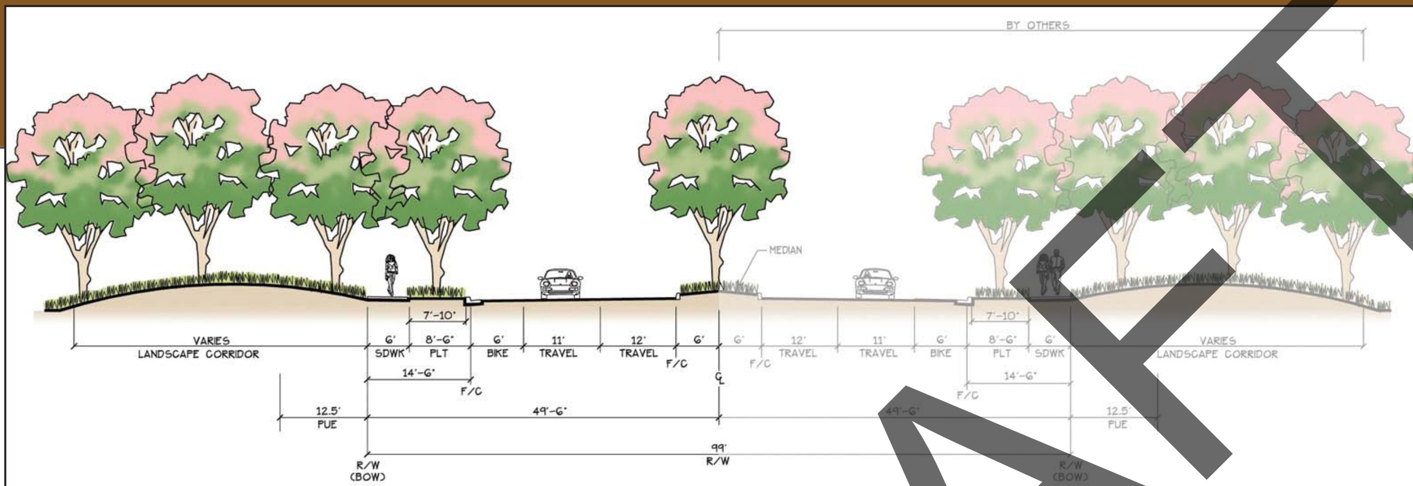
1. Include a mix of land uses to capture/internalize trips on-site, reduce Vehicle Miles Traveled (VMT) and associated Greenhouse Gas (GHG) emissions.
2. Provide abundant opportunities for walking and bicycling through the provision of short block lengths, sidewalks, bike lanes, off-street trails, and nonvehicular shortcuts to shorten travel distances.
3. Coordinate with Regional Transit (RT) and other transit providers to tie higher density land uses and commercial/employment services into planned transit routes along South Watt Avenue and area roadways.
4. Design Rock Creek Parkway as a multi-modal collector street which facilitates vehicles, bicyclists, pedestrians, and future transit opportunities within the street section.

5. Reinforce the pedestrian-friendly nature of roadways and trail systems with tree canopied walkways combined with inviting architecture and lighting palettes.

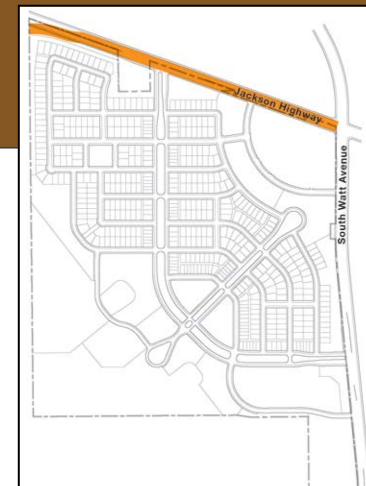
6. Establish simple lines of travel and strong visual connections between the Urban Farm and higher density residential and commercial portions of the Plan Area through Aspen Promenade.

7. Provide continuous extensions of the park experience throughout the Plan Area by incorporating wide park-like medians along Rock Creek Parkway and Aspen Promenade.

8. Adopt street design standards which create an interconnected system of medians, planter strips, and modified roadway design standards such as cross gutters, road crowning, and curb cuts to facilitate LID and stormwater reduction and conveyance.



Design Section



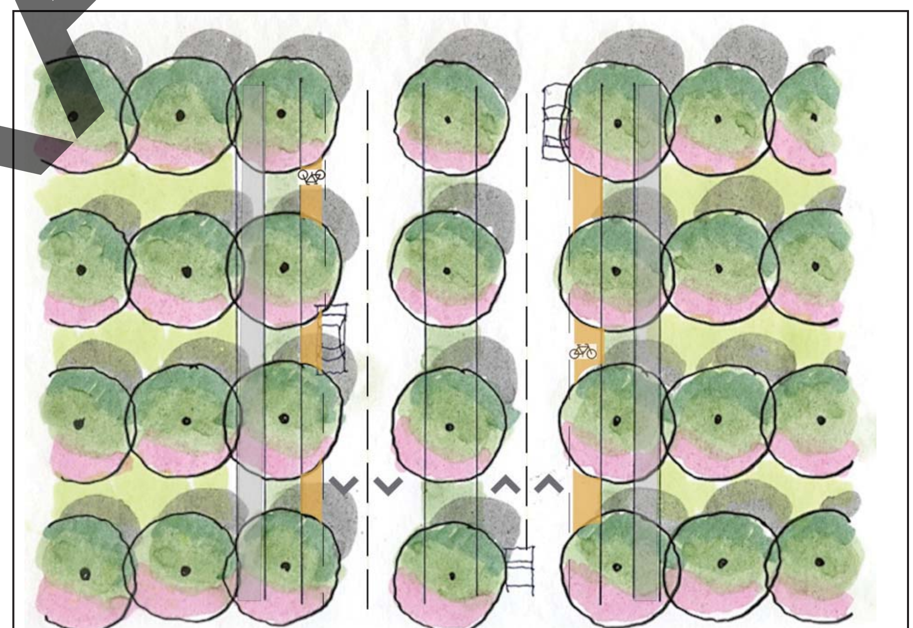
Location Map

Figure 5-2: Jackson Highway and 14th Avenue Extension Road Network

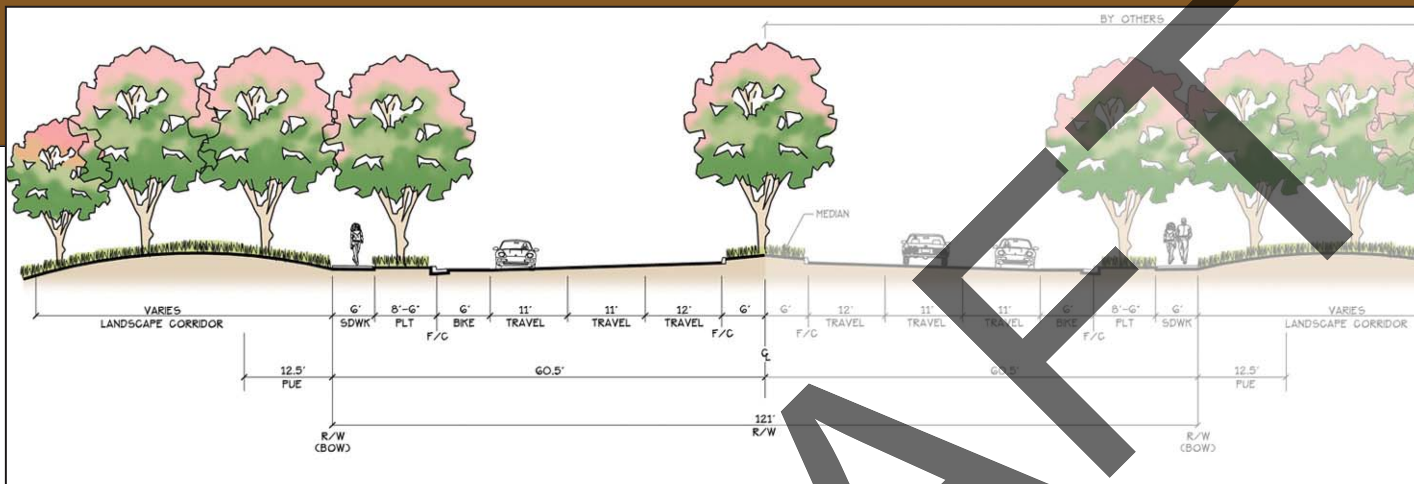
5.3 ROAD NETWORK

5.3.1 JACKSON HIGHWAY AND 14TH AVENUE EXTENSION

Jackson Highway abuts the northern edge of the Plan Area and is designated as a 4-lane divided arterial. The City of Sacramento General Plan proposes to realign Jackson Highway to the west in order to connect to the extension of 14th Avenue, providing an alternate east-west route to relieve congestion on Folsom Boulevard. Right-of-way for this realignment is reserved at the northwest corner of the Plan Area as part of an Irrevocable Offer of Dedication (IOD) on the approved Tentative Maps. While Jackson Highway was considered a State Highway during the preparation of these PUD Guidelines, it has been designed as an urban corridor to facilitate automotive, transit, bicycle, and pedestrian traffic adjacent to the Plan Area.



Design Plan



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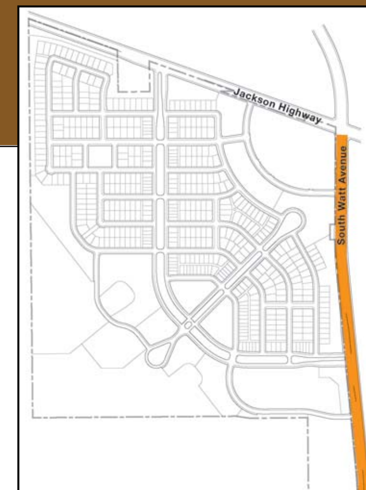
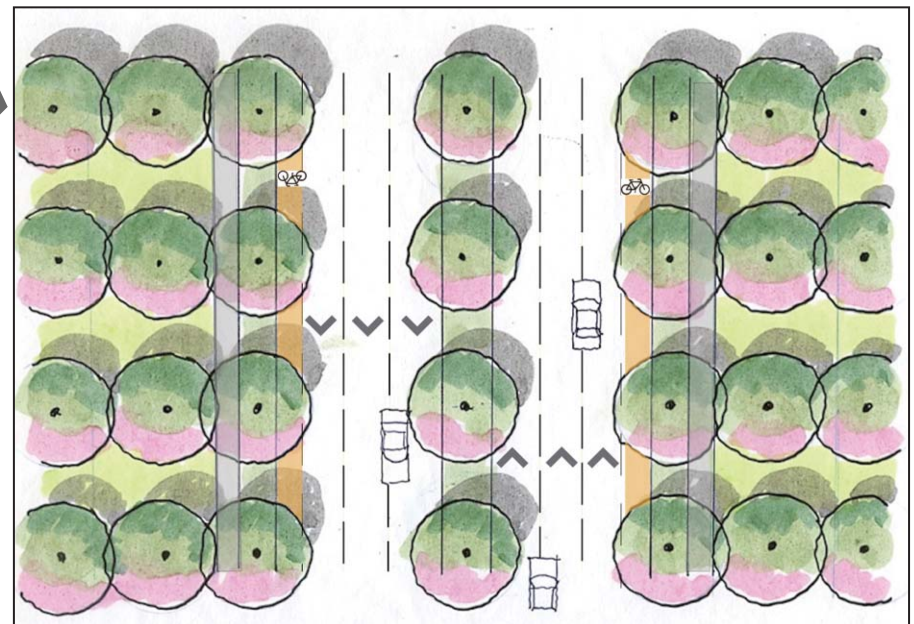


Location Map

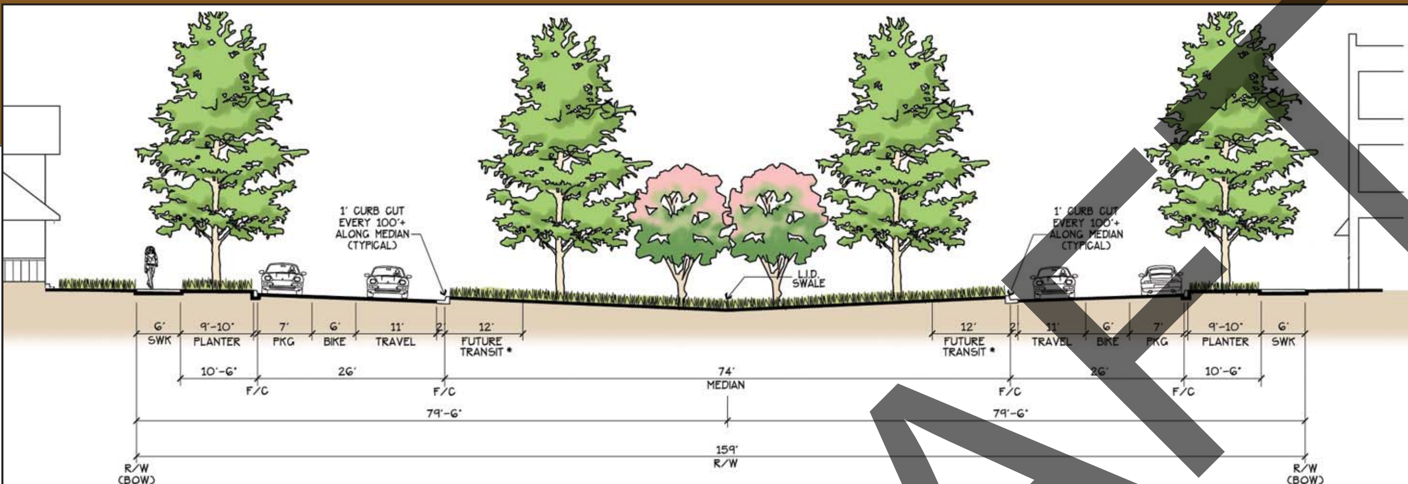
Figure 5-3: South Watt Avenue Road Network

5.3.2 SOUTH WATT AVENUE

South Watt Avenue is a primary 6-lane north-south arterial designed to convey cross-town traffic at moderate speeds. Located along the eastern edge of the Plan Area, it is designed to serve Bus Rapid Transit (BRT) and facilitate access to and from the Watt Avenue light rail station and Highway 50 which is approximately 1½ miles to the north. Access to and from the Plan Area to South Watt Avenue is designed to occur at the signalized intersection of Rock Creek Parkway and South Watt Avenue, as well as two right-in, right-out intersections.



Design Plan



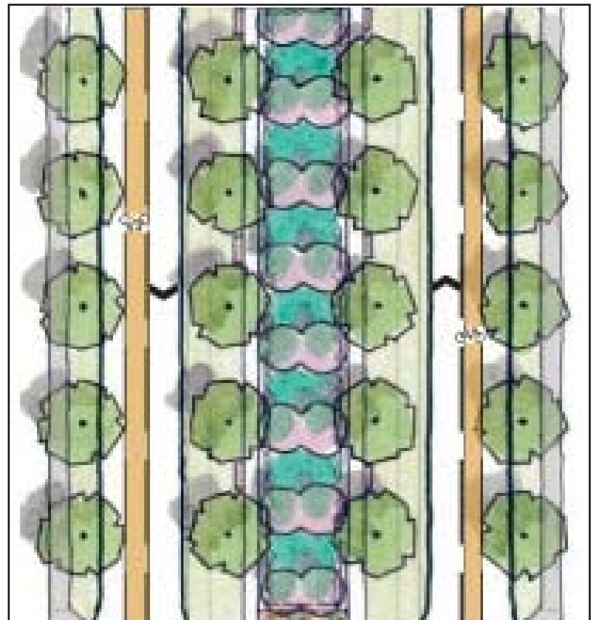
Design Section

Location Map

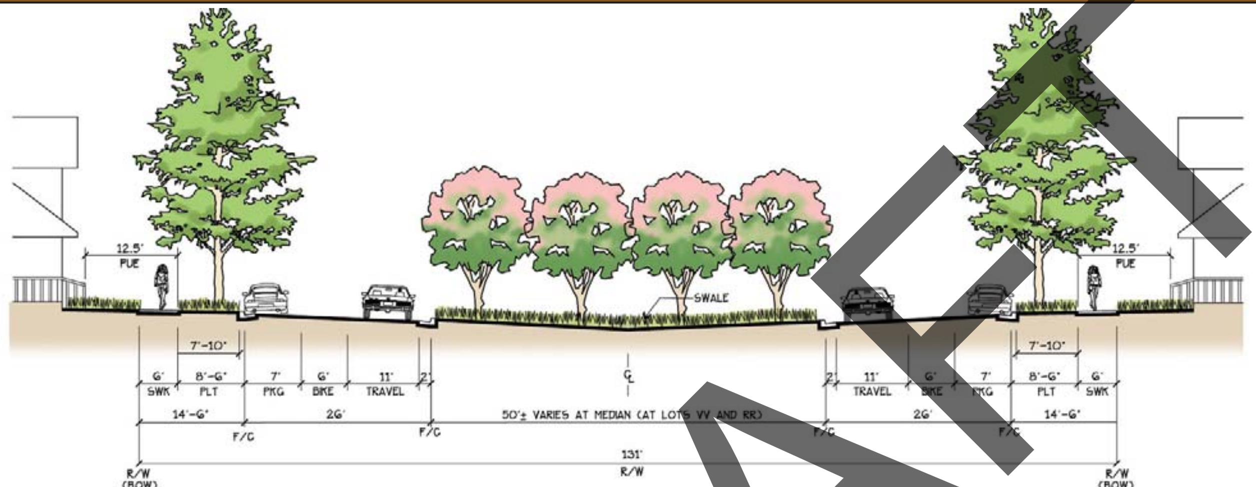
Figure 5-4: Rock Creek Parkway Road Network

5.3.3 ROCK CREEK PARKWAY

Rock Creek Parkway has been designed as the signature street within the Plan Area, with a formal parkway design consisting of a 74-foot wide median, stately trees which connect neighborhoods to community open space and activity areas, and a transit-ready street system. Rock Creek Parkway will provide one lane of vehicular travel in each direction, on-street parking, a Class II bicycle lane, sidewalk and planter, and a 12-foot transit corridor on either side of the 74-foot wide median. Although the precise type and location of future transit use is unknown at this time, it is anticipated that future transit design shall be coordinated with the City of Sacramento and Sacramento Regional Transit (RT) and may consist of bus or shuttle service, Bus Rapid Transit (BRT), rubber tired or electric streetcar, electric vehicle, or similar type use. In order to ensure future transit capability, the 12-foot transit area shown on the approved street section shall be set aside as a reservation for transit on the final recorded maps for the project. Planting within the reservation area shall be limited to shrubs and grasses in order to eliminate the need for future tree removal.



Design Plan



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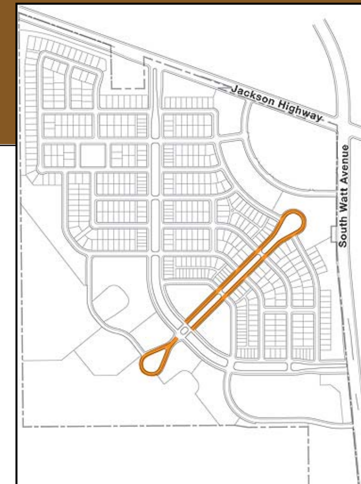
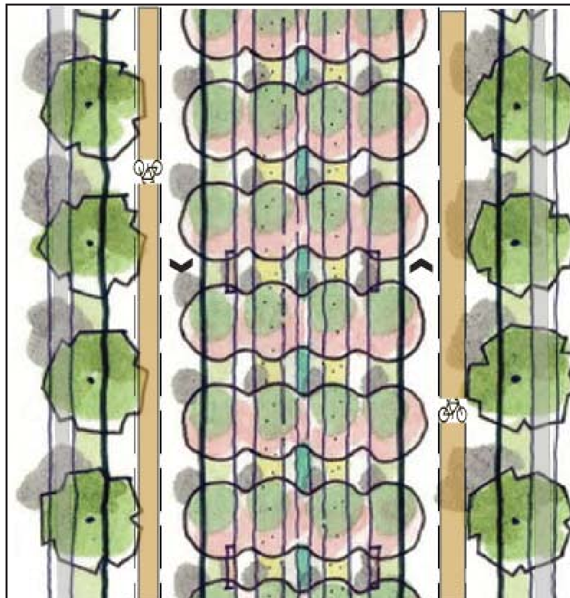


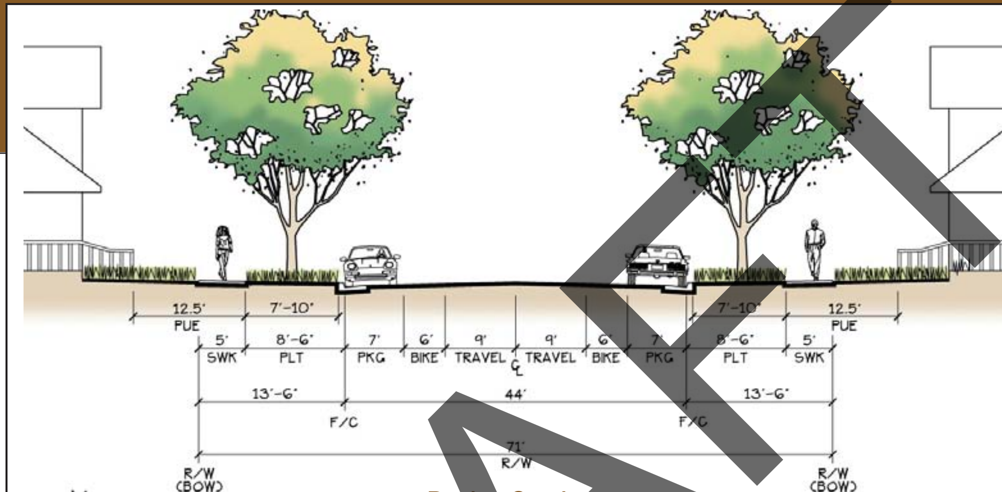
Location Map

Figure 5-5: Aspen Promenade Road Network

5.3.4 ASPEN PROMENADE

Aspen Promenade serves as the second prominent parkway within the project, and has been designed to intersect Rock Creek Parkway at the heart of the community. Designed with one lane of travel in each direction and on-street bike lanes, and supplanted by a generously landscaped 50-foot median, Aspen Promenade provides a physical and visual connection between higher density residential and community commercial land uses at the northeastern corner of the project site and the Four Corners Community Center District. A teardrop shaped mini-park marks the terminus of this street connection from which a shortcut will extend up to the multi-family and community commercial area. The roadway will be built for slower travel speeds and to foster easy pedestrian connectivity and use of portions of the median area.


Design Plan



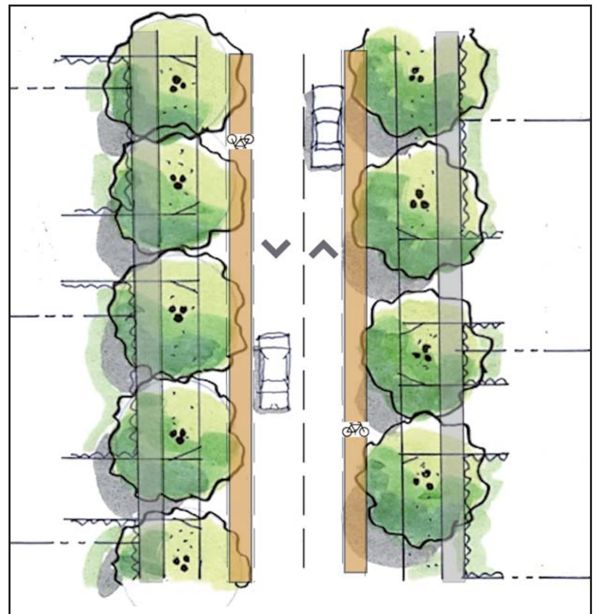
Design Section

Location Map

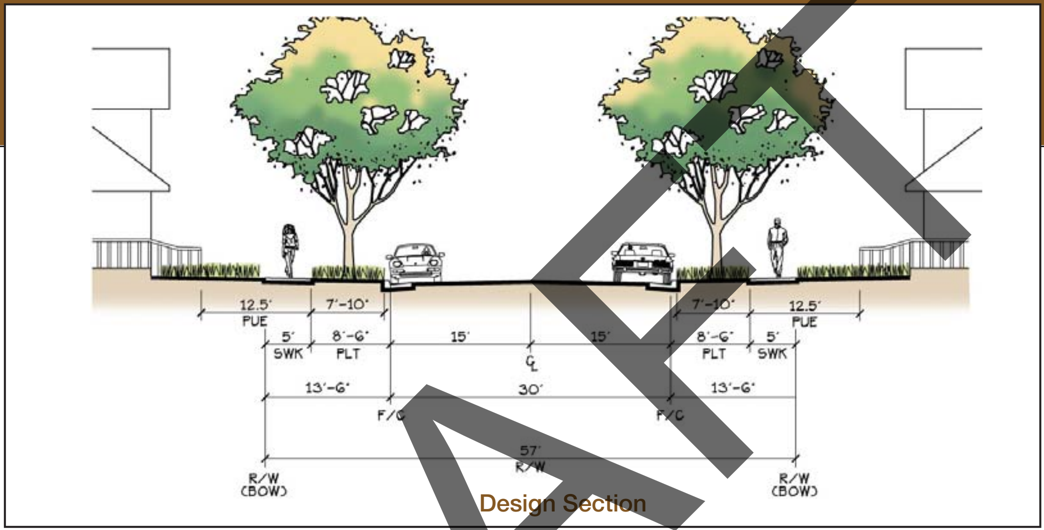
Figure 5-6: Residential Collector Roadways

5.3.5 RESIDENTIAL COLLECTOR

All residential roadways within the Plan Area have been designed to reinforce the pedestrian friendly nature of the community and to facilitate alternative modes of travel. Residential roadways incorporate detached sidewalks, enlarged planter areas with large canopy trees, and a narrow roadway section to slow traffic and facilitate pedestrian use. The residential collector is designed as a two-way roadway which provides for on-street parallel parking, similar to local roadway sections, but designed to support higher traffic volumes and a Class II bike lane. Due to short block lengths and the modified grid pattern of the project, vehicular traffic volumes on residential roadways will be low, resulting in a limited need for this street section. It is anticipated that this street section will be primarily used to connect Rock Creek Parkway and the Traditional Neighborhoods District to the Community Commercial District at the northeast corner of the Plan Area.



Design Plan



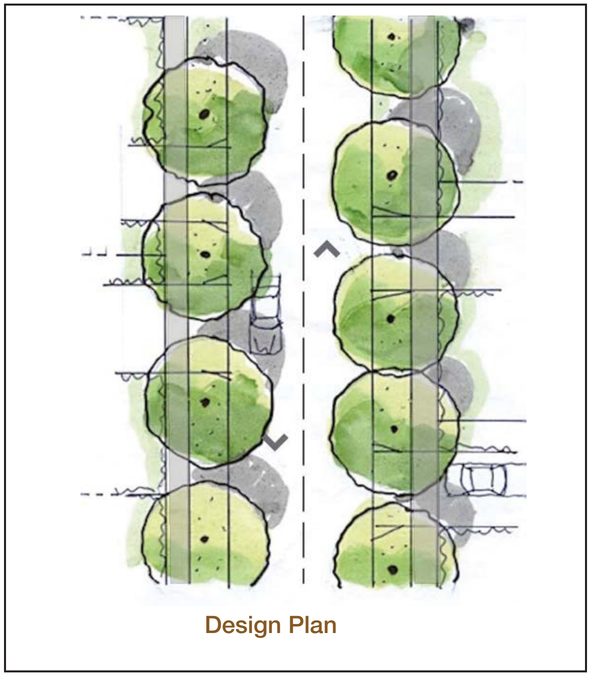
Design Section

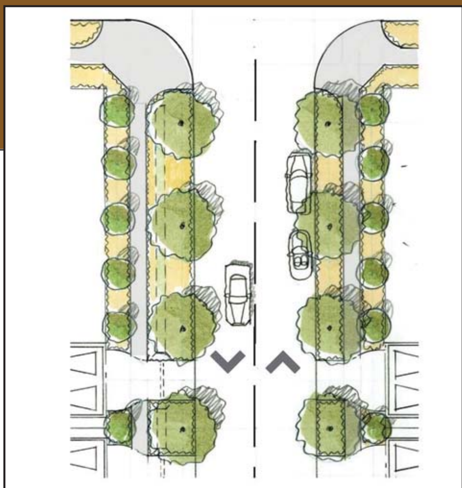
Location Map

Figure 5-7: Local Residential Roadways

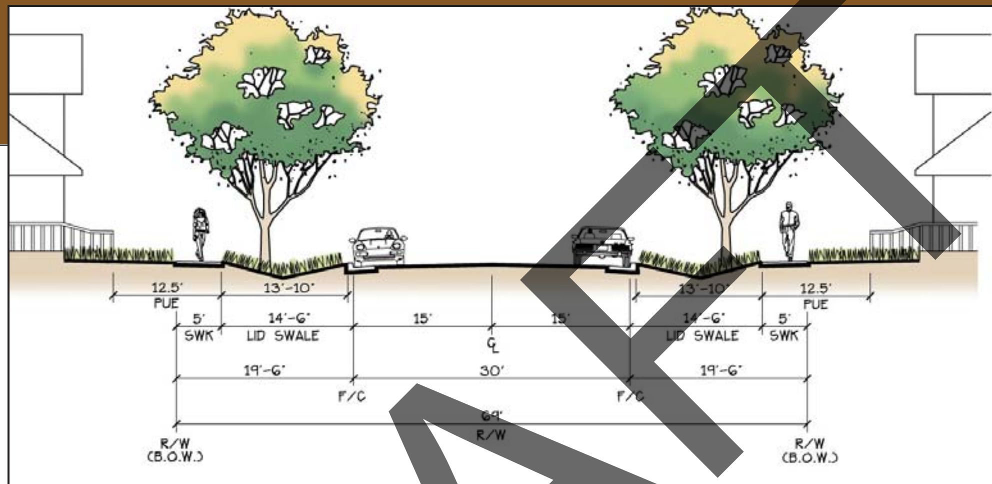
5.3.6 LOCAL RESIDENTIAL

In order to implement many of the guiding principles contained within these PUD Guidelines, including wellness, promoting sustainable practices, and facilitating alternative modes of travels, the Land Use Plan is based upon a modified grid concept which disperses vehicular traffic and facilitates the use of smaller local roadways. Local residential streets within the Plan Area are designed with separated sidewalks and large planters which exceed City of Sacramento design standards in order to provide areas for large canopy trees and to minimize future maintenance issues associated with mature tree growth. While the primary roadway section among local residential streets remains constant throughout the Plan Area, variations in planter size, on-street parking, sidewalks, and the use of Class I trails occur to accommodate the use of LID principles and to simplify pedestrian and bicyclist connections to land uses such as schools, parks, and the urban farm.


Design Plan



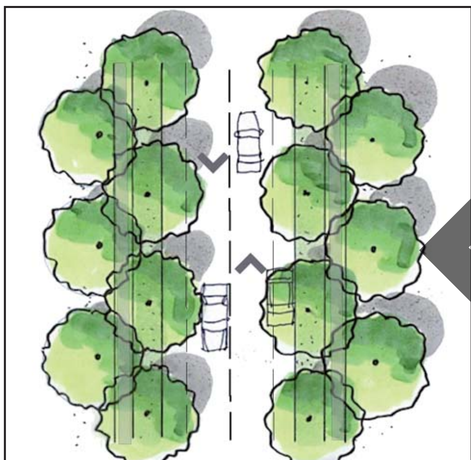
Local Residential with LID Design Plan



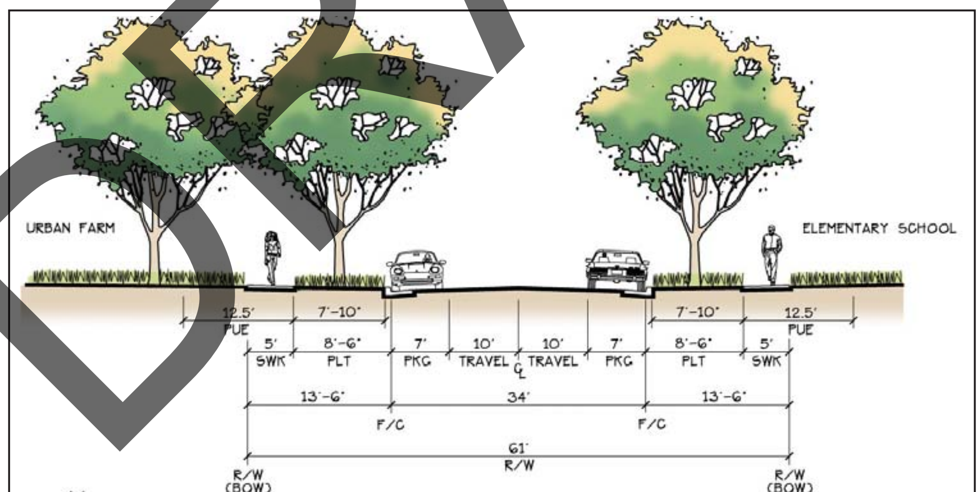
Local Residential with LID Design Section

Local Residential with LID Location Map

Figure 5-8: Local Residential Roadways with LID Design



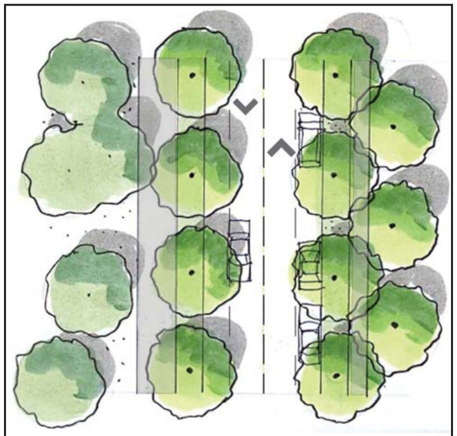
Local Residential Adjacent to Urban Farm Design Plan



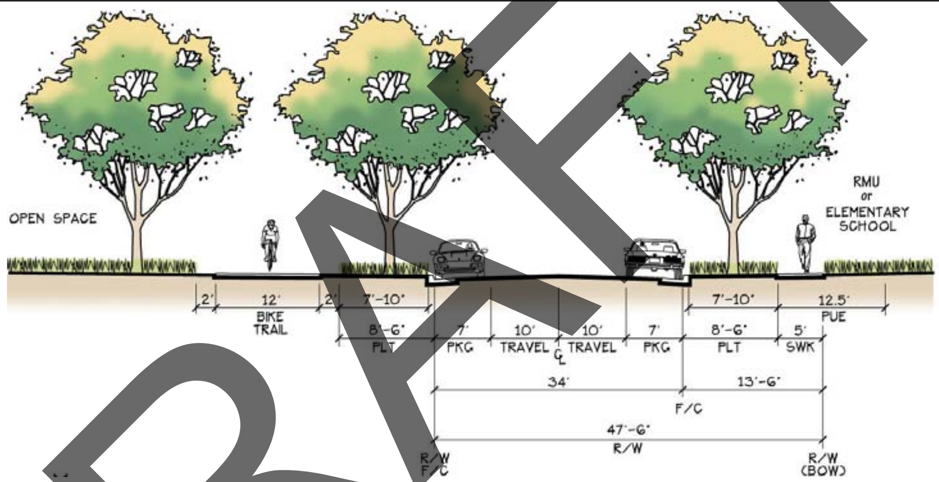
Local Residential Adjacent to Urban Farm Design Section

Local Residential Adjacent to Urban Farm Location Map

Figure 5-9: Local Residential Roadways Adjacent to Urban Farm Design



Local Residential Adjacent to Open Space Design Plan



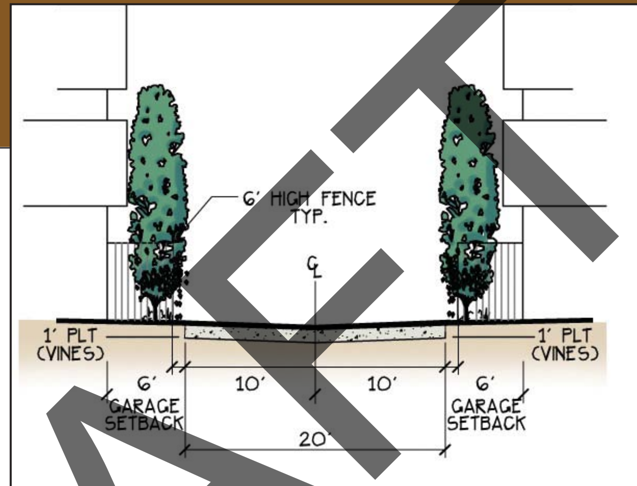
Local Residential Adjacent to Open Space Design Section

Local Residential Adjacent to Open Space Location Map

Figure 5-10: Local Residential Roadways Adjacent to Open Space Design

5.3.7 ALLEYS

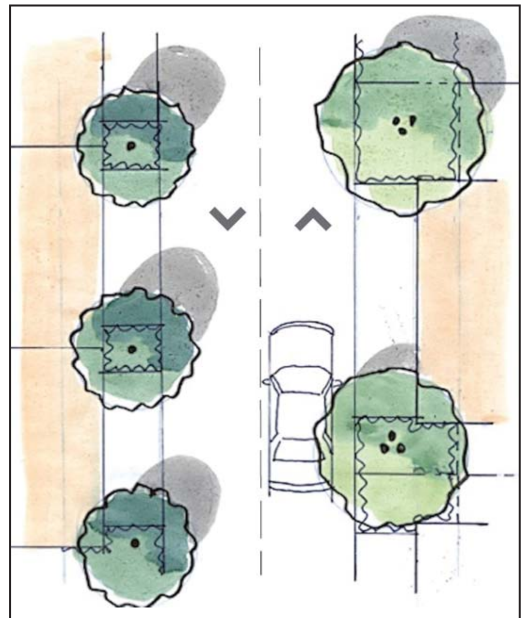
Alleys and alley-loaded housing product are an important component of the land use plan. Alleys have been strategically located adjacent to Rock Creek Parkway and Aspen Promenade in order to allow prominent front entries along major parkways and to minimize the appearance of garage doors and avoid driveway conflicts.



Design Section

Location Map

Figure 5-11: Alleys


Design Plan

5.3.8 ALTERNATIVE STREET STANDARDS

New Brighton will utilize modified street standards to facilitate incorporation of LID/H-M facilities. The modifications are required to keep the stormwater flow at the street level and direct the stormwater to the LID/H-M facilities which are landscape planters and medians rather than allowing the stormwater to enter drainage inlets and pipe systems. These include the following items, most of which facilitate disconnecting the impervious cover from directly draining into the storm drain system. These facilities initially direct flow onto or through vegetated features and LID facilities before entering the storm drain system.

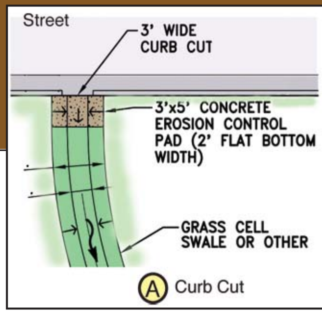
A. **Median Gutter Drain:** Curb cut to allow a drainage flow into the planters/median swales.

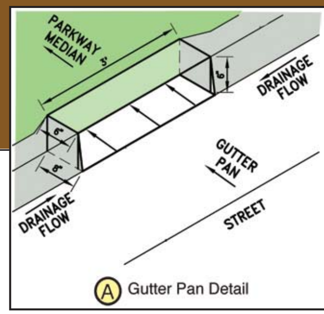
B. **Street cross slope to center or one side of street:** To allow drainage to flow to median or planter.

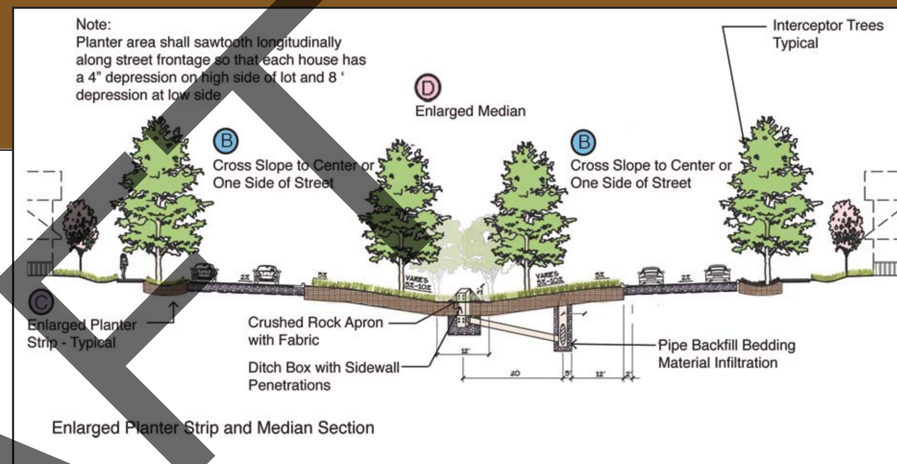
C. **Larger front yard and side yard planters:** Increase from 6 feet to 8 feet or 14 feet.

D. **Larger medians:** To increase bio-retention, infiltration, evapo-transpiration and provide detention storage.

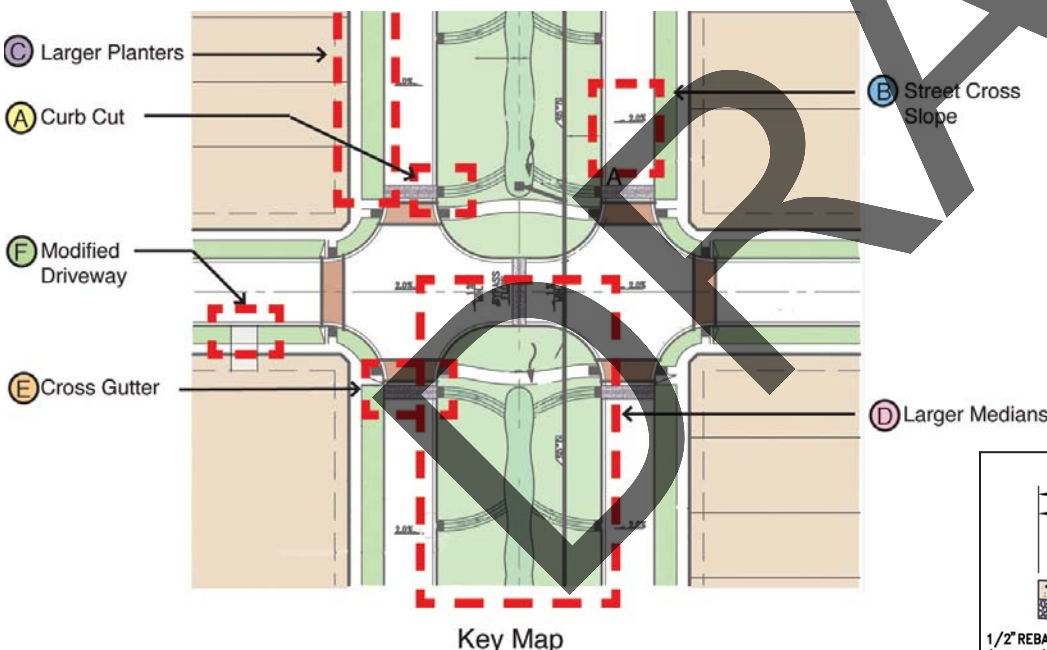
E. **Cross Gutters:** To keep drainage at street level to allow drainage to planter or median.

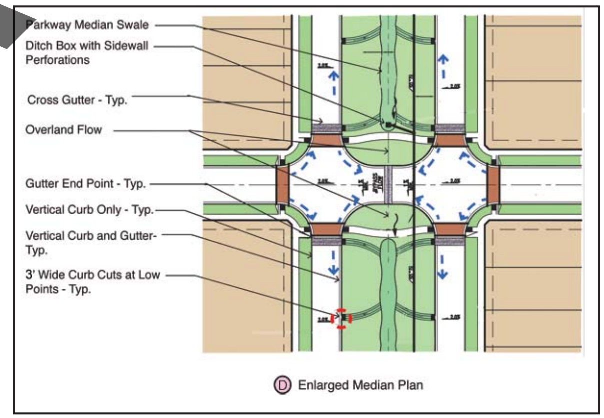


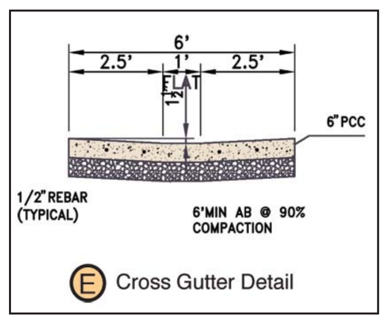




F. **Modify driveway discharge to sidewalk planter:** Allows lot driveway drainage to enter sidewalk planter versus running directly to curb and gutter.







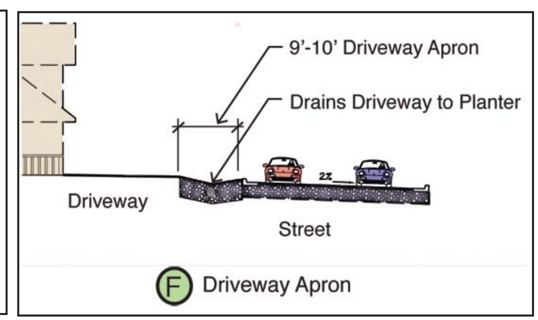


Figure 5-12: Alternative Street Standards

5.4 TRAIL NETWORK

The provision of a comprehensive trail and bikeway network within the Plan Area is a critical element in promoting the guiding principles of the PUD set forth in Chapter 2. The proposed trail network within the Plan Area is comprised of an interconnected system of on-street sidewalks, Class II and III bicycle lanes, Class I trails, and shortcuts. This comprehensive system promotes alternative modes of travel and facilitates easy access between residential, commercial, educational, and recreational opportunities within the Plan Area and greater community without the use of automobiles.

Trails provide an easily accessible outdoor resource for many forms of recreation, most notably bicycling and walking. Trails greatly increase community access to physical activity and fitness opportunities such as bicycling and walking. A well defined trail system not only increases mobility but can effect the quality of community life. Trails can express community character and pride, aesthetics of the local environment, access to the outdoors, opportunities for socialization, and increased mobility.

The general framework for perimeter connections to the Plan Area trail network is contained within the City of Sacramento Pedestrian Master Plan shown in Figure 5-13 and the Sacramento County Bicycle Master Plan shown on Figure 5-14. As shown, Jackson Highway and South Watt Avenue are planned as pedestrian street corridors, while a future trail is conceptually planned along the powerline easement which passes through

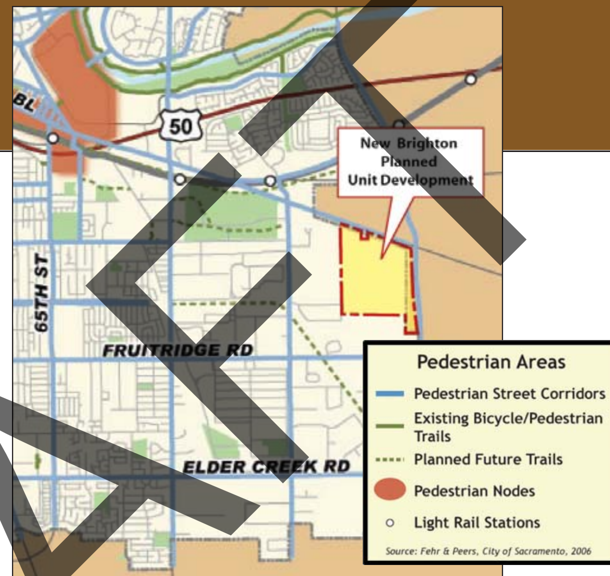


Figure 5-13: City of Sacramento Pedestrian Master Plan

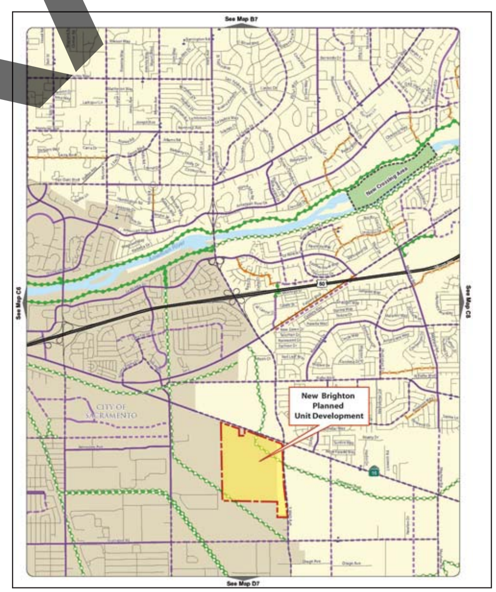


Figure 5-14: Sacramento County Bicycle Master Plan

Figure 5-15: New Brighton Trails Plan

the Four Corners Community Center District. In addition to these off-site systems, South Watt Avenue and Jackson Highway are designated to include Class II bicycle lanes.

The trail network within the Plan Area has been designed to connect to the planned off-site trail network and will be developed as shown by Figure 5-15. The trail network shown on Figure 5-15 will utilize a variety of bikeways and trails which are classified in Table 5-1.

Table 5-1: New Brighton Trail Classifications

CLASS	SURFACE	DESCRIPTION
I	Paved	Off-street multi-use bicycle and pedestrian path. Class I trails are used in the Plan Area to faciliate access between the elementary school, urban farm, and powerline corridor trail system.
II	Paved	Signed on-street bicycle routes with a striped lane. Class II bicycle routes within the Plan Area include Jackson Highway, South Watt Avenue, Rock Creek Parkway, Aspen Promenade, and Collector Streets.
III	Paved	Signed on-street bicycle routes without a striped lane. Class III bicycle routes comprise all roadways within the Plan Area which do not have a separate striped lane.
N/A	Varies	Shortcuts vary in size and surface but are intended to provide an all-weather surface to facilitate pedestrian movement between uses and shorten travel distance.

5.5 PUBLIC TRANSIT

Planning for public transit is a key component in the design of any community to allow mobility for those that do not have access to vehicles and to encourage those with vehicles to utilize alternative modes of travel. This project has been designed to support transit use through the following design features:

- **Transit Friendly Roadway Design.** As outlined throughout the PUD Guidelines and specified in this Chapter, Rock Creek Parkway has been designed as a "transit ready" roadway section with the ability to accommodate two 12-foot exclusive travel lanes. These exclusive travel lanes are intended to support any combination of future transit including but not limited to shuttle, bus, BRT, rubber tire or electric streetcar, electric vehicle, or similiar type use.

- **The Four Corners Node of Density.** Based upon early involvement and coordination with RT, a mixture of higher density residential, commercial, and community uses have been centered within the Four Corners Community Center District within the heart of the Plan Area. Land uses have been designed to create a destination that will support transit stops at this location at the intersection of Rock Creek Parkway and Aspen Promenade.

- **Concentration of Activities.** South Watt Avenue is designated to provide future Bus and Bus Rapid Transit/High Bus service as indicated by the RT Transit Master Plan and SACOG Metropolitan Transportation Plan (MTP). In support of those uses, two nodes of development have been located along South Watt Avenue. The first node of development is comprised of the Community Commercial District, which includes commercial and high density residential at the intersection of South Watt Avenue and Jackson Highway. This location can provide a transit stop along its eastern edge for southbound transit service. The second node of development along South Watt Avenue occurs at the southwest corner of Rock Creek Parkway and South Watt Avenue. The proposed elementary school site and multi-family parcel are strategically sited at this location to provide easy access to the planned transit systems along South Watt Avenue and Rock Creek Parkway.

Future transit stops at these locations shall be coordinated with the City of Sacramento and RT and, at a minimum, should adhere to the following guidelines:

- The design of transit stops, lighting, trash bin containers, and other street furniture shall be consistent with the landscape and street furniture guidelines contained within Chapter 4 of these guidelines.
- Street trees, landscaping, benches, and lighting should be designed to provide a pleasant, shaded, and safe environment for waiting riders.
- Adjacent buildings should be located close to sidewalks so that there are "eyes-on-the-street" to improve the sense of security. Retail commercial uses are encouraged to incorporate outdoor seating and/or plazas in their landscape design.
- Transit stops provide an opportunity to make a unifying architectural statement and can provide a good location for a community information board or kiosk. Creation of public gathering spaces or activity nodes near transit stops is encouraged.

Chapter 6: Residential Neighborhoods

6.1 INTRODUCTION

Residential neighborhoods within the Plan Area are comprised of a variety of single-family detached, attached, affordable, and multi-family housing types interconnected and tied together by a comprehensive system of tree-lined walkable streets, neighborhood- and community-serving commercial, open space, recreational opportunities, and community spaces. By employing a design palette of authentic architectural styles and creative site planning techniques, residential neighborhoods within the Plan Area will embody a strong architectural identity reminiscent of Sacramento's Park Neighborhoods.

Chapter 6 has been organized to begin with community-wide single-family design principles, which apply to all single-family development within the Plan Area. These design principles set forth basic standards and guidelines that pertain to all single-family development, regardless of architectural style or location.

Subsequent to the single-family design principles, development standards and defining characteristics for each of the single-family lot types within the Plan Area are described. Development standards including lot characteristics, setbacks, garage type and orientation, and building massing are addressed in this section. Annotated illustrations accompany many of these standards to graphically illustrate development standards and simplify interpretation.

Community-wide multi-family residential development standards are also addressed in this chapter and are set forth in a similar manner to the single-family section. They begin with multi-family design principles and are accompanied by development standards unique to the multi-family and mixed-use residential sites within the Plan Area. Chapter 6 concludes with a detailed architectural guidelines section, which identifies the architectural styles and details appropriate for New Brighton.

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

6.2 COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

6.2.1 DIVERSITY OF STREETSCAPE

An eclectic and diverse streetscape is a defining characteristic of great park neighborhoods. Simple and elegant planning and design elements can change the essence of a community while maintaining an overall unified theme. The intent of this section is to articulate the standards and unique defining elements by which the residential neighborhoods of New Brighton shall be built.

A. Master Home Plan Requirements

To achieve variation in residential neighborhoods, a minimum number of master home plans (master home plans are defined as unique floor plans with a distinct footprint with regard to placement and relationship of garage, front door, and building massing) and associated elevations shall be provided in each sub-neighborhood. (A sub-neighborhood is defined as the portion of the overall New Brighton neighborhood, to be built upon by one specific builder.)

Number of Lots	Floor Plans (Min.)	Architectural Styles (Min.)	Color Schemes per Style (Min.)
Less than 50	Three (3)	3	3
50-100	Four (4)	3	3
100-200	Five (5)	4	3
Greater than 200	Six (6)	4	3

A maximum of one secondary architectural style is permitted in any sub-neighborhood; the remaining elevations must all represent primary architectural styles. (See Section 6.6 for information on primary and secondary architectural styles.)

B. Massing and Roof Form

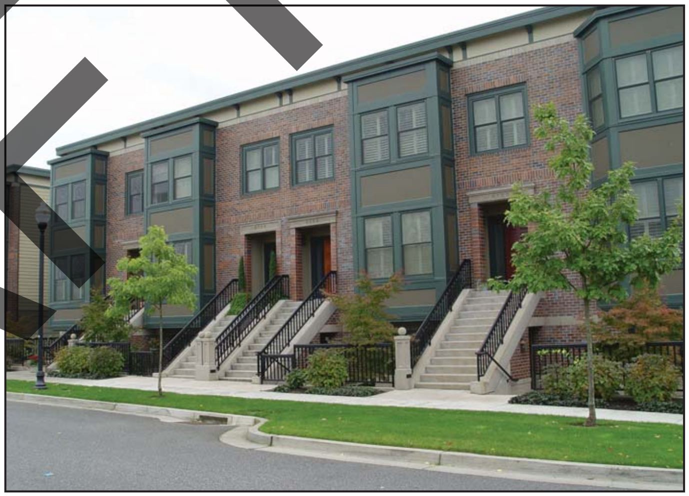
Proportion and placement of architectural forms and elements must be appropriately and authentically applied in a manner consistent with the historical architectural style being represented. Roof articulation in the form of proper roof pitches and forms also plays a significant role in the authenticity and diversity of the streetscape and creates an aesthetically pleasing "roof bounce" or skyline effect.

- Massing must be appropriate and authentic to the architectural style (e.g., The Prairie style has a very horizontal character and it would be inappropriate to have dominant vertical massing).
- One out of every three homes must have a significantly different roof form than its neighbors (e.g., forward-facing gable versus side-facing gable).
- Front porches, when appropriate to the building style as defined in Section 6.6, must have a minimum depth of six (6) feet.

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

C. Single-Family Attached

Single-family attached product types provide an opportunity to create a defined edge along the primary spine road of Rock Creek Parkway. Row homes can be used to create an eclectic urban edge, while manor homes can depict the sense of large historic estates. Bungalow courts, which are allowed throughout the Plan Area, add interest to the streetscape and a unique living environment.



ROW HOMES	
Row homes provide a unique opportunity for a very traditional architectural statement, and there are certain defining elements that the row homes must exhibit. When designing row homes, which are typically narrow in nature, the quantity, scale, and placement must be judicious to not overwhelm the scale of the building.	• While row home units will be attached, each unit should have its own identity within the building. To accomplish this, facades should break at property lines to allow for change of material, color, and, in some cases, architectural style.
	• Front doors must be visible from the street.
	• Walk-up design is encouraged, with the door raised a half-story from the street to create a traditional brownstone effect with a welcoming stoop.
	• To avoid dominant unbroken planes, row homes must provide vertical articulation at the front elevation.
	• Varied setbacks for different components of the home, such as garages, second floors, balconies, etc., are encouraged.
	• Massing of forms must be established using the fundamental characteristics of the selected architectural style.

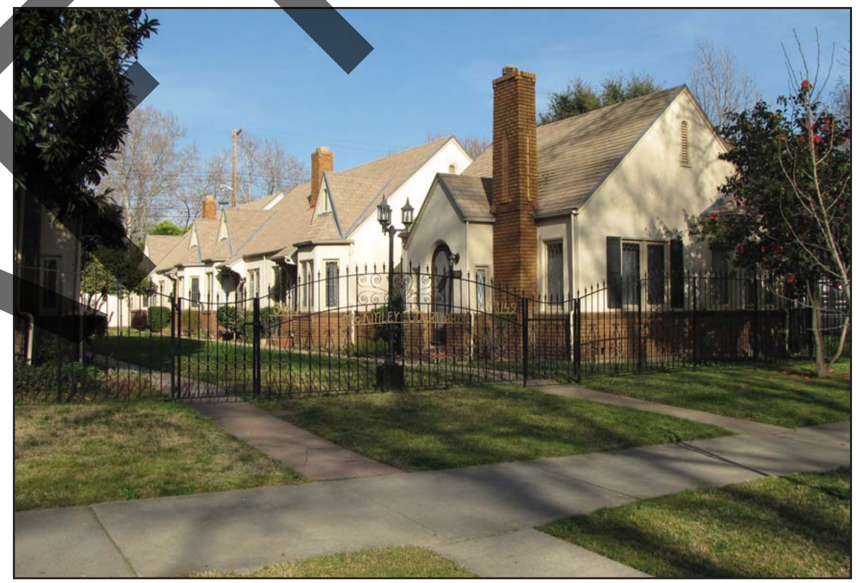
COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

MANOR HOMES

Manor homes are single-family attached town homes designed with the appearance of one large estate home. The massing, form, and scale of the architectural elements utilized in designing manor homes must be consistent with the concept that the building is one statement as a whole, rather than a series of individual expressions.

- Massing of forms must be established using the fundamental characteristics of the selected architectural style.
- Manor homes must be designed with one architectural style over the entire building to give the appearance of one large home, rather than a series of individual residences.
- Detailing must be applied such that repetition is based on style, rather than on individual residential units. (E.g., if bay windows are a style-appropriate building element, the bay windows should be used authentically to complement the entire building expression, rather than repeated over the entire facade in a repetitive manner.)

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES



BUNGALOW COURTS

Bungalow courts can create an opportunity for a node of small cottages interspersed between traditional single-family homes, as seen in the Park Neighborhoods of Sacramento.

- Bungalow courts are created through the joining of several single-family detached lots arranged around a single common green space.
- Homes within bungalow courts should primarily be single story.
- Garages may either be accessed by alleys running perpendicular to the street or be detached and grouped, accessed by a secondary street or alley.

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

D. Staggered Setbacks

A variety of front yard setbacks animates and articulates the streetscape and reduces the canyon effect and monotony that can be apparent with identical setbacks.

- One out of every three contiguous homes must have a two-foot (2') minimum offset from its neighbors.
- Additional and more frequent setback staggering is encouraged.

E. Repetition

Avoiding repetition of identical floor plans or architectural styles is important to create a sense of permanence and the effect of a community that has been built over time.

- The same floor plan with the same architectural style shall be no less than five (5) lots away in any direction (on the same side of the street as well as the opposite side of the street).
- Not more than two two-story homes can be adjacent to each other.

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

6.2.2 FOUR-SIDED ARCHITECTURE

The continuation of style-specific architectural elements from the front facade around to the side and rear elevations creates an authentic architectural statement. As defined in the Architectural Guidelines found in Section 6.6, there is a minimum level of enhancement required on all homes based on architectural style. Each style of architecture has a matrix representing minimum and enhanced elements that are inherent to each style. Blank, unadorned building faces are never permitted; a certain minimum amount of detail is required. It is recognized, however, that there are situations where a building face is virtually hidden and adding additional architectural elements is unproductive. The following section identifies enhanced lot situations as well as the four-sided enhancements that are required on these lots.

Figure 6-1 identifies home sites that are visible from multiple angles, public ways, open space, community edges, and major arterials. Homesites identified as either an enhanced lot or corner lot are subject to the requirements in subsections A and B which follow.

Figure 6-1: Enhanced Home Sites

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

A. Corners

Corner lots are viewable from more than one street and must therefore address multiple viewing angles.

- All corner lots identified on Figure 6-1 must employ at least four enhancements from the enhanced elements portion of the corresponding architectural style matrix (found in Section 6.6) on all street-adjacent building faces (in addition to the minimum enhancements required for all homes).
- Unique entry and garage configurations are encouraged to give the effect of creating two "fronts" to a home and address both streets. An example solution would be to situate the front door to address the primary roadway and the garage off the secondary roadway.
- When appropriate to the architectural style, wrap-around porches are an encouraged corner solution.

B. Enhanced Lots

Home sites that are highly visible, as identified on Figure 6-1, warrant special attention to any visible building faces to present an authentic and cohesive appearance.

- All highly visible sites identified on Figure 6-1 as enhanced lots must employ at least three enhancements from the enhanced elements portion of the corresponding architectural style matrix (found in Section 6.6) on all building faces adjacent to public ways, open space, community edges, and/or major arterials (in addition to the minimum enhancements required for all homes).

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

6.2.3 ACTIVE AND PASSIVE SIDES

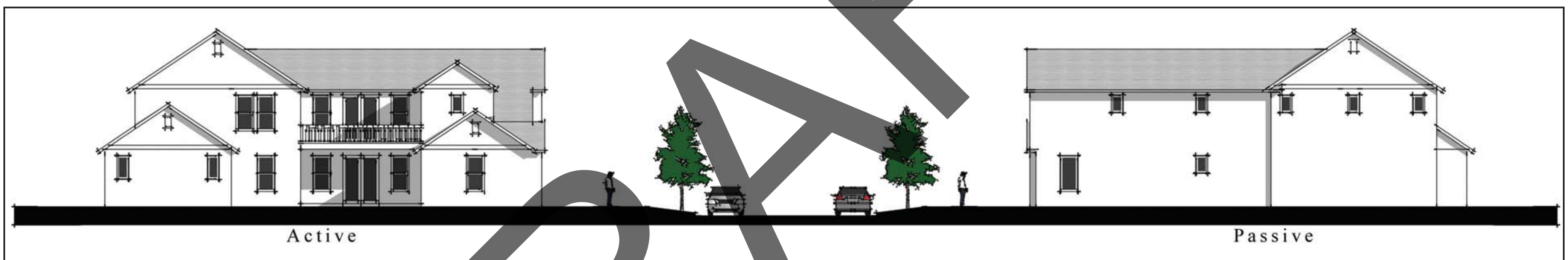


Figure 6-2: Active and Passive Sides

ACTIVE AND PASSIVE SIDES

Side yards offer a unique opportunity for private outdoor space that can be easily overlooked when not planned effectively. To promote the utilization of these spaces, it is important to designate active and passive sides to each home. The active side of a home is identified as having more and larger windows and the most usable outdoor living space. The passive side of the house has fewer and smaller windows to promote privacy for the neighbor's active side. This creates a relationship between homes and helps create an enhanced living environment.

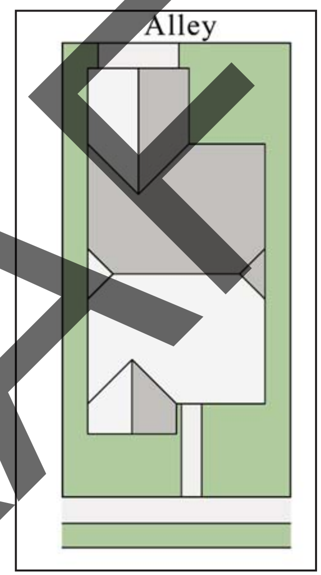
- Active and passive sides must be adjacent to each other to ensure privacy for the active side.
- Reciprocal use easements are encouraged when utilizing passive and active sides to allow for more usable side yard area.
- For side drive or pushback garage lots, the wall adjacent to the side drive must be active.
- Active and passive side design must be incorporated on lots 50 feet in width and less and is encouraged on larger lot sizes.

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

6.2.4 GARAGES

Reducing garage dominance on the streetscape and moving living space closer to the street creates street scenes that are inviting and safe with an "eyes on the street" environment. Using design features that enhance a home's architectural style and relegating the garage to a less visible position promotes a more pedestrian-oriented neighborhood.

There are six permitted garage orientations at New Brighton: alley-loaded attached and detached, side drive attached and detached, recessed attached, and side street entry at corner lots.



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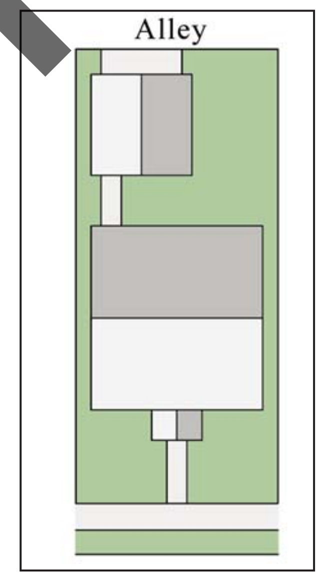
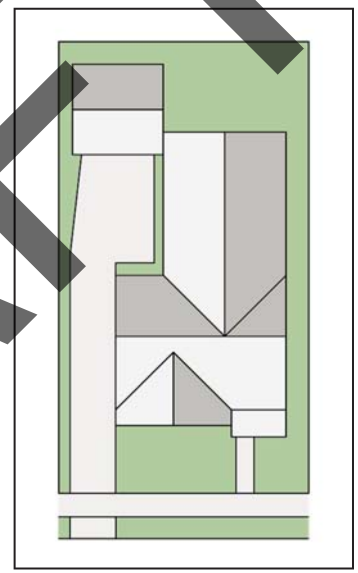


Detached

ALLEY-LOADED	
The most effective form of mitigating garage dominance is to remove garages completely from the streetscape through the use of alleys. New Brighton allows either attached or detached garages in an alley configuration. Attached garages provide the benefit of direct access to the home from the garage; however, yard space is diminished in this situation. Detached garages allow for more yard space, while sacrificing direct access to the home from the garage. Each alternative has benefits, and a mixture of both configurations is encouraged.	• A 5-foot apron must be provided at all alley-loaded garages. If length is greater than 5 feet, it must be a minimum of 18 feet to discourage parking in sub-standard spaces.

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES



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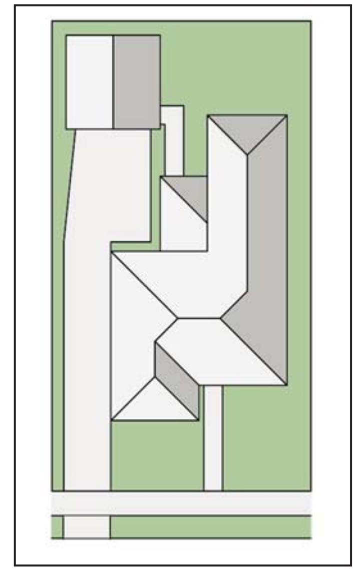


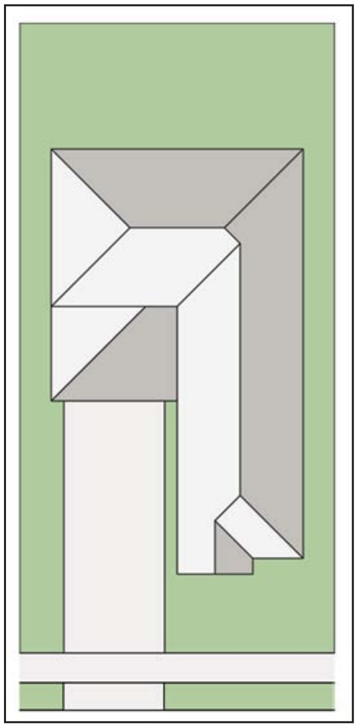
Detached

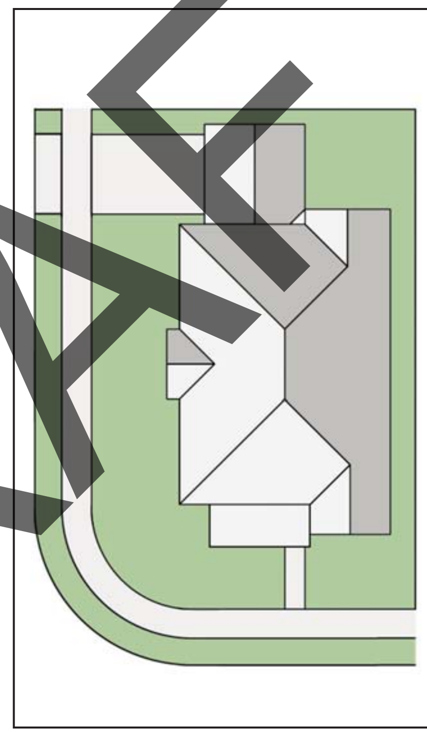
SIDE DRIVE

Lots that are accessed from the street must reduce the visual impact of the garage on the streetscape. There are three allowable methods for mitigating street-loaded garages: a side drive with an attached garage, a side drive with a detached garage, or a recessed attached garage. A side drive is defined as a driveway with a length of at least 40% of the total lot depth (measured from back of sidewalk to rear fence line). Anything less than this length is defined as a recess.

- The drive aisle width must be 10 feet minimum (exclusive of landscape except for Hollywood Drives).
- Hollywood Drives are encouraged (two paving strips of between 2.5 and 3.5 feet wide separated by a minimum 3-foot wide planting strip).
- Side drives may only be paired (two contiguous homes with driveways directly adjacent to one another) on one out of every five lots with at least two lots in between sets of paired drives to ensure variety.
- To avoid conflict with curb cuts and necessary directional signage, driveways may not be adjacent to corners.

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES





RECESSED ATTACHED

An alternative to a full side drive is a recessed attached garage, wherein the length of the driveway is less than 40% of the total lot depth (measured from back of sidewalk to rear fence line). Recessed attached garages are acceptable on two out of every four plans in a street-loaded master home plan series.

- The garage must be recessed a minimum of 5 feet from living space.

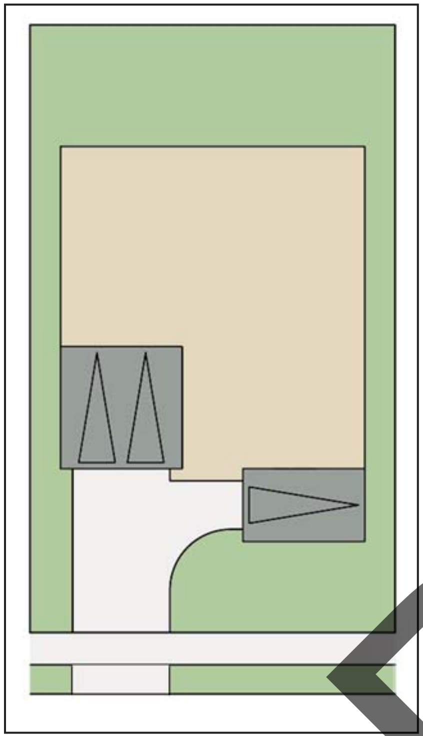
- Driveways must be a minimum of 18 feet deep.

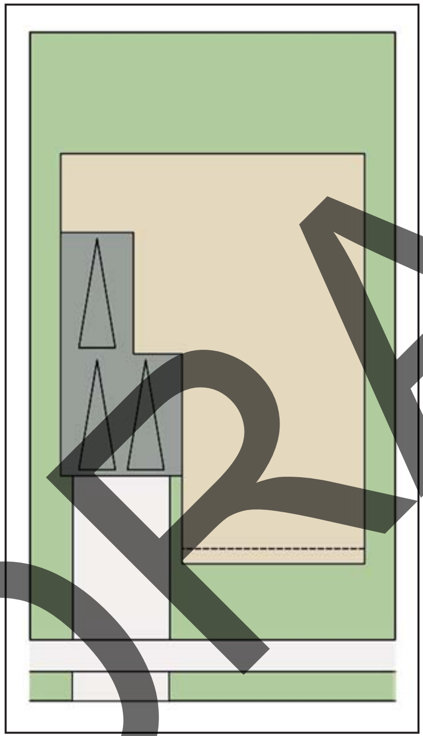
CORNER LOT SIDE STREET ENTRY

Lots situated at corners are permitted to situate the driveway and garage off the secondary roadway (side street).

- When designing to address a corner lot situation, the garage entry and front door entry must have a perpendicular relationship to one another to address each street.

COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES

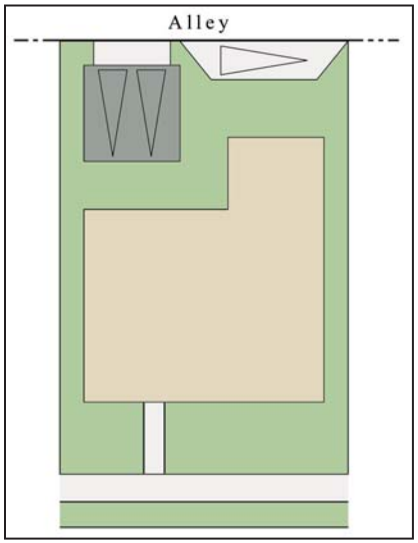




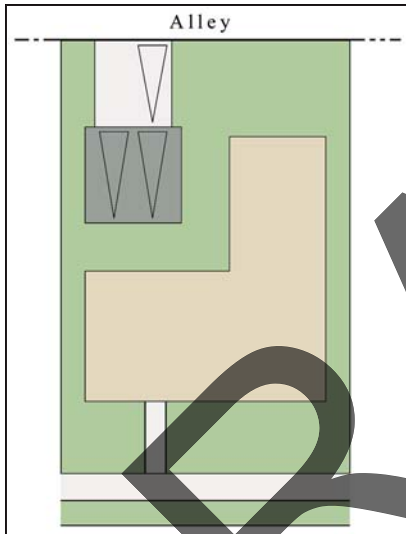
THREE CAR GARAGES

Garages accommodating more than two cars are allowable only in a split or tandem configuration per the following diagrams. Three car front-loaded garages are never permitted.

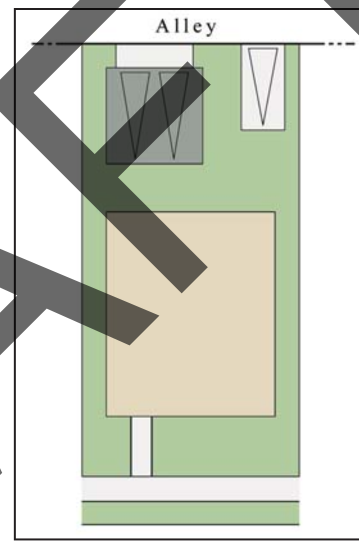
COMMUNITY-WIDE SINGLE-FAMILY DESIGN PRINCIPLES



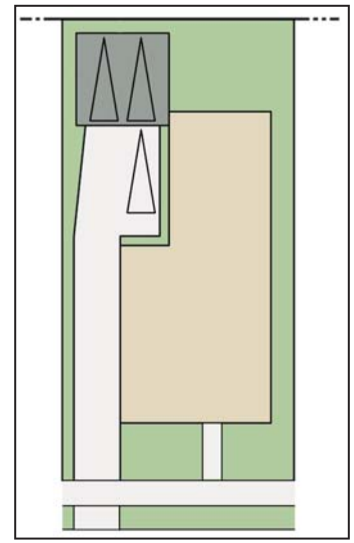
Parallel Parking Pocket



Rear Driveway



Dedicated Parking Space Adjacent to Garage

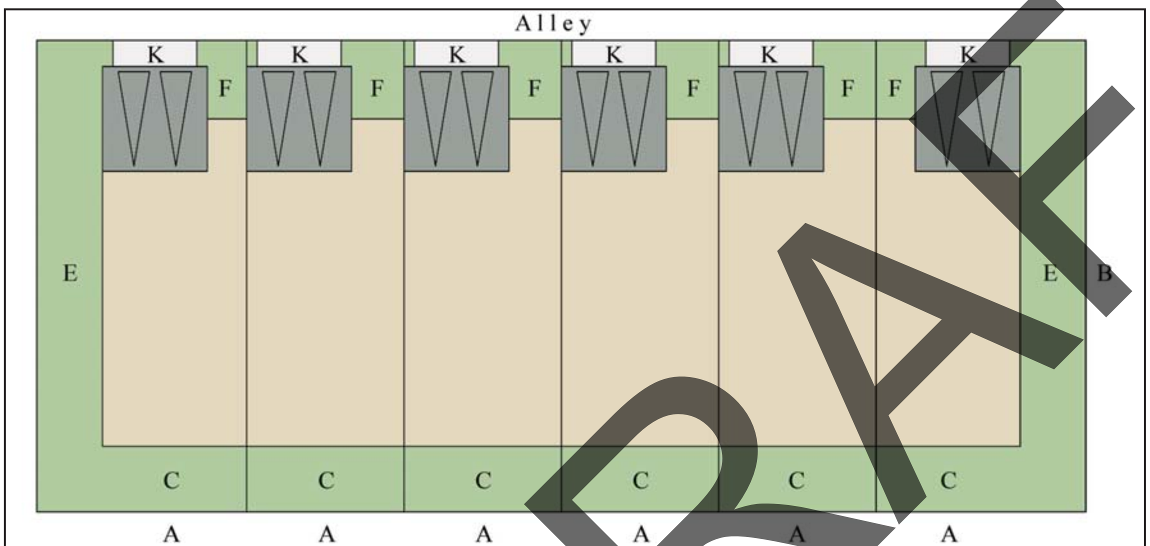

Side Drive

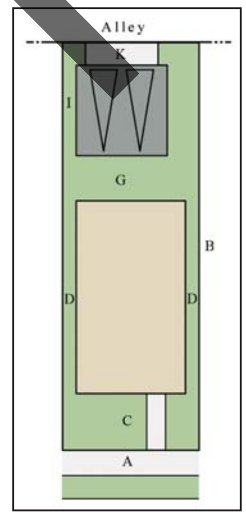
6.2.5 ACCESSORY DWELLING UNITS

Accessory dwelling units add dimension and vibrancy to the streetscape and, when located on alleys, serve to activate and enliven the alley. Often referred to as carriage units or granny flats, these homes provide an affordable housing means for relatives, friends, boomerang children, or renters. Accessory dwelling units are defined as being located above or adjacent to garages with primary access via a separate entrance outside of the primary residence.

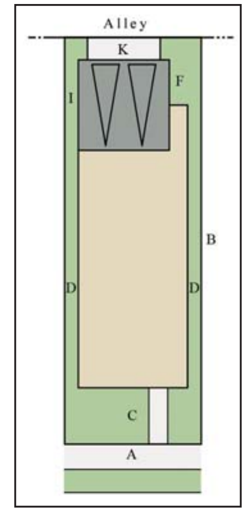
- Accessory dwelling units are required on 10% of all single-family detached lots with a width of 40 feet and greater.
- Accessory dwelling units are permitted above garages that are alley-loaded attached and detached as well as side drive attached and detached garages.
- Accessory dwelling units must have dedicated entries separate from the principal residence and not requiring passage through the garage. However, access integrated into the garage structure is encouraged (e.g., a dedicated exterior door to an interior vestibule and stair).
- Accessory dwelling units containing a kitchen should strive to provide one dedicated off-street parking space. A parallel parking pocket, a front or rear driveway, or a dedicated parking space adjacent to the garage are all acceptable solutions.

6.3 SINGLE-FAMILY DEVELOPMENT STANDARDS - THE THIRTIES





Alley Detached

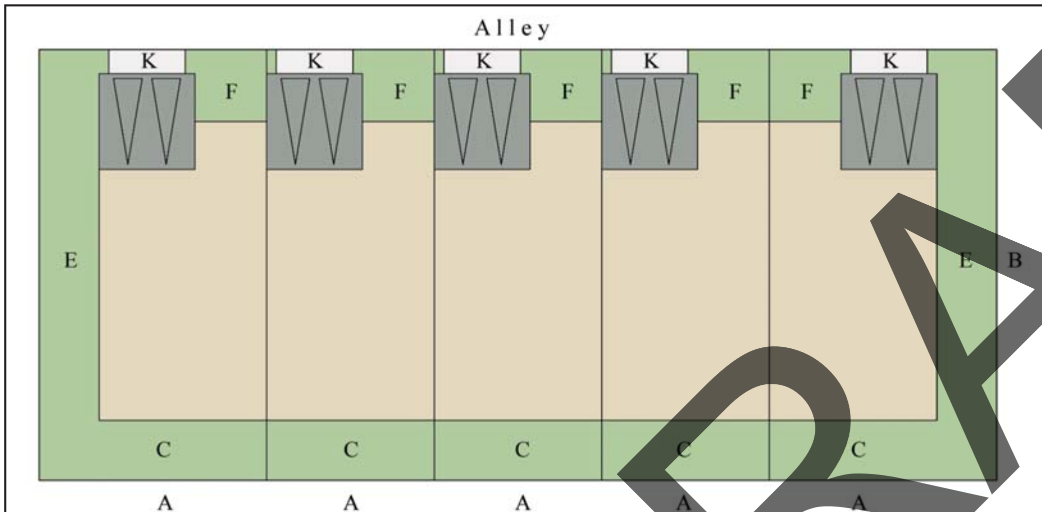


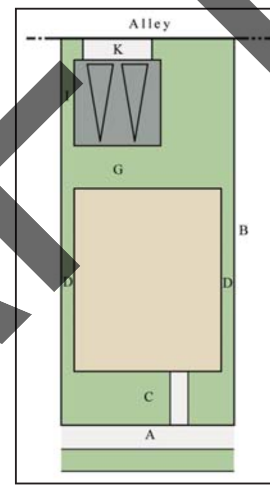
Alley Attached

THE THIRTIES					
Lot Characteristics	**A** - Width (Min.)	30’	Garage Setbacks	**I** - Side	3’
	B - Depth (Min.)	90’		**J** - Rear	3’
Principal Building Setbacks (Min.)	**C** - Front	12.5’		**K** - Alley	5’
	D - Side (Single-Family Detached)[1]	5’	Garage Orientation	Alley-Loaded (Attached or Detached)	Permitted
	E - Corner Lot Side Yard Along Street	12.5’		Side Drive (Attached or Detached)	Not Permitted
	F - Rear (to Living Space)	15’		Recessed Attached	Not Permitted
	G - Minimum Distance Between Principal Building and Detached Garage	10’		Corner Lot Side Street Entry (Attached or Detached)	Not Permitted
	H - Front Porch	12.5’	Maximum Building Height		35’

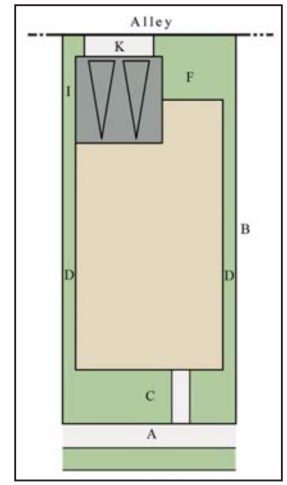
[1] Single-family attached (fee simple row homes) are permitted on 30’ x 90’ lots. Building-to-building setback between single-family attached clusters is 10’ minimum. All other setbacks remain consistent. • [2] All setbacks are minimum unless otherwise specified.

SINGLE-FAMILY DEVELOPMENT STANDARDS - THE FORTIES





Alley Detached



Alley Attached

THE FORTIES					
Lot Characteristics	**A** - Width (Min.)	40’	**Garage Setbacks**	**I** - Side	3’
	B - Depth (Min.)	90’		**J** - Rear	3’
Principal Building Setbacks (Min.)	**C** - Front	12.5’		**K** - Alley	5’
	D - Side (Single-Family Detached)[1]	5’	**Garage Orientation**	Alley-Loaded (Attached or Detached)	Permitted
	E - Corner Lot Side Yard Along Street	12.5’		Side Drive (Attached or Detached)	Not Permitted
	F - Rear (to Living Space)	15’		Recessed Attached	Not Permitted
	G - Minimum Distance Between Principal Building and Detached Garage	10’		Corner Lot Side Street Entry (Attached or Detached)	Not Permitted
	H - Front Porch	12.5’	**Maximum Building Height**		35’

[1] *Single-family attached are permitted on 40’ x 90’ lots. Building-to-building setback between single-family attached clusters is 10’ minimum. All other setbacks remain consistent.*
[2] *All setbacks are minimum unless otherwise specified.*

SINGLE-FAMILY DEVELOPMENT STANDARDS

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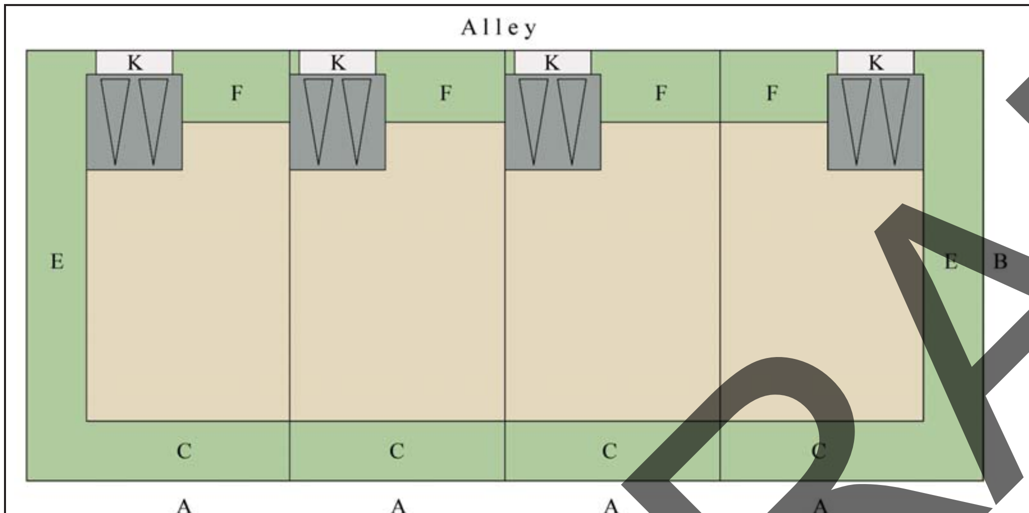
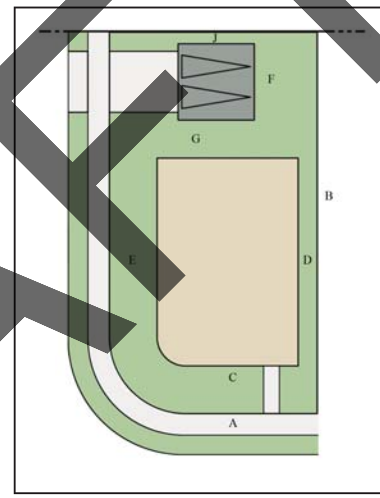
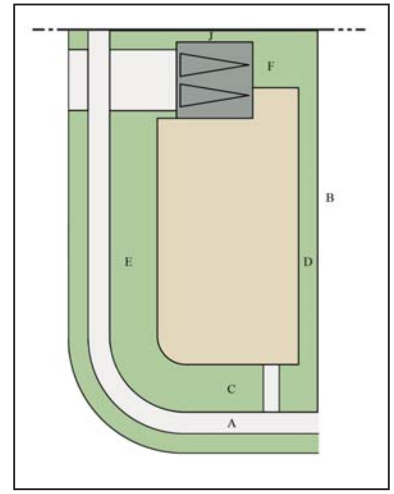
SINGLE-FAMILY DEVELOPMENT STANDARDS - THE FORTY-FIVES





Corner Side Drive - Detached

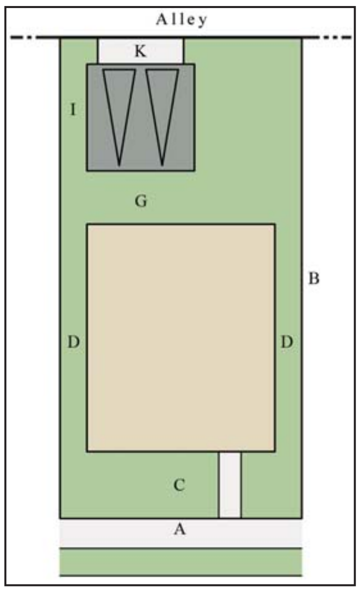


Corner Side Drive - Attached

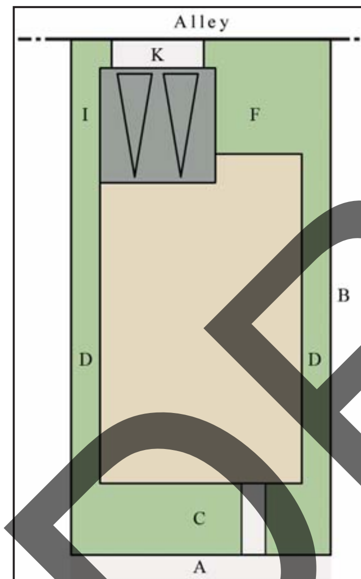
THE FORTY-FIVES					
Lot Characteristics	**A** - Width (Min.)	45’	Garage Setbacks	**I** - Side	3’
	B - Depth (Min.)	90’		**J** - Rear	3’
Principal Building Setbacks (Min.)	**C** - Front	12.5’		**K** - Alley	5’
	D - Side (Single-Family Detached)[1]	5’		**L** - Minimum Clear Space in Front of Garage Doors	24’
	E - Corner Lot Side Yard Along Street	12.5’	Garage Orientation	Alley-Loaded (Attached or Detached)	Permitted
	F - Rear (to Living Space)	15’		Side Drive (Attached or Detached)	Permitted
	G - Minimum Distance Between Principal Building and Detached Garage	10’		Recessed Attached	Permitted
				Corner Lot Side Street Entry (Attached or Detached)	Permitted
	H - Front Porch	12.5’	Maximum Building Height		35’

[1] *Single-family attached are permitted on 45’ x 90’ lots. Building-to-building setback between single-family attached clusters is 10’ minimum. All other setbacks remain consistent.*
[2] *All setbacks are minimum unless otherwise specified.*

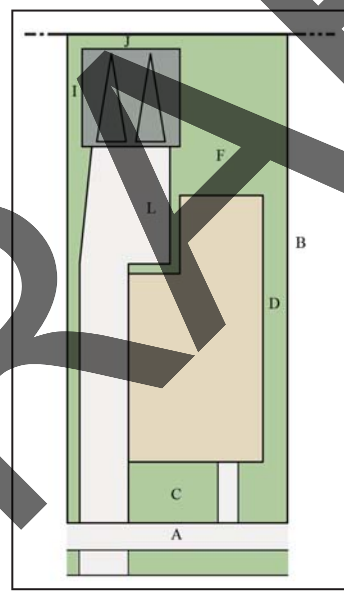
SINGLE-FAMILY DEVELOPMENT STANDARDS - THE FORTY-FIVES



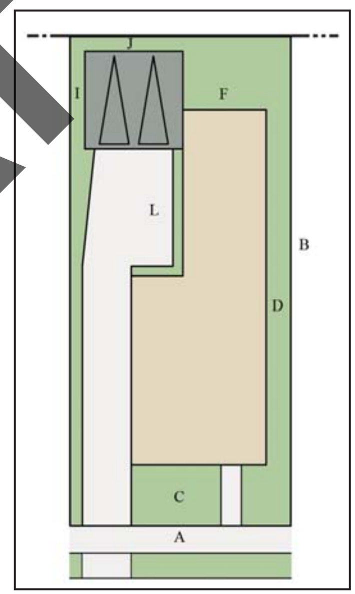
Alley Detached



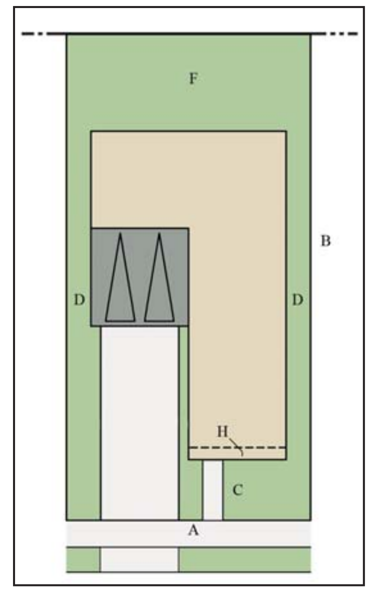
Alley Attached



Side Drive Detached

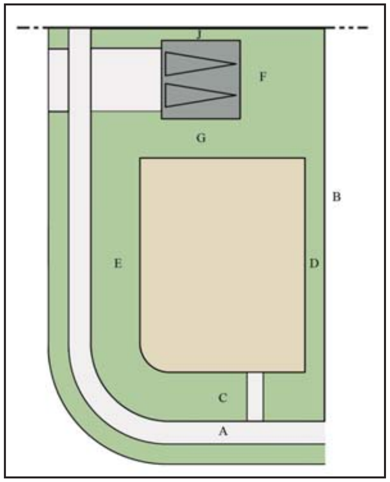


Side Drive Attached

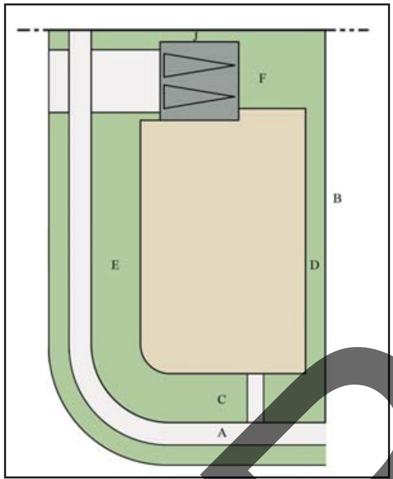


Recessed Garage

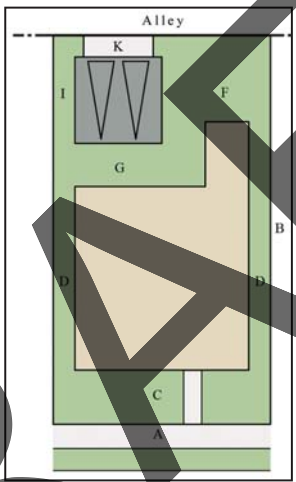
SINGLE-FAMILY DEVELOPMENT STANDARDS - THE FIFTIES AND LARGER



Corner Side Drive - Detached



Corner Side Drive - Attached



Alley Detached

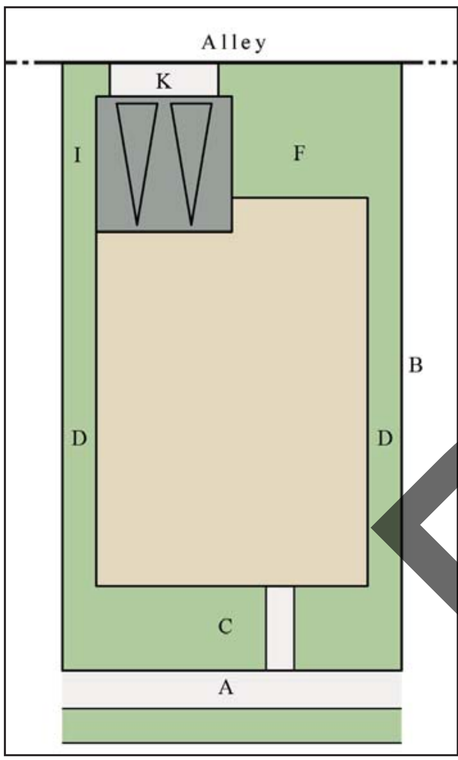
THE FIFTIES AND LARGER

Lot Characteristics	**A** - Width (Min.)	50’
	B - Depth (Min.)	100’
Principal Building Setbacks (Min.)	**C** - Front	12.5’
	D - Side (Single-Family Detached)[1]	5’
	E - Corner Lot Side Yard Along Street	12.5’
	F - Rear (to Living Space)	20’
	G - Minimum Distance Between Principal Building and Detached Garage	10’
	H - Front Porch	12.5’

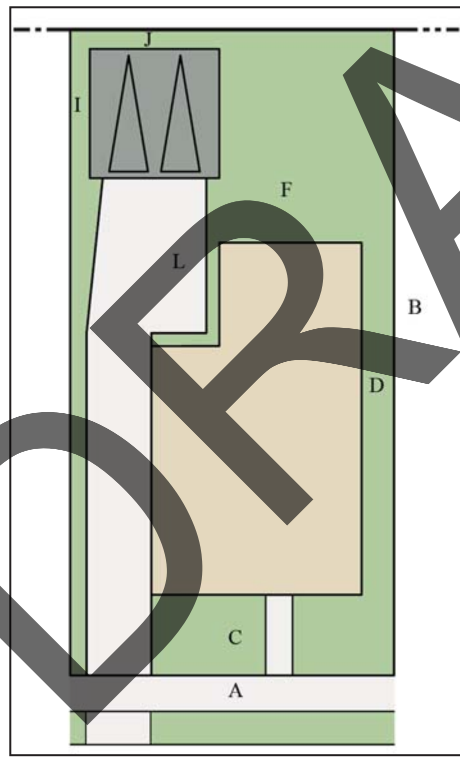
Garage Setbacks	**I** - Side	3’
	J - Rear	3’
	K - Alley	5’
	L - Minimum Clear Space in Front of Garage Doors	24’
Garage Orientation	Alley-Loaded (Attached or Detached)	Permitted
	Side Drive (Attached or Detached)	Permitted
	Recessed Attached	Permitted
	Corner Lot Side Street Entry (Attached or Detached)	Permitted
Maximum Building Height		35’

[1] *All setbacks are minimum unless otherwise specified.*

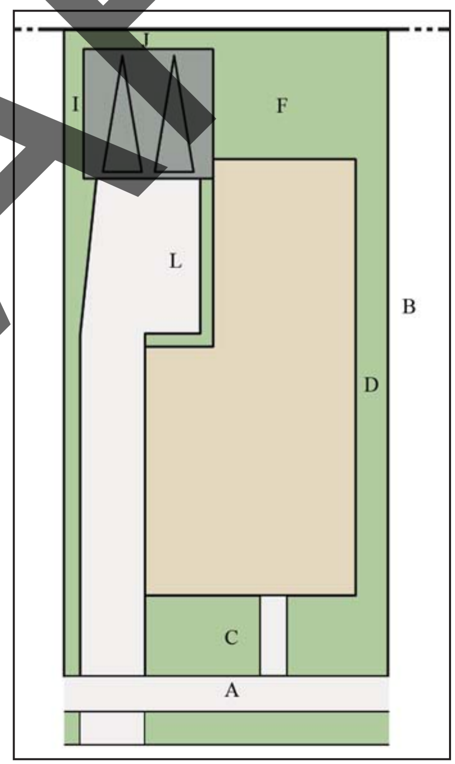
SINGLE-FAMILY DEVELOPMENT STANDARDS - THE FIFTIES AND LARGER



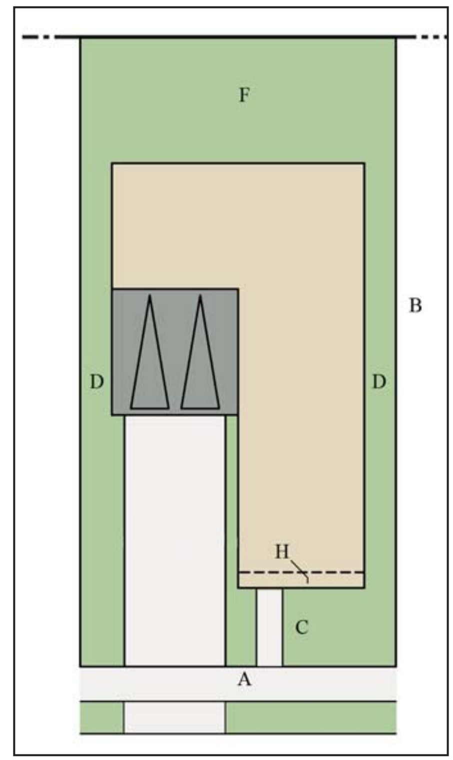
Alley Attached



Side Drive Detached



Side Drive Attached



Recessed Attached

COMMUNITY-WIDE MULTI-FAMILY DESIGN PRINCIPLES

6.4 COMMUNITY-WIDE MULTI-FAMILY DESIGN PRINCIPLES

The Plan Area provides the opportunity for two different multi-family product types at two density levels. Multi-family residential is defined as for-rent or for-sale residential product at 25 dwelling units per net acre. Residential mixed-use is defined as for-rent or for-sale residential product vertically or horizontally related to an office or commercial use, such as office, retail, or restaurant use. Residential mixed-use has an allowable density of 30 dwelling units per net acre.

6.4.1 DIVERSITY OF STREETSCAPE

As with the single-family detached sub-neighborhoods, multi-family and residential mixed-use areas should also exhibit streetscape diversity, while drawing from a more selective pool of architectural styles. Sub-neighborhoods have an opportunity to present an eclectic streetscape with a variety of product types to achieve different densities. For example, row homes can be designed to look like a series of individual architectural statements, whereas larger multi-family buildings can be designed to emulate large stately manor homes with one architectural style. The intent of this section is to define the standards by which the multi-family and residential mixed-use neighborhoods shall be built.

A. Massing

When designing multi-family buildings, proportion and placement of architectural elements is critical. When a condominium or apartment building is designed to look like one large home, the scale of architectural forms and elements must be cohesive with the scale of the overall building.

- End units must have articulation, such as windows and doors facing sidewalks and public ways.
- Unarticulated or windowless walls are not permitted.
- Massing of forms must be established using the fundamental characteristics of the selected architectural style.

B. Four-Sided Architecture

Multi-family buildings generally have access on all sides, whether pedestrian, vehicular, or visual. As such, defining architectural elements and detailing from the front elevation must be carried to the sides and rear of all multi-family buildings.

- At least three style-specific architectural details from the enhanced elements portion of the corresponding architectural style matrix as specified under each style found in Section 6.6 must be continued on all sides of multi-family buildings.

COMMUNITY-WIDE MULTI-FAMILY DESIGN PRINCIPLES

- Details must be selected from the matrix corresponding to the selected architectural style. It is not acceptable to apply details that are not style appropriate in an attempt to remedy a poorly designed facade.
- When multi-family product is alley-loaded, a sense of activity and "eyes-on" the alley is encouraged through outdoor living space in the form of second or third floor balconies.
- Garage doors are prohibited from facing the perimeter of the individual multi-family project.
- Detached garage units, when present, must be internal to the individual multi-family project in order to prevent the sense of a walled fortress with blank walls facing streets or other product types.

C. Mixed-Use Elements

Mixed-use projects will incorporate a variety of integrated architecture and planning elements to create an eclectic, vibrant, interactive area that draws not only the residents of the Plan Area, but also provides a destination for residents of surrounding neighborhoods as well.

- Plazas shall be integrated into building design and placed to allow for outdoor seating adjacent to cafés and restaurants.
- Judicious use of canopies and awnings is encouraged.
- Windows should be incorporated at the pedestrian level to promote a welcoming atmosphere.
- Access to units must be dedicated and separate from commercial/office uses (e.g., a single consolidated lobby entry or individual entry doors) with the exception of live-work units.
- The use of balconies and rooftop open space is encouraged.

MULTI-FAMILY DEVELOPMENT STANDARDS

6.5 MULTI-FAMILY DEVELOPMENT STANDARDS

MULTI-FAMILY RESIDENTIAL		
Basic Criteria		
Average Density (Net)		25 Units per Acre
Setbacks		
Minimum to Public Street or Property Line (Back of walk)	One-Story	5'
	Two-Story	10'
	Three-Story	10'
Minimum to Interior Street/Private Drive	One-Story	5'
	Two-Story	5'
	Three-Story	5'
Minimum Building to Building	One-Story	15'
	Two-Story	15'
	Three-Story	20'
Garage Setback from Public Street		18'
Maximum Building Height	This dimension includes the height of the building from finished grade to top of ridge for sloped roofs.	45' or Three-Story

MULTI-FAMILY RESIDENTIAL		
Site Characteristics		
Minimum Parking	Covered	1.5 Spaces per Unit
	Uncovered / Guest	1 Space per 15 Units
	Minimum Open Space per Unit	75 Square Feet for Patios or Balconies

Notes:

[1] *See Chapter 4: Landscape Design for landscape and lighting requirements.*

[2] *Multi-family projects require Planning Director Plan Review as specified in the New Brighton SPD Guidelines.*

[3] *All setbacks are minimum unless otherwise specified and apply to the entire building.*

MULTI-FAMILY DEVELOPMENT STANDARDS

RESIDENTIAL MIXED-USE		
Basic Criteria		
Average Density (Net)		30 Units per Acre
Setbacks		
Minimum to Public Street or Property Line (Back of walk)	One-Story	5'
	Two-Story	10'
	Three-Story	10'
Minimum to Interior Street/Private Drive	One-Story	5'
	Two-Story	5'
	Three-Story	5'
Minimum Building to Building	One-Story	15'
	Two-Story	15'
	Three-Story	20'
Garage Setback from Public Street		18'
Maximum Building Height	45'[1,2] or three-story. This dimension includes the height of the building from finished grade to top of ridge for sloped roofs.	
Site Characteristics		
Minimum Parking	Covered	1.5 Spaces per Unit
	Uncovered / Guest	1 Space per 15 Units
	Minimum Open Space per Unit	75 Square Feet for Patios or Balconies

Notes:

[1] *Mixed-use buildings are designed to a more pedestrian scale and may contain uses not typical to traditional commercial design. To this end, varying setbacks are encouraged to provide features such as courtyards, outdoor dining, and gathering spaces. See Chapter 4 of these PUD Guidelines.*

[2] *Landscape lighting and tower elements or other features may project higher than the maximum height by up to 10 feet, but for no more than 30 percent of any building frontage.*

[3] *Multi-family projects require Planning Director Plan Review as specified in the New Brighton SPD Guidelines.*

[4] *All setbacks are minimum unless otherwise specified and apply to the entire building.*

[5] *See Chapter 4: Landscape Design for landscape and lighting requirements.*

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6.6 Architectural Guidelines

The concept, inspiration, and vision for New Brighton are based on a unique and compelling design character derived from the timeless Park Neighborhoods of Sacramento: McKinley Park and East Sacramento, Land Park, Curtis Park, and Oak Park. With their iconic architecture, landmark community buildings, and tree-lined streets, these neighborhoods represent some of Sacramento's finest and most desirable neighborhoods.

These distinct neighborhoods can be grouped into the manor neighborhoods and the bungalow neighborhoods. The manor neighborhoods have grand stately homes representative of the more formal styles. Although there are certainly cottage and bungalow-scale homes in these neighborhoods, they are primarily characterized through larger estate homes. The bungalow neighborhoods are distinguished by their smaller scale, more modest and comfortable homes. Still with a great deal of detailing and charm, the neighborhoods are reminiscent of early twentieth century European and American architectural styles.

The Plan Area has examples of both the formal manor scale and the informal bungalow scale and recalls the sense of permanence and legacy found in these neighborhoods by employing similar street patterns, lot sizes, and open spaces. The thirteen distinctive architectural styles presented herein include the most prevalent historical architectural styles of these significant neighborhoods (listed to the right and organized into ten Primary Styles and three Secondary Styles).

When interspersed throughout the neighborhoods, this collection of architectural styles will create a diverse and eclectic streetscape through massing and form, material and color, and detailing. The variety of styles will energize and animate the streetscape, creating a dynamic and vibrant community.

Each style lends itself to a specific scale, which corresponds directly to an appropriate minimum lot size. The community offers a wide range of lot sizes; and, as such, the following table defines the appropriate applicable lot size for each architectural style. The architectural styles are broken

The American Farmhouse
The Colonial Revival
The Craftsman
The English Cottage
The French Cottage
The Italian Renaissance
The Monterey
The Prairie
The Spanish Eclectic
The Tudor Revival

• • • • •

The International
The Italianate
The Moderne

down into Primary Styles and Secondary Styles. The Primary Styles represent those that are most prevalent in the Park Neighborhoods of Sacramento and, likewise, should be most prevalent in the Plan Area. The Secondary Styles would have occurred later in the evolution of the neighborhoods and therefore are not as prevalent within the neighborhoods. As such, these styles will appear less often.

The following architectural guidelines define the history and intent of each style, identify key style elements, and provide a matrix that identifies the minimum elements required for each style along with applicable enhanced elements. Additionally, sketches of primary style elements and

LOT SIZE	PRIMARY STYLES										SECONDARY STYLES		
	AMERICAN FARMHOUSE	COLONIAL REVIVAL	CRAFTSMAN	ENGLISH COTTAGE	FRENCH COTTAGE	ITALIAN RENAISSANCE	MONTEREY	PRAIRIE	SPANISH ECLECTIC	TUDOR REVIVAL	INTERNATIONAL	ITALIANATE	MODERNE
>60’	●	●	●			●	●	●	●	●	●	●	●
60’	●	●	●			●	●	●	●	●	●	●	●
55’	●	●	●	●	●	●	●	●	●	●	●	●	●
50’	●	●	●	●	●	●	●	●	●	●	●	●	●
45’			●	●	●	●		●	●	●	●	●	●
40’			●	●	●	●		●	●	●	●	●	●
30’			●	●	●	●			●	●	●	●	●
Bungalow Courts			●	●	●				●				●
Manor Homes	●*	●*				●*	●*		●*	●*			
Row Homes and Multi-Family Attached	●	●				●	●		●	●		●	●

* *When utilized on attached building types, the entire building must be designed with the specified style such that the composition of details gives the appearance of one larger building or home as opposed to a series of individual residences.*

details and pictorial examples of both a historic and present day version of the style are represented. With the intent of creating authentic representations of these architectural styles, all of the minimum elements outlined on the style specific matrix are required along with three enhanced elements.

To further define the architecture of the Plan Area, the following statements apply to all styles herein:

- On styles utilizing stucco, smooth or imperfect smooth stucco is the only allowed finish (further defined per style on pages to follow).
- Manufactured stone must be applied authentically, wrapping outside corners and terminating at inside corners.
- All material changes must occur on an inside corner.
- No fascia gutter.
- No concrete rake tiles.
- Garage doors should complement architectural style.
- House lights should complement architectural style.
- When shutters are used, each shutter must be sized to one-half of entire adjacent window width.
- Builders may choose to incorporate one Secondary Architectural Style for inclusion in their Master Home Plan series; the remaining style offerings in the series must pull from the ten Primary Architectural Styles.

Each style section within this document is broken into four pages, each with a distinct purpose. The first page articulates the history of the architectural style as well as the intent of that style within the Plan Area. Additionally, this page offers a list of some of the elements that make the defined style distinctive. These elements draw from both the minimum and enhanced elements from the matrix found on the following page and are intended to be descriptive, rather than prescriptive, by conveying the essence of the style. The second page offers a matrix of the minimum and enhanced elements of each style and serves as the prescriptive requirements of the style. The third page graphically represents a selection of the key style elements described in the matrix. Finally, the last page offers details and vignettes as well as pictorial representations, both historical and present day, of well-executed examples of the style.

These guidelines are intended for the use of the City of Sacramento in approving builder projects within the Plan Area. Prior to municipality review, the developer's design review board will evaluate and approve each project.

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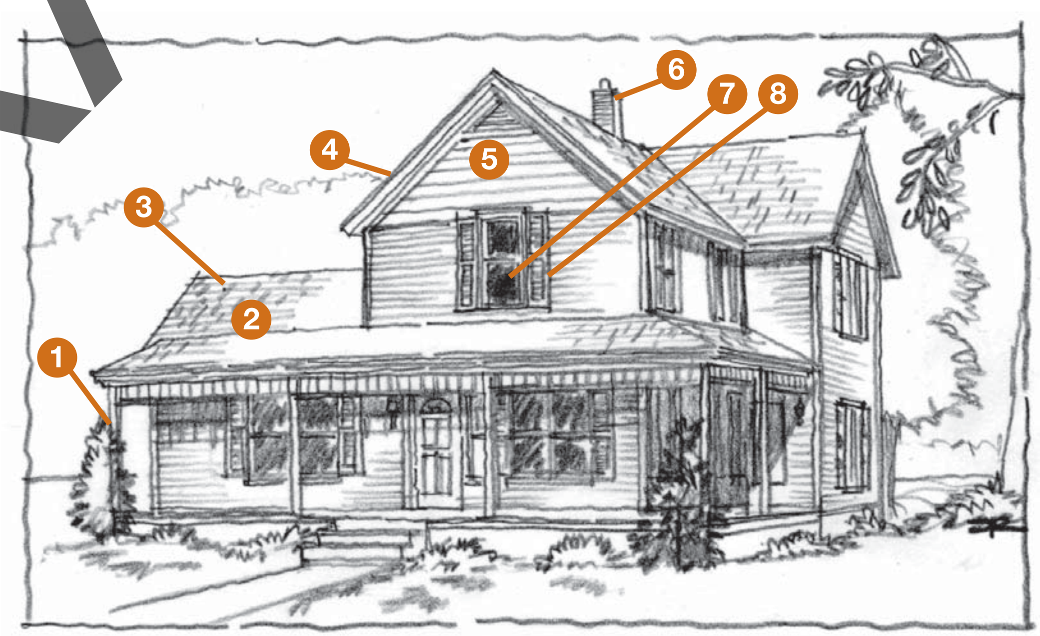
THE AMERICAN FARMHOUSE

DISTINCTIVE STYLE ELEMENTS	
1	Slender Porch Columns
2	Projecting Porch with Shed Roof
3	Rectangular, Cross Gabled Form
4	Dominant Gable Roof
5	Lap Siding
6	Brick Chimney
7	Single-Hung Windows
8	Louvered Shutters

HISTORY AND INTENT

In the Sacramento area, farmhouses were utilitarian housing for farmers settling in outlying areas of the region. They were typically wood frame with clapboard siding. These homes were simply detailed and understated and often evolved in size and form to reflect the success and size of the farming family. Although utilitarian in nature, the farmhouse also reflected the regional style of the time to the extent possible, sometimes emulating a higher style of architecture by borrowing details of widely accepted styles.

The intent of the American Farmhouse is to include a style that embraces the agrarian history of the region. The Farmhouse is a traditional, honest representation of the style with simple forms and detailing, lacking the highly stylized features of its Midwestern and East Coast counterparts.



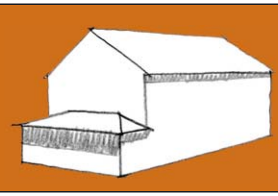
THE AMERICAN FARMHOUSE

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Rectangular, typically two-story. • Front, side, or cross gabled. • Symmetrical or asymmetrical. • Entry porch, very simple in form and detailing. • Porches project from the house rather than being incorporated into the primary massing.	• Two-story with opposing wings in larger homes. • One- or two-story wings and covered porches. • Form may reflect additions to original house. • Covered porches along entire facade or wrapping around corners, very simple in form and detailing. • Converted water tower as ancillary structure.
ROOF	• Dominate gable roof forms. • Roof pitch 6:12 to 10:12 with porches of lower profiles. • 6” to 12” overhangs. • Concrete shingles that are flat or resemble wood shake or composition asphalt shingles. • Tight wood fascias and rakes.	• Shed roof forms, reflecting additions to the original house. • Porch roofs of standing seam metal. • Roof dormers, shed or gabled, symmetrically organized. • Fascias and rakes may be box end soffit or open with exposed rafters and starter board. • Metal roofs.
WALLS	• Primary exterior material is lap siding with 6”-8” exposure. • Window and door trim, corner boards, starter boards, and vergeboards used as siding terminations.	• Lap siding with tighter exposure or shingles at accent areas. • Picket railings at porches in various styles. • Stone at raised foundation.
WINDOWS & DOORS	• Wood window and door trims. • Single-hung vertical windows with or without window grids.	• Enhanced (built-up) window trim.
DETAILS	• Verge rafters. • Trim at corner boards, verge boards, and starter boards. • Slender, unornamented square or round porch columns.	• Roof ornamentation such as cupolas, weather vanes, or dovecote accents. • Chimneys clad in stone, brick, or siding with basic rectilinear termination caps.

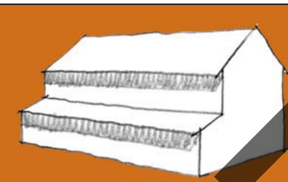
[1] *Minimum three enhanced elements per house are required.*

THE AMERICAN FARMHOUSE - STYLE ELEMENTS

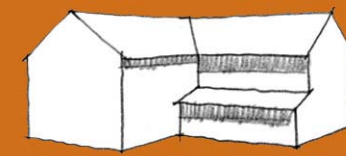
FORWARD GABLE



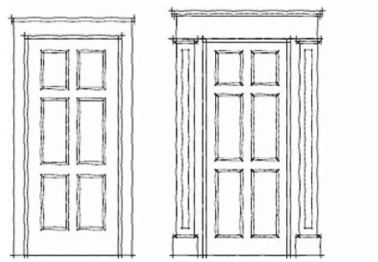
SIDE GABLE



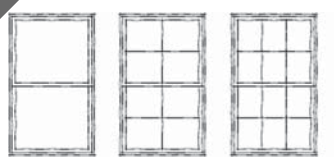
CROSS GABLE



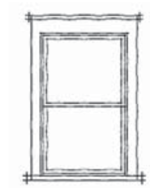
Entry Doors and Surrounds



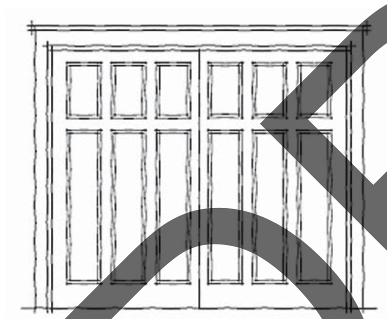
Window Patterns



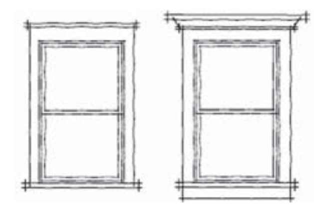
Window Groupings



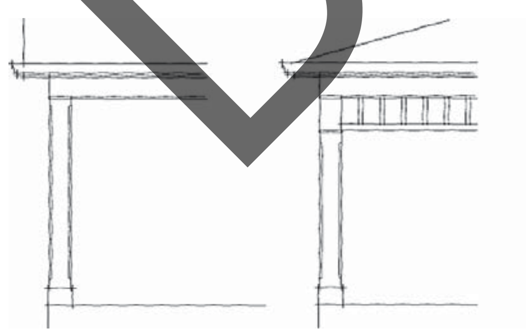
Garage Doors

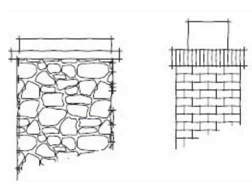


Window Surrounds

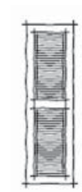


Porch Columns





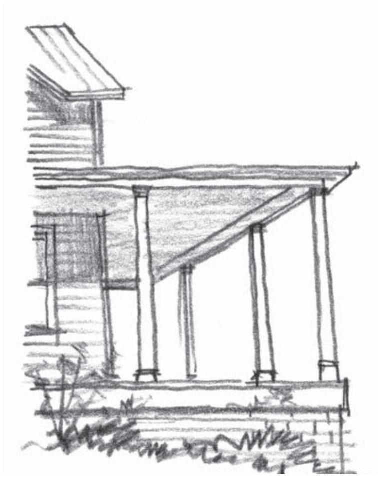
Chimneys



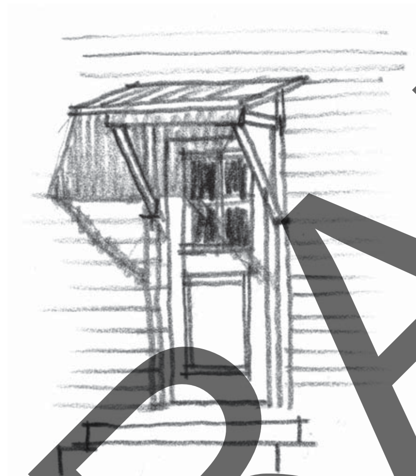
Shutters

THE AMERICAN FARMHOUSE

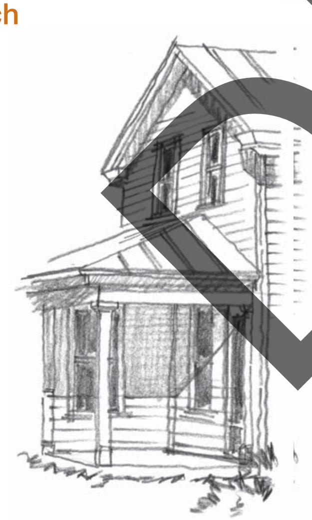
DETAILS



Raised Porch



Shed Roof at Door



Gable and Porch

PICTORIAL EXAMPLES

Historical Representation

Present Day Interpretation

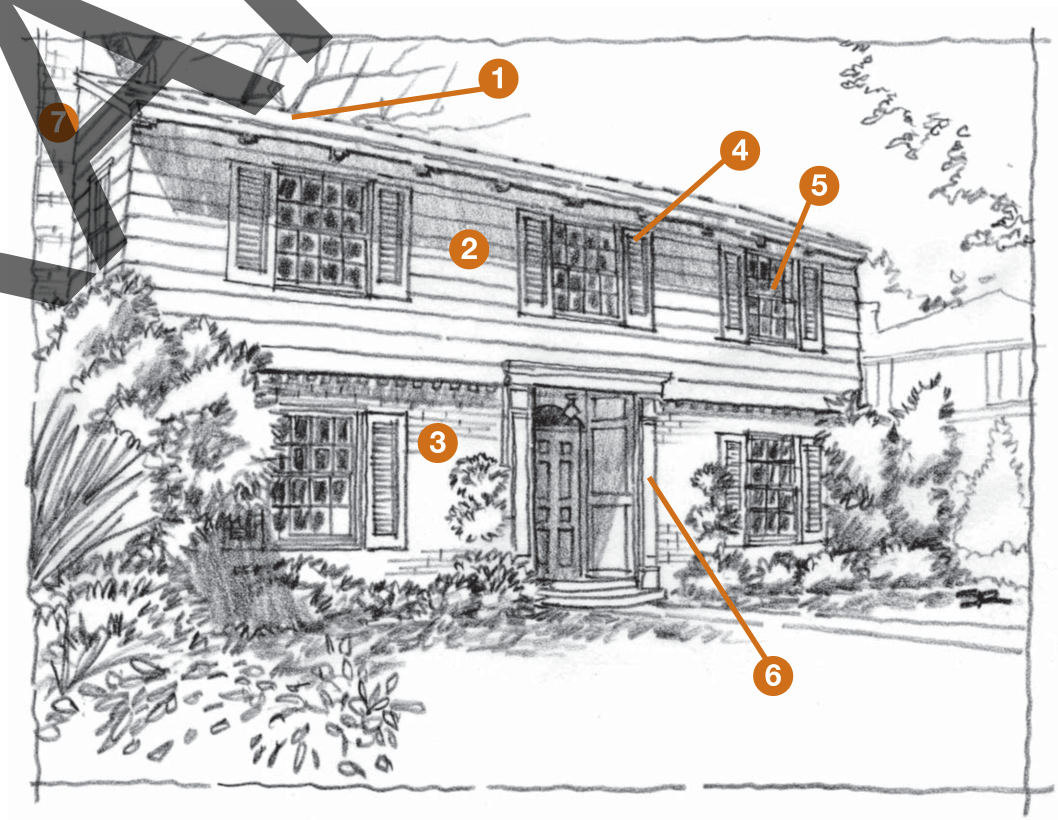
THE COLONIAL REVIVAL

Distinctive Style Elements	
1	Two-Story Side Gabled Rectangular Form
2	Lap Siding
3	Brick at First Floor
4	Louvered Shutters
5	Divided Light Windows
6	Pedimented Entry
7	Brick Chimney

HISTORY AND INTENT

In Sacramento, the Colonial Revival house falls into several categories. First, there are the modest single-story versions, generally known as Cape Cod cottages, with the addition of more formal Georgian or American Southern Colonial surface details. A two-story Dutch Colonial version was also popular in most Park Neighborhoods. The cottage forms are usually symmetrical in form, with wood siding (either lap siding or shingles) and shake or composition roofs. Entryways have modest facade-faced entablatures. Entry porches are always simple in form and articulation when they appear. Though Colonial Revival styles are quite common, especially the smaller cottage form, they are not as prevalent as the Tudor Cottage and Spanish Eclectic styles in Sacramento that reflect this city's more relaxed temperament and architectural preferences.

The intent of the Colonial Revival is to bring a formal, stately, and gracious presence to the community.



THE COLONIAL REVIVAL

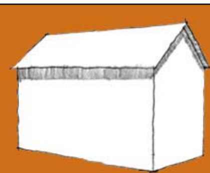
DRAFT

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Two-story, simple rectangular form. • Predominately side gable. • Symmetrically balanced windows and center door. • When present, small entry porch covering less than the full facade width. More typically, pedimented entry door surround is used.	• One-story, full-width porch with classical columns. • Doric columns at porch (singularly or paired) with capital and base. • Asymmetrical entry in larger examples. • One-story side wing, either open or enclosed, usually with a flat roof, but alternately with a shed roof.
ROOF	• Steeply pitched roof (6:12 to 10:12). • Composition shingle roof. • Principally side gable with variations such as center gable, cross gable, and hip. • Little or no overhang.	• Roof dormers. • Eave returns at gable ends. • Pilasters as building corners.
WALLS	• Predominately lap siding with 3”-6” exposure or shake (shingle) siding. • Smooth finish stucco.	• Brick. • Stone. • Siding or shake as accent at gable end.
WINDOWS & DOORS	• Windows with double-hung sashes, usually with divided lights (divided into six, eight, nine, or twelve panes). • Windows in adjacent pairs. • Window and door surrounds with projecting built-up head trim and projecting sills at windows. • Doors with overhead fanlights or sidelights. • Accentuated pedimented front door without supporting pilasters.	• Bay windows. • Triple windows. • Elliptical oculus window centered over entry door. • Windows with broken segmental or triangular pediments. • Accentuated pedimented front door supported by pilasters, or extended forward and supported by slender columns to form an entry porch.
DETAILS	• Massive central chimney or gable end chimney(s). • Ogee gutter as part of eave detail. • Cornice at roof line.	• Louvered shutters. (Each shutter must be sized to one-half of entire adjacent window width.) • Horizontal banding on two-story homes as a defining line between first and second story. • Dentil frieze. • Roof and/or upper porch balustrades. • Leader heads at downspouts.

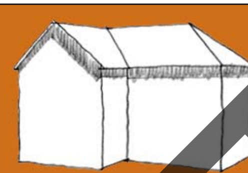
[1] *Minimum three enhanced elements per house are required.*

THE COLONIAL REVIVAL

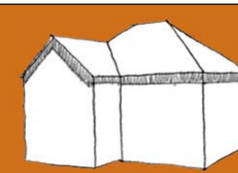
SIDE GABLE



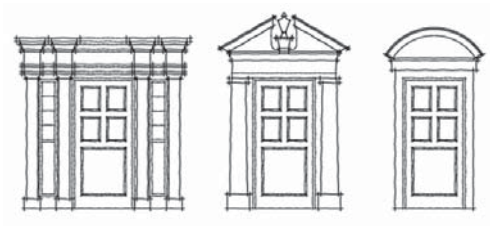
CROSS GABLE

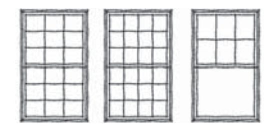


ASYMMETRICAL GABLE

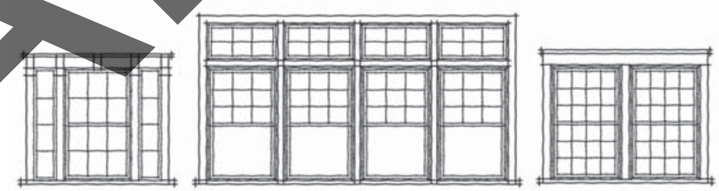


Entry Doors and Surrounds



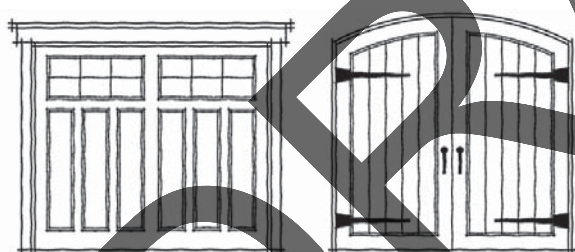


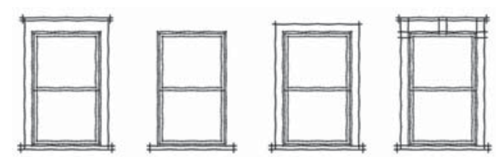
Window Patterns



Window Groupings

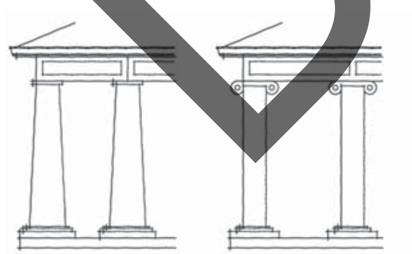
Garage Doors

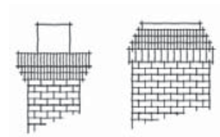




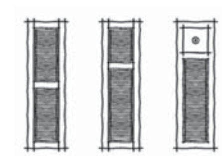
Window Surrounds

Porch Columns





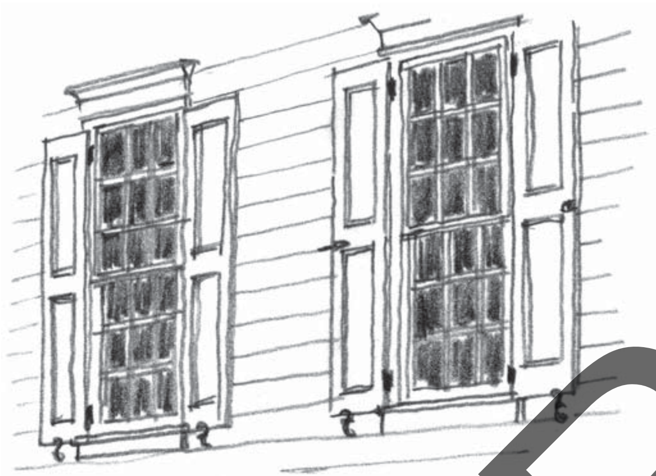
Chimneys



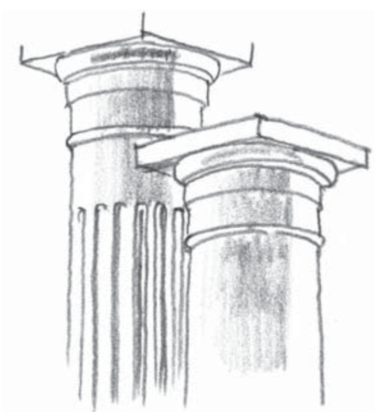
Shutters

THE COLONIAL REVIVAL

DETAILS



Window Surround and Shutters



Colonial Columns

Broken Pediment at Entry

PICTORIAL EXAMPLES

Historical Representation

Present Day Interpretation

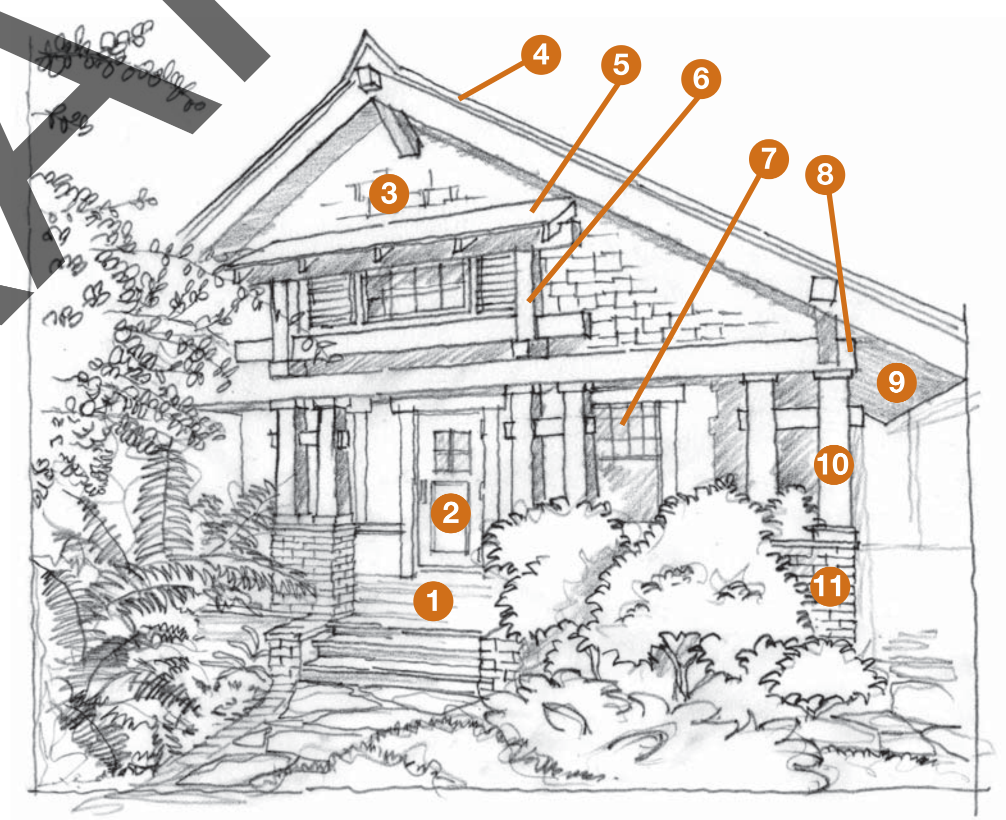
THE CRAFTSMAN

Distinctive Style Elements			
1	Deep Recessed Porch	7	Decorative Window Patterns
2	Wide Entry Door	8	Knee Braces
3	Shingle Siding	9	Wide Overhangs
4	Gable Roof	10	Decorative Porch Columns
5	Gable Ornamentation	11	Masonry Column Base
6	Gable Vents		

HISTORY AND INTENT

The Arts and Crafts bungalow was an enormously influential form and style of architecture in Sacramento between 1906 and 1918, the first truly American vernacular style. The bungalow broke with earlier formal Victorian spatial arrangements and changed the way that families lived in and related to their houses. Architecturally, the Craftsman bungalow was designed to achieve harmony between the house and its landscape, to get as close as possible to nature. A Craftsman bungalow has many of the hallmarks of the Arts and Crafts aesthetic: clinker brick, carved rafter tails, a mixture of cladding (brick, clapboard, tile, and shingle), and oversized eave brackets painted in colors of nature.

The intent of the Craftsman style within the Plan Area is to recall the comfortable and welcoming nature of the Craftsman bungalows found in the Park Neighborhoods of Sacramento. These homes reflect a sense of permanence that only craftsmanship and careful design can convey.



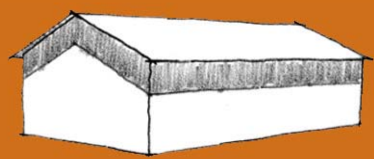
THE CRAFTSMAN

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Simple massing on one to one-and-a-half stories, front or side gabled. • Symmetrical or asymmetrical form. • Deep front entry porch. • Stylized column and beam detailing at porches.	• Cross-gabled massing. • Two stories with a combination of one- and two-story elements. • Full width, deep porch at entry.
ROOF	• Low-pitched roofs with large overhanging eaves,emphasizing horizontal planes. • 4:12 to 6:12 roof pitch. • 16” to 24” overhangs. • Flat concrete tile with a shingle appearance or composition shingle.	• Varied porch roofs, shed or gabled. • Cascading (multiple) gables. • Roof dormers (shed or gable form). • 24” to 36” overhangs. • Extended and shaped barge rafters. • Exposed rafter tails at eaves.
WALLS	• Exterior wall materials with combinations of wood shingles, horizontal siding, board and batten, and stucco. • Foundation or wainscot using stone or brick.	• Stone, brick, or combination chimneys. • Eliminate stucco as a wall treatment. • Battered (tapered) stone foundation or wainscot.
WINDOWS & DOORS	• Single-hung windows at front elevations. • Divided light windows with wood trim. • Use windows individually or in groups (typically two or three). • Doors with full surrounds. • Windows with full surrounds and a projected sill/apron.	• Casement windows. • Three or more windows in a “ribbon.” • Grouped windows with a high transom. • Wide wood entry door with integrated glass. • Wood door and window surrounds.
DETAILS	• Entry porches with columns resting on larger pier or bases. • Porch rails of repeated vertical elements. • Wood brackets or knee braces. • Surface-mounted fixtures on front elevations must complement architectural style. • Garage door patterns and lights to complement the architectural style.	• Entry porch columns consist of single or multiple wood posts with battered brick or stone pier or base. • Porch rails comprised of decoratively cut boards that create a pattern. • Additional “stick-work” in gable ends. • Typical downspouts replaced with “rain chains.” • Open eave overhangs with shaped rafter tails. • Decorative ridge beams, outlookers, and purlins. • Porte-cochère, pergola, or trellis that continues, or is integrated with, the front porch.

[1] *Minimum three enhanced elements per house are required.*

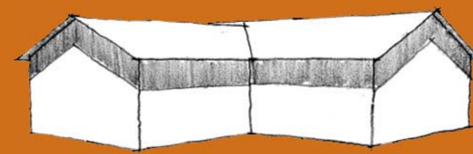
THE CRAFTSMAN

FORWARD GABLE

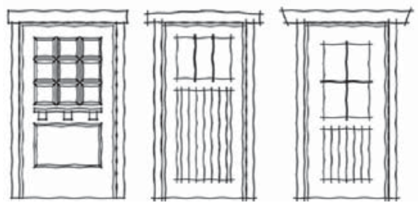


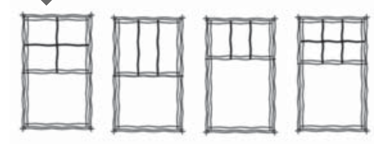
SIDE GABLE

CROSS GABLE

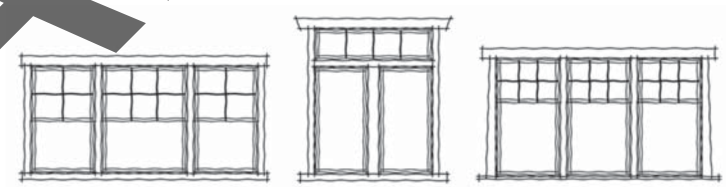


Entry Doors and Surrounds



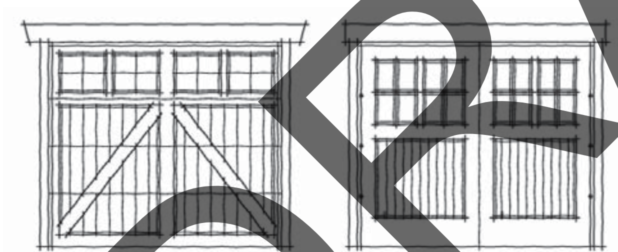


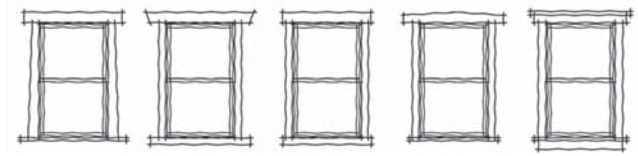
Window Patterns



Window Groupings

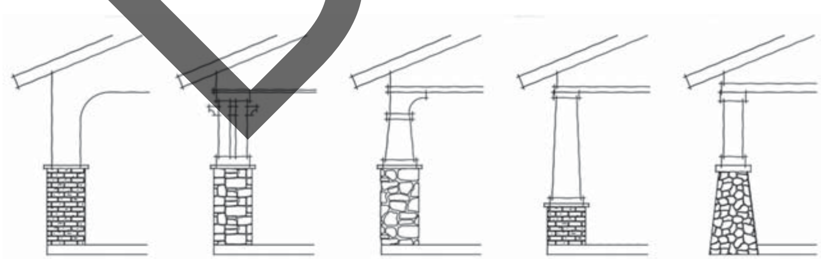
Garage Doors





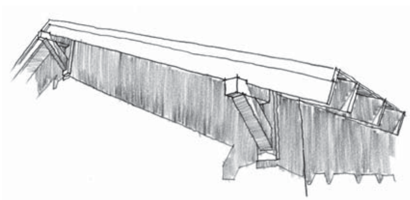
Window Surrounds

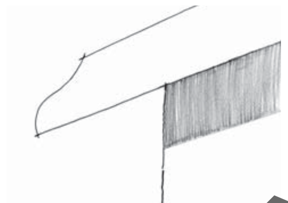
Porch Columns

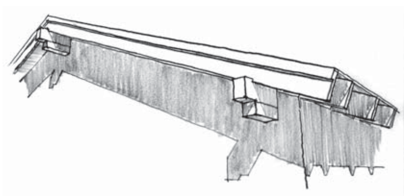


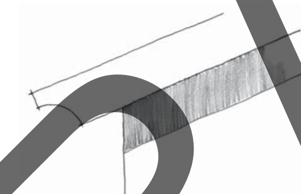
Chimneys

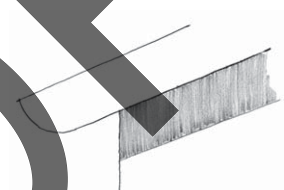
DETAILS

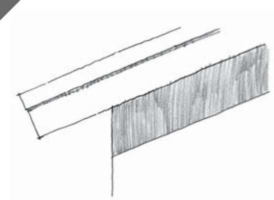

Gable with Knee Brace Detail


Fancy Cut Rafter


Gable with Outlooker Detail


Quarter Round Cut Rafter


Round Cut Rafter


Square Cut Rafter

PICTORIAL EXAMPLES


Historical Representation


Present Day Interpretation

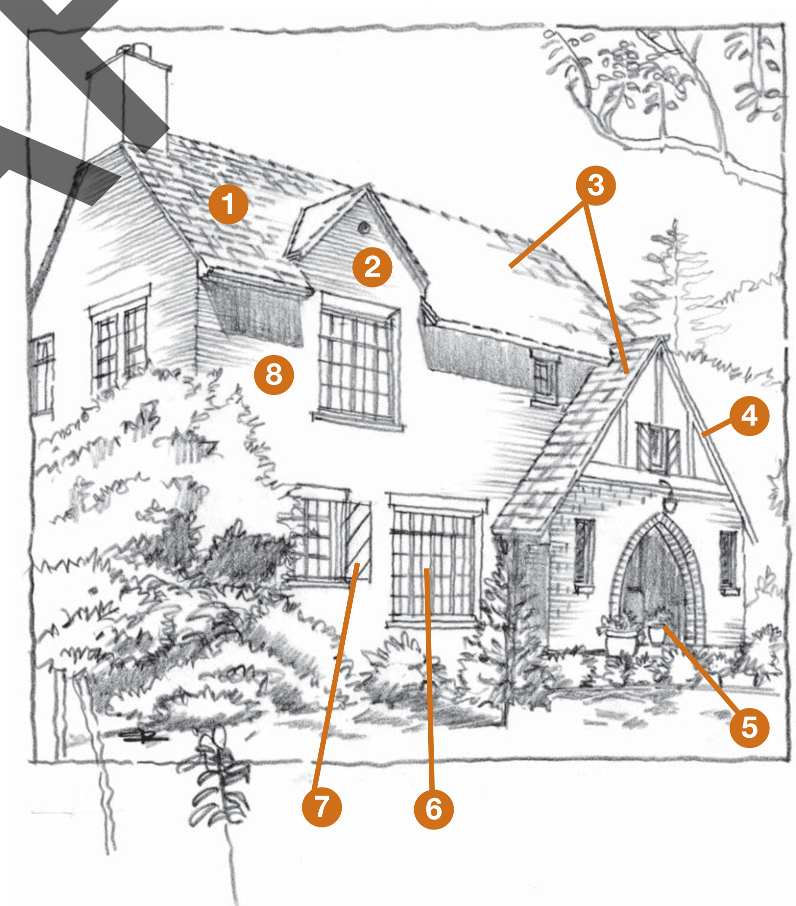
THE ENGLISH COTTAGE

Distinctive Style Elements			
1	Steeply Pitched Main Roof	5	Deeply Recessed Entry
2	Dormer	6	Divided Light Windows
3	Asymmetrical Massing	7	Diagonal Plank Shutters
4	Dominant Steeply Pitched Facade Element	8	Brick

HISTORY AND INTENT

The English Cottage is a romantic, informal, country style that followed the soldiers home from Europe, where they became enchanted with the picturesque villages, after World War I. The whimsical cottage styles of Sacramento's Park Neighborhoods added to the eclectic atmosphere of the new communities, building a storybook community with an inviting and friendly sense of place. The origins of this style are rooted in the English Renaissance homes of the 16th and 17th centuries found in the rural countryside of England.

The English Cottage will create continuity between the historic park neighborhoods and the Plan Area, adding whimsy and romanticism to the new neighborhood. The design of the English Cottage should present an ornate focal point, with the balance of the architecture retaining simplicity in design so as to not create a contrived veneer, but rather an authentic updating of the classic style.

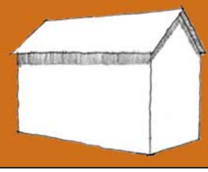


STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• One- and two-story. • Dominant facade element is a steeply pitched forward gable with combinations of hip roofs. • Dominant front-facing gable usually incorporates a deeply recessed entry door. • Asymmetrical massing and proportions.	• Bell-cast eaves. • Variety of dormer styles where appropriate. • Massive chimney, usually integrated with the dominant gable.
ROOF	• Steeply pitched roof (minimum 10:12 for the dominant gable, 8:12-14:12 for secondary roof elements). • Composition or flat tile (not of concrete) roofs mimicking slate or thatch in form and color. Alternatives to tile that mimic shake are encouraged. • Where tile is used, utilize a raised barge to eliminate rake tile. • Gables with a tight rake (4” max). • Eaves can be broader (up to 12”).	• Composition roofing materials rolled around eaves and rakes to suggest a thatched roof. • Ornamented barge boards.
WALLS	• Imperfect smooth stucco, lap siding, masonry/brick, stone, or any combination thereof. • Material transitions may only occur at floor line breaks (i.e., at line between first and second floor). Wainscots or partial elements are not acceptable.	• Horizontal siding accents at gables and single massing elements. • Masonry as an entire massing element (i.e., chimney, gable end, etc.).
WINDOWS & DOORS	• Divided lights common on all windows. • Vertical windows, in groupings of twos to fives. • Head and sill trim used but rarely at jambs. • Entry doors accented by trim surrounds. • Arched entry door of carved wood.	• Soft arch windows. • Recessed windows. • Oriel accent windows. • Casement windows. • Mulled window groupings.
DETAILS	• Stone elements that mimic “built-over-time” architecture, such as combining stone with brick at building elements. (Stone scattered over stucco to mimic building age is not appropriate.)	• Shutters (each shutter must be sized to one-half of entire adjacent window width). • Exposed accent wood timbers and beams. • Cast concrete door surrounds, window trim accents, and/or lentils.

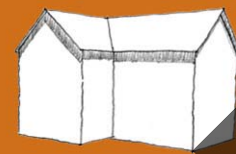
[1] *Minimum three enhanced elements per house are required.*

THE ENGLISH COTTAGE

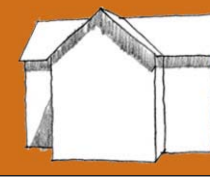
SIDE GABLE



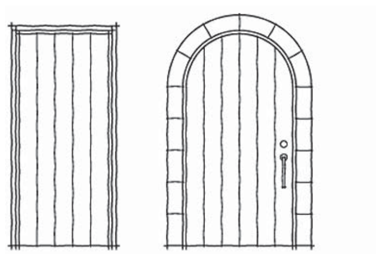
CROSS GABLE

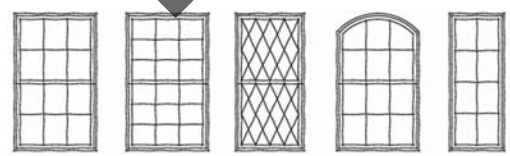


CENTER GABLE

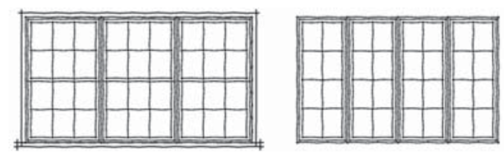


Entry Doors and Surrounds



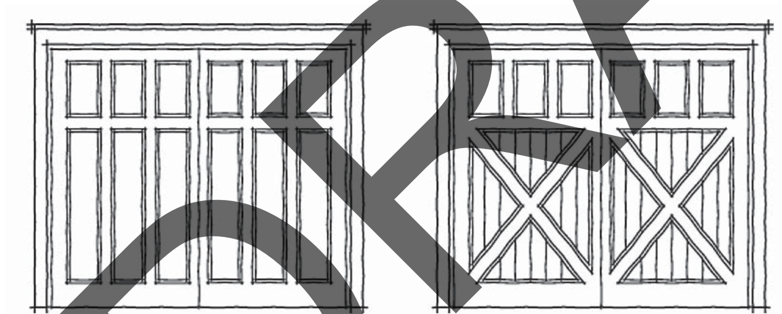


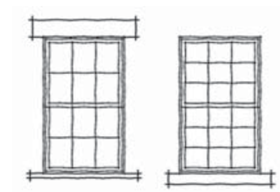
Window Patterns



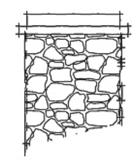
Window Groupings

Garage Doors

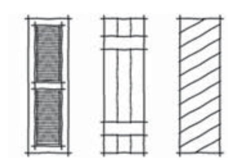




Window Surrounds



Chimneys



Shutters

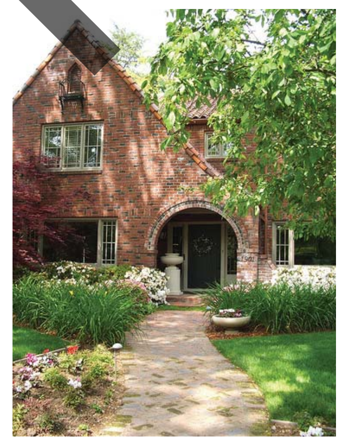
THE ENGLISH COTTAGE

DETAILS

Deep Recessed Entry

Window with Shutters
and Planter Box

PICTORIAL EXAMPLES



Historical Representation

Present Day Interpretation

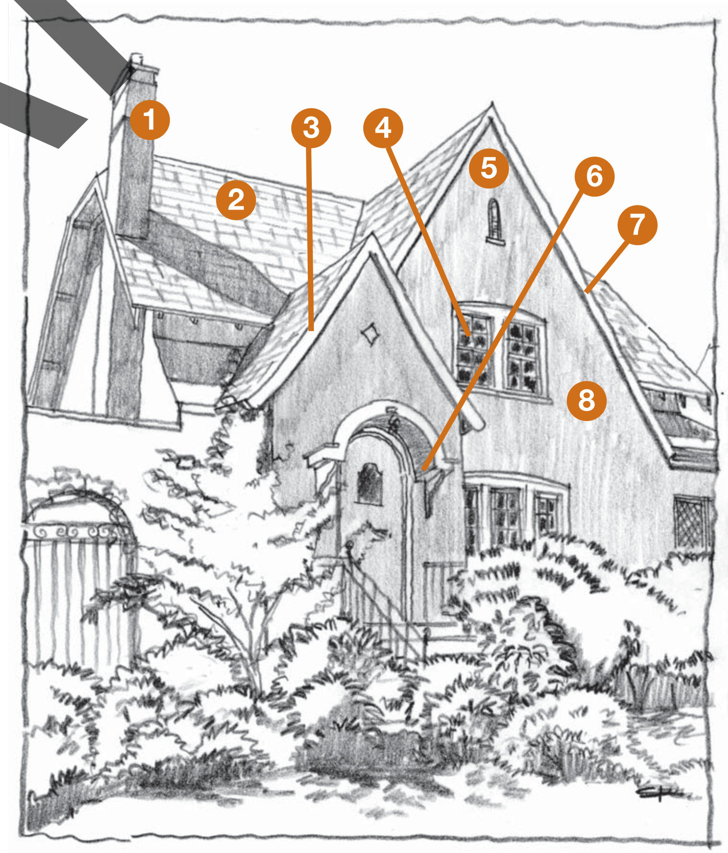
THE FRENCH COTTAGE

HISTORY AND INTENT

The French Cottage is cozy, charming, and understated, more refined and sophisticated than the English Cottage yet still picturesque, recalling a storybook village. As with the English Cottage, the French Cottage is reminiscent of the European villages visited by the soldiers in World War I, and returned to the States with them. The Sacramento Park Neighborhoods are peppered with quaint examples, adding to the eclectic streetscape that is so admired.

This project aims to bring that nostalgic streetscape character to the next generation of Sacramento neighborhoods through a simple and idyllic representation of the French Cottage. This style is less rustic than its English counterpart, with an emphasis on more refined stucco and masonry applications.

Distinctive Style Elements			
1	Chimney as Vertical Element	5	Steeply Pitched Forward Gable
2	Hipped Gable as Dominant Roof Form	6	Recessed Covered Entry Door
3	Bell Cast Eave	7	Tight Gable Overhangs
4	Divided Light Windows	8	Imperfect Smooth Stucco



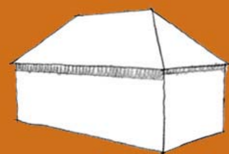
THE FRENCH COTTAGE

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• One- or two-story. • Asymmetrical massing with steep hip roofs. • Deep recessed entry door.	• Asymmetrical gabled projection with bellcast eaves and sculpted stucco walls. • Turret element.
ROOF	• Steeply pitched roof (8:12 to 12:12). • Hip roof as dominant roof form, although gables can be introduced as accent elements. • Prominent dormers in a variety of forms: shed, hip, or gabled. • Tight gable overhangs (4" max) with slender, understated fascias (4" max). Eave overhangs can be broader (12" to 24") with a thin, crisp fascia line. • Composition shingle roofing.	• Hipped gables. • Eyebrow dormers. • Hip roof with engaged wall dormers. • Bell cast or flared eaves. • Composition roofing materials rolled around eaves and rakes to suggest a thatched roof. • Slate or material mimicking slate.
WALLS	• Smooth or imperfect smooth stucco or cement plaster as primary exterior finish material with stone or brick as accent materials. (Stone or brick scattered over stucco to mimic building age is not appropriate.)	• Smooth or imperfect smooth stucco, brick, or stone exterior material combinations with wood siding accents. • Painted brick.
WINDOWS & DOORS	• Casement and single-hung windows, arched accent windows enhanced with divided lights. • Traditional wood window head, jamb, and sill trims. • Tall window and/or French door assemblies in the front elevation. • Heavy wood paneled arched entry doors with metal detailing. • Arched entryways.	• Windows with wood planter boxes or embellished plant shelf details. • Round or oval accent windows. Accent windows may also be arched, flanked with arched wood shutters. (Each shutter must be sized to one-half of entire adjacent window width.) • Brick or stone window and door surrounds. • Balcony or windows with decorative metal railings and French doors.
DETAILS	• Chimney.	• Stone elements that mimic "built-over-time" architecture. (Stone or brick scattered over stucco to mimic building age is not appropriate.) • Copper detailing (i.e., dormer roof). • Brick or stone detailed chimney. • Heavy timber post and beam construction. • Recessed gable vents. • Leader heads at downspouts.

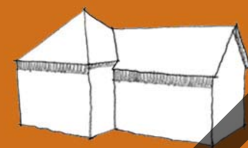
[1] *Minimum three enhanced elements per house are required.*

THE FRENCH COTTAGE

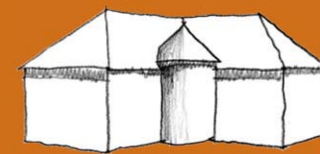
SYMMETRICAL HIP



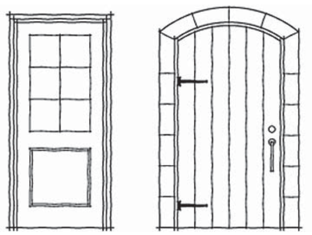
ASYMMETRICAL



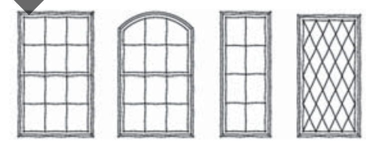
TOWERED



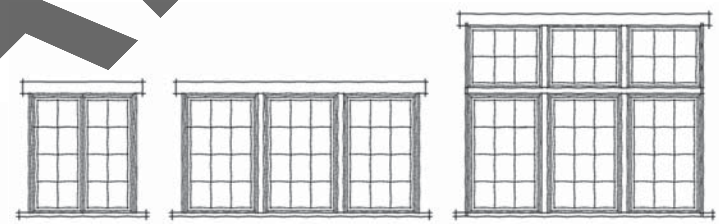
Entry Doors and Surrounds



Window Patterns

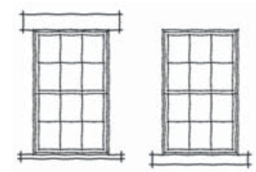


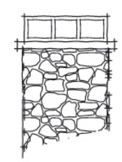
Window Groupings



Garage Doors

Window Surrounds



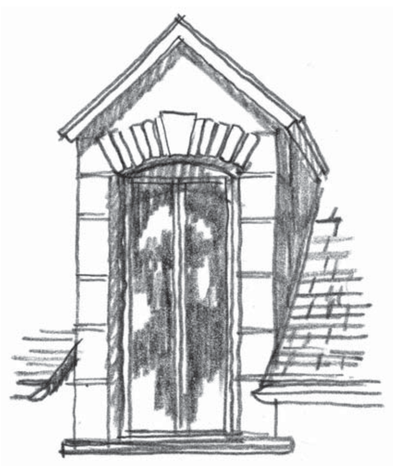


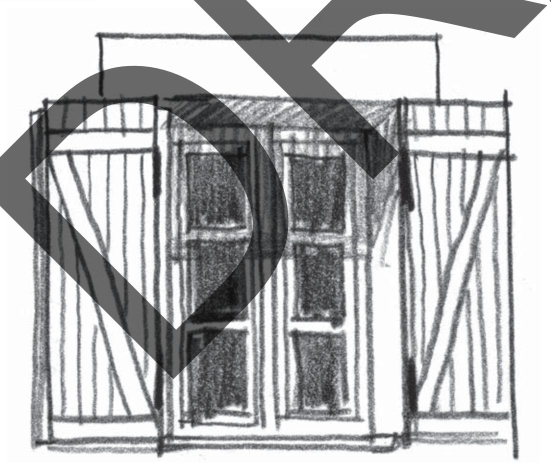
Chimneys

Shutters

THE FRENCH COTTAGE

DETAILS


Dormer


Recessed Window with Shutters

PICTORIAL EXAMPLES


Historical Representation


Present Day Interpretation

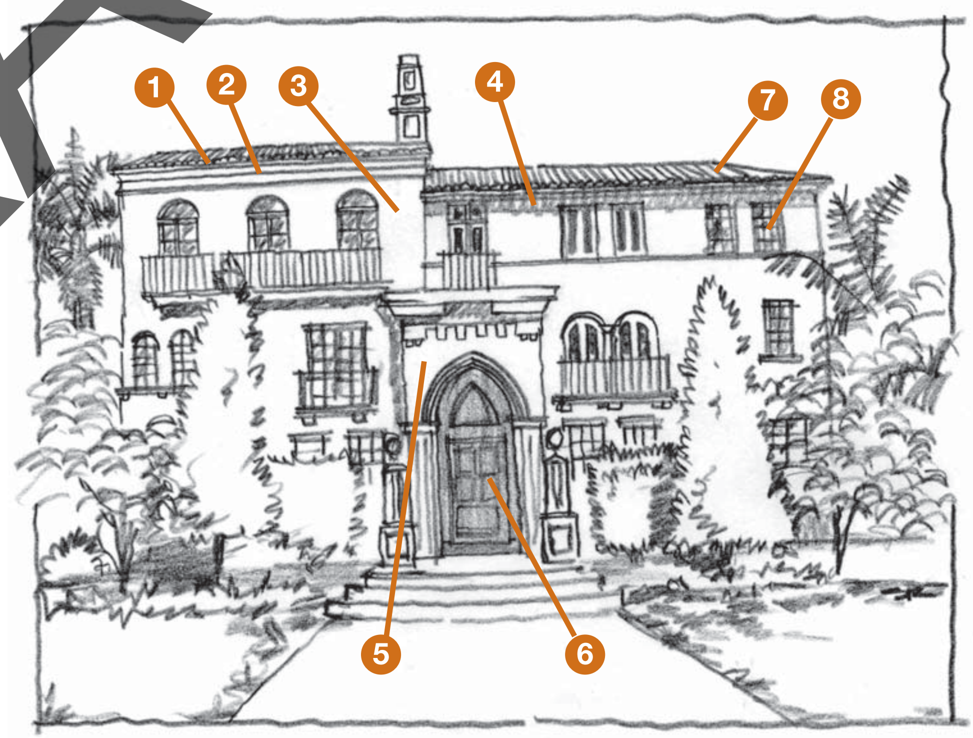
THE ITALIAN RENAISSANCE

HISTORY AND INTENT

The Italian Renaissance style was borne of the emergence of world travel in the late 1800's; with the ability to travel to Italy, Americans experienced the authentic architecture first hand, and the style gained popularity. The Italian Renaissance house type is less common to Sacramento and is generally found in the prestigious neighborhoods built as larger two-story houses. Local examples show restraint on simple symmetrical facades.

The Italian Renaissance style is intended to complement the community with the romantic flavor of the Mediterranean. Being more formal and vertical in nature, the Italian Renaissance style adds attractive contrast and an enhanced skyline, or "roof bounce," effect to the neighborhood.

Distinctive Style Elements			
1	Three-Story Form	5	Elaborate Entry Surround
2	Decorative Frieze	6	Recessed Entry Door
3	Smooth Stucco	7	Low Pitched Roof
4	Barrel Tile	8	Smaller Windows on Upper Floors



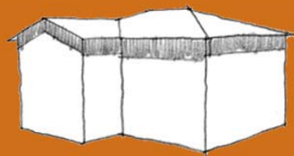
THE ITALIAN RENAISSANCE

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Two- or three-story forms. • Simple hipped roof with a flat, symmetrical front facade.	• Full-width loggia with a formal and elegantly detailed colonnade.
ROOF	• Low pitched roof (4:12 to 5:12). • Simple hipped roof. • Broadly overhanging (24" min), boxed eaves with brackets. • Barrel or S-shaped concrete tiles.	• Decorative brackets at eaves. • Hipped roof with single-story projecting wings (i.e., porte-cochère or sunroom). • Decorative frieze.
WALLS	• Smooth stucco.	• Masonry walls (typically yellow brick rather than red). • Horizontal rusticated base of stone or masonry.
WINDOWS & DOORS	• Formal window arrangement across full facade. • Symmetrical placement of windows. • Smaller windows on upper floors. • Classical door surrounds.	• Full-length first-story windows with arches above. • Palladian window arrangements. • Precast concrete door and window surrounds. • Pedimented door surround with columns. • Arched entry door.
DETAILS	• Belt course to accentuate horizontal emphasis of design.	• Roof-line balustrades. • Molded cornices. • Bracketed window cornices. • Pedimented windows. • Precast concrete belt course.

[1] *Minimum three enhanced elements per house are required.*

THE ITALIAN RENAISSANCE

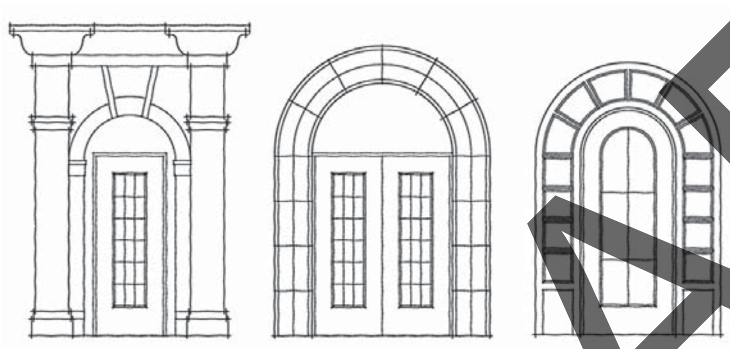
ASYMMETRICAL

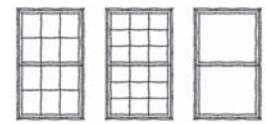


SIMPLE HIP

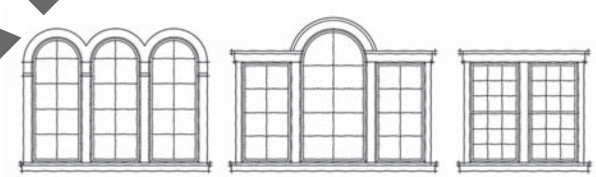
HIP WITH WINGS

Entry Doors and Surrounds



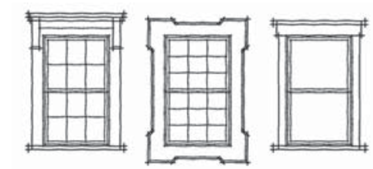


Window Patterns



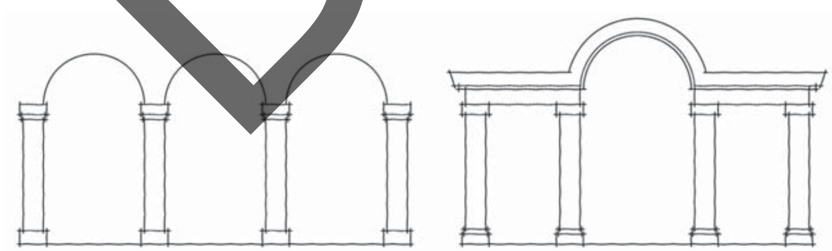
Window Groupings

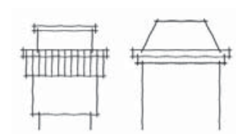
Garage Doors



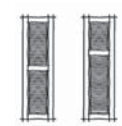
Window Surrounds

Porch Columns





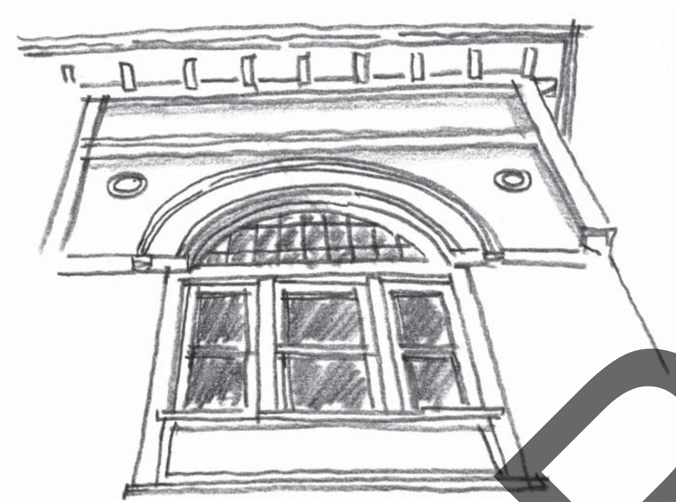
Chimneys



Shutters

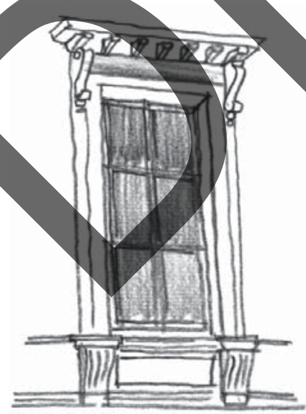
THE ITALIAN RENAISSANCE

DETAILS



Window Grouping with Bracketed Eave

Door Surround



Window Surround

PICTORIAL EXAMPLES

Historical Representation

Present Day Interpretation

Multifamily Interpretation

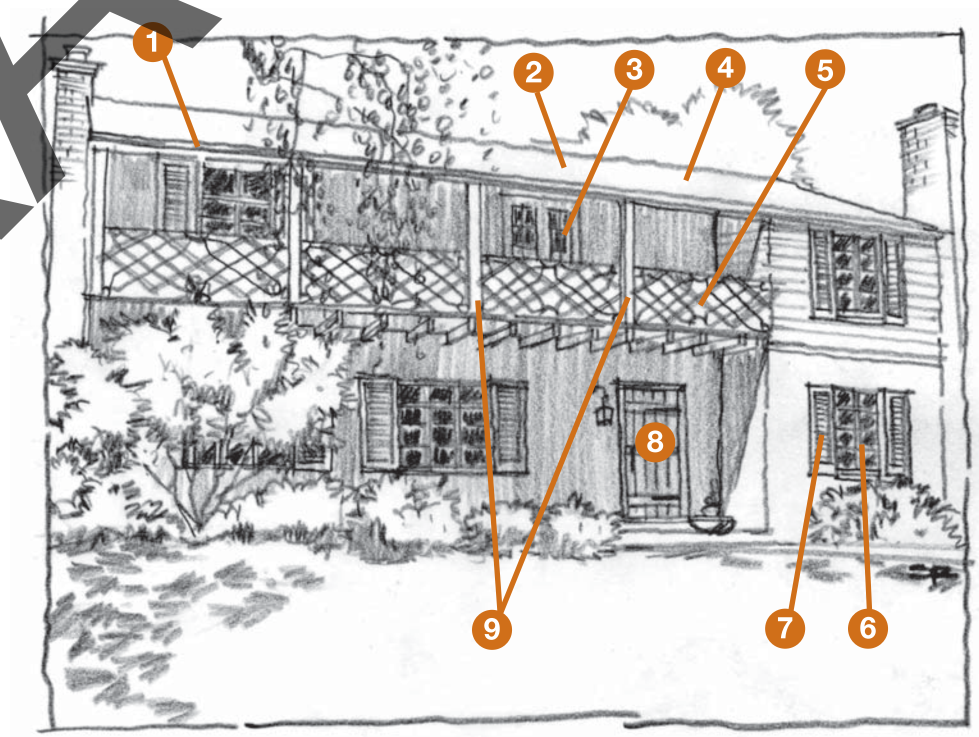
THE MONTEREY

HISTORY AND INTENT

The Monterey style blends the Hispanic cultures of original California residents with the influences brought to the west by the first European settlers. These homes are a juxtaposition of local indigenous materials with colonial detailing applied. The dominant feature of the Monterey style is the always present upper-story balcony element, which is contained within the principal roof form and cantilevered. The balcony is of heavy timbered construction, defining the structure.

The Monterey style is a direct link to the colonial heritage of California. These homes will be found on the larger lot sizes of the community, to provide an authentic representation of the style and its horizontal nature.

Distinctive Style Elements			
1	Thin Eaves	6	Vertical Divided Light Windows
2	Low Pitched Roof	7	Louvered Shutters
3	French Doors Accessing Balcony	8	Rustic Plank Entry Door
4	Two-Story Rectangular Form	9	Decorative Posts and Beams at Cantilever
5	Cantilevered Second-Story Balcony		



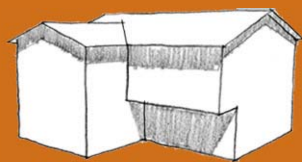
THE MONTEREY

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Two-story, rectangular form. • Principal side gabled roof. • Cantilevered second-story balcony covered by principal roof.	• L-shaped form with front-facing cross gable.
ROOF	• Low-pitched gabled roofs (4:12 to 5:12). • Slate-look tile roof. • 12" to 16" overhangs. • Exposed rafter tails. • Thin eaves with either a half-round or ogee gutter.	• S-tile roof.
WALLS	• Smooth or imperfect smooth stucco is the dominant exterior finish.	• Brick at first floor that may be painted. • Horizontal wood siding at the upper floor. • Thickened walls.
WINDOWS & DOORS	• Paired windows in groups of twos or threes. • Tall vertical windows. • At least one pair of French doors accessing the balcony. • Rustic plank wood entry door.	• First floor arched picture window at cross gable.
DETAILS	• Fixed panel or louvered wood shutters. (Each shutter must be sized to one-half of entire adjacent window width.) • Wood railing at balcony to match posts and beams.	• Exposed decorative wood elements at balconies. • Ornate wrought iron railing at balcony.

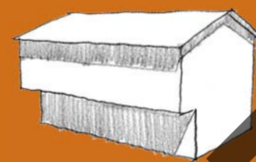
[1] *Minimum three enhanced elements per house are required.*

THE MONTEREY

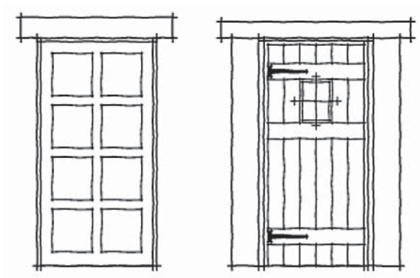
CROSS GABLE



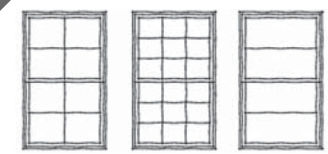
SIDE GABLE



Entry Doors and Surrounds

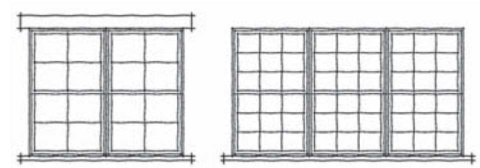


Window Patterns

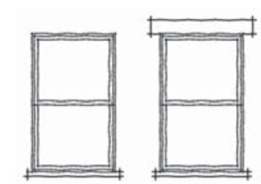


Garage Doors

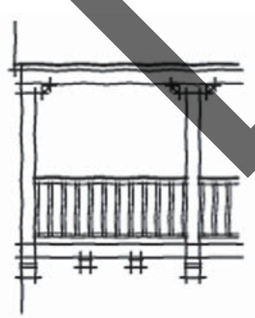
Window Groupings

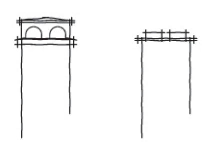


Window Surrounds

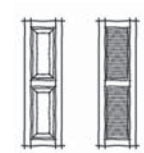


Porch Columns





Chimneys

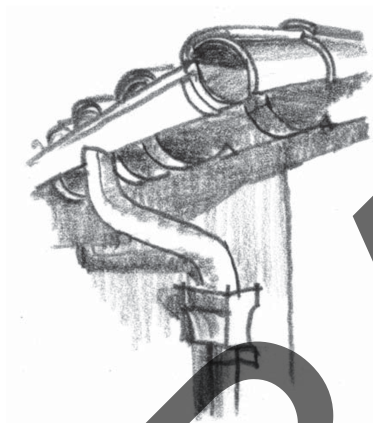


Shutters

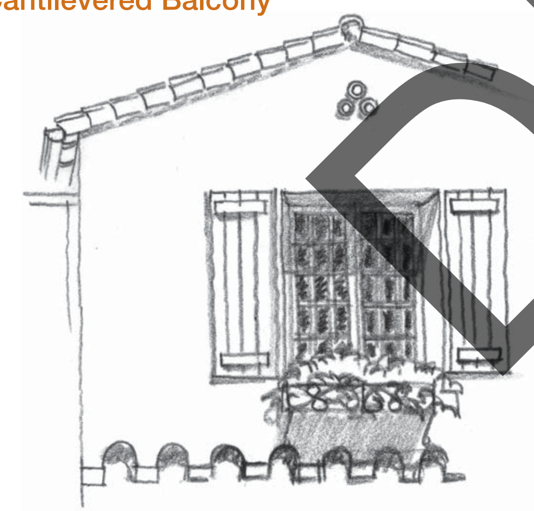
THE MONTEREY

DETAILS

Cantilevered Balcony



Rafter Tail and Downspout



Gable with Canales, Shutters, and Deep Recess

PICTORIAL EXAMPLES

Historical Representation

Present Day Interpretation

Multifamily Interpretation

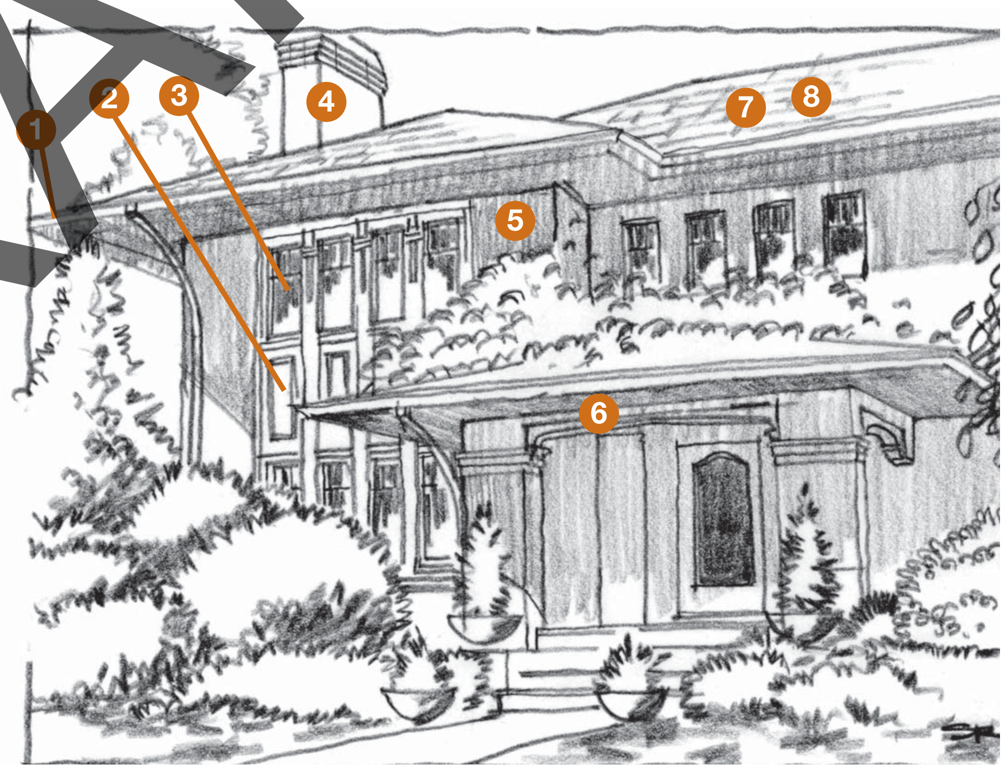
THE PRAIRIE

Distinctive Style Elements			
1	Long Soffited Eave Overhangs	5	Smooth Stucco
2	Panels Connect Upper and Lower Window Groupings	6	Raised Porch Extending from Main Building Form
3	Square or Rectangular Windows with Divided Lights	7	Two-Story Horizontal Massing
4	Massive Chimney Form	8	Low Pitched Roof

HISTORY AND INTENT

The Prairie style was borne of the Chicago Prairie School movement. The style is organic in nature, integrated with the land, using natural materials and abstracted nature forms. The Prairie emphasizes the integration of indoor and outdoor areas. Its trademark wide overhangs, appropriate for the Sacramento climate, typically identify the style. Although not as prevalent in the area as the Craftsman style, Sacramento Prairie homes are very distinctive and add a strong horizontal presence to the community.

The Prairie is found on the larger lots of the community, allowing room for the home to integrate with the land and create the horizontal lines so definitive of the style.



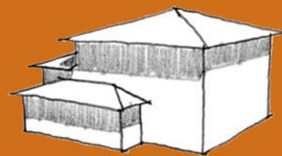
THE PRAIRIE

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• One- or two-story with horizontal massing. • Secondary masses perpendicular to the primary forms.	• Porte-cocheres (where applicable) and raised porches extending out from the entry of the home. • Accentuated horizontal base extending out as a site or planter wall.
ROOF	• Long, horizontal low-pitched hip roofs with large overhanging eaves, emphasizing horizontal planes (3.5:12 to 4:12 roof pitch). • 36" minimum overhangs. • Gable roof forms are also appropriate. • Flat concrete tile with a shingle appearance.	• Terraces covered by primary roof form with massive rectilinear stone piers for roof support.
WALLS	• Smooth stucco in combination with ledge stone or masonry wainscot base. • Ledge stone used as post bases and fireplaces only.	• Extensive use of brick or ledge stone, used to emphasize the horizontal planes, with struck horizontal grout joints. • Cement plank lap siding is found in some examples.
WINDOWS & DOORS	• Square or rectangular windows with custom divided lights. • Grouping and arrangement of windows should emphasize the geometry of the elevation. • Ribbons of windows under deep roof overhangs. • Wood window and door trim.	• Clerestory windows. • Leaded glass inserts at entry.
DETAILS	• Massive chimney forms, wrapped in stone or brick. • Ornamental railings and gates. • Wood beams and brackets.	• Metal or wood fascia. • Carpenter detailing. • Style-specific unique lighting fixtures. • Low garden walls to enclose and frame outdoor living spaces.

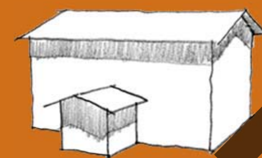
[1] *Minimum three enhanced elements per house are required.*

THE PRAIRIE

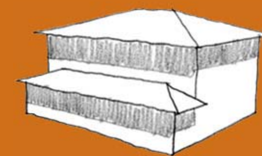
ASYMMETRICAL HIP



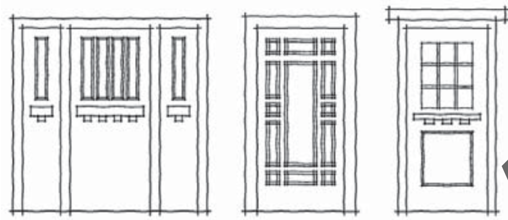
SIDE GABLE



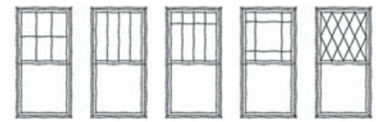
HIP WITH FRONT ENTRY



Entry Doors and Surrounds

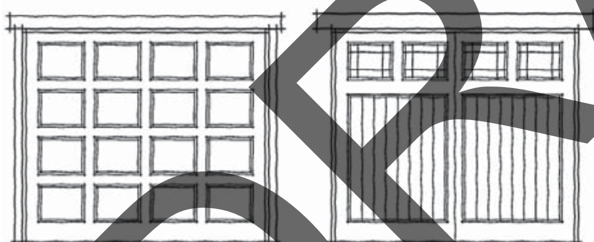


Window Patterns

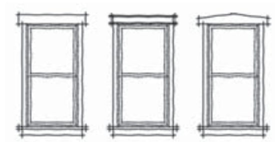


Window Groupings

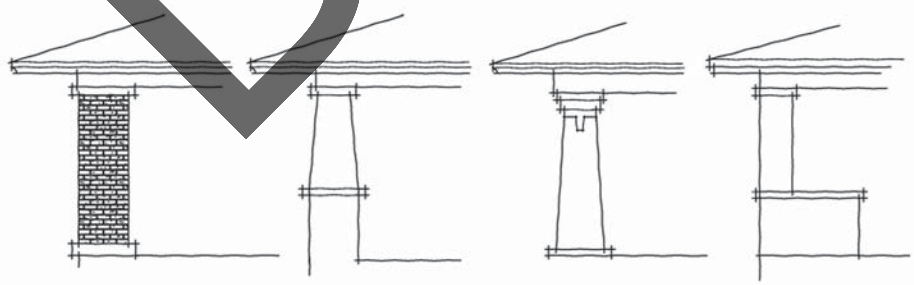
Garage Doors



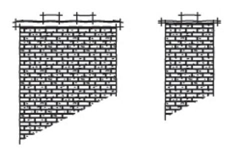
Window Surrounds



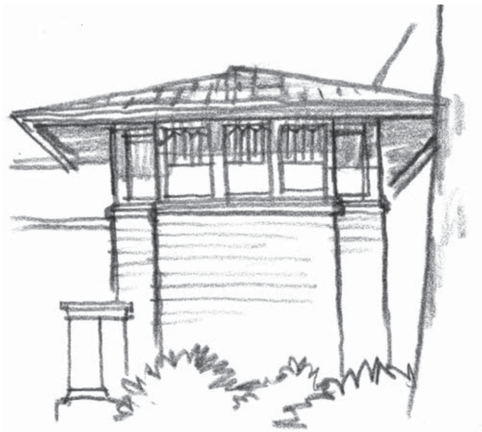
Porch Columns



Chimneys

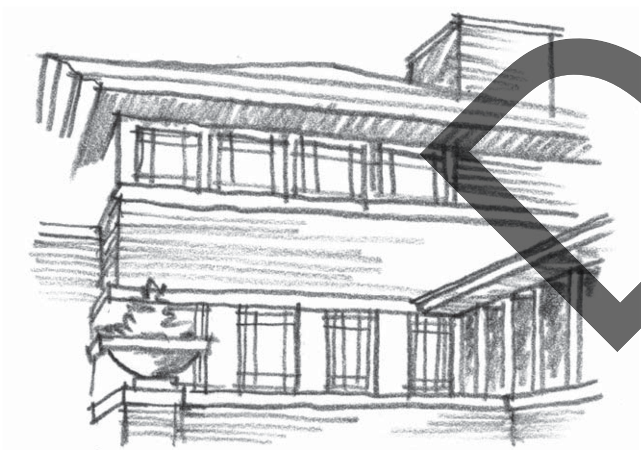


DETAILS



Massing with Hip Roof Form

Low Walls, Horizontal Banding, and Long Overhang



Massing with Horizontal Banding

PICTORIAL EXAMPLES

Historical Representation

Present Day Interpretation

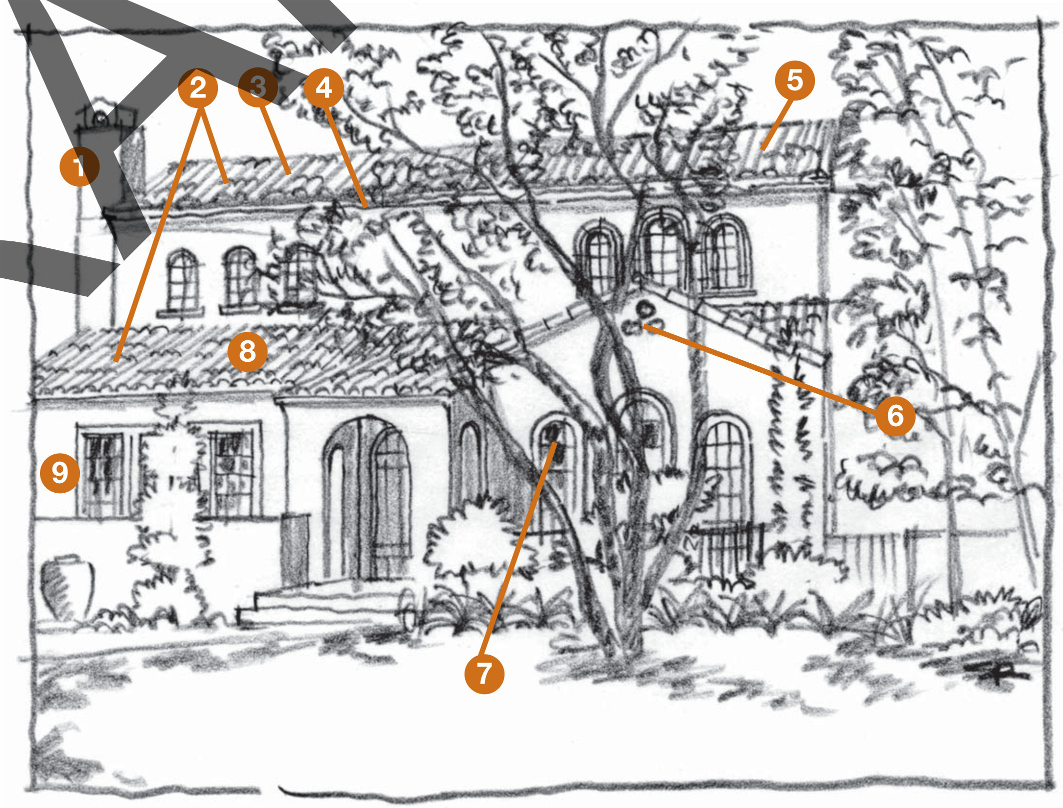
THE SPANISH ECLECTIC

Distinctive Style Elements			
1	Chimney with Elaborate Cap	6	Canales at Gable
2	One Story with Stepped Back Second Story	7	Arched Windows Grouped in Threes
3	Side Gabled Form	8	Barrel Tile Roof
4	Tight Overhangs	9	Imperfect Smooth Stucco
5	Low Pitched Roof		

HISTORY AND INTENT

The Spanish Eclectic house in California gained in popularity and sophistication in surface design after the 1915 Panama-California Exposition in San Diego. The Spanish Eclectic house is popular in all Sacramento Park Neighborhoods because of its adaptability of form and casual, playful character. Historic precedence can be drawn from a wide and diverse range of influences; region, chronology, and function (based on urban versus rural examples) all contribute to the evolution of the Spanish Eclectic style. Truly one of the most eclectic architectural styles, the Spanish Eclectic can vary from playful to exotic, bungalow to hacienda.

The Spanish Eclectic style will add to the intrinsic character and rich diversity of the streetscape. Offering an opportunity for bright colors and whimsical forms, the style will add a playful element to the neighborhood.



THE SPANISH ECLECTIC

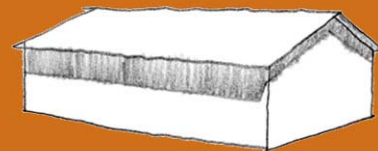
STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• One-, one-and-a-half (with strong one-story element and stepped back second story), or full two-story massing. (The form is not rigidly defined; this style can be applied to a wide variety of asymmetric building mass configurations.) • Roof form is predominately pitched, hipped, or gabled, but may also be parapeted.	• Massive chimney with buttressed form and elaborate cap with arched openings and small tiled roof. • Massive battered (tapered) chimney with finial chimney cap. • Recessed arcade along front elevation. • Arcaded wing wall. • Balconies.
ROOF	• Low pitched roof (3:12 to 5:12). • Simple flat, hip, or gable roof with one intersecting gable roof. • Overhangs are typically tight, but can be up to 18". • Fascia is either tight to the building (6" max) or nonexistent with rake tile providing the transition from wall to roof. • Flat concrete tiles. • Exposed rafter tails.	• Barrel or S-shaped concrete tiles.
WALLS	• Smooth or imperfect smooth stucco.	
WINDOWS & DOORS	• Feature recessed arched picture window or three grouped arched windows. • Vertical multi-paned windows or inserts at front elevations. • Window head and jamb trim is absent. • Modest (4" max) window sill trim.	• Accent beveled glass recessed window. • Single or grouped arched windows. • Decorative precast concrete door and window surrounds. • Heavy wood head trim at windows. • Thickened walls.
DETAILS	• Shaped rafter tails at feature areas. • Masonry vents. • Canales.	• Shaped rafter rails throughout. • Wrought iron balconies and accent details. • Arched stucco column porches. • Vibrant and colorful glazed Spanish tile accents.

[1] *Minimum three enhanced elements per house are required.*

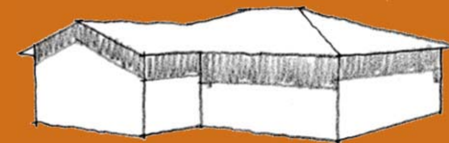
THE SPANISH ECLECTIC

CROSS GABLE

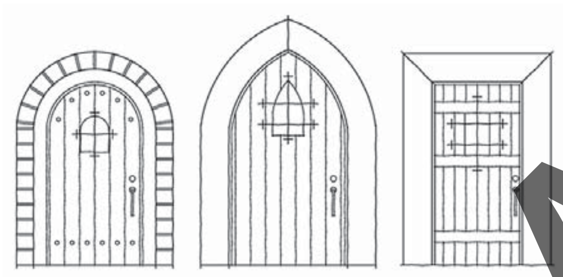
SIDE GABLE



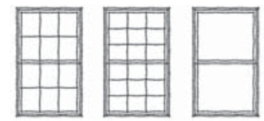
COMBINED HIP AND GABLE



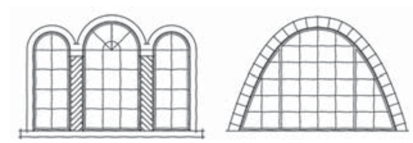
Entry Doors and Surrounds



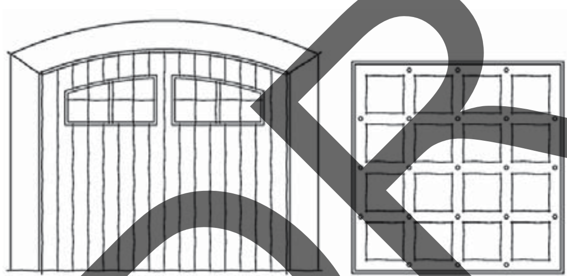
Window Patterns



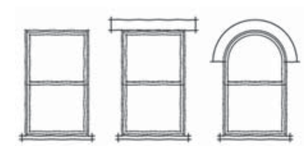
Window Groupings



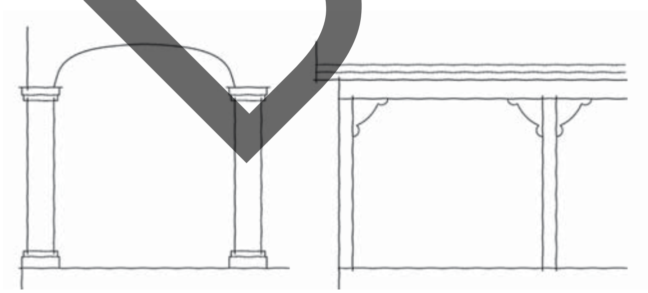
Garage Doors

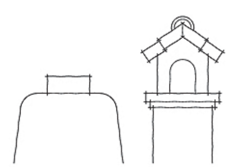


Window Surrounds



Porch Columns



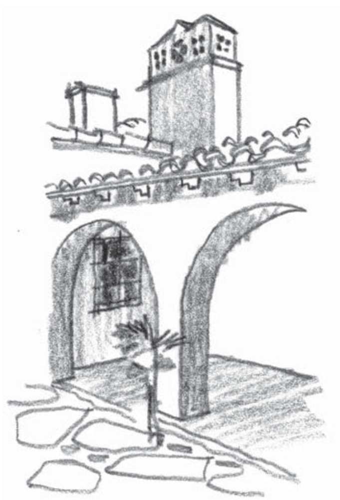


Chimneys

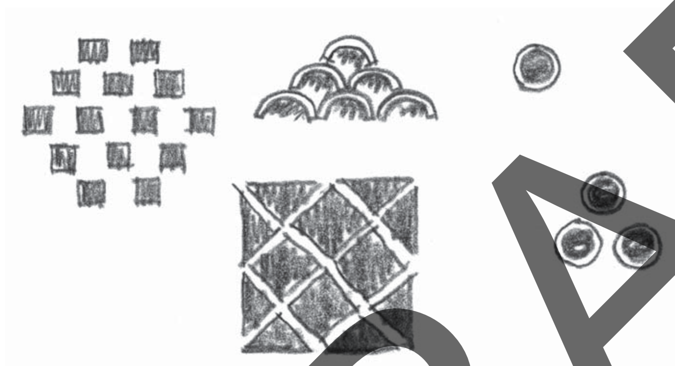
Shutters

THE SPANISH ECLECTIC

DETAILS



Arches and Chimney Elaboration



Decorative Vents

Deep Recessed Entry

PICTORIAL EXAMPLES

Historical Representation

Present Day Interpretation

THE TUDOR REVIVAL

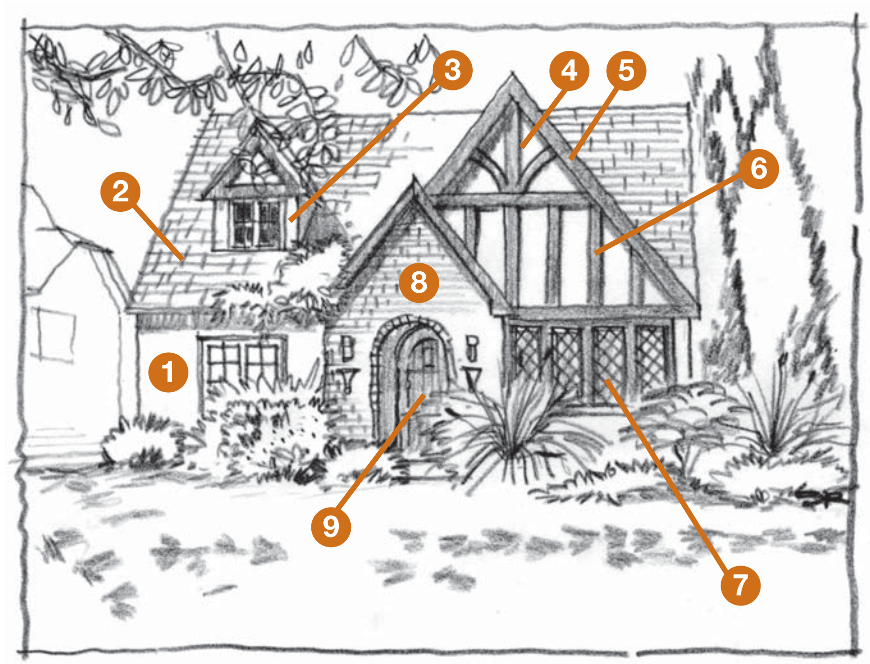
HISTORY AND INTENT

The Tudor Revival house was the most common design built in Sacramento during the 1920's and 1930's. The Tudor typically has a steeply pitched roof, with the principal roof being side gabled, and multiple asymmetric cross gables. The homes have applied half-timbering, many with face brick, and rarely with stone in Sacramento. Brick facing on Sacramento's Tudor homes is sometimes applied with contrasting dark colored bricks, painted brick, clinker bricks, and occasionally applied in a decorative pattern. Gabled dormers are common, with only modest eave extension. Windows tend to be vertically oriented, often with casements, and often with square gridded or diamond-pane leaded muntins. Tudor houses generally have prominent chimneys. Occasionally, Sacramento's Tudor houses have rolled roof edges that mimic thatched forms.

Incorporation of the Tudor Revival style will provide an opportunity to create picturesque cottages on smaller lots as well as stately manors on larger lots within the community.

Distinctive Style Elements

1	Smooth Stucco	6	Decorative Half-Timbering
2	Steeply Pitched Main Roof	7	Diamond Grid Windows
3	Dormer	8	Brick at Entry or Dominant Element
4	Dominant Steeply Pitched Facade Element	9	Deeply Recessed Entry
5	Asymmetrical One-and-a-Half Story		



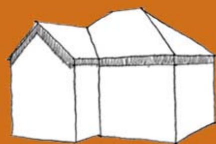
THE TUDOR REVIVAL

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Asymmetrical, one-and-a-half to two stories, commonly with upper rooms in the roof. • Facade dominated by one prominent steeply pitched side-gabled roof, with multiple asymmetric steeply pitched cross gables. • Visible chimney as component of roof design.	• Small entry porch. • Side porches. • Dormer windows at upper floor. • Massive chimney as a significant form element.
ROOF	• Steeply pitched roof, with cascading cross gables. • 10:12 to 14:12 roof pitch. (8:12 pitch is acceptable on secondary roof forms.) • Modest eave overhangs (12” max) and tight gable overhangs (6” max). • Concrete shingles that are flat to resemble slate or thatch.	• Composition roofing materials rolled around eaves and rakes to suggest a thatched roof.
WALLS	• Smooth or imperfect smooth stucco wall cladding to appear as masonry. • Decorative half-timbering.	• Brick wall cladding (can be painted). • Brick first-story walls with stone, stucco, or wooden claddings on principal gables or upper stories. • Stone wall cladding as principal wall material with brick, stucco, or wooden trim. (Half-timbering is also common with this application.)
WINDOWS & DOORS	• Tall, narrow windows, usually in multiple groups of three or more, commonly located on or below the main gable on one- or two-story bays. • At least one diamond pane focal window. • Divided light windows. • Simple round-arched doorways with arched board-and-batten doors.	• Window casements of wood or metal. • Casement windows with diamond panes. • Renaissance detailing at doorways, such as small tabs of cut stone projecting into surrounding brickwork, giving a quoin-like effect. • Tudor arches at door surrounds or entry porches. • Small transoms above the main windows.
DETAILS	• Decorative half-timbering. • Use of a variety of wall materials is common, both for different vertical units and for different stories.	• Application of half-timbering elements depicting the structural composition of true post and beam construction. • Massive stone or brick chimney. • Chimneys crowned by decorative chimney pots. • Patterned brickwork or stonework.

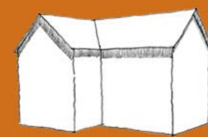
[1] *Minimum three enhanced elements per house are required.*

THE TUDOR REVIVAL

ASYMMETRICAL HIP

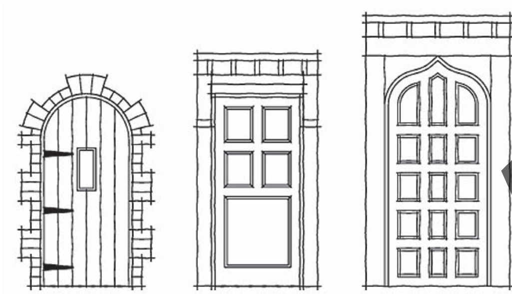


CROSS GABLE

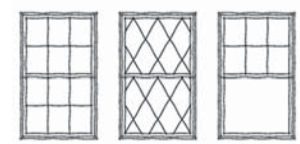


CENTER GABLE

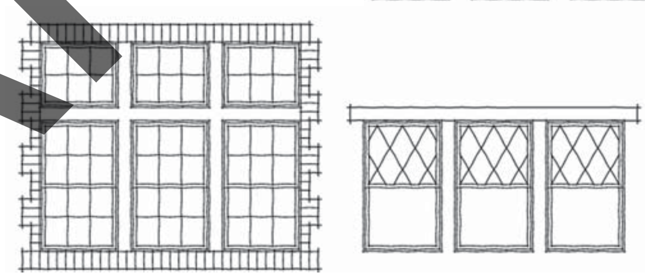
Entry Doors and Surrounds



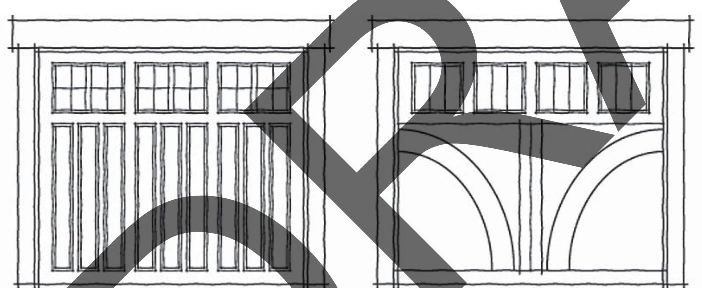
Window Patterns



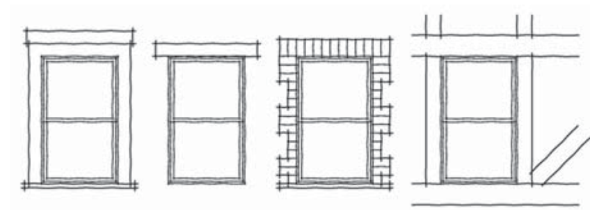
Window Groupings



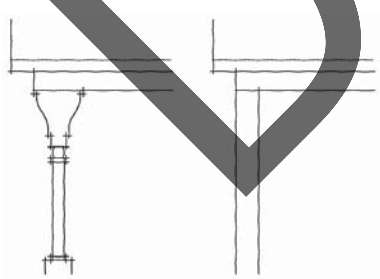
Garage Doors



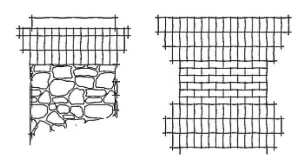
Window Surrounds



Porch Columns



Chimneys

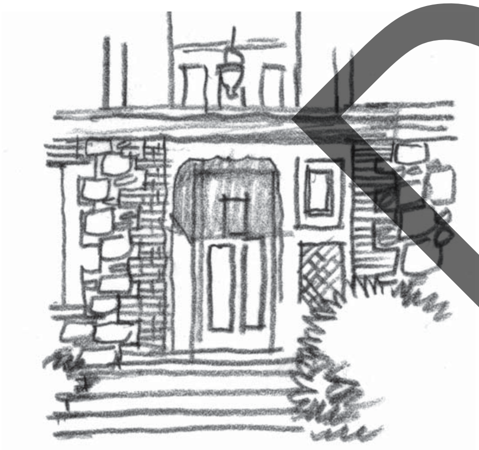


THE TUDOR REVIVAL

DETAILS

Brick Deep Recessed Entry

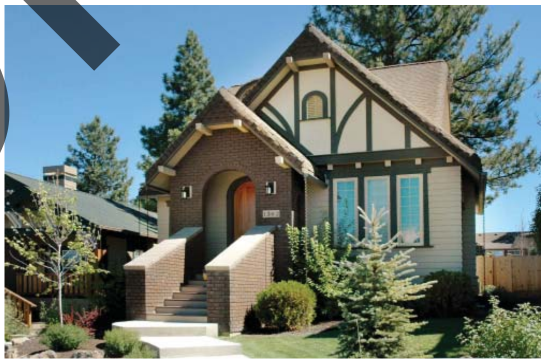
Decorative Half-Timbering



Stone/Brick Raised Entry

PICTORIAL EXAMPLES

Historical Representation



Present Day Interpretation

Multifamily Interpretation

THE INTERNATIONAL

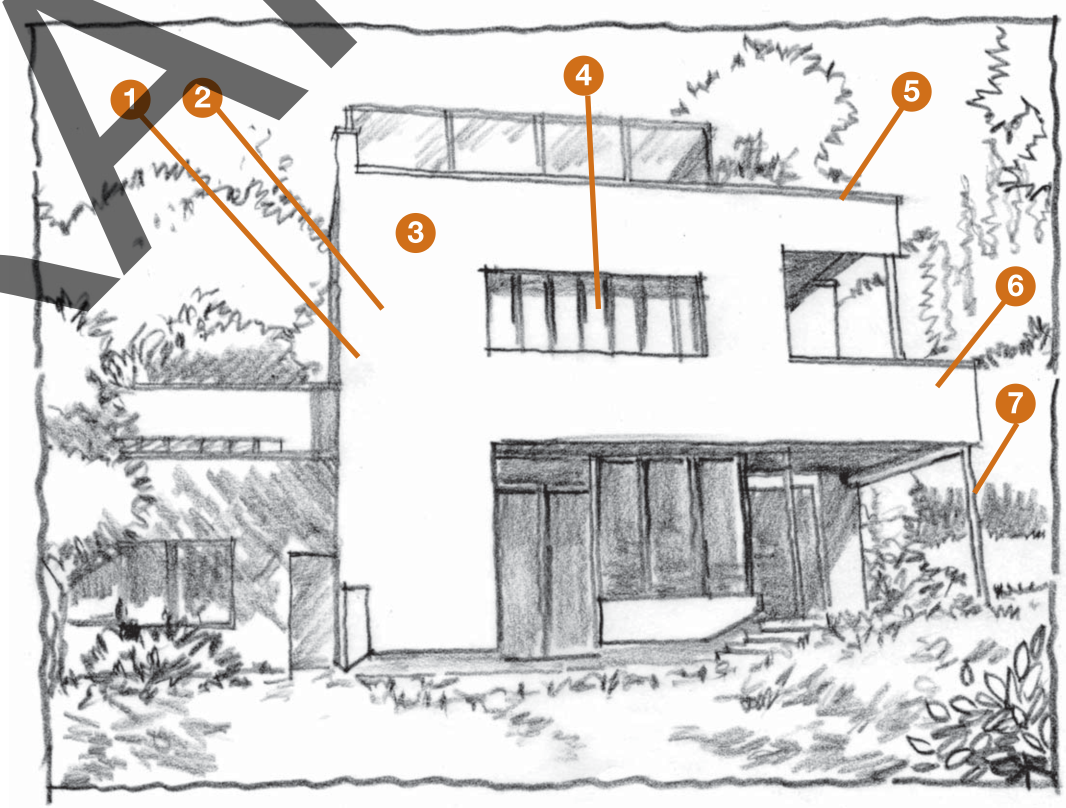
Distinctive Style Elements

1	Composition Defines Form
2	Asymmetrical Form
3	Smooth Stucco Finish
4	Ribbon of Windows
5	Flat Roof
6	Cantilevered Recessed Areas
7	Plain Round Supports

HISTORY AND INTENT

The International style was the predominant of the Modernist styles in Sacramento. The International home is focused on geometry, based solely on form, proportion, and composition. The potential for mass appeal and mass production was inherent to the style; it represents everything that the Arts and Crafts movement did not. The International style has a flat roof, usually without coping at the roofline. Smooth, unornamented wall surfaces with no decorative detailing at doors or windows and an asymmetrical facade distinguish this modernistic style. In high-style International style houses, long ribbons of windows are common, sometimes wrapping around building corners. Large, floor-to-ceiling plate glass windows are also used. Cantilevered projections are favored, with sections of roof, balcony, or second stories dramatically jutting over the wall below.

The primary intent of the International style is to enhance the eclectic mix of architecture that comprises traditional Sacramento Park Neighborhoods.



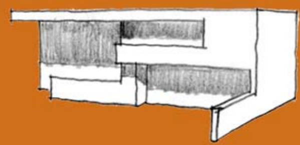
THE INTERNATIONAL

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Composition of wall massings and voids, cantilevered roof planes, and large expanses of glass that define the form. • Asymmetrical facade.	• Sections of roof, balcony, or second stories dramatically cantilevered over the wall below.
ROOF	• Flat roof, usually without coping at the roofline. • Multiple roof levels in two-story applications.	• Areas of wide, boxed overhangs intersecting walls below the roofline. • Projecting cantilevered roof elements.
WALLS	• Smooth, unornamented wall surfaces with no decorative detailing at doors or windows. • Smooth stucco finish.	• Smooth board walls. • Smooth brick walls.
WINDOWS & DOORS	• Windows set flush with the outer wall. • Large window assemblies including fixed and operable sections. • Long ribbons of windows. • Front door not accentuated.	• Windows wrapping around building corners. • Large, floor-to-ceiling plate glass windows. • High, clerestory ribbon windows.
DETAILS	• Plain round supports for porches or portions of house.	• Cylindrical forms.

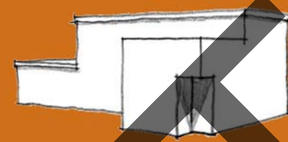
[1] *Minimum three enhanced elements per house are required.*

THE INTERNATIONAL

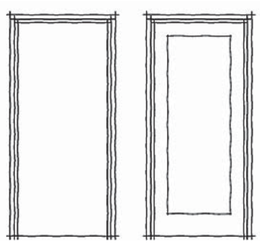
CANTILEVERED

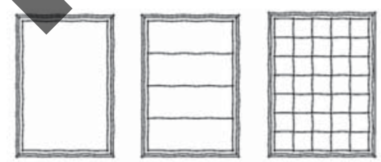


FLAT ROOF

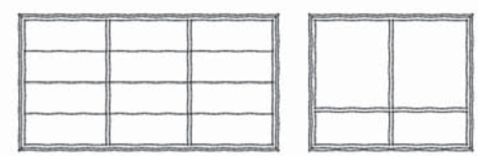


Entry Doors and Surrounds



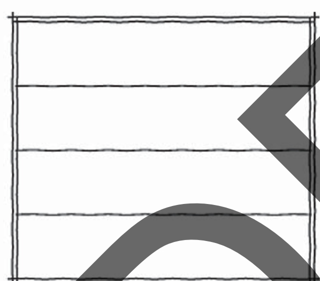


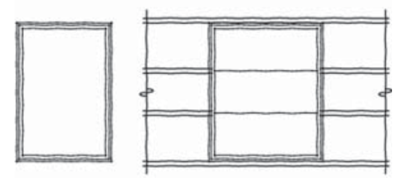
Window Patterns



Window Groupings

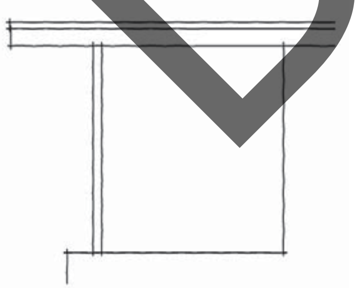
Garage Doors

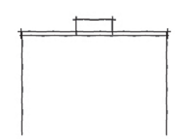




Window Surrounds

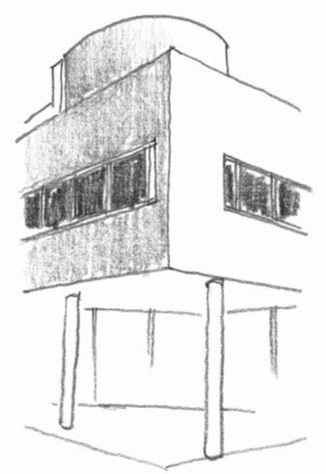
Porch Columns



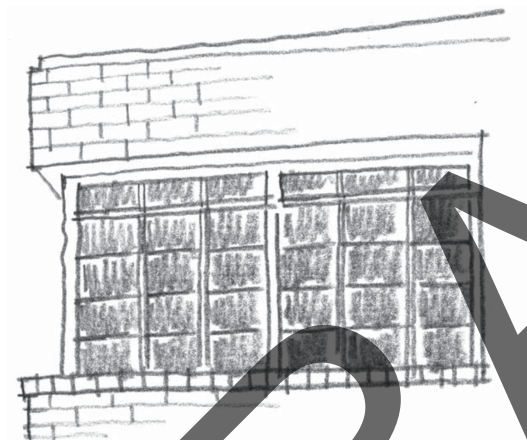


Chimneys

DETAILS



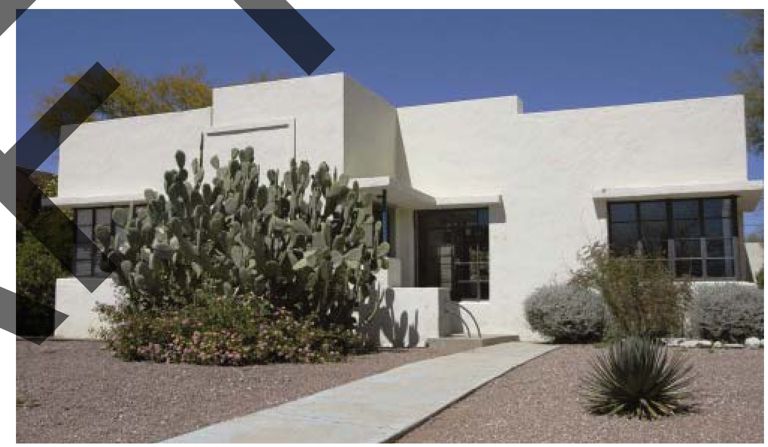
Massing/Supported Corner



Corner Window

Cantilevered Roof with Corner Window

PICTORIAL EXAMPLES



Historical Representation

Present Day Interpretation

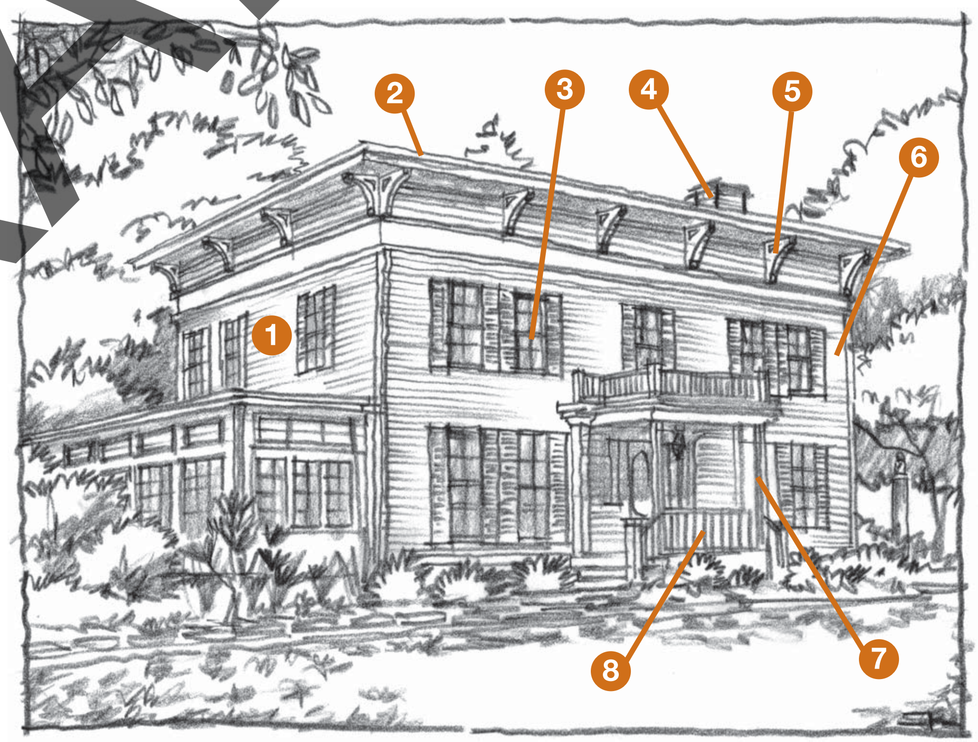
THE ITALIANATE

Distinctive Style Elements			
1	Tightly Spaced Horizontal Siding	5	Decorative Cornice with Brackets
2	Low Pitched Hipped Main Roof	6	Two-Story Formal Massing
3	Tall Narrow Windows in Pairs	7	Slender, Square Porch Columns
4	Brick Chimney	8	Entry Porch

HISTORY AND INTENT

Italianate houses built in the United States generally followed the informal rural styles of the picturesque movement. The style was most popular from 1855 to 1880, with Sacramento examples being built by the founders of the city. Examples range from high-style ornately detailed mansions to simple, elegant, and refined versions, both single family and townhomes.

The Italianate embodies the simple, elegant, and refined homes of early Sacramento. These homes bring a sophisticated and formal atmosphere to the neighborhood streetscape, presenting juxtaposition between more playful styles such as the Spanish Eclectic.



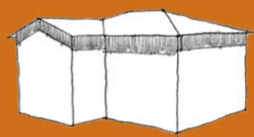
THE ITALIANATE

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Formal massing, whether asymmetrical or symmetrical, generally in two or three stories. • Hipped roof is the dominant form. • Single-story porches with slender square or round columns.	• L-shaped plan form with an engaged tower. • Porches that wrap corners.
ROOF	• Low pitched hip roofs up to 4:12. • Decorative cornice with brackets under wide overhanging eaves (18” min). Overhang size is predicated by cornice and bracket design and must be proportional in scale.	• Soffitted eaves with enhanced frieze detailing. • Cupola.
WALLS	• Generally tightly spaced (4”-6”) horizontal siding. • Smooth stucco can also be used. • Tightly spaced horizontal siding or brick as accent materials.	• Brick or masonry wall cladding. • Balcony projections on upper floors.
WINDOWS & DOORS	• Tall narrow rectangular windows. • Single-hung pedimented windows with window crowns. • Paired or tripled windows are common.	• More elaborate built-up window trims. • Bay windows. • Paired or single doors with glazing and elaborate trims or pediments. • Windows may be flattened arch, segmented, or full arch.
DETAILS	• Repeated corbels and brackets. • Symmetrical arrangement of details.	• Large eave brackets arranged in pairs on a deep trim band elaborated with panels or moldings. • Louvered or paneled shutters. (Each shutter must be sized to one-half of entire adjacent window width.)

[1] *Minimum three enhanced elements per house are required.*

THE ITALIANATE

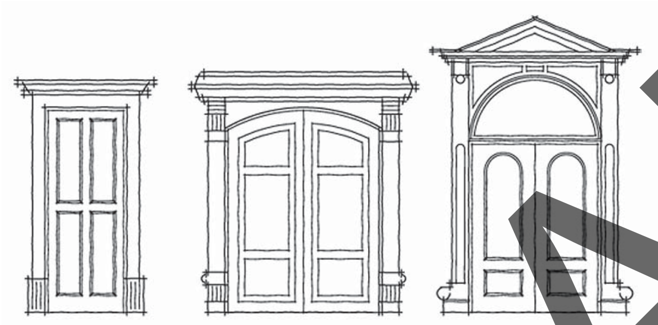
FORWARD GABLE



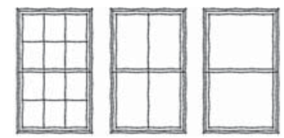
SIMPLE HIP

CENTER GABLE

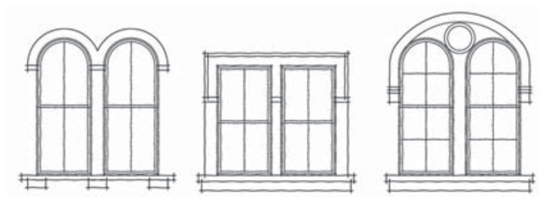
Entry Doors and Surrounds



Window Patterns

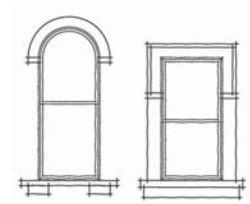


Window Groupings

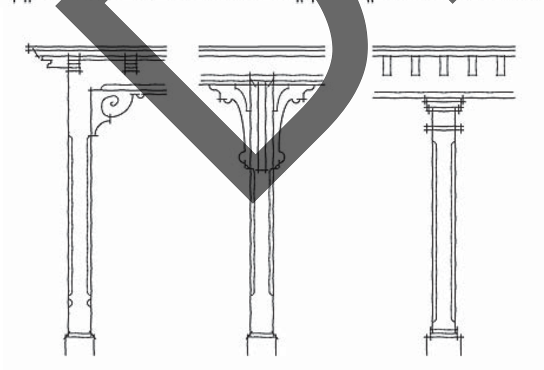


Garage Doors

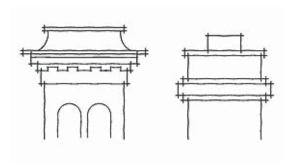
Window Surrounds



Porch Columns

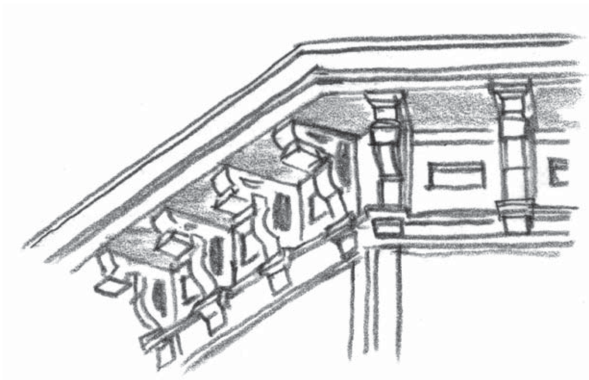


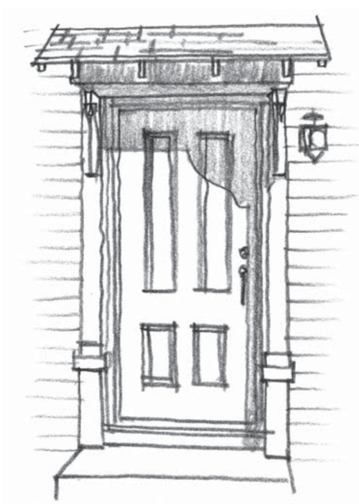
Chimneys

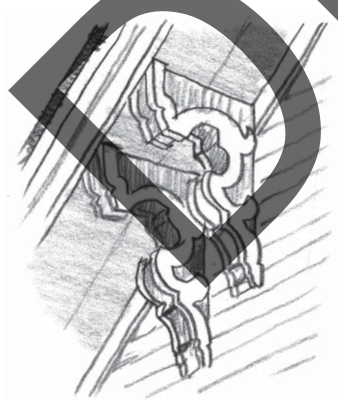


THE ITALIANATE

DETAILS


Eave Brackets


Entry


Gable Brackets

PICTORIAL EXAMPLES


Historical Representation


Present Day Interpretation


Multi-Family Interpretation

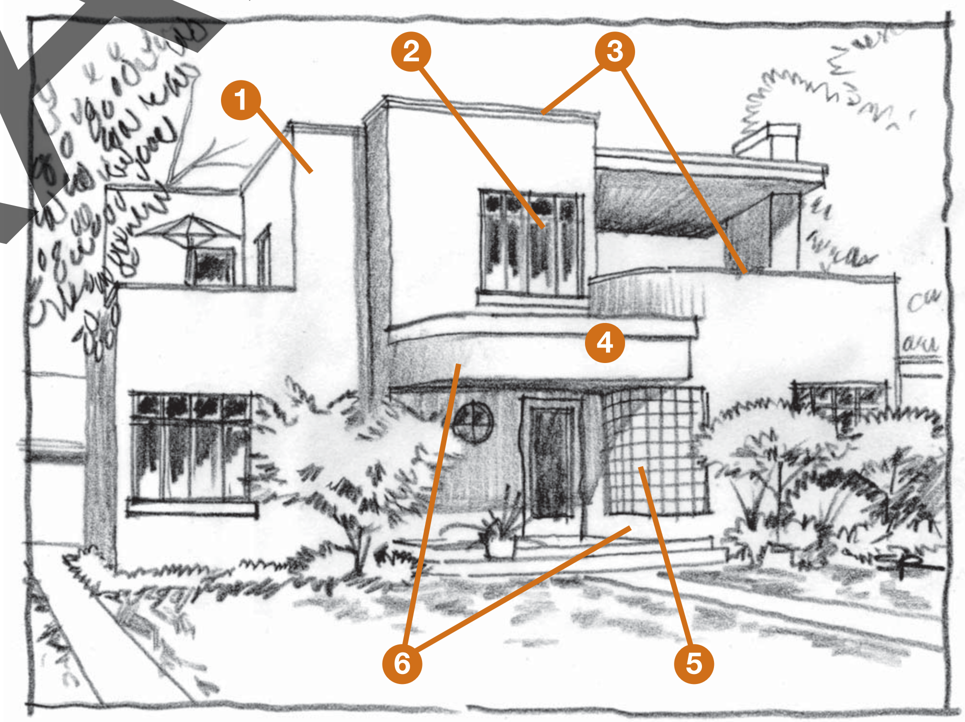
THE MODERNE

HISTORY AND INTENT

The Modernistic styles that came of age in the 1930's are rare to Sacramento. Smaller cottage forms occasionally reveal the influence of the "Streamline" style, which gives the feeling that airstreams could move smoothly over the structure's smooth surface, curved corners, and horizontal emphasis. Moderne examples in Sacramento have rounded corner walls and glass block, and small round windows are common. All of the building's features, including horizontal grooves or lines in the walls and horizontal balustrade elements, give a streamlined emphasis. The facade is usually asymmetrical in design and windows are frequently continuous around corners. Glass blocks are not only used in windows, but also as entire sections of wall.

The Moderne style is intended to emphasize the eclectic and distinctive nature of the community.

Distinctive Style Elements	
1	Asymmetrical Form
2	Continuous Windows at Corners
3	Flat Roof and Roof Decks
4	Cantilevered Entry Canopy
5	Glass Block as Accent
6	Curvilinear Form



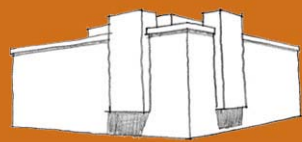
THE MODERNE

STYLE ELEMENTS	MINIMUM ELEMENTS	ENHANCED ELEMENTS[1]
FORM	• Asymmetrical facade based on a composition of solids and voids.	• One or more corners of the building curved.
ROOF	• Flat roof, usually with small ledge (coping) at the roofline.	
WALLS	• Smooth wall surface, usually of stucco.	• Horizontal grooves or lines in walls and horizontal balustrade elements to give a horizontal emphasis.
WINDOWS & DOORS	• Windows continuous around corners. • Glass blocks used in accent windows.	• Glass blocks used as entire sections of wall. • Small round windows. • Windows that curve along with curved building corners.
DETAILS	• Delicate steel columns as porch supports (where applicable). • Pipe railing where used. • Cornice details, usually of metal, at roofline or floating above entries. • Trim used to accentuate the forms and emphasize the geometry of the design, rather than to decorate windows and doors.	• Curvilinear forms. • Floating entry canopies.

[1] *Minimum three enhanced elements per house are required.*

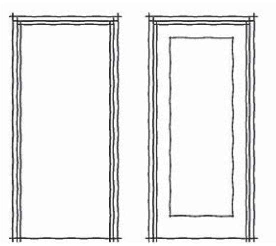
THE MODERNE

ART MODERNE

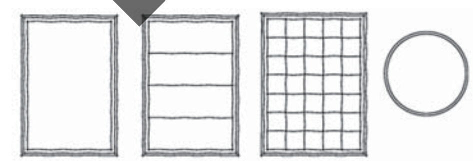


MODERNE

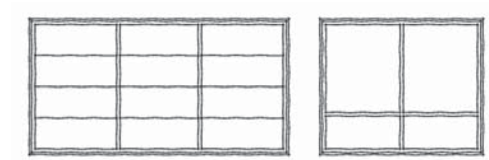
Entry Doors and Surrounds



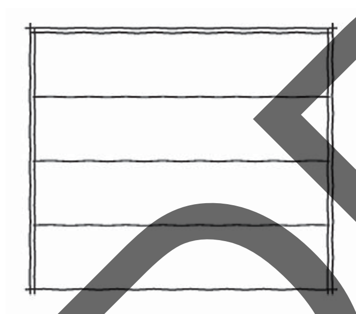
Window Patterns



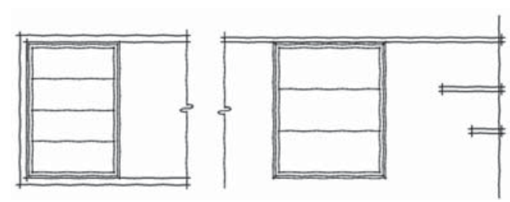
Window Groupings



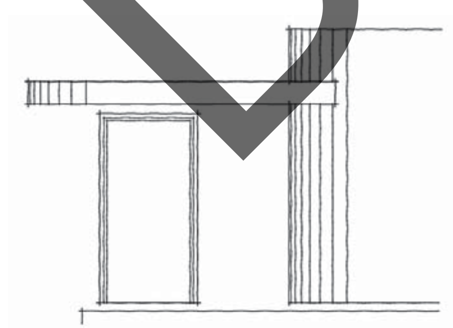
Garage Doors



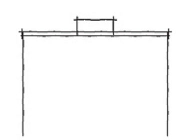
Window Surrounds



Porch Columns

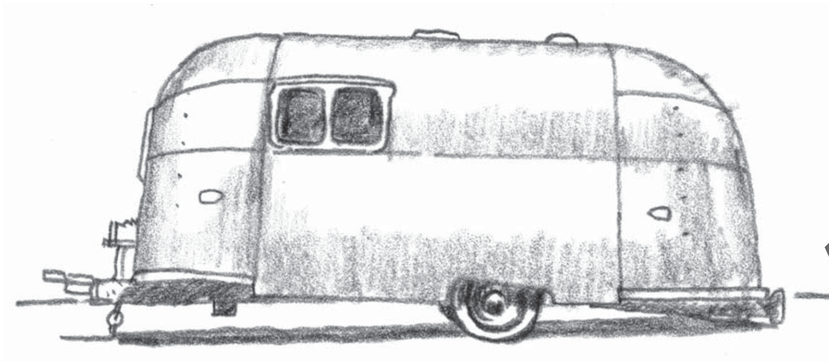


Chimneys

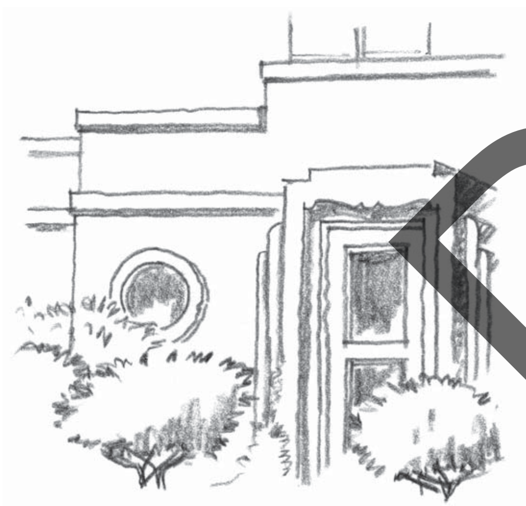


THE MODERNE

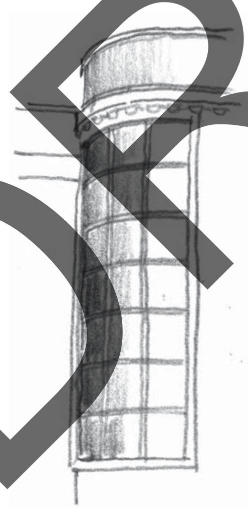
DETAILS



Moderne Design Aesthetic



Round Window, Elaborated Entry, and Decorative Banding



Rounded Corner Glass

PICTORIAL EXAMPLES

Historical Representation

Multifamily Interpretation

Present Day Interpretation

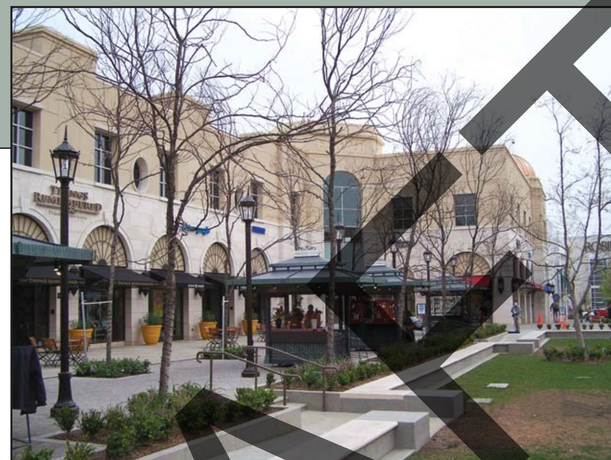
Chapter 7: Commercial Centers

7.1 INTRODUCTION

This chapter establishes the development standards, design guidelines, and architectural guidelines for commercial development within the Plan Area. The provision of commercial uses within the project supports the guiding principles of these PUD Guidelines by providing a mixture of uses to create community, promote sustainable practices, and reduce reliance on the automobile. A reduction in vehicular trips and associated reduction in VMT in turn contributes to the overall wellness of the community and larger region by reducing or eliminating travel times, encouraging alternative modes of travel to purchase goods and services, and improving air quality.

As illustrated by Figure 7-1, commercial development will occur at two locations within the Plan Area. The Community Commercial Center is located at the southwest corner of Jackson Highway and South Watt Avenue, while the Four Corners Village Center is located along the intersection of Rock Creek Parkway and Aspen Promenade within the heart of the community. Both commercial centers have been located along major roadways, with higher density residential as an integrated land use. In addition, as described

Figure 7-1: Commercial Locations



in greater detail in Chapter 5 of these Guidelines, transit service, trails, and shortcuts link these commercial centers to residential land uses in order to simplify access and further support the success of these commercial areas.

7.2 COMMERCIAL FRAMEWORK

7.2.1 COMMUNITY COMMERCIAL CENTER

The Community Commercial Center is located in the northeast corner of the Plan Area and is bounded on the north by Jackson Highway and on the east by South Watt Avenue. This location provides tremendous visibility and accessibility from adjacent roadways and major transit lines planned along both corridors. The internal circulation system of the Plan Area has been configured to facilitate access to and from commercial uses within the community.

The Community Commercial Center is intended to be grocer-anchored with various commercial/retail uses to meet the daily shopping and service needs of the community, while providing opportunities for mixed-use residential housing types as well. The proposed mixed-use nature of the site is intended to have second floor residential units over in-line commercial shops or live/work loft units facing the ring road. The inclusion of residential along the ring road can help enliven the Commercial Center and promote eyes on the street while providing for a smooth transition to residential uses along the ring road.



7.2.2 FOUR CORNERS COMMERCIAL

Commercial uses are intended to enliven and augment the land uses located within the Four Corners Village Center District. As described in Section 2.3.2 of these Guidelines, this central district has been designed to provide a lively combination of mixed-uses, neighborhood-oriented services, recreational areas, and the Urban Farm in order to support transit and foster community interaction.

This district is intended to provide a complementary mixture of high-density residential along with neighborhood-serving commercial, office, and personal service uses. Residential mixed-use may be either vertically or horizontally related (or a combination of both), and could include multi-family residential uses with ground floor retail and/or commercial uses on key corners or prominent locations on the site. This designation may also include live/work lofts with ground floor small-scale office and service uses that accommodate small business users and entrepreneurs.

Because commercial land uses within this district fall under the RMX-SPD-PUD Zoning established by the New Brighton SPD-PUD Ordinance, development standards for this district are set forth within Chapter 6, Sections 6.4 and 6.5 of these Guidelines. Commercial components of these developments shall comply with the site design guidelines and architectural requirements set forth within this chapter.

7.3 DEVELOPMENT STANDARDS

7.3.1 PERMITTED USES

Permitted uses within the Community Commercial Center are as shown for the SC-SPD-PUD zone in the adopted New Brighton SPD Ordinance.

7.3.2 HEIGHT AND AREA REGULATIONS

Lot Characteristics	Minimum Lot Area	No Req.
	Floor Area Ratio	.20-2.0
Principal Building Setbacks (Min.)[7]	Jackson Highway and South Watt Avenue	20'
	Other Public Streets	5'
	Internal Drives and Parking Areas	5'
	Interior Side/Rear (to Property Line)[1]	0'
Encroachments	Outdoor Seating Areas[2]	0'

Maximum Building Height		45'/ 3 Stories
Site Characteristics	Parking Requirements[3]	Section 17.643
	Landscape Coverage[4]	20% Minimum
	Landscape	Chapter 4[5]
	Fences and Walls	Chapter 4[5]
	Paving and Hardscape	Chapter 4[5]
	Lighting	Chapter 4[5]
	Site Furniture	Chapter 4[5]
	Parking Lot Landscaping	Chapter 4[5]
Signage		Section 15.148[6]

[1] *If abutting a residential property the minimum interior side/rear setback shall be 15'.*
[2] *Outdoor seating areas may be located within setback areas but outside of right-of-way.*
[3] *Parking requirements shall conform to Section 17.64 of the City of Sacramento Zoning Code.*
[4] *Landscape areas may include outdoor public spaces.*
[5] *See Chapter 4 of these PUD Guidelines.*
[6] *Project signage shall conform to Section 15.148 of the City of Sacramento Zoning Code.*
[7] *All setbacks are measured from back of walk unless otherwise specified.*

7.4 SITE DESIGN GUIDELINES

The creation of successful commercial areas is dependent upon crafting a mixture of unique tenants, memorable architectural styles, safe and easy access, and engaging activity areas which offer an opportunity to rest, gather, and socialize. If executed correctly, successful commercial areas can enliven a community and provide a focal point for its residents to enjoy.

The following design guidelines have been prepared to guide development of commercial locations within the Plan Area. They are derived from an evaluation of the best practices of several of the most successful neighborhood and community commercial areas across the nation. When utilized in conjunction with the Development Standards in Section 7.3 and the Architectural Guidelines in Section 7.5, they provide the framework for establishing the commercial areas as desirable destinations for residents and visitors.

7.4.1 BUILDING FORM AND ORIENTATION

- Buildings within the Community Commercial Center shall be oriented to reinforce a strong street edge while allowing for easy access to the interior of the commercial center.
- Buildings shall be designed to be highly visible from Jackson Highway and South Watt Avenue while providing easy access to and from these roadways.
- Buildings along the ring road shall address the roadway with building entries and facade articulation in order to avoid expanses of blank walls.
- Buildings shall have prominent entryways, windows, and arcades along plazas and high-traffic pedestrian areas to encourage pedestrian activity. Secondary facades and public entries should be located adjacent to the interior parking area.
- Buildings shall be clustered to create a concentrated, positive outdoor setting and should frame pedestrian spaces with their architectural form and massing.
- Buildings shall be designed to address transit stop locations and provide views and access.
- Primary facades of buildings along the exterior of the site shall be oriented to the street edge, whereas primary facades of buildings in the interior of the site should be oriented toward parking areas. Attractive facades and secondary entries, where appropriate, should also be provided on the street side and wherever visible by the public to create visual appeal and facilitate pedestrian access.
- Buildings at corner locations shall have corner architectural treatments such as chamfered entryways, variations in building height, towers, or other architectural features that serve as landmarks.




- Large residential buildings adjacent to the street shall be designed with varied setbacks to avoid long, monotonous, featureless walls, and provide interest along the streetscape.
- Tenant spaces should be clearly identifiable and may utilize any number of techniques including:
    - Alternating building or roof heights between tenants.
    - Varying building facades through the use of color and material treatments, recessed entrances, and varying landscape and pedestrian areas.
    - Incorporating roof overhangs, window boxes, or arcades.
    - Building pilasters, columns, or piers between building bays.

7.4.2 CIRCULATION AND PARKING

Commercial areas will be designed to accommodate vehicular traffic in parking areas at the front of large-scale commercial buildings, with additional circulation routes that will accommodate pedestrians and bicyclists. An emphasis will be placed upon pedestrian connections to and from transit stops and adjacent residential areas.

- Overall site design shall use pedestrian circulation and activity as a primary organizing feature.
- Vehicular and pedestrian circulation from within the Plan Area shall be facilitated by a roadway connection to Rock Creek Parkway.
- Pedestrian connections shall be provided to Aspen Promenade, adjacent multi-family residential areas, and transit stops along Jackson Highway and South Watt Avenue.
- Major pedestrian access routes through large parking fields should be emphasized and clearly designated. This may be accomplished through a variety of means including, but not limited to, change of paving material and/or color, landscaping, and the use of special signage and lighting.
- The interior of the commercial center shall be configured to provide an internal open space and courtyard area that aligns and/or links to the Aspen Promenade Mini-Park.
- Bicycle routes through commercial areas should be clearly marked with pavement striping and signage.
- Bicycle parking should be provided at all anchor stores and equally distributed along anchor tenant storefronts. Bicycle parking should be easily visible from store entries, windows, and security locations.




- Transit stops should include amenities to encourage transit use including shelters, benches, lighting, and waste receptacles.
- Community information boards, or kiosks, providing information about transit, ride sharing, recreational opportunities, neighborhood events, etc., should be provided at high-traffic areas and in main gathering places within commercial areas.

7.4.3 LOADING AND SERVICE AREAS

Loading and service areas should be placed at the rear and/or side of commercial buildings, depending upon the design of the commercial site. Service and loading areas should be designed to minimize conflicts with vehicle and pedestrian routes. Functional service areas and prominent commercial entries of buildings should receive focused design attention and consideration and should be carefully located and well screened to reduce noise and view of loading areas.

- Loading space, trash, and recycling areas should not encroach into the public right-of-way or setback areas.
- Loading and trash areas should be located to minimize their visual impact on the community, either behind or at the side of buildings, and away from public and residential areas.
- Siting considerations should be given to the location of mixed-use residential and loading and service areas in order to minimize compatibility issues.
- Trash and recycling areas should be located adjacent to one another where possible.
- Loading space, trash, and recycling areas should be screened from public view by landscaping, decorative walls, or other means. Walls, if used, should be a minimum of 6’ in height and should be constructed of a solid masonry material with a decorative exterior surface similar to that used on the primary buildings.
- Loading space, trash, and recycling areas should be well lit to promote safety and discourage loitering in these areas.
- A concrete apron should be constructed in front of each trash and recycling enclosure to facilitate pickup and protect adjacent asphalt.
- Service and loading areas should be designed to minimize conflicts with vehicles and pedestrians. Service areas should be screened from public view adjacent to residential land uses and public streets.

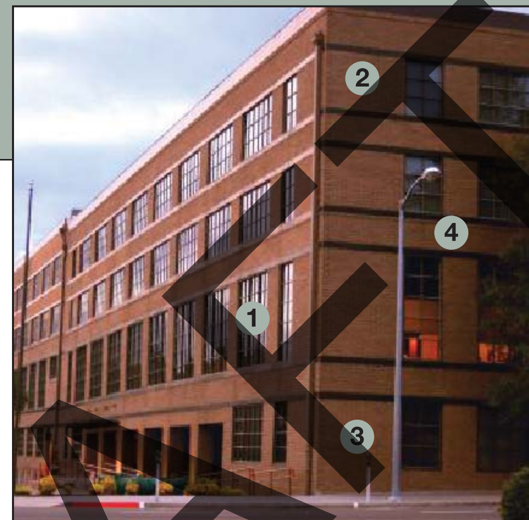
7.5 ARCHITECTURAL GUIDELINES

The commercial areas within the Plan Area provide an opportunity for a distinctive architectural palette consistent with the commercial architecture found in historic areas of Sacramento, including the Park Neighborhoods, Old Sacramento, downtown, the Railyards, and the farms that were prevalent in the area.

This section defines the recommended architectural styles for the commercial areas of the Plan Area and describes the key elements of each style. Variations in architectural style may be permitted, subject to review and approval by the New Brighton Architectural Review Committee. The commercial architectural palette includes the following styles:

- Industrial Warehouse
- Art Deco
- Agrarian
- River Delta
- Spanish Eclectic

While these styles are deeply rooted in history, there is room for appropriate levels of abstraction to these traditional commercial styles. The balance between maintaining the historical integrity of an architectural style and imposing a truly abstract interpretation is critical. This optimal balance can be achieved by simply updating the style with modern materials while maintaining the form. The building should still convey the root style, but



the materials offer the opportunity to abstract the essence of the style while creating a contemporary interpretation. The end result should be an eclectic retail and commercial environment that has the appearance of being built-over-time.

7.5.1 INDUSTRIAL WAREHOUSE

With the industrial revolution came the need for buildings to house the associated mass production. Borne of practicality and function, the utilitarian forms and box-like structures were in stark contrast to the Victorian buildings predominant at the time. A lack of detail and ornamentation is indicative of the industrial warehouse style, with the building materials and window form and arrangement serving to define the essence and distinction of the architecture.

Defining Elements

There are certain key elements and details that are characteristic of the industrial warehouse vernacular to consider when designing this style of building. Table 7-1 details these elements and a

Table 7-1

Defining Elements	
1	Divided Light Windows, Either Square, Rectangular, or Arched
2	Brick as the Primary Wall Material
3	Vertical and Box-Like Form with Minimal Setbacks
4	Horizontal Lines Emphasize the Building Geometry
5	Awnings Can Be Either Traditional or Contemporary
6	Accent Material at Wainscot to Create a Pedestrian Scale
7	Building Articulated with a Regular Pattern of Bays
8	Colored Window Mullions and Door Frames
9	Flat or Low-Pitched Roof with a Parapet Wall, with or without Minimal Vertical Articulation at the Front Facade
10	Signage and Murals Painted Directly on Building Walls

minimum of five of these defining elements shall be incorporated in Industrial Warehouse style architecture within the Plan Area.

Contemporary Interpretation

The industrial warehouse style lends itself to abstraction through material use and roof form. The basic building form should retain its box-like appearance, but the primary wall material could be metal or a less traditional masonry (such as yellow brick). The roof may take on a barrel form in a standing seam material or corten steel. Window patterns may be abstracted, but must still be ordered. The addition of outdoor space in the form of simple balconies is appropriate on the abstracted warehouse style.

Defining Elements	
1	Barrel Roof Form in Standing Seam Metal
2	Metal as Primary Wall Material
3	Abstracted Window Patterns
4	Simple Balcony

7.5.2 ART DECO

The Art Deco style is a post-war representation of all things modern, luxurious, and decadent. The style was common in public and commercial buildings in the 1920's and early 1930's and can be seen throughout Sacramento. The style is highly decorative and ornamented, with quintessential patterns such as zigzags, sunbursts, Egyptian motifs, and chevrons.

Defining Elements

Art Deco architecture has specific characteristic patterns, forms, and details that are characteristic of the style and must be considered when designing this style of building. Table 7-3 details these elements, and a minimum of five of these defining elements shall be incorporated in Art Deco style architecture within the Plan Area.

Table 7-3

	DEFINING ELEMENTS
1	Vertical Elements, Which Can Extend Past the Roofline, to Define Building Sections
2	Stepped Cornice Detail
3	Recessed Accent Color and Pattern
4	Vertical Divided Light Windows
5	Tile as a Primary Building Material
6	The Art Deco Color Palette Consists of Cooler and More Metallic Colors
7	Horizontal Banding
8	Accent Patterns, Such as Chevrons
9	Vertical Tower Element
10	Rounded Building Form

7.5.3 AGRARIAN

With Sacramento's history of farmlands and ranches, examples of Agrarian style architecture are frequently found in old farmland areas. Barns, outbuildings, and old farmhouses are prime examples of this architectural vernacular. In addition to traditional interpretations, Agrarian style architecture also lends itself strongly to contemporary reinterpretation of traditional forms and use of innovative materials and applications, and designers are encouraged to explore such interpretations.

Defining Elements

Agrarian architecture has specific forms and details that are characteristic of the style and must be considered when designing Agrarian style buildings. Table 7-4 details these elements, and a minimum of five of these defining elements shall be incorporated in Agrarian style architecture within the Plan Area.

Table 7-4

	Defining Elements
1	Reclaimed Lumber
2	Heavy Beam as Header Element
3	Utilitarian Unornamented Awnings
4	Clerestory Windows
5	Divided Light Windows in Casual Arrangements
6	Rustic Doors with Heavy Forged Hardware
7	Saltbox Form
8	Contemporary Metal Siding
9	Reinterpreted Traditional Barn Form
10	Contemporary Metal Signage
11	Buildings Casually Arranged Around a Common Gathering Space
12	Rich Color Palette
13	Contemporary Awning Interpretation with Standing Signage
14	Low-Pitched Split Contemporary Roof Form
15	Aluminum Window Frames
16	Contemporary Tile as Primary Building Material
17	Poured-in-Place Concrete

Contemporary Interpretation

The Agrarian style lends itself strongly to interpretation and abstraction, with its utilitarian and casual forms. Traditional rural forms can take on contemporary proportions, with a narrow clerestory or a split roof; wall and roof materials can be re-interpreted by using self-rusting metals (such as corten, or cold-rolled steel) or wood siding with an unexpected exposure (very narrow or very wide); and colors can be abstracted and applied in unique ways, such as vibrant red doors, or entirely monochromatic dark buildings. Signage also presents an opportunity for contemporary abstraction through form, placement, and lighting.

7.5.4 RIVER DELTA

River cities such as Sacramento have a unique architectural vocabulary along the water. The architecture is casual and focused on the natural outdoor amenity, with large expanses of outdoor gathering spaces to enjoy the surroundings. Elements of the style have a distinctly southern touch and provide an opportunity for a whimsical flare through the use of lighter colors and details.

Defining Elements

River Delta style architecture has specific characteristics that are definitive of the style and must be considered when designing this type of building. Table 7-5 details these elements, and a minimum of five of these defining elements shall be incorporated in River Delta style architecture of the Plan Area.

Table 7-5

	Defining Elements
1	Balconies at Upper Floors
2	Dormer Windows
3	Unique Building Form Consistent with Street Curve
4	Casual Building Form with Wide Overhang
5	Large Awnings to Promote Outdoor Gathering
6	Expansive Balconies and Decks
7	Bermuda Shutters
8	Pastel Tropical Colors Blended with Whitewashed Finishes
9	Vertical Tower Element
10	Rounded Building Form

Contemporary Interpretation

The River Delta style is contextual and largely based on function and lifestyle, making it a highly adaptable style with ample opportunities for unique interpretation. A contemporary River Delta style can be achieved through simplified forms and highly ordered fenestration patterns, along with streamlined outdoor spaces with simple railings and contemporary awning or roof structures. The color palette also provides an opportunity for creating a contemporary twist to the style. The traditional River Delta style can be very vibrant and generous with color application, a contemporary interpretation can utilize more refined color palette with judicious splashes of accent colors in strategic locations, such as entryways or window surrounds.

7.5.5 SPANISH ECLECTIC

The Spanish Eclectic style is characterized by its asymmetrical and highly adaptable form and a casual, playful character. The style evolved based on region, chronology, and function, and can range from exotic to whimsical. Details are critical to the Spanish Eclectic style, with wood and metal elements throughout.

Defining Elements

The Spanish Eclectic style has specific details, forms, and characteristics that are definitive of the style and must be considered when designing Spanish Eclectic architecture. Table 7-6 details these elements, and a minimum of five of these defining elements shall be incorporated in Spanish Eclectic style architecture of the Plan Area.

Table 7-6

Defining Elements	
1	Flared Wing Walls
2	Recessed Entry Addressing the Corning
3	Arcades along Pedestrian Level
4	S-Tile Roof
5	Arched Windows Grouped in Threes
6	Second-Story Balcony Element with Heavy Wood Supports
7	Tower Element
8	Walled Courtyards

Contemporary Interpretation

Creating an abstracted Spanish Electric is an exercise in simplification and refinement. The contemporary interpretation removes much of the ornamentation of the style, concentrating any decorative elements at high-impact areas. For example, Spanish tiles, a common element of Spanish Eclectic architecture, may be present only at window sills or at stairs, leaving the remaining wall surface unornamented. The primary wall material is smooth stucco in a very rectilinear form. Colors can range toward a cooler palette rather than the traditional warm tones. Parapet roofs are very appropriate for the contemporary interpretation of this style and can offer opportunities for unique and vibrant outdoor spaces.

APPENDIX F

Draft Air Quality and Greenhouse Gas Technical Report for the Aspen 1 – New Brighton Project Located in Sacramento, CA

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Introduction

This technical report evaluates potential air quality and greenhouse gas (GHG) impacts associated with the Aspen 1-New Brighton Project (Project) located in Sacramento, California. The report describes the Project, presents the regulatory and environmental setting, and evaluates the Project's air and greenhouse gas impacts.

Impacts are evaluated in a three-step process that first identifies the air quality and GHG significance thresholds, then explains the methodology use to evaluate whether the project would exceed those thresholds, and finally evaluates whether the thresholds would be exceeded.

Project Description

The Project would include 482 single-family units, 883 multi-family units, an 850-student elementary school, 192,500 square feet of retail, 29,500 square feet of office space, parks, and an urban farm. The project would be located southwest of the South Watt Avenue/Jackson Road intersection (Figure 1). A no- school alternative has also been proposed, which would add 79 single family dwelling units in lieu of an elementary school.

Figure 1. Project Location

Regulatory Setting

Air Quality Regulatory Framework

Federal, state, and local government agencies have distinct responsibilities for protecting air quality. These responsibilities are described in more detail below.

Federal Air Quality Responsibilities

The United States Environmental Protection Agency (EPA) implements national air quality programs established under the Federal Clean Air Act (FCAA). The FCAA requires that EPA set National Ambient Air Quality Standards (NAAQS) for several problem air pollutants based on human health and welfare criteria. Two types of NAAQS have been established: primary standards, which protect public health, and secondary standards, which protect public welfare from non-health-related adverse effects such as visibility reduction.

Primary NAAQS were established for the following “criteria” air pollutants (so called because they were established based on health criteria):

- Ozone,
- Particulate Matter (PM10, PM2.5)
- Nitrogen Dioxide (NO_2),
- Carbon Monoxide (CO),
- Sulfur Dioxide (SO_2), and
- Lead (Pb).

The primary NAAQS standards are intended to protect, with an adequate margin of safety, those persons most susceptible to respiratory distress, such as the elderly, young children, or people engaged in strenuous work or exercise. Table 1 presents the NAAQS.

The FCAA requires that states not meeting the NAAQS prepare an air quality control plan referred to as the State Implementation Plan (SIP). SIPs are designed to bring non-attainment areas into attainment with the NAAQS. Table 2 shows Sacramento County’s attainment status for each of the criteria pollutants. Sacramento County is nonattainment for the federal ozone, PM10, and PM2.5 standards. Air quality in Sacramento County is managed by the Sacramento Metropolitan Air Quality Management District (SMAQMD).

Table 1. State and Federal Ambient Air Quality Standards

Contaminant	Averaging Time	State Standards[1]	Primary Federal Standards[2]	Secondary Federal Standards[2]
Ozone	1 hour	0.09 ppm	-	-
	8 hour	0.070 ppm	0.075 ppm	0.075 ppm
Particulate Matter (PM10)	24 hour	50 μg/m³	150 μg/m³	150 μg/m³
	Annual arithmetic mean	20 μg/m³	-	-
Particulate Matter (PM2.5)	24 hour	-	35 μg/m³	35 μg/m³
	Annual arithmetic mean	12 μg/m³	15.0 μg/m³	15.0 μg/m³
Carbon Monoxide	8 hour	9.0 ppm	9 ppm	-
	1 hour	20 ppm	35 ppm	-
Nitrogen Dioxide	Annual arithmetic mean	0.030 ppm	0.053 ppm	0.053 ppm
	1 hour	0.18 ppm	0.1 ppm	-
Sulfur Dioxide	Annual arithmetic mean	-	0.03 ppm	
	24 hour	0.04 ppm	0.14 ppm	-
	3 hour	-	-	0.5 ppm
	1 hour	0.25 ppm	75 ppb	-
Lead	30 day average	1.5 μg/m³	-	-
	Calendar quarter	-	1.5 μg/m³	1.5 μg/m³
Visibility reducing particles	8 hour	See footnote 3	-	-
Sulfates	24 hour	25 μg/m³	-	-
Hydrogen Sulfide	1 hour	0.03 ppm	-	-
Vinyl Chloride	24 hour	0.01 ppm	-	-

California Air Resources Board, 2010a.
ppm – parts per million by volume, ppb – parts per billion by volume, μg/m³ – micrograms per cubic meter, PM10 – particulate matter less than 10 microns in diameter

1. California standards for ozone, carbon monoxide, sulfur dioxide (1-hour and 24-hour), nitrogen dioxide, suspended particulate matter – PM10, and visibility reducing particles are values that are not to be exceeded. The standards for sulfates, lead, hydrogen sulfide, and vinyl chloride are not to be equaled or exceeded. If the standard is for a 1-hour, 8-hour, or 24-hour average then some measurements may be excluded. In particular, measurements that the Air Resources Board determines would occur less than once per year on average are excluded.
2. National standards other than for ozone, particulates, and those based on annual averages are not to be exceeded more than once per year. The 1-hour ozone standard is attained if, during the most recent three-year period, the average number of days per year with maximum hourly concentrations above the standard is equal to or less than one. The 8-hour ozone standard is attained when the 3-year average of the 4th highest daily concentrations is 0.075 ppm (75 ppb) or less. The 24-hour PM10 standard is attained when the 3-year average of the 99th percentile of monitored concentrations is less than 150 μg/m³. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentiles is less than 35 μg/m³.

Except for the national particulate standards, annual standards are met if the annual average falls below the standard at every site. The national annual particulate standard for PM10 is met if the 3-year average falls below the standard at every site. The annual PM2.5 standard is met if the 3-year average of annual averages spatially averaged across officially designed clusters of sites falls below the standard.

3. Statewide VRP Standard (except Lake Tahoe Air Basin): Particles in sufficient amount to produce an extinction coefficient of 0.23 per kilometer when the relative humidity is less than 70 percent.

Table 2. Air Quality Standard Attainment Status for the Sacramento Region

Contaminant	Averaging Time	State Standards Attainment Status	Federal Standards Attainment Status
Ozone	1 hour	N	N/A
	8 hour	N	N
Respirable Particulate Matter (PM10)	24 hour	N	N
	Annual Arithmetic Mean	N	N/A
Fine Particulate Matter (PM2.5)	24 hour	N	N
	Annual arithmetic mean	U	A
Carbon Monoxide	8 hour	A	A
	1 hour	A	A
Nitrogen Dioxide	Annual arithmetic mean	A	A
	1 hour	A	A
Sulfur Dioxide	Annual arithmetic mean	N/A	A
	24 hour	A	A
	3 hour	N/A	A
	1 hour	A	A
Lead	30 day average	A	
	Calendar quarter	N/A	A
Visibility Reducing Particles	8 hour	A	N/A
Sulfates	24 hour	A	N/A
Hydrogen Sulfide	1 hour	A	N/A

Source: (California Air Resources Board, 2010b)
A = attainment
N = nonattainment
U = unclassified
N/A = not applicable. No standard has been enacted for this combination of pollutant and averaging period.

State Air Quality Responsibilities

The California Air Resources Board (ARB) is the agency responsible for coordination and oversight of state and local air pollution programs in California. ARB has primary responsibility in California for developing and implementing air pollution control plans designed to achieve and maintain the NAAQS established by the EPA. Whereas ARB has primary responsibility and produces a major part of the SIP for pollution sources that are statewide in scope, it relies on the local air districts to provide additional strategies for sources under their jurisdiction. The ARB combines its data with local district data and submits the completed SIP to the EPA. The SIP consists of the emissions standards for vehicular sources and consumer products set by the ARB, and attainment plans adopted by the air districts and approved by ARB.

States may establish their own standards, provided the state standards are at least as stringent as the NAAQS. California has established California Ambient Air Quality Standards (CAAQS) pursuant to H&SC §39606(b) and its predecessor statutes. Table 1 also presents the CAAQS.

In addition to the eight criteria pollutants established by the NAAQS, the CAAQS includes hydrogen sulfide, vinyl chloride, and visibility reducing particles.

California Health and Safety Code §39608 requires the ARB to "identify" and "classify" each air basin in the state on a pollutant-by-pollutant basis. Subsequently, the ARB has designated areas in California as nonattainment based on violations of the CAAQS. Table 2 shows Sacramento County to be nonattainment for the state ozone, PM10, and PM2.5 standards.

ARB is also responsible for monitoring air quality. The ARB has established and maintains, in conjunction with the air districts, a network of sampling stations called the State and Local Air Monitoring (SLAMS) network that monitor actual pollutant levels present in the ambient air.

State law recognizes that air pollution does not respect political boundaries and therefore requires the ARB to divide the state into separate air basins that have "similar geographical and meteorological conditions" while still making "considerations for political boundary lines whenever practicable" [H&SC §39606(1)].

Local Air Quality Responsibilities

The SMAQMD is tasked with achieving and maintaining healthy air quality for Sacramento County's residents. This is accomplished by establishing programs, plans, and regulations enforcing air pollution rules in order to attain all state and federal ambient air quality standards and minimize public exposure to airborne toxic air contaminants (TACs) and nuisance odors.

The SMAQMD has adopted several attainment plans to achieve state and federal air quality standards and comply with CCAA and FCAAA requirements. The SMAQMD continuously monitors its progress in implementing attainment plans and must periodically report to ARB and EPA. The SMAQMD, in partnership with five air districts in the Sacramento Metropolitan Area, ARB, and the Sacramento Area Council of Governments (SACOG), periodically revises its attainment plans to reflect new conditions and requirements

The SMAQMD's primary means of implementing air quality plans is by adopting rules and regulations. The SMAQMD has also enhanced its participation in CEQA where it actively reviews and comments on prepared environmental documents. The SMAQMD has developed air quality-related CEQA guidance to be used in preparing air studies (SMAQMD, 2009).

Sacramento City Code

The City of Sacramento has a local city code - 15.40.050 Control of dust and mud – that limits dust from construction operations:

- *Any person who has been issued a permit for any work covered by this code shall take reasonable precautions to prevent and control the movement of dust created by work activities to adjoining public or private property. Such dust shall be immediately settled by wetting the same. Work activities shall be stopped during periods of high winds that may carry dust from the job site before it can be settled by wetting.*

- *The permittee shall be responsible for maintaining clean public streets, sidewalks and alleys in the immediate vicinity of the job site during and after the period of work activity. The permittee shall remove all mud and dust from any public property which was deposited there by any activity related to the work. In order to prevent mud and other material from entering any public sewer, the permittee shall properly pond any affected gutter to permit such material to settle and shall remove such material from public property. This procedure shall be in accordance with the requirements and policies of the city water and sewer division. The permittee shall obtain any necessary permits for water from the manager of said division. See Section 15.44.170 of this title for additional requirements.*

City of Sacramento 2030 General Plan
The City of Sacramento's 2030 General Plan is based on the promotion of "Smart Growth Principles" for future development and favors a more compact growth pattern for the city, emphasizing infill development and reuse of underutilized properties over expanding outward into undeveloped areas known as greenfields. It focuses on intensifying development near transit and mixed-use activity centers and co-locating residential and employment uses to reduce private automobile use and encourage the use of mass transit, walking, bicycling, and alternative transportation modes. This would reduce fuel consumption and thereby air pollutant emissions. The following goals and policies from the proposed 2030 General Plan are relevant to Air Quality within the entire Policy Area.

Goal ER 6.1 Improved Air Quality. Improve the health and sustainability of the community through improved regional air quality and reduced greenhouse gas emissions that affect climate change.

Policies

ER 6.1.1 Maintain Ambient Air Quality Standards. The City shall work with the California Air Resources Board and the Sacramento Metropolitan Air Quality Management District (SMAQMD) to meet State and Federal ambient air quality standards.

ER 6.1.2 New Development. The City shall review proposed development projects to ensure projects incorporate feasible measures that reduce construction and operational emissions for reactive organic gases, nitrogen oxides and particulate matter (PM10 and PM2.5) through project design.

ER 6.1.3 Emissions Reduction. The City shall require development projects that exceed SMAQMD ROG and NOX operational thresholds to incorporate design or operational features that reduce emissions equal to 15 percent from the level that would be produced by an unmitigated project.

ER 6.1.5 Development near TAC Sources. The City shall ensure that new development with sensitive uses located adjacent to toxic air contaminant sources, as identified by the California Air Resources Board (CARB), minimizes potential health risks. In its review of these new development projects, the City shall consider current guidance provided by and consult with CARB and SMAQMD.

ER 6.1.6 Sensitive Uses. The City shall require new development with sensitive uses located adjacent to mobile and stationary toxic air contaminants (TAC) be designed with consideration of site and building orientation, location of trees, and incorporation of appropriate technology for improved air quality (i.e., ventilation and filtration) to lessen any potential health risks. In addition, the City shall require preparation of a health risk assessment, if recommended by Sacramento Metropolitan Air Quality Management District, to identify health issues, reduce exposure to sensitive receptors, and/or to implement alternative approached to development that reduces exposure to TAC sources.

ER 6.1.11 Coordination with SMAQMD. The City shall coordinate with SMAQMD to ensure projects incorporate feasible mitigation measures if not already provided for through project design.

ER 6.1.14 Zero-Emission and Low-Emission Vehicle Use. The City shall encourage the use of zero-emission vehicles, low-emission vehicles, bicycles and other non-motorized vehicles, and car-sharing programs by requiring sufficient and convenient infrastructure and parking facilities in residential developments and employment centers to accommodate these vehicles.

Applicable Mitigation Measures from the City of Sacramento 2030 General Plan
No applicable mitigation measures were required or available with respect to Air Quality as evaluated in the 2030 General Plan Master EIR.

Climate Change/Greenhouse Gas Regulatory Framework

State Regulations

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order was to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by 2020; and (3) 80% below 1990 levels by 2050.

In 2006, this goal was further reinforced with the passage of Assembly Bill 32 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan (including market mechanisms), and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team. CARB must adopt, no later than January 1, 2012, rules and regulations to implement the GHG emissions reductions.

Pursuant to AB 32, ARB adopted a Scoping Plan in 2008, outlining measures to meet the 2020 GHG reduction limits (CARB, 2008). To meet these goals, California must reduce its GHG emissions by 28 percent below projected 2020 business as usual emissions or about 15 percent from today's levels. The Scoping Plan estimates a reduction of 174 million metric tons of CO_2e from the transportation, energy, agriculture, forestry, and high global warming potential sections. ARB has identified an implementation timeline for the GHG reduction strategies in the Scoping Plan. Some measures may require new legislation to implement, some will require subsidies, some have already been developed, and some will require additional effort to evaluate and quantify.

Senate Bill 97 and CEQA

In 2007, Senate Bill 97 (SB 97) was adopted to provide greater certainty to lead agencies that GHG emissions and the effects of GHG emissions are appropriate subjects for CEQA analysis. Pursuant to SB 97, the state's Natural Resources Agency adopted amendments to the State CEQA Guidelines to address analysis and mitigation of the potential effects of GHG emissions in CEQA documents and processes. These amendments became effective on March 18, 2010. Topics of the amendments include but are not limited to:

- requiring a lead agency to make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project;
- requiring a lead agency to consider the project's effect on GHG emissions in comparison to the existing setting, an exceedance of a significance threshold by the project, and the extent to which the project complies with adopted regulations or requirements among others, when assessing the significance of impacts from greenhouse gas emissions on the environment;
- identifying types of suitable/applicable mitigation measures for GHG emissions;
- allowing project-specific environmental documents to tier from and/or incorporate by reference any existing programmatic review of GHG emissions, such as in a general plan, a long range development plan, or a separate plan to reduce GHG emissions.

Actions Taken by California Attorney General's Office

The California Attorney General (AG) has filed comment letters under CEQA about a number of proposed projects. The AG has also filed several complaints and obtained settlement agreements for CEQA documents covering general plans and individual programs that the AG found either failed to analyze GHG emissions or failed to provide adequate GHG mitigation. The AG's office has prepared a report that lists measures that local agencies should consider under CEQA to offset or reduce global warming impacts (California Department of Justice, 2011).

Environmental Setting

This section discusses existing climate and air quality conditions in the project area.

Climate and Topography

The SMAQMD is located within the Sacramento Valley Air Basin (SVAB). The SVAB encompasses eleven counties including all of Shasta, Tehama, Glenn, Colusa, Butte, Sutter, Yuba, Sacramento, and Yolo Counties, the westernmost portion of Placer County and the northeastern half of Solano County. The SVAB is bounded by the North Coast Ranges on the west and Northern Sierra Nevada Mountains on the east. The intervening terrain is relatively flat.

Hot dry summers and mild rainy winters characterize the SVAB's Mediterranean climate. During the year, the temperature may range from 20 to 115 degrees Fahrenheit with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is about 20 inches, and the rainy season generally occurs from November through March.

The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north. The mountains surrounding the SVAB create a barrier to airflow, which can trap air pollutants under certain meteorological conditions. The highest frequency of air stagnation occurs in the autumn and early winter when large high-pressure cells collect over the Sacramento Valley. The lack of surface wind during these periods and the reduced vertical flow caused by less surface heating reduces the influx of outside air and allows air pollutants to become concentrated in a stable volume of air. The surface concentrations of pollutants are highest when these conditions are combined with temperature inversions that trap pollutants near the ground.

The ozone season (May through October) in the Sacramento Valley is characterized by stagnant morning air or light winds with the delta sea breeze arriving in the afternoon out of the southwest. Usually the evening breeze transports the airborne pollutants to the north out of the Sacramento Valley. During about half of the days from July to September, however, a phenomenon called the "Schultz Eddy" prevents this from occurring. Instead of allowing the prevailing wind patterns to move north, carrying the pollutants out, the Schultz Eddy causes the wind pattern to circle back to the south. Essentially, this phenomenon causes the air pollutants to be blown south toward the Sacramento metropolitan area. This phenomenon has the effect of exacerbating the pollution levels in the area and increases the likelihood of violating federal or state standards. The eddy normally dissipates around noon when the delta sea breeze arrives.

Ambient Air Quality and Pollutant Characteristics

Table 3 summarizes recent air monitoring data for locations near the proposed project site. As the table shows, violations were recorded for the state and federal ozone standards, for the federal PM2.5 standards, and for the state PM10 standards.

Characteristics and Health Effects of Air Pollutants

<u>Ozone</u>

Ozone in the lower atmosphere is one of the main components of smog. It is not directly emitted but is formed in the atmosphere over several hours from combinations of various precursors in the presence of sunlight. Reactive organic gases (ROG) and nitrogen oxides (NOx) are considered the primary compounds, or precursors, contributing to the formation of ozone. Ozone is viewed as both a secondary pollutant and a regional pollutant because ozone can form far from where precursors are emitted.

Short-term exposure to ozone can result in injury and damage to the lungs, decreases in pulmonary function and impairment of immune mechanisms. Chronic lung disease can occur because of longer-term exposure. Symptoms of ozone irritation include shortness of breath, chest pain when inhaling deeply, wheezing, and coughing. Children and persons with pre-existing respiratory disease (e.g., asthma, chronic bronchitis, and emphysema) are at greater risk.

ROG are photochemically reactive hydrocarbons whose primary sources include mobile sources, consumer products, petroleum marketing (e.g., gas dispensing), coatings and solvents, and agricultural related activities. NOx is a family of gaseous nitrogen compounds whose emissions result primarily from the combustion of fossil fuels under high temperature and pressure. On road and off-road motor vehicle fuel combustion is the major source of this air pollutant.

Table 3. Air Quality Monitoring Data Summary (2008-2010) for the Project Area

POLLUTANT	2008	2009	2010
Ozone			
Folsom – Natoma Street			
Highest 1-hour average, ppm	0.166	0.120	0.124
Highest 8-hour average, ppm	**0.123**	**0.104**	**0.112**
Days > State 1-hour standard	38	24	12
Days > Federal 8-hour standard	50	35	19
Days > State 8-hour standard	65	47	26
Percent of Year Covered	97	96	94
Particulate Matter (PM10)			
Sacramento – Stockton Blvd			
Highest 24-hour average, µg/m^3	**88**	45	45
Days > State 24-hour standard	13	0	0
Annual Average, µg/m^3	**23.9**	18.6	15.8
Percent of Year Covered	98	93	97
Particulate Matter (PM2.5)			
Sacramento – Stockton Blvd			
Highest 24-hour average, µg/m^3	64.8	42.4	29.0
Days > Federal standard	21.5	3.1	0
Percent of Year Covered	98	97	94
Nitrogen Dioxide			
Folsom – Natoma Street			
Highest Hourly average, ppm	0.042	0.038	0.028
Days > State standard	0	0	0
Percent of Year Covered	96	97	92
Carbon Monoxide			
Sacramento – El Camino and Watt			
Highest 1-hour Average	2.8	2.8	1.9
Highest 8-hour Average	2.4	N/A	N/A

Note: Underlined values represent those in excess of the National Ambient Air Quality Standards. **Bolded values** represent those in excess of the applicable California Ambient Air Quality Standards.

ppm = parts per million, µg/m^3 = micrograms per cubic meter

Source: (California Air Resources Board, 2011, U.S. Environmental Protection Agency, 2011a)

Particulate Matter

The term "particulate matter" (PM) includes both solid particles and liquid droplets found in air. Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. These solid and liquid particles come in a wide range of sizes. Particles less than 10 micrometers in diameter (PM10) pose a health concern because they can be inhaled into and accumulate in the respiratory system.

Particles with diameters between 2.5 and 10 micrometers are referred to as "coarse." Sources of coarse particles include crushing or grinding operations, and dust from paved or unpaved roads. Particles less than 2.5 micrometers in diameter (PM2.5) are referred to as "fine" particles and are believed to pose the largest health risks. Because of their small size, fine particles can lodge deeply into the lungs. Sources of fine particles include all types of combustion (motor vehicles, power plants, wood burning, etc.) and some industrial processes. In 1997, the EPA adopted a fine particulate matter standard for particles 2.5 microns or less in diameter (PM2.5) for the first time, and revised the standard for PM10. The ARB adopted an annual PM2.5 standard in 2002.

Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, bronchitis, and respiratory illnesses in children.

Carbon Monoxide

Carbon monoxide is formed by the incomplete combustion of carbon-containing material. Under most conditions, CO does not persist in the atmosphere and is rapidly dispersed. Elevated levels of CO are most likely to occur in the winter, when inversion levels trap pollutants near the ground and concentrate the CO. Since CO is somewhat soluble in water, normal winter conditions of rainfall and fog can suppress CO concentrations. Motor vehicles are the dominant source of CO emissions and adverse localized impacts can be created in areas of heavy traffic congestion.

When CO combines with hemoglobin in the blood, the oxygen-carrying capacity of the blood is reduced and the release of oxygen is inhibited or slowed. This condition places angina (uncomfortable pressure, fullness, squeezing, or pain in the center of the chest) patients, persons with other cardiovascular diseases or with chronic obstructive lung disease, or asthma at risk. At higher levels, CO also affects the central nervous system. Symptoms of exposure may include headaches, dizziness, sleepiness, nausea, vomiting, confusion, and disorientation.

Other Criteria Pollutants

The standards for NO_2, SO_2, and lead are being met in the SMAQMD, and the latest pollutant trends suggest that these standards will be attained for the near future. Ambient levels of airborne lead are well below the state and federal standards and are expected to continue to decline. Since the phase-out of leaded gasoline, ambient lead concentrations have decreased dramatically and lead inhalation is no longer a significant health concern.

Toxic Air Contaminants

In addition to the criteria air pollutants, TACs are another group of airborne substances known to be highly hazardous to health, even in small quantities. TACs are capable of causing short-term (acute) and long-term (chronic or carcinogenic) adverse human health effects. TACs can be emitted from a variety of common sources, including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. Agricultural and construction activities can also contribute to toxic air emissions. In 1998, ARB also identified diesel exhaust particulate matter (diesel PM) as a TAC.

Greenhouse Gases

The California Global Warming Solution Act of 2006 (AB 32), a law to control and reduce the emissions of global warming gases in California, requires both reporting of greenhouse gas emissions and their reduction. AB32 requires the reduction of greenhouse gas emissions such as carbon dioxide (CO_2) to 1990 levels by 2020.

Climate change results from the accumulation in the atmosphere of "greenhouse gases" produced by the burning of fossil fuels for energy. Because greenhouse gases (primarily, CO_2, methane, and nitrous oxide) persist and mix in the atmosphere, emissions anywhere in the world affect the climate everywhere.

Anthropogenic emissions of greenhouse gases are widely accepted in the scientific community as contributing to global warming. According to *Climate Change 2007: The Physical Science Basis: Summary for Policymakers* (Intergovernmental Panel on Climate Change [IPCC] 2007), there is no doubt that the climate system is warming. Global average air and ocean temperatures, as well as global average sea level, are rising. Of the years 1995-2006, 11 years ranked as among the warmest on record since 1850. While some of the increase is explained by natural occurrences, the 2007 report asserts that the increase in temperature is very likely (> 90%) due to human activity, most notably the burning of fossil fuels.

For California, similar effects are described in *Our Changing Climate: Assessing the Risks to California* (California Climate Change Center 2006). Based on projections using state of the art climate modeling, temperatures in California are expected to rise between 3 and 10.5 °F (1.7 and 5.8 degrees Celsius [°C]) by the end of the century, dependent on how much California and the rest of the globe are able to reduce their GHG emissions. The report states that these temperature increases will negatively impact public health, water supply, agriculture, plant and animal species, and the coastline.

The IPCC has been established by the World Meteorological Organization and United Nations Environment Program to assess scientific, technical, and socio-economic information relevant to the understanding of climate change, its potential impacts, and options for adaptation and mitigation. The IPCC predicts substantial increases in temperatures globally may affect the natural environment in California in the following ways:

- rising sea levels along the California coastline, particularly in San Francisco and the San Joaquin Delta, due to ocean expansion;
- extreme-heat conditions, such as heat waves and very high temperatures, which could last longer and become more frequent;
- an increase in heat-related human deaths, infectious diseases, and a higher risk of respiratory problems caused by deteriorating air quality;
- reduced snow pack and stream flow in the Sierra Nevada, affecting winter recreation and water supplies;
- potential increase in the severity of winter storms, affecting peak stream flows and flooding;
- changes in growing season conditions that could affect California agriculture, causing variations in crop quality and yield; and/or
- changes in distribution of plant and wildlife species due to changes in temperature, competition from colonizing species, changes in hydrologic cycles, changes in sea levels, and other climate-related effects.

These changes in California's climate and ecosystems are occurring at a time when California's population is expected to increase from 34 million to 59 million by the year 2040 (California Energy Commission 2005). As such, the number of people potentially affected by climate change, as well as the amount of anthropogenic GHG emissions expected under a "business as usual" scenario, are expected to increase. Similar changes as those noted above for California would also occur in other parts of the world, with regional variations in resources affected and vulnerability to adverse effects.

Sensitive Receptors

Sensitive receptors are those who are particularly susceptible to the adverse effects of air pollution, such as children, the elderly, and the sick. Air pollution can cause adverse health effects in humans including aggravating asthma conditions and other respiratory problems. The residents of the proposed Project are considered sensitive receptors in that they could be exposed to air pollutants or odors from surrounding emission sources.

Similarly, surrounding sensitive receptors could be exposed to emissions from the proposed project. The closest sensitive receptors to the project site include residences in the Rosemont area located northeast of the South Watt Avenue/Jackson Road intersection (see Figure 1).

Impact Analysis

The Project's air and greenhouse gas impacts are analyzed using the following three-step approach. First, significance thresholds are identified. Then, the methodology used to evaluate those thresholds is explained. Finally, the significance of each potential impact is evaluated.

Criteria for Determining Significance – Criteria Pollutants, Toxic Air Contaminants, and Odors

Appendix G of the State CEQA Guidelines states that a project would have significant air quality impacts if it would:

- Conflict with or obstruct implementation of the applicable air quality plan;
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is within non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors);
- Expose sensitive receptors to substantial pollutant concentrations; or
- Create objectionable odors affecting a substantial number of people.

Project Specific Significance Thresholds

<u>Criteria Pollutant Quantitative Thresholds</u>

Due to the general nature of the Appendix G criteria, the SMAQMD has adopted the quantitative emission thresholds shown in Table 4. For construction emissions, the SMAQMD requires that specific mitigation measures be employed if a project's emissions exceed the 85 pounds per day NOx threshold. Also, if construction would actively disturb more than 15 acres per day, then fugitive dust dispersion modeling is required to estimate the project's contribution to ambient PM10 concentrations. If the resulting PM10 concentrations exceed more than 5 percent of the PM10 24 hour standard, then SMAQMD requires the implementation of fugitive dust measures.

Table 4. SMAQMD Mass Emission Significance Thresholds – Construction and Operation

POLLUTANT	CONSTRUCTION (POUNDS/DAY)	OPERATION (POUNDS/DAY)
Reactive Organic Gases (ROG)	None	65
Nitrogen Oxides (NOx)	85	65
PM10	None*	None
PM2.5	None*	None
Carbon Monoxide (CO)	None	Violation of a state ambient air quality standard for CO

Source: None means that no thresholds have been established by the SMAQMD (2009).

*Although there is no PM10 or PM2.5 mass emission threshold for construction, SMAQMD recommends implementation of basic emission control practices. If construction would actively disturb 15 or more acres per day, SMAQMD recommends dispersion modeling be used to determine whether the project would result in ambient PM10 concentrations of 5% or more of the ambient standard.

Carbon Monoxide Concentrations

The SMAQMD has adopted the state ambient carbon monoxide (CO) standards of 20 parts per million (ppm) for the 1-hour average and 9 ppm for the 8-hour average as the significance thresholds for projects (see also Table 1). A project that causes or contributes to exceedances of these state CO standards is considered to have a significant impact.

Toxic Air Contaminant Health Risks

Toxic air contaminant (TAC) emissions from construction typically includes diesel particulate matter (DPM) exhaust from diesel equipment and naturally occurring asbestos (NOA) from earth disturbance. Each of these is discussed below.

The SMAQMD has not established a quantitative threshold of significance from construction-related TAC emissions. Consequently, a qualitative procedure to evaluate the significance of DPM emissions is used in this analysis as recommended by SMAQMD.

Naturally occurring asbestos (NOA) is commonly found in the soils of eastern Sacramento County. Construction activities have the potential to disturb soils containing NOA, releasing asbestos fibers into the atmosphere. The California Department of Conservation has prepared a report that examines the likelihood that NOA is present at various locations in eastern Sacramento County (California Department of Conservation, 2006). Using the California Department of Conservation report, this analysis examines whether the proposed project location is located in or near an area with NOA.

For operational emissions, SMAQMD has adopted significance thresholds for toxic air contaminants (TACs) emitted by mobile sources (SMAQMD 2011). The SMAQMD guidance provides a methodology for the assessment and disclosure of potential cancer risk from diesel particulate matter (DPM) attributable to siting land uses adjacent to freeways and major roadways. For a mixed-use project such as the Aspen 1 Project, a significant impact would occur if the project were located near roadways with traffic volumes that equal or exceed 100,000 vehicles per day.

Odors

According to the SMAQMD's CEQA guidance, odor impacts need to be examined when a new facility has the potential to generate odors or when a new project has the potential to be affected by existing odor sources (SMAQMD, 2009).

Cumulative Impact Significance Criteria

A project is considered to have a significance cumulative impact if it would exceed the criteria pollutant project level thresholds listed in Table 4 (SMAQMD, 2009).

Criteria for Determining Significance – Greenhouse Gases

Appendix G of the State CEQA Guidelines states that a project would have significant air quality impacts if it would:

- Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment; or
- Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.

Neither the SMAQMD nor the City of Sacramento has developed guidance or thresholds for evaluating the significance of a project's greenhouse gas emissions. ARB adopted a Scoping Plan in 2008 to meet the requirements of AB32. This Plan outlines measures to meet the 2020 GHG reduction limits. To meet these goals, California must reduce its GHG emissions by 28 percent below projected 2020 business as usual emissions or about 15 percent from today's levels.

Methodology for Evaluating Significance – Criteria Pollutants, Toxic Air Contaminants, and Odors

Criteria Pollutant Methodology - Construction

The Project's construction emissions were calculated by first identifying the construction phases that would be required, along with the number and type of on-road and off-road construction equipment that would be required. Mass grading would occur during the first two years of construction. During mass grading, material would be imported to Aspen 1 from the Aspen 3 site, while channel construction would occur in Aspen 2 and construction of a retention basin would occur on the Mayhew property. That material imported from Aspen 3 would be used to regrade the Aspen 1 site and to develop residential, commercial, and school building pads. During construction years three through seven, fine site grading, trenching for utilities, and road and building construction would occur. A detailed description of construction activities and construction emissions is included in Appendix A.

Mass grading would generate the majority of the construction related emissions, especially PM10 emissions. Thus, the following analysis focuses on the project's emissions from mass grading. Two basic construction mass grade options are being considered for this project. The with conveyor belt option would transport material from Aspen 3 to Aspen 1 by conveyor belt, while the second option would transport that material from Aspen 3 to Aspen 1 by truck. Information for each mass grade option was entered into the URBEMIS model, which was used to estimate construction emissions (URBEMIS, 2006).

Since construction activity would disturb more than 15 acres per day, fugitive dust dispersion modeling was conducted to determine whether the project would exceed five percent of the ambient PM10 standards. PM10 dispersion modeling results are included in Appendix A.

Criteria Pollutant Methodology - Operations

A combination of air quality assessment tools were used to estimate operational criteria emissions for the proposed project with and without the elementary school. The URBEMIS2007 model was used to estimate operational emissions. Criteria pollutant emissions were estimated for ROG and NOx because these are the pollutants for which the SMAQMD has established operational significance thresholds.

Carbon Monoxide Methodology

The SMAQMD states that a project will have a less-than-significant impact to air quality for local CO if:

1) traffic generated by the Project would not result in deterioration of intersection level of service (LOS) to LOS E or F, or

2) the Project would not contribute additional traffic to an intersection that already operates at LOS E or F (SMAQMD 2009).

If the first tier of CO screening criteria is not met, then the second tier of screening shall be examined. The traffic report for this study shows that the first tier CO screening criteria would not be met (Dowling, 2011). This is because the project would contribute traffic to existing intersections currently operating at LOS E and F.

For the second tier of CO screening criteria, all of the following three criteria must be met for the project to result in a less than significant air quality impact for local CO.

1) The project would not result in an affected intersection experiencing more than 31,600 vehicles per hour;

2) The project would not contribute traffic to a tunnel, parking garage, bridge underpass, urban street canyon, or below-grade roadway, or other locations where horizontal or vertical mixing of air would be substantially limited; and

3) The mix of vehicle types at the intersection is not anticipated to be substantially different from the County average (as identified by the EMFAC or URBEMIS models).

Estimates for nearby intersections affected by project traffic shown worst-case hourly volumes approaching the 31,600 vehicles per hour threshold. Consequently, the project would not meet the first criterion listed above. Therefore, air quality modeling is used to evaluate the project's effect on ambient CO concentrations.

Odor Methodology

The CEQA threshold for odors requires that records be reviewed for complaint records for the odor source in question. Distance and wind direction should be evaluated if complaint records indicate a potential odor impact.

To assess potential odor impacts, a public records request was submitted to the SMAQMD. The SMAQMD report several odor complaints for the proposed Project area for the last ten years (Jester, J., 2011). Consequently, odors have the potential to cause a significant impact and are evaluated in more detail in the impact discussion.

Toxic Air Contaminants and Health Risk Methodology

Naturally Occurring Asbestos (NOA)

The proposed project is evaluated for its potential to release NOA by comparing the project to a NOA map for Sacramento County. That map shows areas that are most and least likely to contain NOA (California Department of Conservation, 2006).

Diesel Particulate Matter – Construction

For construction, SMAQMD recommends that exposure be evaluated qualitatively using a number of factors, including types of off-site receptors and their proximity to construction activity, duration of construction period, quantity and types of diesel powered equipment, number of hours equipment would be operated per day, location of equipment staging area, predominant wind direction, and amount of on-site diesel exhaust.

Diesel Particulate Matter - Operational

Cancer and non-cancer risks for diesel particulate matter (DPM) during project operation were evaluated using SMAQMD's guidance (SMAQMD 2011). SMAQMD's screening procedure applies for projects that would place residences within 500 feet of roadways having average daily traffic volumes in excess of 100,000 vehicles.

Methodology for Evaluating Significance - Greenhouse Gas Emissions

Although SMAQMD has not established a numerical significance threshold for greenhouse gas emissions, state CEQA guidelines require that GHG emissions be estimated. Consequently, greenhouse gas emissions were estimated.

Greenhouse gas emissions were estimated for carbon dioxide (CO_2) and, where emission factors were available, for methane (CH_4) and nitrous oxide (N_2O). Emissions for each pollutant were then multiplied by their respective global warming potential and summed to obtain carbon dioxide equivalence (CO_2e). Global warming potential is a relative measure of how much heat each greenhouse traps in the atmosphere. The following global warming potential values were used: CO_2 =1, CH_4 = 21, and N_2O = 310 (California Climate Action Registry, 2009).

For this analysis, operational GHG emissions were estimated for construction, and for 2020 buildout and 2030 cumulative conditions. Emissions estimates were made using a combination of the URBEMIS2007 and BGM models (URBEMIS, 2006; BAAQMD, 2010). Operational emissions were estimated for business as usual (BAU) conditions and for mitigated conditions. Both BAU and mitigated operational emissions also included construction emissions that have been amortized using the minimum expected project life of 50 years (Hurley, J., 2011).

The BAU condition represents unmitigated emissions. BAU represents emissions that do not account for any project design features or state GHG reduction measures described in the California Air Resources Board's Scoping Plan (ARB, 2008). The "With Project Design" alternative represents mitigated emissions and accounts for state GHG reduction measures, project design measures, and measures included in the Aspen 1 AQMP.

Impacts – Construction

Construction Impact AIR–1: Increase in NOx Emissions During Construction

Table 5 shows NOx emission estimates associated with construction. Unmitigated construction emissions would exceed SMAQMD's NOx threshold level of 85 pounds per day during the first two years of construction for both the with conveyor belt and without conveyor belt options (Table 5). These emissions are primarily associated with earth moving and rough grading. SMAQMD has not established construction-related mass emission thresholds for ROG, PM10, or PM2.5. Consequently, they are not included in Table 5, although they are included in Appendix A.

Table 5. StoneBridge 1 Project Construction NOx Emissions (pounds per day)

	With Conveyor Belt		Without Conveyor Belt	
	Unmitigated	Mitigated	Unmitigated	Mitigated
2012	485.4	388.3	467.9	374.3
2013	490.1	392.1	472.2	377.8
2014	94.8	75.8	94.8	75.8
2015	34.6	27.7	34.6	27.7
2016	31.2	25.0	31.2	25.0
2017	28.3	22.7	28.3	22.7
2018	25.7	20.5	25.7	20.5
SMAQMD Significance Thresholds	85	85	85	85
Exceed Thresholds?	Yes	Yes	Yes	Yes
Notes: Detailed emission estimate results are included in Appendix A.				

The following construction-related mitigation measures will reduce the project's construction emissions of NOx and PM10 dust emissions. The list includes mitigation measures recommended in the Sacramento City Code, the City of Sacramento 2030

General Plan EIR, and in the SMAQMD's CEQA Handbook (SMAQMD, 2009). Implementation of these measures, which includes an emissions offset fee, will reduce NOx emissions to less than SMAQMD's significance threshold.

Mitigation Measures:

- Water all exposed surfaces with adequate frequency for continued moist soil. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads. However, do not overwater to the extent that sediment flows off the site;
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered;
- Use wheel washers for all exiting trucks, or wash off all trucks and equipment when leaving the site.
- Treat site accesses to a distance of 100 feet from the paved road edge with a 6 to 12 inch layer of wood chips, mulch, or gravel to reduce generation of road dust and road dust carryout onto public roads.
- Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited;
- Limit vehicle speeds on unpaved roads to 15 miles per hour (mph);
- Suspend excavation, grading, and/or demolition activity within wind speeds exceed 20 mph.
- All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action with 48 hours. The phone number of the District shall also be visible to ensure compliance.
- This measure requires that heavy duty off-road vehicles used in construction of the project achieve a project-wide fleet-average 20 percent NOx reduction and 40 percent particulate reduction compared

to the most recent CARB fleet average at the time of construction. While the required reductions are feasible when compared to existing fleet averages, it may not be feasible to achieve such reductions in future years once Tier IV engines begin replacing older equipment. Therefore, the measure should be revised to require that the reductions be based on a comparison to the current (2011) fleet average.

- The project representative shall submit the City of Sacramento a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project representative shall provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman.
- The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately, and the City of Sacramento shall be notified within 48 hours of identification of non-compliant equipment.
- A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs.
- The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supersede other SMAQMD or state rules or regulations.

Off-Site Construction Mitigation Fee

- Since the projected construction related emissions for the Project are not reduced to below the District's threshold of significance (85 pounds/day of NOx) by the application of the standard on-site construction mitigation (see Table 5), an off-site construction mitigation fee is required. This fee, currently priced at $16,640 per ton of NOx (plus a 5% administrative fee), is used by the District to purchase off-site emission reductions. The fee is based on the rate set by the California Air Resources Board for the Carl Moyer Program. The District purchases emission reductions primarily through the District's Heavy Duty Incentive Program through which select owners of heavy-duty equipment in Sacramento County can repower or retrofit their old engines with cleaner engines or technologies. StoneBridge will ensure that its contractors maintain detailed construction equipment use records to ensure accurate calculation of fees.

Construction Impact AIR–2: Increase in PM10 and PM2.5 Concentrations During Construction

During the first two years of construction, mass grading activities would actively disturb more than 15 acres per day. SMAQMD's CEQA guidance requires that dispersion modeling be used to determine if the project would result in ambient PM10 concentrations that exceed 2.5 µg/m^3 averaged over 24-hours at nearby sensitive receptors, which equals five percent of the state 24-hour PM10 standard of 50 µg/m^3. Ambient PM10 concentrations were estimated using the AERMOD model with meteorological data supplied by SMAQMD (Huss, K., pers. comm.). The detailed AERMOD assumptions and results are included in Appendix A. The modeling results indicated that even with implementation of the basic and enhanced fugitive PM10 dust and exhaust control practices identified in Construction Impact Air-1, the project would result in PM10 concentrations that exceed 2.5 µg/m^3 (5 percent of the ambient PM10 standard). Consequently, during the first two years of construction, the project would have significant and unavoidable PM10 and PM2.5 impacts.

Construction Impact Air-3: Increase in Health Risks from Diesel Exhaust During Construction

The majority of the project's DPM exhaust would be generated during the first two years of project construction, when mass grading operations would be used to move material from the Aspen 3 area to Aspen 1 (Table 6). Two construction options have been evaluated for their potential to generate DPM, a conveyor belt option and a without conveyor belt option. Under the conveyor belt option, a belt would be used to transfer material from the Aspen 3 and Mayhew areas to Aspen 1. Under the second option, in lieu of a conveyor belt, all material would be transported by truck from Aspen 3 and Mayhew to Aspen 1.

Table 6. Diesel Particulate Matter Emissions During Construction (pounds per day)

	With Conveyor Belt		Without Conveyor Belt	
Year	Unmitigated	Mitigated	Unmitigated	Mitigated
2012	16.2	8.9	16.5	9.1
2013	16.7	9.2	17.1	9.4
2014	4.9	2.7	4.9	2.7
2015	2.0	1.1	2.0	1.1
2016	1.8	1.0	1.8	1.0
2017	1.6	0.9	1.6	0.9
2018	1.5	0.8	1.5	0.8

As Table 6 indicates, the proposed project's DPM emissions would be highest during the first two years of construction, and would decrease substantially in subsequent years. Mitigated DPM emissions assume a 45% reduction from uncontrolled levels based on the mitigation measures specified in Construction Impact Air-1. With those mitigation measures in place, DPM emissions and associated health risks are considered to be less than significant.

Construction Impact AIR-4: Increase in Health Risks from Naturally Occurring Asbestos Emissions

During construction, the project has to potential to release naturally occurring asbestos (NOA) emissions in soils because it is located in Sacramento County, an area identified as having soils containing NOA. However, the project is located in an area of Sacramento County that is designated as not having NOA. Also, the project's topsoil has already been mined. Consequently, the project would be unlikely to release NOA during construction.

Impacts – Operational

Operational Impact AIR– 1: Emissions Increase of ROG and NOx During Project Operation

Table 7 shows ROG and NOx emissions for project buildout conditions (2020) with and without the elementary school. Unmitigated ROG emissions will exceed SMAQMD's significance threshold of 65 ppd. NOx emissions will be less than SMAQMD's significance threshold.

Table 7. Project Buildout Emissions (2020)

	WITH ELEMENTARY SCHOOL		WITHOUT ELEMENTARY SCHOOL	
	ROG (ppd)	NOx (ppd)	ROG (ppd)	NOx (ppd)
Unmitigated	164.9	64.3	160.7	64.0
Mitigated	151.1	52.7	146.5	52.3
Notes: Detailed emission estimates included in Appendix A. ppd = pounds per day. Mitigated NOx emissions also account for air pollutant interception and absorption and air pollutants avoided (Vargas, K, 2011).				

Table 8 shows ROG and NOx emissions for project cumulative conditions (2030) with and without the elementary school. Although lower than under buildout conditions, unmitigated ROG emissions will still exceed SMAQMD's significance threshold of 65 ppd. NOx emissions will be less than SMAQMD's significance threshold.

Table 8. Project Cumulative Emissions (2030)

	WITH ELEMENTARY SCHOOL		WITHOUT ELEMENTARY SCHOOL	
	ROG (ppd)	NOx (ppd)	ROG (ppd)	NOx (ppd)
Unmitigated	138.6	40.1	137.0	39.7
Mitigated	126.6	29.1	124.5	28.7
Notes: Detailed emission estimates included in Appendix A. ppd = pounds per day. Mitigated NOx emissions also account for air pollutant interception and absorption and air pollutants				

avoided (Vargas, K, 2011).

The City of Sacramento's General Plan Policy ER 6.1.3 requires that projects exceeding the SMAQMD ROG or NOx threshold incorporate design or operational features that reduce emissions by at least 15 percent as compared to without project design features. The SMAQMD recommends that an Air Quality Mitigation Plan (AQMP) be implemented for all projects that exceed the operational threshold of 65 pounds per day for ROG or NOx to clearly demonstrate that emissions are reduced by a minimum of 15 percent from baseline.

In compliance with both the 2030 General Plan policies and SMAQMD regulations, the proposed project has developed an AQMP to define the processes by which emissions of ROG would be reduced by 15 percent or more. The full text of the AQMP is included as Appendix B and is summarized in Table 9.

The mitigated emissions shown in Tables 7 and 8 reflect reductions in the vehicle miles traveled included in the project traffic report (DKS Associates, 2011), but do not include mitigation associated with the design features described in the AQMP. With the design features described in the AQMP, the proposed project would reduce ROG and NOx emissions by 38.3 percent. However, even with the AQMP design features (Appendix B), ROG emissions would not be reduced to less than the 65 pounds per day ROG threshold. Therefore, the project's emissions would still exceed SMAQMD's ROG significance threshold.

Operational Impact AIR–2: Increase in CO Concentrations Causing a Violation of the Ambient CO Standards

Implementation of the proposed project could result in operational CO concentrations that exceed the 1-hour state ambient air quality standard of 20.0 ppm or the 8-hr state ambient standard of 9 ppm.

Motor vehicles are the primary source of CO. The proposed project would result in a net increase in traffic, especially in the immediate vicinity of the project. According to the project traffic study, the project would increase traffic volumes at intersections already operating at level of service (LOS) E or F. Consequently, the project does not meet SMAQMD's first CO screening criteria. In addition, the project does not meet SMAQMD's second CO screening criteria because the project traffic report contains no information as to whether the project fleet mix would differ substantially from the County average. Consequently, CO modeling was conducted for intersections in the project vicinity having a combination of the worst case LOS and highest traffic volumes. These included the South Watt Avenue/Folsom Blvd. intersection and the South Watt Avenue/Jackson Highway intersection.

Table 9. Summary of Aspen 1 Operational Air Quality Mitigation Plan Measures

Aspen 1 Operational Air Quality Mitigation Plan Measures
1. Non-residential bike parking
2. Non-residential "end of trip" facilities: showers, lockers
3. Long term bike parking at apartments and condominiums
4. Project w/in 1/2 mile of Class 1 or 2 bike Lane
5. Pedestrian network
6. Pedestrian barriers removed
8. Bus shelter for planned transit service
9. Traffic calming
13. Pedestrian pathway through parking
14. Off-street parking
19. Street grid
21. Affordable Housing
25. No fireplaces or wood stoves
31. Non-Roof Surfaces
33. TMA Membership
99A. Walkable Communities
99B. Transit Corridor
99C. Urban Farm
99D. Urban Forest
Notes: See Appendix B for additional details.

Table 10 shows the modeling results for these two intersections under existing plus project and cumulative plus project conditions. For both intersections under both conditions, the modeling results indicate that the project would not cause or contribute to violations of the state or federal ambient CO standards. Consequently, the project's CO impacts are less than significant.

Table 10. CO Modeling Results (parts per million)

Receptor	Existing Plus Project				Cumulative Plus Project			
	S. Watt/ Jackson Road		S. Watt/Jackson Hwy		S. Watt/ Folsom Blvd		S. Watt/Jackson Hwy	
	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour
1	4.2	3.4	3.7	3.0	2.8	2.4	2.8	2.4
2	4.2	3.4	3.8	3.1	2.8	2.4	2.8	2.4
3	4.1	3.3	3.5	2.9	2.8	2.4	2.8	2.4
4	4.1	3.3	3.4	2.8	2.8	2.4	2.8	2.4
5	N/A	N/A	3.9	3.2	N/A	N/A	2.8	2.4
CO Standard	9.0	20.0	9.0	20.0	9.0	20.0	9.0	20.0
Exceed Standard?	No	No	No	No	No	No	No	No

CO modeling results assume a maximum 1-hour background concentration of 2.8, and maximum 8-hour background concentration of 2.4 ppm, and a persistence factor of 0.7. Background concentrations based on maximum monitoring concentrations as shown in Table 3. Persistence factors and related modeling assumptions based on Caltrans Modeling Protocol (Garza, V.J.,et.al., 1997). CO Modeling results in Appendix A.

Operational Impact AIR–3: Creation of Objectionable Odors

Implementation of the proposed project would expose new residents to existing odor sources. Four potential odor sources in the vicinity of the project site could potentially affect the project's residents (see Figure 2). These odor sources include:

- Teichert's Perkins plant, located at 8760 Kiefer Boulevard, just north of the project,
- The Florin Perkins Landfill, located at 4201 Florin-Perkins Road, just west of the project,
- The L & D Landfill, located at 8635 Fruitridge Road, southwest of the project, and
- The 23rd Avenue/Warehouse Way Industrial area, located southwest of the project.

Each of these potential odor sources is shown in Figure 2 along with a wind rose for the project. The wind rose shows the average wind direction (blowing from) and wind speed based on five years of hourly data. A larger version of the wind rose is also shown in Figure 3.

Over the most recent three years (2008 through 2010), 13 odor complaints were received by SMAQMD for the Teichert Perkins plant, although the locations of those complaints were not identified . One additional odor complaint was received for odors eminating from the 23rd Avenue/Warehouse Industrial Area. No other odor complaints were received during the past three years for the two landfills near the project site (Jester, J., 2011).

Figure 2 shows that winds blow from the north and northwest towards the project site from the direction of the Teichert Perkins Plant approximately 18 percent of the time. The figure also shows that the Florin-Perkins landfill does not appear to be upwind of the project site, since winds rarely blow from the west. However, the 23rd Avenue/ Warehouse Way Industrial Area and the L&D Landfill are located upwind of the project site. Consequently, odors from these locations would likely be detectable at residences. The potential for odor detection at residences will be reduced somewhat because of the distance from the industrial area and landfill to residences. This is because open space and the urban farm are located at the far southwestern corner of the project. However, although these land uses will provide a buffer zone, odors could still be detectable at residences. No feasible mitigation measures are available to reduce these odor impacts. Consequently, this is a significant and unavoidable impact.

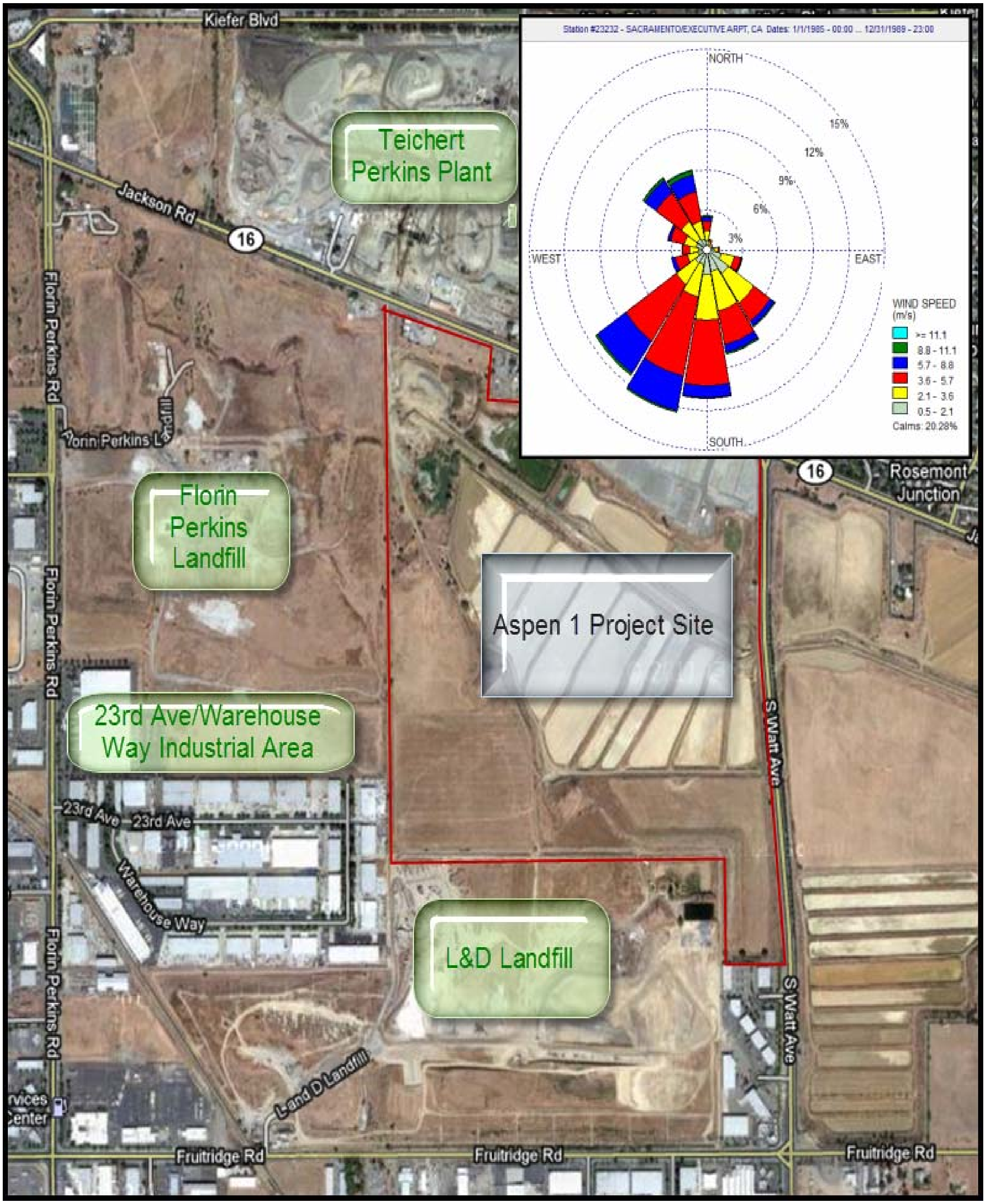

Figure 2. Odor Sources near the Aspen 1 Project Site

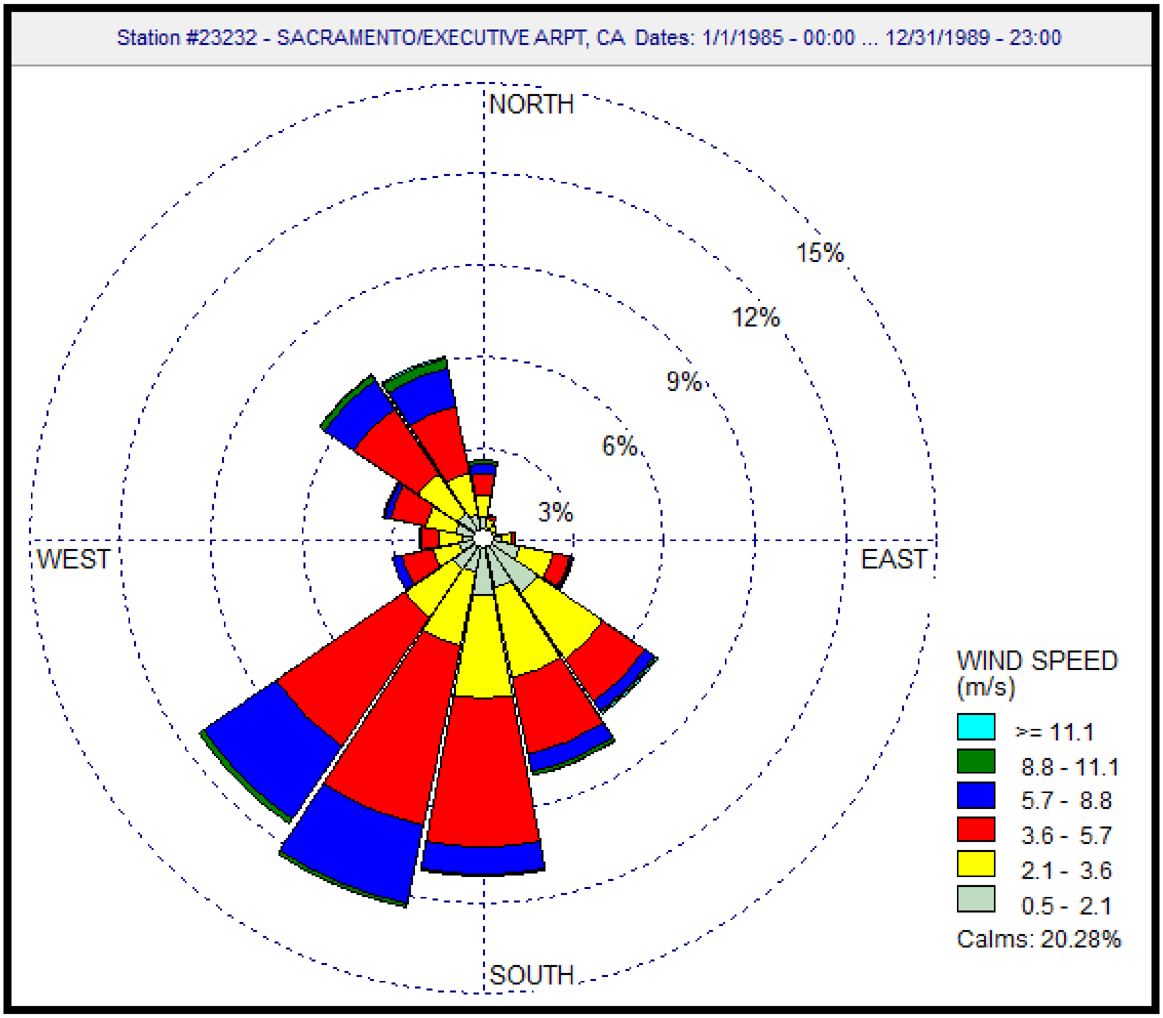

Figure 3. Wind Rose for the Project Vicinity

Operational Impact AIR-4 – Creation of Health Risks from Exposure to Diesel Particulate Matter

The California Air Resources Board (CARB) indicates that one of the highest public health priorities is the reduction of diesel particulate matter (DPM) generated by vehicles on California's highways, since DPM poses a large health risk. Other potential toxic air contaminant (TAC) generators within the City of Sacramento are specific types of facilities such as dry cleaners, gas stations, and chrome plating facilities, and are the focus of CARB's control efforts. CARB has made specific recommendations with respect to considering existing sensitive uses when siting new TAC-emitting facilities or with respect to TAC-emitting sources when siting sensitive receptors.

Operation of the proposed project does not include land uses that have the potential to emit TAC in quantities that would represent an adverse health impacts to nearby sensitive land uses. Therefore, the site was not evaluated as a TAC source.

CARB has issued a guidance document on air quality and land use entitled *Air Quality and Land Use Handbook: A Community Health Perspective*, which recommends that sensitive land uses not be located within 500 feet of a freeway. For land uses within 500 feet of a freeway, CARB recommends that a site-specific health risk assessment (HRA) be performed to accurately evaluate potential health risks. In response to this document, SMAQMD has developed a methodology to assist local land use jurisdictions in assessing the potential cancer risk of siting sensitive land uses near major roadways (SMAQMD 2011). The methodology provides a mechanism that shows the relationship between potential cancer risk from DPM exposure and distance from major roadways.

The closest major roadways to the proposed project are Jackson Highway, which serves as the northern border for the project, and South Watt Avenue, which serves as the project's eastern border. Several Aspen 1 residences would be located within 500 feet of Jackson Highway or South Watt Avenue. Table 11 shows the average daily traffic volumes under cumulative, cumulative plus project (includes school), and cumulative plus no school alternative for the road segments adjacent to the project.

Table 11. Cumulative Conditions Average Daily Traffic (ADT) Volumes Adjacent to the Project Site

Roadway	Segment	Cumulative (ADT)	Cumulative Plus Project, including School (ADT)	Cumulative Plus No School Alternative (ADT)
South Watt Ave.	Jackson Road to Fruitridge Road	48,311	51,515	51,292
Jackson Road	E. Florin Perkins to South Watt Ave.	46,953	50,325	50,405
Source: DKS Associates, 2011				

As indicated by the SMAQMD's guidance, no further roadway related air quality analysis is recommended if roadways have average daily traffic volumes less than 100,000. As shown in Table 11, traffic volumes would be less than 100,000 for all three cumulative scenarios on both road segments that are adjacent to the project. Consequently, under SMAQMD's guidance, a detailed HRA is not required for the project. Thus, emissions generated by traffic on roads adjacent to the project would not pose a significant health risk to residents of Aspen 1.

Impacts – Cumulative

Cumulative Impact AIR–1: Increase in ROG and NOx Emissions during Project Operation

The Project would result in a net increase in ROG and NOx emissions. The proposed project's cumulative ROG emissions would exceed SMAQMD's significance thresholds (see Table 8), which the SMAQMD also uses to evaluate cumulative impacts. As with the project level Operational Impact Air-1, ROG emissions after mitigation would remain significant and unavoidable.

Cumulative Impact AIR–2: Increase in CO Concentrations Causing a Violation of the Ambient CO Standards

The Project would not cause or contribute to a violation of the state or federal CO ambient air quality standards under cumulative conditions, as indicated in Table 10.

Cumulative Impact AIR–3: Creation of Objectionable Odors

The Project would not cause project specific odor impacts. However, existing odor sources surrounding the project are likely to have a cumulative odor impact on the Project's residents.

Cumulative Impact GHG-1: Increase in CO_2e Emissions

Table 12 shows the project's construction-related GHG emissions for the "with-conveyor belt" and "without conveyor belt" options. There would be virtually no difference in CO_2e emissions for these two construction alternatives. Table 12 also shows that when construction emissions are amortized over 50 years, emissions would equal 426 metric tons CO_2e per year.

Table 12. Project Construction GHG Emissions (metric tons CO_2e/year)

Year	With Belt	Without Belt
2012	2,752	2,800
2013	4,228	4,261
2014	1,326	1,326
2015	3,217	3,217
2016	3,245	3,245
2017	3,233	3,233
2018	3,232	3,232
Total	21,233	21,314
Average	3,033	3,045
Total Amortized over 50 years	425	426
Notes: Notes: Emissions estimated using URBEMIS2007 model. Detailed URBEMIS modeling results in Appendix A.		

Table 13 shows the project's operational emissions at buildout without any reductions (business as usual or BAU conditions) and with emission reductions (with project design features). The project's GHG emissions will be 36.7 percent lower in 2020 with project design features as compared to under BAU conditions. Detailed calculations of the reductions are included in Appendix C.

Table 13. Comparison of Operational Greenhouse Gas Emissions at Buildout 2020 (metric tons CO_2e/year)

	Business as Usual (BAU)	With Project Design	% Reduction
Transportation:	18,237.4	9,464.0	48.1%
Area Source:	11.7	11.70	0%
Electricity:	2,253.1	2,230.6	1%
Natural Gas:	2,171.7	2,149.9	1%
Water & Wastewater:	213.8	192.45	10%
Solid Waste:	897.9	897.94	0%
Agriculture:	50.2	50.22	0%
Sequestration:	N/A	-161.50	-
Construction (Amortized):	426.0	426.0	0%
Total:	24,261.8	15,261.3	36.7%
Notes: Detailed emission estimates included in Appendix C.			

Table 14 shows GHG emissions under 2030 cumulative conditions. By 2030, the project would achieve a 43.0 percent GHG reduction as compared to BAU conditions. As compared to 2020, 2030 emissions are lower for two primary reasons: transportation and carbon sequestration. Transportation emissions are lower because the project would generate fewer trips in 2030 as compared to 2020 (DKS Associates, 2011). Also, by 2030, the project's trees would be larger, resulting in more sequestered carbon (Vargas, K., 2011).

Table 14. Comparison of Operational Greenhouse Gas Emissions under Cumulative Conditions 2030 (metric tons CO_2e/year)

	Business as Usual (BAU)	With Project Design	% Reduction
Transportation:	16,750.6	7,878.2	53.0%
Area Source:	11.7	11.70	0%
Electricity:	2,253.1	2,027.8	1%
Natural Gas:	2,171.7	2,150.0	1%
Water & Wastewater:	207.0	186.3	10%
Solid Waste:	898.0	898.0	0%
Agriculture:	50.2	50.2	0%
Sequestration:	N/A	-646.0	0%
Construction (Amortized):	426.0	426.0	0%
Total:	22,768.3	12,982.2	43.0
Notes: Detailed emission estimates included in Appendix A.			

The land uses that would be developed under the proposed project would not change from those land uses assumed for the project site in the 2030 General Plan. Therefore, the GHG emissions generated by the proposed project have already been accounted for in the Master EIR analysis. While the proposed project would result in a net increase in GHG emissions, it would not result in GHG emissions beyond those already considered in the Master EIR. Further, with incorporation of the project design features and additional mitigation measures, the proposed project will reduce emissions by 29 percent and therefore is in compliance with the AB 32 reduction requirements.

GHG emissions that could be generated by development consistent with the 2030 General Plan were identified and considered in detail in the Master EIR. The proposed project would generate GHGs, but any contribution of the project was considered and included in the 2030 General Plan Master EIR analysis. The proposed project is consistent with the long range planning for the urban environment in the City because it focuses on VMT reduction by including a site plan that encourages bicycling and walking, places services close to residences, provides residences and businesses with close access to local produce, and develops an urban forest. The proposed project would not have any additional significant effects related to compliance with GHG plans and regulations that were not addressed as a significant effect in the 2030 General Plan Master EIR.

Cumulative Impact GHG–2: Construction and Operation of the Proposed Project May Conflict with Applicable Plans, Policies, or Regulations Adopted for the Purpose of Reducing GHG Emissions

Construction and operation of the Aspen 1 project combined with all aspects of growth proposed under the City of Sacramento General Plan will result in the emission of GHGs. As indicated in the 2030 General Plan Master EIR, future development within the City of Sacramento will be required to comply with AB 32, and with the SACOG 2035 MTP.

The 2035 MTP is anticipated to meet the AB32 goal of reaching 1990 transportation emissions by 2020. However, the City will need to reduce emissions in other planning areas for the City as a whole to meet AB32 goals. As discussed previously, the City is anticipating an increase in GHG emissions without the incorporation of reduction measures. The 2030 General Plan Master EIR concluded that because the actual effectiveness of all feasible policies and programs included in the 2030 General Plan to avoid and reduce GHG emissions is unknown, the City, under the 2030 General Plan, may not comply with AB 32.

The proposed project must comply with the 2030 General Plan policies and measures for the reduction of GHGs to comply with the 2030 MTP and AB 32. Because the traffic from the proposed project was incorporated into the 2035 MTP, and the 2035 MTP is anticipated to meet the goals of AB 32, the proposed project would comply with the 2035 MTP.

AB 32 requires an approximate 29 percent reduction from existing emissions on a statewide level in order to achieve the goal of reducing GHG emissions to 1990 levels by 2020. In order for this to occur, the existing and future operations of the City as well as individual land uses must reduce their emissions accordingly.

The Project was addressed in the Master EIR for the 2030 General Plan. Therefore, the GHG emission increase seen with implementation of the project has been accounted for in the General Plan. As compared to BAU, the Project results in a buildout (2020) emission reduction of 29 percent and a cumulative (2030) emission reduction of 35 percent. Consequently, the Project will meet the AB32 goal and the City's General Plan goals. Therefore the Project will not conflict with applicable plans, policies, and regulations adopted by the City of Sacramento or the State of California for the purpose of reducing GHG emissions. The project would not have any additional significant environmental effects not addressed in the Master EIR.

Although the Master EIR determined that GHG emissions generated by the development anticipated by the 2030 General Plan would be cumulatively considerable, the proposed project would not contribute to cumulative impacts beyond those already addressed in the City of Sacramento General Plan Master EIR.

Summary of Impacts and Mitigation Measures

Table 15 summarizes the project's impacts and mitigation measures.

Impact	Significance Before Mitigation	Mitigation	Significance After Mitigation
Construction Impact AIR-1: Increase in NOx Emissions During Construction	Significant	• Water all exposed surfaces with adequate frequency for continued moist soil. Exposed surfaces include, but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads. However, do not overwater to the extent that sediment flows off the site; • Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered; • Use wheel washers for all exiting trucks, or wash off all trucks and equipment when leaving the site. • Treat site accesses to a distance of 100 feet from the paved road edge with a 6 to 12 inch layer of wood chips, mulch, or gravel to reduce generation of road dust and road dust carryout onto public roads. • Use wet power vacuum street sweepers to remove any visible trackout mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited; • Limit vehicle speeds on unpaved roads to 15 miles per hour (mph);	Less than Significant

Impact	Significance Before Mitigation	Mitigation	Significance After Mitigation
		• Suspend excavation, grading, and/or demolition activity within wind speeds exceed 20 mph. • All roadways, driveways, sidewalks, parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used. • Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action with 48 hours. The phone number of the District shall also be visible to ensure compliance. • This measure requires that heavy duty off-road vehicles used in construction of the project achieve a project-wide fleet-average 20 percent NOx reduction and 40 percent particulate reduction compared to the most recent CARB fleet average at the time of construction. While the required reductions are feasible when compared to existing fleet averages, it may not be feasible to achieve such reductions in future years once Tier IV engines begin replacing older equipment. Therefore, the measure should be revised to require that the reductions be based on a comparison to the current (2011) fleet average. • The project representative shall submit the City of Sacramento a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day	

Impact	Significance Before Mitigation	Mitigation	Significance After Mitigation
		period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the project representative shall provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman. • The project shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40 percent opacity for more than three minutes in any one hour. Any equipment found to exceed 40 percent opacity (or Ringelmann 2.0) shall be repaired immediately, and the City of Sacramento shall be notified within 48 hours of identification of non-compliant equipment. • A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. • The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supersede other SMAQMD or state rules or regulations. **Off-Site Construction Mitigation Fee** • Since the projected construction related emissions for the Project are not reduced to below the District's threshold of significance (85 pounds/day of NOx) by the application of the standard on-site construction mitigation	

Impact	Significance Before Mitigation	Mitigation	Significance After Mitigation
		(see Table 5), an off-site construction mitigation fee is required. This fee, currently priced at $16,640 per ton of NOx, is used by the District to purchase off-site emission reductions. This is done primarily through the District's Heavy Duty Incentive Program through which select owners of heavy duty equipment in Sacramento County can repower or retrofit their old engines with cleaner engines or technologies. StoneBridge will ensure that its contractors maintain detailed construction equipment use records to ensure accurate calculation of fees.	
Construction Impact AIR-2: Increase in PM10 and PM2.5 Concentrations During Construction	Significant	Dust mitigation measures listed under Construction Impact AIR-1	Significant
Construction Impact AIR-3: Increase in Health Risks from Diesel Exhaust During Construction	Less than Significant	Not applicable	
Construction Impact AIR-4: Increase in Health Risks from Naturally Occurring Asbestos Emissions	Less than Significant	Not applicable	
Operational Impact AIR-1: Emissions Increase of ROG and NOx During Project Operation	Significant	Implementation of measures described in Air Quality Mitigation Plan (see Appendix B).	Significant

Impact	Significance Before Mitigation	Mitigation	Significance After Mitigation
Operational Impact AIR–2: Increase in CO Concentrations Causing a Violation of the Ambient CO Standards	Less than Significant	Not applicable	
Operational Impact AIR-3: Creation of Objectionable Odors	Significant	No additional mitigation measures available.	Significant
Operational Impact AIR-4: Creation of Health Risks from Exposure to Diesel Particulate Matter	Less than Significant	Not applicable	
Cumulative Impact AIR-1: Increase in ROG and NOx Emissions During Project Operation	Significant	Implementation of measures described in Air Quality Mitigation Plan (see Appendix B).	Significant
Cumulative Impact AIR-2: Increase in CO Concentrations Causing a Violation of the Ambient CO Standards	Less than Significant	Not Applicable	
Cumulative Impact AIR-3: Creation of Objectionable Odors	Significant	No additional mitigation measures available.	Significant

Impact	Significance Before Mitigation	Mitigation	Significance After Mitigation
Cumulative Impact GHG-1: Increase in CO_2e Emissions	Less than Significant	Project design incorporates several features that will reduce the generation of GHG emissions (See Appendix C)	
Cumulative Impact GHG-2: Construction and Operation of the Proposed Project May Conflict with Applicable Plans, Policies, or Regulations Adopted for the Purpose of Reducing GHG Emissions	Less than Significant	Not Applicable.	

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Appendix A – Air Emission Calculations

Contents

URBEMIS Construction Results

Construction emissions estimated using the URBEMIS model. For the 2011 and 2012 mass grading operations, construction equipment type and use was based on information provided by Teichert Construction for two construction options, with conveyor belt and without conveyor belt. Information on fine site grading, trenching (for utilities), paving, building construction, and architectural coatings based on defaults included in the URBEMIS model. Mitigated NOx emissions assume 20% reduction from uncontrolled levels.

URBEMIS Results – Construction NOx and Particulates with Conveyor Belt

Page: 1

10/6/2011 01:45:55 PM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Construction with Belt.urb924

Project Name: Aspen I - With Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	NOx Mitigated Calc	PM10 Exhaust Mit Calc
2012 TOTALS (lbs/day unmitigated)	485.42	1,919.03	16.22	1,931.49	400.77	15.06	412.49		
2012 TOTALS (lbs/day mitigated)		354.00		354.29	65.39	0.47	65.47	388.34	8.92
2013 TOTALS (lbs/day unmitigated)	490.11	1,879.05	16.74	1,895.79	392.43	15.58	408.01		
2013 TOTALS (lbs/day mitigated)		346.64		346.76	64.03	0.07	64.05	392.09	9.21

2014 TOTALS (lbs/day unmitigated)	94.76	1,144.07	4.89	1,148.96	238.94	4.49	243.43		
2014 TOTALS (lbs/day mitigated)		211.09		213.89	39.00	0.87	39.86	75.81	2.69
2015 TOTALS (lbs/day unmitigated)	34.57	0.96	1.96	2.92	0.34	1.76	2.10		
2015 TOTALS (lbs/day mitigated)		0.96		2.46	0.34	0.96	1.30	27.65	1.08
2016 TOTALS (lbs/day unmitigated)	31.24	0.96	1.75	2.71	0.34	1.57	1.91		
2016 TOTALS (lbs/day mitigated)		0.96		2.32	0.34	0.88	1.22	24.99	0.96
2017 TOTALS (lbs/day unmitigated)	28.32	0.96	1.60	2.56	0.34	1.42	1.77		
2017 TOTALS (lbs/day mitigated)		0.96		2.21	0.34	0.82	1.16	22.66	0.88
2018 TOTALS (lbs/day unmitigated)	25.68	0.96	1.46	2.41	0.34	1.29	1.63		
2018 TOTALS (lbs/day mitigated)		0.96		2.11	0.34	0.77	1.11	20.54	0.80

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 8/1/2012-8/13/2012 Active Days: 9	19.27	1,144.00	0.50	1,144.50	238.91	0.47	239.38
Mass Grading 08/01/2012-08/13/2012	19.27	1,144.00	0.50	1,144.50	238.91	0.47	239.38
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	19.25	0.00	0.50	0.50	0.00	0.47	0.47
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Time Slice 8/14/2012-8/25/2012 Active Days: 12	179.54	1,144.02	5.51	1,149.52	238.92	5.14	244.06
Mass Grading 08/14/2012-08/25/2012	179.54	1,144.02	5.51	1,149.52	238.92	5.14	244.06
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	179.40	0.00	5.50	5.50	0.00	5.13	5.13
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.13	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 8/27/2012-9/18/2012 Active Days: 17	265.09	1,144.02	8.16	1,152.18	238.92	7.62	246.54
Mass Grading 08/27/2012-09/18/2012	265.09	1,144.02	8.16	1,152.18	238.92	7.62	246.54
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	264.94	0.00	8.15	8.15	0.00	7.61	7.61
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.14	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 9/19/2012-9/21/2012 Active Days: 3	317.30	1,144.02	9.85	1,153.87	238.92	9.18	248.10
Mass Grading 09/19/2012-09/21/2012	317.30	1,144.02	9.85	1,153.87	238.92	9.18	248.10
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	317.12	0.00	9.83	9.83	0.00	9.17	9.17
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.18	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 9/24/2012-9/27/2012 Active Days: 4	313.92	1,144.02	10.32	1,154.35	238.92	9.63	248.55
Mass Grading 09/24/2012-09/27/2012	313.92	1,144.02	10.32	1,154.35	238.92	9.63	248.55
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	313.73	0.00	10.31	10.31	0.00	9.62	9.62

Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.18	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 9/28/2012-10/2/2012 Active Days: 3	235.01	1,144.02	7.80	1,151.82	238.92	7.28	246.20
Mass Grading 09/28/2012-10/02/2012	235.01	1,144.02	7.80	1,151.82	238.92	7.28	246.20
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	234.88	0.00	7.79	7.79	0.00	7.27	7.27
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.13	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 10/3/2012-10/11/2012 Active Days: 7	171.85	1,144.01	7.18	1,151.19	238.92	6.69	245.60
Mass Grading 10/03/2012-10/11/2012	171.85	1,144.01	7.18	1,151.19	238.92	6.69	245.60
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	171.73	0.00	7.17	7.17	0.00	6.68	6.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.12	0.01	0.01	0.02	0.01	0.01	0.01
Time Slice 10/12/2012-10/26/2012 Active Days: 11	408.03	1,144.03	11.96	1,155.98	238.92	11.25	250.18
Mass Grading 10/12/2012-11/21/2012	408.03	1,144.03	11.96	1,155.98	238.92	11.25	250.18
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	407.83	0.00	11.94	11.94	0.00	11.24	11.24
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.21	0.03	0.01	0.04	0.01	0.01	0.02
Time Slice 10/29/2012-11/20/2012 Active Days: 17	427.30	**1,919.03**	12.46	**1,931.49**	**400.77**	11.72	**412.49**
Mass Grading 10/12/2012-11/21/2012	408.03	1,144.03	11.96	1,155.98	238.92	11.25	250.18

Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	407.83	0.00	11.94	11.94	0.00	11.24	11.24
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.21	0.03	0.01	0.04	0.01	0.01	0.02
Mass Grading 10/29/2012-11/20/2012	19.27	775.00	0.50	775.50	161.85	0.47	162.32
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	19.25	0.00	0.50	0.50	0.00	0.47	0.47
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 11/21/2012-11/21/2012 Active Days: 1	408.03	1,144.03	11.96	1,155.98	238.92	11.25	250.18
Mass Grading 10/12/2012-11/21/2012	408.03	1,144.03	11.96	1,155.98	238.92	11.25	250.18
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	407.83	0.00	11.94	11.94	0.00	11.24	11.24
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.21	0.03	0.01	0.04	0.01	0.01	0.02
Time Slice 11/22/2012-11/22/2012 Active Days: 1	347.02	735.04	12.13	747.17	153.51	11.26	164.77
Mass Grading 11/22/2012-02/01/2013	347.02	735.04	12.13	747.17	153.51	11.26	164.77
Mass Grading Dust	0.00	735.00	0.00	735.00	153.50	0.00	153.50
Mass Grading Off Road Diesel	346.73	0.00	12.11	12.11	0.00	11.25	11.25
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.29	0.04	0.02	0.06	0.01	0.01	0.03
Time Slice 11/23/2012-12/31/2012 Active Days: 27	<u>485.42</u>	1,879.05	<u>16.22</u>	1,895.27	392.43	<u>15.06</u>	407.49
Mass Grading 11/22/2012-02/01/2013	347.02	735.04	12.13	747.17	153.51	11.26	164.77

Mass Grading Dust	0.00	735.00	0.00	735.00	153.50	0.00	153.50
Mass Grading Off Road Diesel	346.73	0.00	12.11	12.11	0.00	11.25	11.25
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.29	0.04	0.02	0.06	0.01	0.01	0.03
Mass Grading 11/23/2012-02/26/2013	138.40	1,144.01	4.09	1,148.10	238.92	3.79	242.71
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	138.31	0.00	4.08	4.08	0.00	3.79	3.79
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 1/1/2013-2/1/2013 Active Days: 24	**490.11**	1,879.05	**16.74**	1,895.79	392.43	**15.58**	408.01
Mass Grading 11/22/2012-02/01/2013	350.44	735.04	12.53	747.57	153.51	11.66	165.17
Mass Grading Dust	0.00	735.00	0.00	735.00	153.50	0.00	153.50
Mass Grading Off Road Diesel	350.18	0.00	12.51	12.51	0.00	11.65	11.65
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.26	0.04	0.02	0.06	0.01	0.01	0.03
Mass Grading 11/23/2012-02/26/2013	139.67	1,144.01	4.21	1,148.23	238.92	3.92	242.84
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	139.58	0.00	4.21	4.21	0.00	3.92	3.92
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.09	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 2/4/2013-2/26/2013 Active Days: 17	139.67	1,144.01	4.21	1,148.23	238.92	3.92	242.84
Mass Grading 11/23/2012-02/26/2013	139.67	1,144.01	4.21	1,148.23	238.92	3.92	242.84
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	139.58	0.00	4.21	4.21	0.00	3.92	3.92

Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.09	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 2/27/2013-3/6/2013 Active Days: 6	36.23	1,144.00	1.14	1,145.14	238.91	1.06	239.97
Mass Grading 02/27/2013-03/06/2013	36.23	1,144.00	1.14	1,145.14	238.91	1.06	239.97
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	36.21	0.00	1.14	1.14	0.00	1.06	1.06
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 3/7/2013-3/15/2013 Active Days: 7	277.19	1,144.02	9.39	1,153.41	238.92	8.78	247.70
Mass Grading 03/07/2013-03/15/2013	277.19	1,144.02	9.39	1,153.41	238.92	8.78	247.70
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	277.04	0.00	9.38	9.38	0.00	8.77	8.77
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.15	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 3/18/2013-3/18/2013 Active Days: 1	19.52	70.00	0.52	70.52	14.62	0.49	15.11
Mass Grading 03/18/2013-03/18/2013	19.52	70.00	0.52	70.52	14.62	0.49	15.11
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	19.51	0.00	0.52	0.52	0.00	0.49	0.49
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 3/22/2013-3/26/2013 Active Days: 3	261.03	70.02	8.53	78.55	14.63	7.99	22.61
Mass Grading 03/22/2013-03/28/2013	261.03	70.02	8.53	78.55	14.63	7.99	22.61

Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	260.90	0.00	8.53	8.53	0.00	7.98	7.98
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.13	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 3/27/2013-3/28/2013 Active Days: 2	285.67	140.02	9.39	149.41	29.25	8.78	38.03
Mass Grading 03/22/2013-03/28/2013	261.03	70.02	8.53	78.55	14.63	7.99	22.61
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	260.90	0.00	8.53	8.53	0.00	7.98	7.98
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.13	0.02	0.01	0.03	0.01	0.01	0.01
Mass Grading 03/27/2013-03/29/2013	24.64	70.00	0.85	70.86	14.62	0.80	15.42
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	24.62	0.00	0.85	0.85	0.00	0.80	0.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 3/29/2013-3/29/2013 Active Days: 1	24.64	70.00	0.85	70.86	14.62	0.80	15.42
Mass Grading 03/27/2013-03/29/2013	24.64	70.00	0.85	70.86	14.62	0.80	15.42
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	24.62	0.00	0.85	0.85	0.00	0.80	0.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 4/1/2013-4/5/2013 Active Days: 5	36.23	70.00	1.14	71.14	14.62	1.06	15.68
Mass Grading 04/01/2013-04/08/2013	36.23	70.00	1.14	71.14	14.62	1.06	15.68

Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	36.21	0.00	1.14	1.14	0.00	1.06	1.06
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 4/8/2013-4/8/2013 Active Days: 1	326.37	845.02	10.15	855.17	176.48	9.56	186.04
Mass Grading 04/01/2013-04/08/2013	36.23	70.00	1.14	71.14	14.62	1.06	15.68
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	36.21	0.00	1.14	1.14	0.00	1.06	1.06
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Mass Grading 04/08/2013-05/31/2013	290.13	775.02	9.02	784.03	161.86	8.50	170.36
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	290.02	0.00	9.01	9.01	0.00	8.49	8.49
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.12	0.02	0.01	0.02	0.01	0.01	0.01
Time Slice 4/9/2013-5/31/2013 Active Days: 39	290.13	775.02	9.02	784.03	161.86	8.50	170.36
Mass Grading 04/08/2013-05/31/2013	290.13	775.02	9.02	784.03	161.86	8.50	170.36
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	290.02	0.00	9.01	9.01	0.00	8.49	8.49
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.12	0.02	0.01	0.02	0.01	0.01	0.01
Time Slice 6/3/2013-6/25/2013 Active Days: 17	333.15	775.02	10.28	785.30	161.86	9.66	171.52
Mass Grading 06/03/2013-06/25/2013	333.15	775.02	10.28	785.30	161.86	9.66	171.52

Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	333.00	0.00	10.27	10.27	0.00	9.65	9.65
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.15	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 6/26/2013-8/7/2013 Active Days: 31	273.81	775.02	9.49	784.52	161.86	8.88	170.74
Mass Grading 06/26/2013-08/07/2013	273.81	775.02	9.49	784.52	161.86	8.88	170.74
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	273.66	0.00	9.48	9.48	0.00	8.87	8.87
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.15	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 8/8/2013-9/27/2013 Active Days: 37	39.89	775.00	1.13	776.13	161.85	1.05	162.91
Mass Grading 08/08/2013-09/27/2013	39.89	775.00	1.13	776.13	161.85	1.05	162.91
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	39.86	0.00	1.13	1.13	0.00	1.05	1.05
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 10/1/2013-10/4/2013 Active Days: 4	19.52	480.00	0.52	480.52	100.24	0.49	100.73
Mass Grading 10/01/2013-10/04/2013	19.52	480.00	0.52	480.52	100.24	0.49	100.73
Mass Grading Dust	0.00	480.00	0.00	480.00	100.24	0.00	100.24
Mass Grading Off Road Diesel	19.51	0.00	0.52	0.52	0.00	0.49	0.49
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Time Slice 10/7/2013-11/26/2013 Active Days: 37	350.48	480.02	10.75	490.78	100.25	10.13	110.38
Mass Grading 10/07/2013-11/26/2013	350.48	480.02	10.75	490.78	100.25	10.13	110.38
Mass Grading Dust	0.00	480.00	0.00	480.00	100.24	0.00	100.24
Mass Grading Off Road Diesel	350.33	0.00	10.74	10.74	0.00	10.12	10.12
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.15	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 12/2/2013-12/3/2013 Active Days: 2	20.00	480.00	0.68	480.68	100.24	0.63	100.88
Mass Grading 12/01/2013-12/03/2013	20.00	480.00	0.68	480.68	100.24	0.63	100.88
Mass Grading Dust	0.00	480.00	0.00	480.00	100.24	0.00	100.24
Mass Grading Off Road Diesel	19.98	0.00	0.68	0.68	0.00	0.63	0.63
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 12/4/2013-12/16/2013 Active Days: 9	47.18	480.00	1.30	481.31	100.24	1.23	101.48
Mass Grading 12/04/2013-12/16/2013	47.18	480.00	1.30	481.31	100.24	1.23	101.48
Mass Grading Dust	0.00	480.00	0.00	480.00	100.24	0.00	100.24
Mass Grading Off Road Diesel	47.16	0.00	1.30	1.30	0.00	1.23	1.23
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/6/2014-6/30/2014 Active Days: 126	72.97	1,144.01	3.30	1,147.31	238.92	3.04	241.95
Fine Grading 01/06/2014-12/31/2014	72.97	1,144.01	3.30	1,147.31	238.92	3.04	241.95
Fine Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Fine Grading Off Road Diesel	72.90	0.00	3.29	3.29	0.00	3.03	3.03
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Fine Grading Worker Trips	0.08	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 7/1/2014-10/31/2014 Active Days: 89	86.02	1,144.02	3.89	1,147.91	238.92	3.58	242.50
Fine Grading 01/06/2014-12/31/2014	72.97	1,144.01	3.30	1,147.31	238.92	3.04	241.95
Fine Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Fine Grading Off Road Diesel	72.90	0.00	3.29	3.29	0.00	3.03	3.03
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.01	0.01	0.02	0.00	0.00	0.01
Trenching 07/01/2014-10/31/2014	13.05	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 11/3/2014-12/31/2014 Active Days: 43	94.76	1,144.07	4.89	1,148.96	238.94	4.49	243.43
Asphalt 11/03/2014-12/31/2014	21.79	0.06	1.59	1.65	0.02	1.46	1.48
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	15.61	0.00	1.34	1.34	0.00	1.24	1.24
Paving On Road Diesel	6.14	0.06	0.24	0.29	0.02	0.22	0.24
Paving Worker Trips	0.04	0.01	0.00	0.01	0.00	0.00	0.00
Fine Grading 01/06/2014-12/31/2014	72.97	1,144.01	3.30	1,147.31	238.92	3.04	241.95
Fine Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Fine Grading Off Road Diesel	72.90	0.00	3.29	3.29	0.00	3.03	3.03
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 1/5/2015-4/3/2015 Active Days: 65	34.55	0.96	1.96	2.92	0.34	1.76	2.10
Building 01/05/2015-12/28/2018	34.55	0.96	1.96	2.92	0.34	1.76	2.10

Building Off Road Diesel	16.17	0.00	1.03	1.03	0.00	0.94	0.94
Building Vendor Trips	14.04	0.20	0.58	0.78	0.07	0.53	0.60
Building Worker Trips	4.33	0.75	0.35	1.11	0.27	0.28	0.56
Time Slice 4/6/2015-12/31/2015 Active Days: 194	34.57	0.96	1.96	2.92	0.34	1.76	2.10
Building 01/05/2015-12/28/2018	34.55	0.96	1.96	2.92	0.34	1.76	2.10
Building Off Road Diesel	16.17	0.00	1.03	1.03	0.00	0.94	0.94
Building Vendor Trips	14.04	0.20	0.58	0.78	0.07	0.53	0.60
Building Worker Trips	4.33	0.75	0.35	1.11	0.27	0.28	0.56
Coating 04/06/2015-12/01/2018	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/1/2016-12/30/2016 Active Days: 261	31.24	0.96	1.75	2.71	0.34	1.57	1.91
Building 01/05/2015-12/28/2018	31.23	0.96	1.75	2.71	0.34	1.56	1.90
Building Off Road Diesel	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	12.43	0.20	0.52	0.72	0.07	0.47	0.54
Building Worker Trips	3.96	0.75	0.35	1.11	0.27	0.28	0.56
Coating 04/06/2015-12/01/2018	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/2/2017-12/29/2017 Active Days: 260	28.32	0.96	1.60	2.56	0.34	1.42	1.77
Building 01/05/2015-12/28/2018	28.31	0.96	1.60	2.55	0.34	1.42	1.76
Building Off Road Diesel	13.62	0.00	0.77	0.77	0.00	0.71	0.71
Building Vendor Trips	11.09	0.20	0.47	0.67	0.07	0.43	0.50

Building Worker Trips	3.60	0.75	0.35	1.11	0.27	0.28	0.56
Coating 04/06/2015-12/01/2018	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/1/2018-11/30/2018 Active Days: 240	25.68	0.96	1.46	2.41	0.34	1.29	1.63
Building 01/05/2015-12/28/2018	25.67	0.96	1.45	2.41	0.34	1.29	1.63
Building Off Road Diesel	12.45	0.00	0.67	0.67	0.00	0.62	0.62
Building Vendor Trips	9.92	0.20	0.43	0.63	0.07	0.39	0.46
Building Worker Trips	3.29	0.75	0.35	1.11	0.27	0.28	0.56
Coating 04/06/2015-12/01/2018	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 12/3/2018-12/28/2018 Active Days: 20	25.67	0.96	1.45	2.41	0.34	1.29	1.63
Building 01/05/2015-12/28/2018	25.67	0.96	1.45	2.41	0.34	1.29	1.63
Building Off Road Diesel	12.45	0.00	0.67	0.67	0.00	0.62	0.62
Building Vendor Trips	9.92	0.20	0.43	0.63	0.07	0.39	0.46
Building Worker Trips	3.29	0.75	0.35	1.11	0.27	0.28	0.56

Phase Assumptions

Phase: Fine Grading 1/6/2014 - 12/31/2014 - Type Your Description Here

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

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

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

Phase: Mass Grading 8/1/2012 - 8/13/2012 - Mow Bale and Disc

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 8/14/2012 - 8/25/2012 - Overex Filled Detention Basin

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (265 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1.3 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 8/27/2012 - 9/18/2012 - Overex Berms and Unimproved Roadways

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1.7 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.3 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1.7 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 9/19/2012 - 9/21/2012 - Overex Residential Pads 2

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

5 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 9/24/2012 - 9/27/2012 - Overex Commercial Pads 4

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

5 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 9/28/2012 - 10/2/2012 - Overex School 4

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

0.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 10/3/2012 - 10/11/2012 - Strip 4 from Farm and Stockpile

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Strip Farm and Stockpile
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 929 hrs/year

Phase: Mass Grading 10/12/2012 - 11/21/2012 - Rough Grade

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

2 Scrapers (265 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
2.6 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

6.8 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 10/29/2012 - 11/20/2012 - Aspen 3 Mow, Bale and Disc

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 11/22/2012 - 2/1/2013 - Aspen 3 Export Dirt to Aspen 1 On Belt

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 36.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

2.8 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
18 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 24 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

8.6 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 11/23/2012 - 2/26/2013 - Place Import from Aspen 3

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 2/27/2013 - 3/6/2013 - Finish Grade Slopes

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 3/7/2013 - 3/15/2013 - Bring Dirt Back to Farm

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

4.3 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 3/18/2013 - 3/18/2013 - Aspen 2 Mow, Bale and Disc

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 3/22/2013 - 3/28/2013 - Aspen 2 Rough Grade Channel

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1.4 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1.2 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 3/27/2013 - 3/29/2013 - Aspen 2 Stockpile Export from Channel

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Strip Farm and Stockpile
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 929 hrs/year

Phase: Mass Grading 4/1/2013 - 4/8/2013 - Aspen 2 Finish Grade Slopes

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 4/8/2013 - 5/31/2013 - Aspen 3 Rough Grade Channel

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1.2 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
4.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 6/3/2013 - 6/25/2013 - Aspen 3 Rough Grade NW Borrow Area

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

3.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 6/26/2013 - 8/7/2013 - Aspen 3 Rough Grade North of Channel

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

5.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

4.1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 8/8/2013 - 9/27/2013 - Aspen 3 Finish Grade Slopes

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 10/1/2013 - 10/4/2013 - Mayhew Mow Bale and Disc

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 10/7/2013 - 11/26/2013 - Mayhew Rough Grade

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
2.2 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

4.4 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 12/1/2013 - 12/3/2013 - Mayhew Stockpile Export

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 12/4/2013 - 12/16/2013 - Finish Grade Slopes

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year
1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Trenching 7/1/2014 - 10/31/2014 - Install Utilities

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 11/3/2014 - 12/31/2014 - Street and Parking Lot Paving

Acres to be Paved: 57.2

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/5/2015 - 12/28/2018 - Type Your Description Here

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

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

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 4/6/2015 - 12/1/2018 - Type Your Description Here

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

URBEMIS Results – Construction NOx and Particulates without Conveyor Belt

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Construction with Trucks Instead of Belt.urb924
Project Name: Aspen I - With Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	NOx Mitigated Calc	PM10 Exhaust Mit Calc
2012 TOTALS (lbs/day unmitigated)	467.87	1,919.03	16.54	1,931.49	400.77	15.35	412.49		
2012 TOTALS (lbs/day mitigated)		354.00		354.29	65.39	0.09	65.47	374.30	9.10
2013 TOTALS (lbs/day unmitigated)	472.19	1,879.05	17.07	1,896.12	392.43	15.87	408.30		
2013 TOTALS (lbs/day mitigated)		346.64		346.81	64.03	0.07	64.05	377.75	9.39
2014 TOTALS (lbs/day unmitigated)	94.76	1,144.07	4.89	1,148.96	238.94	4.49	243.43		
2014 TOTALS (lbs/day mitigated)		211.09		213.89	39.00	0.87	39.86	75.81	2.69
2015 TOTALS (lbs/day unmitigated)	34.57	0.96	1.96	2.92	0.34	1.76	2.10		

2015 TOTALS (lbs/day mitigated)		0.96		2.46	0.34	0.96	1.30	27.65	1.08
2016 TOTALS (lbs/day unmitigated)	31.24	0.96	1.75	2.71	0.34	1.57	1.91		
2016 TOTALS (lbs/day mitigated)		0.96		2.32	0.34	0.88	1.22	24.99	0.96
2017 TOTALS (lbs/day unmitigated)	28.32	0.96	1.60	2.56	0.34	1.42	1.77		
2017 TOTALS (lbs/day mitigated)		0.96		2.21	0.34	0.82	1.16	22.66	0.88
2018 TOTALS (lbs/day unmitigated)	25.68	0.96	1.46	2.41	0.34	1.29	1.63		
2018 TOTALS (lbs/day mitigated)		0.96		2.11	0.34	0.77	1.11	20.54	0.80

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

	NOx	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5
Time Slice 8/1/2012-8/13/2012 Active Days: 9	19.27	1,144.00	0.50	1,144.50	238.91	0.47	239.38
Mass Grading 08/01/2012-08/13/2012	19.27	1,144.00	0.50	1,144.50	238.91	0.47	239.38
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	19.25	0.00	0.50	0.50	0.00	0.47	0.47
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 8/14/2012-8/25/2012 Active Days: 12	179.54	1,144.02	5.51	1,149.52	238.92	5.14	244.06
Mass Grading 08/14/2012-08/25/2012	179.54	1,144.02	5.51	1,149.52	238.92	5.14	244.06
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	179.40	0.00	5.50	5.50	0.00	5.13	5.13

Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.13	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 8/27/2012-9/18/2012 Active Days: 17	265.09	1,144.02	8.16	1,152.18	238.92	7.62	246.54
Mass Grading 08/27/2012-09/18/2012	265.09	1,144.02	8.16	1,152.18	238.92	7.62	246.54
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	264.94	0.00	8.15	8.15	0.00	7.61	7.61
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.14	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 9/19/2012-9/21/2012 Active Days: 3	317.30	1,144.02	9.85	1,153.87	238.92	9.18	248.10
Mass Grading 09/19/2012-09/21/2012	317.30	1,144.02	9.85	1,153.87	238.92	9.18	248.10
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	317.12	0.00	9.83	9.83	0.00	9.17	9.17
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.18	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 9/24/2012-9/27/2012 Active Days: 4	313.92	1,144.02	10.32	1,154.35	238.92	9.63	248.55
Mass Grading 09/24/2012-09/27/2012	313.92	1,144.02	10.32	1,154.35	238.92	9.63	248.55
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	313.73	0.00	10.31	10.31	0.00	9.62	9.62
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.18	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 9/28/2012-10/2/2012 Active Days: 3	235.01	1,144.02	7.80	1,151.82	238.92	7.28	246.20
Mass Grading 09/28/2012-10/02/2012	235.01	1,144.02	7.80	1,151.82	238.92	7.28	246.20

Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	234.88	0.00	7.79	7.79	0.00	7.27	7.27
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.13	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 10/3/2012-10/11/2012 Active Days: 7	171.85	1,144.01	7.18	1,151.19	238.92	6.69	245.60
Mass Grading 10/03/2012-10/11/2012	171.85	1,144.01	7.18	1,151.19	238.92	6.69	245.60
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	171.73	0.00	7.17	7.17	0.00	6.68	6.68
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.12	0.01	0.01	0.02	0.01	0.01	0.01
Time Slice 10/12/2012-10/26/2012 Active Days: 11	408.03	1,144.03	11.96	1,155.98	238.92	11.25	250.18
Mass Grading 10/12/2012-11/20/2012	408.03	1,144.03	11.96	1,155.98	238.92	11.25	250.18
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	407.83	0.00	11.94	11.94	0.00	11.24	11.24
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.21	0.03	0.01	0.04	0.01	0.01	0.02
Time Slice 10/29/2012-11/20/2012 Active Days: 17	427.30	1,919.03	12.46	1,931.49	400.77	11.72	412.49
Mass Grading 10/12/2012-11/20/2012	408.03	1,144.03	11.96	1,155.98	238.92	11.25	250.18
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	407.83	0.00	11.94	11.94	0.00	11.24	11.24
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.21	0.03	0.01	0.04	0.01	0.01	0.02
Mass Grading 10/29/2012-11/21/2012	19.27	775.00	0.50	775.50	161.85	0.47	162.32

Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	19.25	0.00	0.50	0.50	0.00	0.47	0.47
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 11/21/2012-11/21/2012 Active Days: 1	348.74	1,510.04	12.96	1,523.00	315.36	12.02	327.38
Mass Grading 10/29/2012-11/21/2012	19.27	775.00	0.50	775.50	161.85	0.47	162.32
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	19.25	0.00	0.50	0.50	0.00	0.47	0.47
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading 11/21/2012-02/01/2013	329.47	735.04	12.46	747.50	153.51	11.55	165.06
Mass Grading Dust	0.00	735.00	0.00	735.00	153.50	0.00	153.50
Mass Grading Off Road Diesel	329.15	0.00	12.44	12.44	0.00	11.54	11.54
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.32	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 11/22/2012-11/22/2012 Active Days: 1	329.47	735.04	12.46	747.50	153.51	11.55	165.06
Mass Grading 11/21/2012-02/01/2013	329.47	735.04	12.46	747.50	153.51	11.55	165.06
Mass Grading Dust	0.00	735.00	0.00	735.00	153.50	0.00	153.50
Mass Grading Off Road Diesel	329.15	0.00	12.44	12.44	0.00	11.54	11.54
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.32	0.04	0.02	0.06	0.01	0.02	0.03
Time Slice 11/23/2012-12/31/2012 Active Days: 27	467.87	1,879.05	16.54	1,895.60	392.43	15.35	407.78
Mass Grading 11/21/2012-02/01/2013	329.47	735.04	12.46	747.50	153.51	11.55	165.06

Mass Grading Dust	0.00	735.00	0.00	735.00	153.50	0.00	153.50
Mass Grading Off Road Diesel	329.15	0.00	12.44	12.44	0.00	11.54	11.54
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.32	0.04	0.02	0.06	0.01	0.02	0.03
Mass Grading 11/23/2012-02/26/2013	138.40	1,144.01	4.09	1,148.10	238.92	3.79	242.71
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	138.31	0.00	4.08	4.08	0.00	3.79	3.79
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.10	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 1/1/2013-2/1/2013 Active Days: 24	472.19	1,879.05	17.07	1,896.12	392.43	15.87	408.30
Mass Grading 11/21/2012-02/01/2013	332.52	735.04	12.85	747.90	153.51	11.95	165.46
Mass Grading Dust	0.00	735.00	0.00	735.00	153.50	0.00	153.50
Mass Grading Off Road Diesel	332.23	0.00	12.84	12.84	0.00	11.93	11.93
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.29	0.04	0.02	0.06	0.01	0.02	0.03
Mass Grading 11/23/2012-02/26/2013	139.67	1,144.01	4.21	1,148.23	238.92	3.92	242.84
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	139.58	0.00	4.21	4.21	0.00	3.92	3.92
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.09	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 2/4/2013-2/26/2013 Active Days: 17	139.67	1,144.01	4.21	1,148.23	238.92	3.92	242.84
Mass Grading 11/23/2012-02/26/2013	139.67	1,144.01	4.21	1,148.23	238.92	3.92	242.84
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	139.58	0.00	4.21	4.21	0.00	3.92	3.92

Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.09	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 2/27/2013-3/6/2013 Active Days: 6	36.23	1,144.00	1.14	1,145.14	238.91	1.06	239.97
Mass Grading 02/27/2013-03/06/2013	36.23	1,144.00	1.14	1,145.14	238.91	1.06	239.97
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	36.21	0.00	1.14	1.14	0.00	1.06	1.06
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 3/7/2013-3/15/2013 Active Days: 7	277.19	1,144.02	9.39	1,153.41	238.92	8.78	247.70
Mass Grading 03/07/2013-03/15/2013	277.19	1,144.02	9.39	1,153.41	238.92	8.78	247.70
Mass Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Mass Grading Off Road Diesel	277.04	0.00	9.38	9.38	0.00	8.77	8.77
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.15	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 3/18/2013-3/18/2013 Active Days: 1	19.52	70.00	0.52	70.52	14.62	0.49	15.11
Mass Grading 03/18/2013-03/18/2013	19.52	70.00	0.52	70.52	14.62	0.49	15.11
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	19.51	0.00	0.52	0.52	0.00	0.49	0.49
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 3/22/2013-3/26/2013 Active Days: 3	261.03	70.02	8.53	78.55	14.63	7.99	22.61
Mass Grading 03/22/2013-03/28/2013	261.03	70.02	8.53	78.55	14.63	7.99	22.61

Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	260.90	0.00	8.53	8.53	0.00	7.98	7.98
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.13	0.02	0.01	0.03	0.01	0.01	0.01
Time Slice 3/27/2013-3/28/2013 Active Days: 2	285.67	140.02	9.39	149.41	29.25	8.78	38.03
Mass Grading 03/22/2013-03/28/2013	261.03	70.02	8.53	78.55	14.63	7.99	22.61
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	260.90	0.00	8.53	8.53	0.00	7.98	7.98
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.13	0.02	0.01	0.03	0.01	0.01	0.01
Mass Grading 03/27/2013-03/29/2013	24.64	70.00	0.85	70.86	14.62	0.80	15.42
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	24.62	0.00	0.85	0.85	0.00	0.80	0.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 3/29/2013-3/29/2013 Active Days: 1	24.64	70.00	0.85	70.86	14.62	0.80	15.42
Mass Grading 03/27/2013-03/29/2013	24.64	70.00	0.85	70.86	14.62	0.80	15.42
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	24.62	0.00	0.85	0.85	0.00	0.80	0.80
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 4/1/2013-4/5/2013 Active Days: 5	36.23	70.00	1.14	71.14	14.62	1.06	15.68
Mass Grading 04/01/2013-04/08/2013	36.23	70.00	1.14	71.14	14.62	1.06	15.68

Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	36.21	0.00	1.14	1.14	0.00	1.06	1.06
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 4/8/2013-4/8/2013 Active Days: 1	326.37	845.02	10.15	855.17	176.48	9.56	186.04
Mass Grading 04/01/2013-04/08/2013	36.23	70.00	1.14	71.14	14.62	1.06	15.68
Mass Grading Dust	0.00	70.00	0.00	70.00	14.62	0.00	14.62
Mass Grading Off Road Diesel	36.21	0.00	1.14	1.14	0.00	1.06	1.06
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Mass Grading 04/08/2013-05/31/2013	290.13	775.02	9.02	784.03	161.86	8.50	170.36
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	290.02	0.00	9.01	9.01	0.00	8.49	8.49
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.12	0.02	0.01	0.02	0.01	0.01	0.01
Time Slice 4/9/2013-5/31/2013 Active Days: 39	290.13	775.02	9.02	784.03	161.86	8.50	170.36
Mass Grading 04/08/2013-05/31/2013	290.13	775.02	9.02	784.03	161.86	8.50	170.36
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	290.02	0.00	9.01	9.01	0.00	8.49	8.49
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.12	0.02	0.01	0.02	0.01	0.01	0.01
Time Slice 6/3/2013-6/25/2013 Active Days: 17	333.15	775.02	10.28	785.30	161.86	9.66	171.52
Mass Grading 06/03/2013-06/25/2013	333.15	775.02	10.28	785.30	161.86	9.66	171.52

Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	333.00	0.00	10.27	10.27	0.00	9.65	9.65
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.15	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 6/26/2013-8/7/2013 Active Days: 31	273.81	775.02	9.49	784.52	161.86	8.88	170.74
Mass Grading 06/26/2013-08/07/2013	273.81	775.02	9.49	784.52	161.86	8.88	170.74
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	273.66	0.00	9.48	9.48	0.00	8.87	8.87
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.15	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 8/8/2013-9/27/2013 Active Days: 37	39.89	775.00	1.13	776.13	161.85	1.05	162.91
Mass Grading 08/08/2013-09/27/2013	39.89	775.00	1.13	776.13	161.85	1.05	162.91
Mass Grading Dust	0.00	775.00	0.00	775.00	161.85	0.00	161.85
Mass Grading Off Road Diesel	39.86	0.00	1.13	1.13	0.00	1.05	1.05
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 10/1/2013-10/4/2013 Active Days: 4	19.52	480.00	0.52	480.52	100.24	0.49	100.73
Mass Grading 10/01/2013-10/04/2013	19.52	480.00	0.52	480.52	100.24	0.49	100.73
Mass Grading Dust	0.00	480.00	0.00	480.00	100.24	0.00	100.24
Mass Grading Off Road Diesel	19.51	0.00	0.52	0.52	0.00	0.49	0.49
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00

Time Slice 10/7/2013-11/26/2013 Active Days: 37	350.48	480.02	10.75	490.78	100.25	10.13	110.38
Mass Grading 10/07/2013-11/26/2013	350.48	480.02	10.75	490.78	100.25	10.13	110.38
Mass Grading Dust	0.00	480.00	0.00	480.00	100.24	0.00	100.24
Mass Grading Off Road Diesel	350.33	0.00	10.74	10.74	0.00	10.12	10.12
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.15	0.02	0.01	0.03	0.01	0.01	0.02
Time Slice 12/2/2013-12/3/2013 Active Days: 2	20.00	480.00	0.68	480.68	100.24	0.63	100.88
Mass Grading 12/01/2013-12/03/2013	20.00	480.00	0.68	480.68	100.24	0.63	100.88
Mass Grading Dust	0.00	480.00	0.00	480.00	100.24	0.00	100.24
Mass Grading Off Road Diesel	19.98	0.00	0.68	0.68	0.00	0.63	0.63
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 12/4/2013-12/16/2013 Active Days: 9	47.18	480.00	1.30	481.31	100.24	1.23	101.48
Mass Grading 12/04/2013-12/16/2013	47.18	480.00	1.30	481.31	100.24	1.23	101.48
Mass Grading Dust	0.00	480.00	0.00	480.00	100.24	0.00	100.24
Mass Grading Off Road Diesel	47.16	0.00	1.30	1.30	0.00	1.23	1.23
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 1/6/2014-6/30/2014 Active Days: 126	72.97	1,144.01	3.30	1,147.31	238.92	3.04	241.95
Fine Grading 01/06/2014-12/31/2014	72.97	1,144.01	3.30	1,147.31	238.92	3.04	241.95
Fine Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Fine Grading Off Road Diesel	72.90	0.00	3.29	3.29	0.00	3.03	3.03
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Fine Grading Worker Trips	0.08	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 7/1/2014-10/31/2014 Active Days: 89	86.02	1,144.02	3.89	1,147.91	238.92	3.58	242.50
Fine Grading 01/06/2014-12/31/2014	72.97	1,144.01	3.30	1,147.31	238.92	3.04	241.95
Fine Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Fine Grading Off Road Diesel	72.90	0.00	3.29	3.29	0.00	3.03	3.03
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.01	0.01	0.02	0.00	0.00	0.01
Trenching 07/01/2014-10/31/2014	13.05	0.00	0.59	0.60	0.00	0.54	0.55
Trenching Off Road Diesel	13.02	0.00	0.59	0.59	0.00	0.54	0.54
Trenching Worker Trips	0.03	0.00	0.00	0.01	0.00	0.00	0.00
Time Slice 11/3/2014-12/31/2014 Active Days: 43	94.76	1,144.07	4.89	1,148.96	238.94	4.49	243.43
Asphalt 11/03/2014-12/31/2014	21.79	0.06	1.59	1.65	0.02	1.46	1.48
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	15.61	0.00	1.34	1.34	0.00	1.24	1.24
Paving On Road Diesel	6.14	0.06	0.24	0.29	0.02	0.22	0.24
Paving Worker Trips	0.04	0.01	0.00	0.01	0.00	0.00	0.00
Fine Grading 01/06/2014-12/31/2014	72.97	1,144.01	3.30	1,147.31	238.92	3.04	241.95
Fine Grading Dust	0.00	1,144.00	0.00	1,144.00	238.91	0.00	238.91
Fine Grading Off Road Diesel	72.90	0.00	3.29	3.29	0.00	3.03	3.03
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.08	0.01	0.01	0.02	0.00	0.00	0.01
Time Slice 1/5/2015-4/3/2015 Active Days: 65	34.55	0.96	1.96	2.92	0.34	1.76	2.10
Building 01/05/2015-12/28/2018	34.55	0.96	1.96	2.92	0.34	1.76	2.10

Building Off Road Diesel	16.17	0.00	1.03	1.03	0.00	0.94	0.94
Building Vendor Trips	14.04	0.20	0.58	0.78	0.07	0.53	0.60
Building Worker Trips	4.33	0.75	0.35	1.11	0.27	0.28	0.56
Time Slice 4/6/2015-12/31/2015 Active Days: 194	34.57	0.96	1.96	2.92	0.34	1.76	2.10
Building 01/05/2015-12/28/2018	34.55	0.96	1.96	2.92	0.34	1.76	2.10
Building Off Road Diesel	16.17	0.00	1.03	1.03	0.00	0.94	0.94
Building Vendor Trips	14.04	0.20	0.58	0.78	0.07	0.53	0.60
Building Worker Trips	4.33	0.75	0.35	1.11	0.27	0.28	0.56
Coating 04/06/2015-12/01/2018	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/1/2016-12/30/2016 Active Days: 261	31.24	0.96	1.75	2.71	0.34	1.57	1.91
Building 01/05/2015-12/28/2018	31.23	0.96	1.75	2.71	0.34	1.56	1.90
Building Off Road Diesel	14.84	0.00	0.88	0.88	0.00	0.81	0.81
Building Vendor Trips	12.43	0.20	0.52	0.72	0.07	0.47	0.54
Building Worker Trips	3.96	0.75	0.35	1.11	0.27	0.28	0.56
Coating 04/06/2015-12/01/2018	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/2/2017-12/29/2017 Active Days: 260	28.32	0.96	1.60	2.56	0.34	1.42	1.77
Building 01/05/2015-12/28/2018	28.31	0.96	1.60	2.55	0.34	1.42	1.76
Building Off Road Diesel	13.62	0.00	0.77	0.77	0.00	0.71	0.71
Building Vendor Trips	11.09	0.20	0.47	0.67	0.07	0.43	0.50

Building Worker Trips	3.60	0.75	0.35	1.11	0.27	0.28	0.56
Coating 04/06/2015-12/01/2018	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.02	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 1/1/2018-11/30/2018 Active Days: 240	25.68	0.96	1.46	2.41	0.34	1.29	1.63
Building 01/05/2015-12/28/2018	25.67	0.96	1.45	2.41	0.34	1.29	1.63
Building Off Road Diesel	12.45	0.00	0.67	0.67	0.00	0.62	0.62
Building Vendor Trips	9.92	0.20	0.43	0.63	0.07	0.39	0.46
Building Worker Trips	3.29	0.75	0.35	1.11	0.27	0.28	0.56
Coating 04/06/2015-12/01/2018	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Time Slice 12/3/2018-12/28/2018 Active Days: 20	25.67	0.96	1.45	2.41	0.34	1.29	1.63
Building 01/05/2015-12/28/2018	25.67	0.96	1.45	2.41	0.34	1.29	1.63
Building Off Road Diesel	12.45	0.00	0.67	0.67	0.00	0.62	0.62
Building Vendor Trips	9.92	0.20	0.43	0.63	0.07	0.39	0.46
Building Worker Trips	3.29	0.75	0.35	1.11	0.27	0.28	0.56

Phase Assumptions

Phase: Fine Grading 1/6/2014 - 12/31/2014 - Type Your Description Here

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

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

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

Phase: Mass Grading 8/1/2012 - 8/13/2012 - Mow Bale and Disc

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 8/14/2012 - 8/25/2012 - Overex Filled Detention Basin

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (265 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1.3 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 8/27/2012 - 9/18/2012 - Overex Berms and Unimproved Roadways

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1.7 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
3.3 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1.7 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 9/19/2012 - 9/21/2012 - Overex Residential Pads 2

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
5 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 9/24/2012 - 9/27/2012 - Overex Commercial Pads 4

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

5 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 9/28/2012 - 10/2/2012 - Overex School 4

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

0.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 10/3/2012 - 10/11/2012 - Strip 4 from Farm and Stockpile

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Strip Farm and Stockpile
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 929 hrs/year

Phase: Mass Grading 10/12/2012 - 11/20/2012 - Rough Grade

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

2 Scrapers (265 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
2.6 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

6.8 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 10/29/2012 - 11/21/2012 - Aspen 3 Mow, Bale and Disc

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 11/21/2012 - 2/1/2013 - Aspen 3 Export Dirt to Aspen 1 On Belt

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 36.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

2.6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
24 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

5.6 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 11/23/2012 - 2/26/2013 - Place Import from Aspen 3

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 2/27/2013 - 3/6/2013 - Finish Grade Slopes

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 3/7/2013 - 3/15/2013 - Bring Dirt Back to Farm

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

4.3 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 3/18/2013 - 3/18/2013 - Aspen 2 Mow, Bale and Disc

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 3/22/2013 - 3/28/2013 - Aspen 2 Rough Grade Channel

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1.4 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1.2 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 3/27/2013 - 3/29/2013 - Aspen 2 Stockpile Export from Channel

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Strip Farm and Stockpile
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 929 hrs/year

Phase: Mass Grading 4/1/2013 - 4/8/2013 - Aspen 2 Finish Grade Slopes

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 4/8/2013 - 5/31/2013 - Aspen 3 Rough Grade Channel

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1.2 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
4.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 6/3/2013 - 6/25/2013 - Aspen 3 Rough Grade NW Borrow Area

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

3.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 6/26/2013 - 8/7/2013 - Aspen 3 Rough Grade North of Channel

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

5.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

4.1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 8/8/2013 - 9/27/2013 - Aspen 3 Finish Grade Slopes

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 10/1/2013 - 10/4/2013 - Mayhew Mow Bale and Disc

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 10/7/2013 - 11/26/2013 - Mayhew Rough Grade

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year
2.2 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

4.4 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 12/1/2013 - 12/3/2013 - Mayhew Stockpile Export

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year
1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 12/4/2013 - 12/16/2013 - Finish Grade Slopes

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year
1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Trenching 7/1/2014 - 10/31/2014 - Install Utilities

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 11/3/2014 - 12/31/2014 - Street and Parking Lot Paving

Acres to be Paved: 57.2

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/5/2015 - 12/28/2018 - Type Your Description Here

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

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

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 4/6/2015 - 12/1/2018 - Type Your Description Here

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

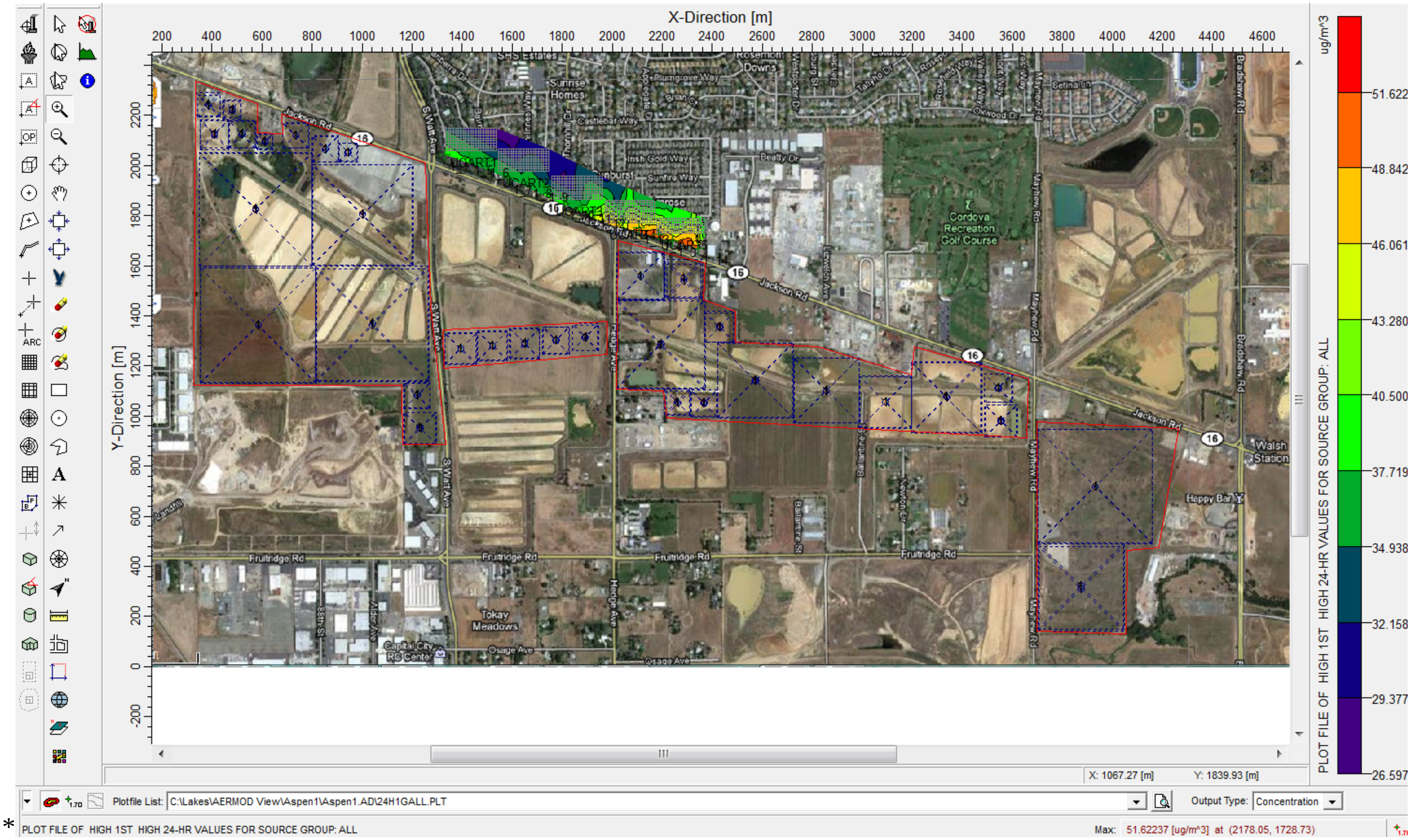
PM10 AERMOD Modeling Results

All PM10 modeling results assume 45% reduction in PM10 exhaust from uncontrolled and 75% reduction in PM10 fugitive dust from uncontrolled. These reductions are based on SMAQMD CEQA Guidance for Enhanced Fugitive PM Dust Control Practices. Maximum 24-hour and annual concentrations are based on five years of meteorological data provided by SMAQMD (Huss, K, 2011). These modeled concentrations exceed the significance threshold of 2.5 micrograms per cubic meter.

Maximum 24-Hour Concentrations

```
                                                 *** THE SUMMARY OF HIGHEST 24-HR RESULTS ***

                                     ** CONC OF PM_10    IN MICROGRAMS/M**3                          **

                                                                DATE                                                                   NETWORK
GROUP ID                               AVERAGE CONC      (YYMMDDHH)              RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)    OF TYPE  GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

ALL      HIGH  1ST HIGH VALUE IS      51.62237c ON 02031924: AT (    2178.05,     1728.73,    10.00,    10.00,    0.00)  GC  UCART5

 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
```

Graphic showing AERMOD maximum 24-hour concentration plot file



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URBEMIS Operational Results

Operational emissions based on trip generation rates provided in the traffic report (DKS Associates, 2011).

URBEMIS Operational Results – Buildout with School

Page: 1

6/9/2011 03:47:57 PM

Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Operational with School.urb924

Project Name: Aspen I - With Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	81.41	13.09	34.21	0.00	0.10	0.10	16,134.05
TOTALS (lbs/day, mitigated)	73.90	9.26	32.26	0.00	0.10	0.10	11,307.57
Percent Reduction	9.22	29.26	5.70	NAN	0.00	0.00	29.91

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	83.46	51.17	664.95	1.10	176.10	33.59	112,013.41
TOTALS (lbs/day, mitigated)	77.24	45.44	589.81	0.99	156.13	29.79	99,317.78
Percent Reduction	7.45	11.20	11.30	10.00	11.34	11.31	11.33

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	164.87	64.26	699.16	1.10	176.20	33.69	128,147.46
TOTALS (lbs/day, mitigated)	151.14	54.70	622.07	0.99	156.23	29.89	110,625.35
Percent Reduction	8.33	14.88	11.03	10.00	11.33	11.28	13.67

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	0.97	12.76	6.51	0.00	0.02	0.02	16,088.27
Hearth - No Summer Emissions							
Landscape	4.38	0.33	27.70	0.00	0.08	0.08	45.78
Consumer Products	61.62						
Architectural Coatings	14.44						
TOTALS (lbs/day, unmitigated)	81.41	13.09	34.21	0.00	0.10	0.10	16,134.05

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	0.68	8.93	4.56	0.00	0.02	0.02	11,261.79
Hearth - No Summer Emissions							
Landscape	4.38	0.33	27.70	0.00	0.08	0.08	45.78
Consumer Products	61.62						
Architectural Coatings	7.22						
TOTALS (lbs/day, mitigated)	73.90	9.26	32.26	0.00	0.10	0.10	11,307.57

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with natural gas fireplaces changed from 65% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	19.91	14.19	190.61	0.32	50.95	9.71	32,409.77
Condo/townhouse general	23.86	13.75	184.79	0.31	49.39	9.42	31,420.06
Elementary school	12.06	2.42	31.02	0.05	8.22	1.57	5,226.20
Strip mall	25.70	19.29	238.55	0.39	62.12	11.86	39,524.06
General office building	1.93	1.52	19.98	0.03	5.42	1.03	3,433.32
TOTALS (lbs/day, unmitigated)	83.46	51.17	664.95	1.10	176.10	33.59	112,013.41

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	18.48	12.80	172.03	0.29	45.98	8.77	29,249.64
Condo/townhouse general	21.25	11.22	150.74	0.26	40.29	7.68	25,630.87
Elementary school	11.85	2.23	28.61	0.05	7.58	1.45	4,819.86
Strip mall	23.86	17.79	220.01	0.36	57.29	10.94	36,451.04
General office building	1.80	1.40	18.42	0.03	4.99	0.95	3,166.37
TOTALS (lbs/day, mitigated)	77.24	45.44	589.81	0.99	156.13	29.79	99,317.78

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 Temperature (F): 95 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
Single family housing	160.67	8.22	dwelling units	482.00	3,962.04	29,656.91
Condo/townhouse general	55.19	4.35	dwelling units	883.00	3,841.05	28,751.27
Elementary school		1.06	students	850.00	901.00	4,786.11
Strip mall		46.20	1000 sq ft	192.50	8,893.50	36,148.12
General office building		15.66	1000 sq ft	29.50	461.97	3,152.60
					18,059.56	102,495.01

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	10.0	0.0	97.0	3.0
Light Truck 3751-5750 lbs	22.8	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.2	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	40.0	60.0	0.0
School Bus	0.1	0.0	0.0	100.0

Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
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)						
Elementary school				20.0	10.0	70.0
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

URBEMIS Operational Results – Buildout without School

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Operational No School.urb924

Project Name: Aspen I - Without Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	86.27	13.11	35.96	0.00	0.10	0.10	16,193.39
TOTALS (lbs/day, mitigated)	78.36	9.28	34.07	0.00	0.10	0.10	11,349.97
Percent Reduction	9.17	29.21	5.26	#######	0.00	0.00	29.91

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	74.46	50.87	662.48	1.10	175.51	33.48	111,640.28
TOTALS (lbs/day, mitigated)	68.11	45.03	585.39	0.97	155.03	29.57	98,612.47
Percent Reduction	8.53	11.48	11.64	11.82	11.67	11.68	11.67

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2

TOTALS (lbs/day, unmitigated)	160.73	63.98	698.44	1.10	175.61	33.58	127,833.67
TOTALS (lbs/day, mitigated)	146.47	54.31	619.46	0.97	155.13	29.67	109,962.44
Percent Reduction	8.87	15.11	11.31	11.82	11.66	11.64	13.98

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	0.98	12.77	6.28	0.00	0.02	0.02	16,144.75
Hearth - No Summer Emissions							
Landscape	4.89	0.34	29.68	0.00	0.08	0.08	48.64
Consumer Products	65.19						
Architectural Coatings	15.21						
TOTALS (lbs/day, unmitigated)	86.27	13.11	35.96	0.00	0.10	0.10	16,193.39

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	0.68	8.94	4.39	0.00	0.02	0.02	11,301.33
Hearth - No Summer Emissions							
Landscape	4.89	0.34	29.68	0.00	0.08	0.08	48.64
Consumer Products	65.19						
Architectural Coatings	7.60						
TOTALS (lbs/day, mitigated)	78.36	9.28	34.07	0.00	0.10	0.10	11,349.97

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with natural gas fireplaces changed from 65% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	22.97	16.31	219.16	0.37	58.58	11.17	37,262.84
Condo/townhouse general	23.86	13.75	184.79	0.31	49.39	9.42	31,420.06
Strip mall	25.70	19.29	238.55	0.39	62.12	11.86	39,524.06
General office building	1.93	1.52	19.98	0.03	5.42	1.03	3,433.32
TOTALS (lbs/day, unmitigated)	74.46	50.87	662.48	1.10	175.51	33.48	111,640.28

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	21.28	14.68	197.16	0.33	52.70	10.05	33,522.67
Condo/townhouse general	21.20	11.18	150.17	0.25	40.14	7.65	25,533.13
Strip mall	23.83	17.77	219.67	0.36	57.20	10.92	36,395.15
General office building	1.80	1.40	18.39	0.03	4.99	0.95	3,161.52
TOTALS (lbs/day, mitigated)	68.11	45.03	585.39	0.97	155.03	29.57	98,612.47

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 Temperature (F): 95 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
Single family housing	187.00	8.12	dwelling units	561.00	4,555.32	34,097.77
Condo/townhouse general	55.19	4.35	dwelling units	883.00	3,841.05	28,751.27
Strip mall		46.20	1000 sq ft	192.50	8,893.50	36,148.12
General office building		15.66	1000 sq ft	29.50	461.97	3,152.60
					17,751.84	102,149.76

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	10.0	0.0	97.0	3.0
Light Truck 3751-5750 lbs	22.8	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.2	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	40.0	60.0	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial	
Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer

Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
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)						
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

URBEMIS Operational Results – Cumulative with School

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Cumulative Operational with School.urb924

Project Name: Aspen I - With Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	81.41	13.09	34.21	0.00	0.10	0.10	16,134.05
TOTALS (lbs/day, mitigated)	73.90	9.26	32.26	0.00	0.10	0.10	11,307.57
Percent Reduction	9.22	29.26	5.70	#######	0.00	0.00	29.91

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	57.23	27.00	426.12	1.03	161.67	30.82	102,924.65
TOTALS (lbs/day, mitigated)	52.65	23.75	374.18	0.90	141.92	27.04	90,343.84
Percent Reduction	8.00	12.04	12.19	12.62	12.22	12.26	12.22

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2

TOTALS (lbs/day, unmitigated)	138.64	40.09	460.33	1.03	161.77	30.92	119,058.70
TOTALS (lbs/day, mitigated)	126.55	33.01	406.44	0.90	142.02	27.14	101,651.41
Percent Reduction	8.72	17.66	11.71	12.62	12.21	12.23	14.62

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	0.97	12.76	6.51	0.00	0.02	0.02	16,088.27
Hearth - No Summer Emissions							
Landscape	4.38	0.33	27.70	0.00	0.08	0.08	45.78
Consumer Products	61.62						
Architectural Coatings	14.44						
TOTALS (lbs/day, unmitigated)	81.41	13.09	34.21	0.00	0.10	0.10	16,134.05

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	0.68	8.93	4.56	0.00	0.02	0.02	11,261.79
Hearth - No Summer Emissions							
Landscape	4.38	0.33	27.70	0.00	0.08	0.08	45.78
Consumer Products	61.62						
Architectural Coatings	7.22						
TOTALS (lbs/day, mitigated)	73.90	9.26	32.26	0.00	0.10	0.10	11,307.57

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with natural gas fireplaces changed from 65% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	13.29	7.18	117.48	0.29	44.92	8.56	28,600.70
Condo/townhouse general	15.98	6.95	113.69	0.28	43.48	8.28	27,679.05
Elementary school	8.49	1.44	22.45	0.05	8.53	1.63	5,426.32
Strip mall	18.11	10.60	159.24	0.38	59.61	11.37	37,961.06
General office building	1.36	0.83	13.26	0.03	5.13	0.98	3,257.52
TOTALS (lbs/day, unmitigated)	57.23	27.00	426.12	1.03	161.67	30.82	102,924.65

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	12.22	6.39	104.49	0.25	39.96	7.61	25,438.87
Condo/townhouse general	14.02	5.50	89.90	0.22	34.38	6.55	21,886.73
Elementary school	8.32	1.33	20.70	0.05	7.87	1.50	5,004.42
Strip mall	16.82	9.77	146.86	0.35	54.98	10.48	35,009.57
General office building	1.27	0.76	12.23	0.03	4.73	0.90	3,004.25
TOTALS (lbs/day, mitigated)	52.65	23.75	374.18	0.90	141.92	27.04	90,343.84

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 95 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
Single family housing	160.67	7.25	dwelling units	482.00	3,494.50	26,157.25
Condo/townhouse general	55.19	3.83	dwelling units	883.00	3,381.89	25,314.33
Elementary school		1.10	students	850.00	935.00	4,966.72
Strip mall		44.35	1000 sq ft	192.50	8,537.37	34,700.63
General office building		14.85	1000 sq ft	29.50	438.08	2,989.54
					16,786.84	94,128.47

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	10.0	0.0	99.0	1.0
Light Truck 3751-5750 lbs	22.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.1	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	81.0	19.0
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	34.3	65.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
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)						
Elementary school				20.0	10.0	70.0
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

URBEMIS Operational Results – Cumulative without School

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Cumulative Operational No School.urb924

Project Name: Aspen I - Without Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	86.27	13.11	35.96	0.00	0.10	0.10	16,193.39
TOTALS (lbs/day, mitigated)	78.36	9.28	34.07	0.00	0.10	0.10	11,349.97
Percent Reduction	9.17	29.21	5.26	#######	0.00	0.00	29.91

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	50.76	26.62	421.03	1.02	159.79	30.45	101,726.85
TOTALS (lbs/day, mitigated)	46.09	23.29	367.81	0.89	139.53	26.59	88,831.50
Percent Reduction	9.20	12.51	12.64	12.75	12.68	12.68	12.68

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2

TOTALS (lbs/day, unmitigated)	137.03	39.73	456.99	1.02	159.89	30.55	117,920.24
TOTALS (lbs/day, mitigated)	124.45	32.57	401.88	0.89	139.63	26.69	100,181.47
Percent Reduction	9.18	18.02	12.06	12.75	12.67	12.64	15.04

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	0.98	12.77	6.28	0.00	0.02	0.02	16,144.75
Hearth - No Summer Emissions							
Landscape	4.89	0.34	29.68	0.00	0.08	0.08	48.64
Consumer Products	65.19						
Architectural Coatings	15.21						
TOTALS (lbs/day, unmitigated)	86.27	13.11	35.96	0.00	0.10	0.10	16,193.39

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	0.68	8.94	4.39	0.00	0.02	0.02	11,301.33
Hearth - No Summer Emissions							
Landscape	4.89	0.34	29.68	0.00	0.08	0.08	48.64
Consumer Products	65.19						
Architectural Coatings	7.60						
TOTALS (lbs/day, mitigated)	78.36	9.28	34.07	0.00	0.10	0.10	11,349.97

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with natural gas fireplaces changed from 65% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	15.31	8.24	134.84	0.33	51.57	9.82	32,829.22
Condo/townhouse general	15.98	6.95	113.69	0.28	43.48	8.28	27,679.05
Strip mall	18.11	10.60	159.24	0.38	59.61	11.37	37,961.06
General office building	1.36	0.83	13.26	0.03	5.13	0.98	3,257.52
TOTALS (lbs/day, unmitigated)	50.76	26.62	421.03	1.02	159.79	30.45	101,726.85

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Mitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	14.04	7.30	119.47	0.29	45.69	8.70	29,087.03
Condo/townhouse general	13.99	5.47	89.50	0.22	34.22	6.52	21,788.94
Strip mall	16.79	9.76	146.63	0.35	54.89	10.47	34,955.89
General office building	1.27	0.76	12.21	0.03	4.73	0.90	2,999.64
TOTALS (lbs/day, mitigated)	46.09	23.29	367.81	0.89	139.53	26.59	88,831.50

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 Temperature (F): 95 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
Single family housing	187.00	7.15	dwelling units	561.00	4,011.15	30,024.51
Condo/townhouse general	55.19	3.83	dwelling units	883.00	3,381.89	25,314.33
Strip mall		44.35	1000 sq ft	192.50	8,537.37	34,700.63
General office building		14.85	1000 sq ft	29.50	438.08	2,989.54
					16,368.49	93,029.01

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	10.0	0.0	99.0	1.0
Light Truck 3751-5750 lbs	22.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.1	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	81.0	19.0
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	34.3	65.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer

Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
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)						
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

CO EMFAC Results

```
Title    : Sacramento County Subarea Winter CYrs 2011 and 2020 Default Title
Version  : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/13 10:50:03
Scen Year: 2011 -- All model years in the range 1967 to 2011 selected
Season   : Winter
Area     : Sacramento
*****************************************************************************************
     Year: 2011 -- Model Years 1967 to 2011 Inclusive -- Winter
     Emfac2007 Emission Factors: V2.3 Nov 1 2006

     County Average                          Sacramento                 County Average

                            Table   1:  Running Exhaust Emissions (grams/mile)

     Pollutant Name: Carbon Monoxide          Temperature:  40F  Relative Humidity:  50%

     Speed
      MPH        LDA       LDT       MDT       HDT       UBUS      MCY       ALL

        1      4.605     6.331     8.686    23.455    29.147    41.394     6.976
        5      4.221     5.771     8.004    23.455    29.147    41.394     6.515
```

```
Title    : Sacramento County Subarea Winter CYrs 2011 and 2020 Default Title
Version  : Emfac2007 V2.3 Nov 1 2006
Run Date : 2011/06/13 10:50:03
Scen Year: 2020 -- All model years in the range 1976 to 2020 selected
Season   : Winter
Area     : Sacramento
----------------------------------------------------------------------------------------------------------
     Year: 2020 -- Model Years 1976 to 2020 Inclusive -- Winter
     Emfac2007 Emission Factors: V2.3 Nov 1 2006

     County Average                           Sacramento                County Average

                        Table   1:  Running Exhaust Emissions (grams/mile)


     Pollutant Name: Carbon Monoxide           Temperature:  40F  Relative Humidity:  50%

     Speed
      MPH       LDA       LDT       MDT       HDT       UBUS      MCY       ALL

        1      1.637    2.649    4.213    7.918   16.080   30.096    2.859
        5      1.547    2.492    3.954    7.918   16.080   30.096    2.730
```

CO Modeling Results

Existing Plus Project

South Watt Avenue/Folsom Boulevard

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: Aspen 1 South Watt and Folsom Blvd Exist
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=    .5 M/S              Z0= 100. CM             ALT=     0. (M)
      BRG= WORST CASE             VD=    .0 CM/S
     CLAS=     7 (G)              VS=    .0 CM/S
     MIXH= 1000. M               AMB=    .0 PPM
    SIGTH=   15. DEGREES        TEMP=    .0 DEGREE (C)


 II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)   *                EF     H     W
   DESCRIPTION   *   X1    Y1    X2    Y2  * TYPE  VPH    (G/MI)  (M)   (M)
 ----------------*-------------------------*----------------------------
 A. Link A       *   179    84   297   168 *  AG   2435    7.0     .0  20.7
 B. Link B       *   297   168   413   250 *  AG   3236    7.0     .0  20.7
 C. Link C       *   379    53   297   168 *  AG   3384    7.0     .0  20.7
 D. Link D       *   297   168   226   266 *  AG   5667    7.0     .0  20.7


 III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
   RECEPTOR  *    X       Y      Z
 ------------*---------------------
 1. Recpt 1  *    290     110    1.8
 2. Recpt 2  *    358     150    1.8
 3. Recpt 3  *    311     226    1.8
```

```
 4. Recpt 4  *    226    179   1.8

  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

             *       * PRED  *      CONC/LINK
             *  BRG  * CONC  *        (PPM)
  RECEPTOR   * (DEG) * (PPM) *   A    B    C    D
-------------*-------*-------*--------------------
 1. Recpt 1  *  352. *   1.4 *   .4   .0   .0   .9
 2. Recpt 2  *  298. *   1.4 *   .0   .4   .1   .8
 3. Recpt 3  *  208. *   1.3 *   .5   .0   .0   .8
 4. Recpt 4  *   83. *   1.3 *   .0   .5   .0   .7
```

South Watt Avenue/Jackson Road

```
          CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: Aspen 1 South Watt and Jackson Road EPlu
               RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

         U=    .5 M/S              Z0= 100. CM            ALT=     0. (M)
       BRG= WORST CASE             VD=    .0 CM/S
      CLAS=     7 (G)              VS=    .0 CM/S
      MIXH= 1000. M               AMB=    .0 PPM
     SIGTH=   15. DEGREES        TEMP=    .0 DEGREE (C)


  II.  LINK VARIABLES

      LINK       *  LINK COORDINATES (M)   *                EF     H     W
   DESCRIPTION   *   X1     Y1     X2     Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*-------------------------*-----------------------------
 A. Link A       *    83    240    283    175 *  AG   1184   7.0     .0  20.7
 B. Link B       *   283    175    503     98 *  AG   1291   7.0     .0  20.7
 C. Link C       *   280     10    283    175 *  AG   2199   7.0     .0  20.7
 D. Link D       *   283    175    275    308 *  AG   2562   7.0     .0  20.7


 III.  RECEPTOR LOCATIONS

             *    COORDINATES (M)
   RECEPTOR  *    X      Y      Z
 ------------*---------------------
 1. Recpt 1  *    253    155    1.8
 2. Recpt 2  *    310    138    1.8
 3. Recpt 3  *    338    193    1.8
 4. Recpt 4  *    335    203    1.8
 5. Recpt 5  *    255    205    1.8


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

             *       * PRED  *      CONC/LINK
```

```
              *  BRG  * CONC  *        (PPM)
  RECEPTOR    * (DEG) * (PPM) *   A     B     C     D
-------------*-------*-------*--------------------
 1. Recpt 1  *   23. *    .9 *   .3    .0    .0    .6
 2. Recpt 2  *  335. *   1.0 *   .0    .3    .1    .6
 3. Recpt 3  *  269. *    .7 *   .3    .0    .0    .3
 4. Recpt 4  *  266. *    .6 *   .3    .0    .0    .4
 5. Recpt 5  *  123. *   1.1 *   .0    .5    .0    .5
```

Cumulative Plus Project

South Watt Avenue/Folsom Boulevard

```
           CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                    JUNE 1989 VERSION
                    PAGE   1

               JOB: Aspen 1 South Watt and Folsom Blvd Cumu+
               RUN: Hour 1           (WORST CASE ANGLE)
         POLLUTANT: Carbon Monoxide


   I.  SITE VARIABLES

        U=    .5 M/S              Z0= 100. CM            ALT=     0. (M)
      BRG= WORST CASE             VD=    .0 CM/S
     CLAS=     7 (G)              VS=    .0 CM/S
     MIXH= 1000. M               AMB=    .0 PPM
    SIGTH=   15. DEGREES        TEMP=    .0 DEGREE (C)


  II.  LINK VARIABLES

       LINK      *  LINK COORDINATES (M)   *                EF     H     W
    DESCRIPTION  *   X1     Y1     X2    Y2  * TYPE  VPH  (G/MI)  (M)   (M)
 ----------------*--------------------------*------------------------------
 A. Link A       *   179    84    297   168 *  AG   2966   2.9     .0  20.7
 B. Link B       *   297   168    413   250 *  AG   4460   2.9     .0  20.7
 C. Link C       *   379    53    297   168 *  AG   6561   2.9     .0  20.7
 D. Link D       *   297   168    226   266 *  AG   8185   2.9     .0  20.7


 III.  RECEPTOR LOCATIONS

               *    COORDINATES (M)
   RECEPTOR    *    X       Y      Z
 ------------*---------------------
 1. Recpt 1  *    290    110   1.8
 2. Recpt 2  *    358    150   1.8
 3. Recpt 3  *    311    226   1.8
 4. Recpt 4  *    226    179   1.8


  IV.  MODEL RESULTS (WORST CASE WIND ANGLE )
```

RECEPTOR	BRG (DEG)	PRED CONC (PPM)	CONC/LINK (PPM) A	B	C	D
1. Recpt 1	353.	.8	.2	.0	.0	.5
2. Recpt 2	297.	.8	.0	.2	.0	.5
3. Recpt 3	190.	.8	.0	.2	.3	.2
4. Recpt 4	84.	.7	.0	.3	.0	.4

South Watt Avenue/Jackson Road

```
CALINE4: CALIFORNIA LINE SOURCE DISPERSION MODEL
                   JUNE 1989 VERSION
                   PAGE   1

              JOB: Aspen 1 South Watt and Jackson Rd c plus
              RUN: Hour 1           (WORST CASE ANGLE)
        POLLUTANT: Carbon Monoxide


  I.  SITE VARIABLES

        U=    .5 M/S             Z0= 100. CM            ALT=     0. (M)
      BRG= WORST CASE            VD=   .0 CM/S
     CLAS=     7 (G)             VS=   .0 CM/S
     MIXH= 1000. M              AMB=   .0 PPM
    SIGTH=   15. DEGREES       TEMP=   .0 DEGREE (C)


 II.  LINK VARIABLES

     LINK       *  LINK COORDINATES (M)    *                EF     H     W
  DESCRIPTION   *   X1     Y1     X2     Y2  * TYPE  VPH  (G/MI)  (M)   (M)
----------------*-------------------------*-----------------------------
A. Link A       *    83   240    283    175 *  AG   3552   2.9      .0  20.7
B. Link B       *   283   175    503     98 *  AG   5387   2.9      .0  20.7
C. Link C       *   280    10    283    175 *  AG   4217   2.9      .0  20.7
D. Link D       *   283   175    275    308 *  AG   6292   2.9      .0  20.7


III.  RECEPTOR LOCATIONS

            *    COORDINATES (M)
  RECEPTOR  *    X      Y      Z
------------*---------------------
1. Recpt 1  *    253    155   1.8
2. Recpt 2  *    310    138   1.8
3. Recpt 3  *    338    193   1.8
4. Recpt 4  *    335    203   1.8
5. Recpt 5  *    255    205   1.8


 IV.  MODEL RESULTS (WORST CASE WIND ANGLE )

            *       * PRED  *      CONC/LINK
```

RECEPTOR	BRG (DEG)	CONC (PPM)	A	B	C	D
1. Recpt 1	91.	.9	.0	.5	.3	.0
2. Recpt 2	335.	1.1	.0	.4	.0	.5
3. Recpt 3	268.	.7	.3	.0	.0	.3
4. Recpt 4	265.	.6	.3	.0	.0	.3
5. Recpt 5	123.	1.2	.0	.6	.0	.5

(A, B, C, D in PPM)

Appendix B. Draft Air Quality Mitigation Plan for the Aspen 1 – New Brighton Project

Prepared for:
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March 16, 2012

Contents Page B-

Project Description

This report describes the Aspen 1 - New Brighton Project Air Quality Mitigation Plan (AQMP). The Project consists of a master-planned, mixed-use development proposed for a 232-acre site at the southwest corner of Jackson Highway and South Watt Avenue in the City of Sacramento. The proposed project site is a former aggregate mine that provided alluvial sand and gravel in the 1960s to the Teichert Perkins Plant.

The Project would include 482 single-family units, 883 multi-family units, an 850-student elementary school, 192,500 square feet of retail, 29,500 square feet of office space, parks, and an urban farm. The project would be located southwest of the South Watt Avenue/Jackson Road intersection (Figure 1). A no-school alternative has also been proposed, which would add 79 single family dwelling units in lieu of an elementary school.

Purpose of the Air Quality Mitigation Plan

CEQA requires that EIRs identify and evaluate any significant environmental impacts of a proposed project. The analysis of significant effects must include both direct project impacts and indirect impacts. The analysis must then describe feasible measures that could minimize any significant adverse impacts. To assist in the evaluation of air quality impacts, the Sacramento Metropolitan Air Quality Management District (SMAQMD) developed a Guide to Air Quality

Assessment in Sacramento County (SMAQMD, 20009). This CEQA Guide outlines a methodology for calculating project emissions.

Project emissions are compared to significance thresholds and mitigation measures are required for projects with emissions exceeding those thresholds. In the CEQA process, project operational emissions are calculated and impacts evaluated in the draft EIR (DEIR). The CEQA Guide requires preparation of an Air Quality Mitigation Plan (AQMP) that addresses mitigation of a project's operational emissions impacts as reported in the DEIR.

The Project will redevelop 232 acres of industrial land into residential and commercial land uses. Operational emissions will be predominately indirect, resulting from vehicle exhaust emissions and area sources (natural gas combustion from space and water heating, gasoline combustion from landscape maintenance equipment, and evaporative emissions from the use of consumer products).

SMAQMD requires that projects with significant operational air quality impacts (related to regional ozone) reduce direct and indirect emissions by a minimum of 15% by selecting and implementing mitigation measures from a list of SMAQMD recommendations. SMAQMD has further determined that a 15% reduction in emissions will satisfy the "all reasonable measures" mitigation requirement under CEQA for operational impacts for all jurisdictions within Sacramento County.

To assist in documenting, quantifying, and monitoring the mitigation measures selected by the project proponent, SMAQMD has prescribed that the selected operational mitigation measures be explained in the context of the AQMP. The AQMP is a standalone document separate from other documents or plans required by CEQA or other laws, ordinances, or regulations. This AQMP is intended to satisfy this requirement for the Aspen 1 – New Brighton project.

During the environmental review process, and before certification of the DEIR by the lead agency, the SMAQMD independently reviews and endorses the AQMP by letter. The endorsed AQMP is then referenced in the DEIR as an air quality mitigation measure, appended to the DEIR, and at the discretion of the lead agency, may be referenced as a separate condition of approval.

Description of Scaling Methodology

The SMAQMD guidance document includes a list of potential mitigation measures approved by SMAQMD. These measures are included in the following groups:

- bicycle/pedestrian use,
- parking measures,
- site design measures,
- affordable housing component,
- mixed-use measures,

- building component measures, and
- TDM and miscellaneous measures.

Each measure has a point value and has been assigned a land use type for which credit may be claimed. The land use types include residential (R), commercial (C), and mixed-use (M). Each point or fraction thereof associated with a particular measure corresponds to an equal percentage of emission reductions. Mixed-use projects claiming a credit for a strictly commercial or residential measure must scale the credit claimed to that fraction of a project that is commercial or residential. Therefore, it is necessary to calculate the fraction of credit that is claimable for each use type. This was done (using scaling method 2 of the guidance document) by calculating the percentage of residential and commercial gross floor area. These percentages are shown in Table B-1 below.

Table B-1. Land Use Percentages Based on Gross Square Footage

Land Use Type	Gross Square Footage (GSF)	% Total GSF
Residential	1,935,300	89.7%
Commercial	222,000	10.3%
Total	2,157,300	100%
Assumes 482 single-family detached units at 2,000 square feet each and 883 single-family attached units at 1,100 square feet each. Multi-family dwellings consist of 45 percent of total square footage.		

Summary of Mitigation Measures

Table B-2 summarizes the applicable mitigation measures from the 35 measures listed in SMAQMD's guidance document (SMAQMD, 2010). A detailed description of each measure is shown below.

Table B-2. Summary of Mitigation Measures

Measure	Applicable Land Use	Possible	Scale	Adjusted by Gross Square Feet	Comments
1. Bike Parking	C	0.625	0.103	0.064	Applied to all commercial.
2. Showers	C	0.625	0.103	0.064	Applied to all commercial.
3. Long-Term Bike Parking	R	0.625	0.450	0.281	Applied to residential apartments.
4. 1/2 mile of Bike Lane	C, R	0.625	1.000	0.625	Applied to entire project.
5. Pedestrian Connections	C, R	1	1.000	1	Applied to entire project.
6. Site Access	C, R	1	1.000	1	Applied to entire project.
8. Transit Stops	C, R	0.25	1.000	0.25	Applied to entire project.
9. Traffic Calming	C, R	1	1.000	1	Applied to entire project.
13. Parking lot design	C, R	0.5	1.000	0.5	Applied to entire project.
14. Parking facility not adjacent to street frontage	C, R	0.1	1.000	0.1	Applied to entire project.
19. Grid Style	C, R	1	1.000	1	Applied to entire project.
21. Affordable housing component	R	4	0.150	0.6	Applied to affordable residential percentage.
25. No fireplaces or stoves	R	1	0.897	0.897	Applied to residential.
31. Non-Roof Surfaces	C, R	1	1.000	1	Applied to entire project.
33. TMA Membership	C, R	5	1.000	5	Applied to entire project.
99A. Walkable Community	C, R	4	1.000	4	Applied to entire project.
99B. Transit Corridor	C, R	19	1.000	19	Applied to entire project.
99C. Urban Farm	R	1	0.897	0.897	Applied to residential.
99D. Urban Forest	C, R	1	1.000	1	Applied to entire project.
Total				38.3	

Detailed Description of Measures

This discussion is based primarily on information contained in the New Brighton PUD Guidelines (Stonebridge, 2011). To obtain a more thorough understanding of how the project's design guidelines will reduce air emissions, the following discussion should be viewed in conjunction with the New Brighton PUD Guidelines.

Measure 1. Non-residential projects provide plentiful short-term and long-term bicycle parking facilities to meet peak season maximum demand. Points: 0.064 (0.625 x 0.103 commercial percentage of total gross square footage)

The Project will comply with the City of Sacramento bicycle parking regulations (City Code 17.64.050) that a minimum of 1 long-term bike locker be provided per 20 vehicle parking spaces.

Measure 2. Non-residential projects provide "end-of-trip" facilities including showers, lockers, and changing space. Points: 0.064 (0.625 x 0.103 commercial percentage of total gross square footage)

The Project will include four clothes lockers and one shower for every 80 employee parking spaces.

Measure 3. Long-term bicycle parking is provided at apartment complexes or condominiums without garages. Points: 0.28 (0.625 x 0.45, where apt/condo equals 45 percent of total gross square footage)

The Project will provide one long-term bicycle parking space for each apartment and/or condominium unit without a garage. The long–term bike parking facilities will include bicycle lockers, a locked room with standard racks and access limited to bicyclists only, or a standard rack in a location that is staffed and/or monitored by video surveillance 24 hours per day.

Measure 4. Entire project is located within ½ mile of an existing class 1 or 2 bike lane and project design includes a comparable network that connects the project to the existing offsite facility. Points: 0.625

The entire project will include a series of Class 1, 2, and 3 bike lanes as shown in the following Figure 5-15, taken from the New Brighton PUD Guidelines. The project's Class 2 bike lanes will connect to the City of Sacramento's Class 2 bike lanes on Jackson Highway and South Watt Avenue.

Figure 5-15: New Brighton Trails Plan

the Four Corners Community Center District. In addition to these off-site systems, South Watt Avenue and Jackson Highway are designated to include Class II bicycle lanes.

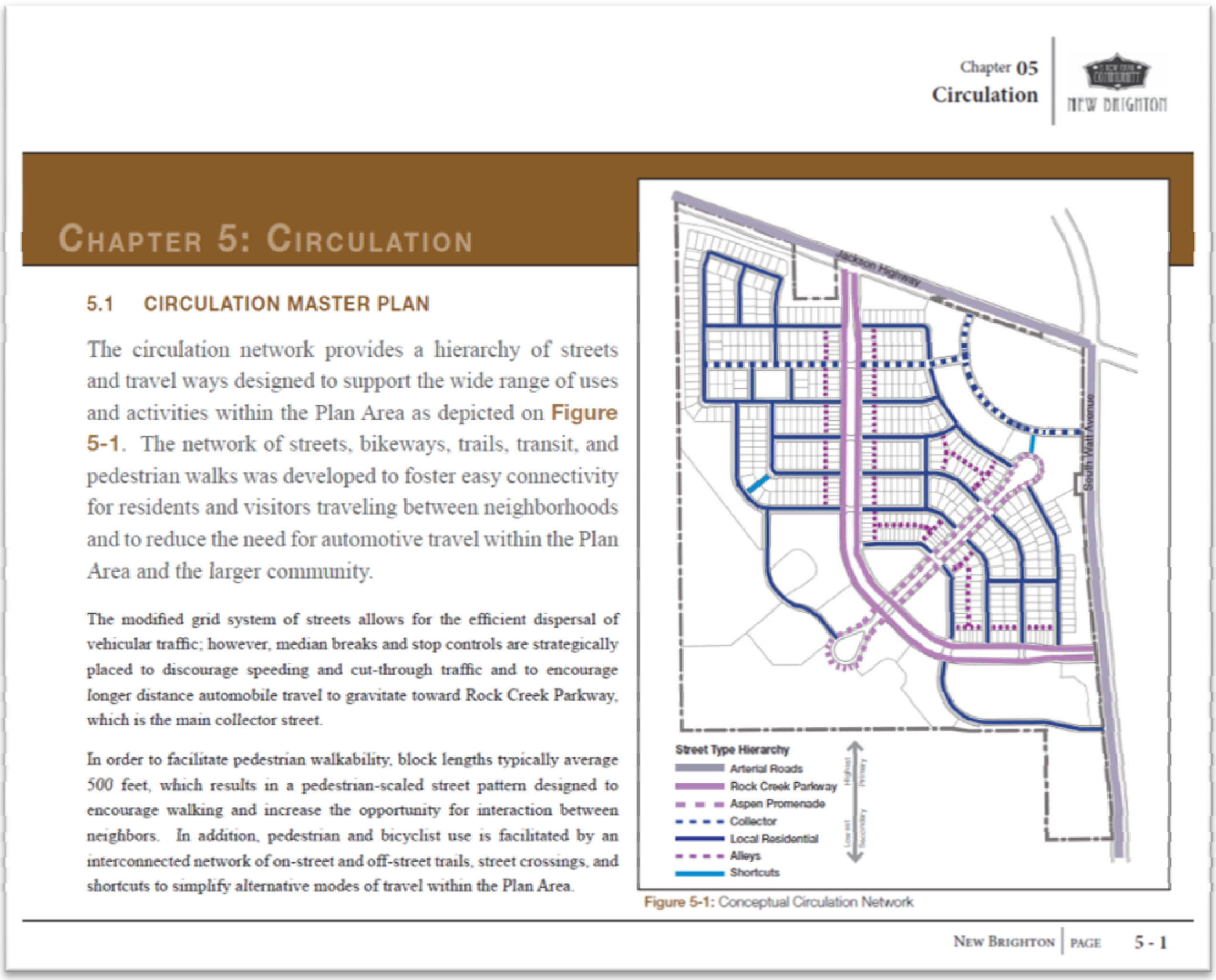
The trail network within the Plan Area has been designed to connect to the planned off-site trail network and will be developed as shown by Figure 5-15. The trail network shown on Figure 5-15 will utilize a variety of bikeways and trails which are classified in Table 5-1.

Table 5-1: New Brighton Trail Classifications

CLASS	SURFACE	DESCRIPTION
I	Paved	Off-street multi-use bicycle and pedestrian path. Class I trails are used in the Plan Area to faciliate access between the elementary school, urban farm, and powerline corridor trail system.
II	Paved	Signed on-street bicycle routes with a striped lane. Class II bicycle routes within the Plan Area include Jackson Highway, South Watt Avenue, Rock Creek Parkway, Aspen Promenade, and Collector Streets.
III	Paved	Signed on-street bicycle routes without a striped lane. Class III bicycle routes comprise all roadways within the Plan Area which do not have a separate striped lane.
N/A	Varies	Shortcuts vary in size and surface but are intended to provide an all-weather surface to facilitate pedestrian movement between uses and shorten travel distance.

Measure 5. The project provides a pedestrian access network that internally links all uses and connects to all existing or planned external streets and pedestrian facilities contiguous with the project site. Points: 1

The project includes connections to planned streets within the development and to existing external streets. The figure below shows the circulation network, and includes pedestrian routes that interconnect all internal uses. Sidewalks will be included on both sides of all streets. Rock Creek Parkway, which is the main collector street, will connect to Jackson Highway and South Watt Avenue.


Chapter 05
Circulation

NEW BRIGHTON

CHAPTER 5: CIRCULATION

5.1 CIRCULATION MASTER PLAN

The circulation network provides a hierarchy of streets and travel ways designed to support the wide range of uses and activities within the Plan Area as depicted on Figure 5-1. The network of streets, bikeways, trails, transit, and pedestrian walks was developed to foster easy connectivity for residents and visitors traveling between neighborhoods and to reduce the need for automotive travel within the Plan Area and the larger community.

The modified grid system of streets allows for the efficient dispersal of vehicular traffic; however, median breaks and stop controls are strategically placed to discourage speeding and cut-through traffic and to encourage longer distance automobile travel to gravitate toward Rock Creek Parkway, which is the main collector street.

In order to facilitate pedestrian walkability, block lengths typically average 500 feet, which results in a pedestrian-scaled street pattern designed to encourage walking and increase the opportunity for interaction between neighbors. In addition, pedestrian and bicyclist use is facilitated by an interconnected network of on-street and off-street trails, street crossings, and shortcuts to simplify alternative modes of travel within the Plan Area.

Figure 5-1: Conceptual Circulation Network

NEW BRIGHTON | PAGE 5 - 1

Measure 6: Site design and building placement minimize barriers to pedestrian access and interconnectivity. Physical barriers such as walls, berms, landscaping, and slopes between residential and non-residential uses that impede bicycle or pedestrian circulation are eliminated. Points: 1

The project's circulation plan will minimize barriers to pedestrian access and will not include any impediments to bicycle or pedestrian circulation. To facilitate pedestrian walkability, block lengths will average 500 feet. Pedestrians will have access to an interconnected network of on-street and off-street trails, street crossings, and shortcuts, as described in the project's circulation master plan.

Measure 8. Project provides transit stops with safe and convenient bicycle/pedestrian access. Project provides essential transit stop improvements (i.e., shelters, route information, benches, and lighting in anticipation of future transit service). Points: 0. 25

South Watt Avenue is designated to provide future Bus and Bus Rapid Transit service as indicated in the Sacramento Regional Transit Master Plan and the SACOG Metropolitan Transportation Plan (MTP). To support transit, two nodes of development have been located along South Watt Avenue. The first is the Community Commercial District, which includes commercial and high density residential at the intersection of South Watt Avenue and Jackson Highway. The second node of development is at the southwest corner of Rock Creek Parkway and South Watt Avenue. Four transit stops at these locations will be coordinated with the City of Sacramento and RT. These stops will include street trees, landscaping, benches, lighting, and locations near sidewalks so that there are "eyes on the street" to improve security.

Measure 9. Project design includes pedestrian/bicycle safety and traffic calming measures in excess of jurisdiction requirements. Roadways are designed to reduce motor vehicle speeds and encourage pedestrian and bicycle trips by featuring traffic calming features. Points: 1

The project's circulation master plan states that the modified grid system allows for the efficient dispersal of vehicle traffic. However, median breaks and stop controls will be strategically placed to discourage speeding and cut-through traffic and to encourage longer distance automobile travel to gravitate to Rock Creek Parkway, which is the main collector street.

Measure 13. Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances. Points: 0.5

The commercial center design guidelines require that major pedestrian access routes through large parking fields should be emphasized and clearly designated using landscaping, signage, and/or lighting.

Measure 14. Parking facilities are not adjacent to street frontage. Points: 0.1

The project has specific design principles to reduce residential garage dominance. The project allows either attached or detached garages in an alley configuration. This provides for better security and encourages pedestrian trips. For commercial uses, the Four Corners Commercial area will include residential mixed-use consisting of multi-family residential with ground floor retail and/or commercial uses on key corners or prominent locations. The Community Commercial is intended to have second floor residential units over in-line commercial shops. In certain portions of the retail development, parking would not be hidden from view.

Measure 19. Multiple and direct street routing (grid style). Points: 1.0

The project consists of a modified grid style that allows for the efficient dispersal of vehicle traffic. The project does not include cul-de-sacs. See figure below.

Measure 21. Affordable housing component. Points: 0.6 (15% x 0.04)

A maximum of 4 points is available for this measure, which could be achieved if 100 percent of the houses were deed restricted affordable housing. Consequently, the following equation was used to estimate the points for the Aspen 1 - New Brighton project:

Points = % units deed-restricted below market rate housing * 0.04

The project will include 15% of the houses as affordable housing. These will include a combination of secondary units and dedicated housing sites. Consequently, the project qualifies for 0.6 points.

Measure 25. Project does not feature fireplaces or wood burning stoves. Points: 0.897 (1.0 x 0.897 [89.7 percent residential] = 0.897)

The Project proposes that all buildings, units, and facilities, indoors and out, are free of devices designated to facilitate the combustion of wood or wood products. The project will not exclude the use of natural gas burning stoves or electric stoves.

Measure 31. Provide shade (within 5 years) and/or use light-colored/high-albedo materials (reflectance of at least 0.3) and/or open grid payment for at least 30% of the site's non-roof impervious surfaces, including parking lots, walkways, plazas, etc.; OR place a minimum of 50% of parking spaces underground or covered by structured parking; OR use an open-grid pavement system (less than 50% impervious) for a minimum of 50% of the parking lot area. Unshaded parking lot areas, driveways, fire lanes, and other paved areas have a minimum albedo of 0.3 or greater. Points: 1.0

Project would provide shade within 5 years for at least 30% of the site's non-roof impervious surfaces, including parking lots, walkways, and plazas. Shade will be provided by implementing an extensive landscaping plan.

The figure shown below (Figure 4-1 from the New Brighton PUD Guidelines) illustrates how trees will be used to shade public streets and sidewalks. Street tree plantings are required along all public streets and must be installed parallel to the curb and centered in the planter strips. Local streets must be framed by regular plantings of canopy street trees and a minimum of 8-foot parkway between curb and sidewalks. Rock Creek Parkway and Aspen Promenade must have multiple rows of regularly spaced trees. Trees must be planted at sufficient intervals to accommodate mature growth. Maximum spacing shall be no more than 30 feet on center.

In addition, all commercial parking lots will be planted with trees to achieve 50% shading within 15 years.

Figure 4-1: Street Tree Plantings

Measure 33. Include permanent TMA membership and funding requirement. Funding to be provided by Community Facilities District or County Service Area or other non-revocable funding mechanism. Points: 5.0

Stonebridge will provide funding for permanent TMA membership through a non-revocable funding mechanism as specified by the City of Sacramento.

Measure 99A Walkable Communities. Points: 4

Chapter 5 of the New Brighton PUD Guidelines contains the Project's Circulation Master Plan element. This element describes the various aspects of the project that will encourage pedestrian use. All major and minor arterials, collectors, and local streets will include sidewalks on both sides of the street. Arterial and collector street sidewalks will be a minimum of 6-feet wide and will be separated from the street by 10-foot landscape strips. Local streets will include 5-foot minimum width sidewalks that will be separated from the street by 8-foot planting strips. Construction of the sidewalks will occur concurrently with street construction. Section 5.3 of the PUD Guidelines describes the road design sections for the various street types proposed, including the amount of space reserved for cars, bikes, pedestrians, and transit.

Additionally, the Plan Area includes a comprehensive trail and bikeway network within the Plan Area. The following figure (Figure 5-15 from the New Brighton PUD Guidelines) shows the proposed bike and pedestrian network. The proposed trail network consists of an interconnected system of on-street sidewalks, Class I, Class II and III bicycle lanes and pedestrian trails, and shortcuts. The shortcuts (identified as red lines in the following figure) are intended to facilitate pedestrian movement between land uses and to shorten walking distances. The Class 1 trails will be used to facilitate access between the elementary school, the urban farm and the power line corridor trail system. The comprehensive trail system promotes alternative modes of travel and facilitates easy access between residential, commercial, educational, and recreational opportunities within the Plan Area without the use of automobiles.

Figure 5-15: New Brighton Trails Plan

Measure 99B. Transit Corridor. Points: 19

The Project has several features that will enable it to function as an effective transit corridor that substantially reduces vehicle trips and associated air pollution. First, the Project's internal circulation network is designed to support a wide range of uses and activities. This network of streets, bikeways, trails, transit, and pedestrian walkways is designed to foster easy connectivity for residents and visitors traveling between neighborhoods. As such, it will reduce the need for automotive travel within the Plan area. It will also allow the Project's residences to access planned regional bus transit proposed for South Watt Avenue and Folsom Blvd so that they can connect with other areas of Sacramento without using an automobile.

The Project's modified grid street system allows for efficient dispersal of vehicular traffic. Median breaks and stop controls are strategically placed to discourage speeding and cut-through traffic and to encourage longer distance automobile traffic to gravitate toward Rock Creek Parkway, which is a multi-modal collector street corridor that will link all land uses within the Project: the neighborhood centers, parks, commercial areas, and residential areas. Rock Creek Parkway will facilitate use by vehicles, bicycles, pedestrians, and future transit within the street section, as shown in the design section from the New Brighton PUD Guidelines.

Rock Creek Parkway (highlighted on the following map) will connect to Bus Rapid Transit (BRT) on South Watt Avenue, which in turn will connect to the RT Gold Line light rail stop at Folsom Blvd and Manlove Street near the intersection of South Watt Avenue and Folsom Blvd. Rock Creek Parkway will also connect to future bus service planned for Jackson Highway adjacent to the project.

Rock Creek Parkway will serve as the signature backbone street within the Plan Area. It will connect to future planned transit on both South Watt Avenue and Jackson Highway and will include dedicated transit lanes within the approved street section that will be reserved for transit. Consequently, all future residents will have access to public transit.

The following table shows two sets of trip generation rates for the project. These trip generation rates are based on Institute of Transportation Engineers (ITE) trip generation rates (DKS Associates, 2011). ITE's trip generation rates are collected primarily in suburban settings and do not typically account for environments with pedestrian, bike, or transit use. Direct use of the ITE trip rates without adjustments for mode choice and internalization ignore the site-specific land use and transportation characteristics of the project, and overestimate the project's trip generation.

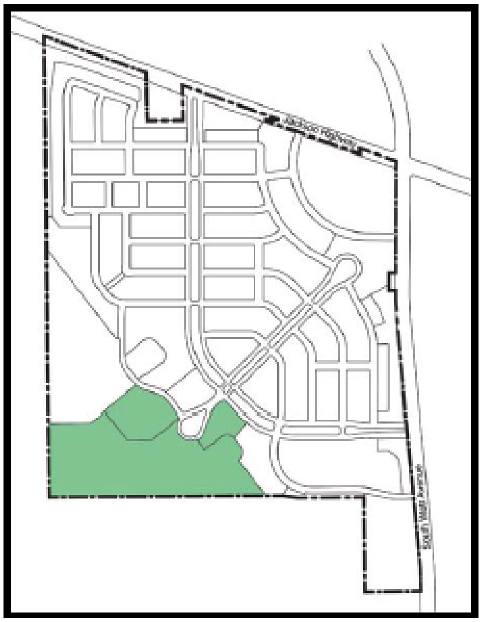
The cumulative trip generation column in the table below adjusts the ITE trip rates to account for the project's transit accessibility. The expected increase in transit use was modeled by DKS Associates for this project using the SACOG Sacramento Regional Travel Simulation Model (SACSIM). This reduction in trip generation rates per day takes into account the project's access to transit service along both Jackson Road and South Watt Avenue. In addition, the adjusted trip generation accounts for travel mode choice that is affected by the project's land use densities, mixed uses, street patterns, pedestrian and bicycle networks, and transit accessibility.

As shown in the table below, the project would reduce vehicle trips by 19% as compared to a standard suburban development of the same size that is poorly designed and has little to no pedestrian, bike, or transit use. Compared to a normal development project, the proposed project would reduce the number of daily trips by 3,926 (20,711 trips per day [proposed development] – 16,785 trips per day [cumulative]). This equals 1,432,990 trips reduced per year (3,926 trips reduced per day x 365 days per year). And, assuming an average trip length of 5 miles, the project would save 7,164,950 miles traveled per year. Consequently, the proposed project's circulation network and access to transit would result in substantial reductions in trip generation and VMT.

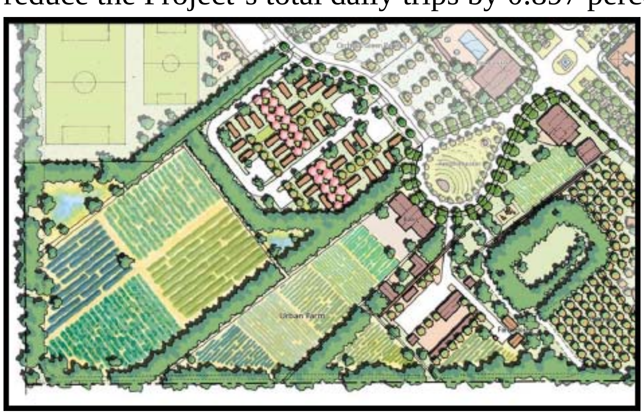
	Proposed Development (trips per day)	Proposed Project Cumulative (trips per day)
Residential	8,698	6,877
Retail	10,395	8,538
Office	521	438
School	1,097	932
Total	20,711	16,785
Percent Change from Proposed		19.0%
(DKS Associates, 2011).		

Measure 99C. Urban Farm. Points 0.897 = (1 point x 89.7% residential)

The Project's Urban Farm area, highlighted in green in the following illustration, is located near the intersection of Rock Creek Parkway and Aspen Promenade.



The following illustration shows the conceptual design of the Urban Farm at the southwestern corner of the Plan Area. Designed to serve as the centerpiece of the community, the Urban Farm will provide a central location for residents and surrounding neighbors to obtain fresh produce and assorted agricultural goods. In addition, the Urban Farm allows for up to 50 residential units, a potential school site or related educational facilities, and a community barn to host community events such as farmers markets, barn dances, outdoor movies, harvest festivals, and craft fairs. An emission reduction is included to account for trip reduction associated with the urban farm. This emission reduction is based on data showing that daily shopping trips constitute approximately 0.3 trips per day, which equals approximately 3.7% of daily residential trips (Taylor, B.D. and Mauch, M, 1996). This analysis assumes that the urban farm would reduce the Project's total daily trips by 0.897 percent.



Measure 99D. New Brighton Urban Forest. Points: 1.0

The Aspen 1 - New Brighton project includes a dense urban forest of 7,500 trees of more than 50 species that will intercept and absorb several pollutants, including ozone, NOx, PM10, and PM2.5. In addition, by reducing summer ground level temperatures, the urban forest will avoid the generation of air pollutants through reductions in natural gas and electricity consumption. The following table shows the annual air pollution reduction benefits of New Brighton's urban forest over 10-year intervals (Vargas, K. 2011). A one point emission reduction is included to account for these emission reduction benefits.

Year Interval	10	20	30	40	50	60	70	80	90	100
Interception and Absorption										
Ozone (lbs)	1,874	3,700	5,071	6,120	6,934	7,548	8,008	8,318	8,527	8,558
NO_2 (lbs)	471	944	1,302	1,575	1,791	1,954	2,075	2,158	2,213	2,222
PM (lbs)	1,045	2,116	2,981	3,568	4,063	4,440	4,723	4,917	5,049	5,067
Year Interval	10	20	30	40	50	60	70	80	90	100
Avoided										
NO_2 (lbs)	246	484	645	752	829	882	920	946	964	961
PM (lbs)	48	95	123	145	158	169	176	180	185	185
SOx (lbs)	114	227	299	348	383	407	422	436	442	442
ROG (lbs)	13	24	31	37	42	44	46	46	48	48

Notes: ROG = reactive organic gases, SOx = sulfur oxides, NO2 = nitrogen dioxide, PM = small particulate matter.

References

DKS Associates, 2011. Aspen 1 Traffic Report. April 25. Sacramento, CA.

Stonebridge Properties, LLC. 2011. New Brighton PUD Guidelines. In Conjunction with Wood Rodgers, Jeffrey Demure + Associates, SWA, Monica Simpson ASLA, Mogavero Notestine Associates, and Williams + Paddon. Sacramento, CA.

Taylor, Brian D. and Mauch, Michael. 1996. Gender, Race, and Travel Behavior: An Analysis of Household-Serving Travel and Commuting in the San Francisco Bay Area. Women's Travel Issues, Proceedings from the Second National Conference. Baltimore, MD. Available at: http://www.fhwa.dot.gov/ohim/womens/chap20.pdf

Vargas, Kelaine. 2011. Ecosystem Services and Environmental Benefits of the Aspen 1 Urban Forest. San Francisco, CA. August.

Appendix C – Greenhouse Gas Emissions and Mitigation

Contents

URBEMIS Construction Results

Construction emissions estimated using the URBEMIS model. Project construction would occur over seven years, from 2012 through 2018. Mass grading operations would occur during the first two years of construction. In year three, fine site grading, trenching for utilities and road construction would occur. In years four through seven, buildings would be construction and painted.

For the mass grading operations, construction equipment type and use was based on information provided by Teichert Construction for two construction options, with conveyor belt and without conveyor belt. Information on fine site grading, trenching (for utilities), paving, building construction, and architectural coatings was based on defaults included in the URBEMIS model.

URBEMIS Results – Construction CO_2 with Conveyor Belt

Page: 1

10/6/2011 01:33:07 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Construction with Belt.urb924

Project Name: Aspen I - With Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	CO2
2012 TOTALS (tons/year unmitigated)	2,752.38
2013 TOTALS (tons/year unmitigated)	4,227.61
2014 TOTALS (tons/year unmitigated)	1,325.51
2015 TOTALS (tons/year unmitigated)	3,217.48
2016 TOTALS (tons/year unmitigated)	3,244.83
2017 TOTALS (tons/year unmitigated)	3,232.54
2018 TOTALS (tons/year unmitigated)	3,231.92
2018 TOTALS (tons/year mitigated)	3,231.92

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	CO2
2012	2,752.38
Mass Grading 08/01/2012-08/13/2012	11.15
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	10.90
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.25
Mass Grading 08/14/2012-08/25/2012	158.28
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	155.97
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	2.31
Mass Grading 08/27/2012-09/18/2012	330.28
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	326.78
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	3.49
Mass Grading 09/19/2012-09/21/2012	71.24
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	70.44
Mass Grading On Road Diesel	0.00

Mass Grading Worker Trips	0.80
Mass Grading 09/24/2012-09/27/2012	98.90
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	97.83
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.06
Mass Grading 09/28/2012-10/02/2012	56.04
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	55.46
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.58
Mass Grading 10/03/2012-10/11/2012	122.44
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	121.27
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.17
Mass Grading 10/12/2012-11/21/2012	729.77
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	721.02
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	8.75
Mass Grading 10/29/2012-11/20/2012	21.07
Mass Grading Dust	0.00

Mass Grading Off Road Diesel	20.59
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.48
Mass Grading 11/22/2012-02/01/2013	870.20
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	858.30
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	11.89
Mass Grading 11/23/2012-02/26/2013	283.01
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	279.24
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	3.77
2013	4,227.61
Mass Grading 11/22/2012-02/01/2013	745.89
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	735.69
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	10.20
Mass Grading 11/23/2012-02/26/2013	429.76
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	424.02
Mass Grading On Road Diesel	0.00

Mass Grading Worker Trips	5.73
Mass Grading 02/27/2013-03/06/2013	16.86
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	16.60
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.25
Mass Grading 03/07/2013-03/15/2013	153.03
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	151.38
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.65
Mass Grading 03/18/2013-03/18/2013	1.24
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	1.21
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.03
Mass Grading 03/22/2013-03/28/2013	98.35
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	97.33
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.02
Mass Grading 03/27/2013-03/29/2013	6.32
Mass Grading Dust	0.00

Mass Grading Off Road Diesel	6.24
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.08
Mass Grading 04/01/2013-04/08/2013	16.86
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	16.60
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.25
Mass Grading 04/08/2013-05/31/2013	738.78
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	731.35
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	7.44
Mass Grading 06/03/2013-06/25/2013	374.20
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	370.04
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	4.16
Mass Grading 06/26/2013-08/07/2013	682.27
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	674.82
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	7.45

Mass Grading 08/08/2013-09/27/2013		100.92
Mass Grading Dust	0.00	
Mass Grading Off Road Diesel	99.37	
Mass Grading On Road Diesel	0.00	
Mass Grading Worker Trips	1.55	
Mass Grading 10/01/2013-10/04/2013		4.96
Mass Grading Dust	0.00	
Mass Grading Off Road Diesel	4.85	
Mass Grading On Road Diesel	0.00	
Mass Grading Worker Trips	0.11	
Mass Grading 10/07/2013-11/26/2013		831.84
Mass Grading Dust	0.00	
Mass Grading Off Road Diesel	822.94	
Mass Grading On Road Diesel	0.00	
Mass Grading Worker Trips	8.90	
Mass Grading 12/01/2013-12/03/2013		3.32
Mass Grading Dust	0.00	
Mass Grading Off Road Diesel	3.27	
Mass Grading On Road Diesel	0.00	
Mass Grading Worker Trips	0.06	
Mass Grading 12/04/2013-12/16/2013		23.01
Mass Grading Dust	0.00	
Mass Grading Off Road Diesel	22.63	

Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.38
2014	1,325.51
Fine Grading 01/06/2014-12/31/2014	1,176.81
Fine Grading Dust	0.00
Fine Grading Off Road Diesel	1,140.73
Fine Grading On Road Diesel	0.00
Fine Grading Worker Trips	36.08
Trenching 07/01/2014-10/31/2014	81.28
Trenching Off Road Diesel	76.30
Trenching Worker Trips	4.98
Asphalt 11/03/2014-12/31/2014	67.41
Paving Off-Gas	0.00
Paving Off Road Diesel	30.50
Paving On Road Diesel	33.90
Paving Worker Trips	3.01
2015	3,217.48
Building 01/05/2015-12/28/2018	3,210.47
Building Off Road Diesel	292.58
Building Vendor Trips	728.64
Building Worker Trips	2,189.25
Coating 04/06/2015-12/01/2018	7.01
Architectural Coating	0.00

Coating Worker Trips	7.01
2016	3,244.83
Building 01/05/2015-12/28/2018	3,235.40
Building Off Road Diesel	294.84
Building Vendor Trips	734.35
Building Worker Trips	2,206.22
Coating 04/06/2015-12/01/2018	9.43
Architectural Coating	0.00
Coating Worker Trips	9.43
2017	3,232.54
Building 01/05/2015-12/28/2018	3,223.15
Building Off Road Diesel	293.71
Building Vendor Trips	731.62
Building Worker Trips	2,197.83
Coating 04/06/2015-12/01/2018	9.40
Architectural Coating	0.00
Coating Worker Trips	9.40
2018	3,231.92
Building 01/05/2015-12/28/2018	3,223.25
Building Off Road Diesel	293.71
Building Vendor Trips	731.69
Building Worker Trips	2,197.85
Coating 04/06/2015-12/01/2018	8.67

Architectural Coating	0.00
Coating Worker Trips	8.67

Phase Assumptions

Phase: Fine Grading 1/6/2014 - 12/31/2014 - Type Your Description Here

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

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

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

Phase: Mass Grading 8/1/2012 - 8/13/2012 - Mow Bale and Disc

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 8/14/2012 - 8/25/2012 - Overex Filled Detention Basin

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (265 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1.3 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 8/27/2012 - 9/18/2012 - Overex Berms and Unimproved Roadways

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1.7 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.3 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1.7 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 9/19/2012 - 9/21/2012 - Overex Residential Pads 2

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

5 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 9/24/2012 - 9/27/2012 - Overex Commercial Pads 4

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

5 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 9/28/2012 - 10/2/2012 - Overex School 4

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

0.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 10/3/2012 - 10/11/2012 - Strip 4 from Farm and Stockpile

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Strip Farm and Stockpile
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 929 hrs/year

Phase: Mass Grading 10/12/2012 - 11/21/2012 - Rough Grade

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

2 Scrapers (265 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2.6 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

6.8 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 10/29/2012 - 11/20/2012 - Aspen 3 Mow, Bale and Disc

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 11/22/2012 - 2/1/2013 - Aspen 3 Export Dirt to Aspen 1 On Belt

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 36.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

2.8 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

18 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 24 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

8.6 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 11/23/2012 - 2/26/2013 - Place Import from Aspen 3

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 2/27/2013 - 3/6/2013 - Finish Grade Slopes

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 3/7/2013 - 3/15/2013 - Bring Dirt Back to Farm

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

4.3 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 3/18/2013 - 3/18/2013 - Aspen 2 Mow, Bale and Disc

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 3/22/2013 - 3/28/2013 - Aspen 2 Rough Grade Channel

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1.4 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1.2 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 3/27/2013 - 3/29/2013 - Aspen 2 Stockpile Export from Channel

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Strip Farm and Stockpile
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 929 hrs/year

Phase: Mass Grading 4/1/2013 - 4/8/2013 - Aspen 2 Finish Grade Slopes

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 4/8/2013 - 5/31/2013 - Aspen 3 Rough Grade Channel

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1.2 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

4.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 6/3/2013 - 6/25/2013 - Aspen 3 Rough Grade NW Borrow Area

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

3.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 6/26/2013 - 8/7/2013 - Aspen 3 Rough Grade North of Channel

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

5.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

4.1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 8/8/2013 - 9/27/2013 - Aspen 3 Finish Grade Slopes

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 10/1/2013 - 10/4/2013 - Mayhew Mow Bale and Disc

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc

Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 10/7/2013 - 11/26/2013 - Mayhew Rough Grade

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.2 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

4.4 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 12/1/2013 - 12/3/2013 - Mayhew Stockpile Export

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 12/4/2013 - 12/16/2013 - Finish Grade Slopes

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Trenching 7/1/2014 - 10/31/2014 - Install Utilities

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 11/3/2014 - 12/31/2014 - Street and Parking Lot Paving

Acres to be Paved: 57.2

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/5/2015 - 12/28/2018 - Type Your Description Here

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

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

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 4/6/2015 - 12/1/2018 - Type Your Description Here

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

URBEMIS Results – Construction CO_2 without Conveyor Belt

Page: 1

10/6/2011 01:36:08 PM

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Construction with Trucks Instead of Belt.urb924

Project Name: Aspen I - With Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	CO2
2012 TOTALS (tons/year unmitigated)	2,800.19
2013 TOTALS (tons/year unmitigated)	4,261.27
2014 TOTALS (tons/year unmitigated)	1,325.51
2015 TOTALS (tons/year unmitigated)	3,217.48
2016 TOTALS (tons/year unmitigated)	3,244.83
2017 TOTALS (tons/year unmitigated)	3,232.54
2018 TOTALS (tons/year unmitigated)	3,231.92

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

	CO_2
2012	2,800.19
Mass Grading 08/01/2012-08/13/2012	11.15
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	10.90
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.25
Mass Grading 08/14/2012-08/25/2012	158.28
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	155.97
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	2.31
Mass Grading 08/27/2012-09/18/2012	330.28
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	326.78
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	3.49
Mass Grading 09/19/2012-09/21/2012	71.24
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	70.44
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.80
Mass Grading 09/24/2012-09/27/2012	98.90

Mass Grading Dust	0.00
Mass Grading Off Road Diesel	97.83
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.06
Mass Grading 09/28/2012-10/02/2012	56.04
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	55.46
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.58
Mass Grading 10/03/2012-10/11/2012	122.44
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	121.27
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.17
Mass Grading 10/12/2012-11/20/2012	704.61
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	696.16
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	8.45
Mass Grading 10/29/2012-11/21/2012	22.31
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	21.80
Mass Grading On Road Diesel	0.00

Mass Grading Worker Trips	0.50
Mass Grading 11/21/2012-02/01/2013	941.94
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	928.49
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	13.45
Mass Grading 11/23/2012-02/26/2013	283.01
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	279.24
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	3.77
2013	4,261.27
Mass Grading 11/21/2012-02/01/2013	779.54
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	768.40
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	11.14
Mass Grading 11/23/2012-02/26/2013	429.76
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	424.02
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	5.73
Mass Grading 02/27/2013-03/06/2013	16.86

Mass Grading Dust	0.00
Mass Grading Off Road Diesel	16.60
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.25
Mass Grading 03/07/2013-03/15/2013	153.03
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	151.38
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.65
Mass Grading 03/18/2013-03/18/2013	1.24
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	1.21
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.03
Mass Grading 03/22/2013-03/28/2013	98.35
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	97.33
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.02
Mass Grading 03/27/2013-03/29/2013	6.32
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	6.24
Mass Grading On Road Diesel	0.00

Mass Grading Worker Trips	0.08
Mass Grading 04/01/2013-04/08/2013	16.86
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	16.60
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.25
Mass Grading 04/08/2013-05/31/2013	738.78
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	731.35
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	7.44
Mass Grading 06/03/2013-06/25/2013	374.20
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	370.04
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	4.16
Mass Grading 06/26/2013-08/07/2013	682.27
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	674.82
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	7.45
Mass Grading 08/08/2013-09/27/2013	100.92
Mass Grading Dust	0.00

Mass Grading Off Road Diesel	99.37
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	1.55
Mass Grading 10/01/2013-10/04/2013	4.96
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	4.85
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.11
Mass Grading 10/07/2013-11/26/2013	831.84
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	822.94
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	8.90
Mass Grading 12/01/2013-12/03/2013	3.32
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	3.27
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.06
Mass Grading 12/04/2013-12/16/2013	23.01
Mass Grading Dust	0.00
Mass Grading Off Road Diesel	22.63
Mass Grading On Road Diesel	0.00
Mass Grading Worker Trips	0.38

2014	1,325.51
Fine Grading 01/06/2014-12/31/2014	1,176.81
Fine Grading Dust	0.00
Fine Grading Off Road Diesel	1,140.73
Fine Grading On Road Diesel	0.00
Fine Grading Worker Trips	36.08
Trenching 07/01/2014-10/31/2014	81.28
Trenching Off Road Diesel	76.30
Trenching Worker Trips	4.98
Asphalt 11/03/2014-12/31/2014	67.41
Paving Off-Gas	0.00
Paving Off Road Diesel	30.50
Paving On Road Diesel	33.90
Paving Worker Trips	3.01
2015	3,217.48
Building 01/05/2015-12/28/2018	3,210.47
Building Off Road Diesel	292.58
Building Vendor Trips	728.64
Building Worker Trips	2,189.25
Coating 04/06/2015-12/01/2018	7.01
Architectural Coating	0.00
Coating Worker Trips	7.01
2016	3,244.83

Building 01/05/2015-12/28/2018	3,235.40
Building Off Road Diesel	294.84
Building Vendor Trips	734.35
Building Worker Trips	2,206.22
Coating 04/06/2015-12/01/2018	9.43
Architectural Coating	0.00
Coating Worker Trips	9.43
2017	3,232.54
Building 01/05/2015-12/28/2018	3,223.15
Building Off Road Diesel	293.71
Building Vendor Trips	731.62
Building Worker Trips	2,197.83
Coating 04/06/2015-12/01/2018	9.40
Architectural Coating	0.00
Coating Worker Trips	9.40
2018	3,231.92
Building 01/05/2015-12/28/2018	3,223.25
Building Off Road Diesel	293.71
Building Vendor Trips	731.69
Building Worker Trips	2,197.85
Coating 04/06/2015-12/01/2018	8.67
Architectural Coating	0.00
Coating Worker Trips	8.67

Phase Assumptions

Phase: Fine Grading 1/6/2014 - 12/31/2014 - Type Your Description Here

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

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

1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day

3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day

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

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

Phase: Mass Grading 8/1/2012 - 8/13/2012 - Mow Bale and Disc

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 8/14/2012 - 8/25/2012 - Overex Filled Detention Basin

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (265 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1.3 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 8/27/2012 - 9/18/2012 - Overex Berms and Unimproved Roadways

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1.7 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.3 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1.7 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 9/19/2012 - 9/21/2012 - Overex Residential Pads 2

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

5 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 9/24/2012 - 9/27/2012 - Overex Commercial Pads 4

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

5 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 9/28/2012 - 10/2/2012 - Overex School 4

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

0.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 10/3/2012 - 10/11/2012 - Strip 4 from Farm and Stockpile

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Strip Farm and Stockpile
Off-Road Equipment:

8 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 929 hrs/year

Phase: Mass Grading 10/12/2012 - 11/20/2012 - Rough Grade

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

2 Scrapers (265 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

3.2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

2.6 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

6.8 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 10/29/2012 - 11/21/2012 - Aspen 3 Mow, Bale and Disc

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 11/21/2012 - 2/1/2013 - Aspen 3 Export Dirt to Aspen 1 On Belt

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 36.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

2.6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

24 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

5.6 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 11/23/2012 - 2/26/2013 - Place Import from Aspen 3

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 2/27/2013 - 3/6/2013 - Finish Grade Slopes

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 3/7/2013 - 3/15/2013 - Bring Dirt Back to Farm

Total Acres Disturbed: 228.82

Maximum Daily Acreage Disturbed: 57.2

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

4.3 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

1.3 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 3/18/2013 - 3/18/2013 - Aspen 2 Mow, Bale and Disc

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 3/22/2013 - 3/28/2013 - Aspen 2 Rough Grade Channel

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1.4 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1.2 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 3/27/2013 - 3/29/2013 - Aspen 2 Stockpile Export from Channel

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Strip Farm and Stockpile
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 929 hrs/year

Phase: Mass Grading 4/1/2013 - 4/8/2013 - Aspen 2 Finish Grade Slopes

Total Acres Disturbed: 14

Maximum Daily Acreage Disturbed: 3.5

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 4/8/2013 - 5/31/2013 - Aspen 3 Rough Grade Channel

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

1.2 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

4.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 6/3/2013 - 6/25/2013 - Aspen 3 Rough Grade NW Borrow Area

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.3 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

3.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 6/26/2013 - 8/7/2013 - Aspen 3 Rough Grade North of Channel

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

5.1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

4.1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

Phase: Mass Grading 8/8/2013 - 9/27/2013 - Aspen 3 Finish Grade Slopes

Total Acres Disturbed: 155

Maximum Daily Acreage Disturbed: 38.75

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

1 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 10/1/2013 - 10/4/2013 - Mayhew Mow Bale and Disc

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Mow, Bale and Disc
Off-Road Equipment:

2 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Mass Grading 10/7/2013 - 11/26/2013 - Mayhew Rough Grade

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

6 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 1092 hrs/year

2 Scrapers (450 hp) operating at a 0.72 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1092 hrs/year

2.6 Other Equipment (365 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 690 hrs/year

2.2 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

4.4 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

Phase: Mass Grading 12/1/2013 - 12/3/2013 - Mayhew Stockpile Export

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Overex
Off-Road Equipment:

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 690 hrs/year

1 Graders (220 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2004 with average useage of 929 hrs/year

Phase: Mass Grading 12/4/2013 - 12/16/2013 - Finish Grade Slopes

Total Acres Disturbed: 96

Maximum Daily Acreage Disturbed: 24

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off Road Diesel calculated using the Named Equipment EMS functions.

The Off Road Equipment was based on the Named Equipment List:
C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Data\Stonebridge.equip;Rough Grade
Off-Road Equipment:

1 Graders (310 hp) operating at a 0.61 load factor for 8 hours per day; Engine Built/Rebuilt in 2005 with average useage of 929 hrs/year

1 Other Equipment (310 hp) operating at a 0.62 load factor for 8 hours per day; Engine Built/Rebuilt in 1998 with average useage of 690 hrs/year

1 Crawler Tractors (189 hp) operating at a 0.64 load factor for 8 hours per day; Engine Built/Rebuilt in 2006 with average useage of 1013 hrs/year

Phase: Trenching 7/1/2014 - 10/31/2014 - Install Utilities

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 11/3/2014 - 12/31/2014 - Street and Parking Lot Paving

Acres to be Paved: 57.2

Off-Road Equipment:

1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day

2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day

2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/5/2015 - 12/28/2018 - Type Your Description Here

Off-Road Equipment:

1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day

3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day

1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day

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

1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 4/6/2015 - 12/1/2018 - Type Your Description Here

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

URBEMIS Operational Results

Operational emissions are based on trip generation rates provided in the traffic report (DKS Associates, 2011).

URBEMIS Annual Operational CO_2 Results – Buildout with School

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Operational with School.urb924

Project Name: Aspen I - With Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	2,945.90
TOTALS (tons/year, mitigated)	2,065.07
Percent Reduction	29.90

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	19,092.71
TOTALS (tons/year, mitigated)	16,928.76

Percent Reduction	11.33

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO_2
TOTALS (tons/year, unmitigated)	22,038.61
TOTALS (tons/year, mitigated)	18,993.83
Percent Reduction	13.82

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO_2
Natural Gas	2,936.11
Hearth	5.67
Landscape	4.12
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	2,945.90

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO_2
Natural Gas	2,055.28
Hearth	5.67
Landscape	4.12

Consumer Products	
Architectural Coatings	
TOTALS (tons/year, mitigated)	2,065.07

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with natural gas fireplaces changed from 65% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Single family housing	5,524.24
Condo/townhouse general	5,355.54
Elementary school	890.75
Strip mall	6,737.12
General office building	585.06
TOTALS (tons/year, unmitigated)	19,092.71

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO2
Single family housing	4,985.60
Condo/townhouse general	4,368.78
Elementary school	821.50
Strip mall	6,213.30

General office building	539.58
TOTALS (tons/year, mitigated)	16,928.76

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 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
Single family housing	160.67	8.22	dwelling units	482.00	3,962.04	29,656.91
Condo/townhouse general	55.19	4.35	dwelling units	883.00	3,841.05	28,751.27
Elementary school		1.06	students	850.00	901.00	4,786.11
Strip mall		46.20	1000 sq ft	192.50	8,893.50	36,148.12
General office building		15.66	1000 sq ft	29.50	461.97	3,152.60
					18,059.56	102,495.01

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	10.0	0.0	97.0	3.0
Light Truck 3751-5750 lbs	22.8	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.2	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2

Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	40.0	60.0	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
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)						
Elementary school				20.0	10.0	70.0
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

URBEMIS Annual Operational CO_2 Results – Buildout without School

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Operational No School.urb924

Project Name: Aspen I - Without Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	2,956.89
TOTALS (tons/year, mitigated)	2,072.96
Percent Reduction	29.89

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	19,029.16
TOTALS (tons/year, mitigated)	16,808.57
Percent Reduction	11.67

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO_2
TOTALS (tons/year, unmitigated)	21,986.05
TOTALS (tons/year, mitigated)	18,881.53
Percent Reduction	14.12

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO_2
Natural Gas	2,946.42
Hearth	6.09
Landscape	4.38
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	2,956.89

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO_2
Natural Gas	2,062.49
Hearth	6.09
Landscape	4.38
Consumer Products	
Architectural Coatings	

TOTALS (tons/year, mitigated)	2,072.96

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with natural gas fireplaces changed from 65% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO_2
Single family housing	6,351.44
Condo/townhouse general	5,355.54
Strip mall	6,737.12
General office building	585.06
TOTALS (tons/year, unmitigated)	19,029.16

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO_2
Single family housing	5,713.93
Condo/townhouse general	4,352.12
Strip mall	6,203.77
General office building	538.75
TOTALS (tons/year, mitigated)	16,808.57

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2020 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
Single family housing	187.00	8.12	dwelling units	561.00	4,555.32	34,097.77
Condo/townhouse general	55.19	4.35	dwelling units	883.00	3,841.05	28,751.27
Strip mall		46.20	1000 sq ft	192.50	8,893.50	36,148.12
General office building		15.66	1000 sq ft	29.50	461.97	3,152.60
					17,751.84	102,149.76

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	10.0	0.0	97.0	3.0
Light Truck 3751-5750 lbs	22.8	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.2	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	76.2	23.8
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	40.0	60.0	0.0

School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
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)						
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

URBEMIS Annual Operational CO_2 Results – Cumulative with School

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Cumulative Operational with School.urb924

Project Name: Aspen I - With Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	2,945.90
TOTALS (tons/year, mitigated)	2,065.07
Percent Reduction	29.90

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	17,536.22
TOTALS (tons/year, mitigated)	15,392.70
Percent Reduction	12.22

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO_2
TOTALS (tons/year, unmitigated)	20,482.12
TOTALS (tons/year, mitigated)	17,457.77
Percent Reduction	14.77

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO_2
Natural Gas	2,936.11
Hearth	5.67
Landscape	4.12
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	2,945.90

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO_2
Natural Gas	2,055.28
Hearth	5.67
Landscape	4.12
Consumer Products	

Architectural Coatings

TOTALS (tons/year, mitigated)	2,065.07

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with natural gas fireplaces changed from 65% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO_2
Single family housing	4,872.95
Condo/townhouse general	4,715.92
Elementary school	924.48
Strip mall	6,467.99
General office building	554.88
TOTALS (tons/year, unmitigated)	17,536.22

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO_2
Single family housing	4,334.24
Condo/townhouse general	3,729.03
Elementary school	852.60
Strip mall	5,965.10
General office building	511.73

TOTALS (tons/year, mitigated)	15,392.70

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 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
Single family housing	160.67	7.25	dwelling units	482.00	3,494.50	26,157.25
Condo/townhouse general	55.19	3.83	dwelling units	883.00	3,381.89	25,314.33
Elementary school		1.10	students	850.00	935.00	4,966.72
Strip mall		44.35	1000 sq ft	192.50	8,537.37	34,700.63
General office building		14.85	1000 sq ft	29.50	438.08	2,989.54
					16,786.84	94,128.47

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	10.0	0.0	99.0	1.0
Light Truck 3751-5750 lbs	22.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.1	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	81.0	19.0
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0

Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0
Motorcycle	3.5	34.3	65.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
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)						
Elementary school				20.0	10.0	70.0
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

URBEMIS Annual Operational CO_2 Results – Cumulative without School

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Aspen 1 Cumulative Operational No School.urb924

Project Name: Aspen I - Without Elementary School

Project Location: Sacramento County AQMD

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

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	2,956.89
TOTALS (tons/year, mitigated)	2,072.96
Percent Reduction	29.89

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	17,332.19
TOTALS (tons/year, mitigated)	15,135.08
Percent Reduction	12.68

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO_2
TOTALS (tons/year, unmitigated)	20,289.08
TOTALS (tons/year, mitigated)	17,208.04
Percent Reduction	15.19

Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO_2
Natural Gas	2,946.42
Hearth	6.09
Landscape	4.38
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	2,956.89

Area Source Mitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO_2
Natural Gas	2,062.49
Hearth	6.09
Landscape	4.38
Consumer Products	

Architectural Coatings

TOTALS (tons/year, mitigated)	2,072.96

Area Source Changes to Defaults

Percentage of residences with wood stoves changed from 35% to 0%

Percentage of residences with natural gas fireplaces changed from 65% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Single family housing	5,593.40
Condo/townhouse general	4,715.92
Strip mall	6,467.99
General office building	554.88
TOTALS (tons/year, unmitigated)	17,332.19

Operational Mitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Mitigated

Source	CO2
Single family housing	4,955.81
Condo/townhouse general	3,712.37
Strip mall	5,955.95
General office building	510.95
TOTALS (tons/year, mitigated)	15,135.08

Operational Settings:

Includes correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2030 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
Single family housing	187.00	7.15	dwelling units	561.00	4,011.15	30,024.51
Condo/townhouse general	55.19	3.83	dwelling units	883.00	3,381.89	25,314.33
Strip mall		44.35	1000 sq ft	192.50	8,537.37	34,700.63
General office building		14.85	1000 sq ft	29.50	438.08	2,989.54
					16,368.49	93,029.01

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	47.5	0.0	100.0	0.0
Light Truck < 3750 lbs	10.0	0.0	99.0	1.0
Light Truck 3751-5750 lbs	22.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	10.1	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	2.1	0.0	81.0	19.0
Lite-Heavy Truck 10,001-14,000 lbs	0.9	0.0	55.6	44.4
Med-Heavy Truck 14,001-33,000 lbs	1.6	0.0	18.8	81.2
Heavy-Heavy Truck 33,001-60,000 lbs	0.4	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.0	0.0	0.0	0.0

Motorcycle	3.5	34.3	65.7	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.8	0.0	87.5	12.5

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	10.8	7.3	7.3
Rural Trip Length (miles)	15.0	10.0	10.0	15.0	10.0	10.0
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)						
Strip mall				2.0	1.0	97.0
General office building				35.0	17.5	47.5

Greenhouse Gas Emission Estimates

The Bay Area Air Quality Management District's BGM Model was used to estimate greenhouse gas emissions (BAAQMD, 2010). BGM reads in URBEMIS files and uses a portion of those files in generating GHG emission estimates. BGM uses a portion of URBEMIS' operation emission estimates. For operational emissions, BGM uses URBEMIS2007's transportation emissions and a portion of area source emissions. Electricity-related emissions and emissions associated with solid waste were estimated separately as described below. Greenhouse gas emissions were estimated for full buildout of the project in 2020 and future cumulative conditions in 2030.

Transportation

Mobile sources refer to emissions from motor vehicles, including tailpipe, evaporative, and fugitive emissions. URBEMIS2007 was used to estimate emissions from project traffic. URBEMIS reports CO_2 emissions as tons per year, which are read by the BGM model, and then converted to metric tons by BGM. The U.S. EPA estimates that CH_4, N_2O, and HFC emissions account for 5% of on-road GHG emissions, after accounting for their GWPs (Environmental Protection Agency 2005). Consequently, BGM takes the annual transportation-related CO_2 emissions estimated by URBEMIS and divides by 0.95 to account for emissions of CH_4, N_2O, and HFCs.

For mitigation, a 7.2% decrease in traffic-related CO_2e emissions was assumed to occur by 2020 because of the Low Carbon Fuel Standard, and a 19.6 percent decrease in CO_2e to account for the Pavley Standards.

Area Sources

BGM's GHG emission estimates used in this report use a portion of URBEMIS's area source emissions. They include GHG emissions from landscape maintenance equipment and from hearths. BGMs emission estimates assumed that no wood stoves or wood burning fireplaces would be used for the project. The estimates did assume that approximately 1/3 of the residential units would have natural gas burning fireplaces or stoves. Area source emissions of natural gas used for space and water heating were not estimated using URBEMIS because more accurate project specific estimates were made for this project using BGM. Area sources of CO_2e were estimated for 2020 buildout conditions and 2030 cumulative conditions.

Electricity

Direct Electricity Emissions

The California Energy Commission's "Residential Appliance Saturation Survey" was used to estimate average electricity demand of a new home in California, which equals 7,605 kWh per year for single family residences and 3,929 kwh per year for multi-family residential (KEMA, 2010). These energy use values were entered into the BGM model.

$CO_{2,}$ methane, and nitrous oxide emissions per kwh generated for the Project's climate zone were entered into BGM and used to estimate CO_2 emissions from electricity use (U.S. Environmental Protection Agency, 2011b).

Water/Wastewater

Electricity use associated with water supply and distribution was based on a report prepared for the California Energy Commission (Navigant Consulting, 2006). $CO_{2,}$ methane, and nitrous oxide emissions per kwh generated for the Project's climate zone were used to estimate CO_2 emissions from electricity (U.S. Environmental Protection Agency, 2011b).

Solid Waste

Emissions from solid waste generation were estimated for transfer of waste to the nearest landfill, and for decomposition of that waste at the landfill. The average truck travel distance to the nearest landfill was assumed to equal 11 miles (one way trip) to the Keifer Landfill. EMFAC2007 emission factors were used to estimate the emissions associated with those trips. Each truck was assumed to have a haul capacity of 15 tons.

Methane emissions from waste decomposition are based on emission factors from EPA's WARM model (U.S. EPA 2010). The emission factors used assume that the methane generated by waste decomposition is captured at the landfill and burned to generate energy. EPA's WARM model shows that burning methane to generate energy reduces carbon emissions.

Carbon Sequestration

Carbon sequestration emission reductions associated with the Project were based on a separate analysis prepared for the project (Vargas, K., 2011). That analysis found that the Project's landscaping would reduce emissions by 646 metric tons CO_2e within 10 years. This value of 646 metric was used for the 2030 cumulative analysis. One-quarter of this value was assumed for the 2020 project buildout analysis.

BGM Results

BGM Results – Buildout Business as Usual

Project Name:	Aspen I - With Elementary School
Project Year:	2020

Results	Unmitigated Project CO2e (metric tons/year)
Transportation:	18,237.38
Area Source:	11.70
Electricity:	2,253.09
Natural Gas:	2,171.66
Water & Wastewater:	213.83
Solid Waste:	897.94
Agriculture:	50.22
Total:	23,835.82

Notes: BGM takes the transportation emissions reported by URBEMIS and converts them to metric tons and then adjusts them to account for methane and nitrous oxide emissions. They do not include adjustments for the Low Carbon Fuels Rule or the Pavley rule.

BGM Results – Buildout with Project Design and Mitigation

Project Name:	Aspen I - With Elementary School
Project and Baseline Years:	2020

Results	**Project CO2e (metric tons/year)**
Transportation:	14,448.42
Area Source:	11.70
Electricity:	2,253.09
Natural Gas:	2,171.66
Water & Wastewater:	213.83
Solid Waste:	897.94
Agriculture:	50.22
Total:	20,046.87

Notes: BGM takes the transportation emissions reported by URBEMIS and converts them to metric tons and then adjusts them to account for methane and nitrous oxide emissions. They do not include adjustments for the Low Carbon Fuels Rule or the Pavley rule.

Mitigated (2020)	CO2e (metric tpy)
Transportation:	9,464.0
Area Source:	11.70
Electricity:	2,230.6
Natural Gas:	2,149.9
Water & Wastewater:	192.45
Solid Waste:	897.94
Agriculture:	50.22
Sequestration:	-161.50
Total:	14,835.4

Reduction 37.8% Reduction from BAU

Drought Tolerant Landscaping =		10%
AQMP - Transportation =	34.5	% transportation
AQMP Non-Roof Surfaces =	1	% electricity
No Wood Stoves or Fireplaces -	(unmit and mit)	
(Already included in URBEMIS modeling)		

This table takes the BGM modeling results and adjusts transportation, electricity, natural gas, water and wastewater. It also includes a 161.50 metric ton carbon sequestration adjustment. This adjustment assumes that sequestration will yield 25% of the 10 year sequestration amount (646 metric tons CO2e) calculated for this project (Vargas, K., 2011).

Transportation emissions assume a 48.1% reduction, which is the sum of the transportation points in the AQMP plus adjustments to account for Pavley and the Low Carbon Fuels Standard.

Electricity and natural gas emissions reduced by 1% to account for the non-roof surfaces credit as listed in the AQMP.

Water and wastewater reduced by 10% from BAU to account for the drought tolerant landscaping associated with the project.

BGM Results – Cumulative Business as Usual

Project Name:	Aspen I - With Elementary School
Project and Baseline Years:	2030

Results	**Project CO2e (metric tons/year)**
Transportation:	16,750.62
Area Source:	11.70
Electricity:	2,253.09
Natural Gas:	2,171.66
Water & Wastewater:	207.01
Solid Waste:	897.98
Agriculture:	50.22
Total:	22,342.27

Notes: BGM takes the transportation emissions reported by URBEMIS and converts them to metric tons and then adjusts them to account for methane and nitrous oxide emissions. They do not include adjustments for the Low Carbon Fuels Rule or the Pavley rule.

BGM Results – Cumulative with Project Design and Mitigation

Project Name:	Aspen I - With Elementary School
Project and Baseline Years:	2030

Results	Project CO2e (metric tons/year)
Transportation:	12,027.8
Area Source:	11.7
Electricity:	2,253.1
Natural Gas:	2,171.7
Water & Wastewater:	207.0
Solid Waste:	898.0
Agriculture:	50.2
Total:	17,619.5

Notes: BGM takes the transportation emissions reported by URBEMIS and converts them to metric tons and then adjusts them to account for methane and nitrous oxide emissions. They do not include adjustments for the Low Carbon Fuels Rule or the Pavley rule.

Mitigated Cumulative 2030	CO2e (metric tpy)
Transportation*:	7,878.2
Area Source:	11.70
Electricity:	2,027.8
Natural Gas:	2,150.0
Water & Wastewater:	186.3
Solid Waste:	898.0
Agriculture:	50.2
Sequestration:	-646.0
Total:	12,556.2

Drought Tolerant Landscaping =	10
Sequestration =	646
AQMP - Transportation =	34.5
AQMP Non-Roof Surfaces =	1
No Wood Stoves or Fireplaces – (already included in URBEMIS modeling)	

43.8 % Reduction from BAU

This table takes the BGM modeling results and adjusts transportation, electricity, natural gas, water and wastewater. It also includes a 646 metric ton carbon sequestration adjustment (Vargas, K., 2011).

Transportation emissions assume a 53.0 % reduction, which is the sum of the transportation points in the AQMP plus reductions associated with Pavley and the Low Carbon Fuels Standard.

Electricity and natural gas emissions reduced by 1% to account for the non-roof surfaces mitigation measure.

Water and wastewater reduced by 10% from BAU to account for the drought tolerant landscaping associated with the project.

APPENDIX G

Biological and Wetlands Resources Evaluation for the Aspen I New Brighton Project, City of Sacramento, California

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Revised February 17, 2011

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This report describes the existing biological and wetland resources within StoneBridge Properties, LLC's (StoneBridge) Aspen I New Brighton Project Area (Project) which lies primarily within the City of Sacramento. It also describes measures incorporated into the Project to avoid, minimize, and compensate for effects of the Project on biological resources and wetlands. Potential wildlife hazard effects on aviation will be evaluated separately.

PROJECT DESCRIPTION

StoneBridge is proposing to redevelop existing aggregate operation lands within the City of Sacramento as residential and commercial uses. The Project consists of the development of the Aspen I New Brighton site (referred to in this report as "on-site" development) shown on Figure 1 and appurtenant off-site infrastructure improvements (referred to in this report as "off-site" improvements or components) shown on Figure 2. This report addresses impacts to biological and wetlands resources associated with the proposed development of the Aspen I New Brighton property as well as the impacts associated with off-site infrastructure needed to serve the Aspen I New Brighton development.

Project Overview

The approximately 454-acre Project would develop 232 acres on the Aspen I New Brighton site with a variety of uses including residential, commercial, and mixed uses, as well as parks, transportation, stormwater facilities, and an urban farming operation (Figure 3). Stormwater (and associated nuisance water) from the Project area would drain into an easterly running channel and would be collected in an off-site retention basin. Offsite project components will occur outside City limits in Sacramento County on 222 acres comprised of portions of the Aspen II, Aspen III and Mayhew Property sites (these properties are also controlled by StoneBridge Properties). The off-site components include the stormwater drainage and retention discussed above, a sewer lift station, excavation of borrow material for use within the project area, and the disposal of excavated material on Mayhew Property (Figure 2). All other off-site infrastructure is located within the rights of way of existing roadways.

Project Relationship to Aggregate Operation Activities

The Aspen I New Brighton property is a former aggregate operation site. Aggregate extraction at the site is now complete, resulting in residual depressional topography occupying most of the Project area; the base is approximately 30 feet below the natural grade on surrounding lands. The Aspen I New Brighton area has been used continuously for aggregate processing activities, including for conveyor transport of mined material from other Teichert

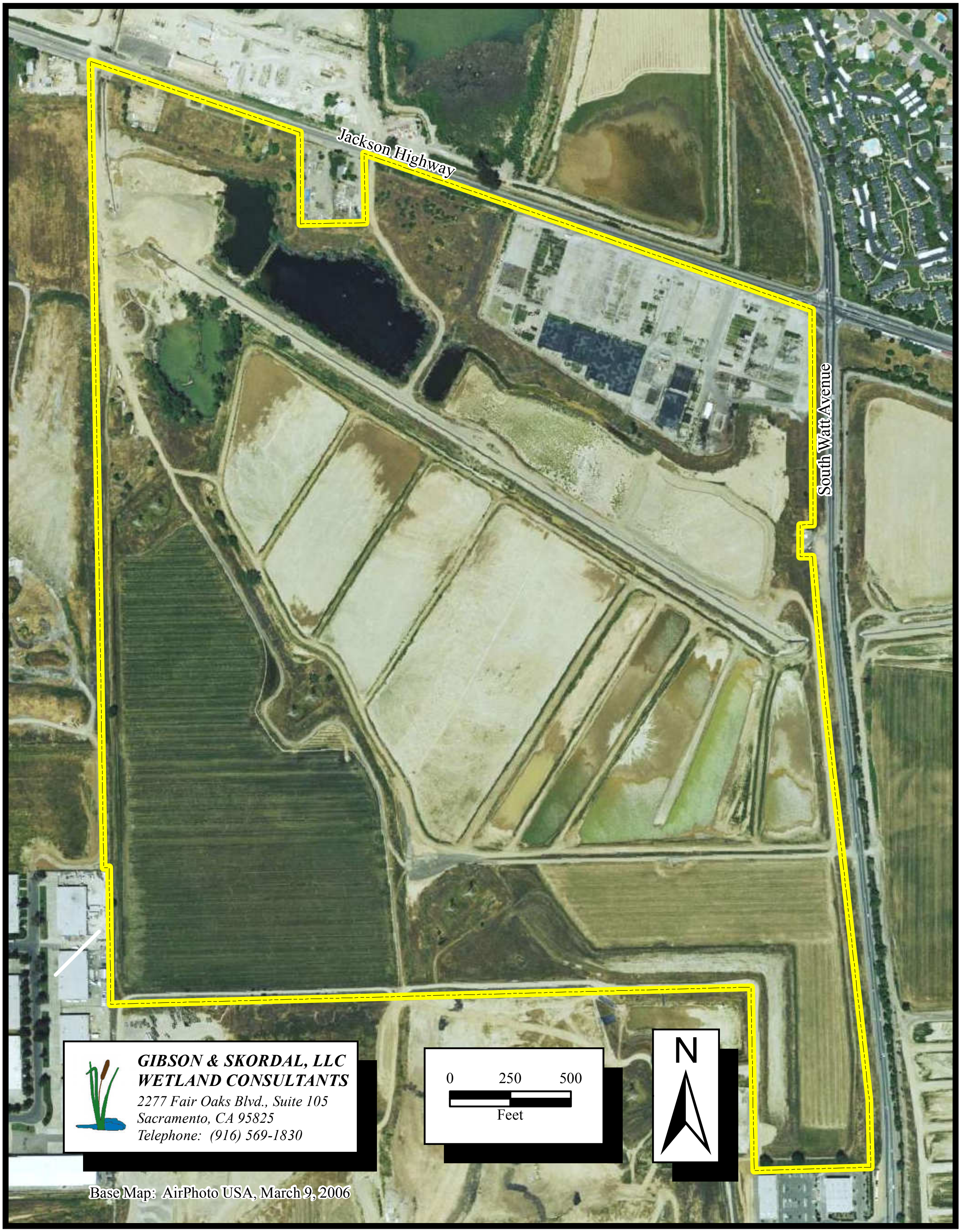


Figure 1
Aspen I New Brighton
Site Location

February 2011

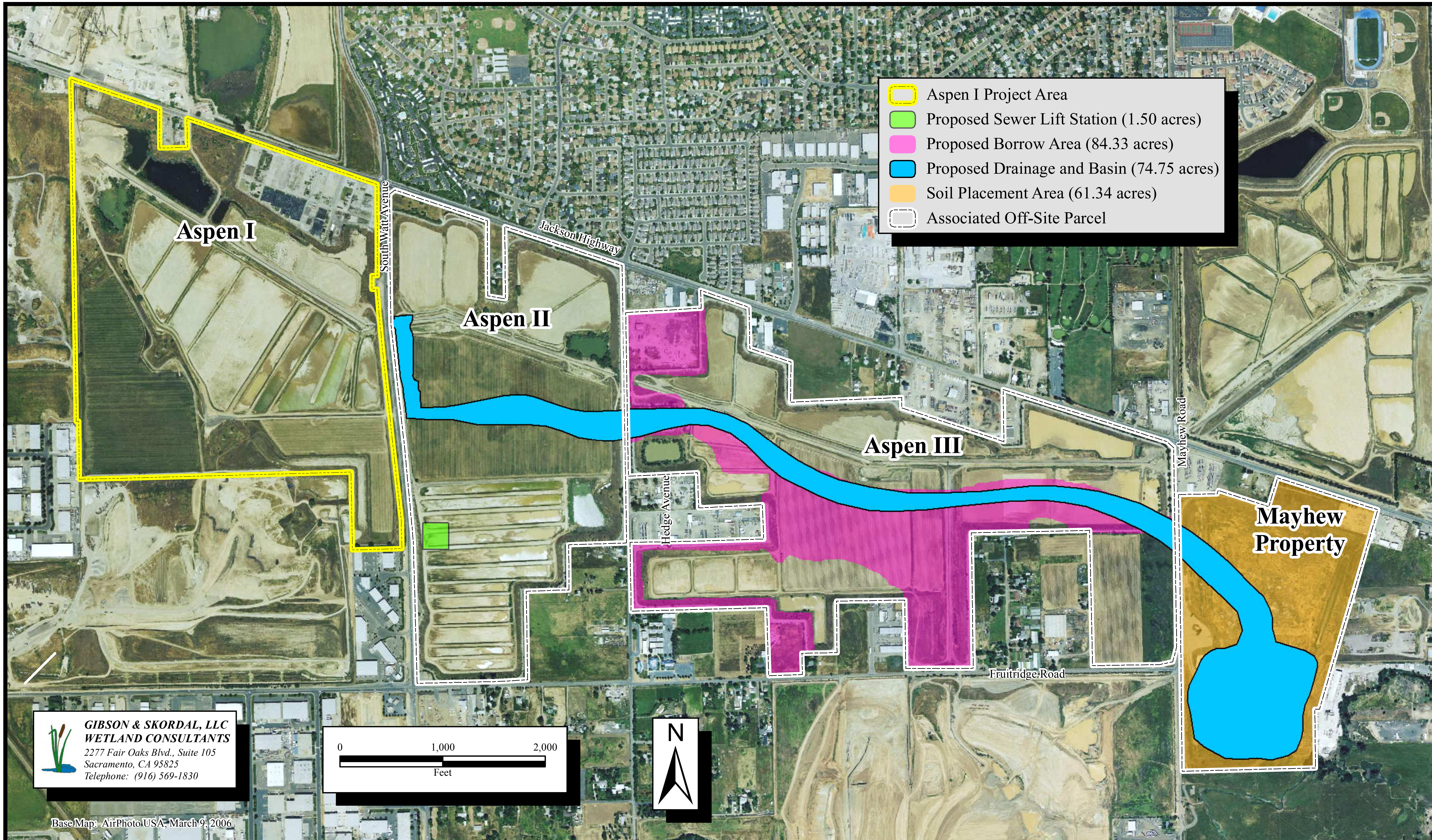


Figure 2
Aspen I New Brighton
Off-Site Infrastructure

February 2011

SPD - PUD SCHEMATIC PLAN

ASPEN 1 - NEW BRIGHTON

CITY OF SACRAMENTO, CALIFORNIA

JUNE 2010
Revised July 7, 2010

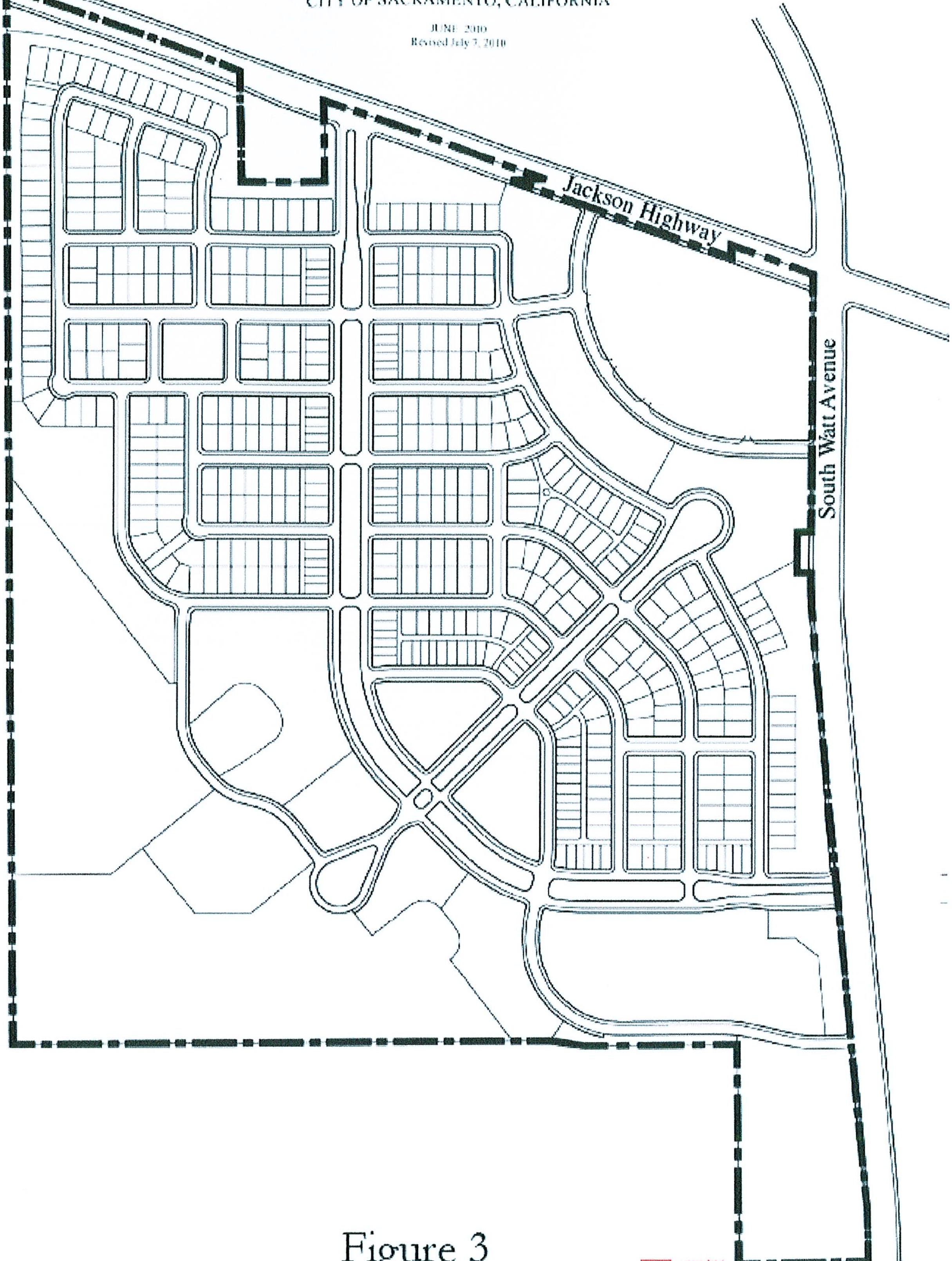


Figure 3

WOOD RODGERS

Aggregates properties to the Perkins processing plant, which is located north of the project site, just across Jackson Highway (Figure 1). Much of the site also is used as drying beds, as described in ***Project Site Conditions*** below. Existing industrial ponds used to process aggregate and retain internal drainage also are located onsite. Finally, the Aspen I New Brighton site includes roads used to transport equipment and personnel and to inspect and patrol facilities and project lands.

For off-site properties, aggregate removal has been completed at the Aspen II and Aspen III sites, but the properties continue to be used as part of an active aggregate operation for aggregate transport (by conveyor) and processing of aggregate washed material. There is approximately 25 acres in the southeast corner of Aspen III that is at grade. The Mayhew Property property was mined historically then was previously used for greenwaste composting and storage, but is currently vacant.

At the location of the offsite improvements, Aspen II consists of drying beds (where the sewer lift station will be located) and reclaimed agricultural fields (where the drainage will be located). The drainage will continue east through Aspen III which consists of drying beds, reclaimed agricultural fields, ditches constructed for the aggregate operations, an industrial pond, and annual grassland. The drainage channel culminates at a retention basin on the Mayhew Property parcel, which consists of disturbed annual grasslands, and seasonal wetlands. The borrow area on Aspen III that will be used to generate the fill material used on the Aspen I New Brighton site consists of an industrial yard, drying beds, reclaimed agricultural fields, disturbed aggregate operation areas, an industrial pond, and ditches.

BIOLOGICAL AND WETLANDS SETTING

Methods

Habitat Mapping and Description

Habitat mapping was conducted from aerial photography of the site (USGS 2002 and Teichert Aggregates 2008) and was field verified during habitat evaluation and surveys for wetlands and special-status plants and animals (see subsequent section for details).

Field Surveys and Characterization of Existing Biological Resources

Habitat evaluations and field surveys were conducted for wetlands and plant and animal species that were determined to have potential to occur at the project site.

Wetlands and Waters. A survey to assess and map wetlands and other waters was conducted by Matt Hirkala and Sam Garcia of Gibson & Skordal, LLC (Gibson & Skordal), March 24, 2009, on the entire ±232 acre Aspen I New Brighton site. Two aerial photographs (from 2002 and 2008) were plotted at 1 inch equals 100 feet and used to locate the larger industrial ponds and artificial drainages occurred on the project site. An on-the-ground pedestrian survey covered the entire 222-acre off-site area comprised of the Aspen II, Aspen III, and Mayhew Property sites to determine if any smaller wetlands and other waters were present that were not readily visible on the aerial photos. All aquatic features not readily identifiable on the aerial photo were mapped in the field using a Trimble Geo-XT hand held Global Positioning System. During the site survey, all industrial ponds, ditches and other waters were observed in the field and habitat descriptions were noted. The boundaries of the industrial ponds and drainage ditches (verified in the field during the site survey) were digitized using ARCGIS in the office after the site visit was completed.

Rare Plants. Prior to field surveys, the California Natural Diversity Data Base (CNDDB; DFG 2009) was searched to identify known occurrences of special-status plants that occur within the Sacramento East and Carmichael U.S. Geological Survey (USGS) quadrangle maps, covering the project site, and also within the ten adjacent quads (Buffalo Creek, Citrus Heights, Clarksburg, Elk Grove, Florin, Folsom, Rio Linda, Sacramento West, Sloughhouse, and Taylor Monument).

The CNDDB search showed that the following twelve special-status plant species occur in the region surrounding the proposed project area; Brandegee's clarkia (*Clarkia biloba ssp. brandegeeae*); dwarf downingia (*Downingia pusilla*); stinkbells (*Fritillaria agrestis*); Boggs Lake hedge-hyssop (*Gratiola heterosepal*); wooly rose-mallow (*Hibiscus lasiocarpos*); Northern

California black walnut (*Juglans hindsii*); legenere (*Legenere limosa*); pincushion navarretia (*Navarretia myersii ssp. myersii*); slender Orcutt grass (*Orcuttia tenuis*); Sacramento Orcutt grass (*Orcuttia viscida*); and Sanford's arrowhead (*Sagittaria sanfordii*). The likelihood of occurrence of these species was evaluated based on species requirements and knowledge of Project area habitat conditions (Table 1).

Previous field surveys within the Project area indicated that suitable habitat is present on the site for 7 of the 12 species known to occur in the vicinity. Marginal habitat for two of the 7 species, Sanford's arrowhead (*Sagittaria sanfordii*) and Boggs lake hedge hyssop (*Gratiola heterosepala*), was considered to have potential to exist along shallow wetland fringes of industrial ponds located on the Aspen I, II , III and Mayhew Property sites. In addition, 5 additional species (known to occur within vernal pool habitats in the project vicinity) had the potential to occur within the seasonal wetland habitats located at the at-grade section of the Aspen III site (situated at the southwest corner of the Aspen III site). These species include; dwarf downingia (*Downingia pusilla*); legenere (*Legenere limosa*); pincushion navarretia (*Navarretia myersii ssp. myersii*); slender Orcutt grass (*Orcuttia tenuis*); and Sacramento Orcutt grass (*Orcuttia viscida*). Boggs Lake hedge-hyssop (*Gratiola heterosepala*) also had the potential to occur within the seasonal wetland habitat located on the Aspen III site.

A rare plant survey was conducted within the Project area. Due to the highly disturbed nature of the Project area, only those areas with suitable habitat for rare plants were surveyed (i.e., the industrial ponds). Rare plant surveys were conducted according to the protocols established by the California Native Plant Society and California Department of Fish and Game. The survey was conducted by Sam Garcia and Matt Hirkala of Gibson & Skordal on April 21 and July 1, 2009. As part of preparation for the field surveys, photographs and illustrations of each of the special-status species were examined. These survey periods were specifically selected to occur within the known flowering periods of the special-status plant species that could have potential to occur on site, as determined by evaluating phenology of target species growing in nearby locations.

Protected Trees. A complete survey of the Aspen I New Brighton site was conducted for trees that meet the definition of City of Sacramento heritage trees (see subsequent section under ***Regulatory Setting*** for definitions). The assessment only evaluated the size criteria for heritage eligibility, and did not assess tree condition, which is an additional criteria for heritage eligibility under the City's definition. For the off-site infrastructure areas, the County of Sacramento's definition for heritage and protected trees was utilized (see subsequent section under ***Regulatory Setting*** for definitions). Field studies were conducted on June 11, 25, and September 16, 2009, and on September 9, February 24, and April 25, 2010. All trees and shrubs were examined, identified, and evaluated. With the exception of unusually branched trees, the circumferences of all trunks were measured approximately 4.5 feet above ground level.

Table 1. Habitat acreages at StoneBridge's Aspen I New Brighton Project Site

Project Components	Drying Beds	Industrial Ponds	Ditches	Agricultural Fields	Industrial Yard	Disturbed Mining Areas	Abandoned Parking Lot	Annual Grasslands	Seasonal Wetlands
On-Site									
Aspen I New Brighton Development	76.20	10.60	1.15	50.43	18.42	75.36	0.00	0.00	0.00
Off-Site									
Drainage Channel and Retention Basin; Borrow Material Excavation Area; Sewer Lift Station,; and Mayhew Disposal Area	22.52	1.21	0.34	46.35	13.59	42.71	5.10	89.69	0.25
TOTAL	98.72	11.81	1.49	96.78	32.01	118.07	5.10	89.69	0.25

Locations of all trees within the Project area that could meet the City of Sacramento's definition of heritage trees or the County of Sacramento's definition of protected (e.g. native and landmark) trees were recorded using a Trimble GeoXT GPS unit equipped with sub-meter accuracy.

Wildlife Species. Wildlife surveys were conducted to evaluate habitat and assess occurrence of special-status species, evaluate general habitat conditions, and conduct surveys for species that have potential to pose hazards to aviation. (The evaluation of potential risks to aviation will be addressed in a separate report.) Available information from the project vicinity including geographic information in the California Natural Diversity Database (CNDDB), previous surveys of nearby lands (Airola 2007a, b; Foothill Associates 2007a, b), and previous raptor surveys (J. Estep, pers. comm.) was reviewed prior to conducting surveys.

Surveys were conducted at the Project site by Certified Wildlife Biologist Daniel Airola on February 27 and May 6, 2009, and on February 17 and June 2, 2010. All areas of the Project site were examined to characterize habitat conditions, as well as habitat suitability and use by special-status species, including the Swainson's hawk, burrowing owl, and tricolored blackbird. All Project area trees were examined for nest sites of raptors and other larger species in February 2009 and 2010, before leaf-out of deciduous trees, to detect early-nesting species and to identify residual 2008 and 2009 nest sites. Surveys in May 2009 verified previously identified nest sites and searched for late nesting species, including the Swainson's hawk. Industrial ponds were examined in February and March 2009 and February 2010 to enumerate waterbirds that could pose hazards to aviation. Tricolored blackbirds were surveyed for in agricultural lands during the two breeding season visits to the Project site in both 2009 and 2010. General wildlife species were noted incidentally during all surveys.

In addition, surveys for federally listed vernal pool invertebrates and valley elderberry longhorn beetle were conducted by Samuel Garcia and Matt Hirkala of Gibson & Skordal. Surveys for elderberry shrubs (*Sambucus sp.*), the host plant of the valley elderberry longhorn beetle, were conducted on April 21 and July 1, 2009 in association with the rare plant survey effort. Protocol surveys (authorized by the U.S. Fish and Wildlife Service [USFWS]) were conducted during the 2009/2010 wet season and again during the 2010/2011 wet season (the 2010/2011 survey was ongoing at the time of publication). All potential habitat for federally listed vernal pool crustaceans (depressional seasonal wetlands) located in the Project area were subject to the protocol survey.

Characterization of Post-Aggregate Operations, Pre-Project Conditions

The Project is proposed to be initiated after aggregate operations are completed on at least the southern half of Aspen I New Brighton and within the off-site infrastructure areas of Aspen II and Aspen III. Aggregate operations may still be underway on the northern half of

Aspen I and on other portions of Aspen II and Aspen III at the time of the development of the southern portion of the Aspen I New Brighton site. Most of the existing site conditions are substantially influenced by past aggregate operations as well as aspects of the ongoing aggregate operation, including use of industrial ponds, operation of drying beds, and use and maintenance of roads and conveyor facilities for transport of aggregate to Teichert Aggregates's Perkins Plant (Figure 1; also see ***Project Relationship to Aggregate Operation Activities***). Therefore, in areas where aggregate operations are currently active, conditions at the time of initiation of construction likely will differ somewhat from existing conditions, as will the impacts of the Project.

To fully characterize Project impacts, where post-mining conditions are likely to differ from existing conditions, this assessment describes the expected conditions at the time of Project start-up. This characterization is based on a projection of habitat conditions that would result from cessation of aggregate operations within the Project area described above.

Impact Characterization

Project impacts were characterized by evaluating the potential changes in habitat conditions relative to existing site conditions, consistent with the California Environmental Quality Act (CEQA). Project impacts also were evaluated relative to post-aggregate operation site conditions since this will be the likely environmental setting at the time Project construction begins. Impact evaluation focused on effects of special-status species . Details regarding methods for identifying species use and impacts are provided in subsequent sections. In addition, this evaluation incorporates environmental commitments that StoneBridge has agreed to implement as a part of the proposed Project.

Regulatory Setting

This section briefly describes federal, state and local laws and policies that are relevant to this assessment of biological and wetlands resources on the properties which comprise the Aspen I New Brighton Project.

California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires evaluations of project effects on biological resources. Determining the significance of those effects is guided by Appendix G of the CEQA guidelines. These evaluations must consider direct effects on a biological resource within the project site itself, indirect effects on adjacent resources, and cumulative effects within a larger area or region. Effects can be locally important but not significant according to CEQA if they would not substantially affect the regional population of the biological resource. Significant adverse impacts on biological resources would include the following:

- Substantial adverse effects on any species identified as candidate, sensitive, or special-status in local or regional plans, policies, or regulations or by the California Department of Fish and Game (DFG) or the U.S. Fish and Wildlife Service (USFWS) (these effects could be either direct or via habitat modification);
- Substantial adverse impacts to species designated by the California Department of Fish and Game (2009) as Species of Special Concern;
- Substantial adverse effects on riparian habitat or other sensitive habitat identified in local or regional plans, policies, or regulations or by DFG and USFWS;
- Substantial adverse effects on federally protected wetlands defined under Section 404 of the Clean Water Act (these effects include direct removal, filling, or hydrologic interruption of marshes, vernal pools, coastal wetlands, or other wetland types);
- Substantial interference with movements of native resident or migratory fish or wildlife species population, or with use of native wildlife nursery sites;
- Conflicts with local policies or ordinances protecting biological resources (e.g. tree preservation policies); and
- Conflict with provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan.

Federal Endangered Species Act

The Federal Endangered Species Act (FESA) of 1973 protects species that are federally listed as endangered or threatened with extinction. FESA prohibits the unauthorized "take" of listed species. Take includes harassing, harming, pursuing, hunting, shooting, wounding, killing, trapping, capturing, or collecting wildlife species or any attempt to engage in such activities. Harm includes significant modifications or degradations of habitats that may cause death or injury to protected species by impairing their behavioral patterns. Harassment includes disruption of normal behavior patterns that may result in injury to or mortality of protected species. Civil or criminal penalties can be levied against persons convicted of "take."

State Endangered Species Act

The California Endangered Species Act (CESA) of 1984 protects state-designated endangered and threatened species in a way similar to FESA. For projects on private property (i.e. that for which a state agency is not a lead agency), CESA enables DFG to authorize take of a listed species that is incidental to carrying out an otherwise lawful project that has been approved under CEQA (Fish & Game Code Section 2081).

Clean Water Act Section 404

Section 404 of the Federal Clean Water Act requires that a Department of the Army permit be issued prior to the discharge of any dredged or fill material into waters of the United States, including wetlands. The U. S. Army Corps of Engineers (Corps) implements this program, with oversight from the U. S. Environmental Protection Agency. Waters of the United States include all navigable waters; interstate waters and wetlands; all intrastate waters and wetlands that could affect interstate or foreign commerce; impoundments of the above; tributaries of the above; territorial seas; and wetlands adjacent to the above. Typically, the Corps does not recognize as jurisdictional waters of the U.S. areas that are "*water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel, unless or until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States*." (33CFR Part 328, preamble.)

Clean Water Act, Section 401

Section 401 of the Clean Water Act requires any applicant for a 404 permit in support of activities that may result in any discharge into waters of the United States to obtain a water quality certification. This program is meant to protect these waters and wetlands by ensuring that waste discharged into them meets state water quality standards. Because the water quality certification program is triggered by the need for a Section 404 permit (and both programs are a part of the Clean Water Act), the definition of waters of the United States under Section 401 is the same as that used by the Corps under Section 404.

California Water Code, Porter-Cologne Act

The Porter Cologne Act, from Division 7 of the California Water Code, requires any person discharging waste or proposing to discharge waste that could affect the quality of waters of the state to file a report of waste discharge (RWD) with the Regional Water Quality Control Board (Board). The Board can waive the filing of a report, but once a report is filed, the Board must either waive or adopt water discharge requirements (WDRs). "Waters of the state" are defined as any surface water or groundwater, including saline waters, within the boundaries of the state.

California Fish and Game Code Section 1600 – Streambed and Lake Alteration

The Department of Fish and Game (DFG) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code, Section 1602, requires notification to DFG of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state or local government agency, or public utility that proposes an activity that will:

- substantially divert or obstruct the natural flow of any river, stream or lake;
- substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
- deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

For the purposes of Section 1602, rivers, streams and lakes must flow at least intermittently through a bed or channel. If notification is required and DFG believes the proposed activity is likely to result in adverse harm to the natural environment, it will require that the parties enter into a Lake or Streambed Alteration Agreement (LSAA).

California Fish and Game Code Section 3503.5 - Raptor Nests

Section 3503.5 of the Fish and Game Code makes it unlawful to take, possess, or destroy hawks or owls, unless permitted to do so, or to destroy the nest or eggs of any hawk or owl.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the take, possession, import, export, transport, selling, purchase, barter, or offering for sale, purchase or barter, any native migratory bird, their eggs, parts, and nests, except as authorized under a valid permit (50 CFR 21.11.). Likewise, Section 3513 of the California Fish & Game Code prohibits the "take or possession" of any migratory non-game bird identified under the MBTA. Therefore, activities that may result in the injury or mortality of native migratory bird, including eggs and nestlings, would be prohibited under the MBTA.

City of Sacramento Heritage Tree Ordinance

Sacramento City Code Chapter 12.64.020 provides policy regarding heritage trees within the City. Heritage trees are defined by this code as:

1. Any tree of any species with a trunk circumference of 100 inches or more (i.e., >32 inches diameter), which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.

2. Any native oak (*Quercus* species), California buckeye (*Aesculus californica)* or California sycamore (*Platanus racemosa*), having a circumference of 36 inches or greater (>11.5 inches diameter) when a single trunk, or a cumulative circumference of thirty-six inches or greater when a multi-trunk, which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.

3. Any tree 36 inches in circumference or greater (>11.5 inches diameter) in a riparian zone. The riparian zone is measured from the centerline of the water course to thirty (30) feet beyond high water line.

4. Any tree, grove of trees or woodland trees designated by resolution of the city council to be of special historical or environmental value or of significant community benefit. (Ord. 2008-018 § 3; prior code § 45.04.211).

Heritage trees may be removed only with issuance of a written permit from the City's Director of the Department of Transportation or an authorized representative. The code states that "*the permit shall be granted by the director if he or she finds: 1) that the heritage tree must be removed in order for the applicant to use the property for any use permitted... and the use could not be made of the property unless the tree is removed" or that such activity is necessary " to engage in construction activity on the property."*

County of Sacramento General Plan

Sacramento County General Plan Policy CO-62 currently provides protection to aquatic ecosystems. Specifically, it "ensures no net loss of marsh and riparian woodland acreage, values, or functions."

The General Plan also seeks to protect landmark and native trees (collectively referred to as "protected trees"). "Landmark trees" are defined as "any non-oak native tree measuring 19 inches in diameter at breast height." Policy CO-130 encourages protection and preservation of native oak trees and other native trees (excluding cottonwoods) and landmark trees.

Sacramento County Tree Preservation and Protection Code (Sac County Code 19.12.060)

Sacramento County outlines their requirements regarding the protection of trees in County Code 19.12.060. The county code includes the following statement:

"*No person shall trench, grade or fill within the dripline of any tree or destroy, kill or remove any tree as defined, in the designated urban area of the unincorporated area of Sacramento County, on any property, public or private, without a tree permit, or unless authorized as a condition of a discretionary project approval by the Board of Supervisors, County Planning Commission, Zoning Board of Appeals, the Zoning Administrator or the Subdivision Review Committee. (SCC 1400 § 23, 2008: SCC 480 § 1, 1981.).*

Sacramento County Code (Section 19.12.040) defines trees as follows;

Tree: As used in this chapter, a "tree" shall mean any living native oak tree having at least one trunk of six inches or more in diameter measured four and one-half feet above the ground, or a multi-trunked native oak tree having an aggregate diameter of ten inches or more, measured four and one-half feet above the ground (dbh).

Project Site Conditions

Site History and Overview

On-Site Aspen I New Brighton. The current conditions of the Aspen I New Brighton site have resulted largely from Teichert Aggregates's past and ongoing aggregate operations, including aggregate extraction, transport, and processing. Much of the site was mined for aggregate during the 1960s. Since then, the site has been used for disposal of aggregate wash material, storage of processing waters, transport and storage of pre-processed aggregate materials, and agriculture on reclaimed lands.

The Aspen I New Brighton site is located along the south side of Jackson Highway immediately south of Teichert Aggregates's Perkins Ready-Mix concrete plant and precast concrete plant located at 8760 Kiefer Boulevard in Sacramento (Figure 1). Much of the eastern two thirds of the site consists of active drying beds while the western third of the site is occupied by reclaimed agricultural lands. Four industrial ponds in the north portion of the site store aggregate wash material and retain on-site drainage.

An aggregate conveyor belt traverses and bisects the Aspen I New Brighton site. The conveyor belt deposits wet, pre-washed aggregate material onto a surge pile (i.e., a material storage pile maintained to ensure supply to the plant if longer term conveyor transport is interrupted) located in the northwest corner of the site. An overhead electrical transmission line traverses the western third of the site with three towers evenly spaced across the site. The base of each of the towers has never been mined, and as a result, the tower footings are at the original grade of the surrounding areas (approximately 30 to 35 feet above the pit floor).

Off-Site Infrastructure: Aspen II, Aspen III, and Mayhew Property. The portions of Aspen II and III where the offsite infrastructure is proposed to be located are also largely influenced by Teichert Aggregates's past and ongoing aggregate operations, including aggregate extraction, transport, and processing. Much of the site was mined for aggregate during the 1960s. Since then, the site has been used for disposal of aggregate wash material, transport and storage of pre-processed aggregate materials, and agriculture on reclaimed lands. The Mayhew Property was mined historically by Sacramento Aggregates then was used for greenwaste composting and storage.

Aspen II is located along the south side of Jackson Highway, east of South Watt Avenue, west of Hedge Avenue, and north of Fruitridge Road (Figure 2). Much of the site consists of active drying beds used to dispose of aggregate wash material removed during aggregate processing. The central portion of the site consists of reclaimed agricultural lands. Two industrial ponds located along the eastern boundary of the Project area retain water from direct precipitation. An aggregate conveyor belt traverses and bisects the Aspen II site. The conveyor belt delivers pre-washed aggregate material to a surge pile on the Aspen I New Brighton site and to the Perkins aggregate processing plant site. Access roads are located around the perimeter of the site, around the drying beds and agricultural field, and along both sides of the conveyor belt. The off-site infrastructure is proposed to be located in drying beds and reclaimed agricultural fields.

The Aspen III site is located along the south side of Jackson Highway, east of Hedge Avenue, west of Mayhew Road, and north of Fruitridge Road (Figure 2). Drying beds are generally located along the western, northern and eastern boundaries of the site, and a 60-acre reclaimed agricultural field is located at the center of the project site. Two industrial ponds are located on the site. The industrial ponds are used for drainage from drying beds, run-off of disturbed aggregate operation areas and run-off from the reclaimed agricultural field. Two aggregate conveyor belts traverse and bisect the Aspen III site. An active conveyor belt runs east to west across the entire site. An abandoned/inactive conveyor belt, located at the eastern edge of the agricultural field, runs from south to north from the boundary along Fruitridge Road to the active conveyor belt located in the northern section of the site. In addition, access roads are located around the perimeter of the site, around the drying beds, and along both sides of the conveyor. Within the southeastern 25 acres, there is an at-grade agricultural field as well as annual grasslands containing wetland features. The off-site infrastructure is proposed to be located in drying beds, reclaimed agricultural fields, ditches constructed for the aggregate operations, industrial ponds, disturbed aggregate operation areas, and annual grassland.

The Mayhew Property is located east of Mayhew and south of Jackson Highway (Figure 2). The Mayhew Property property was mined historically by Sacramento Aggregates then was used for greenwaste composting and storage. StoneBridge acquired this property in 2006. Currently the 97-acre site supports mostly disturbed aggregate operations area with an abandoned parking lot and industrial yard as well as an industrial pond and seasonal wetlands. The off-site infrastructure is proposed to be located in disturbed annual grasslands which contain seasonal wetlands.

Soils and Geology

On-Site Aspen I New Brighton. Nearly all native soils at the site were removed during past mining of the site for aggregate. The only area of native soil remaining consists of small pedestals that support transmission line towers and are at their original grade. Most of the site elevation is located below historic grade. Two areas that are close to historic grade, the industrial yard and the agricultural lands, consist of formerly mined lands that were restored to or near the pre-aggregate extraction elevation (T. Kamisky pers. comm.). Therefore, the site lacks any substantial amount of native soil. The current growth medium for plants consists of unrestored excavated lands within disturbed aggregate operation areas and restored areas.

Off-Site Aspen II and Aspen III. Nearly all native soils at the site were removed during past mining of the site for aggregate. The only area of native soil remaining consists of narrow strips of land located at the top of the pit walls. Most of the site elevation is located below historic grade. Therefore, the site lacks any substantial amount of native soil. Reclaimed soils or soils deposited from aggregate washing restored to agricultural uses within portions of the Aspen II and Aspen III site are used to grow alfalfa and oat hay.

In addition, native soils do occur at an at-grade section of the Aspen III site (located at the southeast corner of the property). This “at-grade” section of the site has never been subject to aggregate operations, and occurs at the non-mined elevation of the surrounding land uses.

Outside of the agricultural fields and the “at-grade” section of the Aspen III site, the current growth medium for plants consists of unrestored excavated lands within disturbed aggregate operation areas and restored areas.

Off-Site Mayhew Property. Nearly all native soils at the site were removed during past mining of the site for aggregate. The only area of native soil remaining consists of narrow strips of land located at the top of the pit walls. Most of the site elevation is located below historic grade. Therefore, the site lacks any substantial amount of native soil. Aggregate operation activities that have occurred have resulted in highly disturbed, truncated soil profiles within the study area. Approximately 30 to 40 feet of material has been removed from the site resulting in the creation of a large below-grade area, and subsequent green waste composting has further distorted the soils.

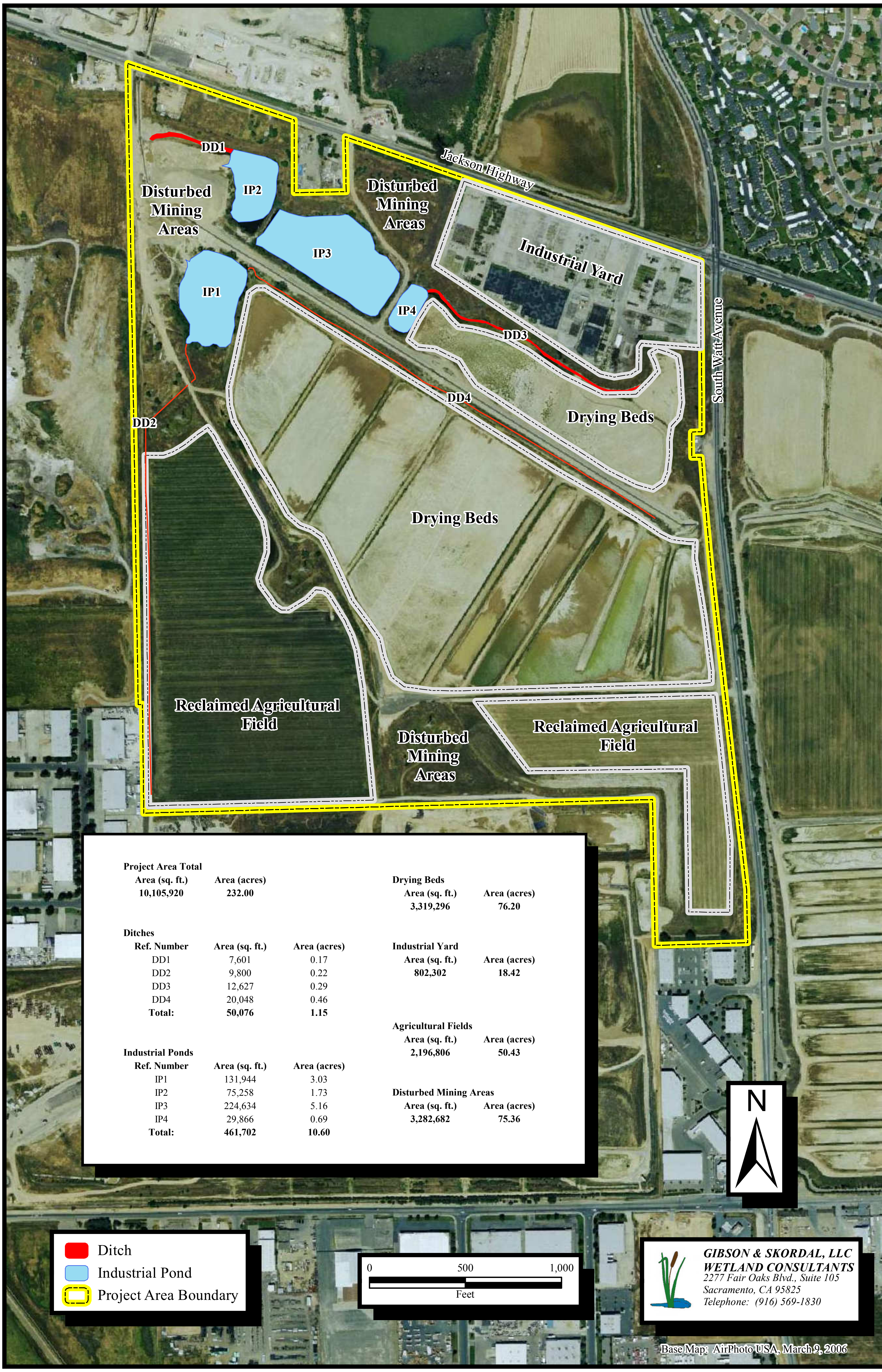
Habitat Conditions

Habitat conditions at the Project site reflect the intensive past and ongoing aggregate operations and reclamation uses. Habitat mapping for this evaluation designated different habitats based on differences in appearance, ecological conditions, and suitability for various biological resources (Figures 4 and 5). Acreages of mapped habitats are detailed on Figure 4 for Aspen I New Brighton and Figure 5 for the off-site infrastructure located on Aspen II, III, and Mayhew Property and summarized in Table 1. Habitat conditions are described below.

Drying Beds. Drying beds are shallow basins that are used to dispose of sediment washed from aggregate delivered to the Perkins Plant site. The purpose of these beds is to fill the depressions created by previous aggregate operation activities and eventually bring these areas up closer to adjacent grade. The sediment is delivered to the basins in slurry form and spread over the previously mined "pit" areas in interval layers. It is subsequently dried and compacted then the process is repeated with another layer of material. The drying beds are maintained at 90 percent compaction or greater. Drying beds are present within the Aspen I New Brighton site, Aspen II and Aspen III properties.

Drying-bed habitats provide resting habitat and a water source for birds, but provide little or no foraging habitat because their turbid and frequently disturbed conditions do not promote growth of typical aquatic plants and animal food for birds and other wildlife. Monitoring of similar drying-bed facilities on Teichert Aggregates's Aspen IV project showed limited use by ducks, geese, shorebirds, and other waterfowl (Airola 2007a). No waterbird use was observed within drying-bed habitats during the site visits to the Aspen I New Brighton Project Area in February 2009 or 2010, the season when peak waterfowl numbers occur in other area wetlands, nor were any present in May 2009. The drying beds are not suitable habitat for aquatic reptiles or amphibians. Low levees (<4 ft) between the beds support ruderal vegetation. Once aggregate operations have ceased, the drying beds no longer receive the sediment slurry. They will likely support ruderal vegetation.

Industrial Ponds and Drainage Ditches. Four industrial ponds (Industrial ponds 1, 2, 3, and 4) and four artificial drainage ditches (Ditch 1, 2, 3, and 4) have been constructed on the Aspen I New Brighton site (Figure 4). As part of the ongoing aggregate extraction and reclamation operations on Aspen I New Brighton, Teichert Aggregates conducts maintenance of these industrial ponds and ditches, including the removal of vegetation to prevent encroachment. The off-site infrastructure will also modify four constructed ditches and three industrial ponds (Figure 5). The off-site ditches and industrial ponds were created as part of the aggregate



Project Area Total

Area (sq. ft.)	Area (acres)
10,105,920	**232.00**

Ditches

Ref. Number	Area (sq. ft.)	Area (acres)
DD1	7,601	0.17
DD2	9,800	0.22
DD3	12,627	0.29
DD4	20,048	0.46
Total:	**50,076**	**1.15**

Industrial Ponds

Ref. Number	Area (sq. ft.)	Area (acres)
IP1	131,944	3.03
IP2	75,258	1.73
IP3	224,634	5.16
IP4	29,866	0.69
Total:	**461,702**	**10.60**

Drying Beds

Area (sq. ft.)	Area (acres)
3,319,296	**76.20**

Industrial Yard

Area (sq. ft.)	Area (acres)
802,302	**18.42**

Agricultural Fields

Area (sq. ft.)	Area (acres)
2,196,806	**50.43**

Disturbed Mining Areas

Area (sq. ft.)	Area (acres)
3,282,682	**75.36**

Figure 4
Aspen I New Brighton
Delineation of Aquatic Features
& Other Habitats

February 2011

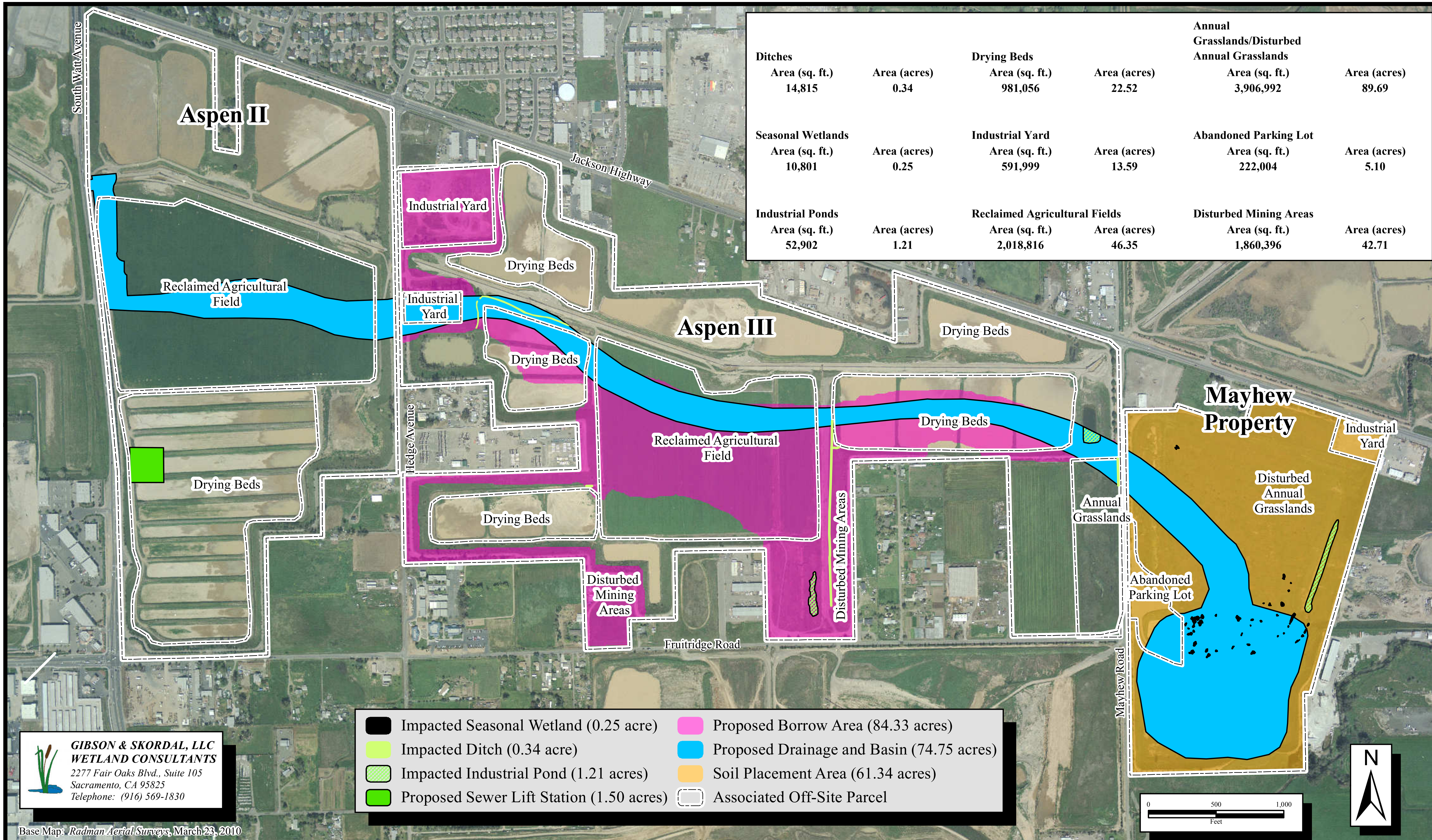


Figure 5
Aspen I New Brighton
Project Impacts

February 2011

operations associated with each of the properties. These features are described in more detail below.

On-Site Industrial Pond 1. Industrial Pond (IP) 1, 3.03 acres in size, is located in the northwest portion of the site, directly south of the surge pile (Figure 4). Wet, pre-washed aggregate is stockpiled at the surge pile and then transferred, when needed, to the Perkins Processing Area conveyor belt. Water is constantly draining off of the surge pile and into IP 1. An artificial drainage ditch (Ditch 2) conveys stormwater and drainage to IP 1 from the reclaimed agricultural lands in the southwest portion of the site. Drainage water from the drying beds located immediately south of the IP can also drain directly into IP 1.

The banks of the relatively deep IP 1 are steep on all sides except around the northwest end and at the southwest corner. The northwest end appears to receive the run-off from the surge pile and as a result has a beach-like substrate with a shallow, gently sloping shore. The bank at the southwest corner of the IP has been excavated to accommodate and intercept an artificial drainage ditch (Ditch 2). The excavated area has silted in and is approximately 15 to 20 feet wide.

Vegetation at IP 1 is limited to the banks and shore where woody riparian species such as Freemont cottonwood (*Populus fremontii*), black willow (*Salix nigra*), arroyo willow *(S. lasiolepus*), sandbar willow (*S. exigua*), and coyote brush (*Baccharis pilularis*) dominate the tree and shrub layer. The herbaceous and vine layers are dominated by such common species as Himalayan blackberry (*Rubus discolor*), hairy vetch (*Vicia villosa*), white sweetclover (*Melilotus alba*), sour sweetclover (*M. indica*), ripgut bromegrass (*Bromus diandrus*), soft chess bromegrass (*B. hordeaceaus*), field mustard (*Brassica rapa*), and black mustard (*B. nigra*).

On-Site Industrial Pond 2. IP 2, 1.73 acres in size, is located directly adjacent to the east side of the surge pile (Figure 4). This IP receives drainage from the surge pile through an artificially constructed drainage ditch (Ditch 1). Although the banks of this relatively shallow IP are steep sided, the shallow nature has allowed emergent wetland vegetation to grow in a shallow water fringe that occurs along approximately 90 percent of the IP edge. IP 2 is separated from IP 3 by an approximately 20 foot wide (at the base) artificial levee.

Woody riparian vegetation surrounding this IP is dominated by mulefat (*Bacharis salicifolia*), arroyo willow, sandbar willow, black willow, and cottonwood trees. The herbaceous and vine layers along the banks of this industrial pond are dominated by such common species as Himalayan blackberry, California grape (*Vitis californica*), hairy vetch, white sweetclover, sour sweetclover, ripgut bromegrass, soft chess bromegrass, field mustard, and black mustard. Emergent wetland vegetation occurring in the shallow edges of the IP is dominated by spike rush (*Eleocharis macrostachya*).

On-Site Industrial Pond 3. IP 3 is the largest of the four industrial ponds at the Aspen I New Brighton site, at 5.16 acres. IP 3 is located directly adjacent to the southeast side of IP 2 and is separated from IP 2 by an artificial levee that is approximately 20 feet wide at the base (Figure 4). IP 3 receives drainage from nearby uplands and aggregate operations and overflow from IP 2. The banks of this relatively deep IP are steep sided and the only emergent wetland vegetation is located at the west end where silts have built up along the levee. Emergent vegetation at the west end is dominated by sandbar willow. Mature woody riparian vegetation exists only at the northwest corner of IP 3. However, the immature woody riparian vegetation that has returned following vegetation maintenance surrounds the rest of the IP. Woody riparian vegetation is dominated by mulefat, coyote brush, arroyo willow, sandbar willow, and cottonwood trees. In addition, the herbaceous and vine layers along the banks are dominated by such common species as Himalayan blackberry, California grape, hairy vetch, white sweetclover, sour sweetclover, ripgut bromegrass, soft chess bromegrass, field mustard, and black mustard.

On-Site Industrial Pond 4. IP 4, 0.69 acre in size, is the smallest of the 4 industrial ponds at the Aspen I New Brighton area. IP 4 was constructed just to the east of IP 3 and is separated from IP 3 by an approximately 35 foot wide, well maintained, dirt access road (Figure 4). An approximately 10-foot-wide artificial drainage ditch appears to convey run off and drainage from drying beds located immediately east of IP 4. The banks of this smaller IP have been frequently maintained, and only immature and shrubby woody vegetation and other weedy herbaceous vegetation was found growing around this IP. Woody vegetation is dominated by mulefat and coyote brush. The vine and herbaceous layers are dominated by Himalayan blackberry, soft chess brome grass, ripgut brome grass, hairy vetch, sour sweetclover, white sweetclover, horseweed (*Conyza canadensis*), field mustard, and black mustard. The banks of this relatively deep IP are steep sided and, as a result, no emergent wetland vegetation is present.

Off-Site Industrial Ponds. Three industrial ponds occur within the off-site infrastructure improvement area (Figure 5). Of the 3 industrial ponds, one is located on the Mayhew Property parcel, and the other two are located upon the Aspen III parcel. These features are described in detail below.

Aspen III. A 0.33 acre IP is located near the center of the southern boundary of the Aspen III site. It is a shallow IP with a maximum depth of approximately 18 inches to 2 feet and exists as a low spot that receives seasonal run-off from the reclaimed agricultural field as well as precipitation. An access road and an unused conveyor belt are located immediately east of the IP. The IP was likely created incidental to the construction of the adjacent access road. Woody riparian vegetation is limited to cottonwood saplings located along the south and west banks. The herbaceous vegetation along the banks of this IP are dominated by common species as hairy vetch, white sweetclover, sour sweetclover, ripgut bromegrass, soft chess bromegrass, field mustard, and black mustard among others. As the IP dries out during the late spring and summer months, wetland vegetation such as popcorn flower (*Plagiobothrys* sp.) and goldfields (*Lasthenia* sp.) dominate the bottom of the IP. There is no apparent drainage ditch associated with this IP.

The second IP is approximately 1.07 acres and is located on the eastern portion of the Aspen III site. It is relatively deep with pit walls on the south and east sides. The top of the west bank is open to the pit floor and adjacent to a drying bed from which it receives water/drainage. The north bank of the IP is bordered by a road ramp that facilitates vehicle traffic from the top of the pit to the bottom of the pit. Woody riparian vegetation consisting of sandbar willow is dominant along the north bank of the IP, sparse along the west and east banks, and non-existent along the south bank. The herbaceous and vine layers along the banks are dominated by such common species as Himalayan blackberry, California grape, hairy vetch, white sweetclover, sour sweetclover, ripgut bromegrass, soft chess bromegrass, field mustard, and black mustard (Figure 5).

Mayhew Property Parcel. A third off-site IP totaling 0.64 acres in size is located within the Mayhew Property property (Figure 5). The IP parallels the east edge of the study area and appears to be an artifact from historic aggregate operations, but was also likely modified by the greenwaste operation. Though no surface water was present during field surveys, ponding occurred to a maximum depth of approximately three feet in 2009 based on the location of the rack line and high water mark. Rough cocklebur (*Xanthium strumarium*) was growing in the dried IP bed while willows (*Salix* sp.) and cottonwoods (*Populus fremontii*) lined the southern banks. Very thick algal matting and cracked soils were also present. The IP is as an elevation of approximately 12 feet and represents the lowest point within the study area.

In summary, there are a total of seven industrial ponds within the Project area (four within the on-site Project area and three within the off-site Project area). Five are used for aggregate operations and have been subject to routine maintenance activities, including the removal of encroaching vegetation. One IP was likely created incidental to the construction of an access road and the last was likely created as part of the aggregate operation on Mayhew Property but was also likely modified by the greenwaste operation. In addition, the shapes and sizes of five of these seven industrial ponds have been maintained or altered as needed for aggregate recovery and reclamation operations. At the time of survey, each of the 4 IPs on the Aspen I New Brighton site was inundated with water from the ongoing industrial uses. The limited riparian and lacustrine vegetation and functions associated with these industrial ponds depends on drainage and retention of industrial water associated with the ongoing aggregate operations. When the ongoing aggregate operations are discontinued, as planned, the extent of riparian and lacustrine vegetation and functions that occur at the fringes of the industrial ponds will likely be significantly reduced or eliminated because of elimination of much of the industrial ponds' water input.

Drainage Ditches. Four excavated drainage ditches occur within the Aspen I New Brighton site (Figure 4). An additional four drainage ditches occur within the footprint of the off-site infrastructure on Aspen III (Figure 5). All of these artificial (non-natural) drainage features are regularly maintained as part of the ongoing aggregate operations to ensure that proper drainage occurs at the drying beds, the surge pile, and the reclaimed agricultural lands. Vegetation in the on-site (i.e., Aspen I New Brighton site) ditches was dominated by annual grassland species such as rip gut bromegrass, soft chess bromegrass, hairy vetch, Italian ryegrass, and horseweed, while vegetation in the off-site (i.e., Aspen III) ditches was dominated by annual grassland species such as Italian ryegrass (*Lolium multiflorum*) and seaside barley (*Hordeum marinum*). When the ongoing aggregate operations are discontinued, water conveyance functions will likely be significantly reduced or eliminated entirely.

Reclaimed Agricultural Lands. The lands in the southwest portion of the Aspen I New Brighton site are at a higher elevation than the rest of the project lands. A total of 50.43 acres are currently leased for agricultural use, for oat hay production in 2009. The history of this portion of the site is not fully known, but is thought to have been mined and reclaimed in the distant past. The site has been farmed for many years. These agricultural lands were farmed to oat hay in 2009, and provided suitable foraging habitat for the Swainson's hawk and other raptors. During May 2009, as many as 500-1,000 tricolored blackbirds were observed flying to forage within the unharvested oats in this field (see ***Special-Status Species***, below).

Approximately 46.35 acres of reclaimed agricultural lands are located within the off-site infrastructure area on Aspen II and Aspen III. There will be no change in this land-use type once the aggregate operations cease.

Industrial Yard. The 18.42-acre area at the northeast corner of Aspen I New Brighton was previously mined and restored to a grade similar to that of the nearby Jackson Highway. It formerly was leased for a commercial nursery operation. Currently the site is leased intermittently for use as an industrial yard such as for storage of construction equipment and materials.

Two additional industrial yards on the Aspen III site (associated with the off-site infrastructure) will be impacted by the construction of the drainage channel and the excavation of borrow material. One industrial yard located in the northwest corner of Aspen III has no active land use but was previously used as a vehicle wrecking/storage yard. This property is comprised of nearly level ground with a mixture of compacted soil substrate, compacted gravel, and asphalt/concrete. Vegetation is limited to scattered weedy annual grassland species growing in exposed soil areas across the site. Wetlands, waters of the U. S., and habitats for endangered species do not occur at this area. The industrial yard has never been subject to aggregate operations, and remains at the same grade as the surrounding unmined lands.

The second industrial yard in the off-site area is located along Hedge Avenue in the central portion of the west side of Aspen III. This yard is currently used to store recreational vehicles and for general storage. Habitat present at the industrial yard is limited to mature sycamore and eucalyptus trees along the yard edges and a thicket of Himalayan blackberry along the southern boundary fence line. The interior of the yard is partially paved, graveled, and compacted soil substrate. The Industrial yard has never been subject to aggregate operations, and occurs at the same grade as the surrounding (non-mine/pit) land uses. There will be no change in this land-use type once the aggregate operations cease.

Off-Site Annual Grasslands. Annual grassland habitat at the "at-grade" section of the Aspen III site is located on relatively flat terrain at an average elevation of about 60 feet. The east and south edges of the "at-grade" area border Mayhew Road and Fruitridge Road, respectively. The western two-thirds of the "at-grade" area supports an actively farmed hay field, which may have been historically leveled. The eastern one-third appears to be relatively undisturbed with the exception of a drainage ditch situated along the base of Mayhew Road. The actively maintained hay field is predominantly composed of perennial rye grass (*Lolium perenne*) and wild oats (*Avena fatua*), and non-native annual grasslands, is characterized by soft chess (*Bromus mollis*), six-week brome (*Vulpia bromoides*), rip-gut brome (*Bromus diandrus*), medusa head (*Taeniatherum caput-medusae*), and wild oats.

In addition, the Mayhew Property site predominantly supports disturbed non-native annual grasslands characterized by soft chess, wild oats, rip-gut brome, yellow star-thistle (*Centaurea solstitialis*), medusa head, filaree (*Erodium botrys*), rat-tail fescue (*Vulpia myuros*), hairy hawkbit (*Leontodon leysseri*), fiddleneck (*Amsinckia intermedia*), and common tarweed (*Holocarpha virgata*). There will be no change in this land-use type once the aggregate operations cease.

Off-Site Seasonal Wetlands. Seasonal wetland habitat within the Mayhew Property site sustains long-term ponding and/or saturated soil conditions during and following periods of heavy precipitation in the winter and early spring. Additional water may be provided by surface sheet flow and subsurface discharge onto perched water-tables, if present. Plants observed include coyote thistle (*Eryngium vaseyi*), slender popcorn flower (*Plagiobothrys stipitatus*), Mediterranean barley (*Hordeum hystrix*), loosestrife (*Lythrum hyssopifolia*), and annual hair-grass (*Deschampsia danthonioides*). The soil profiles in the seasonal wetlands were extremely disturbed due to historic aggregate operations and green waste storage. Some of the soils were sandy silt loams (10YR 3/2) which possessed at least 5% redoximorphic features (10YR 4/6) located within the matrices. In other areas, the soil was almost entirely composed of partially composted organic matter. The primary indicators of wetland hydrology were the presence of biotic crusts in the form of algal matting and surface observed during a site visit held approximately two weeks before field surveys. There will be no change in this land-use type once the aggregate operations cease.

Aggregate Operation and Aggregate Processing Areas. Aggregate operation and aggregate processing areas include lands whose primary uses are for transport and storage of aggregate, general site management (e.g., roads), or residual lands from past aggregate operations (e.g., sides of old excavation areas). These areas support either bare ground or ruderal vegetation, including non-native and some native annual grasses and herbaceous species. These areas have low wildlife value due to frequent disturbance. They are used by wildlife species that favor open ground and herbaceous seeds, including mourning doves, California quail, American goldfinches, house finches, and other common species. Based on surrounding conditions it is likely that once the aggregate operations cease, more of these areas will support ruderal vegetation.

Ornamental Screening. Most of the perimeter of the project area supports a narrow (10-20 ft wide) band of mainly non-native ornamental shrubs that were planted to provide a visual screen of the site operations from surrounding streets. This habitat supports generalist wildlife species that accept ornamental habitats, including species such as mourning doves, northern mockingbirds, California quail, Anna's hummingbirds, and house finches. There will be no change in this land-use type once the aggregate operations cease.

Protected Trees

Twenty-two trees (18 Fremont cottonwoods and 4 valley oaks) on the Aspen I New Brighton site met the City's size criteria for heritage and/or protected trees. The trees are limited to the fringe of Industrial Pond 1and a few other isolated sites within areas that are subject to regular disturbance by aggregate operation activities (Figure 6). Table 2 lists these trees by species and circumference. The condition of these trees was not assessed; therefore, it is possible that some of these trees would not meet the "good" condition required for eligibility as heritage trees under the City's ordinance (see ***City of Sacramento Heritage Tree Ordinance.***)

Other woody vegetation onsite is of small stature, due to regular disturbance by industrial activities.

Figure 6
Aspen I New Brighton
Heritage Tree & Elderberry
Shrub Survey Results

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Table 2. Heritage trees identified on-site defined according to the City of Sacramento's heritage tree ordinance

Map Reference Number[1]	Common Name	Scientific name	Number of Trunks	Total Circumference (inches)
1	Valley oak	*Quercus lobata*	1	44
2	Valley oak	*Quercus lobata*	1	48
3	Valley oak	*Quercus lobata*	1	49
4	Valley oak	*Quercus lobata*	1	55
5	Fremont cottonwood	*Populus fremontli*	1	108
6	Fremont cottonwood	*Populus fremontli*	1	103
7	Fremont cottonwood	*Populus fremontii*	5	164
8	Fremont cottonwood	*Populus fremontii*	1	134
9	Fremont cottonwood	*Populus fremontii*	1	100
10	Fremont cottonwood	*Populus fremontii*	3	172
11	Fremont cottonwood	*Populus fremontii*	2	239
12	Fremont cottonwood	*Populus fremontii*	1	167
13	Fremont cottonwood	*Populus fremontii*	1	127
14	Fremont cottonwood	*Populus fremontii*	3	193
15	Fremont cottonwood	*Populus fremontli*	6	235
16	Fremont cottonwood	*Populus fremontii*	1	120
17	Fremont cottonwood	*Populus fremontii*	1	109
18	Fremont cottonwood	*Populus fremontii*	1	102
19	Fremont cottonwood	*Populus fremontii*	1	>101
20	Fremont cottonwood	*Populus fremontii*	1	104
21	Fremont cottonwood	*Populus fremontii*	2	174
22	Fremont cottonwood	*Populus fremontli*	1	155

[1]See Figure 6 for tree locations

Source: Gibson and Skordal (2009a)

Thirty-one trees (30 valley oak, and 1 interior live oak) occur within the off-site infrastructure areas of the proposed project and meet the definition and size criteria for protected trees contained in the County of Sacramento's current General Plan and Code. All protected trees are screening trees along the edges of the aggregate operations area at the top of the pit walls (Figure 7). Table 3 lists these trees by species and diameter-at-breast-height.

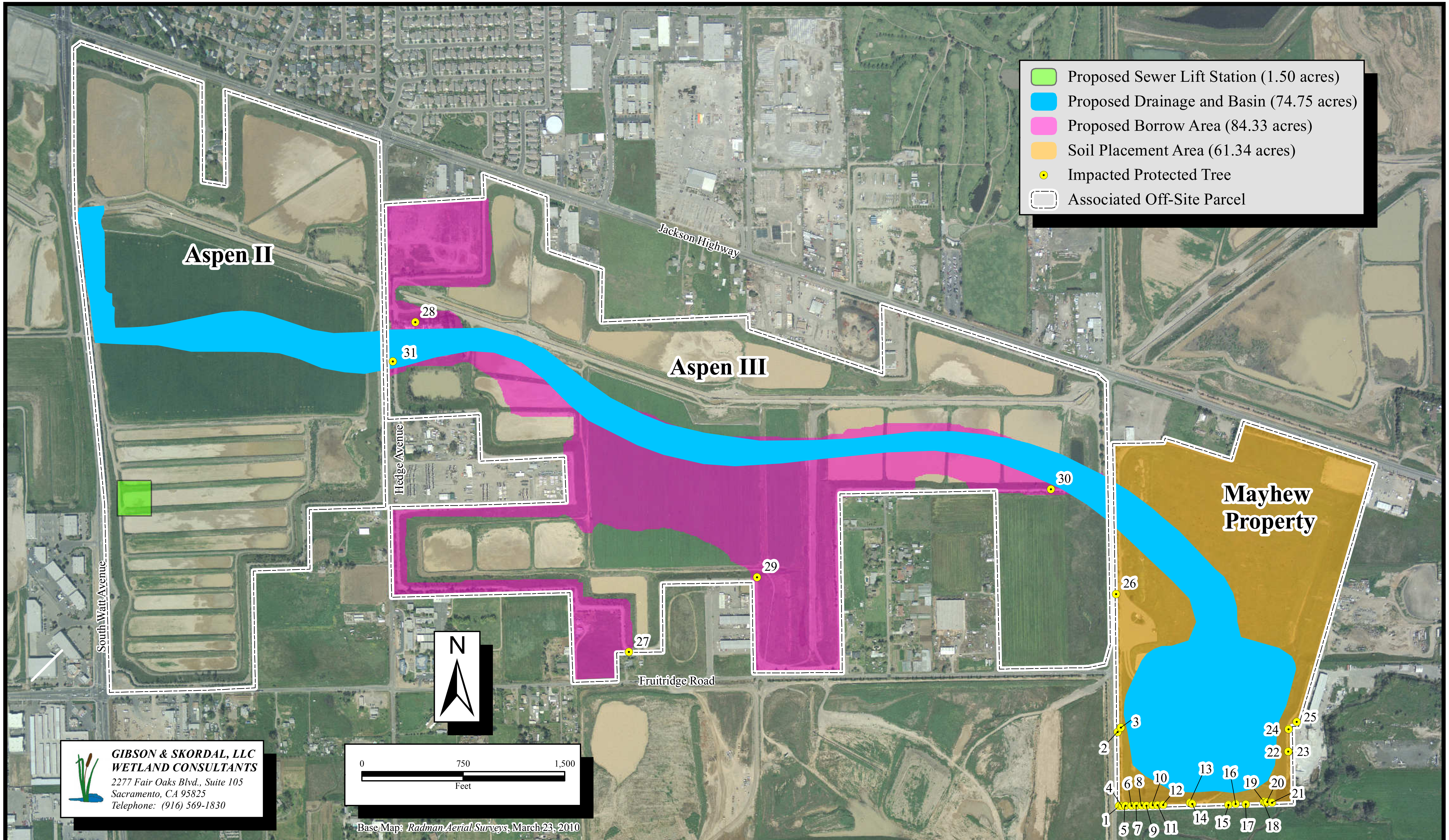
Special-Status Species

Special-status species are plant and animal species that federal, state, or local resource agencies or organizations have designated for special recognition and protection. These species typically have limited distributions or special requirements for certain habitat conditions. For this assessment, special-status species are defined as those:

- listed or proposed for listing under Federal or State Endangered Species Acts,
- designated by DFG as Fully Protected or Species of Special Concern, and identified by CNPS as being rare or threatened.

Evaluation of Potential Occurrence. As described in ***Methods***, an initial list of potential special-status species for the Aspen I New Brighton Project site evaluation was selected based on a search of CNDDB for records of species occurrence in the project vicinity, reconnaissance surveys to evaluate habitats, review of relevant scientific literature, and focused field surveys. Table 4 presents the common and scientific names of all selected species, their regulatory status, descriptions of the species' relevant habitat requirements, and evaluations of their potential for occurrence on the site. Potentials for occurrence on the site were assigned to species according to the following categories:

- ***Present***: The species is known to occur on the site, based on CNDDB records and/or detection onsite during field surveys.
- ***High***: The site supports suitable habitat for the species and the species is known to occur within 5 miles of the site (from CNDDB records) or the species is expected to occur onsite or nearby based on professional judgment regarding species requirements and site characteristics, with suitable habitat for the species onsite.
- ***Moderate:*** The species is known from records within 5 miles of the project site but only moderately suitable habitat occurs on site.
- ***Low***: The species is known to occur in the project vicinity but the project site provides only marginal habitat, or, although suitable habitat is present, the species is not known to occur in the project vicinity.
- ***None***: No suitable habitat for the species occurs onsite or the species was not found during onsite protocol-level surveys during the appropriate season.



February 2011

Figure 7
Aspen I New Brighton
Off-Site Infrastructure Heritage Trees

Table 3. Trees identified in off-site Project areas subject to protection under the Sacramento County tree protection ordinance

Reference No.[a]	Common Name	Species	Cumulative DBH	DBH 1	DBH 2[b]	DBH 3
1	Valley oak	*Quercus lobata*	13.5	13.5		
2	Valley oak	*Quercus lobata*	12.2	12.2		
3	Valley oak	*Quercus lobata*	12.0	12.0		
4	Valley oak	*Quercus lobata*	12.5	8.0	4.5	
5	Valley oak	*Quercus lobata*	7.0	7.0		
6	Valley oak	*Quercus lobata*	10.3	10.3		
7	Valley oak	*Quercus lobata*	9.0	9.0		
8	Valley oak	*Quercus lobata*	9.4	9.4		
9	Valley oak	*Quercus lobata*	9.4	9.4		
10	Valley oak	*Quercus lobata*	8.0	8.0		
11	Valley oak	*Quercus lobata*	8.0	8.0		
12	Valley oak	*Quercus lobata*	10.0	10.0		
13	Valley oak	*Quercus lobata*	18.0	18.0		
14	Valley oak	*Quercus lobata*	9.5	9.5		
15	Valley oak	*Quercus lobata*	12.0	12.0		
16	Valley oak	*Quercus lobata*	14.0	14.0		
17	Valley oak	*Quercus lobata*	9.8	9.8		
18	Valley oak	*Quercus lobata*	15.5	15.5		
19	Valley oak	*Quercus lobata*	8.0	8.0		
20	Valley oak	*Quercus lobata*	13.5	6.0	7.5	
21	Valley oak	*Quercus lobata*	12.2	12.2		
22	Valley oak	*Quercus lobata*	14.5	7.5	4.0	3.0
23	Valley oak	*Quercus lobata*	7.2	7.2		
24	Valley oak	*Quercus lobata*	12.2	12.2		
25	Valley oak	*Quercus lobata*	8.5	8.5		
26	Valley oak	*Quercus lobata*	13.0	13.0		
27	Valley oak	*Quercus lobata*	6.5	6.5		
28	Valley oak	*Quercus lobata*	6.0	6.0		
29	Interior live oak	*Quercus wislizenii*	10.0	4.0	3.0	3.0
30	Valley oak	*Quercus lobata*	12.0	8.0	4.0	
31	Valley oak	*Quercus lobata*	32.0	19.0	13.0	

Notes:

[a]See Figure 7 for tree locations

[b]DBH 2 and DBH 3 indicates trunk sizes for multi-trunk trees.

Source: Gibson and Skordal (2009a)

Table 4. Special-Status Species Evaluated for Potential Occurrence within the Rock Creek Aspen 1 Project Area.

Species	Federal Status	State Status	CNPS Listing	Habitat Association	Potential for Occurrence In Project Area	Rationale for Assessing Potential Occurrence
Plants						
Ahart's dwarf rush *(Juncus leiospermus var. ahartii*)	None	None	CNPS-1B.2	Vernal pools and other seasonally flooded features.	None	No suitable habitat occurs onsite.
Bogg's Lake hedge-hyssop (*Gratiola heterosepala*)	None	Endangered	CNPS-1B.2	Vernal pools and margins of lakes/ponds	Low	Marginal habitat is present along margins of industrial ponds
Brandegee's clarkia (*Clarkia biloba ssp. brandegeeae*)	None	None	CNPS-1B.2	Generally associated with chaparral and cismontane woodland, but may occur in foothill oak woodland and grassland.	None	No suitable habitat occurs onsite.
Dwarf downingia *(Downingia pusilla)*	None	None	CNPS-2.2	Vernal pools and other seasonally flooded features.	None	No suitable habitat occurs onsite.
Legenere *(Legenere limosa*)	None	None	CNPS-1B.1	Vernal pools and other seasonally flooded features.	None	No suitable habitat occurs onsite.
Northern California black walnut (*Juglans hindsii)*	None	None	CNPS-1B.1	Only two of three known native stands are still in existence. This species prefers riparian scrub and riparian woodland habitats.	None	All historic landscapes and landforms at the Aspen 1 site were removed during the mining. As a result, natural/historic stands of these species do not occur.
Pin cushion navarretia *(Navarretia myersii ssp. Myersii)*	None	None	CNPS-1B.1	Vernal pools and other seasonally flooded features.	None	No suitable habitat occurs onsite.
Sacramento orcutt grass *(Orcuttia viscida)*	Endangered	Endangered	CNPS-1B.1	Vernal pools and other seasonally flooded features.	None	No suitable habitat occurs onsite.
Sanford's arrowhead *(Sagittaria sanfordii*)	None	None	CNPS-1B.2	Emergent marsh habitat, typically associated with drainages, canals, or irrigation ditches.	Low	Marginal habitat occurs along edges of industrial ponds
Slender orcutt grass *(Orcuttia tenuis*)	Threatened	Endangered	CNPS-1B.1	Vernal pools and other seasonally flooded features.	None	No suitable habitat occurs onsite.

Stinkbells *(Fritillaria agrestis)*	None	None	CNPS-4.2	Non-native grasslands with heavy clay soils. Sometimes found on serpentine soils.	None	No suitable habitat occurs onsite.
Wooly rose-mallow *(Hibiscus lasiocarpos)*	None	None	CNPS-2.2	Species typically occurs in freshwater wetlands/marshes or other areas with wet soils.	None	No suitable habitat occurs onsite.
Invertebrates						
California linderiella *(Linderiella occidentalis)*	Species of Concern	None	N/A	Vernal pools, swales, and other ephemeral freshwater habitats	Low	Marginal habitat within Mayhew Acquisition seasonal wetlands
Hairy water flea *(Dumontia oregonensis)*	None	None	N/A	Vernal pools	Low	Marginal habitat within Mayhew Acquisition seasonal wetlands
Midvalley fairy shrimp *(Branchinecta mesovallensis)*	Species of Concern	None	N/A	Vernal pools, swales, and other ephemeral freshwater habitats	Low	Marginal habitat within Mayhew Acquisition seasonal wetlands
Valley elderberry longhorn beetle *(Desmocerus californicus dimorphus)*	Threatened	None	N/A	Elderberry host plants (*Sambucus sp.)* in riparian habitats	Low	Complete surveys have been conducted. One elderberry shrub was found on a transmission tower pedestal.
Vernal pool fairy shrimp *(Branchinecta lynchi)*	Threatened	None	N/A	Vernal pools, swales, and other ephemeral freshwater habitats	None	No suitable habitat onsite
Vernal pool tadpole shrimp *(Lepidurus packardi)*	Endangered	None	N/A	Vernal pools, swales, and other ephemeral freshwater habitats	None	No suitable habitat onsite
Amphibians/Reptiles						
Northwestern pond turtle *(Clemmys marmorata marmorata)*	Species of Concern	Species of Special Concern	N/A	Permanent or nearly permanent water in wide variety of habitat types	Low	None observed during surveys and ponds appear to be too disturbed to support species.
Birds						
Bank swallow *(Riparia riparia)*	None	Threatened	N/A	Vertical banks with fine-textured, sandy soils for excavating burrows for colonial nesting, generally in riparian habitats.	Low	No suitable bank habitat onsite to support nesting. Area unlikely to be attractive for foraging
Ferruginous hawk *(Buteo regalis)*	Species of Concern	Species of Special Concern	N/A	Open grassland habitats and woodlands and brushy forests (wintering)	None	Area is too disturbed and fragmented
Northern harrier *(Circus cyaneus)*	None	Species of Special	N/A	Open grasslands, wetlands, and agricultural fields	Moderate	No nesting likely. Areas too disturbed to support

		Concern				nesting; could use the reclaimed agricultural field in winter
Purple martin *(Progne subis)*	None	Species of Special Concern	N/A	Low elevation woodlands and riparian areas for nesting	None	Nests only in bridges and overpasses. Too far from breeding sites to attract martins for foraging
Swainson's hawk *(Buteo swainsoni)*	Species of Concern	Threatened	N/A	Riparian woodlands and isolated trees adjacent to suitable foraging habitat (agricultural fields and grasslands) for nesting	High	No nesting occurs onsite Foraging likely occurs in reclaimed agricultural fields
Tricolored blackbird *(Agelaius tricolor)*	Species of Concern	Species of Special Concern	N/A	Dense thickets of blackberry, cattails, willow, and wild rose in emergent wetland habitats	High	Observed foraging in onsite reclaimed agricultural fields from adjacent nest site. Nesting habitat limited due to frequent maintenance
Western burrowing owl *(Athene cunicularia hypugaea)*	Species of Concern	Species of Special Concern	N/A	Open, dry grasslands where it nests in ground burrows, often from ground squirrels or badgers	Moderate	Not detected in surveys, but habitat suitable for breeding and wintering
White-tailed kite *(Elanus leucurus)*	Species of Concern	Fully Protected	N/A	Woodlands and isolated trees (for nesting) near suitable open foraging habitat	Moderate	No nesting occurs onsite, but potential for future use. Foraging possible in agricultural fields in winter
Mammals						
American badger *(Taxidea taxus)*	None	Species of Special Concern	N/A	Dry shrub and forest habitats with friable soils	None	Site is too disturbed and fragmented.

N/A = Not Applicable

CNPS Listing Categories:

- List 1A - Plants Presumed Extinct in California
- List 1B - Plants Rare, Threatened, or Endangered in California and Elsewhere
- List 2 - Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere
- List 3 - Plants about Which We Need More Information (The Review List)
- List 4 - Plants of Limited Distribution (The Watch List)

CNPS Threat Ranks are extensions added to the CNPS Listing Category to designate the level of endangerment as follows:

- 0.1 - Seriously threatened in California (high degree/immediacy of threat)
- 0.2 - Fairly threatened in California (moderate degree/immediacy of threat)
- 0.3 - Not very threatened in California (low degree/immediacy of threats or no current threats known)

The following sections discuss the species that are present on the properties which comprise the Aspen I New Brighton Project or have high, moderate, or low potential to occur there.

Vernal Pool Crustaceans. The vernal pool fairy shrimp (*Branchinecta lynchi*), is a small crustacean in the Branchinectidae family. It ranges in size from ½ to one inch long. Fairy shrimp are aquatic species in the order Anostraca. The vernal pool fairy shrimp occupies a variety of different vernal pool habitats, from small, clear, sandstone rock pools to large, turbid, alkaline, grassland pools on the valley floor (USFWS October 2007a). Generally, vernal pool fairy shrimp can be found from early December to early May throughout the Central Valley. Female fairy shrimp carry their eggs in a ventral brood sac. The eggs either are dropped to the pool bottom or remain in the brood sac until the mother dies and sinks. When the pool dries out, so do the eggs. They remain in the dry pool bed until rains and other environmental stimuli hatch them.

The vernal pool tadpole shrimp (*Lepidurus packardi*) is a small crustacean in the Triopsidae family. It has compound eyes, a large shield-like carapace (shell) that covers most of the body, and a pair of long cercopods (appendages) at the end of the last abdominal segment. Vernal pool tadpole shrimp adults reach a length of 2 inches in length. This animal inhabits vernal pools containing clear to highly turbid water, ranging in size from 54 square feet in the former Mather Air Force Base area of Sacramento County, to the 89-acre Olcott Lake at Jepson Prairie (USFWS October 2007b). The life history of the vernal pool tadpole shrimp is linked to the seasonal cycle of the vernal pool. After winter rainwater fills the pool, the population is reestablished from cysts that lie dormant in the dry pool sediments.

The seasonal wetlands located on the Mayhew Property are the only potential habitat for federally listed vernal pool crustaceans within the Project area. At the time of publication, vernal pool fairy shrimp and/or vernal pool tadpole shrimp had not been observed within potential habitats located within the project area. In addition, the first of the two wet season surveys had been completed (2009/2010), and the second (2010/2011) wet season survey was in process.

Swainson's Hawk. The Swainson's hawk, a California Threatened Species, nests in California's Central Valley and winters primarily in Mexico. It migrates north to California in March and early April to establish breeding territories and breeds from late March to late August, with the peak of breeding in late May through July (England et al. 1997). The hawks return to their wintering areas in Mexico in late August and early September (Estep Environmental Consulting 2008).

Swainson's hawks in the Central Valley typically nest in isolated trees, small wooded groves, and large woodlands near open grasslands and agricultural fields. They often nest near riparian areas but are also known to nest in urban areas. Nests are typically close to suitable foraging habitats consisting of irrigated pastures, alfalfa fields and other hay crops, low-growing row crops, annual grasslands, and fallow fields (Estep Environmental Consulting 2008).

The CNDDB contains a record of Swainson's hawks nesting on a tree on a mid-channel island in the American River just upstream of the Howe Avenue bridge. A 2006 survey located several nesting pairs within 5 miles of the Project area, including one along Morrison Creek where it crosses the Jackson Highway (Hwy 16) (Estep, pers. comm.), 2.7 miles east of the residential portion of the Project area and 0.6 miles from the nearest portion of the off-site work. This nesting territory was determined to be active through project-related surveys in 2009. Another 2006 nest site was near Jackson Highway and Excelsior Road, approximately 4.0 miles from the residential portion of the Project and site and 2.3 miles from the easternmost offsite work.

Thorough surveys of all potential nesting trees onsite did not detect Swainson's hawks. However, because suitable nest trees occur onsite, the Swainson's hawk could use these trees for nesting in the future. The Project site contains agricultural fields and disturbed annual grassland that provide suitable foraging habitat that may be used currently. Therefore, this species has high potential to occur on site.

Tricolored Blackbird. The tricolored blackbird nests in large colonies established in large, dense thickets of blackberry, bulrush, cattails, milk thistle, willows, and wild roses, usually near wetlands or irrigated pasture. The colonies can be occupied by thousands of nesting pairs. Colonies often shift locations from year to year, in response to changes in habitat resulting from management activities in farmlands and rangelands. The birds forage in large groups on surrounding agricultural fields and grasslands to harvest seeds and insects regularly traveling up to three miles or more between nesting and foraging areas (Beedy and Hamilton 1999).

The CNDDB contains 6 recent records of colonies within 5 miles east and southeast of the Project site. These nesting colonies occur in blackberry thickets and cattail marshes along natural and artificial drainages surrounded by grassland areas for foraging.

This species has been documented using the Project site. In May 2009, tricolored blackbirds were observed foraging in several of the reclaimed agricultural lands. Tricolored blackbirds were observed commuting to and from a potential nesting colony within cattails north of the Project site. This site, however, apparently was not used for nesting in 2010. No tricolored blackbird nesting was observed within the Project area and conditions appear marginal to support nesting, presumably as a result of routine vegetation maintenance that limits development of larger dense patches of Himalayan berry or blessed milkthistle (*Silybum marianum*), which are used as nesting substrates in the region (Airola, unpub. data).

Western Burrowing Owl. The burrowing owl nests in ground burrows in open, dry grasslands and forages in surrounding open areas, typically annual grassland and ruderal vegetation. Their nests are often placed in burrows previously occupied by California ground squirrels. The CNDDB contains six records of burrowing owls within 5 miles of the project site. Only two of these sites have been observed to support burrowing owls in the last 10 years and therefore are presumed to continue to support owls.

Biologists searched for burrowing owls during reconnaissance surveys of the entire Project site in 2009 and 2010. No owls or occupied burrow sites were observed during field surveys. However, the potential exists that the species could occur onsite or could occupy the site in the future, because suitable foraging and nesting habitat does exist. Accordingly, this species has moderate potential to occur within the Project site.

Northern Harrier. The northern harrier is a large raptor that forages in open wetlands, meadows, grasslands, croplands, and riparian woodlands where it takes small mammals, birds, reptiles, and frogs. It finds prey by flying low over open habitats. It nests on a platform of vegetation placed on the ground in these open habitats. CNDDB contained no records of this raptor species in surrounding lands.

The Project site has low to moderate potential for occurrences of the harrier for foraging in harvested agricultural fields during the nonbreeding season. Nesting of the species is unlikely because most areas are frequently disturbed by maintenance or other operations.

White-tailed kite. The kite is a medium-sized raptor that resides year-round in lowland areas of California. It forages in open areas such as grasslands and agricultural fields where it hovers while it searches for small mammals. The kite places its nests within dense foliage in the upper branches of large trees growing near suitable foraging habitats. CNDDB contains 6 records of nest sites of the white-tailed kite in large trees within 5 miles of the project site.

The Project site has moderate potential for occurrences of the kite foraging in agricultural fields and other open habitats and for nesting. Although surveys of the project site detected no current nests of the kite, it could potentially nest in the site's large isolated trees in the future.

Northwestern Pond Turtle. The pond turtle uses permanent industrial ponds, lakes, streams, and irrigation ditches throughout interior California. In its aquatic habitats, it requires basking sites comprised of logs, rocks, mud banks, or floating vegetation. CNDDB has one record of the turtle within 5 miles of the project site; it was observed in 1995 in Morrison Creek near Mather AFB within 2 miles of the site.

The Project site is considered to have low potential for occurrences of the pond turtle. On-site reconnaissance surveys detected no pond turtles and the industrial ponds and drainages on site are often turbid and are regularly maintained and therefore considered to provide only marginal habitat.

Valley Elderberry Longhorn Beetle. The valley elderberry longhorn beetle (VELB) occurs only in California's Central Valley where it inhabits shrubs of blue elderberry (*Sambucus mexicana*) in riparian habitats. Its larvae feed on the pith of elderberry stems and the adults feed on elderberry foliage and flowers. The beetle's threatened status results from the loss of riparian habitats along California's streams and rivers. Recently USFWS recommended the species for delisting under the federal ESA but this has not yet occurred. USFWS is currently in the process of developing a post-delisting monitoring plan for VELB.

CNDDB has 2 records of the VELB within 5 miles of the project site; both of these records are from the riparian floodplain of the American River downstream from the H Street bridge in Sacramento.

The Project site has low potential to support occurrences of the VELB. Complete surveys of the project area detected only one elderberry shrub, located on one of the transmission line pedestals (Gibson and Skordal 2009a).

Bogg's Lake Hedge-Hyssop and Sanford's Arrowhead. These two species were the only special-status plants for which potentially suitable habitat was considered to be present at the project site (Table 1). Surveys for these plants were conducted in the only potential habitat, the wetland fringes of the industrial ponds at the Aspen I New Brighton Project Area. These areas were considered as only marginally suitable potential habitat for Sanford's arrowhead and Boggs Lake hedge hyssop. No individuals of these species were discovered during the protocol-level surveys. As noted above, the Aspen I New Brighton site is significantly disturbed by past aggregate operation activities and ongoing operations such as the transfer of aggregate materials along the conveyor belt system, surge pile operations, and drying bed operations. The Aspen I New Brighton Project site is also significantly disturbed by ongoing maintenance activities associated with the ongoing operations. As a result, the industrial ponds are considered unsuitable for the two species. Therefore, the species are considered to not be present onsite.

Nesting Raptors and Other Birds. Thorough surveys of potential raptor nest trees in the Project area detected nesting by the red-tailed hawk and great horned owl in both 2009 and 2010. In both 2009 and 2010, a nesting pair of red-tailed hawks was observed defending nests in adjacent trees at Industrial Pond 1 in the area proposed for residential development. No young were seen within nests, but nestlings may have been present and not visible. Previous regional raptor surveys did not detect nesting raptors at this site (Estep, pers. comm.). A pair of red-tailed hawks and great horned owls also both nested in 2009 and 2010 in an area 500-1,000 ft north of the proposed drainage facility. No raptor nesting occurred within Project areas proposed for other uses.

Raptors. As noted previously under ***Nesting Raptors and Other Birds,*** the only nesting raptor species observed at the project site in 2009 were the red-tailed hawk and great horned owl. Other raptors that may make use of the site during summer include white-tailed kite, Cooper's hawk, Swainson's hawk, and American kestrel. Additional wintering species could include the northern harrier, sharp-shinned hawk, and merlin.

PROJECT IMPACTS AND ADOPTED MITIGATION MEASURES

The proposed Project area encompasses approximately 454 acres. Within that area, the Project will affect: 11.81 acres of industrial ponds; 1.49 acres of artificially created ditches; 0.25 acres of seasonal wetlands; 89.69 acres of annual grassland or disturbed annual grassland; 96.78 acres of reclaimed agricultural fields; 98.72 acres of drying beds; 32.01 acres of industrial yards; 118.07 acres of disturbed mining areas; and 5.10 acres of abandoned parking lot. This analysis evaluates the environmental impacts of Project actions on wetland and biological resources pursuant to CEQA and other relevant federal and state regulatory programs.

Impacts to Wetlands and Associated Resources

Seven industrial ponds and eight artificial drainage ditches are present within the Project area. The industrial ponds total 11.81 acres in size while there are 1.49 acres of ditches. As described in detail above, vegetation associated with the industrial ponds ranges from limited amounts of mature woody species, disturbed riparian forest and scrub, and emergent vegetation. The ditches support only annual grasses. The industrial ponds and artificial drainage ditches have been regularly maintained in the past and continue to be maintained as needed as part of Teichert Aggregates's aggregate operations and site reclamation, including periodic vegetation removal.

Development of the Project would eliminate all seven industrial ponds and all portions of the eight drainage ditches within the Project area as shown on Figures 4 and 5. The Project's effects on wetlands and waters subject to federal and state jurisdiction follow. As discussed previously, the hydrology of all fifteen of these features depends mostly on water associated with ongoing aggregate extraction and reclamation operations. When these uses cease, the existing site hydrology will also be interrupted and the aquatic components of the habitat associated with these seven features will likely be eliminated or significantly reduced.

Development of the Project would also eliminate 0.25 acres of seasonal wetlands due to the construction of the retention basin and the disposal of the material excavated for the drainage channel and retention basin on Mayhew Property over the remainder of the Mayhew site (Figure 5).

Impact Wetlands-1. Impacts to Wetlands and Other Waters of the United States

As described previously in ***Regulatory Setting***, the Corps does not typically consider "water-filled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel" to be waters of the United States unless the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States (33CFR Part 328, preamble). The features present on Aspen I New Brighton consist of four industrial ponds and four artificial drainage ditches, all of which are part of an active, on-going operation, and all of which are located below historic grade at the bottom of a historically mined area (Figure 4). Additionally, there are three industrial ponds and portions of four artificial drainage ditches that will be impacted by the off-site infrastructure. Two of the three (all but the industrial pond on the Mayhew Property site) are part of the active, on-going operation. By the Corps' definition, they are not waters of the United States. Moreover, should the operations on-site cease and these features retain characteristics necessary for potential classification as waters of the United States, as is the case for the third off-site industrial pond (on Mayhew Property), their position in the landscape, 30 feet lower than the natural ground surface, isolates them from any other water of the United States. They do not receive waters of the United States, nor do they drain to waters of the United States; in other words, they are not tributary to waters of the United States. As such, they clearly would not be jurisdictional features per the Corps definition.

The 0.25 acres of seasonal wetland on the Mayhew Property Site have reformed since the abandonment of the site. Their position in the landscape, approximately 30 feet lower than the natural ground surface, isolates them from any other water of the United States. They do not receive waters of the United States, nor do they drain to waters of the United States; in other words, they are not tributary to waters of the United States. As such, they clearly would not be jurisdictional features per the Corps definition.

Because these features are not waters of the United States, the discharge of fill material into them is not regulated by either Section 404 or Section 401 of the Clean Water Act. Therefore there would be no impact to jurisdictional wetlands or other waters of the United States.

Impact Wetlands-2. Impacts to Waters of the State

As discussed above, "waters of the state" are defined as any surface water or groundwater, including saline waters, within the boundaries of the state. Six of the seven artificial industrial ponds and all drainage ditches on the Project site were created for use in the aggregate operations and have been subject to regular maintenance activities. The seventh industrial pond (on Mayhew Property) was created for use in aggregate operations, but has since been abandoned and has not been subject to regular maintenance. The shape and size of all of these industrial ponds have been altered and managed as needed for aggregate recovery and reclamation operations. The drainage ditches have been heavily maintained to ensure the correct operation of the facility. The industrial ponds and ditches sit approximately 30 feet below natural grade. All but one of these features are working components of an industrial operation. These features are not natural and are completely isolated from surrounding natural features. It is not expected that a Report of Waste Discharge will be required. No mitigation is required for these impacts.

The 0.25 acres of seasonal wetland on the Mayhew Property Site have reformed since the abandonment of the site. Their position in the landscape, 30 feet lower than the natural ground surface, isolates them from any other water of the State. They do not receive waters of the State, nor do they drain to waters of the State. However, isolation does not eliminate these features from regulation under the Porter Cologne Act of the California Water Code. Furthermore, the County of Sacramento's General Plan contains a policy requiring mitigation for the loss of any wetland, even if isolated.

Mitigation Measure Wetlands-1. StoneBridge will either create 0.25 acre of seasonal wetland habitat or will purchase 0.25 acres of seasonal wetland credits at an agency-approved mitigation bank with a service area covering the Project site. This mitigation measure will reduce impacts on waters of the state to a less-than significant level.

Impact Wetlands-3. Impacts to Streambed and Lake Habitats

Pursuant to Section 1600 of the Fish and Game Code, DFG regulates impacts to the bed, bank or channel of rivers, streams and lakes. Six of the seven industrial ponds and all eight artificial drainage ditches are part of an active aggregate operation and all sit at the bottom of a historically mined area. Their position in the landscape, 30 feet lower than the natural ground surface, isolates them from any other water or wetland. They do not receive waters from rivers, streams or lakes, nor do they drain to rivers, streams or lakes.

Because these features are not physically connected to any river, stream or lake, their elimination will not modify any natural river, stream or lake. It is not expected that a Lakebed/Streambed Alteration Agreement will be required.

The Project will not have an impact on a lakebed or streambed; therefore, no mitigation is required.

Impacts to Special-Status Species

Impact Bio-1 – Loss of Federally Listed Vernal Pool Crustacean Habitat

Vernal pool fairy shrimp and vernal pool tadpole shrimp have been documented in multiple locations within 5 miles of the Project site. In addition, potential habitat for these species occurs within the off-site improvements area within the Mayhew Property site. As a result, surveys for these species (authorized by the USFWS) were conducted by Samuel Garcia and Matt Hirkala of Gibson & Skordal who both hold a federal Endangered Species Act (Section 10(A)(1)(a) take permit for collecting these species. The USFWS survey protocol for these species requires two wet season surveys be conducted in order to determine if these species are absent or present in potential habitats.

At the time of publication, the first of the two wet season surveys has been completed (2009/2010), and the second (2010/2011) wet season survey is in process. To date, vernal pool fairy shrimp and/or vernal pool tadpole shrimp have not been observed within the potential habitats located within the Project Area.

The seasonal wetlands on the Mayhew Property site are subject to very short inundation periods, and these features typically do not pond water continuously for more than 3 weeks. Most of the seasonal wetlands on-site do not pond water continuously for more than 2 weeks. As a result, it is likely that these species do not occur within the Project Area and there will be no impact to these species. If, however, these species are observed within the Project Area during the remainder of the protocol survey, the impacts will be tallied at that time and mitigation measure Bio-1 (below) shall be implemented.

Mitigation Measure Bio-1. Mitigate for Take of Vernal Pool Fairy Shrimp and Vernal Pool Tadpole Shrimp. StoneBridge will communicate with USFWS regarding potential impacts to vernal pool crustacean species. Based on the results of this communication, StoneBridge will be responsible for compliance with the Endangered Species Act, including obtaining an incidental take permit if it is determined that take will, in fact, occur. Mitigation requirements for take of vernal pool fairy shrimp and vernal pool tadpole shrimp shall be consistent with the *Programmatic Formal Endangered Species Act Consultation on Issuance of 404 Permits for Projects with Relatively Small Effects on Listed Vernal Pool Crustaceans Within the Jurisdiction of the Sacramento Field Office, California.*

Implementation of Mitigation Measure Bio-1 will ensure that impacts to the vernal pool fairy shrimp and the vernal pool tadpole shrimp are less than significant.

Impact Bio-2 - Loss of Swainson's Hawk Foraging Habitat

The presence of a Swainson's hawk nest within 2.7 miles of the Project residential development areas and within 0.6 miles of the off-site facilities, as well as the presence of other nesting pairs within 5 miles, makes it possible that the Aspen I New Brighton Project site is used as part of the foraging range of the species. Suitable foraging habitat onsite is limited to the reclaimed agricultural land and more extensive areas of disturbed annual grasslands habitat. The following habitats are not considered suitable foraging habitat: industrial ponds, drying beds, recently mined areas, roads, conveyor route, and other industrial and steep lands on the sides of the pit that support little or no vegetation, and small isolated areas of ruderal habitat.

The project would remove approximately 50 acres of agricultural habitat suitable for Swainson's hawk foraging within on-site lands proposed for development. Off-site borrow and fill areas, and drainage and stormwater retention facilities, together would modify an additional 136 acres of reclaimed agricultural lands and annual grassland that serves as suitable foraging habitat (see Table 1). The project conditions, however, would retain open grassland/ruderal habitat that may retain some foraging value.

The quality of the foraging habitat and level of potential use by Swainson's hawks is influenced by the size of the area of suitable habitat and the overall conditions on other lands onsite and on surrounding lands. A high proportion of lands within 2 miles of the Project site are developed for industrial or residential uses or actively mined. Areas of suitable foraging habitat within this area are limited to several relatively small, scattered patches of irrigated pasture and alfalfa, and some residual annual grassland. This fragmented condition of the foraging habitat onsite may explain why Red-tailed hawks, but not Swainson's hawks nest within the project area.

Notwithstanding the relatively low value of potential foraging habitat onsite, the loss of Swainson's hawk foraging habitat would be a significant impact.

Mitigation Measure Bio-2. Mitigate for Loss of Foraging Habitat through Replacement. Mitigation requirements for loss of Swainson's hawk foraging habitat were calculated using different methods required by the City and County of Sacramento for lands under their jurisdictions. Mitigation for loss of foraging habitat within the residential development area under jurisdiction of the City of Sacramento was determined based on DFG's model mitigation guidelines (California Department of Fish and Game 1994). In order to mitigate for the loss of foraging habitat, DFG's model guidelines provide that a project proponent must provide "Habitat Management" (HM) lands to DFG based on the following ratios:

(a) Projects within 1 mile of an active nest tree shall provide:

- One acre of HM land for each acre of development authorized (1:1 ratio) where 10% of the HM land requirement is met by fee title acquisition or a conservation easement allowing for the active management of the foraging habitat, and the remaining 90% of the HM land is protected by a conservation easement on agricultural land or other suitable foraging habitat land, or

- One-half acre of HM land for each acre of development authorized (0.5:1 ratio) where all of the HM land requirement is met by fee title acquisition or a conservation easement allowing for active management of the habitat for prey production.

(b) Projects within 5 miles for an active nest tree but greater than 1 mile from the nest tree shall provide 0.75 acres of HM land for each acre of urban development authorized (0.75:1 ratio). All HM lands acquired must be protected by fee title acquisition or a conservation easement.

(c) Projects within 10 miles of an active nest tree but greater than 5 miles from an active nest tree shall provide 0.5 acres of HM land for each acre of urban development authorized (0.5:1 ratio). All HM lands acquired must be protected by fee title acquisition or a conservation easement.

All suitable foraging habitat within the Project's lands in the City are within the DFG's one to five mile distance class to the nearest nest site. Therefore, the appropriate mitigation ratio for onsite foraging habitat loss is 0.75:1. As applied to the 50 acres of suitable onsite foraging habitat within the City lands, 38 acres of mitigation is required.

Offsite actions would modify areas considered suitable foraging habitat for the Swainson's hawk including agricultural lands and disturbed annual grassland. Most impacts to these areas would be temporary in nature as most lands would return to ruderal-grassland condition. Regardless of these temporarily and potential minor permanent impacts, mitigation for loss of Swainson's hawk foraging habitat in Sacramento County is determined based on guidance in its mitigation policy, which has been approved by CDFG. This mitigation program recognizes the diminished foraging habitat value to Swainson's hawks of lands that are fragmented or degraded by previous developed land uses onsite and adjacent uses (Sacramento County Department of Environmental Review and Assessment 2009). The County's program requires mitigation for impacts to foraging habitat only when land is rezoned from agricultural to urban land use designations, or when an applicant requests land use entitlements for "non-agricultural uses of land zoned with an agricultural designation."   The off-site (i.e., County) portions of the Aspen I New Brighton project do not require rezoning from agricultural designations, nor is StoneBridge requesting entitlements for non-agricultural uses of agriculturally-zoned property in order to implement these off-site components. Therefore, no mitigation is required for the off-site Project impacts.

The mechanism for mitigating for losses of Swainson's hawk foraging habitat has not yet been determined, but, consistent with CDFG's mitigation guidelines, such mitigation could involve payment of a mitigation fee to the City (although the City does not currently have a Swainson's hawk mitigation program), acquisition of mitigation credits from an accredited mitigation bank, or acquisition and permanent protection and management of mitigation lands by StoneBridge. Implementation of Mitigation Measure Bio-2 would reduce the impact of loss of Swainson's hawk foraging habitat to a less than significant level.

Impact Bio-3. Disturbance or Removal of an Active Swainson's Hawk Nest

Although Swainson's hawks have not been observed nesting within the Project site, suitable nest trees are present. Therefore it is possible that a Swainson's hawk could be nesting on the site at the time of project implementation. Construction activities and habitat modification at or near an active nest site during the active nesting season (March 30 to August 15) could disrupt nesting activities and thereby reduce reproductive success or cause direct or indirect mortality of nestlings. This potential impact is considered significant. StoneBridge will implement one of the following mitigation options to avoid disturbing or removing any active Swainson's hawk nest tree at the time of project implementation.

Mitigation Measure Bio-3a. Remove Potential Nest Trees during the Non-Nesting Season. Under this mitigation option, if Project construction plans require removal of a tree that represents potential nesting habitat for Swainson's hawk and other raptors, StoneBridge will remove such trees during the non-nesting season, prior to initiation of major construction.

Mitigation Measure Bio-3b. Conduct Surveys of Suitable Trees to Determine Occupancy and Avoid Occupied Nest Sites. If suitable raptor nest trees are on the site and construction is planned during the nesting season for the Swainson's hawk or other raptors, StoneBridge will conduct preconstruction surveys to determine if raptors are using suitable nest trees. If Swainson's hawks or other raptors have active nests on the property, construction will be avoided within a buffer area designated to protect the nesting pair. The size of the buffer will be determined by a qualified biologist with experience in raptor nest protection. The size of the buffer will be based on the location of the nest, the background level of disturbance in the nest area (i.e., from ongoing aggregate operation activities and land use activities on adjacent lands), and observed reactions of the nesting hawks to human activity.

Implementation of either Mitigation Measure Options Bio 3A or Bio 3B would reduce the potential impacts of removal of an active Swainson's hawk nest to a less than significant level.

Impact Bio-4. Potential for Loss of Occupied Burrowing Owl Habitat

No burrowing owls have been observed within the Aspen I New Brighton Project area, and none were observed during reconnaissance surveys. Nonetheless, because suitable habitat exists onsite, the potential exists for burrowing owls to be present and not have been detected, or for them to colonize the site prior to construction. If the site is occupied, then construction could lead to mortality or reproductive disruption. This impact would be considered significant.

Mitigation Measure Bio-4. Conduct Preconstruction Burrowing Owl Surveys and Implement Exclusion Measures if Occupied Nests or Burrows are Found. Because much of the site is considered suitable habitat for the burrowing owl, prior to construction StoneBridge will conduct preconstruction surveys of the Project site to determine if owls are occupying burrows during the breeding and non-nesting season.

To minimize the potential for disturbing owls during the nesting season, StoneBridge will attempt to conduct surveys and implement mitigation during the non-nesting season prior to any breeding season construction. If occupied burrows are found during the non-breeding season, StoneBridge will implement standard "passive relocation" measures to exclude burrowing owls from burrows that need to be disturbed, consistent with DFG guidelines.

If breeding owls are found onsite during the nesting season, StoneBridge will establish a no-disturbance buffer around nesting burrows until the nesting is completed. The buffer distance and verification of completion of nesting will be determined by a qualified biologist with experience working with burrowing owls and construction activities. If it is not feasible to avoid removal of nesting burrows, StoneBridge will consult with the DFG to determine if any options for active nest relocation are feasible.

This mitigation would reduce potential impacts to burrowing owls to a less-than-significant level.

Impact Bio-5. Loss of Tricolored Blackbird Foraging Habitat.

No suitable nesting habitat for the tricolored blackbird currently exists on the Project site. The species, however, was observed likely nesting on an adjacent property in 2009 (but not in 2010) and was observed foraging within the reclaimed agricultural lands within the Aspen I New Brighton Project site. The foraging habitat used by the blackbirds also constitutes the potential foraging habitat for the Swainson's hawk (See Impact Bio -2). Loss of occupied foraging habitat could be considered a significant impact under CEQA.

Mitigation Measure Bio-5. Loss of foraging habitat for the tricolored blackbird will be mitigated through implementation of measures to mitigate for loss of Swainson's Hawk foraging habitat (see Mitigation Measure Bio-1 for Swainson's hawk foraging requirements and approaches to preserving habitat as mitigation).

Implementation of Mitigation Measure Bio-5 would reduce potential impacts to tricolored blackbird to a less-than-significant level.

Impact Bio -6. Loss of Marginal Habitat for the Northwestern Pond Turtle

Elimination of the industrial ponds onsite would eliminate habitat that has marginal potential to support the pond turtle. The species was not observed onsite and is considered unlikely to use the area due to the high level of disturbance of the industrial ponds, as a result of industrial uses and periodic maintenance. Loss of this habitat is considered a less than significant impact, and no mitigation is proposed.

Impact Bio-7. Loss of Habitat for the Valley Elderberry Longhorn Beetle

The only elderberry shrub, the habitat for the VELB, detected during complete surveys was on one of the transmission line pedestals. The pedestal would not be disturbed by project activities. Therefore, no impacts would occur to any elderberry shrubs or potential VELBs currently within the project sites.

Because elderberries can be widely dispersed by birds, some potential exists for them to become established prior to project construction. Impacts could occur to the beetle if occupied elderberry shrubs are removed during Project construction. Although the FWS has proposed the species for delisting, this impact would be considered significant if the species was still listed as "threatened" under the federal ESA at the time of the action.

Mitigation Measure Bio-7. If the VELB is still listed as "threatened" under the federal ESA at the time of construction, surveys will be conducted for any newly established elderberry shrubs. If shrubs cannot be avoided, StoneBridge will coordinate with U.S. Fish and Wildlife Service to identify appropriate mitigation for these impacts, which may include compliance with the USFWS' standard mitigation guideline to move and plant elderberry shrubs as replacement for loss of elderberries as identified in Table 6.

Table 6. U.S. Fish and Wildlife Service elderberry shrub replacement ratios

Location	Stem size (maximum diameter at ground level)	Exit Holes Present?	Elderberry Seedling Ratio	Associated Native Plant Ratio
Non-riparian	stems ≥1" & ≤3"	N	1:1	1:1
		Y	2:1	2:1
Non-riparian	stems >3" & <5"	N	2:1	1:1
		Y	4:1	2:1
Non-riparian	stems ≥5"	N	3:1	1:1
		Y	6:1	2:1
Riparian	stems ≥1" & ≤3"	N	2:1	1:1
		Y	4:1	2:1
Riparian	stems >3" & <5"	N	3:1	1:1
		Y	6:1	2:1
Riparian	stems ≥5"	N	4:1	1:1
		Y	8:1	2:1

If StoneBridge chooses to do so, this replacement can be incorporated into the Project design by inclusion into the stormwater conveyance system, parks, or urban farm areas.

With implementation of adopted mitigation, if necessary at the time of Project implementation, impacts to VELB and its habitat would be less than significant.

Impact Bio-8. Impacts to Special-Status Plant Species

Protocol-level surveys conducted for Bogg's Lake Hedge-Hyssop and Sanford's Arrowhead did not locate the species in marginally suitable habitat surrounding industrial ponds at the site. No other species were considered to have possibility to occur at that site, due to lack of suitable habitat. Therefore, there will be no impacts to special-status plant species, and no mitigation is required.

Impacts to Nesting Raptors

Impact Bio-9. Loss of Active Raptor Nest Trees

An active red-tailed hawk nest was documented within the Project site in 2009 and 2010, and other raptors (in addition to the Swainson's hawk; see ***Impact Bio-2***) have potential to nest there. Project construction that occurs during the nesting seasons for raptors and other native migratory birds could disturb or destroy active nests of raptors or other migratory birds. Loss of raptor nests would violate California Fish and Game Code Section 3503.5 and would be a significant impact.

Mitigation Measures Bio-2a and 2b describes protection measures for the Swainson's hawk and other tree nesting raptors, including removal of nesting trees during the non-nesting season or establishment of no-disturbance buffers around nests. Implementation of this measure would ensure that active raptor nests will not be disturbed and reduce this potential impact to a less-than-significant level. No additional mitigation is required.

Protected Trees

Impact Bio 10. Loss of Protected Trees.

The project will result in the loss of 22 trees that qualify as heritage and/or protected trees over the ±232-acre Aspen I New Brighton on-site area. Protection of these trees is not feasible due to their current location in topographically low positions within the project site, and the need to conduct grading for construction uses. Removal of the trees will require a permit under Sacramento City Code Chapter 12.64.020. Pursuant to General Plan Policy ER 3.1.3, the City will require suitable mitigation for the removal of these trees.

Another 31 protected trees within the 222-acre Aspen I New Brighton off-site area will be removed. Protection of these trees is not feasible due to their current location within the project site and the need to conduct grading for construction. The removal of the trees will require authorization from the County under Sacramento County Code 19.12.060. Pursuant to County General Plan Policy CO-133, the County will require the establishment of an on-site mitigation area to ensure "no net loss" of native oak canopy. If the project site cannot support all of the required replacement trees, Policy CO-132 allows the applicant to deposit in the County's Tree Preservation Fund "a sum equivalent to the replacement cost of the number of trees that cannot be accommodated." In addition, if an on-site mitigation area is not available due to site limitations, Policy CO-136 allows the applicant to mitigate off-site for such impacts, provided the off-site area meets the following criteria:

a. Equal or greater in area to the total area that is included within a radius of 30 feet of the dripline of all trees to be removed;

b. Adjacent to a protected stream corridor or other preserved natural areas;

c. Supports a significant number of native broadleaf trees; and

d. Offers good potential for continued regeneration of an integrated woodland community.

Effects of removal of 53 City and County protected trees will be offset by the planting of trees in parks and open space areas on the site. As compensation for the removal of these trees, StoneBridge commits to planting a minimum of 265 valley oaks and other native trees on-site within the Aspen I New Brighton development in order to achieve heritage and native tree replacement at a 5:1 ratio. Therefore, the project will mitigate its effects on heritage trees through standard development practices. No additional mitigation is required.

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APPENDIX H

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MAPS:	USGS 7.5-Minute Quadrangle, Carmichael, CA 1992
KEYWORDS:	Cultural Resources Survey; 232 acres; Negative results; Sacramento, CA; Sacramento County; Township 8N and Range 6E; UTM coordinates: 641499 mE/4266384 mN within Zone 10S (NAD 83), Mount Diablo Base and Meridian

CULTURAL RESOURCES SURVEY FOR THE ASPEN I – NEW BRIGHTON PROJECT, CITY OF SACRAMENTO, SACRAMENTO COUNTY, CALIFORNIA

SWCA Project No. 15570.02

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Archaeological and other heritage resources can be damaged or destroyed through uncontrolled public disclosure of information regarding their location. This document contains sensitive information regarding the nature and location of archaeological sites which should not be disclosed to the general public or unauthorized persons.

Information regarding the location, character, or ownership of a cultural resource is exempt from the Freedom of Information Act pursuant to 16 USC 470w-3 (National Historic Preservation Act) and 16 USC Section 470(h) (Archaeological Resources Protections Act).

MANAGEMENT SUMMARY/ABSTRACT

Purpose and Scope: SWCA Environmental Consultants conducted a cultural resources inventory of the Aspen I – New Brighton property and associated off-site infrastructure improvements (Figure 1) on behalf of Stonebridge Properties, LLC. SWCA reviewed a cultural resources literature search, conducted a Native American Sacred Lands File search, and performed reconnaissance (windshield) and intensive pedestrian surveys within the approximately 232 ± acre proposed study area. Wave Consulting surveyed several existing structures on May 19, 2011

Dates of Investigation: A cultural resources literature search was completed by the North Central Information Center at California State University, Sacramento, on March 20, 2009 (Appendix A). SWCA contacted the Native American Heritage Commission on May 22, 2009, requesting a search of their Sacred Lands File for Native American cultural resources (Appendix B) and performed a pedestrian survey on May 22, 2009. In addition several structures were evaluated on May 19, 2011

Investigation Constraints: Ground visibility for the pedestrian survey was poor (approximately 0 to 20 percent) due mainly to grass coverage. Ground visibility for the windshield survey was moderate, ranging from 25 to 90 percent.

Summary of Findings: A review of available literature indicates that five cultural resources studies have previously been conducted within a 0.25-mile radius of the project, all of which are within the current study area. No cultural resources have been previously recorded within 0.25 miles of the project or within the study area, and none were identified during the 2009 pedestrian survey. Two historic structures were identified during the 2011 survey

Recommendations Summary: SWCA and Wave Consulting recommend no additional cultural resources work for this project at this time. However, in the event that cultural resources are discovered during construction grading, trenching, or excavation, project personnel should halt grading activities in the immediate area and notify a qualified archaeologist to evaluate the resource.

Disposition of Data: Copies of this report will be filed with the City of Sacramento; North Central Information Center at California State University, Sacramento; and the Sacramento, California, office of SWCA Environmental Consultants. Original documentation will remain on file at SWCA's Sacramento office and with Wave Consulting.

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INTRODUCTION

Contracting Data: SWCA Environmental Consultants performed a cultural resources investigation for the proposed Aspen I – New Brighton project. The study area comprises the Aspen I site which is approximately 232 acres in size and located in the City of Sacramento. The study area also includes approximately 136 acres off-site and located within Sacramento County which will contain infrastructure for the Aspen I site, including stormwater drainage and retention and a sewer lift station, as well as an area from which borrow material will be excavated. The cultural resources investigation included review of an existing cultural resources literature search, a Sacred Lands File search, pedestrian and reconnaissance surveys of the property for cultural resources, and the preparation of a cultural resources technical report documenting the results of the study and providing management recommendations.

Regulatory Setting: The current study was completed under the provisions of the California Environmental Quality Act (CEQA) (California Code of Regulations [CCR] 14 Section 15064.5 and Public Resources Code [PRC] Section 21083.2). In addition, the field survey conducted for this project was in compliance with Section 106 of the National Historic Preservation Act (NHPA) (36 Code of Federal Regulations [CFR] 800).

<u>Federal</u>

Cultural resources are considered during federal undertakings chiefly under Section 106 of NHPA of 1966 (as amended) through one of its implementing regulations, 36 CFR 800 (Protection of Historic Properties), as well as the National Environmental Policy Act (NEPA). Properties of traditional religious and cultural importance to Native Americans are considered under Section 101(d)(6)(A) of NHPA. Other federal laws include the Archaeological Data Preservation Act of 1974, the American Indian Religious Freedom Act (AIRFA) of 1978, the Archaeological Resources Protection Act (ARPA) of 1979, and the Native American Graves Protection and Repatriation Act (NAGPRA) of 1989, among others.

Section 106 of NHPA (16 United States Code [USC] 470f) requires federal agencies to take into account the effects of their undertakings on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places (NRHP) and to afford the Advisory Council on Historic Preservation (ACHP) a reasonable opportunity to comment on such undertakings (36 CFR 800.1). Under Section 106, the significance of any adversely affected cultural resource is assessed and mitigation measures are proposed to reduce any impacts to an acceptable level. Significant cultural resources are those resources that are listed in, or are eligible for listing on the NRHP per the criteria listed at 36 CFR 60.4 (Advisory Council on Historic Preservation 2000) below.

The quality of *significance* in American history, architecture, archaeology, engineering and culture is present in districts, sites, buildings, structures, and objects that possess *integrity* of location, design, setting, materials, workmanship, feeling and association and that:

(a) Are associated with events that have made a significant contribution to the broad patterns of our history; or
(b) Are associated with the lives of persons significant in our past; or
(c) Embody the distinctive characteristics of a type, period, or method of installation, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
(d) Have yielded, or may be likely to yield, information important in prehistory or history.

Impacts to significant cultural resources that affect the characteristics of any resource that qualify it for the NRHP are considered a significant effect on the environment. Impacts to *significant* cultural resources from the proposed project are thus considered significant if the project physically destroys or damages all or part of a resource, changes the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance, or introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

State

CEQA requires a lead agency to determine whether a project may have a significant effect on historical resources. If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required by California Public Resources Code (PRC) (Section 5024.1) and CEQA guidelines and PRC (Section 21083.2[a], [b], and [c]). CEQA guidelines and PRC Section 21083.2 (g) describes a *unique archaeological resource* as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

(1) Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

(2) Has a special and particular quality such as being the oldest of its type or the best available example of its type.

(3) Is directly associated with a scientifically recognized important prehistoric or historic event or person.

A *historical resource* is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR) (CEQA Section 21084.1), a resource included in a local register of historical resources (CEQA Section 15064.5[a][2]), or any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant (CEQA Section 15064.5[a][3]).

PRC Section 5024.1, Section 15064.5 of the Guidelines, and Sections 21083.2 and 21084.1 of the Statutes of CEQA were used as the basic guidelines for the cultural resources study (Governor's Office of Planning and Research 1998). PRC Section 5024.1 requires evaluation of historical resources to determine their eligibility for listing on the CRHR. The purpose of the register is to maintain listings of the state's historical resources and to indicate which properties are to be protected from substantial adverse change. The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing on the NRHP, enumerated above.

According to PRC Section 5024.1(c)(1–4), as well as Section 15064.5(a)(3)(A–D) of the revised CEQA Guidelines (Association of Environmental Professionals 2005), a resource is considered historically *significant* if it meets at least one of the following criteria:

(1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

(2) Is associated with the lives of persons important in our past;

(3) Embodies the distinctive characteristics of a type, period, region or method of installation, or represents the work of an important creative individual, or possesses high artistic values; or

(4) Has yielded, or may be likely to yield, information important in prehistory or history.

Impacts to significant cultural resources that affect the characteristics of any resource that qualify it for the NRHP or adversely alter the significance of a resource listed on or eligible for listing on the CRHR are considered a significant effect on the environment. Impacts to *significant* cultural resources from the proposed project are thus considered significant if the project physically destroys or damages all or part of a resource, changes the character of the use of the resource or physical feature within the setting of the resource which contribute to its significance or introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

Under CEQA, if an archaeological site is not a historical resource but meets the definition of a "unique archaeological resource" as defined in PRC Section 21083.2, then it should be treated in accordance with the provisions of that section.

Report Format: The format of this report follows *Archaeological Resource Management Reports (ARMR): Recommended Contents and Format* (Office of Historic Preservation 1990).

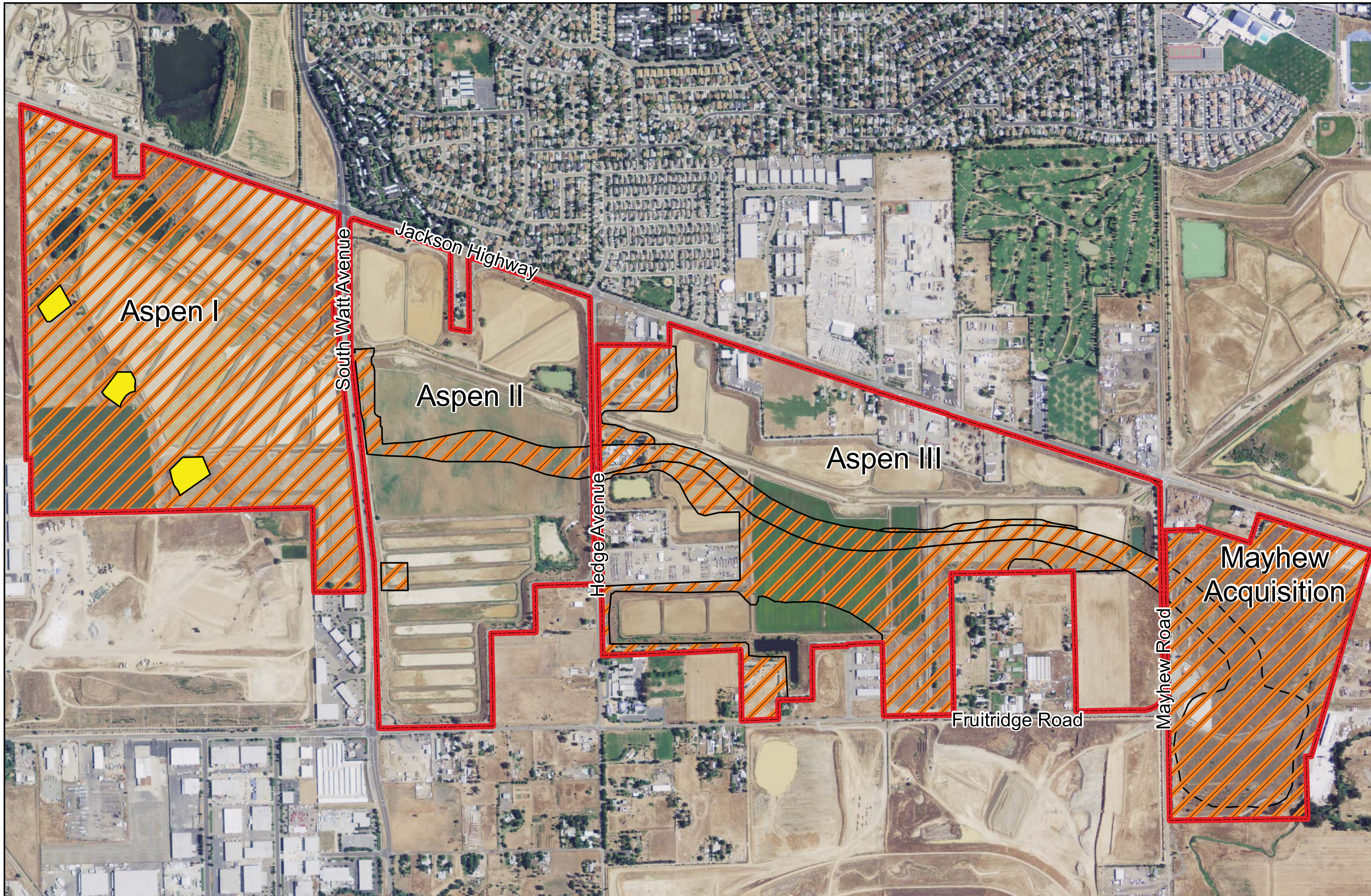
Undertaking: The Aspen I – New Brighton project consists of several parcels of land that had been previously mined. The Aspen I – New Brighton property contains three pedestals of land left intact to support the aerial transmission lines running through the area. These portions required pedestrian survey (Photograph 1). The three pedestals make up approximately 4.5 acres of the total 232 acres for the properties. The remaining 232 acres required a reconnaissance survey (Figure 1).

Project Limits: The 232 ± acre Aspen I – New Brighton phase study area is situated within the City of Sacramento and Sacramento County, California. The project study area is located within Section 24 of Township 8 North, Range 6 East of the USGS 7.5-minute Carmichael, CA quadrangle; Mount Diablo Base and Meridian. Universal Transverse Mercator (UTM) coordinates for the study area are 641499 mE, 4266384 mN within Zone 10N (NAD 83) (Figure 1). The three 4.5-acre intensive survey areas are located approximately 0.4 miles south of Jackson Road and approximately 1.2 miles southeast of the intersection of Jackson Road and Folsom Blvd.

Project Personnel: Philip Hanes, B.A., performed the field survey of the study area and served as the lead report author. John Dietler, Ph.D., RPA, was the principal investigator and quality control officer for this report. David Cao created the maps and figures, and Michelle Treviño served as co-author and technical editor for this report.

Figure 1

Survey Coverage Map
Aspen I - New Brighton Project



Legend

- Property Boundary
- Intensive Survey Area
- Reconnaissance Survey Area

N

1:12,000

0 500 1,000 2,000 Feet

0 125 250 500 Meters

Aerial Source: California Spatial Information Library(CaSIL)
Aerial Date: 2009

WAVE CONSULTING

Photograph 1. View of Aspen I from S. Watt, looking west (5/22/09).

ENVIRONMENTAL SETTING

The Aspen I – New Brighton project is located within the southern Sacramento Valley, which is part of the Great Central Valley geomorphic province. The Great Central Valley dominates the landscape of central California and is surrounded by the Sierra Nevada, Siskiyou Range, Tehachapi Range, and Coast Ranges. The Sacramento River drains the northern half of the valley (Sacramento Valley), and the San Joaquin River drains the southern half (San Joaquin Valley). The two rivers converge at the Sacramento–San Joaquin Delta, near the Mokelumne River, and flow into Suisun Bay. The project is located 2.7 km (1.6 miles) to the south of the American River, 13.9 km (8.6 miles) to the northeast of Deer Creek, and 14.9 km (9.2 miles) to the northeast of the Consumnes River. The project lies in a portion of the Sacramento Valley that is dotted with low natural hills. Its broad alluvial plains are dominated by annual grasslands and wetland habitats. Review of the USGS *7.5,Minute Topographic Map of the Sacramento East Quadrangle, California* (1980) *and Carmichael Quadrangle* (1992) revealed the site ground surface elevation ranges from + 45 to + 50 feet relative to mean sea level (msl). However, due to significant changes in site elevations during mining operations and subsequent fill operations, ground surface elevations vary from information provided in the previously mentioned topographic maps. Review of topographic contours from LiDAR data provided by Sacramento County, indicate the site ground surface elevation in 2007 ranged from + 12 to + 50 feet msl." (Kamisky 2009:3)

When California was initially occupied, the climate was moister and cooler than today's Mediterranean climate (Major 1988). Today's temperature averages 16 degrees Celsius (61° Fahrenheit), generally ranging between 3.3 and 34 degrees Celsius (38° and 93° Fahrenheit). Precipitation averages 43 cm (17 inches) per year and occurs primarily between November and March. This translates to hot and humid summers and cool/cold and wet winters.

The area surrounding the project location is currently used for agricultural, cattle ranching, and residential purposes. The project vicinity contains a mixture of native and introduced plant species. During the prehistoric era, the study area would have been a very productive environment. The availability of a variety of water birds, small and large mammals, fish, reptiles, amphibians, and edible plant species would have been well-suited to a hunting and gathering economy.

Within the Central Valley, the environment has been greatly altered over the past 150 years. Major modifications include the construction of an extensive levee system to control the Sacramento River, channelization of other waterways, and the introduction of agricultural practices and nonnative Mediterranean grasses. Before these changes, the marshy wetlands supported stands of willow (*Salix* sp.), cottonwood (*Populus fremontii*), tule (*Scirpus* sp.), and sycamore (*Platanus racemosa*) (Wallace 1978). Oak groves in the study area would have likely included blue oaks (*Quercus douglasii*), interior live oaks (*Q. wislizeni*), and valley oaks (*Q. lobata*). These natural communities would have provided a portion of the plant resources used by prehistoric populations.

Fauna in the Aspen I – New Brighton study area would have likely included a number of larger mammals, including mule deer (*Odocoileus hemionus californicus*), black-tailed deer (*O. hemionus columbianus*), mountain lion (*Felis concolor*), and black bear (*Ursus americanus*), whose range is now limited to the Sierran foothills and mountains. Tule elk (*Cervus elaphus nannoides*) and pronghorn (*Antilocapra americana*) were also common in the valley, but now occur in very limited areas (Jameson and Peeters 1988). Small animals such as rabbit (*Sylvilagus* sp.), black-tailed jackrabbit (*Lepus californicus*), gray squirrel (*Sciurus griseus*), coyote (*Canis latrans*), and gray fox (*Urocyon cinereoargenteus*) would have also been available for human exploitation.

The marshy wetlands once common in the Central Valley provided a rich habitat for migratory waterfowl and other birds. Today, for example, one sees great blue heron (*Ardea herodias*), belted kingfisher (*Ceryle alcyon*), mallard duck (*Anas platyrhynchos*), green-winged teal (*A. crecca*), northern pintail (*A. acuta*), northern flicker woodpecker (*Colaptes auratus*), red-winged blackbird (*Agelaius phoeniceus*), black-shouldered kite *(Elanus caeruleus*), northern harrier (*Circus cyaneus*), rock dove *(Columba livia)*, and red-tailed hawk (*Buteo jamaicensis*). Like other rivers in this area, the Cosumnes River would have also supported a number of anadromous and freshwater fish species, including salmon (*Oncorhynchus* sp.), rainbow trout/steelhead (*O. mykiss*), and the occasional sturgeon (*Acipenser transmontanus*). Chinook salmon and Central Valley steelhead, for example, are still fished from the river today.

CULTURAL SETTING

PREHISTORIC PERIOD

Occupation in the Sacramento Valley during the Prehistoric Period is estimated to have occurred as early as 12,000 years ago, but only a few archaeological sites have been identified that predate 5,000 years ago. It is possible that Holocene alluvial deposits buried many prehistoric sites in this area. For example, Moratto (1984:214) has estimated that as much as 10 meters of sediment accumulated along the lower stretch of the Sacramento drainage system during the last 5,000–6,000 years. This estimate is supported by the results of multiple studies. For example, a soil sample collected 20.3 feet (6.2 meters) deep from an area west of the San Joaquin River produced a calibrated radiocarbon date of 3,625 years before present (BP) (Rosenthal and Meyer 2004:61).

Prehistoric material culture in central California (including the Sacramento Valley) subsequent to the Paleoindian Period has been categorized according to "horizons" or "patterns" that define broad technological, economic, social, and ideological elements over long periods of time and large areas. The taxonomic system historically used for central California is a tripartite classification scheme with Early, Middle, and Late Horizons. This Central California Taxonomic System (CCTS) was the result of efforts of a number of researchers (e.g., Beardsley 1954; Heizer 1949), and was refined after the advent of radiocarbon dating (Fredrickson 1973, 1974; Heizer 1958; Ragir 1972).

Today, a series of generalized periods associated with regionally based "patterns" are typically used as part of the CCTS for the Sacramento Delta area, San Francisco Bay area, and North Coast ranges (Bennyhoff and Fredrickson 1969; Fredrickson 1973, 1974). Smaller units of patterns are referred to as "aspects" and "phases." Revisions of the widely accepted CCTS (Bennyhoff 1994; Fredrickson 1994a, 1994b) are found in a volume edited by Hughes (1994).

Fredrickson (1973, 1974) defined several regionally based patterns, of which three are specific to Central Valley prehistory and the current study area. Referred to as the Windmiller Pattern, Berkeley Pattern, and Augustine Pattern, each represents a general pattern of resource exploitation, as identified between 2500 B.C. and the beginning of Euro-American contact (A.D. 1769). These patterns are present within the following horizon sequences: Early Horizon/Windmiller Pattern, Middle Horizon/Berkeley Pattern, and Late Horizon/Augustine Pattern. Table 1 shows the hypothesized cultural periods in California, based on the CCTS classification scheme and adapted from Fredrickson (1994a).

Windmiller Pattern (2500–500 B.C.)

Some of the earliest well-documented evidence for human occupation in the region is found at sites characteristic of the Windmiller Pattern during the Middle Archaic Period. The Windmiller Pattern was first identified at the Windmiller site (CA-SAC-107) near the Cosumnes River in Sacramento County. The archaeological record during the Windmiller period indicates that people practiced a mixed procurement strategy of both game and wild plants as a part of a seasonal round. Populations likely occupied the lower elevations of the Sacramento Valley in the winter months and shifted to higher elevations during the summer (Moratto 1984:206).

Windmiller Pattern sites often contain manos and metates (grinding stones), as well as many mortar fragments, indicating that acorns and/or various seeds formed an important part of the diet (Moratto 1984:201). Numerous faunal remains (e.g., deer, elk, pronghorn, rabbits, and waterfowl) have been documented at Windmiller Pattern sites, along with large quantities of projectile points. The projectile points have a triangular blade and contracting stems, and are classified within the Sierra Contracting Stem and Houx Contracting Stem series (Justice 2002:266, 276). The presence of angling hooks and baked clay artifacts possibly used as net or line sinkers, along with the remains of sturgeon, salmon, and smaller fishes, indicate that fishing was an additional source of food (Fredrickson 1973; Heizer 1949; Ragir 1972). Ground and polished charmstones, impressions of twined basketry, shell beads, bone tools, and other baked clay items also have been found at Windmiller Pattern sites. Some items, such as shell beads, obsidian tools, and quartz crystals, were obtained by trade. Mortuary practices included burials, accompanied by grave goods, in cemeteries that were separate from the habitation sites.

Table 1. California Cultural Periods

Cultural Period	Characteristics
A.D. 1800 Upper Emergent Period Phase 2, Late Horizon	A monetary economy appears using clam disk beads. More extensive trade networks and a resurgence of long-distance trade networks. Production and exchange of local specializations develops.

Table 1. California Cultural Periods

Cultural Period	Characteristics
A.D. 1500 Lower Emergent Period Phase 1, Late Horizon	The atlatl and dart are replaced by the bow and arrow; and south coast maritime adaptation flowers. Territorial boundaries are well-established. Distinctions in social status linked to wealth become increasingly common. Network exchanges see an influx of material between groups as regularized exchanges become more frequent.
A.D. 1000 Upper Archaic Period Middle Horizon Intermediate Cultures	Sociopolitical complexity has a marked growth; shell beads, possibly indicators of both exchange and status, gain importance. Group-oriented religious organization begins to emerge; possible origins of Kuksu religious system towards the later part of period. Greater complexity of exchange systems; evidence of regular, sustained exchanges between groups; territorial boundaries not firmly established.
500 B.C. Middle Archaic Period Middle Horizon Intermediate Cultures	During this interval, the climate has become more benign. Mortars and pestles and inferred acorn economy introduced. Diversification of economy; sedentism begins to develop, accompanied by population growth and expansion. Technological and environmental factors provide dominant themes. Little impact is demonstrated in exchange or in social relations.
3000 B.C. Lower Archaic Period Early Horizon Early San Francisco Bay Early Milling Stone Cultures	Climatic changes cause ancient lakes to dry up; an abundance of milling stones appear in the archaeological record; priority subsistence sees a shift from hunting to a plant food emphasis. Manufacturing of artifacts using local material is dominant; network exchange reflects the patterns of previous period. Little emphasis on wealth. The extended family continues to make up the social unit.
6000 B.C. Upper Paleo-Indian Period San Dieguito Western Clovis 8000 B.C.	First demonstrated entry and spread of humans into California; lakeside sites indicate a probable hunting emphasis, but not clearly demonstrated. Evidence for a developed milling technology does not appear in the archaeological record. Exchange on a one-to-one basis, probably ad hoc. The extended family, which makes up the social unit, is not heavily dependent on exchange; procurement of new resources is acquired by changing habitat.

After Fredrickson 1994a:Figure 9.1

Berkeley Pattern (500 B.C.–A.D. 500)

Over a 1,000-year period, a more specialized subsistence regime called the Berkeley Pattern or Middle Horizon (500 B.C.–A.D. 500) emerged. The Berkeley Pattern was initially identified at the West Berkeley site (CA-ALA-307) in Alameda County on the east side of the San Francisco Bay. Artifactual and chronological evidence suggest that this subsistence pattern developed in the San Francisco Bay region and spread to surrounding coast and central valley locales. Moratto (1984:207–211) suggests that the Berkeley Pattern is related to the expansion of Eastern Miwok populations from the San Francisco Bay area to the Sacramento Valley and Sierra foothills.

An increase in the occurrence of mortars and pestles, along with a decrease in manos and metates, likely signifies a greater reliance on acorns as a dietary staple during the Berkeley Pattern (Moratto 1984:209–210). Hunting remained an important aspect of food procurement during the Berkeley Pattern (Fredrickson 1973:125–126). The archaeological record, which is dominated by large shell-midden/mound sites, also demonstrates that most Berkeley Pattern sites located near or in the vicinity of water (both fresh and salt) made intensive use of aquatic resources. The artifact assemblage also includes shell beads and ornaments, as well as numerous types of bone tools. Interment, the act of burial in the ground, continues to dominate mortuary practices, but some evidence of cremation is also found at Berkeley Pattern sites.

Augustine Pattern (A.D. 500–1769)

The Augustine Pattern is evidenced by a number of changes in subsistence, foraging, and land use patterns that reflect the beginnings of patterns associated with historic period Native American groups in the area. The Augustine Pattern was identified at the Augustine site (CA-SAC-127) in the Sacramento–San Joaquin Delta. Tools and cooking implements associated with the Augustine Pattern include shaped mortars and pestles, hopper mortars, bone awls, and the bow and arrow. Pottery vessels, known as Cosumnes Brownware, are found in some parts of the Central Valley and most likely developed during this period from the earlier baked clay industry (Moratto 1984:211–214).

A substantial increase in the intensity of subsistence exploitation, including fishing, hunting, and gathering (particularly acorns), is evident in the archaeological record, correlating directly with evidence for population growth. During this period, an increase in sedentism led to the development of social stratification, accompanied by a shift to elaborate ceremonial and social organization. Exchange networks, with the use of clamshell disk beads as currency, also developed during the Augustine Pattern. Mortuary practices during this period included flexed burials and pre-interment burning of offerings in a grave pit, as well as cremation of high-status individuals (Fredrickson 1973:127–129; Moratto 1984:211). Additional items of material culture included flanged tubular pipes, harpoons, and small Gunther barbed series projectile points. The Augustine Pattern may represent the southward expansion of Wintu populations (Moratto 1984:211–214).

ETHNOGRAPHY

The study area is located in an area historically occupied by the Penutian-speaking Plains Miwok, a subgroup of the Eastern Miwok (Kroeber 1925; Levy 1978; Shipley 1978:84). The Plains Miwok historically occupied the lower Mokelumne River, Cosumnes River, and the Sacramento River from Rio Vista to Freeport (Levy 1978:398–399). Neighboring groups included the Nisenan to the north, Patwin and Bay Miwok to the west, Northern Valley Yokuts to the south, and the Washoe to the east.

Spanish mission records, diaries, and journals have provided the most comprehensive study of the Miwok, as well as some ethnographical studies done in the first half of the twentieth century (Bennyhoff 1977; Levy 1978:399). Much of the history of the Plains Miwok, however, is incomplete.

The villages of the Plains Miwok were divided into “tribelets,” political units that were also structured by similarities in language and ethnicity. The tribelets averaged 300 to 500 persons, and each held claim to a designated portion of territory within the lands of the Plains Miwok, which also extended to the natural resources within each territory (Levy 1978:410). Each tribelet’s territory contained a main village and smaller satellite villages. Within a tribelet’s main village was an assembly or dance house, either a large semi-subterranean structure or a simpler circular brush structure (Kroeber 1925:447). Other structures included semi-subterranean or aboveground conical houses made with tule-matting, conical sweathouses, winter grinding houses, and acorn granaries (Levy 1978:408–409). The Plains Miwok also practiced cremation (Kroeber 1925:452).

The rich resources of the Sacramento–San Joaquin Delta and surrounding areas provided the Plains Miwok with food and material needs. The primary food staple was the acorn, supplemented by waterfowl, fish, shellfish, and large and small mammals (Bennyhoff 1977; Levy 1978). The Miwok are best described as seasonally mobile hunter–gatherers with semi-permanent villages. The Delta islands were also used regularly for hunting and fishing base camps. Permanent settlements of the Plains Miwok were located on high ridges or knolls near watercourses or on the sandy islands in the Delta.

The Plains Miwok collected plant greens and roots in the spring; seeds and nuts in the spring, summer, and early fall; and acorns in the late fall/early winter (Levy 1978:402–403). Acorns, particularly from the prevalent valley oak (*Quercus lobata*), could be stored for some time in the conical-shaped granaries prior to processing. Tule elk, pronghorn antelope, and mule deer, as well as smaller mammals such as jackrabbits, cottontails, beaver, squirrels, and woodrats, were regularly hunted. Game birds included many types of waterfowl, mountain and valley quail, pigeons, jays, and woodpeckers. In addition to salmon, the Plains Miwok fished for sturgeon and lamprey (Levy 1978:402–403).

A wide array of tools, implements, and enclosures were used by the Plains Miwok for hunting and gathering of natural resources. Among those used for hunting land mammals and birds were the bow and arrow, traps and snares, nets, and enclosures/blinds. Communal hunting drives were employed for both large and small mammals. Many plants were collected using wooden tools: long poles for dislodging acorns and pinecones, fire-hardened digging sticks for roots, and beaters for dislodging seeds. Once collected, seeds, roots, and nuts were placed in burden baskets and transported for processing or storage (Levy 1978:403–404).

The Plains Miwok used a variety of tools to process food resources. These included portable stone mortars and pestles, bedrock mortars, anvils, woven strainers and winnowers, leaching and boiling baskets, woven drying trays, and knives. Unprocessed acorns were stored in the conical granaries. Various foods were baked in earth ovens. Exotic items such as obsidian, steatite, and shell indicate they traded with coastal groups and mountain tribes (Levy 1978).

The Native American residents of the Sacramento Valley came into contact with Europeans beginning in the late 1700s as a result of increased incursions into the area by the Spanish. Traditional lifeways were drastically altered during the early to mid-1800s as Spanish colonization and proselytization, Mexican land grants, and the subsequent American takeover and settlement progressively pushed indigenous people into the rugged California interior and reduced their numbers through relocation to the missions, the spread of infectious disease, and outright murder. Beginning in the early 1800s, most of the Plains Miwok converts were transported to Mission San José (Levy 1978:400–402). Many resisted conversion and tried to return to their villages in the Delta. Plains Miwok people attacked Mexican coastal settlements and fought with neighboring Yokuts in the 1820s and 1830s. The secularization of the missions followed, spurred in part by these activities. During the Mexican-American War in the 1840s, the Miwoks sided with the United States (Cook 1960, 1962).

The discovery of gold in 1848 and the ensuing Gold Rush, as well as the continuing influx of Euro-Americans into formerly remote regions of California, was the final cultural blow for many California Indians, including the Miwok bands near the current study area. With the loss of the majority of their traditional lands, as well as enslavement, slaughter, and disease, surviving Miwok labored for the growing lumber, ranching, farming, and mining industries (Levy 1978:401).

During the first half of the twentieth century, acquisitions of land by the federal government (from 2 acres to more than 300 acres) created a number of reservations, or *rancherias*, for the Plains Miwok, along with the Northern and Central Sierra Miwok. Between 1934 and 1972, the U.S. Bureau of Indian Affairs (BIA) then terminated relations with most of these rancherias, although since 1984, the status has been restored to the majority of the rancherias (Slagle 2005). Today, while there is no unified California Miwok tribal organization at a state or federal level, there are seven rancherias that have primarily or exclusively Eastern Miwok populations. These are the Buena Vista Rancheria (Plains Miwok/Amador County), the Chicken Ranch Rancheria (Central Sierra division of Eastern Miwok/Tuolumne County), the Ione Rancheria (Northern Sierra and Plains Miwok/Amador County), the Jackson Rancheria (Northern Sierra and Plains Miwok/Amador County), the Sheep Ranch Rancheria (Northern Sierra Miwok/Calaveras County), the Shingle Springs Rancheria (Plains Miwok/El Dorado County), and the Tuolumne Rancheria (Central Sierra Miwok/Tuolumne County) (Slagle 2005). The Wilton Rancheria was established for the Nisenan and northern Miwok by the BIA, but was terminated by the federal government. Thus the Me-Wuk Indian Community of the Wilton Rancheria is no longer a federally recognized tribe.

HISTORIC OVERVIEW

Post-Contact history for the state of California is divided into three specific periods: the Spanish Period (1769–1822), the Mexican Period (1822–1848), and the American Period (1848–present).

Spanish Period (1769–1822)

The beginning of Spanish settlement in California, which marked the devastating disruption of the culture of indigenous Californians, occurred in the spring of 1769. Exploration between 1529 and 1769 of Alta (upper) California was limited despite its location within the territory claimed by Spain. During this nearly 250-year span, there were only brief visits by Spanish, Russian, and British explorers.

In 1769, Gaspar de Portolá established the first Spanish settlement in Alta California at San Diego, and with Father Junipero Serra, founded the first of 21 missions (Mission San Diego de Alcala) that would be built by the Spanish and the Franciscan Order between 1769 and 1823. Portolá continued north, reaching San Francisco Bay on October 31, 1769. Later expeditions to Alta California by Pedro Fages (1772), who was seeking a site for a mission, and Juan Bautista De Anza (1776), who was seeking a site for a presidio and mission, explored the land east of San Francisco Bay and viewed the vast plains to the east (Grunsky 1989:2–3).

In 1808, Spanish Lieutenant Gabriel Moraga led the first expedition into the Sacramento Valley and traveled northward along the Sacramento River. The expedition was scouting for new mission locations and also searching for runaway Indian neophytes from the coastal missions. They traveled south as far as the Merced River and explored parts of the American, Calaveras, Cosumnes, Feather, Mokelumne, and Stanislaus Rivers to the north. In 1817, the final Spanish expedition into the interior of Alta California was led by Luis Arguello, who traveled up the Sacramento River, past the future site of the city of Sacramento to the mouth of the Feather River, before returning to the coast (Beck and Haase 1974:18, 20; Grunsky 1989:3–4).

Mexican Period (1822–1848)

With the end of the Mexican Revolution (1810–1821) against the Spanish crown, all Spanish holdings in North American (including Alta and Baja California) became part of the new Mexican republic. When word of Mexican independence reached Alta California in 1822, an era of extensive land grants began, in contrast to the Spanish colonization through missions and presidios. Most of the land grants to Mexican citizens in California (*Californios*) were in the interior, granted to increase the population away from the more settled coastal areas where the Spanish had concentrated their settlements.

With the opening by Mexico of California to Americans after the revolution, the fur trappers, also known as “mountain men,” began exploring west of the Sierra Nevada mountains. The first trapper to enter California was Jedediah Smith, whose small party trapped and explored along the Sierra Nevadas in 1826. They entered the Sacramento Valley in 1827, traveling along the Cosumnes and American Rivers and camping near Wilton and the Rosemont section of modern-day Sacramento. As a result of the explorations by Smith and other trappers, maps of the Sacramento Valley were created and circulated in the 1830s (Grunsky 1989:9–11).

Between 1830 and 1833, large numbers of the indigenous population in the Sacramento Valley died from disease, likely introduced by the American trappers and/or the local Mexican population. Disease exterminated whole tribes along the American, Merced, Tuolumne, and Yuba Rivers (Cook 1955). In 1837, the Sacramento Valley was hit by a second epidemic, which further decimated indigenous Californians. The issuance of numerous land grants, accompanied by population increases, contributed to the continuing introduction of foreign diseases for which Native Americans had no immunity.

A number of land grants were issued in the Sacramento area, starting in 1833 with John Rogers Cooper, a British sea captain who married into an established *Californio* family (Grunsky 1989:14). John Sutter received the two largest land grants in the Sacramento Valley. In 1839, Sutter founded a trading and agricultural empire called New Helvetia, which was headquartered at Sutter’s Fort near the divergence of the Sacramento and American Rivers, in Valley Nisenan territory.

American Period (1848–Present)

Victory in the Mexican–American War (1846–1848) resulted in Mexico releasing its northern territories (now the states of California, Arizona, Colorado, New Mexico, and part of Utah) to the United States under the Treaty of Guadalupe Hidalgo in 1848. Even though California became a territory of the United States, the full impact of “Americanization” would not occur until the discovery of gold in 1848. The discovery of gold on the American River at Sutter’s Mill had a devastating impact on the lives of indigenous Californians in the Central Valley and all along the foothills of the Sierra Nevadas (Chartkoff and Chartkoff 1984:296). The mass introduction and concentration of diseases, the loss of land and territory (including traditional hunting and gathering locales), violence, malnutrition, and starvation accompanied the tens of thousands of gold seekers (Grunsky 1989).

One year after the discovery of gold, nearly 90,000 people had journeyed to the gold fields of California, and a portion of Sutter's Mexican land grant became the bustling Gold Rush boomtown of Sacramento. Largely as a result of the Gold Rush, California became the 31st state in 1850. By 1853, the population of the state exceeded 300,000, and in 1854, Sacramento became the state capital.

As the more easily obtainable gold (i.e., placer gold) disappeared along the rivers and other waterways, mining shifted toward more industrialized methods of extraction, including hydraulic and dredge mining. Hydraulic mining was outlawed in the 1880s, although dredge mining continued at a smaller scale than during the Gold Rush in the western Sierra foothills into the 1950s. Extensive dredge tailings along the American River bear witness to this environmentally destructive mining method.

The City of Sacramento survived several early devastating floods and fires. In addition to its central location to the mining district in the foothills, it served as a river transportation hub after Sutter began a steamer service, and the city had 12 stage lines by 1853. Sacramento was also the westernmost point of the Pony Express (1860–1861) and the terminal of the first California railroad, the Sacramento Valley line, which ran 22 miles east to Folsom (Beck and Haase 1974:51, 53, 68).

With the completion of the transcontinental railroad in 1869, thousands of new settlers and immigrants poured into the state during the second half of the nineteenth century. California was fast becoming a national leader in the production of agricultural products. The vast Central Valley's fertile soil, combined with numerous irrigation canals, promoted the growth of large amounts of fruits, vegetables, and nuts, as well as vineyards (introduced early in the Spanish and Mexican Periods), livestock (cattle and sheep), and field crops, such as hay, cotton, rice, and barley.

In the Sacramento area, land-based agriculture and livestock (sheep, beef, and dairy cattle) became the dominant industry. Primary agricultural products included rice, vegetables, and hay, as well as fruits and nuts. This agriculture-based industry promoted the growth of a large number of food processing plants in Sacramento and nearby Yolo County. By the 1940s, several military installations had located in Sacramento County near the City of Sacramento. Later, some of the leading aerospace industries in the state of California also located in this region.

Local History

The Aspen I – New Brighton study area lies on the border between the City of Sacramento and unincorporated Sacramento County. The Aspen I – New Brighton site was annexed by the City of Sacramento in 1963. (City of Sacramento 2007). It abuts Jackson Road on the north and is south of the Rosemont neighborhood. Jackson Road began as a stagecoach line from Sacramento to the goldfields during the Gold Rush era. In an 1866 Government Land Office (GLO) plat map, the road meanders to the southeast of the Rancho de Los Americanos land grant and is called the "new road to Jackson." The road was in its present-day location by 1911, as evidenced by the USGS 1911 Brighton 7.5-minute (scale 1:31,680) historic quadrangle map. The Rosemont neighborhood grew out of the post–World War II housing boom. Laid out beginning in the 1950s, the homes in the neighborhood date to the latter half of the twentieth century.

The abandoned tracks of the Central California Traction Company Railroad (CCTC-RR) run approximately 1 km (.62 mile) southwest of the project parcel. The railroad was incorporated in 1905 as one of several interurban railways operating in the Sacramento Valley in the early part of the twentieth century. Originally an electric railway, parts of the railroad line remained operational as a diesel-powered freight line until June 1998. The main line ran between Sacramento and Stockton, with a branch line running to Lodi. Passenger service was discontinued in 1933, and the CCTC-RR's original electric equipment was replaced by diesel engines in 1947 (Central California Traction Company 2005). Freight service through Sacramento ended in 1998, but the CCTC-RR is still in operation, servicing the Port of Stockton (Burg 2006:89). The rail corridor is currently being considered as a possible route for a high-speed train between Sacramento and Stockton (CVRT 2009).

PRE-FIELD RESEARCH

LITERATURE SEARCH

A cultural resources records search (Appendix A) was performed for the Sacramento County Department of Environmental Review and Assessment (DERA) at the California Historical Resources Information System's (CHRIS's) North Central Information Center (NCIC) on March 20, 2009. The results were provided to SWCA in support of this report. In addition to official maps and records, the following sources of information at the NCIC were consulted as part of the record search:

- National Register of Historic Places – Listed Properties (2009)
- California Register of Historical Resources (2009)
- California Inventory of Historical Resources (1976)
- California State Historical Landmarks (1996 and updates)
- California Points of Historical Interest (1992 and updates)
- Office of Historic Preservation Historic Property Directory and Determinations of Eligibility (2009)
- Caltrans Bridge Inventory (1989, 2000, 2004)
- 1849 Sacramento Valley
- 1857 Rio de Los Americanos Rancho Plat for Township 8 North, Range 5 East
- 1865 Government Land Office (GLO) Plat of Township 8 North, Range 5 East
- 1866 GLO Plat of Township 8 North, Range 6 East
- 1887 USGS Sacramento quadrangle
- 1911 USGS Mills quadrangle
- 1911 USGS Brighton quadrangle

The records search indicates that five cultural resources studies have been conducted within a 0.25-mile radius of the entire study area (Table 2).

Table 2. Prior Cultural Resources Studies Within a 0.25-mile Radius

NCIC Report No.	Author	Date	Study	Proximity to Study area
488	Peak & Associates	1980	Cultural Resource Assessment of Sacramento Municipal Utility District's Project A, Phase II 230kV Transmission Line, Hurley to Hedge-Pocket Tap, Sacramento County, California	Within
1999	No information from CHRIS	No info	No info	Within
6030	Billat, Lorna B.	2000	Nextel Communications Wireless Telecommunications Service Facility–Sacramento County (letter report)	Within
6162	Peak & Associates	2005	Cultural Resource Assessment for the Aspen 1-A District Office Project, Sacramento County, California	Within
7130	Egherman, R., Hatoff, B.	2002	Roseville Energy Facility Cultural Resources Appendix J-1 of Application for Certification	Within

Table 2. Prior Cultural Resources Studies Within a 0.25-mile Radius

NCIC Report No.	Author	Date	Study	Proximity to Study area
9188	Nelson, Wendy J., and Carpenter, Kimberley	2002	Cultural Resources Survey for Right-of-Way Maintenance Along the Western Area Power Administration Transmission Lines in Sacramento, Placer, and Sutter Counties, California. Volume I: Archaeological Survey Report	Within

The early plat and USGS maps generally provide additional information regarding historic use of a study area. Although the historic maps referenced above do not show any buildings, structures, or other cultural features within the study area, Folsom Road (now Folsom Boulevard) and the tracks of the Southern Pacific Railroad are shown northwest of the study area on the 1911 USGS Brighton 7.5-minute historic quadrangle.

The NCIC record search indicates that no cultural resources have been previously recorded within a 0.25-mile radius of the study area.

Sacred Lands File Search

SWCA contacted the Native American Heritage Commission (NAHC) on May 22, 2009, requesting a search of their Sacred Lands File for Native American cultural resources within the study area. The reply from the NAHC, dated June 5, 2009, and received June 9, 2009, states that a search of the Sacred Lands File failed to indicate the presence of Native American sites in the immediate study area, and provided the names of five Native Americans who may have knowledge of cultural resources within the study area.

Letters requesting information regarding the study area were sent on June 12, 2009, to the five Native American individuals or organizations identified by the NAHC who might have knowledge of the area. Follow-up telephone calls were placed on June 22, 2009. To date, the following replies have been received from the contact list to the letters or telephone calls. Tribal Administrator Pam Baumgardner said that the Ione Band of Miwok Indians' Heritage Cultural Committee just held elections, and that the Committee would not be able to comment on the study area until it is organized in a few weeks. Sarah Norris of the Heritage Cultural Committee of the Ione Band of Miwok Indians requested an email of the letter and map for the Committee's use when they organize. Mr. Leland Daniels of the Wilton Rancheria stated that he had performed monitoring of the Aspen I site years ago, and that to his knowledge there are no Native American cultural resources in the study area. A copy of this correspondence is attached as Appendix B.

FIELD METHODS

SWCA Archaeologist Philip Hanes conducted a pedestrian survey of the study area on May 22, 2009. The 4.5-acre portion of the study area was intensively surveyed with transects spaced no more than 10 meters apart. The remaining portions (encompassing approximately 232 acres) of the Aspen I – New Brighton property and associated off-site infrastructure improvements were reviewed by windshield survey because they were previously mined properties or contained within the rights of ways of existing roadways.

All unmined portions of the Aspen I – New Brighton and off-site infrastructure study area were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, or fire-affected rock); soil discoloration that might indicate the presence of a cultural midden; soil depressions and features indicative of the former presence of structures or buildings (e.g., postholes, foundations); or historic debris (e.g., metal, glass, ceramics). Ground disturbances (e.g., road and driveway clearings, gardening disturbances, livestock areas, etc.) were visually inspected.

Mr. Hanes took photographs with a digital camera including study area overviews, examples of ground surface visibility, and items of interest. Locational data was recorded with a handheld Trimble Geo HX global positioning system (GPS) unit. Soil color within the intensively surveyed areas was described using a Munsell soil color chart. In addition, the surrounding neighborhood was reviewed by car to check the general topography.

Approximately 98.5 percent of the 232 ± acre study area is composed of previously mined land. Of this portion of the property, approximately 60 percent is currently used as drying beds and approximately 38.5 percent is reclaimed agricultural land. The remaining 1.5 percent of the study area is broken up into three pedestals that remain at grade and have not been previously mined (Photograph 2). The pedestals each contain a tower for a high-voltage aerial transmission line. In addition portions of Aspen II, Aspen III and Mayhew Acquisition sites located within Sacramento County that include stormwater drainage and retention, a sewer lift station, and excavation of borrow material for use within the project area were also surveyed as part of this project. All other off-site infrastructure is located within the rights of way of existing roadways.

During May 19, 2011 survey several existing buildings were evaluated for historical significance. A commercial property located at 8710 Jackson Rd, the remnants of a nursery located at 8888 Jackson Rd. and a sewer station 4480 South Watt Ave.

FINDINGS

Ground surface visibility at the time of the survey was poor (0–20 percent) within the intensive (pedestrian) survey areas. Ground cover consisted of native and nonnative grasses. Visibility was good (50–80 percent) within the reconnaissance (windshield) survey area. As previously mentioned, review of the USGS *7.5,Minute Topographic Map of the Sacramento East Quadrangle, California* (1980) *and Carmichael Quadrangle* (1992) revealed the site ground surface elevation ranges from + 45 to + 50 feet relative to mean sea level (msl). However, due to significant changes in site elevations during mining operations and subsequent fill operations, ground surface elevations vary from information provided in the previously mentioned topographic maps. Review of topographic contours from LiDAR data provided by Sacramento County, indicates the site ground surface elevation in 2007 ranged from + 12 to + 50 feet msl (Kamisky 2009:3). The soils (within the intensively surveyed portion) are brown (10YR 4/3 moist) silty loam with gravel inclusions.

No prehistoric cultural resources were identified during the course of the reconnaissance and intensive-level pedestrian surveys. Two historic resources were identified during the survey of May 2011. The remains of a garage constructed during the 1950‘s to 1960’s in addition to a well pump constructed during the the same time period. Both historic structures were documented using California DPR series 523 forms.(appendix C) Both structures lack integrity and are unlikely to yield any information pertinent to the history of the area and do not appear to be eligible for listing on the National Register of Historic Places.

The Sewer Station located at 4480 South Watt appears to have been constructed in 1978 and is not an exceptional structure, therefore does not meet the criteria to be considered as a historical resource.

According to the CHRIS results, the environmental setting and known land use patterns in the vicinity indicate there is a low to moderate possibility for subsurface prehistoric cultural resources and a moderate to high possibility of subsurface historic cultural resources within the Aspen I – New Brighton and associated off site infrastructure study area.

Photograph 2. View of top of north pedestal, looking southwest (5/22/09).

PROJECT EFFECTS ASSESSMENT

REGULATORY REQUIREMENTS

As mandated by Section 106 of the National Historic Preservation Act (NHPA), federal agencies must take into account the effects of their undertakings on historic properties and seek ways to avoid, minimize, or mitigate adverse effects on such properties (36 CFR 800.1[a]). If an archaeological site qualifies for listing on the NRHP, the provisions of Section 106 mandate that the lead agencies further determine whether the proposed undertaking will have an "effect" and "adverse effect" upon the site (36 CFR 800.4[d][1]). According to federal regulations, "*Effect* means alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register" (36 CFR 800.16[i]). The criteria of adverse effect are:

> An adverse effect is found when an undertaking may alter, directly or indirectly, and of the characteristics of a historic property that qualify the property for inclusion in the National Register is a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Consideration shall be given to all qualifying characteristics of a historic property, including those that may have been identified subsequent to the original evaluation of the property's eligibility for the National Register. Adverse effects may include reasonably foreseeable effects caused by the undertaking that may occur later in time, be farther removed in distance or be cumulative. (36 CFR 800.5[a][1])

As part of the determination made pursuant to CEQA and PRC Section 21080.1, the lead agency shall determine whether the project may have a significant effect on archaeological resources. If the lead agency determines that the project may have significant effect on unique archaeological resources, the environmental impact report shall address the issue of those resources. An environmental impact report, if otherwise necessary, shall not address the issue of nonunique archaeological resources. A negative declaration shall be issued with respect to a project if, but for the issue of nonunique archaeological resources, the negative declaration would be otherwise issued.
(b) If it can be demonstrated that a project will cause damage to a unique archaeological resource,

the lead agency may require reasonable efforts to be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. Examples of that treatment, in no order of preference, may include, but are not limited to, any of the following:
(1) Planning construction to avoid archaeological sites.
(2) Deeding archaeological sites into permanent conservation easements.
(3) Capping or covering archaeological sites with a layer of soil before building on the sites.
(4) Planning parks, greenspace, or other open space to incorporate archaeological sites. (CEQA and PRC section 21083.2)

DETERMINATION OF EFFECTS

Since there are no known cultural resources or known historic properties situated within the Aspen I – New Brighton study area, the Aspen I – New Brighton project will have no effect per Section 106 of NHPA and will have a less than significant impact on historical resources per CEQA

RECOMMENDATIONS

Based on the results of the records search and field survey within the study area, SWCA recommends no additional cultural resources work at this time. However, as noted above, there is potential for the existence of buried archaeological materials within the current study area. Should cultural resources be encountered during construction grading, trenching, and/or excavation, work in the area must be halted and a qualified archaeologist should be notified immediately to evaluate the resource(s) encountered.

The discovery of human remains is always a possibility; State of California Health and Safety Code Section 7050.5 covers these findings. This code section states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. The County Coroner must be notified of the find immediately. If the human remains are determined to be prehistoric, the Coroner will notify the NAHC, which will designate and notify a Most Likely Descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.

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APPENDIX I

Wallace Kuhl & Associates Inc

Preliminary Geotechnical Engineering Report
ASPEN 1 PROJECT
WKA No. 8430.01
August 10, 2009
Revised September 2, 2009

Prepared For:
Mark McLoughlin
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Preliminary Geotechnical Engineering Report

ASPEN 1 PROJECT

Sacramento, California

WKA No. 8430.01

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Preliminary Geotechnical Engineering Report
ASPEN 1 PROJECT
Jackson Road and South Watt Avenue
Sacramento, California
WKA No. 8430.01
August 10, 2009
Revised September 2, 2009

INTRODUCTION

We have completed a preliminary geotechnical engineering evaluation of the soil and groundwater conditions for the proposed Aspen 1 development located southwest of the intersection of Jackson Road (a.k.a. Highway 16, Jackson Highway) and South Watt Avenue in the City of Sacramento, California. The purposes of our work have been to provide an overview of the probable subsurface soil and groundwater conditions across the property, and to discuss their impact upon development of the property.

It is emphasized that the findings and conclusions contained in this report are preliminary in nature and are not intended for use in specific design of structural improvements. This investigation is limited to a general overview to assist in planning and environmental review for the project.

Scope

The scope of our investigation has included the following:

1. review of available historical aerial photographs;
2. review of historical USGS topographic maps, geologic maps, soil survey maps and available groundwater information;
3. review of our previous investigations performed within the site;
4. site reconnaissance; and,
5. preparation of this preliminary report.

Figures and Attachments

This preliminary geotechnical report contains a Vicinity Map as Figure 1, a Site Map showing the approximate site boundaries as Figure 2, a Site Plan showing general landmarks observed during our site reconnaissance as Figure 3, and a Topographic Map of the site as Figure 4.

Proposed Development

The Aspen 1 property is currently utilized by Teichert Aggregates (Teichert). We understand specific improvement plans have not been prepared for the site. However, we anticipate the property will be developed with a combination of single-family residences, multi-family residences and commercial developments.

Previous Studies

We reviewed previous reports performed by our firm within Aspen 1 (herein referred to as site). Specifically, we reviewed a *Preliminary Geotechnical Engineering Report* prepared for the Aspen I – Matsuda Lease Site (WKA No. 5222.06; dated October 24, 2006) located in the northeast portion of the site and a *Geotechnical Engineering Report* prepared for the Teichert Aspen 1A District Office (WKA No. 6351.01; dated January 18, 2005) located in the southeast portion of the site. Additionally, our firm is currently performing earthwork testing and observation operations within the drying beds at the site as part of the Aspen Properties Reclamation project (WKA No. 5222.02). Our records show that our firm has been performing earthwork testing and observation operations within the site since September 26, 2002. Information from our previous reports and work was used in preparation of this report.

FINDINGS

Site Description

The site is located southwest of the Jackson Road and South Watt Avenue intersection in Sacramento, California (Figures 1 and 2). The site is associated with several street addresses as follows: 8710, 8730, 8750, 8760, 8790, 8795, and 8888 Jackson Road; 5320 and 8910 South Watt Avenue; and, 8795 Fruitridge Road.

The site is comprised of all or portions of 17 Sacramento County Assessor Parcel Numbers (APNs) totaling approximately 232 acres of land. Teichert refers to the site as "Aspen 1."

In general, the major portion of the site has been utilized for aggregate mining and contains drying beds, a few wash ponds, vacant land (Aspen 1 - Matsuda Lease Site), a conveyor belt, and "reclaimed agricultural land" (Figure 3). Surrounding land use consists of aggregate mining and industrial use. Several trees were observed throughout the western portion of the site.

Review of the USGS *7.5-Minute Topographic Map of the Sacramento East Quadrangle, California* (1980) *and Carmichael Quadrangle* (1992) revealed the site ground surface elevation ranges from +45 to +50 feet relative to mean sea level (msl). However, due to significant changes in site elevations during mining operations and subsequent fill operations, ground surface elevations vary from information provided in the previously mentioned topographic maps. Review of topographic contours from LiDAR data, provided by Sacramento County, indicates the site ground surface elevation in 2007 ranged from +12 to +50 feet msl (Figure 4).

Site Reconnaissance

A visual site reconnaissance was conducted on March 10, 2009. The site was accessed from a gate at 8710 Jackson Road via an unimproved dirt road.

The portion of the site nearest the entrance gate from Jackson Road contained the conveyor belt (belt) that supplies Teichert's Perkins Plant, located at 8760 Kiefer Boulevard, with mined aggregate material. Several large cobble piles, a water well, and plastic water tank were also located near the entrance. The belt traversed the site in a northwest/southeast direction.

North of the belt and south of Jackson Road is an area of the site that supported the former Aspen I – Matsuda Lease site, vacant land, stored equipment, a water supply well, asphaltic pavements and a portable job trailer. The former Matsuda Lease nursery portion of the site is approximately 18-acres in size and is comprised of fill material that was placed on site in the 1970s (WKA No. 5222.06). This area of the site is at the same elevation, approximately +50 feet msl, as Jackson Road and contained a water supply well and a metal shed. West of the former nursery was an area containing a portable trailer, parked and stored vehicles and a workshop. South of this area, the ground surface of the site drops off approximately 30 feet, which is related to the aggregate mining.

Two drying beds and two wash ponds are located north of the belt. The drying beds are areas that Teichert has utilized for the disposal of silts and clays that accumulate during the aggregate mining and transport. The silts and clays are spread out in the drying beds approximately one foot in thickness at a time and then allowed to dry out. The silts and clays are then compacted to approximately 90 percent compaction (WKA No. 5222.02). South of the belt the site contained ten additional drying beds and a pond. South and southwest of theses drying beds were areas referred to as "reclaimed agricultural land."

The east central portion of the site contained a corrugated metal tunnel beneath South Watt Avenue. The belt continued through the tunnel to the east and off the site. A dirt road adjacent to the belt within the tunnel provided vehicle access between the site and the aggregate mining area (Aspen 2) to the east. An unimproved dirt road was located on top of the tunnel and allowed vehicle access to either side of the belt. Additional unimproved dirt roads traverse the perimeter and interior of the site. Several stockpiles of soil were located on the site in different areas. The site also contained a natural growth of grasses and weeds.

An agricultural water supply well and concrete standpipe were located on the southeastern portion of the site. The well and standpipe were approximately 700 feet west of South Watt Avenue.

Steel tower-mounted, high voltage, electrical lines traverse the western portion of the site in a northeast/southwest direction. The steel towers that support the electrical lines are located on three areas of the site that have not been disturbed by the mining operations and, therefore are higher in elevation (at approximately 50 feet msl) than the surrounding topography. Wooden pole-mounted electrical lines are also located on the site along the belt.

For an overview of the general landmarks observed during our site reconnaissance, please refer to the Site Plan shown as Figure 3.

Historical Aerial Photograph Review

Historical aerial photographs of the site covering the years 1961, 1963, 1981, 1986, 1991 and 2004 were available for review. The results of the review are discussed below by year.

On the 1961 aerial photograph, the western, southern and eastern portions of the site appear to be undeveloped agricultural land. This photo shows early signs of mining operations throughout the central and northern portions of the site. Several structures in the northwest portion of the site and two structures in the southern portion of the site are visible in this photograph. Several trees were observed throughout the site.

On the 1963 aerial photograph, the site is similar to the 1961 photograph reviewed above. It appears three structures were constructed in the northeastern corner of the site sometime between 1961 and 1963.

On the 1981 photograph, the major portion of the site appears to have been mined and now supports "reclaimed agricultural land." Some of the structures previously observed in the northwestern portion of the site and all of the structures observed in the southern and northeastern portions of the site have been removed. The three large mounds supporting high voltage overhead electrical lines (northwest/southeast orientation) are visible in the western portion of the site. The following appear to have been constructed sometime between 1963 and 1981: the conveyor belt system (northwest/southeast orientation) and associated equipment located in the northwestern portion of the site, three wash ponds, additional structures and pavements located in the northwestern portion of the site, and the Aspen I – Matsuda Lease nursery, including associated structures, located in the northeastern portion of the site.

On the 1986 aerial photograph, the site is similar to the 1981 photograph reviewed above. It appears an additional pond was constructed in the northwestern portion of the site sometime between 1981 and 1986.

On the 1991 aerial photograph, the site is similar to the 1986 photograph reviewed above. It appears one of the wash ponds located in the northeastern portion of the site has dried out.

On the 2004 aerial photograph, the site is similar to the 1991 photograph reviewed above. It appears the pond that was dried out in the 1991 photograph contains water. Additionally, the central portion of the site, both north and south of the conveyor belt system has been converted into several drying beds. Several nursery structures associated with the Aspen I – Matsuda Lease site have been removed.

General Site Geology

The un-mined portions of the site are predominately underlain by the Riverbank Formation, Lower member (Qrl) as identified by the Department of Interior United States Geologic Survey publication, *"Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierra Foothills, California."* The Riverbank Formation, Lower member consists of semi-consolidated gravels, sands and silts deposited as alluvium.

Our office reviewed the April 1993 US Department of Agriculture, Soil Conservation Service (SCS) *Soil Survey of Sacramento County, California, Sheet No. 6 (Sacramento East)* and *Sheet No. 7 (Carmichael Quadrangle).* According to our research, the site soils are comprised of the following:

<u>(No. 190) Pits:</u> Pits typically consist of sand, gravel, and clay pits and rock quarries. Some areas are shallow pits on ridge tops. The shallow pits were exposed during early placer mining operations in which water carried by ditches was used to wash gravelly soil material downs slope. Most of areas of this unit (Pits) have been extensively excavated. Slopes are complex. Areas are highly disturbed and vary in natural drainage, permeability, erosion hazard, runoff, and available water capacity.

<u>(No. 228) Urban land-Natomas complex, 0 to 2 percent slopes:</u> Urban land consists of areas covered by impervious surfaces or structures, such as roads, driveways, sidewalks, buildings, and parking lots. The soil material under the impervious surfaces is similar to that of the Natomas soil, although it may have been truncated or otherwise altered. Natomas soils typically consist of a surface layer of brown loam about 17 inches thick. The upper part of the subsoil is yellowish-red and reddish-brown loam about 16 inches thick. The lower part is red clay loam about 45 inches thick. The substratum to a depth of 84 inches is yellowish-red sandy loam. In some areas the surface layer is sandy loam.

<u>(No. 238) Xerarents-San Joaquin complex, 0 to 1 percent slopes:</u> Xerarents consist of fill material derived from nearby soils of mixed but dominantly granitic origin. The texture, color, and thickness of the layers of these soils vary from one area to another. In a reference pedon, the surface layer is about 16 inches thick and consists of pale brown, yellowish-brown, light gray, white, and brown sandy loam and sandy clay loam fill that has remnant subsoil fragments of clay loam or clay. Below this is a buried surface layer of grayish-brown loam about 5 inches thick. The underlying material to a depth of 60 inches is brown loam and a light yellowish-brown, weakly cemented hardpan. The San Joaquin soils typically consist of yellowish-brown and brown fine sandy loam about 13 inches thick. The upper part of the subsoil is brown and strong brown sandy loam about 17 inches thick. The lower part is a claypan of yellowish-brown and brown clay about 5 inches think. The upper part of the substratum is a brown, pinkish-gray, and yellowish-brown, indurated hardpan about 25 inches thick. The lower part to a depth of 67 inches is light yellowish-brown loamy coarse sand. In some areas the surface layer is sandy loam.

Groundwater

We reviewed available groundwater elevation data obtained from a California Department of Water Resources (DWR) monitored well identified as #08N06E30C001M located approximately 1 mile southeast of the site. The surface elevation at the well location is indicated to be about +50 feet msl, which is similar to the elevation of Jackson Road and South Watt Avenue. The DWR has periodically measured water elevations in this well from March 1965 to at least November 2007. Based on the available data, the "lowest" measured groundwater elevation at the well occurred on October 9, 1991, at an approximate elevation of about –39.1 feet msl (approximately 51.1 feet below the lowest existing grades at the site); the "highest" elevation of about –12.9 feet msl (approximately 24.9 feet below the lowest existing grades at the site) occurred on March 26, 1969.

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Building Support

Our research and experience with previous investigations performed within the subject site indicates soil conditions consist of a combination of native soils and undocumented fill soils. Disturbed native soils and undocumented fill soils are not suitable for support of proposed residential and commercial buildings. We anticipate building pads planned for areas in disturbed native soils and undocumented fill soils will require overexcavation and thorough recompaction to provide uniform support of the structures. The depth of disturbed native soils, undocumented fill soils and required overexcavation must be identified with a more extensive geotechnical investigation, after building types and locations have been determined. Taller structures with increased foundation loads may require alternative site preparation and foundation recommendations to improve the soil bearing capacity. These alternatives include additional overexcavation and recompaction, deep foundation systems (i.e. driven piles or drilled piers) and soil modification systems (i.e. rammed aggregate piers).

Building Foundations

After removal and thorough recompaction of disturbed native soils and undocumented fill soils, we anticipate the one- and two-story single and multi-family residential structures and one- and two-story commercial buildings could be supported upon continuous and isolated spread foundations extending roughly 12 to 18 inches below grade. Bearing capacities on the order of 1500 to 2000 pounds per square foot (psf) are considered suitable for preliminary design of foundations. Conventional foundations typically would contain reinforcement, such as No. 4 reinforcing bars placed near the top and bottom of the foundations. For taller buildings, alternative foundations such as deep foundations may be required.

Site Preparation

Adequate site clearing and removal/processing of disturbed native soils and undocumented fill soils will be critical to the successful development of this property. *The depth of disturbed native soils, undocumented fill soils and required overexcavation must be identified with a more extensive geotechnical investigation. Preliminary planning should include contingency for these items.* Utility lines, associated water wells, all existing structures and substructures including flatwork, foundations, slabs, etc. associated with previous site use should be completely removed and the resulting depressions backfilled with engineered fill.

Trees designated for removal should include the entire rootball and all roots larger than ½-inch in diameter. Adequate processing of underlying soils and removal of tree roots will be necessary in these areas.

Removal of surface organics would depend on the condition and quantity of the organics at the time grading is to begin. Discing of the organics may be suitable for construction, if the organic concentrations are not too thick at the time of grading. Stripping of the organics likely would be required if organics are very thick, with strippings being completely removed from the site or used only in landscape areas.

Standard fill construction and compaction procedures, including uniform moisture conditioning of the on-site soils to at least two percent over the optimum moisture content for clay soils and at least the optimum moisture content for granular soils at the time of compaction, will be important for proper support of the planned structures.

Differential Fill Depths

Buildings should not be supported upon differential fill depths greater than five feet. This is especially important if building placement will span over areas of existing and subsequent fills. Overexcavation and recompaction of the affected building pad should be performed to limit the differential fill depths. Building pads to be located over differential areas deeper than five feet should be excavated down to reduce the differential to less than five feet. The excavations should then be uniformly brought up to the proposed building pad elevation. For example, if part of a building pad is to be located over an area that is nine feet deep, the remainder of the building pad should be excavated down about four feet to limit the differential fill to less than five feet. The resulting overexcavated pad should then be uniformly brought up to the final pad elevation.

Soil Expansion Potential

It is anticipated that surface and near-surface soils will vary throughout the site. If encountered, clayey silts, and sandy and silty clays are generally considered capable of exerting "medium" to "high" expansion pressures on building foundations, interior floor slabs and exterior flatwork if subject to variations in soil moisture content. Specific recommendations to mitigate the effects of expansive clays will be addressed in the final geotechnical report.

Typical recommendations for mitigating expansive clays in residential developments may include the deepening of footings and increased reinforcement within footings, the saturating of building pads prior to concrete slab placement, or supporting the residential structures on a post-tension (PT) slab foundation. Typical recommendations for mitigating expansive clay for larger pad commercial buildings may include the deepening of footings and increased reinforcement within footings, removal of clays within the upper one to two feet of the building pads and replacement with non-expansive soils or the chemical treatment of the upper one to two feet of soils within the pads.

If encountered, sandy silts, clayey and silty sands are generally considered capable of exerting "low" expansion pressures, and are expected to experience minor volume changes with increasing or decreasing soil moisture content. Therefore, we do not anticipate these soils to be a significant factor in the design and construction of the proposed development.

Seismic Code Parameters

Section 1613 of the 2006 IBC references Chapter 11 (*Seismic Design Criteria)* of the American Society of Civil Engineers (ASCE) Standard 7-05 for the purposes of seismic design. The required site parameters were determined based on the site's latitude (38.5355°N) and longitude (-121.3755°W) using the public domain computer program (Version 5.0.8) developed by the

United States Geological Survey (USGS). The following parameters summarized in the following table may be used for seismic design of the subdivision per the 2006 IBC/2007 CBC.

SUMMARY OF SEISMIC DESIGN PARAMETERS				
Design Parameters	ASCE 7-05 Table/Figure	2007 CBC Table/Figure	Factor/Coefficient	Value
Short-Period MCE at 0.2s	Figure 22-3	Figure 1613.5(1)	S_S	0.52
1.0s Period MCE*	Figure 22-4	Figure 1613.5(2)	S_1	0.23
Site Classification	Table 20.3-1	Table 1613.5.2	D	---
Site Coefficient	Table 11.4-1	Table 1613.5.3(1)	F_a	1.38
Site Coefficient	Table 11.4-2	Table 1613.5.3(2)	F_v	1.95
Adjusted MCE Spectral Response Parameters	Equation 11.4-1	Equation 16-37	S_{MS}	0.72
	Equation 11.4-2	Equation 16-38	S_{M1}	0.45
Design Spectral Acceleration Parameters	Equation 11.4-3	Equation 16-39	S_{DS}	0.48
	Equation 11.4-4	Equation 16-40	S_{D1}	0.30
Seismic Design Categories	Tables 11.6-1	Tables 1613.5.6(1)	Occupancy I to III	C
	Tables 11.6-1	Tables 1613.5.6(1)	Occupancy IV	D
	Tables 11.6-2	Tables 1613.5.6(2)	Occupancy I to IV	D

*MCE - Maximum Considered Earthquake

A liquefaction analysis was not included in our scope of services for this preliminary evaluation. Based on our experience in the area, we do not anticipate liquefaction induced settlement will adversely affect the long-term performance of the proposed developments. However, a site-specific liquefaction analysis would be required to verify our assumptions.

<u>Excavation Conditions</u>

The near surface soils at the site should be excavatable with conventional earthmoving and trenching equipment.

Slope Stability

Existing slopes throughout the site appear to be approximately one horizontal to one vertical (1:1), or steeper. Further investigation of the existing slopes will be required to determine adequate stability. In general, as a minimum reconstructed slopes will likely be required to be sloped back or be buttress filled to at least two horizontal to one vertical (2:1), or shallower.

Groundwater and Seasonal Water

Based on review of available historic groundwater information, we conclude that a permanent groundwater table should not be a significant factor in the design or construction of the proposed structures or utilities.

During the wet season, infiltrating surface water will create a saturated surface condition due to the relatively impermeable nature of the near-surface clays and silts. Grading operations attempted following the onset of winter rains and prior to prolonged periods of drying will be hampered by high soil moisture contents. Such soils, intended for use as engineered fill, would likely require considerable aeration or a period of drying to reach a moisture content to allow the specified degree of compaction to be achieved.

Interior Floor Slab Support

Interior slab-on-grade concrete floors would be suitable for this project provided the slabs are properly designed and constructed with regard to moisture penetration resistance and slabs are adequately reinforced. Typical slab reinforcement for residential slabs constructed on non-expansive soils would consist of chaired, reinforcing steel bars. Placement of the reinforcement near the mid-depth of the slab would be crucial to its performance. Floor slabs constructed on expansive soils would require moisture conditioning of the soil subgrade prior to concrete slab placement. Floor slabs on pile-supported foundations must be designed to span irregularities in subgrades soils.

Site Drainage

Performance of building foundations, slab-on-grade floors and pavement areas is dependent upon proper control of surface water on the site. Adequate drainage is crucial to site development.

Pavement Design

It is anticipated on-site near-surface soils will vary throughout the site. Therefore, pavement subgrade quality will likely range from poor (clays) to good (silts and sands) for support of asphalt concrete pavements. In our opinion, a Resistance value (R-value) of five for the poor subgrade quality soils, and an R-value of 35 for the good subgrade quality soils are appropriate for preliminary design of asphalt concrete pavements.

We are providing several preliminary alternative pavement designs based on the anticipated soil conditions at the site and our previous experience in the vicinity of the project site. The following pavement sections have been calculated using the procedures contained within Chapters 600 to 670 of the *California Highway Design Manual*, dated September 1, 2006. An R-value of 5 for the poor quality subgrade soils and an R-value of 35 for the good quality subgrade soils are considered appropriate for preliminary design of pavements. The project civil engineer should determine the appropriate traffic index based on anticipated traffic conditions.

PRELIMINARY PAVEMENT DESIGN ALTERNATIVES R-value = 5, per City of Sacramento Specifications			
Street Right-of-Way	Traffic Index (TI)	Type B Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
40' and 50' Residential	5.0	2½	11
		3*	10
56' to 74' without Bus Routes	6.0	3	14
		3½*	13
56' to 74' with Bus Routes and Cul-de-Sacs	6.5	3	16
		4*	14
84' Streets	9.0	4	23
		5½*	21

* = Asphalt thickness contains Caltrans Factor of Safety.

PRELIMINARY PAVEMENT DESIGN ALTERNATIVES R-value = 35, per City of Sacramento Specifications			
Street Right-of-Way	Traffic Index (TI)	Type B Asphalt Concrete (inches)	Class 2 Aggregate Base (inches)
40' and 50' Residential	5.0	2½	6
		3*	5
56' to 74' without Bus Routes	6.0	3	8
		3½*	7
56' to 74' with Bus Routes and Cul-de-Sacs	6.5	3	10
		4*	8
84' Streets	9.0	4	14
		5½*	11

* = Asphalt thickness contains Caltrans Factor of Safety.

We emphasize that the performance of a pavement is critically dependent upon uniform compaction of the subgrade soils, as well as all engineered fill and utility trench backfill within the limits of the pavements. Materials used for pavement construction should conform to the appropriate sections of the most recent editions of the Caltrans *Standard Specifications and* City of Sacramento *Improvement Standards*.

Efficient drainage of all surface water to avoid infiltration and saturation of the supporting aggregate base and subgrade soils is important to the performance of pavements. Where drop inlets or other surface drainage features are to be constructed, we strongly recommend that weep holes be provided at the base/subgrade level to allow free drainage of collected water.

Future Geotechnical Engineering Study

Prior to final design and the commencement of site grading, a detailed geotechnical investigation of this property must be conducted that includes test borings or test pits with soil sampling, laboratory testing and additional engineering evaluation. The final report should present geotechnical engineering conclusions and specific recommendations regarding site preparation, foundation alternates, floor support, site drainage and pavement design. When the project reaches this stage of development, we would be pleased to provide a separate cost estimate for these services.

LIMITATIONS

The findings and conclusions contained in this report are intended as a general overview of geotechnical reconnaissance information available from previous investigations and studies performed in the site vicinity, combined with office analysis. We have used prudent engineering judgment based upon the information provided and the data generated. We emphasize that this report is general in nature and intended for use in planning and budgeting for the project and is applicable only to the investigated site.

Wallace - Kuhl & Associates, Inc.

REGISTERED PROFESSIONAL ENGINEER
TODD G. KAMISKY
NO. 2567
Exp. 12/31/09
GEOTECHNICAL
STATE OF CALIFORNIA

Mauricio Luna
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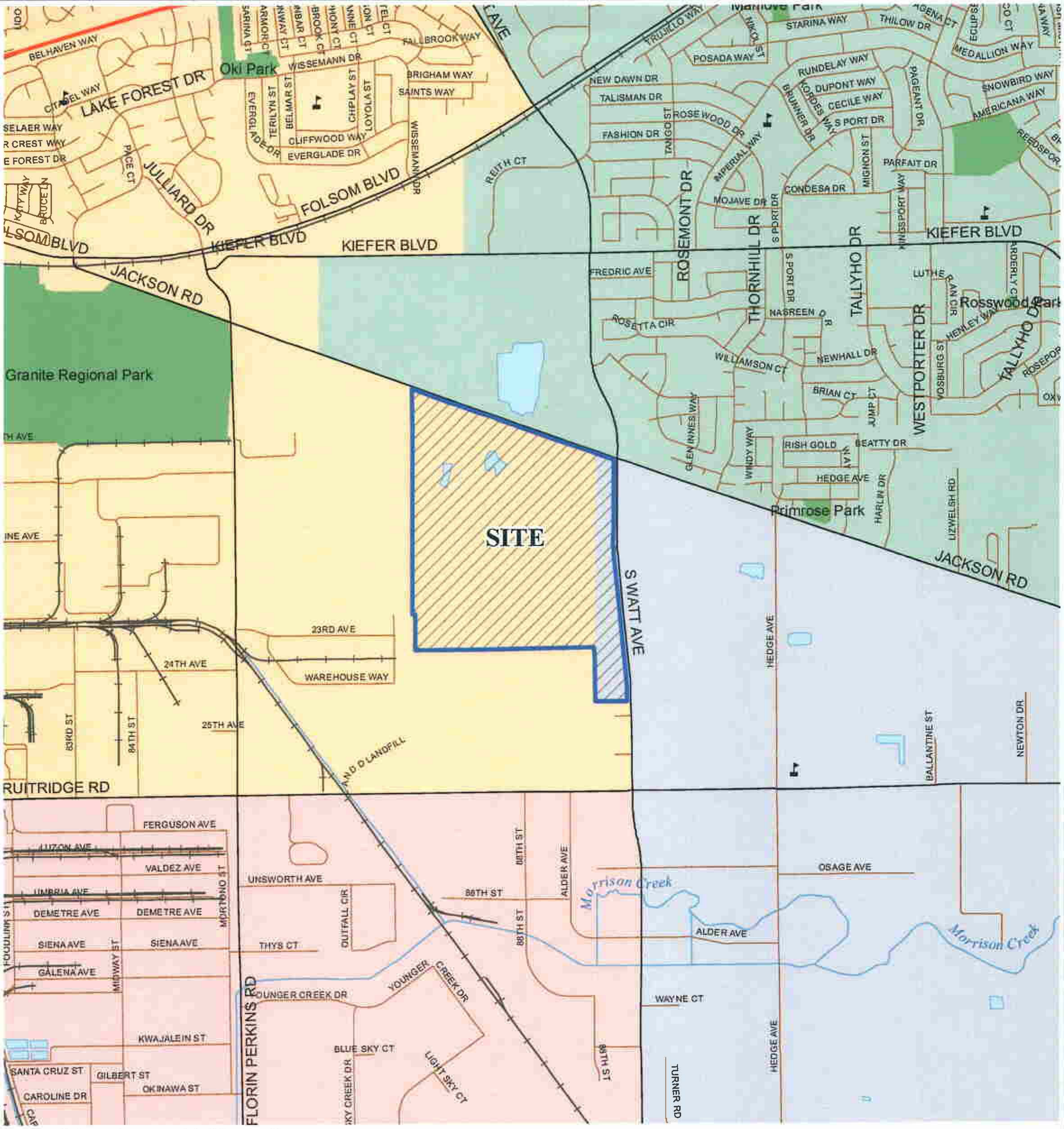
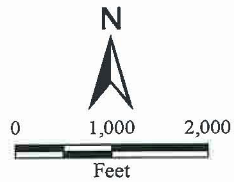
Senior Engineer



Adapted from data provided by the Sacramento
Area Council of Governments, 2007
Projection: NAD 83, California State Plane, Zone II



WallaceKuhl	

VICINITY MAP

ASPEN 1 PROJECT

Sacramento, California

FIGURE	1
DRAWN BY	TJC
CHECKED BY	TWK
PROJECT MGR	TWK
DATE	8/09
WKA NO.	8430.01

Aerial imagery courtesy of ESRI ArcGIS Online, 2008.
Projection: NAD 83, California State Plane, Zone II

N

0 500 1,000
Feet

Wallace Kuhl & Associates Inc

SITE MAP

ASPEN 1 PROJECT

Sacramento, California

FIGURE	2
DRAWN BY	TJC
CHECKED BY	TWK
PROJECT MGR	TWK
DATE	8/09
WKA NO.	8430.01

Aerial imagery courtesy of ESRI ArcGIS Online, 2008.
Projection: NAD 83, California State Plane, Zone II

Legend
- Site boundary
- Reclaimed agricultural land
- Aspen 1 - Matsuda Lease Site
- High Voltage Electrical Towers
- Conveyor Belt
- Drying Beds
- Pond

N

0 400 800
Feet

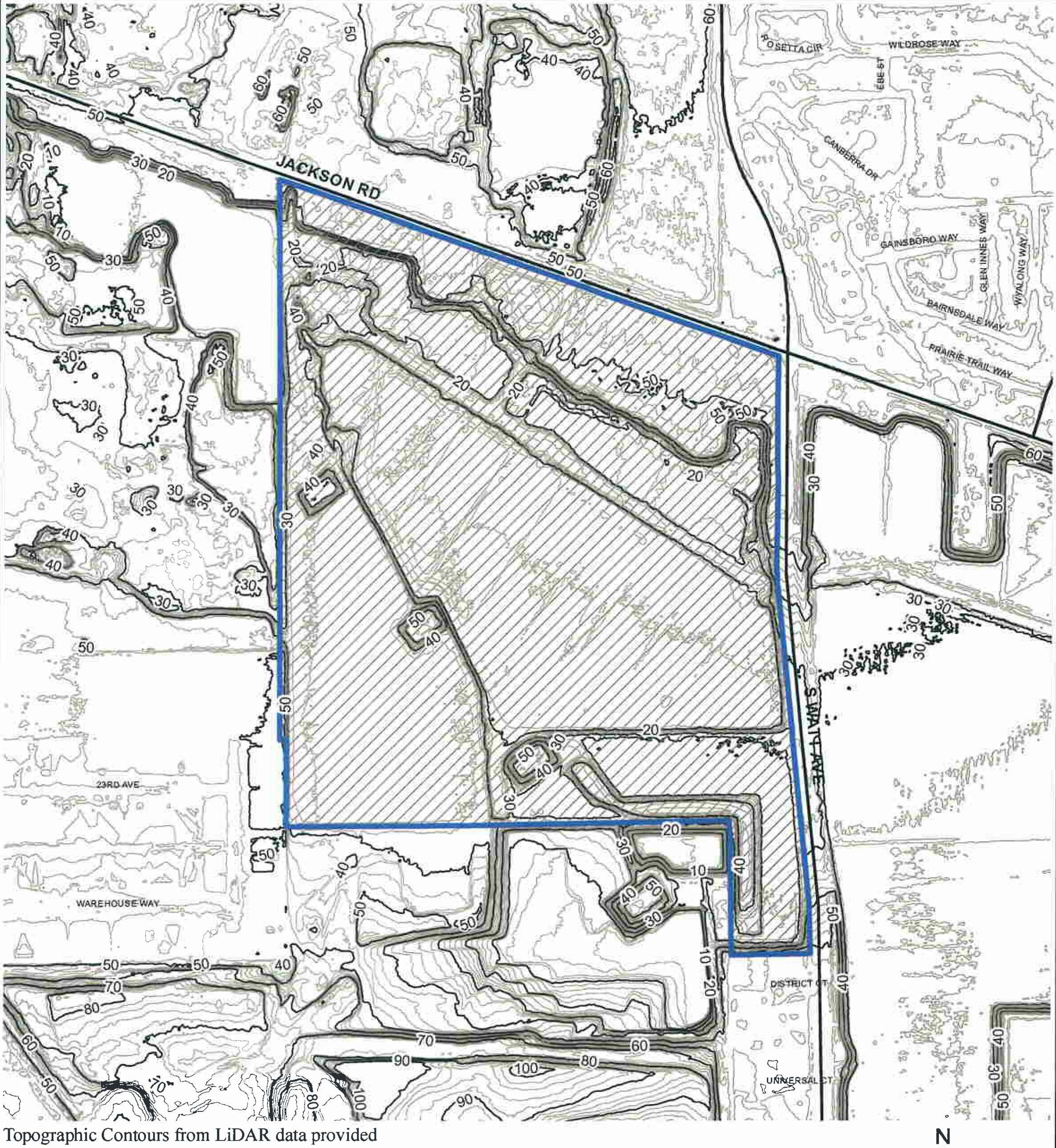
WallaceKuhl

SITE PLAN

ASPEN 1 PROJECT

Sacramento, California

FIGURE	3
DRAWN BY	TJC
CHECKED BY	TWK
PROJECT MGR	TWK
DATE	8/09
WKA NO.	8430.01



Topographic Contours from LiDAR data provided by Sacramento County, 2007
Projection: NAD83, California State Plane Zone II

N

0 400 800
Feet

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TOPOGRAPHIC MAP

ASPEN 1 PROJECT

Sacramento, California

FIGURE	4
DRAWN BY	TJC
CHECKED BY	TWK
PROJECT MGR	TWK
DATE	8/09
WKA NO.	8430.01

APPENDIX J

November 8, 2010

Mr. Mark McLoughlin
Stonebridge Properties
3600 American River Drive, Suite 160
Sacramento, California 95864

Preliminary Geotechnical Engineering Report Update
ASPEN I NEW BRIGHTON PROJECT
City of Sacramento, California
MPE No. 01134-01

INTRODUCTION

As authorized, we have completed a review and update to the Preliminary Geotechnical Engineering Report for the Aspen I project, prepared by Wallace-Kuhl & Associates, Inc. (their WKA No. 8430.01, dated August 10, 2009). The purposes of our work have been to update the report to cover the off-site improvements located in Aspen II, Aspen III and the Mayhew Acquisition sites associated with the development, and provide an overview of the probable subsurface soil and groundwater conditions underlying those improvements.

It is emphasized that the findings and conclusions contained in this report are preliminary in nature and are not intended for use in specific design of structural improvements. This investigation is limited to a general overview to assist in planning and budgeting for the project.

Scope

The scope of our investigation has included the following:

1. review of available historical aerial photographs;
2. review of historical USGS topographic maps, geologic maps, soil survey maps and available groundwater information;
3. review of the previous investigations performed within the vicinity of the site, including the *Preliminary Geotechnical Engineering Report* for the Aspen I project, prepared by Wallace-Kuhl & Associates, Inc., their WKA No. 8430.01, dated August 10, 2009, revised September 2, 2009;
4. site reconnaissance; and,
5. preparation of this update letter.

Figures and Attachments

Attached to this letter is a Site Plan indicating the location of the proposed off-site improvements.

Proposed Development

The project consists of the development of the previously mined area known as Aspen I New Brighton with both residential and commercial areas, and construction of appurtenant off-site infrastructure improvements, including an easterly running channel and an off-site retention basin (Figure 1) designed to accommodate the stormwater and associated nuisance water from the Aspen I New Brighton project. This report addresses impacts of the existing geotechnical conditions on the construction of the associated with off-site stormwater channel and retention basin. Information regarding the impacts to the proposed residential and commercial development can be found in the previous WKA report for the Aspen I New Brighton project.

The proposed channel will extend easterly from Watt Avenue, and meander through additional Teichert owned properties. The basin will be located on the Mayhew Acquisition property. Based on topography provided by Stonebridge, current elevations range from about +28 feet, msl near the western portion of the channel to about + 30 feet, msl at the eastern end of the channel. The elevation in the vicinity of the basin is approximately +30 to + 33 feet, msl. The entire channel and basin will be developed by excavating below the existing grade, with depths ranging from about 4 to 18 feet for the channel (proposed elevations from about +22 to +14 feet, msl), and about 20 feet for the basin (proposed elevation of about +12 feet, msl).

FINDINGS

Site Description

Our site reconnaissance on September 28, 2010, revealed the major portion of the proposed channel alignment and basin has been utilized for aggregate mining and contains drying beds, ponds, vacant fallow land and pasture land, a few structures, water supply wells, and several miles of a conveyor belt (belt) system that supplies Teichert's Perkins Plant, located at 8760 Kiefer Boulevard, with mined aggregate material. Surrounding land use consisted of rural residences, commercial/industrial uses, and vacant land.

Aerial Photographs

Historical and current aerial photographs of the project site were reviewed. The photos are consistent with the previous site usage as a large aggregate mining operation. Various mining activities, including fill and reclamation, can be observed in the photos reviewed.

General Site Geology

Nearly the entire project site has been previously mined for aggregates, and the resulting soils are generally disturbed and variable. The un-mined portions of the site are underlain by the Riverbank Formation, Lower member (Qrl), as identified by the Department of Interior United States Geologic Survey publication, *"Geologic Map of the Late Cenozoic Deposits of the Sacramento Valley and Northern Sierra Foothills, California."* Additionally, the publication indicates the northeastern un-mined portions of the site are underlain by the Riverbank Formation, Upper member (Qru); and the southeastern un-mined portions of the site are underlain by the Laguna Formation (Tla). The Riverbank Formation, Lower member consists of semi-consolidated gravels, sands and silts deposited as alluvium; the Upper member consist of unconsolidated but compact, alluvium composed of gravels, sands, silts and minor amounts of clays. The Laguna Formation consists of interbedded alluvial gravel, sands and silts. Pebbles and cobbles of quartz and metamorphic rock fragments generally dominate the gravel, but the matrix of the gravelly units and finer sediments are invariably arkosic.

Our office reviewed the April 1993 US Department of Agriculture, Soil Conservation Service (SCS) *Soil Survey of Sacramento County, California, Sheet No. 7 (Carmichael Quadrangle).* According to our research, the site soils are comprised of the following:

(No. 118) Columbia sandy loam, drained, 0 to 2 percent slopes, occasionally flooded: Typically, the surface layer is light yellowish brown sandy loam about 11 inches thick. The underlying material to a depth of 60 inches is stratified, yellowish brown sandy loam, silt loam, and loam and pale brown sand. In some areas the surface layer is loamy sand, loam, or silt loam. In other areas it is thicker and darker.

(No. 132) Creviscreek sand loam, 0 to 3 percent slopes: Typically, the surface layer is light yellowish brown and reddish yellow sandy loam about 21 inches thick. The subsoil is about 8 inches of reddish yellow sandy clay loam and brown gravelly sandy clay loam. The substratum is about 28 inches of stratified very pale brown, reddish yellow, yellow, and light gray extremely gravelly sandy loam to very gravelly sandy clay loam. Weakly consolidated, clayey sediments are at a depth of about 57 inches. In some areas the surface layer is gravelly sandy loam. In other areas the subsoil is very gravelly sandy clay loam.

(No. 135) Dierssen clay loam, drained, 0 to 2 percent slopes: Typically, the surface layer is brown clay loam about 15 inches thick. The upper part of the subsoil is grayish brown and brown clay about 9 inches thick. The lower part is brown, calcareous clay about 17 inches thick. The substratum to a depth of 60 inches or more is a strong brown and pale brown, continuous hardpan that is strongly cemented with silica. In some areas the surface layer is sandy clay loam.

(No. 137) Durixeralfs, 0 to 1 percent slopes: The texture, color, and thickness of the layers of these soils vary from one area to another. In a reference pedon, the surface layer is brown clay about 6 inches thick. The subsoil also is brown clay. It is about 14 inches thick. The next 35 inches is a continuous hardpan that is strongly cemented with silica. Below this to a depth of 69 inches is an indurated hardpan. In some areas the surface layer is sandy clay loam or clay loam.

(No. 157) Hedge loam, 0 to 2 percent slopes: Typically, the surface layer is light yellowish brown loam about 14 inches thick. The subsurface layer is very pale brown loam about 9 inches thick. It has common black iron-cemented concretions. The upper part of the subsoil is light yellowish brown clay loam about 8 inches thick. The lower part is strong brown loam about 7 inches thick. The next 6 inches is a light yellowish brown and strong brown hardpan that is weakly cemented with silica. The substratum to a depth of 60 inches is light yellowish brown sandy loam. In some areas the surface layer is sandy loam or fine sandy loam.

(No. 164) Kimball silt loam, 0 to 2 percent slopes: Typically, the surface layer is brown and light brown silt loam about 24 inches thick. The upper part of the subsoil is a claypan of brown and strong brown clay about 12 inches thick. The lower part to a depth of 60 inches is brown sandy clay loam and sandy loam. In some areas the surface layer is loam. In other areas it is lighter colored.

(No. 181) Natomas loam, 0 to 2 percent slopes: Typically, the surface layer is brown loam about 17 inches thick. The upper part of the subsoil is yellowish red and reddish brown loam about 16 inches thick. The lower part is red clay loam about 45 inches thick. The substratum to a depth of 84 inches is yellowish red and strong brown sandy loam. In some areas the surface layer is sandy loam.

(No. 190) Pits: Pits typically consist of sand, gravel, and clay pits and rock quarries. Some areas are shallow pits on ridge tops. The shallow pits were exposed during early placer mining operations in which water carried by ditches was used to wash gravelly soil material downs slope. Most of areas of this unit (Pits) have been extensively excavated. Slopes are complex. Areas are highly disturbed and vary in natural drainage, permeability, erosion hazard, runoff, and available water capacity.

(No. 191) Red Bluff loam, 0 to 2 percent slopes: Typically, the surface layer is brown loam about 8 inches thick. The upper part of the subsoil is reddish brown and yellowish red clay loam about 17 inches thick. The lower part to a depth of 68 inches is yellowish red and red clay and clay loam. In some areas the surface layer is sandy loam. In other areas the soil is gravelly throughout.

(No. 195) Red Bluff-Xerarents complex, 0 to 2 percent slopes: This unit is about 50 percent Red Bluff soil and 35 percent Xerarents. The Red Bluff soil is in the relatively undisturbed areas, and the Xerarents are in filled areas that have 20 or more inches of overburden. The Red Bluff soil is very deep and well drained. It formed in alluvium derived from mixed rock sources. Typically, the surface layer is brown loam about 8 inches thick. The upper part of the subsoil is reddish brown and yellowish red clay loam about 17 inches thick. The next part is yellowish red and red gravelly clay about 8 inches thick. The lower part to a depth of 68 inches is yellowish red, red, and light brown very gravelly clay loam. In some areas the surface layer is sandy loam. The Xerarents are very deep, well drained, and altered. They formed in fill material mixed by leveling activities. The fill material is derived from nearby soils of mixed origin. The texture, color, and thickness of the layers of these soils vary from one area to another. In a reference pedon, the surface layer is fill about 30 inches thick. It is brown loam mixed with fragments of gravelly clay, and very gravelly clay. The next 8 inches is a buried surface layer of brown loam. The upper part of the buried subsoil is reddish brown and yellowish red clay loam about 17 inches thick. The lower part to a depth of 60 inches or more is yellowish red and red gravelly clay and very gravelly clay.

(No. 213) San Joaquin silt loam, leveled, 0 to 1 percent slopes: Typically, the surface layer is strong brown silt loam about 23 inches thick. The subsoil is a claypan of yellowish red clay loam about 5 inches thick. The next layer is an indurated hardpan about 26 inches thick. The substratum to a depth of 60 inches is light yellowish brown loam. In some areas the surface layer is sandy loam, fine sandy loam, or loam.

(No. 214) San Joaquin silt loam, 0 to 3 percent slopes: Typically, the surface layer is strong brown silt loam about 23 inches thick. The subsoil is a claypan of yellowish red clay loam about 5 inches thick. Below this is an indurated hardpan about 11 inches thick. The next 15 inches is a hardpan that is strongly cemented with silica. The substratum to a depth of 60 inches is yellowish brown loam. In some areas the surface layer is sandy loam, fine sandy loam, or loam.

(No. 215) San Joaquin silt loam, 3 to 8 percent slopes: Typically, the surface layer is strong brown silt loam about 23 inches thick. The subsoil is a claypan of yellowish red clay loam about 5 inches thick. The next layer is an indurated hardpan about 26 inches thick. The substratum to a depth of 60 inches is light yellowish brown loam. In some areas the surface layer is sandy loam, loam, or fine sandy loam.

(No. 221) San Joaquin-Xerarents complex, leveled, 0 to 1 percent slopes: This unit is about 45 percent San Joaquin soil and 40 percent Xerarents. The San Joaquin soil is in areas that have been left relatively undisturbed when leveled. The Xerarents are in filled areas. The San Joaquin soil is moderately deep and moderately well drained. It formed in alluvium derived from granitic rocks. Typically, the surface layer is strong brown silt loam about 23 inches thick. The subsoil is a claypan of yellowish red clay loam about 5 inches thick. The upper part of the substratum is an indurated hard is an indurated hardpan about 26 inches thick. The lower part to a depth of 60 inches is light yellowish brown loam. In some areas the surface layer is find sandy loam, sandy loam, or loam. The Xerarents are moderately deep to very deep, well drained, and altered. They formed in fill material mixed by leveling activities. The fill material is derived from nearby soils of mixed but dominantly granitic origin. Prior to leveling, areas of these soils consisted of depressions and narrow channels along drainageways. The texture, color, and thickness of the layers of these soils vary from one area to another. In a reference pedon, the surface layer is about 16 inches of pale brown, yellowish brown, light gray, white and brown sandy loam and sandy clay loam fill that has remnant subsoil fragments of clay loam or clay. The subsurface layer is about 14 inches of pale brown and brown loamy sand and sandy loam fill that has remnant subsoil fragments of clay loam or clay. Below this is a buried surface layer of grayish brown loam about 5 inches thick. The underlying material to a depth of 60 inches is brown loam and a light yellowish brown, weakly cemented hardpan.

(No. 238) Xerarents- San Joaquin complex, 0 to 1 percent slopes: This unit is about 65 percent Xerarents and 20 percent San Joaquin soil. The Xerarents are in areas that were filled when the land was leveled. The San Joaquin soil is in relatively undisturbed areas. The Xerarents are moderately deep to very deep, well drained, and altered. They are in filled areas on low terraces. Prior to leveling, areas of these soils consisted of depressions and narrow channels along drainageways. The soils formed in fill material mixed by leveling activities. The fill material is derived from nearby soils of mixed but dominantly granitic origin. The texture, color, and thickness of the layers of these soils vary from one area to another. In a reference pedon, the surface layer is about 16 inches of pale brown, yellowish brown, light gray, white and brown sandy loam and sandy clay loam fill that has remnant subsoil fragments of clay loam or clay. The subsurface layer is about 14 inches of pale brown and brown loamy sand and sandy loam fill that has remnant subsoil fragments of clay loam or clay. Below this is a buried surface layer of grayish brown loam about 5 inches thick. The underlying material to a depth of 60 inches is brown loam and a light yellowish brown, weakly cemented hardpan. The San Joaquin soil is moderately deep and moderately well drained. Typically, the surface layer is yellowish brown and brown fine sandy loam about 13 inches thick. The upper part of the subsoil is brown and strong brown sandy loam about 17 inches thick. The lower part is a claypan of yellowish brown and brown clay about 5 inches thick. The upper part of the substratum is a brown, pinkish gray, and yellowish brown, indurated hardpan about 25 inches thick. The lower part to a depth of 67 inches is light yellowish brown loam coarse sand. In some areas the surface layer is sandy loam.

Groundwater

We reviewed available groundwater elevation data obtained from three California Department of Water Resources (DWR) monitored wells located within the general vicinity of the site (Wells Number 08N06E30C, 08N06E21N and 08N06E20R).

Well Number	Ground Surface Elevation (ft, msl)	Recorded High GW Elevation (ft, msl)	Date	Recorded Low GW Elevation (feet, msl)	Date
08N06E30C	+50.0	-12.9	03-26-69	-39.1	10-09-91
08N06E21N	+65.0	3.4	03-19-63	-30.8	11-06-97
08N06E20R	+57.4	-21.3	04-13-99	-59.3	09-25-00

The previously stated groundwater information only applies the close proximity of the central and eastern portions of the site. Due to the large size and variation in ground surface elevations across the property, groundwater elevations will vary throughout the site. A more detailed geotechnical investigation of this site must be conducted prior to final design, in which more accurate groundwater information should be provided.

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

General

In general, the field conditions observed during our site reconnaissance coupled with our review of the previously prepared report and data, indicate there are no significant geotechnical conditions at the site which will prevent construction of the drainage channel and basin. The major portion of the proposed project location has previously been mined to various depths, resulting in variable soils conditions across the site, which will require thorough investigation prior to final design.

It is our opinion that the Findings, and Preliminary Conclusions and Recommendations contained in the previous WKA report are applicable to the evaluation of the drainage channel and basin.

Site Preparation

Adequate site clearing and removal/processing of disturbed native soils and undocumented fill soils will be critical to the successful development of this property. The entire channel is proposed to be constructed by excavation; therefore, it is anticipated the major portion of the loose soils, structures and vegetation will be exposed and removed. *The depth of disturbed native soils, undocumented fill soils and required overexcavation must be identified with a more extensive geotechnical investigation. Preliminary planning should include contingency for these items.*

Standard fill construction and compaction procedures, including uniform moisture conditioning of the on-site soils to at least two percent over the optimum moisture content for clay soils and at least the optimum moisture content for granular soils at the time of compaction, will be important for long term stability of channel and basin side slopes.

Slope Stability

The planned channel and basin slopes are currently proposed at inclinations of 3:1 to 4:1; therefore global slope instabilities should not be an issue provided the slope soils are properly compacted and/or expose firm native soils. Further investigation of the proposed slopes will be required to verify stability.

Groundwater and Seasonal Water

Based on review of available historic groundwater information, we conclude that a permanent groundwater table should not be a significant factor in the design or construction of the proposed channel or basin.

Future Geotechnical Engineering Study

Prior to final design and the commencement of site grading, a detailed geotechnical investigation of this property must be conducted that includes test borings or test pits with soil sampling, laboratory testing and additional engineering evaluation. The final report should present geotechnical engineering conclusions and specific recommendations regarding site preparation, grading, channel construction and slope stability. When the project reaches this stage of development, we would be pleased to provide a separate cost estimate for these services.

LIMITATIONS

The findings and conclusions contained in this report are intended as a general overview of geotechnical reconnaissance information available from previous investigations and studies performed in the site vicinity, combined with office analysis. We have used prudent engineering judgment based upon the information provided and the data generated. We emphasize that this report is general in nature and intended for use in planning and budgeting for the project and is applicable only to the investigated site.

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