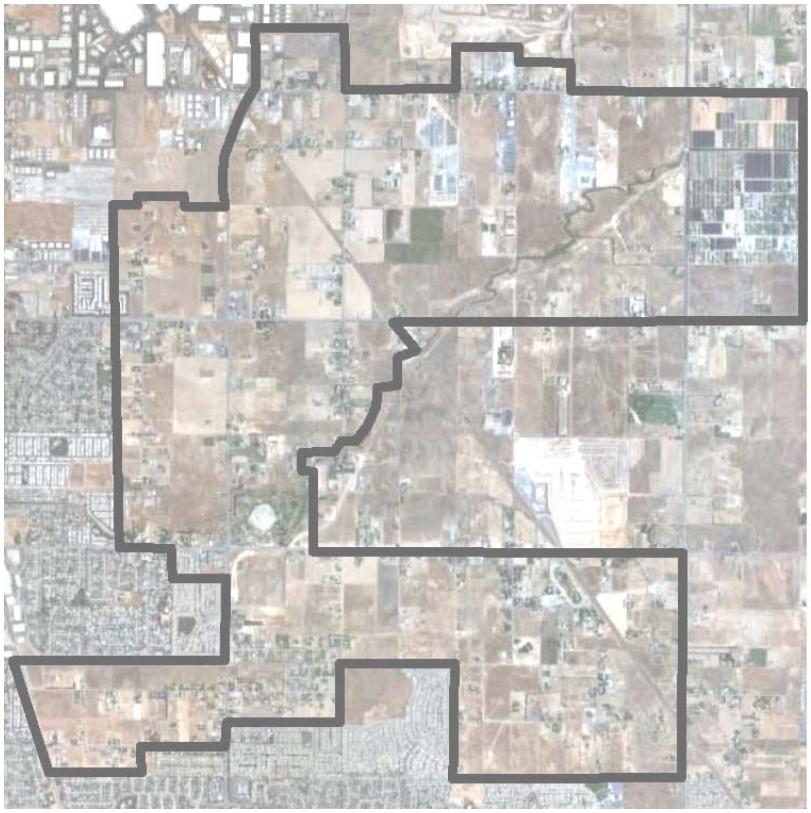
FINAL ENVIRONMENTAL IMPACT REPORT
VOLUME 3 (OF 5)

FLORIN-VINEYARD GAP COMMUNITY PLAN PROJECT



Control Number: 04-GPB-CPB-0096
State Clearinghouse Number: 2005082045
Date: October 2010

COUNTY OF SACRAMENTO
DEPARTMENT OF ENVIRONMENTAL
REVIEW AND ASSESSMENT
827 7TH STREET, ROOM 220
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With Assistance By

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FINAL ENVIRONMENTAL IMPACT REPORT
VOLUME 3 (OF 5)

FLORIN-VINEYARD GAP COMMUNITY PLAN

Control Number: 04-GPB-CPB-0096
State Clearinghouse Number: 2005082045

This Environmental Impact Report has been prepared pursuant to the California Environmental Quality Act of 1970 (Public Resources Code Division 13). An Environmental Impact Report is an informational document which, when this Department requires its preparation shall be considered by every public agency prior to its approval or disapproval of a project. The purpose of an Environmental Impact Report is to provide public agencies with detailed information about the effect that a proposed project is likely to have on the environment; to list ways in which any adverse effects of such a project might be minimized; and to suggest alternatives to such a project.

Prepared by the
COUNTY OF SACRAMENTO
DEPARTMENT OF ENVIRONMENTAL
REVIEW AND ASSESSMENT
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SACRAMENTO, CALIFORNIA 95814

Municipal Services Agency

Department of Environmental Review and Assessment
Joyce Horizumi, Director

Steven C. Szalay, Interim County Executive
Nav Gil, Chief Operations Manager

October 15, 2010

TO: ALL INTERESTED PARTIES

SUBJECT: DRAFT ENVIRONMENTAL IMPACT REPORT FOR FLORIN-VINEYARD GAP COMMUNITY PLAN PROJECT (Control Number: 04-GPB-CPB-0096; State Clearinghouse Number: 2005082045)

The subject Final Environmental Impact Report (FEIR) is attached for your review. The FEIR and the subject project are scheduled to be heard before the Sacramento County Board of Supervisors on October 27, 2010 at (time) in the County Board Chambers located at 700 H Street, Sacramento, California.

The DEIR consists of five volumes:

- **Volume I** of the FEIR contains all of the program-level California Environmental Quality Act (CEQA) mandated information and analyses for the entire Florin Vineyard Gap Community Plan Project area. This volume also includes the Response to Comments on the Draft EIR.
- **Volume II** of the FEIR contains all of the project-level CEQA mandated information and analyses for the individual development projects currently proposed within the Florin Vineyard Gap Community Plan Project area.
- **Volume III** of the FEIR contains supporting technical appendices for the DEIR analysis for the overall Florin Vineyard Gap Community Plan Project Area.
- **Volume IV** of the FEIR contains supporting technical appendices for the individual development projects.
- **Volume V** of the FEIR contains Mitigation Monitoring and Reporting Programs for the individual development projects.

Volumes I, II and V are available in hard copy, with Volumes III and IV attached in CD format. All volumes will be available electronically, beginning October 15, 2010, at:
http://www.dera.saccounty.net/tabid/71/Default.aspx?ProjectID=32642

Sincerely,

Joyce Horizumi
Environmental Coordinator

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APPENDIX A

AIR QUALITY IMPACT ANALYSIS

AIR QUALITY IMPACT ANALYSIS FOR THE FLORIN-VINEYARD GAP COMMUNITY PLAN PROJECT, COUNTY OF SACRAMENTO

Prepared for:

Raney Planning and Management
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Sacramento, CA. 95834

December 2008

INTRODUCTION

This report describes the impacts of the proposed project on local and regional air quality. This report was prepared using methodologies and assumptions recommended within the air quality impact assessment recommendations of the Sacramento Metropolitan Air Quality Management District.[1] In keeping with these recommendations, the section describes existing air quality, construction-related impacts, direct and indirect emissions associated with the project, the impacts of these emissions on both the local and regional scale, and mitigation measures warranted to reduce or eliminate any identified significant impacts.

ENVIRONMENTAL SETTING

Air Basin Characteristics

Sacramento lies at the southern end of the Sacramento Valley, a broad, flat valley bounded by the coastal ranges to the west and the Sierra Nevada to the east. A sea level gap in the Coast Range (the Carquinez Strait) is located approximately 50 miles southwest and the intervening terrain is very flat. The prevailing wind direction is southwesterly, which is the wind direction when marine breezes flow through the Carquinez Strait. Marine breezes dominate during the spring and summer months, and show strong daily variations. Highest average wind speeds occur in the afternoon and evening hours; lightest winds occur in the night and morning hours. During fall and winter, when the sea breeze diminishes, northerly winds occur more frequently, but southwesterly winds still predominate.

The project is within the Sacramento Metropolitan Air Quality Management District, which is part of the Sacramento Valley Air Basin. The Sacramento Valley Air Basin has been further divided into Planning Areas called the Northern Sacramento Valley Air Basin (NSVAB) and the Greater Sacramento Air region, designated by the U.S. Environmental Protection Agency (EPA) as the Sacramento Federal Ozone non-attainment area. The non-attainment area consists of all of Sacramento and Yolo counties and parts of El Dorado, Solano, Placer, and Sutter counties.

The San Francisco Bay Area Air Basin lies to the west, and the San Joaquin Valley Air Basin is located to the south of the Planning Area. Considerable transport of pollutants occurs between these air basins, so that air quality in Sacramento is partially determined by the release of pollutants elsewhere. In turn, pollutants generated in Sacramento affect air quality in areas to the north and east.

Ambient Air Quality Standards

[1] Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County*, July 2004.

Both the U. S. Environmental Protection Agency and the California Air Resources Board have established ambient air quality standards for common pollutants. These ambient air quality standards are levels of contaminants that represent safe levels that avoid specific adverse health effects associated with each pollutant. The ambient air quality standards cover what are called “criteria" pollutants because the health and other effects of each pollutant are described in criteria documents. The federal and California state ambient air quality standards are summarized in Table 1 for important pollutants. The federal and state ambient standards were developed independently with differing purposes and methods, although both processes attempted to avoid health-related effects. As a result, the federal and state standards differ in some cases. In general, the California state standards are more stringent. This is particularly true for ozone and particulate matter (PM_{10} and $PM_{2.5}$)

Health Effects of Pollutants

The following is a discussion of the health effects of important pollutants in the Sacramento Valley Air Basin.

Ozone

Ozone is produced by chemical reactions, involving nitrogen oxides (NOx) and reactive organic gases (ROG), that are triggered by sunlight. Nitrogen oxides are created during combustion of fuels, while reactive organic gases are emitted during combustion and evaporation of organic solvents. Since ozone is not directly emitted to the atmosphere, but is formed as a result of photochemical reactions, it is considered a secondary pollutant. In the Sacramento Valley Air Basin ozone is a seasonal problem, occurring roughly from April through October.

Ozone is a strong irritant that attacks the respiratory system, leading to the damage of lung tissue. Asthma, bronchitis and other respiratory ailments as well as cardiovascular diseases are aggravated by exposure to ozone. A healthy person exposed to high concentrations may become nauseated or dizzy, may develop headache or cough, or may experience a burning sensation in the chest.

Research has shown that exposure to ozone damages the alveoli (the individual air sacs in the lung where the exchange of oxygen and carbon dioxide between the air and blood takes place). Research has shown that ozone also damages vegetation.

Suspended Particulate

Suspended particulate matter (PM) is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These

Table 1: Federal and State Ambient Air Quality Standards

Pollutant	Averaging Time	Federal Primary Standard	State Standard
Ozone	1-Hour 8-Hour	-- 0.075 PPM	0.09 PPM 0.07 PPM
Carbon Monoxide	8-Hour 1-Hour	9.0 PPM 35.0 PPM	9.0 PPM 20.0 PPM
Nitrogen Dioxide	Annual Average 1-Hour	0.05 PPM --	0.03 PPM 0.18 PPM
Sulfur Dioxide	Annual Average 24-Hour 1-Hour	0.03 PPM 0.14 PPM --	-- 0.04 PPM 0.25 PPM
PM_{10}	Annual Average 24-Hour	-- 150 $\mu g/m^3$	20 $\mu g/m^3$ 50 $\mu g/m^3$
$PM_{2.5}$	Annual 24-Hour	15 $\mu g/m^3$ 35 $\mu g/m^3$	12 $\mu g/m^3$ --
Lead	Calendar Quarter 30 Day Average	1.5 $\mu g/m^3$ --	-- 1.5 $\mu g/m^3$
Sulfates	24 Hour		25 $\mu g/m^3$
Hydrogen Sulfide	1-Hour		0.03 PPM
Vinyl Chloride	24-Hour		0.01 PPM

PPM = Parts per Million
$\mu g/m^3$ = Micrograms per Cubic Meter

Source: California Air Resources Board, Ambient Air Quality Standards (06/26/08) http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

particles vary greatly in shape, size and chemical composition, and can be made up of many different materials such as metals, soot, soil, and dust. "Inhalable" PM consists of particles less than 10 microns in diameter, and is defined as "suspended particulate matter" or PM_{10}. Particles between 2.5 and 10 microns in diameter arise primarily from natural processes, such as wind-blown dust or soil.

Fine particles are less than 2.5 microns in diameter ($PM_{2.5}$). $PM_{2.5}$, by definition, is included in PM_{10}. Fine particles are produced mostly from combustion or burning activities. Fuel burned in cars and trucks, power plants, factories, fireplaces and wood stoves produces fine particles.

The level of fine particulate matter in the air is a public health concern because it can bypass the body's natural filtration system more easily than larger particles, and can lodge deep in the lungs. The health effects vary depending on a variety of factors, including the type and size of particles. Research has demonstrated a correlation between high PM concentrations and increased mortality rates. Elevated PM concentrations can also aggravate chronic respiratory illnesses such as bronchitis and asthma.

Carbon Monoxide

Carbon monoxide is a local pollutant in that high concentrations are found only very near the source. The major source of carbon monoxide, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volumes.

Carbon monoxide's health effects are related to its affinity for hemoglobin in the blood. At high concentrations, carbon monoxide reduces the amount of oxygen in the blood, causing heart difficulties in people with chronic diseases, reduced lung capacity and impaired mental abilities.

Carbon monoxide concentrations are highly seasonal, with the highest concentrations occurring in the winter. This is partly due to the fact that automobiles create more carbon monoxide in colder weather and partly due to the very stable atmospheric conditions that exist on cold winter evenings when winds are calm. Concentrations typically are highest during stagnant air periods within the period November through January.

Toxic Air Contaminants

Unlike criteria pollutants, no safe levels of exposure to TACs can be established. There are many different types of TACs, with varying degrees of toxicity. Sources of TAC's include industrial processes such as petroleum refining and chrome plating operations, commercial operations such as gasoline stations and dry cleaners, and motor vehicle exhaust. Public exposure to TACs can result from emissions from normal operations,

as well as accidental releases of hazardous materials during upset conditions. The health effects of TACs include cancer, birth defects, neurological damage and death.

Diesel exhaust is a TAC of growing concern in California. The California Air Resources Board in 1998 identified diesel engine particulate matter as a TAC. The exhaust from diesel engines contains hundreds of different gaseous and particulate components, many of which are toxic. Many of these compounds adhere to the particles, and because diesel particles are so small, they penetrate deep into the lungs. Diesel engine particulate has been identified as a human carcinogen. Mobile sources, such as trucks, buses, automobiles, trains, ships and farm equipment are by far the largest source of diesel emissions.

CARB has completed a risk management process that identified potential cancer risks for a range of activities using diesel-fueled engines.[2] High volume freeways, stationary diesel engines and facilities attracting heavy and constant diesel vehicle traffic were identified as having the highest associated risk.

Ambient Air Quality

The Sacramento Metropolitan Air Quality Management District (SMAQMD) and California Air Resources Board (CARB) maintain several air quality monitoring sites in the Sacramento area. Table 2 shows data for the years 2005-2007 for the Sacramento T Street and Sacramento-Heath Dept. Stockton Street monitoring sites, the closest monitoring sites to the proposed project.

All federal ambient air quality standards are met in the project area, with the exception of ozone. Additionally, the state ambient standards of ozone and PM_{10} are regularly exceeded.

Regional Air Quality Planning

Attainment Status

Federal and state air quality laws require identification of areas not meeting the ambient air quality standards. These areas must develop regional air quality plans to eventually attain the standards. Under the federal Clean Air Act, Sacramento County is a non-attainment area for ozone and PM_{10} and unclassified or attainment for other federal standards. Under the California Clean Air Act Sacramento County is a non-attainment area for ozone and particulate matter (PM_{10} and $PM_{2.5}$) and attainment for other state standards.

[2] California Air Resources Board, *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel-Fueled Engines and Vehicles*, October 2000.

Table 2: Days Exceeding Air Quality Standards at the Sacramento T Street and Sacramento-Health Dept. Stockton Blvd. Monitoring Sites, 2005-2007

Pollutant/Standard	**Year**	**Days Exceeding Standard:**
Ozone/State 1-Hour	2005 2006 2007	6 4 1
Ozone/Fed. 1-Hour	2005 2006 2007	0 0 0
Ozone Fed. 8-Hour	2005 2006 2007	3 1 0
Nitrogen Dioxide/State 1- Hour	2005 2006 2007	0 0 0
PM_{10}/State-Hour	2005 2006 2007	3 4 4
PM_{10}/Federal 24-Hour	2005 2006 2007	0 0 0
$PM_{2.5}$/Federal 24-Hour	2005 2006 2007	0 0 0
Carbon Monoxide/Fed. And State 8-Hour	2005 2006 2007	0 0 0

Source: California Air Resources Board, Aerometric Data Analysis and Management (ADAM), 2008. (http: //www.arb.ca.gov./adam/cgi-bin/adamtop/d2wstart)

Federal Clean Air Act

Sacramento County's first federal ozone clean air plan was adopted in 1994 in compliance with the 1990 Amendments to the Federal Clean Air Act. At that time, the region could not show that it would meet the federal 1-hour standard by 1999. In exchange for moving the deadline to 2005, the region accepted a designation of "severe nonattainment", with additional emission requirements on stationary sources.

In July 1997, EPA promulgated a new 8-hour standard for ozone. This change lowered the standard for ambient ozone from 0.12 parts per million of ozone averaged over one hour to 0.08 parts per million of ozone averaged over eight hours (Since revised downward to 0.075 parts per million). The 8-hour ozone rule required new designations in June 2004 and the revocation of the 1-hour ozone standard in June 2005.

The Sacramento region was classified by EPA as a "serious" nonattainment area on June 15, 2004, for the federal 8-hour ozone standard with an attainment deadline of June 15, 2013. An evaluation of proposed new control measures and associated VOC and NOx emission reductions concluded that no set of feasible controls were available to provide the needed emission reductions before the attainment deadline year

The Board of Director's for each of the five air districts which comprises the Sacramento Federal Nonattainment Area (SFNA) requested that the California Air Resources Board (CARB) submit a formal request for voluntary reclassification from a "serious" to a "severe" for the 8-hour ozone nonattainment area with an associated attainment deadline of June 15, 2019.

On October 16, 2006, the EPA promulgated a new 24-hour standard for $PM_{2.5}$. This change lowered the daily standard from 65μg/m^3 to 35μg/m^3 to protect the general public from short term exposure of the fine particulate matter. Sacramento County does not meet the new standard. In December, 2007, the California Air Resources Board made their recommendations to the USEPA, recommending that Sacramento County be designed nonattainment. Areas so designated must prepare an attainment plan to be submitted not later than 3 years after the effective date of the designation (EPA estimates this to be April 2012).

California Clean Air Act

The California Clean Air Act (CCAA) of 1988 required nonattainment areas to achieve and maintain the state ambient air quality standards by the earliest practicable date and local air districts to develop plans for attaining the state ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide standards. In compliance with the CCAA, the Sacramento Metropolitan Air Quality Management District (AQMD) prepared and submitted the 1991 Air Quality Attainment Plan (AQAP) to mainly address Sacramento County's nonattainment status for ozone and carbon monoxide (CO), and although not required, particulate matter (PM_{10}). The 1991 AQAP was designed to make expeditious progress toward attaining the state ozone standard and contained preliminary implementation

schedules for control programs on stationary sources, transportation, and indirect sources, and a vehicle/fuels program.

Sacramento County has met the ambient air quality standards for sulfur dioxide and nitrogen dioxide. The CCAA also requires that by the end of 1994 and once every three years thereafter, the districts are to assess their progress toward attaining the air quality standards. The triennial assessment is to report the extent of air quality improvement and the amounts of emission reductions achieved from control measures for the preceding three year period. The AQMD Board of Directors adopted the 2003 Triennial Report April 28, 2005. The report, prepared pursuant to California Health and Safety Code section 40925, identifies "all feasible measures" the AQMD will study or adopt over the next three years.

Sacramento Metropolitan Air Quality Management District

The Sacramento Metropolitan Air Quality Management District (SMAQMD) shares responsibility with the California Air Resources Board (CARB) for ensuring that the State and national ambient air quality standards are met within Sacramento County. State law assigns local air districts the primary responsibility for control of air pollution from stationary sources while reserving to the CARB control of mobile sources. The District is responsible for developing regulations governing emissions of air pollution, permitting and inspecting stationary sources, monitoring air quality and air quality planning activities. Under the California Environmental Quality Act (CEQA) the District may participate as a "responsible agency" or "reviewing agency" or "lead agency". The District has adopted the document *Guide to Air Quality Assessment in Sacramento County* to provide lead agencies, consultants and project proponents with uniform procedures for assessing potential air quality impacts for proposed projects and for preparing the air quality section of environmental documents.

IMPACTS AND MITIGATIONS

Standards of Significance

The Sacramento Metropolitan AQMD has published a guidance document for the preparation of the air quality portions of environmental documents that includes thresholds of significance to be used in evaluating land use proposals. Several types of thresholds are recommended:[3]

> **Ozone Precursors Significance Thresholds** - The District considers increases in emissions of nitrogen oxides (NO_x) greater than 85 pounds per day as significant during construction. For operation of a project, the District's threshold of significance is 65 pounds per day of either NO_x or reactive organic gases (ROG).

[3] Sacramento Metropolitan Air Quality Management District, *Guide to Air Quality Assessment in Sacramento County*, July 2004.

Other Criteria Pollutant -Significance Thresholds - A project that may cause an exceedance of a state air quality standard, or may make a substantial contribution to an existing exceedance of an air quality standard will have a significant adverse air quality impact. "Substantial" is defined as making measurably worse, which is five percent or more of an existing exceedance of a state ambient air quality standard.

Offensive Odors Significance Threshold - A qualitative assessment indicating that a project may reasonably be expected to generate odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property will have a significant adverse air quality impact.

Toxic Air Contaminants Significance Thresholds - The recommended significance thresholds for TACs are a lifetime probability of contracting cancer greater than 10 in one million and a ground-level concentration of non-carcinogenic toxic air pollutants that would result in a Hazard Index of greater than 1.

Cumulative Impacts Thresholds - A proposed project is considered cumulatively significant if the project requires a change in the existing land use designation (i.e., general plan amendment, rezone), and projected emissions of the proposed project are greater than the emissions anticipated for the site if developed under the existing land use designation.

Methodology

Carbon Monoxide Concentrations

The CALINE-4 program for estimating carbon monoxide concentrations was applied to worst-case intersections in the study area. Worst-case intersections were selected on the basis of worst Level of Service (LOS). The modeling procedures contained in *Transportation Project-Level Carbon Monoxide Protocol* were utilized.[4] The CALINE-4 computer model was used to predict worst-case concentrations of carbon monoxide at receptors located near the intersections. The results are shown in Table 3. A description of the modeling procedure is included in Appendix 1.

[4] Garza, Vincente J.; Peter Granly; Daniel Sperling. 1997. *Transportation Project-Level Carbon Monoxide Protocol*. Institute of Transportation Studies, University of California, Davis, Report UCD-ITS-RR-97-21.

Regional Emissions

Estimates of operational emissions generated by project traffic and area sources were made using the URBEMIS-2007 program. URBEMIS-2007 estimates the emissions that result from various land uses. The URBEMIS-2007 program includes considerations for trip generation rates, vehicle mix, average trip length by trip type, and average speed.

The URBEMIS-2007 program was used to calculate daily operational emissions during the summer months with an ambient temperature of 95 degrees Fahrenheit and during the winter months with an ambient temperature of 50 degrees Fahrenheit. Summer results from URBEMIS-2007 are used to assess ozone precursors, reactive organic gases (ROG) and nitrogen oxides (NO_X), while winter results are used to assess particulate matter (PM_{10} and $PM_{2.5}$) and carbon monoxide (CO) emissions. In addition, the annual results were used to estimate the project carbon dioxide (CO_2) emissions per year. A detailed discussion of URBEMIS-2007 parameters used in the analysis is included in the Appendix 2. The results are shown in Table 4.

Impact 1: Implementation of the proposed project would result in temporarily increased particulate matter levels at various times and locations over the buildout period of the project that could result in exceedance of the ambient air quality standards for particulate matter.

Construction would result in numerous activities that would generate dust. The fine, silty soils in the project area and often strong afternoon winds exacerbate the potential for dust, particularly in the summer months. Grading, leveling, earthmoving and excavation are the activities that generate the most particulate emissions. Impacts would be localized and variable. Construction impacts would last for a period of several months at any one location. Construction dust impacts are considered to be potentially significant on a localized basis. The potential for dust nuisance would exist during early stages of construction when disturbance of soil is greatest.

Construction activities would temporarily affect local air quality, causing a temporary increase in particulate matter and dust emissions. Although the future amount of construction activity on any given day is unknown, it is likely that dust emissions during construction would have the potential to exceed locally ambient air quality standards and result in nuisance complaints. This is a potentially significant impact.

Mitigation Measures

Appendix B of SMAQMD's *Guide to Air Quality Assessment in Sacramento County* provides recommended mitigation measures that are dependant on the size of the project site and maximum disturbed area at any given time. The following mitigation measures shall be applied to all development within the Community Plan area:

Prior to issuance of a grading permit, the applicant/developer shall incorporate all appropriate dust control measures as identified by the Sacramento Metropolitan Air Quality Management District as appropriate for the size and nature of the site, project,

and project surroundings. All projects shall comply with the following mitigation if active project grading in any one day falls within the acreage ranges below. This mitigation may be modified if guidance from the Sacramento Metropolitan Air Quality Management District changes in the future.

A. *5.1 – 8 acres: Water exposed soil twice daily and maintain two feet of freeboard space(or cover loads) on haul trucks.*

B. *8.1 – 12 acres: Water exposed soil and soil piles three times daily and maintain two feet of freeboard space (or cover loads) on haul trucks.*

C. *12.1 acres or greater: Keep soil moist at all times, maintain two feet of freeboard space(or cover loads) on haul trucks, and use emulsified diesel or diesel catalysts on applicable heavy duty diesel construction equipment.*

Because the amount of construction activity on any given day within the project area cannot be predicted, the above mitigation measure would reduce project fugitive particulate matter impacts, but they would remain significant and unavoidable.

Impact 2: Implementation of the proposed project would result in temporarily increased ozone precursor emissions and diesel particulate emissions at various times and locations over the buildout period of the project.

Although the future amount of construction activity on any given day is unknown, it is likely that construction activities for one or more developments could result in construction emissions above the SMAQMD construction thresholds of significance. This is a potentially significant impact.

During construction various diesel-powered vehicles and equipment would be in use on the site. Depending on the amount of construction activity and equipment used health risks from construction emissions of diesel particulate could be a potentially significant impact.

Mitigation Measures

All development proposals should prepare construction emission estimates based on actual construction timelines and equipment lists. When emissions exceed the SMAQMD construction thresholds of significance the following measure shall be implemented:

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 SMAQMD 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

The contractor shall provide a plan for approval by SMAQMD demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased and subcontractor vehicles, will achieve a project wide fleet-average 20 percent NO_x reduction and 45 percent particulate reduction[5] compared to the most recent CARB fleet average at time of construction; and the project sponsor shall submit to SMAQMD 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.

If, after implementation of the above, the SMAQMD thresholds of significance are still exceeded, then that development should participate in the District's mitigation fee program to reduce emissions to below the significance threshold. Developers shall contact the SMAQMD for assistance in assessing a fee that is currently $16,000/ton of NOx or whatever value is in effect at the time of construction.

The above measures would reduce project construction-related emissions to a level that is less than significant.

Impact 3: Project traffic would affect carbon monoxide concentrations along roads and near intersections.

Carbon monoxide is a local pollutant (i.e., high concentrations are normally only found very near sources). The major source of carbon monoxide, a colorless, odorless, poisonous gas, is automobile traffic. Elevated concentrations, therefore, are usually only found near areas of high traffic volume and congestion.

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[5] Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

Existing concentrations are well below the state/federal standards. Future predicted concentrations are below current levels, despite increased traffic, due to the lower emission rate from the future vehicle mix resulting from emission controls. Predicted concentrations would remain below the state/federal standards with the addition of project and cumulative traffic. As the project would not cause a violation of either ambient air quality standard, nor contribute substantially to an existing violation, the impact of the project on local carbon monoxide concentrations is considered to be less than significant.

Mitigation Measures

None required.

Impact 4: Development within the Community Plan area would result in increases in emission of ozone precursors that would exceed the SMAQMD thresholds of significance.

Table 4 shows the new auto and area source emissions of regional pollutants that would result from the proposed project, based upon output from the URBEMIS-2007 computer program. The modeling methodology and assumptions are described in Appendix 2. Also shown are the Sacramento Metropolitan Air Quality Management District's thresholds of significance.

Both project alternatives would generate emissions of reactive organic gases (ROG) and nitrogen oxides (NO_X) exceeding the SMAQMD's significance threshold of 65 pounds per day, as seen in Table 4. Based on the criterion set forth by SMAQMD, the project would have a significant impact on regional ozone air quality.

Mitigation Measures

All developments in the Community Plan are shall implement the already endorsed (3/26/07) Air Quality Mitigation Program (AQMP).

Implementation of the above measure would reduce project impacts by a minimum of 15%. This would reduce estimated project regional emissions, but not to levels below the SMAQMD thresholds of significance for ozone precursors, so project regional air quality impacts would be significant and unavoidable.

Impact 5: The project, in combination with other reasonably foreseeable projects in the Sacramento Air Basin, would produce mobile and area source emissions that could contribute to regional air quality impacts.

Development in the Sacramento Air Basin would produce long-term mobile and are

Table 3: Worst Case Carbon Monoxide Concentrations, in Parts Per Million[6]

[6] The CALINE-4 modeling does not reflect the 15% housing density bonus. With the housing density bonus, traffic volumes and CO concentrations would be somewhat

Intersection	Existing (2008)		Cumulative + CAC Project (2025)		Cumulative + PD Project (2025)	
	1-Hour	8-Hour	1-Hour	8-Hour	1-Hour	8-Hour
Keifer/ Bradshaw	7.0	4.9	4.3	3.0	4.3	3.0
Elder Creek/ Florin-Perkins	7.1	5.0	4.6	3.2	4.6	3.2
Florin/ Florin-Perkins	6.3	4.4	4.3	3.0	4.4	3.1
Florin/ Bradshaw	5.1	3.6	4.2	2.9	4.3	3.0
Gerber/ French	5.6	3.9	4.1	2.9	4.2	2.9
Gerber/ Elk Grove-Florin	7.2	5.0	4.5	3.2	4.6	3.2
Most Stringent Standard	20.0	9.0	20.0	9.0	20.0	9.0

higher. The housing density bonus would increase traffic on affected roads by from 0 to 6.25%. Even with this increased traffic, modeled carbon monoxide concentrations would remain well below the state/federal ambient standards.

Table 4: Estimated New Regional Emissions, in Pounds

Alternative	**ROG**	**NOx**
CAC Preferred Land Use Plan	1315.1	571.2
Planning Department Land Use Plan	1648.7	682.4
SMAQMD Significance Threshold	65.0	65.0

source emissions (reactive organic gasses and nitrogen dioxide) that would exceed SMAQMD maximum emission thresholds. SMAQMD thresholds are 65 pounds per day for both pollutants. These pollutants contribute to the formation of ozone, for which the region is a nonattainment area.

The CAC Preferred Land Use Plan would produce about 1,315 pounds per day of ROG and approximately 571 pounds per day of NOx when the project is built out. The Planning Department Land Use Plan would produce about 1,649 pounds per day of ROG and approximately 682 pounds per day of NOx when the project is built out. Other projects in the area would also produce long-term emissions, depending o the volumes of traffic generated by the projects and types of land uses, and could contribute to violations of SMAQMD thresholds. Because cumulative mobile and area source emissions exceed SMAQMD thresholds for ROG and NOx, cumulative impacts on air quality would be significant.

Mitigation Measures

See Mitigation Measures for Impact 4.

Implementation of the above measure would reduce project impacts by a minimum of 15%. This would reduce estimated project regional emissions but not to levels below the SMAQMD thresholds of significance for ozone precursors, so project regional air quality impacts would remain cumulatively significant.

Impact 6: Project implementation could result in construction of new sources of toxic air contaminants, and would create new residences, which are sensitive receptors.

The California Air Resources Board recently published an air quality/land use handbook[7] The handbook was developed in response to recent studies that have demonstrated a link between exposure to poor air quality and respiratory illnesses, both cancer and non-cancer related. The CARB handbook recommends that planning agencies strongly consider proximity to these sources when finding new locations for "sensitive" land uses such as homes, medical facilities, daycare centers, schools and playgrounds.

Air pollution sources of concern include:

High traffic freeways and roads
Distribution centers
Rail yards
Ports
Refineries

[7] California Air Resources Board, *Air Quality and Land Use Handbook: A Community Health Perspective*, 2005.

Chrome plating facilities
Dry cleaners
Large gasoline dispensing facilities

The above sources are either direct sources of TAC emissions or attract diesel vehicles. The above types of heavy-industrial facilities would not be allowed within the proposed land use zoning. However, manufacturing uses could utilize relatively small amounts of TACs. Any new sources of toxic air contaminants would be subject to the permitting procedures and risk assessment requirements of the SMAQMD.

The Community Plan area does not include any lands within 500 feet of a freeway. While rail lines do pass through the project area, there are no rail yards within or near the project. Project impacts related to exposure to toxic air contaminants would be less than significant.

Mitigation Measures

None required.

Appendix 1: CALINE-4 Modeling

The CALINE-4 program for estimating carbon monoxide concentrations was applied to six selected intersections. The modeling procedures contained in *Transportation Project-Level Carbon Monoxide Protocol* were utilized.[8] The CALINE-4 computer model was used to predict worst-case concentrations of carbon monoxide at receptors located near the intersection. Receptors were located at the four corners of the intersections and 10 meters in either direction from the corner, for a total of 12 receptors. These receptors were located 3 meters from the road edge.

The assumptions made in running the program were:

Windspeed: 0.5 meter per second
Wind Direction: Worst Case
Roughness: 100 cm
Sigma Theta: 5 degrees
Temperature: 30 degrees Fahrenheit

A 1-hour background concentration of 3.1 Parts Per Million (PPM) was used. This was taken from the SMAQMD's CEQA guidance document *Guide to Air Quality Assessment in Sacramento*.

The EMFAC-2007 program was utilized to estimate carbon monoxide emission factors for a Sacramento County vehicle population in the years 2008 and 2025. Worst-case winter emission rates at an ambient temperature of 30 degrees F were used.

The CALINE-4 program procedure provides a worst-case estimate of 1-hour concentrations of carbon monoxide generated by vehicles. To calculate 8-hour concentrations, the 1-hour projections were multiplied by a persistence factor of 0.7.

[8] Garza, Vincente J.; Peter Granly; Daniel Sperling, Transportation Project-Level Carbon Monoxide Protocol. Institute of Transportation Studies, University of California, Davis, Report UCD-ITS-RR-97-21, 1997.

Appendix 2: URBEMIS-2007

Estimates operational emissions generated by project traffic and area sources were made using a program called URBEMIS2007, Version 9.2.4.[9] URBEMIS2007 is a program that estimates the emissions that result from various land use development projects. Land use project can include residential uses such as single-family dwelling units, apartments and condominiums, and nonresidential uses such as shopping centers, office buildings, and industrial parks. URBEMIS2007 contains default values for much of the information needed to calculate emissions. However, project-specific, user-supplied information can also be used when it is available.

Inputs to the URBEMIS2007 program include trip generation rates, vehicle mix, average trip length by trip type and average speed. Trip generation rates for proposed project land uses and development were provided by the project transportation consultant. Sacramento County average trip lengths and vehicle mixes were used. Average speed for all types of trips was assumed to be 35 MPH.

The URBEMIS2007 program was run to calculate summertime emissions. To obtain annual CO2 emissions, the model was also run for on an annual basis. Analysis year was 2025. The URBEMIS2007 output is attached.

[9] Jones and Stokes Associates, *Software User's Guide: URBEMIS2007 for Windows, Version 9.2*, 2007.

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\Don Ballanti\Application Data\Urbemis\Version9a\Projects\florinvineyardCAC.urb924

Project Name: Florin Vineyard CAC

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)	741.20	194.17	558.12	0.02	1.60	1.58	239,929.74

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	573.94	377.05	5,469.47	12.08	1,918.09	363.77	1,212,964.15

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,315.14	571.22	6,027.59	12.10	1,919.69	365.35	1,452,893.89

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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	14.47	188.89	90.96	0.00	0.36	0.35	239,178.00
Hearth - No Summer Emissions							
Landscape	83.65	5.28	467.16	0.02	1.24	1.23	751.74
Consumer Products	464.62						
Architectural Coatings	178.46						
TOTALS (lbs/day, unmitigated)	741.20	194.17	558.12	0.02	1.60	1.58	239,929.74

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	309.15	187.85	2,788.74	6.07	958.83	182.02	608,814.03
Regnl shop. center	173.24	141.80	1,996.80	4.49	717.10	135.85	451,292.24
General office building	20.27	13.76	200.37	0.44	70.58	13.38	44,600.82
Medical office building	1.82	0.90	12.73	0.03	4.56	0.86	2,868.75
Manufacturing	38.88	15.51	228.15	0.50	79.87	15.15	50,541.35
Other	30.58	17.23	242.68	0.55	87.15	16.51	54,846.96
TOTALS (lbs/day, unmitigated)	573.94	377.05	5,469.47	12.08	1,918.09	363.77	1,212,964.15

Operational Settings:

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Does not include correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 0.00 Nonresidential Trip % Reduction: 0.00

Analysis Year: 2025 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	3,430.67	6.35	dwelling units	10,292.00	65,354.20	558,758.80
Regnl shop. center		42.35	1000 sq ft	1,339.60	56,732.06	418,115.27
General office building		9.45	1000 sq ft	510.67	4,825.83	41,140.21
Medical office building		4.00	1000 sq ft	88.00	352.00	2,655.84
Manufacturing		2.22	1000 sq ft	2,335.20	5,184.14	46,553.61
Other		5.71	1000 sq ft	1,207.50	6,894.83	50,814.86
					139,343.06	1,118,038.59

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	98.0	2.0
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	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

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
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)						
Regnl shop. center				2.0	1.0	97.0
General office building				35.0	17.5	47.5
Medical office building				7.0	3.5	89.5
Manufacturing				48.0	24.0	28.0
Other				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Summer Emissions Reports (Pounds/Day)

File Name: C:\Documents and Settings\Don Ballanti\Application Data\Urbemis\Version9a\Projects\florinvineyardPD.urb924

Project Name: Florin Vineyard PD

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)	984.22	251.04	740.76	0.03	2.13	2.11	310,630.34

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	664.51	431.36	6,282.30	13.85	2,195.50	416.45	1,389,380.90

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	1,648.73	682.40	7,023.06	13.88	2,197.63	418.56	1,700,011.24

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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	18.73	243.96	113.65	0.00	0.46	0.46	309,621.78
Hearth - No Summer Emissions							
Landscape	112.56	7.08	627.11	0.03	1.67	1.65	1,008.56
Consumer Products	626.37						
Architectural Coatings	226.56						
TOTALS (lbs/day, unmitigated)	984.22	251.04	740.76	0.03	2.13	2.11	310,630.34

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Summer Pounds Per Day, Unmitigated

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	416.78	253.24	3,759.60	8.18	1,292.64	245.39	820,763.18
Regnl shop. center	165.76	135.69	1,910.65	4.30	686.16	129.98	431,820.26
General office building	18.04	12.25	178.35	0.40	62.82	11.91	39,701.16
Medical office building	1.70	0.84	11.86	0.03	4.24	0.80	2,673.15
Manufacturing	34.84	13.90	204.49	0.45	71.58	13.58	45,299.35
Other	27.39	15.44	217.35	0.49	78.06	14.79	49,123.80
TOTALS (lbs/day, unmitigated)	664.51	431.36	6,282.30	13.85	2,195.50	416.45	1,389,380.90

Operational Settings:

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Does not include correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 0.00 Nonresidential Trip % Reduction: 0.00

Analysis Year: 2025 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	4,625.00	6.35	dwelling units	13,875.00	88,106.25	753,282.01
Regnl shop. center		42.35	1000 sq ft	1,281.80	54,284.23	400,074.79
General office building		9.45	1000 sq ft	454.57	4,295.69	36,620.73
Medical office building		4.00	1000 sq ft	82.00	328.00	2,474.76
Manufacturing		2.22	1000 sq ft	2,093.00	4,646.46	41,725.21
Other		5.71	1000 sq ft	1,081.50	6,175.37	45,512.44
					157,836.00	1,279,689.94

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	98.0	2.0
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	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

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
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)						
Regnl shop. center				2.0	1.0	97.0
General office building				35.0	17.5	47.5
Medical office building				7.0	3.5	89.5
Manufacturing				48.0	24.0	28.0
Other				2.0	1.0	97.0

APPENDIX B

GREENHOUSE GAS ANALYSIS

Green House Gas (GHG) Emission Estimate Methodology

During operation, the project would contribute to long-term increases in GHGs as a result of traffic increases (mobile sources) and residential and commercial operations associated with heating and energy use (area sources).

The above sources are considered direct project emissions. The project would also indirectly result in GHG emissions from off-site electricity generation at power plants.

Direct Emissions from Mobile Sources

Estimates of carbon dioxide generated by project traffic were made by the URBEMIS2007 program. While URBEMIS2007 estimates carbon dioxide emissions from land use projects, there are other global warming gases that should be considered. Emissions of methane (CH4) and nitrous oxide (N2O) were estimated separately based on the URBEMIS2007 estimates of carbon dioxide from vehicles and natural gas combustion. CH4 and N2O emission factors from Table 3 in BAAQMD's "Source Inventory of Bay Area Greenhouse Gas Emissions" were utilized to estimate project emissions of these gases. Because these gases are more powerful global warming gases the emissions were multiplied by a correction factor to estimate “carbon dioxide equivalents”. CH4 was assumed to have a Global Warming Potential of 21 times that of CO2, while N2O was assumed to have a Global Warming Potential of 310 times that of CO2. The URBERMIS2007 output for operational emissions is attached. A spreadsheet is also attached that shows the adjustment of the transportation emissions to account for methane and nitrous oxide emissions, with the result reported as “CO2 equivalent”.

Direct Emissions from Area Sources

Area source emissions of carbon dioxide were also quantified by the URBEMIS2007 program. The URBEMIS program identifies 5 categories of area source emissions:

Natural Gas Combustion
Hearth Emissions
Landscaping Emissions
Architectural Coating
Consumer Products

Natural gas emissions result from the combustion of natural gas for cooking, space heating and water heating. Estimates are based on the number of residential land uses and the number and size of nonresidential land uses.

Hearth emissions consist of emissions from wood stoves, wood fireplaces (where allowed), and natural gas fireplaces related to residential uses.

URBEMIS calculates emissions from fuel combustion and evaporation of unburned fuel by landscape maintenance equipment. Equipment in this category includes lawn

mowers, rotor tillers, shredders/grinders, blowers, trimmers, chain saws, and hedge trimmers used in residential and commercial applications. This category also includes air compressors, generators, and pumps used primarily in commercial applications.

Consumer product emissions are generated by a wide range of product categories, including air fresheners, automotive products, household cleaners and personal care products. Emissions associated with these products primarily depend on the increased population associated with residential development. In URBEMIS2007, these sources generate ROG emissions but not carbon dioxide.

Architectural coating emissions result from the evaporation of solvents contained in paints, varnished, primers and other surface coatings associated with maintenance of residential and nonresidential structures. In URBEMIS2007, this source generates ROG emissions but not carbon dioxide.

The URBERMIS2007 output for operational emissions is attached. A spreadsheet is also attached that shows the adjustment of the area source emissions to account for methane and nitrous oxide emissions, with the result reported as “CO2 equivalent”.

Indirect Emissions

Indirect emissions are related to secondary emissions of global warming gases emitted away from the site and not directly related to project activities. The largest of this type of source is the electricity used by the project, a portion of which is generated by fossil-fueled power plants that generate global warming gases.

Global warming gas emissions related to electricity use were estimated using average annual electrical consumption per square foot of interior space recommended by the California Energy Commission. Emission rates for CO2, CH4 and N2O per megawatt hour were taken from the California Climate Action Registry General Reporting Protocol, Version 3.0. Project square footage was multiplied by the electrical usage factor and emission rates per megawatt hour to obtain annual emissions for CO2, CH4 and N2O. These emissions were converted to CO2 equivalents. The calculation is shown in the attached spreadsheet.

Total Emissions

Total estimated greenhouse gases emissions, expressed in CO2 equivalents, are shown in Table 1 below. Table 2 provides a breakdown of emissions by land use category.

Table 1: Annual Greenhouse Gas Emissions at Buildout, in Metric Tons (MT) CO2 Equivalent

Alternative	Annual GHG Emission (MT/Year)
CAC Alternative (with Density Bonus)	
Direct Mobile Sources	188,100.4
Direct Area Sources	48.649.9
Indirect Sources	66,556.5
Total	303,306.8
PD Alternative (with Density Bonus)	
Direct Mobile Sources	215,469.8
Direct Area Sources	63,453.7
Indirect Sources	76,508.6
Total	355,432.1

Table 2: Annual Greenhouse Gas Emissions by Land Use Type at Buildout, in Metric Tons (MT) CO2 Equivalent

Alternative	Annual GHG Emission (MT/Year)
CAC Alternative (with Density Bonus)	
Residential	174,314.1
Retail	79,906.8
Office	10,406.0
Medical	1046.4
Manufacturing	20,879.4
Other	16,754.1
Total	303,306.8
PD Alternative (with Density Bonus)	
Residential	234,998.9
Retail	76,459.2
Office	9,262.6
Medical	975.0
Manufacturing	18,730.5
Other	15,005.9
Total	355,432.1

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\Don Ballanti\Application Data\Urbemis\Version9a\Projects\florinvineyardCAC.urb924

Project Name: Florin Vineyard CAC

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)	53,386.43

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	206,567.97

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	259,954.40

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Natural Gas	43,649.98
Hearth	9,668.79
Landscape	67.66
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	53,386.43

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Single family housing	103,713.02
Regnl shop. center	76,826.80
General office building	7,595.13
Medical office building	488.39
Manufacturing	8,607.63
Other	9,337.00
TOTALS (tons/year, unmitigated)	206,567.97

Operational Settings:

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Does not include correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 0.00 Nonresidential Trip % Reduction: 0.00

Analysis Year: 2025 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	3,430.67	6.35	dwelling units	10,292.00	65,354.20	558,758.80
Regnl shop. center		42.35	1000 sq ft	1,339.60	56,732.06	418,115.27
General office building		9.45	1000 sq ft	510.67	4,825.83	41,140.21
Medical office building		4.00	1000 sq ft	88.00	352.00	2,655.84
Manufacturing		2.22	1000 sq ft	2,335.20	5,184.14	46,553.61
Other		5.71	1000 sq ft	1,207.50	6,894.83	50,814.86
					139,343.06	1,118,038.59

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	98.0	2.0
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	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

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
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)						
Regnl shop. center				2.0	1.0	97.0
General office building				35.0	17.5	47.5
Medical office building				7.0	3.5	89.5
Manufacturing				48.0	24.0	28.0
Other				2.0	1.0	97.0

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Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\Don Ballanti\Application Data\Urbemis\Version9a\Projects\florinvineyardPD.urb924

Project Name: Florin Vineyard PD

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)	69,631.58

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	236,624.47

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	CO2
TOTALS (tons/year, unmitigated)	306,256.05

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Natural Gas	56,505.98
Hearth	13,034.83
Landscape	90.77
Consumer Products	
Architectural Coatings	
TOTALS (tons/year, unmitigated)	69,631.58

Area Source Changes to Defaults

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

Source	CO2
Single family housing	139,819.10
Regnl shop. center	73,511.94
General office building	6,760.76
Medical office building	455.09
Manufacturing	7,714.87
Other	8,362.71
TOTALS (tons/year, unmitigated)	236,624.47

Operational Settings:

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Does not include correction for passby trips

Includes the following double counting adjustment for internal trips:

Residential Trip % Reduction: 0.00 Nonresidential Trip % Reduction: 0.00

Analysis Year: 2025 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	4,625.00	6.35	dwelling units	13,875.00	88,106.25	753,282.01
Regnl shop. center		42.35	1000 sq ft	1,281.80	54,284.23	400,074.79
General office building		9.45	1000 sq ft	454.57	4,295.69	36,620.73
Medical office building		4.00	1000 sq ft	82.00	328.00	2,474.76
Manufacturing		2.22	1000 sq ft	2,093.00	4,646.46	41,725.21
Other		5.71	1000 sq ft	1,081.50	6,175.37	45,512.44
					157,836.00	1,279,689.94

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	98.0	2.0
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	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

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Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
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)						
Regnl shop. center				2.0	1.0	97.0
General office building				35.0	17.5	47.5
Medical office building				7.0	3.5	89.5
Manufacturing				48.0	24.0	28.0
Other				2.0	1.0	97.0

APPENDIX C

CLIMATE CHANGE PLAN

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Larry Greene
AIR POLLUTION CONTROL OFFICER

February 5, 2010

Mr. Steve T. Johns
Brewer Lofgren LLP
3727 Sutter Hill Lane
Carmichael, CA 95608

RE: Florin Vineyard Community Plan Elements Addressing Climate Change
SMAQMD No: SAC200400141H

Per our meeting on January 13, 2010; thank you for submitting the revised Florin Vineyard Community Plan Elements of Climate Change to the Sacramento Metropolitan Air Quality Management District (District) for review and comment.

Given the ongoing challenges of greenhouse gas quantification and mitigation, along with the unique challenges of the Florin Vineyard Community Plan project area, we appreciate your willingness to work cooperatively to address District concerns. With the revisions to the Florin Vineyard Climate Change Plan, submitted February 2, 2010, being included in the Final Environmental Impact Report; the District staff is pleased to endorse this plan. This Climate Change Plan requires measures totaling 10.625 percent reduction to be implemented at the plan-wide level from the District measures list. In addition, measures totaling 10 points must be chosen from the Attorney General's measures list and implemented at the project level.

Please feel free to contact Charlene McGhee of my staff at 916.874 4883 or cmcghee@airquality.org if you have any questions.

Sincerely,

Larry Robinson
Land Use and Transportation
Program Coordinator

c: Cathy Hack, DERA, Sacramento County
Charlene McGhee, Planner, SMAQMD
Jeane Berry, Climate Change Program, SMAQMD

777 12th Street, 3rd Floor ▪ Sacramento, CA 95814-1908
916/874-4800 ▪ 916/874-4899 fax
www.airquality.org

FLORIN VINEYARD COMMUNITY PLAN AREA
PLAN ELEMENTS ADDRESSING CLIMATE CHANGE

Overview

In 1999, Sacramento County initiated a community planning program for the Florin-Vineyard area. The proposed Florin-Vineyard Community Plan area covers approximately 3,766 acres and is located within the communities of Vineyard and South Sacramento. The area is commonly referred to as the "Gap" area because it is located between the existing urban area that is west of Elk Grove-Florin Road and the comprehensively planned North Vineyard Station and Vineyard Springs urban areas to the east. The northern boundary of the Plan area is generally comprised of ranchettes adjacent to an aggregate quarry.

The general boundaries of the Florin-Vineyard Community Plan area are as follows:

- Northern boundary: Elder Creek Road and the Sacramento City limits.

- Eastern boundary: Bradshaw Road, excluding the North Vineyard Station Specific Plan area.

- Southern boundary: Generally a few hundred feet north of Vintage Park Drive, north of the developed Churchill Downs and Vintage Park areas.

- Western boundary: Union Pacific Railroad tracks, and Elk Grove Florin Road.

Initiation of the Florin-Vineyard Community Plan will lead to changes to the County General Plan, and both the South Sacramento and Vineyard Community Plans.

This document identifies Plan elements that will be incorporated into the Florin Vineyards Community Plan approvals that are intended to reduce greenhouse gas emissions. These elements are intended to respond to the interim measures identified by the Sacramento Metropolitan Air Quality Management District's Guidance for Land Use Emission Reductions and the California Attorney General's February 14, 2008 letter entitled, "Addressing Global Warming Impacts at the Local Agency Level" (updated May 21, 2008.) The Florin Vineyard Community Plan approvals will contain elements that respond to the various design and operational objectives that are identified by both the SMAQMD and the Attorney General.

I. SMAQMD MEASURES FOR THE ENTIRE PLAN AREA.

A. MEASURES INCLUDED IN THE APPROVED FLORIN VINEYARD COMMUNITY PLAN AREA AIR QUALITY AND EMISSIONS REDUCTION PLAN

Sacramento County General Plan Policy AQ-15 requires all new major sources of emissions to be reviewed and modified or conditioned to achieve a reduction of emissions. The goal of the review is to achieve a 15 percent reduction of emissions from the base-case level. The Sacramento Metropolitan Air Quality Management District has prepared a list of measures with corresponding point values that can be applied to a project to achieve a reduction of emissions.

The SMAQMD approved the Florin Vineyard Community Plan area's AQ-15 Plan. The implementation of the measures identified in the Plan achieves a 12.5 percent reduction in emissions. The remaining 2.5 percent reduction will be met by each individual project within the Community Plan area. This tiered approach to reaching the 15 percent target will provide individual projects the flexibility to implement measures that complement their individual developments and site constraints.

Subsequent to the approval of the Florin Vineyard Community Plan area's AQ-15 Plan, SMAQMD updated its "Guidance for Land Use Emission Reductions." While the updated Guidance includes many of the same general measures as the previous Guidance, some of the measures have been further developed. Additionally, each measure in the updated Guidance corresponds to an estimated reduction in CO2 emissions. Each item listed below is from the updated Guidance, identifies the updated CO2 equivalent points for each measure, and generally corresponds to the items contained in the approved AQ-15 Plan.

1. SMAQMD Item #1. Non-residential projects provide plentiful short-term and long-term bicycle parking facilities to meet peak season maximum demand.

   0.625 Point.

2. SMAQMD Item #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.

   1.0 Point.

3. SMAQMD Item #15. Project provides high density office or mixed-use proximate to transit.

   1.5 Points.

4. SMAQMD Item #18. Project provides high-density residential development.

   2.5 Points.

5. SMAQMD Item #19. Multiple and direct street routing.

   1 Point.

6. SMAQMD Item #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.

   1 Point.

B. ADDITIONAL SMAQMD MEASURES, NOT INCLUDED IN THE APPROVED AQ-15 PLAN, THAT FURTHER REDUCE EMISSIONS PLAN-WIDE.

The Florin Vineyards Community Plan AQ-15 Plan is based on Version 1.1 of the "Recommended SMAQMD Guidance for Land Use Emissions Reductions." Subsequent to the preparation of the Plan, SMAQMD updated its Guidance. The most recent version of the Guidance is Version 2.4, which was updated on August 15, 2007. The Plan can incorporate some of the measures from the most recent version of the Guidance to further reduce emissions. The measures below, which can be incorporated into the Plan, are identified in the same manner as they are identified in Guidance Version 2.4.

AQMD Measure 23. Have at least three of the following on site and/or offsite within ¼ mile: Residential Development, Retail Development, Park, Open Space, or Office.

Comment: There are several sites within the Plan area where there is a concentration of a variety of uses and amenities.

Application: Plan-wide.

3 Points.

II. MEASURES IDENTIFIED IN THE ATTORNEY GENERAL'S "PROJECT ELEMENTS ADDRESSING CO2 EMISSIONS REDUCTIONS."

The California Attorney General has prepared a document entitled, "The California Environmental Quality Act - Addressing Global Warming Impacts at the Local Agency Level." Set forth in the left column in the table below is the list of the Attorney General strategies. Some of the strategies can be incorporated into all projects in the Plan area, and where a strategy is able to be incorporated into all projects in the Plan area, the method for doing so is described in the center "Plan Level Application" column of the table. However, due to the diversity of existing and proposed uses within the Plan area, some of the Attorney General strategies are more effectively applied to specific projects rather than Plan-wide. Thus, where a strategy is more appropriately applied on a project-by-project basis, it is listed in the "Project Level Application" column on the right side of the table.

Each strategy in the Project Level Application column has been assigned points that roughly correspond to the relative significance of each measure. The points for each measure may or may not have a representative correlation to the estimated percentage of CO2 emissions reduction. Each individual project in the Plan area will implement strategies from the Project Level Application list that have a collective value of at least 10 points.

The project-specific strategies are in addition to the remaining 2.5 percent reduction that must be met by each individual project under the approved Air Quality and Emissions Reduction Plan. (See Air Quality and Emissions Reduction Plan, page 5.) As is the case with the Air Quality Plan, the goal of the project specific measures to provide each project with the flexibility to utilize the most feasible measures for the proposed development and site constraints.

Projects within the Florin Vineyards Community Plan area will comply with each of the Plan Level Application measures in this section, unless the required measure is included in the County's Green Building Code (once adopted), in which case the project will comply with the more stringent standard.

The project specific measures list below is comprised of measures identified by the County of Sacramento Department of Environmental Review and Assessment as well as measures set forth in the Attorney General's document. Where a measure has a range of points associated with its application, the actual number of points applied to a specific project will be determined by the project applicant in consultation with the County of Sacramento Department of Environmental Review and Assessment.

Florin Vineyard Gap Project Elements Addressing Climate Change		
California Attorney General Strategy	**Plan Level Application**	**Project Level Application** (Each project will need to implement measures with a collective value of at least 10 points.)
Energy Efficiency Strategies		
Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use.		Exceed Title 24 energy efficiency standards by 20%. (1 Point.)
		Install EPA approved fireplaces and woodstoves or project does not feature fireplaces or woodstoves. (1 Point.)
		Install natural gas line in rear yard for BBQ and install exterior electrical outlets for electric yard equipment compatibility. (1 Point.)
		Provide an electric mower to each residential buyer. (.5 Point.)
		Install attic insulation in excess of R-38 value. (1 Point.)
		Design buildings to be energy efficient. Site buildings to take advantage of shade, prevailing winds, landscaping and sun screens to reduce energy use. (1 - 2 Points.)
		Install whole-house fan in

		each residential unit. (1 Point.)
Install efficient lighting and lighting control systems. Use of daylight as an integral part of lighting systems of buildings.	Provide CFD light bulbs for all fixtures to each homeowner upon initial sale.	Install efficient lighting and lighting control systems. Use of daylight as an integral part of lighting systems of buildings. (1 Point.)
Install light colored "cool" roofs, cool pavements, and strategically placed shade trees.	The Plan area has developed an enhanced Green Streets/Parkway Plan that encourages pedestrian circulation and bicycle usage throughout area. Thoroughfares, arterials and collector streets will have shade-tree planted medians and shade-tree planted landscape buffers between the roadway and the separated sidewalk. Additionally, shade trees will be incorporated into all projects as required by County Code.	Install parking lot shading 10% beyond what is required by the Sacramento County Code. (1 Point.)
Provide information on energy management services for large energy users.		Provide information on energy management services for large energy users. (.25 Point.)
Install energy efficient heating and cooling systems, appliances and equipment, and control systems.	Install Energy Star (or equivalent) heating and cooling systems, appliances and control systems.	
Install light emitting diodes (LEDs) for traffic, street and other outdoor lighting.	LED lighting will be installed for traffic and street lighting to the extent that the proposed lighting complies with the illumination and construction standards for the County and/or other agencies.	

Limit the hours of operation of outdoor lighting.	Outdoor lighting in non-residential uses and in the common areas of multi-family housing will be limited, subject to illumination and safety standards.	
Use solar heating, automatic covers, and efficient pumps and motors for pools and spas.		Use solar heating, automatic covers, and efficient pumps and motors for pools and spas. (.5 Point.)
Provide education on energy efficiency.		Provide education on energy efficiency. (.25 Point.)
Renewable Energy Strategies		
Install solar and wind power systems, solar and tankless hot water heaters and energy-efficient heating ventilation and air conditioning. Educate consumers about existing incentives.		Install tankless hot water heater. (.5 Point.)
		Install solar hot water heater. (1 Point.)
		Install solar and/or wind power systems. (2 - 5 Points.)
		Install hot water recirculating system. (.5 Point.)
Install solar panels on carports and over parking areas.		Install solar panels on carports and over parking areas. (2 - 5 Points.)
Use combined heat and power in appropriate applications.		Use combined heat and power. (2 - 5 Points.)
Water Conservation and Efficiency Measures		
Create water-efficient		Create water-efficient

landscapes.		landscapes. (.5 Point.)
Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls.		Install water-efficient irrigation systems and devices, such as soil moisture-based irrigation controls. (.5 Point.)
Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water.		Use reclaimed water for landscape irrigation in new developments and on public property. Install the infrastructure to deliver and use reclaimed water. (1 Point.)
Design buildings to be water-efficient. Install water-efficient fixtures and appliances.		Design buildings to be water-efficient. Install low-flow toilets, shower heads and faucet aerators. Install water efficient appliances. (0.5 – 1 Point.)
Use graywater. (Graywater is untreated household waste water from bathtubs, showers, bathroom wash basins, and water from clothes washing machines.) For example, install dual plumbing in all new development allowing graywater to be used for landscape irrigation.		Use graywater for landscape irrigation. (.5 Point.)
Restrict watering methods (e.g., prohibit systems that apply water to non-vegetated surfaces) and control runoff.	Individual projects CC&R's will prohibit the application of irrigation water to non-vegetated surfaces.	
Restrict the use of water for cleaning outdoor surfaces and vehicles.		Restrict the use of water for cleaning outdoor surfaces and vehicles. (.25 Point.)
Implement low-impact	The Plan area's drainage plan	

development practices that maintain the existing hydrologic character of the site to manage storm water and protect the environment. (Retaining storm water runoff on-site can drastically reduce the need for energy-intensive imported water at the site.)	protects creeks that flow through the area. The drainage plan also includes water detention basins that not only improves the quality of runoff into the creeks by allowing sedimentation to settle prior to discharge, but also recharges groundwater by holding water before discharge into creeks.	
Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate to the specific project.		Devise a comprehensive water conservation strategy appropriate for the project and location. The strategy may include many of the specific items listed above, plus other innovative measures that are appropriate to the specific project. (1 - 3 Points.)
Provide education about water conservation and available programs and incentives.		Provide education about water conservation and available programs and incentives. (.25 Point.)
Solid Waste Strategies		
Reuse and recycle construction and demolition waste (including, but not limited to soil, vegetation, concrete, lumber, metal, and cardboard).		Reuse and recycle 50% of construction and demolition waste (including, but not limited to, soil, vegetation, and concrete, lumber, metal, and cardboard). (.5 Point.)
Provide interior and exterior storage areas for recyclables and green waste and adequate recycling containers located in public areas.	Provide interior and exterior storage areas for recyclables in residential units and adequate recycling containers located in public areas.	
Recover by-product	This is not feasible for the proposed Plan.	

methane to generate electricity.		
Provide education and publicity about reducing waste and available recycling services.		Provide education and publicity about reducing waste and available recycling services. (.25 Point.)
Land Use Strategies		
Include mixed-use, infill, and higher density in development projects to support the reduction of vehicle trips, promote alternatives to individual vehicle travel, and promote efficient delivery of services and goods.	Sacramento County initiated a community planning program for the Florin-Vineyard area, also known as the "Gap" area. The term "Gap" has been used to refer to this area because it is located between the existing urban area to the west of Elk Grove-Florin Road and a comprehensively planned urban area to the east (i.e., North Vineyard Station and Vineyard Springs). The Plan has developed an enhanced Green Streets/Parkway Plan that encourages pedestrian circulation and bicycle usage throughout the Plan area, thus reducing vehicle trips. Pedestrian and bicycle paths throughout the Plan connect commercial areas, parks, schools and the hike/bike trail that runs along the riparian corridor. Higher density residential development within the Plan is located in close proximity to commercial services and to anticipated transit lines.	
Educate the public about		Provide information

the benefits of well-designed, higher density development.		regarding the benefits of well-designed, higher density development. (.25 Point.)
Incorporate public transit into project design.	This area is not currently served by transit. The Plan includes a transit fee to cover the cost of transit-related facilities and infrastructure within the Plan area. The fee will cover the cost of new buses to serve the Plan area, bus shelters in the Plan area, land acquisition and construction cost of a planned park and ride facility, the Plan area's share of a new bus maintenance facility. Specifically, the transit fees are identified for use by the Sacramento Regional Transit District for the acquisition of up to 15 bus vehicles, to acquire land for a 5 acre, 500 space park-and-ride lot, to contribute toward a new bus maintenance facility and to construct 40 bus shelters within the Plan area. It is estimated that the Plan area will generate approximately $11,907.000 for transit. The payments to transit are not required by ordinance or regulation. There will be convenient pedestrian and bicycle access to the transit facilities through the system of interconnected pedestrian and bicycle paths within the Plan and connecting to areas outside of the Plan area. The pedestrian and bicycle paths will connect residential areas to commercial areas, schools,	

	parks and other destinations.	
Preserve and create open space and parks. Preserve existing trees, and plant replacement trees at a set ratio.	The Plan includes preserves riparian areas that are adjacent to creeks and wetlands and mitigates wetlands where appropriate. The Plan also includes numerous parks. The Plan also contains a linear power line corridor that will remain as open space. The Plan also includes project-specific and Plan-area serving detention basins that will also remain as open space.	
Develop "brownfields" and other underused or defunct properties near existing public transportation and jobs.	The Plan area is comprised of underused properties that are, in the regional context, close to downtown and other central parts of the Sacramento region. The Plan area is comprised of 3766 acres over 670 separate parcels. Sacramento County initiated a community planning program for this area, also known as the "Gap" area, to comprehensively plan this area. The term "Gap" has been used to refer to this area because it is located between existing urban areas. The areas to the west, north and south are either developed with residential, commercial or industrial uses or are comprehensively planned urban areas. The development that will occur under the Community Plan will be much denser than what would occur on a project-by-project basis and will be better connected with	

	streets, bicycle trails and pedestrian routes than would be developed on a project-by-project basis. This area has been identified for development in the County's General Plan and the SACOG Regional Blueprint for Growth. The Plan also supports the seven growth principles identified in the Blueprint: 1. Transportation Choices: The Plan area is designed to encourage people to walk, ride bicycles, ride the bus and ride light rail. 2. Mixed-Use Developments: Residences, commercial areas, and offices are located near each other to create active neighborhoods. 3. Compact Development: The Plan area projects will be more compactly built and will use space in a more efficient manner than the existing land uses in the area. The Community Plan will encourage more walking, biking, and public transit use, and will shorten auto trips than what is currently available in the Plan area. 4. Housing Choice and Diversity: The Community Plan will include a variety of places where people can live – apartments, condominiums, townhouses, and single-family detached	

	homes on varying lot sizes – creating housing options for the variety of people who will reside and work in the area. 5. Use of Existing Assets: The Plan area is a very low-density area comprised of 670 parcels that will be comprehensively planned under the Community Plan, promoting the intensification of underutilized parcels. The areas around the Plan area are either developed or will be developed under a comprehensive plan. 6. Quality Design: The Community Plan will include an enhanced Green Streets/Parkway Plan that encourages pedestrian circulation and bicycle usage throughout the Plan area, thus reducing vehicle trips. Pedestrian and bicycle paths throughout the Plan area connect commercial areas, parks, schools and the hike/bike trail that runs along the riparian corridor. The Plan area is approximately four miles from light rail; an easy bus ride for access to the light rail system, providing a strong transit connection. 7. Natural Resources Conservation: The Community Plan preserves creeks and other riparian areas and provides access to these areas through bike and	

	pedestrian trails. Landscaping will frequently be drought tolerant and shade trees will be incorporated into the area to promote pedestrian activity as well as reduce energy consumption.	
Include pedestrian and bicycle-only streets and plazas within developments. Create travel routes that ensure that destinations may be reached conveniently by public transportation, bicycling or walking.	The Plan has developed an enhanced Green Streets/Parkway Plan that encourages pedestrian circulation and bicycle usage throughout the Plan area, thus reducing vehicle trips. The Plan area will include several miles of Class I and Class II bike paths adjacent to major roadways, which are intended to serve both commuter and recreational cyclists. Additionally, there are segments of off-street hike/bike paths that are adjacent to riparian areas and parks. The entire Plan area is located within ½ mile of either a Class I or Class II bike path and the bicycle circulation system is designed to connect to existing and planned bike paths outside of the Plan area. Non-residential projects will provide a bicycle lockers and bicycle racks. Class I bicycle storage will be provided at apartment complexes or condominium complexes without garages.	
Transportation and Motor Vehicle Strategies		
Limit idling time for		Limit idling time for

commercial vehicles, including delivery and construction vehicles.		commercial vehicles, including delivery and construction vehicles. (.5 Point.)
Use low or zero-emission vehicles, including construction vehicles.		Use low or zero-emission vehicles, including construction vehicles. (1 - 2 Points.)
Promote ride sharing programs e.g., by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles, and providing a web site or message board for coordinating rides.		Promote ride sharing programs by designating a certain percentage of parking spaces for ride sharing vehicles, designating adequate passenger loading and unloading and waiting areas for ride sharing vehicles and / or providing a web site or message board for coordinating rides. (.25 Point.)
		Install the minimum parking allowed by the Sacramento County Code. (1 Point.)
Create car sharing programs. Accommodations for such programs include providing parking spaces for the car share vehicles at convenient locations accessible by public transportation.		Create a car sharing program that includes providing parking spaces for the car share vehicles at convenient locations accessible by public transportation. (.5 Point.)
Create local "light vehicle" networks, such as neighborhood electric vehicle (NEV) systems.	The Plan area is not being designed to accommodate an additional vehicular circulation network, as the majority of the property within the plan area is not currently proposed for development and the installation of a complete system within the Plan area could be speculative.	

Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles (e.g., electric vehicle charging facilities and conveniently located alternative fueling stations).		Provide the necessary facilities and infrastructure to encourage the use of low or zero-emission vehicles such as electric vehicle charging facilities and alternative fueling stations. (.5 Point.) Provide priority parking to hybrid vehicles. (.5 Point.)
Increase the cost of driving and parking private vehicles by, e.g., imposing tolls and parking fees.		Increase the cost of driving and parking private vehicles by establishing parking fees. (1 Point.)
Build or fund a transportation center where various public transportation modes intersect.	The Plan area will provide essential bus stop improvements so that future bus service can provide an efficient connection to the Watt Avenue LRT station and to other bus routes. Commercial properties will provide low cost transit passes to employees, as coordinated through the Transportation Systems Management program. Each commercial development will include a display case or kiosk that displays transportation information. There will be convenient pedestrian and bicycle access to the transit facilities through the system of interconnected pedestrian and bicycle paths within the Plan area and connecting to areas outside of the Plan	

	area. The pedestrian and bicycle paths will connect residential areas to commercial areas, schools, parks and other destinations. The Plan area provides a development pattern that eliminates physical barriers that impede pedestrian and bicycle circulation, such as walls, berms, landscaping and slopes between residential and non-residential uses.	
Provide shuttle service to public transit.		Provide shuttle service to public transit. (1 Point.)
Provide public transit incentives such as free or low-cost monthly transit passes.		Provide public transit incentives such as free or low-cost monthly transit passes. (1 to 3 Points.)
Incorporate bicycle lanes and routes into street systems, new subdivisions, and large developments. Incorporate bicycle-friendly intersections into street design.	The Plan area has developed an enhanced Green Streets/Parkway Plan that encourages pedestrian circulation and bicycle usage throughout the Plan area. Pedestrian and bicycle paths throughout the Plan area connect commercial areas, parks, schools and the hike/bike trail that runs along the riparian corridor. Additionally, 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.	

Incorporate bicycle-friendly intersections into street design.	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.	
For commercial projects, provide adequate bicycle parking near building entrances to promote cyclist safety, security, and convenience. For large employers, provide facilities that encourage bicycle commuting, including, e.g., locked bicycle storage or covered or indoor bicycle parking.	Non-residential projects will provide bicycle lockers or bicycle racks near building entrances.	
Create bicycle lanes and walking paths directed to the location of schools, parks and other destination Points.	The Plan area has developed an enhanced Green Streets/Parkway Plan that encourages pedestrian circulation and bicycle usage throughout the Plan area. Pedestrian and bicycle paths throughout the Plan area connect commercial areas, parks, schools and the hike/bike trail that runs along the riparian corridor.	
Work with the school district to restore or expand school bus services.	The property owners within the Plan area will work with the Elk Grove Unified School District to include school bus services within the Plan area.	
Institute a telecommute work program. Provide information, training, and		Establish a telecommute work program and provide information, training and

incentives to encourage participation. Provide incentives for equipment purchases to allow high-quality teleconferences.		incentives to encourage participation. (.5 Point.)
Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation.		Provide information on all options for individuals and businesses to reduce transportation-related emissions. Provide education and information about public transportation. (.25 Point.)
Additional Strategies		
Each proposed project may propose other measures that do not appear on this matrix through consultation with and approval by the County of Sacramento Department of Environmental Review and Assessment. It is anticipated that the County will adopt Phase 2 of the County's Climate Action Plan within a year of the County's adoption of the 2030 General Plan. The Phase 2 document will include additional resources to reduce greenhouse gas emissions that may be implemented by projects within the Florin Vineyards Gap Community Plan area.		

APPENDIX D

AIR QUALITY MITIGATION PROGRAM

SACRAMENTO METROPOLITAN
AIR QUALITY
MANAGEMENT DISTRICT

Larry Greene
AIR POLLUTION CONTROL OFFICER

March 26, 2007

Mr. Roy Brewer
Brewer Lofgren Attorneys at Law
3727 Sutter Hill Lane
Carmichael, CA 95608

RE: Florin Vineyard Community Plan Air Quality Mitigation Plan Endorsement
AQMD No: SAC200400141G

Thank you for submitting the Florin Vineyard Community Plan Air Quality Management Plan.

We appreciate the cooperative way we were able to come to an agreement on how to address the General Plan Policy AQ-15 given the unique nature of this project. With the current revisions the Plan dated March 20, 2007, totals 12.5 points of the 15 points required for any projects within the Florin Vineyard Community Plan area. The remaining 2.5 points will be required to be chosen, in consultation with the Sacramento Metropolitan Air Quality Management District, and implemented by each individual project as they move through the planning process. With that understanding we are pleased to endorse this Air Quality Mitigation Plan.

Please feel free to contact me at 916.874 4883 or cmcghee@airquality.org if you have any questions.

Sincerely,

Charlene McGhee
Associate Air Quality Analyst

c: Lauren Hocker, DERA, Sacramento County
Larry Robinson, SMAQMD

777 12th Street, 3rd Floor ▪ Sacramento, CA 95814-1908
916/874-4800 ▪ 916/874-4899 fax
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Florin Vineyard Community Plan Area
Air Quality and Emissions Reduction Plan

EXECUTIVE SUMMARY

This document presents the Air Quality and Emissions Reduction Plan for the proposed the Florin Vineyard Community Plan area in the County of Sacramento.

The County of Sacramento General Plan Policy AQ-15 requires "a 15% reduction in emissions from the level that would be produced by a base-case project assuming full trip generation per the current ITE Trip Generation Handbook." The Florin Vineyard Community Plan area contains 3,766 acres, as shown on the Planning area Boundary Map (Figure 1), with the following approximate boundaries:

- Northern boundary: Elder Creek Road and the Sacramento City limits.
- Eastern boundary: ½ mile East of Bradshaw between Elder Creek and Florin Roads and at Bradshaw Road South of Florin Road excluding the North Vineyard Station Specific Plan area.
- Southern boundary: Generally a few hundred feet north of Vintage Park Drive, north of the developed Churchill Downs and Vintage Park area.
- Western boundary: Union Pacific Railroad tracks, and Elk Grove-Florin Road area is situated.

The term "Gap" has been used to refer to this area because it is located between the existing urban area to the west of Elk Grove-Florin Road and the comprehensively planned areas to the east, the North Vineyard Station Specific Plan and the Vineyard Springs Comprehensive Plan. The Draft Florin Vineyard Community Plan contemplates between 8,950 and 12,500 residential units at a variety of densities, and a mix of commercial, office, industrial, school, park and open space uses.

The Draft Florin Vineyard Community Plan is the result of a County initiated planning effort to fill in the areas between existing development and approved planning areas. The Florin-Vineyard Citizens Advisory Committee was appointed to help Planning staff draft the Community Plan. The result of the planning process was the CAC Preferred Plan. At the direction of the Board of Supervisors, County planning staff provided alternative land use scenarios for selected portions of the planning area. These were identified as "Planning Options," in the Draft Plan submitted by the Board for environmental assessment. The planning options represent opportunities for increased densities and, in some cases, allow for a mix of uses beyond those identified in the CAC Plan.

This Air Quality and Emissions Reduction Plan was prepared by the applicant group at the request of Sacramento County. While the applicant group comprises approximately 50% of the lands with non-industrial zoning proposed, this document is intended to provide a baseline for future project applications and create consistency among measures that would otherwise not be achievable with such a diverse fabric of ownerships and land uses. The point values achieved in this plan will be credited against each project's obligation toward their 15% emissions reduction. Together with a supplemental Air Quality and Emissions Reduction Plan submitted by individual project applicants, each project's measures have the goal of reducing peak hour vehicle trips and emissions from both mobile and direct sources by 15%.

INTRODUCTION

Sacramento County General Plan Policy AQ-15 requires all new major sources of emissions be reviewed and modified or conditioned to achieve a reduction in emissions. The indirect source review will include a 15 percent reduction in emissions from the level that would be produced by a base-case project.

The Sacramento Metropolitan Air Quality Management District (SMAQMD) has prepared a list of measures and corresponding point values that can be applied to achieve the targeted 15% reduction in emissions. Each emission reduction measure is assigned a point value, which is approximately equivalent to the percentage reduction in emissions from the level that would be produced by a base-case project assuming full trip generation per the current ITE Trip Generation Handbook. The emission reduction measures are organized into the following categories:

- Bicycle, Pedestrian and Transit
- Parking
- Mixed Use
- Building Components
- Transportation Demand Management and Miscellaneous

PROJECT DESCRIPTION AND TRANSPORTATION SETTING

The proposed Florin Vineyard Plan area is a 3,766 acre mixed-use project located in the central portion Sacramento County. The project site is located between the existing Florin community and the area comprising the North Vineyard Station Specific Plan. The planning area is located south of Florin Road, north of Calvine Road, and primarily east of Elk Grove-Florin Boulevard and west of Bradshaw Road, as shown on the Location Map (Figure 2). The draft Community Plan features between 8,950 and 12,500 residential units in a variety of density levels, and a mix of commercial, business park, industrial park, school, park and open space uses, all as described below in Table 1.

Table 1 - Land Use Summary

Zoning	CAC Acres	Planning Acres
Industrial	1242.0	841.0
Industrial Reserve	0.0	275.0
Commercial	145.0	158.0
Office	5.0	5.0
Ag Residential	1028.0	559.0
Low Density Residential	1140.0	1677.0
Medium Density Residential	13.7	90.5
High Density Residential	45.0	86.0
Open Space	89.3	74.5
Golf/Recreation	58.0	0.0
Total Acres	**3766.0**	**3766.0**

An illustrative map of the draft Florin Vineyard Community Plan provided as Figure 3 is shown, with the Planning Department alternatives identified as “Planning Options.”

An enhanced Green Streets/Parkway Plan, which includes green streets and trails, is proposed to provide attractive alternatives to driving. The green streets and bike ways plans, (Figures 4.0 – 4.7) are intended to encourage internal pedestrian circulation and ease of access throughout the plan area, as well as providing enhanced access to neighboring communities.

Access Characteristics
Vehicular access to the project site is extensive. There are two major North-South roadways (South Watt/Elk Grove Florin and Bradshaw Roads) as well as three major East-West roadways (Elder Creek, Florin and Gerber Roads.)

Bicycle Facilities
Bicycle facilities are currently limited within and near the project site. However, Sacramento County's Bikeway Master Plan proposes Class II bike lanes on Bradshaw, Elder Creek, Florin and Gerber Roads. The Florin Vineyard Property Owners Group is proposing additional bike lanes as depicted in the green streets and bike ways plans (Figures 4.0 – 4.7).

Transit Service and Facilities
Sacramento Regional Transit (RT) does not currently serve this area. Regional Transit's 20 Year Vision plan shows the following transit planned for this area:

- Enhanced Bus Corridor on Elk Grove-Florin and Florin Roads
- Trunk Bus on Bradshaw Road
- Light Rail within the existing heavy rail corridor that runs diagonally through the planning area

Proposed Air Quality Measures
The Proposed Air Quality Measures (Table 2) present measures to be applied throughout the Community Plan area to reduce emissions as required by General Plan Policy AQ-15. Each measure has been selected from the menu of creditable measures for emissions reduction developed by the SMAQMD, and the inclusion of each measure has been approved by SMAQMD staff.

Measure Fulfillment Strategy
Implementation of the Measure Fulfillment Strategy (Table 3) achieves 12.5 points of the 15.0 points required by policy. Any additional measures required to achieve the 15% reduction requirement shall be met by each individual project by implementation of measures from version 1.1 of Recommended SMAQMD Guidance for Land Use Emission Reductions (Table 4) or future measures recommended by SMAQMD, including additional measures which may be considered, "Innovative Strategies." This tiered approach to reaching the targeted 15% emissions reduction will provide individual projects the flexibility to implement measures that complement their individual developments and site constraints.

TABLE 2
Proposed Measures

BICYCLE/PEDESTRIAN/TRANSIT

#	Description		Comments
1	Non-residential projects provide bicycle lockers and/or racks	0.5	
6	The project provides for pedestrian facilities and improvements	1.0	Wider sidewalks separated from roadway and buffered by landscaping are incorporated into the street cross sections (Figures 4.2 – 4.7)
7	Bus service providing headways of 15 minutes or less for stops within ¼ mile; the project provides essential bus stop improvements	1.0	
8	Provide a display case or kiosk within each commercial development, displaying transportation information	0.5	
10	High density residential, mixed, or retail/commercial uses within ¼ of planned transit, linking with activity centers and other planned infrastructure.	0.5	
	Points proposed in this section	3.5	

RESIDENTIAL DEVELOPMENT

#	Description		Comments
26	Average residential density 7 d.u. per acre or greater	1.5	1.5 points for 7 - 14 du/acre, 3.0 points for 15 – 29 de/acre, 4.5 points for 30+ du/acre
27	Multiple and direct street routing	2.5	Points per a connectivity factor
	Points proposed in this section	4.0	

MIXED USE

#	Description		Comments
33	The project provides a development pattern that eliminates physical barriers such as walls, berms, landscaping and slopes between residential and non-residential uses that impede bicycle or pedestrian circulation.	1.0	
	Points proposed in this section	1.0	

OTHER MEASURES

#	Description		Comments
99	Proximate location of complementary uses and on and off street connections between uses	4.0	Extensive network of non-vehicular circulation throughout planning area.
	Points proposed in this section	4.0	

	Total points proposed plan wide	**12.5**	

TABLE 3
Measure Fulfillment Strategy

Bicycle/Pedestrian/Transit Measures

1 Bike lockers and/or racks - Commercial uses within the project will install bicycle lockers and/or racks, which will provide employees with safe and convenient bicycle storage

6 Pedestrian Facilities - The design of the Florin Vineyard Gap project incorporates pathways and connections between land uses. Walkways adjacent to roads are wider that County standard 4' residential and 6' commercial walkways providing an enhanced pedestrian experience. (See Figures 4.2 – 4.7 for proposed walkway sizes)

7 Commercial Uses Proximate (1/4 Mile) to Planned Transit - Sacramento Regional Transit's 20-year vision plan currently provides bus service on three of the major streets that span the plan area.

8 Transportation Information Kiosk - The project will provide a Transportation Information display case or kiosk within commercial developments

10 High density or commercial uses proximate to transit – As illustrated on the land use plan (Figure 3) the higher density residential and commercial land uses are located closest to transit corridors and provide enhanced ridership opportunities.

Residential Development

26 Average residential density of 7 units per acre – The residential portions of the planning area provide an overall density of greater than 7 per acre. (Table 5)

27 Multiple and direct street routing – The plan area is made up of multiple North-South and East-West thoroughfare and arterial roadways. The proposed collector roadways, shown in the Green Streets/Parkway Plan (Figure 4.0), are intended to create parallel connections between the roadways to further enhance the grid pattern.

Mixed Use Development Measures

33 Elimination of Physical Barriers - The Florin Vineyard Community Plan will eliminate physical barriers that would impede bicycle or pedestrian circulation between residential and non-residential land uses. Berms and walls, where necessary, shall provide passages between uses such that noise mitigation can be achieved while allowing for interaction between differing land uses.

Other Measures

99 Community Plan Connectivity - The Florin Vineyard Gap proposes an extensive network of off-street pedestrian and bicycle facilities within the Florin Vineyard Gap Parkway and Landscape Plan. In addition to connections adjacent to and on roadways, this plan features trails, pathways and connections within greenbelts and open spaces that stretch the length and width of the community, interconnecting neighborhoods to one another as well as to convenient neighborhood commercial and employment opportunities.

TABLE 4

Recommended SMAQMD Guidance for Land Use Emission Reductions

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Bicycle/Pedestrian/Transit			
1	Non-residential projects provide bicycle lockers and/or racks	C	**0.5**	
2	Provide an additional 20 percent of required Class I and Class II bicycle parking facilities	C	**0.5**	
3	Non-residential projects provide personal showers and lockers	C	**0.5**	
4	Bicycle storage (Class I) at apartment complexes or condos without garages	R	**0.5**	
5	Entire project is located within 1/2 mile of an existing Class I or Class II bike lane and provides a comparable bikeway connection to that existing facility	R, C, M	**1.0**	All facilities must be in place before 20% of the occupancy permits are granted or before 2005, whichever occurs first.
6	The project provides for pedestrian facilities and improvements such as overpasses and wider sidewalks	R, C, M	**1.0**	All facilities must be in place before 20% of the occupancy permits are granted or before 2005, whichever occurs first.
7	Bus service provides headways of 15 minutes or less for stops within 1/4 mile; project provides essential bus stop improvements (i.e., shelters, route information, benches, and lighting).	C	**1.0**	Maximum combined credit for measure #7 and #64 is 2.0
8	Provide a display case or kiosk displaying transportation information in a prominent area accessible to employees or residents	R, C, M	**0.5**	
9	High density residential, mixed, or retail/commercial uses within 1/4 mile of existing transit, linking with activity centers and other planned infrastructure	R, C, M	**2.0 for light rail, 1.0 for bus only**	Planned infrastructure must be in General Plan or Community Plan. Office uses considered under "Commercial Building Design" category. Maximum credit is 2.0 (light rail and bus points cannot be combined).
10	High density residential, mixed, or retail/commercial uses within 1/4 mile of planned transit, linking with activity centers and other planned infrastructure	R, C, M	**1.0 for light rail, 0.5 for bus only**	Planned transit must be in MTP or RT Masterplan; planned infrastructure must be in General Plan or Community Plan. Office uses considered under "Commercial Building Design" category. Maximum credit is 1.0 (light rail and bus points cannot be combined). Cannot get points for both this measure and measure #9.

TABLE 4 (continued)
Recommended SMAQMD Guidance for Land Use Emission Reductions

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Parking			
11	Employee and/or customer paid parking system (no validations)	C	3.0	Must be coordinated with TMA.
12	Provide minimum amount of parking required	C, M	0.5	
13	Provide parking reduction: Office 25%, Medical office 8%, Commercial 5%, Industrial 10%,, Additional 10-20% if located along transit station (special review of parking is required)	C, M	2.5	
14	Provide grass paving or reflective surface for unshaded parking lot areas, driveways, or fire lanes that reduce standard paving by 10% or more	R, C, M	0.5	
15	Increase parking lot shading by 20% over code	R, C, M	1.0	
16	Provide electric vehicle charging facilities	R, C, M	1.0	Details of facilities' provision must be coordinated with City or County of Sacramento and SMAQMD.
17	Provide preferential parking for carpool/vanpools	C	0.5	
18	Covered carpool/vanpool spaces near the entrance to the building(s)	C	0.5	
19	Loading and unloading facilities for transit and carpool/vanpool users	C	0.5	
20	Project is located within one mile of a park and ride lot operated by a transportation agency	R	0.5	
21	Provide a parking lot design that includes clearly marked and shaded pedestrian pathways between transit facilities and building entrances	C	0.5	

TABLE 4 (continued)
Recommended SMAQMD Guidance for Land Use Emission Reductions

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Commercial Building Design			
22	Office FAR is 0.75 or greater within 1/4 mile of a planned transit stop	C, M	**1.5 for light rail, 0.8 for bus only**	Planned transit must be in MTP or RT Masterplan. Cannot get points for both this measure and the below measure.
23	Office FAR is 0.75 or greater within 1/4 mile of an existing transit stop	C, M	**2.5 for light rail, 1.5 for bus only**	
24	Setback distance is minimized between development and existing transit, bicycle, or pedestrian corridor	C, M	**1.0**	
25	Setback distance is minimized between development and planned transit, bicycle, or pedestrian corridor	C, M	**0.5**	Planned transit, bicycle or pedestrian corridor must be in MTP, RT Masterplan, General Plan, or Community Plan. Cannot get points for both this measure and the above measure.
	Residential Development			
26	Average residential density 7 d.u. per acre or greater	R	**1.5, 3.0, 4.5**	1.5 points for 7-14 du/acre, 3.0 points for 15-29 du/acre, 4.5 points for 30+ du/acre
27	Multiple and direct street routing (grid style)	R, C, M	**2.5**	Full credit for internal connectivity factor (CF) >= 0.70, and average 1/4 mile or less between external connections. [CF= # of intersections / (# of cul-de-sacs + intersections)]
28	Granny Flats - Have ancillary "granny units" (requires Special Development Permit but no Accessory Structure Use Permit)	R	**1.0**	

TABLE 4 (continued)
Recommended SMAQMD Guidance for Land Use Emission Reductions

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Mixed Use			
29	Development of projects predominantly characterized by properties on which various uses, such as office, commercial, institutional, and residential, are combined in a single building or on a single site. A "single site" may include contiguous properites.	M	3.0	Cannot get points for both this measure and any "Convenience Services" measures. Also mutually exclusive with #30.
30	Mixed use - Have at least 3 of the following on site and/or within 1/4 mile: Residential Development, Retail Development, Personal Services, Open Space, Office	R, C, M	1.0	Cannot get points for both this measure and any "Convenience Services" measures. Also mutually exclusive with #29.
31	Neighborhood serving as focal point with parks, school and civic uses within 1/4 mile	R, M	0.5	
32	Separate, safe, and convenient bicycle and pedestrian paths connecting residential, commercial, and office uses	R, C, M	2.0	
33	The project provides a development pattern that eliminates physical barriers such as walls, berms, landscaping, and slopes between residential and non-residential uses that impede-bicycle or pedestrian circulation	C, M	1.0	
	Convenience Services			
34	Day care facilities are provided on site	R, C, M	1.0	
35	Restaurant or cafeteria on site or within 1/4 mile of site	R, C, M	0.2	
36	Bank or ATM on site or within 1/4 mile of site	R, C, M	0.2	
37	Dry cleaners on site or within 1/4 mile of site	R, C, M	0.2	
38	Post office on site or within 1/4 mile of site	R, C, M	0.2	
39	Entertainment (movie/video) on site or within 1/4 mile of site	R, C, M	0.2	
40	Recreation facility/fitness center on site or within 1/4 mile of site	R, C, M	0.2	

TABLE 4 (continued)
Recommended SMAQMD Guidance for Land Use Emission Reductions

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Building Component Measures			
41	Install lowest emitting commercially available fireplace	R	1.0	
42	Install lowest emitting commercially available furnace	R, C, M	0.5	
43	Install ozone destruction catalyst on air conditioning systems, in consultation with SMAQMD	R, C, M	2.5	
44	Install Energy Star labeled roof materials	C	0.5	
45	Provide fiber optic wiring and connections	R, C, M	0.5	
46	Provide T1 wiring and connections	R, C, M	0.5	
47	Install roof photovoltaic energy systems	R	0.5	2.5 if offered as a standard feature on all homes
48	Comply with SMUD Advantage (Tier II) energy standards	R	0.5	
49	Comply with SMUD Advantage Plus (Tier III) or EPA/DOE Energy Star Home energy standards	R	1.0	Cannot get points for both this measure and the above measure.
50	Orient 75 or more percent of homes and/or buildings to face either north or south (within 30 degrees of N/S), and include shading masterplan	R	0.5	Moved from Commercial Building Design and Residential Development sections.

TABLE 4 (continued)
Recommended SMAQMD Guidance for Land Use Emission Reductions

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	TDM and Misc. Measures			
51	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.	R, C, M	2.5	
52	Carpool Matching Assistance	C	0.2	Must be coordinated with TMA.
53	Provide financial incentives to carpoolers for vehicle tune-up or maintenance	R, C, M	0.2	Must be coordinated with TMA.
54	Provide Flextime for non-SOV commuters	C	0.2	Must be coordinated with TMA.
55	Provide Guaranteed Ride Home	C	0.2	Must be coordinated with TMA.
56	Implement compressed work week schedules	C	0.2	Must be coordinated with TMA.
57	Provide on-site Transportation Coordinator	R, C, M	0.2	Must be coordinated with TMA.
58	Contract only with commercial landscapers who operate with equipment that complies with the most recent California Air Resources Board certification standards, or standards adopted no more than three years prior to date of use.	C	2.0	
59	Make physical development consistent with requirements for neighborhood electric vehicles	R	1.5	
60	Install videoconferencing system	C, M	0.5	
61	Promote teleworking and implement an employee telework policy	C, M	1.0	
62	Provide free-access telework terminals in multi-family projects	R	1.0	At least one terminal per 100 apartments
63	Implement Clean Air Business Practices such as using low-emission delivery vehicles, contract with alternative-fuel waste hauling companies, etc., in consultation with SMAQMD	C	tbd	
64	Provide electric shuttle to transit stops	R, C, M	2.0	Maximum combined credit for measure #7 and #64 is 2.0
65	Provide a complimentary cordless electric lawnmower to each residential buyer	R	2.0	
66	Provide an opportunity to receive either a complimentary bicycle or electric bicycle retrofit kit to each residential buyer	R	0.5	
67	Transit pass subsidy and/or commute alternative allowance	C	1.5	Point value based on 100% subsidy.

TABLE 4 (continued)

Recommended SMAQMD Guidance for Land Use Emission Reductions

Recommended SMAQMD Guidance for Land Use Emission Reductions

#	Description	Development Type R=Res C=Comm M=Mixed	Point Value	Comments
	Innovative Strategies			
66	Other proposed strategies, in consultation with City or County of Sacramento and SMAQMD	R, C, M	tbd	

Version 1.1

Printed 07/18/2006

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TABLE 5

Planning Application as of 7/27/06

DU	Net Acres	Project Name
541	63.3	Gardner Park
33	4.4	Phan Court
21	4.1	Sikich Acres
66	7.8	Lelani Village
391	58.5	Gerber Creek
50	10.0	Gardner Country Estates
342	40.7	Legends
728	82.9	Villages @ Elder Creek Estates
167	31.7	Hedgerow
852	102.6	Florin Vineyards
98	16.8	Porter
99	20.4	Dakuzaku
37	7.3	Lawson
47	8.8	Portico Acres
41	13.1	Kumar/Gacnaki
306	57.1	Vintage Creek #1
84	13.6	Vintage Creek #2
26	4.9	Vintage Creek #3
293	46.4	Caselman
93	17.9	Tovera-Elk Trail
98	14.2	Vintage Ranch
1705	244.7	Roemer Ranch
504	73.8	Stonehedge
6622	**945.0**	**7.01 du/Acre**

FIGURE 1
Planning area Boundary Map

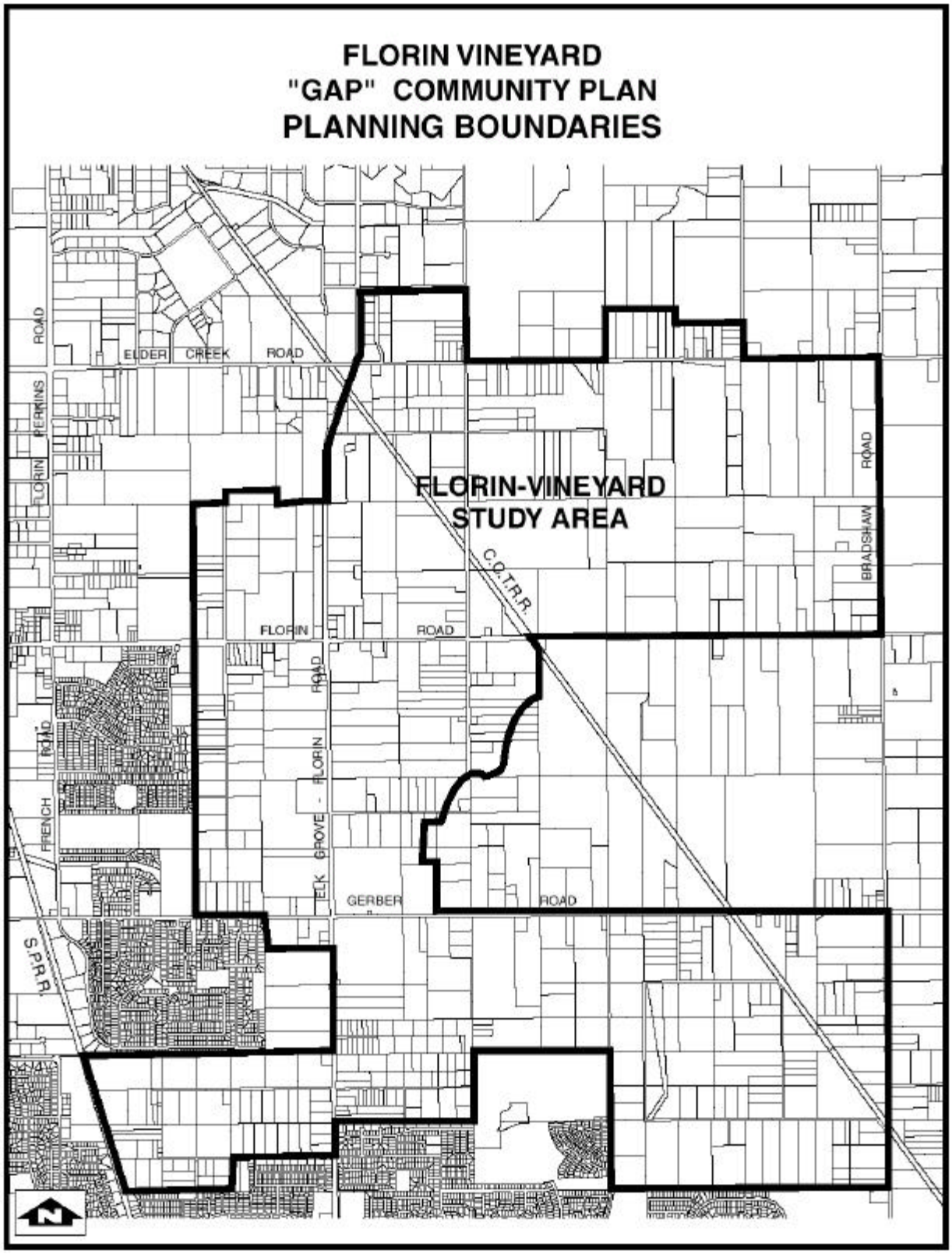


FIGURE 2
Planning Area Location Map

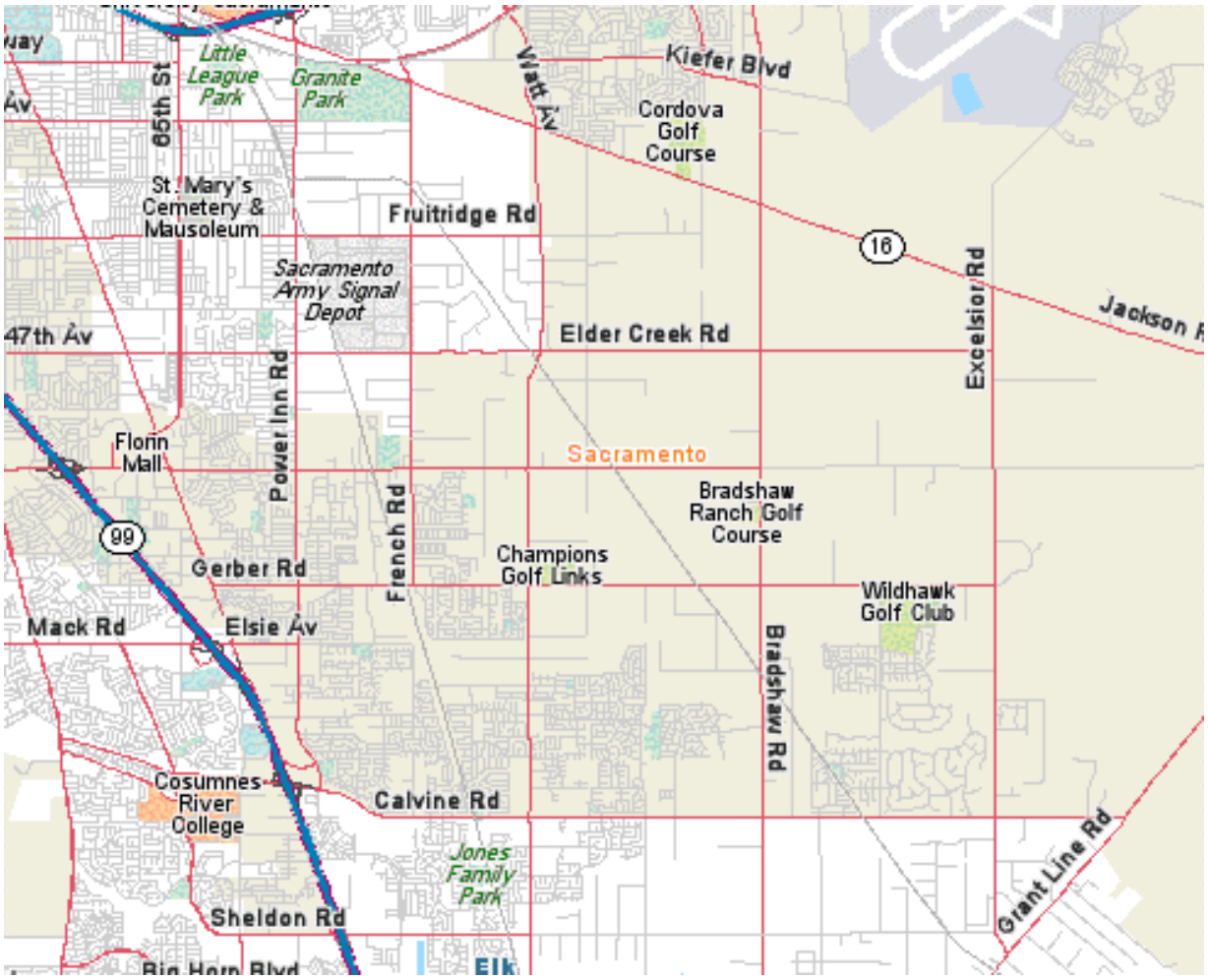


FIGURE 3
CAC PLAN WITH PLANNING DEPARTMENT ALTERNATIVES

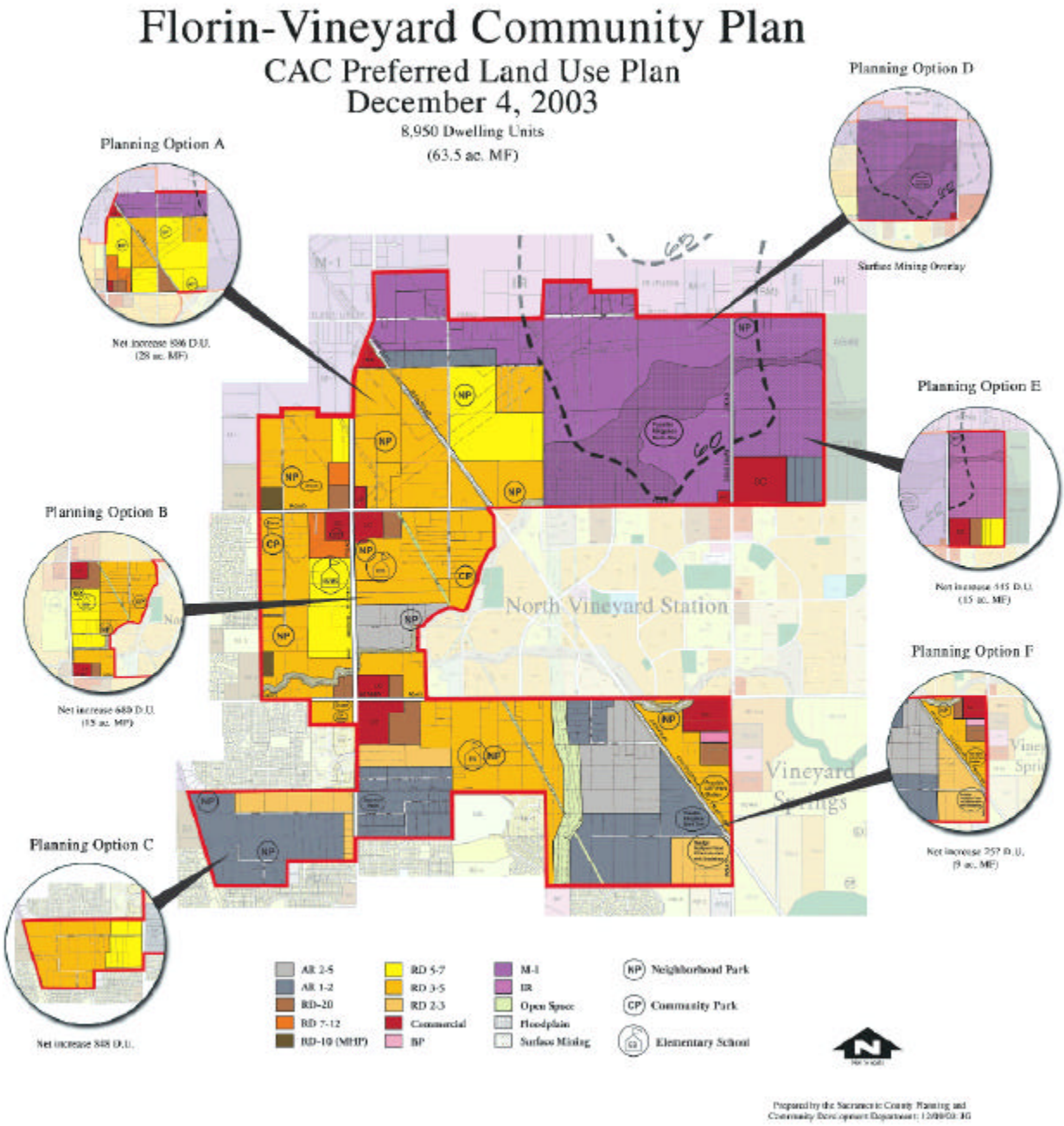


FIGURE 4.0
Green Streets/Parkway Plan

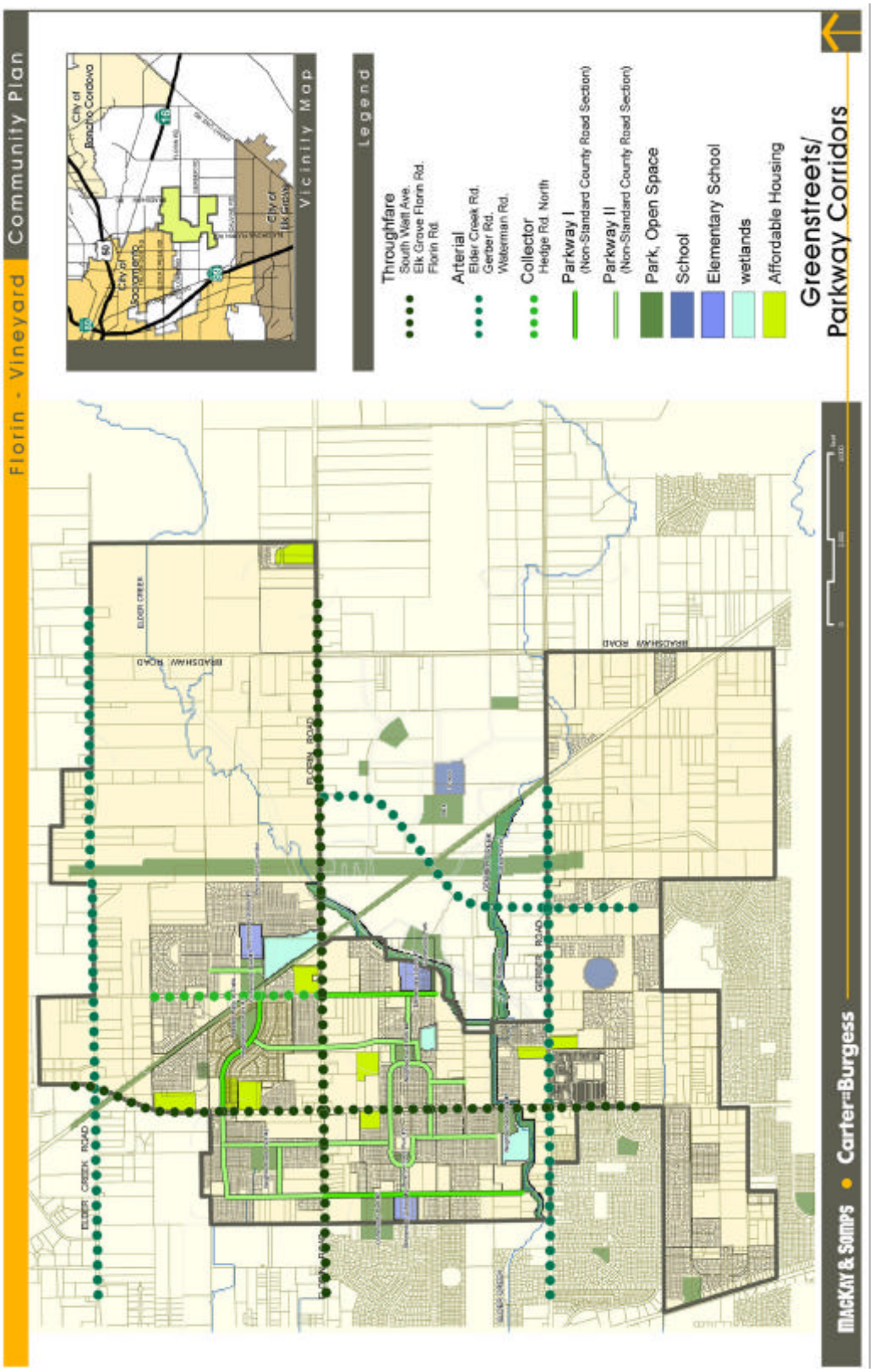


FIGURE 4.1
Bikeway Plan

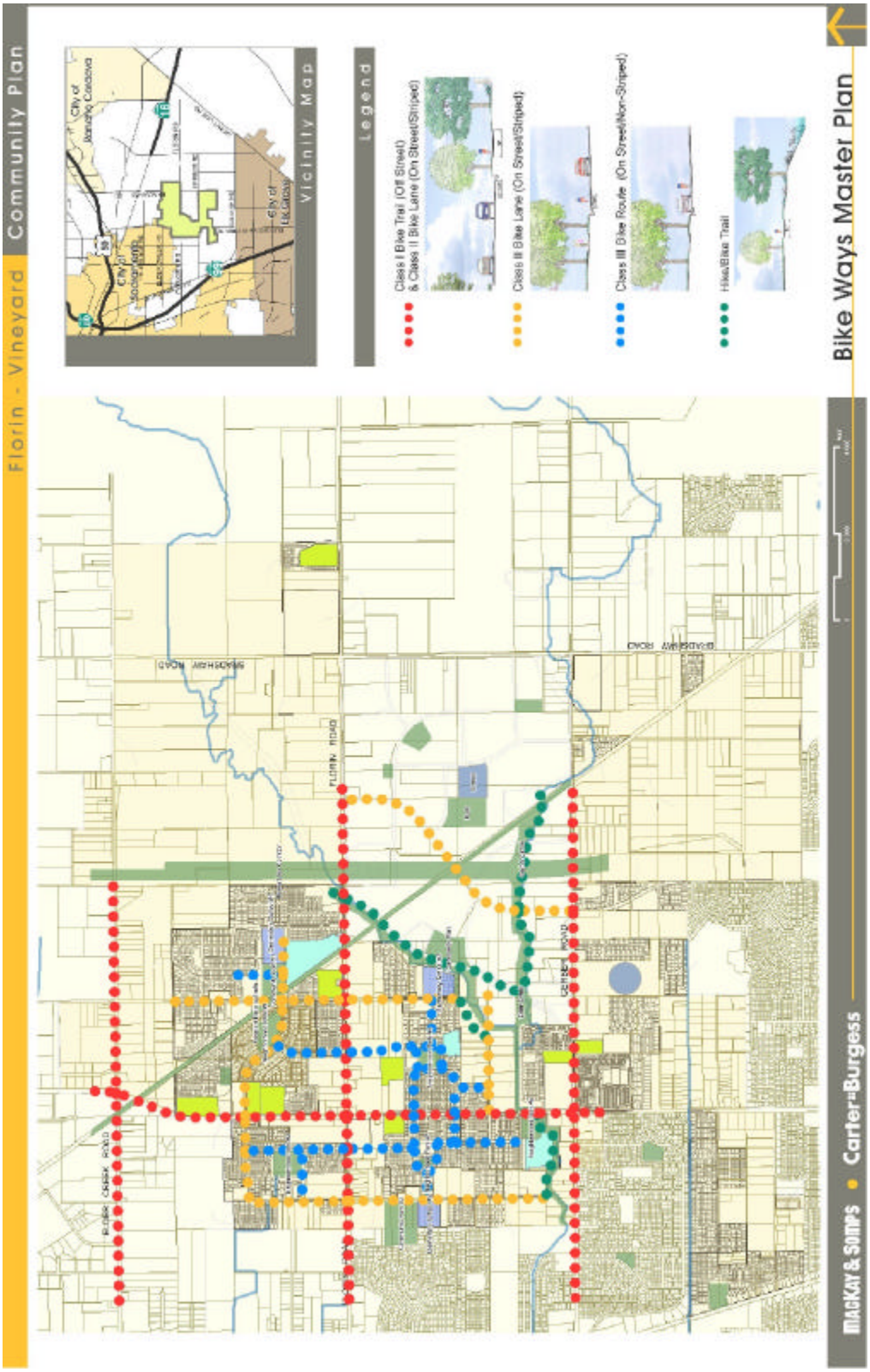


FIGURE 4.2
Thoroughfare Cross Section

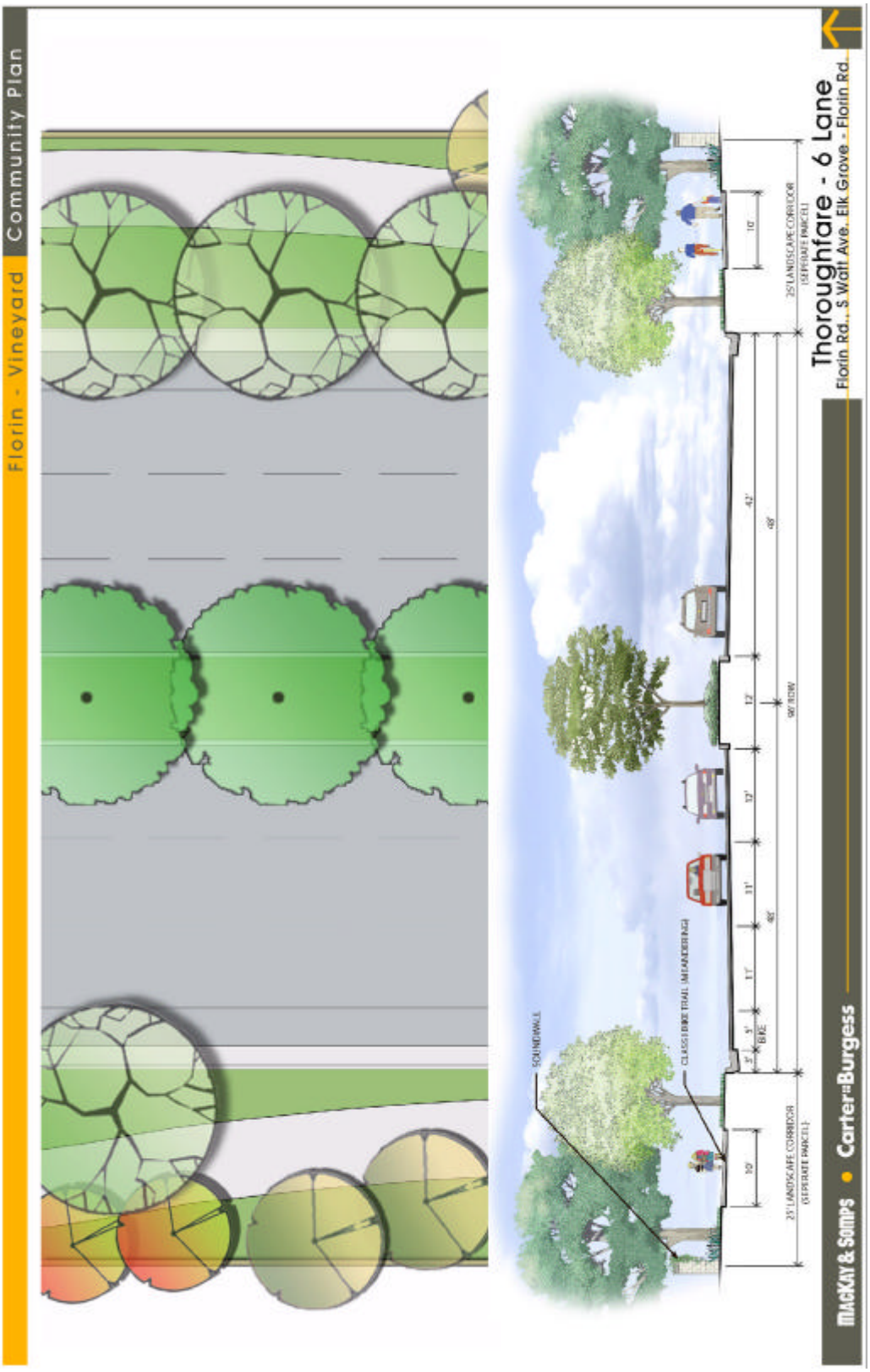


FIGURE 4.3
Arterial Cross Section

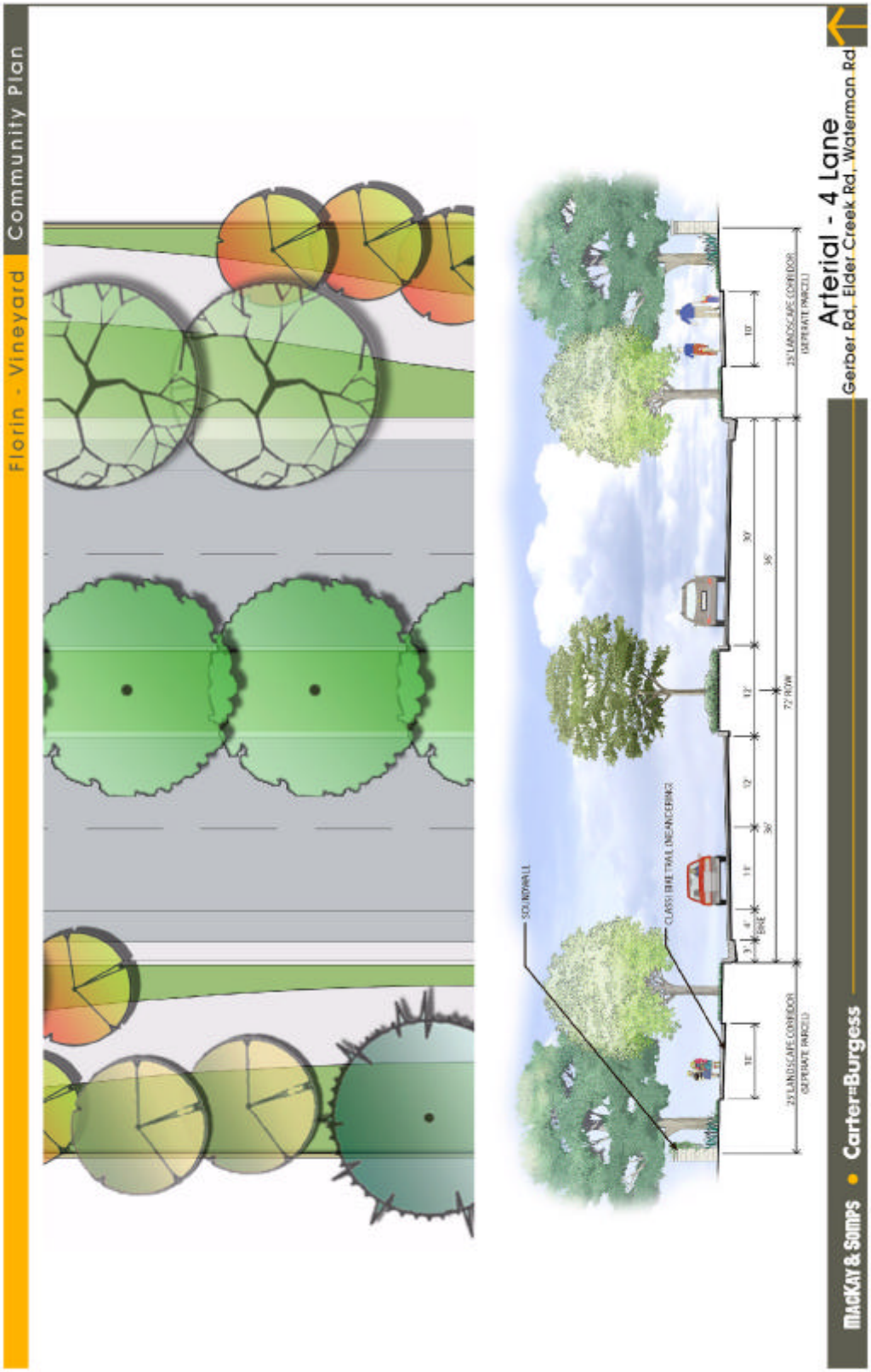


FIGURE 4.4
Collector Cross Section

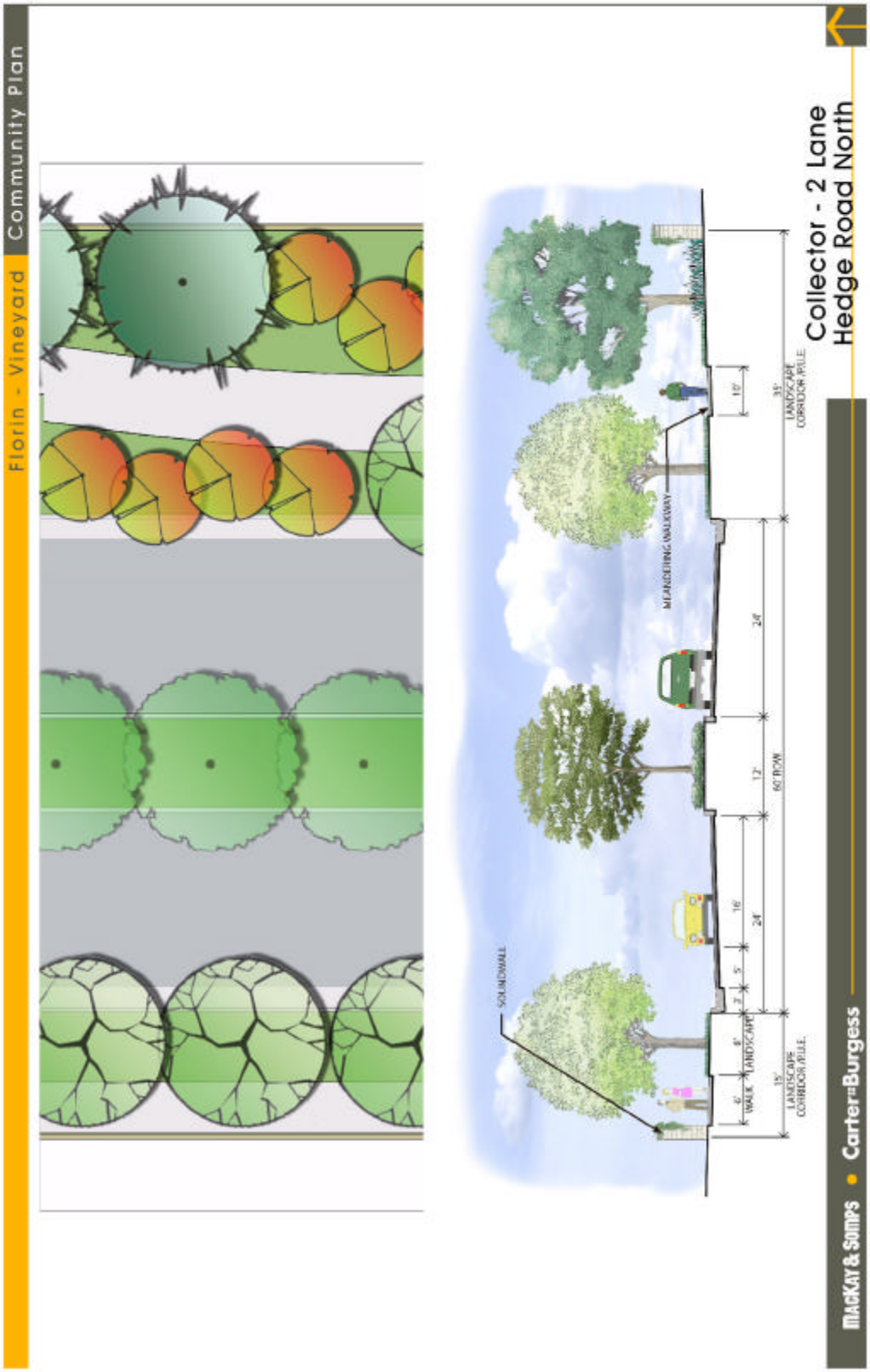


FIGURE 4.5
Parkway III w/Class III Bike Route Cross Section

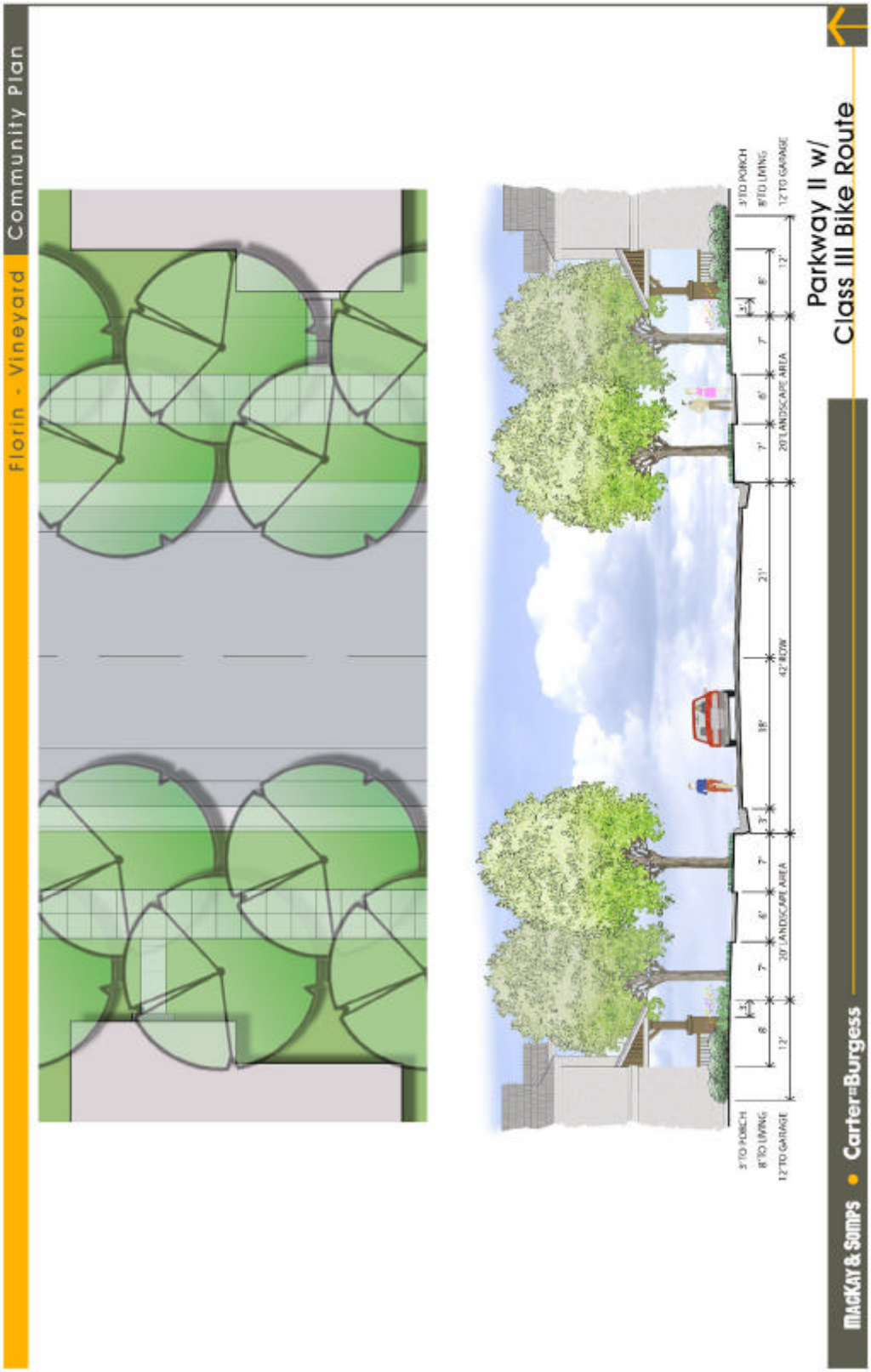


FIGURE 4.6
Parkway I w/Class II Bike Lane Cross Section

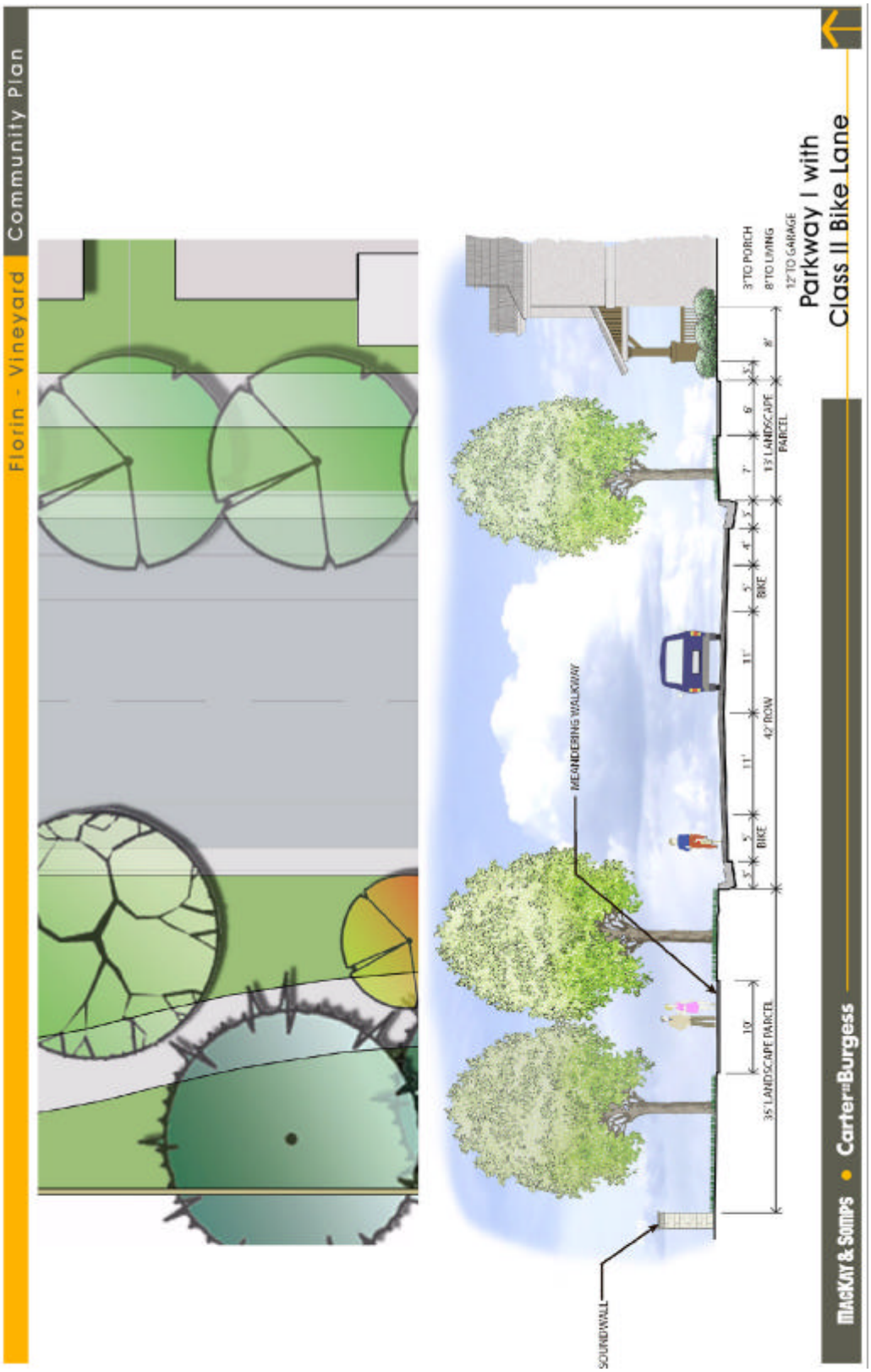
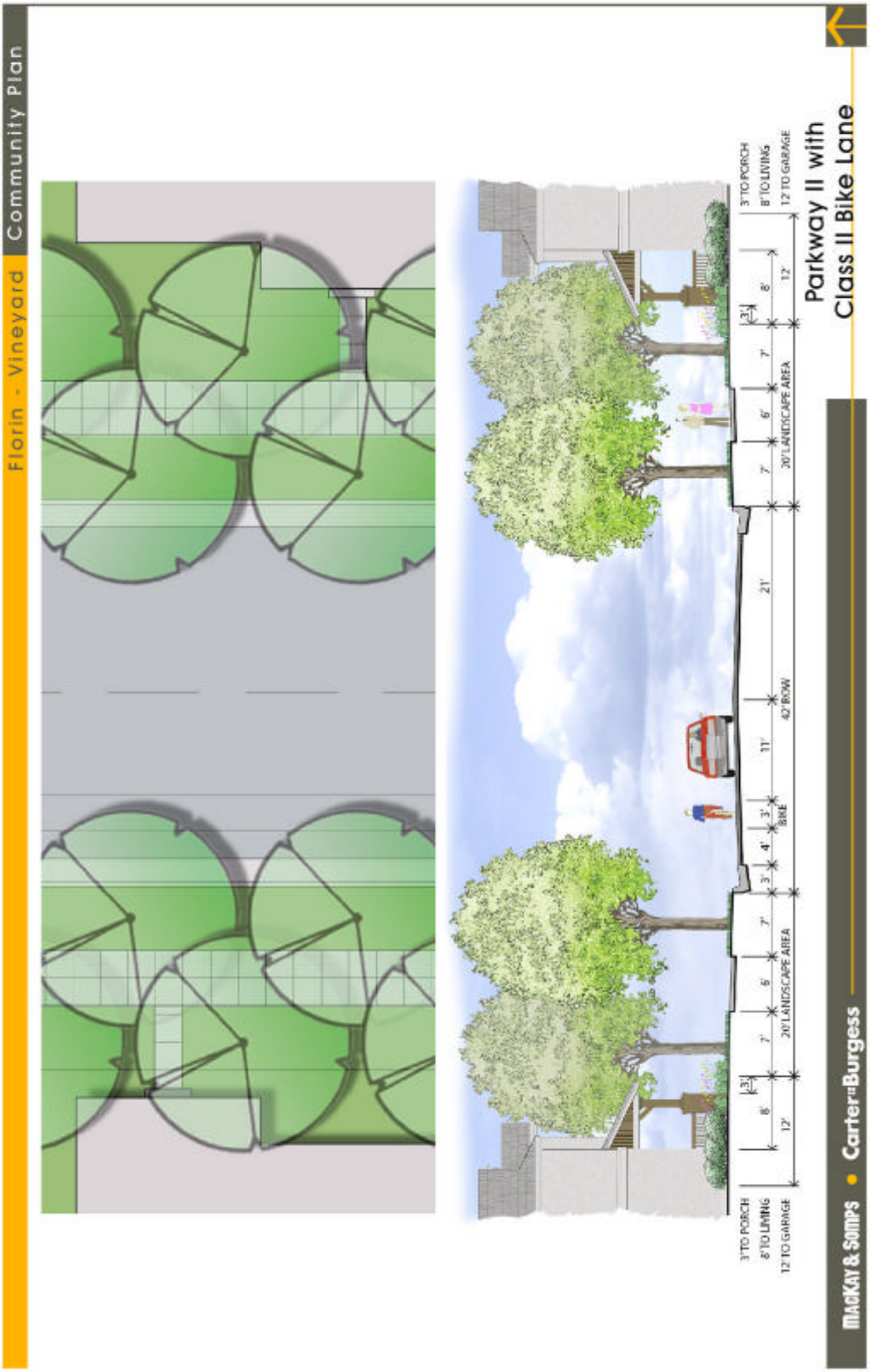


FIGURE 4.7
Parkway II w/Class II Bike Lane Cross Section



APPENDIX E

ENVIRONMENTAL NOISE ASSESSMENT

Environmental Noise Assessment

Florin-Vineyard Gap Project EIR

Sacramento County, California

BAC Job # 2005-613

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INTRODUCTION

This section discusses the existing noise environment in the project vicinity, and identifies potential impacts and mitigation measures related to development within the Florin-Vineyard Gap Community Plan (project) Area in Sacramento County, California. The project boundaries are shown in Figure 1. Specifically, this section analyzes potential noise impacts due to and upon development within the Project Area relative to applicable noise criteria and to the existing ambient noise environment.

The Florin-Vineyard Community Plan is located in unincorporated Sacramento County east of the City of Sacramento and north of the City of Elk Grove. The project is generally located north of Calvine Road, south of State Route 16 (SR 16), east of Power Inn Road, and west of Bradshaw Road. The community plan encompasses approximately 3,770 acres.

Two plan-area concepts are being evaluated and are referred to as the CAC (Community Advisory Committee) Plan and PD (Planning Department) Plan. In general, the PD Plan has higher residential densities than the CAC Plan with higher density clusters located around major intersections.

SETTING

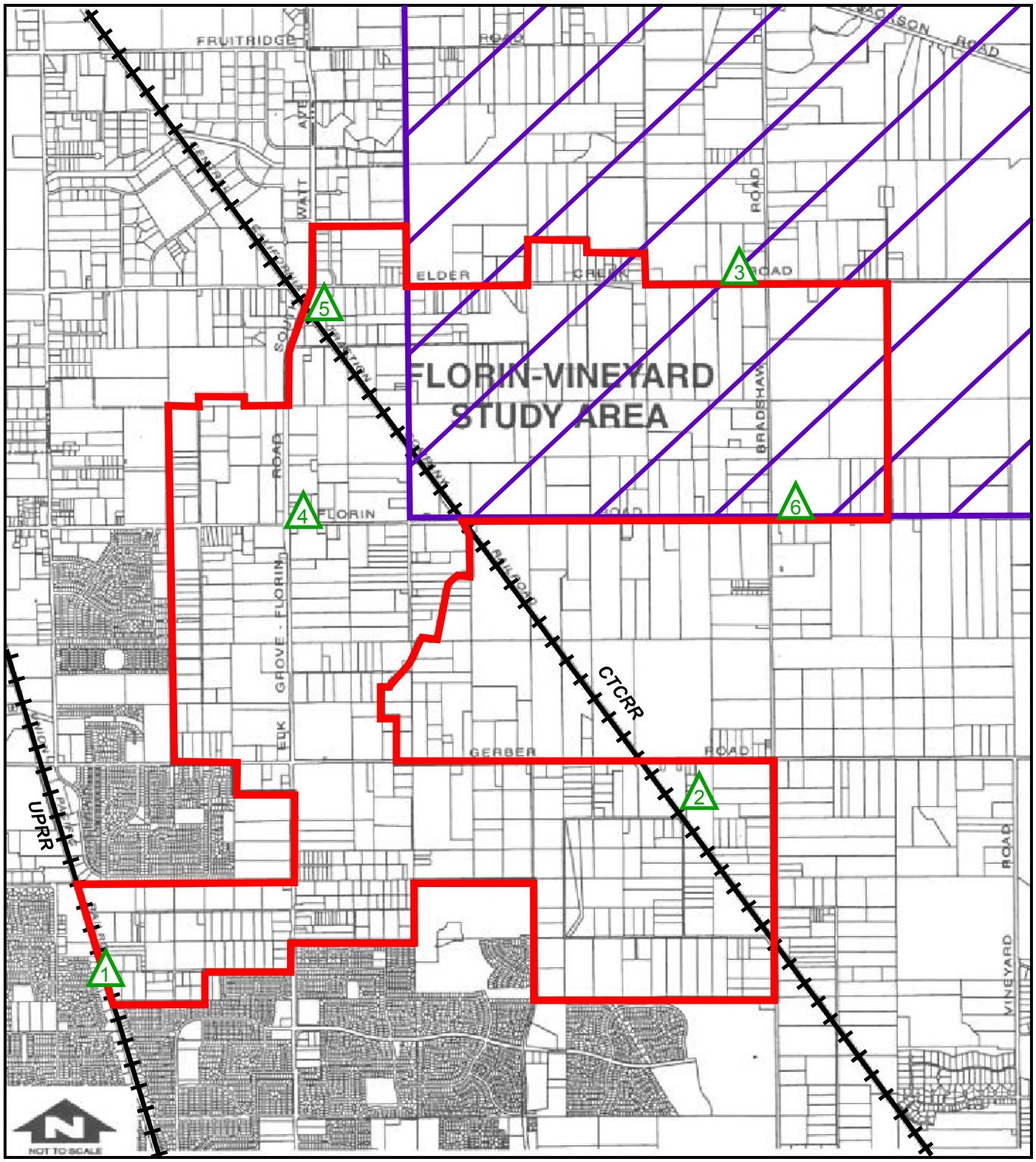
Acoustical Terminology

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough, they can be heard and are called sound. The number of pressure variations per second is called the frequency of sound, and is expressed as cycles per second, called Hertz (Hz).

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. As a result, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure), as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB, and changes in levels (dB) correspond closely to human perception of relative loudness.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable, and can be approximated by the A-weighing network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and the way the human ear perceives noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels. Table 1 contains definitions of acoustical terminology used in this section.

Figure 1
Florin Vineyard Community Plan Area Location
Sacramento County, California



: Florin Vineyard Study Area

: Mather Airport Policy Area

: Noise Measurement Locations

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Table 1
Acoustical Terminology

Acoustics	The science of sound.
Ambient Noise	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
Attenuation	The reduction of noise.
A-Weighting	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
Decibel or dB	Fundamental unit of sound, A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
CNEL	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
Frequency	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
L_{dn}	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
L_{eq}	Equivalent or energy-averaged sound level.
L_{max}	The highest root-mean-square (RMS) sound level measured over a given period of time.
Loudness	A subjective term for the sensation of the magnitude of sound.
Noise	Unwanted sound.
Threshold of Hearing	The lowest sound that can be perceived by the human auditory system, generally considered to be 0 dB for persons with perfect hearing.
Threshold of Pain	Approximately 120 dB above the threshold of hearing.

Community noise is commonly described in terms of the "ambient" noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level (Leq), which corresponds to a steady-state A-weighted sound level containing the same total energy as a time-varying signal over a given time period (usually one hour). The Leq is the foundation of the composite noise descriptor, Ldn, and shows very good correlation with community response to noise.

The Day-night Average Level (Ldn) is based upon the average noise level over a 24-hour day, with a +10 decibel weighing applied to noise occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours. The nighttime penalty is based upon the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because Ldn represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

Background on Vibration

Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that in that noise is generally considered to be pressure waves transmitted through air, whereas vibration usually consists of the excitation of a structure or surface. As with noise, vibration consists of an amplitude and frequency. A person's perception to the vibration will depend on their individual sensitivity to vibration, as well as the amplitude and frequency of the source and the response of the system which is vibrating.

Vibration can be measured in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration measures in terms of peak particle velocities in inches per second. Standards pertaining to perception as well as damage to structures have been developed for vibration levels defined in terms of peak particle velocities. For this project, vibration may be a concern during construction related activities which incorporate impulse-type equipment, such as jack hammers or pile driving.

EXISTING NOISE ENVIRONMENT IN THE COMMUNITY PLAN AREA

There are a variety of land use types within the Community Plan Area. Such land uses include agricultural, residential, commercial, business and industrial. The existing ambient noise environment in the Plan Area is mostly defined by local arterial street traffic and by railroad operations on the Union Pacific Railroad (UPRR) tracks, although aircraft overflights associated with Mather Airport also contribute to the ambient conditions.

To quantify existing noise levels within the Plan Area, noise surveys were conducted and accepted traffic noise modeling algorithms were utilized. The following sections describe the existing noise environment within the Florin-Vineyard Gap Community Plan Area.

General Ambient Noise Level Survey

To generally quantify background noise levels in the Plan area continuous noise monitoring was conducted at four locations in the Plan area on September 19-22, 2005. Two additional short-term noise measurements were conducted to supplement the continuously monitored noise level data. The ambient noise measurement sites are shown on Figure 1.

Larson Davis Laboratories (LDL) Model 820 precision integrating sound level meters were used for the ambient noise level measurement surveys. The meters were calibrated before and after use with an LDL Model CAL200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all pertinent specifications of the American National Standards Institute for Type 1 sound level meters (ANSI S1.4).

The sound level meters were programmed to record the maximum and average noise level at each site during the survey. The maximum value, denoted Lmax, represents the highest noise level measured. The average value, denoted Leq, represents the energy average of all of the noise received by the sound level meter microphone during the monitoring period. The ambient noise level measurement results are provided in Table 2.

Table 2
Ambient Noise Monitoring Results
Florin-Vineyard Gap Community Plan Area – September 19-22, 2005

Site	Location	Measured Sound Level, dBA		
		Day Night Average (Ldn)	Hourly Average (Leq)	Hourly Maximum (Lmax)
1	West end of Carlisle Ave. 180' to UPRR tracks	72-73 dB	67 dB (day)/ 66 dB (night)	58-104 dB (day)/ 51-93 dB (night)
2	9558 Gerber Road, Sacramento Pet Cemetery, (rear of property)	54-56 dB	48-50 dB (day)/ 47-50 dB (night)	54-70 dB (day)/ 52-66 dB (night)
3	9651 Elder Creek Road, (front yard)	64-65 dB	55-71 dB (day)/ 46-63 dB (night)	71-88 dB (day)/ 67-81 dB (night)
4	8905 Florin Road, (front yard, adjacent to S. Watt)	69-70 dB	62-68 dB (day)/ 56-68 dB (night)	75-98 dB (day)/ 73-95 dB (night)
5	Adjacent to Tokay St., west of Hedge, minimal traffic	NA	56 dB	75 dB
6	Adjacent to Florin Rd., east of Bradshaw, minimal traffic	NA	59 dB	72 dB

Notes:
1. Noise measurement locations are shown on Figure 1.
2. Sites 1-4 were monitored on a continuous basis, whereas sites 5-6 were monitored for a short-term 15 minute sample.
3. The continuous noise measurement results for one typical day are shown in the appendices.
4. Source: Bollard Acoustical Consultants, Inc.

The ambient noise survey results indicate that the measured daytime ambient noise levels within the Plan Area vary depending on proximity to the local arterial roadways and the UP railroad tracks. Specifically, noise levels immediately adjacent to those areas (Sites 1, and 3-4) registered significantly elevated ambient noise levels; whereas sites more removed from those areas (Sites 2 and 5-6) registered fairly low ambient noise levels. The ambient conditions in the Plan area are consistent with those typically found in areas which contain major traffic or railroad corridors. A separate assessment of specific existing traffic and railroad noise levels follows.

Aircraft Noise Environment

The northeast proportion of the Florin-Vineyard Gap Community Plan Area is located within the Mather Airport Policy Area. The southern boundary of that policy area extends along Florin Road to its southwestern corner at Hedge Avenue, where the boundary heads north to Jackson Highway (Mather Airport Master Plan). Although the previous plans indicated that 60 dB CNEL contour nearly extended to Florin Road, according to the recent Master Plan (sacairports.org/mather/planning), the 60 dB CNEL noise contours for the various Master Plan Alternatives are located well outside of the Florin-Vineyard Community Plan Area. Therefore, although periodic over-flights will occur, the entire Plan Area will be exposed to Mather Airport aircraft noise of less than 60 dB CNEL. Figure 2 indicates the location of the current Master Plan 60 dB CNEL contours for Mather Airport. Information pertaining to development within the Policy Area is provided in the Regulatory Setting section of this document.

Traffic Noise Environment

To predict noise levels due to traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly Leq values for free-flowing traffic conditions. To predict noise levels in terms of Ldn, the daytime and nighttime distribution of traffic must be included in the computations.

Average Daily Traffic (ADT) volumes were obtained from the traffic study conducted for the Florin-Vineyard Community Plan by the project transportation consultant (Fehr & Peers 2008). Truck usage and vehicle speeds on the local area roadways were estimated from published Caltrans traffic counts and Bollard Acoustical, Inc. field observations. FHWA Model inputs for all project scenarios are provided in the appendices.

Table 3 shows the predicted existing traffic noise levels in terms of the Day/Night Average Level descriptor (Ldn) at a standardized distance of 100 feet from the centerlines of the existing project-area roadways for existing conditions, as well as distances to existing traffic noise contours. The extent by which existing land uses in the project vicinity are affected by existing traffic noise depends on their respective proximity to the roadways and their individual sensitivity to noise.

Table 3
Existing Traffic Noise Levels and Distances to Contours
Florin-Vineyard Gap Community Plan Area Roadways

Segment	Roadway	Description	Ldn @ 100'	Distance to Ldn Contour (feet)		
				70	65	60
1	Folsom Blvd.	State Route 16 to Watt Ave.	66	56	120	259
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	61	26	55	119
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	66	57	123	264
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	64	39	83	179
5	SR 16	Folsom Blvd. to Watt Ave.	65	47	101	217
6	SR 16	Watt Ave. to Bradshaw Rd.	66	53	115	248
7	SR 16	Bradshaw Rd. to Sunrise Blvd	65	46	100	215
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	66	54	116	251
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	65	45	96	207
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	61	25	54	116
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	65	47	101	218
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	63	36	77	167
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	63	34	73	157
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	64	37	80	173
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	59	18	38	81
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	66	57	123	265
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	65	49	105	226
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	65	43	94	202
19	Florin Rd.	Gardner Ave. to South Watt Ave.	65	50	107	230
20	Florin Rd.	South Watt Ave. to Hedge Ave.	64	40	87	187
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	63	34	74	159
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	62	30	64	139
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	61	25	54	117
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	65	43	93	200
25	Gerber Rd.	Power Inn Rd. to French Rd.	66	54	116	251
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	65	45	96	207
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	63	37	79	171
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	63	33	72	155
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	59	19	41	89
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	64	37	80	173
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	60	22	47	102
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	69	90	195	419
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	67	68	146	314
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	67	68	146	314
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	65	50	108	232
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	66	53	114	245
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	63	32	70	150
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	61	25	53	115
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	68	72	155	335
40	Power Inn Rd	Florin Rd. to Gerber Rd.	68	70	150	324

Table 3
Existing Traffic Noise Levels and Distances to Contours
Florin-Vineyard Gap Community Plan Area Roadways

Segment	Roadway	Description	Ldn @ 100'	Distance to Ldn Contour (feet)		
				70	65	60
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	66	56	120	260
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	66	52	112	241
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	67	68	146	315
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	68	72	154	332
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	66	52	112	241
46	French Rd.	Florin Rd. to Gerber Rd.	62	31	67	145
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	71	115	247	533
48	South Watt Ave.	Kiefer Blvd. to SR 16	69	92	197	425
49	South Watt Ave.	SR 16 to Fruitridge Rd.	69	87	188	405
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	68	77	165	356
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	67	66	142	307
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	69	84	180	388
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	71	111	239	515
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	68	77	167	359
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	68	74	160	345
56	Hedge Ave.	SR 16 to Fruitridge Rd.	59	20	43	92
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	61	24	52	112
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	60	20	44	95
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	61	25	53	115
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	70	104	223	481
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	63	37	79	171
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	67	66	143	308
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	68	76	164	353
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	67	58	126	271
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	66	50	108	234
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	61	26	56	121
67	Excelsior Rd.	SR 16 to Florin Rd.	63	33	72	155
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	65	45	96	207
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	63	32	69	148

Notes: Source: FHWA-RD-77-108 with inputs from Fehr & Peers and Bollard Acoustical Consultants, Inc.
Distances to traffic noise contours are measured in feet from the centerlines of the roadways.

Existing Railroad Noise Environment

The UPRR railroad tracks extend along the western edge of the southwest corner of the Plan area, as shown by Figure 1. The Central California Traction Company railroad tracks bisect the plan area, but those tracks have not been used for years, and have effectively been abandoned. Nonetheless, due to the possibility that the CCTC tracks could conceivably be reactivated, this analysis assesses noise from both the UPRR and CCTC tracks.

UPRR Noise

To quantify UPRR noise exposure at the project site, BAC conducted continuous noise level measurements at Site 1, as shown by Figure 1. The purposes of the noise level measurements were to determine the approximate number of daily railroad operations on these tracks, to quantify typical sound exposure levels (SEL) for railroad passages, and to calculate railroad noise levels in terms of day/night average levels (Ldn).

The results of the noise measurements are shown in Table 4. A detailed analysis of the single-event data indicated that there was an average of approximately 35 trains per day on these railroad tracks. In addition, the railroad operations were essentially randomly distributed throughout the day and nighttime hours. Figure 3 shows an enlarged area at the southwest corner of the Project area which is adjacent to the railroad tracks, as well as the location of the 60 and 65 dB Ldn noise contours.

Table 4
Union Pacific Railroad Noise Measurement Results
Florin-Vineyard Gap Community Plan Area

				Distance to Existing Ldn Contours, feet	
Date	**# Trains / Day**	**Mean SEL, dB @ 120 ft.**	**Computed Ldn, dB @ 100 ft.**	**60 dB**	**65 dB**
September 19-22, 2005	35	101	74	910	423

1 - The noise level measurement site is shown on Figure 1. The site was approximately 120 feet from the railroad tracks.

2 - The number of apparent railroad operations was estimated from an analysis of single-event noise level data collected over the 3-day monitoring period. Events were considered to be railroad operations if they met criteria for event duration, maximum level, and SEL.

Source: Bollard Acoustical Consultants, Inc.

CCTC Noise

As noted previously, there is currently no activity on the CCTC line within the Community Plan Area. If rail service were to return, which would require substantial upgrades to the trackage, the level of noise-generated by such activities would depend on several factors. The most important factors would include type of rail service (heavy freight service, heavy passenger service, or light rail passenger service), number of daily operations, time of day of those operations (i.e. daytime or nighttime), train speeds, and whether or not warning horns would be utilized.

Given the presence of major freight carriers in the region currently, it is unlikely that heavy rail service would return to these lines with a large number of daily operations. Nonetheless, if such service were to return, it would only take 1 nighttime train to generate a noise level of 65 dB Ldn beyond the railroad right-of-way, which is 50 feet on each side of the tracks.

Because light rail passenger operations in the Sacramento area generates far lower noise levels than heavy rail operations, a far greater number of such operations could occur prior to causing noise levels in excess of 65 dB Ldn beyond the right-of way. Specifically, approximately 100 such events would be required to achieve an exterior noise level of 65 dB Ldn at a distance of 50 feet.

Recent residential developments in the area located adjacent to these tracks have included construction of solid noise barriers at the rear of the lots which abut the CCTC right of way in the event that rail service may return to these tracks. The heights of these barriers appear to be approximately 6-8 feet.

REGULATORY SETTING

Federal and State Policies

Decisions regarding local land use development with respect to noise are typically subject to local regulation, such as the policies contained within the local General Plan Noise Element or Noise Ordinance. As such, there are no pertinent Federal or State policies which would pertain to development within the Community Plan Area.

Sacramento County General Plan Goals and Policies

The Sacramento County General Plan Noise Element establishes acceptable noise level criteria for both transportation and non-transportation noise sources. The County Noise Element policies applicable to development within the Florin-Vineyard Gap Community Plan Area are as follows:

NO-1 Noise created by new transportation* noise sources should be mitigated so as not to exceed 60 dB Ldn/CNEL at the outdoor activity areas of any affected residential lands or land use situated in the unincorporated areas. When a practical application of the best available noise-reduction technology cannot achieve the 60 dB Ldn / CNEL standard, then an exterior noise level of 65 dB Ldn / CNEL may be allowed in outdoor activity areas.

Discussion: This policy will provide guidance when new roadways, light or heavy rail-lines are proposed adjacent to residential areas. This policy also applies to capacity enhancing roadway improvement projects. Mitigation measures such as soundwalls, berms or other attenuation must achieve a 60dB to 65dB Ldn / CNEL in the outdoor area for the project to be consistent with this policy.

* For the purposes of the Noise Element, transportation noise sources are defined as traffic on public roadways and railroad line operations. Control of noise from these sources is preempted by Federal and State regulations. Other noise sources are presumed to be subject to local regulations, such as the Sacramento County Noise Control Ordinance. Areas affected by public use airport noise are subject to the Airport Land Use section and individual Comprehensive Land Use Policy.

Further, there may be portions of the county where higher existing levels of ambient noise in residential areas make the 60 dB standard a hindrance to development otherwise typical in the area. In these instances, an exterior noise level of 65 dB Ldn / CNEL may be allowed in outdoor activity areas, provided that all practical exterior noise reduction measures are applied.

NO-2 Noise created by new nontransportation noise sources shall be mitigated so as not to exceed any of the noise level standards of Table 5, as measured immediately within the property line of any affected residentially designated lands or residential land use situated in the unincorporated areas.

NO-3 Where proposed nontransportation noise sources are likely to produce noise levels exceeding the performance standards of Table 5 (Noise Element Table II-1) at existing or planned residential uses, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

Each of the noise standards in Table 5 shall be decreased by five dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. These noise level standards do not apply to residential units established in conjunction with industrial or commercial uses (e.g., caretaker dwellings).

Table 5
Noise Level Performance Standards[1] for Residential Uses Affected by Nontransportation Noise

Statistical Descriptor	Daytime (7 am to 10pm)	Nighttime (10 pm - 7 am)
L50	50 dBA	45 dBA
Lmax	70 dBA	65 dBA

1. These standards are for planning purposes only and may vary from the standards of the County Noise Ordinance which are for enforcement purposes.
2. These standards apply to new or existing residential areas affected by new or existing nontransportation noise sources.

NO-4 Where residential land uses are proposed in areas exposed to existing or projected exterior noise levels exceeding either 60 dB Ldn / CNEL or the performance standards of Table 5, an acoustical analysis shall be required as part of the environmental review process so that noise mitigation may be included in the project design.

NO-5 New residential development shall not be allowed where the noise level due to nontransportation noise sources will exceed the noise level standards of Table 5 as measured immediately within the property line of the new development.

NO-6 The compatibility of proposed nonresidential projects with existing and future noise levels due to transportation noise sources shall be evaluated through a comparison to Figure II-1 of the County Noise Element (incorporated by reference), "Land Use Compatibility for Community Noise Environments" and Table 6, "Acceptable Noise Levels in Unoccupied Rooms", and to Figure II-4 of the Noise Element (incorporated by reference) for projects affected by aircraft noise.

NO-7 Proposed development of residential land uses should not be permitted:

l) In areas exposed to existing or projected levels of noise from transportation noise sources which exceed 60 dB to 65 dB Ldn / CNEL unless the project design includes effective mitigation measures to reduce noise to 60 dB to 65 dB Ldn / CNEL or less in outdoor activity areas, and 45 dB Ldn / CNEL or less in indoor areas; and

2) For 5 and 10 acre Agricultural-Residential land use the standard for exterior noise is also 60 to 65 dB Ldn / CNEL. The standard remains at 45 dB Ldn / CNEL for interior noise levels.

Table 6
Acceptable Noise Levels in Unoccupied Rooms Affected By Transportation Noise

Location	Leq, dBA	Location	Leq, dBA
Radio studios, recording studios	25-30	Music Rooms	30-35
Concert halls, large auditoriums	30-35	Theaters (speech)	30-35
Motion picture theaters	40-45	Churches	35-40
Conference rooms, small offices	40-45	Classrooms	35-45
Public offices, banks, stores	45-50	Hospitals	40-45
Restaurants, cafeterias	45-55	Court Rooms	40-45
Libraries	40-45		

Mather Airport Policy Area

The Sacramento County General Plan Contains the following additional information with respect to development within the Mather Airport Policy Area:

Purpose: This policy is intended to increase the awareness of residents, in any future residential communities that are approved, of their possible exposure to aircraft operations; to limit the potential for conflict between the airport and adjacent communities; and, to protect future airport development and aircraft operations flexibility beyond that obtainable solely by relying upon the noise and safety land use guidelines contained within the Comprehensive Land Use Plan.

Justification: The potential for successful public reuse of Mather Field properties is largely based on the successful operation of Mather Airport as a major economic and commerce center. The desire is for Mather Airport to become the premier air cargo center for Northern California, serving both domestic and international markets. This may best be realized if the airport can function both in an environment free of as many aircraft operational restrictions as possible, and within a positive, mutually beneficial relationship with nearby communities.

Experience has shown that the primary cause of airport operational restrictions is the encroachment of residential development within the airport environs. Encroachment in turn, has led to many airport-related complaints from the new residents living within these areas. The State of California has adopted airport noise and safety standards which are implemented through Comprehensive Land Use Plans prepared by Airport Land Use Commissions. The Mather Airport CLUP adopted by the local Airport Land Use Commission prohibits new residential development within the 65 CNEL noise contour.

Despite the standards in the CLUP legislation, airports do receive complaints from outside the 65 CNEL noise contour by residents who perceive they are impacted or potentially impacted by airport operations. These complaints, whether valid or not, can result in restrictions to airport operations. Sacramento County has an opportunity to create an additional envelope of protection for Mather Airport since much of the surrounding area is not yet urbanized.

Policy: New residential development within the 60 CNEL Mather Airport Policy Area shall be prohibited. Also, new residential development within the Mather Airport Policy Area boundaries, but outside the 60 CNEL, shall be subject to the following conditions:

1. Provide minimum noise insulation to 45 dB within new residential dwellings, including detached single family dwellings, with windows closed in any habitable room.

2. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within the Mather Airport Policy Area.

3. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento and recorded with the Sacramento County Recorder and file with Department of Airports. Such Avigation Easement shall acknowledge the property location within the Mather Airport Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of Mather Airport.

Exceptions: New accessory residential dwellings on parcels zoned Agricultural, Agricultural-Residential, Interim Agricultural, Interim General Agricultural, or Interim Limited Agricultural and between the 60 and 65 CNEL contours, shall be permitted within the Mather Airport Policy Area boundaries, but would be subject to the conditions listed above.

Sacramento County Noise Ordinance

Chapter 6.68 of the Sacramento County Code contains the County Noise Ordinance. The various sections of this chapter describe definitions, sound level measurement, exterior and interior noise level standards, exemptions, pre-existing conditions, and various specific noise sources. The following provisions would be applicable to development within the Community Plan Area:

> Section 6.68.070 of the Sacramento County Code states that it is unlawful for any person at any location within the County to create any noise which causes the noise levels on the affected property, when measured within the designated noise area, to exceed for the duration of time set forth in the noise standards shown in Table 7.

Table 7
Sacramento County Noise Ordinance Standards
Applicable at Exterior Spaces of Residential Uses

Cumulative Duration of Intrusive Sound	Noise Metric	Daytime, dB	Nighttime, dB
Cumulative period of 30 minutes per hour	L_{50}	55	50
Cumulative period of 15 minutes per hour	L_{25}	60	55
Cumulative period of 5 minutes per hour	L_{08}	65	60
Cumulative period of 1 minute per hour	L_{02}	70	65
Level not to be exceeded for any time during hour	L_{max}	75	70

Note: Daytime is defined as 7 a.m. to 10 p.m. and Nighttime is defined as 10 p.m. to 7 a.m.
If the existing ambient noise levels exceed that permitted in the first four noise-limit categories, the allowable limit shall be increased in 5 dB increments to encompass the ambient.

Project-Related Traffic Noise Level Increases

California Environmental Quality Act (CEQA) guidelines define a significant impact of a project if it increases substantially the ambient noise levels for adjoining areas. In practice, significant noise impacts are usually identified in CEQA analyses if the project would result in a perceptible ambient noise level increase, commonly considered to be 3-5 dB. The County has directed that a 3 dB significance threshold be applied to project-related traffic noise level increases to provide a conservative assessment of project impacts.

Vibration Standards

The Sacramento County Noise Element does not contain specific policies pertaining to vibration levels. Because the project site is located adjacent to railroad tracks, the effects of railroad-induced vibration are considered in this analysis.

Human and structural response to different vibration levels is influenced by a number of factors, including ground type, distance between source and receptor, duration, and the number of perceived vibration events. Table 8 indicates that the threshold for damage to structures ranges from 2 to 6 inches per second . One-half this minimum threshold or 1 in/sec p.p.v. is considered a safe criterion that would protect against architectural or structural damage. The general threshold at which human annoyance could occur is notes as 0.1 in/sec p.p.v. (ESA, 1996).

Table 8
General Human and Structural Responses to Vibration Levels

Effects on Structures & People	Peak Vibration Threshold (in/sec PPV)
Structural damage to commercial structures	6
Structural damage to residential buildings	2
Architectural damage	1.0
General threshold of human annoyance	0.1
General threshold of human perception	0.01

Sources: Survey of Earth-borne Vibrations due to Highway Construction and Highway Traffic, Caltrans 1976. Final Environmental Impact Report: Richmond Transport Project, Orion Environmental Associates, 1990. Weekly Progress Report for Vibration Monitoring for Richmond Transport, Wilson, Ihrigg & Associates, 1994.

IMPACTS AND MITIGATION MEASURES

Standards of Significance

CEQA guidelines state that implementation of the project would result in significant noise impacts if the project would result in either of the following:

a. Exposure of persons to or generation of noise levels in excess of standards established in the Sacramento County General Plan. Specifically, exterior and interior noise levels of 65 and 45 dB Ldn, respectively, for traffic and railroad noise.

b. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project, defined as 1.5 to 5 dB, as indicated in Table 8.

c. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project, as defined by Table 8.

d. For a project located within an airport land use plan or, where such a plan has not be adopted, within two miles of a public airport or public use airport, where the project would expose people residing or working in the area to excessive noise levels. The Sacramento County General Plan Noise Element contains specific noise level limits for new projects affected by aircraft noise (Noise Element Figure II-4, incorporated by reference). In addition, provisions of the Mather Airport Policy Area, included above, apply to all noise-sensitive development within that area.

e. For a project within the vicinity of a private airstrip, where the project would expose people residing or working in the project area to excessive noise levels.

METHOD OF ANALYSIS

Traffic Noise

To assess noise impacts due to project-related traffic increases on the local roadway network, traffic noise levels are predicted at a representative distance for future, project and no-project conditions. In addition, because the transportation study prepared for this project identified traffic mitigation measures which would affect traffic volume on Plan Area roadways (and therefore noise levels on those segments), this study also analyzes noise impacts associated with future traffic volumes on the roadway network with implementation of those traffic mitigation measures. Noise impacts are identified at existing noise-sensitive areas if the noise level increases which result from the project exceed the 1.5 to 5 dB significance threshold.

To describe projected future noise levels due to traffic, the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108) was used. The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site. The FHWA model was developed to predict hourly Leq values for free-flowing traffic conditions. To predict traffic noise levels in terms of Ldn, it is necessary to adjust the input volume to account for the day/night distribution of traffic.

Table 9 shows the predicted increases in traffic noise levels on the local roadway network which would result from the project for future conditions. Table 10 shows the predicted future traffic noise levels for the same roadway segments with the density bonus applied. Tables 9 and 10 are provided in terms of Ldn at a standard distance of 100 feet from the centerlines of the project-area roadways. The Table 9 and 10 data was used to determine the project-related increase in noise which is anticipated to result from the increase in traffic volumes on the local roadways which would occur under development of the Florin-Vineyard Community Plan. To assess traffic noise impacts at new proposed noise-sensitive land uses, the noise contour distances shown in Tables 11 and 12 for future (cumulative) plus project conditions is used.

Table 9
Future (Cumulative) Conditions Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases
Florin-Vineyard Gap Community Plan

			Ldn @ 100 feet								
Seg.	Roadway Name	Segment Description	Cumulative	Cumulative Plus CAC	Change	Cumulative Plus PD	Change	Cumulative Plus CAC w/ Mit.	Change	Cumulative Plus PD w/ Mit.	Change
1	Folsom Blvd.	State Route 16 to Watt Ave.	68	68	0	68	0	68	0	68	0
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	63	63	0	63	0	62	-1	62	-1
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	67	67	0	67	0	67	0	67	0
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	65	65	0	66	1	65	0	65	0
5	SR 16	Folsom Blvd. to Watt Ave.	67	68	1	68	1	68	1	69	2
6	SR 16	Watt Ave. to Bradshaw Rd.	68	68	0	68	0	70	2	70	2
7	SR 16	Bradshaw Rd. to Sunrise Blvd	68	69	1	69	1	69	1	69	1
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	68	68	0	68	0	68	0	68	0
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	68	68	0	68	0	67	-1	68	0
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	64	64	0	64	0	63	-1	63	-1
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	67	67	0	67	0	67	0	67	0
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	65	66	1	66	1	66	1	66	1
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	67	68	1	68	1	68	1	69	2
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	68	68	0	68	0	69	1	70	2
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	64	65	1	66	2	66	2	66	2
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	68	68	0	68	0	68	0	68	0
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	67	68	1	68	1	67	0	68	1
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	68	69	1	69	1	69	1	69	1
19	Florin Rd.	Gardner Ave. to South Watt Ave.	68	69	1	69	1	69	1	70	2
20	Florin Rd.	South Watt Ave. to Hedge Ave.	67	68	1	68	1	68	1	68	1
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	70	71	1	71	1	69	-1	69	-1
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	67	68	1	68	1	68	1	68	1
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	66	67	1	67	1	67	1	67	1

Table 9
Future (Cumulative) Conditions Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases
Florin-Vineyard Gap Community Plan

			Ldn @ 100 feet								
Seg.	Roadway Name	Segment Description	Cumulative	Cumulative Plus CAC	Change	Cumulative Plus PD	Change	Cumulative Plus CAC w/ Mit.	Change	Cumulative Plus PD w/ Mit.	Change
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	66	66	0	66	0	66	0	66	0
25	Gerber Rd.	Power Inn Rd. to French Rd.	67	68	1	68	1	68	1	68	1
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	67	68	1	68	1	68	1	68	1
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	68	69	1	69	1	68	0	68	0
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	67	68	1	68	1	67	0	67	0
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	62	64	2	64	2	64	2	64	2
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	64	65	1	65	1	65	1	65	1
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	62	62	0	62	0	61	-1	61	-1
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	71	71	0	71	0	71	0	71	0
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	69	69	0	69	0	69	0	69	0
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	69	69	0	69	0	69	0	69	0
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	68	68	0	68	0	68	0	68	0
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	68	68	0	68	0	68	0	68	0
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	66	66	0	66	0	66	0	66	0
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	64	64	0	64	0	64	0	64	0
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	68	68	0	68	0	68	0	68	0
40	Power Inn Rd	Florin Rd. to Gerber Rd.	69	69	0	69	0	69	0	68	-1
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	67	67	0	67	0	67	0	67	0
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	68	69	1	69	1	69	1	69	1
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	69	70	1	70	1	69	0	69	0
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	69	69	0	69	0	69	0	69	0
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	68	68	0	68	0	68	0	68	0
46	French Rd.	Florin Rd. to Gerber Rd.	64	64	0	64	0	65	1	65	1

Table 9
Future (Cumulative) Conditions Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases
Florin-Vineyard Gap Community Plan

			Ldn @ 100 feet								
Seg.	Roadway Name	Segment Description	Cumulative	Cumulative Plus CAC	Change	Cumulative Plus PD	Change	Cumulative Plus CAC w/ Mit.	Change	Cumulative Plus PD w/ Mit.	Change
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	72	72	0	72	0	72	0	72	0
48	South Watt Ave.	Kiefer Blvd. to SR 16	71	71	0	71	0	71	0	71	0
49	South Watt Ave.	SR 16 to Fruitridge Rd.	72	72	0	72	0	72	0	72	0
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	71	72	1	72	1	72	1	72	1
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	70	71	1	71	1	71	1	71	1
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	71	72	1	72	1	72	1	72	1
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	71	72	1	72	1	72	1	72	1
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	69	70	1	70	1	70	1	70	1
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	69	69	0	69	0	69	0	69	0
56	Hedge Ave.	SR 16 to Fruitridge Rd.	60	60	0	60	0	60	0	60	0
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	65	66	1	66	1	62	-3	63	-2
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	66	66	0	66	0	63	-3	64	-2
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	67	67	0	67	0	67	0	67	0
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	72	73	1	73	1	72	0	72	0
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	66	66	0	66	0	67	1	67	1
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	71	71	0	71	0	71	0	71	0
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	71	71	0	71	0	71	0	71	0
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	70	70	0	70	0	70	0	70	0
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	69	69	0	69	0	69	0	69	0
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	65	65	0	65	0	65	0	65	0
67	Excelsior Rd.	SR 16 to Florin Rd.	66	67	1	67	1	66	0	66	0
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	66	67	1	67	1	67	1	67	1
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	65	65	0	65	0	64	-1	64	-1

Table 9
Future (Cumulative) Conditions Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases
Florin-Vineyard Gap Community Plan

			Ldn @ 100 feet								
Seg.	Roadway Name	Segment Description	Cumulative	Cumulative Plus CAC	Change	Cumulative Plus PD	Change	Cumulative Plus CAC w/ Mit.	Change	Cumulative Plus PD w/ Mit.	Change
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	66	67	1	67	1	66	0	66	0
71	Waterman Rd.	Gerber Rd. to Florin Rd.	66	66	0	66	0	66	0	66	0
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	63	63	0	63	0	62	-1	62	-1
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	NA	NA	NA	NA	65	NA	65	NA

Source: FHWA-RD-77-108 with inputs from Fehr & Peers and Bollard Acoustical Consultants, Inc.

Table 10
Future (Cumulative) Conditions Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases with Density Bonus
Florin-Vineyard Gap Community Plan

			Ldn @ 100 feet				
Seg.	Roadway Name	Segment Description	Cumulative	Cumulative Plus CAC w/ Density Bonus w/ Mitigation	Change	Cumulative Plus PD w/ Density Bonus w/ Mitigation	Change
1	Folsom Blvd.	State Route 16 to Watt Ave.	68	68	0	68	0
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	63	62	-1	62	-1
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	67	67	0	67	0
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	65	65	0	65	0
5	SR 16	Folsom Blvd. to Watt Ave.	67	68	1	69	2
6	SR 16	Watt Ave. to Bradshaw Rd.	68	70	2	70	2
7	SR 16	Bradshaw Rd. to Sunrise Blvd	68	69	1	69	1
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	68	68	0	68	0
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	68	67	-1	68	0
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	64	63	-1	63	-1
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	67	67	0	67	0
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	65	66	1	66	1
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	67	69	2	69	2
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	68	70	2	70	2
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	64	66	2	66	2
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	68	68	0	68	0
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	67	68	1	68	1
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	68	69	1	69	1
19	Florin Rd.	Gardner Ave. to South Watt Ave.	68	70	2	70	2
20	Florin Rd.	South Watt Ave. to Hedge Ave.	67	68	1	68	1
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	70	69	-1	69	-1
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	67	68	1	68	1

Table 10
Future (Cumulative) Conditions Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases with Density Bonus
Florin-Vineyard Gap Community Plan

			Ldn @ 100 feet				
Seg.	Roadway Name	Segment Description	Cumulative	Cumulative Plus CAC w/ Density Bonus w/ Mitigation	Change	Cumulative Plus PD w/ Density Bonus w/ Mitigation	Change
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	66	67	1	67	1
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	66	66	0	66	0
25	Gerber Rd.	Power Inn Rd. to French Rd.	67	68	1	68	1
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	67	68	1	68	1
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	68	68	0	69	1
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	67	67	0	67	0
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	62	64	2	64	2
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	64	65	1	65	1
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	62	62	0	62	0
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	71	71	0	71	0
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	69	69	0	69	0
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	69	69	0	69	0
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	68	68	0	68	0
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	68	68	0	68	0
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	66	66	0	66	0
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	64	64	0	64	0
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	68	68	0	68	0
40	Power Inn Rd	Florin Rd. to Gerber Rd.	69	69	0	68	-1
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	67	67	0	67	0
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	68	69	1	69	1
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	69	69	0	69	0
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	69	69	0	69	0
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	68	68	0	68	0

Table 10
Future (Cumulative) Conditions Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases with Density Bonus
Florin-Vineyard Gap Community Plan

			Ldn @ 100 feet				
Seg.	Roadway Name	Segment Description	Cumulative	Cumulative Plus CAC w/ Density Bonus w/ Mitigation	Change	Cumulative Plus PD w/ Density Bonus w/ Mitigation	Change
46	French Rd.	Florin Rd. to Gerber Rd.	64	65	1	65	1
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	72	72	0	72	0
48	South Watt Ave.	Kiefer Blvd. to SR 16	71	71	0	71	0
49	South Watt Ave.	SR 16 to Fruitridge Rd.	72	72	0	72	0
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	71	72	1	72	1
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	70	71	1	71	1
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	71	72	1	72	1
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	71	72	1	73	2
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	69	70	1	70	1
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	69	69	0	70	1
56	Hedge Ave.	SR 16 to Fruitridge Rd.	60	60	0	60	0
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	65	63	-2	63	-2
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	66	64	-2	65	-1
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	67	67	0	67	0
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	72	72	0	73	1
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	66	67	1	67	1
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	71	71	0	71	0
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	71	71	0	71	0
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	70	70	0	70	0
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	69	69	0	69	0
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	65	65	0	65	0
67	Excelsior Rd.	SR 16 to Florin Rd.	66	66	0	67	1
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	66	67	1	67	1

Table 10
Future (Cumulative) Conditions Predicted Traffic Noise Levels and Project-Related Traffic Noise Level Increases with Density Bonus
Florin-Vineyard Gap Community Plan

			Ldn @ 100 feet				
Seg.	Roadway Name	Segment Description	Cumulative	Cumulative Plus CAC w/ Density Bonus w/ Mitigation	Change	Cumulative Plus PD w/ Density Bonus w/ Mitigation	Change
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	65	64	-1	64	-1
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	66	66	0	66	0
71	Waterman Rd.	Gerber Rd. to Florin Rd.	66	66	0	67	1
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	63	62	-1	62	-1
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	65	NA	66	NA

Source: FHWA-RD-77-108 with inputs from Fehr & Peers 2008 and Bollard Acoustical Consultants, Inc.

Table 11
Predicted Distances to Future Plus Project PD Noise Contours (Without Density Bonus - with Mitigation)
Florin-Vineyard Gap Community Plan

			Distance to Ldn Contour (feet)		
Segment	Roadway Name	Segment Description	70	65	60
1	Folsom Blvd.	State Route 16 to Watt Ave.	72	155	334
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	32	68	147
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	62	133	287
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	47	100	216
5	SR 16	Folsom Blvd. to Watt Ave.	80	172	370
6	SR 16	Watt Ave. to Bradshaw Rd.	101	217	467
7	SR 16	Bradshaw Rd. to Sunrise Blvd	84	181	389
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	77	166	357
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	68	147	316
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	36	77	165
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	67	144	311
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	53	114	245
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	80	172	370
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	93	200	431
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	51	110	238
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	74	160	345
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	69	148	318
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	89	192	413
19	Florin Rd.	Gardner Ave. to South Watt Ave.	94	202	435
20	Florin Rd.	South Watt Ave. to Hedge Ave.	73	158	341
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	82	177	382
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	74	158	341
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	61	132	285
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	53	115	248
25	Gerber Rd.	Power Inn Rd. to French Rd.	70	152	327
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	73	156	337
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	78	168	363
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	59	128	275
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	39	85	183
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	48	103	222
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	27	58	124
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	123	265	571
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	84	181	391
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	85	183	394
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	71	153	330
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	78	167	360
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	56	122	262
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	41	89	191
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	73	157	338

40	Power Inn Rd	Florin Rd. to Gerber Rd.	78	169	364
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	63	136	293
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	82	177	381
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	85	183	395
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	88	190	410
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	69	150	322
46	French Rd.	Florin Rd. to Gerber Rd.	44	94	204
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	142	307	661
48	South Watt Ave.	Kiefer Blvd. to SR 16	125	269	580
49	South Watt Ave.	SR 16 to Fruitridge Rd.	130	279	601
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	136	292	630
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	117	252	544
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	134	289	623
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	145	313	674
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	104	223	481
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	91	196	422
56	Hedge Ave.	SR 16 to Fruitridge Rd.	22	47	101
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	32	70	150
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	40	87	187
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	61	131	282
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	146	315	678
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	67	144	309
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	117	251	542
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	122	262	565
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	102	219	472
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	85	184	396
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	49	105	226
67	Excelsior Rd.	SR 16 to Florin Rd.	58	125	270
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	62	133	287
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	42	91	196
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	55	119	256
71	Waterman Rd.	Gerber Rd. to Florin Rd.	57	123	266
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	29	63	135
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	49	106	229

Notes: Source: FHWA-RD-77-108 with inputs from Fehr & Peers 2008 and Bollard Acoustical Consultants, Inc.
Distances to traffic noise contours are measured in feet from the centerlines of the roadways.

Table 12
Predicted Distances to Future Plus Project PD
With Density Bonus With Mitigation Noise Contours
Florin-Vineyard Gap Community Plan

			Distance to Ldn Contour (feet)		
Segment	Roadway Name	Segment Description	70	65	60
1	Folsom Blvd.	State Route 16 to Watt Ave.	73	157	339
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	32	68	147
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	62	134	288
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	47	100	216
5	SR 16	Folsom Blvd. to Watt Ave.	80	173	373
6	SR 16	Watt Ave. to Bradshaw Rd.	101	217	468
7	SR 16	Bradshaw Rd. to Sunrise Blvd	84	181	390
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	78	167	360
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	70	150	324
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	36	78	168
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	68	146	316
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	54	117	252
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	83	178	385
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	95	205	443
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	52	112	241
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	76	163	351
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	70	151	325
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	91	197	425
19	Florin Rd.	Gardner Ave. to South Watt Ave.	97	208	449
20	Florin Rd.	South Watt Ave. to Hedge Ave.	76	164	353
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	86	185	398
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	74	160	345
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	62	134	289
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	54	117	251
25	Gerber Rd.	Power Inn Rd. to French Rd.	72	155	333
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	75	161	346
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	81	174	374
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	61	131	282
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	40	87	188
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	48	103	222
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	27	59	128
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	124	267	575
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	85	182	393
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	85	184	395
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	71	153	330
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	78	168	362
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	57	122	263
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	41	89	191

39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	73	157	339
40	Power Inn Rd	Florin Rd. to Gerber Rd.	78	169	364
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	63	136	293
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	84	180	389
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	86	185	399
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	89	192	413
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	70	150	324
46	French Rd.	Florin Rd. to Gerber Rd.	45	96	208
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	143	308	663
48	South Watt Ave.	Kiefer Blvd. to SR 16	126	271	584
49	South Watt Ave.	SR 16 to Fruitridge Rd.	131	283	610
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	138	297	641
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	121	260	561
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	134	288	620
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	149	320	690
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	106	229	494
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	93	200	431
56	Hedge Ave.	SR 16 to Fruitridge Rd.	23	49	106
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	36	77	166
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	44	95	204
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	62	134	288
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	147	317	684
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	67	145	312
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	119	257	554
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	123	266	573
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	103	222	479
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	86	186	400
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	49	106	227
67	Excelsior Rd.	SR 16 to Florin Rd.	58	126	271
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	63	135	291
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	42	92	197
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	57	123	266
71	Waterman Rd.	Gerber Rd. to Florin Rd.	59	127	274
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	29	63	136
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	52	111	239

Notes: Source: FHWA-RD-77-108 with inputs from Fehr & Peers 2008 and Bollard Acoustical Consultants, Inc.

Distances to traffic noise contours are measured in feet from the centerlines of the roadways.

Railroad Noise

Railroad noise impacts were identified where residential uses are proposed within the 65 dB Ldn railroad noise contour shown in Table 4.

Construction Noise

During the construction phases of the project, noise from construction activities would add to the noise environment in the immediate project vicinity. Activities involved in construction would generate maximum noise levels, as indicated in Table 13, ranging from 85 to 90 dB at a distance of 50 feet. Pile driving activities would generate even higher noise levels. Construction activities would be temporary in nature and are anticipated to occur during normal daytime working hours.

Noise would also be generated during the construction phase by increased truck traffic on area roadways. A significant project-generated noise source would be truck traffic associated with transport of heavy materials and equipment to and from construction sites. This noise increase would be of short duration, and would likely occur primarily during daytime hours.

Table 13
Construction Equipment Noise

Type of Equipment	Maximum Level, dB at 50 feet
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85

Source: Environmental Noise Pollution, Patrick R. Cunniff, 1977.

Aircraft Noise

Because the 60 dB CNEL noise exposure contours for Mather Airport are located well north of the project area, no adverse noise impacts are identified relative to the County's 60 dB CNEL noise level standard applicable to new noise-sensitive (primarily residential) land uses. However, because a portion of the Plan Area is located within the Mather Airport Policy Area, new proposals for development of noise sensitive uses within that Policy Area will require that additional precautions be taken with respect to aircraft noise. Those specific measures (disclosure statements, noise easements, ensured compliance with interior noise standards, etc.), are restated below..

PROJECT-SPECIFIC IMPACTS AND MITIGATION MEASURES

Impact 1: Aircraft Noise on Future Land Uses within the Plan Area.

PD & CAC:

The Mather Airport 60 dB CNEL noise contour does not extend into the Plan Area. As a result, no adverse noise impacts are identified for development within the Florin Vineyard Community Plan Area relative to the Sacramento County General Plan Noise Standards. However, because a portion of the Plan Area is located within the Mather Airport Planning Area, the potential for annoyance due to aircraft over-flights have been identified. **This is considered a potentially significant impact.**

MM-1: Implement Provisions of the Mather Airport Policy Area

PD & CAC:

1. Provide minimum noise insulation to 45 dB within new residential dwellings, including detached single family dwellings, with windows closed in any habitable room.

2. Notification in the Public Report prepared by the California Department of Real Estate disclosing the fact to prospective buyers that the parcel is located within the Mather Airport Policy Area.

3. An Avigation Easement prepared by the Sacramento County Counsel's Office granted to the County of Sacramento and recorded with the Sacramento County Recorder and file with Department of Airports. Such Avigation Easement shall acknowledge the property location within the Mather Airport Policy Area and shall grant the right of flight and unobstructed passage of all aircraft into and out of Mather Airport.

These provisions of the Mather Airport Policy Area will reduce this impact to a **less than significant level.**

PD & CAC:

Significance After Mitigation

Implementation of this noise mitigation measure would reduce this impact to a *less than significant level.*

Impact 2: Increase in Traffic Noise Levels at Existing Noise Sensitive Land Uses in the Plan Area both with and without transportation mitigation and density bonus.

PD & CAC

The project will generate increased traffic on the existing roadway network. As noted in Tables 10 and 11, the project-related changes in traffic noise levels are predicted to range from 0 dB to an increase of 2 dB relative to future conditions without the project..

A substantial increase in traffic noise levels is defined by the County for this assessment as 3 dB. Because the identified project-related traffic noise level increases due to the project do not exceed the 3 dB threshold, **this impact is considered to be less than significant**.

Impact 3: Construction Noise

Activities associated with construction within the Plan Area will result in elevated noise levels in the immediate area of the construction. Activities involved in construction will typically generate maximum noise levels ranging from 85 to 90 dB at a distance of 50 feet, as indicated in Table 13. However, the County exempts noise generated by construction activities provided it occurs during accepted hours. Because construction activities are required to adhere to the County Code provisions, no adverse construction noise impacts are expected. **This impact is considered less than significant.**

Impact 4: Traffic and Railroad Noise Levels at Future Noise-Sensitive Uses Proposed Within the Plan Area.

CAC & PD:

The distance from the future plus project 60 and 65 dB Ldn contours for the Plan Area Roadways are provided in Tables 11 and 12, with the distances to the railroad noise contours shown in Table 4. Any proposed residential uses located within the 65 dB contours shown in Tables 4, 11 or 12, or any other proposed noise-sensitive land uses located within the critical noise contours for that use, would be significantly impacted.

For new projects in noise-impacted areas, however, the Sacramento County General Plan Noise Element requires the preparation of acoustical analyses for proposed noise-sensitive land uses so that appropriate noise mitigation measures can be included in the project design to reduce noise levels to acceptable limits. Specifically, project-level noise analyses are required to be conducted at the tentative map submittal stage to ensure that appropriate traffic and railroad noise mitigation measures are prescribed for each project. Such measures typically include the use of setbacks, noise barriers, site planning, improvements to building facades, utilization of rubberized asphalt, and other measures as appropriate. Because the County General Plan requires that adequate noise control features be included to ensure compliance with County noise standards**, this impact is considered Less-than-Significant.**

Impact 5: Development of Noise-Producing Uses within the Community Plan Area

CAC & PD:

Noise-producing aspects of certain land uses developed within the Plan Area such as industry, commercial loading docks, etc, developed within the appropriately zoned land use areas could generate elevated noise levels in the vicinity of existing or proposed noise-sensitive land uses. Because noise associated with these types of uses has been frequently cited as a potential source of annoyance at noise-sensitive areas,

For new noise-producing projects near noise-sensitive areas, the Sacramento County General Plan Noise Element requires the preparation of acoustical analyses for proposed noise-producing land uses so that appropriate noise mitigation measures can be included in the project design to reduce noise levels to acceptable limits. Such measures typically include the use of setbacks, noise barriers, site planning, improvements to building facades, restrictions on hours of operation, use of quieter equipment, and other measures as appropriate. Because the County General Plan requires that adequate noise control features be included to ensure compliance with County noise standards**, this impact is considered Less-than-Significant.**

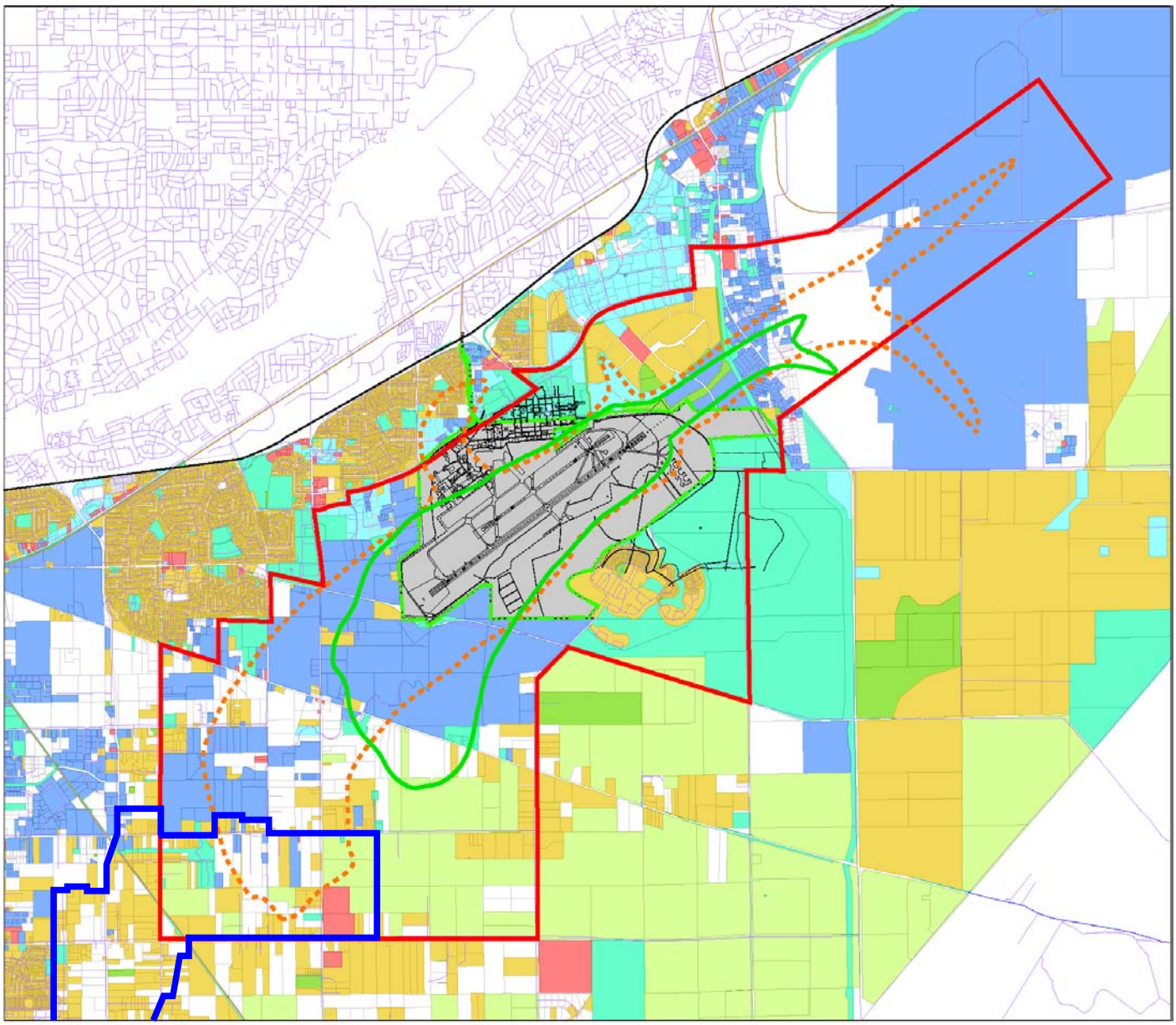
Cumulative Impacts and Mitigation Measures

Impact 6: Future (Cumulative) increase in traffic noise levels at Existing Sensitive Uses.

CAC & PD:

The project will generate increased traffic on the existing roadway network, as indicated by the Table 11 and 12 data. However, compared to the Cumulative no-project traffic noise levels, the project related traffic volumes will only result in a 0 to 2 dB increase in traffic noise levels. Because the predicted impacts are below the 3 dB threshold for finding of a significant impact, the projects contribution to the cumulative noise environment is considered **less-than-significant.**

Figure 2
Mather Airport 60 dB CNEL Noise Contours
Master Plan vs CLUP
Florin Vineyard Community Plan
Sacramento County, California



: Florin Vineyard Study Area

: Mather Airport Policy Area

: 60 dB CNEL Contour - Master Plan (2003)

: 60 dB CNEL Contour - CLUP (1997)

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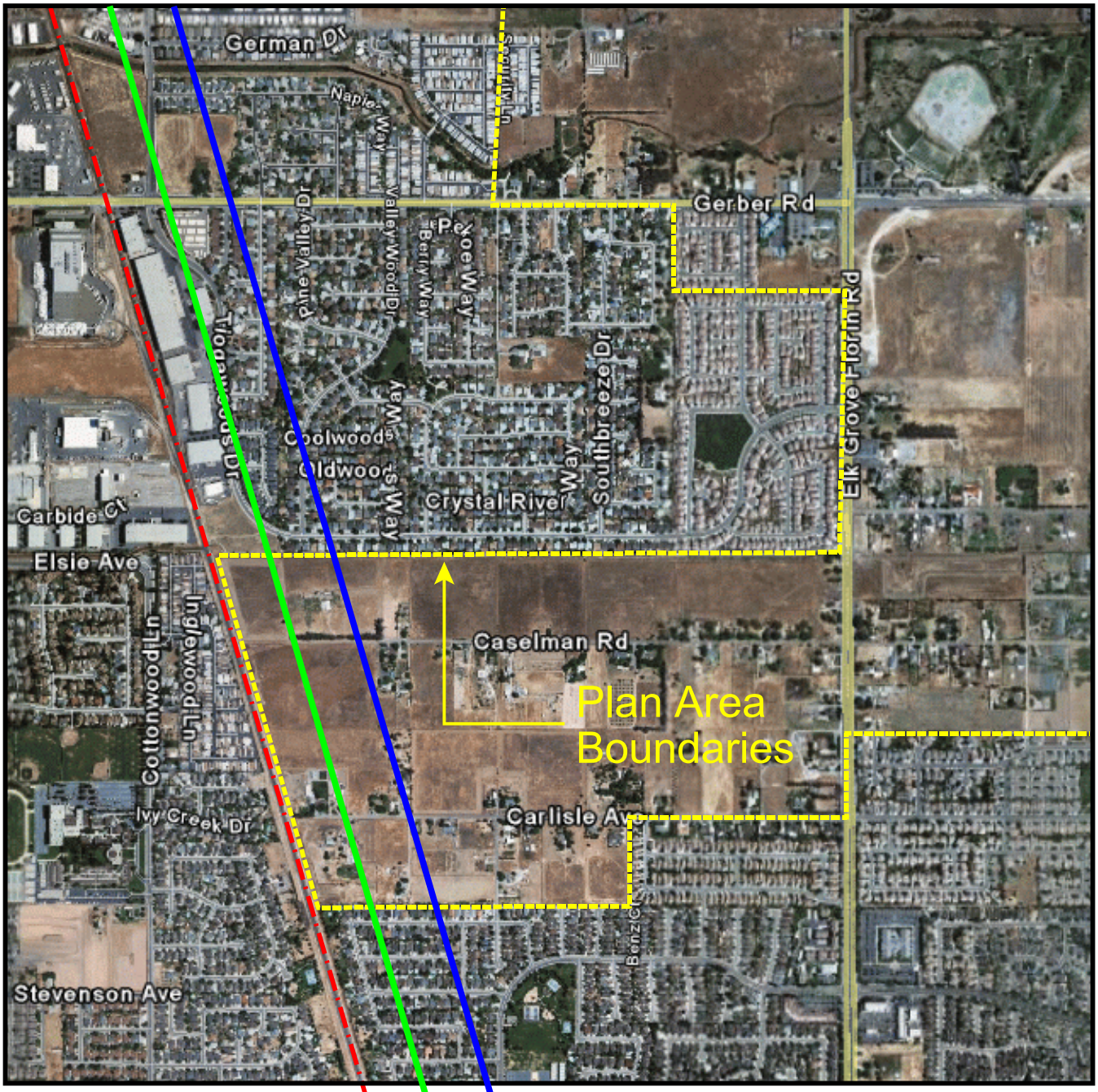
Figure 3

Portion of Florin Vineyard Community Plan Area Located Adjacent to UPRR Tracks and Approximate Locations of Railroad Noise Contours.



: 60 dB Ldn Contour

: 65 dB Ldn Contour

: Union Pacific Railroad Tracks

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Appendix A-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Condtions
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	20,700	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	6,400	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	21,300	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	11,900	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	12,200	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	14,900	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	12,000	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	19,700	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	14,800	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	6,200	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	16,000	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	10,700	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	5,900	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	6,800	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	2,200	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	28,500	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	22,400	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	14,200	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	17,300	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	12,700	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	6,000	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	4,900	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	3,800	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	18,700	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	26,200	83		17	2	1	40	100	

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Appendix A-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Condtions
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	19,700	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	8,500	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	5,800	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	2,500	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	15,000	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	6,800	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	42,600	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	27,600	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	27,600	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	17,500	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	11,500	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	5,500	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	3,700	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	30,400	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	28,900	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	27,600	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	18,500	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	27,700	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	30,000	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	24,700	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	15,700	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	61,000	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	43,500	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	24,400	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	20,100	83		17	2	1	55	100	

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Appendix A-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Condtions
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	16,100	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	22,900	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	35,000	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	33,800	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	31,800	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	4,400	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	5,900	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	4,600	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	6,100	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	31,600	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	20,100	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	16,200	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	19,900	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	13,400	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	10,700	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	6,600	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	5,800	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	8,900	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	5,400	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	NA	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	83		17	2	1	40	100	

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Appendix A-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project CAC
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	25,300	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	8,100	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	23,200	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	13,800	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	18,600	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	19,800	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	12,100	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	22,600	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	17,600	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	8,100	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	21,700	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	17,800	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	15,700	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	16,600	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	4,300	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	36,800	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	35,900	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	29,500	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	34,400	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	27,700	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	15,500	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	6,600	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	5,200	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	23,400	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	37,200	83		17	2	1	40	100	

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Appendix A-5

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project CAC
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	35,800	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	21,100	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	6,300	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	4,500	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	17,800	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	10,100	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	47,600	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	31,400	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	31,900	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	18,800	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	17,000	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	11,000	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	3,800	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	31,100	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	31,000	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	29,700	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	28,500	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	37,500	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	40,000	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	38,100	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	20,800	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	64,300	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	46,800	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	28,000	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	22,100	83		17	2	1	55	100	

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Appendix A-6

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project CAC
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	20,300	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	29,300	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	43,300	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	44,800	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	40,200	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	8,700	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	17,900	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	16,300	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	12,100	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	45,500	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	32,500	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	27,500	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	26,700	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	17,400	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	14,700	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	7,300	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	12,500	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	16,900	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	11,500	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	NA	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	83		17	2	1	40	100	

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Appendix A-7

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project PD
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	25,500	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	8,700	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	23,900	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	14,300	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	19,500	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	20,700	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	12,000	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	23,300	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	18,700	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	8,600	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	22,000	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	18,700	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	16,700	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	17,700	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	4,700	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	38,200	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	37,500	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	29,800	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	35,200	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	29,400	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	16,800	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	7,100	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	5,400	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	23,900	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	38,800	83		17	2	1	40	100	

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Appendix A-8

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project PD
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	35,600	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	21,500	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	6,400	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	5,200	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	18,600	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	10,400	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	48,600	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	31,600	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	32,600	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	19,000	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	18,000	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	11,200	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	3,800	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	31,400	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	31,500	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	30,200	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	29,100	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	38,500	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	40,800	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	39,600	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	21,000	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	64,900	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	47,200	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	28,500	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	22,400	83		17	2	1	55	100	

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Appendix A-9

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project PD
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	21,000	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	29,400	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	43,800	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	49,600	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	41,000	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	9,100	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	19,500	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	18,600	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	12,700	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	47,100	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	34,000	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	29,100	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	27,100	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	16,900	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	14,200	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	8,000	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	13,300	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	17,900	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	11,700	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	NA	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	83		17	2	1	40	100	

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Appendix A-10

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project CAC With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	22,000	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	6,400	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	21,300	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	11,900	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	18,600	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	22,700	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	12,100	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	22,600	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	18,200	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	6,200	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	21,700	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	17,900	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	21,200	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	19,900	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	4,000	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	36,800	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	26,500	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	36,300	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	42,300	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	26,300	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	11,700	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	6,500	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	5,200	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	23,400	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	42,000	83		17	2	1	40	100	

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Appendix A-11

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project CAC With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	29,100	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	21,200	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	6,800	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	3,000	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	15,100	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	7,100	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	47,600	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	29,700	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	29,600	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	19,600	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	12,000	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	5,800	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	3,800	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	31,100	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	28,900	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	27,600	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	23,200	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	27,700	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	33,000	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	32,700	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	24,400	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	68,500	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	64,500	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	46,500	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	42,000	83		17	2	1	55	100	

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Appendix A-12

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project CAC With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	41,700	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	49,600	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	49,500	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	46,600	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	42,500	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	4,400	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	6,500	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	8,900	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	9,300	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	39,200	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	36,800	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	25,600	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	29,100	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	20,300	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	18,600	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	6,800	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	6,400	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	10,000	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	6,100	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	NA	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	83		17	2	1	40	100	

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Appendix A-13

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project PD With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	22,200	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	6,400	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	21,300	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	11,900	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	18,900	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	23,500	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	12,000	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	23,300	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	18,300	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	6,200	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	22,000	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	18,200	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	22,700	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	21,300	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	4,400	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	38,200	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	28,000	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	39,500	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	45,500	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	29,000	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	13,400	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	7,000	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	5,400	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	23,900	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	42,900	83		17	2	1	40	100	

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Appendix A-14

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project PD With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	30,700	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	21,700	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	6,800	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	3,100	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	15,000	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	7,300	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	48,600	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	29,700	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	29,500	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	19,500	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	12,000	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	5,800	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	3,800	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	31,400	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	28,900	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	27,600	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	24,000	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	27,700	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	35,400	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	35,300	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	25,800	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	68,900	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	65,400	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	46,900	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	42,700	83		17	2	1	55	100	

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Appendix A-15

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Existing Plus Project PD With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	43,400	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	50,600	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	51,100	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	50,700	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	44,100	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	4,400	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	6,100	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	10,000	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	9,500	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	40,600	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	38,900	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	27,200	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	29,400	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	20,200	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	18,300	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	6,800	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	6,500	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	10,100	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	6,100	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	NA	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	NA	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	83		17	2	1	40	100	

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Appendix A-16

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	29,000	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	9,200	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	23,900	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	15,000	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	20,100	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	23,600	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	21,500	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	31,100	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	28,500	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	12,100	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	23,500	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	16,500	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	16,200	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	17,700	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	7,900	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	37,900	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	34,300	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	29,800	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	32,800	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	23,800	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	30,700	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	16,800	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	10,800	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	24,000	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	34,200	83		17	2	1	40	100	

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Appendix A-17

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	32,800	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	22,700	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	15,800	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	4,700	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	18,000	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	9,700	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	64,700	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	37,800	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	38,700	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	29,000	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	20,500	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	12,700	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	7,300	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	30,400	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	35,300	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	34,000	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	35,100	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	42,200	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	41,600	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	37,400	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	21,000	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	81,700	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	63,500	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	42,400	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	38,500	83		17	2	1	55	100	

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Appendix A-18

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	31,800	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	36,200	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	39,700	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	38,600	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	37,800	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	5,100	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	16,700	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	17,600	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	23,000	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	49,100	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	37,700	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	37,900	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	37,300	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	29,400	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	22,800	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	17,200	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	12,500	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	13,100	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	8,800	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	26,600	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	24,700	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	9,900	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	83		17	2	1	40	100	

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Appendix A-19

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project CAC
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	29,400	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	9,600	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	26,700	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	17,400	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	22,500	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	26,500	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	27,800	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	33,300	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	32,100	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	12,100	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	26,800	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	19,200	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	19,600	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	20,500	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	10,500	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	42,000	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	39,600	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	38,700	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	42,500	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	28,100	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	33,700	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	17,900	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	14,400	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	25,100	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	37,200	83		17	2	1	40	100	

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Appendix A-20

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project CAC
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	39,900	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	30,000	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	17,700	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	7,000	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	19,800	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	9,800	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	66,800	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	40,000	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	41,100	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	30,100	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	21,000	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	13,200	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	7,900	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	31,300	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	36,700	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	35,400	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	38,500	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	45,300	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	43,700	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	39,700	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	22,400	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	84,200	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	66,200	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	45,000	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	44,700	83		17	2	1	55	100	

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Appendix A-21

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project CAC
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	37,200	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	42,500	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	45,500	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	44,300	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	40,100	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	5,200	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	18,600	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	19,300	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	24,600	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	53,700	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	39,300	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	38,700	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	38,800	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	31,800	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	24,900	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	16,900	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	14,000	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	15,100	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	8,700	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	29,900	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	26,600	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	9,900	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	83		17	2	1	40	100	

BOLLARD
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Appendix A-22

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project PD
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	30,400	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	9,500	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	26,800	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	17,600	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	22,100	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	26,900	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	28,100	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	33,500	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	32,800	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	12,600	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	27,200	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	19,400	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	19,700	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	21,000	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	10,700	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	42,300	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	40,200	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	39,700	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	43,400	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	28,700	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	33,800	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	18,000	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	14,400	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	25,800	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	37,800	83		17	2	1	40	100	

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Appendix A-23

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project PD
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	41,000	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	30,900	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	17,500	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	7,100	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	20,800	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	9,900	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	67,600	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	40,000	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	41,100	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	30,100	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	20,800	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	13,100	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	7,900	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	30,800	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	36,000	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	34,700	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	38,700	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	46,400	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	43,800	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	40,800	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	22,700	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	84,500	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	67,000	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	45,500	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	44,900	83		17	2	1	55	100	

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Appendix A-24

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project PD
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	38,700	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	43,400	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	46,600	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	48,600	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	40,700	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	5,200	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	19,400	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	19,800	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	24,500	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	54,400	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	40,200	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	40,000	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	38,600	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	31,800	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	24,800	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	16,700	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	14,200	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	15,200	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	8,800	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	30,000	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	26,200	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	9,900	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	NA	83		17	2	1	40	100	

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Appendix A-25

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project CAC With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	30,000	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	8,700	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	24,100	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	15,700	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	26,800	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	37,800	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	29,100	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	33,300	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	27,200	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	10,200	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	26,800	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	18,500	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	20,200	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	25,700	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	10,700	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	42,000	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	37,000	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	39,900	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	44,000	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	30,200	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	21,700	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	18,600	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	14,400	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	25,100	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	38,400	83		17	2	1	40	100	

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Appendix A-26

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project CAC With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	40,100	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	26,400	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	14,100	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	7,200	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	21,600	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	9,200	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	66,800	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	38,600	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	39,100	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	29,900	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	20,600	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	13,000	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	7,900	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	31,300	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	35,200	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	33,900	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	36,200	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	38,200	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	41,600	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	37,600	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	26,200	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	84,100	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	68,300	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	43,400	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	46,600	83		17	2	1	55	100	

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Appendix A-27

FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project CAC With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	37,400	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	44,300	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	50,900	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	48,500	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	42,100	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	4,900	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	8,700	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	10,800	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	23,400	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	52,300	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	48,000	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	36,200	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	40,300	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	31,200	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	24,000	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	16,900	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	13,200	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	14,600	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	8,400	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	26,600	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	27,600	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	8,000	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	21,900	83		17	2	1	40	100	

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FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project PD With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
1	Folsom Blvd.	State Route 16 to Watt Ave.	30,300	83		17	2	1	45	100	
2	Kiefer Blvd.	Florin-Perkins Rd. to Watt Ave.	8,800	83		17	2	1	45	100	
3	Kiefer Blvd.	Watt Ave. to Rosemont Dr.	24,100	83		17	2	1	45	100	
4	Kiefer Blvd.	Rosemont Dr. to Bradshaw Rd.	15,800	83		17	2	1	45	100	
5	SR 16	Folsom Blvd. to Watt Ave.	27,200	83		17	2	1	50	100	
6	SR 16	Watt Ave. to Bradshaw Rd.	38,500	83		17	2	1	50	100	
7	SR 16	Bradshaw Rd. to Sunrise Blvd	29,300	83		17	2	1	50	100	
8	Fruitridge Rd.	Power Inn Rd. to Florin-Perkins Rd.	33,500	83		17	2	1	45	100	
9	Fruitridge Rd.	Florin-Perkins Rd. to South Watt Ave.	27,900	83		17	2	1	45	100	
10	Fruitridge Rd.	South Watt Ave. to Hedge Ave.	10,500	83		17	2	1	45	100	
11	Elder Creek Rd.	Power Inn Rd. to Florin-Perkins Rd.	27,200	83		17	2	1	45	100	
12	Elder Creek Rd.	Florin-Perkins Rd. to South Watt Ave.	19,000	83		17	2	1	45	100	
13	Elder Creek Rd.	South Watt Ave. to Hedge Ave.	21,300	83		17	2	1	55	100	
14	Elder Creek Rd.	Hedge Ave. to Bradshaw Rd.	26,800	83		17	2	1	55	100	
15	Elder Creek Rd.	Bradshaw Rd. to Excelsior Rd.	11,000	83		17	2	1	55	100	
16	Florin Rd.	Stockton Blvd to Power Inn Rd.	42,300	83		17	2	1	40	100	
17	Florin Rd.	Power Inn Rd. to Florin-Perkins Rd.	37,500	83		17	2	1	40	100	
18	Florin Rd.	Florin-Perkins Rd. to Gardner Ave.	41,600	83		17	2	1	45	100	
19	Florin Rd.	Gardner Ave. to South Watt Ave.	45,000	83		17	2	1	45	100	
20	Florin Rd.	South Watt Ave. to Hedge Ave.	31,200	83		17	2	1	45	100	
21	Florin Rd.	Hedge Ave. to Bradshaw Rd.	22,400	83		17	2	1	55	100	
22	Florin Rd.	Bradshaw Rd. to Excelsior Rd.	18,900	83		17	2	1	55	100	
23	Florin Rd.	Excelsior Rd. to Sunrise Blvd	14,400	83		17	2	1	55	100	
24	Gerber Rd.	Stockton Blvd to Power Inn Rd.	25,800	83		17	2	1	40	100	
25	Gerber Rd.	Power Inn Rd. to French Rd.	39,000	83		17	2	1	40	100	

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FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project PD With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
26	Gerber Rd.	French Rd. to Elk Grove-Florin Rd.	40,800	83		17	2	1	40	100	
27	Gerber Rd.	Elk Grove-Florin Rd. to Bradshaw Rd.	26,400	83		17	2	1	50	100	
28	Gerber Rd.	Bradshaw Rd. to Vineyard Rd.	13,700	83		17	2	1	55	100	
29	Gerber Rd.	Vineyard Rd. to Excelsior Rd.	7,400	83		17	2	1	55	100	
30	Vintage Park Dr.	Elk Grove-Florin Rd. to Waterman Rd.	21,900	83		17	2	1	40	100	
31	Vintage Park Dr.	Waterman Rd. to Bradshaw Rd.	9,100	83		17	2	1	40	100	
32	Calvine Rd.	Power Inn Rd. to Elk Grove-Florin Rd.	67,600	83		17	2	1	45	100	
33	Calvine Rd.	Elk Grove-Florin Rd. to Grand Cru Dr.	38,300	83		17	2	1	45	100	
34	Calvine Rd.	Grand Cru Dr. to Waterman Rd.	38,800	83		17	2	1	45	100	
35	Calvine Rd.	Waterman Rd. to Bradshaw Rd.	29,700	83		17	2	1	45	100	
36	Calvine Rd.	Bradshaw Rd. to Vineyard Rd.	20,500	83		17	2	1	55	100	
37	Calvine Rd.	Vineyard Rd. to Excelsior Rd.	12,700	83		17	2	1	55	100	
38	Calvine Rd.	Excelsior Rd. to Grant Line Rd.	7,900	83		17	2	1	55	100	
39	Power Inn Rd	Elder Creek Rd. to Florin Rd.	30,800	83		17	2	1	45	100	
40	Power Inn Rd	Florin Rd. to Gerber Rd.	34,400	83		17	2	1	45	100	
41	Power Inn Rd	Gerber Rd. to Calvine Rd.	33,100	83		17	2	1	40	100	
42	Florin-Perkins Rd.	Folsom Blvd. to SR 16	36,900	83		17	2	1	45	100	
43	Florin-Perkins Rd.	SR 16 to Fruitridge Rd.	38,900	83		17	2	1	45	100	
44	Florin-Perkins Rd.	Fruitridge Rd. to Elder Creek Rd.	41,200	83		17	2	1	45	100	
45	Florin-Perkins Rd.	Elder Creek Rd. to Florin Rd.	38,200	83		17	2	1	40	100	
46	French Rd.	Florin Rd. to Gerber Rd.	26,200	83		17	2	1	35	100	
47	Watt Ave.	Folsom Blvd. to Kiefer Blvd.	84,300	83		17	2	1	45	100	
48	South Watt Ave.	Kiefer Blvd. to SR 16	69,200	83		17	2	1	45	100	
49	South Watt Ave.	SR 16 to Fruitridge Rd.	44,200	83		17	2	1	55	100	
50	South Watt Ave.	Fruitridge Rd. to Elder Creek Rd.	47,400	83		17	2	1	55	100	

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FHWA-RD-77-108 Highway Traffic Noise Prediction Model
Data Input Sheet

Project #: 2005-613 Florin-Vineyard Community Plan
Description: Cumulative Plus Project PD With Mitigation
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Name	Segment Description	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)
51	South Watt Ave.	Elder Creek Rd. to Florin Rd.	38,000	83		17	2	1	55	100	
52	Elk Grove-Florin Rd.	Florin Rd. to Gerber Rd.	46,600	83		17	2	1	55	100	
53	Elk Grove-Florin Rd.	Gerber Rd. to Carlisle Ave.	52,500	83		17	2	1	55	100	
54	Elk Grove-Florin Rd.	Carlisle Ave. to Vintage Park Dr.	52,400	83		17	2	1	45	100	
55	Elk Grove-Florin Rd.	Vintage Park Dr. to Calvine Rd.	43,000	83		17	2	1	45	100	
56	Hedge Ave.	SR 16 to Fruitridge Rd.	5,000	83		17	2	1	45	100	
57	Hedge Ave.	Fruitridge Rd. to Elder Creek Rd.	9,100	83		17	2	1	45	100	
58	Hedge Ave.	Elder Creek Rd. to Florin Rd.	12,700	83		17	2	1	45	100	
59	Waterman Rd.	Vintage Park Dr. to Calvine Rd.	23,500	83		17	2	1	45	100	
60	Bradshaw Rd.	Kiefer Blvd. to SR 16	52,900	83		17	2	1	55	100	
61	Bradshaw Rd.	SR 16 to Elder Creek Rd.	49,100	83		17	2	1	35	100	
62	Bradshaw Rd.	Elder Creek Rd. to Florin Rd.	37,800	83		17	2	1	55	100	
63	Bradshaw Rd.	Florin Rd. to Gerber Rd.	40,200	83		17	2	1	55	100	
64	Bradshaw Rd.	Gerber Rd. to Vintage Park Dr.	30,700	83		17	2	1	55	100	
65	Bradshaw Rd.	Vintage Park Dr. to Calvine Rd.	23,600	83		17	2	1	55	100	
66	Vineyard Rd.	Gerber Rd. to Calvine Rd.	16,800	83		17	2	1	45	100	
67	Excelsior Rd.	SR 16 to Florin Rd.	13,300	83		17	2	1	55	100	
68	Excelsior Rd.	Florin Rd. to Gerber Rd.	14,600	83		17	2	1	55	100	
69	Excelsior Rd.	Gerber Rd. to Calvine Rd.	8,200	83		17	2	1	55	100	
70	Waterman Rd.	Vintage Park Dr. to Gerber Rd.	27,100	83		17	2	1	40	100	
71	Waterman Rd.	Gerber Rd. to Florin Rd.	28,600	83		17	2	1	40	100	
72	Vineyard Rd.	Gerber Rd. to Florin Rd.	7,800	83		17	2	1	45	100	
73	Waterman Rd.	Florin Rd. to Elder Creek Rd.	22,900	83		17	2	1	40	100	

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APPENDIX F

DRAINAGE MASTER PLAN

FLORIN VINEYARD GAP COMMUNITY PLAN

SACRAMENTO COUNTY, CA

PRELIMINARY DRAINAGE STUDY

October 12, 2007

Prepared By:

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Signature dated:

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EXECUTIVE SUMMARY

The Florin Vineyard Gap Community Plan (FVGCP) is a sparsely populated area encompassing roughly 3,876 acres located in the eastern portion of Sacramento County. The County's Board of Supervisors initiated the planning process for the area in 1999 and in December of 2003 approved conceptual land use designations for purposes of preparation of an environmental impact report. To be reviewed concurrent with the overall community plan are 34 distinct development applications that have been filed with the County.

The FVGCP is roughly bound by Elder Creek Road on the north, Bradshaw Road and the North Vineyard Station Specific Plan (NVSSP) area on the east, the Churchill Downs subdivision south of Gerber Road on the south and the Union Pacific railroad corridor and Elk Grove-Florin Road on the west. The area is tributary to the overall Morrison Creek stream group with 140 acres draining north into Morrison Creek proper, 774 acres draining to Florin Creek, 1,923 acres draining to the Elder Creek/Gerber Creek system, 800 acres to Unionhouse Creek, and the remaining 90 acres draining into Strawberry Creek located south of the plan area.

This plan analyzes the following conditions:-

- Pre-project based on 2004 land use conditions.;
- FVGCP, North Vineyard Station Specific Plan (NVSSP), and Vineyard Springs Comprehensive Plan (VSCP) post-project conditions with Laguna spill;
- FVGCP, NVSSP, and VSCP post-project conditions without Laguna spill;
- FVGCP stand alone conditions.

The post-project condition with Laguna spill assumes that FVGCP, NVSSP and VSCP are built before Laguna spill is shut off. The post-project condition without Laguna spill assumes that FVGCP, NVSSP and VSCP are built after Laguna spill is shut off. The FVGCP stand alone condition assumes that only FVGCP develops while NVSSP and VSCP remain undeveloped.

Elder and Gerber Creeks are proposed to be improved as part of development within NVSSP; Unionhouse Creek exists in its ultimate configuration and tributary drainage from the FVGCP to Morrison Creek and Strawberry Creek is so insignificant that it will not warrant future channel improvements.

Overall increases in runoff volumes will be mitigated through the implementation of detention basins. Potential water quality impacts will be mitigated through the implementation of water quality impacts features including dry detention basins. In areas where detention basins cannot be implemented, grassy swales and underground treatment structures may be constructed. Oversize exhibit DF-1 shows the drainage facilities that need to be developed with particular project areas.

The improvements needed to accomplish the development concept analyzed in this report are as follows:

- Excavate Elder and Gerber Creeks
- Provide flood control and water quality detention basins along Unionhouse, Florin Elder and Gerber Creeks (Table ES-1)
- Construct storm drain pipes for the project area

Table ES-1 Detention Basins Required for FVGCP

DET-BASIN	WATER QUALITY VOLUME (AC-FT)	FLOOD CONTROL VOLUME (AC-FT)	DETENTION BASIN AND BUFFER AREA FOOTPRINT (ACRES)
UNIONHOUSE CREEK			
UHDET2	5.6	32.6	5.6
WQSCK	2.5	N/A	1.4
UHDET1	N/A	30.5	8.3
WQUH1AN	5.8	N/A	2.4
ELDER CREEK WQ ONLY BASIN			
WQMH10	4.8	N/A	2.1
ELDER CREEK WITH LAGUNA SPILL			
E28	23.4	70.2	15.2
E31	6.0	73.0	12.8
ELDER CREEK WITHOUT LAGUNA SPILL			
E28	23.4	70.2	15.2
E31	6.0	73.0	12.8
GERBER CREEK WITHOUT LAGUNA SPILL			
G43	12.4	14.5	6.9
FLORIN CREEK			
WQDETSC2	8.6	5.7	3.6
SC2R71	N/A	6.0	1.9
DETF4C	24.9	17.7	10.9
SWATTD	N/A	34.9	6.4
MH6DET	N/A	25.5	4.6
INTERIM			
FBNE	3.2	12.6	3.7
VR	N/A	1.4	1.1
VRWQ	1.1	N/A	

Table ES-2 is a summary table identifying 100-year pre-project and post-development peak flows and water surface elevations at the downstream community plan boundary.

Table ES-2: Comparison of Flows and Stages for FVGCP Post-development Conditions				
Condition	**Florin Creek Reach 2 Node 22352**	**Project Boundary at Elder Creek Node Sta 4.795**	**City/County Boundary at Sta. 1.921**	**Unionhouse Creek Node Sta 15407**
Post-project with Laguna Spill 100-year Flows (cfs)				
Existing	419	1897	1946	636
Post-development	352	1807	1843	560
Increase in stage	-67	-90	-103	-76
Post-project with Laguna Spill 100-year Water Surface Elevations (feet)				
Existing	35.61	38.80	20.19	36.48
Post-development	35.21	38.71	19.97	35.59
Increase	-0.40	-0.09	-0.22	-.89
Post-project without Laguna Spill 100-year Flows (cfs)				
Existing	419	1897	1946	636
Post-development	352	1437	1740	560
Increase in stage	-67	-460	-206	-76
Post-project without Laguna Spill 100-year Water Surface Elevations (feet)				
Existing	35.61	38.80	20.19	36.48
Post-development	35.21	37.89	19.76	35.59
Increase	-0.40	-0.91	-0.43	-.89
Condition	**Elder Creek Tributary at Vintage Ranch**	**Elder Creek Tributary at Bradshaw**		
	1.11	**0.62**		
Interim Conditions 100-year Flows (cfs)				
Existing	141	232		
Post-development	127	155		
Increase in stage	-14	-77		
Interim Conditions 100-year Water Surface Elevations (feet)				
Existing	66.79	61.86		
Post-development	66.72	61.15		
Increase in stage	-0.07	-0.71		

With the implementation of the various channel improvements, detention and water quality facilities identified in the report, the FVGCP can build out at the designated land use densities without negatively impacting existing downstream hydraulic conditions or storm water quality with or without the North Vineyard Station Specific Plan Drainage Master Plan improvements.

Stand-alone Condition

The stand-alone condition is an analysis to determine what drainage facilities would be required for FVGCP to develop assuming NVSSP and VSCP do not develop. The stand-alone condition analysis indicates that the detention basin storage volumes provided for the FVGCP site are sufficient to reduce post-project flows and stages down to existing levels immediately downstream of the project at River Mile 4.795 and at the City/County boundary at River Mile 1.921 as shown the table below (Table ES-2). Constructing the proposed detention basins at the same time the areas draining to them will allow the development of the FVGCP site without relying on any other projects (see oversize exhibit DF-1). Under Stand-alone conditions, the FVGCP can build out at the designated land use densities without negatively impacting existing downstream hydraulic conditions or storm water quality.

Table ES-3: Comparison of Flows and Stages for FVGCP Stand-alone Conditions

Condition	Florin Creek Reach 2 Node	Project Boundary at Elder Creek Node	City/County Boundary at Elder Creek Node	Unionhouse Creek Node Sta 15407
	22352	Sta 4.795	Sta 1.921	
100-year Flows (cfs)				
Existing	419	1897	1946	636
Stand-alone	352	1852	1930	560
Increase in stage	-67	-45	-16	-76
100-year Water Surface Elevations (feet)				
Existing	35.61	38.80	20.19	36.48
Stand-alone	35.21	38.79	20.21	35.59
Increase	-0.4	-0.01	0.02	-0.89

1.0 Introduction

1.1 PURPOSE

This drainage master plan is a part of the planning process to be used as a tool by community planners, engineers, and interested parties to evaluate drainage needs in the proposed Florin-Vineyard Gap Community Plan (FVGCP) area. The drainage master plan analyzes the potential impacts of the proposed developments, and identifies the improvements necessary to mitigate those impacts.

This plan analyzes the following conditions:-

- Pre-project conditions based 2004 land use conditions.;
- FVGCP, North Vineyard Station Specific Plan (NVSSP), and Vineyard Springs Comprehensive Plan (VSCP) post-project conditions with Laguna spill;
- FVGCP, NVSSP, and VSCP post-project conditions without Laguna spill;
- FVGCP stand alone conditions.

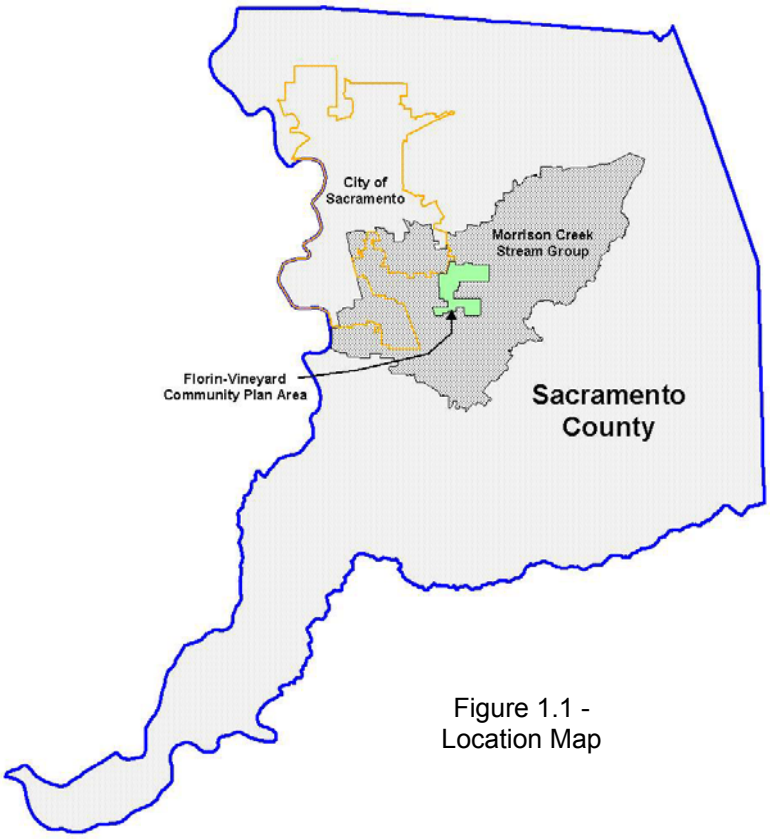


Figure 1.1 - Location Map

The post-project condition with Laguna spill assumes that FVGCP, NVSSP and VSCP are built before Laguna spill is shut off. The post-project condition without Laguna spill assumes that FVGCP, NVSSP and VSCP are built after Laguna spill is shut off. The FVGCP stand alone condition assumes that only FVGCP develops while NVSSP and VSCP remain undeveloped.

The study are also analyzes in the development of the storm drainage components of the project, including detention basins, water quality treatment facilities, trunk storm drainage, flood control channels. The incorporation of the recommended improvements into the FVGCP will provide flood control and protection to the plan area, and ensure that impacts to peak 100-year flow rates are mitigated to less than the pre-project rates, and that stormwater will be properly treated prior to discharge. Improvements within FVGCP will be constructed by the developers and maintained Sacramento County.

1.2 BACKGROUND

The area included in the FVGCP is a sparsely populated area encompassing roughly 3,876 acres located in the middle portion of Sacramento County. The County's Board of Supervisors initiated the planning process for the area in 1999 and in December of 2003 approved conceptual land use designations for purposes of preparation of an environmental impact report. To be reviewed concurrent with the overall community plan, are 34 distinct development applications that have been filed with the County (Oversize Exhibit IP-2). Oversize Exhibit IP-1 shows the same individual projects with the pre-project floodplain boundary superimposed as requested by Sacramento County Department of Environmental Review and Assessment (DERA). Each application will be required to demonstrate compliance with the master drainage plan prior to improvement plan approval.

In 1999, the Sacramento County Board of Supervisors initiated the FVGCP area planning process, (see Figure 1.1). The Plan provides developers, service providers, planners, and decision-makers a policy document for planning the development within the community.

1.3 PLANNING AND DESIGN CRITERIA

The parameters of the watersheds for the pre-project conditions come from the existing Sacramento County land use as shown in 2004 aerial photographs. The parameters for FVGCP post-project conditions were determined from the land use plan adopted by the Planning Department on December 4, 2003 (Oversize Exhibit LU-1). Oversize Exhibit LU-2 shows the same land use map with the pre-project floodplain boundary superimposed as requested by DERA. Previous efforts by Municipal Services Agency – Department of Water Resources (MSA-DWR) and other referenced work form the basis of this hydrologic and hydraulic modeling. Changes under the Future Conditions model pertain to the following categories:

1. Refinement of drainage sub shed boundaries as they relate to proposed tentative map development and lot configurations.

2. Sizing and alignment of stormwater conveyance systems, including routing of overland release to natural or improved drainage ways.

3. Functionality of detention basins to maintain pre-project peak runoff rates downstream of those basins and the ability to provide treatment to stormwater runoff prior to discharge into the jurisdictional drainage ways.

Each watershed is described by its hydrologic and hydraulic characteristics for pre-project and proposed development. Hydrology quantifies the rainfall runoff generated from the land surface within the FVGCP and is a function of the land surface imperviousness, infiltration rate and capacity, slope, soils characteristics, vegetation and rainfall distribution. Runoff will be collected in storm drainage systems and conveyed to the regional trunk facilities. The runoff will be conveyed through trunk facilities consisting of open channels, piped storm drainage systems, swales and flood control channels. Hydraulic analysis identifies limitations or constraints within existing systems and provides a tool to size proposed conveyance systems to adequately and safely convey flood event runoff to the receiving streams.

1.4 SCOPE OF WORK

The low-lying areas of Sacramento County are susceptible to local and regional flooding due to prolonged heavy rains characterized by high peak flows and large volumes of runoff that occur during the winter and early spring. The potential for local flooding also occurs from short duration, high intensity cloudbursts. As urban growth expands into rural areas and increased impervious surfaces accelerate runoff and generate additional runoff volumes, the potential for increased flooding occurs. This report will document computer models which estimate the system response to the estimated flood events. The computer models also can estimate the impacts which the proposed development would have on the existing watershed, downstream and upstream of the project.

Stormwater detention facilities ensure that the increased future peak flow rates do not exceed the receiving creek's pre-project peak flow. To comply with regulatory and clean water issues, water quality treatment facilities are to be provided either on an individual development basis or within the regional stormwater detention facilities of the plan.

Guidelines established as drainage goals within the proposed FVGCP include maintenance or enhancement of the channel flow characteristics of existing creek channels and providing 100-year flood protection within the channel open space corridors.

Hydrologic models are used to determine a quantitative estimate of the runoff flow rates that the FVGCP area will discharge for the design storm events (100-year for regional hydrology). Impacts resulting from the proposed changed land use conditions are also evaluated. These models provide a tool to determine and evaluate potential areas of flooding, increased peak flow rates, increased water surface elevations, and provide the engineer a basis upon which to recommend improvements to mitigate and attenuate that flooding to meet Sacramento County Municipal Services Agency Department of Water Resources (MSA-DWR) criteria.

The FVGCP is located within the jurisdiction of the County of Sacramento. The drainage and surface water runoff analysis will be reviewed by MSA-DWR. All new developments and drainage improvements within the County are required to follow specific guidelines in design, rehabilitation, and maintenance of drainage facilities and natural waters as set forth by MSA-DWR. The County of Sacramento emphasizes protection and preservation of the inherent value of a natural stream. Additionally, the County's General Plan and Drainage Master Plan Program requires that no adverse downstream impact shall occur due to development. This is achieved by ensuring that the proposed improvements result in no water surface increases outside of the plan area upstream and downstream, and no peak flow increases downstream. Other elements for consideration revolve around public health and safety issues, maintaining compliance with regulatory agencies, and providing the public with aesthetic natural appearing features. Additionally, dual use facilities including parks (active and passive) and trails are encouraged. The FCVP drainage master plan is an integrated part of the overall regional FVGCP plan.

Stormwater runoff from developing areas is a major focus, especially where historical flooding is known to occur. The environmental value of the existing creek systems are weighed against the flood control needs. In some cases, the existing creek system is of sufficient depth and capacity that flood control can be satisfied without modification. In other cases, additional flood control facilities are added with minor modifications to the creek. In still other circumstances, where there is no intrinsic value to the creek or it is impractical to leave the creek channel intact, a new flood control channel may be proposed to increase flood control capacity, the drainage system discharge depths, and the environmental and esthetic values.

Within development areas minor flow events such as the "Nolte" or 10-year event will be piped, while excess flows will be conveyed via overland release, primarily in streets or along other overland or channel release paths.

1.5 DESIGN CRITERIA

All criteria used and the analysis performed for this master plan are in accordance with the "Hydrology Standards, Volume 2 of the Sacramento City/County Drainage Manual", dated December 1996.

1.6 DESIGN EVENTS

A design event of a 100-year recurrence interval was used to evaluate the watershed impacts, regional hydrology and stream flow hydraulics.

For Trunk Storm Drainage System evaluations, the "Nolte" flow was used to size facilities. For systems which intersect, or parallel arterial roadways, the 100-year event was also evaluated to verify that flooding of the arterial roadway would not occur in the 100-year design event.

For the systems which were analyzed using the CS DRAINAGE STUDIO software, the "Nolte Charts" methodology was used to develop watershed flow rates.

For the systems which were analyzed using the XPSWMM software, SACCALC software was used to generate the inflow hydrographs with HEC-1. The hydrographs were exported by SACCALC to XPSWMM "xpx" format files for input into the XPSWMM models.

1.7 STUDY TEAM

Civil Engineering Solutions, Inc. (CESI) was requested to participate with Mackay and Somps in the preparation of this document in 2004. In 2005 CESI took over the finalization of this document.

Original studies were prepared by Mr. Doug Hamilton, P.E. (consultant to MSA-DWR). He initially developed many of the UNET models that have subsequently been used and modified by others over the years. The latest version of the Elder-Gerber stream group HEC-RAS base model, for the pre-project condition, was developed by CESI. At the time of the writing of this document, a Letter of Map Revision (LOMR), based on the CESI base model, had been submitted to FEMA and was nearing completion.

The hydrologic and hydraulic analyses for the FVGCP study (this document) were prepared by Civil Engineering Solutions, Inc. (CESI).

1.8 ACKNOWLEDGEMENTS

CESI wishes to express it's appreciation to George Booth, Pete Hall, Heidi Huber and Mike Johnson of the Sacramento County Municipal Services Agency Department of Water Resources for their invaluable assistance and suggestions during the development of this study.

2.0 Study Area Characteristics

2.1 STUDY AREA CHARACTERISTICS

The FVGCP area boundary includes approximately 3,876 acres roughly bound by Elder Creek Road on the north, Bradshaw Road and the North Vineyard Station Specific Plan area on the east, the Churchill Downs subdivision south of Gerber Road on the south and the Union Pacific railroad corridor and Elk Grove-Florin Road on the west. The project area is a portion of the Morrison Creek Stream Group (MCSG) as shown in Figure 2.1 with 1,987 acres draining to the Elder Creek/Gerber Creek system, 816 acres to Unionhouse Creek and 824 acres draining to Florin Creek. The “remaining areas” include 154 acres draining north into Morrison Creek, 88 acres draining into Strawberry Creek and 7 acres to Laguna Creek.

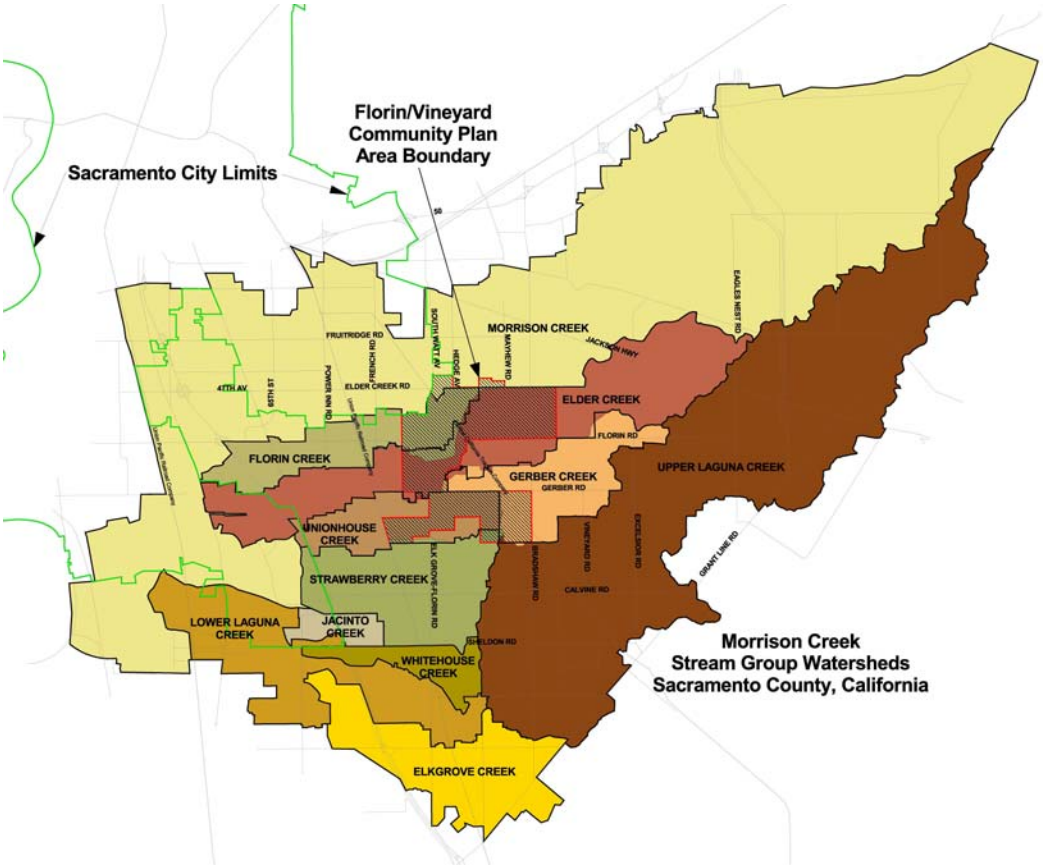


Figure 2.1 Watershed Boundaries

The drainage master plan is organized to give the reader an overview of the FVGCP study area, then develops the hydrology and hydraulic components, including land use changes, adjustments of sub-shed boundaries, and drainage improvements for

the individual creek watersheds. This is accomplished by describing the drainage characteristics and proposed improvements within the individual watersheds for Florin, Elder, Gerber, and Unionhouse Creeks.

2.2 PRE-PROJECT CONDITIONS AND FACILITIES

The FVGCP is primarily located within the watershed boundaries of Florin Creek, Elder-Gerber Creeks and Unionhouse Creek as shown in Figure 2.2.1. These creeks are tributary to the Morrison Creek Stream Group (MCSG) (see Figure 2.1). Elder and Gerber Creeks are affected during large storm events by an inter-basin transfer

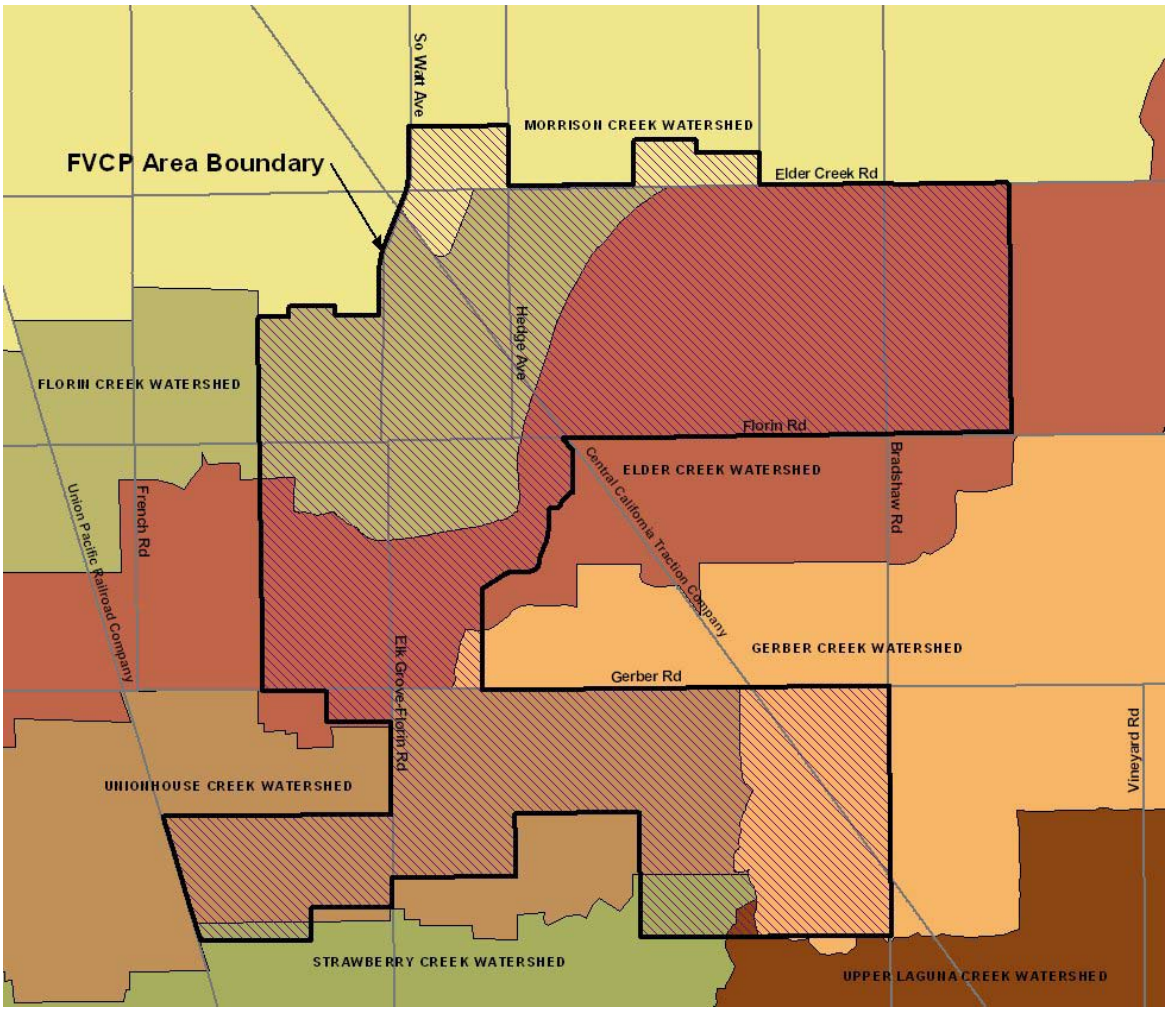


Figure 2.2.1 – Plan Area Boundary

of flood waters from Laguna Creek into their watershed area. The “remaining areas” within the FVGCP area either drain north into Morrison Creek or south into Strawberry Creek or Laguna Creek. Approximately seven acres of the project site drains to Laguna Creek under pre-project conditions. The area will drain to

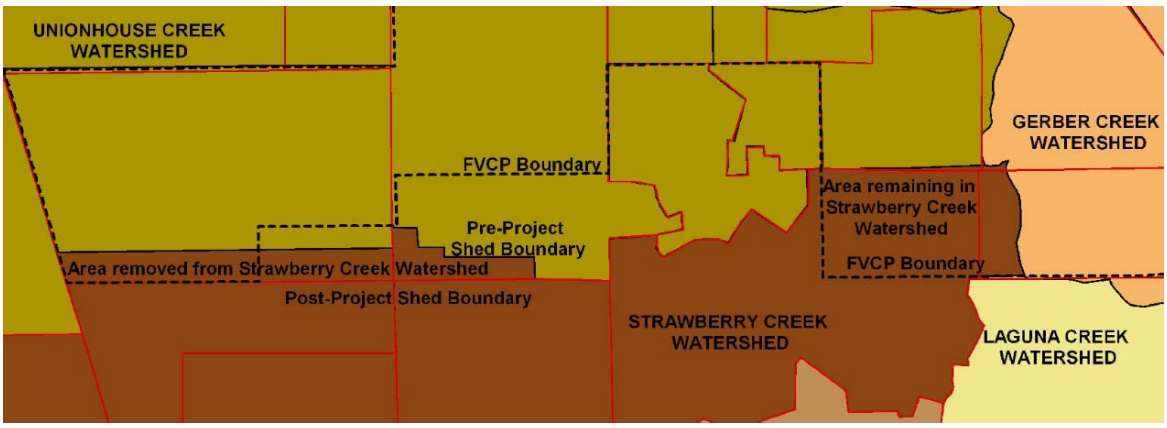


Figure 2.2.2 Modified Strawberry Creek Sub-Shed Areas

Unionhouse Creek under developed conditions so that no area within the FVGCP boundary will be draining to Laguna Creek.

The portion of the FVGCP area to the south within the Strawberry Creek shed area is approximately 59 acres. This is illustrated in Figure 2.2.2.

In the Morrison Creek shed area on the north side of the FVGCP area four sub-sheds will be affected. Figure 2.2.3 shows the portions of these sub-sheds which are within the plan boundaries. Table 2.2 provides a summary of the acreage affected.

Table 2.2 Morrison Creek Shed Areas Within FVGCP Boundaries

Sub-Shed	Morrison Creek Area at Watt Ave (ac)	Area Within FVGCP (ac)	Percent of Total Shed within FVGCP Boundary
MC60A	16448	50.8	0.3
MC60B	18604	42.2	0.2
MC65	18604	28	0.1
MC80	18604	23	0.1
Total	18604	144	0.8

Impacts due to the proposed development of the revised “remaining areas” are evaluated using a proportioned estimated impact analysis, rather than performing

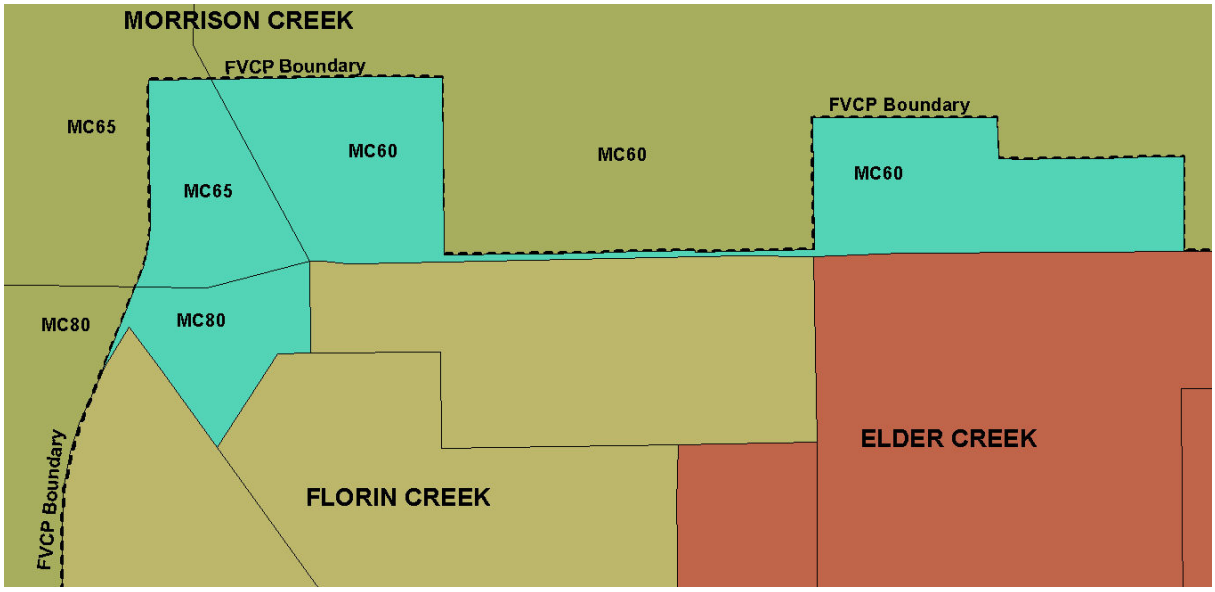


Figure 2.2.3 Morrison Creek Sub-Shed Areas Affected by the FVGCP

detailed hydrology. Detailed hydrologic analysis may be required for future projects developing in the outlying ”remaining areas”.

- **Florin Creek**

The overall Florin Creek watershed encompasses about 2,762 acres, of which approximately 824 acres (30%) are located within the FVGCP area. Florin Creek starts east of the intersection of Elk Grove-Florin Road and Florin Road and flows in a southwesterly direction.

Figure 2.2.4 Florin Creek Channel Downstream of CCTRR

The upper reach of the watershed, described as “Florin Creek – North”, is fed by runoff from ranches, small farms, gardens, pasture and undeveloped lands. The main channel has been redirected from its original natural alignment and redefined within roadside ditches and excavated swales as shown in Figures 2.2.4 and 2.2.5. The existing

channel flows leave the study area at the northwest corner of the FVGCP area, crosses Florin-Perkins Road, and continuing west.

A south tributary to Florin Creek identified as "Florin Creek – South" serves the area immediately north and south of Florin Road. An existing trunk drainage pipeline within Florin Road that begins at the intersection of Florin Road and South Watt Avenue drains this area. The trunk pipeline, which is 66 inches in diameter at the discharge point, conveys flows to the existing trapezoidal channel, crossing Florin-Perkins Road and subsequently joins the main channel of Florin Creek to the west, upstream of McComber Street. Florin Creek joins with Elder Creek, downstream of Franklin Boulevard, which discharges to Morrison Creek near Brookfield Drive, approximately 4 miles southwest of the Plan Area.

Figure 2.2.5 Florin Creek Channel Downstream of South Watt Avenue

- **Elder and Gerber Creeks**

The Elder-Gerber Creek systems are the primary watersheds within the area of the FVGCP with a total of 10,491 acres; 7,636 acres in the Elder Creek watershed and 2,855 acres in the Gerber Creek watershed. The contributing area within the FVGCP is approximately 19 percent or 1,987 acres.

Elder and Gerber Creeks within the plan area are subdivided into three sub-reaches. The portion of Elder Creek upstream of the confluence with Gerber Creek originates near the intersection of Kiefer Boulevard and Eagles Nest Road. The creek conveys flows within natural swales and existing channels and enters the FVGCP area east of Bradshaw Rd. Flow continues in a southwesterly direction to Florin Road (See Figure 2.2.6) where it leaves the FVGCP and enters the North Vineyard Station Specific Plan area (RM 6.9). Approximately half of the creek's upper reach through the northern portion of the Plan area remains in natural channels with a broad and shallow flood plain. The next section of Elder Creek forms the common north-south boundary with the North Vineyard Station Specific Plan between Florin Road and the confluence with Gerber Creek. Here, flows reenter the

Figure 2.2.6 Elder Creek Upstream of Florin Road

FVGCP area (RM 5.994) and are conveyed in an existing trapezoidal channel (See Figure 2.2.7) in a westerly direction. Elder Creek flows out of the FVGCP area approximately 1 mile downstream of the confluence (RM 4.904). Portions of Gerber Creek convey flows through the FVGCP area on the south side of Gerber Road between Bradshaw Road (RM 1.735) and the intersection of Gerber Road with the CCTRR railroad tracks (RM 1.340) and from the western boundary of the NVSSP (RM 0.040) to the confluence with Elder Creek. Elder Creek eventually discharges into Morrison Creek near Brookfield Drive in the City of Sacramento, approximately 4 miles west of the Plan Area.

The Laguna creek system also has significant influence and impact on Elder Creek through the Inter-Basin-Transfer. Gerber Creek receives floodwaters during the 100-yr event from Laguna Creek via the Laguna Creek Inter-Basin-Transfer that spills approximately 840 cfs peak flow into Gerber Creek upstream of the C.C.T.R.R. right-of-way (RM 1.616) and approximately 200 cfs downstream of the C.C.T.R.R. right-of-way. (RM 0.906)

Figure 2.2.7 Elder Creek Upstream of Elk Grove-Florin Road

- **Unionhouse Creek**

Unionhouse Creek begins east of Elk Grove-Florin Road, near the end of Surlingham Court (RM 6.991). Unionhouse Creek conveys flows in a westerly direction primarily within an excavated trapezoidal channel. Unionhouse Creek merges with Strawberry Creek approximately 2 miles southwest of the FVGCP. The total Unionhouse Creek watershed contains approximately 2,178 acres, 816 acres of which are contained within the FVGCP.

The Laguna Creek flow transfer to Gerber Creek has the potential to impact Unionhouse Creek as documented in the previously referenced Elder-Gerber Creek LOMR study. During high flow conditions a portion of the Gerber Creek floodwaters could spill into Unionhouse Creek downstream of the C.C.T.R.R. right-of-way. The study indicates this would only occur in the event of a FEMA levee policy failure of Gerber Road and does not occur in the base condition model for Elder-Gerber Creeks used in this study. The modeling for Unionhouse Creek in this study does not consider this possible scenario.

Two existing subdivisions, Churchill Downs Unit 2 (located west of Waterman Road) and the Tamarindo subdivision (located east of Elk Grove-Florin Road) and an area designated as a wetland preserve currently drain into the upper reach of Unionhouse

Creek. An existing detention basin (UH-1) was partially constructed with the Tamarindo project to control flood waters, and has some room for expansion. The creek conveys flows west, in a trapezoidal channel to where it exits the FVGCP area through twin 72-inch culverts under the Union Pacific (old Southern Pacific) Railroad (RM 5.332) corridor.

2.3 TOPOGRAPHY AND GEOGRAPHICAL SETTING

The Morrison Creek Streams Group (MCSG) area is a fairly gently sloping region located south of the American River roughly between Folsom Lake and the Sacramento River. These streams flow in a generally west-southwest direction, from their beginning near the base of the Sierra Nevada foothills to nearly the Sacramento River. The MCSG is contained east of the Sacramento River Levee system, and conveys flows south to the discharge at the Cosumnes River.

Stream slopes for the three main streams flowing through the area of the FVGCP are fairly flat at less than 0.15% overall. This results in generally slower moving wide flow paths except where otherwise constrained or in generally short segments with steeper drops at, for example, road and/or bridge crossings.

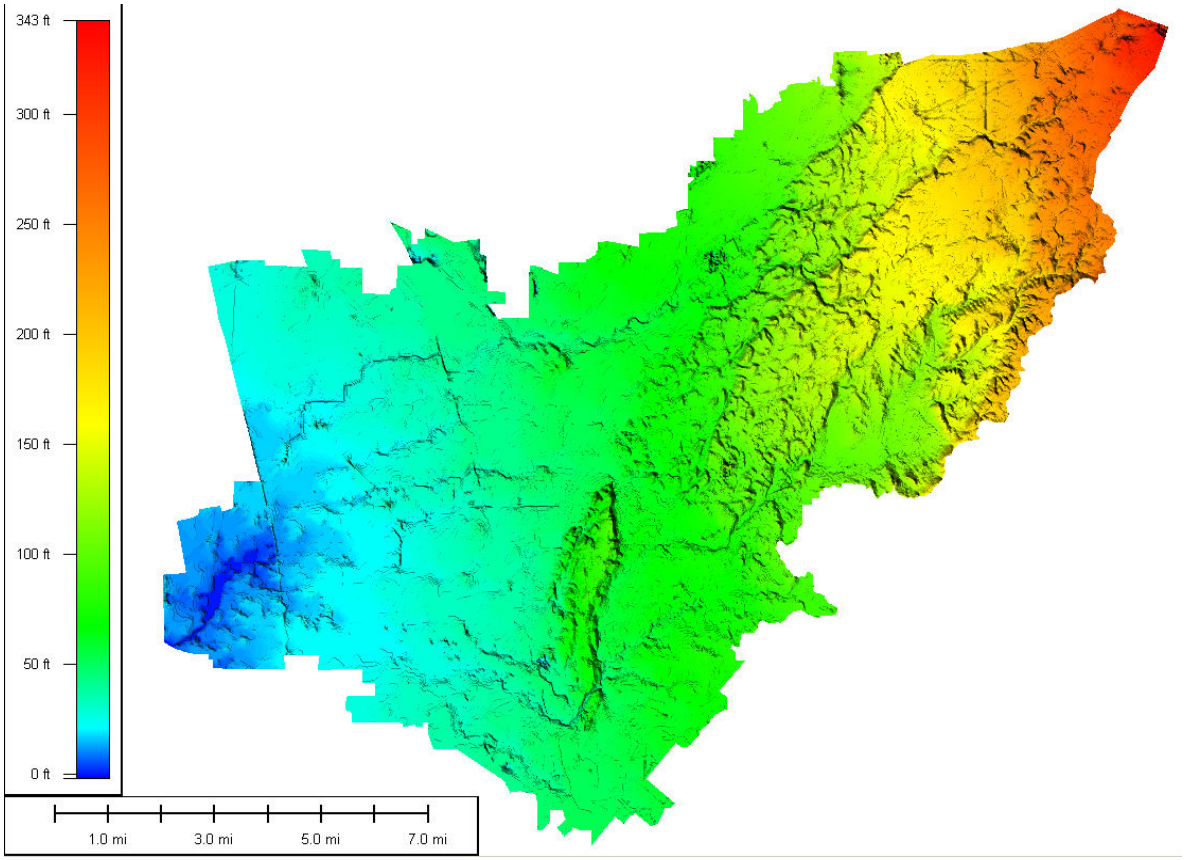


Figure 2.3 Morrison Creek Stream Group Color Shaded Topography

3.0 Hydrology

3.1 METHODOLOGY

The current standard application in Sacramento County for creating U.S Army Corps of Engineers (USACE) HEC-1 (Hydrologic Engineering Center) hydrologic models is the SACALC preprocessor program software. The Letter of Map Revision (LOMR) prepared by CESI for the Elder/Gerber stream group hydrology was based on this software. The previous models for both Florin Creek and Unionhouse Creek were both based on the superseded SacPre preprocessor software. It was therefore necessary to update the pre-project condition models for Florin Creek and Unionhouse Creek to the current SACCALC software before proceeding with the analysis.

As the hydrologic model for each stream/stream group was converted various checks were made to ensure consistency of the results from the existing models to the new base models. This data is available upon request for review.

For each watershed, the amount of each land use type in each hydrologic soil type was determined and input into the SACCALC pre-processor software to generate the HEC-1 hydrologic models. This data was developed using GIS based land use mapping generated from the existing General Plan data and newly created land use mapping for the project area. Soils maps were obtained from the United States Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS, previously the Soils Conservation Service or SCS).

Hydrographs representing the flows generated by each watershed are transferred to the hydraulic un-steady state modeling which now performs the tasks of combining and routing the hydrographs through the various systems. HEC-RAS is used for the unsteady state modeling of creeks and open channels, and XP-SWMM is used for the unsteady state modeling of systems with extensive pipe networks.

3.2 WATERSHEDS

During the course of CESI's preparation of the recent Elder-Gerber LOMR submittal to FEMA, a number of adjustments were made to the sub-shed area delineations for Florin, Elder, Gerber and Unionhouse Creeks. The adjustments resulted from new information which was obtained during the preparation of those models which included the County's LIDAR topography, field investigations of existing systems, and field surveys of roadway culverts, photo documentation of vegetation within the creeks and channels, and the revised delineation of the adjoining Laguna Creek watershed provided by MSA-DWR.

A number of these adjustments as well as apparent inaccuracies in the area calculations performed in the previous models resulted in a number of differences in the data used in the current work verses the older models. As with the conversion from older pre-project models to the new SacCalc methodology, a number of checks were conducted as new and pre-project shed boundaries were delineated or revised to ensure the accuracy of this information. This data is available upon request for review.

A number of pre-project sheds were further subdivided to provide results at desired locations for comparison with the post-project models.

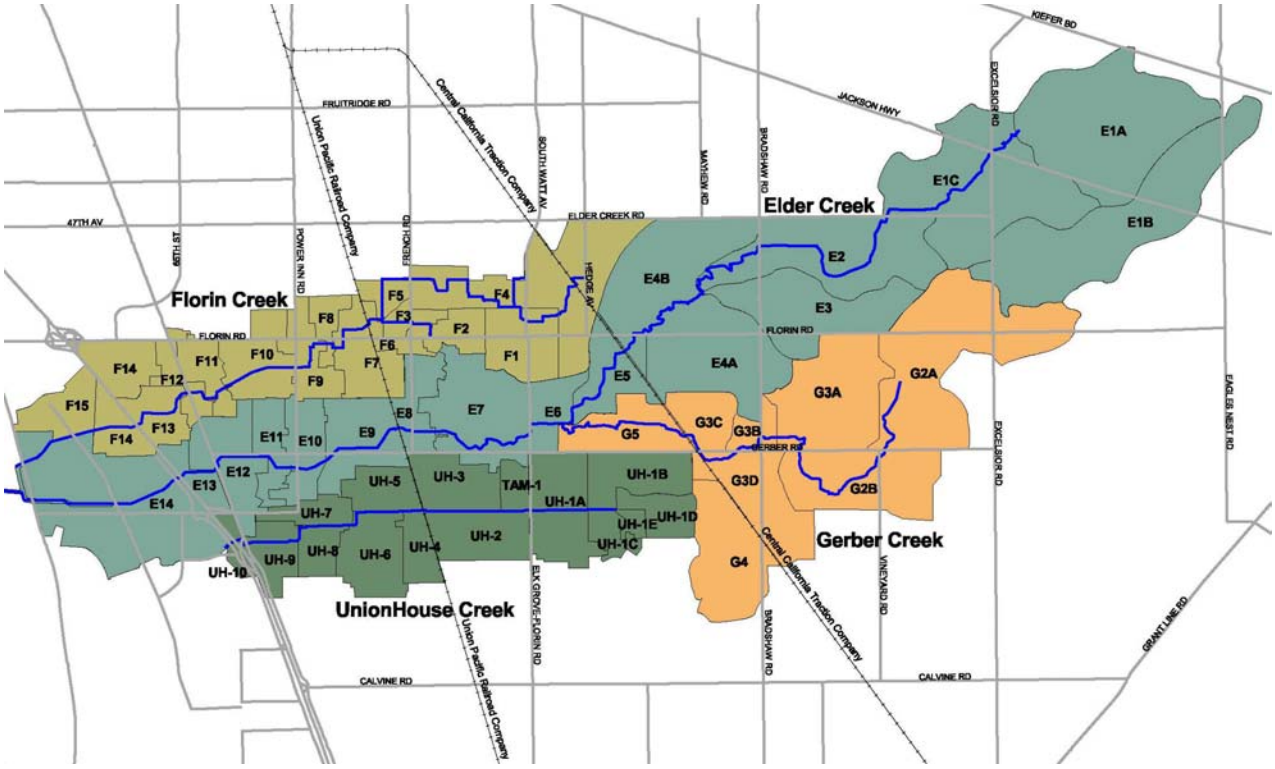


Figure 3.2 Major FVGCP Affected Stream Groups

3.3 LAND USE CLASSIFICATIONS

Sacramento County Hydrology Standards specify the use and/or computation of various hydrologic parameters based on a set of 18 land use classifications. The mapping for the land use in Geographic Information System (GIS) was coded with a numeric designation for each land use based on these 18 classifications. In many cases the planning land uses specified had no direct correlation to the hydrologic land use. Where this occurred the planning land use was mapped to the closest corresponding hydrologic land use. The table on page 13-12 of the Hydrology

Standards, which describes each index, is reproduced here in Table 3.3. These land use index numbers are used in all further references to land use.

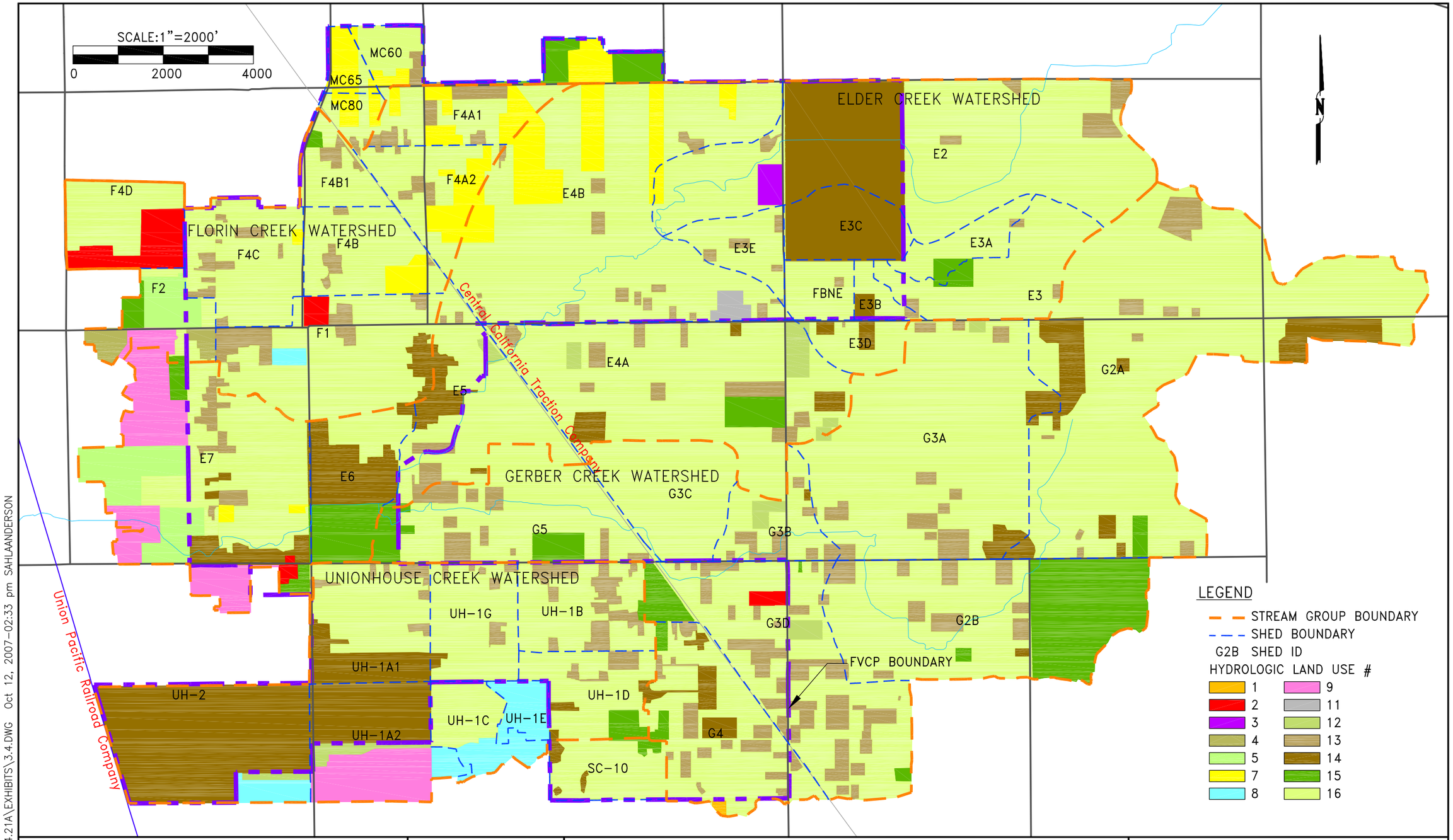
Table 3.3
Sacramento County Hydrologic Land Use Index Numbers

Impervious Area/Infiltration Land Use	Index
Highways, Parking	1
Commercial, Offices	2
Intensive Industrial	3
Apartments, High Density Res.	4
Mobil Home Park	5
Condominiums, Medium Density Res.	6
Residential: 8-10 du/ac (20-25 du/ha), Ext. Indust.	7
Residential: 6-8 du/ac (15-20 du/ha), Low Dens. Res., School	8
Residential: 4-6 du/ac (10-15 du/ha)	9
Residential: 3-4 du/ac (7.5-10 du/ha)	10
Residential: 2-3 du/ac (5-7.5 du/ha)	11
Residential: 1-2 du/ac (2.5-5 du/ha)	12
Residential: 0.5-1 du/ac (1-2.5 du/ha)	13
Residential: 0.2-0.5 du/ac (0.5-1 du/ha), Ag Res	14
Residential: 0.2 du/ac (0.5 du/ha), Recreation	15
Open Space, Grassland, Ag	16
Open Space, Woodland, Natural	17
Dense Oak, Shrubs, Vines	18

3.4 PRE-PROJECT LAND USE

Land use for the pre-project Elder and Gerber Creeks sheds are the same as those in the LOMR. New pre-project condition land use mapping was created for the areas of Florin and Unionhouse Creeks affected by the proposed FVGCP development.

Elder and Gerber Creek land use mapping received from MSA-DWR included areas downstream and therefore unaffected by the FVGCP. This information was left essentially as received in those land use maps. Sheds not affected by the FVGCP had no changes made to the pre-project model's land use data. Florin Creek and Unionhouse Creek pre-project land use mapping developed by CESI for the FVGCP was not extended downstream on these creeks any further than necessary to provide data for all sheds affected by the FVGCP . Figure 3.4 shows the pre-project land use mapping. Table 3.4 summarizes the pre-project land use acreage for each of the sheds affected by the FVGCP. As previously stated, sheds not affected by the FVGCP had no changes made to the pre-project model's land use data.



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CALCED BY: B.A.T. DRAWN BY: L.J.H.

CHECKED BY: B.A.T. DATE: 10/2007

W.O. NO: 2004.21A DWG: 3.4.dwg

Fig. 3.4

FLORIN VINEYARD GAP COMMUNITY PLAN
PRE-PROJECT SHEDS & LAND USE

SACRAMENTO COUNTY CALIFORNIA

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300
fax (916) 563 - 7362

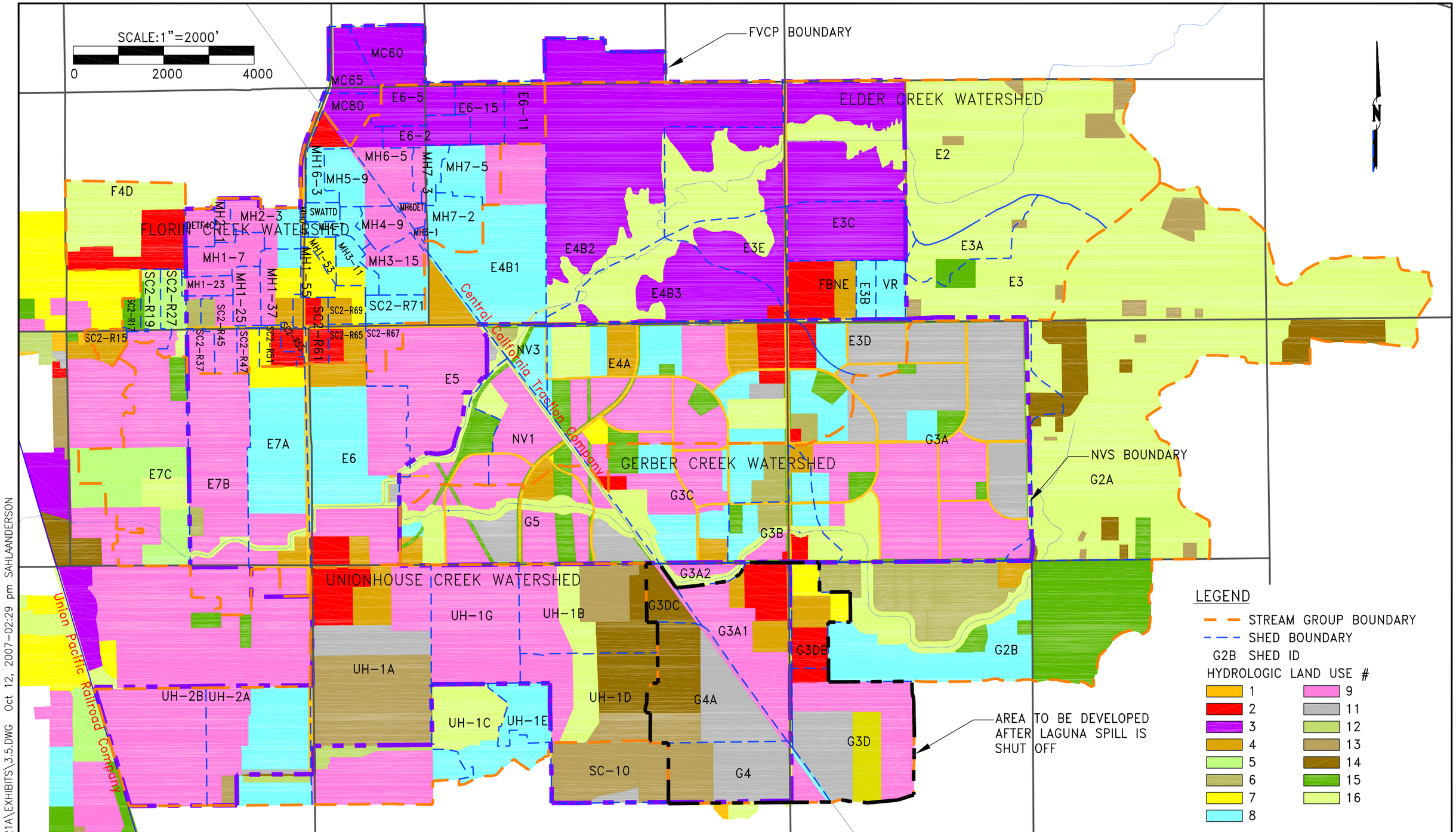
Table 3.4 - Florin Vineyard Community Plan
Pre Project Land Use for Affected Watersheds
In Florin, Elder, Gerber and Unionhouse Creeks
Sacramento County Land Use Index Number

SHED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total Land Use Area
E2	0.0	0.0	11.6	0.0	0.0	0.0	3.9	0.0	0.0	0.0	0.0	0.0	23.7	153.8	0.0	430.5	0.0	0.0	623.5
E3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	0.3	7.0	136.8	0.0	0.0	148.3
E3A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	6.0	47.6	0.0	0.0	54.5
E3B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	5.9	0.0	18.1	0.0	0.0	25.4
E3C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	87.8	0.0	2.9	0.0	0.0	90.7
E3D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.2	8.0	0.0	43.7	0.0	0.0	52.9
E3E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0	0.0	57.2	0.0	0.0	64.5
E4A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.5	36.3	19.8	21.1	348.9	0.0	0.0	447.6
E4B	0.0	0.0	0.0	0.0	0.0	0.0	92.9	0.0	0.0	0.0	11.3	0.0	25.1	0.0	0.9	497.7	0.0	0.0	627.9
E5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2	15.3	24.3	0.9	158.4	0.0	0.0	203.1
E6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	64.2	44.7	34.4	0.0	0.0	143.3
E7	0.0	4.5	0.0	0.0	78.6	0.0	4.6	0.0	107.7	0.0	0.0	0.0	23.0	31.3	14.1	186.2	0.0	0.0	450.0
E8	0.0	1.9	28.1	0.1	13.2	0.0	0.0	0.0	77.6	0.0	0.4	0.0	13.1	22.6	0.0	0.0	0.0	0.0	157.0
F1	0.0	8.3	0.0	0.0	0.0	0.0	0.0	6.5	0.0	0.0	0.0	0.0	31.5	13.4	0.0	192.0	0.0	0.0	251.7
F2	0.0	0.2	0.0	20.0	29.8	0.0	0.0	0.0	12.1	0.0	0.0	0.0	0.1	0.0	9.8	15.8	0.0	0.0	87.8
F3	0.2	0.1	0.0	0.0	0.0	0.0	60.8	0.0	15.0	0.0	0.0	0.4	0.0	0.0	5.8	0.0	0.0	0.0	82.3
F4A1	0.0	0.0	0.0	0.0	0.0	0.0	32.2	0.0	0.0	0.0	0.0	0.0	20.4	0.0	0.0	54.5	0.0	0.0	107.1
F4A2	0.0	0.0	0.0	0.0	0.0	0.0	31.0	0.0	0.0	0.0	0.0	0.0	8.7	0.0	0.0	70.5	0.0	0.0	110.2
F4B	0.0	0.0	0.0	0.0	0.0	0.0	14.9	0.0	0.0	0.0	0.0	0.0	7.9	0.0	0.0	99.0	0.0	0.0	121.8
F4B1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5	0.0	2.7	51.3	0.0	0.0	60.5
F4C	0.0	0.2	0.0	0.0	0.4	0.0	2.0	0.0	0.0	0.0	0.0	0.0	17.1	0.0	0.0	131.4	0.0	0.0	151.1
F4D	0.0	44.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72.4	0.0	0.0	117.0
FBNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	1.4	0.0	44.3	0.0	0.0	46.8
G2B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	39.2	1.4	135.7	226.7	0.0	0.0	403.0
G3A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7	38.8	19.2	0.0	447.4	0.0	0.0	509.1
G3B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	19.7	0.9	0.0	58.0	0.0	0.0	86.2
G3C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	151.6	0.0	0.0	151.6
G3D	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5	89.8	0.0	22.6	242.2	0.0	0.0	367.9
G4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.5	23.4	8.6	158.8	0.0	0.0	226.3
G5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.0	0.0	35.1	183.4	0.0	0.0	252.5
LC42A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.9	11.6	0.0	0.0	12.5
MC60	0.0	0.0	0.0	0.0	0.0	0.0	26.8	0.0	0.0	0.0	0.0	0.0	6.0	0.0	35.2	31.0	0.0	0.0	99.0
MC65	0.0	0.0	0.0	0.0	0.0	0.0	22.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	27.4
MC80	0.0	0.0	0.0	0.0	0.0	0.0	12.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	14.8	0.0	0.0	28.4
SC10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.0	3.5	58.9	0.0	0.0	67.4
TAM1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	68.8
UH-10	39.3	38.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.5	0.0	0.0	100.0
UH-1A1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.2	49.3	0.1	99.5	0.0	0.0	162.1
UH-1A2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	66.0	0.0	0.0	14.2	0.0	82.3	0.0	0.0	0.0	0.0	173.1
UH-1B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.6	0.0	1.5	93.0	0.0	0.0	131.1
UH-1C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.6	0.0	0.0	0.0	0.0	0.0	0.3	0.0	47.6	0.0	0.0	75.5
UH-1D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.8	5.2	11.0	84.2	0.0	0.0	110.2
UH-1E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.9	0.0	0.0	32.1
UH-1G	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	2.4	0.0	106.4	0.0	0.0	117.7
UH-2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19.0	0.1	0.0	0.0	5.4	0.0	157.7	0.0	81.5	0.0	0.0	263.7

3.5 POST-PROJECT LAND USE

Proposed land use mapping for the FVGCP area consistent with the ”Planning Options Plan” land use scenario was provided by MacKay & Somps (Oversize Exhibit LU-1) and subsequently modified by CESI to be suitable for hydrologic analysis purposes. Post project land use for additional areas included in the post-project analysis, including Vineyard Springs and North Vineyard Station, were also mapped. This proposed land use mapping for the FVGCP was then incorporated into the pre-project land use maps for developed conditions determinations. Figure 3.5 shows the post-project without spill land use mapping used. A note on the map indicates that the FVGCP and VSCP areas in the path of the Laguna spill will not be able develop until the spill is shut off.

Currently planned and approved development areas such as the “North Vineyard Station” development were input per their ultimate developed condition with mitigation into the post-project FVGCP. Models were provided to CESI for the North Vineyard Station project; however, there was insufficient documentation of these models for CESI to feel confident in simply plugging their results into the FVGCP modeling efforts. CESI prepared new models for the North Vineyard Station project area land use and the proposed mitigation which was integrated into the FVGCP master plan.



CALCED BY: B.A.T. DRAWN BY: L.J.H.

CHECKED BY: B.A.T. DATE: 10/2007

W.O. NO: 2004.21A DWG: 3.5.dwg

Fig. 3.5

FLORIN VINEYARD GAP COMMUNITY PLAN POST PROJECT SHEDS & LAND USE

SACRAMENTO COUNTY CALIFORNIA

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Table 3.5 - Florin Vineyard Community Plan
Post Project Land Use for Affected Watersheds
In Florin, Elder, Gerber and Unionhouse Creeks

	Sacramento County Land Use Index Number																		
SHED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total Land Use Area
E2	5.8	0.0	158.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.3	3.0	0.0	463.1	0.0	0.0	650.4
E3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	7.0	129.1	0.0	0.0	141.6
E3A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	5.9	46.1	0.0	0.0	52.7
E3B	0.2	0.0	0.1	12.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.1
E3C	0.6	0.0	77.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	2.2	0.0	0.0	80.5
E3D	4.6	2.0	0.0	0.0	0.0	0.0	0.0	12.6	0.0	0.0	30.8	0.1	0.0	0.3	1.6	3.5	0.0	0.0	55.5
E3E	4.3	0.1	40.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.5	0.0	0.0	66.6
E4A	31.9	31.6	0.0	31.3	0.0	6.8	5.3	78.6	116.8	0.0	9.6	0.0	0.2	0.0	38.8	47.0	0.0	0.0	397.9
E4B1	1.4	0.0	0.5	0.0	0.0	0.0	0.0	107.5	30.9	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	142.1
E4B2	0.2	0.0	265.0	0.0	0.0	0.0	0.0	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	49.2	0.0	0.0	315.5
E4B3	4.3	2.6	78.7	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	53.7	0.0	0.0	139.4
E5	6.0	0.0	0.0	18.9	0.0	0.0	0.0	4.2	128.5	0.0	2.1	0.1	0.0	0.0	16.3	15.4	0.0	0.0	191.5
E6	6.6	12.3	0.0	21.8	0.0	0.0	0.0	81.8	74.8	0.0	2.2	0.0	0.0	0.0	0.3	10.1	0.0	0.0	209.9
E6-11	0.0	0.0	27.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	27.8
E6-15	0.0	0.0	27.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	28.2
E6-2	0.0	0.0	24.9	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	25.3
E6-5	0.0	0.0	31.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	32.1
E7A	9.0	0.1	0.0	6.2	0.0	0.0	12.9	79.7	29.9	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	143.3
E7B	0.0	0.0	0.0	0.0	0.1	4.6	0.0	0.2	147.2	0.0	0.0	0.0	0.0	0.0	0.1	5.1	0.0	0.0	157.3
E7C	0.0	0.0	0.0	0.1	73.6	0.0	0.0	0.0	82.3	0.0	0.0	0.0	0.0	0.0	8.6	16.7	0.0	0.0	181.3
VR	0.4	0.0	0.0	0.0	0.0	0.0	0.0	19.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	19.7
FBNE	1.0	29.5	0.5	14.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	45.1
NV1	4.3	0.0	0.0	3.4	0.0	0.0	0.2	0.1	54.0	0.0	0.0	0.0	0.0	0.0	7.5	15.2	0.0	0.0	84.7
NV3	1.2	0.0	0.0	0.0	0.0	4.4	0.0	16.9	0.0	0.0	0.0	0.0	0.1	0.0	2.5	5.4	0.0	0.0	30.5
G2A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.0	29.1	75.5	7.7	709.9	0.0	0.0	825.0
G2B	0.0	0.0	0.0	20.3	0.0	65.4	0.0	80.4	64.1	0.0	0.0	0.0	0.0	0.0	142.0	41.3	0.0	0.0	413.4
G3A	29.8	0.0	0.0	2.9	0.0	0.9	0.0	21.7	180.9	0.0	198.2	0.1	0.0	9.4	23.4	41.6	0.0	0.0	508.9
G3A1	5.4	25.6	0.0	17.8	0.0	0.0	0.0	0.0	68.9	0.0	0.3	0.2	0.3	0.0	0.0	2.4	0.0	0.0	120.9
G3A2	1.5	0.0	0.0	0.1	0.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0	8.8	0.0	0.0	17.4
G3B	6.8	5.0	0.0	4.3	0.0	7.6	0.0	23.0	7.7	0.0	0.0	0.0	0.7	0.0	6.7	17.1	0.0	0.0	78.9
G3C	11.9	4.7	0.0	7.4	0.0	10.3	0.0	69.4	51.8	0.0	0.0	0.0	0.0	0.0	11.6	14.8	0.0	0.0	181.9
G3D	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.6	71.9	29.1	48.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	156.0
G3DB	0.0	16.8	0.0	13.5	0.0	0.0	16.8	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.8	0.0	0.0	48.0
G3DC	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	22.1
G4	1.1	0.0	0.0	0.0	0.0	0.0	0.0	2.7	9.7	0.0	51.0	0.0	30.0	0.0	0.0	2.5	0.0	0.0	97.0
G4A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	53.0	0.0	17.2	46.8	0.0	0.0	0.0	0.0	123.0
G5	9.1	0.0	0.0	13.3	0.0	0.0	0.0	2.9	71.4	0.0	35.3	0.0	0.4	0.0	27.9	50.5	0.0	0.0	210.8
DETF4C	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	12.5
MH0-7	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	7.4
MH1-23	0.0	0.0	0.0	0.0	0.9	0.0	0.0	0.0	10.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	11.2
MH1-25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.4
MH1-37	0.0	0.0	0.0	5.1	0.0	0.0	8.3	4.9	13.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.4
MH1-53	0.5	0.0	0.0	0.0	0.0	0.0	8.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.3
MH1-55	2.3	0.0	0.0	0.0	0.0	0.0	12.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.4
MH16-3	0.1	7.5	1.1	0.0	0.0	0.0	0.0	13.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.5
MH1-7	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	27.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	27.7

Table 3.5 - Florin Vineyard Community Plan
Post Project Land Use for Affected Watersheds
In Florin, Elder, Gerber and Unionhouse Creeks

	Sacramento County Land Use Index Number																		
SHED	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	Total Land Use Area
MH2-1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	8.3
MH2-3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6	18.5	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	29.8
MH3-11	0.0	0.0	0.0	0.0	0.0	0.0	6.1	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.3
MH3-15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.9	15.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.1
MH4-7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	13.6
MH4-9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.4
MH5-9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.6	7.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.8
MH6-1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
MH6-5	0.0	0.0	6.6	0.0	0.0	0.0	0.0	0.0	27.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	34.0
MH6DT	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7
MH7-2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32.2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33.2
MH7-3	0.0	0.0	0.3	0.0	0.0	0.0	0.0	9.0	7.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	17.1
MH7-5	0.0	0.0	0.6	0.0	0.0	0.0	0.0	24.7	10.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	35.4
SC2R15	0.0	0.0	0.0	12.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	12.3
SC2R17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	6.2	0.0	0.0	0.0	6.8
SC2R19	0.0	0.0	0.0	0.1	9.5	0.0	0.0	0.0	6.3	0.0	0.0	0.0	0.0	0.0	2.1	1.8	0.0	0.0	19.8
SC2R27	0.2	0.1	0.0	0.0	13.9	0.0	0.0	0.0	3.1	0.0	0.0	0.0	0.0	0.0	0.0	5.2	0.0	0.0	22.5
SC2R37	0.6	0.0	0.0	0.0	0.2	4.4	0.0	0.0	13.9	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	19.3
SC2R45	2.4	0.0	0.0	0.0	0.0	4.4	0.0	0.0	17.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.0
SC2R47	0.5	0.0	0.0	0.0	0.0	0.0	4.5	0.0	5.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6
SC2R51	0.9	7.1	0.0	0.0	0.0	0.0	4.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	12.7
SC2R55	1.8	6.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.6
SC2R61	3.5	12.7	0.0	4.7	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	21.2
SC2R65	1.8	5.8	0.0	8.7	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	16.5
SC2R67	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.2	13.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3
SCR69	0.0	0.0	0.0	7.1	0.0	0.0	8.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.3
SCR71	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.8
SSWATT	0.1	0.0	0.0	0.0	0.0	0.0	0.0	7.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4
UH-1A	4.4	30.7	0.0	21.0	0.0	0.0	0.0	10.7	95.0	0.0	37.8	13.5	120.2	1.5	0.0	0.4	0.0	0.0	335.3
UH-1B	2.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41.2	0.0	0.0	0.0	33.0	30.7	0.0	24.1	0.0	0.0	131.6
UH-1C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	27.5	0.2	0.0	0.0	0.0	0.1	0.4	0.0	47.2	0.0	0.0	75.4
UH-1D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28.9	0.0	0.0	0.0	17.6	36.5	0.0	26.9	0.0	0.0	109.9
UH-1E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	32.2
UH-1G	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	116.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	118.1
UH-2A	2.2	0.0	0.0	0.0	0.0	0.0	0.0	71.8	9.1	0.0	3.3	5.4	0.0	1.2	0.0	0.0	0.0	0.0	93.0
UH-2B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	159.8	0.0	0.6	0.0	4.9	1.8	0.0	0.1	0.0	0.0	170.8
SC-10	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	64.0	0.0	0.0	0.1	0.0	0.0	69.5

Note:
Highlited shed used only in post-project without Laguna Spill scenario.
Sheds were replaced with pre-project sheds for with Laguna Spill scenario

3.6 SOILS

Soils information was obtained from the NRCS. Hydrologic soils groups were mapped using GIS and used together with the land use mapping to develop the shed characteristics for the hydrologic models. Table 3.6.1 summarizes the acres of each soil type for the pre-project sheds. Figure 3.6.1 shows the soils distribution for the pre-project sheds. Table 3.6.2 summarizes the acres of each soil type for the post-project sheds. Figure 3.6.2 shows the soils distribution for the post-project sheds.

Table 3.6.1
Florin Vineyard Community Plan
Pre-Project Soil Type for Affected Watersheds

	Hydrologic Soil Type Acres			
Shed	B	C	D	Total Soils Area
E2	0.0	136.4	487.1	623.5
E3	0.0	46.6	101.8	148.4
E3A	0.0	25.2	29.3	54.5
E3B	0.0	16.7	8.5	25.1
E3C	0.0	7.7	83.0	90.7
E3D	0.0	32.7	20.7	53.4
E3E	0.0	0.0	64.5	64.5
E4A	0.0	9.9	437.7	447.6
E4B	0.0	7.7	620.2	628.0
E5	0.0	0.0	203.2	203.2
E6	0.0	0.0	143.3	143.3
E7	0.0	0.0	449.9	449.9
F1	0.0	0.0	251.7	251.7
F2	0.0	0.0	87.9	87.9
F4A1	0.0	0.0	107.1	107.1
F4A2	0.0	0.0	110.2	110.2
F4B	0.0	0.0	121.8	121.8
F4B1	0.0	0.0	60.5	60.5
F4D	0.0	0.0	116.9	116.9
G2A	0.0	129.9	695.2	825.0
F4C	0.0	0.0	151.1	151.1
G2B	0.0	216.2	186.9	403.0
G3A	0.0	206.5	302.7	509.1
G3B	0.0	2.6	83.5	86.2
G3C	0.0	0.0	151.6	151.6
G3D	0.0	2.7	365.2	367.9
G4	0.0	0.0	226.2	226.2
G5	0.0	0.0	252.5	252.5
UH1A1	0.0	0.0	162.04	162.04
UH1A2	0.0	0.0	173.1	173.1

UH1B	0.0	0.0	131.2	131.2
UH1D	0.9	0.0	109.2	110.2
UH1G	0.0	0.0	117.6	117.6
UH2A	0.0	0.0	93.0	93.0
UH2B	0.0	0.0	170.8	170.8

Table 3.6.2
Florin Vineyard Community Plan

Post-Project Soil Type
for Affected Watersheds

	Hydrologic Soil Type Acres			
Shed	B	C	D	Total Soils Area
UH-1B	0.0	0.0	131.6	131.6
G3DC	0.0	0.0	22.1	22.1
E7B	0.0	0.0	157.2	157.2
E3D	0.0	33.6	21.9	55.5
E7A	0.0	0.0	143.4	143.4
MH6DET	0.0	0.0	5.7	5.7
G4	0.0	0.0	97.0	97.0
E4B2	0.0	0.0	315.4	315.4
UH-1C	2.1	0.0	73.4	75.4
E4B1	0.0	0.0	142.2	142.2
UH-1E	0.1	0.0	32.2	32.3
UH-1D	0.9	0.0	109.1	110.1
UH-1G	0.0	0.0	118.1	118.1
E7C	0.0	0.0	181.3	181.3
G3B	0.0	2.6	76.2	78.8
G2A	0.0	129.8	695.2	825.0
UH-1A	0.0	0.0	334.7	334.7
NV1	0.0	0.0	84.8	84.8
G3A1	0.0	0.0	120.9	120.9
E3E	0.0	0.0	66.5	66.5
E3C	0.0	60.0	95.7	155.7
G3C	0.0	0.0	181.7	181.7
E6	0.0	0.0	209.9	209.9
DETF4C	0.0	0.0	12.4	12.4
E4B3	0.0	7.3	132.1	139.4
MH2-3	0.0	0.0	29.8	29.8
MH7-2	0.0	0.0	33.2	33.2
SC2-R45	0.0	0.0	24.0	24.0
SC2-R15	0.0	0.0	12.3	12.3
F4D	0.0	0.0	117.6	117.6
SC2-R71	0.0	0.0	18.8	18.8
UH2A	0.0	0.0	93.0	93.0
UH2B	0.0	0.0	170.8	170.8

Table 3.6.2
Florin Vineyard Community Plan

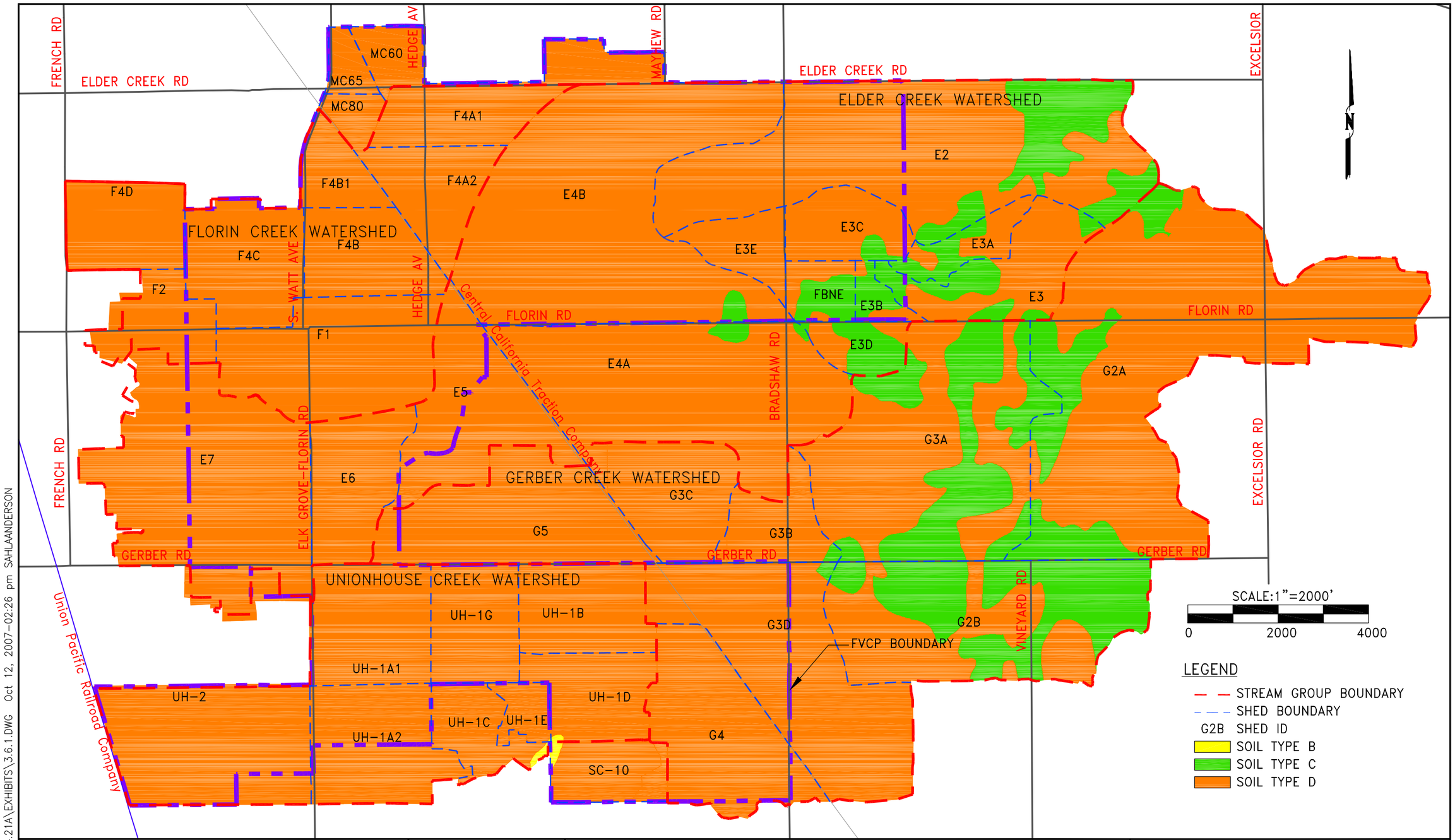
Post-Project Soil Type for Affected Watersheds

	Hydrologic Soil Type Acres			
Shed	B	C	D	Total Soils Area
SC2-R17	0.0	0.0	6.8	6.8
SC2-R15	0.0	0.0	12.3	12.3
MH6-1	0.0	0.0	1.0	1.0
E6-5	0.0	0.0	32.1	32.1
SC2-R19	0.0	0.0	19.9	19.9
SC2-R27	0.0	0.0	22.4	22.4
SC2-R37	0.0	0.0	19.2	19.2
MH3-11	0.0	0.0	18.3	18.3
E6-2	0.0	0.0	25.4	25.4
E6-15	0.0	0.0	28.1	28.1
E6-11	0.0	0.0	27.8	27.8
MH3-15	0.0	0.0	31.1	31.1
MH5-9	0.0	0.0	28.8	28.8
MH16-3	0.0	0.0	22.4	22.4
MH1-23	0.0	0.0	11.2	11.2
MH1-37	0.0	0.0	31.3	31.3
MH2-1	0.0	0.0	8.3	8.3
SC2-R67	0.0	0.0	15.4	15.4
SC2-R65	0.0	0.0	16.4	16.4
SC2-R61	0.0	0.0	21.2	21.2
SC2-R69	0.0	0.0	15.3	15.3
SC2-R55	0.0	0.0	8.6	8.6
SC2-R47	0.0	0.0	10.6	10.6
MH1-7	0.0	0.0	27.7	27.7
MH4-9	0.0	0.0	20.4	20.4
MH7-5	0.0	0.0	35.3	35.3
MH1-55	0.0	0.0	14.4	14.4
MH1-53	0.0	0.0	9.3	9.3
G2A	0.0	129.8	695.2	825.0
G3A	0.0	206.5	302.7	509.1
E3	0.0	46.6	101.8	148.4
E3A	0.0	25.2	29.3	54.5
E3B	0.0	16.7	8.5	25.1
E3C	0.0	7.7	83.0	90.7
E3D	0.0	32.7	20.7	53.4
E3E	0.0	0.0	64.5	64.5
E2	0.0	136.4	514.0	650.3

Table 3.6.2
Florin Vineyard Community Plan

Post-Project Soil Type for Affected Watersheds

	Hydrologic Soil Type Acres			
Shed	B	C	D	Total Soils Area
E8	0.0	0.0	156.9	156.9
F6	0.0	0.0	56.4	56.4
F3	0.0	0.0	82.4	82.4
F5	0.0	0.0	67.5	67.5
UH-3	0.0	0.0	216.5	216.5
UH-4	0.0	0.0	112.6	112.6
UH-5	0.0	0.0	142.0	142.0
TAM-1	0.0	0.0	68.8	68.8
NV3	0.0	0.0	30.4	30.4
E4A	0.0	10.3	387.6	397.9
G5	0.0	0.0	210.9	210.9
E5	0.0	0.0	191.5	191.5
NV1	0.0	0.0	84.8	84.8
G3DC	0.0	0.0	22.1	22.1
UH-1B	0.0	0.0	131.6	131.6
G4A	0.0	0.0	123.0	123.0
G3DB	0.0	0.1	48.0	48.1
G2B	0.0	195.4	218.03	413.4
G3D	0.0	0.0	156.1	156.1
MH0-7	0.0	0.0	7.4	7.4
SWATTD	0.0	0.0	7.4	7.4
MH4-7	0.0	0.0	13.7	13.7
MH7-3	0.0	0.0	17.0	17.0
MH6DET	0.0	0.0	5.7	5.7
MH7-2	0.0	0.0	33.2	33.2
E4B1	0.0	0.0	142.2	142.2
SC2-R45	0.0	0.0	24.0	24.0
DETF4C	0.0	0.0	12.4	12.4
F4D	0.0	0.0	117.6	117.6
MH2-3	0.0	0.0	29.8	29.8
E6	0.0	0.0	209.9	209.9
VR		16.4	4.0	20.4
FBNE		26.2	21.2	47.5



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CHECKED BY: B.A.T. DATE: 10/2007

W.O. NO: 2004.21A DWG: 3.6.1.dwg

Fig. 3.6.1

FLORIN VINEYARD GAP COMMUNITY PLAN
HYDROLOGIC SOILS GROUPS
PRE PROJECT SHEDS

SACRAMENTO COUNTY CALIFORNIA

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300
fax (916) 563 - 7362

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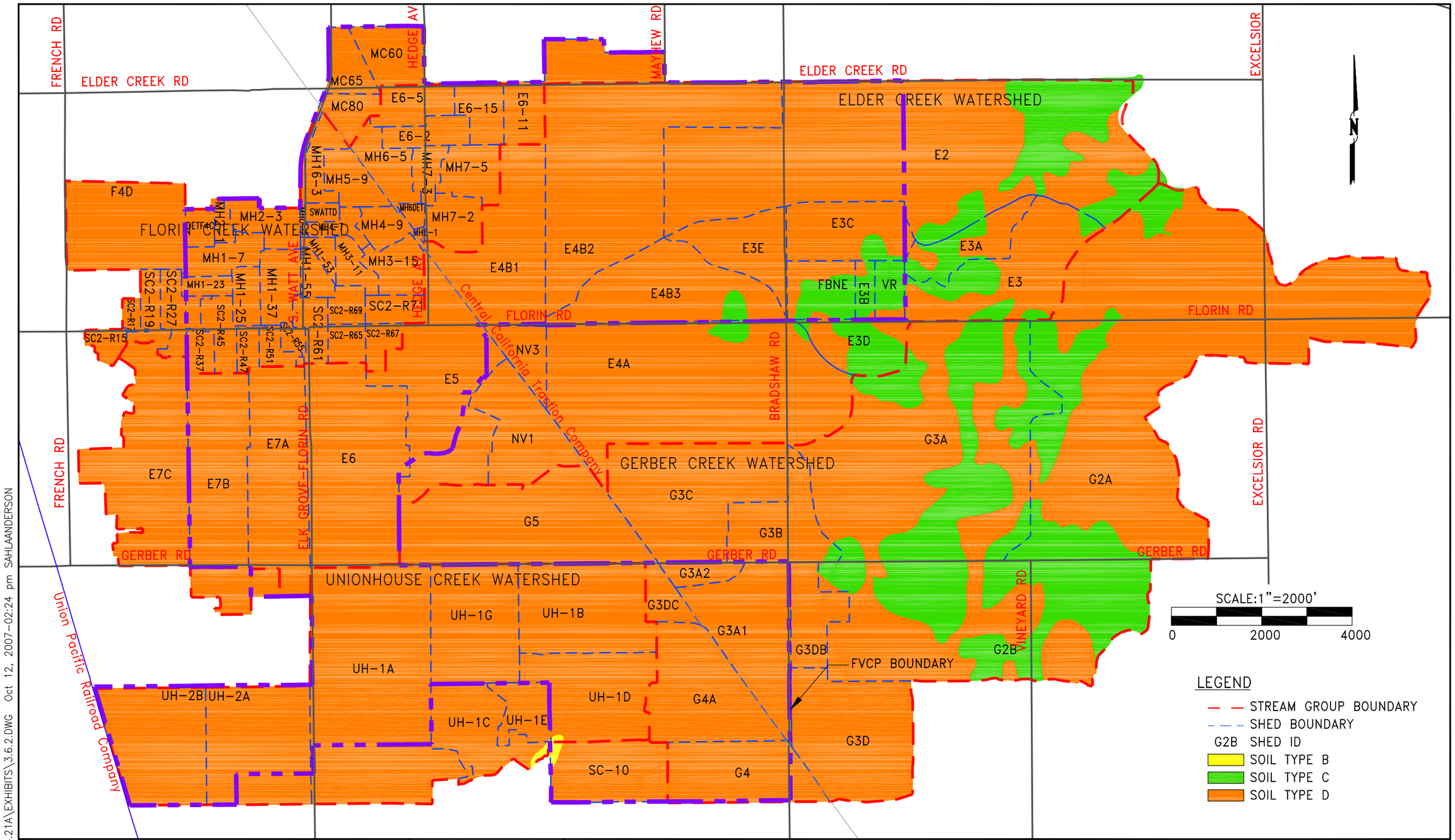

CALCED BY: B.A.T. DRAWN BY: L.J.H.

CHECKED BY: B.A.T. DATE: 10/2007

W.O. NO: 2004.21A DWG: 3.6.2.dwg

Fig. 3.6.2

FLORIN VINEYARD GAP COMMUNITY PLAN
HYDROLOGIC SOILS GROUPS
POST-PROJECT SHEDS

SACRAMENTO COUNTY CALIFORNIA

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300
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3.7 RESULTS

The hydrologic modeling provides runoff hydrographs for the various watersheds in the FVGCP study area. The hydrographs are used as input in the unsteady state (dynamic) hydraulic modeling using HEC-RAS and XPSWMM.

4.0 Hydraulics

4.1 METHODOLOGY

Dynamic Hydraulic modeling for the open channel and creek systems was performed with the USACE HEC-RAS (River Analysis System) modeling software (referred to hereafter as HEC-RAS). This allows for unsteady flow conditions modeling using the flow hydrographs generated by the SACCALC and HEC-1 hydrologic modeling software as direct input to the program (via the DSS interface). Unsteady flow modeling is required by Sacramento County for the evaluation of the flow and water surface attenuation characteristics of the open channel systems and the effect of any associated structures including bridges and culverts.

The overall approach for the hydraulic analysis was to apply the proposed land use for the FVGCP to the affected sheds, calculate the resulting outflow hydrographs using HEC-1 for each shed, and use the computed flow data as input to the unsteady flow RAS model for each stream. Each of the three streams/stream groups was modeled for both pre-project and proposed post-project conditions.

Trunk storm drainage systems were prepared and analyzed for the various areas of the FVGCP. For Trunk Storm Drainage System evaluations, the “Nolte” flow was used to size facilities. For systems which intersect, or parallel arterial roadways, the 100-year event was also evaluated to verify that flooding of the arterial roadway would not occur in the 100-year design event. Simple pipe systems and pipe/open channel systems where attenuation (detention) was not a factor were modeled using the CS DRAINAGE STUDIO software. Sacramento County requires that the all roads including collector and residential streets cannot be ponded by more than 6 inches (Appendix H). Street grading for the FVGCP residential streets is not available at this time and so final determination of ponding depths will have to be made when grading plans become available. The CSDS pipe systems analysis results are included in Appendix D CSDS Storm Drainage System Analysis. For trunk systems where attenuation and/or detention were a factor the XP-SWMM software was used to evaluate the trunk facilities.

Appendix E Oversized Exhibits contains larger scale presentations of the FVGCP area proposed drainage facilities including pipe and drainage channel layouts, SWMM model pipes and channels and the major stream channel alignments.

- **Elder and Gerber Creeks**

For the Elder Creek and Gerber Creek stream group the previously prepared unsteady flow HEC-RAS model from the LOMR submittal was used as the pre-

project condition model and the starting point for evaluating the post FVGCP system modifications.

The Elder-Gerber stream group is the most significant of the streams within the plan area. It is also the system with the most significant impact from outside the actual drainage area of the system in the form of inflow from the Laguna Creek spill.

Channel improvements are proposed to provide flood control enhancements to both Elder Creek and Gerber Creek. Proposed channel improvements on Elder Creek extend about 2.2 miles or 11,500 feet from the downstream boundary of the FVGCP area at RM 4.904 to approximately 1,000 feet upstream of Florin Road at RM 7.077. Channel improvements on Gerber Creek extend over 18,000 feet or about 3.5 miles from the confluence with Elder Creek upstream to RM 3.481 just downstream of the crossing at Vineyard Road.

The proposed channel improvements are intended to lower water surface elevations and peak flow rates by lowering the channel inverts and providing additional in stream attenuation. The various proposed detention basins are designed to compensate for the peak flow impacts of the proposed development areas.

- **Laguna Spill**

During extreme events, flow from Laguna Creek spills north along the California Central Traction Railroad (CCTRR) to Gerber Creek. Two of the 34 applications, namely Portico Acres and Gerber-Bradshaw Southwest are located in the path of the spill (Oversized Exhibit SH-1). These proposed developments may not be able to build until the spill from Laguna Creek is cut off. We looked at the possibility of transmitting the spill in a channel to allow development but no cost effective way of collecting the flow into a channel or detention basin within FVGCP was found.

- **Interim Drainage for Bradshaw Northeast and Vintage Ranch**

Interim flood control detention basins will be required for Bradshaw Northeast and Vintage Ranch developments. The detention basins will reduce the post-project flow down to pre-project conditions. Outflow from the detention basins will be discharged to an existing channel. The half-mile section of the channel upstream of Bradshaw Road is proposed to be relocated along the north boundary of Florin-Bradshaw Northeast development (see oversize Interim FP). The channel is proposed to be widened to 20-foot bottom width and 3:1 side slopes. Two new 42-inch culverts are proposed to be added to Bradshaw Road crossing to prevent the 100-year flood from overtopping the roadway under ultimate conditions. Flood control detention for the two applications will not be needed when the regional detention basin E31 along Elder Creek and the proposed channel are constructed. Each development will provide its own water quality treatment facility.

- **Florin Creek**

Previously available hydraulic modeling for Florin Creek consisted of an old steady flow HEC-2 model that extended only as far east as Florin-Perkins Road, approximately ½ mile to the west of the FVGCP area. It was necessary to convert this model to an unsteady flow HEC-RAS model in order to first determine the pre-project conditions for Florin Creek from upstream of Florin-Perkins Road to the area upstream and east of the CCTRR. The updated model provided a basis for the estimated water surface elevations and flow rates,

Within the FVGCP area, the facilities for this system will include trunk storm drain pipe, a stormwater quality basin and detention basins for peak flow mitigation. XP-Software's XP-SWMM (SWMM – storm water management model) program was used to prepare an analysis of the upstream areas of the Florin Creek watershed (See Figure 4.1) where the majority of the conveyance would be provided by a piped system. Hydrographs exported from the hydrologic model using SacCalc were imported into the SWMM model to provide the proper inflows.

The northern reach of Florin Creek is expected to require a system of several detention basins in order to maintain peak flows at acceptable levels for transmission via a piped system. The most downstream of these basins would also provide required water quality treatment storage.

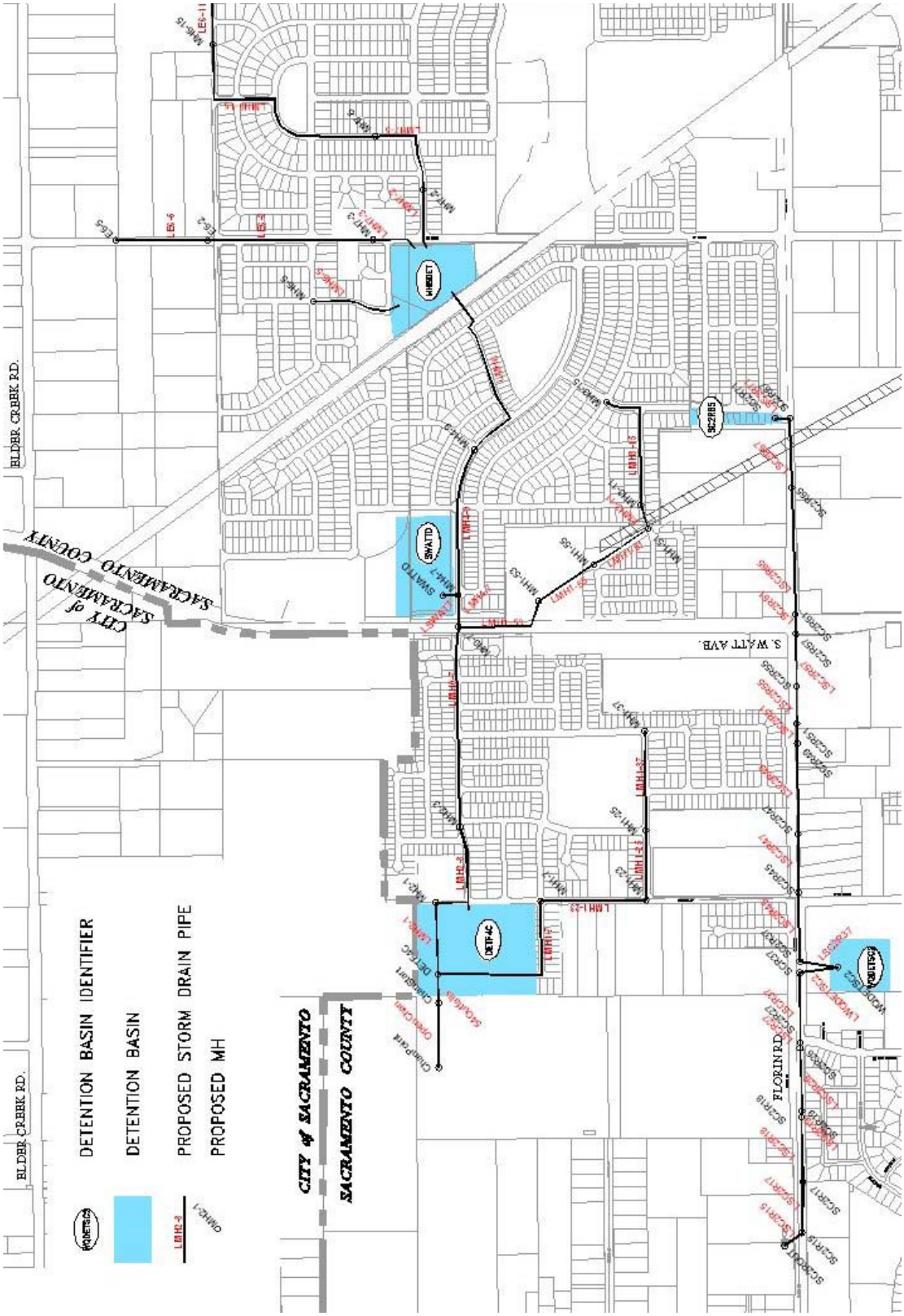


Figure 4.1 Florin Creek SWMM Model Schematic Layout

The existing southern reach of Florin Creek was determined to be inadequate to convey the peak 100-year flow rates estimated in the modeling. In order to reduce the peak flows to a level which could be conveyed by the existing downstream system two detention basins were added to this portion of the plan. The downstream basin would also provide capacity for water quality treatment.

Following the SWMM computations, two output hydrographs from the downstream ends of the two SWMM models, one for each reach, were exported to be used as the upstream input hydrographs into the RAS model for the remaining downstream portion of Florin Creek. This model was then used to evaluate the effects of the FVGCP on the rest of the Florin Creek system. Schematic layouts of the pre and post FVGCP RAS models are included in Appendix B HEC-RAS Models.

- **Unionhouse Creek**

Unionhouse Creek had previously been analyzed by the older unsteady flow hydraulic modeling software known as UNET. The Unionhouse Creek model had been built using the 3.2 version of the UNET software. The UNET software itself was later upgraded to version 4.0 and subsequently integrated into the unsteady flow version of the HEC-RAS software. Migration of UNET models from one version to another version is usually complicated. Therefore, the original Unionhouse Creek UNET model was converted into an unsteady flow RAS model for use as the base pre-project condition model.

Once this model was created the proposed FVGCP hydrographs were used to assess the impact on the Unionhouse watershed.

The existing detention basin (UHDET1) which was partially constructed with the Tamarindo project to control flood waters, will be enlarged from 25 acre-feet to 37.7acre-feet. Another detention basin, UHDET2, will be required at the downstream boundary of the FVGCP project at UPRR to provide both water quality and flood control detention.

4.2 ELDER-GERBER CREEKS MODELING RESULTS

The Elder-Gerber stream group proposed condition proposes enhancements to the stream channels. As previously noted, improvements would include excavation of over 5 miles of enhanced channel. Channel improvements include deepening and widening of the main channel as well as the overbank areas. Figure 4.2 shows an illustration of a representative improved channel cross-section. Proposed channel cross sections are shown in Appendix G. Oversize Exhibit TR-1 shows the open space/trail features associated with the proposed drainage channels.

In addition to the proposed channel improvements additional detention facilities would be required to mitigate for the increased runoff which is anticipated as a result of development in the FVGCP area. Some modification of the pre-project and/or previously proposed facilities would also be necessary due to changes in the channel configuration. Table 4.2.1 shows detention basin results from the HEC-RAS storage area output table.

Table 4.2.1 – Elder-Gerber Detention Basins

Storage Area Model Designation	Maximum Water Surface Elevation	Minimum Detention Volume Elevation	Approximate Surface Area at Maximum Water Surface	Maximum Detained Volume
	(ft)	(ft)	(acres)	(acre-ft)
With Laguna Spill				
E24A	44.1	36.5	13.6	67.3
E24B	45.6	39.0	6.07	35.7
E26	47.4	42.5	10.4	50.6
E28	49.7	45.0	13.3	93.6
E31	49.8	45.0	11.0	79.0
G41	48.8	41.5	7.9	48.5
G45	56.7	56.0	2.9	12.4
G46	57.2	50.5	11.4	76.7
Without Laguna Spill				
E24A	42.9	36.5	8.0	51.4
E24B	45.6	39.0	6.1	35.4
E26	47.4	42.5	10.4	50.6
E28	49.7	45.0	13.3	93.6
E31	49.9	45.0	11.0	78.7
G41	47.6	41.5	6.4	38.4
G43	51.3	50.8	5.2	24.7
G45	56.7	56.0	2.9	12.4
G46	57.2	50.5	11.4	76.7

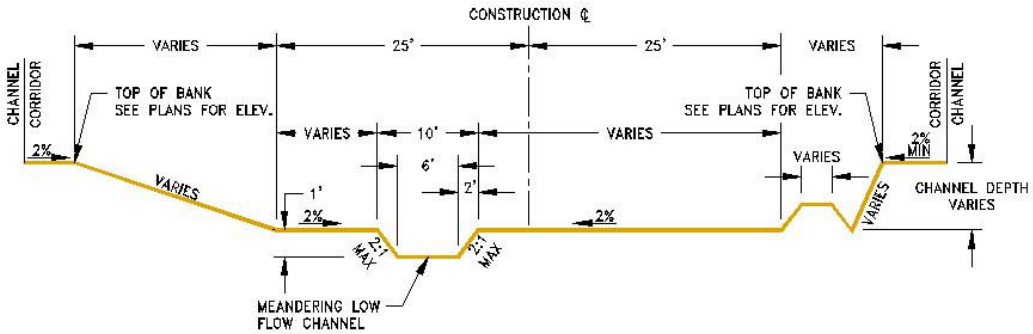


FIGURE 4.2 Sample Proposed Improved Channel Cross-Section

The model results indicate that the peak 100-year water surface elevations for both Elder and Gerber Creek would be generally lower throughout the improved areas with the proposed improvements including channel and detention facilities. Peak flow rates are also reduced except for some portions of Gerber Creek within the plan area. Due to the proposed channel improvements these peak flow increases do not have any adverse impact on Gerber Creek water surface elevations. Figures 4.2.1, 4.2.3 and 4.2.5 illustrate the peak water surface comparisons. Figures 4.2.2, 4.2.4 and 4.2.6 identify the peak 100-year flow rate comparisons.

Exhibit SD in Appendix E identifies the approximate proposed locations and sizes of these facilities.

Although the proposed 100-year post-project with Laguna spill water surface elevations are lower than existing conditions, the water surface elevations are above the channel bank at some locations especially where the excavated channel deviates from the existing channel alignment. At other locations, the water surface elevations are below the channel banks but the available Freeboard is less than one foot. It should be noted that the water surface elevation is not entirely contained in the proposed excavated channel as modeled in the Elder and Gerber Creek and in the North Vineyard Station Specific Plan UNET model. Sacramento County requires excavated channels to have at least one foot of freeboard. It is recommended that the low areas be raised to at least one foot above the 100-year water surface elevation (see oversize exhibit FB Sheets 1-4). Similarly, the water surface elevation for the post-project conditions without Laguna spill is not entirely contained in the proposed excavated channel (see oversize exhibit FB Sheets 5-7). Scalable water surface profile plots are included in Appendix I.

Flood Control Detention Basins

Three flood control detention basins are to be constructed with the FVGCP along Elder and Gerber Creeks. The basins are E28, E31 and G43. Basin G43 will be constructed with the development of the area south of Gerber Creek Road and west of Bradshaw Road which is expected to occur after the Laguna spill is shut off. Weir

crest elevations and lengths for the FVGCP, NVSSP and VSCP flood control detention basins have been optimized in order to reduce downstream flows and stages as much as possible. Table 4.2.2.shows the weir parameters for the post-project conditions with and without Laguna spill. Oversize exhibit DF-1 shows the detention basins that need to be constructed with the different areas in the FVGCP project. Table 5.2 shows which detention basins will be constructed with particular projects.

Table 4.2.2 – Detention Basin Weir Parameters

Detention Basin	Weir Top Width	Weir Crest Elevation		Reduction in Weir Crest Elevation
		With Laguna Spill	Without Laguna Spill	
	(ft)	(ft)	(ft)	(ft)
G45	212	56.1	56.1	0.0
G46	100	56.0	56.0	0.0
G43	60	N/A	50.0	N/A
G41	150	46.5	45.5	1.0
E24A	100	42.0	40.5	1.5
E31	50	51.0	51.0	0.0
E28	100	50.0	50.0	0.0
E24B	100	44.5	44.5	0.0

Detention Basin E20

Borcalli and Associates (B & A) performed an investigation of the need for Detention Basin E20. B & A determined that removal of Basin E20 would result in an increase in the ultimate condition peak stage of 0.4 foot and an increase in peak flow of 127 cfs between Southern Pacific Railroad and Elk Grove- Florin Road. However, the peak flows and stages were significantly below existing conditions. B & A indicated that the locations at which the ultimate conditions stage is above the top of bank would have to be raised with fill to accommodate the resulting increase in the removal of Basin E20. B & A concluded that Basin E20 is not an essential component of the Drainage Master Plan for the Elder and Gerber Creek drainage system.

Civil Solutions analyzed the removal of Basin E20 for FVGCP and NVSSP conditions with inter-basin transfer from Laguna Creek. The results obtained by Civil Solutions are similar to those of B & A. Civil Solutions therefore concurs with B & A conclusion that Basin E20 is not an essential component of the DMP of the Elder and Gerber Creek drainage system.

Elder/Gerber Creek Channel Excavation

Elder Creek reach between River Mile 4.8 and 6.0 is located within FVGCP and is expected to be excavated with the FVGCP development. Another reach of Elder Creek from River Mile 6.9 to 7.2 upstream of Florin Road will also be excavated. A

600-foot reach of Lower Elder creek that parallels Elk Grove-Florin Road provides only 2:1 side slopes along the banks of the channel. The channel cannot be relocated due to environmental reasons. The Sacramento County requirement of 4:1 side slopes could not be provided. The bank slopes will have to be stabilized in accordance with Sacramento County requirements. The constriction will cause increases in the water surface elevation and the overbank area will have to be filled to provide the required one foot freeboard.

Bridges and Culverts

Only one bridge at Elk Grove-Florin Road is located within FVGCP but we understand that the crossing at this location is a Sacramento County project. There are other crossings within NVSSP and VSCP that impact or are impacted by FVGCP flows. It is recommended that the proposed culvert crossings within NVSSP at McCoy Avenue on Elder Creek, Pasalis Lane West, Waterman Road and Pasalis Lane East be enlarged to reduce headlosses in order to minimize fill required to elevate the channel banks to provide the required. Table 4.2.3 shows the recommended culvert sizes.

Table 4.2.3 – Elder-Gerber Recommended Culvert Sizes

Location	Culvert size in UNET	Recommended Culvert Size
McCoy Ave	3- 8'x6' Box	3- 9'x7' Box
Pasalis Lane West	3- 8'x6' Box	3-10'x7' Box
Waterman Road	2- 8'x6' Box 1- 6'x6' Box	2-10'x7.5' Box 1-10'x8.5' Box
Pasalis Lane East	2- 8'x6' Box	2-10'x7.5' Box 1- 8'x8.5' Box

Floodplain Area North of Florin Road

The floodplain area north of Florin Road is not expected to develop due to wetlands. The area was therefore assumed to be open space in the hydrologic analysis and it was not encroached in hydraulics analysis.

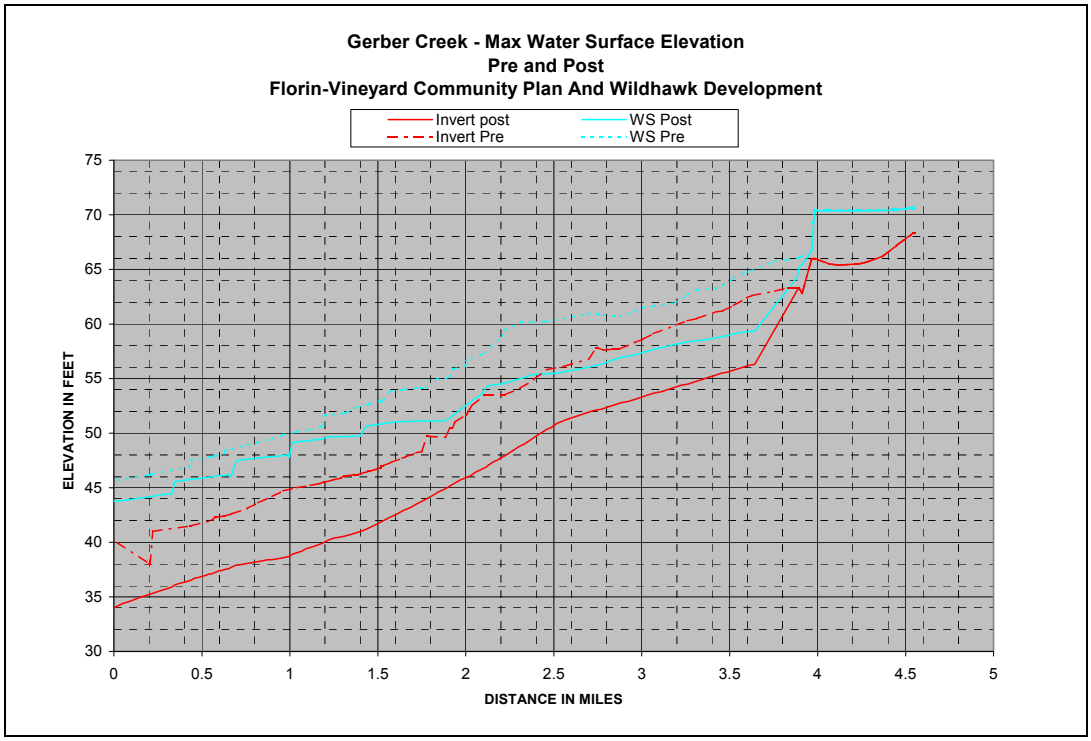


Figure 4.2.1 Gerber Creek Max W.S

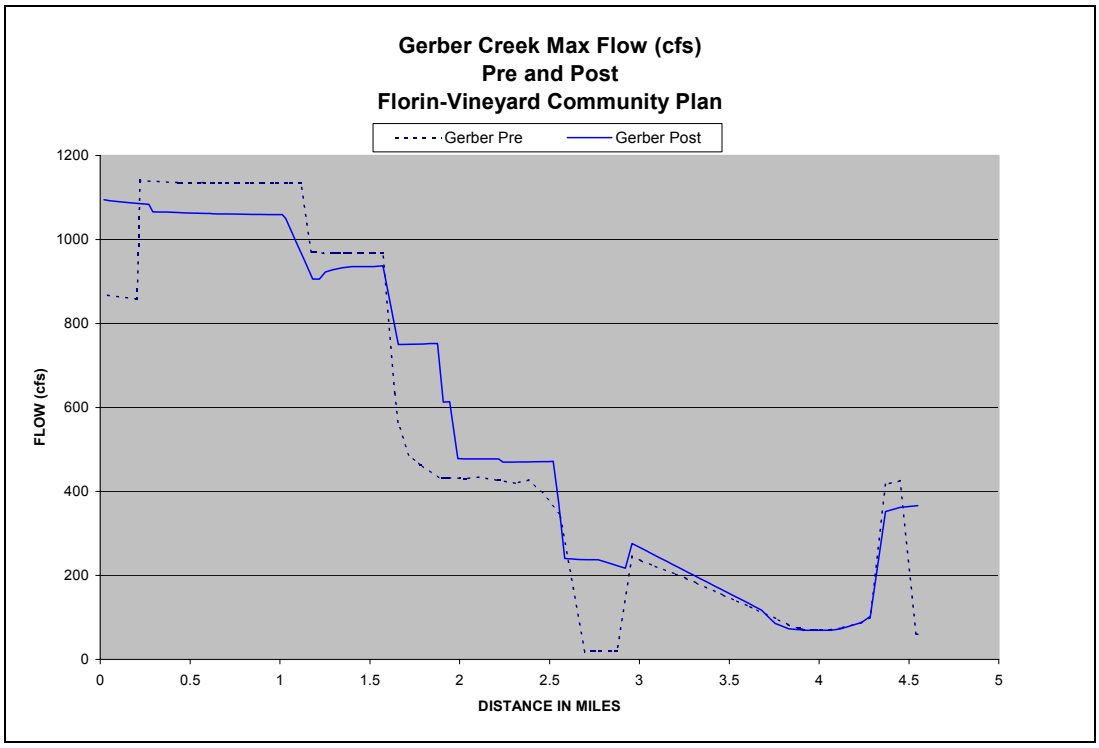


Figure 4.2.2 Gerber Creek Max Flow

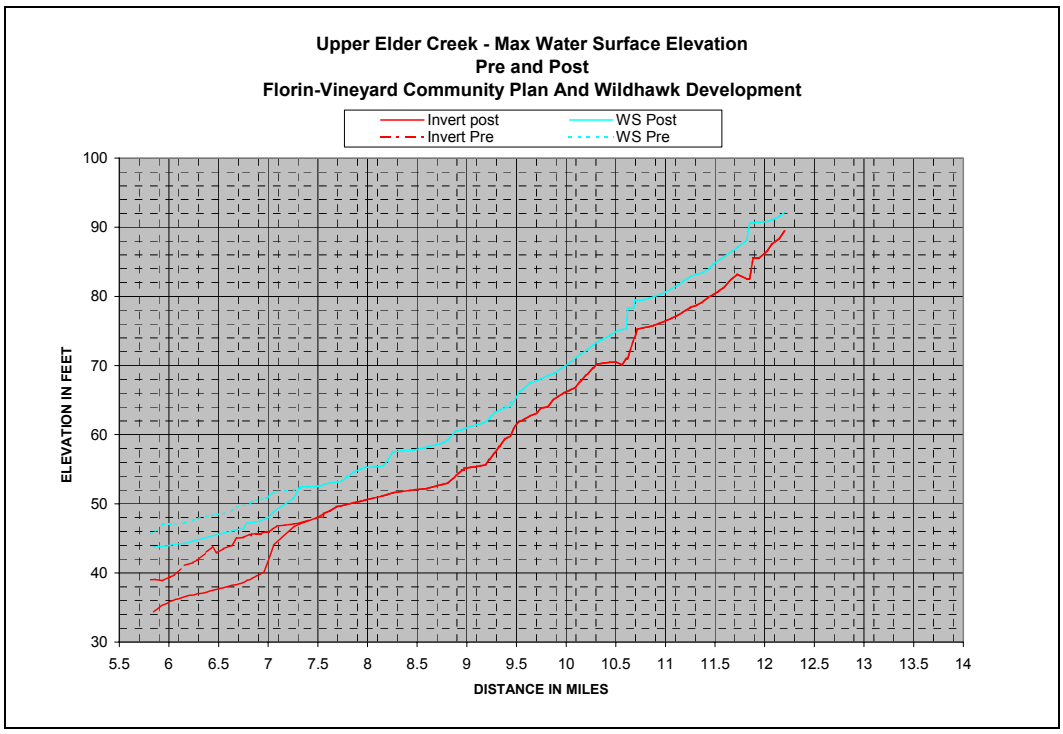


Figure 4.2.3 Upper Elder Creek Max W.S

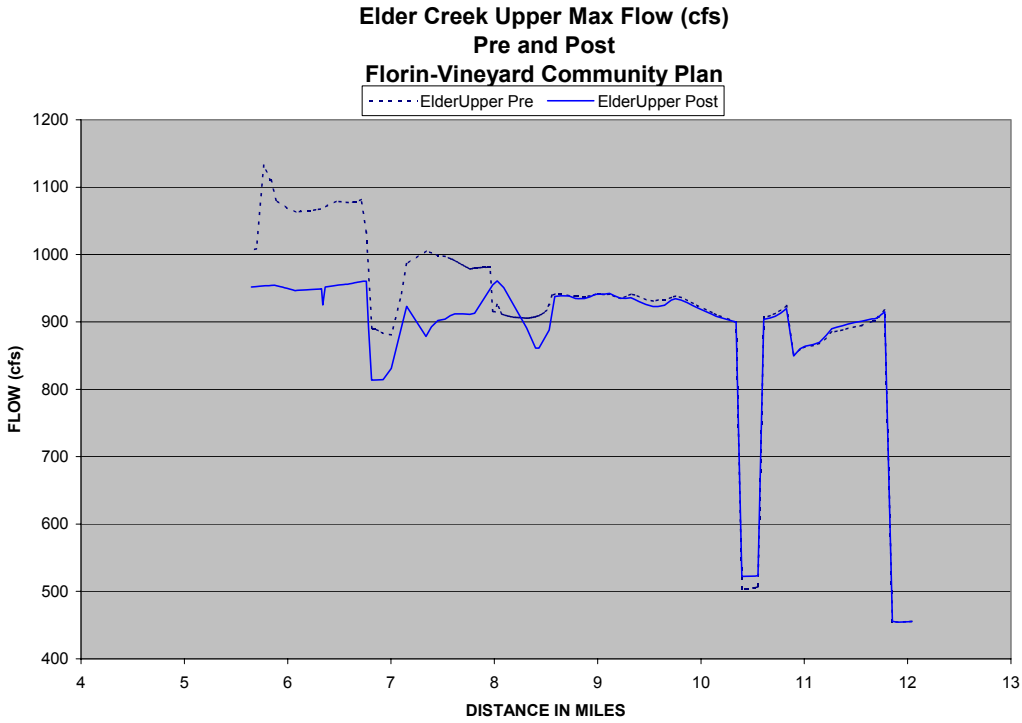


Figure 4.2.4 Upper Elder Creek Max Flow

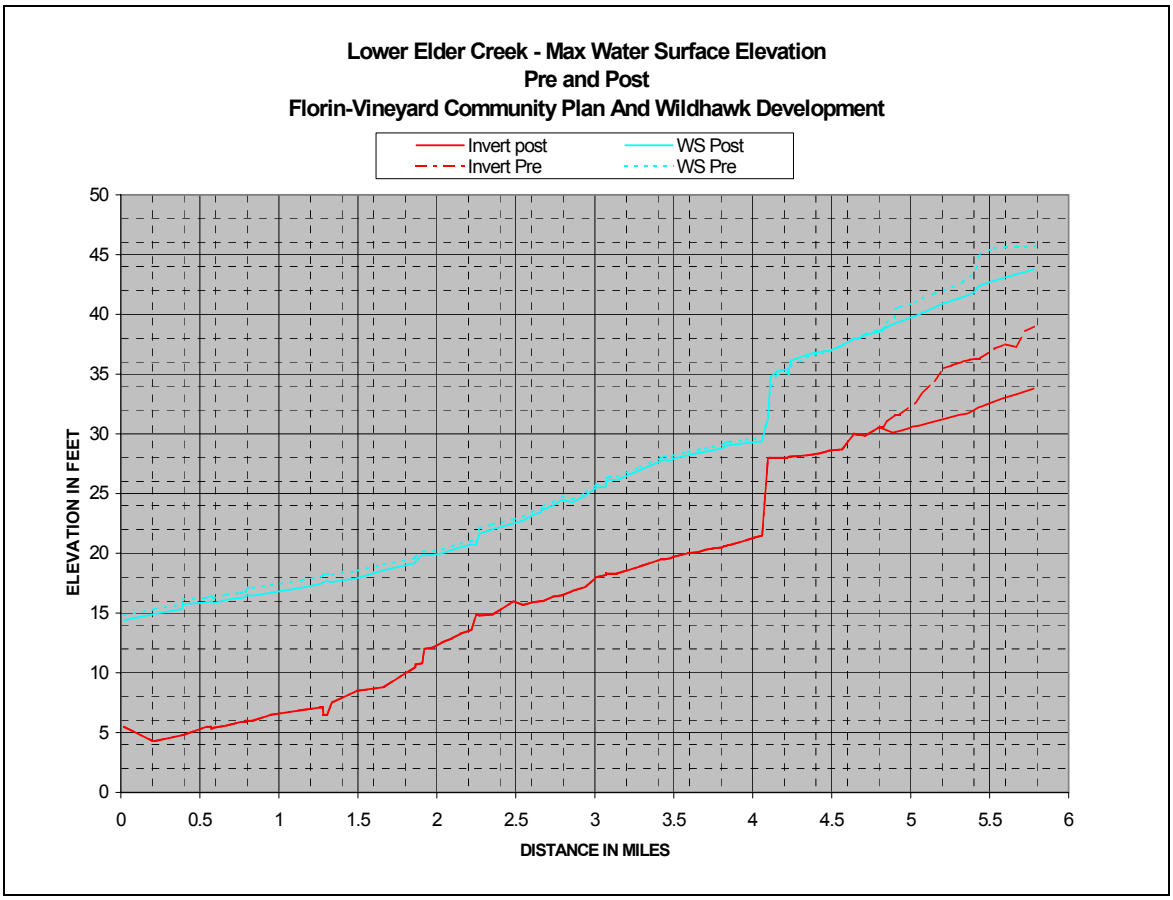


Figure 4.2.5 Lower Elder Creek Max W.S.

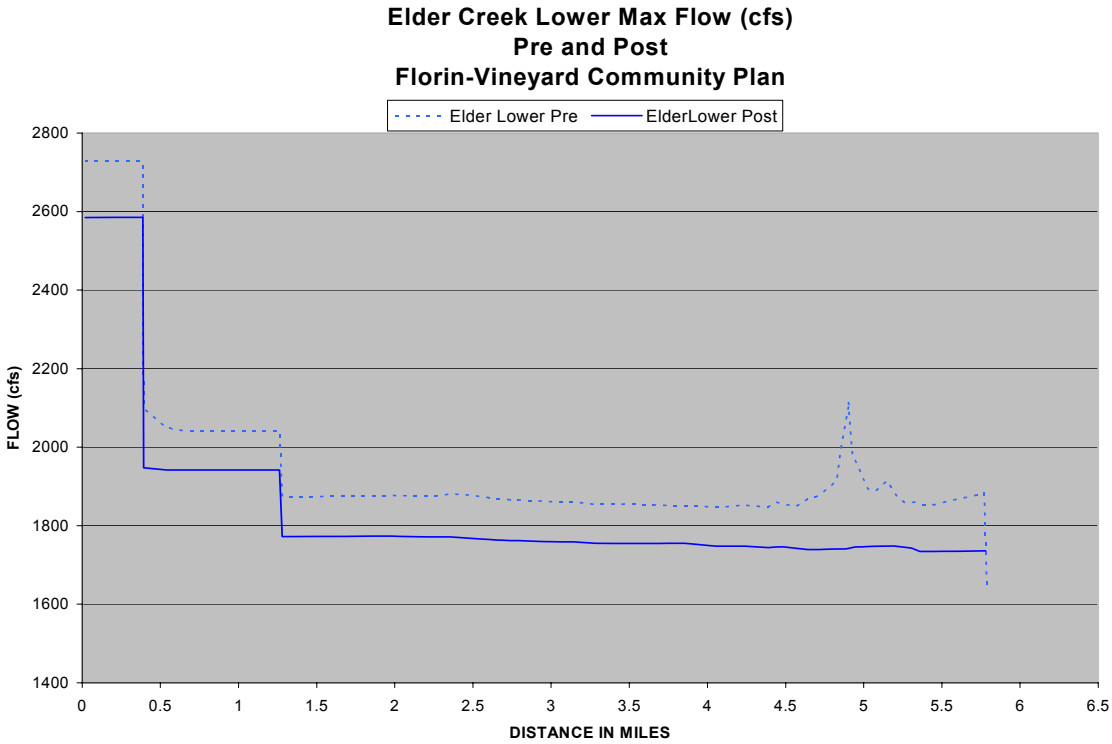


Figure 4.2.6 Lower Elder Creek Max Flow

4.3 FLORIN CREEK MODELING RESULTS

Florin Creek in the upstream area of the FVGCP consists mostly of small shallow ditches and road crossing culverts. A pre-project conditions model for the portions of Florin Creek upstream of Florin-Perkins Road was generated. This model together with revised shed delineations and hydrology modeling indicated that peak flow rates along portions of Florin Creek were less than had been previously indicated by the hydrologic models alone. This result is in conformance with reports indicating less peak flow than predicted and lower water peak surface elevations than expected. This appears to be due primarily to additional upstream ponding and attenuation, including areas upstream of the CCTRR, than was accounted for in previous modeling.

Part of the intent of the proposed changes to the Florin Creek watershed is to provide conveyance of expected “100-year” flows to the downstream side of South Watt Avenue as well as to reduce the peak runoff to the south branch of Florin Creek to compensate for limitations in the capacity of the pre-project facilities.

In order to accomplish the above, and maintain post-project peak flows and water surface elevations at or below pre-project levels, a number of detention basins are proposed for the upstream portion of Florin Creek within the FVGCP plan area. Table 4.3 summarizes the results of the modeling for the proposed detention facilities.

The model indicates that the current constraints on the capacity of the system for the south branch of Florin Creek can be accommodated by the combination of reduced tributary watershed area together with 2 local detention facilities. One basin was placed near the upstream end of the pipe system with an additional detention facility placed just upstream of the western boundary of the FVGCP plan area to provide both detention and water quality treatment

Due to the extent of the modifications to Florin Creek in the FVGCP area a direct graphic comparison of water surface elevations and flow rates such as was prepared for the Elder-Gerber system could not be generated. Instead data tables for the SWMM modeling results are included in the Appendix C. See Figure 4.1 for the SWMM components layout. The oversize exhibits in Appendix E show a schematic of the system layout. The geometry of the Florin Creek system in areas downstream of the FVGCP area remained essentially unchanged facilitating more direct comparison. Figures 4.3.1 and 4.3.2 show HEC-RAS modeling software graphs illustrating the maximum water surface elevations and peak 100-year flow rates for the downstream portions of Florin Creek. The HEC-RAS results section in Appendix B contains the schematic layout for the model.

Table 4.3 Florin Creek Detention Basins				
Proposed Detention Facilities				
Storage Area Model Designation	Maximum Water Surface Elevation (ft)	Minimum Detention Volume Elevation (ft)	Approximate Surface Area at Maximum Water Surface (acres)	Maximum Detained Volume (acre-ft)
WQDETSC2	40.3	37.8	2.4	14.3
MH6DET	47.9	39.6	3.6	25.5
SWATTD	44.3	36.7	5.2	34.9
DETF4C	39.4	37.5	9.1	42.6
SC2R71	46.6	39.5	1.1	6.0

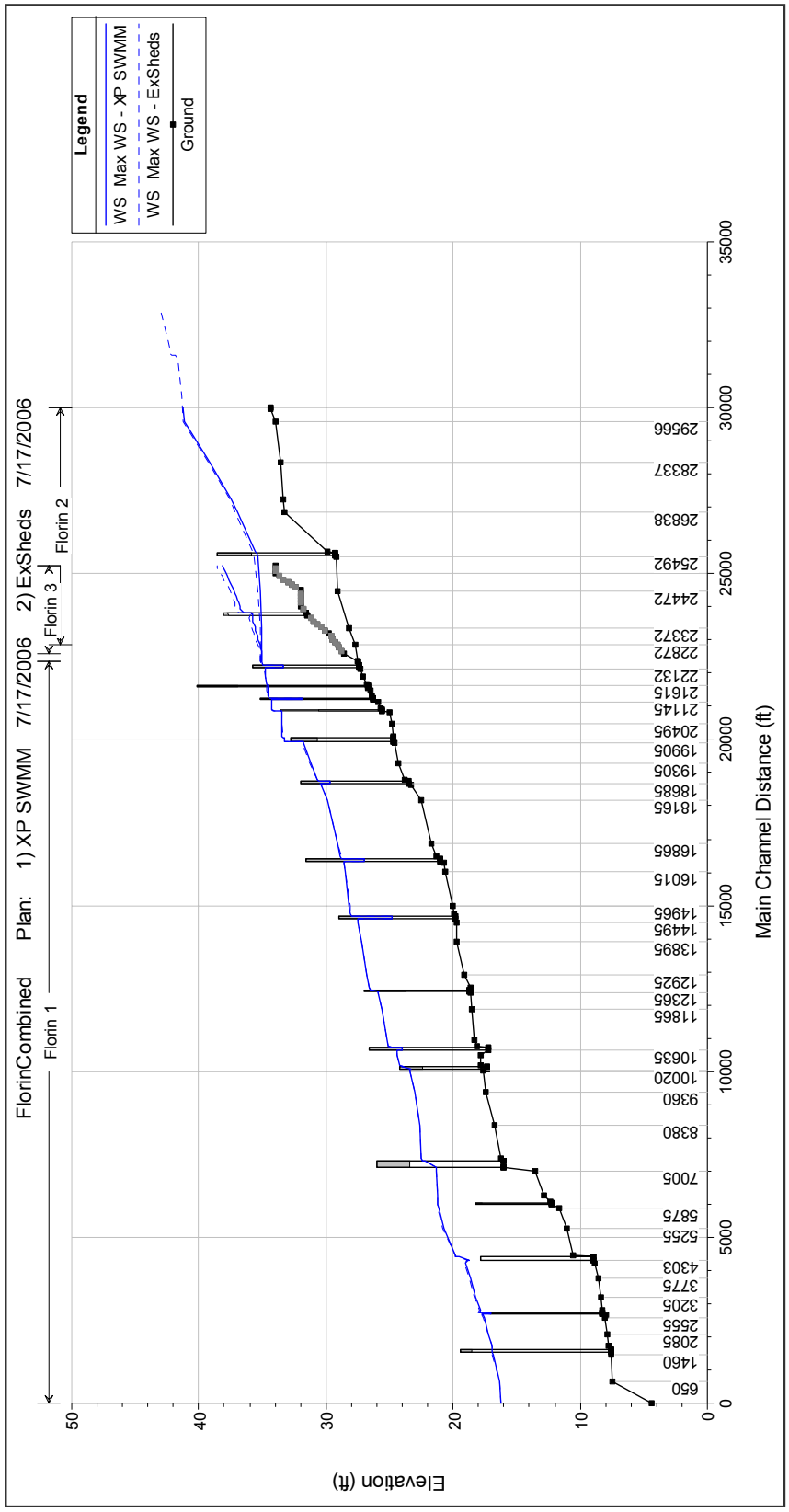


Figure 4.3.1 Florin Creek
Maximum Water Surface Elevation
Pre and Post FVGCP

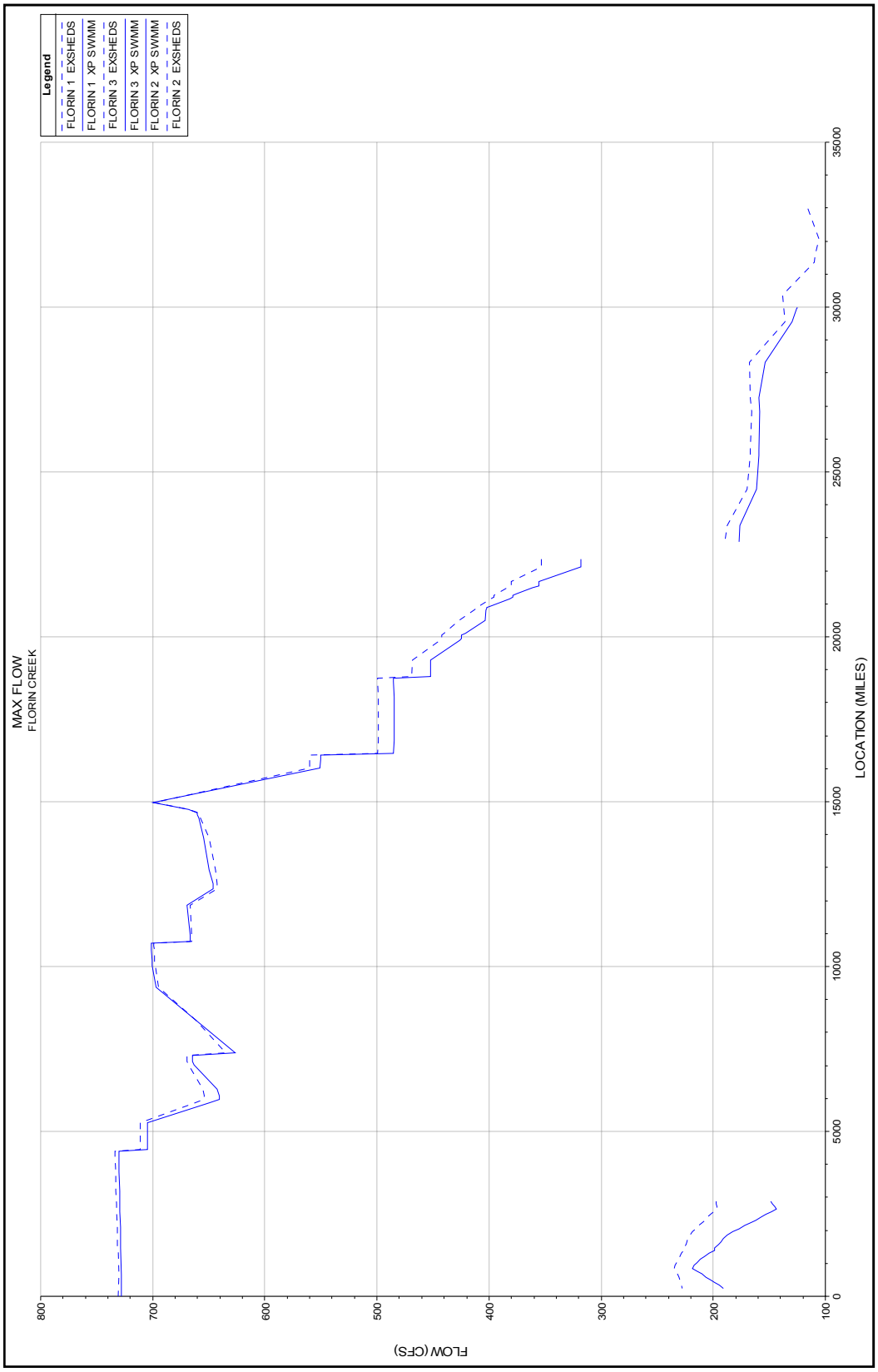


Figure 4.3.2 Florin Creek
Peak Flow Rates
Pre and Post FVGCP

4.4 UNIONHOUSE CREEK MODELING RESULTS

The Unionhouse Creek RAS model required less modification from the pre-FVGCP to post FVGCP condition. The model indicates the existing detention facilities, when expanded to previously estimate future design capacity, would be adequate to provide the necessary mitigation for increases in runoff due to development. Results indicate a detention basin will be required just upstream of the Union Pacific (old Southern Pacific) railroad right of way with the current FVGCP development proposal.

Figure 4.4.1 shows the maximum water surface elevation results of the RAS modeling for Unionhouse Creek for the pre- and post-FVGCP development

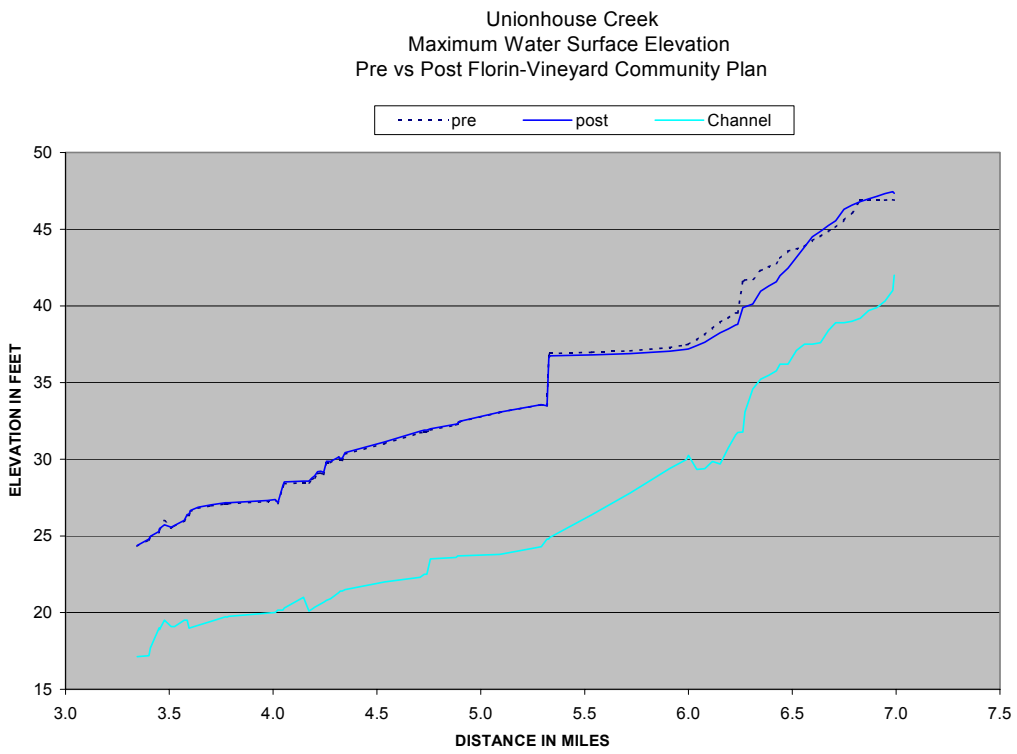


Figure 4.4.1 Unionhouse Creek WS Elevation Comparison

conditions. With the modified detention no increase in downstream maximum water surface elevations is anticipated. Figure 4.4.2 shows the peak flow rate results of the RAS modeling for Unionhouse Creek for the pre- and post-FVGCP development conditions.

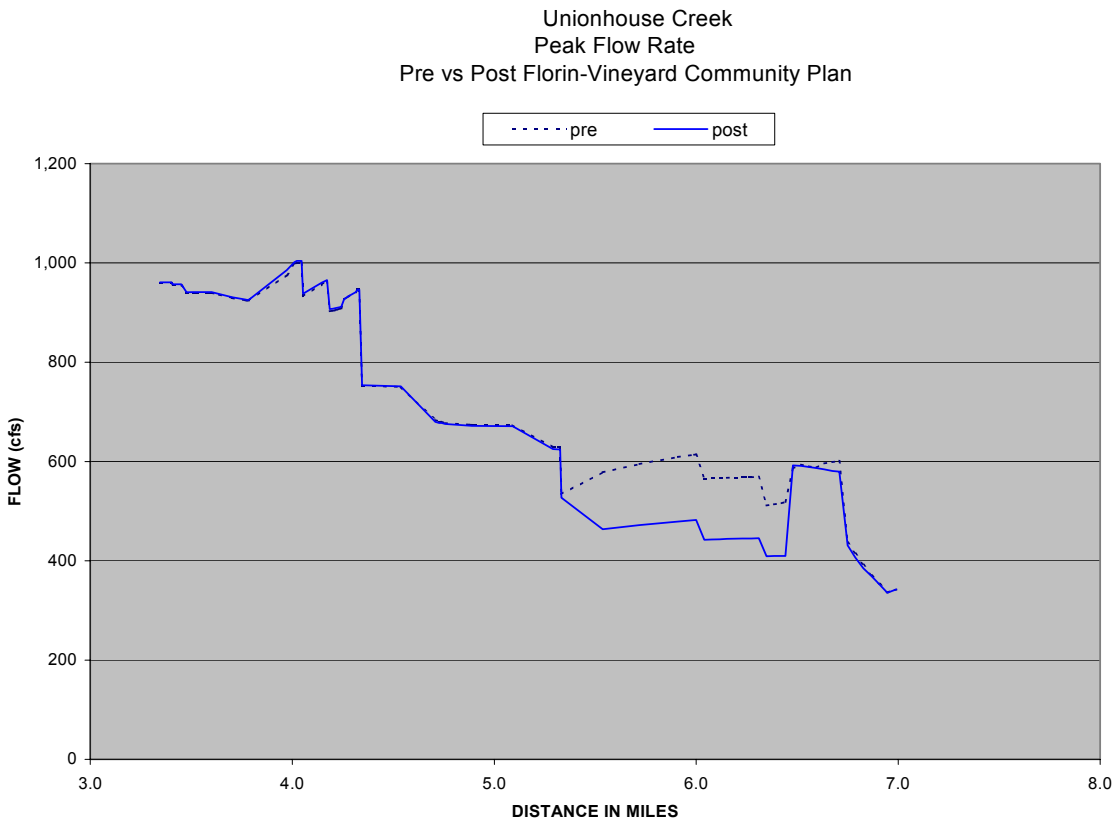


Figure 4.4.2 – Unionhouse Creek Peak Flow Comparison

Table 4.4.1 shows the RAS modeling results for the modified Unionhouse detention and water quality basin.

TABLE 4.4.1 Proposed Detention Facilities Unionhouse Creek

Storage Area Model Designation	Maximum Water Surface Elevation (ft)	Basin Invert Elevation (ft)	Approximate Surface Area (acres)	Maximum Detained Volume (acre-ft)
UHDET1	41.6	34.8	4.9	30.5
UHDET2	35.6	25.0	3.6	38.2

4.5 FUTURE BUILDOUT CONDITIONS

Future build-out analysis outside of the FVGCP, NVSSP and VSCP has not been performed for this master plan. Future development in watersheds E1A, E1B, E1C,

E2 and E3 upstream of the FVGCP will be required to mitigate their impacts to existing conditions.

4.6 ADDITIONAL 1809 UNITS FOR AFFORDABLE HOUSING

An evaluation was made of the impact of increased density due to provision for affordable housing areas within selected areas of the FVGCP. The results of this evaluation indicate that, within the Florin Creek, Elder-Gerber and Unionhouse watersheds, there would be little or no appreciable impact on the overall runoff expected from the affected sheds. This is considered to be due to the relatively small areas involved for each shed which results in the composite land use characteristics for the shed changing by only a small amount if at all.

Table 4.6 Florin Creek Detention Facility Storage Differences Due to Affordable Housing Alternative

Storage Area Model Designation	Maximum Detained Volume With Hi-Dens Alt. (acre-ft)	Maximum Detained Volume Without Hi-Dens Alt. (acre-ft)	Change in Detained Volume Due to Hi-Dens Alt. (acre-ft)
SWATTD	34.9	34.9	0.0
DETF4C	42.6	42.6	0.0

4.7 TRUNK PIPES AND PIPE SHED GROUPS

A preliminary evaluation was undertaken to determine possible alignments and feasibility of trunk pipe drainage (serving 30 acres or more) for the various portions of the FVGCP area. Due to the complexity of the system in the Florin Creek area the XP-SWMM model was used for this analysis. These results are included in the swmm section Appendix C and shown on the oversize exhibits in Appendix E. Elsewhere the CSDS pipe drainage system modeling software was used to evaluate the performance of the proposed pipe systems. The results of these analyses are presented in Appendix D.

All the proposed pipe and channel alignments are shown on the oversize exhibits in Appendix E.

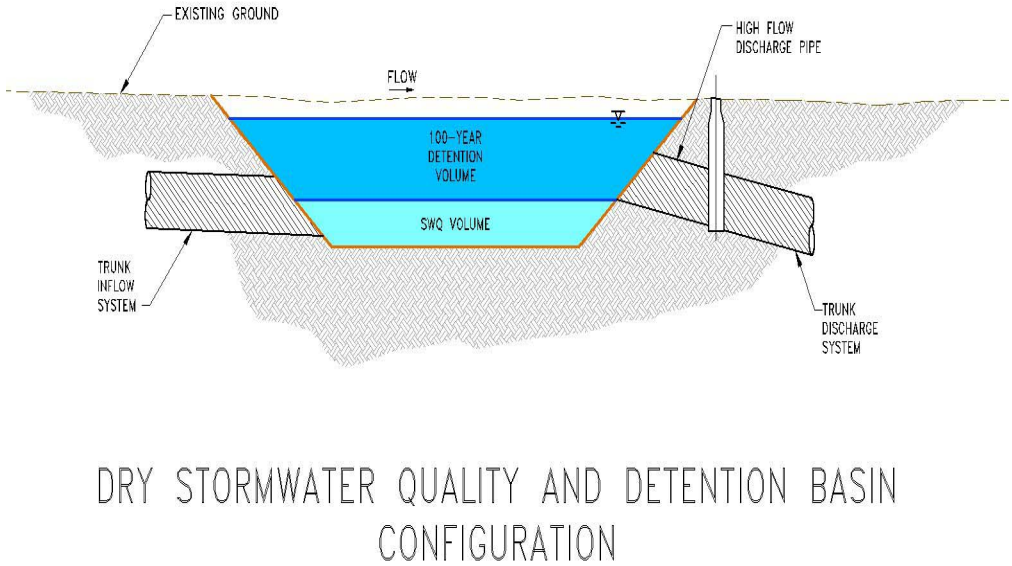
5.0 Water Quality

5.1 METHODOLOGY AND RESULTS

The volume for each of the water quality basins was computed in accordance with the Sato method as described in the drainage manual. Each pipe shed was assigned to a pipe group. Pipe groups were calculated a composite land use percent impervious and the Sato water quality volume was computed for each water quality basin. The required volume for the basins is summarized in the Table 5.1. Calculation of outflow from the detention basins is based on the “March 2007 Draft Stormwater Quality Design Manual”. The drawdown curves are shown in Appendix J.

The included water quality treatment measures of the FVGCP do not include treatment capacity for areas which are outside the FVGCP boundary. If/When these areas develop, additional measures may be needed onsite, or supplemental to the FVGCP facilities such that treatment of the runoff from these additional areas can be accomplished. Areas that cannot drain directly into water quality treatment basins as shown on Oversize Sheet SD will need to be provided with local water quality treatment facilities.

Where water quality treatment is to take place within a detention basin a portion of the basin volume was reserved by either adjusting the detention volume starting elevation or the available storage volume to account for the estimated water quality volume. All water quality in the plan is assumed to be sized and configured per the “Dry Extended” BMP alternative. This results in the largest reserve capacity and worst case impacts to the depths of the storm drainage systems. Figure 5.1.1 below shows a typical cross section of this type of facility.



DRY STORMWATER QUALITY AND DETENTION BASIN CONFIGURATION

Figure 5.1.1 – Dry Stormwater Quality Basin Configuration

The regional stormwater quality treatment facilities identified in this section, do not include reductions for possible “Low Impact Development” (LID) measures as may ultimately be required by Sacramento County. Implementing LID measures with these projects effectively reduces the amount of stormwater which would runoff from the project development areas by reducing the effective imperviousness of the project, and promoting infiltration and pre-treatment. For example, LID measures may include features such as disconnected roof drains, planting of trees, and Hollywood driveways at residential areas. At the time of the writing of this document Sacramento County was reviewing implementation standards for LID. Once these are approved, the effect of the LID improvements could be quantified. Therefore, supplemental calculations may be required with individual project submittals to support the amount of treatment volume reductions proposed by LID measures.

The shed areas and impervious cover used to size the water quality detention basins are shown in Table 5.1. Table 5.2 shows the detention basin and buffer area footprint for each of the basins.

Table 5.1 - Sato Water Quality Basin Volumes						
Basin	Group Total Area (acres)	Composite Percent Impervious	Sato WQ Volume Required (ac-ft)	Flow Required for 48 hr. Drawdown (cfs)	Recommended Outflow Pipe Size	Type of Basin
DETF4C	574	54.6%	24.9	6.3	15" at invert 12" at 16" above invert	Water Quality and Flood Control
WQDETSC2	162	64.5%	8.6	1.9	2 - 6" at invert	Water Quality
E28	423	66.7%	23.4	7.2	15" at invert	Water Quality and Flood Control
E31	144	52.6%	6.0	2.9	8" at invert	Water Quality and Flood Control
G43	380	30.3%	10.2	2.9	10" at invert	Water Quality and Flood Control
WQGC	62	54.3%	2.7	0.7	4" at invert 4" at 16" above invert	Water Quality
E21WQ	374	47.1%	14.1	3.6	2 - 8" at invert	Water Quality
WQSCK	67	46.1%	2.5	0.6	3 - 2" at invert 2 - 2" at 6" above invert	Water Quality
WQUH1AN	159	45.3%	5.8	1.4	6" at invert 4" at 11" above invert	Water Quality
UHDET2	175	39.0%	5.6	1.2	6" at invert 8" at 6" above invert	Water Quality
WQHM10	128	47.3%	4.8		4" at invert 4" at 11" above invert 4" at 16" above invert	Water Quality

Table 5.2 FLORIN VINEYARD AND NORTH VINEYARD STATION DETENTION BASINS

DET-BASIN	EXISTING GROUND ELEVATION (FEET)	BASIN INVERT ELEVATION (FEET)	WATER QUALITY VOLUME (AC-FT)	FLOOD CONTROL VOLUME (AC-FT)	TOTAL BASIN VOLUME (AC-FT)	WATER QUALITY POOL ELEVATION (FEET)	MAXIMUM WATER SURFACE ELEVATION (FEET)	MAXIMUM WATER SURFACE ELEVATION (FEET)-10 YR	FREEBOARD (FEET)	DETENTION BASIN AREA AT GROUND SURFACE (ACRES)	DETENTION BASIN AND BUFFER AREA FOOTPRINT (ACRES)	DEVELOPMENT
UNIONHOUSE CREEK												
UHDET2	36	25.0	5.6	32.6	38.2	26.6	35.6	32.4	0.4	4.5	5.6	FVGCP
WQSCK	40	34.0	2.5	0.0	2.5	38.9	38.9	35.4	1.1	1.0	1.4	FVGCP
UHDET1	44	34.8	0.0	30.5	30.5	NO WQ DET	41.6	40.5	2.4	7.2	8.3	FVGCP
WQUH1AN	44	34.8	5.8	0.0	5.8	39.6	39.6	41.1	4.4	1.8	2.4	FVGCP
ELDER CREEK WQ ONLY BASINS												
E21WQ	38	32.0	14.0	0.0	14.0	35.9	35.9	37.5	2.1	4.2	5.1	NVSSP
WQGC	42	36.0	2.7	0.0	2.7	40.7	40.7	39.9	1.3	0.8	1.2	NVSSP
WQMH10	46	36.3	4.8	0.0	4.8	41.4	41.4	42.0	4.6	1.5	2.1	FVGCP
VRWQ	67	63.0	1.1	0.0	1.1	66.0	66.0		1.0	0.5	0.8	FVGCP
ELDER CREEK WITH LAGUNA SPILL												
E24B	48	36.0	2.3	33.3	35.6	39.0	45.6	41.2	2.4	7.2	8.3	NVSSP
E26	52	39.5	17.0	33.6	50.6	42.5	47.4	45.7	4.6	15.8	17.4	NVSSP
E28	52	42.0	23.4	70.2	93.6	45.0	49.7	47.8	2.7	13.7	15.2	FVGCP
E31	52	42.0	6.0	73.0	79.0	45.0	49.8	46.4	2.2	11.5	12.8	FVGCP
FBNE	60	55.0	3.2	9.9	13.1	56.2	60.0	58.8	0.0	3.0	3.7	FVGCP
VRDET	68	65.4	0.0	0.8	0.8	NO WQ DET	66.3	65.4	1.7	1.0	1.4	FVGCP
ELDER CREEK WITHOUT LAGUNA SPILL												
E24B	48	36.0	2.3	33.1	35.4	39.0	45.6	41.2	2.4	7.2	8.3	NVSSP
E26	52	39.5	17.0	33.6	50.6	42.5	47.4	45.7	4.6	15.8	17.4	NVSSP
E28	52	42.0	23.4	70.2	93.6	45.0	49.7	47.8	2.7	13.7	15.2	FVGCP
E31	52	42.0	6.0	72.9	78.9	45.0	49.8	46.4	2.2	11.5	12.8	FVGCP
GERBER CREEK WITH LAGUNA SPILL												
E24A	46	33.5	7.2	60.1	67.3	36.5	44.1	36.5	1.9	10.4	11.7	NVSSP
G41	52	38.5	8.7	39.8	48.5	41.5	48.8	44.9	3.2	8.6	9.8	NVSSP
G46	60	47.5	17.1	59.6	76.7	50.5	57.2	56.4	2.8	13.4	14.8	NVSSP
G45	62	52.5	1.7	9.0	12.4	56.0	56.7	55.8	5.3	9.1	10.3	VSCP
GERBER CREEK WITHOUT LAGUNA SPILL												
E24A	46	33.5	7.2	44.2	51.4	36.5	42.9	39.9	3.1	10.4	11.7	NVSSP
G41	52	38.5	8.7	30.7	39.4	41.5	47.6	45.8	4.4	8.6	9.8	NVSSP
G43	56	45.8	10.2	14.5	24.7	50.8	51.3	50.9	4.7	5.9	6.9	FVGCP
G46	60	47.5	17.1	59.6	76.7	50.5	57.2	56.4	2.9	13.4	14.8	NVSSP
G45	62	52.5	1.7	9.0	12.4	56.0	56.7	55.8	5.3	9.1	10.3	VSCP
FLORIN CREEK												
WQDETSC2	44	33.3	8.6	5.7	14.3	37.8	40.3		3.7	2.9	3.6	FVGCP
SC2R71	48	39.5	0.0	6.0	6.0	NO WQ DET	46.6		1.4	1.2	1.9	FVGCP
DETF4C	42	34.5	24.9	17.7	42.6	37.5	39.4		2.6	9.7	10.9	FVGCP
SWATTD	46	36.7	0.0	34.9	34.9	NO WQ DET	44.3		1.7	5.5	6.4	FVGCP
MH6DET	49	39.6	0.0	25.5	25.5	NO WQ DET	47.9		1.1	3.8	4.6	FVGCP

44.4 Stages computed in HEC-RAS and SWMM models

Note Buffer areas were computedto provide 20-foot wide maintenance area around the basin.
Basins FBNE and UHDET2 will require a berm or fill for 1-foot of freeboard

6.0 Stand-Alone Condition

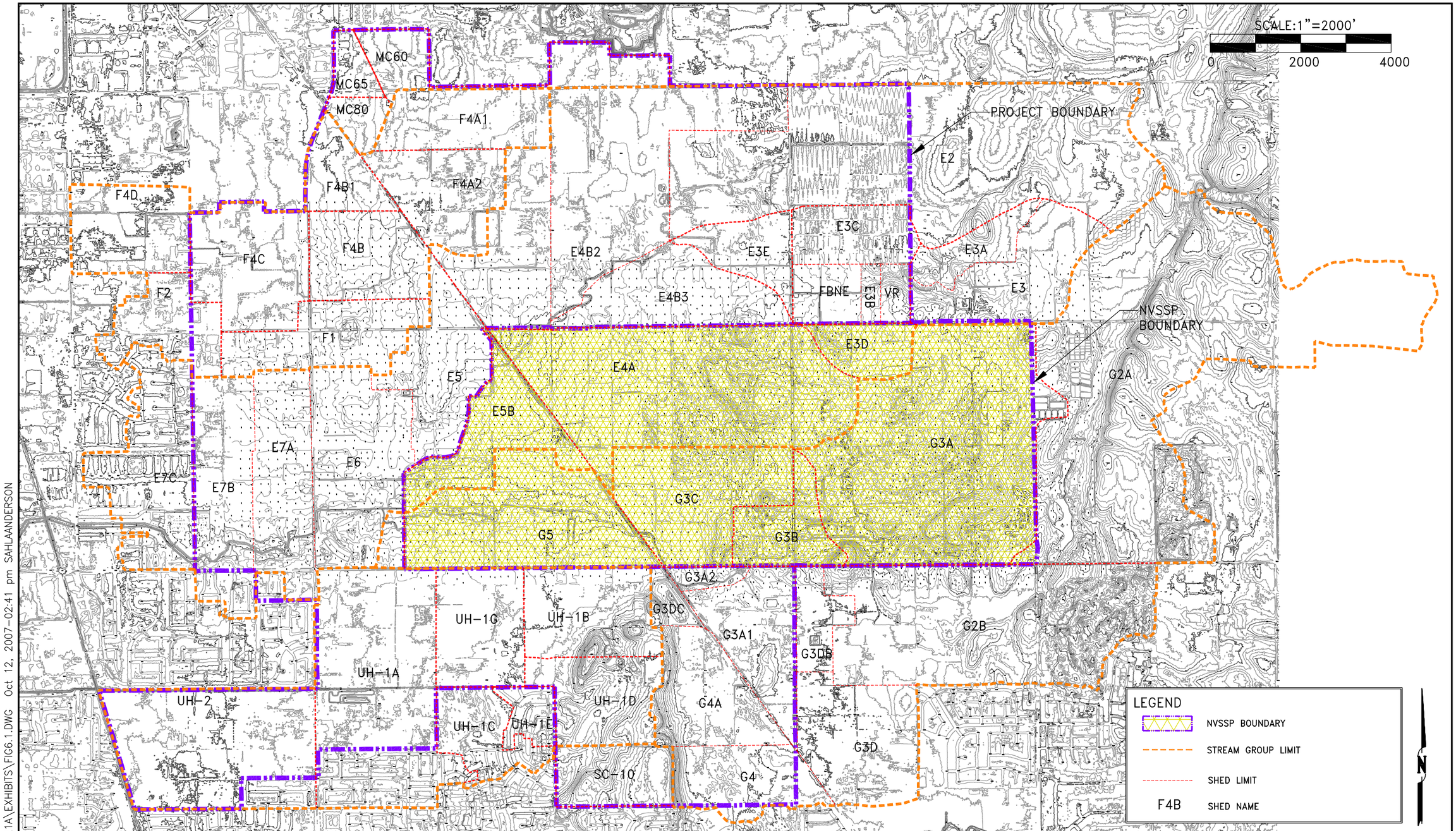
6.1 METHODOLOGY AND RESULTS

It is not known at this time which drainage improvements will be constructed at what time since development depends on economic forces in the housing market which cannot be easily predicted. A stand-alone analysis has been done for NVSSP in the "North Vineyard Station Specific Plan Drainage master Plan" prepared in 2003. A similar stand-alone analysis for FVGCP has been performed that would give some more insight into the phasing sensitivity of the various improvements. The stand-alone Florin Vineyard Gap Community Plan shed area is shown in Figure 6.1. The storm drain pipe system, the detention basins and channel excavation required for the stand alone condition are shown on Figure 6.2.

The stand-alone conditions analysis indicates that the detention basin storage volumes provided for the FVGCP site are sufficient to reduce post-project flows and stages down to existing levels at the City/County boundary at River Mile 1.921 as shown in Table 6.1. Constructing the proposed detention basins at the same time the areas draining to them will allow the development of the FVGCP site without relying on any other projects (see oversize exhibit DF-1). The portion of FVGCP south of Gerber Road and west of Bradshaw cannot develop until the Laguna spill is shut off. Detention Basin G43 will therefore not be constructed until then.

Table 6.1: Pre-project and Post-project Peak Flows and Stages for Stand-Alone Conditions

Condition	Florin Creek Reach 2 Node	Project Boundary at Elder Creek Node	City/County Boundary at Elder Creek Node	Unionhouse Creek Node
	22352	Sta 4.795	Sta 1.921	Sta. 15407
100-year Flows (cfs)				
Existing	419	1897	1946	636
Stand-alone	352	1854	1930	560
Increase in stage	-67	-45	-16	-76
100-year Water Surface Elevations (feet)				
Existing	35.61	38.8	20.19	36.48
Stand-alone	35.21	38.79	20.21	35.59
Increase	-0.4	-0.01	0.02	-0.89



CALCED BY: B.A.T. DRAWN BY: L.J.H.

CHECKED BY: B.A.T. DATE: 10/2007

W.O. NO: 2004.21A DWG: FIG6.1.dwg

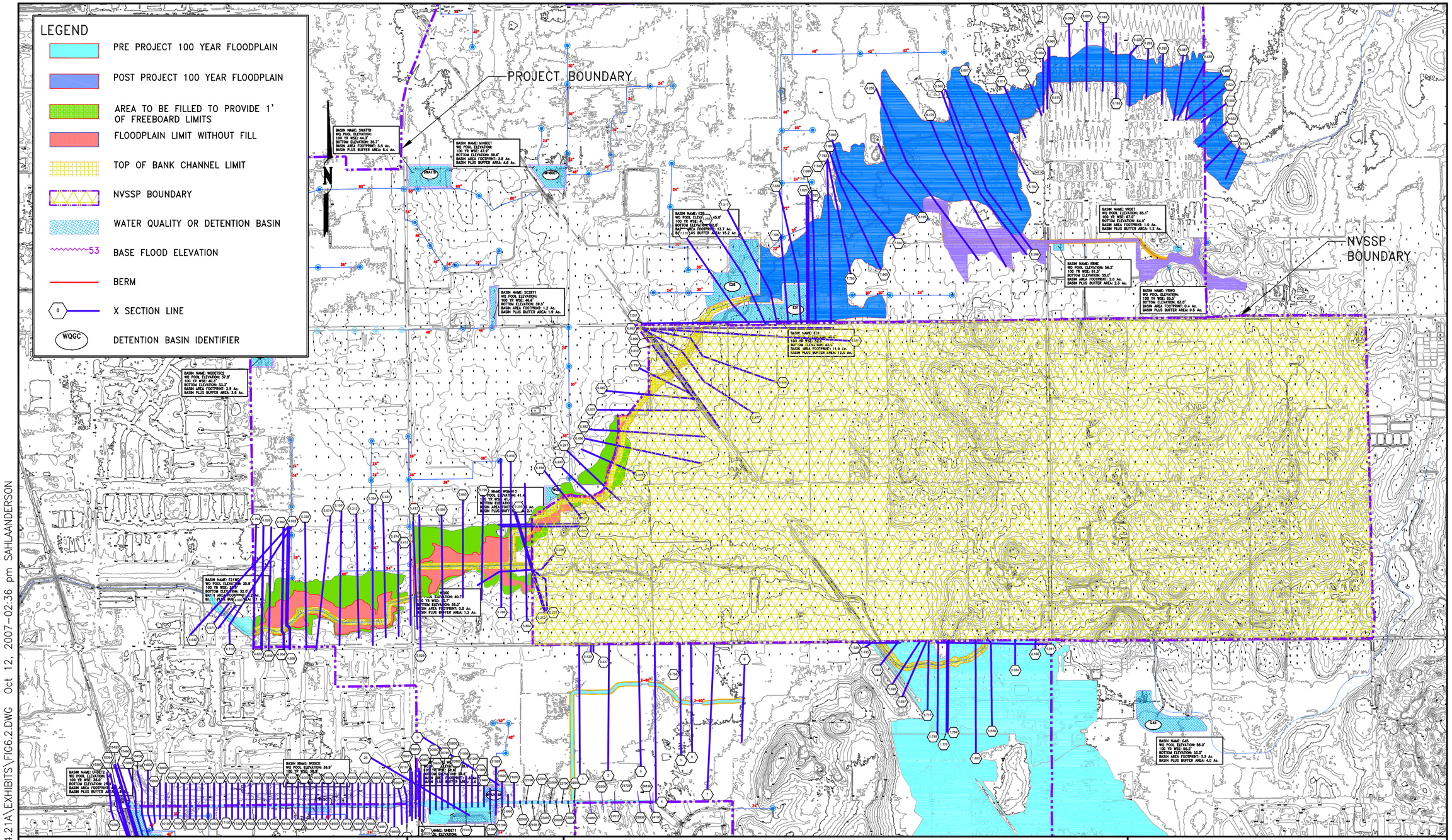
Fig. 6.1

FLORIN VINEYARD GAP COMMUNITY PLAN
STAND ALONE CONDITIONS
SHED MAP

COUNTY OF SACRAMENTO CALIFORNIA

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300
fax (916) 563 - 7362

P:\PROJECTS\2004.21A\EXHIBITS\FIG6.1.DWG Oct 12, 2007-02:41 pm SAHLAANDERSON



CALCED BY: B.A.T. DRAWN BY: L.J.H.

CHECKED BY: B.A.T. DATE: 10/2007

W.O. NO: 2004.21A DWG: FIG6.2.dwg

Fig. 6.2

FLORIN VINEYARD GAP COMMUNITY PLAN STAND ALONE CONDITIONS

COUNTY OF SACRAMENTO CALIFORNIA

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300
fax (916) 563 - 7362

P:\PROJECTS\2004.21A\EXHIBITS\FIG6.2.DWG Oct 12, 2007-02:36 pm SAHLAANDERSON

7.0 Conclusion

The Florin Vineyard Community Plan area can be developed using the concept presented in this drainage study. FVGCP area can build out at the designated densities without negatively impacting existing downstream hydraulic conditions or storm water quality with or without the North Vineyard Station Specific Plan Drainage Master Plan improvements. The improvements needed to accomplish this concept are as follows:

- Excavate Elder and Gerber Creeks
- Provide flood control and water quality detention basins along Unionhouse, Florin Elder and Gerber Creeks (Table 7.1)
- Construct storm drain pipes for the project area

Table 7.1 Detention Basins Required for FVGCP

DET-BASIN	WATER QUALITY VOLUME (AC-FT)	FLOOD CONTROL VOLUME (AC-FT)	DETENTION BASIN AND BUFFER AREA FOOTPRINT (ACRES)
UNIONHOUSE CREEK			
UHDET2	5.6	32.6	5.6
WQSCK	2.5	N/A	1.4
UHDET1	N/A	30.5	8.3
WQUH1AN	5.8	N/A	2.4
ELDER CREEK WQ ONLY BASIN			
WQMH10	4.8	N/A	2.1
ELDER CREEK WITH LAGUNA SPILL			
E28	23.4	70.2	15.2
E31	6.0	73.0	12.8
ELDER CREEK WITHOUT LAGUNA SPILL			
E28	23.4	70.2	15.2
E31	6.0	73.0	12.8
GERBER CREEK WITHOUT LAGUNA SPILL			
G43	12.4	14.5	6.9
FLORIN CREEK			
WQDETSC2	8.6	5.7	3.6
SC2R71	N/A	6.0	1.9
DETF4C	24.9	17.7	10.9
SWATTD	N/A	34.9	6.4
MH6DET	N/A	25.5	4.6
INTERIM			
FBNE	3.2	9.9	3.7
VR	N/A	0.8	1.1
VRWQ	1.1	N/A	

The above improvements will mitigate potential development impacts by not increasing flows and water surface elevations downstream of the project area in accordance with Sacramento County requirements. A summary of the flows and water surface elevations at the downstream project boundary is shown in the Table 7.2. Constructing the proposed detention basins at the same time the areas draining to them will allow the development of the FVGCP site without relying on any other projects.

Table 7.2: Comparison of Flows and Stages for FVGCP Post-development Conditions

Condition	Florin Creek Reach 2 Node 22352	Project Boundary at Elder Creek Node Sta 4.795	City/County Boundary at Sta. 1.921	Unionhouse Creek Node Sta 15407
Post-project with Laguna Spill 100-year Flows (cfs)				
Existing	419	1897	1946	636
Post-development	352	1807	1843	560
Increase in stage	-67	- 90	-103	-76
Post-project with Laguna Spill 100-year Water Surface Elevations (feet)				
Existing	35.61	38.80	20.19	36.48
Post-development	35.21	38.71	19.97	35.59
Increase	-0.40	-0.09	-0.22	-.89
Post-project without Laguna Spill 100-year Flows (cfs)				
Existing	419	1897	1946	636
Post-development	352	1437	1740	560
Increase in stage	-67	-460	-206	-76
Post-project without Laguna Spill 100-year Water Surface Elevations (feet)				
Existing	35.61	38.80	20.19	36.48
Post-development	35.21	37.89	19.76	35.59
Increase	-0.40	-0.91	- 0.43	-.89
Condition	**Elder Creek Tributary at Vintage Ranch**	**Elder Creek Tributary at Bradshaw**		
	1.11	**0.62**		
Interim Conditions 100-year Flows (cfs)				
Existing	141	232		
Post-development	134	207		
Increase in stage	-7	-25		
Interim Conditions 100-year Water Surface Elevations (feet)				
Existing	66.79	61.86		
Post-development	66.75	60.77		
Increase in stage	-0.04	-1.1		

Stand-alone Condition

The stand-alone conditions analysis indicates that the detention basin storage volumes provided for the FVGCP site are sufficient to reduce post-project flows and stages down to existing levels at the City/County boundary at River Mile 1.921 as shown in the Table 7.3. As discussed above, the purpose of the Stand-alone condition is to show that the FVGCP can develop with or without North Vineyard Station Specific Plan. The portion of FVGCP south of Gerber Road and west of Bradshaw cannot develop until the Laguna spill is shut off. Detention Basin G43 will therefore not be constructed until then.

Table 7.3: Comparison of Flows and Stages for FVGCP Stand-alone Conditions

+ Condition	Florin Creek Reach 2 Node 22352	Project Boundary at Elder Creek Node Sta 4.795	City/County Boundary at Sta. 1.921	Unionhouse Creek Node Sta 154072
100-year Flows (cfs)				
Existing	419	1897	1946	636
Stand-alone	352	1852	1930	560
Increase in stage	-67	-45	-16	-76
100-year Water Surface Elevations (feet)				
Existing	35.61	38.80	20.19	36.48
Stand-alone	35.21	38.79	20.21	35.59
Increase	-0.40	-0.01	0.02	-.89

Appendices

APPENDIX A

SACCALC (HYDROLOGIC) MODELS

SacCalc Data

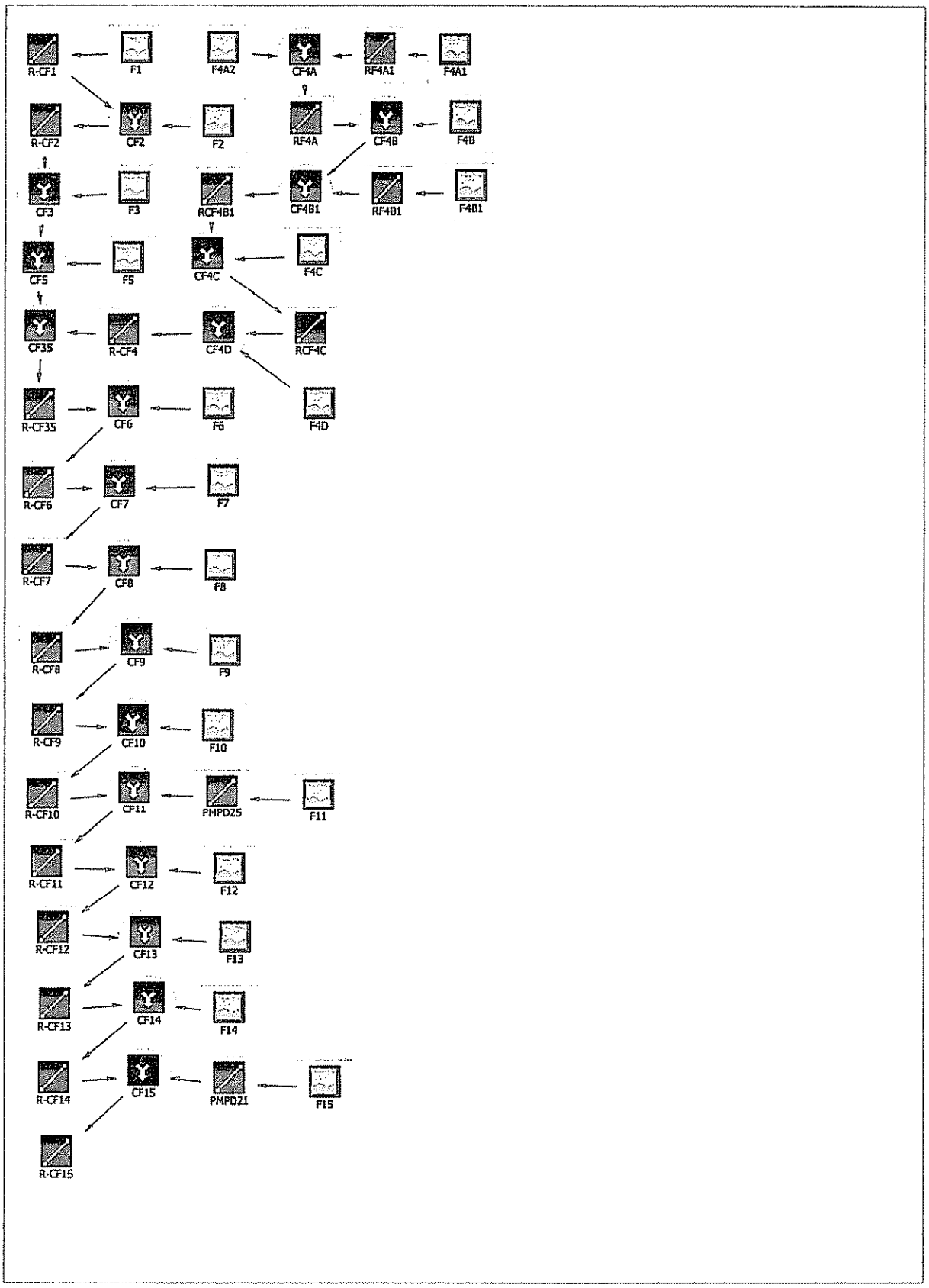
For

Florin Creek – Pre FVCP

Model Schematic Layout

Peak Flow Summary

Report


R-CF1
F1
F4A2
CF4A
RF4A1
F4A1
R-CF2
CF2
F2
RF4A
CF4B
F4B
CF3
F3
RCF4B1
CF4B1
RF4B1
F4B1
CF5
F5
CF4C
F4C
CF35
R-CF4
CF4D
RCF4C
R-CF35
CF6
F6
F4D
R-CF6
CF7
F7
R-CF7
CF8
F8
R-CF8
CF9
F9
R-CF9
CF10
F10
R-CF10
CF11
PMPD25
F11
R-CF11
CF12
F12
R-CF12
CF13
F13
R-CF13
CF14
F14
R-CF14
CF15
PMPD21
F15
R-CF15

View HEC-1 output

Sacramento method results
(Project: FLORIN CREEK)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
F1	208.	12:55	.39			
R-CF1	202.	13:00	.39			
F2	107.	12:31	.14			
CF2	267.	12:55	.53			
R-CF2	252.	13:06	.53			
F3	114.	12:25	.13			
CF3	301.	13:01	.66			
F5	88.	12:28	.11			
CF5	349.	12:51	.76			
F4D	92.	13:03	.18			
F4C	129.	12:52	.24			
F4A2	92.	12:55	.17			
F4A1	98.	12:48	.17			
RF4A1	75.	13:07	.17			
CF4A	165.	12:58	.34			
RF4A	151.	13:19	.34			
F4B	92.	13:03	.19			
CF4B	238.	13:11	.53			
F4B1	66.	12:35	.09			
RF4B1	61.	12:46	.09			
CF4B1	283.	13:08	.62			
RCF4B1	275.	13:24	.62			
CF4C	368.	13:16	.86			
RCF4C	339.	13:39	.86			
CF4D	406.	13:33	1.04			
R-CF4	386.	13:50	1.04			
CF35	647.	13:27	1.81			
R-CF35	627.	13:46	1.81	.0	9.5	
F6	74.	12:28	.09			
CF6	648.	13:44	1.90			
R-CF6	620.	14:26	1.90	.0	6.1	
F7	250.	12:31	.32			
CF7	677.	14:21	2.22			
R-CF7	661.	14:55	2.22	.0	5.8	
F8	90.	12:34	.13			

CF8	678.	14:53	2.34		
R-CF8	676.	15:13	2.34	.0	4.1
F9	223.	12:25	.26		
CF9	753.	12:41	2.60		
R-CF9	706.	15:09	2.60	.0	4.0
F10	307.	12:27	.36		
CF10	809.	12:28	2.96		
R-CF10	760.	14:40	2.96	.0	21.
F11	97.	12:33	.13		
PMPD25	30.	12:27	.13	.0	6.1
CF11	790.	14:40	3.09		
R-CF11	788.	15:33	3.09	.0	7.8
F12	173.	12:29	.21		
CF12	818.	15:07	3.31		
R-CF12	807.	16:57	3.31	.0	12.
F13	127.	12:56	.24		
CF13	829.	16:40	3.55		
R-CF13	818.	18:31	3.55	.0	12.
F14	289.	12:46	.47		
CF14	851.	18:21	4.02		
R-CF14	851.	18:24	4.02	.0	6.0
F15	194.	12:28	.24		
PMPD21	47.	12:19	.24	.0	13.
CF15	896.	18:10	4.25		
R-CF15	833.	20:29	4.25	.0	11.

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
F1	122.	12:55	.39			
R-CF1	121.	13:01	.39			
F2	67.	12:27	.14			
CF2	160.	12:57	.53			
R-CF2	151.	13:10	.53			
F3	75.	12:19	.13			
CF3	180.	13:06	.66			
F5	59.	12:21	.11			
CF5	206.	12:22	.76			
F4D	56.	13:01	18			
F4C	75.	12:52	.24			
F4A2	55.	12:53	.17			

F4A1	59.	12:46	.17		
RF4A1	45.	13:11	.17		
CF4A	98.	12:57	.34		
RF4A	90.	13:23	.34		
F4B	55.	13:03	.19		
CF4B	140.	13:14	.53		
F4B1	38.	12:36	.09		
RF4B1	35.	12:48	.09		
CF4B1	167.	13:10	.62		
RCF4B1	163.	13:29	.62		
CF4C	216.	13:22	.86		
RCF4C	201.	13:49	.86		
CF4D	239.	13:43	1.04		
R-CF4	228.	14:03	1.04		
CF35	375.	13:36	1.81		
R-CF35	369.	13:50	1.81	.0	3.4
F6	49.	12:21	.09		
CF6	381.	13:47	1.90		
R-CF6	377.	14:09	1.90	.0	2.4
F7	153.	12:29	.32		
CF7	434.	12:34	2.22		
R-CF7	425.	12:43	2.22	.0	2.1
F8	53.	12:33	.13		
CF8	472.	12:41	2.34		
R-CF8	461.	12:55	2.34	.0	2.8
F9	141.	12:21	.26		
CF9	535.	12:52	2.60		
R-CF9	523.	13:13	2.60	.0	1.7
F10	206.	12:20	.36		
CF10	606.	12:49	2.96		
R-CF10	594.	13:17	2.96	.0	13.
F11	65.	12:25	.13		
PMPD25	30.	12:41	.13	.0	3.2
CF11	624.	13:17	3.09		
R-CF11	608.	13:46	3.09	.0	4.2
F12	108.	12:26	.21		
CF12	643.	13:25	3.31		
R-CF12	618.	14:42	3.31	0	7.0
F13	77.	12:54	.24		
CF13	646.	14:37	3.55		
R-CF13	619.	16:08	3.55	0	5.2

F14	185	12:41	.47		
CF14	653.	15:55	4.02		
R-CF14	652.	16:06	4.02	.0	3 8
F15	130	12:21	.24		
PMPD21	47.	12:27	.24	.0	6 7
CF15	677	15:45	4.25		
R-CF15	676.	16:23	4.25	.0	4.3

Sacramento Hydrologic Calculator Report

May 4, 2007 12:03

Project Title: FLORIN CREEK
MORRISON CREEK STREAM GROUP - FLORIN CREEK BASIN - EXISTING CONDITIONS SACRAMENTO COUNTY (MAY 1996)

Method: Sacramento County HEC-1 method

Comments: STORM CENTERED FOR ENTIRE ELDER CREEK BASIN PLUS LAGUNA ABOVE CCTRR INFLOW HYDROGRAPHS FOR UNET MODEL (AUGUST 1996) FILENAME: FEX.INT

Date: 5/3/2006

Prepared by: JDH

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
F1	251.7	45	Basin "n"	-	Computed	-	Computed	-	Computed	-
F2	87.9	43	Basin "n"	-	Computed	-	Computed	-	Computed	-
F3	82.4	37	Basin "n"	-	Computed	-	Computed	-	Computed	-
F5	67.4	37	Basin "n"	-	Computed	-	Computed	-	Computed	-
F4D	116.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
F6	56.4	35	Basin "n"	-	Computed	-	Computed	-	Computed	-
F7	206.1	35	Basin "n"	-	Computed	-	Computed	-	Computed	-
F8	80	34	Basin "n"	-	Computed	-	Computed	-	Computed	-
F9	163.2	32	Basin "n"	-	Computed	-	Computed	-	Computed	-
F10	233	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
F11	83.8	27	Basin "n"	-	Computed	-	Computed	-	Computed	-
F12	137	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
F13	153	22	Basin "n"	-	Computed	-	Computed	-	Computed	-
F14	300.2	20	Basin "n"	-	Computed	-	Computed	-	Computed	-
F15	153	17	Basin "n"	-	Computed	-	Computed	-	Computed	-
F4A2	110.2	50	Basin "n"	-	Computed	-	Computed	-	Computed	-
F4A1	107.1	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
F4B	121.8	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
F4B1	60.5	51	Basin "n"	-	Computed	-	Computed	-	Computed	-
F4C	151.1	43	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
F1	4800.	2001.	0.0032	Undeveloped		0						0					0	0		192		
				Developed		8.3						6.5					31.5	13.4		0		
F2	3200.	1600.	0.0012	Undeveloped		0		0	0				0				0		0	15.8		
				Developed		0.2		20	29.8				12.1				0.1		9.8	0		
F3	2999.	1399.	0.0010	Undeveloped	0	0					0		0			0			0			
				Developed	0.2	0.1					60.8		15			0.4			5.8			
F5	3701.	1500.	0.0007	Undeveloped							0		0									
				Developed							67		0.5									
F4D	4050	3200	.0011	Undeveloped		0														72.4		
				Developed		44.6														0		
F6	4050.	2149.	0.0023	Undeveloped	0	0		0			0		0		0	0			0			
				Developed	13.6	0.2		4.9			19.5		4.9		1.9	9.5			1.9			
F7	3099.	1600.	0.0024	Undeveloped						46.7			0			46.1			16			
				Developed						73			24.3			0			0			
F8	2450.	1098.	0.0049	Undeveloped									0							62.1		
				Developed									17.9							0		
F9	2497.	1199.	0.0009	Undeveloped	0			0		24.3	0		0						14.7			
				Developed	21.1			10.9		32	13.4		46.7						0			
F10	4599.	2249.	0.0046	Undeveloped						0	0		0									
				Developed						37.8	30.1		165.1									
F11	4198.	2049.	0.0012	Undeveloped									0									
				Developed									83.8									
F12	3300.	1500.	0.0025	Undeveloped	0					0			0						42.2			
				Developed	48					14.1			32.6						0			
F13	3802.	1452.	0.0005	Undeveloped				0	0				0						103.7			
				Developed				21.1	8.3				19.8						0			
F14	6098.	2798.	0.0017	Undeveloped	0	0				0	0		0						87.7			
				Developed	101.8	39.7				2.6	17.3		51.2						0			
F15	3601.	1800.	0.0016	Undeveloped						0			0									
				Developed						8.3			144.6									
F4A2	4100	1800	0.0011	Undeveloped							0						0			70.5		
				Developed							31						8.7			0		
F4A1	3500	1760	.0010	Undeveloped							0						0			54.5		
				Developed							32.2						20.4			0		
				Undeveloped							0						0			99		

F4B	3900	1950	.00100	Developed							14.9						7.9			0		
F4B1	2300	950	.0031	Undeveloped													0		0	51.3		
				Developed													6.5		2.7	0		
F4C	3700	1300	.0017	Undeveloped		0			0		0						0			131.4		
				Developed		0.2			0.4		2						17.1			0		

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
F1	B																		
	C																		
	D		8.3						6.5					31.5	13.4		192		
F2	B																		
	C																		
	D		0.2		20	29.8				12.1				0.1		9.8	15.8		
F3	B																		
	C																		
	D	0.2	0.1					60.8		15			0.4			5.8			
F5	B																		
	C																		
	D							67		0.5									
F4D	B																		
	C																		
	D		44.6														72.4		
F6	B																		
	C																		
	D	13.6	0.2		4.9			19.5		4.9		1.9	9.5			1.9			
F7	B																		
	C																		
	D						119.7			24.3			46.1			16			
F8	B																		
	C																		
	D									17.9							62.1		
F9	B																		
	C																		
	D	21.1			10.9		56.3	13.4		46.7						14.7			
F10	B																		
	C																		
	D						37.8	30.1		165.1									
F11	B																		
	C																		
	D									83.8									

F12	B																		
	C																		
	D	48					14.1			32.6						42.2			
F13	B																		
	C																		
	D				21.1	8.3				19.8						103.7			
F14	B																		
	C																		
	D	101.8	39.7				2.6	17.3		51.2						87.7			
F15	B																		
	C																		
	D						8.3			144.6									
F4A2	B																		
	C																		
	D							31						8.7			70.5		
F4A1	B																		
	C																		
	D							32.2						20.4			54.5		
F4B	B																		
	C																		
	D							14.9						7.9			99		
F4B1	B																		
	C																		
	D													6.5		2.7	51.3		
F4C	B																		
	C																		
	D		0.2			0.4		2						17.1			131.4		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
R-CF1	F1	CF2	Pipe	2400	0.0012	5.5		0.015
R-CF2	CF2	CF3	Trapezoidal	3000	0.0010	8	1:1	0.045
RF4A1	F4A1	CF4A	Trapezoidal	3070	.00065	3	1:1	0.045
RF4A	CF4A	CF4B	Trapezoidal	3550	.0011	10	1:1	.045
RF4B1	F4B1	CF4B1	Trapezoidal	1760	.0016	7	1:1	.045
RCF4B1	CF4B1	CF4C	Trapezoidal	3700	.00170	10	2:1	.0450
RCF4C	CF4C	CF4D	Trapezoidal	04070	0.0008	8	2:1	0.045
R-CF4	CF4D	CF35	Trapezoidal	3100	.0007	12	2:1	.045

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No. Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-CF35	CF35	CF6	1	-1	Volume (acre-ft)	0	1	2	6	9	11	13	20	33	43	
					Flow (cfs)	0	100	300	500	600	700	800	900	1000	1100	
R-CF6	CF6	CF7	3	-1	Volume (acre-ft)	0	2	5	11	17	23	30	46	66	82	
					Flow (cfs)	0	100	300	500	600	700	800	900	1000	1100	
R-CF7	CF7	CF8	2	-1	Volume (acre-ft)	0	1	3	5	8	14	20	30	41	52	
					Flow (cfs)	0	100	300	500	600	700	800	900	1000	1100	
R-CF8	CF8	CF9	3	-1	Volume (acre-ft)	0	3	6	9	10	13	22	33	44	55	
					Flow (cfs)	0	100	300	500	600	700	800	900	1000	1100	
R-CF9	CF9	CF10	5	-1	Volume (acre-ft)	0	3	6	8	11	19	38	56	66	73	
					Flow (cfs)	0	100	300	500	600	700	800	900	1000	1100	
R-CF10	CF10	CF11	1	-1	Volume (acre-ft)	0	4	8	11	13	17	24	33	41	48	
					Flow (cfs)	0	100	300	500	600	700	800	900	1000	1100	
PMPD25	F11	CF11	1	-1	Volume (acre-ft)	0	2.84	10000								
					Flow (cfs)	0	30	30								
R-CF11	CF11	CF12	3	-1	Volume (acre-ft)	0	3	6	9	12	18	24	32	45	60	
					Flow (cfs)	0	100	300	500	600	700	800	900	1000	1100	
R-CF12	CF12	CF13	5	-1	Volume (acre-ft)	0	5	8	16	23	33	46	64	78	81	
					Flow (cfs)	0	100	225	350	475	600	725	850	975	1100	
R-CF13	CF13	CF14	5	-1	Volume (acre-ft)	0	3	5	7	10	23	42	63	77	84	
					Flow (cfs)	0	100	225	350	475	600	725	850	975	1100	
R-CF14	CF14	CF15	1	-1	Volume (acre-ft)	0	1	1.5	2	2.5	3	5	6	6.5	84	
					Flow (cfs)	0	100	225	350	475	600	725	850	975	1100	
PMPD21	F15	CF15	1	-1	Volume (acre-ft)	0	4.88	10000								

					Flow (cfs)	0	47	47								
R-CF15	CF15	-	5	-1	Volume (acre-ft)	0	5	9	12	15	18	24	62	541	887	
					Flow (cfs)	0	100	225	350	475	600	725	850	975	1100	

SacCalc Model Data

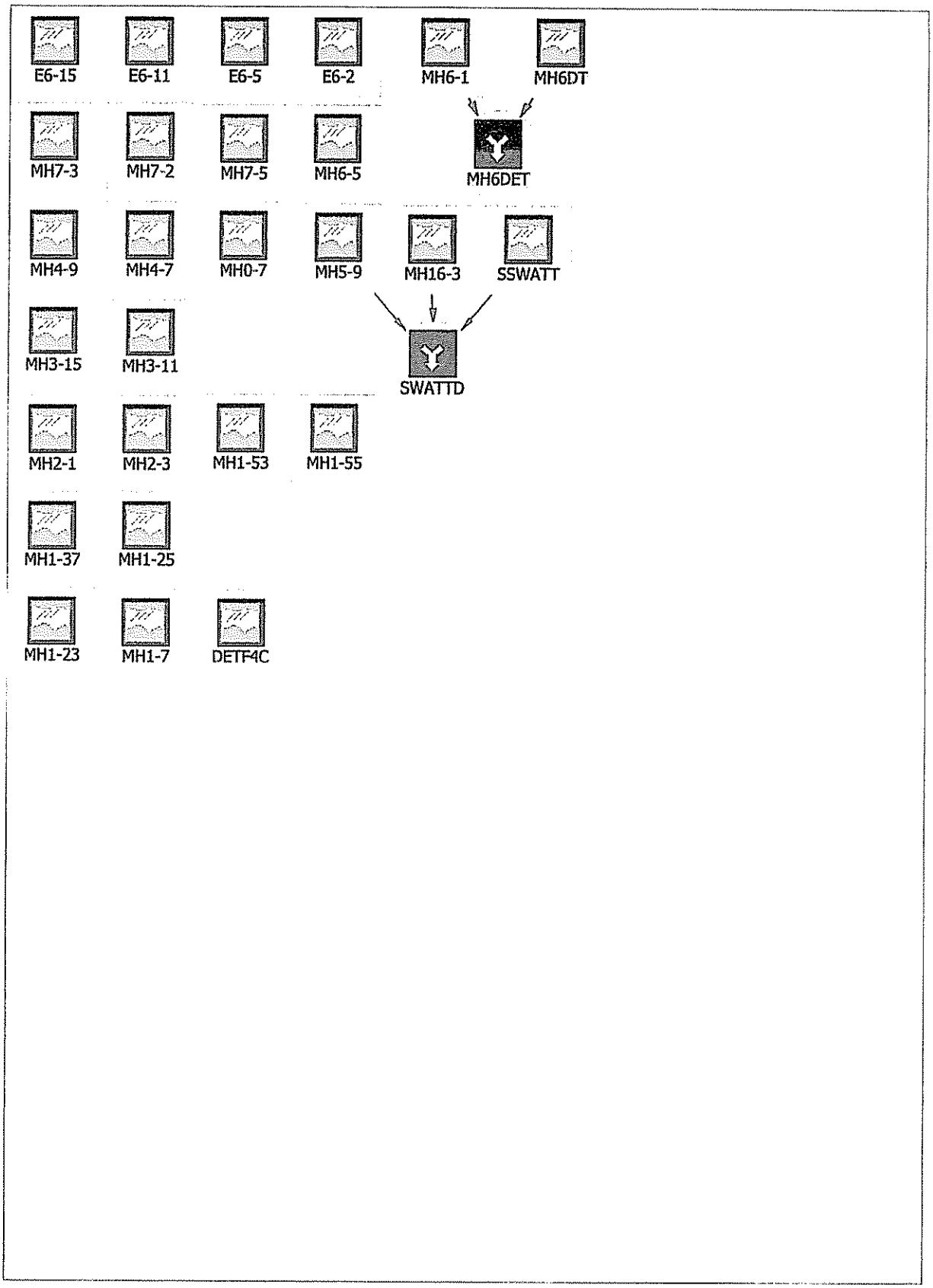
For

Florin Creek – Post Fvcp

Model Schematic Layout

Peak Flow Summary

Report


E6-15
E6-11
E6-5
E6-2
MH6-1
MH6DT
MH7-3
MH7-2
MH7-5
MH6-5
MH6DET
MH4-9
MH4-7
MH0-7
MH5-9
MH16-3
SSWATT
MH3-15
MH3-11
SWATTD
MH2-1
MH2-3
MH1-53
MH1-55
MH1-37
MH1-25
MH1-23
MH1-7
DETF4C

View HEC-1 output

Sacramento method results
(Project: Florin Vineyards)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
E6-15	56.	12:13	.04			
E6-11	54.	12:13	.04			
E6-5	78.	12:08	.05			
E6-2	68.	12:06	.04			
MH7-3	30.	12:16	.03			
MH7-2	68.	12:11	.05			
MH4-9	35.	12:16	.03			
MH4-7	27.	12:13	.02			
MH3-15	59.	12:13	.05			
MH3-11	41.	12:09	.03			
MH2-1	22.	12:06	.01			
MH2-3	49.	12:18	.05			
MH1-37	65.	12:11	.05			
MH1-25	39.	12:10	.03			
MH1-23	27.	12:07	.02			
MH1-7	49.	12:15	.04			
MH0-7	10.	12:26	.01			
MH5-9	56.	12:13	.05			
MH16-3	41.	12:15	.04			
SSWATT	18.	12:08	.01			
SWATTD	110.	12:13	.09			
DETF4C	24.	12:12	.02			
MH6-5	59.	12:16	.05			
MH7-5	74.	12:11	.06			
MH6DT	17.	12:05	.01			
MH6-1	2.9	12:05	.00			
MH6DET	20.	12:05	.01			
MH1-53	23.	12:08	.01			
MH1-55	35.	12:08	.02			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
E6-15	38.	12:09	.04			

E6-11	37.	12:10	.04
E6-5	52	12:06	.05
E6-2	44.	12:04	.04
MH7-3	21	12:11	.03
MH7-2	46.	12:08	.05
MH4-9	24.	12:12	.03
MH4-7	18.	12:09	.02
MH3-15	40.	12:10	.05
MH3-11	28.	12:07	.03
MH2-1	14.	12:05	.01
MH2-3	33.	12:13	.05
MH1-37	44.	12:08	.05
MH1-25	26.	12:07	.03
MH1-23	18.	12:05	.02
MH1-7	34.	12:11	.04
MH0-7	6.7	12:22	.01
MH5-9	38.	12:09	.05
MH16-3	28.	12:11	.04
SSWATT	12.	12:06	.01
SWATTD	75.	12:10	.09
DETF4C	16.	12:09	.02
MH6-5	41.	12:12	.05
MH7-5	50.	12:08	.06
MH6DT	11.	12:03	.01
MH6-1	1.9	12:03	.00
MH6DET	13.	12:03	.01
MH1-53	15.	12:06	.01
MH1-55	23.	12:05	.02

Sacramento Hydrologic Calculator Report

May 1, 2007 16:24

Project Title: Florin Vineyards
Comments: FLORIN CREEK NORTH PIPE SHEDS MODEL FOR XP-SWMM INPUT
Prepared by: Robin Hegedus
Method: Sacramento County HEC-1 method
Date: 1/10/2007

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
E6-15	28.1	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6-11	27.8	52	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6-5	32.1	52	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6-2	25.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH7-3	17	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH7-2	33.2	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH4-9	20.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH4-7	13.7	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH5-9	28.8	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH16-3	22.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH3-15	31.1	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH3-11	18.3	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH2-1	8.3	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH2-3	29.8	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-37	31.3	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-25	18.4	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-23	11.2	42	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-7	27.7	42	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH0-7	7.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
SSWATT	7.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH6DT	5.7	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
DETF4C	12.4	42	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH6-5	34	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH7-5	35.3	52	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH6-1	1	50	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-53	9.25	46	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-55	14.4	46	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
E6-15	1539	714	0.001	Undeveloped			0													0.8		
				Developed			27.4													0		
E6-11	1582	792	0.001	Undeveloped			0													0.6		
				Developed			27.2													0		
E6-5	1376	459	0.003	Undeveloped			0													0.5		
				Developed			31.6													0		
E6-2	1185	268	.002	Undeveloped			0						0									
				Developed			24.9						0.4									
MH7-3	1439	723	0.001	Undeveloped			0					0	0									
				Developed			0.3					9	7.8									
MH7-2	1483	684	0.004	Undeveloped								0	0									
				Developed								32.2	1									
MH4-9	1708	653	0.001	Undeveloped								0	0									
				Developed								1.6	18.8									
MH4-7	1331	730	0.002	Undeveloped								0	0									
				Developed								13.3	0.3									
MH5-9	1337	620	0.0015	Undeveloped								0	0									
				Developed								21.6	7.2									
MH16-3	2029	923	0.002	Undeveloped	0	0	0					0										
				Developed	0.1	7.5	1.1					13.8										
MH3-15	1565	727	0.0025	Undeveloped								0	0									
				Developed								15.9	15.2									
MH3-11	1087	571	0.0037	Undeveloped							0	0										
				Developed							6.1	12.2										
MH2-1	645	197	0.003	Undeveloped									0							0.6		
				Developed									7.7							0		
MH2-3	1711	796	0.001	Undeveloped								0	0							0.7		
				Developed								10.6	18.5							0		
MH1-37	1446	405	0.0014	Undeveloped				0			0	0	0									
				Developed				5.1			8.3	4.9	13.1									
MH1-25	1136	294	0.001	Undeveloped									0									
				Developed									18.4									
MH1-23	798	202	0.001	Undeveloped					0				0									
				Developed					0.9				10.3									
				Undeveloped			0		0				0							0		

MH1-7	1569	581	0.001	Developed			0.1		0.1				27.4							0.1		
MH0-7	2846	1324	0.001	Undeveloped	0							0								1.5		
				Developed	5.2							0.7								0		
SSWATT	670	287	0.001	Undeveloped	0							0										
				Developed	0.1							7.3										
MH6DT	540	210	0.005	Undeveloped									0									
				Developed									5.7									
DETF4C	1015	510	0.001	Undeveloped			0						0							0		
				Developed			0.1						12.2							0.2		
MH6-5	2174	948	0.003	Undeveloped			0						0									
				Developed			6.6						27.4									
MH7-5	1387	548	0.003	Undeveloped			0					0	0									
				Developed			0.6					24.7	10.1									
MH6-1	365	130	0.001	Undeveloped									0									
				Developed									1									
MH1-53	1084	319	0.002	Undeveloped	0						0	0										
				Developed	0.49						8.14	0.63										
MH1-55	839	302	0.001	Undeveloped	0						0	0										
				Developed	2.3						12	0.1										

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

F-89

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
E6-15	B																		
	C																		
	D			27.4													0.8		
E6-11	B																		
	C																		
	D			27.2													0.6		
E6-5	B																		
	C																		
	D			31.6													0.5		
E6-2	B																		
	C																		
	D			24.9						0.4									
MH7-3	B																		
	C																		
	D			0.3					9	7.8									
MH7-2	B																		
	C																		
	D								32.2	1									
MH4-9	B																		
	C																		
	D								1.6	18.8									
MH4-7	B																		
	C																		
	D								13.3	0.3									
MH5-9	B																		
	C																		
	D								21.6	7.2									
MH16-3	B																		
	C																		
	D	0.1	7.5	1.1					13.8										
MH3-15	B																		
	C																		
	D								15.9	15.2									

MH3-11	B																		
	C																		
	D							6.1	12.2										
MH2-1	B																		
	C																		
	D									7.7							0.6		
MH2-3	B																		
	C																		
	D								10.6	18.5							0.7		
MH1-37	B																		
	C																		
	D				5.1			8.3	4.9	13.1									
MH1-25	B																		
	C																		
	D									18.4									
MH1-23	B																		
	C																		
	D					0.9				10.3									
MH1-7	B																		
	C																		
	D			0.1		0.1				27.4							0.1		
MH0-7	B																		
	C																		
	D	5.2							0.7								1.5		
SSWATT	B																		
	C																		
	D	0.1							7.3										
MH6DT	B																		
	C																		
	D									5.7									
DETF4C	B																		
	C																		
	D			0.1						12.2							0.2		
MH6-5	B																		
	C																		
	D			6.6						27.4									
	B																		

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MH7-5	C																		
	D			0.6					24.7	10.1									
MH6-1	B																		
	C																		
	D									1									
MH1-53	B																		
	C																		
	D	0.49						8.14	0.63										
MH1-55	B																		
	C																		
	D	2.3						12	0.1										

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

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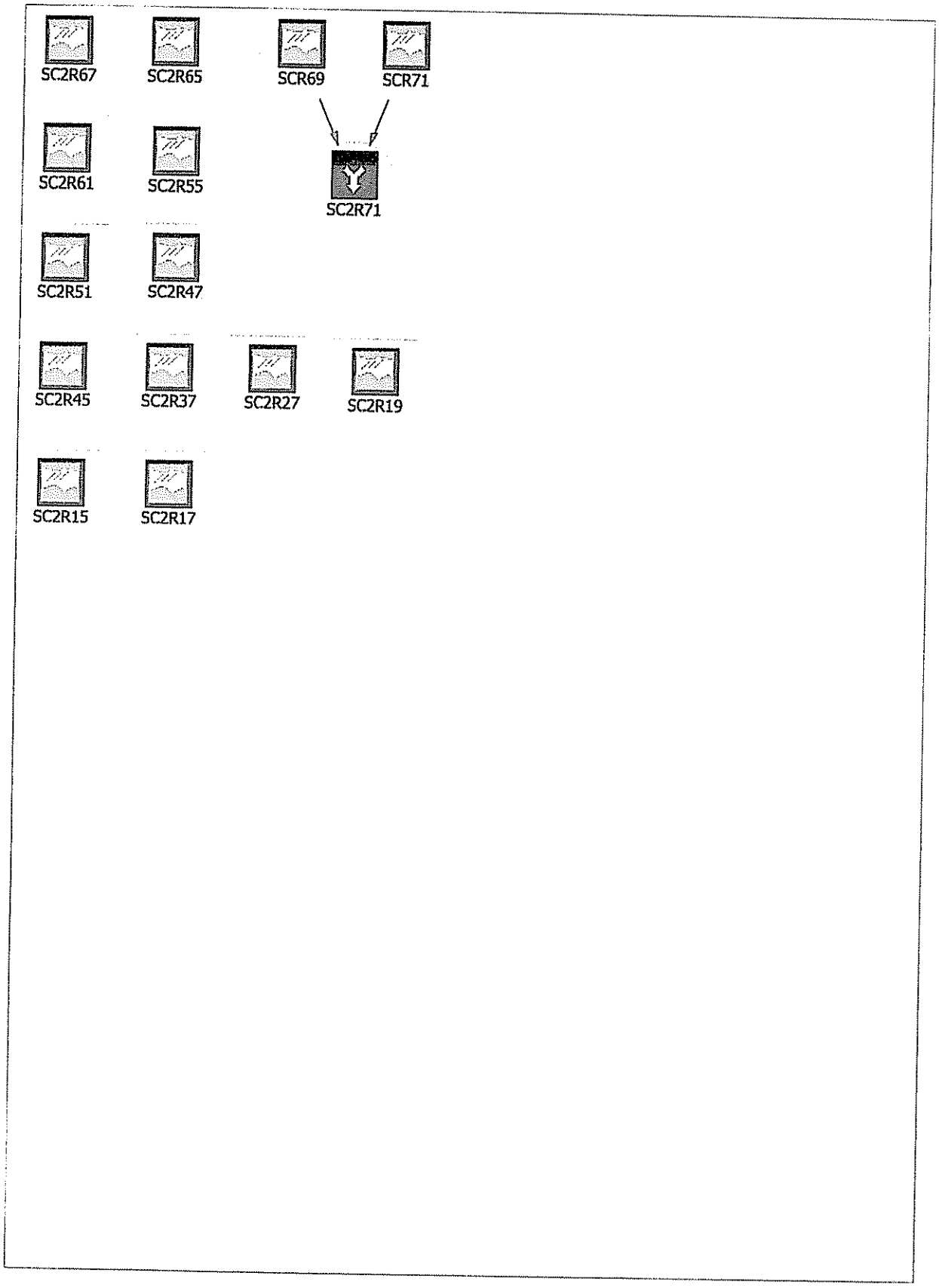
SC2R67
SC2R65
SCR69
SCR71
SC2R61
SC2R55
SC2R71
SC2R51
SC2R47
SC2R45
SC2R37
SC2R27
SC2R19
SC2R15
SC2R17

View HEC-1 output

Sacramento method results
(Project: Florin Vineyards)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
SC2R67	32.	12:11	.02			
SC2R65	41.	12:07	.03			
SC2R61	61.	12:05	.03			
SC2R55	23.	12:06	.01			
SC2R51	29.	12:09	.02			
SC2R47	22.	12:11	.02			
SC2R45	45.	12:14	.04			
SC2R37	41.	12:11	.03			
SC2R27	44.	12:12	.03			
SC2R19	39.	12:12	.03			
SC2R15	32.	12:07	.02			
SC2R17	14.	12:11	.01			
SCR69	36.	12:08	.02			
SCR71	37.	12:12	.03			
SC2R71	71.	12:10	.05			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
SC2R67	22.	12:08	.02			
SC2R65	27.	12:05	.03			
SC2R61	39.	12:03	.03			
SC2R55	15.	12:04	.01			
SC2R51	19.	12:07	.02			
SC2R47	15.	12:08	.02			
SC2R45	31.	12:10	.04			
SC2R37	27.	12:08	.03			
SC2R27	28.	12:10	.03			
SC2R19	25.	12:10	.03			
SC2R15	21	12:05	.02			
SC2R17	8.4	12:10	.01			
SCR69	24.	12:06	.02			
SCR71	25.	12:09	.03			
SC2R71	48.	12:08	.05			

Sacramento Hydrologic Calculator Report

May 1, 2007 16:28

Project Title: Florin Vineyards
Comments: SC2 sheds model for input to XP-SWMM
Prepared by: Robin Hegedus

Method: Sacramento County HEC-1 method
Date: 6/2/2006

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
SC2R67	15.4	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R65	16.4	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
SCR69	15.3	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R61	21.2	46	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R55	8.6	46	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R51	12.7	46	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R47	10.6	46	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R45	24	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R37	19.2	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R27	22.3	42	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R19	19.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R15	12.3	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
SC2R17	6.8	42	Basin "n"	-	Computed	-	Computed	-	Computed	-
SCR71	18.8	50	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
SC2R67	946	490	0.001	Undeveloped	0							0	0									
				Developed	1.8							0.2	13.3									
SC2R65	950	340	0.001	Undeveloped	0	0		0			0		0									
				Developed	1.8	5.8		8.7			0.1		0.1									
SCR69	828	403	0.001	Undeveloped				0			0											
				Developed				7.1			8.2											
SC2R61	975	150	0.001	Undeveloped	0	0		0			0											
				Developed	3.5	12.7		4.7			0.3											
SC2R55	701	352	0.001	Undeveloped	0	0		0														
				Developed	1.8	6.4		0.4														
SC2R51	1205	450	0.001	Undeveloped	0	0					0											
				Developed	0.9	7.1					4.7											
SC2R47	996	446	0.001	Undeveloped	0						0		0									
				Developed	0.5						4.5		5.6									
SC2R45	1378	776	0.0015	Undeveloped	0					0			0									
				Developed	2.4					4.4			17.2									
SC2R37	1126	366	0.001	Undeveloped	0				0	0			0						0	0		
				Developed	0.6				0.2	4.4			13.9						0.1	0.1		
SC2R27	1325	323	0.0015	Undeveloped	0	0			0				0							5.2		
				Developed	0.2	0.1			13.9				3.1							0		
SC2R19	1312	370	0.0015	Undeveloped				0	0				0						2.1	1.8		
				Developed				0.1	9.5				6.3						0	0		
SC2R15	804	300	0.001	Undeveloped				0											0			
				Developed				12.2											0.1			
SC2R17	700	325	0.001	Undeveloped									0						0			
				Developed									0.6						6.2			
SCR71	1425	727	0.003	Undeveloped								0										
				Developed								18.8										

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
SC2R67	B																		
	C																		
	D	1.8							0.2	13.3									
SC2R65	B																		
	C																		
	D	1.8	5.8		8.7			0.1		0.1									
SCR69	B																		
	C																		
	D				7.1			8.2											
SC2R61	B																		
	C																		
	D	3.5	12.7		4.7			0.3											
SC2R55	B																		
	C																		
	D	1.8	6.4		0.4														
SC2R51	B																		
	C																		
	D	0.9	7.1					4.7											
SC2R47	B																		
	C																		
	D	0.5						4.5		5.6									
SC2R45	B																		
	C																		
	D	2.4					4.4			17.2									
SC2R37	B																		
	C																		
	D	0.6				0.2	4.4			13.9						0.1	0.1		
SC2R27	B																		
	C																		
	D	0.2	0.1			13.9				3.1							5.2		
SC2R19	B																		
	C																		
	D				0.1	9.5				6.3						2.1	1.8		

SC2R15	B																		
	C																		
	D				12.2											0.1			
SC2R17	B																		
	C																		
	D									0.6						6.2			
SCR71	B																		
	C																		
	D								18.8										

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

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SacCalc Model Data

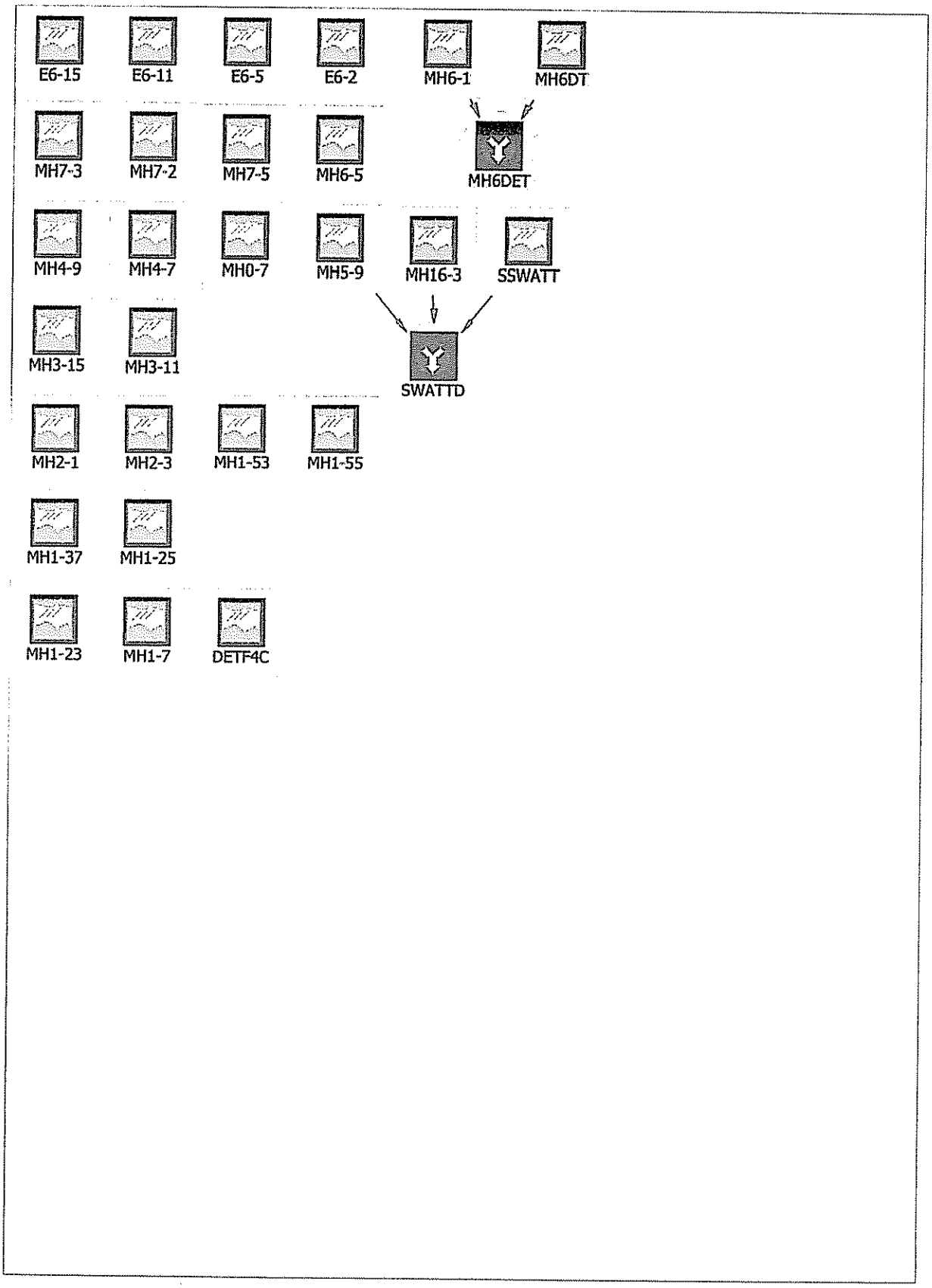
For

Florin Creek – High Density Alternative

Model Schematic Layout

Peak Flow Summary

Report


E6-15
E6-11
E6-5
E6-2
MH6-1
MH6DT
MH7-3
MH7-2
MH7-5
MH6-5
MH6DET
MH4-9
MH4-7
MH0-7
MH5-9
MH16-3
SSWATT
MH3-15
MH3-11
SWATTD
MH2-1
MH2-3
MH1-53
MH1-55
MH1-37
MH1-25
MH1-23
MH1-7
DETF4C

View HEC-1 output

Sacramento method results
(Project: Florin Vineyards High Density Residential Alternative)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
E6-15	56.	12:13	.04			
E6-11	54.	12:13	.04			
E6-5	78.	12:08	.05			
E6-2	68.	12:06	.04			
MH7-3	30.	12:16	.03			
MH7-2	68.	12:11	.05			
MH4-9	35.	12:16	.03			
MH4-7	27	12:13	.02			
MH3-15	59.	12:13	.05			
MH3-11	41.	12:09	.03			
MH2-1	22.	12:06	.01			
MH2-3	49.	12:18	.05			
MH1-37	65.	12:11	.05			
MH1-25	39.	12:10	.03			
MH1-23	27.	12:07	.02			
MH1-7	49.	12:15	.04			
MH0-7	10.	12:26	.01			
MH5-9	56.	12:13	.05			
MH16-3	42.	12:14	.04			
SSWATT	18.	12:08	.01			
SWATTD	112.	12:13	.09			
DETF4C	24.	12:12	.02			
MH6-5	59.	12:16	.05			
MH7-5	74.	12:11	.06			
MH6DT	17.	12:05	.01			
MH6-1	2.9	12:05	.00			
MH6DET	20.	12:05	.01			
MH1-53	24.	12:07	.01			
MH1-55	36.	12:07	.02			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
E6-15	38.	12:09	.04			

E6-11	37.	12:10	.04
E6-5	52.	12:06	.05
E6-2	44.	12:04	.04
MH7-3	21.	12:11	.03
MH7-2	46.	12:08	.05
MH4-9	24.	12:12	.03
MH4-7	18.	12:09	.02
MH3-15	40.	12:10	.05
MH3-11	28.	12:07	.03
MH2-1	14.	12:05	.01
MH2-3	33.	12:13	.05
MH1-37	44.	12:08	.05
MH1-25	26.	12:07	.03
MH1-23	18.	12:05	.02
MH1-7	34.	12:11	.04
MH0-7	6.7	12:22	.01
MH5-9	38.	12:09	.05
MH16-3	29.	12:10	.04
SSWATT	12.	12:06	.01
SWATTD	76.	12:09	.09
DETF4C	16.	12:09	.02
MH6-5	41.	12:12	.05
MH7-5	50.	12:08	.06
MH6DT	11.	12:03	.01
MH6-1	1.9	12:03	.00
MH6DET	13.	12:03	.01
MH1-53	16.	12:05	.01
MH1-55	24.	12:05	.02

Sacramento Hydrologic Calculator Report

May 4, 2007 12:08

Project Title: Florin Vineyards High Density Residential Alternative

Method: Sacramento County HEC-1 method

Comments: FLORIN CREEK NORTH PIPE SHEDS MODEL FOR XP-SWMM INPUT

Date: 5/3/2007

Prepared by: Robin Hegedus

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
E6-15	28.1	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6-11	27.8	52	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6-5	32.1	52	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6-2	25.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH7-3	17	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH7-2	33.2	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH4-9	20.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH4-7	13.7	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH5-9	28.8	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH16-3	22.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH3-15	31.1	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH3-11	18.3	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH2-1	8.3	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH2-3	29.8	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-37	31.3	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-25	18.4	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-23	11.2	42	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-7	27.7	42	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH0-7	7.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
SSWATT	7.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH6DT	5.7	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
DETF4C	12.4	42	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH6-5	34	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH7-5	35.3	52	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH6-1	1	50	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-53	9.25	46	Basin "n"	-	Computed	-	Computed	-	Computed	-
MH1-55	14.4	46	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
E6-15	1539	714	0.001	Undeveloped			0													0.8		
				Developed			27.4													0		
E6-11	1582	792	0.001	Undeveloped			0													0.6		
				Developed			27.2													0		
E6-5	1376	459	0.003	Undeveloped			0													0.5		
				Developed			31.6													0		
E6-2	1185	268	.002	Undeveloped			0						0									
				Developed			24.9						0.4									
MH7-3	1439	723	0.001	Undeveloped			0					0	0									
				Developed			0.3					9	7.8									
MH7-2	1483	684	0.004	Undeveloped								0	0									
				Developed								32.2	1									
MH4-9	1708	653	0.001	Undeveloped								0	0									
				Developed								1.6	18.8									
MH4-7	1331	730	0.002	Undeveloped								0	0									
				Developed								13.3	0.3									
MH5-9	1337	620	0.0015	Undeveloped				0				0	0									
				Developed				1.6				20	7.2									
MH16-3	2029	923	0.002	Undeveloped	0	0	0	0				0										
				Developed	0.1	7.5	1.1	5				8.8										
MH3-15	1565	727	0.0025	Undeveloped								0	0									
				Developed								15.9	15.2									
MH3-11	1087	571	0.0037	Undeveloped							0	0										
				Developed							6.1	12.2										
MH2-1	645	197	0.003	Undeveloped									0							0.6		
				Developed									7.7							0		
MH2-3	1711	796	0.001	Undeveloped								0	0							0.7		
				Developed								10.6	18.5							0		
MH1-37	1446	405	0.0014	Undeveloped				0			0	0	0									
				Developed				5.1			8.3	4.9	13.1									
MH1-25	1136	294	0.001	Undeveloped									0									
				Developed									18.4									
MH1-23	798	202	0.001	Undeveloped					0				0									
				Developed					0.9				10.3									
				Undeveloped			0		0				0							0		

MH1-7	1569	581	0.001	Developed			0.1		0.1				27.4							0.1		
MH0-7	2846	1324	0.001	Undeveloped	0							0								1.5		
				Developed	5.2							0.7								0		
SSWATT	670	287	0.001	Undeveloped	0							0										
				Developed	0.1							7.3										
MH6DT	540	210	0.005	Undeveloped									0									
				Developed									5.7									
DETF4C	1015	510	0.001	Undeveloped			0						0							0		
				Developed			0.1						12.2							0.2		
MH6-5	2174	948	0.003	Undeveloped			0						0									
				Developed			6.6						27.4									
MH7-5	1387	548	0.003	Undeveloped			0					0	0									
				Developed			0.6					24.7	10.1									
MH6-1	365	130	0.001	Undeveloped									0									
				Developed									1									
MH1-53	1084	319	0.002	Undeveloped	0			0			0	0										
				Developed	0.5			6.9			1.3	0.6										
MH1-55	839	302	0.001	Undeveloped	0			0			0	0										
				Developed	2.3			2.8			9.2	0.1										

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
E6-15	B																		
	C																		
	D			27.4													0.8		
E6-11	B																		
	C																		
	D			27.2													0.6		
E6-5	B																		
	C																		
	D			31.6													0.5		
E6-2	B																		
	C																		
	D			24.9						0.4									
MH7-3	B																		
	C																		
	D			0.3					9	7.8									
MH7-2	B																		
	C																		
	D								32.2	1									
MH4-9	B																		
	C																		
	D								1.6	18.8									
MH4-7	B																		
	C																		
	D								13.3	0.3									
MH5-9	B																		
	C																		
	D				1.6				20	7.2									
MH16-3	B																		
	C																		
	D	0.1	7.5	1.1	5				8.8										
MH3-15	B																		
	C																		
	D								15.9	15.2									

MH3-11	B																		
	C																		
	D							6.1	12.2										
MH2-1	B																		
	C																		
	D									7.7							0.6		
MH2-3	B																		
	C																		
	D								10.6	18.5							0.7		
MH1-37	B																		
	C																		
	D				5.1			8.3	4.9	13.1									
MH1-25	B																		
	C																		
	D									18.4									
MH1-23	B																		
	C																		
	D					0.9				10.3									
MH1-7	B																		
	C																		
	D			0.1		0.1				27.4							0.1		
MH0-7	B																		
	C																		
	D	5.2							0.7								1.5		
SSWATT	B																		
	C																		
	D	0.1							7.3										
MH6DT	B																		
	C																		
	D									5.7									
DETF4C	B																		
	C																		
	D			0.1						12.2							0.2		
MH6-5	B																		
	C																		
	D			6.6						27.4									
	B																		

MH7-5	C																		
	D			0.6					24.7	10.1									
MH6-1	B																		
	C																		
	D									1									
MH1-53	B																		
	C																		
	D	0.5			6.9			1.3	0.6										
MH1-55	B																		
	C																		
	D	2.3			2.8			9.2	0.1										

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

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SacCalc Model Data

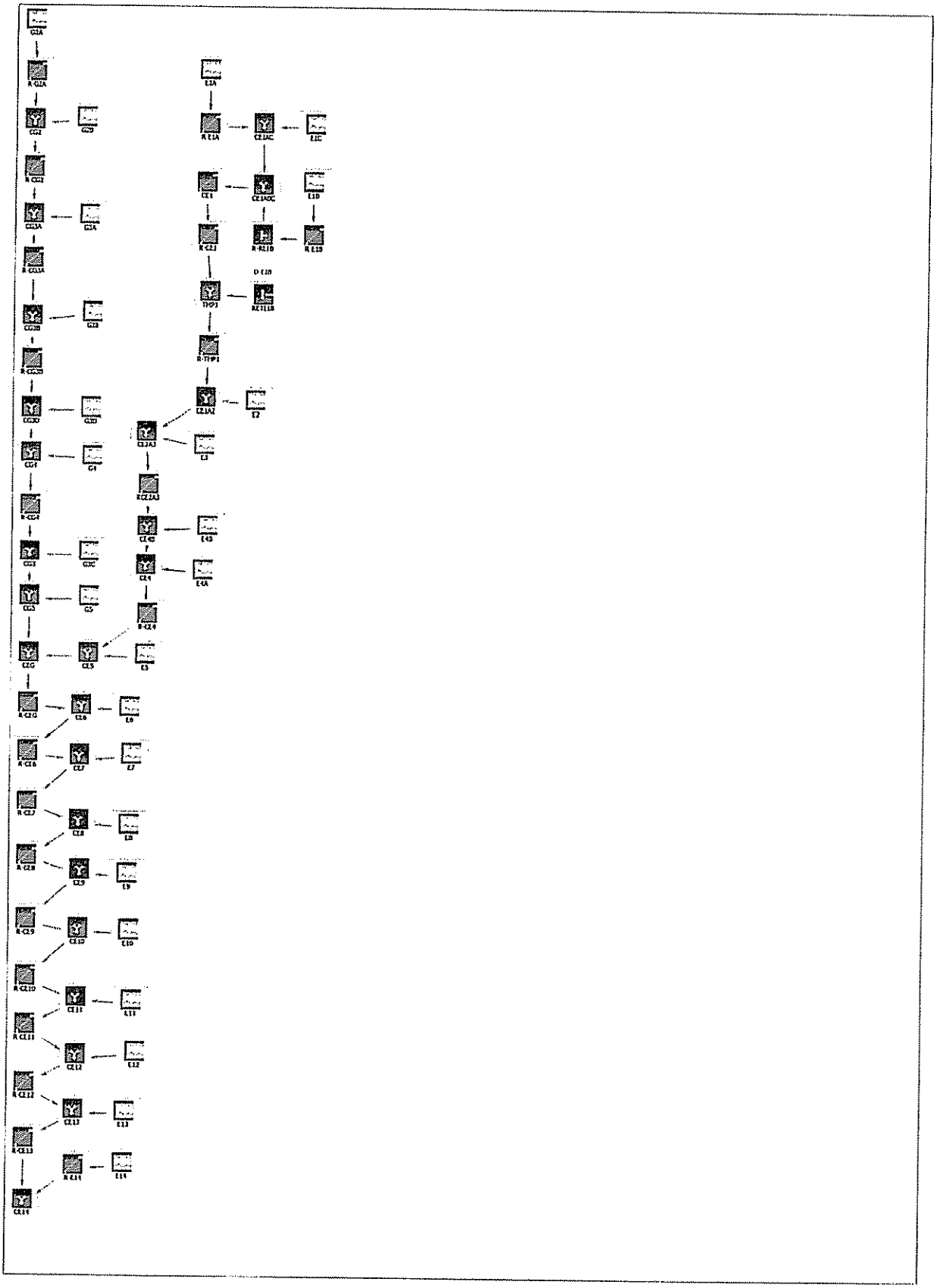
For

Elder and Gerber Creeks – Pre Fvcp

Model Schematic Layout

Peak Flow Summary

Report



View HEC-1 output

Sacramento method results
(Project: ELDER/GERBER CREEK BASINS - EXISTING CONDS.)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	375.	14:04	1.29			
R-G2A	270.	17:03	1.29	.0	14.	
G2B	238.	13:22	.63			
CG2	328.	16:38	1.92			
R-CG2	327.	17:07	1.92	0	2.5	
G3A	286.	13:29	.80			
CG3A	551.	13:38	2.71			
R-CG3A	475.	15:09	2.71	.0	7.5	
G3B	74.	12:47	.13			
CG3B	494.	15:07	2.85			
R-CG3B	494.	15:19	2.85	.0	1.8	
G3D	189.	13:45	.57			
CG3D	609.	15:04	3.42			
G4	145.	13:15	.35			
CG4	674.	14:54	3.78			
R-CG4	669.	15:32	3.78	0	5.1	
G3C	134.	12:45	.24			
CG3	698.	15:26	4.01			
G5	156.	13:19	.39			
CG5	764.	15:13	4.41			
E2	264.	14:19	.97			
E1A	456.	13:42	1.38			
R-E1A	379.	15:19	1.38	.0	7.8	
E1C	477.	13:31	1.34			
CE1AC	705.	13:44	2.73			
E1B	351.	14:32	1.38			
R-E1B	276.	15:30	1.38			
R-RE1B	40.	14:31	1.38			114.54
CE1ABC	745.	13:44	4.10			
CE1	637.	17:01	4.10	0	20.	
R-CE1	635.	17:26	4.10	.0	5.3	
RETE1B	236.	15:30	.00			
TMP1	826.	16:53	4.10			
R-TMP1	753.	19:42	4.10	.0	36.	
CE1A2	821.	19:32	5.08			

E3	252.	13:40	.75		
CE2A3	862.	19:22	5.83		
RCE2A3	843.	20:43	5.83	.0	24.
E4B	310.	13:54	.98		
CE4B	889.	20:35	6.81		
E4A	244.	13:36	.70		
CE4	914.	20:30	7.51		
R-CE4	875.	22:43	7.51	.0	31.
E5	125.	13:20	.32		
CE5	878.	22:42	7.83		
CEG	1421.	16:13	12.24		
R-CEG	1420.	16:29	12.24	.0	14
E6	147.	12:36	.22		
CE6	1434.	16:27	12.46		
R-CE6	1434.	17:21	12.46	.0	.0
E7	351.	12:57	.70		
CE7	1491.	17:17	13.17		
R-CE7	1489.	17:34	13.17	.0	5.6
E8	170.	12:34	.25		
CE8	1506.	17:33	13.41		
R-CE8	1505.	17:46	13.41	.0	8.3
E9	310.	12:33	.44		
CE9	1532.	17:46	13.85		
R-CE9	1532.	17:53	13.85	.0	4.6
E10	229.	12:27	29		
CE10	1551.	17:53	14.14		
R-CE10	1550.	17:56	14.14	.0	4.6
E11	201.	12:23	.23		
CE11	1565.	17:56	14.37		
R-CE11	1565.	18:04	14.37	.0	4.5
E12	301.	12:34	.43		
CE12	1594.	18:03	14.80		
R-CE12	1594.	18:10	14.80	0	4.6
E13	124.	12:26	.15		
CE13	1603.	18:09	14.96		
R-CE13	1603.	18:20	14.96	.0	5.6
E14	808	12:46	1.39		
R-E14	174.	15:57	1.39	.0	84.
CE14	1776.	18:19	16.35		

(10-year, 1-day rainfall)

	Time of	Basin	Peak	Peak

ID	Peak flow (cfs)	peak (hours)	area (sq. mi)	stage (feet)	storage (ac-ft)	Diversion volume (ac-ft)
G2A	218.	14:07	1.29			
R-G2A	159.	17:03	1.29	.0	8.4	
G2B	134.	13:23	.63			
CG2	188.	16:43	1.92			
R-CG2	187.	17:08	1.92	.0	1.5	
G3A	162.	13:31	.80			
CG3A	308.	13:40	2.71			
R-CG3A	283.	14:43	2.71	.0	3.5	
G3B	41.	12:47	.13			
CG3B	296.	14:41	2.85			
R-CG3B	295.	14:59	2.85	.0	1.0	
G3D	111.	13:47	.57			
CG3D	374.	14:48	3.42			
G4	83.	13:16	.35			
CG4	418.	14:39	3.78			
R-CG4	416.	15:05	3.78	.0	2.8	
G3C	73.	12:45	.24			
CG3	435.	15:01	4.01			
G5	89.	13:21	.39			
CG5	482.	14:24	4.41			
E2	155.	14:21	.97			
E1A	261.	13:44	1.38			
R-E1A	235.	14:51	1.38	.0	4.7	
E1C	271.	13:33	1.34			
CE1AC	424.	14:17	2.73			
E1B	206.	14:34	1.38			
R-E1B	157.	15:48	1.38			
R-RE1B	40.	14:51	1.38			48.72
CE1ABC	464.	14:17	4.10			
CE1	386.	17:03	4.10	.0	11.	
R-CE1	386.	17:30	4.10	.0	3.5	
RETE1B	117.	15:48	.00			
TMP1	484.	16:54	4.10			
R-TMP1	439.	19:53	4.10	.0	22.	
CE1A2	474.	19:43	5.08			
E3	144.	13:42	.75			
CE2A3	493.	19:35	5.83			
RCE2A3	473.	21:29	5.83	.0	13.	
E4B	184.	13:54	.98			

CE4B	493.	21:22	6.81		
E4A	141.	13:37	.70		
CE4	503.	21:17	7.51		
R-CE4	485.	23:27	7.51	.0	16.
E5	71.	13:21	.32		
CE5	486.	23:26	7.83		
CEG	844.	15:24	12.24		
R-CEG	838.	16:00	12.24	.0	9.6
E6	79.	12:35	.22		
CE6	847.	15:58	12.46		
R-CE6	847.	16:33	12.46	.0	.0
E7	205.	12:54	.70		
CE7	888.	16:28	13.17		
R-CE7	888.	16:37	13.17	.0	3.8
E8	103.	12:28	.25		
CE8	899.	16:37	13.41		
R-CE8	897.	16:54	13.41	.0	5.9
E9	183.	12:28	.44		
CE9	915.	16:53	13.85		
R-CE9	915.	16:57	13.85	.0	3.1
E10	141.	12:21	.29		
CE10	927.	16:57	14.14		
R-CE10	927.	17:04	14.14	.0	3.1
E11	121.	12:18	.23		
CE11	937.	17:04	14.37		
R-CE11	936.	17:15	14.37	.0	3.2
E12	180.	12:28	.43		
CE12	956.	17:15	14.80		
R-CE12	955.	17:26	14.80	.0	3.3
E13	71.	12:23	.15		
CE13	962.	17:26	14.96		
R-CE13	961.	17:37	14.96	.0	3.8
E14	515.	12:37	1.39		
R-E14	171.	14:26	1.39	.0	39.
CE14	1131.	17:36	16.35		

Sacramento Hydrologic Calculator Report

May 4, 2007 11:36

Project Title: ELDER/GERBER CREEK BASINS - EXISTING CONDS. Method: Sacramento County HEC-1 method
Comments: EG24E100 ELDER/GERBER CREEK BASINS - EXISTING CONDS. Date: 4/21/2005
Prepared by: BAT

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
G2A	825	85	Basin "n"	-	Computed	-	Computed	-	Computed	-
G2B	403	75	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A	509.1	70	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3B	86.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3D	367.9	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
G4	226.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G5	252.5	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1A	885.18	125	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1C	860.69	100	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1B	881	0	Basin "n"	-	Computed	-	Computed	-	Computed	-
E2	623.5	65	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3	483	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B	628	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4A	447.6	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E5	203.2	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7	449.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E8	156.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E9	280.71	36	Basin "n"	-	Computed	-	Computed	-	Computed	-
E10	185.71	32	Basin "n"	-	Computed	-	Computed	-	Computed	-
E11	147.52	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
E12	276.48	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
E13	97.05	24	Basin "n"	-	Computed	-	Computed	-	Computed	-
E14	892.73	20	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3C	151.6	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6	143.3	45	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	14399.	5998.	.0031	Undeveloped													0	0	0	709.9		
				Developed													29.1	78.8	7.2	0		
G2B	8369.	4752.	.0032	Undeveloped													0	0	0	226.7		
				Developed													39.2	1.4	135.7	0		
G3A	6399.	4599.	.0028	Undeveloped												0	0	0		447.4		
				Developed												3.7	38.8	19.2		0		
G3B	3152.	2001.	.0026	Undeveloped												0	0	0		58		
				Developed												7.6	19.7	0.9		0		
G3D	9900.	5502.	.0016	Undeveloped		0										0	0		0	242.2		
				Developed		5.8										7.5	89.8		22.6	0		
G4	6199.	2999.	.0017	Undeveloped	0												0	0	0	158.8		
				Developed	2												33.5	23.4	8.6	0		
G5	5940.	3300.	.0015	Undeveloped													0		0	183.4		
				Developed													34		35.1	0		
E1A	10798.	5998.	.0050	Undeveloped													0	0	0	725.45		
				Developed													65.15	1.96	92.61	0		
E1C	9900.	5000.	.005	Undeveloped			0										0	0	0	665.16		
				Developed			6.61										43.89	19.21	125.82	0		
E1B	15750.	8501.	.0029	Undeveloped													0			834.98		
				Developed													46.02			0		
E2	14509.	7202.	.0013	Undeveloped			0				0						0	0		430.5		
				Developed			11.6				3.9						23.7	153.8		0		
E3	9631.	5000.	.0023	Undeveloped												1	0	0	0	350.7		
				Developed												0	14.7	103.7	13	0		
E4B	8100.	5998.	.0012	Undeveloped							0				0		0		0	497.7		
				Developed							92.9				11.3		25.1		0.9	0		
E4A	7302.	4298.	.0015	Undeveloped												0	0	0	0	348.9		
				Developed												21.5	36.3	19.8	21.1	0		
E5	5760.	3099.	.0014	Undeveloped												0	0	0	0	158.4		
				Developed												4.2	15.3	24.3	0.9	0		
E7	5518.	2519.	.0012	Undeveloped		0			0		0		0				0	0	0	186.2		
				Developed		4.5			78.6		4.6		107.7				23	31.3	14.1	0		
E8	4800.	2408.	.0014	Undeveloped		0	0	0	0				0		0		0	0				
				Developed		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
				Undeveloped		0				0	0		0						0	1.27		

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E9	4604.	2497.	.0025	Developed		13.95				66.54	7.38		104.18						87.39	0		
E10	4050.	1843.	.0024	Undeveloped		0		0			0	0	0						0	0.22		
				Developed		12.06		8.85			10.7	17.38	128.57						7.92	0		
E11	3400.	1399.	.0024	Undeveloped		0				0	0	0	0						0	0.09		
				Developed		20.62				0.45	32.65	0.19	77.15						16.37	0		
E12	4599.	2339.	.0012	Undeveloped		0				0	0	0	0						0	1.23		
				Developed		31.57				63.87	83.06	3.16	22.45						71.13	0		
E13	3200.	1800.	.0022	Undeveloped		0				0		0	0						0	0.02		
				Developed		23.37				19.11		10.63	0.2						43.73	0		
E14	9002.	4499.	.0024	Undeveloped		0		0		0		0	0						0	12.18		
				Developed		229.5		71.89		38.63		90.94	397.71						51.88	0		
G3C	3332	1299	0.0049	Undeveloped																151.61		
				Developed																0		
E6	3802	1800	.0035	Undeveloped														0	0	34.4		
				Developed														64.2	44.7	0		

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

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Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	B																		
	C													5.1	34.4	1	89.3		
	D													24	44.4	6.2	620.6		
G2B	B																		
	C													28.4	1.4	97.6	88.9		
	D													10.8		38.2	137.8		
G3A	B																		
	C												2.4	23.1	17		163.9		
	D												1.3	15.7	2.2		283.5		
G3B	B																		
	C													2.5			0.2		
	D												7.6	17.2	0.9		57.9		
G3D	B																		
	C													1.9			0.9		
	D		5.8										7.5	87.9		22.6	241.4		
G4	B																		
	C																		
	D	2												33.5	23.4	8.6	158.8		
G5	B																		
	C																		
	D													34		35.1	183.4		
E1A	B																0.6		
	C													2.2	1.8	80	179.2		
	D													62.9	0.2	12.6	545.7		
E1C	B															1.3	21.9		
	C			3.3										15.6	19.2	7.9	190.3		
	D			3.3										28.3		116.6	452.9		
E1B	B																		
	C													2.8			81.5		
	D													43.2			753.4		
E2	B																		
	C													14.8			121.6		
	D			11.6				3.9						8.9	153.8		308.9		

E3	B																		
	C												0.7	1.3	18.7	12.7	121.3		
	D												0.3	13.4	84.9	0.2	229.4		
E4B	B																		
	C											7.5					0.2		
	D							92.9				3.7		25.1		0.9	497.5		
E4A	B																		
	C												1.8		1.6		6.4		
	D												19.7	36.3	18.1	21.1	342.5		
E5	B																		
	C																		
	D												4.2	15.3	24.3	0.9	158.4		
E7	B																		
	C																		
	D		4.5			78.6		4.6		107.7				23	31.3	14.1	186.2		
E8	B																		
	C																		
	D		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	B																		
	C																		
	D		14				66.5	7.4		104.2						87.4	1.3		
E10	B																		
	C																		
	D		12.1		8.8			10.7	17.4	128.6						7.9	0.2		
E11	B																		
	C																		
	D		20.6				0.5	32.7	0.2	77.2						16.4	0.1		
E12	B																		
	C																		
	D		31.6				63.9	83.1	3.2	22.5						71.1	1.2		
E13	B																		
	C																		
	D		23.4				19.1		10.6	0.2						43.7			
E14	B																		
	C																		
	D		229.5		71.9		38.6		90.9	397.7						51.9	12.2		
	B																		

G3C	C																		
	D																151.6		
E6	B																		
	C																		
	D														64.2	44.7	34.4		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum-Cunge 8-Point Cross Section

Routing ID	Route From	Route To	Channel Length (ft)	Slope (ft/ft)	Cross Section Geometry								
						Left OB 1	Left OB 2	Left Bank	Channel Point 1	Channel Point 2	Right Bank	Right OB 1	Right OB 2
R-E1B	E1B	R-RE1B	4000	.0003	Station	0	50	100	104	108	116	166	216
					Elevation	3.7	3	1.2	.6	.4	1.5	3.7	5.5
					Mannings "n"	.06			.035		.06		

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No. Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-G2A	G2A	CG2	5	0	Volume (acre-ft)	0	15.2	27.7	51.6	76	100.8	122.7	145.4	169	191.8	221.6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG2	CG2	CG3A	5	0	Volume (acre-ft)	0	2.5	4.5	7.9	11.3	15.2	20.7	24	26	28.1	30
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3A	CG3A	CG3B	5	0	Volume (acre-ft)	0	1.9	4.4	10.9	18.9	28.4	40.6	50.6	57.2	63.3	68.6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3B	CG3B	CG3D	5	0	Volume (acre-ft)	0	0.8	1.3	2.8	5.3	7.6	9.2	11	13.1	15.3	18
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG4	CG4	CG3	5	0	Volume (acre-ft)	0	2.1	3.8	7	10	13.4	17.1	21.4	27	34.1	41.5
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-E1A	E1A	CE1AC	5	0	Volume (acre-ft)	0	11.2	29.2	34.5	42.4	60.3	77.5	93.3	116.1	141.6	171.8
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
CE1	CE1ABC	R-CE1	5	0	Volume (acre-ft)	0	7.7	35.6	45	60.3	68.5	91.3	115.9	141.2	166.4	190.9
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE1	CE1	TMP1	5	0	Volume (acre-ft)	0	5.1	14.2	16.2	18.1	21.7	25.1	28.5	31.7	34.9	41
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
RCE2A3	CE2A3	CE4B	5	0	Volume (acre-ft)	0	7.6	39.9	47.6	55.2	71.4	87.5	102.9	115.6	126.3	136.2
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE4	CE4	CE5	5	0	Volume (acre-ft)	0	13.1	44.1	53.5	63.7	83.6	102.7	121.1	139.7	158.4	177.7
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CEG	CEG	CE6	5	0	Volume (acre-ft)	0	2.8	16.8	31.8	46.4	56.1	62.3	67.1	71.5	75.6	79.5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE6	CE6	CE7	4451.04	0	Volume (acre-ft)	0	5.2	15.4	22.9	31.3	40.9	51.7	64.7	79.7	94.1	110.7

					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE7	CE7	CE8	5	0	Volume (acre-ft)	0	6.1	12.4	15.6	17.9	20.5	23	25.9	30.5	36.4	64.5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE8	CE8	CE9	5	0	Volume (acre-ft)	0	7.3	17.3	22.6	27.3	31.7	35.8	39.7	43.2	47.2	56.2
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE9	CE9	CE10	4	0	Volume (acre-ft)	0	3	7	10	12	13	15	17	19	20	23
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE10	CE10	CE11	3	0	Volume (acre-ft)	0	2	5	7	8	10	11	13	14	16	17
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE11	CE11	CE12	5	0	Volume (acre-ft)	0	4	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE12	CE12	CE13	5	0	Volume (acre-ft)	0	6	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE13	CE13	CE14	5	0	Volume (acre-ft)	0	8.6	13.7	18.2	22.4	26.4	30.8	34.6	39	64	
					Flow (cfs)	0	300	600	900	1200	1500	1800	2100	2400	2700	
R-E14	E14	CE14	1	0	Volume (acre-ft)	0	2.35	4.71	7.04	100						
					Flow (cfs)	0	56	113	169	175						
R-TMP1	TMP1	CE1A2	5	0	Volume (acre-ft)	0	22.8	74.4	86.6	98.7	122.8	146.6	169.7	193.5	216.8	239.1
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000

SacCalc Model Data

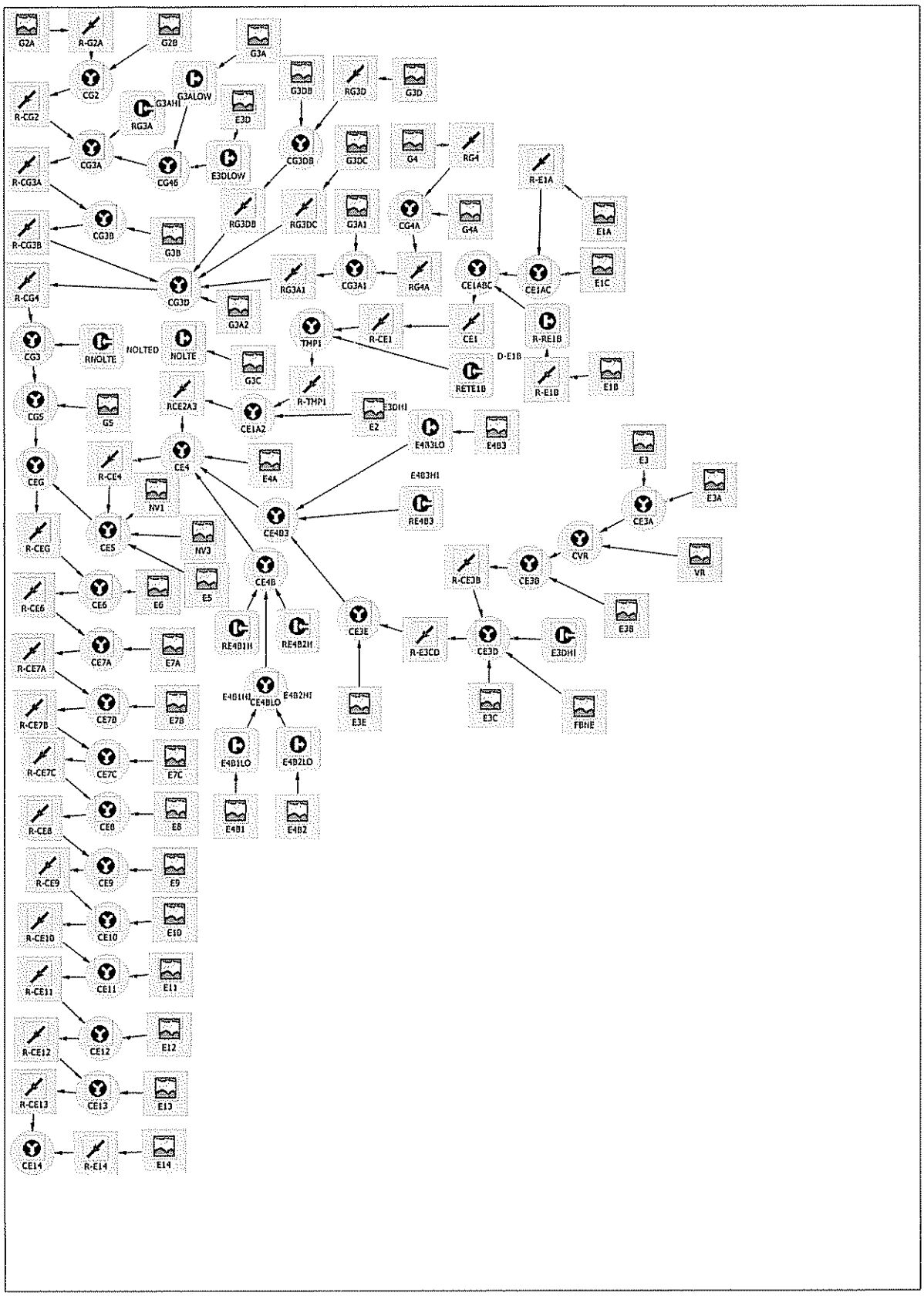
For

Elder and Gerber Creeks – Post Fvcp

Model Schematic Layout

Peak Flow Summary

Report


G2A
R-G2A
G2B
G3A
CG2
G3ALOW
G3AHI
RG3A
G3DB
RG3D
G3D
R-CG2
E3D
CG3A
CG46
E3DLOW
CG3DB
G3DC
G4
RG4
R-CG3A
R-E1A
RG3DB
RG3DC
G3A1
CG4A
G4A
E1A
R-CG3B
CG3B
G3B
RG3A1
CG3A1
RG4A
CE1ABC
CE1AC
E1C
R-CG4
CG3D
G3A2
TMP1
R-CE1
CE1
R-RE1B
CG3
RHOLTE
NOLTED
NOLTE
G3C
RETE1B
D-E1B
R-E1B
E1B
CG5
G5
RCE2A3
CE1A2
R-TMP1
E3DHI
E2
E4B3LO
E4B3
CEG
R-CE4
CE4
E4A
E3
E3A
NV1
E4B3HI
RE4B3
CE4B3
CE3A
R-CEG
CE5
NV3
CVR
VR
CE4B
R-CE3B
CE3B
R-CE6
CE6
E6
E5
E3B
RE4B1H
RE4B2H
CE3E
R-E3CD
CE3D
E3DHI
R-CE7A
CE7A
E7A
E4B1HI
CE4BLO
E4B2HI
E3E
E3C
FBHE
R-CE7B
CE7B
E7B
R-CE7C
CE7C
E7C
E4B1LO
E4B2LO
R-CE8
CE8
E8
E4B1
E4B2
R-CE9
CE9
E9
R-CE10
CE10
E10
R-CE11
CE11
E11
R-CE12
CE12
E12
R-CE13
CE13
E13
CE14
R-E14
E14

View HEC-1 output

Sacramento method results
(Project: ELDER/GERBER CREEK BASINS - PostFVCP)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G3C	178.	12:40	.28			
NOLTE	104.	12:17	.28			3.29
E8	169.	12:34	.25			
G2A	375.	14:04	1.29			
R-G2A	270.	17:03	1.29	0	14.	
G2B	347.	12:50	.65			
CG2	383.	12:50	1.93			
R-CG2	354.	13:19	1.93	.0	2.7	
G3A	426.	12:50	.80			
G3ALOW	62.	12:25	.80			54.03
E3D	80.	12:20	.09			
E3DLOW	5.0	12:12	.09			7.15
CG46	67.	12:25	.88			
RG3A	364.	12:50	.00			
CG3A	715.	12:57	2.82			
R-CG3A	582.	14:18	2.82	.0	9.8	
G3B	116.	12:19	.12			
CG3B	600.	14:17	2.94			
R-CG3B	597.	14:31	2.94	.0	2.2	
G3A1	135.	12:33	.19			
G4A	149.	12:27	.19			
G4	116.	12:28	.15			
RG4	98.	12:46	.15			
CG4A	218.	12:32	.34			
RG4A	203.	12:42	.34			
CG3A1	332.	12:36	.53			
RG3A1	329.	12:38	.53			
G3DC	54.	12:06	.03			
RG3DC	54.	12:07	.03			
G3DB	77.	12:17	.08			
G3D	147.	12:42	.24			
RG3D	118.	13:02	.24			
CG3DB	145.	12:56	.32			
RG3DB	144.	13:04	.32			
G3A2	19.	12:32	.03			
CG3D	781.	14:19	3.85			
R-CG4	761.	15:05	3.85	.0	6.3	
RNOLTE	74.	12:40	.00			

CG3	761.	15:05	3.85			
G5	159.	13:00	.33			
CG5	841.	13:11	4.18			
E2	292.	14:15	1.02			
E1A	455.	13:42	1.38			
R-E1A	379.	15:19	1.38	.0	7.8	
E1C	480.	13:30	1.34			
CE1AC	705.	13:43	2.73			
E1B	351.	14:32	1.38			
R-E1B	276.	15:30	1.38			
R-RE1B	81.	15:29	1.38			76.60
CE1ABC	786.	13:43	4.10			
CE1	672.	17:06	4.10	.0	22.	
R-CE1	670.	17:31	4.10	.0	5.5	
RETE1B	195.	15:30	.00			
TMP1	815.	17:01	4.10			
R-TMP1	745.	19:50	4.10	.0	36.	
CE1A2	823.	19:39	5.12			
RCE2A3	801.	21:08	5.12	.0	23.	
E3E	82.	12:27	.10			
E3C	130.	12:17	.13			
E3	100.	13:03	.22			
E3A	42.	12:50	.08			
CE3A	139.	12:58	.30			
VR	43.	12:09	.03			
CVR	147.	12:57	.33			
E3B	27.	12:10	.02			
CE3B	153	12:57	.36			
R-CE3B	151.	13:10	.36			
FBNE	85.	12:12	.07			
E3DHI	75.	12:20	.00			
CE3D	366.	12:18	.55			
R-E3CD	316.	12:38	.55			
CE3E	387.	12:35	.66			
E4B3	123.	12:49	.22			
E4B3LO	59.	12:44	.22			4.31
RE4B3	64.	12:49	.00			
CE4B3	496.	12:38	.87			
E4A	327.	12:54	.62			
E4B1	177.	12:27	.22			
E4B1LO	50.	12:23	.22			7.30
E4B2	267.	12:53	.49			
E4B2LO	151.	12:21	.49			7.30
CE4BLO	201.	12:21	.71			

RE4B1H	127.	12:27	.00		
RE4B2H	116.	12:53	.00		
CE4B	378.	12:45	.71		
CE4	1272.	12:46	7.33		
R-CE4	845.	15:13	7.33	.0	30.
E5	194.	12:38	.30		
NV1	89.	12:35	.13		
NV3	43.	12:21	.05		
CE5	913.	15:08	7.81		
CEG	1731.	15:05	11.99		
R-CEG	1728.	15:20	11.99	.0	15.
E6	230.	12:34	.33		
CE6	1773.	15:18	12.32		
R-CE6	1741.	16:07	12.32	.0	18.
E7A	163.	12:31	.22		
CE7A	1760.	16:05	12.54		
R-CE7A	1755.	16:26	12.54	0	7.0
E7B	162.	12:37	.25		
CE7B	1775.	16:25	12.79		
R-CE7B	1771.	16:46	12.79	.0	7.1
E7C	152.	12:52	.28		
CE7C	1799.	16:45	13.07		
R-CE7C	1795.	17:06	13.07	.0	7.2
CE8	1812.	17:06	13.32		
R-CE8	1806.	17:32	13.32	.0	9.5
E9	310.	12:33	.44		
CE9	1834.	17:31	13.76		
R-CE9	1833.	17:40	13.76	0	5.1
E10	229.	12:27	.29		
CE10	1852.	17:40	14.05		
R-CE10	1852.	17:43	14.05	.0	5.4
E11	201.	12:23	.23		
CE11	1867.	17:43	14.28		
R-CE11	1866.	17:49	14.28	.0	5.1
E12	300.	12:34	.43		
CE12	1896.	17:49	14.71		
R-CE12	1895.	17:55	14.71	.0	5.2
E13	128.	12:26	.16		
CE13	1905.	17:55	14.87		
R-CE13	1905.	18:03	14.87	.0	6.4
E14	804.	12:47	1.39		
R-E14	174.	15:57	1.39	.0	83.
CE14	2078.	18:03	16.26		

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G3C	109.	12:33	.28			
NOLTE	104.	12:28	.28			.05
E8	103.	12:28	.25			
G2A	218.	14:06	1.29			
R-G2A	159.	17:03	1.29	.0	8.4	
G2B	205.	12:44	.65			
CG2	221.	12:45	1.93			
R-CG2	206.	13:10	1.93	.0	1.6	
G3A	263.	12:41	.80			
G3ALOW	62.	12:44	.80			24.03
E3D	48.	12:15	.09			
E3DLOW	5.0	12:06	.09			3.43
CG46	67.	12:44	.88			
RG3A	201.	12:41	.00			
CG3A	422.	12:49	2.82			
R-CG3A	369.	14:06	2.82	.0	5.1	
G3B	66.	12:17	.12			
CG3B	381.	14:05	2.94			
R-CG3B	379.	14:21	2.94	.0	1.4	
G3A1	84.	12:25	.19			
G4A	84.	12:24	.19			
G4	68.	12:23	.15			
RG4	56.	12:44	.15			
CG4A	123.	12:28	.34			
RG4A	115.	12:40	.34			
CG3A1	189.	12:29	.53			
RG3A1	187.	12:32	.53			
G3DC	28.	12:06	.03			
RG3DC	27.	12:06	.03			
G3DB	46.	12:13	.08			
G3D	94.	12:32	.24			
RG3D	73.	12:55	.24			
CG3DB	92.	12:52	.32			
RG3DB	91.	13:01	.32			
G3A2	11.	12:30	.03			
CG3D	511.	13:52	3.85			
R-CG4	508.	14:21	3.85	.0	3.5	
RNOLTE	4.6	12:33	.00			
CG3	508.	14:21	3.85			
G5	96.	12:54	.33			
CG5	559.	13:54	4.18			

E2	177.	14:14	1.02			
E1A	261.	13:44	1.38			
R-E1A	235.	14:51	1.38	.0	4.7	
E1C	273.	13:32	1.34			
CE1AC	424.	14:18	2.73			
E1B	206.	14:34	1.38			
R-E1B	157.	15:48	1.38			
R-RE1B	81.	13:47	1.38			22.39
CE1ABC	505.	14:18	4.10			
CE1	435.	16:04	4.10	.0	13.	
R-CE1	428.	16:33	4.10	0	3.8	
RETE1B	76.	15:48	.00			
TMP1	498.	16:30	4.10			
R-TMP1	425.	19:57	4.10	.0	21.	
CE1A2	469.	19:44	5.12			
RCE2A3	450.	21:42	5.12	.0	13.	
E3E	47.	12:24	.10			
E3C	79.	12:13	.13			
E3	55.	13:05	.22			
E3A	23.	12:51	.08			
CE3A	77.	12:59	.30			
VR	24.	12:06	.03			
CVR	83.	12:58	.33			
E3B	16.	12:07	.02			
CE3B	88.	12:58	.36			
R-CE3B	86.	13:13	.36			
FBNE	51.	12:09	.07			
E3DHI	43.	12:15	.00			
CE3D	208.	12:14	.55			
R-E3CD	176.	12:37	.55			
CE3E	215.	12:34	.66			
E4B3	73.	12:44	.22			
E4B3LO	59.	12:29	.22			.44
RE4B3	14.	12:44	.00			
CE4B3	283.	12:37	.87			
E4A	201.	12:46	.62			
E4B1	109.	12:20	.22			
E4B1LO	50.	12:21	.22			2.22
E4B2	168.	12:45	.49			
E4B2LO	151.	12:34	.49			.38
CE4BLO	201.	12:34	.71			
RE4B1H	59.	12:20	.00			
RE4B2H	17.	12:45	.00			
CE4B	235.	12:39	.71			

CE4	774.	12:42	7.33		
R-CE4	539.	15:13	7.33	.0	18.
E5	118.	12:31	.30		
NV1	52.	12:30	.13		
NV3	25.	12:18	.05		
CE5	576.	15:08	7.81		
CEG	1097.	14:41	11.99		
R-CEG	1092.	15:04	11.99	.0	12.
E6	143.	12:26	.33		
CE6	1119.	15:03	12.32		
R-CE6	1108.	15:40	12.32	.0	9.3
E7A	101.	12:24	.22		
CE7A	1121.	15:38	12.54		
R-CE7A	1120.	15:47	12.54	.0	4.4
E7B	101.	12:28	.25		
CE7B	1133.	15:45	12.79		
R-CE7B	1133.	15:54	12.79	.0	4.4
E7C	95.	12:43	.28		
CE7C	1154.	15:51	13.07		
R-CE7C	1153.	16:00	13.07	.0	4.5
CE8	1166.	15:59	13.32		
R-CE8	1165.	16:14	13.32	.0	7.0
E9	183.	12:28	.44		
CE9	1184.	16:13	13.76		
R-CE9	1184.	16:20	13.76	.0	3.7
E10	141.	12:21	.29		
CE10	1197.	16:19	14.05		
R-CE10	1197.	16:23	14.05	.0	3.7
E11	121.	12:18	.23		
CE11	1207.	16:23	14.28		
R-CE11	1207.	16:30	14.28	.0	3.8
E12	180.	12:28	.43		
CE12	1227.	16:29	14.71		
R-CE12	1227.	16:36	14.71	.0	3.9
E13	73.	12:23	.16		
CE13	1234.	16:36	14.87		
R-CE13	1234.	16:45	14.87	.0	4.6
E14	512.	12:37	1.39		
R-E14	171.	14:26	1.39	.0	38.
CE14	1404.	16:45	16.26		

View HEC-1 output

Sacramento method results
(Project: ELDER/GERBER CREEK BASINS - PostFVCP)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G3C	178.	12:40	.28			
NOLTE	104.	12:17	.28			3.29
E8	169.	12:34	.25			
G2A	375.	14:04	1.29			
R-G2A	270.	17:03	1.29	.0	14.	
G2B	347.	12:50	.65			
CG2	383.	12:50	1.93			
R-CG2	354.	13:19	1.93	.0	2.7	
G3A	426.	12:50	.80			
G3ALOW	62.	12:25	.80			54.03
E3D	80.	12:20	.09			
E3DLOW	5.0	12:12	.09			7.15
CG46	67.	12:25	.88			
RG3A	364.	12:50	.00			
CG3A	715.	12:57	2.82			
R-CG3A	582.	14:18	2.82	.0	9.8	
G3B	116.	12:19	.12			
CG3B	600.	14:17	2.94			
R-CG3B	597.	14:31	2.94	.0	2.2	
G3A1	135.	12:33	.19			
G4A	149.	12:27	.19			
G4	116.	12:28	.15			
RG4	98.	12:46	.15			
CG4A	218.	12:32	.34			
RG4A	203.	12:42	.34			
CG3A1	332.	12:36	.53			
RG3A1	329.	12:38	.53			
G3DC	54.	12:06	.03			
RG3DC	54.	12:07	.03			
G3DB	77.	12:17	.08			
G3D	147.	12:42	.24			
RG3D	118.	13:02	.24			
CG3DB	145.	12:56	.32			
RG3DB	144.	13:04	.32			
G3A2	19.	12:32	.03			
CG3D	781.	14:19	3.85			
R-CG4	761.	15:05	3.85	.0	6.3	
RNOLTE	74.	12:40	.08			

Sacramento Hydrologic Calculator Report

October 12, 2007 11:49

Project Title: ELDER/GERBER CREEK BASINS - PostFVCP
Comments: ELDER/GERBER CREEK BASINS - PostFVCP CONDS , newly subdivided sheds With NV1 added
Prepared by: jdh
Method: Sacramento County HEC-1 method
Date: 12/13/2005

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
G2A	825	85	Basin "n"	-	Computed	-	Computed	-	Computed	-
G2B	413	75	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A	509.1	67	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3B	78.8	61	Basin "n"	-	Computed	-	Computed	-	Computed	-
G5	210.9	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1A	885.2	125	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1C	860.7	100	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1B	881.1	0	Basin "n"	-	Computed	-	Computed	-	Computed	-
E2	650.3	65	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B1	142	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4A	397.9	58	Basin "n"	-	Computed	-	Computed	-	Computed	-
E5	191.5	47	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7A	143.4	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
E8	156.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E9	280.7	36	Basin "n"	-	Computed	-	Computed	-	Computed	-
E10	185.7	32	Basin "n"	-	Computed	-	Computed	-	Computed	-
E11	147.5	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
E12	276.5	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
E13	100.2	24	Basin "n"	-	Computed	-	Computed	-	Computed	-
E14	891.8	20	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3C	181.7	58	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6	209.9	45	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3E	66.5	64	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3C	80.45	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3	141.7	7968	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3D	55.537	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3DC	22.1	62	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A1	120.9	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3D	156.1	62	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3DB	48.1	55	Basin "n"	-	Computed	-	Computed	-	Computed	-
G4	97	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G4A	123	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A2	17.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7B	157.2	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7C	181.3	38	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B2	315.4	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B3	139.4	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
NV1	84.8	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
NV3	30.4	50	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3A	52.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
VR	19.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3B	13.124	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
FBNE	45.1	68	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	14399	5998	0031	Undeveloped									0				0	0	0	709.9		
				Developed									2.8				29.1	75.5	7.7	0		
G2B	8369	4752	0032	Undeveloped				0		0		0	0						0	0		
				Developed				20.25		65.36		80.43	64.08						142.02	41.29		
G3A	7500	4000	0038	Undeveloped	0			0		0		0	0		0	0	0	0	23.4	41.6		
				Developed	29.9			2.9		0.9		21.7	180.9		198.2	0.1	0.1	9.4	0	0		
G3B	2150	1075	0064	Undeveloped	0	0		0		0		0	0				0		6.7	17		
				Developed	6.8	5		4.3		7.6		23	7.7				0.7		0	0		
G5	5940	3300	0015	Undeveloped	0			0				0	0		0		0		27.9	50.5		
				Developed	9.1			13.3				2.9	71.4		35.3		0.4		0	0		
E1A	10798	5998	0050	Undeveloped													0	0	0	725.4		
				Developed													65.2	2	92.6	0		
E1C	9900	5000	005	Undeveloped			0										0	0	0	665.2		
				Developed			6.6										143.2	19.2	26.5	0		
E1B	15750	8501	0029	Undeveloped													0			835		
				Developed													46			0		
E2	14509	7202	0013	Undeveloped	0		0										0	0		463.1		
				Developed	5.8		158.2										20.3	3		0		
E4B1	4100	1200	0012	Undeveloped	0		0					0	0							1.8		
				Developed	1.4		0.5					107.5	30.9							0		
E4A	6960	3600	0015	Undeveloped	0	0		0		0	0	0	0		0	0	0		38.8	47		
				Developed	32	31.5		31.3		6.8	5.3	78.6	116.8		9.6	0.1	0.2		0	0		
E5	4700	2200	0013	Undeveloped	0			0				0	0		0	0			0	15.4		
				Developed	6			18.9				4.2	128.5		2.1	0.1			16.3	0		
E7A	3540	2000	0010	Undeveloped	0	0		0			0	0	0							5.5		
				Developed	9	0.1		6.2			12.9	79.7	29.9							0		
E8	4800	2408	0014	Undeveloped		0	0	0	0				0		0		0	0				
				Developed		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	4604	2497	0025	Undeveloped		0				0	0		0						0	1.3		
				Developed		14				66.5	7.4		104.2						87.4	0		
E10	4050	1843	0024	Undeveloped		0		0			0	0	0						0	0.2		
				Developed		12.1		8.8			10.7	17.4	128.6						7.9	0		
E11	3400	1399	0024	Undeveloped		0				0	0	0	0						0	0.1		
				Developed		20.6				0.5	32.7	0.2	77.2						16.4	0		
E12	4599	2339	0012	Undeveloped		0				0	0	0	0						0	1.2		
				Developed		31.6				63.9	83.1	3.2	22.5						71.1	0		
E13	3200	1800	0022	Undeveloped		0				0		0	0						0			
				Developed		23.4				19.1		12.4	0.6						44.7			
E14	9002	4499	0024	Undeveloped		0		0		0		0	0						0	16.1		
				Developed		229.6		71.9		38.6		88.9	395.8						50.9	0		
G3C	5320	3000	0 0023	Undeveloped	0	0		0		0		0	0						11.6	14.8		
				Developed	11.9	4.7		7.4		10.3		69.4	51.8						0	0		
E6	3930	2500	0014	Undeveloped	0	0		0				0	0		0				0	10.1		
				Developed	6.6	12.3		21.8				81.8	74.8		2.2				0.3	0		
E3E	3070	1200	0 00195	Undeveloped	0	0	0													21.5		
				Developed	4.3	0.1	40.7													0		
E3C	2561	1525	0 0023	Undeveloped	0		0					0						0		0		
				Developed	0.561		76.98					0.001						0.711		2.204		
E3	5193	2202	0 0039	Undeveloped													0		7	129.2		
				Developed													5.5		0	0		
E3D	2330	1000	0 0026	Undeveloped	0	0						0			0	0		0	0	0		
				Developed	4.635	1.998						12.595			30.817	0.091		0.32	1.57	3.511		
G3DC	855 9	400	0 0186	Undeveloped	0								0					0				
				Developed	0.3								3					18.8				
G3A1	4350	3000	0 0018	Undeveloped	0	0		0					0		0	0	0			2.4		
				Developed	5.4	25.6		17.8					68.9		0.3	0.2	0.3			0		
G3D	4850	2400	0 0008	Undeveloped		0						0	0	0	0							
				Developed		5.8						0.6	71.9	29.1	48.6							
G3DB	2200	1000	0 0009	Undeveloped		0		0			0						0			0.8		
				Developed		16.8		13.5			16.8						0.1			0		
G4	2700	1500	0 0015	Undeveloped	0							0	0		0		0			2.5		
				Developed	1.1							2.7	9.7		51		30			0		
G4A	2870	1300	0 0014	Undeveloped									0		0		0	0				
				Developed									6		53		17.2	46.8				
G3A2	1970	1000	001	Undeveloped	0			0					0							8.8		
				Developed	1.5			0.1					7							0		
E7B	4150	2700	0014	Undeveloped					0	0		0	0						0	5.1		
				Developed					0.1	4.6		0.2	147.2						0.1	0		

E7C	5610	3500	0007	Undeveloped				0	0				0						8.6	16.7		
				Developed				0.1	73.6				82.3						0	0		
E4B2	9200	4000	0012	Undeveloped	0		0					0	0							49.2		
				Developed	0.2		265					1	0.1							0		
E4B3	5000	2500	0012	Undeveloped	0	0	0					0								53.7		
				Developed	4.3	2.6	78.7					0.1								0		
NV1	2940	1800	0009	Undeveloped	0			0			0	0	0						0	15.2		
				Developed	4.3			3.4			0.2	0.1	54						7.5	0		
NV3	1700	850	0 001	Undeveloped	0					0		0					0		0	5.4		
				Developed	1.2					4.4		16.9					0.1		2.5	0		
E3A	3485	1508	0 0034	Undeveloped													0.6	0.1	6	46.1		
				Developed													0	0	0	0		
VR	1472	351	0 0041	Undeveloped	0		0					0								0		
				Developed	0.387		0.031					19.095								0.202		
E3B	1482	723	0027	Undeveloped	0		0	0														
				Developed	0.208		0.07	12.846														
FBNE	2070	1010	0 0029	Undeveloped	0	0	0	0				0										
				Developed	0.963	29.505	0.53	14.06				0.033										

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks Shrubs Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	B																		
	C									2.8				5.1	31.1	1.5	89.3		
	D													24	44.4	6.2	620.6		
G2B	B																		
	C				16.13		52.69		22.71							102.25	1.62		
	D				4.12		12.67		57.72	64.08						39.77	39.67		
G3A	B																		
	C	12.9					0.6			69.5		89.1	0.1		9.4	8.7	16		
	D	16.9			2.9		0.3		21.7	111.4		109.1				14.7	25.6		
G3B	B																		
	C													0.2		0.2	2.2		
	D	6.8	5		4.3		7.6		23	7.7				0.5		6.5	14.9		
G5	B																		
	C																		
	D	9.1			13.3				2.9	71.4		35.3		0.4		27.9	50.5		
E1A	B																0.6		
	C													2.2	1.8	80	179.2		
	D													62.9	0.2	12.6	545.7		
E1C	B													1.3			21.9		
	C			3.3										15.6	19.2	7.9	190.3		
	D			3.3										126.3		18.6	452.9		
E1B	B																		
	C													2.8			81.5		
	D													43.2			753.5		
E2	B																		
	C													14.8			121.6		
	D	5.8		158.2										5.5	3		341.5		
E4B1	B																		
	C																		
	D	1.4		0.5					107.5	30.9							1.8		
E4A	B																		
	C	0.9	1.8		4.3					1.9		0.4				0.1	0.9		
	D	31	29.8		27		6.8	5.3	78.6	114.9		9.2		0.2		38.7	46.1		
E5	B																		
	C																		
	D	6			18.9				4.2	128.5		2.1	0.1			16.3	15.4		
E7A	B																		
	C																		
	D	9	0.1		6.2			12.9	79.7	29.9							5.5		
E8	B																		
	C																		
	D		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	B																		
	C																		
	D		14				66.5	7.4		104.2						87.4	1.3		
E10	B																		
	C																		
	D		12.1		8.8			10.7	17.4	128.6						7.9	0.2		
E11	B																		
	C																		
	D		20.6				0.5	32.7	0.2	77.2						16.4	0.1		
E12	B																		
	C																		
	D		31.6				63.9	83.1	3.2	22.5						71.1	1.2		
E13	B																		
	C																		
	D		23.4				19.1		12.4	0.6						44.7			
E14	B																		
	C																		
	D		229.6		71.9		38.6		88.9	395.8						50.9	16.1		
G3C	B																		
	C																		
	D	11.9	4.7		7.4		10.3		69.4	51.8						11.6	14.8		
	B																		

E6	C																		
	D	6.6	12.3		21.8				81.8	74.8		2.2				0.3	10.1		
E3E	B																		
	C																		
	D	4.3	0.1	40.7													21.5		
E3C	B																		
	C			7.378					0.001						0.043		0.028		
	D	0.561		69.602											0.668		2.176		
E3	B																		
	C															7	30.7		
	D													5.5			98.4		
E3D	B																		
	C	2.839	0.589						1.605			25.8	0.084		0.144	0.95	1.583		
	D	1.796	1.409						10.99			5.016	0.007		0.176	0.621	1.927		
G3DC	B																		
	C																		
	D	0.3								3					18.8				
G3A1	B																		
	C																		
	D	5.4	25.6		17.8					68.9		0.3	0.2	0.3			2.4		
G3D	B																		
	C																		
	D		5.8						0.6	71.9	29.1	48.6							
G3DB	B																		
	C							0.1											
	D		16.8		13.5			16.7						0.1			0.8		
G4	B																		
	C																		
	D	1.1							2.7	9.7		51		30			2.5		
G4A	B																		
	C																		
	D									6		53		17.2	46.8				
G3A2	B																		
	C																		
	D	1.5			0.1					7							8.8		
E7B	B																		
	C																		
	D					0.1	4.6		0.2	147.2						0.1	5.1		
E7C	B																		
	C																		
	D				0.1	73.6				82.3						8.6	16.7		
E4B2	B																		
	C																		
	D	0.2		265					1	0.1							49.2		
E4B3	B																		
	C	0.3		7															
	D	4	2.6	71.7					0.1								53.7		
NV1	B																		
	C																		
	D	4.3			3.4			0.2	0.1	54						7.5	15.2		
NV3	B																		
	C																		
	D	1.2					4.4		16.9					0.1		2.5	5.4		
E3A	B																		
	C														0.1	5.7	17.6		
	D													0.6		0.2	28.5		
VR	B																		
	C			0.031					16.322								0.184		
	D	0.387							2.773								0.018		
E3B	B																		
	C	0.133		0.035	10.579														
	D	0.075		0.035	2.267														
FBNE	B																		
	C	0.316	14.256		10.683				0.033										
	D	0.647	15.249	0.529	3.378														

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum-Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
R-E3CD	CE3D	CE3E	Trapezoidal	3150	.0022	10	4:1	.06
RG4	G4	CG4A	Trapezoidal	2710	.00147	4	3:1	.045
RG3D	G3D	CG3DB	Trapezoidal	2200	.0009	4	4:1	.06
RG3A1	CG3A1	CG3D	Trapezoidal	417	.0020	4	3:1	.0450
RG4A	CG4A	CG3A1	Trapezoidal	1125	.0010	4	3:1	.0450
RG3DC	G3DC	CG3D	Pipe	90	.003	4		.024
RG3DB	CG3DB	CG3D	Trapezoidal	1300	0.003	4	4:1	.06
R-CE3B	CE3B	CE3D	Trapezoidal	2163	0.0027	10	4:1	0.06

Hydrograph Routing – Muskingum-Cunge 8-Point Cross Section

Routing ID	Route From	Route To	Channel Length (ft)	Slope (ft/ft)	Cross Section Geometry								
						Left OB 1	Left OB 2	Left Bank	Channel Point 1	Channel Point 2	Right Bank	Right OB 1	Right OB 2
R-E1B	E1B	R-RE1B	4000	0003	Station	0	50	100	104	108	116	166	216
					Elevation	3.7	3	1.2	.6	.4	1.5	3.7	5.5
					Mannings "n"	06			035		06		

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-G2A	G2A	CG2	5	0	Volume (acre-ft)	0	15 2	27 7	51 6	76	100 8	122 7	145 4	169	191 8	221 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG2	CG2	CG3A	5	0	Volume (acre-ft)	0	2 5	4 5	7 9	11 3	15 2	20 7	24	26	28 1	30
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3A	CG3A	CG3B	5	0	Volume (acre-ft)	0	1 9	4 4	10 9	18 9	28 4	40 6	50 6	57 2	63 3	68 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3B	CG3B	CG3D	5	0	Volume (acre-ft)	0	0 8	1 3	2 8	5 3	7 6	9 2	11	13 1	15 3	18
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG4	CG3D	CG3	5	0	Volume (acre-ft)	0	2 1	3 8	7	10	13 4	17 1	21 4	27	34 1	41 5
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-E1A	E1A	CE1AC	5	0	Volume (acre-ft)	0	11 2	29 2	34 5	42 4	60 3	77 5	93 3	116 1	141 6	171 8
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
CE1	CE1ABC	R-CE1	5	0	Volume (acre-ft)	0	7 7	35 6	45	60 3	68 5	91 3	115 9	141 2	166 4	190 9
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE1	CE1	IMP1	5	0	Volume (acre-ft)	0	5 1	14 2	16 2	18 1	21 7	25 1	28 5	31 7	34 9	41
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
RCE2A3	CE1A2	CE4	5	0	Volume (acre-ft)	0	7 6	39 9	47 6	55 2	71 4	87 5	102 9	115 6	126 3	136 2
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE4	CE4	CE5	5	0	Volume (acre-ft)	0	13 1	44 1	53 5	63 7	83 6	102 7	121 1	139 7	158 4	177 7
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CEG	CEG	CE6	5	0	Volume (acre-ft)	0	2 8	16 8	31 8	46 4	56 1	62 3	67 1	71 5	75 6	79 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE6	CE6	CE7A	5	0	Volume (acre-ft)	0	5 2	15 4	22 9	31 3	40 9	51 7	64 7	79 7	94 1	110 7
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE7A	CE7A	CE7B	5	0	Volume (acre-ft)	0	6 1	12 4	15 6	17 9	20 5	23	25 9	30 5	36 4	64 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE8	CE8	CE9	5	0	Volume (acre-ft)	0	7 3	17 3	22 6	27 3	31 7	35 8	39 7	43 2	47 2	56 2
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE9	CE9	CE10	4	0	Volume (acre-ft)	0	3	7	10	12	13	15	17	19	20	23
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE10	CE10	CE11	3	0	Volume (acre-ft)	0	2	5	7	8	10	11	13	14	16	17
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE11	CE11	CE12	5	0	Volume (acre-ft)	0	4	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE12	CE12	CE13	5	0	Volume (acre-ft)	0	6	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE13	CE13	CE14	5	0	Volume (acre-ft)	0	8 6	13 7	18 2	22 4	26 4	30 8	34 6	39	64	
					Flow (cfs)	0	300	600	900	1200	1500	1800	2100	2400	2700	
R-E14	E14	CE14	1	0	Volume (acre-ft)	0	2 35	4 71	7 04	100						
					Flow (cfs)	0	56	113	169	175						
R-IMP1	IMP1	CE1A2	5	0	Volume (acre-ft)	0	22 8	74 4	86 6	98 7	122 8	146 6	169 7	193 5	216 8	239 1
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE7B	CE7B	CE7C	5	0	Volume (acre-ft)	0	6 1	12 4	15 6	17 9	20 5	23	25 9	30 5	36 4	64 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE7C	CE7C	CE8	5	0	Volume (acre-ft)	0	6 1	12 4	15 6	17 9	20 5	23	25 9	30 5	36 4	64 5

					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000

SacCalc Model Data

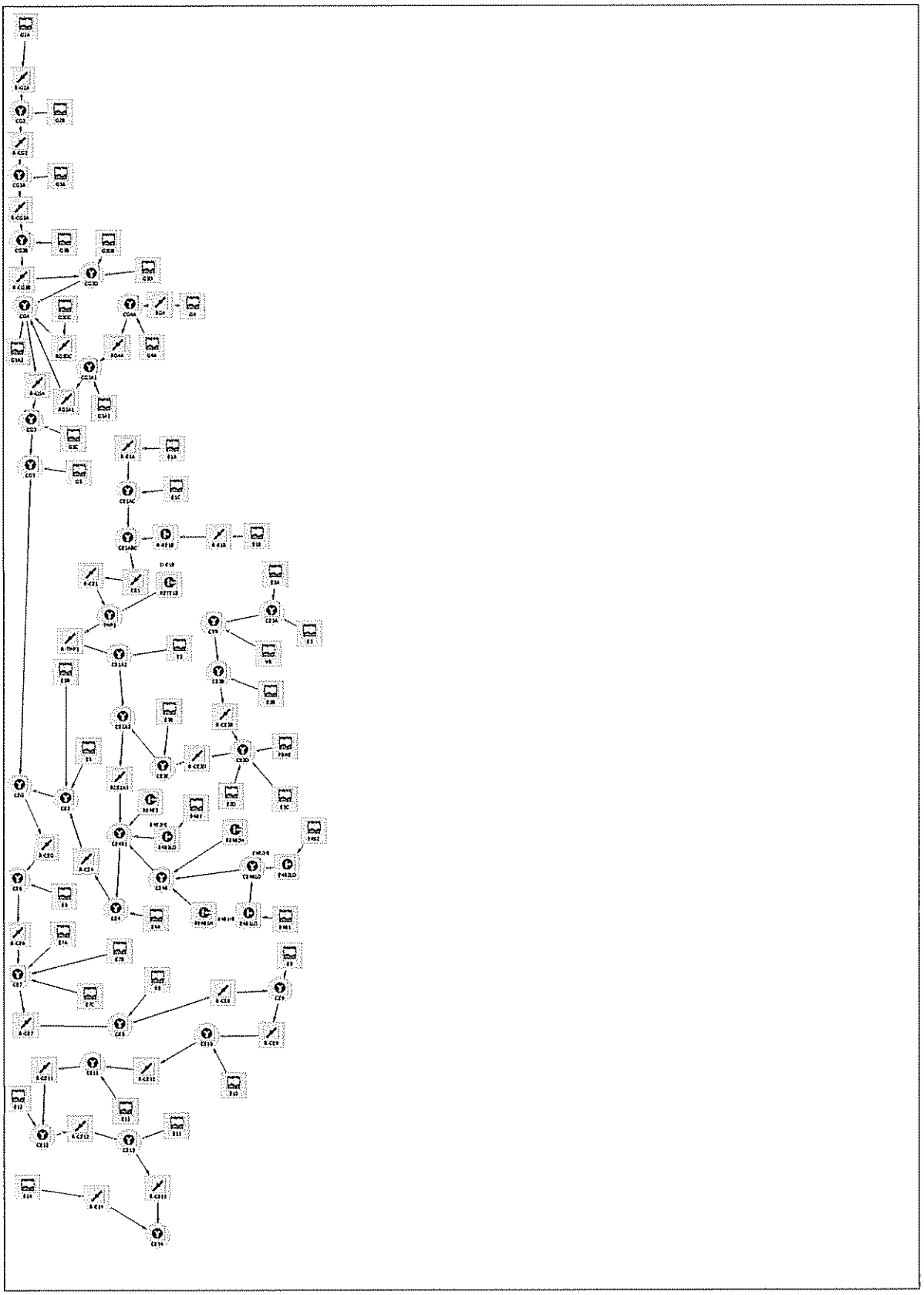
For

Elder and Gerber Creeks – Standalone Fvcp

Model Schematic Layout

Peak Flow Summary

Report



Sacramento method results
(Project: ELDER/GERBER CREEK BASINS - FVCP STAND-ALONE)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	374.	14:04	1.29			
R-G2A	269.	17:03	1.29	.0	14.	
G2B	237.	13:22	.63			
CG2	327.	16:38	1.92			
R-CG2	326.	17:07	1.92	.0	2.5	
G3A	285.	13:29	.80			
CG3A	549.	13:38	2.71			
R-CG3A	473.	15:09	2.71	.0	7.5	
G3B	73.	12:47	.13			
CG3B	493.	15:07	2.85			
R-CG3B	492.	15:19	2.85	.0	1.8	
G3D	103.	13:12	.25			
G3DB	58.	12:28	.08			
CG3D	541.	15:13	3.17			
G3A1	134.	12:33	.19			
G4	115.	12:28	.15			
RG4	98.	12:46	.15			
G4A	148.	12:27	.19			
CG4A	217.	12:32	.34			
RG4A	202.	12:42	.34			
CG3A1	330.	12:36	.53			
RG3A1	327.	12:38	.53			
G3A2	19.	12:32	.03			
G3DC	44.	12:10	.03			
RG3DC	44.	12:10	.03			
CG4	658.	12:43	3.77			
R-CG4	626.	13:29	3.77	.0	4.6	
G3C	134.	12:45	.24			
CG3	705.	13:19	4.00			
G5	144.	13:21	.37			
CG5	849.	13:20	4.37			
E2	291.	14:15	1.02			
E1A	454.	13:42	1.38			
R-E1A	378.	15:19	1.38	.0	7.8	
E1C	475.	13:31	1.34			
CE1AC	703.	13:44	2.73			
E1B	350.	14:32	1.38			
R-E1B	275.	15:30	1.38			

R-RE1B	81.	13:59	1.38			76.18
CE1ABC	784.	13:44	4.10			
CE1	669.	17:07	4.10	.0	22.	
R-CE1	668	17:31	4.10	.0	5.5	
RETE1B	194	15:30	.00			
TMP1	812.	17:01	4.10			
R-TMP1	742	19:50	4.10	.0	36.	
CE1A2	820.	19:39	5.12			
E3E	95.	12:21	.10			
E3C	130.	12:17	.13			
E3D	80.	12:20	.09			
E3	99.	13:03	.22			
E3A	42.	12:50	.08			
CE3A	139.	12:58	.30			
VR	42.	12:09	.03			
CVR	147.	12:57	.33			
E3B	27.	12:10	.02			
CE3B	153.	12:57	.36			
R-CE3B	150.	13:10	.36			
FBNE	85.	12:12	.07			
CE3D	369.	12:18	.64			
R-CE3D	320.	12:37	.64			
CE3E	385.	12:35	.74			
CE2A3	851.	19:32	5.86			
RCE2A3	834.	20:53	5.86	.0	24.	
E4B1	176.	12:27	.22			
E4B1LO	50.	12:19	.22			7.26
E4B2	266.	12:53	.49			
E4B2LO	151.	12:21	.49			7.22
CE4BLO	201.	12:21	.71			
RE4B2H	115.	12:53	.00			
RE4B1H	126.	12:27	.00			
CE4B	376.	12:45	.71			
E4B3	122.	12:49	.22			
E4B3LO	59.	12:39	.22			4.28
RE4B3	63.	12:49	.00			
CE4B1	869.	20:51	6.79			
E4A	243.	13:36	.70			
CE4	892.	20:47	7.49			
R-CE4	852.	23:04	7.49	.0	30.	
E5	131.	12:41	.21			
E5B	69.	13:28	.19			
CE5	860.	23:02	7.89			
CEG	1496.	15:47	12.27			

R-CEG	1495.	16:03	12.27	.0	14.	
E6	229.	12:34	.33			
CE6	1526.	15:59	12.60			
R-CE6	1526.	16:54	12.60	.0	.0	
E7A	163.	12:31	.22			
E7B	161.	12:37	.25			
E7C	152.	12:52	.28			
CE7	1586.	16:50	13.35			
R-CE7	1585.	17:07	13.35	.0	6.0	
E8	169.	12:34	.25			
CE8	1602.	17:06	13.59			
R-CE8	1601.	17:19	13.59	.0	8.6	
E9	309.	12:33	.44			
CE9	1641.	14:56	14.03			
R-CE9	1641.	15:00	14.03	.0	4.8	
E10	228.	12:27	.29			
CE10	1681.	14:59	14.32			
R-CE10	1679.	15:07	14.32	.0	4.9	
E11	200.	12:23	.23			
CE11	1707.	15:06	14.55			
R-CE11	1705.	15:14	14.55	.0	4.8	
E12	299.	12:34	.43			
CE12	1767.	15:13	14.99			
R-CE12	1766.	15:20	14.99	.0	4.9	
E13	123.	12:26	.15			
CE13	1784.	15:19	15.14			
R-CE13	1781.	15:30	15.14	.0	6.1	
E14	804.	12:46	1.39			
R-E14	174.	15:56	1.39	.0	83.	
CE14	1954.	15:30	16.53			
E7	472.	12:40	.75			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	218.	14:07	1.29			
R-G2A	159.	17:03	1.29	.0	8.3	
G2B	133.	13:23	.63			
CG2	187.	16:43	1.92			
R-CG2	187.	17:08	1.92	.0	1.5	
G3A	162.	13:31	.80			
CG3A	307.	13:40	2.71			
R-CG3A	282.	14:43	2.71	.0	3.5	

G3B	40.	12:47	.13			
CG3B	295.	14:41	2.85			
R-CG3B	294.	14:59	2.85	.0	1.0	
G3D	58.	13:13	.25			
G3DB	31.	12:27	.08			
CG3D	326.	14:54	3.17			
G3A1	84.	12:25	.19			
G4	68.	12:23	.15			
RG4	56.	12:44	.15			
G4A	84.	12:24	.19			
CG4A	122.	12:28	.34			
RG4A	114.	12:40	.34			
CG3A1	188.	12:29	.53			
RG3A1	186.	12:32	.53			
G3A2	11.	12:30	.03			
G3DC	23.	12:10	.03			
RG3DC	23.	12:10	.03			
CG4	380.	13:01	3.77			
R-CG4	377.	13:27	3.77	.0	2.5	
G3C	72.	12:45	.24			
CG3	429.	13:17	4.00			
G5	82.	13:23	.37			
CG5	510.	13:19	4.37			
E2	177.	14:14	1.02			
E1A	260.	13:44	1.38			
R-E1A	234.	14:51	1.38	.0	4.7	
E1C	270.	13:33	1.34			
CE1AC	422.	14:18	2.73			
E1B	205.	14:34	1.38			
R-E1B	157.	15:48	1.38			
R-RE1B	81.	13:47	1.38			22.24
CE1ABC	503.	14:18	4.10			
CE1	432.	16:05	4.10	.0	13.	
R-CE1	425.	16:35	4.10	.0	3.8	
RETE1B	76.	15:48	.00			
TMP1	494.	16:32	4.10			
R-TMP1	423.	19:58	4.10	.0	21.	
CE1A2	467.	19:45	5.12			
E3E	55.	12:18	.10			
E3C	78.	12:13	.13			
E3D	47.	12:15	.09			
E3	55.	13:05	.22			
E3A	23.	12:51	.08			
CE3A	76.	12:59	.30			

VR	24.	12:06	.03			
CVR	83.	12:58	.33			
E3B	16.	12:07	.02			
CE3B	87.	12:58	.36			
R-CE3B	86	13:13	.36			
FBNE	51	12:09	.07			
CE3D	212.	12:14	.64			
R-CE3D	181.	12:37	.64			
CE3E	216.	12:34	.74			
CE2A3	485.	19:39	5.86			
RCE2A3	468.	21:36	5.86	.0	13.	
E4B1	109.	12:20	.22			
E4B1LO	50.	12:18	.22			2.19
E4B2	167.	12:45	.49			
E4B2LO	151.	12:34	.49			.36
CE4BLO	201.	12:34	.71			
RE4B2H	16.	12:45	.00			
RE4B1H	59.	12:20	.00			
CE4B	234.	12:39	.71			
E4B3	72.	12:44	.22			
E4B3LO	59.	12:29	.22			.43
RE4B3	13.	12:44	.00			
CE4B1	491.	21:35	6.79			
E4A	141.	13:37	.70			
CE4	507.	13:34	7.49			
R-CE4	481.	23:46	7.49	.0	16.	
E5	82.	12:32	.21			
E5B	39.	13:30	.19			
CE5	495.	16:26	7.89			
CEG	903.	15:18	12.27			
R-CEG	898.	15:51	12.27	.0	10.	
E6	142.	12:26	.33			
CE6	916.	15:48	12.60			
R-CE6	916.	16:23	12.60	.0	.0	
E7A	101.	12:24	.22			
E7B	101.	12:28	.25			
E7C	95.	12:43	.28			
CE7	957.	15:03	13.35			
R-CE7	957.	15:12	13.35	.0	4.0	
E8	102.	12:28	.25			
CE8	976.	15:10	13.59			
R-CE8	974.	15:28	13.59	.0	6.2	
E9	182.	12:28	.44			
CE9	1004.	15:23	14.03			

R-CE9	1003.	15:30	14.03	.0	3.3
E10	140.	12:21	.29		
CE10	1019.	15:28	14.32		
R-CE10	1019.	15:31	14.32	.0	3.4
E11	120.	12:18	.23		
CE11	1032.	15:28	14.55		
R-CE11	1031.	15:35	14.55	.0	3.5
E12	179.	12:28	.43		
CE12	1061.	15:30	14.99		
R-CE12	1060.	15:39	14.99	.0	3.5
E13	70.	12:23	.15		
CE13	1068.	15:38	15.14		
R-CE13	1067.	15:50	15.14	.0	4.1
E14	513.	12:37	1.39		
R-E14	171.	14:25	1.39	.0	38.
CE14	1238.	15:50	16.53		
E7	295.	12:32	.75		

Sacramento Hydrologic Calculator Report

October 12, 2007 12:52

Project Title: ELDER/GERBER CREEK BASINS - FVCP STAND-ALONE
Comments: EG24E100 ELDER/GERBER CREEK BASINS -
Prepared by: BAT
Method: Sacramento County HEC-1 method
Date: 4/21/2005

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
G2A	825	85	Basin "n"	-	Computed	-	Computed	-	Computed	-
G2B	403	75	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A	509.1	70	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3B	86.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3D	157.3	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
G4	97	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G5	237.32	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1A	885.18	125	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1C	860.69	100	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1B	881	0	Basin "n"	-	Computed	-	Computed	-	Computed	-
E2	650.3	65	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3	141.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B3	139.4	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4A	447.6	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E5	136.3	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7A	143.4	44	Basin "n"	-	Computed	-	Computed	-	Computed	-
E8	156.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E9	280.71	36	Basin "n"	-	Computed	-	Computed	-	Computed	-
E10	185.71	32	Basin "n"	-	Computed	-	Computed	-	Computed	-
E11	147.52	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
E12	276.48	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
E13	97.05	24	Basin "n"	-	Computed	-	Computed	-	Computed	-
E14	892.73	20	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3C	151.6	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6	209.9	45	Basin "n"	-	Computed	-	Computed	-	Computed	-
E5B	120	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3C	80.45	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3E	66.484	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3D	55.537	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B1	142	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B2	315.4	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7B	157.2	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7C	181.3	38	Basin "n"	-	Computed	-	Computed	-	Computed	-
G4A	123	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A1	120.9	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A2	17.4	54	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3DC	22.1	62	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7	481.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3A	52.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
VR	19.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3B	13.124	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
FBNE	45.1	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3DB	49.2	59	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	14399	5998	0031	Undeveloped													0	0	0	709.9		
				Developed													29.1	78.8	7.2	0		
G2B	8369	4752	0032	Undeveloped													0	0	0	226.7		
				Developed													39.2	1.4	135.7	0		
G3A	6399	4599	0028	Undeveloped												0	0	0		447.4		
				Developed												3.7	38.8	19.2		0		
G3B	3152	2001	0026	Undeveloped												0	0	0		58		
				Developed												7.6	19.7	0.9		0		
G3D	9900	5502	0016	Undeveloped													0		0	0		
				Developed													54.5		4.3	100		
G4	2700	1500	0015	Undeveloped	0							0	0		0		0			2.5		
				Developed	1.1							2.7	9.7		51		30			0		
G5	5940	3300	0015	Undeveloped													0		0	183.4		
				Developed													34		20	0		
E1A	10798	5998	0050	Undeveloped													0	0	0	725.45		
				Developed													65.15	1.96	92.61	0		
E1C	9900	5000	005	Undeveloped			0										0	0	0	665.16		
				Developed			6.61										43.89	19.21	125.82	0		
E1B	15750	8501	0029	Undeveloped													0			834.98		
				Developed													46.02			0		
E2	14509	7202	0013	Undeveloped	0		0										0	0		463.1		
				Developed	5.8		158.2										20.3	3		0		
E3	5193	2202	0039	Undeveloped													0		7	129.2		
				Developed													5.5		0	0		
E4B3	5000	2500	0012	Undeveloped	0	0	0					0								53.7		
				Developed	4.3	2.6	78.7					0.1								0		
E4A	7302	4298	0015	Undeveloped												0	0	0	0	348.9		
				Developed												21.5	36.3	19.8	21.1	0		
E5	5760	3099	0014	Undeveloped				0					0		0					0		
				Developed				21					104		2					9.3		
E7A	3540	2000	0010	Undeveloped	0	0		0			0	0	0							5.5		
				Developed	9	0.1		6.2			12.9	79.7	29.9							0		
E8	4800	2408	0014	Undeveloped		0	0	0	0				0		0		0	0				
				Developed		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	4604	2497	0025	Undeveloped		0				0	0		0						0	1.27		
				Developed		13.95				66.54	7.38		104.18						87.39	0		
E10	4050	1843	0024	Undeveloped		0		0			0	0	0						0	0.22		
				Developed		12.06		8.85			10.7	17.38	128.57						7.92	0		
E11	3400	1399	0024	Undeveloped		0				0	0	0	0						0	0.09		
				Developed		20.62				0.45	32.65	0.19	77.15						16.37	0		
E12	4599	2339	0012	Undeveloped		0				0	0	0	0						0	1.23		
				Developed		31.57				63.87	83.06	3.16	22.45						71.13	0		
E13	3200	1800	0022	Undeveloped		0				0		0	0						0	0.02		
				Developed		23.37				19.11		10.63	0.2						43.73	0		
E14	9002	4499	0024	Undeveloped		0		0		0		0	0						0	12.18		
				Developed		229.5		71.89		38.63		90.94	397.71						51.88	0		
G3C	3332	1299	0 0049	Undeveloped													0			151.61		
				Developed													0.03			0		
E6	3930	2500	0014	Undeveloped	0	0		0				0	0		0				0	10.1		
				Developed	6.6	12.3		21.8				81.8	74.8		2.2				0.3	0		
E5B	5760	3099	0014	Undeveloped													9.84	1.7		108.5		
				Developed													0	0		0		
E3C	2561	1525	0023	Undeveloped	0		0					0						0		0		
				Developed	0.561		76.98					0.001						0.711		2.204		
E3E	3070	1200	00195	Undeveloped	0	0	0													0		
				Developed	4.254	0.101	40.678													21.451		
E3D	2330	1000	0026	Undeveloped	0	0						0			0	0		0	0	0		
				Developed	4.635	1.998						12.595			30.817	0.091		0.32	1.57	3.511		
E4B1	4100	1200	0012	Undeveloped	0		0					0	0							1.8		
				Developed	1.4		0.5					107.5	30.9							0		
E4B2	9200	4000	0012	Undeveloped	0		0					0	0							49.2		
				Developed	0.2		265					1	0.1							0		
E7B	4150	2700	0014	Undeveloped					0	0		0	0						0	5.1		
				Developed					0.1	4.6		0.2	147.2						0.1	0		
E7C	5610	3500	0007	Undeveloped				0	0				0						8.6	16.7		
				Developed				0.1	73.6				82.3						0	0		
G4A	2870	1300	0014	Undeveloped									0		0		0	0				
				Developed									6		53		17.2	46.8				

G3A1	4350	3000	0018	Undeveloped	0	0		0					0		0	0	0			2.4		
				Developed	5.4	25.6		17.8					68.9		0.3	0.2	0.3			0		
G3A2	1970	1000	001	Undeveloped	0			0					0							8.8		
				Developed	1.5			0.1					7							0		
G3DC	855 9	400	00186	Undeveloped	0								0					0				
				Developed	0.3								3					18.8				
E7	5518	2519	0012	Undeveloped	0	0		0	0	0	0	0	0						0	27.3		
				Developed	9	0.1		6.3	73.7	4.6	12.9	79.9	259.4						8.7	0		
E3A	3485	1508	0034	Undeveloped													0.6	0.1	6	46.1		
				Developed													0	0	0	0		
VR	1472	351	0041	Undeveloped	0		0					0								0		
				Developed	0.387		0.031					19.095								0.202		
E3B	1482	723	0027	Undeveloped	0		0	0														
				Developed	0.208		0.07	12.846														
FBNE	2070	1010	0029	Undeveloped	0	0	0	0				0										
				Developed	0.963	29.505	0.53	14.06				0.033										
G3DB	2200	1000	0009	Undeveloped												0	0		0	0		
				Developed												7	2.1		0.5	39.9		

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	B																		
	C													5.1	34.4	1	89.3		
	D													24	44.4	6.2	620.6		
G2B	B																		
	C													28.4	1.4	97.6	88.9		
	D													10.8		38.2	137.8		
G3A	B																		
	C												2.4	23.1	17		163.9		
	D												1.3	15.7	2.2		283.5		
G3B	B																		
	C													2.5			0.2		
	D												7.6	17.2	0.9		57.9		
G3D	B																		
	C													1.9			0.9		
	D													52.6		2.5	99		
G4	B																		
	C																		
	D	1.1							2.7	9.7		51		30			2.5		
G5	B																		
	C																		
	D													34		20.1	183.4		
E1A	B																0.6		
	C													2.2	1.8	80	179.2		
	D													62.9	0.2	12.6	545.7		
E1C	B															1.3	21.9		
	C			3.3										15.6	19.2	7.9	190.3		
	D			3.3										28.3		116.6	452.9		
E1B	B																		
	C													2.8			81.5		
	D													43.2			753.4		
E2	B																		
	C													14.8			121.6		
	D	5.8		158.2										5.5	3		341.5		
E3	B																		
	C															7	30.7		
	D													5.5			98.4		
E4B3	B																		
	C	0.3		7															
	D	4	2.6	71.7					0.1								53.7		
E4A	B																		
	C												1.8		1.6		6.4		
	D												19.7	36.3	18.1	21.1	342.5		
E5	B																		
	C																		
	D				21					104		2					9.3		
E7A	B																		
	C																		
	D	9	0.1		6.2			12.9	79.7	29.9							5.5		
E8	B																		
	C																		
	D		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	B																		
	C																		
	D		14				66.5	7.4		104.2						87.4	1.3		
E10	B																		
	C																		
	D		12.1		8.8			10.7	17.4	128.6						7.9	0.2		
E11	B																		
	C																		
	D		20.6				0.5	32.7	0.2	77.2						16.4	0.1		
E12	B																		
	C																		
	D		31.6				63.9	83.1	3.2	22.5						71.1	1.2		
	B																		

E13	C																		
	D		23.4				19.1		10.6	0.2						43.7			
E14	B																		
	C																		
	D		229.5		71.9		38.6		90.9	397.7						51.9	12.2		
G3C	B																		
	C																		
	D																151.6		
E6	B																		
	C																		
	D	6.6	12.3		21.8				81.8	74.8		2.2				0.3	10.1		
E5B	B																		
	C																		
	D													9.84	1.7		108.5		
E3C	B																		
	C			7.378					0.001						0.043		0.028		
	D	0.561		69.602											0.668		2.176		
E3E	B																		
	C																		
	D	4.254	0.101	40.678													21.451		
E3D	B																		
	C	2.839	0.589						1.605			25.8	0.084		0.144	0.95	1.583		
	D	1.796	1.409						10.99			5.016	0.007		0.176	0.621	1.927		
E4B1	B																		
	C																		
	D	1.4		0.5					107.5	30.9							1.8		
E4B2	B																		
	C																		
	D	0.2		265					1	0.1							49.2		
E7B	B																		
	C																		
	D					0.1	4.6		0.2	147.2						0.1	5.1		
E7C	B																		
	C																		
	D				0.1	73.6				82.3						8.6	16.7		
G4A	B																		
	C																		
	D									6		53		17.2	46.8				
G3A1	B																		
	C																		
	D	5.4	25.6		17.8					68.9		0.3	0.2	0.3			2.4		
G3A2	B																		
	C																		
	D	1.5			0.1					7							8.8		
G3DC	B																		
	C																		
	D	0.3								3					18.8				
E7	B																		
	C																		
	D	9	0.1		6.3	73.7	4.6	12.9	79.9	259.4						8.7	27.3		
E3A	B																		
	C														0.1	5.7	17.6		
	D													0.6		0.2	28.5		
VR	B																		
	C			0.031					16.322								0.184		
	D	0.387							2.773								0.018		
E3B	B																		
	C	0.133		0.035	10.579														
	D	0.075		0.035	2.267														
FBNE	B																		
	C	0.316	14.256		10.683				0.033										
	D	0.647	15.249	0.529	3.378														
G3DB	B																		
	C																0.5		
	D												7	2.1		0.5	39.5		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
RG4	G4	CG4A	Trapezoidal	2710	.00147	4	3:1	.045
RG4A	CG4A	CG3A1	Trapezoidal	1125	.0010	4	3:1	.045
RG3A1	CG3A1	CG4	Trapezoidal	417	.0020	4	3:1	.045
RG3DC	G3DC	CG4	Pipe	90	.003	4		.024
R-CE3B	CE3B	CE3D	Trapezoidal	2163	.0027	10	4:1	.06
R-CE3D	CE3D	CE3E	Trapezoidal	3150	.0022	10	4:1	.06

Hydrograph Routing – Muskingum-Cunge 8-Point Cross Section

Routing ID	Route From	Route To	Channel Length (ft)	Slope (ft/ft)	Cross Section Geometry								
						Left OB 1	Left OB 2	Left Bank	Channel Point 1	Channel Point 2	Right Bank	Right OB 1	Right OB 2
R-E1B	E1B	R-RE1B	4000	0003	Station	0	50	100	104	108	116	166	216
					Elevation	3.7	3	1.2	.6	.4	1.5	3.7	5.5
					Mannings "n"	06			035		06		

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-G2A	G2A	CG2	5	0	Volume (acre-ft)	0	15 2	27 7	51 6	76	100 8	122 7	145 4	169	191 8	221 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG2	CG2	CG3A	5	0	Volume (acre-ft)	0	2 5	4 5	7 9	11 3	15 2	20 7	24	26	28 1	30
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3A	CG3A	CG3B	5	0	Volume (acre-ft)	0	1 9	4 4	10 9	18 9	28 4	40 6	50 6	57 2	63 3	68 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3B	CG3B	CG3D	5	0	Volume (acre-ft)	0	0 8	1 3	2 8	5 3	7 6	9 2	11	13 1	15 3	18
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG4	CG4	CG3	5	0	Volume (acre-ft)	0	2 1	3 8	7	10	13 4	17 1	21 4	27	34 1	41 5
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-E1A	E1A	CE1AC	5	0	Volume (acre-ft)	0	11 2	29 2	34 5	42 4	60 3	77 5	93 3	116 1	141 6	171 8
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
CE1	CE1ABC	R-CE1	5	0	Volume (acre-ft)	0	7 7	35 6	45	60 3	68 5	91 3	115 9	141 2	166 4	190 9
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE1	CE1	IMP1	5	0	Volume (acre-ft)	0	5 1	14 2	16 2	18 1	21 7	25 1	28 5	31 7	34 9	41
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
RCE2A3	CE2A3	CE4B1	5	0	Volume (acre-ft)	0	7 6	39 9	47 6	55 2	71 4	87 5	102 9	115 6	126 3	136 2
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE4	CE4	CE5	5	0	Volume (acre-ft)	0	13 1	44 1	53 5	63 7	83 6	102 7	121 1	139 7	158 4	177 7
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CEG	CEG	CE6	5	0	Volume (acre-ft)	0	2 8	16 8	31 8	46 4	56 1	62 3	67 1	71 5	75 6	79 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE6	CE6	CE7	4451 04	0	Volume (acre-ft)	0	5 2	15 4	22 9	31 3	40 9	51 7	64 7	79 7	94 1	110 7
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE7	CE7	CE8	5	0	Volume (acre-ft)	0	6 1	12 4	15 6	17 9	20 5	23	25 9	30 5	36 4	64 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE8	CE8	CE9	5	0	Volume (acre-ft)	0	7 3	17 3	22 6	27 3	31 7	35 8	39 7	43 2	47 2	56 2
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE9	CE9	CE10	4	0	Volume (acre-ft)	0	3	7	10	12	13	15	17	19	20	23
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE10	CE10	CE11	3	0	Volume (acre-ft)	0	2	5	7	8	10	11	13	14	16	17
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE11	CE11	CE12	5	0	Volume (acre-ft)	0	4	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE12	CE12	CE13	5	0	Volume (acre-ft)	0	6	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE13	CE13	CE14	5	0	Volume (acre-ft)	0	8 6	13 7	18 2	22 4	26 4	30 8	34 6	39	64	
					Flow (cfs)	0	300	600	900	1200	1500	1800	2100	2400	2700	
R-E14	E14	CE14	1	0	Volume (acre-ft)	0	2 35	4 71	7 04	100						
					Flow (cfs)	0	56	113	169	175						
R-IMP1	IMP1	CE1A2	5	0	Volume (acre-ft)	0	22 8	74 4	86 6	98 7	122 8	146 6	169 7	193 5	216 8	239 1
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000

SacCalc Model Data

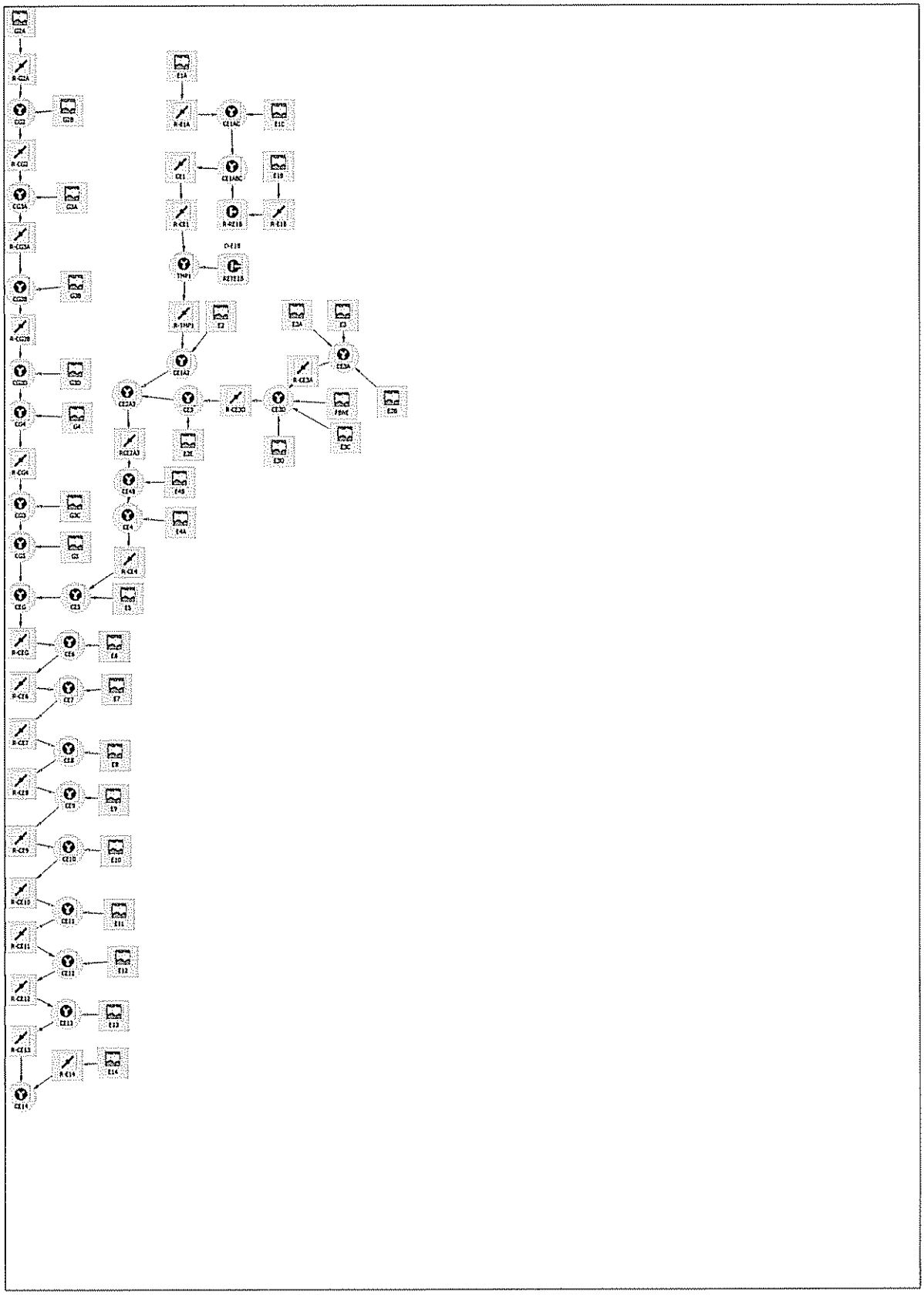
For

Elder and Gerber Creeks – Interim Pre

Model Schematic Layout

Peak Flow Summary

Report



View HEC-1 output

Sacramento method results
(Project: ELDER/GERBER CREEK BASINS - EXISTING CONDS.)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	375.	14:04	1.29			
R-G2A	270.	17:03	1.29	.0	14.	
G2B	238.	13:22	.63			
CG2	328.	16:38	1.92			
R-CG2	327.	17:07	1.92	.0	2.5	
G3A	286.	13:29	.80			
CG3A	551.	13:38	2.71			
R-CG3A	475.	15:09	2.71	.0	7.5	
G3B	74.	12:47	.13			
CG3B	494.	15:07	2.85			
R-CG3B	494.	15:19	2.85	.0	1.8	
G3D	189.	13:45	.57			
CG3D	609.	15:04	3.42			
G4	145.	13:15	.35			
CG4	674.	14:54	3.78			
R-CG4	669.	15:32	3.78	.0	5.1	
G3C	134.	12:45	.24			
CG3	698.	15:26	4.01			
G5	156.	13:19	.39			
CG5	764.	15:13	4.41			
E2	264.	14:19	.97			
E1A	456.	13:42	1.38			
R-E1A	379.	15:19	1.38	.0	7.8	
E1C	477.	13:31	1.34			
CE1AC	705.	13:44	2.73			
E1B	351.	14:32	1.38			
R-E1B	276.	15:30	1.38			
R-RE1B	40.	14:31	1.38			114.54
CE1ABC	745.	13:44	4.10			
CE1	637.	17:01	4.10	.0	20.	
R-CE1	635.	17:26	4.10	.0	5.3	
RETE1B	236.	15:30	.00			
TMP1	826	16:53	4.10			
R-TMP1	753.	19:42	4.10	.0	36.	
CE1A2	821.	19:32	5.08			
E3E	56.	12:46	.10			
E3C	113.	12:26	.14			
E3D	50.	12:39	.08			

E3	104.	13:04	.23		
E3B	30.	12:27	.04		
E3A	44.	12:50	.09		
CE3A	160.	12:56	.36		
R-CE3A	155.	13:14	.36		
FBNE	45.	12:38	.07		
CE3D	279.	12:41	.65		
R-CE3D	272.	13:02	.65		
CE3	321.	12:57	.75		
CE2A3	845.	19:24	5.83		
RCE2A3	826.	20:47	5.83	.0	24.
E4B	310.	13:54	98		
CE4B	871.	20:39	6.81		
E4A	244.	13:36	.70		
CE4	896.	20:35	7.51		
R-CE4	856.	22:48	7.51	.0	30.
E5	125.	13:20	.32		
CE5	860.	22:47	7.83		
CEG	1463.	16:14	12.24		
R-CEG	1462.	16:30	12.24	.0	14.
E6	147.	12:36	.22		
CE6	1476.	16:28	12.46		
R-CE6	1476.	17:22	12.46	.0	.0
E7	351.	12:57	.70		
CE7	1532.	17:19	13.17		
R-CE7	1531.	17:36	13.17	.0	5.8
E8	170.	12:34	.25		
CE8	1547.	17:35	13.41		
R-CE8	1546.	17:48	13.41	.0	8.5
E9	310.	12:33	.44		
CE9	1574.	17:48	13.85		
R-CE9	1573.	17:55	13.85	.0	4.7
E10	229.	12:27	.29		
CE10	1592.	17:55	14.14		
R-CE10	1592.	17:59	14.14	.0	4.7
E11	201.	12:23	.23		
CE11	1606.	17:59	14.37		
R-CE11	1606.	18:06	14.37	.0	4.6
E12	301.	12:34	.43		
CE12	1635.	18:05	14.80		
R-CE12	1635.	18:12	14.80	.0	4.7
E13	124.	12:26	.15		
CE13	1644.	18:11	14.96		
R-CE13	1643.	18:22	14.96	.0	5.7

E14	808.	12:46	1.39			
R-E14	174.	15:57	1.39	.0	84.	
CE14	1817.	18:22	16.35			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	218.	14:07	1.29			
R-G2A	159.	17:03	1.29	.0	8.4	
G2B	134.	13:23	.63			
CG2	188.	16:43	1.92			
R-CG2	187.	17:08	1.92	.0	1.5	
G3A	162.	13:31	.80			
CG3A	308.	13:40	2.71			
R-CG3A	283.	14:43	2.71	.0	3.5	
G3B	41.	12:47	.13			
CG3B	296.	14:41	2.85			
R-CG3B	295.	14:59	2.85	.0	1.0	
G3D	111.	13:47	.57			
CG3D	374.	14:48	3.42			
G4	83.	13:16	.35			
CG4	418.	14:39	3.78			
R-CG4	416.	15:05	3.78	.0	2.8	
G3C	73.	12:45	.24			
CG3	435.	15:01	4.01			
G5	89.	13:21	.39			
CG5	482.	14:24	4.41			
E2	155.	14:21	.97			
E1A	261.	13:44	1.38			
R-E1A	235.	14:51	1.38	.0	4.7	
E1C	271.	13:33	1.34			
CE1AC	424.	14:17	2.73			
E1B	206.	14:34	1.38			
R-E1B	157.	15:48	1.38			
R-RE1B	40.	14:49	1.38			48.72
CE1ABC	464.	14:17	4.10			
CE1	386.	17:03	4.10	0	11.	
R-CE1	385.	17:30	4.10	.0	3.5	
RETE1B	117.	15:48	.00			
TMP1	484.	16:54	4.10			
R-TMP1	439.	19:53	4.10	.0	22.	
CE1A2	474.	19:43	5.08			
E3E	30.	12:47	.10			

E3C	59.	12:26	.14		
E3D	27.	12:39	.08		
E3	57.	13:05	.23		
E3B	16.	12:27	.04		
E3A	24.	12:51	.09		
CE3A	89.	12:58	.36		
R-CE3A	86.	13:19	.36		
FBNE	24.	12:37	.07		
CE3D	152.	12:42	.65		
R-CE3D	150.	13:19	.65		
CE3	175.	13:05	.75		
CE2A3	484.	19:38	5.83		
RCE2A3	465.	21:31	5.83	0	13.
E4B	184.	13:54	.98		
CE4B	485.	21:24	6.81		
E4A	141.	13:37	.70		
CE4	495.	21:19	7.51		
R-CE4	477.	23:29	7.51	.0	16.
E5	71.	13:21	.32		
CE5	478.	23:29	7.83		
CEG	854.	15:28	12.24		
R-CEG	849.	16:04	12.24	0	9.8
E6	79.	12:35	.22		
CE6	858.	16:02	12.46		
R-CE6	858.	16:37	12.46	.0	.0
E7	205.	12:54	.70		
CE7	898.	16:30	13.17		
R-CE7	898.	16:40	13.17	.0	3.8
E8	103.	12:28	.25		
CE8	909.	16:40	13.41		
R-CE8	908.	16:57	13.41	.0	5.9
E9	183.	12:28	.44		
CE9	926.	16:56	13.85		
R-CE9	926.	17:00	13.85	.0	3.2
E10	141.	12:21	.29		
CE10	938.	16:59	14.14		
R-CE10	937.	17:07	14.14	.0	3.1
E11	121.	12:18	.23		
CE11	947.	17:07	14.37		
R-CE11	947.	17:18	14.37	.0	3.2
E12	180.	12:28	.43		
CE12	966.	17:18	14.80		
R-CE12	966.	17:29	14.80	.0	3.3
E13	71.	12:23	.15		

CE13	972.	17:29	14.96		
R-CE13	972.	17:39	14.96	.0	3.8
E14	515.	12:37	1.39		
R-E14	171.	14:25	1.39	.0	39.
CE14	1142.	17:39	16.35		

Sacramento Hydrologic Calculator Report

October 12, 2007 12:08

Project Title: ELDER/GERBER CREEK BASINS - EXISTING CONDS. Method: Sacramento County HEC-1 method
Comments: EG24E100 ELDER/GERBER CREEK BASINS - EXISTING CONDS Date: 4/21/2005
Prepared by: BAT

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
G2A	825	85	Basin "n"	-	Computed	-	Computed	-	Computed	-
G2B	403	75	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A	509.1	70	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3B	86.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3D	367.9	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
G4	226.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G5	252.5	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1A	885.18	125	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1C	860.69	100	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1B	881	0	Basin "n"	-	Computed	-	Computed	-	Computed	-
E2	623.5	65	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3	148.3	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B	628	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4A	447.6	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E5	203.2	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7	449.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E8	156.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E9	280.71	36	Basin "n"	-	Computed	-	Computed	-	Computed	-
E10	185.71	32	Basin "n"	-	Computed	-	Computed	-	Computed	-
E11	147.52	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
E12	276.48	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
E13	97.05	24	Basin "n"	-	Computed	-	Computed	-	Computed	-
E14	892.73	20	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3C	151.6	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6	143.3	45	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3B	25.4	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3C	90.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3D	52.9	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3E	64.5	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3A	54.5	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
FBNE	46.8	68	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	14399	5998	0031	Undeveloped													0	0	0	709.9		
				Developed													29.1	78.8	7.2	0		
G2B	8369	4752	0032	Undeveloped													0	0	0	226.7		
				Developed													39.2	1.4	135.7	0		
G3A	6399	4599	0028	Undeveloped												0	0	0		447.4		
				Developed												3.7	38.8	19.2		0		
G3B	3152	2001	0026	Undeveloped												0	0	0		58		
				Developed												7.6	19.7	0.9		0		
G3D	9900	5502	0016	Undeveloped		0										0	0		0	242.2		
				Developed		5.8										7.5	89.8		22.6	0		
G4	6199	2999	0017	Undeveloped	0												0	0	0	158.8		
				Developed	2												33.5	23.4	8.6	0		
G5	5940	3300	0015	Undeveloped													0		0	183.4		
				Developed													34		35.1	0		
E1A	10798	5998	0050	Undeveloped													0	0	0	725.45		
				Developed													65.15	1.96	92.61	0		
E1C	9900	5000	005	Undeveloped			0										0	0	0	665.16		
				Developed			6.61										43.89	19.21	125.82	0		
E1B	15750	8501	0029	Undeveloped													0			834.98		
				Developed													46.02			0		
E2	14509	7202	0013	Undeveloped			0				0						0	0		430.5		
				Developed			11.6				3.9						23.7	153.8		0		
E3	5193	2202	0039	Undeveloped													0	0.3	7	136.8		
				Developed													4.2	0	0	0		
E4B	8100	5998	0012	Undeveloped							0				0		0		0	497.7		
				Developed							92.9				11.3		25.1		0.9	0		
E4A	7302	4298	0015	Undeveloped												0	0	0	0	348.9		
				Developed												21.5	36.3	19.8	21.1	0		
E5	5760	3099	0014	Undeveloped												0	0	0	0	158.4		
				Developed												4.2	15.3	24.3	0.9	0		
E7	5518	2519	0012	Undeveloped		0			0		0		0				0	0	0	186.2		
				Developed		4.5			78.6		4.6		107.7				23	31.3	14.1	0		
E8	4800	2408	0014	Undeveloped		0	0	0	0				0		0		0	0				
				Developed		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	4604	2497	0025	Undeveloped		0				0	0		0						0	1.27		
				Developed		13.95				66.54	7.38		104.18						87.39	0		
E10	4050	1843	0024	Undeveloped		0		0			0	0	0						0	0.22		
				Developed		12.06		8.85			10.7	17.38	128.57						7.92	0		
E11	3400	1399	0024	Undeveloped		0				0	0	0	0						0	0.09		
				Developed		20.62				0.45	32.65	0.19	77.15						16.37	0		
E12	4599	2339	0012	Undeveloped		0				0	0	0	0						0	1.23		
				Developed		31.57				63.87	83.06	3.16	22.45						71.13	0		
E13	3200	1800	0022	Undeveloped		0				0		0	0						0	0.02		
				Developed		23.37				19.11		10.63	0.2						43.73	0		
E14	9002	4499	0024	Undeveloped		0		0		0		0	0						0	12.18		
				Developed		229.5		71.89		38.63		90.94	397.71						51.88	0		
G3C	3332	1299	0 0049	Undeveloped																151.61		
				Developed																0		
E6	3802	1800	0035	Undeveloped														0	0	34.4		
				Developed														64.2	44.7	0		
E3B	1707	600	0 0035	Undeveloped													0	5.9		18.1		
				Developed													1.4	0		0		
E3C	2561	1525	0023	Undeveloped														0		2.9		
				Developed														87.8		0		
E3D	2330	1000	0026	Undeveloped												0	0	8		43.7		
				Developed												1	0.2	0		0		
E3E	3070	1200	0 00195	Undeveloped													0			57.2		
				Developed													7.3			0		
E3A	3485	1508	0034	Undeveloped													0	0.3	6	47.6		
				Developed													0.6	0	0	0		
FBNE	2070	1010	0 0029	Undeveloped													0	1.4		44.3		
				Developed													1.1	0		0		

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	B																		
	C													5.1	34.4	1	89.3		
	D													24	44.4	6.2	620.6		
G2B	B																		
	C													28.4	1.4	97.6	88.9		
	D													10.8		38.2	137.8		
G3A	B																		
	C												2.4	23.1	17		163.9		
	D												1.3	15.7	2.2		283.5		
G3B	B																		
	C													2.5			0.2		
	D												7.6	17.2	0.9		57.9		
G3D	B																		
	C													1.9			0.9		
	D		5.8										7.5	87.9		22.6	241.4		
G4	B																		
	C																		
	D	2												33.5	23.4	8.6	158.8		
G5	B																		
	C																		
	D													34		35.1	183.4		
E1A	B																0.6		
	C													2.2	1.8	80	179.2		
	D													62.9	0.2	12.6	545.7		
E1C	B															1.3	21.9		
	C			3.3										15.6	19.2	7.9	190.3		
	D			3.3										28.3		116.6	452.9		
E1B	B																		
	C													2.8			81.5		
	D													43.2			753.4		
E2	B																		
	C													14.8			121.6		
	D			11.6				3.9						8.9	153.8		308.9		
E3	B																		
	C														0.3	7	39.2		
	D													4.1			97.7		
E4B	B																		
	C											7.5					0.2		
	D							92.9				3.7		25.1		0.9	497.5		
E4A	B																		
	C												1.8		1.6		6.4		
	D												19.7	36.3	18.1	21.1	342.5		
E5	B																		
	C																		
	D												4.2	15.3	24.3	0.9	158.4		
E7	B																		
	C																		
	D		4.5			78.6		4.6		107.7				23	31.3	14.1	186.2		
E8	B																		
	C																		
	D		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	B																		
	C																		
	D		14				66.5	7.4		104.2						87.4	1.3		
E10	B																		
	C																		
	D		12.1		8.8			10.7	17.4	128.6						7.9	0.2		
E11	B																		
	C																		
	D		20.6				0.5	32.7	0.2	77.2						16.4	0.1		
E12	B																		
	C																		
	D		31.6				63.9	83.1	3.2	22.5						71.1	1.2		
	B																		

E13	C																		
	D		23.4				19.1		10.6	0.2						43.7			
E14	B																		
	C																		
	D		229.5		71.9		38.6		90.9	397.7						51.9	12.2		
G3C	B																		
	C																		
	D																151.6		
E6	B																		
	C																		
	D														64.2	44.7	34.4		
E3B	B																		
	C														5.1		11.7		
	D													1.4	0.8		6.4		
E3C	B																		
	C														7.7				
	D														80.1		2.9		
E3D	B																		
	C												0.7	0.2	5.4		26.2		
	D												0.3		2.6		17.5		
E3E	B																		
	C																		
	D													7.3			57.2		
E3A	B																		
	C														0.3	5.7	19.1		
	D													0.6		0.2	28.5		
FBNE	B																		
	C													1.1			25.1		
	D														1.4		19.2		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
R-CE3D	CE3D	CE3	Trapezoidal	3150	0.0022	10	4:1	0.06
R-CE3A	CE3A	CE3D	Trapezoidal	2638	0.0022	10	4:1	0.06

Hydrograph Routing – Muskingum-Cunge 8-Point Cross Section

Routing ID	Route From	Route To	Channel Length (ft)	Slope (ft/ft)	Cross Section Geometry								
						Left OB 1	Left OB 2	Left Bank	Channel Point 1	Channel Point 2	Right Bank	Right OB 1	Right OB 2
R-E1B	E1B	R-RE1B	4000	0003	Station	0	50	100	104	108	116	166	216
					Elevation	3.7	3	1.2	.6	.4	1.5	3.7	5.5
					Mannings "n"	06			035		06		

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-G2A	G2A	CG2	5	0	Volume (acre-ft)	0	15 2	27 7	51 6	76	100 8	122 7	145 4	169	191 8	221 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG2	CG2	CG3A	5	0	Volume (acre-ft)	0	2 5	4 5	7 9	11 3	15 2	20 7	24	26	28 1	30
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3A	CG3A	CG3B	5	0	Volume (acre-ft)	0	1 9	4 4	10 9	18 9	28 4	40 6	50 6	57 2	63 3	68 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3B	CG3B	CG3D	5	0	Volume (acre-ft)	0	0 8	1 3	2 8	5 3	7 6	9 2	11	13 1	15 3	18
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG4	CG4	CG3	5	0	Volume (acre-ft)	0	2 1	3 8	7	10	13 4	17 1	21 4	27	34 1	41 5
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-E1A	E1A	CE1AC	5	0	Volume (acre-ft)	0	11 2	29 2	34 5	42 4	60 3	77 5	93 3	116 1	141 6	171 8
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
CE1	CE1ABC	R-CE1	5	0	Volume (acre-ft)	0	7 7	35 6	45	60 3	68 5	91 3	115 9	141 2	166 4	190 9
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE1	CE1	TMP1	5	0	Volume (acre-ft)	0	5 1	14 2	16 2	18 1	21 7	25 1	28 5	31 7	34 9	41
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
RCE2A3	CE2A3	CE4B	5	0	Volume (acre-ft)	0	7 6	39 9	47 6	55 2	71 4	87 5	102 9	115 6	126 3	136 2
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE4	CE4	CE5	5	0	Volume (acre-ft)	0	13 1	44 1	53 5	63 7	83 6	102 7	121 1	139 7	158 4	177 7
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CEG	CEG	CE6	5	0	Volume (acre-ft)	0	2 8	16 8	31 8	46 4	56 1	62 3	67 1	71 5	75 6	79 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE6	CE6	CE7	4451 04	0	Volume (acre-ft)	0	5 2	15 4	22 9	31 3	40 9	51 7	64 7	79 7	94 1	110 7
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE7	CE7	CE8	5	0	Volume (acre-ft)	0	6 1	12 4	15 6	17 9	20 5	23	25 9	30 5	36 4	64 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE8	CE8	CE9	5	0	Volume (acre-ft)	0	7 3	17 3	22 6	27 3	31 7	35 8	39 7	43 2	47 2	56 2
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE9	CE9	CE10	4	0	Volume (acre-ft)	0	3	7	10	12	13	15	17	19	20	23
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE10	CE10	CE11	3	0	Volume (acre-ft)	0	2	5	7	8	10	11	13	14	16	17
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE11	CE11	CE12	5	0	Volume (acre-ft)	0	4	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE12	CE12	CE13	5	0	Volume (acre-ft)	0	6	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE13	CE13	CE14	5	0	Volume (acre-ft)	0	8 6	13 7	18 2	22 4	26 4	30 8	34 6	39	64	
					Flow (cfs)	0	300	600	900	1200	1500	1800	2100	2400	2700	
R-E14	E14	CE14	1	0	Volume (acre-ft)	0	2 35	4 71	7 04	100						
					Flow (cfs)	0	56	113	169	175						
R-TMP1	TMP1	CE1A2	5	0	Volume (acre-ft)	0	22 8	74 4	86 6	98 7	122 8	146 6	169 7	193 5	216 8	239 1
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000

SacCalc Model Data

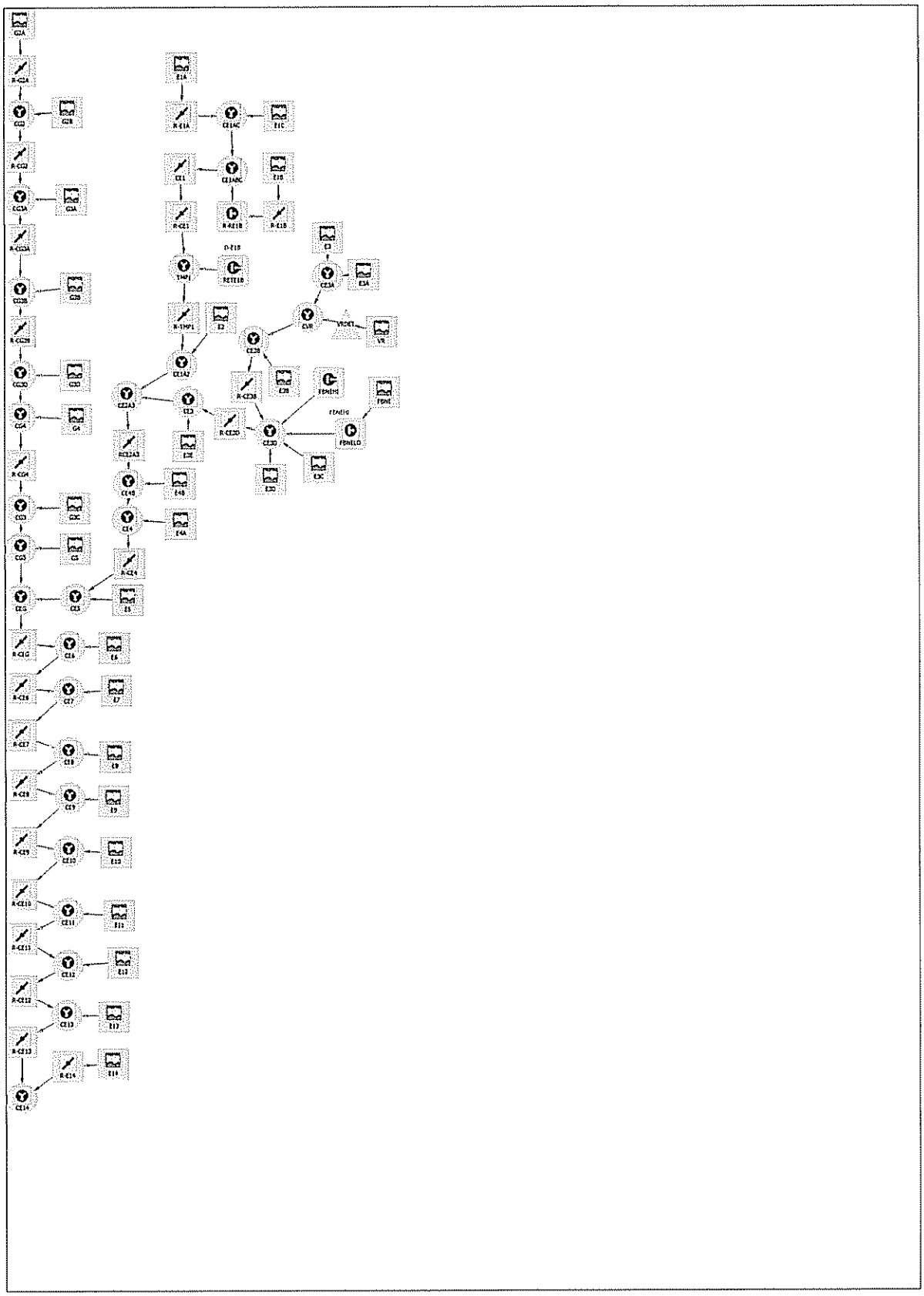
For

Elder and Gerber Creeks – Interim Post

Model Schematic Layout

Peak Flow Summary

Report



View HEC-1 output

Sacramento method results
(Project: Vintage Ranch and Florin-Bradshaw developments)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	375.	14:04	1.29			
R-G2A	270.	17:03	1.29	.0	14.	
G2B	238.	13:22	.63			
CG2	328.	16:38	1.92			
R-CG2	327.	17:07	1.92	.0	2.5	
G3A	286.	13:29	.80			
CG3A	551.	13:38	2.71			
R-CG3A	475.	15:09	2.71	.0	7.5	
G3B	74.	12:47	.13			
CG3B	494.	15:07	2.85			
R-CG3B	494.	15:19	2.85	.0	1.8	
G3D	189.	13:45	.57			
CG3D	609.	15:04	3.42			
G4	145.	13:15	.35			
CG4	674.	14:54	3.78			
R-CG4	669.	15:32	3.78	.0	5.1	
G3C	134.	12:45	.24			
CG3	698.	15:26	4.01			
G5	156.	13:19	.39			
CG5	764.	15:13	4.41			
E2	264.	14:19	.97			
E1A	456.	13:42	1.38			
R-E1A	379.	15:19	1.38	.0	7.8	
E1C	477.	13:31	1.34			
CE1AC	705.	13:44	2.73			
E1B	351.	14:32	1.38			
R-E1B	276.	15:30	1.38			
R-RE1B	40.	14:31	1.38			114.54
CE1ABC	745.	13:44	4.10			
CE1	637.	17:01	4.10	.0	20.	
R-CE1	635.	17:26	4.10	.0	5.3	
RETE1B	236.	15:30	.00			
TMP1	826.	16:53	4.10			
R-TMP1	753.	19:42	4.10	.0	36.	
CE1A2	821.	19:32	5.08			
E3E	56.	12:46	.10			
E3C	113.	12:26	.14			
E3D	50.	12:39	.08			

E3B	15.	12:29	.02			
E3	100.	13:03	.22			
E3A	43.	12:50	.08			
CE3A	139.	12:58	.30			
VR	47.	12:08	.03			
VRDET	7514.	0:00	.03	133.	65.	
CVR	7514.	0:00	.34			
CE3B	7514.	0:00	.36			
R-CE3B	7514.	0:00	.36			
FBNE	91.	12:12	.07			
FBNELO	23.	12:07	.07			2.25
FBNEHI	68.	12:12	.00			
CE3D	7514.	0:00	.66			
R-CE3D	7514.	0:00	.66			
CE3	7514.	0:00	.76			
CE2A3	7514.	0:00	5.83			
RCE2A3	1667.	1:18	5.83	133.	40.	
E4B	310.	13:54	.98			
CE4B	1668.	1:18	6.82			
E4A	244.	13:36	.70			
CE4	1668.	1:18	7.52			
R-CE4	874.	3:35	7.52	133.	31.	
E5	125.	13:20	.32			
CE5	875.	3:35	7.83			
CEG	1476.	16:13	12.24			
R-CEG	1474.	16:29	12.24	133.	14	
E6	147.	12:36	.22			
CE6	1489.	16:27	12.47			
R-CE6	1488.	17:22	12.47	133.	.0	
E7	351.	12:57	.70			
CE7	1545.	17:18	13.17			
R-CE7	1544.	17:35	13.17	133.	5.8	
E8	170.	12:34	.25			
CE8	1560.	17:35	13.41			
R-CE8	1559.	17:47	13.41	133.	8.5	
E9	310.	12:33	.44			
CE9	1587.	17:47	13.85			
R-CE9	1586.	17:54	13.85	133.	4.7	
E10	229.	12:27	.29			
CE10	1605.	17:54	14.14			
R-CE10	1604.	18:01	14.14	133.	4.7	
E11	201.	12:23	.23			
CE11	1619.	18:01	14.37			
R-CE11	1619.	18:08	14.37	133.	4.6	

E12	301.	12:34	.43			
CE12	1647.	18:07	14.80			
R-CE12	1647.	18:14	14.80	133.	4.7	
E13	124.	12:26	.15			
CE13	1656.	18:13	14.96			
R-CE13	1656.	18:23	14.96	133.	5.7	
E14	808.	12:46	1.39			
R-E14	174.	15:57	1.39	133.	84.	
CE14	1829.	18:23	16.35			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	218.	14:07	1.29			
R-G2A	159.	17:03	1.29	.0	8.4	
G2B	134.	13:23	.63			
CG2	188	16:43	1.92			
R-CG2	187.	17:08	1.92	.0	1.5	
G3A	162.	13:31	.80			
CG3A	308.	13:40	2.71			
R-CG3A	283.	14:43	2.71	.0	3.5	
G3B	41.	12:47	.13			
CG3B	296.	14:41	2.85			
R-CG3B	295.	14:59	2.85	.0	1.0	
G3D	111.	13:47	.57			
CG3D	374.	14:48	3.42			
G4	83.	13:16	.35			
CG4	418.	14:39	3.78			
R-CG4	416.	15:05	3.78	.0	2.8	
G3C	73.	12:45	.24			
CG3	435.	15:01	4.01			
G5	89.	13:21	.39			
CG5	482.	14:24	4.41			
E2	155.	14:21	.97			
E1A	261.	13:44	1.38			
R-E1A	235.	14:51	1.38	.0	4.7	
E1C	271.	13:33	1.34			
CE1AC	424.	14:17	2.73			
E1B	206.	14:34	1.38			
R-E1B	157.	15:48	1.38			
R-RE1B	40.	14:49	1.38			48.72
CE1ABC	464.	14:17	4.10			
CE1	386.	17:03	4.10	.0	11.	

R-CE1	385.	17:30	4.10	.0	3.5	
RETE1B	117.	15:48	.00			
TMP1	484.	16:54	4.10			
R-TMP1	439.	19:53	4.10	.0	22.	
CE1A2	474.	19:43	5.08			
E3E	30.	12:47	.10			
E3C	59.	12:26	.14			
E3D	27.	12:39	.08			
E3B	7.8	12:29	.02			
E3	55.	13:05	.22			
E3A	23.	12:51	.08			
CE3A	77.	12:59	.30			
VR	27.	12:06	.03			
VRDET	7514.	0:00	.03	133.	65.	
CVR	7514.	0:00	.34			
CE3B	7514.	0:00	.36			
R-CE3B	7514.	0:00	.36			
FBNE	54.	12:09	.07			
FBNELO	23.	12:06	.07			.64
FBNEHI	31.	12:09	.00			
CE3D	7514.	0:00	.66			
R-CE3D	7514.	0:00	.66			
CE3	7514.	0:00	.76			
CE2A3	7514.	0:00	5.83			
RCE2A3	1667.	1:18	5.83	133.	40.	
E4B	184.	13:54	.98			
CE4B	1668.	1:18	6.82			
E4A	141.	13:37	.70			
CE4	1668.	1:18	7.52			
R-CE4	873.	3:35	7.52	133.	31.	
E5	71.	13:21	.32			
CE5	873.	3:35	7.83			
CEG	877.	3:35	12.24			
R-CEG	857.	16:05	12.24	133.	9.8	
E6	79.	12:35	.22			
CE6	866.	16:03	12.47			
R-CE6	866.	16:37	12.47	133.	.0	
E7	205.	12:54	.70			
CE7	905.	16:32	13.17			
R-CE7	905.	16:41	13.17	133.	3.9	
E8	103.	12:28	.25			
CE8	916.	16:40	13.41			
R-CE8	915.	16:57	13.41	133.	6.0	
E9	183.	12:28	.44			

CE9	933.	16:56	13.85		
R-CE9	933.	17:00	13.85	133.	3.2
E10	141.	12:21	.29		
CE10	945.	17:00	14.14		
R-CE10	945.	17:07	14.14	133.	3.1
E11	121.	12:18	.23		
CE11	955.	17:07	14.37		
R-CE11	954.	17:18	14.37	133.	3.3
E12	180.	12:28	.43		
CE12	974.	17:18	14.80		
R-CE12	973.	17:29	14.80	133.	3.3
E13	71.	12:23	.15		
CE13	980.	17:29	14.96		
R-CE13	979.	17:39	14.96	133.	3.9
E14	515.	12:37	1.39		
R-E14	171.	14:25	1.39	133.	39.
CE14	1149.	17:39	16.35		

Sacramento Hydrologic Calculator Report

October 12, 2007 12:06

Project Title: Vintage Ranch and Florin-Bradshaw developments Method: Sacramento County HEC-1 method
Comments: EXISTING CONDS with Vintage Ranch and Florin-Bradshaw developed Date: 6/14/2007
Prepared by: RDH

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
G2A	825	85	Basin "n"	-	Computed	-	Computed	-	Computed	-
G2B	403	75	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A	509.1	70	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3B	86.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3D	367.9	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
G4	226.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G5	252.5	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1A	885.18	125	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1C	860.69	100	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1B	881	0	Basin "n"	-	Computed	-	Computed	-	Computed	-
E2	623.5	65	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3	141.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B	628	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4A	447.6	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E5	203.2	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7	449.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E8	156.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E9	280.71	36	Basin "n"	-	Computed	-	Computed	-	Computed	-
E10	185.71	32	Basin "n"	-	Computed	-	Computed	-	Computed	-
E11	147.52	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
E12	276.48	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
E13	97.05	24	Basin "n"	-	Computed	-	Computed	-	Computed	-
E14	892.73	20	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3C	151.6	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6	143.3	45	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3A	52.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3B	13.3	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3C	90.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3D	52.9	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3E	64.5	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
VR	20.4	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
FBNE	47.5	68	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	14399	5998	0031	Undeveloped													0	0	0	709.9		
				Developed													29.1	78.8	7.2	0		
G2B	8369	4752	0032	Undeveloped													0	0	0	226.7		
				Developed													39.2	1.4	135.7	0		
G3A	6399	4599	0028	Undeveloped												0	0	0		447.4		
				Developed												3.7	38.8	19.2		0		
G3B	3152	2001	0026	Undeveloped												0	0	0		58		
				Developed												7.6	19.7	0.9		0		
G3D	9900	5502	0016	Undeveloped		0										0	0		0	242.2		
				Developed		5.8										7.5	89.8		22.6	0		
G4	6199	2999	0017	Undeveloped	0												0	0	0	158.8		
				Developed	2												33.5	23.4	8.6	0		
G5	5940	3300	0015	Undeveloped													0		0	183.4		
				Developed													34		35.1	0		
E1A	10798	5998	0050	Undeveloped													0	0	0	725.45		
				Developed													65.15	1.96	92.61	0		
E1C	9900	5000	005	Undeveloped			0										0	0	0	665.16		
				Developed			6.61										43.89	19.21	125.82	0		
E1B	15750	8501	0029	Undeveloped													0			834.98		
				Developed													46.02			0		
E2	14509	7202	0013	Undeveloped			0				0						0	0		430.5		
				Developed			11.6				3.9						23.7	153.8		0		
E3	5193	2202	0039	Undeveloped													0		7	129.2		
				Developed													5.5		0	0		
E4B	8100	5998	0012	Undeveloped							0				0		0		0	497.7		
				Developed							92.9				11.3		25.1		0.9	0		
E4A	7302	4298	0015	Undeveloped												0	0	0	0	348.9		
				Developed												21.5	36.3	19.8	21.1	0		
E5	5760	3099	0014	Undeveloped												0	0	0	0	158.4		
				Developed												4.2	15.3	24.3	0.9	0		
E7	5518	2519	0012	Undeveloped		0			0		0		0				0	0	0	186.2		
				Developed		4.5			78.6		4.6		107.7				23	31.3	14.1	0		
E8	4800	2408	0014	Undeveloped		0	0	0	0				0		0		0	0				
				Developed		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	4604	2497	0025	Undeveloped		0				0	0		0						0	1.27		
				Developed		13.95				66.54	7.38		104.18						87.39	0		
E10	4050	1843	0024	Undeveloped		0		0			0	0	0						0	0.22		
				Developed		12.06		8.85			10.7	17.38	128.57						7.92	0		
E11	3400	1399	0024	Undeveloped		0				0	0	0	0						0	0.09		
				Developed		20.62				0.45	32.65	0.19	77.15						16.37	0		
E12	4599	2339	0012	Undeveloped		0				0	0	0	0						0	1.23		
				Developed		31.57				63.87	83.06	3.16	22.45						71.13	0		
E13	3200	1800	0022	Undeveloped		0				0		0	0						0	0.02		
				Developed		23.37				19.11		10.63	0.2						43.73	0		
E14	9002	4499	0024	Undeveloped		0		0		0		0	0						0	12.18		
				Developed		229.5		71.89		38.63		90.94	397.71						51.88	0		
G3C	3332	1299	0 0049	Undeveloped																151.61		
				Developed																0		
E6	3802	1800	0035	Undeveloped														0	0	34.4		
				Developed														64.2	44.7	0		
E3A	3485	1508	0034	Undeveloped													0.6	0.1	6	46.1		
				Developed													0	0	0	0		
E3B	1482	723	0027	Undeveloped														5.6		7.7		
				Developed														0		0		
E3C	2561	1525	0023	Undeveloped														0		2.9		
				Developed														87.8		0		
E3D	2330	1000	0026	Undeveloped												0	0	8		43.7		
				Developed												1	0.2	0		0		
E3E	3070	1200	0 00195	Undeveloped													0			57.2		
				Developed													7.3			0		
VR	1472	351	0041	Undeveloped				0				0										
				Developed				10.1				10.3										
FBNE	2070	1010	0029	Undeveloped		0																
				Developed		47.4																

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	B																		
	C													5.1	34.4	1	89.3		
	D													24	44.4	6.2	620.6		
G2B	B																		
	C													28.4	1.4	97.6	88.9		
	D													10.8		38.2	137.8		
G3A	B																		
	C												2.4	23.1	17		163.9		
	D												1.3	15.7	2.2		283.5		
G3B	B																		
	C													2.5			0.2		
	D												7.6	17.2	0.9		57.9		
G3D	B																		
	C													1.9			0.9		
	D		5.8										7.5	87.9		22.6	241.4		
G4	B																		
	C																		
	D	2												33.5	23.4	8.6	158.8		
G5	B																		
	C																		
	D													34		35.1	183.4		
E1A	B																0.6		
	C													2.2	1.8	80	179.2		
	D													62.9	0.2	12.6	545.7		
E1C	B															1.3	21.9		
	C			3.3										15.6	19.2	7.9	190.3		
	D			3.3										28.3		116.6	452.9		
E1B	B																		
	C													2.8			81.5		
	D													43.2			753.4		
E2	B																		
	C													14.8			121.6		
	D			11.6				3.9						8.9	153.8		308.9		
E3	B																		
	C															7	30.7		
	D													5.5			98.4		
E4B	B																		
	C											7.5					0.2		
	D							92.9				3.7		25.1		0.9	497.5		
E4A	B																		
	C												1.8		1.6		6.4		
	D												19.7	36.3	18.1	21.1	342.5		
E5	B																		
	C																		
	D												4.2	15.3	24.3	0.9	158.4		
E7	B																		
	C																		
	D		4.5			78.6		4.6		107.7				23	31.3	14.1	186.2		
E8	B																		
	C																		
	D		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	B																		
	C																		
	D		14				66.5	7.4		104.2						87.4	1.3		
E10	B																		
	C																		
	D		12.1		8.8			10.7	17.4	128.6						7.9	0.2		
E11	B																		
	C																		
	D		20.6				0.5	32.7	0.2	77.2						16.4	0.1		
E12	B																		
	C																		
	D		31.6				63.9	83.1	3.2	22.5						71.1	1.2		
	B																		

E13	C																		
	D		23.4				19.1		10.6	0.2						43.7			
E14	B																		
	C																		
	D		229.5		71.9		38.6		90.9	397.7						51.9	12.2		
G3C	B																		
	C																		
	D																151.6		
E6	B																		
	C																		
	D														64.2	44.7	34.4		
E3A	B																		
	C														0.1	5.7	17.6		
	D													0.6		0.2	28.5		
E3B	B																		
	C														4.9		6		
	D														0.7		1.8		
E3C	B																		
	C														7.7				
	D														80.1		2.9		
E3D	B																		
	C												0.7	0.2	5.4		26.2		
	D												0.3		2.6		17.5		
E3E	B																		
	C																		
	D													7.3			57.2		
VR	B																		
	C				6.7				9.6										
	D				3.3				0.7										
FBNE	B																		
	C		26.2																
	D		21.2																

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks Shrubs Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
R-CE3B	CE3B	CE3D	Trapezoidal	2163	0.0027	10	4:1	0.06
R-CE3D	CE3D	CE3	Trapezoidal	3150	0.0022	10	4:1	0.06

Hydrograph Routing – Muskingum-Cunge 8-Point Cross Section

Routing ID	Route From	Route To	Channel Length (ft)	Slope (ft/ft)	Cross Section Geometry								
						Left OB 1	Left OB 2	Left Bank	Channel Point 1	Channel Point 2	Right Bank	Right OB 1	Right OB 2
R-E1B	E1B	R-RE1B	4000	0003	Station	0	50	100	104	108	116	166	216
					Elevation	3.7	3	1.2	.6	.4	1.5	3.7	5.5
					Mannings "n"	06			035		06		

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-G2A	G2A	CG2	5	0	Volume (acre-ft)	0	15 2	27 7	51 6	76	100 8	122 7	145 4	169	191 8	221 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG2	CG2	CG3A	5	0	Volume (acre-ft)	0	2 5	4 5	7 9	11 3	15 2	20 7	24	26	28 1	30
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3A	CG3A	CG3B	5	0	Volume (acre-ft)	0	1 9	4 4	10 9	18 9	28 4	40 6	50 6	57 2	63 3	68 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3B	CG3B	CG3D	5	0	Volume (acre-ft)	0	0 8	1 3	2 8	5 3	7 6	9 2	11	13 1	15 3	18
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG4	CG4	CG3	5	0	Volume (acre-ft)	0	2 1	3 8	7	10	13 4	17 1	21 4	27	34 1	41 5
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-E1A	E1A	CE1AC	5	0	Volume (acre-ft)	0	11 2	29 2	34 5	42 4	60 3	77 5	93 3	116 1	141 6	171 8
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
CE1	CE1ABC	R-CE1	5	0	Volume (acre-ft)	0	7 7	35 6	45	60 3	68 5	91 3	115 9	141 2	166 4	190 9
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE1	CE1	IMP1	5	0	Volume (acre-ft)	0	5 1	14 2	16 2	18 1	21 7	25 1	28 5	31 7	34 9	41
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
RCE2A3	CE2A3	CE4B	5	0	Volume (acre-ft)	0	7 6	39 9	47 6	55 2	71 4	87 5	102 9	115 6	126 3	136 2
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE4	CE4	CE5	5	0	Volume (acre-ft)	0	13 1	44 1	53 5	63 7	83 6	102 7	121 1	139 7	158 4	177 7
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CEG	CEG	CE6	5	0	Volume (acre-ft)	0	2 8	16 8	31 8	46 4	56 1	62 3	67 1	71 5	75 6	79 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE6	CE6	CE7	4451 04	0	Volume (acre-ft)	0	5 2	15 4	22 9	31 3	40 9	51 7	64 7	79 7	94 1	110 7
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE7	CE7	CE8	5	0	Volume (acre-ft)	0	6 1	12 4	15 6	17 9	20 5	23	25 9	30 5	36 4	64 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE8	CE8	CE9	5	0	Volume (acre-ft)	0	7 3	17 3	22 6	27 3	31 7	35 8	39 7	43 2	47 2	56 2
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE9	CE9	CE10	4	0	Volume (acre-ft)	0	3	7	10	12	13	15	17	19	20	23
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE10	CE10	CE11	3	0	Volume (acre-ft)	0	2	5	7	8	10	11	13	14	16	17
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE11	CE11	CE12	5	0	Volume (acre-ft)	0	4	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE12	CE12	CE13	5	0	Volume (acre-ft)	0	6	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE13	CE13	CE14	5	0	Volume (acre-ft)	0	8 6	13 7	18 2	22 4	26 4	30 8	34 6	39	64	
					Flow (cfs)	0	300	600	900	1200	1500	1800	2100	2400	2700	
R-E14	E14	CE14	1	0	Volume (acre-ft)	0	2 35	4 71	7 04	100						
					Flow (cfs)	0	56	113	169	175						
R-IMP1	IMP1	CE1A2	5	0	Volume (acre-ft)	0	22 8	74 4	86 6	98 7	122 8	146 6	169 7	193 5	216 8	239 1
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000

Detention Basin Data

Detention Basin	Initial Condition		Pond Storage Relation											Outlet Data			
														Elev (ft)	Area (sq ft)	Q Coef.	Exponent
VRDET	Volume (ac-ft)	65 4	Elevation (ft)	65 4	69									65 6	785	1	0 5
			Volume (ac-ft)	0	3 47									66 5	50	1	1 5
	Pump Data																
	Pump Hydrograph Name							Pump 1		Pump 2		Pump 3		Pump 4		Pump 5	
			Pump Discharge (cfs)														
			Elevation at which Pump Turns On (ft)														
			Elevation at which Pump Turns Off (ft)														

SacCalc Model Data

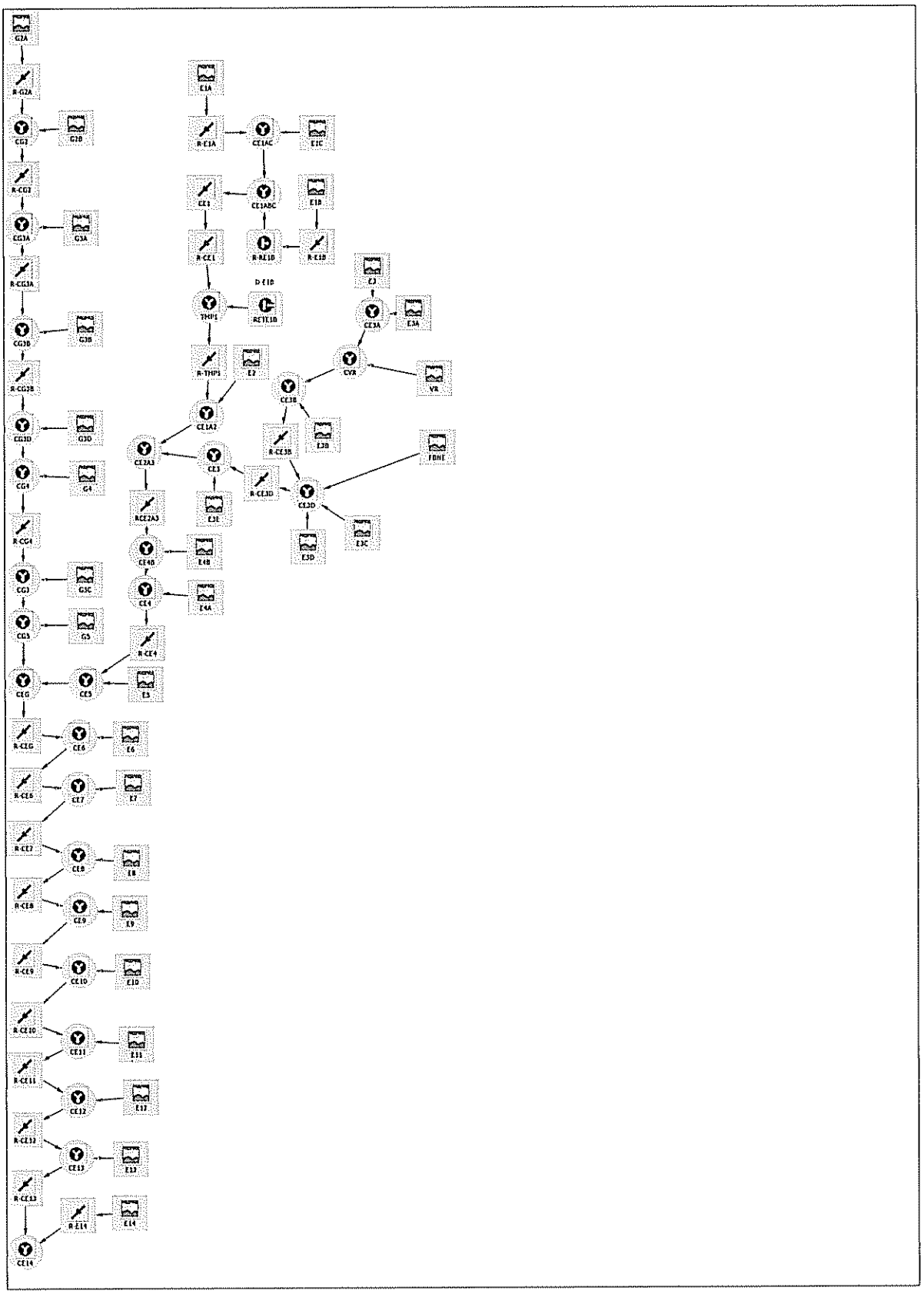
For

Elder and Gerber Creeks – Interim Ultimate

Model Schematic Layout

Peak Flow Summary

Report


G2A
R-G2A
CG2
G2B
R-CG2
CG3A
G3A
R-CG3A
CG3B
G3B
R-CG3B
CG3D
G3D
CG4
G4
R-CG4
CG3
G3C
CG5
G5
CG6
CE5
E5
R-CE6
CE6
E6
R-CE5
CE7
E7
R-CE7
CE8
E8
R-CE8
CE9
E9
R-CE9
CE10
E10
R-CE10
CE11
E11
R-CE11
CE12
E12
R-CE12
CE13
E13
R-CE13
R-E14
E14
CE14
E1A
R-E1A
CE1AC
E1C
CE1
CE1ABC
E1B
R-CE1
R-RE1B
R-E1B
D-E1B
THP1
RETE1B
R-THP1
E2
CE1A2
CE2A3
CE3
E3E
RCE2A3
CE4B
E4B
CE4
E4A
R-CE4
E3
E3
CE3A
E3A
CVA
VR
CE3B
R-CE3B
E3B
FDHF
R-CE3D
CE3D
E3D
E3C

View HEC-1 output

Sacramento method results
(Project: Vintage Ranch and Florin-Bradshaw developments)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	375.	14:04	1.29			
R-G2A	270.	17:03	1.29	.0	14.	
G2B	238.	13:22	.63			
CG2	328.	16:38	1.92			
R-CG2	327.	17:07	1.92	.0	2.5	
G3A	286.	13:29	.80			
CG3A	551.	13:38	2.71			
R-CG3A	475.	15:09	2.71	.0	7.5	
G3B	74.	12:47	.13			
CG3B	494.	15:07	2.85			
R-CG3B	494.	15:19	2.85	.0	1.8	
G3D	189.	13:45	.57			
CG3D	609.	15:04	3.42			
G4	145.	13:15	.35			
CG4	674.	14:54	3.78			
R-CG4	669.	15:32	3.78	.0	5.1	
G3C	134.	12:45	.24			
CG3	698.	15:26	4.01			
G5	156.	13:19	.39			
CG5	764.	15:13	4.41			
E2	264.	14:19	.97			
E1A	456.	13:42	1.38			
R-E1A	379.	15:19	1.38	.0	7.8	
E1C	477.	13:31	1.34			
CE1AC	705.	13:44	2.73			
E1B	351.	14:32	1.38			
R-E1B	276.	15:30	1.38			
R-RE1B	40.	14:37	1.38			114.56
CE1ABC	745.	13:44	4.10			
CE1	637.	17:01	4.10	.0	20.	
R-CE1	635.	17:26	4.10	.0	5.3	
RETE1B	236.	15:30	.00			
TMP1	826.	16:53	4.10			
R-TMP1	753.	19:42	4.10	.0	36.	
CE1A2	821.	19:32	5.08			
E3E	83.	12:27	.10			
E3C	130	12:17	.13			
E3D	80.	12:20	.09			

FBNE	91.	12:12	.07		
E3B	27.	12:10	.02		
VR	47.	12:08	.03		
E3	100.	13:03	.22		
E3A	43.	12:50	.08		
CE3A	139.	12:58	.30		
CVR	148.	12:57	.34		
CE3B	154.	12:57	.36		
R-CE3B	151.	13:10	.36		
CE3D	378.	12:18	.64		
R-CE3D	327.	12:37	.64		
CE3	399.	12:35	75		
CE2A3	853.	19:25	5.83		
RCE2A3	836.	20:46	5.83	.0	24.
E4B	310.	13:54	.98		
CE4B	882.	20:38	6.81		
E4A	244.	13:36	.70		
CE4	906.	20:33	7.51		
R-CE4	866.	22:48	7.51	.0	30.
E5	125.	13:20	.32		
CE5	870.	22:47	7.82		
CEG	1496.	16:11	12.23		
R-CEG	1494.	16:27	12.23	.0	14.
E6	147.	12:36	.22		
CE6	1509.	16:25	12.46		
R-CE6	1509.	17:20	12.46	.0	.0
E7	351.	12:57	.70		
CE7	1566.	17:16	13.16		
R-CE7	1564.	17:33	13.16	.0	5.9
E8	170.	12:34	.25		
CE8	1581.	17:33	13.40		
R-CE8	1580.	17:45	13.40	.0	8.6
E9	310.	12:33	.44		
CE9	1607.	17:45	13.84		
R-CE9	1607.	17:49	13.84	.0	4.8
E10	229.	12:27	.29		
CE10	1626.	17:48	14.13		
R-CE10	1625.	17:56	14.13	.0	4.7
E11	201.	12:23	.23		
CE11	1640.	17:56	14.36		
R-CE11	1639.	18:03	14.36	.0	4.7
E12	301.	12:34	.43		
CE12	1668.	18:03	14.80		
R-CE12	1668.	18:10	14.80	.0	4.7

E13	124.	12:26	.15			
CE13	1677.	18:10	14.95			
R-CE13	1677.	18:21	14.95	.0	5.8	
E14	808.	12:46	1.39			
R-E14	174.	15:57	1.39	.0	84.	
CE14	1850.	18:20	16.34			

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
G2A	218.	14:07	1.29			
R-G2A	159.	17:03	1.29	.0	8.4	
G2B	134.	13:23	.63			
CG2	188.	16:43	1.92			
R-CG2	187.	17:08	1.92	.0	1.5	
G3A	162.	13:31	.80			
CG3A	308.	13:40	2.71			
R-CG3A	283.	14:43	2.71	.0	3.5	
G3B	41.	12:47	.13			
CG3B	296.	14:41	2.85			
R-CG3B	295.	14:59	2.85	.0	1.0	
G3D	111.	13:47	.57			
CG3D	374.	14:48	3.42			
G4	83.	13:16	.35			
CG4	418.	14:39	3.78			
R-CG4	416.	15:05	3.78	.0	2.8	
G3C	73.	12:45	.24			
CG3	435.	15:01	4.01			
G5	89.	13:21	.39			
CG5	482.	14:24	4.41			
E2	155.	14:21	.97			
E1A	261.	13:44	1.38			
R-E1A	235.	14:51	1.38	.0	4.7	
E1C	271.	13:33	1.34			
CE1AC	424.	14:17	2.73			
E1B	206.	14:34	1.38			
R-E1B	157.	15:48	1.38			
R-RE1B	40.	14:51	1.38			48.72
CE1ABC	464.	14:17	4.10			
CE1	386.	17:03	4.10	.0	11.	
R-CE1	386.	17:30	4.10	.0	3.5	
RETE1B	117.	15:48	.00			
TMP1	484.	16:54	4.10			

R-TMP1	439.	19:53	4.10	.0	22.
CE1A2	474.	19:43	5.08		
E3E	47.	12:24	.10		
E3C	79.	12:13	.13		
E3D	48.	12:15	.09		
FBNE	54.	12:09	.07		
E3B	16.	12:07	.02		
VR	27.	12:06	.03		
E3	55.	13:05	.22		
E3A	23.	12:51	.08		
CE3A	77.	12:59	.30		
CVR	83.	12:59	.34		
CE3B	88.	12:59	.36		
R-CE3B	86.	13:13	.36		
CE3D	217.	12:14	.64		
R-CE3D	185.	12:36	.64		
CE3	224.	12:34	.75		
CE2A3	493.	19:38	5.83		
RCE2A3	474.	21:31	5.83	.0	13.
E4B	184.	13:54	.98		
CE4B	494.	21:23	6.81		
E4A	141.	13:37	.70		
CE4	516.	14:13	7.51		
R-CE4	486.	23:30	7.51	.0	16.
E5	71.	13:21	.32		
CE5	487.	23:29	7.82		
CEG	874.	15:31	12.23		
R-CEG	869.	16:07	12.23	.0	10.0
E6	79.	12:35	.22		
CE6	878.	16:05	12.46		
R-CE6	878.	16:39	12.46	.0	.0
E7	205.	12:54	.70		
CE7	918.	16:34	13.16		
R-CE7	917.	16:43	13.16	.0	3.9
E8	103.	12:28	.25		
CE8	928.	16:42	13.40		
R-CE8	928.	16:59	13.40	0	6.0
E9	183.	12:28	.44		
CE9	945.	16:58	13.84		
R-CE9	945.	17:01	13.84	.0	3.2
E10	141.	12:21	.29		
CE10	957.	17:01	14.13		
R-CE10	957.	17:09	14.13	.0	3.2
E11	121.	12:18	.23		

CE11	967.	17:08	14.36		
R-CE11	967.	17:20	14.36	.0	3.3
E12	180.	12:28	.43		
CE12	986.	17:19	14.80		
R-CE12	986.	17:30	14.80	.0	3.4
E13	71.	12:23	.15		
CE13	992.	17:30	14.95		
R-CE13	992.	17:40	14.95	.0	3.9
E14	515.	12:37	1.39		
R-E14	171.	14:26	1.39	.0	39.
CE14	1162.	17:40	16.34		

Sacramento Hydrologic Calculator Report

October 12, 2007 12:31

Project Title: Vintage Ranch and Florin-Bradshaw developments Method: Sacramento County HEC-1 method
Comments: EXISTING CONDS with Vintage Ranch and Florin-Bradshaw developed Date: 6/14/2007
Prepared by: RDH

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
G2A	825	85	Basin "n"	-	Computed	-	Computed	-	Computed	-
G2B	403	75	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3A	509.1	70	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3B	86.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3D	367.9	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
G4	226.2	60	Basin "n"	-	Computed	-	Computed	-	Computed	-
G5	252.5	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1A	885.18	125	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1C	860.69	100	Basin "n"	-	Computed	-	Computed	-	Computed	-
E1B	881	0	Basin "n"	-	Computed	-	Computed	-	Computed	-
E2	623.5	65	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3	141.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4B	628	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E4A	447.6	56	Basin "n"	-	Computed	-	Computed	-	Computed	-
E5	203.2	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
E7	449.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E8	156.9	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
E9	280.71	36	Basin "n"	-	Computed	-	Computed	-	Computed	-
E10	185.71	32	Basin "n"	-	Computed	-	Computed	-	Computed	-
E11	147.52	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
E12	276.48	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
E13	97.05	24	Basin "n"	-	Computed	-	Computed	-	Computed	-
E14	892.73	20	Basin "n"	-	Computed	-	Computed	-	Computed	-
G3C	151.6	59	Basin "n"	-	Computed	-	Computed	-	Computed	-
E6	143.3	45	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3A	52.7	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3B	13.1	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3C	80.45	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3D	55.537	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
E3E	66.5	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
VR	20.4	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
FBNE	47.5	68	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	14399	5998	0031	Undeveloped													0	0	0	709.9		
				Developed													29.1	78.8	7.2	0		
G2B	8369	4752	0032	Undeveloped													0	0	0	226.7		
				Developed													39.2	1.4	135.7	0		
G3A	6399	4599	0028	Undeveloped												0	0	0		447.4		
				Developed												3.7	38.8	19.2		0		
G3B	3152	2001	0026	Undeveloped												0	0	0		58		
				Developed												7.6	19.7	0.9		0		
G3D	9900	5502	0016	Undeveloped		0										0	0		0	242.2		
				Developed		5.8										7.5	89.8		22.6	0		
G4	6199	2999	0017	Undeveloped	0												0	0	0	158.8		
				Developed	2												33.5	23.4	8.6	0		
G5	5940	3300	0015	Undeveloped													0		0	183.4		
				Developed													34		35.1	0		
E1A	10798	5998	0050	Undeveloped													0	0	0	725.45		
				Developed													65.15	1.96	92.61	0		
E1C	9900	5000	005	Undeveloped			0										0	0	0	665.16		
				Developed			6.61										43.89	19.21	125.82	0		
E1B	15750	8501	0029	Undeveloped													0			834.98		
				Developed													46.02			0		
E2	14509	7202	0013	Undeveloped			0				0						0	0		430.5		
				Developed			11.6				3.9						23.7	153.8		0		
E3	5193	2202	0039	Undeveloped													0		7	129.2		
				Developed													5.5		0	0		
E4B	8100	5998	0012	Undeveloped							0				0		0		0	497.7		
				Developed							92.9				11.3		25.1		0.9	0		
E4A	7302	4298	0015	Undeveloped												0	0	0	0	348.9		
				Developed												21.5	36.3	19.8	21.1	0		
E5	5760	3099	0014	Undeveloped												0	0	0	0	158.4		
				Developed												4.2	15.3	24.3	0.9	0		
E7	5518	2519	0012	Undeveloped		0			0		0		0				0	0	0	186.2		
				Developed		4.5			78.6		4.6		107.7				23	31.3	14.1	0		
E8	4800	2408	0014	Undeveloped		0	0	0	0				0		0		0	0				
				Developed		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	4604	2497	0025	Undeveloped		0				0	0		0						0	1.27		
				Developed		13.95				66.54	7.38		104.18						87.39	0		
E10	4050	1843	0024	Undeveloped		0		0			0	0	0						0	0.22		
				Developed		12.06		8.85			10.7	17.38	128.57						7.92	0		
E11	3400	1399	0024	Undeveloped		0				0	0	0	0						0	0.09		
				Developed		20.62				0.45	32.65	0.19	77.15						16.37	0		
E12	4599	2339	0012	Undeveloped		0				0	0	0	0						0	1.23		
				Developed		31.57				63.87	83.06	3.16	22.45						71.13	0		
E13	3200	1800	0022	Undeveloped		0				0		0	0						0	0.02		
				Developed		23.37				19.11		10.63	0.2						43.73	0		
E14	9002	4499	0024	Undeveloped		0		0		0		0	0						0	12.18		
				Developed		229.5		71.89		38.63		90.94	397.71						51.88	0		
G3C	3332	1299	0 0049	Undeveloped																151.61		
				Developed																0		
E6	3802	1800	0035	Undeveloped														0	0	34.4		
				Developed														64.2	44.7	0		
E3A	3485	1508	0034	Undeveloped													0.6	0.1	6	46.1		
				Developed													0	0	0	0		
E3B	1482	723	0027	Undeveloped	0		0	0														
				Developed	0.208		0.07	12.846														
E3C	2561	1525	0023	Undeveloped	0		0					0						0		0		
				Developed	0.561		76.98					0.001						0.711		2.204		
E3D	2330	1000	0026	Undeveloped	0	0						0			0	0		0	0	0		
				Developed	4.635	1.998						12.595			30.817	0.091		0.32	1.57	3.511		
E3E	3070	1200	0 00195	Undeveloped	0	0	0													21.5		
				Developed	4.3	0.1	40.7													0		
VR	1472	351	0041	Undeveloped				0				0										
				Developed				10.1				10.3										
FBNE	2070	1010	0029	Undeveloped		0																
				Developed		47.4																

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
G2A	B																		
	C													5.1	34.4	1	89.3		
	D													24	44.4	6.2	620.6		
G2B	B																		
	C													28.4	1.4	97.6	88.9		
	D													10.8		38.2	137.8		
G3A	B																		
	C												2.4	23.1	17		163.9		
	D												1.3	15.7	2.2		283.5		
G3B	B																		
	C													2.5			0.2		
	D												7.6	17.2	0.9		57.9		
G3D	B																		
	C													1.9			0.9		
	D		5.8										7.5	87.9		22.6	241.4		
G4	B																		
	C																		
	D	2												33.5	23.4	8.6	158.8		
G5	B																		
	C																		
	D													34		35.1	183.4		
E1A	B																0.6		
	C													2.2	1.8	80	179.2		
	D													62.9	0.2	12.6	545.7		
E1C	B															1.3	21.9		
	C			3.3										15.6	19.2	7.9	190.3		
	D			3.3										28.3		116.6	452.9		
E1B	B																		
	C													2.8			81.5		
	D													43.2			753.4		
E2	B																		
	C													14.8			121.6		
	D			11.6				3.9						8.9	153.8		308.9		
E3	B																		
	C															7	30.7		
	D													5.5			98.4		
E4B	B																		
	C											7.5					0.2		
	D							92.9				3.7		25.1		0.9	497.5		
E4A	B																		
	C												1.8		1.6		6.4		
	D												19.7	36.3	18.1	21.1	342.5		
E5	B																		
	C																		
	D												4.2	15.3	24.3	0.9	158.4		
E7	B																		
	C																		
	D		4.5			78.6		4.6		107.7				23	31.3	14.1	186.2		
E8	B																		
	C																		
	D		1.9	28.1	0.1	13.2				77.6		0.4		13.1	22.6				
E9	B																		
	C																		
	D		14				66.5	7.4		104.2						87.4	1.3		
E10	B																		
	C																		
	D		12.1		8.8			10.7	17.4	128.6						7.9	0.2		
E11	B																		
	C																		
	D		20.6				0.5	32.7	0.2	77.2						16.4	0.1		
E12	B																		
	C																		
	D		31.6				63.9	83.1	3.2	22.5						71.1	1.2		
	B																		

E13	C																		
	D		23.4				19.1		10.6	0.2						43.7			
E14	B																		
	C																		
	D		229.5		71.9		38.6		90.9	397.7						51.9	12.2		
G3C	B																		
	C																		
	D																151.6		
E6	B																		
	C																		
	D														64.2	44.7	34.4		
E3A	B																		
	C														0.1	5.7	17.6		
	D													0.6		0.2	28.5		
E3B	B																		
	C	0.133		0.035	10.579														
	D	0.075		0.035	2.267														
E3C	B																		
	C			7.378					0.001						0.043		0.028		
	D	0.561		69.602											0.668		2.176		
E3D	B																		
	C	2.839	0.589						1.605			25.8	0.084		0.144	0.95	1.583		
	D	1.796	1.409						10.99			5.016	0.007		0.176	0.621	1.927		
E3E	B																		
	C																		
	D	4.3	0.1	40.7													21.5		
VR	B																		
	C				6.7				9.6										
	D				3.3				0.7										
FBNE	B																		
	C		26.2																
	D		21.2																

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs Vines

Hydrograph Routing – Muskingum–Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
R-CE3B	CE3B	CE3D	Trapezoidal	2163	0.0027	10	4:1	0.06
R-CE3D	CE3D	CE3	Trapezoidal	3150	0.0022	10	4:1	0.06

Hydrograph Routing -- Muskingum-Cunge 8-Point Cross Section

Routing ID	Route From	Route To	Channel Length (ft)	Slope (ft/ft)	Cross Section Geometry								
						Left OB 1	Left OB 2	Left Bank	Channel Point 1	Channel Point 2	Right Bank	Right OB 1	Right OB 2
R-E1B	E1B	R-RE1B	4000	0003	Station	0	50	100	104	108	116	166	216
					Elevation	3.7	3	1.2	.6	.4	1.5	3.7	5.5
					Mannings "n"	06			035		06		

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-G2A	G2A	CG2	5	0	Volume (acre-ft)	0	15 2	27 7	51 6	76	100 8	122 7	145 4	169	191 8	221 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG2	CG2	CG3A	5	0	Volume (acre-ft)	0	2 5	4 5	7 9	11 3	15 2	20 7	24	26	28 1	30
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3A	CG3A	CG3B	5	0	Volume (acre-ft)	0	1 9	4 4	10 9	18 9	28 4	40 6	50 6	57 2	63 3	68 6
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG3B	CG3B	CG3D	5	0	Volume (acre-ft)	0	0 8	1 3	2 8	5 3	7 6	9 2	11	13 1	15 3	18
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-CG4	CG4	CG3	5	0	Volume (acre-ft)	0	2 1	3 8	7	10	13 4	17 1	21 4	27	34 1	41 5
					Flow (cfs)	0	50	100	200	300	400	500	600	700	800	900
R-E1A	E1A	CE1AC	5	0	Volume (acre-ft)	0	11 2	29 2	34 5	42 4	60 3	77 5	93 3	116 1	141 6	171 8
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
CE1	CE1ABC	R-CE1	5	0	Volume (acre-ft)	0	7 7	35 6	45	60 3	68 5	91 3	115 9	141 2	166 4	190 9
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE1	CE1	TMP1	5	0	Volume (acre-ft)	0	5 1	14 2	16 2	18 1	21 7	25 1	28 5	31 7	34 9	41
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
RCE2A3	CE2A3	CE4B	5	0	Volume (acre-ft)	0	7 6	39 9	47 6	55 2	71 4	87 5	102 9	115 6	126 3	136 2
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CE4	CE4	CE5	5	0	Volume (acre-ft)	0	13 1	44 1	53 5	63 7	83 6	102 7	121 1	139 7	158 4	177 7
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000
R-CEG	CEG	CE6	5	0	Volume (acre-ft)	0	2 8	16 8	31 8	46 4	56 1	62 3	67 1	71 5	75 6	79 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE6	CE6	CE7	4451 04	0	Volume (acre-ft)	0	5 2	15 4	22 9	31 3	40 9	51 7	64 7	79 7	94 1	110 7
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE7	CE7	CE8	5	0	Volume (acre-ft)	0	6 1	12 4	15 6	17 9	20 5	23	25 9	30 5	36 4	64 5
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE8	CE8	CE9	5	0	Volume (acre-ft)	0	7 3	17 3	22 6	27 3	31 7	35 8	39 7	43 2	47 2	56 2
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE9	CE9	CE10	4	0	Volume (acre-ft)	0	3	7	10	12	13	15	17	19	20	23
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE10	CE10	CE11	3	0	Volume (acre-ft)	0	2	5	7	8	10	11	13	14	16	17
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE11	CE11	CE12	5	0	Volume (acre-ft)	0	4	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE12	CE12	CE13	5	0	Volume (acre-ft)	0	6	9	12	14	17	19	21	23	25	27
					Flow (cfs)	0	100	400	600	800	1000	1200	1400	1600	1800	2000
R-CE13	CE13	CE14	5	0	Volume (acre-ft)	0	8 6	13 7	18 2	22 4	26 4	30 8	34 6	39	64	
					Flow (cfs)	0	300	600	900	1200	1500	1800	2100	2400	2700	
R-E14	E14	CE14	1	0	Volume (acre-ft)	0	2 35	4 71	7 04	100						
					Flow (cfs)	0	56	113	169	175						
R-TMP1	TMP1	CE1A2	5	0	Volume (acre-ft)	0	22 8	74 4	86 6	98 7	122 8	146 6	169 7	193 5	216 8	239 1
					Flow (cfs)	0	100	300	350	400	500	600	700	800	900	1000

SacCalc Model Data

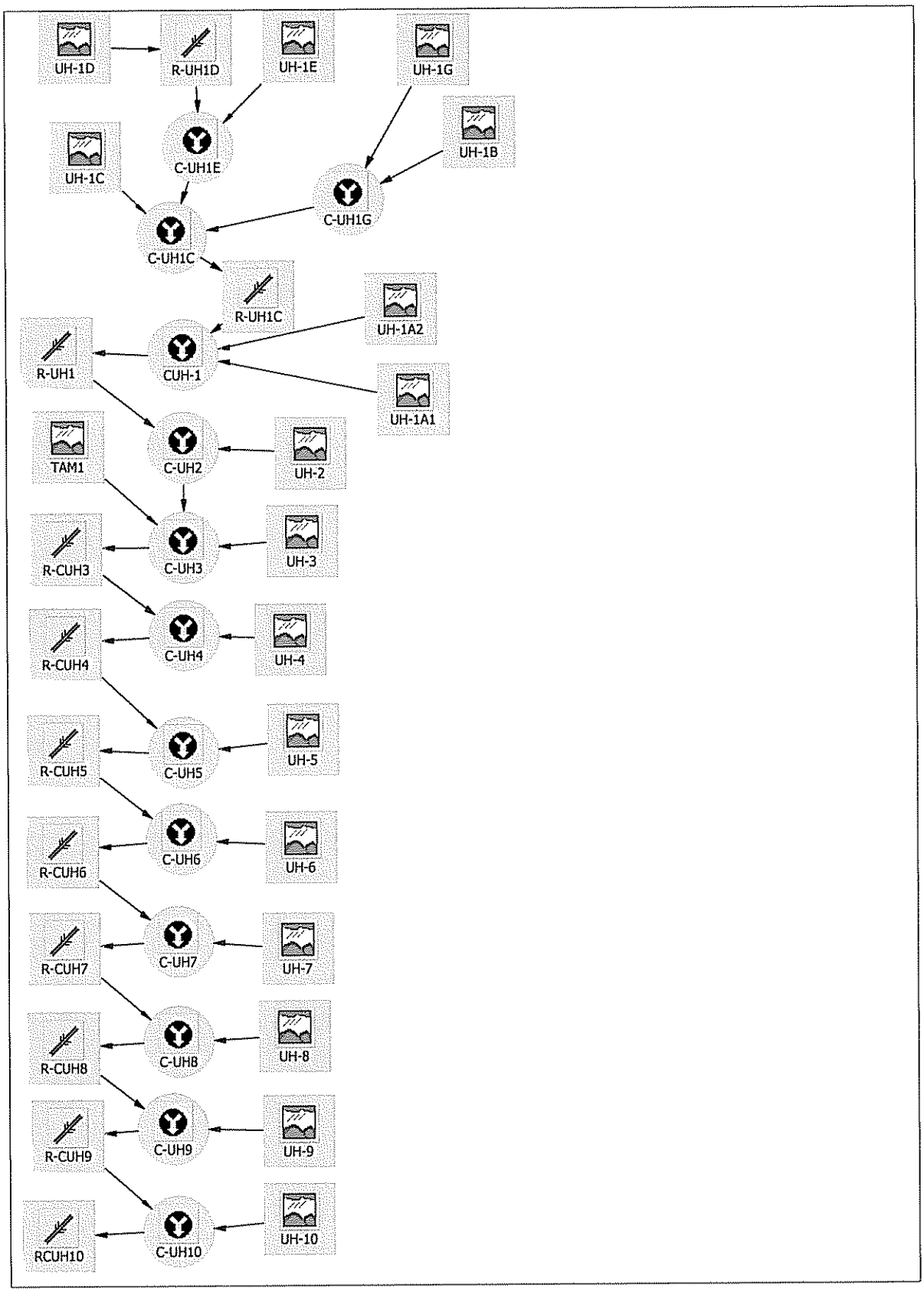
For

Unionhouse Creek – Pre Fvcp

Model Schematic Layout

Peak Flow Summary

Report


UH-1D
R-UH1D
UH-1E
UH-1G
UH-1B
UH-1C
C-UH1E
C-UH1G
C-UH1C
R-UH1C
UH-1A2
R-UH1
CUH-1
UH-1A1
TAM1
C-UH2
UH-2
R-CUH3
C-UH3
UH-3
R-CUH4
C-UH4
UH-4
R-CUH5
C-UH5
UH-5
R-CUH6
C-UH6
UH-6
R-CUH7
C-UH7
UH-7
R-CUH8
C-UH8
UH-8
R-CUH9
C-UH9
UH-9
RCUH10
C-UH10
UH-10

View HEC-1 output

Sacramento method results
(Project: UHPre Unionhouse pre-FVCP conditions.)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
UH-5	145.	12:41	.22			
UH-1C	85.	12:34	.12			
UH-1B	157.	12:31	.21			
UH-1G	110.	12:45	.18			
C-UH1G	249.	12:34	.39			
UH-1E	63.	12:12	.05			
UH-1D	126.	12:33	.17			
R-UH1D	125.	12:35	.17			
C-UH1E	154.	12:32	.22			
C-UH1C	489.	12:34	.73			
R-UH1C	477.	12:38	.73	.0	2.8	
UH-1A2	202.	12:32	.27			
UH-1A1	157.	12:42	.25			
CUH-1	823.	12:37	1.25			
R-UH1	629.	13:37	1.25	.0	5.3	
UH-2	226.	12:52	.41			
C-UH2	804.	13:02	1.66			
UH-3	216.	12:42	.34			
TAM1	104.	12:21	.11			
C-UH3	1024.	12:55	2.11			
R-CUH3	1024.	12:55	2.11	.0	.7	
UH-4	151.	12:26	.18			
C-UH4	1106.	12:53	2.29			
R-CUH4	1067.	13:17	2.29	.0	7.2	
C-UH5	1155.	13:15	2.51			
R-CUH5	1111.	13:38	2.51	.0	7.4	
UH-6	240.	12:44	.38			
C-UH6	1234.	13:33	2.89			
R-CUH6	1197.	14:00	2.89	.0	15.	
UH-7	113.	12:33	.15			
C-UH7	1230.	13:59	3.05			
R-CUH7	1209.	14:21	3.05	.0	12.	
UH-8	103.	12:40	.16			
C-UH8	1240.	14:18	3.20			
R-CUH8	991.	16:25	3.20	.0	20.	
UH-9	178.	12:30	.22			
C-UH9	1006.	16:25	3.43			
R-CUH9	995.	16:54	3.43	.0	8.4	

UH-10	96.	12:17	.09			
C-UH10	1001.	16:54	3.52			
RCUH10	997.	17:12	3.52	.0	6.7	

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
UH-5	94.	12:36	.22			
UH-1C	51.	12:32	.12			
UH-1B	91.	12:31	.21			
UH-1G	65.	12:45	.18			
C-UH1G	146.	12:35	.39			
UH-1E	41.	12:09	.05			
UH-1D	73.	12:33	.17			
R-UH1D	73.	12:35	.17			
C-UH1E	89.	12:33	.22			
C-UH1C	286.	12:34	.73			
R-UH1C	282.	12:37	.73	.0	1.7	
UH-1A2	128.	12:28	.27			
UH-1A1	92.	12:42	.25			
CUH-1	485.	12:35	1.25			
R-UH1	436.	13:06	1.25	.0	3.0	
UH-2	136.	12:51	.41			
C-UH2	560.	13:01	1.66			
UH-3	147.	12:34	.34			
TAM1	70.	12:16	.11			
C-UH3	687.	12:55	2.11			
R-CUH3	687.	12:56	2.11	.0	.6	
UH-4	100.	12:21	.18			
C-UH4	734.	12:51	2.29			
R-CUH4	718.	13:14	2.29	.0	4.5	
C-UH5	774.	13:12	2.51			
R-CUH5	773.	13:16	2.51	.0	2.8	
UH-6	161.	12:36	.38			
C-UH6	868.	13:11	2.89			
R-CUH6	831.	13:37	2.89	.0	7.1	
UH-7	71.	12:30	.15			
C-UH7	857.	13:34	3.05			
R-CUH7	837.	13:57	3.05	.0	5.0	
UH-8	69.	12:33	.16			
C-UH8	860.	13:55	3.20			
R-CUH8	750.	15:07	3.20	.0	9.2	
UH-9	107.	12:29	.22			

C-UH9	767.	15:06	3.43		
R-CUH9	764.	15:20	3.43	.0	5.2
UH-10	61.	12:14	.09		
C-UH10	770.	15:19	3.52		
RCUH10	767.	15:32	3.52	.0	4.8

Sacramento Hydrologic Calculator Report

October 12, 2007 12:33

Project Title: UHPre Unionhouse pre-FVCP conditions
Comments:
Prepared by:

Method: Sacramento County HEC-1 method
Date: 12/4/2006

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
UH-1D	110.2	73	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1E	32.2	61	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1C	75.5	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1B	131.2	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1A2	173.1	45	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-2	263.7	38	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-3	216.4	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
TAM1	68.8	43	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-4	112.6	35	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-5	143	37	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-6	245.3	33	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-7	98.7	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-8	99.3	28	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-9	143.5	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-10	57	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1G	117.6	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1A1	162.04	45	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
UH-1D	3577	1179 5	0 014	Undeveloped													0	0	0	84.2		
				Developed													9.8	5.2	11	0		
UH-1E	1896	948	0 0095	Undeveloped								0						0		0.9		
				Developed								31.1						0.1		0		
UH-1C	2630	1349	0 0044	Undeveloped								0						0		47.6		
				Developed								27.6						0.3		0		
UH-1B	2740 8	1370 4	0 0131	Undeveloped													0		0	93		
				Developed													36.6		1.5	0		
UH-1A2	3076 3	1538 15	0 00065	Undeveloped								0	0			0		0				
				Developed								10.6	66			14.2		82.31				
UH-2	5097 8	2548 9	0 0016	Undeveloped								0	0			0		0		81.5		
				Developed								19	0.1			5.4		157.7		0		
UH-3	5903	4361	0 0030	Undeveloped			0				0		0						0	9.6		
				Developed			26.9				6		164.3						9.5	0		
TAM1	2043 8	1022	00098	Undeveloped									0									
				Developed									68.8									
UH-4	3400	1748	0 002	Undeveloped					0		0	0	0				0		0	0.1		
				Developed					26.6		2	15.8	50.7				1.1		16.3	0		
UH-5	4678	2519	002	Undeveloped							0		0							37.7		
				Developed							89.1		15.3							0		
UH-6	4726	2952	0010	Undeveloped	0					0			0					9.42	3.88			
				Developed	3.6					15.51			67.59					0	0			
UH-7	3031	1441	0020	Undeveloped									0					43.59				
				Developed									56.41					0				
UH-8	3374	2798	0 0010	Undeveloped	0								0						14.86			
				Developed	12.84								72.3						0			
UH-9	2160	1098	0029	Undeveloped	0	0			0									38.2	10.2	21.8		
				Developed	20.9	5.8			3.6									0	0	0		
UH-10	2920	1236	0029	Undeveloped	0	0														0		
				Developed	39.3	38.2														22.5		
UH-1G	2849	1400	0 003	Undeveloped													0	0		106.4		
				Developed													8.9	2.4		0		
UH-1A1	2500	1250	0 001	Undeveloped													0	0	0.1	99.5		
				Developed													13.2	49.28	0	0		

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks Shrubs Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
UH-1D	B														0.6		0.3		
	C																		
	D													9.8	4.6	11	83.9		
UH-1E	B								0.1										
	C																		
	D								31.1						0.1		0.9		
UH-1C	B								2										
	C																		
	D								25.6						0.3		47.6		
UH-1B	B																		
	C																		
	D													36.6		1.5	93		
UH-1A2	B																		
	C																		
	D								10.6	66			14.2		82.31				
UH-2	B																		
	C																		
	D								19	0.1			5.4		157.7		81.5		
UH-3	B																		
	C																		
	D			26.9				6		164.3						9.5	9.6		
TAM1	B																		
	C																		
	D									68.8									
UH-4	B																		
	C																		
	D					26.6		2	15.8	50.7				1.1		16.3	0.1		
UH-5	B																		
	C																		
	D							89.1		15.3							37.7		
UH-6	B																		
	C																		
	D	3.6					15.51			67.59					9.42	3.88			
UH-7	B																		
	C																		
	D									56.41					43.59				
UH-8	B																		
	C																		
	D	12.84								72.3						14.86			
UH-9	B																		
	C																		
	D	20.9	5.8			3.6									38.2	10.2	21.8		
UH-10	B																		
	C																		
	D	39.3	38.2														22.5		
UH-1G	B																		
	C																		
	D													8.9	2.4		106.4		
UH-1A1	B																		
	C																		
	D													13.2	49.28	0.1	99.5		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum-Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
R-UH1D	UH-1D	C-UH1E	Pipe	500	0.002	100		0.06

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-UH1C	C-UH1C	CUH-1	1	-1	Volume (acre-ft)	0	1 3	1 8	2 3	3 6	4 3	4 7	5	5 4	8	
					Flow (cfs)	0	200	300	400	600	800	1000	1200	1400	100	
R-UH1	CUH-1	C-UH2	5	-1	Volume (acre-ft)	0	4 5	7 3	10 3	13 6	22 6	49 6	144 4	156 2	166 6	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH3	C-UH3	C-UH4	1	-1	Volume (acre-ft)	0	0 1	0 2	0 3	0 4	0 6	0 7	0 8	0 9		
					Flow (cfs)	0	100	200	300	400	700	1000	1200	1400		
R-CUH5	C-UH5	C-UH6	2	-1	Volume (acre-ft)	0	1 5	2 4	3 1	3 7	4 7	5 8	11 3	17 5	23	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH6	C-UH6	C-UH7	2	-1	Volume (acre-ft)	0	2 3	3 7	4 9	6 4	8 5	12 5	23 4	30 3	40 8	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH7	C-UH7	C-UH8	2	-1	Volume (acre-ft)	0	1 1	1 7	2 2	3	4 1	8 1	18 3	22 8	31 8	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH8	C-UH8	C-UH9	5	-1	Volume (acre-ft)	0	3 5	5 5	7 3	9	22 9	53 8	102 3	144 1	190 6	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH9	C-UH9	C-UH10	3	-1	Volume (acre-ft)	0	2 9	4 8	6 6	8 5	12 3	16 4	25 4	32 3	40 3	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
RCUH10	C-UH10	-	3	-1	Volume (acre-ft)	0	2 7	4 2	5 9	7 7	11 2	15	20 2	26 7	33 5	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH4	C-UH4	C-UH5	4	-1	Volume (acre-ft)	0	3 6	5 8	7 7	9 9	14 9	20 4	26 8	33 1	42 6	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	

SacCalc Model Data

For

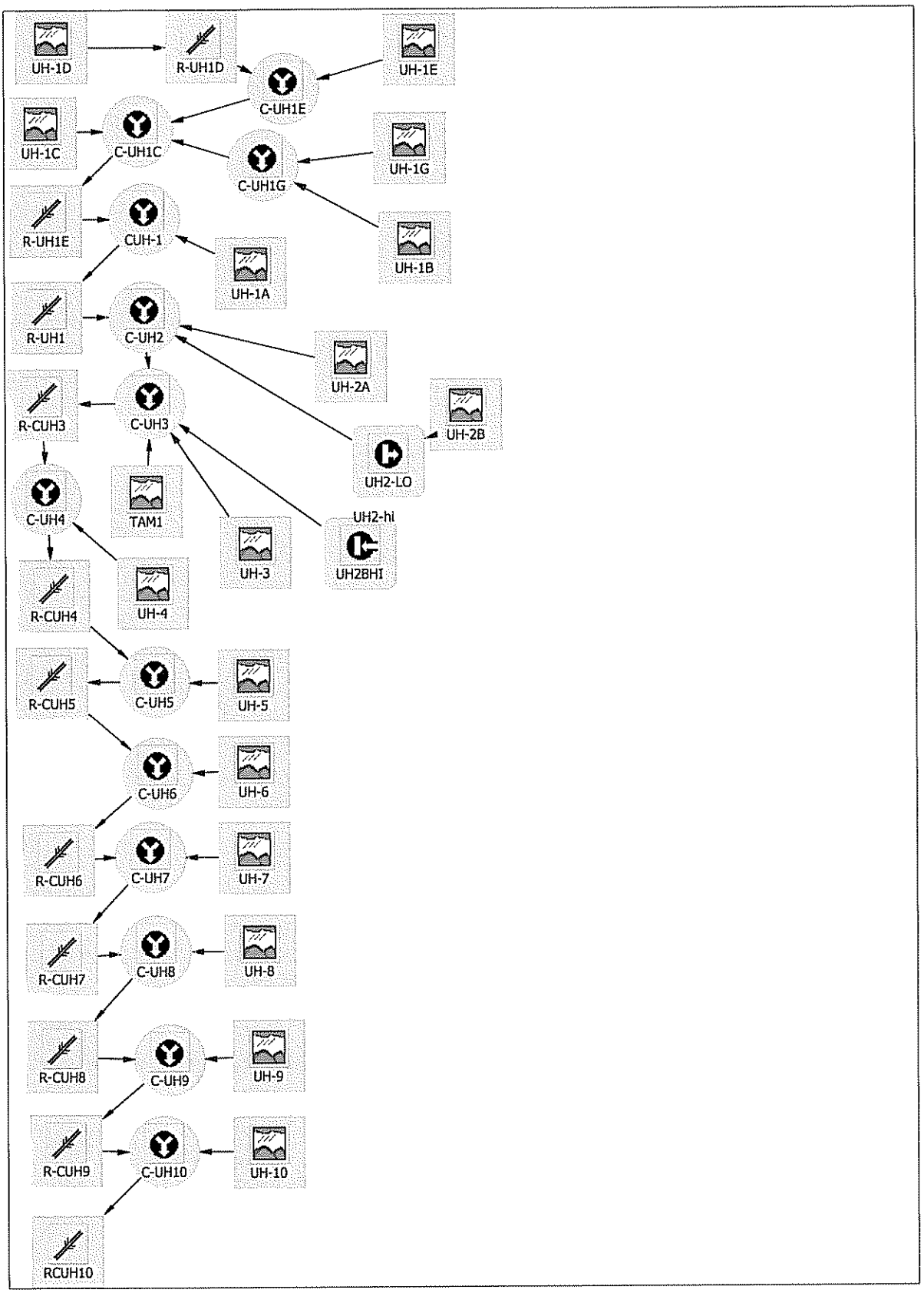
Unionhouse Creek – Post Fvcp

Model Schematic Layout

Peak Flow Summary

Report

UHPost Unionhouse post-FVCP conditions



View HEC-1 output

Sacramento method results
(Project: UHPost Unionhouse post-FVCP conditions)
(100-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
UH-5	143.	12:42	.22			
UH-1C	85.	12:34	.12			
UH-1B	200.	12:20	.21			
UH-1G	175.	12:21	.18			
C-UH1G	375.	12:21	.39			
UH-1E	64.	12:12	.05			
UH-1D	158.	12:22	.17			
R-UH1D	148.	12:24	.17			
C-UH1E	191.	12:22	.22			
C-UH1C	632.	12:22	.73			
R-UH1E	604.	12:26	.73	.0	3.6	
UH-1A	411.	12:30	.52			
CUH-1	1006.	12:27	1.25			
R-UH1	669.	13:36	1.25	.0	6.4	
UH-2A	103.	12:36	.15			
UH-2B	186.	12:37	.27			
UH2-LO	72.	12:30	.27			6.84
C-UH2	783.	13:33	1.67			
UH-3	216.	12:42	.34			
TAM1	104.	12:21	.11			
UH2BHI	114.	12:37	.00			
C-UH3	1099.	12:44	2.11			
R-CUH3	1099.	12:44	2.11	.0	.7	
UH-4	151.	12:26	.18			
C-UH4	1204.	12:42	2.29			
R-CUH4	1140.	13:07	2.29	.0	7.8	
C-UH5	1242.	13:05	2.51			
R-CUH5	1179.	13:29	2.51	.0	8.4	
UH-6	239.	12:44	.38			
C-UH6	1313.	13:24	2.89			
R-CUH6	1250.	13:58	2.89	.0	16.	
UH-7	113.	12:33	.15			
C-UH7	1283.	13:56	3.05			
R-CUH7	1256.	14:25	3.05	.0	13.	
UH-8	103.	12:40	.16			
C-UH8	1286.	14:23	3.20			
R-CUH8	1031.	16:22	3.20	.0	22.	
UH-9	178.	12:30	.22			

C-UH9	1046.	16:22	3.43			
R-CUH9	1035.	16:47	3.43	.0	8.9	
UH-10	97.	12:17	.09			
C-UH10	1042.	16:47	3.52			
RCUH10	1033.	17:09	3.52	.0	7.1	

(10-year, 1-day rainfall)

ID	Peak flow (cfs)	Time of peak (hours)	Basin area (sq. mi)	Peak stage (feet)	Peak storage (ac-ft)	Diversion volume (ac-ft)
UH-5	93.	12:37	.22			
UH-1C	51.	12:32	.12			
UH-1B	120.	12:19	.21			
UH-1G	118.	12:16	.18			
C-UH1G	236.	12:17	.39			
UH-1E	42.	12:09	.05			
UH-1D	94.	12:21	.17			
R-UH1D	88.	12:23	.17			
C-UH1E	112.	12:21	.22			
C-UH1C	383.	12:19	.73			
R-UH1E	371.	12:22	.73	.0	2.2	
UH-1A	265.	12:26	.52			
CUH-1	632.	12:24	1.25			
R-UH1	519.	12:56	1.25	.0	3.8	
UH-2A	71.	12:27	.15			
UH-2B	128.	12:28	.27			
UH2-LO	72.	12:10	.27			2.05
C-UH2	633.	12:55	1.67			
UH-3	147.	12:34	.34			
TAM1	70.	12:16	.11			
UH2BHI	56.	12:28	.00			
C-UH3	790.	12:46	2.11			
R-CUH3	790.	12:46	2.11	.0	.6	
UH-4	100.	12:21	.18			
C-UH4	850.	12:39	2.29			
R-CUH4	827.	13:06	2.29	.0	5.3	
C-UH5	890.	13:03	2.51			
R-CUH5	866.	13:19	2.51	.0	3.8	
UH-6	161.	12:36	.38			
C-UH6	958.	13:15	2.89			
R-CUH6	912.	13:40	2.89	.0	9.3	
UH-7	71.	12:30	.15			
C-UH7	937.	13:39	3.05			
R-CUH7	900.	14:01	3.05	.0	6.6	

UH-8	69.	12:33	.16		
C-UH8	922.	14:00	3.20		
R-CUH8	784.	15:12	3.20	.0	10.
UH-9	107.	12:29	.22		
C-UH9	801.	15:11	3.43		
R-CUH9	797.	15:24	3.43	.0	5.4
UH-10	62.	12:14	.09		
C-UH10	803.	15:24	3.52		
RCUH10	800.	15:37	3.52	.0	5.0

Sacramento Hydrologic Calculator Report

October 12, 2007 12:35

Project Title: UHPost Unionhouse post-FVCP conditions
Comments: Changed UH-2 to match computed land use % jdh 060109
Prepared by: naima
Method: Sacramento County HEC-1 method
Date: 10/18/2005

Watershed Hydrologic Summary Data

Watershed	Area (acres)	Mean Elevation (ft)	Lag Times		Basin "n"		Loss Rates		Percent Impervious	
			Method	Lag Time (min)	Method	Basin "n"	Method	Loss Rate (in/hr)	Method	Impervious Area (%)
UH-1D	110.1	73	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1E	32.3	61	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1C	75.4	48	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1B	131.6	68	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1A	335.257	45	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-2A	93.041	38	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-3	216.4	40	Basin "n"	-	Computed	-	Computed	-	Computed	-
TAM1	68.8	43	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-4	112.6	35	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-5	142	37	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-6	244.8	33	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-7	98.7	30	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-8	99.3	28	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-9	143.5	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-10	57.5	25	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-1G	118.1	49	Basin "n"	-	Computed	-	Computed	-	Computed	-
UH-2B	170.75	38	Basin "n"	-	Computed	-	Computed	-	Computed	-

Basin "n" Method Data for Lag Time Computation

Watershed	Channel Length (ft)	Centroid Length (ft)	Slope (ft/ft)	Channelization	Land Use Impervious Area Percent (% or acres)																	
					95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
UH-1D	3577	1179 5	0 014	Undeveloped									0				0	0		26.9		
				Developed									29				17.6	36.5		0		
UH-1E	1896	948	0 0095	Undeveloped								0	0							0		
				Developed								31.1	0.3							0.8		
UH-1C	2630	1349	0 0044	Undeveloped								0	0				0	0		47.2		
				Developed								27.5	0.2				0.1	0.4		0		
UH-1B	2740 8	1370 4	0 0131	Undeveloped	0								0				0	0		24.1		
				Developed	2.6								41.2				33	30.7		0		
UH-1A	3076 3	1538 15	0 00065	Undeveloped	0	0		0				0	0		0	0	0	0		0.439		
				Developed	4.421	30.7		21				10.7	95.03		37.8	13.5	120.2	1.5		0		
UH-2A	5097 8	2548 9	0 0016	Undeveloped	0							0	0		0	0	0	0		0.015		
				Developed	2.152							71.828	9.105		3.344	5.415	0.032	1.15		0.015		
UH-3	5903	4361	0 0030	Undeveloped			0				0		0						0	9.6		
				Developed			26.9				6		164.3						9.5	0		
IAM1	2043 8	1022	00098	Undeveloped									0									
				Developed									68.8									
UH-4	3400	1748	0 002	Undeveloped					0		0	0	0				0		0	0.1		
				Developed					26.6		2	15.8	50.7				1.1		16.3	0		
UH-5	4678	2519	002	Undeveloped							0		0							37.7		
				Developed							89.1		15.3							0		
UH-6	4726	2952	0010	Undeveloped	0					0			0					9.42	3.88			
				Developed	3.6					15.51			67.59					0	0			
UH-7	3031	1441	0020	Undeveloped									0					43.59				
				Developed									56.41					0				
UH-8	3374	2798	0 0010	Undeveloped	0								0						14.86			
				Developed	12.84								72.3						0			
UH-9	2160	1098	0029	Undeveloped	0	0			0									38.2	10.2	21.8		
				Developed	20.9	5.8			3.6									0	0	0		
UH-10	2920	1236	0029	Undeveloped	0	0														0		
				Developed	39.3	38.2														22.5		
UH-1G	2849	1400	0 003	Undeveloped	0								0							0		
				Developed	1.7								116.1							0.3		
UH-2B	5097 8	2548 9	0 0016	Undeveloped								0	0		0		0	0		0.052		
				Developed								3.629	159.812		0.553		4.924	1.788		0.052		

Refer to the Drainage manual for Land Use Impervious Area Percent

*Dense Oaks Shrubs Vines

Infiltration Loss Rate Data

Watershed	Soil Cover Group	Land Use Impervious Area Percent (% or acres)																	
		95	90	85	80	75	70	60	50	40	30	25	20	15	10	5	2	1	1*
UH-1D	B									0.6							0.3		
	C																		
	D									28.3				17.6	36.5		26.6		
UH-1E	B																		
	C																		
	D								31.1	0.3							0.8		
UH-1C	B								2										
	C																		
	D								25.5	0.2				0.1	0.4		47.2		
UH-1B	B																		
	C																		
	D	2.6								41.2				33	30.7		24.1		
UH-1A	B																		
	C																		
	D	4.421	30.7		21				10.7	95.03		37.8	13.5	120.2	1.5		0.439		
UH-2A	B																		
	C																		
	D	2.152							71.828	9.105		3.344	5.415	0.032	1.15		0.015		
UH-3	B																		
	C																		
	D			26.9				6		164.3						9.5	9.6		
TAM1	B																		
	C																		
	D									68.8									
UH-4	B																		
	C																		
	D					26.6		2	15.8	50.7				1.1		16.3	0.1		
UH-5	B																		
	C																		
	D							89.1		15.3							37.7		
UH-6	B																		
	C																		
	D	3.6					15.51			67.59					9.42	3.88			
UH-7	B																		
	C																		
	D									56.41					43.59				
UH-8	B																		
	C																		
	D	12.84								72.3						14.86			
UH-9	B																		
	C																		
	D	20.9	5.8			3.6									38.2	10.2	21.8		
UH-10	B																		
	C																		
	D	39.3	38.2														22.5		
UH-1G	B																		
	C																		
	D	1.7								116.1							0.3		
UH-2B	B																		
	C																		
	D								3.629	159.812		0.553		4.924	1.788		0.052		

Refer to the help file for Land Use Impervious Area Percent

*Dense Oaks, Shrubs, Vines

Hydrograph Routing – Muskingum-Cunge (Standard)

Routing ID	Route From	Route To	Channel Type	Length (ft)	Slope (ft/ft)	Width or Diameter (ft)	Side Slope (H:V)	Mannings "n"
R-UH1D	UH-1D	C-UH1E	Pipe	500	0.002	10		0.06

Hydrograph Routing – Modified Puls (Storage)

Routing ID	Route From	Route To	No Steps	Initial Flow (cfs)	Storage-Discharge Relationship											
R-UH1E	C-UH1C	CUH-1	1	-1	Volume (acre-ft)	0	1 3	1 8	2 3	3 6	4 3	4 7	5	5 4	8	
					Flow (cfs)	0	200	300	400	600	800	1000	1200	1400	100	
R-UH1	CUH-1	C-UH2	5	-1	Volume (acre-ft)	0	4 5	7 3	10 3	13 6	22 6	49 6	144 4	156 2	166 6	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH3	C-UH3	C-UH4	1	-1	Volume (acre-ft)	0	0 1	0 2	0 3	0 4	0 6	0 7	0 8	0 9		
					Flow (cfs)	0	100	200	300	400	700	1000	1200	1400		
R-CUH5	C-UH5	C-UH6	2	-1	Volume (acre-ft)	0	1 5	2 4	3 1	3 7	4 7	5 8	11 3	17 5	23	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH6	C-UH6	C-UH7	2	-1	Volume (acre-ft)	0	2 3	3 7	4 9	6 4	8 5	12 5	23 4	30 3	40 8	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH7	C-UH7	C-UH8	2	-1	Volume (acre-ft)	0	1 1	1 7	2 2	3	4 1	8 1	18 3	22 8	31 8	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH8	C-UH8	C-UH9	5	-1	Volume (acre-ft)	0	3 5	5 5	7 3	9	22 9	53 8	102 3	144 1	190 6	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH9	C-UH9	C-UH10	3	-1	Volume (acre-ft)	0	2 9	4 8	6 6	8 5	12 3	16 4	25 4	32 3	40 3	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
RCUH10	C-UH10	-	3	-1	Volume (acre-ft)	0	2 7	4 2	5 9	7 7	11 2	15	20 2	26 7	33 5	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	
R-CUH4	C-UH4	C-UH5	4	-1	Volume (acre-ft)	0	3 6	5 8	7 7	9 9	14 9	20 4	26 8	33 1	42 6	
					Flow (cfs)	0	100	200	300	400	600	800	1000	1200	1400	

APPENDIX B

RAS (HYDRAULIC) MODELS

APPENDIX B

RAS (HYDRAULIC) MODELS

RAS Model Data

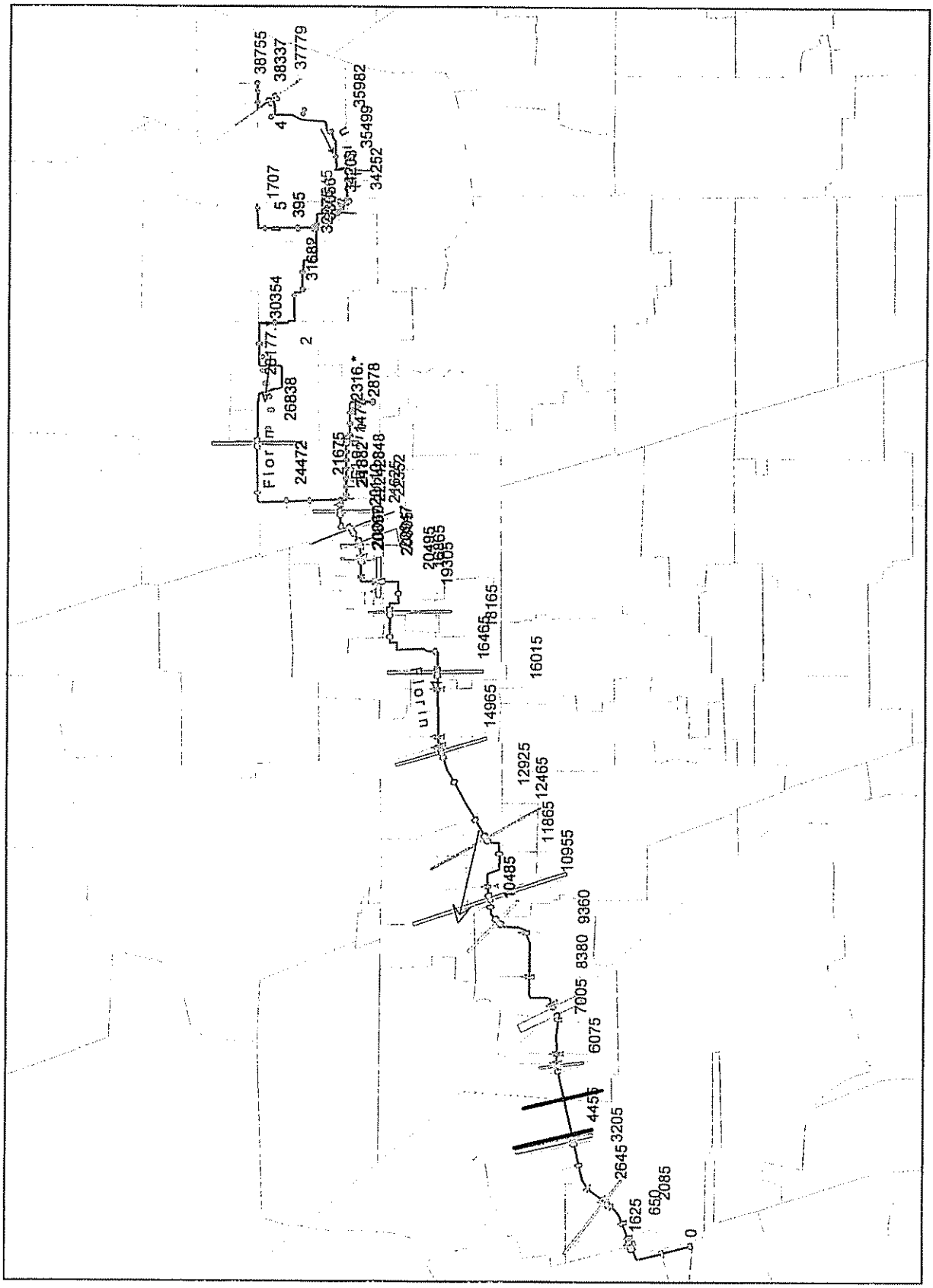
For

Florin Creek – Pre Fvcp

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table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16015
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12465
11865
10955
10485
9360
8380
7005
6075
3205
2645
2085
650
1625
0

RAS Input Hydrograph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
Florin	4	38755		Flow Hydrograph	FlorinPre.dss	/FLORIN C/CF4A/FLOW/31DEC1999/1MIN/100YR-24HR/
Florin	4	37737	37437	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F4B/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	5	1707		Flow Hydrograph	FlorinPre.dss	/FLORIN C/F4B1/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	3	2878		Flow Hydrograph	FlorinPre.dss	/FLORIN C/CF2/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	3	2652	848	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F3/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	2	32055	30354	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F4C/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	2	29972	27251	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F4D/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	2	24472	23372	Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F5/FLOW/31DEC1999/1MIN/100YR-24HR/
Florin	1	22132	21675	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F6/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	21555	19305	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F7/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	18785	18735	Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F8/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	16465	16415	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F9/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	16015		Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F10/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	12365	11865	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/PMPD25/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	10760		Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F12/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	7370	7300	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F13/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	6025	5255	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F14/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	4455	3775	Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F15/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	0		Stage Hydrograph	egiomr.dss	/ELDER REACH1/0.671/STAGE/01DEC1999/15MIN/ELDER 100YR/

HEC-RAS Plan: FlorinPre Profile: Max WS

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	0	412.30	4.40	18.92	7.89	18.93	0.000039	1.00	410.92	45.00	0.06
1	650	448.70	7.50	18.96		18.99	0.000080	1.28	414.08	2504.81	0.09
1	1460	504.87	7.60	19.06		19.09	0.000129	1.43	363.49	1100.00	0.11
1	1520	508.82	7.60	19.07		19.10	0.000033	1.35	377.57	59.37	0.09
1	1572.5	Bridge									
1	1625	508.82	7.60	19.10	11.48	19.13	0.000033	1.34	379.25	59.44	0.09
1	1735	513.41	7.80	19.10		19.14	0.000127	1.60	379.59	1700.00	0.11
1	2085	529.20	7.90	19.15		19.20	0.000187	1.77	346.49	1700.00	0.13
1	2555	540.47	8.10	19.25		19.30	0.000201	1.89	330.22	1843.69	0.13
1	2645	542.65	8.00	19.27		19.27	0.000001	0.15	7169.09	1859.63	0.01
1	2695	542.82	8.30	19.28		19.33	0.000054	1.79	375.74	1950.07	0.12
1	2720	Bridge									
1	2745	542.82	8.30	19.33	12.56	19.37	0.000053	1.78	374.06	1968.15	0.12
1	2795	543.34	8.30	19.33		19.38	0.000209	1.95	331.42	2211.79	0.13
1	3205	543.07	8.40	19.42		19.49	0.000272	2.12	269.22	1587.88	0.15
1	3775	544.79	8.60	19.58		19.66	0.000293	2.19	250.72	775.87	0.16
1	4245	563.54	8.90	19.73		19.80	0.000287	2.18	261.59	1554.94	0.16
1	4303	549.08	9.00	19.64		19.82	0.000265	3.36	175.92	1568.44	0.19
1	4354	Bridge									
1	4405	585.44	9.00	19.81	13.14	20.00	0.000281	3.51	184.94	1584.56	0.20
1	4455	707.21	10.60	19.87		20.14	0.001303	4.23	167.04	33.11	0.31
1	5255	707.30	11.10	20.82		20.99	0.000821	3.35	211.41	43.38	0.25
1	5875	670.96	11.70	21.28		21.37	0.000358	2.44	287.38	620.07	0.16
1	5975	665.13	12.30	21.34		21.40	0.000285	2.18	393.56	964.84	0.13
1	6000	Bridge									
1	6025	665.29	12.30	21.47	15.29	21.48	0.000078	1.15	1233.57	994.37	0.07
1	6075	665.30	12.40	21.47		21.50	0.000136	1.46	636.57	1358.99	0.10
1	6275	665.35	12.80	21.50		21.52	0.000126	1.40	696.32	1366.57	0.10
1	7005	669.71	13.50	21.62		21.67	0.000270	1.80	484.48	738.27	0.14
1	7110	666.50	16.00	21.57		21.93	0.002743	4.78	139.34	25.00	0.36
1	7120	668.72	16.00	21.60		21.96	0.002717	4.77	140.12	25.00	0.36
1	7205	Bridge									
1	7290	686.93	16.00	22.56	18.86	22.83	0.001815	4.19	164.06	25.00	0.29
1	7300	687.16	16.00	22.58		22.85	0.001801	4.18	164.55	25.00	0.29
1	7370	663.79	16.20	22.81		22.85	0.000248	1.77	550.57	1246.74	0.13
1	8380	671.67	16.70	23.11		23.17	0.000442	2.24	451.45	1063.61	0.18
1	9360	696.86	17.40	23.68		23.79	0.000821	2.78	314.52	470.05	0.23
1	10020	712.65	17.60	24.13		24.26	0.000811	2.89	304.87	308.60	0.23
1	10070	713.19	17.30	24.15		24.33	0.001134	3.60	348.26	411.11	0.24
1	10102.5	Bridge									
1	10135	715.70	17.49	24.37	20.43	24.51	0.000967	3.35	474.75	705.26	0.23
1	10185	718.35	17.80	24.43		24.52	0.000550	2.51	418.84	540.32	0.20
1	10485	722.46	17.80	24.60		24.71	0.000713	2.71	267.32	249.72	0.22
1	10635	722.74	17.20	24.61		25.00	0.002657	5.01	144.12	19.99	0.33
1	10672.5	Bridge									
1	10710	727.07	18.00	25.03	21.45	25.45	0.002934	5.17	140.54	20.00	0.34
1	10760	694.49	18.10	25.42		25.50	0.000404	2.27	305.94	1135.72	0.17
1	10955	694.54	18.30	25.52		25.56	0.000280	1.87	572.08	1013.26	0.14
1	11865	694.82	18.50	25.85		25.94	0.000615	2.46	359.05	601.71	0.20
1	12365	665.62	18.60	26.11		26.21	0.000505	2.56	260.26	42.43	0.18
1	12415	665.62	18.70	26.12		26.26	0.001231	2.96	225.03	31.00	0.19
1	12440	Bridge									
1	12465	666.64	18.70	26.76	21.18	26.88	0.000934	2.72	244.93	1284.02	0.17
1	12515	666.64	18.60	26.82		26.91	0.000421	2.39	284.99	669.16	0.17
1	12925	666.68	19.10	27.00		27.09	0.000447	2.43	279.13	649.00	0.17
1	13895	670.68	19.70	27.43		27.52	0.000440	2.40	283.10	89.35	0.17
1	14495	677.60	19.70	27.70		27.80	0.000500	2.62	275.50	157.93	0.18
1	14595	677.61	19.80	27.71		27.87	0.000855	3.17	213.69	27.00	0.20
1	14630	Bridge									
1	14665	687.59	19.80	28.23	22.52	28.37	0.000737	3.02	227.48	27.00	0.18
1	14765	689.20	19.90	28.33		28.42	0.000376	2.36	329.14	692.82	0.16
1	14965	690.56	20.00	28.41		28.50	0.000378	2.36	333.81	751.24	0.16
1	15015	607.64	20.60	28.82		28.89	0.000344	2.19	314.78	667.45	0.15
1	15295	608.30	20.70	28.91		28.99	0.000373	2.29	274.09	97.03	0.16
1	16345	607.73	21.00	28.87		29.02	0.000777	3.15	193.00	35.98	0.20
1	16380	Bridge									
1	16415	610.33	21.00	29.15	23.79	29.30	0.000696	3.05	200.02	37.63	0.19
1	16465	533.66	21.30	29.27		29.39	0.000939	2.81	189.95	42.97	0.24
1	16865	533.74	21.70	29.59		29.68	0.000488	2.39	223.07	177.92	0.18

HEC-RAS Plan: FlorinPre Profile: Max WS (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	18165	534.00	22.50	30.31		30.43	0.000664	2.71	197.00	95.72	0.21
1	18635	534.77	23.30	30.74		30.92	0.001424	3.37	158.81	36.84	0.29
1	18685	535.20	23.50	30.79		30.99	0.001349	3.58	149.30	20.50	0.23
1	18710	Bridge									
1	18735	535.58	23.50	30.99	26.27	31.18	0.001249	3.49	153.55	20.50	0.22
1	18785	474.22	23.80	31.14		31.27	0.000876	2.93	161.68	160.09	0.23
1	19305	519.32	24.30	31.64		31.79	0.000996	3.13	165.99	260.52	0.25
1	19905	501.46	24.60	32.19		32.30	0.000692	2.68	210.44	120.14	0.21
1	19955	500.62	24.70	32.18		32.34	0.000978	3.27	153.26	73.00	0.21
1	20007.5	Bridge									
1	20060	500.59	24.70	33.10	27.34	33.19	0.000501	2.50	274.88	333.63	0.15
1	20110	499.02	24.70	33.13		33.20	0.000334	2.12	305.27	816.42	0.15
1	20495	489.00	24.80	33.26		33.32	0.000300	2.03	327.77	707.15	0.14
1	20805	480.98	25.00	33.35		33.42	0.000349	2.00	244.84	92.36	0.15
1	20855	475.80	25.60	33.21		33.51	0.001265	4.44	130.21	245.27	0.29
1	20876	Culvert									
1	20897	491.68	25.60	34.53		34.60	0.000351	2.61	479.63	670.06	0.16
1	20947	489.98	25.70	34.56		34.59	0.000171	1.57	427.52	715.47	0.11
1	21145	482.05	25.90	34.59		34.63	0.000213	1.72	342.35	677.62	0.12
1	21195	479.78	26.30	34.54		34.67	0.000834	2.95	162.84	39.24	0.19
1	21225	Bridge									
1	21255	480.41	26.30	34.91	29.31	35.04	0.000734	2.81	170.78	233.99	0.17
1	21305	478.29	26.40	35.01		35.04	0.000177	1.46	619.20	555.88	0.11
1	21485	470.80	26.50	35.05		35.13	0.000435	2.27	216.42	818.01	0.17
1	21555	467.88	26.70	35.07		35.16	0.000461	2.38	196.75	30.00	0.16
1	21605	467.88	26.70	35.05		35.19	0.000859	3.07	152.35	22.20	0.21
1	21615	Bridge									
1	21625	467.88	26.70	35.05	30.16	35.21	0.000853	3.06	152.77	22.20	0.21
1	21675	468.23	26.80	35.15		35.24	0.000450	2.36	198.55	30.00	0.16
1	21882	458.44	27.10	35.26		35.29	0.000192	1.56	647.81	669.23	0.12
1	22132	447.40	27.30	35.31		35.35	0.000233	1.68	548.26	654.51	0.13
1	22182	446.46	27.40	35.27		35.45	0.001338	3.44	129.79	16.50	0.22
1	22212	Bridge									
1	22242	450.67	27.40	35.62	30.25	35.79	0.001214	3.32	135.55	16.50	0.20
1	22352	451.34	27.50	35.81		35.86	0.000291	1.88	240.64	326.19	0.14
2	22872	196.13	27.70	35.81		35.82	0.000114	1.11	176.01	31.43	0.08
2	23372	197.16	28.20	35.87		35.89	0.000143	1.21	162.48	30.38	0.09
2	24472	176.52	29.10	36.06		36.08	0.000188	1.31	134.36	57.20	0.10
2	25492	181.20	29.20	36.29		36.32	0.000275	1.52	119.52	33.65	0.13
2	25532	181.20	29.30	36.28		36.34	0.000638	2.08	87.20	12.50	0.14
2	25572	Bridge									
2	25612	181.83	29.30	36.33	31.17	36.40	0.000629	2.07	87.91	12.50	0.14
2	25662	183.02	29.90	36.38		36.42	0.000323	1.71	106.88	36.65	0.14
2	26838	188.55	33.30	37.50		37.59	0.001662	2.38	79.07	32.11	0.27
2	27251	189.85	33.40	37.90		37.90	0.000084	0.64	647.81	599.96	0.06
2	27714.*	181.90	33.52	37.97		37.99	0.000274	1.10	333.00	425.34	0.11
2	28177.*	183.97	33.64	38.16		38.20	0.000627	1.61	163.30	247.17	0.17
2	28640.*	187.22	33.76	38.48		38.53	0.000733	1.75	108.53	75.97	0.18
2	29103.*	175.49	33.88	38.80		38.84	0.000558	1.59	110.55	36.38	0.16
2	29972	159.36	34.00	39.04		39.07	0.000419	1.42	112.38	35.01	0.14
2	30354	159.41	34.70	39.58		39.64	0.001029	2.09	76.28	25.42	0.21
2	31372	108.70	38.80	41.19		41.23	0.002033	2.17	96.42	135.86	0.29
2	31580	99.25	39.00	41.66		41.82	0.003381	3.39	48.45	109.43	0.37
2	31595	Culvert									
2	31610	99.29	39.05	42.17		42.19	0.000706	1.73	140.57	221.50	0.17
2	31682	96.09	39.10	42.21		42.21	0.000157	0.78	255.59	239.60	0.08
2	32055	78.69	39.50	42.34		42.35	0.000572	1.07	112.30	273.48	0.15
2	32975	83.41	39.80	42.85		42.86	0.000617	1.22	184.52	392.62	0.15
3	241	255.21	28.60	35.81		35.86	0.000544	2.03	170.44	90.63	0.16
3	443.333*	261.99	28.80	35.92		35.98	0.000591	2.09	195.67	131.57	0.17
3	645.666*	268.69	29.00	36.05		36.10	0.000573	2.03	240.21	184.82	0.17
3	848	273.93	29.20	36.18		36.22	0.000578	2.00	342.69	472.73	0.17
3	1027.66*	278.89	29.37	36.27		36.32	0.000559	1.91	251.98	292.55	0.17
3	1207.33*	281.80	29.53	36.37		36.42	0.000554	1.78	211.32	202.83	0.16
3	1387	282.19	29.70	36.42		36.79	0.002316	4.89	57.72	155.99	0.36
3	1432	Culvert									
3	1477	294.14	29.80	37.17		37.49	0.001768	4.58	64.17	315.54	0.32
3	1662	290.63	30.00	37.54		37.58	0.000469	1.83	283.86	241.96	0.15
3	1905.*	286.67	30.20	37.68		37.77	0.001021	2.42	145.54	123.54	0.22

HEC-RAS Plan: FlorinPre Profile: Max WS (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
3	2148	286.47	30.40	37.97		38.08	0.001489	2.63	108.87	33.13	0.26
3	2316.*	286.33	30.57	38.23		38.34	0.001468	2.67	109.46	52.70	0.25
3	2484.*	282.78	30.73	38.47		38.58	0.001445	2.70	110.27	55.60	0.25
3	2652	279.66	30.90	38.72		38.84	0.001512	2.78	104.02	39.00	0.26
3	2878	280.54	31.10	39.00		39.04	0.000410	1.65	184.59	77.12	0.14
5	79	53.20	39.80	42.85		42.87	0.000773	1.20	44.36	29.07	0.17
5	80	53.20	39.90	42.85		42.88	0.000875	1.25	42.57	28.82	0.18
5	81	Inl Struct									
5	82	62.14	40.00	43.94	41.56	43.95	0.000244	0.80	77.65	39.41	0.10
5	395	62.29	42.80	44.38		44.40	0.002204	1.45	67.85	140.67	0.27
5	1119	64.22	43.40	45.80		45.85	0.001471	2.07	39.74	23.40	0.25
5	1707	65.38	44.40	46.52		46.52	0.000887	1.15	141.30	384.79	0.18
4	33055	30.20	39.90	42.85		42.86	0.000238	0.75	84.04	156.36	0.10
4	33659	38.22	40.10	43.09		43.11	0.000546	1.21	31.93	22.04	0.14
4	33743.5	38.22	40.30	43.14		43.16	0.000494	1.07	36.72	35.87	0.14
4	33753.5	38.22	40.30	43.15		43.17	0.000490	1.07	36.90	36.47	0.14
4	33770	Culvert									
4	33785.7	38.22	40.43	43.86		43.86	0.000111	0.61	108.18	174.89	0.07
4	33795	38.22	40.43	43.86		43.87	0.000111	0.61	108.38	175.13	0.07
4	33850	38.22	40.70	43.87		43.87	0.000097	0.53	132.56	211.41	0.06
4	34014	38.22	41.00	43.88		43.88	0.000105	0.53	132.46	214.25	0.07
4	34033	38.22	41.10	43.88		43.88	0.000005	0.13	325.14	180.67	0.01
4	34043	38.22	41.10	43.88		43.88	0.000005	0.13	325.15	180.67	0.01
4	34123	Culvert									
4	34193	38.45	41.20	45.33		45.33	0.000001	0.06	658.41	235.00	0.01
4	34203	38.45	41.20	45.33		45.33	0.000001	0.06	658.41	235.00	0.01
4	34252	38.44	41.40	45.33		45.33	0.000001	0.05	1637.71	1759.10	0.01
4	34623	38.84	42.40	45.34		45.34	0.000015	0.15	437.67	529.84	0.02
4	34821	41.42	42.90	45.34		45.34	0.000036	0.23	314.24	431.97	0.04
4	34844	Culvert									
4	34867	61.19	42.90	45.75		45.75	0.000021	0.21	515.03	557.08	0.03
4	35499	117.83	43.50	45.95		45.95	0.000810	1.28	247.67	501.32	0.17
4	35982	125.56	45.10	46.78		46.81	0.002140	1.75	128.76	258.93	0.28
4	36817	128.91	46.50	48.34		48.37	0.001790	1.47	112.48	263.55	0.25
4	37437	132.41	47.50	49.20		49.21	0.000944	1.29	215.63	325.29	0.19
4	37727	137.91	47.90	49.40		49.41	0.000453	0.72	216.71	339.33	0.12
4	37753	Culvert									
4	37779	141.55	48.00	51.11		51.11	0.000008	0.18	1328.49	1204.03	0.02
4	38337	143.89	49.30	51.15		51.15	0.000146	0.52	488.06	525.31	0.08
4	38583	145.78	49.50	51.20		51.20	0.000209	0.61	445.98	582.61	0.09
4	38755	149.66	49.60	51.23		51.23	0.000208	0.60	451.73	525.68	0.09

RAS Model Data

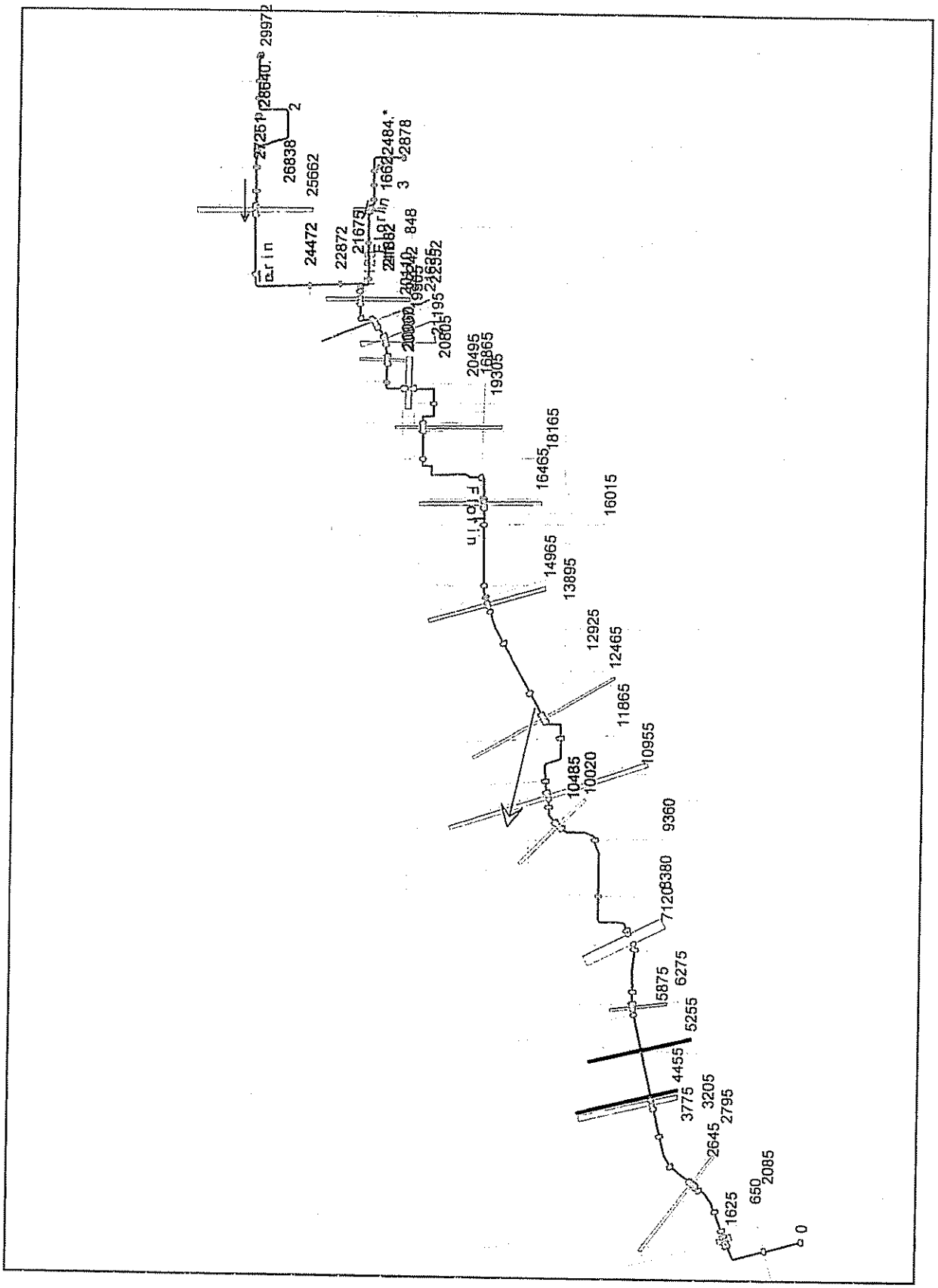
For

Florin Creek – Post Fvcp

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table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5255
4455
3775
3205
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2645
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1625
0

RAS Input Hyd. ,raph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
Florin	3	2878		Flow Hydrograph	SwmmOutflow.dss	/FLORIN/SWMMOUT SC2/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	3	2652	848	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F3/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	2	29972		Flow Hydrograph	SwmmOutflow.dss	/FLORIN/SWMMOUT MH/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	2	29566	27251	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F4D/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	2	24472	23372	Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F5/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	22132	21675	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F6/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	21555	19305	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F7/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	18785	18735	Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F8/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	16465	16415	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F9/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	16015		Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F10/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	12365	11865	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/PMPD25/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	10760		Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F12/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	7370	7300	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F13/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	6025	5255	Uniform Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F14/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	4455	3775	Lateral Inflow Hydrograph	FlorinPre.dss	/FLORIN C/F15/FLOW/01JAN2000/1MIN/100YR-24HR/
Florin	1	0		Stage Hydrograph	egromr.dss	/ELDER REACH1/0.671/STAGE/01DEC1999/15MIN/ELDER 100YR/

HEC-RAS Plan: XP SWMM Profile: Max WS

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	0	427.75	4.40	18.92	7.96	18.93	0.000042	1.04	410.92	45.00	0.06
1	650	454.94	7.50	18.96		18.96	0.000000	0.09	10583.33	2504.79	0.01
1	1460	490.04	7.60	19.09		19.09	0.000007	0.34	3194.88	1100.00	0.03
1	1520	490.19	7.60	19.09		19.12	0.000031	1.29	378.89	59.42	0.09
1	1572.5	Bridge									
1	1625	494.24	7.60	19.12	11.43	19.15	0.000031	1.30	380.49	59.49	0.09
1	1735	494.83	7.80	19.12		19.12	0.000002	0.18	6037.74	1700.00	0.01
1	2085	511.74	7.90	19.17		19.17	0.000002	0.19	5805.13	1700.00	0.01
1	2555	526.53	8.10	19.26		19.26	0.000002	0.17	6700.87	1848.52	0.01
1	2645	527.66	8.00	19.29		19.29	0.000001	0.14	7201.47	1866.97	0.01
1	2695	527.69	8.30	19.30		19.30	0.000001	0.28	6944.34	1957.79	0.02
1	2720	Bridge									
1	2745	527.69	8.30	19.30	12.48	19.30	0.000001	0.28	6944.79	1957.88	0.02
1	2795	527.70	8.30	19.30		19.30	0.000006	0.32	4441.95	2193.12	0.02
1	3205	527.24	8.40	19.39		19.39	0.000008	0.36	3051.03	1561.14	0.03
1	3775	530.34	8.60	19.55		19.60	0.000239	1.97	427.71	767.69	0.14
1	4245	689.36	8.90	19.70		19.82	0.000436	2.68	257.12	1551.32	0.19
1	4303	556.61	9.00	19.61		19.61	0.000016	0.82	2625.43	1565.24	0.05
1	4354	Bridge									
1	4405	731.32	9.00	19.90	13.70	19.90	0.000018	0.89	3085.39	1592.43	0.05
1	4455	713.78	10.60	19.98		20.25	0.001260	4.19	170.35	34.13	0.30
1	5255	713.86	11.10	20.91		21.08	0.000801	3.32	214.81	44.04	0.25
1	5875	666.87	11.70	21.29		21.31	0.000151	1.59	945.44	621.42	0.10
1	5975	659.34	12.30	21.31		21.31	0.000061	1.01	1753.67	957.48	0.06
1	6000	Bridge									
1	6025	659.34	12.30	21.31	15.28	21.31	0.000061	1.01	1753.67	957.48	0.06
1	6075	659.37	12.40	21.31		21.32	0.000064	0.98	1784.76	1316.69	0.07
1	6275	659.48	12.80	21.32		21.33	0.000064	0.98	1796.97	1320.08	0.07
1	7005	662.12	13.50	21.40		21.42	0.000179	1.42	731.27	605.17	0.11
1	7110	662.15	16.00	21.40		21.78	0.002966	4.90	135.06	25.00	0.37
1	7120	664.02	16.00	21.44		21.81	0.002929	4.89	135.91	25.00	0.37
1	7205	Bridge									
1	7290	674.75	16.00	22.44	18.82	22.71	0.001849	4.19	161.00	25.00	0.29
1	7300	674.98	16.00	22.46		22.73	0.001833	4.18	161.50	25.00	0.29
1	7370	641.21	16.20	22.60		22.60	0.000075	0.95	1793.62	1208.76	0.07
1	8380	643.23	16.70	22.67		22.68	0.000108	1.04	1393.00	920.92	0.09
1	9360	678.83	17.40	23.05		23.12	0.000754	2.46	498.56	364.41	0.22
1	10020	702.95	17.60	23.49		23.67	0.001338	3.39	207.50	50.48	0.29
1	10070	700.93	17.30	23.43		23.75	0.002088	4.54	154.53	121.72	0.32
1	10102.5	Bridge									
1	10135	705.85	17.49	23.98	20.40	24.27	0.001740	4.32	163.26	217.76	0.30
1	10185	710.45	17.80	24.21		24.32	0.000668	2.68	320.87	312.99	0.21
1	10485	712.42	17.80	24.43		24.55	0.000786	2.80	269.02	205.78	0.23
1	10635	712.44	17.20	24.45		24.85	0.002755	5.06	140.92	19.99	0.34
1	10672.5	Bridge									
1	10710	714.47	18.00	24.83	21.41	25.25	0.003068	5.23	136.49	20.00	0.35
1	10760	676.52	18.10	25.23		25.31	0.000430	2.29	295.44	929.39	0.18
1	10955	676.66	18.30	25.33		25.37	0.000297	1.88	677.49	836.75	0.15
1	11865	677.42	18.50	25.69		25.78	0.000673	2.53	326.40	525.77	0.21
1	12365	649.26	18.60	25.97		26.07	0.000513	2.55	254.43	42.16	0.18
1	12415	649.26	18.70	25.98		26.12	0.001241	2.94	220.81	31.00	0.19
1	12440	Bridge									
1	12465	650.71	18.70	26.59	21.15	26.71	0.000957	2.71	239.68	1121.10	0.17
1	12515	650.90	18.60	26.65		26.74	0.000438	2.40	272.40	534.82	0.17
1	12925	651.19	19.10	26.83		26.93	0.000464	2.44	267.49	520.01	0.18
1	13895	657.74	19.70	27.28		27.37	0.000458	2.41	273.96	74.59	0.18
1	14495	662.50	19.70	27.56		27.67	0.000517	2.62	257.64	103.38	0.18
1	14595	663.24	19.80	27.58		27.74	0.000860	3.16	210.07	27.00	0.20
1	14630	Bridge									
1	14665	666.17	19.80	28.06	22.47	28.20	0.000736	3.00	223.08	27.00	0.18
1	14765	668.69	19.90	28.17		28.24	0.000320	2.14	516.57	565.10	0.15
1	14965	668.82	20.00	28.24		28.30	0.000313	2.12	546.90	613.14	0.15
1	16015	590.10	20.60	28.59		28.65	0.000351	2.16	370.95	467.64	0.15
1	16295	593.42	20.70	28.68		28.76	0.000401	2.32	256.40	54.18	0.16
1	16345	593.42	21.00	28.64		28.79	0.000821	3.17	187.18	34.61	0.20
1	16380	Bridge									
1	16415	598.71	21.00	28.90	23.76	29.05	0.000746	3.09	193.59	36.14	0.20
1	16465	528.32	21.30	28.99		29.12	0.000908	2.95	178.87	35.86	0.23
1	16865	528.62	21.70	29.32		29.42	0.000548	2.49	212.38	48.41	0.19

HEC-RAS Plan: XP SWMM Profile: Max WS (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	18165	528.92	22.50	30.12		30.24	0.000719	2.78	190.01	78.41	0.21
1	18635	529.47	23.30	30.59		30.77	0.001554	3.46	153.18	36.57	0.30
1	18685	529.48	23.50	30.64		30.85	0.001395	3.62	146.36	20.50	0.24
1	18710	Bridge									
1	18735	529.86	23.50	30.84	26.25	31.03	0.001297	3.52	150.35	20.50	0.23
1	18785	491.69	23.80	30.96		31.11	0.001038	3.15	155.95	123.56	0.25
1	19305	491.82	24.30	31.49		31.64	0.000967	3.05	161.22	231.16	0.24
1	19905	462.69	24.60	32.03		32.13	0.000657	2.56	194.62	83.70	0.20
1	19955	461.10	24.70	32.03		32.17	0.000887	3.07	150.20	67.70	0.20
1	20007.5	Bridge									
1	20060	458.92	24.70	33.42	27.20	33.48	0.000338	2.13	478.91	718.52	0.13
1	20110	457.32	24.70	33.45		33.47	0.000130	1.37	865.79	1087.34	0.09
1	20495	439.84	24.80	33.49		33.51	0.000121	1.32	806.09	766.64	0.09
1	20805	422.90	25.00	33.53		33.58	0.000241	1.69	271.61	217.28	0.12
1	20855	419.41	25.60	33.50		33.64	0.000662	3.30	270.38	339.50	0.21
1	20876	Culvert									
1	20897	437.15	25.60	34.27		34.31	0.000248	2.15	629.52	591.01	0.13
1	20947	433.22	25.70	34.29		34.31	0.000128	1.32	667.77	651.63	0.09
1	21145	417.61	25.90	34.31		34.34	0.000148	1.39	558.12	606.52	0.10
1	21195	413.52	26.30	34.28		34.39	0.000679	2.63	157.52	21.00	0.17
1	21225	Bridge									
1	21255	413.52	26.30	34.55	29.07	34.65	0.000616	2.53	163.19	47.77	0.16
1	21305	409.32	26.40	34.63		34.67	0.000251	1.65	247.55	465.30	0.13
1	21485	394.16	26.50	34.67		34.73	0.000375	2.04	193.20	549.92	0.15
1	21555	388.26	26.70	34.69		34.76	0.000376	2.09	185.44	30.00	0.15
1	21605	388.27	26.70	34.68		34.79	0.000690	2.69	144.16	22.20	0.19
1	21615	Bridge									
1	21625	388.27	26.70	34.69	29.81	34.80	0.000685	2.69	144.48	22.20	0.19
1	21675	388.27	26.80	34.76		34.83	0.000370	2.08	186.74	30.00	0.15
1	21882	369.58	27.10	34.85		34.90	0.000281	1.79	206.12	463.46	0.14
1	22132	347.03	27.30	34.93		34.98	0.000268	1.72	201.40	412.52	0.13
1	22182	347.04	27.40	34.89		35.01	0.000923	2.81	123.56	16.50	0.18
1	22212	Bridge									
1	22242	347.96	27.40	35.08	29.80	35.20	0.000866	2.75	126.75	16.50	0.17
1	22352	349.67	27.50	35.21		35.26	0.000234	1.62	215.30	219.28	0.12
2	22872	169.07	27.70	35.21		35.23	0.000114	1.07	157.85	30.01	0.08
2	23372	171.69	28.20	35.28		35.30	0.000148	1.18	144.99	28.97	0.09
2	24472	163.36	29.10	35.48		35.51	0.000222	1.37	119.30	32.60	0.11
2	25492	180.05	29.20	35.78		35.83	0.000384	1.70	105.74	30.95	0.15
2	25532	179.66	29.30	35.78		35.85	0.000763	2.22	80.95	12.50	0.15
2	25572	Bridge									
2	25612	182.37	29.30	35.88	31.18	35.96	0.000753	2.22	82.30	12.50	0.15
2	25662	183.17	29.90	35.94		35.99	0.000426	1.88	97.37	34.86	0.15
2	26838	185.87	33.30	37.31		37.41	0.001983	2.54	73.07	30.73	0.29
2	27251	186.05	33.40	37.78		37.78	0.000105	0.70	578.98	564.84	0.07
2	27714.*	177.99	33.52	37.87		37.89	0.000334	1.18	291.96	391.62	0.12
2	28177.*	172.44	33.64	38.08		38.12	0.000638	1.60	144.88	217.58	0.17
2	28640.*	172.19	33.76	38.39		38.43	0.000689	1.66	103.66	37.67	0.18
2	29103.*	158.12	33.88	38.68		38.72	0.000504	1.49	106.39	35.84	0.15
2	29566	142.65	34.00	38.90		38.93	0.000380	1.33	107.59	34.46	0.13
2	29966	142.71	34.36	39.09		39.14	0.000651	1.66	86.18	29.47	0.17
2	29971	142.71	34 36	39.11		39.15	0.000640	1.65	86.67	29.53	0.17
2	29972	142.71	34.36	39.11		39.16	0.000638	1.64	86.77	29.55	0.17
3	241	180.60	28 60	35.21		35.25	0.000495	1.77	123.40	68.52	0.15
3	848	154.46	29.20	36.16		36.17	0.000194	1.15	332.68	465.85	0.10
3	1387	168.06	29.70	36.42		36.55	0.000824	2.91	57.68	154.93	0.21
3	1432	Culvert									
3	1477	179.52	29.80	36.65		36.79	0.000874	3.05	58.96	186.51	0.22
3	1662	178.03	30.00	36.86		36.90	0.000452	1.62	152.79	147.36	0.14
3	1905.*	166.97	30.20	37.00		37.05	0.000725	1.79	93.31	30 21	0.18
3	2148	154.50	30.40	37.20		37.25	0.000801	1.81	85.17	28.18	0.18
3	2316.*	145.77	30.57	37.35		37.40	0.000831	1.81	80.72	27.52	0.19
3	2484.*	136.46	30.73	37.49		37.54	0.000859	1.79	76 07	26.61	0.19
3	2652	127.22	30.90	37.65		37.70	0.000908	1.79	70.94	25.53	0.19
3	2878	127.64	31.10	37.81		37.83	0 000262	1.08	118.47	38.89	0.11

RAS Model Data

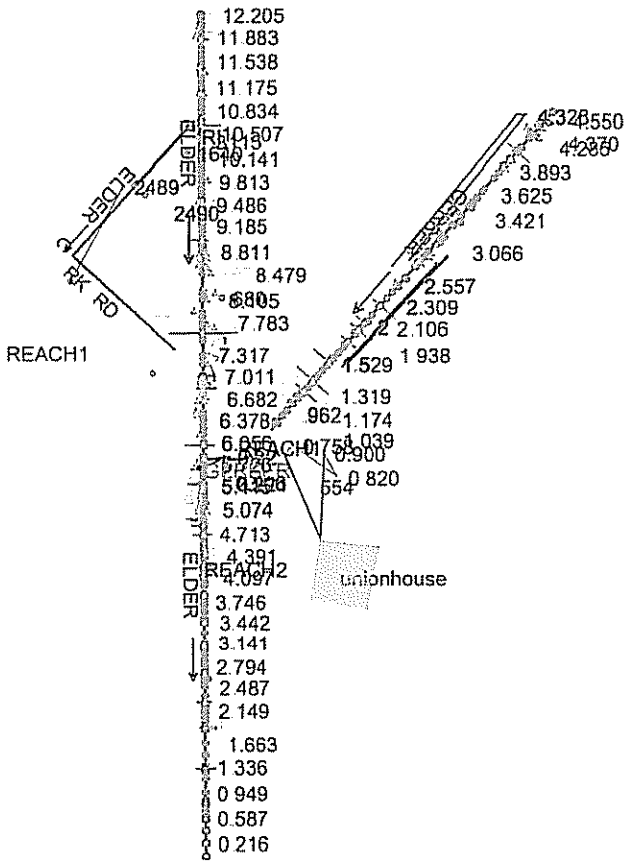
For

Elder and Gerber Creeks – Pre Fvcp

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table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2.149
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1.336
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0.587
0.216
ELDER
ELDER
ELDER
2489
2490
REACH1
3.893
3.625
3.421
3.066
2.557
2.309
2.106
1.938
1.529
1.319
1.174
1.039
0.900
0.820
962
754
554
unionhouse

RAS Input Hydrograph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
ELDER	REACH1	12.205		Flow Hydrograph	EFG-24HR.dss	/ELDER CREEK/E1A/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	9.438		Lateral Inflow Hydrograph	EFG-24HR.dss	/ELDER CRK RD REACH1/680/FLOW/01JAN2000/10MIN/EGLOMR100R/
ELDER	REACH1	8.105		Lateral Inflow Hydrograph	EFG-24HR.dss	/ELDER CREEK/E3/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	12.02	11.944	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E1C/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	10.507	7.783	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E2/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	10.272		Lateral Inflow Hydrograph	EFG-24HR.dss	/ELDER CREEK/RETE1B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	7.93	6.877	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E4B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	6.920		Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E4A/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	6.751	6.158	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E5/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	11.063		Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/R-RE1B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	5.374	4.437	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E7/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	5.726	5.599	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E6/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.391	4.156	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E8/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.06	3.483	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E9/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	3.286	3.141	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E10/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	3.01	2.794	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E11/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	2.736	2.354	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E12/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	2.219	1.978	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/ELDER CREEK/E13/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	1.280		Lateral Inflow Hydrograph	EFG-24HR.dss	/ELDER CREEK/R-E14/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	0.394		Lateral Inflow Hydrograph	hcalcflorinpre.dss	/FLORIN C/R-CF15/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	0.019		Friction Slope=0.0015		
ELDER CRK RD	REACH1	3115		Flow Hydrograph	EFG-24HR.dss	
ELDER CRK RD	REACH1	680		Friction Slope=0.005		
GERBER	REACH1	4.550		Flow Hydrograph	EFG-24HR.dss	/GERBER CREEK/G2A/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	3.912	2.784	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/GERBER CREEK/G2B/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	2.697	2.386	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/GERBER CREEK/G3A/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	2.309	1.938	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/GERBER CREEK/G3B/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.779	1.573	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/GERBER CREEK/G3D/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.784	1.319	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/GERBER CREEK/G3C/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.883	1.573	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/TRANSFER REACH TRANSFER REACH/600/FLOW/01JAN2000/10MIN/100YR-24HR/
GERBER	REACH1	1.244		Lateral Inflow Hydrograph	EFG-24HR.DSS	/GERBER CREEK/G4/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.199	0.202	Uniform Lateral Inflow Hydrograph	EFG-24HR.DSS	/GERBER CREEK/G5/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.174		Lateral Inflow Hydrograph	EFG-24HR.DSS	/CTRR REACH CTRR REACH/200/FLOW/01JAN2000/10MIN/100YR-24HR/

HEC-RAS Plan: 100yR Ext Profile: Max WS

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	0.019	2735.10	5.50	12.31	10.47	13.26	0.001500	7.82	349.85	64.08	0.59
ELDER	REACH2	0.2	2735.14	4.30	13.73		14.36	0.000804	6.37	429.53	69.42	0.44
ELDER	REACH2	0.216	2735.16	4.30	13.81		14.42	0.000776	6.29	434.89	69.69	0.43
ELDER	REACH2	0.388	2735.45	4.80	14.53		15.07	0.000656	5.90	463.59	68.01	0.40
ELDER	REACH2	0.394	1924.64	4.80	15.11		15.34	0.000257	3.82	503.36	69.84	0.25
ELDER	REACH2	0.543	1929.91	5.50	15.30		15.60	0.000408	4.40	438.77	70.16	0.31
ELDER	REACH2	0.556	Bridge									
ELDER	REACH2	0.569	1932.25	5.50	15.45	11.00	15.74	0.000380	4.30	449.30	70.23	0.30
ELDER	REACH2	0.574	1932.55	5.30	15.48		15.75	0.000323	4.15	465.72	69.25	0.28
ELDER	REACH2	0.587	1928.84	5.40	15.21		15.60	0.000898	6.15	313.60	54.61	0.45
ELDER	REACH2	0.671	1938.09	5.60	15.73		16.11	0.000484	4.97	389.62	58.70	0.34
ELDER	REACH2	0.76	1942.23	5.90	15.93		16.37	0.000599	5.34	363.87	57.83	0.38
ELDER	REACH2	0.768	1944.05	5.90	15.99		16.46	0.000647	5.54	351.14	55.67	0.39
ELDER	REACH2	0.769	1947.28	6.00	16.17		16.47	0.000355	4.36	446.59	66.04	0.30
ELDER	REACH2	0.797	Bridge									
ELDER	REACH2	0.804	1948.69	6.00	16.24	11.52	16.53	0.000345	4.32	451.35	66.31	0.29
ELDER	REACH2	0.835	1948.07	6.00	16.19		16.61	0.000547	5.16	377.31	58.84	0.36
ELDER	REACH2	0.949	1957.46	6.50	16.52		16.94	0.000530	5.15	380.14	58.07	0.35
ELDER	REACH2	1.148	1974.90	6.90	17.10		17.52	0.000549	5.18	381.58	59.37	0.36
ELDER	REACH2	1.263	2111.11	7.10	17.51		17.85	0.000435	4.73	446.50	68.39	0.33
ELDER	REACH2	1.280	1941.54	7.10	17.59		17.95	0.000449	4.85	399.76	58.56	0.33
ELDER	REACH2	1.281	1941.54	6.50	17.69		17.95	0.000315	4.11	472.17	68.44	0.28
ELDER	REACH2	1.292	Bridge									
ELDER	REACH2	1.305	1941.54	6.50	17.81	12.22	18.05	0.000302	4.04	480.09	69.06	0.27
ELDER	REACH2	1.336	1941.54	7.50	17.70		18.14	0.000573	5.30	366.60	56.52	0.37
ELDER	REACH2	1.495	1941.56	8.50	18.16		18.73	0.000829	6.03	321.99	54.66	0.44
ELDER	REACH2	1.663	1941.59	8.80	18.90		19.43	0.000761	5.83	333.22	55.97	0.42
ELDER	REACH2	1.864	1941.65	10.50	19.53		19.98	0.000269	5.37	361.82	55.28	0.37
ELDER	REACH2	1.865	1941.67	10.70	19.68		19.97	0.000161	4.35	446.25	62.73	0.29
ELDER	REACH2	1.893	Bridge									
ELDER	REACH2	1.908	1941.69	10.80	20.23	15.37	20.49	0.000134	4.09	474.23	63.10	0.26
ELDER	REACH2	1.921	1941.69	12.00	20.19		20.50	0.000204	4.43	438.51	76.44	0.33
ELDER	REACH2	1.978	1941.70	12.13	20.23		20.62	0.000591	4.97	390.72	71.59	0.37
ELDER	REACH2	2.036	1940.87	12.57	20.38		20.83	0.000776	5.37	361.75	72.91	0.42
ELDER	REACH2	2.098	1939.97	12.91	20.65		21.07	0.000722	5.24	370.52	73.38	0.41
ELDER	REACH2	2.149	1939.22	13.26	20.85		21.26	0.000699	5.17	375.11	73.86	0.40
ELDER	REACH2	2.219	1938.17	13.60	21.09		21.54	0.000789	5.37	360.92	73.44	0.43
ELDER	REACH2	2.250	1938.17	14.90	21.01		21.71	0.001222	6.68	290.29	53.00	0.50
ELDER	REACH2	2.258	Bridge									
ELDER	REACH2	2.269	1909.03	14.80	22.11	18.73	22.57	0.000661	5.44	350.79	53.00	0.37
ELDER	REACH2	2.354	1872.57	14.88	22.54		22.90	0.000636	4.85	386.10	78.29	0.38
ELDER	REACH2	2.467	1889.99	16.00	22.93		23.48	0.000935	5.90	320.37	63.89	0.46
ELDER	REACH2	2.546	1884.10	15.68	23.15		23.81	0.001124	6.54	288.17	55.77	0.51
ELDER	REACH2	2.603	1894.79	15.90	23.53		24.12	0.000901	6.15	307.85	53.88	0.45
ELDER	REACH2	2.656	1892.39	16.00	23.77		24.38	0.000911	6.24	303.34	53.00	0.46
ELDER	REACH2	2.665	Bridge									
ELDER	REACH2	2.673	1892.39	16.00	24.02	21.09	24.58	0.000806	5.98	316.67	53.69	0.43
ELDER	REACH2	2.736	1892.45	16.38	24.35		24.84	0.000758	5.65	335.13	60.00	0.42
ELDER	REACH2	2.794	1926.39	16.50	24.64		25.06	0.000700	5.31	362.73	68.21	0.41
ELDER	REACH2	2.861	1924.60	16.85	24.73		25.42	0.001218	6.68	288.00	57.44	0.53
ELDER	REACH2	2.944	1922.37	17.20	25.26		26.00	0.001390	6.88	279.57	59.36	0.56
ELDER	REACH2	3.01	1920.63	18.00	25.88		26.37	0.000768	5.60	343.22	63.20	0.42
ELDER	REACH2	3.07	1920.65	18.20	25.94		26.75	0.001619	7.26	264.61	58.17	0.60
ELDER	REACH2	3.071	1920.67	18.30	26.39		26.74	0.000474	4.73	406.34	66.58	0.34
ELDER	REACH2	3.081	Bridge									
ELDER	REACH2	3.092	1920.67	18.30	26.54	22.65	26.87	0.000443	4.61	416.21	67.21	0.33
ELDER	REACH2	3.141	1920.68	18.30	26.51		27.07	0.001103	6.03	318.35	69.88	0.50
ELDER	REACH2	3.286	1913.58	18.90	27.30		27.86	0.000939	5.98	319.83	62.22	0.47
ELDER	REACH2	3.419	1913.71	19.50	28.07		28.26	0.000284	3.49	549.01	100.26	0.26
ELDER	REACH2	3.420	1913.70	19.50	28.07		28.26	0.000287	3.58	534.91	94.23	0.26
ELDER	REACH2	3.431	Bridge									
ELDER	REACH2	3.442	1913.70	19.50	28.20	23.86	28.39	0.000270	3.50	547.21	95.16	0.26
ELDER	REACH2	3.483	1913.71	19.60	28.08		28.48	0.000558	5.08	376.55	61.88	0.36
ELDER	REACH2	3.490	Bridge									
ELDER	REACH2	3.496	1913.70	19.70	28.27	24.58	28.67	0.000539	5.05	379.15	61.24	0.36
ELDER	REACH2	3.59	1912.20	20.00	28.57		28.93	0.000504	4.81	397.56	66.44	0.35
ELDER	REACH2	3.657	1911.00	20.10	28.75		29.10	0.000501	4.79	399.20	66.99	0.35
ELDER	REACH2	3.698	1910.19	20.30	28.85		29.21	0.000506	4.80	397.63	66.82	0.35
ELDER	REACH2	3.746	1909.41	20.40	28.98		29.34	0.000510	4.82	395.89	66.49	0.35
ELDER	REACH2	3.808	1908.31	20.50	29.15		29.51	0.000499	4.78	399.05	66.89	0.35
ELDER	REACH2	3.816	1908.10	20.60	29.22		29.53	0.000396	4.40	433.20	69.04	0.31
ELDER	REACH2	3.825	Bridge									
ELDER	REACH2	3.832	1908.10	20.60	29.33	24.99	29.63	0.000377	4.33	440.79	69.50	0.30
ELDER	REACH2	3.842	1907.92	20.70	29.40		29.64	0.000351	4.01	476.02	80.21	0.29
ELDER	REACH2	3.855	1907.69	20.70	29.41		29.67	0.000309	4.08	467.52	68.15	0.27
ELDER	REACH2	3.958	1905.85	21.10	29.58		29.84	0.000318	4.08	467.64	70.92	0.28
ELDER	REACH2	4.009	1904.94	21.30	29.67		29.93	0.000327	4.09	465.47	72.02	0.28
ELDER	REACH2	4.06	1904.02	21.50	29.75		30.02	0.000340	4.12	461.95	72.85	0.29
ELDER	REACH2	4.097	1904.02	28.00	30.70	32.83	39.42	0.053283	23.70	80.35	42.27	3.03
ELDER	REACH2	4.105	Bridge									
ELDER	REACH2	4.112	1904.02	28.00	34.97	32.83	35.44	0.001657	5.53	344.25	674.27	0.45

HEC-RAS Plan: 100yR Ext Profile: Max WS (Continued)

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	4.156	1904.03	28.00	35.52		35.66	0.000459	3.06	623.17	126.05	0.24
ELDER	REACH2	4.221	1902.88	28.00	35.68		35.84	0.000563	3.21	592.39	129.68	0.26
ELDER	REACH2	4.229	1902.51	28.10	35.51		35.90	0.001808	4.99	381.15	102.24	0.46
ELDER	REACH2	4.239	Bridge									
ELDER	REACH2	4.240	1902.03	28.10	36.26	32.83	36.51	0.001097	3.99	580.43	559.70	0.36
ELDER	REACH2	4.343	1902.90	28.20	36.76		36.95	0.000578	3.52	540.43	104.18	0.27
ELDER	REACH2	4.391	1901.46	28.30	36.93		37.10	0.000561	3.37	640.10	499.14	0.27
ELDER	REACH2	4.437	1901.68	28.40	37.05		37.23	0.000501	3.34	569.82	207.81	0.26
ELDER	REACH2	4.485	1900.96	28.60	37.15		37.44	0.001165	4.32	439.60	318.51	0.37
ELDER	REACH2	4.564	1899.78	28.70	37.61		37.98	0.001393	4.89	388.65	160.89	0.41
ELDER	REACH2	4.642	1898.67	30.00	38.20		38.36	0.000508	3.22	599.15	178.21	0.25
ELDER	REACH2	4.671	1898.23	29.90	38.17		38.47	0.000849	4.33	438.55	82.18	0.33
ELDER	REACH2	4.684	Bridge									
ELDER	REACH2	4.693	1898.24	29.90	38.35	34.80	38.62	0.000775	4.19	452.88	83.13	0.32
ELDER	REACH2	4.713	1897.85	29.84	38.51		38.69	0.000495	3.42	570.66	148.87	0.26
ELDER	REACH2	4.794	1896.61	30.50	38.80		38.97	0.000841	3.31	615.95	240.78	0.25
ELDER	REACH2	4.822	1896.13	30.60	38.72		39.26	0.002282	5.91	350.79	139.39	0.40
ELDER	REACH2	4.824	Bridge									
ELDER	REACH2	4.826	1896.17	30.60	39.02	35.26	39.49	0.001929	5.59	397.42	177.37	0.37
ELDER	REACH2	4.85	1895.84	31.02	39.44		39.64	0.001104	3.66	592.29	245.36	0.28
ELDER	REACH2	4.902	1895.29	31.50	39.87		40.07	0.002151	4.60	824.87	503.76	0.38
ELDER	REACH2	4.9035	Bridge									
ELDER	REACH2	4.904	1895.28	31.50	40.46	39.00	40.56	0.001074	3.51	1370.35	1056.57	0.27
ELDER	REACH2	4.928	1894.95	31.60	40.62		40.69	0.001149	3.26	1474.77	1159.04	0.27
ELDER	REACH2	4.930	Culvert									
ELDER	REACH2	4.932	1895.03	31.60	40.64		40.71	0.001106	3.21	1503.01	1176.27	0.27
ELDER	REACH2	5.028	1894.56	32.60	41.04		41.16	0.001181	4.03	1171.02	1082.44	0.29
ELDER	REACH2	5.074	1894.73	33.39	41.31		41.45	0.001044	4.11	1161.81	825.01	0.28
ELDER	REACH2	5.15	1895.02	34.45	41.72		41.79	0.000793	2.31	1065.63	780.52	0.22
ELDER	REACH2	5.212	1895.00	35.50	42.01		42.13	0.001191	3.47	974.42	1759.29	0.29
ELDER	REACH2	5.264	1895.21	35.73	42.27		42.49	0.001427	4.24	754.61	1055.97	0.32
ELDER	REACH2	5.331	1895.99	36.04	42.78		42.95	0.001231	4.11	761.86	1196.09	0.30
ELDER	REACH2	5.374	1896.22	36.20	43.30		44.28	0.007544	8.67	310.24	876.66	0.70
ELDER	REACH2	5.415	1897.42	36.30	44.45		44.51	0.000446	2.75	1767.75	1011.49	0.18
ELDER	REACH2	5.423	Bridge									
ELDER	REACH2	5.437	1897.09	36.30	44.15	41.29	45.16	0.003013	8.05	235.54	1312.10	0.51
ELDER	REACH2	5.529	1897.68	37.11	45.35		45.39	0.000308	2.23	2210.90	1265.24	0.15
ELDER	REACH2	5.599	1898.09	37.50	45.45		45.47	0.000172	1.62	2535.55	955.32	0.11
ELDER	REACH2	5.665	1897.46	37.27	45.52		45.55	0.000251	1.96	2055.96	836.36	0.14
ELDER	REACH2	5.726	1898.21	38.59	45.62		45.64	0.000329	2.01	1919.41	973.52	0.15
ELDER	REACH2	5.786	1621.06	39.00	45.75		45.79	0.000571	2.09	1254.54	937.47	0.19
ELDER	REACH1	5.816	891.53	39.02	45.75		45.76	0.000229	1.48	1432.46	1218.53	0.12
ELDER	REACH1	5.864	1196.48	39.06	45.85		45.88	0.000845	1.86	1083.06	989.32	0.22
ELDER	REACH1	6.001	1204.57	39.40	46.18		46.19	0.000046	0.75	3329.94	1747.95	0.06
ELDER	REACH1	6.004	Bridge									
ELDER	REACH1	6.007	1204.66	39.40	46.19	41.88	46.19	0.000046	0.75	3338.58	1749.42	0.06
ELDER	REACH1	6.056	1206.48	39.70	46.23		46.25	0.000353	1.60	1587.84	1206.02	0.15
ELDER	REACH1	6.158	1223.38	41.10	46.66		46.77	0.001405	3.77	746.61	604.77	0.31
ELDER	REACH1	6.243	1231.55	41.50	47.49		47.70	0.002558	4.55	489.83	314.74	0.40
ELDER	REACH1	6.297	1231.04	41.96	48.01		48.04	0.000495	2.20	1452.18	987.24	0.18
ELDER	REACH1	6.378	1229.86	43.00	48.26		48.30	0.000749	2.38	1144.06	869.60	0.22
ELDER	REACH1	6.436	1229.98	43.78	48.47		48.50	0.000605	2.27	1467.90	1257.78	0.20
ELDER	REACH1	6.482	1230.42	42.92	48.61		48.64	0.000524	2.23	1402.10	1122.41	0.19
ELDER	REACH1	6.533	1233.19	44.00	48.92		48.95	0.000533	2.25	1200.47	1176.60	0.19
ELDER	REACH1	6.682	1237.65	45.03	49.28		49.43	0.002709	4.15	582.48	1237.55	0.41
ELDER	REACH1	6.751	1242.54	45.14	49.98		50.18	0.002794	4.95	474.65	1210.61	0.42
ELDER	REACH1	6.813	1073.69	45.60	50.42		50.58	0.001179	3.18	337.90	1474.15	0.27
ELDER	REACH1	6.821	Bridge									
ELDER	REACH1	6.829	1073.69	45.40	50.58	47.96	50.73	0.000997	3.02	355.43	1485.89	0.25
ELDER	REACH1	6.83	1073.72	45.60	50.43		50.74	0.002416	4.47	240.22	930.64	0.40
ELDER	REACH1	6.877	1242.74	45.70	51.02		51.03	0.000207	1.60	1247.27	2101.92	0.11
ELDER	REACH1	6.928	1192.99	45.70	51.16		51.23	0.001267	2.30	643.97	1737.98	0.27
ELDER	REACH1	6.981	803.63	46.00	51.46		51.51	0.000442	2.08	566.15	1891.43	0.17
ELDER	REACH1	6.992	803.23	46.00	51.46		51.54	0.000917	2.08	482.78	326.80	0.23
ELDER	REACH1	7.001	Bridge									
ELDER	REACH1	7.011	803.25	46.00	51.63	49.54	51.68	0.000787	1.92	531.37	351.28	0.21
ELDER	REACH1	7.170	812.45	46.91	52.05		52.06	0.000304	1.28	1499.55	1667.09	0.13
ELDER	REACH1	7.258	928.86	47.08	52.16		52.17	0.000321	1.45	1635.07	2047.48	0.14
ELDER	REACH1	7.317	1041.07	47.20	52.37		52.45	0.001283	3.46	703.76	455.50	0.29
ELDER	REACH1	7.505	1124.37	48.05	52.78		52.79	0.000601	1.81	1303.17	867.24	0.19
ELDER	REACH1	7.557	Lat Struct									
ELDER	REACH1	7.558	1161.19	48.59	53.05		53.09	0.001202	2.72	1169.91	1292.58	0.27
ELDER	REACH1	7.620	1156.63	49.00	53.28		53.29	0.000390	1.49	1848.15	1527.76	0.15
ELDER	REACH1	7.6225	Bridge									
ELDER	REACH1	7.625	1156.66	49.00	53.29	52.48	53.31	0.000518	1.67	1560.43	1281.40	0.17
ELDER	REACH1	7.689	1155.03	49.61	53.36		53.38	0.000810	2.23	1290.71	1715.14	0.22
ELDER	REACH1	7.740	1150.52	49.72	53.56		53.58	0.000636	1.98	1288.74	1945.11	0.20
ELDER	REACH1	7.783	1147.85	49.88	53.93		54.05	0.002772	4.25	770.61	1006.35	0.41
ELDER	REACH1	7.863	1140.20	50.16	54.66		54.69	0.001223	2.14	1367.13	2065.58	0.26
ELDER	REACH1	7.93	1131.24	50.36	55.12		55.20	0.001719	3.61	917.19	1876.19	0.32
ELDER	REACH1	8.105	1058.84	51.00	55.98		56.04	0.001743	3.61	877.12	1164.56	0.29

HEC-RAS Plan: 100yR Ext Profile: Max WS (Continued)

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	8.195	1066.84	51.33	56.39		56.43	0.001382	2.43	1054.41	1276.21	0.27
ELDER	REACH1	8.258	1064.25	51.60	56.69		56.95	0.001290	3.20	982.68	1774.45	0.28
ELDER	REACH1	8.479	1061.88	52.04	57.82		57.86	0.000696	2.57	1109.04	1501.88	0.22
ELDER	REACH1	8.565	1064.30	52.15	58.16		58.26	0.001473	3.39	651.07	2266.04	0.31
ELDER	REACH1	8.598	1066.57	52.20	58.34		58.39	0.001098	3.04	852.31	2920.86	0.26
ELDER	REACH1	8.697	1076.47	52.60	58.72		58.78	0.000774	2.54	865.70	4204.54	0.22
ELDER	REACH1	8.752	1093.94	52.80	58.92		59.00	0.000744	2.41	610.38	986.49	0.22
ELDER	REACH1	8.811	1122.46	53.00	59.38		59.59	0.002584	4.80	504.08	541.61	0.40
ELDER	REACH1	8.89	1135.02	54.05	60.21		60.30	0.001080	2.36	516.96	390.23	0.25
ELDER	REACH1	8.954	1132.41	54.90	60.51		60.70	0.001287	3.71	451.14	407.96	0.28
ELDER	REACH1	8.961	Bridge									
ELDER	REACH1	8.969	1132.41	54.90	60.65	57.42	60.81	0.001104	3.49	508.44	418.53	0.26
ELDER	REACH1	8.975	1132.10	55.14	60.67		60.89	0.002113	4.04	456.50	419.99	0.37
ELDER	REACH1	9.039	1128.97	55.28	61.27		61.36	0.001016	3.09	663.61	425.07	0.26
ELDER	REACH1	9.091	1126.71	55.37	61.53		61.61	0.000745	2.78	635.62	587.53	0.23
ELDER	REACH1	9.143	1125.25	55.51	61.76		61.87	0.001040	3.31	744.59	542.18	0.26
ELDER	REACH1	9.185	1124.27	55.60	61.96		62.32	0.002329	4.77	235.86	56.05	0.39
ELDER	REACH1	9.228	1124.39	56.40	62.67		62.93	0.003022	4.63	444.06	910.94	0.43
ELDER	REACH1	9.282	1125.66	57.40	63.39		63.49	0.001354	3.11	701.78	559.29	0.29
ELDER	REACH1	9.329	1124.92	58.30	63.72		63.91	0.001736	4.03	512.06	401.92	0.34
ELDER	REACH1	9.387	1122.93	59.40	64.32		64.53	0.002293	4.04	431.75	892.92	0.37
ELDER	REACH1	9.438	1046.89	59.80	64.82		64.92	0.000772	2.84	616.30	903.20	0.23
ELDER	REACH1	9.486	1048.80	61.30	65.39		65.69	0.005290	5.21	333.12	441.92	0.56
ELDER	REACH1	9.524	1049.48	61.85	66.19		66.25	0.001152	2.83	651.73	956.99	0.27
ELDER	REACH1	9.566	1046.65	62.13	66.65		66.99	0.004204	5.59	325.34	229.72	0.52
ELDER	REACH1	9.633	1043.42	62.66	67.65		67.70	0.000843	2.70	788.65	435.30	0.24
ELDER	REACH1	9.701	1039.04	63.10	67.95		68.00	0.000793	2.35	795.61	466.05	0.23
ELDER	REACH1	9.749	1037.43	63.84	68.24		68.32	0.001554	3.39	690.23	633.78	0.32
ELDER	REACH1	9.813	1037.49	64.02	68.62		68.65	0.000520	2.06	1030.75	699.19	0.19
ELDER	REACH1	9.878	1038.48	65.13	68.97		69.02	0.001515	3.15	733.54	495.91	0.31
ELDER	REACH1	9.919	1041.44	65.50	69.35		69.45	0.002351	4.01	643.49	539.62	0.38
ELDER	REACH1	9.974	1041.93	66.02	69.87		69.90	0.000934	2.53	907.74	590.22	0.24
ELDER	REACH1	10.034	1039.05	66.41	70.41		70.58	0.003002	4.68	506.25	422.29	0.44
ELDER	REACH1	10.09	1035.84	66.80	71.17		71.32	0.002077	4.16	519.15	350.99	0.37
ELDER	REACH1	10.141	1032.36	67.65	71.69		71.78	0.001741	3.17	577.21	362.81	0.33
ELDER	REACH1	10.214	1027.85	68.78	72.41		72.50	0.002272	3.68	580.12	413.37	0.37
ELDER	REACH1	10.272	830.37	69.63	73.01		73.06	0.001586	2.85	563.54	364.48	0.30
ELDER	REACH1	10.312	828.03	70.20	73.34		73.37	0.001392	2.39	691.95	572.59	0.28
ELDER	REACH1	10.361	825.68	70.32	73.65		73.68	0.001100	2.54	736.61	551.96	0.26
ELDER	REACH1	10.442	822.67	70.48	74.26		74.35	0.001967	3.58	556.25	527.31	0.35
ELDER	REACH1	10.507	820.33	70.50	74.65		74.97	0.001751	3.65	462.02	511.89	0.33
ELDER	REACH1	10.562	821.18	70.10	75.13		75.23	0.001122	3.26	434.22	291.20	0.27
ELDER	REACH1	10.607	821.77	71.00	75.35		75.73	0.003291	4.96	165.75	105.71	0.45
ELDER	REACH1	10.613	Culvert									
ELDER	REACH1	10.619	822.11	71.00	77.99		77.99	0.000047	0.85	2270.68	928.53	0.06
ELDER	REACH1	10.63	Lat Struct									
ELDER	REACH1	10.686	844.90	72.50	78.90		79.09	0.004561	5.27	419.97	472.51	0.37
ELDER	REACH1	10.689	Culvert									
ELDER	REACH1	10.691	844.93	72.50	79.78		79.80	0.000696	2.25	894.22	602.64	0.15
ELDER	REACH1	10.717	845.01	75.25	79.84		79.85	0.000242	1.55	1088.56	428.85	0.13
ELDER	REACH1	10.775	845.25	75.45	79.91		79.93	0.000286	1.53	979.74	419.98	0.14
ELDER	REACH1	10.834	845.71	75.60	80.03		80.07	0.000560	1.97	767.43	435.69	0.19
ELDER	REACH1	10.884	846.68	75.80	80.18		80.21	0.000540	2.08	881.91	529.07	0.19
ELDER	REACH1	10.936	849.12	76.10	80.35		80.38	0.000679	2.26	809.46	504.31	0.21
ELDER	REACH1	10.995	852.62	76.40	80.62		80.69	0.001252	3.03	635.49	511.26	0.28
ELDER	REACH1	11.063	777.95	76.84	81.08		81.17	0.001378	3.16	492.98	649.48	0.30
ELDER	REACH1	11.125	783.60	77.27	81.51		81.59	0.001491	3.22	507.20	373.75	0.31
ELDER	REACH1	11.175	787.54	77.70	82.02		82.20	0.002847	4.38	354.78	287.24	0.42
ELDER	REACH1	11.252	790.41	78.41	82.77		82.83	0.001116	2.82	531.35	293.89	0.27
ELDER	REACH1	11.313	791.35	78.70	83.06		83.09	0.000596	2.23	686.23	362.61	0.21
ELDER	REACH1	11.375	793.85	79.20	83.33		83.37	0.001053	2.68	618.28	620.66	0.26
ELDER	REACH1	11.433	802.03	79.88	83.86		83.97	0.002799	4.30	378.79	216.07	0.41
ELDER	REACH1	11.482	807.73	80.23	84.52		84.62	0.002247	4.09	420.80	247.92	0.38
ELDER	REACH1	11.538	809.28	80.77	85.08		85.14	0.001340	3.17	532.53	305.38	0.29
ELDER	REACH1	11.588	811.26	81.30	85.55		85.69	0.002565	4.13	400.85	291.32	0.40
ELDER	REACH1	11.659	814.26	82.38	86.29		86.39	0.001763	3.31	396.58	213.04	0.33
ELDER	REACH1	11.724	815.47	83.19	86.89		86.99	0.001738	3.30	404.65	228.09	0.33
ELDER	REACH1	11.822	818.33	82.50	88.16		88.56	0.004066	5.15	183.07	325.28	0.49
ELDER	REACH1	11.835	Culvert									
ELDER	REACH1	11.848	819.75	82.50	91.35		91.38	0.000197	1.76	849.80	762.80	0.12
ELDER	REACH1	11.849	819.75	82.50	91.35		91.38	0.000194	1.54	802.31	762.81	0.12
ELDER	REACH1	11.883	819.86	85.50	91.40		91.40	0.000041	0.68	2088.90	714.95	0.05
ELDER	REACH1	11.944	820.67	85.50	91.42		91.42	0.000106	1.10	1388.93	476.53	0.09
ELDER	REACH1	12.02	428.10	86.52	91.46		91.47	0.000175	1.27	690.39	381.70	0.11
ELDER	REACH1	12.072	429.69	87.50	91.53		91.56	0.000424	1.42	357.01	250.03	0.16
ELDER	REACH1	12.144	439.72	88.36	91.77		91.84	0.001121	2.16	231.35	138.48	0.25
ELDER	REACH1	12.205	450.30	89.50	92.29		92.36	0.002098	2.12	212.18	152.22	0.32
ELDER CRK RD	REACH1	680	2572.09	66.00	71.77	67.16	71.78	0.000087	0.63	4083.42	799.80	0.05
ELDER CRK RD	REACH1	1640	-111.27	68.00	69.69		69.69	0.000016	-0.09	1200.05	1172.69	0.02
ELDER CRK RD	REACH1	2489	Lat Struct									
ELDER CRK RD	REACH1	2490	-8490.07	69.00	74.86		75.26	0.006578	-5.65	1699.07	385.20	0.43

HEC-RAS Plan: 100yR Ext Profile: Max WS (Continued)

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER CRK RD	REACH1	3115	10.00	73.00	76.54		76.54	0.000000	0.02	789.21	464.20	0.00
GERBER	REACH1	0.020	729.53	40.00	45.75		45.77	0.000258	1.55	827.14	405.88	0.13
GERBER	REACH1	0.202	768.30	38.00	46.20		46.25	0.000722	2.63	923.70	1062.39	0.16
GERBER	REACH1	.2045	Culvert									
GERBER	REACH1	0.206	768.35	38.00	46.20		46.25	0.000707	2.60	918.84	1011.66	0.16
GERBER	REACH1	0.22	Lat Struct									
GERBER	REACH1	0.221	1055.56	41.00	46.24		46.25	0.000168	0.86	1394.16	1301.60	0.10
GERBER	REACH1	0.429	1078.81	41.50	46.87		46.92	0.001011	3.05	1074.28	948.20	0.26
GERBER	REACH1	.4295	Culvert									
GERBER	REACH1	0.437	1079.43	41.50	47.55		47.56	0.000315	1.87	1764.15	1263.23	0.15
GERBER	REACH1	.554	1080.03	42.00	47.81		47.84	0.000560	2.30	1022.78	800.01	0.19
GERBER	REACH1	.575	1079.97	42.30	47.87		47.89	0.000439	2.06	1123.12	812.93	0.17
GERBER	REACH1	.578	Culvert									
GERBER	REACH1	.581	1079.97	42.30	47.93		47.95	0.000403	1.58	1209.47	953.30	0.16
GERBER	REACH1	0.625	1079.90	42.40	48.07		48.12	0.000910	2.78	1141.92	1189.13	0.21
GERBER	REACH1	0.628	Culvert									
GERBER	REACH1	0.631	1079.90	42.40	48.38		48.40	0.000446	2.00	1510.12	1223.97	0.14
GERBER	REACH1	0.659	1079.84	42.60	48.48		48.54	0.000724	2.82	1250.32	1462.07	0.22
GERBER	REACH1	0.758	1080.25	43.10	48.90		48.94	0.001008	2.90	1160.02	1192.01	0.25
GERBER	REACH1	0.820	1080.56	43.60	49.11		49.13	0.000264	1.38	1150.05	997.10	0.13
GERBER	REACH1	0.89	Lat Struct									
GERBER	REACH1	0.900	1081.16	44.20	49.45		49.54	0.001491	3.37	818.24	826.32	0.31
GERBER	REACH1	.962	1081.53	44.70	49.82		49.90	0.000798	2.71	725.85	525.83	0.23
GERBER	REACH1	1.009	1081.55	45.00	50.06		50.08	0.000230	1.33	1168.57	839.66	0.12
GERBER	REACH1	1.116	1081.79	45.20	50.22		50.29	0.000760	2.09	570.86	512.23	0.22
GERBER	REACH1	1.174	916.56	45.40	50.53		50.60	0.001130	2.20	463.29	364.14	0.25
GERBER	REACH1	1.191	916.62	45.50	50.66		50.91	0.003565	5.08	456.96	649.11	0.47
GERBER	REACH1	1.195	Culvert									
GERBER	REACH1	1.199	723.71	45.50	51.64		51.66	0.000241	1.55	1262.50	916.25	0.13
GERBER	REACH1	1.244	634.72	45.70	51.69		51.69	0.000088	0.88	1592.39	937.13	0.08
GERBER	REACH1	1.292	913.57	45.90	51.73		51.75	0.000368	1.61	1232.65	973.68	0.15
GERBER	REACH1	1.309	643.76	46.10	51.72		51.77	0.000339	1.86	346.81	68.04	0.14
GERBER	REACH1	1.3145	Bridge									
GERBER	REACH1	1.319	913.81	46.10	51.82	48.39	51.93	0.000642	2.58	353.71	68.04	0.20
GERBER	REACH1	1.33	913.76	46.10	51.84		52.02	0.001426	3.86	392.86	206.30	0.31
GERBER	REACH1	1.366	913.69	46.20	52.17		52.28	0.001566	3.44	508.93	423.41	0.32
GERBER	REACH1	1.39	913.65	46.20	52.35		52.40	0.000664	2.32	663.27	375.85	0.21
GERBER	REACH1	1.444	913.54	46.50	52.55		52.64	0.000937	3.05	589.60	344.90	0.25
GERBER	REACH1	1.453	913.52	46.50	52.58		52.72	0.001327	3.65	519.10	428.88	0.30
GERBER	REACH1	1.45433	913.52	46.50	52.62		52.70	0.000851	2.94	611.97	344.25	0.24
GERBER	REACH1	1.511	913.42	46.80	52.87		52.95	0.000849	2.94	649.66	434.71	0.24
GERBER	REACH1	1.515	913.42	46.80	52.94		53.05	0.001009	3.28	600.20	475.60	0.27
GERBER	REACH1	1.519	913.16	47.00	52.69		53.33	0.004850	6.42	142.23	25.00	0.47
GERBER	REACH1	1.524	Bridge									
GERBER	REACH1	1.529	913.42	47.00	52.99	50.46	53.57	0.004176	6.10	149.76	25.00	0.44
GERBER	REACH1	1.573	913.38	47.30	53.74		53.77	0.000266	1.43	1029.36	606.77	0.13
GERBER	REACH1	1.639	698.19	47.70	53.87		53.90	0.000431	1.99	823.68	626.99	0.17
GERBER	REACH1	1.657	647.80	47.80	53.90		53.98	0.000684	2.62	437.05	324.99	0.22
GERBER	REACH1	1.717	479.67	48.20	54.12		54.15	0.000416	1.93	754.45	1100.23	0.16
GERBER	REACH1	1.749	390.05	48.30	54.20		54.22	0.000513	1.29	561.09	731.60	0.16
GERBER	REACH1	1.779	306.26	49.70	54.27		54.30	0.000333	1.64	475.10	492.92	0.14
GERBER	REACH1	1.782	Bridge									
GERBER	REACH1	1.784	425.66	49.70	54.64	52.77	54.66	0.000327	1.72	684.90	657.10	0.15
GERBER	REACH1	1.883	422.84	49.60	54.77		54.79	0.000183	1.14	537.19	494.59	0.11
GERBER	REACH1	1.911	423.40	50.50	54.90		55.25	0.003723	4.79	88.43	20.19	0.40
GERBER	REACH1	1.922	Bridge									
GERBER	REACH1	1.924	426.29	50.50	55.99	52.91	56.06	0.000809	2.55	378.75	441.12	0.19
GERBER	REACH1	1.938	426.43	51.00	56.04		56.04	0.000037	0.59	1671.05	1136.63	0.05
GERBER	REACH1	2	428.10	51.70	56.30		56.50	0.001839	3.56	120.13	28.00	0.30
GERBER	REACH1	2.001	Bridge									
GERBER	REACH1	2.002	432.75	51.70	56.78	54.05	56.88	0.001092	2.84	308.37	684.94	0.23
GERBER	REACH1	2.034	432.83	52.50	56.92		56.93	0.000177	0.97	916.96	980.27	0.10
GERBER	REACH1	2.106	437.96	53.50	57.36		57.50	0.002422	3.56	226.73	238.37	0.38
GERBER	REACH1	2.206	432.90	53.50	58.75		59.01	0.002475	4.34	209.75	514.65	0.38
GERBER	REACH1	2.217	Culvert									
GERBER	REACH1	2.222	445.20	53.50	59.01		59.50	0.003418	5.64	78.88	530.17	0.46
GERBER	REACH1	2.309	440.78	54.10	60.01		60.02	0.000199	1.40	698.08	717.88	0.11
GERBER	REACH1	2.386	441.82	54.90	60.09		60.10	0.000175	1.22	832.70	547.44	0.11
GERBER	REACH1	2.459	410.02	55.80	60.14		60.15	0.000124	0.87	604.97	463.33	0.09
GERBER	REACH1	2.557	370.25	56.10	60.48		60.53	0.001291	1.86	243.18	279.15	0.25
GERBER	REACH1	2.697	34.28	56.80	61.08		61.08	0.000009	0.20	256.57	360.04	0.02
GERBER	REACH1	2.742	34.55	57.80	61.09		61.09	0.000071	0.46	74.92	40.70	0.06
GERBER	REACH1	2.747	Bridge									
GERBER	REACH1	2.752	34.57	57.80	61.09	58.88	61.10	0.000070	0.46	75.11	40.73	0.06
GERBER	REACH1	2.784	35.02	57.60	61.10		61.10	0.000040	0.40	178.30	378.68	0.05
GERBER	REACH1	2.838	28.62	57.70	61.11		61.11	0.000010	0.20	258.27	391.15	0.02
GERBER	REACH1	2.875	24.16	57.70	61.11		61.11	0.000006	0.14	264.01	435.42	0.02
GERBER	REACH1	2.905	Lat Struct									
GERBER	REACH1	2.959	205.23	58.30	61.31		61.35	0.001078	2.10	160.41	258.51	0.24
GERBER	REACH1	3.008	199.23	58.60	61.52		61.53	0.000389	0.96	207.53	137.67	0.14
GERBER	REACH1	3.037	195.71	58.80	61.89		62.07	0.006023	3.40	57.58	44.47	0.53

HEC-RAS Plan: 100yR Ext Profile: Max WS (Continued)

River	Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	3.066	192.04	59.10	62.40		62.40	0.000021	0.27	815.01	752.97	0.03
GERBER	REACH1	3.193	177.31	59.90	62.46		62.46	0.000155	0.66	385.57	572.10	0.09
GERBER	REACH1	3.260	181.28	60.30	62.78		62.80	0.001011	1.12	161.99	271.69	0.26
GERBER	REACH1	3.314	179.02	60.50	63.08		63.08	0.000056	0.41	439.98	247.11	0.05
GERBER	REACH1	3.421	158.34	61.10	63.19		63.21	0.000372	0.83	190.78	152.94	0.13
GERBER	REACH1	3.462	150.51	61.20	63.45		63.52	0.002434	2.16	69.58	54.02	0.34
GERBER	REACH1	3.523	138.88	61.70	64.20		64.28	0.002165	2.30	66.98	84.24	0.33
GERBER	REACH1	3.598	124.78	62.40	64.74		64.75	0.000329	0.96	213.73	318.20	0.13
GERBER	REACH1	3.625	119.89	62.60	64.86		64.89	0.001520	1.93	131.54	248.51	0.27
GERBER	REACH1	3.757	43.53	63.00	65.85		65.85	0.000085	0.50	86.57	48.37	0.07
GERBER	REACH1	3.828	41.70	63.30	65.89		65.89	0.000132	0.56	74.35	48.88	0.08
GERBER	REACH1	3.883	68.36	63.30	66.00		66.04	0.000690	1.56	43.76	16.20	0.17
GERBER	REACH1	3.888	Culvert									
GERBER	REACH1	3.893	68.49	63.30	66.05		66.08	0.000699	1.54	44.48	16.20	0.16
GERBER	REACH1	3.912	54.78	62.80	66.11		66.12	0.000176	0.98	67.49	50.35	0.10
GERBER	REACH1	3.967	69.22	66.00	66.72		66.77	0.004397	1.83	37.91	101.86	0.40
GERBER	REACH1	3.974	Culvert									
GERBER	REACH1	3.981	69.44	66.00	70.37		70.37	0.000008	0.27	254.47	252.25	0.02
GERBER	REACH1	3.982	69.44	66.00	70.37		70.37	0.000011	0.33	254.46	252.25	0.03
GERBER	REACH1	3.985	69.45	66.00	70.37		70.37	0.000011	0.33	254.48	252.25	0.03
GERBER	REACH1	4.01	Inl Struct									
GERBER	REACH1	4.056	69.44	65.50	70.37	65.73	70.37	0.000001	0.08	1094.59	336.69	0.01
GERBER	REACH1	4.120	69.61	65.40	70.37		70.37	0.000011	0.27	317.92	271.57	0.03
GERBER	REACH1	4.237	69.11	65.50	70.38		70.38	0.000013	0.27	381.73	474.30	0.03
GERBER	REACH1	4.285	69.72	65.70	70.38		70.38	0.000001	0.07	1212.39	1187.91	0.01
GERBER	REACH1	4.328	Lat Struct									
GERBER	REACH1	4.370	339.07	66.20	70.39		70.40	0.000094	0.78	507.34	1135.53	0.08
GERBER	REACH1	4.450	345.95	67.20	70.43		70.44	0.000083	0.57	606.20	277.09	0.07
GERBER	REACH1	4.540	365.84	68.30	70.72		70.77	0.001291	1.97	275.98	285.53	0.26
GERBER	REACH1	4.550	366.53	68.30	70.79		70.83	0.001093	1.85	295.35	288.89	0.24

RAS Model Data

For

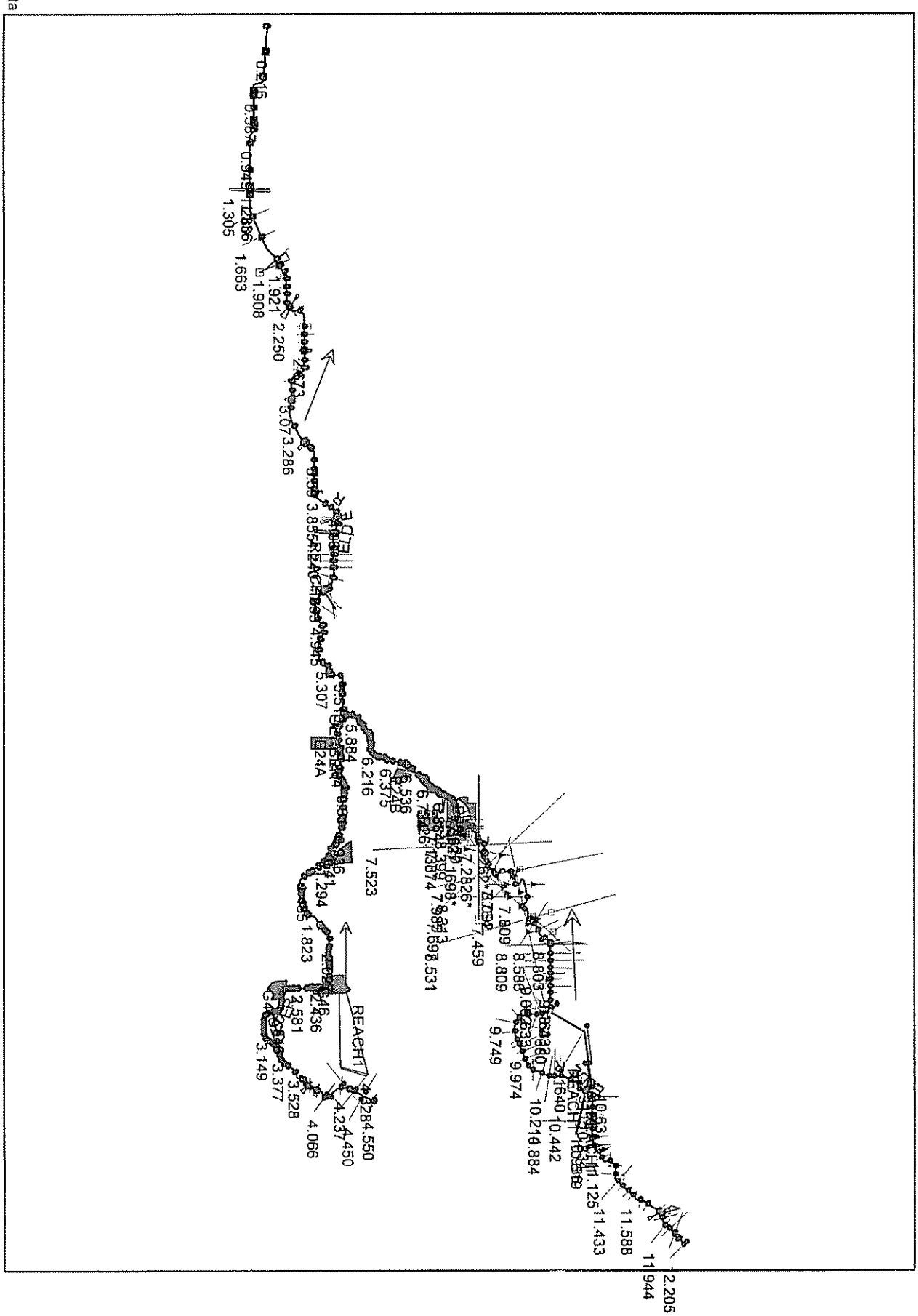
Elder and Gerber Creeks – Post with Laguna Spill

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table

Partial GIS data



RAS Input Hydrograph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
ELDER	REACH1	12.205		Flow Hydrograph	hcalc.dss	/ELDER GE/E1A/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	12.02	11.944	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E1C/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	10.507	7.809	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E2/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	10.272		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RETE1B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	9.438		Lateral Inflow Hydrograph	EFG-24HR.dss	/ELDER CRK RD REACH1/680/FLOW/01JAN2000/10MIN/EGLOMR100R/
ELDER	REACH1	7.809		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/CE3E/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	7.764	7.120	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RE4B2H/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	7.697	6.978	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RE4B3/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	7.057	6.978	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RE4B1H/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	6.903	6.774	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/NV3/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	6.267	6.070	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E5/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	11.063		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/R-RE1B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	5.359		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E6/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	5.307		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E7A/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.945		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E7B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.642	4.485	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E7C/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.391	4.240	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E8/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.06	3.855	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E9/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	3.286	3.141	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E10/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	3.01	2.794	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E11/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	2.736	2.354	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E12/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	2.219	1.978	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E13/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	1.280		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/R-E14/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	0.394		Lateral Inflow Hydrograph	hcalcflorinpre.dss	/FLORIN C/R-CF15/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	0.019		Friction Slope=0.0005		
ELDER CRK RI	REACH1	3115		Flow Hydrograph	hcalc.dss	
ELDER CRK RI	REACH1	680		Friction Slope=0.0015		
GERBER	REACH1	4.550		Flow Hydrograph	hcalc.dss	/ELDER GE/G2A/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	3.883	2.581	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/G2B/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	2.360		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RG3A/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	2.052		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/G3B/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.831	1.800	Uniform Lateral Inflow Hydrograph	EFG-24HR.dss	/TRANSFER REACH TRANSFER REACH/600/FLOW/01JAN2000/10MIN/100YR-24HR/
GERBER	REACH1	1.823	1.434	Uniform Lateral Inflow Hydrograph	EFG-24HR.dss	/GERBER CREEK/G3D/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.343	1.294	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RHOLTE/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.182	1.013	Uniform Lateral Inflow Hydrograph	EFG-24HR.dss	/CTRR REACH CTRR REACH/200/FLOW/01JAN2000/10MIN/100YR-24HR/
GERBER	REACH1	1.133		Lateral Inflow Hydrograph	EFG-24HR.dss	/GERBER CREEK/G4/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.068	0.051	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/G5/FLOW/01JAN2000/1MIN/100YR-24HR/
		G41		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/HOLTE/FLOW/01JAN2000/1MIN/100YR-24HR/
		E26		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E4A/FLOW/31DEC1999/1MIN/100YR-24HR/
		E24B		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/NV1/FLOW/31DEC1999/1MIN/100YR-24HR/
		E31		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E4B3LO/FLOW/10JAN2000/1MIN/100YR-24HR/
		G46		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/CG46/FLOW/01JAN2000/1MIN/100YR-24HR/
		E28		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/CE4BLO/FLOW/01JAN2000/1MIN/100YR-24HR/

HEC-RAS Profile: Max WS

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	4.550	Post 10yr	216.74	68.30	70.49		70.52	0.000855	1.46	212.18	274.16	0.21
GERBER	REACH1	4.550	weirs	372.27	68.30	70.80		70.84	0.001098	1.87	298.42	289.42	0.24
GERBER	REACH1	4.540	Post 10yr	215.91	68.30	70.44		70.47	0.000993	1.54	198.07	271.58	0.22
GERBER	REACH1	4.540	weirs	371.11	68.30	70.73		70.76	0.001294	1.98	278.94	286.04	0.26
GERBER	REACH1	4.450	Post 10yr	198.93	67.20	70.23		70.23	0.000036	0.36	550.62	265.75	0.04
GERBER	REACH1	4.450	weirs	350.47	67.20	70.44		70.44	0.000084	0.58	608.62	277.58	0.07
GERBER	REACH1	4.370	Post 10yr	195.40	66.20	70.21		70.21	0.000036	0.46	600.16	1108.04	0.05
GERBER	REACH1	4.370	weirs	344.58	66.20	70.41		70.41	0.000077	0.70	819.17	1137.79	0.07
GERBER	REACH1	4.328		Lat Struct									
GERBER	REACH1	4.285	Post 10yr	59.50	65.70	70.20		70.20	0.000001	0.06	1153.66	1177.40	0.01
GERBER	REACH1	4.285	weirs	64.10	65.70	70.39		70.39	0.000001	0.06	1377.50	1188.85	0.01
GERBER	REACH1	4.237	Post 10yr	59.34	65.50	70.20		70.20	0.000013	0.26	299.71	469.60	0.03
GERBER	REACH1	4.237	weirs	63.84	65.50	70.39		70.39	0.000011	0.24	389.28	474.74	0.03
GERBER	REACH1	4.120	Post 10yr	59.18	65.40	70.20		70.20	0.000011	0.25	271.59	262.38	0.03
GERBER	REACH1	4.120	weirs	63.44	65.40	70.39		70.39	0.000009	0.24	322.62	272.49	0.02
GERBER	REACH1	4.066	Post 10yr	59.17	65.50	70.19	65.70	70.19	0.000001	0.07	1036.39	333.95	0.01
GERBER	REACH1	4.066	weirs	63.46	65.50	70.39	65.71	70.39	0.000001	0.07	1100.46	336.97	0.01
GERBER	REACH1	4.064		Inl Struct									
GERBER	REACH1	3.985	Post 10yr	59.17	66.00	70.19		70.19	0.000002	0.13	707.84	249.78	0.01
GERBER	REACH1	3.985	weirs	63.46	66.00	70.38		70.38	0.000002	0.13	755.92	252.42	0.01
GERBER	REACH1	3.982	Post 10yr	59.17	66.00	70.19		70.19	0.000002	0.13	707.84	249.78	0.01
GERBER	REACH1	3.982	weirs	63.46	66.00	70.38		70.38	0.000002	0.13	755.92	252.42	0.01
GERBER	REACH1	3.974		Culvert									
GERBER	REACH1	3.967	Post 10yr	59.17	66.00	66.62		66.67	0.004657	1.69	39.60	93.23	0.40
GERBER	REACH1	3.967	weirs	63.46	66.00	66.66		66.70	0.004258	1.68	43.02	96.46	0.39
GERBER	REACH1	3.912	Post 10yr	59.16	62.80	65.23		65.38	0.004337	3.16	18.71	11.22	0.43
GERBER	REACH1	3.912	weirs	63.45	62.80	65.30		65.46	0.004459	3.25	19.50	11.42	0.44
GERBER	REACH1	3.893	Post 10yr	59.16	63.30	64.98		65.05	0.002197	2.17	27.24	16.20	0.30
GERBER	REACH1	3.893	weirs	63.45	63.30	65.05		65.13	0.002246	2.24	28.38	16.20	0.30
GERBER	REACH1	3.888		Culvert									
GERBER	REACH1	3.883	Post 10yr	59.08	63.10	64.18	64.49	65.21	0.133970	8.15	7.25	10.47	1.73
GERBER	REACH1	3.883	weirs	63.27	63.10	64.23	64.55	65.26	0.126754	8.16	7.75	10.69	1.69
GERBER	REACH1	3.642	Post 10yr	57.39	56.30	58.83		58.84	0.000311	0.70	82.46	40.18	0.09
GERBER	REACH1	3.642	weirs	61.88	56.30	59.33		59.33	0.000189	0.60	103.21	43.17	0.07
GERBER	REACH1	3.604	Post 10yr	63.16	56.20	58.76		58.77	0.000356	0.75	84.58	41.06	0.09
GERBER	REACH1	3.604	weirs	71.49	56.20	59.28		59.29	0.000232	0.67	106.86	44.33	0.08
GERBER	REACH1	3.566	Post 10yr	67.49	56.00	58.71		58.72	0.000337	0.75	89.77	41.30	0.09
GERBER	REACH1	3.566	weirs	78.69	56.00	59.25		59.25	0.000237	0.70	112.85	44.54	0.08
GERBER	REACH1	3.528	Post 10yr	77.65	55.80	58.55		58.56	0.000421	0.85	91.52	41.51	0.10
GERBER	REACH1	3.528	weirs	95.65	55.80	59.13		59.14	0.000319	0.82	116.45	44.97	0.09
GERBER	REACH1	3.490	Post 10yr	87.67	55.60	58.36		58.37	0.000534	0.96	91.65	41.53	0.11
GERBER	REACH1	3.490	weirs	112.50	55.60	58.97		58.99	0.000421	0.95	118.46	45.24	0.10
GERBER	REACH1	3.452	Post 10yr	93.21	55.50	58.24		58.25	0.000620	1.03	90.84	41.41	0.12
GERBER	REACH1	3.452	weirs	121.88	55.50	58.88		58.89	0.000491	1.03	118.65	45.26	0.11
GERBER	REACH1	3.415	Post 10yr	98.64	55.30	58.11		58.13	0.000831	1.05	93.85	41.85	0.12
GERBER	REACH1	3.415	weirs	131.20	55.30	58.77		58.79	0.000514	1.07	123.01	45.84	0.11
GERBER	REACH1	3.377	Post 10yr	103.99	55.10	57.98		58.00	0.000642	1.07	96.80	42.27	0.13
GERBER	REACH1	3.377	weirs	140.44	55.10	58.66		58.68	0.000535	1.10	127.24	46.39	0.12
GERBER	REACH1	3.339	Post 10yr	109.31	54.90	57.88		57.89	0.000404	0.80	136.74	66.34	0.10
GERBER	REACH1	3.339	weirs	149.67	54.90	58.59		58.60	0.000304	0.81	185.59	71.74	0.09
GERBER	REACH1	3.301	Post 10yr	114.62	54.70	57.80		57.81	0.000427	0.83	138.49	66.43	0.10
GERBER	REACH1	3.301	weirs	158.89	54.70	58.52		58.53	0.000326	0.84	188.84	72.08	0.09
GERBER	REACH1	3.263	Post 10yr	119.93	54.50	57.71		57.72	0.000449	0.85	140.26	66.48	0.10
GERBER	REACH1	3.263	weirs	168.12	54.50	58.45		58.47	0.000347	0.88	192.12	72.32	0.09
GERBER	REACH1	3.225	Post 10yr	125.21	54.40	57.59		57.61	0.000639	1.13	110.44	44.29	0.13

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	3.225	weirs	177.35	54.40	58.35		58.37	0.000581	1.22	145.85	48.89	0.12
GERBER	REACH1	3.187	Post 10yr	130.46	54.20	57.46		57.48	0.000638	1.15	113.68	44.68	0.13
GERBER	REACH1	3.187	weirs	186.57	54.20	58.23		58.25	0.000595	1.25	149.80	49.30	0.13
GERBER	REACH1	3.149	Post 10yr	135.69	54.00	57.33		57.35	0.000643	1.17	116.42	44.97	0.13
GERBER	REACH1	3.149	weirs	195.78	54.00	58.10		58.13	0.000616	1.28	153.03	49.61	0.13
GERBER	REACH1	3.112	Post 10yr	140.87	53.80	57.20		57.22	0.000642	1.18	119.56	45.38	0.13
GERBER	REACH1	3.112	weirs	204.98	53.80	57.97		58.00	0.000632	1.31	156.60	50.04	0.13
GERBER	REACH1	3.074	Post 10yr	146.02	53.70	57.08		57.08	0.000719	1.24	117.92	45.25	0.14
GERBER	REACH1	3.074	weirs	214.18	53.70	57.83		57.86	0.000714	1.38	154.85	49.03	0.14
GERBER	REACH1	3.036	Post 10yr	151.13	53.50	56.91		56.93	0.000734	1.26	119.64	45.18	0.14
GERBER	REACH1	3.036	weirs	223.38	53.50	57.68		57.71	0.000750	1.43	156.34	49.76	0.14
GERBER	REACH1	2.998	Post 10yr	156.20	53.30	56.76		56.79	0.000740	1.28	122.03	45.44	0.14
GERBER	REACH1	2.998	weirs	232.57	53.30	57.53		57.56	0.000760	1.47	158.53	49.94	0.15
GERBER	REACH1	2.960	Post 10yr	161.23	53.10	56.61		56.63	0.000755	1.30	123.82	45.59	0.14
GERBER	REACH1	2.960	weirs	225.93	53.10	57.37		57.41	0.000710	1.41	160.49	50.09	0.14
GERBER	REACH1	2.922	Post 10yr	166.30	52.90	56.51		56.52	0.000336	0.82	203.82	64.12	0.09
GERBER	REACH1	2.922	weirs	231.92	52.90	57.29		57.30	0.000279	0.85	272.05	90.73	0.09
GERBER	REACH1	2.884	Post 10yr	171.38	52.80	56.42		56.44	0.000501	1.01	170.01	68.38	0.11
GERBER	REACH1	2.884	weirs	238.28	52.80	57.22		57.23	0.000421	1.05	227.16	75.54	0.11
GERBER	REACH1	2.846	Post 10yr	176.47	52.60	56.29		56.31	0.000752	1.33	132.19	46.74	0.14
GERBER	REACH1	2.846	weirs	243.91	52.60	57.09		57.12	0.000685	1.42	171.81	51.50	0.14
GERBER	REACH1	2.808	Post 10yr	181.56	52.40	56.13		56.16	0.000760	1.35	134.38	47.02	0.14
GERBER	REACH1	2.808	weirs	249.49	52.40	56.95		56.98	0.000680	1.43	175.00	51.86	0.14
GERBER	REACH1	2.771	Post 10yr	186.65	52.20	55.98		56.01	0.000763	1.36	137.03	47.55	0.14
GERBER	REACH1	2.771	weirs	255.20	52.20	56.82		56.85	0.000671	1.43	179.04	52.56	0.14
GERBER	REACH1	2.744		Lat Struct									
GERBER	REACH1	2.733	Post 10yr	191.74	52.10	55.80		55.83	0.000940	1.51	126.60	43.46	0.16
GERBER	REACH1	2.733	weirs	213.83	52.10	56.71		56.74	0.000518	1.27	168.50	48.03	0.12
GERBER	REACH1	2.695	Post 10yr	196.82	51.90	55.62		55.65	0.000806	1.46	134.80	47.56	0.15
GERBER	REACH1	2.695	weirs	267.29	51.90	56.57		56.60	0.000698	1.46	183.01	53.35	0.14
GERBER	REACH1	2.657	Post 10yr	201.90	51.70	55.44		55.47	0.000859	1.42	142.49	51.18	0.15
GERBER	REACH1	2.657	weirs	273.31	51.70	56.44		56.47	0.000636	1.39	197.07	58.17	0.13
GERBER	REACH1	2.619	Post 10yr	206.95	51.50	55.26		55.30	0.000880	1.44	143.83	51.42	0.15
GERBER	REACH1	2.619	weirs	279.06	51.50	56.31		56.34	0.000624	1.39	201.49	58.77	0.13
GERBER	REACH1	2.581	Post 10yr	211.93	51.30	55.08	52.52	55.11	0.000952	1.51	140.30	49.32	0.16
GERBER	REACH1	2.581	weirs	283.57	51.30	56.18	52.77	56.21	0.000642	1.43	198.62	56.42	0.13
GERBER	REACH1	2.535		Bridge									
GERBER	REACH1	2.518	Post 10yr	211.53	50.90	54.82		54.88	0.001561	1.94	109.18	37.66	0.20
GERBER	REACH1	2.518	weirs	225.22	50.90	56.01		56.04	0.000637	1.43	157.65	43.67	0.13
GERBER	REACH1	2.483	Post 10yr	211.10	50.50	54.66		54.68	0.000510	1.02	206.94	82.93	0.11
GERBER	REACH1	2.483	weirs	225.11	50.50	55.96		55.97	0.000158	0.70	321.12	93.51	0.07
GERBER	REACH1	2.465	Post 10yr	210.87	50.40	54.62		54.63	0.000470	0.98	216.09	87.23	0.11
GERBER	REACH1	2.465	weirs	224.98	50.40	55.94		55.95	0.000141	0.66	339.45	98.86	0.06
GERBER	REACH1	2.436	Post 10yr	210.22	50.10	54.54		54.56	0.000473	1.00	211.00	82.74	0.11
GERBER	REACH1	2.436	weirs	224.78	50.10	55.92		55.93	0.000141	0.67	333.13	94.60	0.06
GERBER	REACH1	2.415	Post 10yr	209.65	49.90	54.49		54.51	0.000449	0.96	218.25	86.82	0.11
GERBER	REACH1	2.415	weirs	224.62	49.90	55.91		55.91	0.000129	0.64	349.01	99.55	0.06
GERBER	REACH1	2.396	Post 10yr	208.84	49.70	54.45		54.47	0.000418	1.06	197.95	84.86	0.11
GERBER	REACH1	2.396	weirs	224.26	49.70	55.89		55.90	0.000154	0.74	301.66	78.94	0.07
GERBER	REACH1	2.378		Lat Struct									
GERBER	REACH1	2.360	Post 10yr	207.23	49.30	54.37		54.39	0.000372	1.05	197.36	59.33	0.10
GERBER	REACH1	2.360	weirs	223.61	49.30	55.86		55.87	0.000146	0.76	294.67	71.32	0.07
GERBER	REACH1	2.332	Post 10yr	344.38	49.00	54.17		54.23	0.001299	2.01	171.59	49.26	0.19
GERBER	REACH1	2.332	weirs	521.12	49.00	55.67		55.74	0.001035	2.06	252.52	58.49	0.18
GERBER	REACH1	2.305	Post 10yr	343.97	48.80	54.04		54.08	0.000861	1.64	209.58	60.32	0.16

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	2.305	weirs	519.86	48.80	55.57		55.62	0.000669	1.67	311.38	72.23	0.14
GERBER	REACH1	2.268	Post 10yr	343.53	48.40	53.88		53.92	0.000760	1.58	216.92	59.84	0.15
GERBER	REACH1	2.268	weirs	518.70	48.40	55.45		55.49	0.000602	1.62	320.02	71.46	0.13
GERBER	REACH1	2.220	Post 10yr	343.19	47.90	53.65		53.70	0.000946	1.82	188.75	49.01	0.16
GERBER	REACH1	2.220	weirs	517.79	47.90	55.26		55.32	0.000773	1.88	274.95	58.00	0.15
GERBER	REACH1	2.194	Post 10yr	343.14	47.70	53.57		53.60	0.000596	1.42	242.45	66.15	0.13
GERBER	REACH1	2.194	weirs	517.64	47.70	55.20		55.23	0.000460	1.43	361.97	80.00	0.12
GERBER	REACH1	2.177	Post 10yr	343.10	47.50	53.53		53.56	0.000338	1.24	277.06	59.07	0.10
GERBER	REACH1	2.177	weirs	517.57	47.50	55.17		55.20	0.000315	1.36	379.64	66.17	0.10
GERBER	REACH1	2.172	Post 10yr	343.10	47.50	53.53		53.55	0.000266	1.13	303.62	61.73	0.09
GERBER	REACH1	2.172	weirs	517.57	47.50	55.17		55.19	0.000255	1.26	409.76	67.64	0.09
GERBER	REACH1	2.150	Post 10yr	343.09	47.30	53.50		53.51	0.000381	1.01	339.34	106.90	0.10
GERBER	REACH1	2.150	weirs	517.52	47.30	55.15		55.16	0.000227	0.99	522.95	115.17	0.08
GERBER	REACH1	2.13	Post 10yr	343.08	47.10	53.41		53.46	0.000720	1.65	207.74	50.82	0.14
GERBER	REACH1	2.13	weirs	517.49	47.10	55.08		55.12	0.000605	1.72	300.17	60.26	0.14
GERBER	REACH1	2.116	Post 10yr	343.08	46.90	53.33		53.39	0.001001	2.01	170.41	38.01	0.17
GERBER	REACH1	2.116	weirs	517.49	46.90	55.00		55.07	0.000908	2.17	238.69	43.97	0.16
GERBER	REACH1	2.103		Culvert									
GERBER	REACH1	2.092	Post 10yr	343.08	46.70	52.91		53.00	0.001813	2.39	143.75	39.87	0.22
GERBER	REACH1	2.092	weirs	517.34	46.70	54.00		54.12	0.001943	2.72	190.24	45.60	0.23
GERBER	REACH1	2.052	Post 10yr	343.06	46.40	52.53		52.62	0.001824	2.35	145.72	41.70	0.22
GERBER	REACH1	2.052	weirs	517.28	46.40	53.60		53.71	0.001942	2.68	193.30	47.80	0.23
GERBER	REACH1	2.027	Post 10yr	369.91	46.10	52.24		52.34	0.002170	2.58	143.48	40.74	0.24
GERBER	REACH1	2.027	weirs	554.31	46.10	53.27		53.41	0.002337	2.94	188.64	46.49	0.26
GERBER	REACH1	1.968	Post 10yr	369.38	45.70	51.57		51.67	0.002168	2.48	150.12	46.35	0.24
GERBER	REACH1	1.968	weirs	552.68	45.70	52.58		52.70	0.002246	2.76	200.19	53.39	0.25
GERBER	REACH1	1.914	Post 10yr	368.62	45.20	50.90		51.00	0.002473	2.52	146.05	48.07	0.26
GERBER	REACH1	1.914	weirs	89.67	45.20	52.50		52.50	0.000045	0.38	234.07	64.76	0.04
GERBER	REACH1	1.883	Post 10yr	367.88	44.90	50.50		50.60	0.002516	2.53	145.30	48.35	0.26
GERBER	REACH1	1.883	weirs	89.66	44.90	52.50		52.50	0.000032	0.35	257.95	64.38	0.03
GERBER	REACH1	1.843	Post 10yr	366.79	44.60	50.07	47.34	50.15	0.001762	2.21	165.72	51.77	0.22
GERBER	REACH1	1.843	weirs	89.64	44.60	52.49	46.15	52.49	0.000019	0.29	312.13	69.23	0.02
GERBER	REACH1	1.832		Bridge									
GERBER	REACH1	1.831	Post 10yr	366.63	44.60	50.01		50.09	0.000827	2.26	162.41	51.30	0.22
GERBER	REACH1	1.831	weirs	89.64	44.60	52.49		52.49	0.000008	0.29	312.06	69.23	0.02
GERBER	REACH1	1.823	Post 10yr	366.17	44.40	49.25		49.31	0.001631	1.95	187.63	67.69	0.21
GERBER	REACH1	1.823	weirs	794.39	44.40	52.09		52.14	0.000815	1.88	421.55	94.60	0.16
GERBER	REACH1	1.800	Post 10yr	372.19	44.20	49.08		49.13	0.001191	1.76	211.48	70.10	0.18
GERBER	REACH1	1.800	weirs	926.98	44.20	51.95		52.02	0.000900	2.08	445.99	93.17	0.17
GERBER	REACH1	1.756	Post 10yr	381.36	43.80	48.79		48.84	0.001243	1.81	210.50	68.97	0.18
GERBER	REACH1	1.756	weirs	927.45	43.80	51.75		51.81	0.000875	2.06	450.70	93.57	0.17
GERBER	REACH1	1.719	Post 10yr	389.43	43.50	48.54		48.60	0.001212	1.87	208.25	63.67	0.18
GERBER	REACH1	1.719	weirs	927.43	43.50	51.57		51.64	0.000878	2.16	429.68	82.75	0.17
GERBER	REACH1	1.687	Post 10yr	396.27	43.20	48.33		48.39	0.001253	1.87	211.81	66.50	0.18
GERBER	REACH1	1.687	weirs	927.59	43.20	51.43		51.50	0.000810	2.04	454.01	89.75	0.16
GERBER	REACH1	1.643	Post 10yr	405.58	42.90	48.04		48.10	0.001241	1.91	212.42	64.01	0.18
GERBER	REACH1	1.643	weirs	928.06	42.90	51.25		51.32	0.000771	2.06	450.12	84.11	0.16
GERBER	REACH1	1.610	Post 10yr	413.62	42.60	47.89		47.93	0.000674	1.46	283.82	81.60	0.14
GERBER	REACH1	1.610	weirs	928.60	42.60	51.17		51.21	0.000417	1.58	588.94	104.50	0.12
GERBER	REACH1	1.570	Post 10yr	423.28	42.30	47.69		47.74	0.001062	1.81	233.48	67.72	0.17
GERBER	REACH1	1.570	weirs	929.33	42.30	51.05		51.10	0.000602	1.86	499.38	90.55	0.14
GERBER	REACH1	1.485	Post 10yr	443.43	41.60	47.22		47.27	0.001020	1.77	250.86	73.68	0.17
GERBER	REACH1	1.485	weirs	930.97	41.60	50.82		50.87	0.000461	1.83	572.47	104.86	0.12
GERBER	REACH1	1.434	Post 10yr	456.03	41.20	46.95		47.00	0.000992	1.80	253.71	71.03	0.17
GERBER	REACH1	1.434	weirs	932.07	41.20	50.71		50.75	0.000386	1.64	568.40	98.86	0.11

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	1.417		Culvert									
GERBER	REACH1	1.402	Post 10yr	450.88	41.00	46.49		46.59	0.001323	2.49	181.25	59.68	0.20
GERBER	REACH1	1.402	weirs	924.23	41.00	48.97		49.14	0.001337	3.33	277.92	70.60	0.22
GERBER	REACH1	1.343	Post 10yr	448.05	40.70	46.31		46.32	0.000276	0.95	471.55	132.52	0.09
GERBER	REACH1	1.343	weirs	923.89	40.70	48.84		48.86	0.000210	1.12	827.08	148.04	0.08
GERBER	REACH1	1.294	Post 10yr	447.46	40.50	46.27		46.27	0.000128	0.64	697.86	199.62	0.06
GERBER	REACH1	1.294	weirs	923.76	40.50	48.82		48.83	0.000092	0.75	1226.74	215.19	0.06
GERBER	REACH1	1.252	Post 10yr	447.22	40.40	46.24		46.25	0.000101	0.57	784.23	224.61	0.05
GERBER	REACH1	1.252	weirs	922.36	40.40	48.80		48.81	0.000072	0.67	1380.38	241.57	0.05
GERBER	REACH1	1.235		Lat Struct									
GERBER	REACH1	1.219	Post 10yr	447.09	40.20	46.20	42.65	46.22	0.000246	0.91	488.73	133.65	0.08
GERBER	REACH1	1.219	weirs	925.29	40.20	48.77	43.21	48.78	0.000201	1.07	867.55	162.15	0.08
GERBER	REACH1	1.200		Bridge									
GERBER	REACH1	1.182	Post 10yr	446.62	39.90	45.99		46.03	0.000762	1.67	267.38	68.06	0.15
GERBER	REACH1	1.182	weirs	925.05	39.90	48.56		48.62	0.000699	2.00	462.31	83.82	0.15
GERBER	REACH1	1.133	Post 10yr	456.66	39.60	45.81		45.85	0.000664	1.53	297.69	78.15	0.14
GERBER	REACH1	1.133	weirs	973.16	39.60	48.39		48.44	0.000622	1.85	526.45	99.27	0.14
GERBER	REACH1	1.09	Post 10yr	525.35	39.40	45.61		45.66	0.000879	1.78	294.61	76.11	0.16
GERBER	REACH1	1.09	weirs	1016.75	39.40	48.23		48.29	0.000672	1.95	520.17	95.30	0.15
GERBER	REACH1	1.068	Post 10yr	529.42	39.20	45.51		45.55	0.000938	1.71	308.79	89.22	0.16
GERBER	REACH1	1.068	weirs	1038.83	39.20	48.16		48.21	0.000602	1.83	568.83	106.67	0.14
GERBER	REACH1	1.032	Post 10yr	538.12	39.00	45.31		45.36	0.001067	1.79	300.94	89.80	0.17
GERBER	REACH1	1.032	weirs	1074.42	39.00	48.04		48.09	0.000650	1.88	571.58	108.75	0.14
GERBER	REACH1	1.013	Post 10yr	542.31	38.90	45.20		45.27	0.000839	2.06	263.17	72.53	0.16
GERBER	REACH1	1.013	weirs	1092.16	38.90	47.91		48.02	0.000798	2.69	406.66	90.65	0.17
GERBER	REACH1	1.004		Culvert									
GERBER	REACH1	0.997	Post 10yr	540.12	38.70	44.81		44.95	0.001634	2.97	181.65	67.57	0.23
GERBER	REACH1	0.997	weirs	1091.02	38.70	47.15		47.42	0.001929	4.14	263.50	81.60	0.27
GERBER	REACH1	0.994	Post 10yr	540.72	38.70	44.87		44.92	0.000987	1.93	280.68	70.10	0.17
GERBER	REACH1	0.994	weirs	1091.28	38.70	47.20		47.38	0.000945	2.33	469.17	85.14	0.17
GERBER	REACH1	0.936	Post 10yr	542.06	38.50	44.63		44.67	0.000684	1.60	338.72	85.56	0.14
GERBER	REACH1	0.936	weirs	1091.23	38.50	47.08		47.14	0.000633	1.91	571.21	104.04	0.14
GERBER	REACH1	0.895	Post 10yr	543.55	38.40	44.54		44.56	0.000295	1.08	504.54	123.75	0.09
GERBER	REACH1	0.895	weirs	1091.33	38.40	47.01		47.04	0.000273	1.31	835.38	144.29	0.10
GERBER	REACH1	0.872	Post 10yr	544.55	38.40	44.50		44.52	0.000394	1.07	507.98	154.75	0.10
GERBER	REACH1	0.872	weirs	1091.44	38.40	46.98		47.00	0.000260	1.19	917.31	175.05	0.09
GERBER	REACH1	0.844	Post 10yr	545.46	38.30	44.41		44.44	0.000631	1.53	356.42	90.78	0.14
GERBER	REACH1	0.844	weirs	1091.50	38.30	46.90		46.95	0.000560	1.80	607.49	111.02	0.14
GERBER	REACH1	0.769	Post 10yr	548.19	38.10	44.13		44.17	0.000732	1.62	338.63	88.57	0.15
GERBER	REACH1	0.769	weirs	1091.73	38.10	46.66		46.71	0.000611	1.85	589.27	109.75	0.14
GERBER	REACH1	0.702	Post 10yr	550.58	37.90	43.86		43.91	0.000788	1.68	326.80	84.98	0.15
GERBER	REACH1	0.702	weirs	1092.01	37.90	46.44		46.50	0.000633	1.91	570.82	103.60	0.14
GERBER	REACH1	0.693	Post 10yr	550.45	37.90	43.68		43.84	0.002174	3.26	168.73	61.30	0.26
GERBER	REACH1	0.693	weirs	1092.01	37.90	46.18		46.46	0.002128	4.26	256.16	75.73	0.28
GERBER	REACH1	0.679		Culvert									
GERBER	REACH1	0.666	Post 10yr	548.20	37.70	43.35		43.61	0.003426	4.08	134.44	56.99	0.33
GERBER	REACH1	0.666	weirs	1091.78	37.70	45.60		46.07	0.003777	5.53	197.39	70.48	0.37
GERBER	REACH1	0.655	Post 10yr	549.05	37.60	43.39		43.44	0.000956	1.84	298.09	78.13	0.17
GERBER	REACH1	0.655	weirs	1091.90	37.60	45.78		45.85	0.000844	2.17	503.58	93.81	0.16
GERBER	REACH1	0.627	Post 10yr	549.24	37.50	43.26		43.31	0.000873	1.68	326.56	92.36	0.16
GERBER	REACH1	0.627	weirs	1091.97	37.50	45.69		45.74	0.000666	1.90	575.22	109.41	0.15
GERBER	REACH1	0.61	Post 10yr	550.07	37.40	43.24		43.26	0.000218	0.93	590.20	143.27	0.08
GERBER	REACH1	0.61	weirs	1092.06	37.40	45.68		45.70	0.000196	1.14	960.59	159.02	0.08
GERBER	REACH1	0.598	Post 10yr	550.10	37.40	43.18		43.22	0.000838	1.73	318.02	159.53	0.16
GERBER	REACH1	0.598	weirs	1092.12	37.40	45.67		45.69	0.000201	1.10	1060.92	208.07	0.08

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	0.586	Post 10yr	550.12	37.30	43.12		43.17	0.000867	1.75	313.47	99.35	0.16
GERBER	REACH1	0.586	weirs	1092.18	37.30	45.62		45.67	0.000568	1.83	647.44	144.89	0.14
GERBER	REACH1	0.567	Post 10yr	550.45	37.20	43.04		43.09	0.000826	1.72	320.10	105.12	0.15
GERBER	REACH1	0.567	weirs	1092.28	37.20	45.57		45.61	0.000525	1.78	668.25	145.95	0.13
GERBER	REACH1	0.555	Post 10yr	550.73	37.10	43.00		43.04	0.000643	1.53	359.64	92.12	0.14
GERBER	REACH1	0.555	weirs	1092.32	37.10	45.53		45.58	0.000535	1.80	607.04	103.87	0.13
GERBER	REACH1	0.539	Post 10yr	550.90	37.10	42.94		42.98	0.000714	1.59	347.11	90.40	0.14
GERBER	REACH1	0.539	weirs	1092.37	37.10	45.48		45.53	0.000556	1.90	576.10	90.40	0.13
GERBER	REACH1	0.527	Post 10yr	551.15	37.00	42.89		42.93	0.000846	1.72	321.35	85.90	0.16
GERBER	REACH1	0.527	weirs	1092.43	37.00	45.44		45.49	0.000672	1.93	566.70	106.69	0.15
GERBER	REACH1	0.486	Post 10yr	551.27	36.80	42.72		42.76	0.000764	1.65	334.84	88.02	0.15
GERBER	REACH1	0.486	weirs	1092.62	36.80	45.30		45.35	0.000606	1.86	588.89	108.56	0.14
GERBER	REACH1	0.459	Post 10yr	551.68	36.70	42.64		42.67	0.000487	1.34	412.24	106.07	0.12
GERBER	REACH1	0.459	weirs	1092.75	36.70	45.25		45.28	0.000390	1.52	718.10	128.66	0.11
GERBER	REACH1	0.434	Post 10yr	552.13	36.50	42.56		42.59	0.000660	1.52	364.21	97.63	0.14
GERBER	REACH1	0.434	weirs	1092.87	36.50	45.18		45.22	0.000489	1.67	654.70	122.84	0.13
GERBER	REACH1	0.367	Post 10yr	552.67	36.20	42.31		42.35	0.000700	1.59	346.91	90.00	0.14
GERBER	REACH1	0.367	weirs	1093.20	36.20	44.99		45.04	0.000541	1.77	619.18	113.23	0.13
GERBER	REACH1	0.346	Post 10yr	551.28	36.10	42.15		42.25	0.001232	2.54	217.13	70.81	0.20
GERBER	REACH1	0.346	weirs	1093.27	36.10	44.79		44.96	0.001193	3.31	330.57	84.00	0.21
GERBER	REACH1	0.338		Culvert									
GERBER	REACH1	0.329	Post 10yr	548.32	35.90	42.01		42.12	0.001349	2.62	209.39	63.26	0.21
GERBER	REACH1	0.329	weirs	1093.21	35.90	44.21		44.42	0.001584	3.62	301.86	76.47	0.24
GERBER	REACH1	0.293	Post 10yr	547.36	35.70	41.91		41.93	0.000484	1.34	407.47	103.38	0.12
GERBER	REACH1	0.293	weirs	1093.39	35.70	44.16		44.20	0.000464	1.69	648.52	110.96	0.12
GERBER	REACH1	.284		Lat Struct									
GERBER	REACH1	0.271	Post 10yr	546.60	35.60	41.84		41.87	0.000594	1.51	361.71	89.60	0.13
GERBER	REACH1	0.271	weirs	1090.61	35.60	44.08		44.14	0.000613	1.87	582.46	106.91	0.14
GERBER	REACH1	0.216	Post 10yr	544.00	35.30	41.67		41.71	0.000533	1.46	373.82	90.33	0.13
GERBER	REACH1	0.216	weirs	1088.72	35.30	43.91		43.96	0.000573	1.83	595.14	107.47	0.14
GERBER	REACH1	0.155	Post 10yr	539.36	35.00	41.50		41.54	0.000534	1.47	367.44	87.68	0.13
GERBER	REACH1	0.155	weirs	1085.44	35.00	43.72		43.78	0.000596	1.87	580.03	104.39	0.14
GERBER	REACH1	0.093	Post 10yr	535.01	34.60	41.35		41.38	0.000408	1.34	399.93	89.48	0.11
GERBER	REACH1	0.093	weirs	1081.17	34.60	43.55		43.60	0.000496	1.76	612.67	104.36	0.13
GERBER	REACH1	0.051	Post 10yr	532.14	34.40	41.27		41.30	0.000384	1.31	405.62	89.28	0.11
GERBER	REACH1	0.051	weirs	1078.00	34.40	43.44		43.49	0.000482	1.75	615.46	103.74	0.13
GERBER	REACH1	0.000	Post 10yr	528.18	34.00	41.19		41.21	0.000257	1.07	492.20	108.29	0.09
GERBER	REACH1	0.000	weirs	1074.32	34.00	43.35		43.38	0.000309	1.46	733.92	113.10	0.10
ELDER	REACH1	12.205	Post 10yr	260.92	89.50	91.68		91.75	0.002595	2.01	130.12	119.20	0.34
ELDER	REACH1	12.205	weirs	452.74	89.50	92.25		92.32	0.002291	2.20	206.12	150.03	0.33
ELDER	REACH1	12.144	Post 10yr	258.87	88.36	90.92		90.99	0.002092	2.16	123.75	110.25	0.32
ELDER	REACH1	12.144	weirs	450.46	88.36	91.55		91.64	0.001717	2.50	201.25	132.02	0.31
ELDER	REACH1	12.072	Post 10yr	239.77	87.50	90.33		90.37	0.001077	1.57	153.30	113.58	0.23
ELDER	REACH1	12.072	weirs	434.41	87.50	91.03		91.08	0.000969	1.86	250.61	178.26	0.23
ELDER	REACH1	12.02	Post 10yr	231.74	86.52	90.12		90.15	0.000563	1.77	245.04	283.05	0.18
ELDER	REACH1	12.02	weirs	402.91	86.52	90.84		90.87	0.000410	1.75	469.19	336.18	0.16
ELDER	REACH1	11.944	Post 10yr	442.85	85.50	90.01		90.02	0.000178	1.13	753.67	428.34	0.11
ELDER	REACH1	11.944	weirs	862.75	85.50	90.72		90.74	0.000253	1.53	1064.97	453.16	0.13
ELDER	REACH1	11.883	Post 10yr	442.21	85.50	89.98		89.98	0.000063	0.67	1203.69	580.48	0.06
ELDER	REACH1	11.883	weirs	822.09	85.50	90.67		90.67	0.000095	0.93	1669.02	696.34	0.08
ELDER	REACH1	11.848	Post 10yr	442.11	82.50	89.94		89.96	0.000226	1.32	334.50	553.75	0.12
ELDER	REACH1	11.848	weirs	841.96	82.50	90.64		90.64	0.000051	0.70	2432.02	1198.24	0.06
ELDER	REACH1	11.835		Culvert									
ELDER	REACH1	11.822	Post 10yr	442.09	82.50	87.18		87.63	0.003380	5.38	82.24	78.46	0.44
ELDER	REACH1	11.822	weirs	988.47	82.50	88.26		88.54	0.003395	4.79	360.64	374.30	0.45

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	11.724	Post 10yr	441.83	83.19	86 17		86.24	0.001599	2.65	253.27	202.15	0.30
ELDER	REACH1	11.724	weirs	1082.69	83.19	87.15		87.26	0.002057	3.78	484.49	255.04	0.36
ELDER	REACH1	11.659	Post 10yr	441.77	82.38	85.66		85.73	0.001392	2.53	272.42	182.02	0.28
ELDER	REACH1	11.659	weirs	981.37	82.38	86.49		86.61	0.002010	3.68	445.77	235.24	0.36
ELDER	REACH1	11.588	Post 10yr	441.50	81.30	84.85		85.01	0.003071	3.88	219.10	233.75	0.42
ELDER	REACH1	11.588	weirs	995.34	81.30	85 73		85.89	0.002817	4.49	455.75	305.80	0.42
ELDER	REACH1	11.538	Post 10yr	441.29	80.77	84.32		84.38	0.001440	2.81	318.94	256.58	0.29
ELDER	REACH1	11.538	weirs	932.49	80.77	85.25		85.32	0.001386	3.32	586.13	316.46	0.30
ELDER	REACH1	11.482	Post 10yr	441 18	80.23	83.83		83.90	0.001812	3.20	270.22	184.09	0.33
ELDER	REACH1	11.482	weirs	921.60	80.23	84.67		84.78	0.002381	4.32	457 74	259.91	0.39
ELDER	REACH1	11.433	Post 10yr	440.80	79.88	83.23		83.31	0.002739	3.71	249.58	194.19	0.39
ELDER	REACH1	11.433	weirs	907.63	79.88	83.91		84.04	0.003311	4.72	389.62	217.86	0.45
ELDER	REACH1	11.376	Post 10yr	439.43	79.20	82.68		82.71	0.001150	2.42	468.31	533.23	0.26
ELDER	REACH1	11.376	weirs	856.83	79.20	83.40		83.42	0.000775	2.33	886.96	629.60	0.22
ELDER	REACH1	11.313	Post 10yr	438.83	78.70	82.38		82.41	0.000723	1.97	448.27	342 75	0.21
ELDER	REACH1	11.313	weirs	855.16	78.70	83.16		83.19	0.000699	2.28	722.69	365.56	0.21
ELDER	REACH1	11.252	Post 10yr	438.66	78.41	82.10		82.15	0.001045	2.37	346.72	257.44	0.25
ELDER	REACH1	11.252	weirs	853.55	78.41	82.86		82.93	0.001126	2.89	560 13	297.63	0.27
ELDER	REACH1	11.175	Post 10yr	438.29	77.70	81.40		81.55	0.002568	3.63	210.53	198.26	0.39
ELDER	REACH1	11.175	weirs	849.13	77.70	82.10		82.29	0.002625	4.44	379.47	292.07	0.42
ELDER	REACH1	11.125	Post 10yr	437.39	77.27	80.94		81.01	0.001299	2.66	306.62	300.71	0.28
ELDER	REACH1	11.125	weirs	841.61	77.27	81.59		81.68	0.001464	3.24	476.95	384.42	0.31
ELDER	REACH1	11.063	Post 10yr	435.82	76.84	80.47		80.58	0.001654	3.04	264.67	548.46	0.32
ELDER	REACH1	11.063	weirs	830.83	76.84	81.13		81.23	0.001595	3.43	466.34	658.21	0.32
ELDER	REACH1	10.995	Post 10yr	515.83	76.40	80.00		80.06	0.001097	2.50	356 74	222.10	0.26
ELDER	REACH1	10.995	weirs	901.25	76.40	80.62		80.70	0.001292	3.08	540.38	511.59	0.29
ELDER	REACH1	10.936	Post 10yr	514.80	76.10	79.79		79.81	0.000422	1.60	576.99	313.80	0.16
ELDER	REACH1	10.936	weirs	895.54	76.10	80.33		80.37	0.000771	2.40	803.29	502.78	0.22
ELDER	REACH1	10.884	Post 10yr	514.26	75.80	79.68		79.69	0.000430	1.69	643.56	426.10	0.16
ELDER	REACH1	10.884	weirs	892.79	75.80	80.14		80.17	0.000640	2.25	861.45	526.73	0.20
ELDER	REACH1	10.834	Post 10yr	513.93	75.60	79.56		79 58	0.000417	1.54	580.68	374.69	0.16
ELDER	REACH1	10.834	weirs	891.31	75.60	79.96		80.00	0.000672	2.12	738.17	408.23	0.21
ELDER	REACH1	10.775	Post 10yr	513.66	75.45	79.48		79.49	0.000173	1.10	806.30	374.71	0.10
ELDER	REACH1	10.775	weirs	890.40	75.45	79.82		79.84	0.000353	1.68	939.73	411.23	0 15
ELDER	REACH1	10.717	Post 10yr	513.60	75.25	79.43		79.44	0.000140	1.10	921.99	398.92	0.10
ELDER	REACH1	10.717	weirs	890.16	75.25	79 72		79.74	0.000302	1 70	1039.68	417.93	0.14
ELDER	REACH1	10.691	Post 10yr	513.59	74.00	79.42		79.42	0.000074	0.86	1051.58	1061.07	0.07
ELDER	REACH1	10.691	weirs	890.05	74.00	79.69		79.70	0.000168	1 35	1159.56	1084.72	0.11
ELDER	REACH1	10.669		Culvert									
ELDER	REACH1	10.666	Post 10yr	512.64	74.00	78.34		78.35	0.000379	1.62	872.53	953.06	0 16
ELDER	REACH1	10.666	weirs	889.72	74.00	78.58		78.61	0.000605	2.15	1107.37	976.66	0.20
ELDER	REACH1	10.63		Lat Struct									
ELDER	REACH1	10.619	Post 10yr	482.95	71.00	78.26		78.26	0.000031	0.54	1413.61	677.67	0.05
ELDER	REACH1	10.619	weirs	851.99	71.00	78.45		78.46	0.000078	0.88	1543 13	684.24	0.07
ELDER	REACH1	10.613		Culvert									
ELDER	REACH1	10.607	Post 10yr	482.75	71.00	74.78		75.05	0.002080	4.11	117.32	71.58	0.37
ELDER	REACH1	10.607	weirs	851.49	71.00	75.32		75.95	0.004167	6.36	133.89	103.95	0.54
ELDER	REACH1	10.562	Post 10yr	482.68	70.10	74.65		74.71	0.000693	2.38	374.25	248.53	0.21
ELDER	REACH1	10.562	weirs	851.22	70.10	75.15		75.25	0.001083	3.22	507.92	293.79	0.27
ELDER	REACH1	10.507	Post 10yr	482.57	70.50	74.39		74.51	0.001652	3.25	313.28	422.03	0.32
ELDER	REACH1	10.507	weirs	850.44	70.50	74.89		75.00	0.001721	3.64	550.11	517.47	0.33
ELDER	REACH1	10.442	Post 10yr	485 74	70.48	73.81		73.90	0.002006	3.28	343.30	423.48	0.34
ELDER	REACH1	10.442	weirs	854.02	70.48	74.30		74.38	0.001955	3.59	580 78	530.87	0.35
ELDER	REACH1	10.361	Post 10yr	489 74	70.32	73.21		73.24	0.001006	2.19	510.99	481.62	0.24
ELDER	REACH1	10.361	weirs	858.70	70.32	73.69		73.72	0.001105	2.57	757.43	557.42	0.26

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	10.312	Post 10yr	491.97	70.20	72.83		72.87	0.002010	2.43	416.13	508.32	0.32
ELDER	REACH1	10.312	weirs	861.76	70.20	73.37		73.41	0.001381	2.41	713.89	577.17	0.28
ELDER	REACH1	10.272	Post 10yr	493.86	69.63	72.39		72.44	0.002023	2.76	355.09	313.51	0.33
ELDER	REACH1	10.272	weirs	864.21	69.63	73.05		73.10	0.001613	2.90	576.40	367.53	0.31
ELDER	REACH1	10.214	Post 10yr	572.69	68.78	71.77		71.84	0.002135	3.05	353.22	275.22	0.35
ELDER	REACH1	10.214	weirs	1057.91	68.78	72.45		72.53	0.002257	3.70	594.70	417.90	0.37
ELDER	REACH1	10.141	Post 10yr	575.86	67.65	71.04		71.12	0.001874	2.79	356.63	315.39	0.32
ELDER	REACH1	10.141	weirs	1064.10	67.65	71.73		71.82	0.001740	3.20	590.76	365.52	0.33
ELDER	REACH1	10.09	Post 10yr	578.08	66.80	70.50		70.64	0.002071	3.67	305.34	280.89	0.36
ELDER	REACH1	10.09	weirs	1068.60	66.80	71.21		71.36	0.002095	4.21	531.26	354.23	0.37
ELDER	REACH1	10.034	Post 10yr	580.67	66.41	69.85		69.98	0.002386	3.72	303.16	252.42	0.38
ELDER	REACH1	10.034	weirs	1072.86	66.41	70.45		70.62	0.002973	4.69	522.35	427.00	0.44
ELDER	REACH1	9.974	Post 10yr	583.28	66.02	69.41		69.44	0.000773	2.09	651.06	545.32	0.22
ELDER	REACH1	9.974	weirs	1076.75	66.02	69.91		69.94	0.000985	2.59	932.86	593.61	0.25
ELDER	REACH1	9.919	Post 10yr	585.22	65.50	68.80		68.92	0.003069	4.07	359.84	456.75	0.42
ELDER	REACH1	9.919	weirs	1076.52	65.50	69.39		69.48	0.002306	4.00	664.50	543.42	0.38
ELDER	REACH1	9.878	Post 10yr	585.69	65.13	68.32		68.37	0.001815	2.98	439.62	408.88	0.32
ELDER	REACH1	9.878	weirs	1073.95	65.13	69.01		69.06	0.001501	3.17	755.29	501.98	0.31
ELDER	REACH1	9.813	Post 10yr	587.31	64.02	67.90		67.94	0.000591	1.80	582.17	498.46	0.19
ELDER	REACH1	9.813	weirs	1073.83	64.02	68.66		68.70	0.000534	2.10	1069.44	703.76	0.19
ELDER	REACH1	9.749	Post 10yr	588.99	63.84	67.51		67.58	0.001587	2.93	380.46	305.05	0.31
ELDER	REACH1	9.749	weirs	1074.41	63.84	68.28		68.37	0.001527	3.39	719.89	647.13	0.32
ELDER	REACH1	9.701	Post 10yr	590.40	63.10	67.20		67.25	0.000878	2.09	480.38	379.57	0.23
ELDER	REACH1	9.701	weirs	1075.30	63.10	68.00		68.05	0.000791	2.37	818.54	471.72	0.23
ELDER	REACH1	9.633	Post 10yr	592.95	62.68	66.86		66.92	0.000974	2.51	471.77	369.50	0.25
ELDER	REACH1	9.633	weirs	1079.29	62.68	67.69		67.75	0.000846	2.73	808.67	439.03	0.24
ELDER	REACH1	9.566	Post 10yr	595.71	62.13	66.08		66.30	0.003045	4.24	214.76	165.21	0.43
ELDER	REACH1	9.566	weirs	1084.64	62.13	66.74		67.06	0.003977	5.52	346.48	239.70	0.51
ELDER	REACH1	9.524	Post 10yr	597.36	61.85	65.76		65.79	0.000633	1.92	629.38	435.85	0.20
ELDER	REACH1	9.524	weirs	1088.46	61.85	66.28		66.33	0.001094	2.81	998.27	1022.17	0.27
ELDER	REACH1	9.488	Post 10yr	599.11	61.30	64.56		64.96	0.009587	5.48	153.91	478.11	0.71
ELDER	REACH1	9.488	weirs	1089.20	61.30	65.24		65.65	0.007505	5.98	295.71	761.34	0.66
ELDER	REACH1	9.438	Post 10yr	598.98	59.80	63.45		63.57	0.001304	2.91	268.64	172.69	0.29
ELDER	REACH1	9.438	weirs	1086.36	59.80	64.38		64.53	0.001348	3.51	510.08	847.92	0.30
ELDER	REACH1	9.221	Post 10yr	601.67	59.40	63.30		63.32	0.000280	1.54	753.52	353.54	0.14
ELDER	REACH1	9.221	weirs	1163.27	59.40	64.19		64.23	0.000510	2.38	1187.48	885.03	0.19
ELDER	REACH1	9.163	Post 10yr	603.07	58.30	62.97		63.11	0.001390	3.17	269.75	248.76	0.30
ELDER	REACH1	9.163	weirs	1166.64	58.30	63.76		63.95	0.001767	4.09	528.63	410.31	0.35
ELDER	REACH1	9.116	Post 10yr	603.96	57.40	62.61		62.72	0.001743	2.97	342.51	404.06	0.32
ELDER	REACH1	9.116	weirs	1168.79	57.40	63.43		63.52	0.001373	3.15	720.05	516.83	0.30
ELDER	REACH1	9.062	Post 10yr	603.88	56.40	61.58		61.91	0.004277	4.57	132.26	49.03	0.49
ELDER	REACH1	9.062	weirs	1157.05	56.40	62.77		63.00	0.002627	4.40	493.44	943.94	0.40
ELDER	REACH1	9.019	Post 10yr	603.39	55.60	61.13		61.28	0.001163	3.11	193.95	48.13	0.27
ELDER	REACH1	9.019	weirs	1149.45	55.60	62.14		62.47	0.002099	4.63	300.54	448.87	0.38
ELDER	REACH1	8.977	Post 10yr	603.63	55.51	60.96		61.05	0.000852	2.75	391.02	323.81	0.23
ELDER	REACH1	8.977	weirs	1150.54	55.51	61.95		62.04	0.000837	3.02	851.75	581.69	0.24
ELDER	REACH1	8.925	Post 10yr	604.51	55.37	60.77		60.84	0.000626	2.32	447.79	431.23	0.20
ELDER	REACH1	8.925	weirs	1152.41	55.37	61.77		61.82	0.000571	2.50	979.28	636.17	0.20
ELDER	REACH1	8.873	Post 10yr	606.10	55.28	60.56		60.64	0.000807	2.49	379.51	374.27	0.23
ELDER	REACH1	8.873	weirs	1155.43	55.28	61.58		61.65	0.000707	2.67	800.46	530.29	0.22
ELDER	REACH1	8.809	Post 10yr	607.79	55.14	60.15		60.29	0.001364	2.94	250.21	378.93	0.29
ELDER	REACH1	8.809	weirs	1159.60	55.14	61.30		61.39	0.000886	2.90	738.80	484.30	0.24
ELDER	REACH1	8.803	Post 10yr	608.01	54.90	60.17	56.57	60.25	0.000526	2.27	316.83	382.15	0.17
ELDER	REACH1	8.803	weirs	1160.03	54.90	61.28	57.46	61.36	0.000591	2.74	791.67	515.24	0.19
ELDER	REACH1	8.798		Bridge									

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	8.788	Post 10yr	606.44	54.90	59.97		60.06	0.000610	2.39	253.32	50.00	0.19
ELDER	REACH1	8.788	weirs	1159.97	54.90	61.02		61.14	0.000759	3.02	671.21	446.98	0.22
ELDER	REACH1	8.724	Post 10yr	607.97	54.05	59.83		59.87	0.000465	1.49	409.29	166.38	0.17
ELDER	REACH1	8.724	weirs	1163.17	54.05	60.88		60.93	0.000472	1.81	810.43	490.07	0.17
ELDER	REACH1	8.645	Post 10yr	601.31	53.00	58.70		59.10	0.003722	5.18	145.77	454.88	0.47
ELDER	REACH1	8.645	weirs	1157.52	53.00	59.54		60.08	0.004744	6.66	296.55	553.73	0.55
ELDER	REACH1	8.586	Post 10yr	595.25	52.80	58.28		58.33	0.000486	1.72	367.68	488.88	0.17
ELDER	REACH1	8.586	weirs	1134.78	52.80	58.92		59.01	0.000801	2.51	610.15	986.31	0.23
ELDER	REACH1	8.531	Post 10yr	593.98	52.60	58.07		58.15	0.001042	2.61	558.55	1050.64	0.25
ELDER	REACH1	8.531	weirs	1117.91	52.60	58.75		58.79	0.000588	2.22	1317.63	3588.78	0.20
ELDER	REACH1	8.432	Post 10yr	589.90	52.20	57.75		57.78	0.000704	2.20	560.68	337.32	0.20
ELDER	REACH1	8.432	weirs	1057.55	52.20	58.46		58.49	0.000870	2.76	1232.80	3134.98	0.23
ELDER	REACH1	8.399	Post 10yr	583.18	52.15	57.63		57.69	0.000966	2.48	425.44	292.02	0.24
ELDER	REACH1	8.399	weirs	1056.26	52.15	58.34		58.40	0.000965	2.83	927.16	2339.35	0.25
ELDER	REACH1	8.313	Post 10yr	556.66	52.04	57.38		57.41	0.000535	2.10	734.19	1398.72	0.19
ELDER	REACH1	8.313	weirs	1053.50	52.04	58.13		58.15	0.000358	1.93	1428.61	2029.65	0.16
ELDER	REACH1	8.092	Post 10yr	532.08	51.60	57.05		57.06	0.000216	1.34	1128.60	1825.12	0.12
ELDER	REACH1	8.092	weirs	985.27	51.60	57.93		57.93	0.000055	0.77	3540.97	2078.54	0.06
ELDER	REACH1	8.029	Post 10yr	533.75	51.33	55.68		56.24	0.006274	6.00	88.94	26.25	0.60
ELDER	REACH1	8.029	weirs	1368.24	51.33	56.37		56.73	0.005889	6.52	560.36	1272.02	0.59
ELDER	REACH1	7.985	Post 10yr	534.42	51.13	55.08		55.09	0.000318	1.30	873.05	814.40	0.14
ELDER	REACH1	7.985	weirs	1325.42	51.13	55.75		55.77	0.000509	1.90	1459.68	943.52	0.18
ELDER	REACH1	7.809	Post 10yr	535.52	50.55	54.97		54.97	0.000296	1.12	899.65	1935.99	0.13
ELDER	REACH1	7.809	weirs	1304.20	50.55	55.53		55.56	0.000672	1.95	1290.43	2515.17	0.20
ELDER	REACH1	7.764	Post 10yr	558.90	50.36	54.75		54.82	0.001222	2.05	598.29	1755.57	0.27
ELDER	REACH1	7.764	weirs	1338.28	50.36	55.22		55.29	0.001647	3.59	1080.59	1885.77	0.32
ELDER	REACH1	7.697	Post 10yr	558.78	50.16	54.28		54.33	0.001715	2.23	630.97	1811.96	0.30
ELDER	REACH1	7.697	weirs	1319.42	50.16	54.84		54.86	0.000864	1.90	1750.62	2208.02	0.22
ELDER	REACH1	7.617	Post 10yr	556.08	49.88	53.42		53.57	0.002824	3.83	317.57	471.03	0.41
ELDER	REACH1	7.617	weirs	1247.90	49.88	54.16		54.26	0.002243	4.00	1261.54	2668.60	0.38
ELDER	REACH1	7.574	Post 10yr	551.13	49.72	53.08		53.10	0.000442	1.47	874.61	1486.18	0.16
ELDER	REACH1	7.574	weirs	1188.72	49.72	53.88		53.90	0.000348	1.56	1785.74	2058.85	0.15
ELDER	REACH1	7.523	Post 10yr	549.93	49.61	53.00		53.00	0.000189	0.99	1556.05	1666.98	0.10
ELDER	REACH1	7.523	weirs	1181.91	49.61	53.82		53.83	0.000118	0.93	2977.10	1787.83	0.09
ELDER	REACH1	7.459	Post 10yr	549.64	49.00	52.97	52.26	52.98	0.000261	1.11	1179.26	1163.47	0.12
ELDER	REACH1	7.459	weirs	1180.65	49.00	53.80	52.48	53.81	0.000293	1.40	2355.92	2354.49	0.14
ELDER	REACH1	7.457		Bridge									
ELDER	REACH1	7.454	Post 10yr	549.41	49.00	52.96		52.97	0.000235	1.06	1224.41	1168.28	0.12
ELDER	REACH1	7.454	weirs	1180.65	49.00	53.79		53.80	0.000264	1.34	2454.04	2387.21	0.13
ELDER	REACH1	7.392	Post 10yr	549.02	48.59	52.85		52.87	0.000546	1.76	743.96	768.44	0.18
ELDER	REACH1	7.392	weirs	1178.47	48.59	53.69		53.71	0.000412	1.81	1395.03	773.16	0.16
ELDER	REACH1	7.339	Post 10yr	548.90	48.05	52.68		52.70	0.000517	1.65	677.14	495.29	0.17
ELDER	REACH1	7.339	weirs	1178.02	48.05	53.54		53.56	0.000534	1.99	1104.59	504.34	0.18
ELDER	REACH1	7.3202*	Post 10yr	548.89	47.97	52.65		52.68	0.000632	1.88	597.86	452.42	0.19
ELDER	REACH1	7.3202*	weirs	1177.82	47.97	53.51		53.54	0.000654	2.26	989.47	465.00	0.20
ELDER	REACH1	7.3014*	Post 10yr	548.88	47.88	52.62		52.65	0.000684	2.01	570.98	547.17	0.20
ELDER	REACH1	7.3014*	weirs	1177.81	47.88	53.49		53.52	0.000603	2.22	1132.12	728.58	0.20
ELDER	REACH1	7.2826*	Post 10yr	548.85	47.80	52.53		52.63	0.001536	3.05	360.55	442.06	0.30
ELDER	REACH1	7.2826*	weirs	1177.80	47.80	53.42		53.50	0.001162	3.13	825.01	587.35	0.27
ELDER	REACH1	7.2638*	Post 10yr	548.84	47.71	52.39		52.55	0.002073	3.54	277.52	359.29	0.35
ELDER	REACH1	7.2638*	weirs	1177.77	47.71	53.33		53.45	0.001615	3.73	663.30	473.31	0.33
ELDER	REACH1	7.245*	Post 10yr	548.84	47.63	52.25		52.41	0.002156	3.60	255.78	308.31	0.36
ELDER	REACH1	7.245*	weirs	1177.65	47.63	53.23		53.38	0.001795	3.95	592.96	397.95	0.34
ELDER	REACH1	7.2262*	Post 10yr	548.81	47.55	52.10		52.27	0.002229	3.64	239.26	287.18	0.37
ELDER	REACH1	7.2262*	weirs	1177.64	47.55	53.13		53.29	0.001882	4.04	559.03	352.33	0.35
ELDER	REACH1	7.2074*	Post 10yr	548.82	47.46	51.97		52.12	0.001953	3.40	229.48	143.00	0.34

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	7.2074*	weirs	1177.62	47.46	53.02		53.19	0.001979	4.17	519.83	306.37	0.36
ELDER	REACH1	7.1886*	Post 10yr	548.81	47.38	51.84		51.98	0.001924	3.36	225.07	126.36	0.34
ELDER	REACH1	7.1886*	weirs	1177.54	47.38	52.86		53.08	0.002290	4.46	427.03	210.00	0.39
ELDER	REACH1	7.1698*	Post 10yr	548.81	47.29	51.69		51.84	0.001990	3.39	214.03	109.60	0.35
ELDER	REACH1	7.1698*	weirs	1177.53	47.29	52.66		52.94	0.002898	4.93	374.04	196.86	0.44
ELDER	REACH1	7.151	Post 10yr	548.81	47.21	51.52		51.68	0.002239	3.53	194.77	92.79	0.36
ELDER	REACH1	7.151	weirs	1177.32	47.21	52.31		52.74	0.004392	5.81	291.26	167.46	0.53
ELDER	REACH1	7.15		Lat Struct									
ELDER	REACH1	7.1445*	Post 10yr	513.46	47.18	51.48		51.54	0.001139	2.46	316.53	179.08	0.26
ELDER	REACH1	7.1445*	weirs	1023.82	47.18	52.36		52.46	0.001361	3.23	475.14	180.00	0.30
ELDER	REACH1	7.136*	Post 10yr	513.45	47.15	51.30		51.45	0.001253	2.48	320.16	200.00	0.27
ELDER	REACH1	7.136*	weirs	1023.81	47.15	52.26		52.36	0.001378	3.15	494.98	200.00	0.30
ELDER	REACH1	7.1315*	Post 10yr	513.45	47.11	51.26		51.34	0.001705	2.76	285.68	200.00	0.31
ELDER	REACH1	7.1315*	weirs	1023.79	47.11	52.13		52.24	0.001710	3.38	459.54	200.00	0.33
ELDER	REACH1	7.125	Post 10yr	513.45	47.08	50.60		50.99	0.009731	5.23	125.48	153.08	0.70
ELDER	REACH1	7.125	weirs	1023.73	47.08	51.89		52.08	0.002996	4.19	370.98	200.00	0.42
ELDER	REACH1	7.120	Post 10yr	513.44	46.70	50.09		50.33	0.006534	3.88	132.34	47.71	0.41
ELDER	REACH1	7.120	weirs	1023.73	46.70	51.13		51.62	0.009657	5.60	182.97	49.80	0.51
ELDER	REACH1	7.119		Lat Struct									
ELDER	REACH1	7.10425*	Post 10yr	513.42	46.05	49.49		49.74	0.007595	4.04	127.16	48.71	0.44
ELDER	REACH1	7.10425*	weirs	909.85	46.05	50.61		50.99	0.007867	4.91	185.18	53.56	0.47
ELDER	REACH1	7.0885*	Post 10yr	513.42	45.40	48.80		49.07	0.008454	4.16	123.42	49.03	0.46
ELDER	REACH1	7.0885*	weirs	889.90	45.40	50.00		50.35	0.007750	4.76	186.16	55.98	0.46
ELDER	REACH1	7.07275*	Post 10yr	513.39	44.75	48.10		48.37	0.008444	4.15	123.69	49.23	0.46
ELDER	REACH1	7.07275*	weirs	889.17	44.75	49.41		49.74	0.007014	4.60	193.09	56.94	0.44
ELDER	REACH1	7.057	Post 10yr	513.30	44.10	47.53		47.75	0.006375	3.78	135.74	50.22	0.41
ELDER	REACH1	7.057	weirs	887.00	44.10	48.86		49.23	0.005203	4.15	213.66	58.74	0.38
ELDER	REACH1	7.04066*	Post 10yr	512.91	43.43	47.05		47.25	0.005349	3.55	144.30	51.37	0.37
ELDER	REACH1	7.04066*	weirs	886.27	43.43	48.59		48.82	0.004193	3.84	230.72	60.62	0.35
ELDER	REACH1	7.02433*	Post 10yr	512.90	42.77	46.68		46.84	0.004071	3.23	158.83	53.17	0.33
ELDER	REACH1	7.02433*	weirs	883.10	42.77	48.31		48.50	0.003189	3.48	254.00	63.07	0.31
ELDER	REACH1	7.008	Post 10yr	512.87	42.10	46.42		46.54	0.002829	2.84	180.50	55.61	0.28
ELDER	REACH1	7.008	weirs	879.57	42.10	48.11		48.26	0.002326	3.10	283.69	65.93	0.26
ELDER	REACH1	6.98		Lat Struct									
ELDER	REACH1	6.97906*	Post 10yr	554.17	41.50	46.21		46.32	0.002242	2.67	207.58	58.96	0.25
ELDER	REACH1	6.97906*	weirs	919.39	41.50	47.93		48.06	0.001855	2.89	318.24	69.37	0.24
ELDER	REACH1	6.978	Post 10yr	553.45	40.90	46.09		46.17	0.001457	2.28	242.29	62.85	0.21
ELDER	REACH1	6.978	weirs	916.02	40.90	47.84		47.94	0.001303	2.54	361.10	73.32	0.20
ELDER	REACH1	6.960		Lat Struct									
ELDER	REACH1	6.95819*	Post 10yr	552.74	40.50	46.04		46.10	0.001023	1.95	283.35	71.83	0.17
ELDER	REACH1	6.95819*	weirs	915.06	40.50	47.80		47.87	0.000921	2.19	418.75	82.42	0.17
ELDER	REACH1	6.956	Post 10yr	567.10	40.10	46.02		46.06	0.000505	1.52	373.50	81.04	0.12
ELDER	REACH1	6.956	weirs	956.08	40.10	47.78		47.83	0.000547	1.82	524.00	91.68	0.13
ELDER	REACH1	6.946		Culvert									
ELDER	REACH1	6.927	Post 10yr	563.79	39.90	45.76		45.82	0.001049	1.94	291.09	75.85	0.17
ELDER	REACH1	6.927	weirs	940.05	39.90	47.39		47.47	0.000999	2.22	424.09	86.77	0.18
ELDER	REACH1	6.926		Lat Struct									
ELDER	REACH1	6.903	Post 10yr	573.34	39.70	45.64		45.69	0.000893	1.78	321.31	84.26	0.16
ELDER	REACH1	6.903	weirs	949.31	39.70	47.29		47.35	0.000830	2.02	470.61	97.01	0.16
ELDER	REACH1	6.884	Post 10yr	573.27	39.60	45.59		45.62	0.000557	1.44	399.11	102.00	0.13
ELDER	REACH1	6.884	weirs	948.55	39.60	47.24		47.28	0.000521	1.64	579.21	115.48	0.13
ELDER	REACH1	6.872	Post 10yr	573.34	39.50	45.56		45.59	0.000469	1.32	433.63	110.48	0.12
ELDER	REACH1	6.872	weirs	947.73	39.50	47.22		47.25	0.000438	1.51	629.23	125.19	0.12
ELDER	REACH1	6.858	Post 10yr	573.42	39.40	45.52		45.55	0.000530	1.41	406.17	102.74	0.13

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	6.858	weirs	946.94	39.40	47.18		47.22	0.000499	1.61	588.47	116.74	0.13
ELDER	REACH1	6.847	Post 10yr	573.32	39.30	45.47		45.51	0.000703	1.59	359.97	93.82	0.14
ELDER	REACH1	6.847	weirs	945.21	39.30	47.13		47.18	0.000651	1.79	528.81	109.28	0.14
ELDER	REACH1	6.824	Post 10yr	573.45	39.10	45.43		45.45	0.000321	1.09	527.68	135.81	0.10
ELDER	REACH1	6.824	weirs	944.53	39.10	47.10		47.13	0.000286	1.23	766.62	149.85	0.10
ELDER	REACH1	6.807	Post 10yr	573.54	39.00	45.40		45.42	0.000412	1.00	526.46	162.22	0.11
ELDER	REACH1	6.807	weirs	943.83	39.00	47.08		47.10	0.000294	1.17	809.99	174.65	0.10
ELDER	REACH1	6.795	Post 10yr	573.60	39.00	45.38		45.39	0.000278	1.02	561.11	142.05	0.09
ELDER	REACH1	6.795	weirs	943.11	39.00	47.06		47.08	0.000247	1.16	811.44	155.08	0.09
ELDER	REACH1	6.782	Post 10yr	573.55	38.90	45.32		45.36	0.000642	1.59	360.08	87.26	0.14
ELDER	REACH1	6.782	weirs	941.60	38.90	47.00		47.05	0.000622	1.82	517.40	100.06	0.14
ELDER	REACH1	6.774	Post 10yr	573.48	38.80	45.28	41.53	45.33	0.000849	1.88	304.79	70.11	0.16
ELDER	REACH1	6.774	weirs	940.81	38.80	46.95	42.17	47.02	0.000859	2.19	429.47	78.98	0.17
ELDER	REACH1	6.764		Bridge									
ELDER	REACH1	6.752	Post 10yr	573.37	38.60	44.66		44.71	0.000856	1.81	316.86	78.39	0.16
ELDER	REACH1	6.752	weirs	936.64	38.60	46.22		46.29	0.000851	2.10	446.88	88.01	0.16
ELDER	REACH1	6.745	Post 10yr	573.37	38.60	44.65		44.68	0.000707	1.52	377.62	106.63	0.14
ELDER	REACH1	6.745	weirs	936.63	38.60	46.22		46.27	0.000634	1.67	561.16	126.60	0.14
ELDER	REACH1	6.734	Post 10yr	573.37	38.50	44.61		44.65	0.000646	1.52	377.12	98.65	0.14
ELDER	REACH1	6.734	weirs	936.62	38.50	46.18		46.23	0.000561	1.74	538.87	105.60	0.14
ELDER	REACH1	6.697	Post 10yr	573.36	38.40	44.62		44.62	0.000119	0.71	805.57	186.04	0.06
ELDER	REACH1	6.697	weirs	936.60	38.40	46.20		46.21	0.000118	0.84	1108.82	197.04	0.06
ELDER	REACH1	6.684	Post 10yr	573.36	38.30	44.59		44.61	0.000327	1.16	496.01	117.09	0.10
ELDER	REACH1	6.684	weirs	936.57	38.30	46.17		46.19	0.000371	1.35	693.94	143.87	0.11
ELDER	REACH1	6.665	Post 10yr	573.25	38.30	44.52		44.56	0.000711	1.62	352.93	89.63	0.14
ELDER	REACH1	6.665	weirs	935.63	38.30	46.09		46.14	0.000691	1.86	504.36	102.67	0.15
ELDER	REACH1	6.635	Post 10yr	573.15	38.20	44.40		44.44	0.000728	1.70	336.94	80.91	0.15
ELDER	REACH1	6.635	weirs	926.37	38.20	45.97		46.03	0.000721	1.97	471.24	90.18	0.15
ELDER	REACH1	6.581	Post 10yr	573.05	38.00	44.18		44.23	0.000786	1.73	330.38	81.65	0.15
ELDER	REACH1	6.581	weirs	923.78	38.00	45.76		45.82	0.000754	1.98	466.94	91.57	0.15
ELDER	REACH1	6.558	Post 10yr	573.05	37.90	44.11		44.14	0.000591	1.51	378.55	92.93	0.13
ELDER	REACH1	6.558	weirs	921.90	37.90	45.69		45.74	0.000569	1.72	535.31	105.07	0.13
ELDER	REACH1	6.539		Lat Struct									
ELDER	REACH1	6.536	Post 10yr	573.04	37.80	44.02		44.06	0.000786	1.74	329.74	165.50	0.15
ELDER	REACH1	6.536	weirs	907.61	37.80	45.60		45.66	0.000729	1.94	467.91	187.33	0.15
ELDER	REACH1	6.522	Post 10yr	573.03	37.60	43.96		44.01	0.000777	1.69	338.30	86.34	0.15
ELDER	REACH1	6.522	weirs	921.85	37.60	45.55		45.61	0.000724	1.90	485.70	98.94	0.15
ELDER	REACH1	6.504	Post 10yr	573.02	37.70	43.90		43.94	0.000637	1.46	391.52	107.90	0.14
ELDER	REACH1	6.504	weirs	921.83	37.70	45.51		45.55	0.000557	1.59	580.59	127.97	0.13
ELDER	REACH1	6.470	Post 10yr	572.99	37.60	43.76		43.81	0.000804	1.76	324.87	79.59	0.15
ELDER	REACH1	6.470	weirs	920.94	37.60	45.37		45.43	0.000763	2.00	460.93	89.82	0.16
ELDER	REACH1	6.416	Post 10yr	572.87	37.40	43.53		43.58	0.000816	1.78	322.34	78.69	0.15
ELDER	REACH1	6.416	weirs	918.12	37.40	45.15		45.21	0.000764	2.00	458.23	88.89	0.16
ELDER	REACH1	6.375	Post 10yr	572.84	37.20	43.37		43.41	0.000762	1.65	346.38	90.32	0.15
ELDER	REACH1	6.375	weirs	917.13	37.20	45.01		45.06	0.000674	1.81	506.55	105.03	0.15
ELDER	REACH1	6.344	Post 10yr	572.74	37.10	43.23		43.28	0.000817	1.75	327.14	82.02	0.15
ELDER	REACH1	6.344	weirs	916.13	37.10	44.88		44.94	0.000737	1.94	472.18	93.68	0.15
ELDER	REACH1	6.309	Post 10yr	572.72	37.00	43.09		43.13	0.000785	1.70	336.11	85.65	0.15
ELDER	REACH1	6.309	weirs	915.12	37.00	44.75		44.81	0.000689	1.87	489.70	96.38	0.15
ELDER	REACH1	6.287	Post 10yr	572.71	37.00	42.99		43.04	0.000848	1.77	324.16	82.83	0.16
ELDER	REACH1	6.287	weirs	914.15	37.00	44.67		44.73	0.000734	1.93	473.41	94.75	0.15
ELDER	REACH1	6.267	Post 10yr	572.70	36.90	42.90		42.95	0.000860	1.80	318.93	80.22	0.16
ELDER	REACH1	6.267	weirs	913.23	36.90	44.59		44.65	0.000747	1.97	463.92	91.14	0.15
ELDER	REACH1	6.244	Post 10yr	573.79	36.80	42.78		42.84	0.000936	1.92	299.63	72.27	0.17
ELDER	REACH1	6.244	weirs	913.45	36.80	44.48		44.55	0.000820	2.13	429.28	79.18	0.16

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	6.216	Post 10yr	575.24	36.80	42.64		42.69	0.000961	1.86	309.08	80.10	0.17
ELDER	REACH1	6.216	weirs	789.77	36.80	44.39		44.44	0.000581	1.72	459.87	91.95	0.14
ELDER	REACH1	6.166	Post 10yr	576.66	36.70	42.48		42.54	0.001072	1.97	292.59	75.03	0.18
ELDER	REACH1	6.166	weirs	786.77	36.70	44.30		44.35	0.000618	1.80	438.19	84.83	0.14
ELDER	REACH1	6.166	Post 10yr	577.74	36.60	42.38		42.43	0.000937	1.73	333.33	95.10	0.16
ELDER	REACH1	6.166	weirs	784.65	36.60	44.25		44.29	0.000456	1.49	527.52	109.43	0.12
ELDER	REACH1	6.147	Post 10yr	578.71	36.50	42.28		42.33	0.000998	1.84	314.69	85.67	0.17
ELDER	REACH1	6.147	weirs	781.94	36.50	44.20		44.24	0.000493	1.60	488.05	94.30	0.12
ELDER	REACH1	6.124	Post 10yr	579.86	36.40	42.17		42.22	0.000866	1.70	340.21	93.71	0.16
ELDER	REACH1	6.124	weirs	780.62	36.40	44.15		44.19	0.000404	1.44	542.25	107.57	0.11
ELDER	REACH1	6.106	Post 10yr	580.77	36.30	42.14		42.16	0.000326	1.11	521.92	131.53	0.10
ELDER	REACH1	6.106	weirs	781.11	36.30	44.14		44.16	0.000161	0.98	793.12	139.35	0.07
ELDER	REACH1	6.087	Post 10yr	581.70	36.20	42.10		42.13	0.000383	1.23	474.31	115.73	0.11
ELDER	REACH1	6.087	weirs	781.21	36.20	44.12		44.14	0.000195	1.09	715.98	123.52	0.08
ELDER	REACH1	6.070	Post 10yr	582.58	36.20	42.04		42.08	0.000592	1.52	383.39	93.65	0.13
ELDER	REACH1	6.070	weirs	780.02	36.20	44.09		44.12	0.000296	1.34	581.11	99.40	0.10
ELDER	REACH1	6.039	Post 10yr	582.50	36.00	41.89		41.95	0.001023	1.90	306.58	80.79	0.17
ELDER	REACH1	6.039	weirs	775.80	36.00	44.02		44.06	0.000450	1.60	485.92	87.60	0.12
ELDER	REACH1	6.013	Post 10yr	457.27	35.90	41.72		41.77	0.000905	1.77	257.65	68.23	0.16
ELDER	REACH1	6.013	weirs	770.18	35.90	43.93		43.98	0.000617	1.84	418.04	78.47	0.14
ELDER	REACH1	6.001		Culvert									
ELDER	REACH1	5.993	Post 10yr	454.92	35.70	41.56		41.61	0.001054	1.72	264.37	83.11	0.17
ELDER	REACH1	5.993	weirs	738.41	35.70	43.58		43.63	0.000602	1.62	455.64	102.10	0.14
ELDER	REACH1	5.978	Post 10yr	453.57	35.60	41.50		41.54	0.000793	1.54	295.01	88.89	0.15
ELDER	REACH1	5.978	weirs	734.84	35.60	43.55		43.58	0.000479	1.46	501.73	111.04	0.12
ELDER	REACH1	5.927	Post 10yr	450.22	35.30	41.34		41.37	0.000456	1.27	355.14	94.38	0.12
ELDER	REACH1	5.927	weirs	725.02	35.30	43.45		43.48	0.000308	1.26	575.62	114.79	0.10
ELDER	REACH1	5.884	Post 10yr	447.72	34.80	41.26		41.28	0.000359	1.15	388.38	99.45	0.10
ELDER	REACH1	5.884	weirs	719.37	34.80	43.39		43.41	0.000242	1.15	623.27	117.64	0.09
ELDER	REACH1	5.845	Post 10yr	446.02	34.40	41.19		41.21	0.000294	1.08	411.68	99.38	0.09
ELDER	REACH1	5.845	weirs	715.83	34.40	43.35		43.37	0.000206	1.11	645.73	114.24	0.08
ELDER	REACH2	5.779	Post 10yr	974.19	33.80	41.19		41.26	0.000918	2.05	474.34	103.01	0.17
ELDER	REACH2	5.779	weirs	1790.15	33.80	43.35		43.45	0.000917	2.52	709.49	110.30	0.18
ELDER	REACH2	5.665	Post 10yr	973.08	33.30	40.63		40.70	0.000942	2.06	472.59	104.26	0.17
ELDER	REACH2	5.665	weirs	1790.13	33.30	42.80		42.89	0.000922	2.52	709.21	110.40	0.18
ELDER	REACH2	5.591	Post 10yr	972.44	33.00	40.26		40.33	0.000958	2.07	469.26	103.83	0.17
ELDER	REACH2	5.591	weirs	1790.12	33.00	42.43		42.53	0.000931	2.53	707.48	110.70	0.18
ELDER	REACH2	5.510	Post 10yr	972.10	32.60	40.00		40.09	0.000130	2.50	388.42	73.09	0.19
ELDER	REACH2	5.510	weirs	1790.11	32.60	42.14		42.30	0.000156	3.26	549.48	77.10	0.22
ELDER	REACH2	5.450	Post 10yr	972.00	32.30	39.96		40.06	0.000114	2.42	402.47	70.73	0.18
ELDER	REACH2	5.450	weirs	1790.10	32.30	42.09		42.25	0.000146	3.21	557.65	74.99	0.21
ELDER	REACH2	5.428	Post 10yr	971.99	32.20	39.95	35.48	40.04	0.000099	2.49	389.76	71.09	0.17
ELDER	REACH2	5.428	weirs	1790.06	32.20	42.05	36.53	42.24	0.000129	3.45	518.29	75.31	0.21
ELDER	REACH2	5.414		Bridge									
ELDER	REACH2	5.402	Post 10yr	971.92	32.00	39.69		39.78	0.000835	2.41	403.14	89.78	0.17
ELDER	REACH2	5.402	weirs	1790.10	32.00	41.78		41.95	0.001090	3.33	536.80	103.20	0.20
ELDER	REACH2	5.359	Post 10yr	971.83	31.70	39.53		39.60	0.000840	2.11	460.16	88.60	0.16
ELDER	REACH2	5.359	weirs	1790.06	31.70	41.60		41.72	0.001043	2.72	657.08	101.35	0.19
ELDER	REACH2	5.307	Post 10yr	998.38	31.60	39.30		39.36	0.000832	2.03	490.92	100.16	0.16
ELDER	REACH2	5.307	weirs	1798.06	31.60	41.35		41.45	0.000913	2.54	708.61	109.50	0.18
ELDER	REACH2	5.195	Post 10yr	1015.25	31.20	38.82		38.88	0.000798	1.97	515.13	106.49	0.16
ELDER	REACH2	5.195	weirs	1803.18	31.20	40.83		40.93	0.000839	2.45	736.58	111.30	0.17
ELDER	REACH2	5.113	Post 10yr	1014.80	30.90	38.44		38.51	0.000920	2.08	487.54	103.83	0.17
ELDER	REACH2	5.113	weirs	1803.08	30.90	40.44		40.54	0.000962	2.55	707.39	113.10	0.18
ELDER	REACH2	5.056	Post 10yr	1014.50	30.70	38.17		38.23	0.000904	2.02	501.66	110.35	0.17
ELDER	REACH2	5.056	weirs	1803.04	30.70	40.16		40.25	0.000920	2.45	734.75	120.80	0.18

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	5.009	Post 10yr	1014.37	30.60	37.91		37.99	0.001060	2.19	462.68	101.34	0.18
ELDER	REACH2	5.009	weirs	1803.03	30.60	39.89		40.00	0.001097	2.68	672.25	109.78	0.19
ELDER	REACH2	4.998	Post 10yr	1014.36	30.50	37.89		37.94	0.000658	1.76	576.20	123.10	0.14
ELDER	REACH2	4.998	weirs	1803.03	30.50	39.88		39.95	0.000687	2.17	830.01	131.71	0.15
ELDER	REACH2	4.945	Post 10yr	1014.24	30.30	37.63		37.70	0.001035	2.15	472.67	105.14	0.18
ELDER	REACH2	4.945	weirs	1803.02	30.30	39.60		39.71	0.001023	2.63	686.61	108.70	0.18
ELDER	REACH2	4.887	Post 10yr	1032.61	30.10	37.36		37.42	0.000781	1.95	529.71	107.46	0.15
ELDER	REACH2	4.887	weirs	1807.56	30.10	39.34		39.43	0.000819	2.42	746.89	110.40	0.16
ELDER	REACH2	4.810	Post 10yr	1032.51	30.50	36.88		36.98	0.001381	2.55	404.81	85.95	0.21
ELDER	REACH2	4.810	weirs	1807.48	30.50	38.80		38.95	0.001528	3.10	582.79	89.30	0.23
ELDER	REACH2	4.795	Post 10yr	1032.44	30.50	36.78		36.90	0.000805	2.79	369.74	84.13	0.23
ELDER	REACH2	4.795	weirs	1807.48	30.50	38.71		38.86	0.000782	3.16	645.42	237.67	0.24
ELDER	REACH2	4.713	Post 10yr	1032.41	29.84	36.49		36.62	0.000470	2.83	365.06	83.76	0.24
ELDER	REACH2	4.713	weirs	1807.45	29.84	38.42		38.59	0.000474	3.31	557.70	143.58	0.25
ELDER	REACH2	4.693	Post 10yr	1032.40	29.90	36.37	33.66	36.55	0.000753	3.45	296.93	72.26	0.30
ELDER	REACH2	4.693	weirs	1807.45	29.90	38.27	34.69	38.52	0.000732	4.05	446.38	82.70	0.31
ELDER	REACH2	4.684		Bridge									
ELDER	REACH2	4.671	Post 10yr	1032.38	29.90	36.13		36.34	0.000892	3.66	282.02	70.96	0.32
ELDER	REACH2	4.671	weirs	1807.45	29.90	38.04		38.32	0.000828	4.23	427.46	81.43	0.33
ELDER	REACH2	4.642	Post 10yr	1032.37	30.00	36.11		36.23	0.000497	2.80	368.49	89.74	0.24
ELDER	REACH2	4.642	weirs	1807.45	30.00	38.06		38.21	0.000507	3.16	574.76	170.23	0.25
ELDER	REACH2	4.564	Post 10yr	1045.37	28.70	35.64		35.91	0.001053	4.19	249.36	56.47	0.35
ELDER	REACH2	4.564	weirs	1810.93	28.70	37.48		37.84	0.001342	4.79	378.11	84.88	0.40
ELDER	REACH2	4.485	Post 10yr	1059.48	28.60	35.07		35.35	0.001619	4.26	248.96	77.76	0.42
ELDER	REACH2	4.485	weirs	1814.74	28.60	37.04		37.32	0.001140	4.24	428.01	103.63	0.37
ELDER	REACH2	4.437	Post 10yr	1059.46	28.40	34.95		35.08	0.000470	2.86	370.70	83.87	0.24
ELDER	REACH2	4.437	weirs	1814.74	28.40	36.95		37.11	0.000480	3.25	558.40	105.82	0.25
ELDER	REACH2	4.391	Post 10yr	1059.44	28.30	34.82		34.96	0.000511	2.99	353.78	79.03	0.25
ELDER	REACH2	4.391	weirs	1814.71	28.30	36.86		37.00	0.000471	3.08	854.57	494.16	0.24
ELDER	REACH2	4.343	Post 10yr	1068.21	28.20	34.67		34.82	0.000571	3.06	349.06	82.30	0.26
ELDER	REACH2	4.343	weirs	1817.04	28.20	36.67		36.85	0.000549	3.42	531.51	103.04	0.27
ELDER	REACH2	4.240	Post 10yr	1078.19	28.10	34.12	31.66	34.37	0.001068	4.06	265.71	65.04	0.35
ELDER	REACH2	4.240	weirs	1819.73	28.10	36.17	32.72	36.41	0.001110	3.95	528.98	553.50	0.36
ELDER	REACH2	4.239		Bridge									
ELDER	REACH2	4.229	Post 10yr	1078.14	28.10	33.91		34.20	0.001233	4.27	252.66	63.91	0.38
ELDER	REACH2	4.229	weirs	1819.71	28.10	35.37		35.75	0.001779	4.95	367.49	98.55	0.45
ELDER	REACH2	4.221	Post 10yr	1078.14	28.00	34.05		34.15	0.000408	2.60	414.01	97.43	0.22
ELDER	REACH2	4.221	weirs	1819.74	28.00	35.54		35.70	0.000541	3.16	574.98	124.90	0.26
ELDER	REACH2	4.156	Post 10yr	1078.12	28.00	33.93		34.02	0.000356	2.44	441.41	103.18	0.21
ELDER	REACH2	4.156	weirs	1819.72	28.00	35.39		35.53	0.000449	3.00	606.83	124.16	0.24
ELDER	REACH2	4.112	Post 10yr	1078.10	28.00	33.47	31.60	33.60	0.001735	4.60	234.34	69.15	0.44
ELDER	REACH2	4.112	weirs	1819.71	28.00	34.85	32.72	35.31	0.001647	5.42	335.59	671.03	0.45
ELDER	REACH2	4.105		Bridge									
ELDER	REACH2	4.097	Post 10yr	1078.08	28.00	30.01	31.60	36.36	0.053575	20.23	53.29	35.75	2.92
ELDER	REACH2	4.097	weirs	1819.69	28.00	30.63	32.72	39.17	0.053557	23.45	77.61	41.66	3.03
ELDER	REACH2	4.06	Post 10yr	1078.00	21.50	27.75		27.92	0.000300	3.32	324.37	64.79	0.26
ELDER	REACH2	4.06	weirs	1819.66	21.50	29.56		29.81	0.000339	4.06	447.74	72.06	0.29
ELDER	REACH2	4.009	Post 10yr	1085.81	21.30	27.67		27.84	0.000287	3.29	329.54	64.51	0.26
ELDER	REACH2	4.009	weirs	1821.51	21.30	29.47		29.72	0.000327	4.04	451.41	71.28	0.28
ELDER	REACH2	3.958	Post 10yr	1093.54	21.10	27.60		27.76	0.000276	3.27	334.07	63.85	0.25
ELDER	REACH2	3.958	weirs	1823.33	21.10	29.38		29.64	0.000317	4.02	453.79	70.22	0.28
ELDER	REACH2	3.855	Post 10yr	1108.97	20.70	27.45		27.61	0.000260	3.26	340.26	61.74	0.24
ELDER	REACH2	3.855	weirs	1826.86	20.70	29.21		29.46	0.000308	4.02	454.23	67.51	0.27
ELDER	REACH2	3.842	Post 10yr	1108.96	20.70	27.42		27.60	0.000288	3.33	332.79	65.30	0.26
ELDER	REACH2	3.842	weirs	1826.86	20.70	29.20		29.44	0.000351	3.97	460.26	78.69	0.29

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	3.832	Post 10yr	1108.96	20.60	27.38	23.71	27.58	0.000334	3.54	313.20	61.34	0.28
ELDER	REACH2	3.832	weirs	1826.86	20.60	29.14	24.87	29.42	0.000377	4.28	427.24	68.68	0.30
ELDER	REACH2	3.825		Bridge									
ELDER	REACH2	3.818	Post 10yr	1108.86	20.60	27.29		27.49	0.000351	3.60	307.62	60.96	0.28
ELDER	REACH2	3.818	weirs	1826.82	20.60	29.03		29.32	0.000396	4.35	419.68	68.22	0.31
ELDER	REACH2	3.808	Post 10yr	1108.73	20.50	27.23		27.48	0.000473	3.99	277.96	59.10	0.32
ELDER	REACH2	3.808	weirs	1826.81	20.50	28.96		29.30	0.000503	4.73	385.96	66.09	0.35
ELDER	REACH2	3.746	Post 10yr	1108.72	20.40	27.07		27.32	0.000480	4.01	276.26	58.84	0.33
ELDER	REACH2	3.746	weirs	1826.80	20.40	28.78		29.14	0.000513	4.77	382.87	65.70	0.35
ELDER	REACH2	3.698	Post 10yr	1108.61	20.30	26.95		27.20	0.000473	3.99	277.94	59.14	0.32
ELDER	REACH2	3.698	weirs	1826.77	20.30	28.66		29.01	0.000509	4.75	384.54	66.02	0.35
ELDER	REACH2	3.657	Post 10yr	1108.60	20.10	26.86		27.10	0.000465	3.96	279.73	59.29	0.32
ELDER	REACH2	3.657	weirs	1826.77	20.10	28.55		28.90	0.000503	4.73	386.08	66.19	0.35
ELDER	REACH2	3.59	Post 10yr	1108.58	20.00	26.69		26.94	0.000460	3.96	280.10	58.97	0.32
ELDER	REACH2	3.59	weirs	1826.76	20.00	28.37		28.72	0.000505	4.75	384.58	65.65	0.35
ELDER	REACH2	3.496	Post 10yr	1108.54	19.70	26.45	23.35	26.71	0.000461	4.05	273.41	55.08	0.32
ELDER	REACH2	3.496	weirs	1826.75	19.70	28.08	24.46	28.46	0.000537	4.97	367.39	60.58	0.36
ELDER	REACH2	3.490		Bridge									
ELDER	REACH2	3.483	Post 10yr	1108.53	19.60	26.30		26.55	0.000477	4.08	271.62	55.66	0.33
ELDER	REACH2	3.483	weirs	1826.77	19.60	27.89		28.28	0.000558	5.01	364.60	61.21	0.36
ELDER	REACH2	3.442	Post 10yr	1108.52	19.50	26.34	22.81	26.47	0.000249	2.90	382.25	83.22	0.24
ELDER	REACH2	3.442	weirs	1826.76	19.50	28.00	23.76	28.18	0.000271	3.46	528.25	93.74	0.26
ELDER	REACH2	3.431		Bridge									
ELDER	REACH2	3.420	Post 10yr	1108.52	19.50	26.23		26.37	0.000268	2.97	372.79	82.50	0.25
ELDER	REACH2	3.420	weirs	1826.76	19.50	27.87		28.06	0.000288	3.54	516.54	92.85	0.26
ELDER	REACH2	3.419	Post 10yr	1108.52	19.50	26.23		26.36	0.000268	2.94	377.64	85.55	0.25
ELDER	REACH2	3.419	weirs	1826.76	19.50	27.88		28.06	0.000286	3.45	529.44	98.55	0.26
ELDER	REACH2	3.286	Post 10yr	1108.33	18.90	25.59		25.98	0.000871	5.01	221.03	53.22	0.43
ELDER	REACH2	3.286	weirs	1826.50	18.90	27.11		27.65	0.000951	5.94	307.65	61.18	0.47
ELDER	REACH2	3.141	Post 10yr	1126.00	18.30	24.68		25.15	0.001257	5.54	203.20	55.97	0.51
ELDER	REACH2	3.141	weirs	1830.97	18.30	26.20		26.85	0.001146	6.05	302.55	68.03	0.51
ELDER	REACH2	3.092	Post 10yr	1125.99	18.30	24.71	21.51	24.93	0.000389	3.75	299.91	60.39	0.30
ELDER	REACH2	3.092	weirs	1830.97	18.30	26.31	22.53	26.64	0.000446	4.56	401.19	66.25	0.33
ELDER	REACH2	3.081		Bridge									
ELDER	REACH2	3.071	Post 10yr	1125.99	18.30	24.60		24.83	0.000416	3.84	293.23	60.00	0.31
ELDER	REACH2	3.071	weirs	1830.97	18.30	26.17		26.51	0.000476	4.67	391.92	65.65	0.34
ELDER	REACH2	3.07	Post 10yr	1125.99	18.20	24.19		24.85	0.001773	6.54	172.21	47.50	0.61
ELDER	REACH2	3.07	weirs	1830.95	18.20	25.71		26.53	0.001691	7.28	251.41	56.83	0.61
ELDER	REACH2	3.01	Post 10yr	1125.98	18.00	24.10		24.45	0.000741	4.74	237.65	55.08	0.40
ELDER	REACH2	3.01	weirs	1830.95	18.00	25.65		26.13	0.000789	5.57	328.45	62.13	0.43
ELDER	REACH2	2.944	Post 10yr	1130.00	17.20	23.46		24.06	0.001503	6.18	182.76	48.35	0.56
ELDER	REACH2	2.944	weirs	1831.80	17.20	24.99		25.74	0.001478	6.95	263.58	57.68	0.57
ELDER	REACH2	2.861	Post 10yr	1135.04	16.85	22.89		23.44	0.001290	5.93	191.31	47.80	0.52
ELDER	REACH2	2.861	weirs	1832.93	16.85	24.41		25.12	0.001323	6.80	269.73	55.85	0.54
ELDER	REACH2	2.794	Post 10yr	1139.07	16.50	23.00		23.10	0.000208	2.56	445.27	103.66	0.22
ELDER	REACH2	2.794	weirs	1833.81	16.50	24.63		24.76	0.000205	2.94	623.95	116.05	0.22
ELDER	REACH2	2.736	Post 10yr	1139.03	16.38	22.62		22.98	0.000744	4.80	237.10	53.88	0.40
ELDER	REACH2	2.736	weirs	1833.77	16.38	24.15		24.65	0.000789	5.67	323.34	59.29	0.43
ELDER	REACH2	2.673	Post 10yr	1144.49	16.00	22.35	19.90	22.73	0.000736	4.96	230.77	49.06	0.40
ELDER	REACH2	2.673	weirs	1835.28	16.00	23.82	21.01	24.38	0.000839	6.00	305.66	53.12	0.44
ELDER	REACH2	2.665		Bridge									
ELDER	REACH2	2.656	Post 10yr	1144.49	16.00	22.18		22.57	0.000831	5.17	221.37	48.52	0.43
ELDER	REACH2	2.656	weirs	1835.21	16.00	23.56		24.17	0.000956	6.28	292.07	52.42	0.47
ELDER	REACH2	2.603	Post 10yr	1149.43	15.90	21.94		22.34	0.000803	5.09	226.04	48.76	0.42

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	2.603	weirs	1836.60	15.90	23.30		23.90	0.000950	6.21	295.57	53.13	0.46
ELDER	REACH2	2.546	Post 10yr	1154.43	15.68	21.54		22.04	0.001146	5.68	203.27	49.78	0.50
ELDER	REACH2	2.546	weirs	1837.97	15.68	22.86		23.57	0.001255	6.74	272.58	54.80	0.53
ELDER	REACH2	2.487	Post 10yr	1159.59	16.00	21.27		21.70	0.001043	5.27	219.85	56.74	0.47
ELDER	REACH2	2.487	weirs	1839.40	16.00	22.63		23.21	0.001057	6.11	301.08	62.55	0.49
ELDER	REACH2	2.354	Post 10yr	1171.08	14.88	20.76		21.07	0.000720	4.51	259.74	64.60	0.40
ELDER	REACH2	2.354	weirs	1842.48	14.88	22.16		22.57	0.000750	5.16	356.93	74.59	0.42
ELDER	REACH2	2.269	Post 10yr	1171.05	14.80	20.47	17.67	20.78	0.000596	4.43	264.21	53.00	0.35
ELDER	REACH2	2.269	weirs	1842.47	14.80	21.76	18.64	22.24	0.000724	5.54	332.72	53.00	0.39
ELDER	REACH2	2.258		Bridge									
ELDER	REACH2	2.250	Post 10yr	1170.93	14.90	19.47		19.96	0.001182	5.62	208.53	50.48	0.49
ELDER	REACH2	2.250	weirs	1842.02	14.90	20.82		21.50	0.001231	6.57	280.22	53.00	0.50
ELDER	REACH2	2.219	Post 10yr	1170.92	13.60	19.44		19.79	0.000869	4.75	246.36	65.18	0.43
ELDER	REACH2	2.219	weirs	1842.02	13.60	20.89		21.33	0.000804	5.32	345.95	72.39	0.43
ELDER	REACH2	2.149	Post 10yr	1173.46	13.26	19.16		19.48	0.000778	4.57	256.76	66.41	0.41
ELDER	REACH2	2.149	weirs	1842.43	13.26	20.64		21.05	0.000712	5.12	359.70	72.67	0.41
ELDER	REACH2	2.098	Post 10yr	1175.20	12.91	18.93		19.27	0.000822	4.68	251.26	65.38	0.42
ELDER	REACH2	2.098	weirs	1842.61	12.91	20.43		20.85	0.000736	5.19	354.94	72.27	0.41
ELDER	REACH2	2.036	Post 10yr	1177.29	12.57	18.60		18.97	0.000957	4.92	239.20	64.67	0.45
ELDER	REACH2	2.036	weirs	1842.94	12.57	20.16		20.60	0.000798	5.33	345.77	71.88	0.43
ELDER	REACH2	1.978	Post 10yr	1179.17	12.13	18.43		18.73	0.000635	4.38	269.18	63.40	0.37
ELDER	REACH2	1.978	weirs	1843.24	12.13	20.01		20.39	0.000598	4.92	374.91	70.46	0.38
ELDER	REACH2	1.921	Post 10yr	1179.15	12.00	18.37		18.60	0.000205	3.83	307.82	67.24	0.32
ELDER	REACH2	1.921	weirs	1843.23	12.00	19.97		20.27	0.000206	4.37	421.47	75.31	0.33
ELDER	REACH2	1.908	Post 10yr	1179.15	10.80	18.43	14.37	18.59	0.000110	3.25	362.84	60.44	0.23
ELDER	REACH2	1.908	weirs	1843.23	10.80	20.00	15.25	20.25	0.000132	4.00	460.32	62.92	0.26
ELDER	REACH2	1.893		Bridge									
ELDER	REACH2	1.865	Post 10yr	1177.85	10.70	17.85		18.05	0.000140	3.52	334.46	59.61	0.26
ELDER	REACH2	1.865	weirs	1842.89	10.70	19.46		19.74	0.000159	4.26	432.11	62.41	0.29
ELDER	REACH2	1.864	Post 10yr	1177.62	10.50	17.75		18.05	0.000228	4.39	268.52	49.58	0.33
ELDER	REACH2	1.864	weirs	1842.79	10.50	19.31		19.74	0.000266	5.27	349.65	54.57	0.37
ELDER	REACH2	1.663	Post 10yr	1176.20	8.80	17.24		17.59	0.000626	4.77	246.50	48.41	0.37
ELDER	REACH2	1.663	weirs	1842.48	8.80	18.69		19.20	0.000756	5.74	321.16	54.98	0.42
ELDER	REACH2	1.495	Post 10yr	1174.37	8.50	16.69		17.04	0.000624	4.77	246.21	48.15	0.37
ELDER	REACH2	1.495	weirs	1769.83	8.50	18.00		18.50	0.000741	5.65	313.32	53.06	0.41
ELDER	REACH2	1.336	Post 10yr	1172.63	7.50	16.37		16.61	0.000388	3.99	294.16	52.15	0.30
ELDER	REACH2	1.336	weirs	1769.58	7.50	17.60		17.98	0.000496	4.90	361.13	56.20	0.34
ELDER	REACH2	1.305	Post 10yr	1173.18	6.50	16.42	10.94	16.57	0.000100	3.01	389.71	61.64	0.21
ELDER	REACH2	1.305	weirs	1769.64	6.50	17.69	11.96	17.91	0.000262	3.75	472.27	68.45	0.25
ELDER	REACH2	1.292		Bridge									
ELDER	REACH2	1.261	Post 10yr	1172.64	6.50	16.35		16.50	0.000196	3.04	385.42	61.26	0.21
ELDER	REACH2	1.261	weirs	1769.57	6.50	17.58		17.81	0.000273	3.81	464.83	67.87	0.26
ELDER	REACH2	1.260	Post 10yr	1172.35	7.10	16.30		16.50	0.000290	3.59	326.76	54.64	0.26
ELDER	REACH2	1.260	weirs	1769.53	7.10	17.50		17.81	0.000388	4.49	394.42	58.28	0.30
ELDER	REACH2	1.263	Post 10yr	1342.83	7.10	16.20		16.41	0.000315	3.72	361.00	62.33	0.27
ELDER	REACH2	1.263	weirs	1943.11	7.10	17.41		17.72	0.000384	4.41	440.14	67.97	0.31
ELDER	REACH2	1.148	Post 10yr	1341.61	6.90	15.90		16.10	0.000438	4.29	313.05	54.62	0.32
ELDER	REACH2	1.148	weirs	1942.93	6.90	17.02		17.43	0.000550	5.16	376.87	59.07	0.36
ELDER	REACH2	0.949	Post 10yr	1339.72	6.50	15.48		15.75	0.000397	4.17	321.20	54.45	0.30
ELDER	REACH2	0.949	weirs	1942.75	6.50	16.45		16.86	0.000540	5.17	375.62	57.60	0.36
ELDER	REACH2	0.835	Post 10yr	1338.75	6.00	15.24		15.51	0.000398	4.14	322.99	55.36	0.30
ELDER	REACH2	0.835	weirs	1942.65	6.00	16.11		16.53	0.000565	5.22	372.30	58.53	0.36
ELDER	REACH2	0.804	Post 10yr	1338.75	6.00	15.27	10.61	15.45	0.000248	3.44	388.63	62.72	0.24
ELDER	REACH2	0.804	weirs	1942.66	6.00	16.16	11.51	16.45	0.000355	4.36	445.81	66.00	0.30
ELDER	REACH2	0.797		Bridge									

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	0.789	Post 10yr	1338.44	6.00	15.22		15.41	0.000253	3.47	385.44	62.53	0.25
ELDER	REACH2	0.789	weirs	1942.62	6.00	16.08		16.38	0.000366	4.41	440.80	65.72	0.30
ELDER	REACH2	0.788	Post 10yr	1337.79	5.90	15.10		15.41	0.000456	4.41	303.44	52.23	0.32
ELDER	REACH2	0.788	weirs	1942.58	5.90	15.89		16.38	0.000673	5.62	345.93	55.31	0.40
ELDER	REACH2	0.76	Post 10yr	1337.78	5.90	15.06		15.34	0.000419	4.24	315.34	54.18	0.31
ELDER	REACH2	0.76	weirs	1942.56	5.90	15.83		16.29	0.000625	5.42	358.30	57.43	0.38
ELDER	REACH2	0.671	Post 10yr	1337.10	5.60	14.93		15.17	0.000327	3.89	343.91	58.00	0.28
ELDER	REACH2	0.671	weirs	1942.51	5.60	15.62		16.02	0.000509	5.07	383.46	58.34	0.35
ELDER	REACH2	0.587	Post 10yr	1334.99	5.40	14.62		14.97	0.000574	4.74	281.89	51.95	0.36
ELDER	REACH2	0.587	weirs	1942.36	5.40	15.07		15.70	0.000976	6.35	305.69	53.96	0.47
ELDER	REACH2	0.574	Post 10yr	1336.03	5.30	14.77		14.93	0.000209	3.20	417.77	66.49	0.22
ELDER	REACH2	0.574	weirs	1942.42	5.30	15.36		15.64	0.000344	4.25	457.06	68.76	0.29
ELDER	REACH2	0.569	Post 10yr	1336.02	5.50	14.76	10.19	14.93	0.000234	3.32	402.27	64.06	0.24
ELDER	REACH2	0.569	weirs	1942.42	5.50	15.32	11.02	15.63	0.000409	4.41	440.32	70.17	0.31
ELDER	REACH2	0.556		Bridge									
ELDER	REACH2	0.543	Post 10yr	1335.00	5.50	14.67		14.85	0.000238	3.38	396.84	63.62	0.24
ELDER	REACH2	0.543	weirs	1942.38	5.50	15.16		15.48	0.000423	4.53	429.03	67.54	0.32
ELDER	REACH2	0.394	Post 10yr	1334.62	4.80	14.57		14.69	0.000154	2.87	465.81	68.11	0.19
ELDER	REACH2	0.394	weirs	1942.32	4.80	14.96		15.20	0.000277	3.94	493.05	69.37	0.26
ELDER	REACH2	0.388	Post 10yr	2014.23	4.80	14.19		14.51	0.000413	4.58	440.25	66.91	0.31
ELDER	REACH2	0.388	weirs	2667.49	4.80	14.43		14.96	0.000652	5.84	456.46	67.67	0.40
ELDER	REACH2	0.216	Post 10yr	2014.12	4.30	13.80		14.13	0.000423	4.64	434.17	65.65	0.32
ELDER	REACH2	0.216	weirs	2667.44	4.30	13.71		14.31	0.000770	6.23	428.37	65.36	0.43
ELDER	REACH2	0.2	Post 10yr	2014.12	4.30	13.76		14.10	0.000430	4.67	431.56	65.52	0.32
ELDER	REACH2	0.2	weirs	2667.44	4.30	13.63		14.25	0.000798	6.30	423.09	65.10	0.44
ELDER	REACH2	0.019	Post 10yr	2014.10	5.50	13.29	9.63	13.65	0.000500	4.87	413.88	67.40	0.35
ELDER	REACH2	0.019	weirs	2667.43	5.50	12.22	10.40	13.15	0.001500	7.76	343.84	63.76	0.59

RAS Model Data

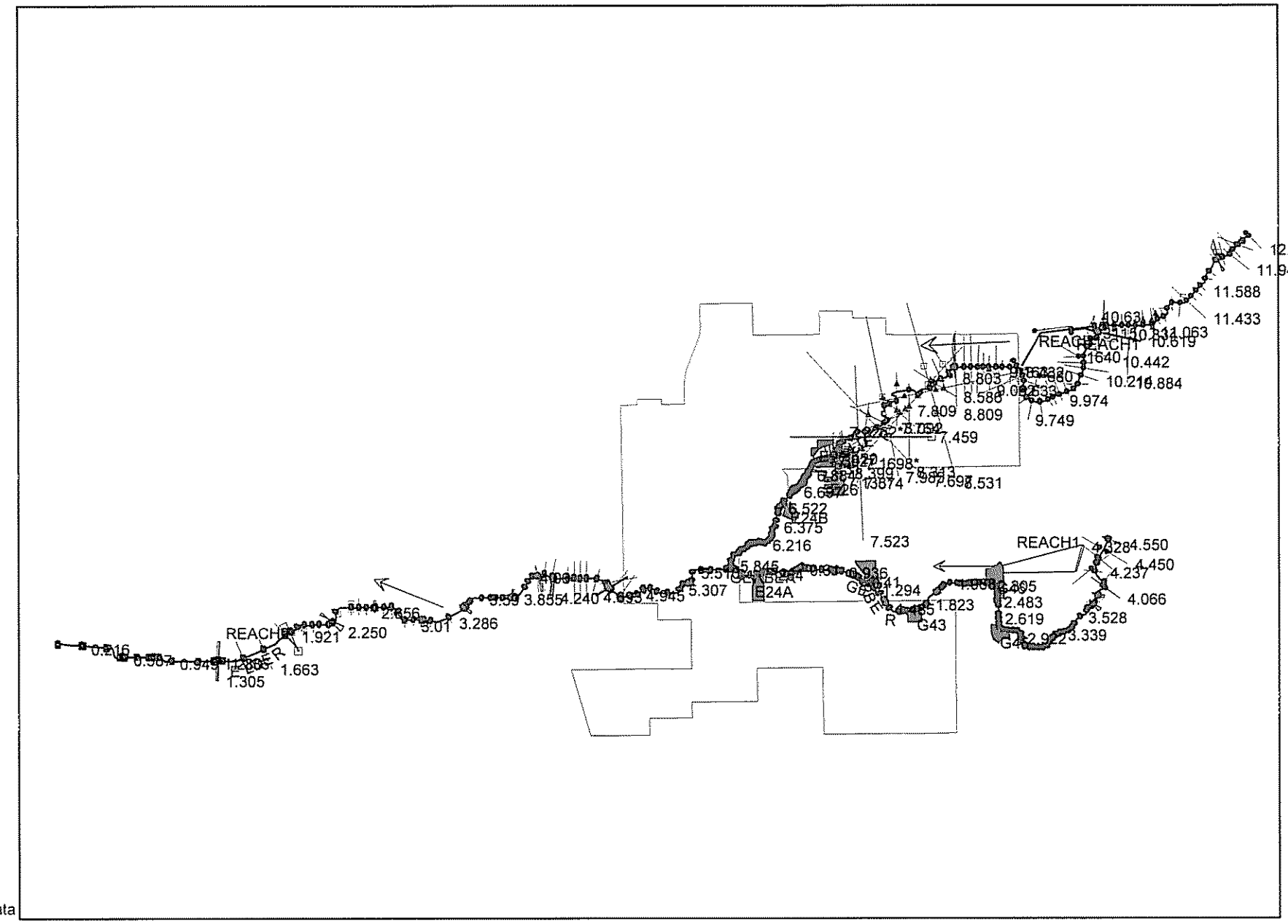
For

Elder and Gerber Creeks – Post without Laguna Spill

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table



Partial GIS data

RAS Input Hydrograph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
ELDER	REACH1	12.205		Flow Hydrograph	hcalc.dss	/ELDER GE/E1A/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	12.02	11.944	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E1C/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	10.507	7.809	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E2/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	10.272		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RETE1B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	9.438		Lateral Inflow Hydrograph	EFG-24HR.dss	/ELDER CRK RD REACH1/680/FLOW/01JAN2000/10MIN/EGLOMR100R/
ELDER	REACH1	7.809		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/CE3E/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	7.764	7.120	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RE4B2H/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	7.697	6.978	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RE4B3/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	7.057	6.978	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RE4B1H/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	6.903	6.774	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/NV3/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	6.267	6.070	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E5/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH1	11.063		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/R-RE1B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	5.359		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E6/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	5.307		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E7A/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.945		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E7B/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.642	4.485	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E7C/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.391	4.240	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E8/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	4.06	3.855	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E9/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	3.286	3.141	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E10/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	3.01	2.794	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E11/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	2.736	2.354	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E12/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	2.219	1.978	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E13/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	1.280		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/R-E14/FLOW/01JAN2000/1MIN/100YR-24HR/
ELDER	REACH2	0.394		Lateral Inflow Hydrograph	hcalcflorinpre.dss	/FLORIN C/R-CF15/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	0.019		Friction Slope=0.0005		
ELDER CRK RI	REACH1	3115		Flow Hydrograph	hcalc.dss	
ELDER CRK RI	REACH1	680		Friction Slope=0.0015		
GERBER	REACH1	4.550		Flow Hydrograph	hcalc.dss	/ELDER GE/G2A/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	3.883	2.581	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/G2B/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	2.360		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RG3A/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	2.052		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/G3B/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.823	1.434	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/G3A2/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.800		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RG3DB/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.485		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RG3DC/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.343	1.294	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/RNOLTE/FLOW/01JAN2000/1MIN/100YR-24HR/
GERBER	REACH1	1.068	0.051	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/G5/FLOW/01JAN2000/1MIN/100YR-24HR/
		G41		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/NOLTE/FLOW/01JAN2000/1MIN/100YR-24HR/
		E26		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E4A/FLOW/31DEC1999/1MIN/100YR-24HR/
		E24B		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/NV1/FLOW/31DEC1999/1MIN/100YR-24HR/
		E31		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E4B3LO/FLOW/10JAN2000/1MIN/100YR-24HR/
		G46		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/CG46/FLOW/01JAN2000/1MIN/100YR-24HR/
		E28		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/CE4BLO/FLOW/01JAN2000/1MIN/100YR-24HR/
		G43		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/CG3A1/FLOW/01JAN2000/1MIN/100YR-24HR/

HEC-RAS Profile: Max WS

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	4.550	NoSpill 10yr	216.66	68.30	70.49		70.52	0.000854	1.46	212.25	274.18	0.21
GERBER	REACH1	4.550	fvcp nospill	372.27	68.30	70.80		70.84	0.001098	1.87	298.44	289.42	0.24
GERBER	REACH1	4.540	NoSpill 10yr	215.82	68.30	70.44		70.47	0.000991	1.54	198.16	271.60	0.22
GERBER	REACH1	4.540	fvcp nospill	370.96	68.30	70.73		70.78	0.001293	1.98	278.96	286.05	0.26
GERBER	REACH1	4.450	NoSpill 10yr	199.12	67.20	70.23		70.23	0.000036	0.36	550.73	265.78	0.04
GERBER	REACH1	4.450	fvcp nospill	350.64	67.20	70.44		70.44	0.000084	0.58	608.64	277.58	0.07
GERBER	REACH1	4.370	NoSpill 10yr	196.14	66.20	70.21		70.21	0.000037	0.47	600.80	1108.10	0.05
GERBER	REACH1	4.370	fvcp nospill	344.41	66.20	70.41		70.41	0.000077	0.70	819.24	1137.80	0.07
GERBER	REACH1	4.328		Lat Struct									
GERBER	REACH1	4.285	NoSpill 10yr	59.54	65.70	70.21		70.21	0.000001	0.06	1154.12	1177.42	0.01
GERBER	REACH1	4.285	fvcp nospill	64.16	65.70	70.39		70.39	0.000001	0.06	1377.58	1188.85	0.01
GERBER	REACH1	4.237	NoSpill 10yr	59.41	65.50	70.20		70.20	0.000013	0.26	299.90	459.61	0.03
GERBER	REACH1	4.237	fvcp nospill	63.84	65.50	70.39		70.39	0.000011	0.24	389.30	474.74	0.03
GERBER	REACH1	4.120	NoSpill 10yr	59.23	65.40	70.20		70.20	0.000011	0.25	271.68	262.39	0.03
GERBER	REACH1	4.120	fvcp nospill	63.45	65.40	70.39		70.39	0.000009	0.24	322.64	272.49	0.02
GERBER	REACH1	4.066	NoSpill 10yr	59.18	65.50	70.20	65.70	70.20	0.000001	0.07	1036.51	333.95	0.01
GERBER	REACH1	4.066	fvcp nospill	63.46	65.50	70.39	65.71	70.39	0.000001	0.07	1100.47	336.97	0.01
GERBER	REACH1	4.064		Inl Struct									
GERBER	REACH1	3.985	NoSpill 10yr	59.16	66.00	70.19		70.19	0.000002	0.13	707.94	249.78	0.01
GERBER	REACH1	3.985	fvcp nospill	63.46	66.00	70.38		70.38	0.000002	0.13	755.93	252.42	0.01
GERBER	REACH1	3.982	NoSpill 10yr	59.17	66.00	70.19		70.19	0.000002	0.13	707.93	249.78	0.01
GERBER	REACH1	3.982	fvcp nospill	63.46	66.00	70.38		70.38	0.000002	0.13	755.93	252.42	0.01
GERBER	REACH1	3.974		Culvert									
GERBER	REACH1	3.967	NoSpill 10yr	59.17	66.00	66.62		66.67	0.004657	1.69	39.60	93.23	0.40
GERBER	REACH1	3.967	fvcp nospill	63.46	66.00	66.66		66.70	0.004258	1.68	43.02	96.46	0.39
GERBER	REACH1	3.912	NoSpill 10yr	59.17	62.80	65.23		65.38	0.004337	3.16	18.71	11.22	0.43
GERBER	REACH1	3.912	fvcp nospill	63.53	62.80	65.30		65.46	0.004466	3.26	19.51	11.42	0.44
GERBER	REACH1	3.893	NoSpill 10yr	59.17	63.30	64.98		65.06	0.002198	2.17	27.25	16.20	0.30
GERBER	REACH1	3.893	fvcp nospill	63.45	63.30	65.05		65.13	0.002246	2.24	28.30	16.20	0.30
GERBER	REACH1	3.888		Culvert									
GERBER	REACH1	3.883	NoSpill 10yr	59.07	63.10	64.18	64.49	65.21	0.133880	8.15	7.25	10.47	1.73
GERBER	REACH1	3.883	fvcp nospill	63.27	63.10	64.23	64.55	65.26	0.126751	8.16	7.75	10.69	1.69
GERBER	REACH1	3.642	NoSpill 10yr	57.40	56.30	58.83		58.84	0.000311	0.70	82.51	40.19	0.09
GERBER	REACH1	3.642	fvcp nospill	61.88	56.30	59.33		59.33	0.000189	0.60	103.21	43.17	0.07
GERBER	REACH1	3.604	NoSpill 10yr	63.19	56.20	58.76		58.77	0.000356	0.75	84.63	41.06	0.09
GERBER	REACH1	3.604	fvcp nospill	71.49	56.20	59.28		59.29	0.000232	0.67	106.87	44.33	0.08
GERBER	REACH1	3.566	NoSpill 10yr	67.53	56.00	58.71		58.72	0.000336	0.75	89.82	41.31	0.09
GERBER	REACH1	3.566	fvcp nospill	78.68	56.00	59.25		59.25	0.000237	0.70	112.85	44.54	0.08
GERBER	REACH1	3.528	NoSpill 10yr	77.71	55.80	58.55		58.56	0.000421	0.85	91.58	41.52	0.10
GERBER	REACH1	3.528	fvcp nospill	95.65	55.80	59.13		59.14	0.000319	0.82	116.45	44.97	0.09
GERBER	REACH1	3.490	NoSpill 10yr	87.74	55.60	58.36		58.37	0.000534	0.96	91.70	41.54	0.11
GERBER	REACH1	3.490	fvcp nospill	112.49	55.60	58.97		58.99	0.000421	0.95	118.47	45.24	0.10
GERBER	REACH1	3.452	NoSpill 10yr	93.29	55.50	58.24		58.25	0.000619	1.03	90.90	41.42	0.12
GERBER	REACH1	3.452	fvcp nospill	121.87	55.50	58.88		58.89	0.000491	1.03	118.65	45.26	0.11
GERBER	REACH1	3.415	NoSpill 10yr	98.72	55.30	58.11		58.13	0.000631	1.05	93.91	41.86	0.12
GERBER	REACH1	3.415	fvcp nospill	131.19	55.30	58.77		58.79	0.000514	1.07	123.02	45.84	0.11
GERBER	REACH1	3.377	NoSpill 10yr	104.06	55.10	57.98		58.00	0.000641	1.07	96.87	42.28	0.13
GERBER	REACH1	3.377	fvcp nospill	140.43	55.10	58.66		58.68	0.000534	1.10	127.24	46.39	0.12
GERBER	REACH1	3.339	NoSpill 10yr	109.40	54.90	57.88		57.89	0.000404	0.80	136.84	66.35	0.10
GERBER	REACH1	3.339	fvcp nospill	149.65	54.90	58.59		58.60	0.000304	0.81	185.60	71.74	0.09
GERBER	REACH1	3.301	NoSpill 10yr	114.72	54.70	57.80		57.81	0.000427	0.83	138.59	66.44	0.10
GERBER	REACH1	3.301	fvcp nospill	158.89	54.70	58.52		58.53	0.000326	0.84	188.85	72.08	0.09
GERBER	REACH1	3.263	NoSpill 10yr	120.04	54.50	57.71		57.72	0.000449	0.85	140.40	66.49	0.10
GERBER	REACH1	3.263	fvcp nospill	168.11	54.50	58.45		58.47	0.000347	0.87	192.13	72.32	0.09

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	3.225	NoSpill 10yr	125.33	54.40	57.59		57.61	0.000639	1.13	110.51	44.30	0.13
GERBER	REACH1	3.225	fvcp nospill	177.34	54.40	58.35		58.37	0.000581	1.22	145.86	48.89	0.12
GERBER	REACH1	3.187	NoSpill 10yr	130.58	54.20	57.46		57.48	0.000638	1.15	113.75	44.69	0.13
GERBER	REACH1	3.187	fvcp nospill	186.56	54.20	58.23		58.25	0.000595	1.25	149.81	49.30	0.13
GERBER	REACH1	3.149	NoSpill 10yr	135.80	54.00	57.33		57.35	0.000643	1.17	116.50	44.98	0.13
GERBER	REACH1	3.149	fvcp nospill	195.76	54.00	58.10		58.13	0.000615	1.28	153.05	49.61	0.13
GERBER	REACH1	3.112	NoSpill 10yr	140.99	53.80	57.20		57.22	0.000642	1.18	119.64	45.39	0.13
GERBER	REACH1	3.112	fvcp nospill	204.97	53.80	57.97		58.00	0.000632	1.31	156.62	50.04	0.13
GERBER	REACH1	3.074	NoSpill 10yr	146.14	53.70	57.06		57.08	0.000719	1.24	118.00	45.26	0.14
GERBER	REACH1	3.074	fvcp nospill	214.16	53.70	57.83		57.86	0.000714	1.38	154.88	49.93	0.14
GERBER	REACH1	3.036	NoSpill 10yr	151.25	53.50	56.91		56.94	0.000733	1.26	119.73	45.20	0.14
GERBER	REACH1	3.036	fvcp nospill	223.35	53.50	57.68		57.71	0.000749	1.43	156.37	49.76	0.14
GERBER	REACH1	2.998	NoSpill 10yr	156.32	53.30	56.76		56.79	0.000739	1.28	122.13	45.46	0.14
GERBER	REACH1	2.998	fvcp nospill	232.54	53.30	57.53		57.56	0.000760	1.47	158.57	49.95	0.15
GERBER	REACH1	2.960	NoSpill 10yr	161.37	53.10	56.61		56.64	0.000754	1.30	123.92	45.61	0.14
GERBER	REACH1	2.960	fvcp nospill	225.42	53.10	57.38		57.41	0.000704	1.40	160.71	50.12	0.14
GERBER	REACH1	2.922	NoSpill 10yr	166.43	52.90	56.52		56.53	0.000338	0.82	204.01	84.14	0.09
GERBER	REACH1	2.922	fvcp nospill	231.47	52.90	57.30		57.31	0.000276	0.85	272.51	90.77	0.09
GERBER	REACH1	2.884	NoSpill 10yr	171.51	52.80	56.43		56.44	0.000500	1.01	170.18	68.40	0.11
GERBER	REACH1	2.884	fvcp nospill	237.64	52.80	57.22		57.24	0.000417	1.04	227.60	75.59	0.11
GERBER	REACH1	2.846	NoSpill 10yr	176.61	52.60	56.29		56.32	0.000751	1.33	132.31	46.76	0.14
GERBER	REACH1	2.846	fvcp nospill	243.45	52.60	57.10		57.13	0.000678	1.41	172.17	51.54	0.14
GERBER	REACH1	2.808	NoSpill 10yr	181.70	52.40	56.13		56.16	0.000759	1.35	134.51	47.03	0.14
GERBER	REACH1	2.808	fvcp nospill	249.05	52.40	56.96		56.99	0.000673	1.42	175.44	51.92	0.14
GERBER	REACH1	2.771	NoSpill 10yr	186.79	52.20	55.98		56.01	0.000762	1.36	137.17	47.57	0.14
GERBER	REACH1	2.771	fvcp nospill	254.71	52.20	56.83		56.86	0.000663	1.42	179.57	52.62	0.14
GERBER	REACH1	2.744		Lat Struct									
GERBER	REACH1	2.733	NoSpill 10yr	191.88	52.10	55.80		55.84	0.000938	1.51	126.74	43.47	0.16
GERBER	REACH1	2.733	fvcp nospill	213.22	52.10	56.73		56.75	0.000510	1.26	169.05	48.08	0.12
GERBER	REACH1	2.695	NoSpill 10yr	196.97	51.90	55.62		55.65	0.000894	1.46	134.98	47.58	0.15
GERBER	REACH1	2.695	fvcp nospill	267.00	51.90	56.58		56.62	0.000689	1.45	183.73	53.44	0.14
GERBER	REACH1	2.657	NoSpill 10yr	202.04	51.70	55.44		55.48	0.000857	1.42	142.70	51.21	0.15
GERBER	REACH1	2.657	fvcp nospill	272.92	51.70	56.45		56.48	0.000626	1.38	197.96	58.28	0.13
GERBER	REACH1	2.619	NoSpill 10yr	207.10	51.50	55.27		55.30	0.000877	1.44	144.07	51.46	0.15
GERBER	REACH1	2.619	fvcp nospill	278.60	51.50	56.33		56.36	0.000613	1.38	202.51	58.89	0.13
GERBER	REACH1	2.581	NoSpill 10yr	212.09	51.30	55.08	52.53	55.12	0.000948	1.51	140.55	49.35	0.16
GERBER	REACH1	2.581	fvcp nospill	283.36	51.30	56.20	52.77	56.23	0.000632	1.42	199.74	56.55	0.13
GERBER	REACH1	2.535		Bridge									
GERBER	REACH1	2.518	NoSpill 10yr	211.72	50.90	54.83		54.88	0.001554	1.94	109.41	37.69	0.20
GERBER	REACH1	2.518	fvcp nospill	223.78	50.90	56.02		56.06	0.000623	1.41	158.20	43.73	0.13
GERBER	REACH1	2.483	NoSpill 10yr	211.33	50.50	54.67		54.69	0.000507	1.02	207.51	82.99	0.11
GERBER	REACH1	2.483	fvcp nospill	223.70	50.50	55.97		55.98	0.000154	0.69	322.42	93.62	0.07
GERBER	REACH1	2.465	NoSpill 10yr	211.12	50.40	54.63		54.64	0.000467	0.97	216.71	87.29	0.11
GERBER	REACH1	2.465	fvcp nospill	223.61	50.40	55.96		55.97	0.000137	0.66	340.86	98.99	0.06
GERBER	REACH1	2.436	NoSpill 10yr	210.54	50.10	54.55		54.57	0.000470	0.99	211.63	82.80	0.11
GERBER	REACH1	2.436	fvcp nospill	223.43	50.10	55.94		55.94	0.000138	0.67	334.54	94.72	0.06
GERBER	REACH1	2.415	NoSpill 10yr	209.93	49.90	54.50		54.52	0.000446	0.96	218.93	86.69	0.11
GERBER	REACH1	2.415	fvcp nospill	223.21	49.90	55.92		55.93	0.000125	0.64	351.42	99.69	0.06
GERBER	REACH1	2.396	NoSpill 10yr	209.28	49.70	54.46		54.47	0.000417	1.05	198.47	64.94	0.11
GERBER	REACH1	2.396	fvcp nospill	222.95	49.70	55.91		55.92	0.000151	0.74	302.89	79.09	0.07
GERBER	REACH1	2.378		Lat Struct									
GERBER	REACH1	2.360	NoSpill 10yr	207.65	49.30	54.38		54.40	0.000371	1.05	197.86	59.30	0.10
GERBER	REACH1	2.360	fvcp nospill	222.22	49.30	55.88		55.89	0.000143	0.75	295.83	71.45	0.07
GERBER	REACH1	2.332	NoSpill 10yr	344.08	49.00	54.18		54.24	0.001286	2.00	172.09	49.32	0.19
GERBER	REACH1	2.332	fvcp nospill	517.99	49.00	55.69		55.76	0.001010	2.04	253.72	58.62	0.17

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	2.305	NoSpill 10yr	343.58	48.80	54.05		54.09	0.000851	1.63	210.28	60.41	0.15
GERBER	REACH1	2.305	fvcp nospill	516.60	48.80	55.60		55.64	0.000652	1.65	313.06	72.41	0.14
GERBER	REACH1	2.268	NoSpill 10yr	343.20	48.40	53.90		53.93	0.000750	1.58	217.72	59.94	0.15
GERBER	REACH1	2.268	fvcp nospill	515.51	48.40	55.48		55.52	0.000585	1.60	321.93	71.65	0.13
GERBER	REACH1	2.220	NoSpill 10yr	342.81	47.90	53.67		53.72	0.000933	1.81	189.56	49.10	0.16
GERBER	REACH1	2.220	fvcp nospill	514.38	47.90	55.30		55.35	0.000749	1.86	276.83	58.18	0.15
GERBER	REACH1	2.194	NoSpill 10yr	342.73	47.70	53.58		53.62	0.000587	1.41	243.63	66.30	0.13
GERBER	REACH1	2.194	fvcp nospill	514.16	47.70	55.24		55.27	0.000445	1.41	364.73	80.29	0.12
GERBER	REACH1	2.177	NoSpill 10yr	342.71	47.50	53.55		53.58	0.000333	1.23	278.14	59.15	0.10
GERBER	REACH1	2.177	fvcp nospill	514.10	47.50	55.21		55.24	0.000306	1.35	381.98	66.33	0.10
GERBER	REACH1	2.172	NoSpill 10yr	342.70	47.50	53.55		53.57	0.000262	1.12	304.75	61.80	0.09
GERBER	REACH1	2.172	fvcp nospill	514.10	47.50	55.20		55.23	0.000248	1.25	412.19	67.97	0.09
GERBER	REACH1	2.150	NoSpill 10yr	342.68	47.30	53.52		53.53	0.000373	1.00	341.38	106.99	0.10
GERBER	REACH1	2.150	fvcp nospill	514.08	47.30	55.19		55.20	0.000219	0.98	527.13	115.36	0.08
GERBER	REACH1	2.13	NoSpill 10yr	342.68	47.10	53.43		53.48	0.000708	1.64	208.78	50.93	0.14
GERBER	REACH1	2.13	fvcp nospill	514.04	47.10	55.12		55.16	0.000584	1.70	302.50	60.48	0.13
GERBER	REACH1	2.116	NoSpill 10yr	342.68	46.90	53.35		53.41	0.000985	2.00	171.24	38.09	0.17
GERBER	REACH1	2.116	fvcp nospill	514.02	46.90	55.04		55.11	0.000878	2.14	240.50	44.12	0.16
GERBER	REACH1	2.103		Culvert									
GERBER	REACH1	2.092	NoSpill 10yr	342.67	46.70	52.94		53.02	0.001777	2.37	144.72	39.99	0.22
GERBER	REACH1	2.092	fvcp nospill	513.58	46.70	54.06		54.17	0.001847	2.66	192.78	45.90	0.23
GERBER	REACH1	2.052	NoSpill 10yr	342.66	46.40	52.57		52.65	0.001772	2.33	147.15	41.89	0.22
GERBER	REACH1	2.052	fvcp nospill	513.31	46.40	53.68		53.78	0.001813	2.60	197.17	48.26	0.23
GERBER	REACH1	2.027	NoSpill 10yr	369.17	46.10	52.28		52.38	0.002090	2.54	145.29	40.99	0.24
GERBER	REACH1	2.027	fvcp nospill	549.46	46.10	53.38		53.50	0.002142	2.84	193.62	47.08	0.25
GERBER	REACH1	1.968	NoSpill 10yr	368.56	45.70	51.66		51.74	0.002017	2.39	153.96	46.93	0.23
GERBER	REACH1	1.968	fvcp nospill	547.58	45.70	52.77		52.87	0.001928	2.60	210.48	54.72	0.23
GERBER	REACH1	1.914	NoSpill 10yr	367.96	45.20	51.06		51.14	0.002155	2.40	153.60	49.30	0.24
GERBER	REACH1	1.914	fvcp nospill	546.09	45.20	52.22		52.31	0.001954	2.53	216.20	59.65	0.23
GERBER	REACH1	1.883	NoSpill 10yr	367.69	44.90	50.72		50.80	0.002074	2.35	156.15	50.12	0.24
GERBER	REACH1	1.883	fvcp nospill	545.38	44.90	51.92		52.01	0.001779	2.45	222.19	59.75	0.22
GERBER	REACH1	1.843	NoSpill 10yr	367.53	44.60	50.38	47.34	50.44	0.001370	2.02	181.97	53.98	0.19
GERBER	REACH1	1.843	fvcp nospill	544.83	44.60	51.63	47.86	51.70	0.001201	2.14	255.17	63.02	0.19
GERBER	REACH1	1.832		Bridge									
GERBER	REACH1	1.831	NoSpill 10yr	367.51	44.60	50.32		50.38	0.000640	2.06	178.72	53.55	0.20
GERBER	REACH1	1.831	fvcp nospill	544.75	44.60	51.57		51.64	0.000557	2.17	251.18	62.56	0.19
GERBER	REACH1	1.823	NoSpill 10yr	367.47	44.40	49.83		49.87	0.000947	1.60	229.06	73.76	0.16
GERBER	REACH1	1.823	fvcp nospill	544.74	44.40	51.17		51.21	0.000724	1.62	336.87	87.61	0.15
GERBER	REACH1	1.800	NoSpill 10yr	367.75	44.20	49.74		49.77	0.000647	1.42	259.71	75.42	0.13
GERBER	REACH1	1.800	fvcp nospill	545.19	44.20	51.10		51.13	0.000527	1.48	369.34	86.31	0.13
GERBER	REACH1	1.756	NoSpill 10yr	455.15	43.80	49.53		49.57	0.000940	1.73	263.39	75.08	0.16
GERBER	REACH1	1.756	fvcp nospill	684.34	43.80	50.91		50.96	0.000792	1.82	375.00	86.57	0.15
GERBER	REACH1	1.719	NoSpill 10yr	455.66	43.50	49.35		49.40	0.000862	1.74	261.40	68.74	0.16
GERBER	REACH1	1.719	fvcp nospill	685.11	43.50	50.75		50.81	0.000763	1.88	364.13	77.59	0.15
GERBER	REACH1	1.703		Lat Struct									
GERBER	REACH1	1.687	NoSpill 10yr	600.50	43.20	49.08		49.16	0.001554	2.28	263.25	72.07	0.21
GERBER	REACH1	1.687	fvcp nospill	920.55	43.20	50.49		50.58	0.001383	2.47	372.34	82.64	0.21
GERBER	REACH1	1.643	NoSpill 10yr	600.81	42.90	48.71		48.80	0.001574	2.34	256.80	68.21	0.21
GERBER	REACH1	1.643	fvcp nospill	919.18	42.90	50.16		50.26	0.001391	2.54	362.29	77.29	0.21
GERBER	REACH1	1.610	NoSpill 10yr	599.97	42.60	48.53		48.58	0.000856	1.78	337.44	86.07	0.16
GERBER	REACH1	1.610	fvcp nospill	919.47	42.60	50.01		50.07	0.000764	1.95	472.46	96.40	0.15
GERBER	REACH1	1.570	NoSpill 10yr	599.96	42.30	48.27		48.35	0.001348	2.19	274.27	71.70	0.20
GERBER	REACH1	1.570	fvcp nospill	864.62	42.30	49.79		49.87	0.001030	2.21	391.02	82.02	0.18
GERBER	REACH1	1.485	NoSpill 10yr	600.33	41.60	47.69		47.78	0.001292	2.10	286.44	77.75	0.19

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	1.485	fvcp nospill	838 14	41.60	49.40		49 46	0.000810	1.94	431 78	92 52	0.16
GERBER	REACH1	1.434	NoSpill 10yr	604 47	41.20	47.34		47.41	0.001292	2.14	282.25	74.02	0.19
GERBER	REACH1	1.434	fvcp nospill	832 77	41.20	49.19		49.25	0.000749	1.93	432 18	88.10	0.15
GERBER	REACH1	1.417		Culvert									
GERBER	REACH1	1.402	NoSpill 10yr	602 06	41.00	46.52		46.69	0.002308	3.30	182.43	59.81	0.27
GERBER	REACH1	1.402	fvcp nospill	768 79	41.00	47.80		48 05	0.001604	3.26	235.63	65.82	0.23
GERBER	REACH1	1.343	NoSpill 10yr	599 47	40.70	46.19		46 22	0.000546	1.31	456.25	131.81	0.12
GERBER	REACH1	1.343	fvcp nospill	752 47	40 70	47.71		47 73	0.000272	1.14	662 94	141.09	0.09
GERBER	REACH1	1.294	NoSpill 10yr	598.49	40 50	46.10		46 12	0.000266	0.90	665.66	198.63	0.09
GERBER	REACH1	1.294	fvcp nospill	749.37	40 50	47.67		47.68	0.000121	0.76	984.11	208 19	0.06
GERBER	REACH1	1.252	NoSpill 10yr	598.19	40 40	46.05		46.06	0.000216	0.81	742.04	223.36	0.08
GERBER	REACH1	1.252	fvcp nospill	748.37	40.40	47.65		47.66	0.000095	0.68	1106.50	233.93	0.05
GERBER	REACH1	1.235		Lat Struct									
GERBER	REACH1	1.219	NoSpill 10yr	482.45	40.20	46.00	42.69	46.02	0.000337	1.04	462.18	131.42	0 10
GERBER	REACH1	1.219	fvcp nospill	804.86	40.20	47.60	43.08	47.62	0.000298	1 17	685.90	149.16	0 10
GERBER	REACH1	1.200		Bridge									
GERBER	REACH1	1.182	NoSpill 10yr	481.37	39.90	45 73		45.78	0 001077	1 93	249.55	66 44	0 18
GERBER	REACH1	1.182	fvcp nospill	803.58	39.90	47 32		47.39	0 001038	2.21	362.99	76.20	0 18
GERBER	REACH1	1.133	NoSpill 10yr	480.12	39.60	45.47		45.52	0.000949	1 77	271.67	75.37	0 16
GERBER	REACH1	1.133	fvcp nospill	802.59	39.60	47 08		47.14	0.000879	1 99	403.66	88.56	0 16
GERBER	REACH1	1.09	NoSpill 10yr	479.17	39.40	45 26		45.31	0.000953	1 79	268.09	73.40	0 16
GERBER	REACH1	1.09	fvcp nospill	801.95	39.40	46 88		46.95	0.000867	2.02	397.41	85.81	0 17
GERBER	REACH1	1.066	NoSpill 10yr	478 71	39.20	45.14		45.19	0.001066	1.73	276 51	86.81	0.17
GERBER	REACH1	1.066	fvcp nospill	801.66	39.20	46.79		46.84	0.000816	1.87	428.62	97.65	0.16
GERBER	REACH1	1.032	NoSpill 10yr	480.64	39.00	44.95		45.00	0 000916	1.78	269.68	71 87	0.16
GERBER	REACH1	1.032	fvcp nospill	804.23	39.00	46.63		46.68	0.000856	1.89	425.37	98 96	0.16
GERBER	REACH1	1.013	NoSpill 10yr	481 58	38 90	44.85		44 91	0 000844	1.97	244.67	70.19	0.16
GERBER	REACH1	1.013	fvcp nospill	805.45	38.90	46.51		46.60	0 000848	2.42	332.60	81 29	0.17
GERBER	REACH1	1.004		Culvert									
GERBER	REACH1	0.997	NoSpill 10yr	480 12	38 70	44.51		44.63	0 001579	2.81	171.02	65 74	0.22
GERBER	REACH1	0.997	fvcp nospill	803.90	38 70	45.95		46.15	0.001872	3.63	221.30	74 38	0.25
GERBER	REACH1	0.994	NoSpill 10yr	480.58	38 70	44.55		44.61	0.000981	1.86	259.03	68 16	0.17
GERBER	REACH1	0.994	fvcp nospill	804.52	38 70	46.05		46 12	0.001017	2.19	367.67	77.40	0.18
GERBER	REACH1	0.936	NoSpill 10yr	483.42	38 50	44.31		44.35	0.000688	1.55	312.16	83 19	0.14
GERBER	REACH1	0.936	fvcp nospill	808.21	38 50	45.80		45.86	0.000702	1.82	444.65	94.43	0.15
GERBER	REACH1	0.895	NoSpill 10yr	485 90	38 40	44.23		44 24	0.000299	1.04	465.72	121 12	0.09
GERBER	REACH1	0.895	fvcp nospill	811.14	38 40	45.72		45 75	0.000304	1.24	656.33	133 57	0.10
GERBER	REACH1	0.872	NoSpill 10yr	487.33	38.40	44.18		44.20	0.000433	1.06	458.80	152 12	0.11
GERBER	REACH1	0.872	fvcp nospill	812.90	38.40	45.69		45.71	0.000331	1.17	697.16	164.44	0.10
GERBER	REACH1	0.844	NoSpill 10yr	489.01	38.30	44.08		44 12	0.000645	1.49	327.51	88 15	0.14
GERBER	REACH1	0.844	fvcp nospill	814.94	38.30	45.59		45.64	0.000644	1.74	469.43	100 40	0.14
GERBER	REACH1	0.769	NoSpill 10yr	493.64	38.10	43.80		43.84	0.000767	1.59	309.52	85 77	0.15
GERBER	REACH1	0.769	fvcp nospill	820.47	38 10	45.31		45.36	0.000740	1.83	448.68	98 43	0.15
GERBER	REACH1	0.702	NoSpill 10yr	497.78	37 90	43 51		43.55	0.000844	1.67	297.45	82 31	0 16
GERBER	REACH1	0.702	fvcp nospill	825.48	37 90	45.03		45.09	0.000802	1 91	431.56	93.87	0 16
GERBER	REACH1	0.693	NoSpill 10yr	498.23	37 90	43.33		43.40	0.002288	3.18	156.51	59 11	0.27
GERBER	REACH1	0.693	fvcp nospill	826.09	37 90	44 78		45.03	0.002459	3.98	207.47	68 24	0.29
GERBER	REACH1	0.679		Culvert									
GERBER	REACH1	0.666	NoSpill 10yr	497.58	37.70	43 01		43.26	0.003589	3.98	125.09	54.99	0.33
GERBER	REACH1	0.666	fvcp nospill	742.32	37.70	44 18		44.52	0.003696	4.71	157.62	61.96	0.35
GERBER	REACH1	0.655	NoSpill 10yr	498.38	37.60	43 04		43.09	0.001038	1 84	271 07	75.83	0.17
GERBER	REACH1	0.655	fvcp nospill	825.98	37.60	44 28		44.36	0.001156	2.23	370.48	83.99	0.19
GERBER	REACH1	0.627	NoSpill 10yr	499.91	37 50	42 90		42.94	0.000979	1 70	293.43	88.73	0 17
GERBER	REACH1	0.627	fvcp nospill	743.25	37.50	44 15		44.20	0.000830	1 80	412.48	101.18	0 16

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	0.61	NoSpill 10yr	501.01	37.40	42.87		42.88	0.000240	0.93	537.54	140.55	0.08
GERBER	REACH1	0.61	fvcp nospill	742.85	37.40	44.14		44.15	0.000216	1.03	721.13	149.83	0.08
GERBER	REACH1	0.598	NoSpill 10yr	501.65	37.40	42.80		42.85	0.000933	1.75	287.31	153.17	0.16
GERBER	REACH1	0.598	fvcp nospill	742.97	37.40	44.12		44.14	0.000282	1.11	743.33	201.55	0.09
GERBER	REACH1	0.586	NoSpill 10yr	502.33	37.30	42.74		42.79	0.000976	1.78	282.54	90.74	0.17
GERBER	REACH1	0.586	fvcp nospill	738.62	37.30	44.05		44.10	0.000779	1.84	426.15	137.87	0.15
GERBER	REACH1	0.567	NoSpill 10yr	503.37	37.20	42.65		42.69	0.000944	1.75	287.69	94.18	0.16
GERBER	REACH1	0.567	fvcp nospill	733.31	37.20	43.97		44.03	0.000767	1.83	401.41	131.08	0.15
GERBER	REACH1	0.555	NoSpill 10yr	504.05	37.10	42.60		42.64	0.000745	1.56	323.09	90.25	0.15
GERBER	REACH1	0.555	fvcp nospill	731.43	37.10	43.94		43.98	0.000586	1.63	448.22	96.49	0.13
GERBER	REACH1	0.539	NoSpill 10yr	504.96	37.10	42.53		42.57	0.000866	1.63	309.85	90.40	0.16
GERBER	REACH1	0.539	fvcp nospill	728.34	37.10	43.89		43.93	0.000615	1.68	432.60	90.40	0.14
GERBER	REACH1	0.527	NoSpill 10yr	505.56	37.00	42.47		42.51	0.000996	1.77	285.81	82.46	0.17
GERBER	REACH1	0.527	fvcp nospill	725.39	37.00	43.84		43.89	0.000751	1.78	406.87	93.67	0.15
GERBER	REACH1	0.486	NoSpill 10yr	507.79	36.80	42.26		42.30	0.000930	1.72	295.40	84.39	0.16
GERBER	REACH1	0.486	fvcp nospill	715.01	36.60	43.69		43.74	0.000653	1.68	424.45	95.77	0.14
GERBER	REACH1	0.459	NoSpill 10yr	509.26	36.70	42.17		42.20	0.000603	1.40	362.66	101.94	0.13
GERBER	REACH1	0.459	fvcp nospill	712.92	36.70	43.63		43.66	0.000413	1.37	521.38	114.64	0.11
GERBER	REACH1	0.434	NoSpill 10yr	510.64	36.50	42.06		42.10	0.000838	1.61	316.79	92.65	0.15
GERBER	REACH1	0.434	fvcp nospill	710.20	36.50	43.56		43.60	0.000543	1.52	467.12	107.64	0.13
GERBER	REACH1	0.367	NoSpill 10yr	513.99	36.20	41.74		41.78	0.000946	1.73	296.50	85.00	0.16
GERBER	REACH1	0.367	fvcp nospill	706.05	36.20	43.36		43.40	0.000563	1.58	446.00	99.08	0.13
GERBER	REACH1	0.346	NoSpill 10yr	514.05	36.10	41.49		41.63	0.002006	2.97	173.04	66.86	0.25
GERBER	REACH1	0.346	fvcp nospill	700.01	36.10	43.17		43.31	0.001275	2.93	238.60	76.95	0.21
GERBER	REACH1	0.338		Culvert									
GERBER	REACH1	0.329	NoSpill 10yr	512.86	35.90	41.38		41.51	0.001937	2.90	176.86	59.49	0.24
GERBER	REACH1	0.329	fvcp nospill	693.87	35.90	43.02		43.15	0.001240	2.86	242.41	69.32	0.20
GERBER	REACH1	0.293	NoSpill 10yr	511.91	35.70	41.21		41.25	0.000765	1.52	336.45	100.38	0.15
GERBER	REACH1	0.293	fvcp nospill	693.46	35.70	42.95		42.98	0.000371	1.34	517.63	106.91	0.11
GERBER	REACH1	.284		Lat Struct									
GERBER	REACH1	0.271	NoSpill 10yr	396.58	35.60	41.16		41.19	0.000521	1.31	303.00	84.40	0.12
GERBER	REACH1	0.271	fvcp nospill	692.19	35.60	42.90		42.93	0.000477	1.50	461.20	97.78	0.12
GERBER	REACH1	0.216	NoSpill 10yr	394.10	35.30	41.02		41.05	0.000451	1.25	316.51	85.34	0.11
GERBER	REACH1	0.216	fvcp nospill	693.69	35.30	42.77		42.80	0.000433	1.45	477.14	98.70	0.12
GERBER	REACH1	0.155	NoSpill 10yr	389.14	35.00	40.88		40.90	0.000435	1.24	314.27	82.98	0.11
GERBER	REACH1	0.155	fvcp nospill	694.98	35.00	42.63		42.66	0.000440	1.46	470.75	96.14	0.12
GERBER	REACH1	0.093	NoSpill 10yr	388.51	34.60	40.77		40.79	0.000287	1.06	346.93	85.53	0.09
GERBER	REACH1	0.093	fvcp nospill	696.20	34.60	42.50		42.53	0.000351	1.37	507.13	97.26	0.11
GERBER	REACH1	0.051	NoSpill 10yr	387.87	34.40	40.71		40.73	0.000266	1.03	356.92	85.58	0.09
GERBER	REACH1	0.051	fvcp nospill	697.19	34.40	42.43		42.46	0.000336	1.36	513.58	96.99	0.10
GERBER	REACH1	0.000	NoSpill 10yr	365.87	34.00	40.66		40.67	0.000179	0.84	435.09	105.75	0.07
GERBER	REACH1	0.000	fvcp nospill	696.20	34.00	42.36		42.38	0.000220	1.12	622.21	113.10	0.08
ELDER	REACH1	12.205	NoSpill 10yr	260.02	89.50	91.68		91.75	0.002595	2.01	130.12	119.20	0.34
ELDER	REACH1	12.205	fvcp nospill	452.69	89.50	92.25		92.32	0.002291	2.20	206.11	150.03	0.33
ELDER	REACH1	12.144	NoSpill 10yr	258.81	88.36	90.92		90.99	0.002088	2.16	123.81	110.27	0.32
ELDER	REACH1	12.144	fvcp nospill	450.42	88.36	91.55		91.64	0.001717	2.50	201.25	132.02	0.31
ELDER	REACH1	12.072	NoSpill 10yr	239.76	87.50	90.34		90.38	0.001071	1.57	153.58	113.73	0.23
ELDER	REACH1	12.072	fvcp nospill	435.00	87.50	91.03		91.08	0.000972	1.87	250.62	178.27	0.23
ELDER	REACH1	12.02	NoSpill 10yr	231.61	86.52	90.12		90.15	0.000558	1.76	246.15	283.34	0.18
ELDER	REACH1	12.02	fvcp nospill	401.67	86.52	90.84		90.87	0.000407	1.75	469.52	336.26	0.16
ELDER	REACH1	11.944	NoSpill 10yr	442.97	85.50	90.02		90.03	0.000177	1.13	755.67	428.51	0.11
ELDER	REACH1	11.944	fvcp nospill	865.65	85.50	90.72		90.73	0.000255	1.53	1064.73	453.14	0.13
ELDER	REACH1	11.883	NoSpill 10yr	442.46	85.50	89.99		89.99	0.000062	0.67	1206.53	580.84	0.06
ELDER	REACH1	11.883	fvcp nospill	827.66	85.50	90.66		90.67	0.000096	0.94	1668.56	696.32	0.08

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	11.848	NoSpill 10yr	442.44	82.50	89.94		89.97	0.000225	1.32	334.94	553.89	0.12
ELDER	REACH1	11.848	fvcp nospill	842.12	82.50	90.64		90.64	0.000051	0.70	2432.04	1198.24	0.06
ELDER	REACH1	11.835		Culvert									
ELDER	REACH1	11.822	NoSpill 10yr	442.41	82.50	87.18		87.63	0.003382	5.38	82.26	78.51	0.44
ELDER	REACH1	11.822	fvcp nospill	988.51	82.50	88.26		88.54	0.003391	4.79	360.85	374.46	0.45
ELDER	REACH1	11.724	NoSpill 10yr	442.10	83.19	86.17		86.25	0.001599	2.66	253.43	202.22	0.30
ELDER	REACH1	11.724	fvcp nospill	1082.83	83.19	87.15		87.28	0.002057	3.78	484.55	255.05	0.36
ELDER	REACH1	11.659	NoSpill 10yr	442.11	82.38	85.66		85.73	0.001393	2.54	272.54	182.05	0.28
ELDER	REACH1	11.659	fvcp nospill	981.04	82.38	86.49		86.61	0.002008	3.68	445.81	235.25	0.36
ELDER	REACH1	11.586	NoSpill 10yr	441.86	81.30	84.86		85.01	0.003071	3.88	219.28	233.81	0.42
ELDER	REACH1	11.586	fvcp nospill	995.63	81.30	85.73		85.89	0.002815	4.49	455.95	305.85	0.42
ELDER	REACH1	11.538	NoSpill 10yr	441.66	80.77	84.32		84.38	0.001440	2.81	319.16	256.64	0.29
ELDER	REACH1	11.538	fvcp nospill	932.57	80.77	85.25		85.32	0.001385	3.32	586.32	316.50	0.30
ELDER	REACH1	11.482	NoSpill 10yr	441.55	80.23	83.83		83.90	0.001812	3.20	270.37	184.12	0.33
ELDER	REACH1	11.482	fvcp nospill	921.87	80.23	84.67		84.78	0.002380	4.32	457.89	259.96	0.39
ELDER	REACH1	11.433	NoSpill 10yr	441.19	79.88	83.23		83.32	0.002740	3.71	249.71	194.22	0.39
ELDER	REACH1	11.433	fvcp nospill	907.87	79.88	83.91		84.04	0.003309	4.72	389.77	217.88	0.45
ELDER	REACH1	11.376	NoSpill 10yr	439.83	79.20	82.68		82.71	0.001150	2.42	468.77	533.34	0.28
ELDER	REACH1	11.376	fvcp nospill	856.70	79.20	83.40		83.42	0.000774	2.33	886.98	629.60	0.22
ELDER	REACH1	11.313	NoSpill 10yr	439.28	78.70	82.39		82.41	0.000723	1.97	448.61	342.78	0.21
ELDER	REACH1	11.313	fvcp nospill	855.22	78.70	83.16		83.19	0.000700	2.28	722.70	365.56	0.21
ELDER	REACH1	11.252	NoSpill 10yr	439.10	78.41	82.10		82.15	0.001045	2.37	346.98	257.50	0.25
ELDER	REACH1	11.252	fvcp nospill	853.53	78.41	82.86		82.93	0.001126	2.89	560.14	297.63	0.27
ELDER	REACH1	11.175	NoSpill 10yr	438.66	77.70	81.40		81.55	0.002568	3.63	210.71	198.36	0.39
ELDER	REACH1	11.175	fvcp nospill	849.14	77.70	82.10		82.29	0.002825	4.44	379.48	292.07	0.42
ELDER	REACH1	11.125	NoSpill 10yr	437.82	77.27	80.94		81.01	0.001299	2.66	306.84	300.62	0.28
ELDER	REACH1	11.125	fvcp nospill	841.74	77.27	81.59		81.68	0.001465	3.24	476.94	384.42	0.31
ELDER	REACH1	11.063	NoSpill 10yr	436.35	76.84	80.47		80.58	0.001654	3.05	264.95	548.54	0.32
ELDER	REACH1	11.063	fvcp nospill	830.73	76.84	81.13		81.23	0.001595	3.43	466.31	658.19	0.32
ELDER	REACH1	10.995	NoSpill 10yr	516.13	76.40	80.00		80.06	0.001098	2.50	356.91	222.12	0.26
ELDER	REACH1	10.995	fvcp nospill	901.14	76.40	80.62		80.70	0.001292	3.08	540.34	511.57	0.29
ELDER	REACH1	10.936	NoSpill 10yr	515.24	76.10	79.79		79.81	0.000422	1.60	577.21	313.81	0.16
ELDER	REACH1	10.936	fvcp nospill	895.57	76.10	80.33		80.37	0.000771	2.40	803.24	502.76	0.22
ELDER	REACH1	10.884	NoSpill 10yr	514.77	75.80	79.68		79.69	0.000430	1.69	643.83	426.16	0.16
ELDER	REACH1	10.884	fvcp nospill	892.68	75.80	80.14		80.17	0.000640	2.25	861.39	526.73	0.20
ELDER	REACH1	10.834	NoSpill 10yr	514.43	75.60	79.56		79.58	0.000418	1.54	580.88	374.73	0.16
ELDER	REACH1	10.834	fvcp nospill	891.20	75.60	79.96		80.00	0.000672	2.12	738.13	468.22	0.21
ELDER	REACH1	10.775	NoSpill 10yr	514.19	75.45	79.48		79.49	0.000173	1.10	896.47	374.76	0.10
ELDER	REACH1	10.775	fvcp nospill	890.36	75.45	79.82		79.84	0.000353	1.68	939.69	411.22	0.15
ELDER	REACH1	10.717	NoSpill 10yr	514.09	75.25	79.43		79.44	0.000140	1.10	922.15	398.95	0.10
ELDER	REACH1	10.717	fvcp nospill	890.03	75.25	79.72		79.74	0.000302	1.70	1039.65	417.93	0.14
ELDER	REACH1	10.691	NoSpill 10yr	514.04	74.00	79.42		79.42	0.000074	0.86	1051.73	1061.11	0.07
ELDER	REACH1	10.691	fvcp nospill	889.96	74.00	79.69		79.70	0.000168	1.35	1159.53	1084.71	0.11
ELDER	REACH1	10.689		Culvert									
ELDER	REACH1	10.686	NoSpill 10yr	513.11	74.00	78.34		78.35	0.000379	1.62	873.23	953.13	0.16
ELDER	REACH1	10.686	fvcp nospill	889.55	74.00	78.58		78.61	0.000605	2.15	1107.32	976.65	0.20
ELDER	REACH1	10.63		Lat Struct									
ELDER	REACH1	10.619	NoSpill 10yr	483.39	71.00	78.26		78.26	0.000031	0.54	1414.13	677.70	0.05
ELDER	REACH1	10.619	fvcp nospill	851.90	71.00	78.45		78.46	0.000078	0.88	1543.11	684.24	0.07
ELDER	REACH1	10.613		Culvert									
ELDER	REACH1	10.607	NoSpill 10yr	483.25	71.00	74.79		75.05	0.002083	4.12	117.35	71.64	0.37
ELDER	REACH1	10.607	fvcp nospill	851.39	71.00	75.32		75.95	0.004166	6.36	133.89	103.94	0.54
ELDER	REACH1	10.562	NoSpill 10yr	483.14	70.10	74.65		74.71	0.000693	2.38	374.52	248.59	0.21
ELDER	REACH1	10.562	fvcp nospill	851.13	70.10	75.15		75.25	0.001083	3.22	507.89	293.78	0.27

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	10.507	NoSpill 10yr	483.04	70.50	74.39		74.51	0.001652	3.25	313.66	422.20	0.32
ELDER	REACH1	10.507	fvcp nospill	850.31	70.50	74.89		75.00	0.001720	3.64	550.06	517.46	0.33
ELDER	REACH1	10.442	NoSpill 10yr	486.22	70.48	73.81		73.90	0.002005	3.28	343.62	423.58	0.34
ELDER	REACH1	10.442	fvcp nospill	853.95	70.48	74.30		74.38	0.001955	3.59	580.74	530.86	0.35
ELDER	REACH1	10.361	NoSpill 10yr	490.25	70.32	73.22		73.24	0.001007	2.19	511.33	481.73	0.24
ELDER	REACH1	10.361	fvcp nospill	858.65	70.32	73.69		73.72	0.001105	2.57	757.40	557.42	0.26
ELDER	REACH1	10.312	NoSpill 10yr	492.50	70.20	72.83		72.87	0.002009	2.43	416.55	508.42	0.32
ELDER	REACH1	10.312	fvcp nospill	861.69	70.20	73.37		73.41	0.001381	2.41	713.84	577.16	0.28
ELDER	REACH1	10.272	NoSpill 10yr	494.43	69.63	72.40		72.45	0.002023	2.76	355.39	313.58	0.33
ELDER	REACH1	10.272	fvcp nospill	864.16	69.63	73.05		73.10	0.001613	2.90	576.37	367.52	0.31
ELDER	REACH1	10.214	NoSpill 10yr	573.26	68.78	71.77		71.84	0.002135	3.05	353.48	275.32	0.35
ELDER	REACH1	10.214	fvcp nospill	1057.84	68.78	72.45		72.53	0.002257	3.70	594.67	417.89	0.37
ELDER	REACH1	10.141	NoSpill 10yr	576.40	67.65	71.04		71.12	0.001873	2.79	356.96	315.47	0.32
ELDER	REACH1	10.141	fvcp nospill	1064.02	67.65	71.73		71.82	0.001740	3.20	590.73	365.51	0.33
ELDER	REACH1	10.09	NoSpill 10yr	578.67	66.80	70.50		70.64	0.002071	3.67	305.65	281.01	0.36
ELDER	REACH1	10.09	fvcp nospill	1068.52	66.80	71.21		71.38	0.002095	4.21	531.23	354.22	0.37
ELDER	REACH1	10.034	NoSpill 10yr	581.26	66.41	69.85		69.98	0.002387	3.72	303.43	252.55	0.38
ELDER	REACH1	10.034	fvcp nospill	1072.74	66.41	70.45		70.62	0.002973	4.69	522.32	426.99	0.44
ELDER	REACH1	9.974	NoSpill 10yr	583.92	66.02	69.41		69.44	0.000774	2.09	651.55	545.41	0.22
ELDER	REACH1	9.974	fvcp nospill	1076.69	66.02	69.91		69.94	0.000965	2.59	932.82	593.81	0.25
ELDER	REACH1	9.919	NoSpill 10yr	585.92	65.50	68.80		68.92	0.003069	4.07	360.33	457.60	0.42
ELDER	REACH1	9.919	fvcp nospill	1076.31	65.50	69.39		69.48	0.002306	4.00	664.46	543.41	0.38
ELDER	REACH1	9.878	NoSpill 10yr	586.46	65.13	68.32		68.37	0.001614	2.98	440.16	409.05	0.32
ELDER	REACH1	9.878	fvcp nospill	1073.72	65.13	69.01		69.06	0.001500	3.17	755.26	501.97	0.31
ELDER	REACH1	9.813	NoSpill 10yr	587.97	64.02	67.90		67.94	0.000591	1.90	582.95	498.72	0.19
ELDER	REACH1	9.813	fvcp nospill	1073.78	64.02	68.66		68.70	0.000534	2.10	1069.40	703.76	0.19
ELDER	REACH1	9.749	NoSpill 10yr	589.94	63.84	67.51		67.58	0.001587	2.94	380.97	305.27	0.31
ELDER	REACH1	9.749	fvcp nospill	1074.36	63.84	68.28		68.37	0.001527	3.39	719.86	647.11	0.32
ELDER	REACH1	9.701	NoSpill 10yr	591.39	63.10	67.20		67.25	0.000878	2.09	481.06	379.78	0.23
ELDER	REACH1	9.701	fvcp nospill	1075.12	63.10	68.00		68.05	0.000791	2.37	818.51	471.72	0.23
ELDER	REACH1	9.633	NoSpill 10yr	593.94	62.68	66.86		66.92	0.000974	2.51	472.52	369.64	0.25
ELDER	REACH1	9.633	fvcp nospill	1079.26	62.68	67.69		67.75	0.000846	2.73	808.64	439.02	0.24
ELDER	REACH1	9.566	NoSpill 10yr	596.63	62.13	66.09		66.30	0.003048	4.24	214.99	165.36	0.43
ELDER	REACH1	9.566	fvcp nospill	1084.60	62.13	66.74		67.06	0.003977	5.52	346.47	239.70	0.51
ELDER	REACH1	9.524	NoSpill 10yr	598.27	61.85	65.76		65.79	0.000634	1.92	629.84	435.93	0.20
ELDER	REACH1	9.524	fvcp nospill	1088.42	61.85	66.28		66.33	0.001094	2.81	998.21	1022.13	0.27
ELDER	REACH1	9.486	NoSpill 10yr	600.12	61.30	64.56		64.96	0.009579	5.48	154.22	478.58	0.71
ELDER	REACH1	9.486	fvcp nospill	1089.17	61.30	65.24		65.65	0.007505	5.98	295.70	761.33	0.66
ELDER	REACH1	9.438	NoSpill 10yr	600.22	59.80	63.45		63.57	0.001305	2.92	269.09	172.89	0.29
ELDER	REACH1	9.438	fvcp nospill	1088.28	59.80	64.36		64.53	0.001348	3.51	510.06	847.91	0.30
ELDER	REACH1	9.221	NoSpill 10yr	602.74	59.40	63.30		63.32	0.000280	1.54	754.44	353.75	0.14
ELDER	REACH1	9.221	fvcp nospill	1163.19	59.40	64.19		64.23	0.000510	2.38	1187.42	885.02	0.19
ELDER	REACH1	9.163	NoSpill 10yr	604.33	58.30	62.97		63.12	0.001391	3.17	270.35	249.25	0.30
ELDER	REACH1	9.163	fvcp nospill	1166.58	58.30	63.76		63.95	0.001787	4.09	526.60	410.30	0.35
ELDER	REACH1	9.116	NoSpill 10yr	605.26	57.40	62.61		62.72	0.001737	2.97	343.93	404.54	0.32
ELDER	REACH1	9.116	fvcp nospill	1168.72	57.40	63.43		63.52	0.001373	3.15	720.03	516.82	0.30
ELDER	REACH1	9.062	NoSpill 10yr	605.28	56.40	61.59		61.91	0.004281	4.57	132.45	49.07	0.49
ELDER	REACH1	9.062	fvcp nospill	1157.00	56.40	62.77		63.00	0.002627	4.40	493.40	943.92	0.40
ELDER	REACH1	9.019	NoSpill 10yr	604.85	55.60	61.13		61.29	0.001166	3.12	194.10	48.14	0.27
ELDER	REACH1	9.019	fvcp nospill	1149.42	55.60	62.14		62.47	0.002099	4.63	300.46	448.86	0.38
ELDER	REACH1	8.977	NoSpill 10yr	605.14	55.51	60.96		61.06	0.000853	2.75	391.97	324.11	0.23
ELDER	REACH1	8.977	fvcp nospill	1150.49	55.51	61.95		62.04	0.000838	3.02	851.67	581.66	0.24
ELDER	REACH1	8.925	NoSpill 10yr	606.00	55.37	60.77		60.84	0.000628	2.33	448.97	431.78	0.20
ELDER	REACH1	8.925	fvcp nospill	1152.38	55.37	61.76		61.82	0.000571	2.50	979.19	636.14	0.20
ELDER	REACH1	8.873	NoSpill 10yr	607.56	55.28	60.56		60.65	0.000808	2.49	380.46	374.45	0.23
ELDER	REACH1	8.873	fvcp nospill	1155.29	55.28	61.58		61.65	0.000707	2.67	800.38	530.09	0.22

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	8.809	NoSpill 10yr	609.16	55.14	60.16		60.29	0.001368	2.95	250.66	379.02	0.29
ELDER	REACH1	8.809	fvcp nospill	1159.55	55.14	61.30		61.39	0.000886	2.90	736.70	484.28	0.24
ELDER	REACH1	8.803	NoSpill 10yr	609.36	54.90	60.17	56.56	60.25	0.000528	2.28	317.27	382.23	0.17
ELDER	REACH1	8.803	fvcp nospill	1159.98	54.90	61.28	57.46	61.36	0.000591	2.74	791.56	515.16	0.19
ELDER	REACH1	8.798		Bridge									
ELDER	REACH1	8.788	NoSpill 10yr	607.99	54.90	59.97		60.06	0.000611	2.40	253.61	50.00	0.19
ELDER	REACH1	8.788	fvcp nospill	1159.92	54.90	61.02		61.14	0.000759	3.02	671.08	446.96	0.22
ELDER	REACH1	8.724	NoSpill 10yr	609.40	54.05	59.84		59.87	0.000485	1.49	410.25	166.69	0.17
ELDER	REACH1	8.724	fvcp nospill	1163.05	54.05	60.88		60.92	0.000472	1.81	810.29	490.03	0.17
ELDER	REACH1	8.645	NoSpill 10yr	602.90	53.00	58.71		59.10	0.003722	5.18	146.38	455.42	0.47
ELDER	REACH1	8.645	fvcp nospill	1157.46	53.00	59.54		60.08	0.004743	6.65	296.57	553.74	0.55
ELDER	REACH1	8.586	NoSpill 10yr	596.69	52.80	58.29		58.33	0.000486	1.73	368.99	493.43	0.17
ELDER	REACH1	8.586	fvcp nospill	1134.73	52.80	58.92		59.01	0.000801	2.50	610.20	986.35	0.23
ELDER	REACH1	8.531	NoSpill 10yr	595.14	52.60	58.07		58.15	0.001036	2.61	562.11	1651.53	0.25
ELDER	REACH1	8.531	fvcp nospill	1118.44	52.60	58.75		58.79	0.000586	2.22	1317.76	3568.84	0.20
ELDER	REACH1	8.432	NoSpill 10yr	591.14	52.20	57.75		57.78	0.000704	2.20	561.32	337.40	0.20
ELDER	REACH1	8.432	fvcp nospill	1057.45	52.20	58.46		58.49	0.000869	2.76	1233.22	3135.43	0.23
ELDER	REACH1	8.399	NoSpill 10yr	583.94	52.15	57.63		57.69	0.000965	2.49	425.99	292.25	0.24
ELDER	REACH1	8.399	fvcp nospill	1056.10	52.15	58.34		58.40	0.000964	2.83	927.75	2339.57	0.25
ELDER	REACH1	8.313	NoSpill 10yr	556.95	52.04	57.36		57.42	0.000532	2.10	736.57	1399.35	0.18
ELDER	REACH1	8.313	fvcp nospill	1054.55	52.04	58.13		58.15	0.000358	1.93	1429.33	2029.75	0.16
ELDER	REACH1	8.092	NoSpill 10yr	533.36	51.60	57.05		57.06	0.000214	1.34	1133.84	1826.54	0.12
ELDER	REACH1	8.092	fvcp nospill	983.01	51.60	57.93		57.93	0.000055	0.77	3543.92	2078.96	0.06
ELDER	REACH1	8.029	NoSpill 10yr	534.97	51.33	55.69		56.25	0.006289	6.01	89.01	28.26	0.60
ELDER	REACH1	8.029	fvcp nospill	1369.84	51.33	56.37		56.73	0.005889	6.52	560.97	1272.18	0.59
ELDER	REACH1	7.985	NoSpill 10yr	535.55	51.13	55.08		55.10	0.000318	1.30	874.11	814.65	0.14
ELDER	REACH1	7.985	fvcp nospill	1326.75	51.13	55.75		55.77	0.000510	1.90	1460.47	943.70	0.18
ELDER	REACH1	7.809	NoSpill 10yr	536.74	50.55	54.97		54.97	0.000297	1.12	900.34	1937.05	0.13
ELDER	REACH1	7.809	fvcp nospill	1305.41	50.55	55.53		55.56	0.000672	1.95	1290.93	2515.88	0.20
ELDER	REACH1	7.764	NoSpill 10yr	560.05	50.36	54.75		54.82	0.001224	2.85	599.05	1755.72	0.27
ELDER	REACH1	7.764	fvcp nospill	1339.38	50.36	55.22		55.29	0.001647	3.59	1081.19	1885.82	0.32
ELDER	REACH1	7.697	NoSpill 10yr	559.94	50.16	54.28		54.33	0.001713	2.23	632.71	1812.16	0.30
ELDER	REACH1	7.697	fvcp nospill	1320.71	50.16	54.84		54.86	0.000863	1.90	1752.03	2208.53	0.22
ELDER	REACH1	7.617	NoSpill 10yr	557.44	49.88	53.42		53.57	0.002825	3.83	318.42	471.73	0.41
ELDER	REACH1	7.617	fvcp nospill	1248.56	49.88	54.16		54.26	0.002240	4.00	1262.84	2868.73	0.38
ELDER	REACH1	7.574	NoSpill 10yr	552.54	49.72	53.08		53.10	0.000442	1.47	876.38	1488.05	0.16
ELDER	REACH1	7.574	fvcp nospill	1189.36	49.72	53.88		53.90	0.000348	1.56	1786.70	2058.94	0.15
ELDER	REACH1	7.523	NoSpill 10yr	551.14	49.61	53.00		53.01	0.000189	0.99	1559.21	1667.23	0.10
ELDER	REACH1	7.523	fvcp nospill	1182.70	49.61	53.82		53.83	0.000118	0.93	2978.50	1787.95	0.09
ELDER	REACH1	7.459	NoSpill 10yr	550.88	49.00	52.98	52.26	52.98	0.000260	1.11	1181.52	1163.71	0.12
ELDER	REACH1	7.459	fvcp nospill	1181.42	49.00	53.80	52.48	53.81	0.000293	1.40	2357.73	2355.09	0.14
ELDER	REACH1	7.457		Bridge									
ELDER	REACH1	7.454	NoSpill 10yr	550.74	49.00	52.97		52.97	0.000235	1.06	1226.73	1168.52	0.12
ELDER	REACH1	7.454	fvcp nospill	1181.42	49.00	53.79		53.80	0.000264	1.34	2455.90	2387.82	0.13
ELDER	REACH1	7.392	NoSpill 10yr	550.35	48.59	52.85		52.87	0.000548	1.76	745.57	768.45	0.18
ELDER	REACH1	7.392	fvcp nospill	1179.19	48.59	53.69		53.71	0.000412	1.81	1395.66	773.19	0.16
ELDER	REACH1	7.339	NoSpill 10yr	550.20	48.05	52.69		52.70	0.000517	1.65	678.21	495.32	0.17
ELDER	REACH1	7.339	fvcp nospill	1178.73	48.05	53.54		53.56	0.000534	1.99	1105.00	504.35	0.18
ELDER	REACH1	7.3202*	NoSpill 10yr	550.20	47.97	52.66		52.68	0.000632	1.88	598.82	452.44	0.19
ELDER	REACH1	7.3202*	fvcp nospill	1178.53	47.97	53.51		53.54	0.000654	2.26	989.85	465.00	0.20
ELDER	REACH1	7.3014*	NoSpill 10yr	550.20	47.88	52.62		52.65	0.000684	2.01	572.17	548.00	0.20
ELDER	REACH1	7.3014*	fvcp nospill	1178.52	47.88	53.49		53.52	0.000603	2.22	1132.71	728.67	0.20
ELDER	REACH1	7.2826*	NoSpill 10yr	550.18	47.80	52.53		52.63	0.001535	3.05	361.56	442.51	0.30
ELDER	REACH1	7.2826*	fvcp nospill	1178.51	47.80	53.42		53.50	0.001162	3.13	825.50	587.45	0.27

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	7.2638*	NoSpill 10yr	550.18	47.71	52.39		52.55	0.002072	3.54	278.39	359.38	0.35
ELDER	REACH1	7.2638*	fvcp nospill	1178.48	47.71	53.33		53.45	0.001615	3.73	663.71	473.41	0.33
ELDER	REACH1	7.245*	NoSpill 10yr	550.16	47.63	52.25		52.42	0.002154	3.60	256.62	308.38	0.36
ELDER	REACH1	7.245*	fvcp nospill	1178.36	47.63	53.23		53.38	0.001794	3.95	593.32	398.04	0.34
ELDER	REACH1	7.2262*	NoSpill 10yr	550.15	47.55	52.10		52.27	0.002227	3.64	240.13	287.23	0.37
ELDER	REACH1	7.2262*	fvcp nospill	1178.35	47.55	53.13		53.29	0.001861	4.04	559.35	352.43	0.35
ELDER	REACH1	7.2074*	NoSpill 10yr	550.15	47.46	51.97		52.12	0.001955	3.41	229.82	143.04	0.34
ELDER	REACH1	7.2074*	fvcp nospill	1178.33	47.46	53.02		53.19	0.001979	4.17	520.12	306.40	0.36
ELDER	REACH1	7.1886*	NoSpill 10yr	550.15	47.38	51.84		51.98	0.001927	3.37	225.37	126.39	0.34
ELDER	REACH1	7.1886*	fvcp nospill	1178.24	47.38	52.87		53.08	0.002290	4.46	427.22	210.00	0.39
ELDER	REACH1	7.1698*	NoSpill 10yr	550.15	47.29	51.69		51.84	0.001994	3.39	214.26	109.62	0.35
ELDER	REACH1	7.1698*	fvcp nospill	1178.23	47.29	52.66		52.94	0.002698	4.93	374.21	196.87	0.44
ELDER	REACH1	7.151	NoSpill 10yr	550.14	47.21	51.52		51.69	0.002245	3.54	194.93	92.80	0.37
ELDER	REACH1	7.151	fvcp nospill	1178.02	47.21	52.31		52.74	0.004392	5.81	291.40	167.46	0.53
ELDER	REACH1	7.15		Lat Struct									
ELDER	REACH1	7.1445*	NoSpill 10yr	514.62	47.18	51.48		51.54	0.001141	2.46	316.83	179.09	0.26
ELDER	REACH1	7.1445*	fvcp nospill	1024.37	47.18	52.36		52.46	0.001361	3.23	475.31	180.00	0.30
ELDER	REACH1	7.138*	NoSpill 10yr	514.62	47.15	51.39		51.45	0.001256	2.49	320.47	200.00	0.27
ELDER	REACH1	7.138*	fvcp nospill	1024.36	47.15	52.26		52.36	0.001378	3.15	495.17	200.00	0.30
ELDER	REACH1	7.1315*	NoSpill 10yr	514.61	47.11	51.26		51.34	0.001708	2.76	285.93	200.00	0.31
ELDER	REACH1	7.1315*	fvcp nospill	1024.34	47.11	52.13		52.24	0.001710	3.38	459.73	200.00	0.33
ELDER	REACH1	7.125	NoSpill 10yr	514.61	47.08	50.61		51.00	0.009687	5.23	126.06	153.45	0.70
ELDER	REACH1	7.125	fvcp nospill	1024.31	47.08	51.89		52.08	0.002995	4.19	371.20	200.00	0.42
ELDER	REACH1	7.120	NoSpill 10yr	514.60	46.70	50.10		50.33	0.006534	3.88	132.53	47.72	0.41
ELDER	REACH1	7.120	fvcp nospill	1024.28	46.70	51.13		51.62	0.009661	5.60	183.01	49.80	0.51
ELDER	REACH1	7.119		Lat Struct									
ELDER	REACH1	7.10425*	NoSpill 10yr	514.59	46.05	49.49		49.74	0.007596	4.04	127.35	48.73	0.44
ELDER	REACH1	7.10425*	fvcp nospill	910.22	46.05	50.61		50.99	0.007867	4.91	185.23	53.56	0.47
ELDER	REACH1	7.0885*	NoSpill 10yr	514.57	45.40	48.81		49.08	0.008455	4.16	123.61	49.05	0.48
ELDER	REACH1	7.0885*	fvcp nospill	890.23	45.40	50.00		50.35	0.007749	4.78	186.22	55.99	0.46
ELDER	REACH1	7.07275*	NoSpill 10yr	514.55	44.75	48.10		48.37	0.008447	4.15	123.87	49.25	0.48
ELDER	REACH1	7.07275*	fvcp nospill	889.49	44.75	49.41		49.74	0.007011	4.60	193.17	56.95	0.44
ELDER	REACH1	7.057	NoSpill 10yr	514.44	44.10	47.53		47.76	0.006382	3.79	135.90	50.24	0.41
ELDER	REACH1	7.057	fvcp nospill	887.65	44.10	48.96		49.23	0.005204	4.15	213.75	58.75	0.38
ELDER	REACH1	7.04066*	NoSpill 10yr	514.09	43.43	47.05		47.25	0.005362	3.56	144.40	51.38	0.37
ELDER	REACH1	7.04066*	fvcp nospill	885.36	43.43	48.59		48.82	0.004180	3.84	230.81	60.63	0.35
ELDER	REACH1	7.02433*	NoSpill 10yr	513.87	42.77	46.68		46.84	0.004082	3.23	158.89	53.18	0.33
ELDER	REACH1	7.02433*	fvcp nospill	883.45	42.77	48.32		48.50	0.003187	3.48	254.11	63.08	0.31
ELDER	REACH1	7.008	NoSpill 10yr	513.85	42.10	46.42		46.54	0.002839	2.85	180.51	55.62	0.28
ELDER	REACH1	7.008	fvcp nospill	864.77	42.10	48.12		48.26	0.002244	3.05	283.90	65.95	0.26
ELDER	REACH1	6.98		Lat Struct									
ELDER	REACH1	6.97906*	NoSpill 10yr	554.79	41.50	46.20		46.32	0.002255	2.68	207.35	58.93	0.25
ELDER	REACH1	6.97906*	fvcp nospill	921.56	41.50	47.94		48.07	0.001857	2.89	318.68	69.41	0.24
ELDER	REACH1	6.978	NoSpill 10yr	553.22	40.90	46.09		46.17	0.001481	2.29	241.97	62.82	0.21
ELDER	REACH1	6.978	fvcp nospill	917.22	40.90	47.84		47.94	0.001302	2.54	361.58	73.36	0.20
ELDER	REACH1	6.960		Lat Struct									
ELDER	REACH1	6.95819*	NoSpill 10yr	552.67	40.50	46.04		46.10	0.001027	1.95	282.93	71.80	0.17
ELDER	REACH1	6.95819*	fvcp nospill	916.31	40.50	47.81		47.88	0.000921	2.19	419.30	82.46	0.17
ELDER	REACH1	6.956	NoSpill 10yr	567.07	40.10	46.02		46.05	0.000507	1.52	372.97	81.00	0.12
ELDER	REACH1	6.956	fvcp nospill	957.10	40.10	47.78		47.83	0.000546	1.82	525.52	91.72	0.13
ELDER	REACH1	6.946		Culvert									
ELDER	REACH1	6.927	NoSpill 10yr	562.72	39.90	45.75		45.81	0.001049	1.94	290.74	75.82	0.17
ELDER	REACH1	6.927	fvcp nospill	944.87	39.90	47.40		47.48	0.001007	2.23	424.51	86.81	0.18
ELDER	REACH1	6.926		Lat Struct									

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	6.903	NoSpill 10yr	573.17	39.70	45.63		45 68	0.000896	1.79	320.89	84.22	0.16
ELDER	REACH1	6.903	fvcp nospill	956.48	39.70	47.29		47 35	0.000841	2.03	470.98	97.04	0.16
ELDER	REACH1	6.884	NoSpill 10yr	573.21	39.60	45.58		45 61	0.000559	1.44	398.58	101.05	0.13
ELDER	REACH1	6.884	fvcp nospill	952.35	39.60	47.25		47 29	0.000525	1.64	579.59	115.50	0.13
ELDER	REACH1	6.872	NoSpill 10yr	573.06	39.50	45.55		45 58	0.000470	1.32	433.05	110.43	0.12
ELDER	REACH1	6.872	fvcp nospill	951.62	39.50	47.22		47 26	0.000441	1.51	629.61	125.21	0.12
ELDER	REACH1	6.858	NoSpill 10yr	573.10	39.40	45.51		45 54	0.000532	1.41	405.62	102.70	0.13
ELDER	REACH1	6.858	fvcp nospill	950.09	39.40	47.18		47 22	0.000503	1.61	588.79	116.76	0.13
ELDER	REACH1	6.847	NoSpill 10yr	573.17	39.30	45.47		45 51	0.000706	1 59	359.45	93.77	0.14
ELDER	REACH1	6.847	fvcp nospill	950.15	39.30	47.14		47 19	0.000557	1 80	529.07	109.30	0.14
ELDER	REACH1	6.824	NoSpill 10yr	573.25	39.10	45.42		45.44	0.000322	1 09	526.90	135.77	0.10
ELDER	REACH1	6.824	fvcp nospill	950.34	39.10	47.10		47 13	0.000289	1.24	766.92	149.87	0.10
ELDER	REACH1	6.807	NoSpill 10yr	573.35	39.00	45.39		45.41	0.000414	1.09	525.53	162.18	0.11
ELDER	REACH1	6.807	fvcp nospill	949.70	39.00	47.08		47 10	0.000297	1 17	810.28	174.87	0.10
ELDER	REACH1	6.795	NoSpill 10yr	573 42	39.00	45.37		45.39	0.000279	1.02	560.26	142.00	0.09
ELDER	REACH1	6.795	fvcp nospill	949.81	39.00	47.06		47.09	0.000251	1.17	811.67	155.10	0.09
ELDER	REACH1	6.782	NoSpill 10yr	573.45	38.90	45.32		45.36	0.000644	1 59	359.54	87.21	0 14
ELDER	REACH1	6.782	fvcp nospill	949 19	38.90	47.00		47.05	0.000632	1.83	517 46	100.06	0 14
ELDER	REACH1	6.774	NoSpill 10yr	573 50	38 80	45 27	41.53	45.33	0.000853	1.88	304.35	70.08	0 16
ELDER	REACH1	6.774	fvcp nospill	948.53	38 80	46 95	42.18	47.03	0.000873	2.21	429.45	78.98	0 17
ELDER	REACH1	6.764		Bridge									
ELDER	REACH1	6.752	NoSpill 10yr	573.50	38.60	44.66		44 71	0 000881	1 81	316.36	78.35	0.16
ELDER	REACH1	6.752	fvcp nospill	946.28	38.60	46.22		46.29	0 000869	2 12	446.69	88.00	0.17
ELDER	REACH1	6.745	NoSpill 10yr	573.50	38.60	44.64		44 68	0 000711	1.52	376.92	106.55	0.14
ELDER	REACH1	6.745	fvcp nospill	946.28	38.60	46 22		46.26	0.000648	1.69	560.88	126.57	0.14
ELDER	REACH1	6.734	NoSpill 10yr	573.49	38 50	44.60		44 64	0 000650	1.52	376.45	98.68	0.14
ELDER	REACH1	6.734	fvcp nospill	945.52	38 50	46 18		46.23	0.000593	1.76	538.54	105.80	0.14
ELDER	REACH1	6.697	NoSpill 10yr	573.48	38.40	44.61		44 62	0.000119	0 71	804.31	185.99	0.06
ELDER	REACH1	6.697	fvcp nospill	945.51	38.40	46 20		46.21	0.000121	0.85	1108.27	197.02	0.06
ELDER	REACH1	6.684	NoSpill 10yr	573.46	38 30	44 58		44 60	0.000329	1.16	495.20	117.93	0.10
ELDER	REACH1	6.684	fvcp nospill	944.79	38 30	46 16		46 19	0.000379	1.36	693.45	143.78	0.11
ELDER	REACH1	6.665	NoSpill 10yr	573.45	38 30	44 51		44 55	0.000715	1.63	352.27	89.77	0.14
ELDER	REACH1	6.665	fvcp nospill	943.35	38.30	46.08		46 14	0.000705	1 87	503.84	102.83	0.15
ELDER	REACH1	6.635	NoSpill 10yr	573.42	38.20	44.39		44 44	0.000732	1 71	336.29	80.86	0.15
ELDER	REACH1	6.635	fvcp nospill	941.18	38.20	45.96		46.02	0.000748	2.00	470.51	90.13	0.15
ELDER	REACH1	6.581	NoSpill 10yr	573.32	38.00	44.17		44.22	0.000792	1.74	329.60	81 59	0.15
ELDER	REACH1	6.581	fvcp nospill	938.52	38.00	45.74		45.80	0.000785	2.02	465.40	91.47	0 16
ELDER	REACH1	6.558	NoSpill 10yr	573 20	37 90	44.10		44.13	0.000596	1.52	377.60	92.85	0 13
ELDER	REACH1	6.558	fvcp nospill	937 37	37 90	45.67		45.72	0.000595	1.76	533.26	104.92	0 14
ELDER	REACH1	6.539		Lat Struct									
ELDER	REACH1	6.536	NoSpill 10yr	573 20	37 80	44.00		44.05	0.000793	1.74	328.85	165.35	0 15
ELDER	REACH1	6.536	fvcp nospill	921 71	37 80	45.58		45.64	0.000761	1.98	465.78	187.01	0 16
ELDER	REACH1	6.522	NoSpill 10yr	573 19	37 80	43.95		44.00	0.000784	1.70	337.32	86 25	0 15
ELDER	REACH1	6.522	fvcp nospill	936 46	37.80	45.53		45.59	0.000758	1.94	463.18	98 74	0 15
ELDER	REACH1	6.504	NoSpill 10yr	573 17	37.70	43.89		43.93	0.000643	1.47	390.23	107 75	0 14
ELDER	REACH1	6.504	fvcp nospill	936.01	37.70	45.48		45.52	0.000584	1.62	577.03	127.62	0 13
ELDER	REACH1	6.470	NoSpill 10yr	573 06	37.60	43.75		43.80	0.000812	1 77	323.81	79 50	0 15
ELDER	REACH1	6.470	fvcp nospill	934 62	37.60	45.33		45.40	0.000802	2.04	457.80	89.60	0.16
ELDER	REACH1	6.416	NoSpill 10yr	572 95	37 40	43.51		43.56	0.000820	1.78	321 10	78.79	0.16
ELDER	REACH1	6.416	fvcp nospill	934 51	37 40	45.10		45.17	0.000813	2.06	453.97	88 59	0 16
ELDER	REACH1	6.375	NoSpill 10yr	572 85	37 20	43.35		43.39	0.000772	1.66	344.76	90.16	0.15
ELDER	REACH1	6.375	fvcp nospill	934 41	37.20	44.95		45.00	0.000724	1.87	500.43	104.52	0 15
ELDER	REACH1	6.344	NoSpill 10yr	572 75	37 10	43.21		43.26	0.000828	1.76	325.52	81.88	0.16
ELDER	REACH1	6.344	fvcp nospill	934 30	37 10	44 82		44.88	0.000796	2.01	465.82	93.20	0.16

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	6.309	NoSpill 10yr	572.73	37.00	43.06		43.11	0.000798	1.71	334.22	85.48	0.15
ELDER	REACH1	6.309	fvcp nospill	934.32	37.00	44.67		44.73	0.000751	1.94	481.89	97.77	0.15
ELDER	REACH1	6.287	NoSpill 10yr	572.66	37.00	42.96		43.01	0.000863	1.78	322.20	82.66	0.16
ELDER	REACH1	6.287	fvcp nospill	934.31	37.00	44.58		44.64	0.000806	2.01	465.11	94.13	0.16
ELDER	REACH1	6.267	NoSpill 10yr	572.65	36.90	42.87		42.92	0.000876	1.81	316.89	80.06	0.16
ELDER	REACH1	6.267	fvcp nospill	934.30	36.90	44.49		44.56	0.000825	2.05	455.18	90.52	0.16
ELDER	REACH1	6.244	NoSpill 10yr	573.74	36.80	42.75		42.81	0.000955	1.93	297.64	72.13	0.17
ELDER	REACH1	6.244	fvcp nospill	935.45	36.80	44.38		44.45	0.000913	2.22	420.77	78.93	0.17
ELDER	REACH1	6.216	NoSpill 10yr	575.18	36.80	42.61		42.66	0.000963	1.88	306.62	79.89	0.17
ELDER	REACH1	6.216	fvcp nospill	936.89	36.80	44.25		44.32	0.000889	2.10	446.58	90.96	0.17
ELDER	REACH1	6.188	NoSpill 10yr	576.55	36.70	42.45		42.51	0.001100	1.99	290.00	74.83	0.18
ELDER	REACH1	6.188	fvcp nospill	938.30	36.70	44.10		44.18	0.000986	2.23	421.35	84.04	0.18
ELDER	REACH1	6.166	NoSpill 10yr	577.58	36.60	42.35		42.39	0.000965	1.75	329.74	94.70	0.17
ELDER	REACH1	6.166	fvcp nospill	939.38	36.60	44.02		44.08	0.000758	1.87	502.44	108.48	0.15
ELDER	REACH1	6.147	NoSpill 10yr	578.55	36.50	42.24		42.29	0.001032	1.86	311.17	85.48	0.17
ELDER	REACH1	6.147	fvcp nospill	940.35	36.50	43.93		44.00	0.000837	2.03	462.93	93.51	0.16
ELDER	REACH1	6.124	NoSpill 10yr	579.67	36.40	42.13		42.17	0.000899	1.73	336.01	93.29	0.16
ELDER	REACH1	6.124	fvcp nospill	941.45	36.40	43.85		43.90	0.000710	1.85	509.82	106.55	0.15
ELDER	REACH1	6.106	NoSpill 10yr	580.56	36.30	42.09		42.11	0.000338	1.13	515.83	131.35	0.10
ELDER	REACH1	6.106	fvcp nospill	942.35	36.30	43.83		43.86	0.000279	1.28	749.79	138.13	0.10
ELDER	REACH1	6.087	NoSpill 10yr	581.50	36.20	42.05		42.08	0.000397	1.24	468.80	115.55	0.11
ELDER	REACH1	6.087	fvcp nospill	943.27	36.20	43.80		43.83	0.000340	1.40	675.75	122.26	0.10
ELDER	REACH1	6.070	NoSpill 10yr	582.39	36.20	41.99		42.03	0.000514	1.54	378.75	93.49	0.13
ELDER	REACH1	6.070	fvcp nospill	944.16	36.20	43.74		43.79	0.000524	1.73	546.30	98.63	0.13
ELDER	REACH1	6.039	NoSpill 10yr	582.38	36.00	41.84		41.90	0.001066	1.93	302.10	80.38	0.18
ELDER	REACH1	6.039	fvcp nospill	944.03	36.00	43.61		43.68	0.000839	2.10	450.16	86.42	0.16
ELDER	REACH1	6.013	NoSpill 10yr	582.35	35.90	41.63		41.71	0.001577	2.32	251.20	67.64	0.21
ELDER	REACH1	6.013	fvcp nospill	943.87	35.90	43.44		43.53	0.001218	2.48	380.79	74.80	0.19
ELDER	REACH1	6.001		Culvert									
ELDER	REACH1	5.993	NoSpill 10yr	582.32	35.70	41.34		41.43	0.002102	2.37	245.90	80.35	0.24
ELDER	REACH1	5.993	fvcp nospill	942.45	35.70	42.91		43.00	0.001618	2.44	386.81	99.52	0.22
ELDER	REACH1	5.978	NoSpill 10yr	582.27	35.60	41.21		41.28	0.001679	2.16	269.23	85.35	0.21
ELDER	REACH1	5.978	fvcp nospill	941.80	35.60	42.81		42.88	0.001295	2.24	421.18	104.51	0.20
ELDER	REACH1	5.927	NoSpill 10yr	457.70	35.30	40.89		40.92	0.000674	1.46	313.00	89.96	0.14
ELDER	REACH1	5.927	fvcp nospill	937.30	35.30	42.53		42.59	0.000884	1.98	473.55	105.83	0.16
ELDER	REACH1	5.884	NoSpill 10yr	455.36	34.80	40.76		40.78	0.000540	1.34	339.88	94.33	0.12
ELDER	REACH1	5.884	fvcp nospill	668.55	34.80	42.43		42.46	0.000371	1.31	512.25	111.46	0.11
ELDER	REACH1	5.845	NoSpill 10yr	453.17	34.40	40.66		40.68	0.000442	1.26	360.01	94.28	0.11
ELDER	REACH1	5.845	fvcp nospill	666.31	34.40	42.36		42.39	0.000319	1.25	534.60	110.56	0.10
ELDER	REACH2	5.779	NoSpill 10yr	819.04	33.80	40.66		40.72	0.000908	1.95	420.65	98.21	0.17
ELDER	REACH2	5.779	fvcp nospill	1364.52	33.80	42.36		42.44	0.000907	2.27	600.54	110.30	0.17
ELDER	REACH2	5.665	NoSpill 10yr	819.02	33.30	40.10		40.16	0.000936	1.96	418.71	99.33	0.17
ELDER	REACH2	5.665	fvcp nospill	1364.42	33.30	41.81		41.89	0.000909	2.27	600.93	110.40	0.17
ELDER	REACH2	5.591	NoSpill 10yr	819.00	33.00	39.73		39.79	0.000954	1.97	415.79	98.95	0.17
ELDER	REACH2	5.591	fvcp nospill	1364.40	33.00	41.46		41.54	0.000919	2.28	599.46	110.70	0.17
ELDER	REACH2	5.510	NoSpill 10yr	818.93	32.60	39.48		39.56	0.000125	2.33	350.76	71.61	0.19
ELDER	REACH2	5.510	fvcp nospill	1364.39	32.60	41.19		41.31	0.000138	2.86	476.81	75.47	0.20
ELDER	REACH2	5.450	NoSpill 10yr	818.91	32.30	39.45		39.52	0.000107	2.24	366.12	69.69	0.17
ELDER	REACH2	5.450	fvcp nospill	1364.36	32.30	41.15		41.27	0.000126	2.80	487.72	73.10	0.19
ELDER	REACH2	5.428	NoSpill 10yr	818.91	32.20	39.43	35.24	39.51	0.000093	2.28	358.39	70.06	0.17
ELDER	REACH2	5.428	fvcp nospill	1364.34	32.20	41.12	36.01	41.26	0.000111	2.96	461.49	73.44	0.19
ELDER	REACH2	5.414		Bridge									
ELDER	REACH2	5.402	NoSpill 10yr	818.82	32.00	39.18		39.28	0.000785	2.21	370.42	86.50	0.16
ELDER	REACH2	5.402	fvcp nospill	1364.34	32.00	40.86		40.98	0.000934	2.86	477.66	97.26	0.18
ELDER	REACH2	5.359	NoSpill 10yr	818.58	31.70	39.02		39.08	0.000794	1.97	416.10	85.49	0.16

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	5.359	fvcp nospill	1364.28	31.70	40.69		40.78	0.000916	2.41	567.09	95.74	0.17
ELDER	REACH2	5.307	NoSpill 10yr	845.68	31.60	38.80		38.86	0.000801	1.91	442.09	96.16	0.16
ELDER	REACH2	5.307	fvcp nospill	1395.34	31.60	40.45		40.53	0.000867	2.28	610.79	107.44	0.17
ELDER	REACH2	5.195	NoSpill 10yr	863.59	31.20	38.33		38.38	0.000796	1.88	463.54	104.50	0.16
ELDER	REACH2	5.195	fvcp nospill	1414.91	31.20	39.95		40.03	0.000813	2.22	638.54	111.10	0.16
ELDER	REACH2	5.113	NoSpill 10yr	862.01	30.90	37.96		38.02	0.000893	1.97	438.51	99.53	0.17
ELDER	REACH2	5.113	fvcp nospill	1414.60	30.90	39.57		39.65	0.000938	2.32	609.42	111.24	0.17
ELDER	REACH2	5.056	NoSpill 10yr	861.83	30.70	37.69		37.75	0.000880	1.91	450.35	105.54	0.16
ELDER	REACH2	5.056	fvcp nospill	1414.76	30.70	39.29		39.37	0.000901	2.24	631.23	118.05	0.17
ELDER	REACH2	5.009	NoSpill 10yr	861.56	30.60	37.44		37.51	0.001029	2.07	416.31	97.21	0.18
ELDER	REACH2	5.009	fvcp nospill	1414.74	30.60	39.03		39.13	0.001051	2.44	579.99	106.55	0.18
ELDER	REACH2	4.998	NoSpill 10yr	861.54	30.50	37.42		37.46	0.000635	1.66	519.67	118.34	0.14
ELDER	REACH2	4.998	fvcp nospill	1414.74	30.50	39.02		39.08	0.000655	1.97	718.61	128.29	0.15
ELDER	REACH2	4.945	NoSpill 10yr	860.97	30.30	37.17		37.23	0.001000	2.02	425.52	100.76	0.17
ELDER	REACH2	4.945	fvcp nospill	1414.72	30.30	38.76		38.85	0.000995	2.38	595.06	108.70	0.18
ELDER	REACH2	4.887	NoSpill 10yr	884.13	30.10	36.91		36.96	0.000762	1.84	481.63	105.39	0.15
ELDER	REACH2	4.887	fvcp nospill	1437.43	30.10	38.50		38.57	0.000790	2.20	654.27	110.40	0.16
ELDER	REACH2	4.810	NoSpill 10yr	883.75	30.50	36.45		36.54	0.001320	2.40	368.42	82.96	0.20
ELDER	REACH2	4.810	fvcp nospill	1437.40	30.50	37.99		38.12	0.001441	2.85	504.83	93.69	0.22
ELDER	REACH2	4.795	NoSpill 10yr	883.59	30.50	36.35		36.46	0.000760	2.64	335.08	79.57	0.23
ELDER	REACH2	4.795	fvcp nospill	1437.40	30.50	37.89		38.03	0.000877	3.04	472.58	101.02	0.25
ELDER	REACH2	4.713	NoSpill 10yr	883.01	29.84	36.08		36.19	0.000442	2.66	331.71	79.50	0.23
ELDER	REACH2	4.713	fvcp nospill	1437.39	29.84	37.58		37.73	0.000490	3.11	462.26	94.89	0.25
ELDER	REACH2	4.693	NoSpill 10yr	882.59	29.90	35.97	33.40	36.13	0.000737	3.26	270.42	70.06	0.29
ELDER	REACH2	4.693	fvcp nospill	1437.36	29.90	37.44	34.23	37.66	0.000733	3.78	379.86	78.16	0.30
ELDER	REACH2	4.684		Bridge									
ELDER	REACH2	4.671	NoSpill 10yr	881.44	29.90	35.74		35.92	0.000875	3.46	254.64	68.81	0.32
ELDER	REACH2	4.671	fvcp nospill	1437.34	29.90	37.21		37.46	0.000840	3.97	362.14	76.91	0.32
ELDER	REACH2	4.642	NoSpill 10yr	881.31	30.00	35.71		35.82	0.000472	2.64	333.77	85.58	0.24
ELDER	REACH2	4.642	fvcp nospill	1437.32	30.00	37.21		37.35	0.000512	3.02	476.68	108.40	0.25
ELDER	REACH2	4.564	NoSpill 10yr	899.34	28.70	35.30		35.53	0.000909	3.90	230.69	52.21	0.33
ELDER	REACH2	4.564	fvcp nospill	1454.01	28.70	36.66		36.99	0.001272	4.63	313.97	70.77	0.39
ELDER	REACH2	4.485	NoSpill 10yr	920.47	28.60	34.71		34.98	0.001679	4.14	222.26	74.28	0.42
ELDER	REACH2	4.485	fvcp nospill	1472.32	28.60	36.14		36.43	0.001382	4.34	339.58	91.77	0.40
ELDER	REACH2	4.437	NoSpill 10yr	920.39	28.40	34.59		34.71	0.000443	2.70	341.24	80.52	0.23
ELDER	REACH2	4.437	fvcp nospill	1472.31	28.40	36.03		36.19	0.000491	3.15	466.93	94.06	0.25
ELDER	REACH2	4.391	NoSpill 10yr	920.27	28.30	34.47		34.59	0.000484	2.82	326.52	76.76	0.24
ELDER	REACH2	4.391	fvcp nospill	1472.30	28.30	35.89		36.06	0.000544	3.32	442.91	88.62	0.26
ELDER	REACH2	4.343	NoSpill 10yr	933.28	28.20	34.33		34.46	0.000551	2.91	320.99	79.55	0.26
ELDER	REACH2	4.343	fvcp nospill	1482.78	28.20	35.74		35.92	0.000574	3.36	441.55	90.77	0.27
ELDER	REACH2	4.240	NoSpill 10yr	948.06	28.10	33.79	31.45	34.02	0.001046	3.88	244.61	63.20	0.35
ELDER	REACH2	4.240	fvcp nospill	1494.76	28.10	35.08	32.29	35.38	0.001397	4.40	339.66	90.57	0.40
ELDER	REACH2	4.239		Bridge									
ELDER	REACH2	4.229	NoSpill 10yr	948.02	28.10	33.60		33.85	0.001208	4.08	232.61	62.13	0.37
ELDER	REACH2	4.229	fvcp nospill	1494.71	28.10	34.80		35.15	0.001596	4.74	315.24	82.93	0.43
ELDER	REACH2	4.221	NoSpill 10yr	948.04	28.00	33.72		33.81	0.000396	2.48	382.20	94.55	0.22
ELDER	REACH2	4.221	fvcp nospill	1494.73	28.00	34.96		35.09	0.000459	2.94	507.65	108.49	0.24
ELDER	REACH2	4.156	NoSpill 10yr	948.03	28.00	33.60		33.68	0.000343	2.32	408.07	100.00	0.20
ELDER	REACH2	4.156	fvcp nospill	1494.72	28.00	34.82		34.94	0.000410	2.77	539.35	115.98	0.23
ELDER	REACH2	4.112	NoSpill 10yr	948.02	28.00	33.16	31.37	33.47	0.001730	4.45	213.14	66.03	0.44
ELDER	REACH2	4.112	fvcp nospill	1494.71	28.00	34.33	32.27	34.72	0.001674	5.04	296.82	656.51	0.44
ELDER	REACH2	4.105		Bridge									
ELDER	REACH2	4.097	NoSpill 10yr	947.51	28.00	29.88	31.37	35.72	0.052843	19.39	48.87	34.60	2.88
ELDER	REACH2	4.097	fvcp nospill	1494.71	28.00	30.40	32.27	37.90	0.052201	21.99	67.97	39.42	2.95

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	4.06	NoSpill 10yr	945.19	21.50	27.44		27.59	0.000277	3.11	304.23	63.53	0.25
ELDER	REACH2	4.06	fvcp nospill	1494.70	21.50	28.89		29.11	0.000313	3.73	400.88	69.39	0.27
ELDER	REACH2	4.009	NoSpill 10yr	958.82	21.30	27.38		27.51	0.000268	3.10	309.57	63.33	0.25
ELDER	REACH2	4.009	fvcp nospill	1503.92	21.30	28.81		29.02	0.000303	3.71	405.20	68.79	0.27
ELDER	REACH2	3.958	NoSpill 10yr	972.36	21.10	27.29		27.44	0.000260	3.09	314.36	62.74	0.24
ELDER	REACH2	3.958	fvcp nospill	1513.08	21.10	28.73		28.94	0.000295	3.70	408.41	67.87	0.27
ELDER	REACH2	3.855	NoSpill 10yr	998.89	20.70	27.14		27.29	0.000250	3.11	321.23	60.72	0.24
ELDER	REACH2	3.855	fvcp nospill	1531.22	20.70	28.56		28.78	0.000288	3.73	410.90	65.37	0.26
ELDER	REACH2	3.842	NoSpill 10yr	998.89	20.70	27.11		27.27	0.000288	3.19	312.74	63.70	0.25
ELDER	REACH2	3.842	fvcp nospill	1531.22	20.70	28.54		28.76	0.000335	3.74	409.94	74.16	0.28
ELDER	REACH2	3.832	NoSpill 10yr	998.88	20.60	27.08	23.52	27.25	0.000323	3.39	294.48	60.08	0.27
ELDER	REACH2	3.832	fvcp nospill	1531.18	20.60	28.49	24.42	28.74	0.000350	3.99	383.55	65.96	0.29
ELDER	REACH2	3.825		Bridge									
ELDER	REACH2	3.816	NoSpill 10yr	998.86	20.60	26.99		27.18	0.000339	3.45	289.38	59.71	0.28
ELDER	REACH2	3.816	fvcp nospill	1531.15	20.60	28.39		28.64	0.000377	4.06	376.70	65.52	0.30
ELDER	REACH2	3.808	NoSpill 10yr	998.84	20.50	26.93		27.16	0.000463	3.84	260.42	57.89	0.32
ELDER	REACH2	3.808	fvcp nospill	1531.11	20.50	28.32		28.62	0.000487	4.44	344.59	63.51	0.34
ELDER	REACH2	3.746	NoSpill 10yr	998.84	20.40	26.78		27.01	0.000469	3.86	259.01	57.65	0.32
ELDER	REACH2	3.746	fvcp nospill	1531.03	20.40	28.15		28.46	0.000496	4.47	342.17	63.17	0.34
ELDER	REACH2	3.698	NoSpill 10yr	998.83	20.30	26.66		26.89	0.000462	3.83	260.77	57.95	0.32
ELDER	REACH2	3.698	fvcp nospill	1530.96	20.30	28.03		28.34	0.000490	4.45	343.93	63.49	0.34
ELDER	REACH2	3.657	NoSpill 10yr	998.83	20.10	26.57		26.79	0.000452	3.80	262.67	58.11	0.32
ELDER	REACH2	3.657	fvcp nospill	1530.92	20.10	27.93		28.23	0.000484	4.43	345.65	63.66	0.33
ELDER	REACH2	3.59	NoSpill 10yr	998.82	20.00	26.41		26.63	0.000445	3.79	263.44	57.84	0.31
ELDER	REACH2	3.59	fvcp nospill	1530.87	20.00	27.78		28.06	0.000483	4.44	345.05	63.21	0.33
ELDER	REACH2	3.496	NoSpill 10yr	998.76	19.70	26.18	23.16	26.41	0.000440	3.86	258.48	54.16	0.31
ELDER	REACH2	3.496	fvcp nospill	1530.82	19.70	27.49	24.03	27.82	0.000502	4.61	332.26	58.59	0.34
ELDER	REACH2	3.490		Bridge									
ELDER	REACH2	3.483	NoSpill 10yr	998.76	19.60	26.03		26.26	0.000455	3.89	256.92	54.73	0.32
ELDER	REACH2	3.483	fvcp nospill	1530.80	19.60	27.31		27.65	0.000521	4.64	329.92	59.20	0.35
ELDER	REACH2	3.442	NoSpill 10yr	998.77	19.50	26.07	22.64	26.19	0.000241	2.78	359.52	81.47	0.23
ELDER	REACH2	3.442	fvcp nospill	1530.81	19.50	27.39	23.40	27.56	0.000258	3.24	473.12	89.63	0.25
ELDER	REACH2	3.431		Bridge									
ELDER	REACH2	3.420	NoSpill 10yr	998.71	19.50	25.96		26.08	0.000259	2.85	350.56	80.77	0.24
ELDER	REACH2	3.420	fvcp nospill	1530.80	19.50	27.28		27.45	0.000276	3.31	462.59	88.91	0.26
ELDER	REACH2	3.419	NoSpill 10yr	998.71	19.50	25.96		26.08	0.000260	2.82	354.58	83.45	0.24
ELDER	REACH2	3.419	fvcp nospill	1530.78	19.50	27.28		27.44	0.000276	3.24	471.98	94.01	0.26
ELDER	REACH2	3.286	NoSpill 10yr	997.10	18.90	25.36		25.71	0.000826	4.78	208.81	52.02	0.42
ELDER	REACH2	3.286	fvcp nospill	1530.77	18.90	26.50		27.05	0.000901	5.55	275.90	58.37	0.45
ELDER	REACH2	3.141	NoSpill 10yr	1029.02	18.30	24.44		24.89	0.001250	5.41	190.12	54.00	0.51
ELDER	REACH2	3.141	fvcp nospill	1552.21	18.30	25.72		26.25	0.001165	5.84	265.59	63.75	0.50
ELDER	REACH2	3.092	NoSpill 10yr	1029.02	18.30	24.47	21.35	24.67	0.000376	3.60	285.49	59.55	0.29
ELDER	REACH2	3.092	fvcp nospill	1552.20	18.30	25.78	22.15	26.04	0.000420	4.25	364.88	64.05	0.31
ELDER	REACH2	3.081		Bridge									
ELDER	REACH2	3.071	NoSpill 10yr	1028.97	18.30	24.37		24.58	0.000400	3.68	279.26	59.18	0.30
ELDER	REACH2	3.071	fvcp nospill	1504.82	18.30	25.63		25.91	0.000421	4.22	356.79	63.61	0.31
ELDER	REACH2	3.07	NoSpill 10yr	1028.48	18.20	23.98		24.60	0.001738	6.34	162.20	46.16	0.60
ELDER	REACH2	3.07	fvcp nospill	1503.84	18.20	25.23		25.92	0.001545	6.69	224.82	53.99	0.58
ELDER	REACH2	3.01	NoSpill 10yr	1028.27	18.00	23.88		24.20	0.000715	4.55	225.77	54.11	0.39
ELDER	REACH2	3.01	fvcp nospill	1503.54	18.00	25.17		25.56	0.000691	5.03	299.14	59.94	0.40
ELDER	REACH2	2.944	NoSpill 10yr	1033.85	17.20	23.27		23.82	0.001445	5.96	173.59	47.18	0.55
ELDER	REACH2	2.944	fvcp nospill	1520.44	17.20	24.58		25.20	0.001300	6.32	240.66	55.20	0.53
ELDER	REACH2	2.861	NoSpill 10yr	1042.41	16.85	22.72		23.23	0.001224	5.69	183.23	46.89	0.51
ELDER	REACH2	2.861	fvcp nospill	1543.39	16.85	24.06		24.65	0.001148	6.16	250.41	54.00	0.50

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	2.794	NoSpill 10yr	1051 32	16.50	22.81		22.91	0.000202	2.47	425.68	102 13	0 21
ELDER	REACH2	2.794	fvcp nospill	1563.64	16.50	24.22		24.33	0.000186	2.71	576.74	112.88	0 21
ELDER	REACH2	2.736	NoSpill 10yr	1049 90	16.38	22.46		22.79	0.000706	4.60	228.32	53 30	0 39
ELDER	REACH2	2.736	fvcp nospill	1561 94	16.38	23.81		24.22	0.000684	5.14	303.73	58 10	0.40
ELDER	REACH2	2.673	NoSpill 10yr	1060 81	16 00	22.20	19.74	22.55	0.000696	4.75	223.25	48.63	0 39
ELDER	REACH2	2.673	fvcp nospill	1585 22	16 00	23 51	20.63	23.98	0.000731	5.48	289.51	52.28	0.41
ELDER	REACH2	2.665		Bridge									
ELDER	REACH2	2.656	NoSpill 10yr	1059 57	16 00	22 02		22 40	0.000776	4 93	214.76	48.14	0.41
ELDER	REACH2	2.656	fvcp nospill	1583.69	16 00	23 31		23 81	0.000812	5.68	278.98	51.72	0.43
ELDER	REACH2	2.603	NoSpill 10yr	1059 87	15 90	21 81		22 18	0.000755	4.87	219.68	48.31	0.40
ELDER	REACH2	2.603	fvcp nospill	1605 38	15 90	23 06		23 56	0.000822	5.67	282.93	52.35	0.43
ELDER	REACH2	2.546	NoSpill 10yr	1079.46	15.68	21.43		21.89	0.001087	5.47	197.45	49.25	0.46
ELDER	REACH2	2.546	fvcp nospill	1627 15	15.68	22.65		23.26	0.001113	6.23	261.15	54.07	0.50
ELDER	REACH2	2.487	NoSpill 10yr	1091.14	16 00	21 15		21 55	0 001013	5 12	212.99	56.24	0.46
ELDER	REACH2	2.487	fvcp nospill	1650.55	16.00	22.40		22 92	0 000976	5 75	287 00	61.56	0.47
ELDER	REACH2	2.354	NoSpill 10yr	1117.16	14.88	20.62		20 93	0 000721	4.45	250.96	63.71	0.40
ELDER	REACH2	2.354	fvcp nospill	1701.61	14.88	21.69		22.28	0 000743	5 05	337 10	72.39	0.41
ELDER	REACH2	2.269	NoSpill 10yr	1117.15	14.80	20 34	17 58	20.63	0 000590	4 34	257 25	53.00	0.35
ELDER	REACH2	2.269	fvcp nospill	1701.60	14.80	21.52	18.45	21 96	0 000697	5 32	319.87	53.00	0.38
ELDER	REACH2	2.258		Bridge									
ELDER	REACH2	2.250	NoSpill 10yr	1116.92	14.90	19.38		19.83	0.001169	5.50	203 00	50.41	0.48
ELDER	REACH2	2.250	fvcp nospill	1699.58	14.90	20.65		21.26	0.001164	6.27	270.92	53.00	0.49
ELDER	REACH2	2.219	NoSpill 10yr	1116.88	13.60	19.33		19.67	0.000863	4.67	239 13	64.63	0.43
ELDER	REACH2	2.219	fvcp nospill	1699.76	13.60	20.69		21.10	0.000770	5.12	332 08	71 40	0.42
ELDER	REACH2	2.149	NoSpill 10yr	1123.72	13.26	19.04		19.36	0.000782	4.51	248.98	65.93	0.41
ELDER	REACH2	2.149	fvcp nospill	1711 09	13.26	20.44		20.82	0.000689	4.95	345.63	71.05	0.40
ELDER	REACH2	2.098	NoSpill 10yr	1128.55	12.91	18.80		19.14	0.000835	4.64	243.17	64.81	0.42
ELDER	REACH2	2.098	fvcp nospill	1718.98	12.91	20.24		20.63	0.000721	5.04	340.85	71.38	0.41
ELDER	REACH2	2.036	NoSpill 10yr	1134 11	12.57	18.46		18.83	0.000996	4.93	230.11	64.02	0.46
ELDER	REACH2	2.036	fvcp nospill	1728 13	12 57	19.96		20.38	0.000794	5.22	331.27	70.92	0.43
ELDER	REACH2	1.978	NoSpill 10yr	1139 07	12 13	18.28		18.58	0.000660	4.39	259.53	62.72	0.38
ELDER	REACH2	1.978	fvcp nospill	1736 97	12.13	19 80		20.16	0.000595	4.82	360.19	69.51	0.37
ELDER	REACH2	1.921	NoSpill 10yr	1139 02	12.00	18.22		18.45	0.000211	3.83	297.36	66.41	0.32
ELDER	REACH2	1.921	fvcp nospill	1736.78	12.00	19.76		20.04	0.000203	4.28	405.68	74.26	0.32
ELDER	REACH2	1.908	NoSpill 10yr	1139.06	10.80	18.27	14 32	18.43	0.000111	3.22	353.55	60.17	0.23
ELDER	REACH2	1.908	fvcp nospill	1736.88	10.80	19 80	15.11	20 03	0.000128	3.88	447.22	62.75	0.26
ELDER	REACH2	1.893		Bridge									
ELDER	REACH2	1.865	NoSpill 10yr	1137 79	10.70	17.63		17.82	0.000148	3.54	321.04	59.22	0.27
ELDER	REACH2	1.865	fvcp nospill	1732 98	10.70	19.26		19.53	0.000153	4.12	420.24	62.08	0 28
ELDER	REACH2	1.864	NoSpill 10yr	1137 61	10.50	17 52		17.82	0.000240	4.42	257.28	48.85	0 34
ELDER	REACH2	1.864	fvcp nospill	1732 10	10 50	19 13		19 53	0.000255	5.10	339.79	53.99	0.36
ELDER	REACH2	1.663	NoSpill 10yr	1136.45	8 80	16 97		17 34	0 000675	4 86	233.61	47.18	0.39
ELDER	REACH2	1.663	fvcp nospill	1728.63	8 80	18 54		19.02	0 000710	5.51	313.50	54.34	0.40
ELDER	REACH2	1.495	NoSpill 10yr	1134.96	8.50	16.35		16.73	0 000697	4 93	230.41	46.68	0.39
ELDER	REACH2	1.495	fvcp nospill	1724.69	8.50	17.88		18.37	0 000744	5.62	306 92	53.43	0.41
ELDER	REACH2	1.336	NoSpill 10yr	1134.14	7.50	15.99		16.25	0.000441	4.13	274 55	50 90	0.31
ELDER	REACH2	1.336	fvcp nospill	1722.63	7.50	17.49		17.85	0 000495	4.86	354 50	55 81	0.34
ELDER	REACH2	1.305	NoSpill 10yr	1134.33	6.50	16 05	10.87	16.20	0 000208	3.09	366 88	59.62	0.22
ELDER	REACH2	1.305	fvcp nospill	1723.19	6.50	17 57	11.88	17 79	0 000260	3.71	464 09	67.81	0.25
ELDER	REACH2	1.292		Bridge									
ELDER	REACH2	1.281	NoSpill 10yr	1134 10	6 50	15 97		16.12	0 000215	3 13	362.37	59.21	0.22
ELDER	REACH2	1.281	fvcp nospill	1722.57	6 50	17.47		17 69	0 000271	3 77	456.84	67.23	0.25
ELDER	REACH2	1.280	NoSpill 10yr	1133 95	7 10	15 91		16.12	0 000328	3.71	305.78	53.46	0.27
ELDER	REACH2	1.280	fvcp nospill	1722 14	7 10	17 38		17.69	0.000386	4.44	387.65	57.93	0.30

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	1.263	NoSpill 10yr	1304 90	7 10	15.80		16.03	0.000362	3.88	336.22	60.46	0.29
ELDER	REACH2	1.263	fvcp nospill	1894 91	7 10	17.29		17.59	0.000384	4.39	432.10	67.42	0.31
ELDER	REACH2	1.148	NoSpill 10yr	1304 29	6.90	15.44		15.76	0.000520	4.52	288.47	53.09	0.34
ELDER	REACH2	1.148	fvcp nospill	1893 42	6.90	16.90		17.31	0.000549	5.12	370.01	58.63	0.36
ELDER	REACH2	0.949	NoSpill 10yr	1303.66	6 50	14 92		15.23	0.000495	4.47	291.35	52.52	0.33
ELDER	REACH2	0.949	fvcp nospill	1891 78	6 50	16.33		16.74	0.000537	5.13	369.11	57.41	0.36
ELDER	REACH2	0.835	NoSpill 10yr	1303 41	6 00	14.61		14.93	0.000517	4.51	288.72	53.05	0.34
ELDER	REACH2	0.835	fvcp nospill	1890 76	6 00	16.00		16.41	0.000562	5.17	365.84	58.13	0.36
ELDER	REACH2	0.804	NoSpill 10yr	1303 44	6.00	14.64	10.55	14.86	0.000316	3.73	349.89	60.40	0.27
ELDER	REACH2	0.804	fvcp nospill	1891 04	6.00	16.05	11.44	16.34	0.000352	4.31	438.44	65.59	0.29
ELDER	REACH2	0.797		Bridge									
ELDER	REACH2	0.789	NoSpill 10yr	1303 35	6 00	14 58		14.80	0 000325	3.77	346.15	60.17	0.28
ELDER	REACH2	0.789	fvcp nospill	1890.65	6 00	15 97		16.27	0 000363	4 36	433.50	65.31	0.30
ELDER	REACH2	0.788	NoSpill 10yr	1303.22	5.90	14.44		14.80	0.000600	4 84	269 37	49.62	0.37
ELDER	REACH2	0.788	fvcp nospill	1890.18	5.90	15 79		16.27	0.000688	5 56	339 97	54.88	0.39
ELDER	REACH2	0.76	NoSpill 10yr	1303.19	5.90	14 37		14 71	0.000556	4.67	279 06	51.43	0.35
ELDER	REACH2	0.76	fvcp nospill	1890.06	5.90	15.72		16.17	0.000620	5.37	352 12	56.97	0 38
ELDER	REACH2	0.671	NoSpill 10yr	1303.07	5.60	14.19		14.48	0.000441	4.29	303.45	53.50	0 32
ELDER	REACH2	0.671	fvcp nospill	1889.59	5.60	15.52		15.91	0.000503	5.01	377.34	57 99	0 35
ELDER	REACH2	0.587	NoSpill 10yr	1302.76	5.40	13.72		14.19	0.000873	5.50	237.06	47 93	0.44
ELDER	REACH2	0.587	fvcp nospill	1887.96	5.40	14.97		15.58	0.000966	6.28	300.43	53.52	0.47
ELDER	REACH2	0.574	NoSpill 10yr	1302.89	5.30	13.94		14.14	0.000295	3.58	363 55	63.21	0 26
ELDER	REACH2	0.574	fvcp nospill	1888.82	5.30	15.25		15.53	0.000340	4.20	449.95	68.36	0 29
ELDER	REACH2	0.569	NoSpill 10yr	1302.89	5.50	13.91	10.14	14.13	0.000328	3.73	349.47	61.41	0.28
ELDER	REACH2	0.569	fvcp nospill	1888.76	5.50	15.22	10.95	15.52	0.000396	4.36	433.13	68.67	0 31
ELDER	REACH2	0.556		Bridge									
ELDER	REACH2	0.543	NoSpill 10yr	1302 82	5.50	13.80		14.02	0.000349	3.81	342.25	61.06	0.28
ELDER	REACH2	0.543	fvcp nospill	1888 21	5.50	15.06		15.37	0.000410	4.47	422.45	66.34	0 31
ELDER	REACH2	0.394	NoSpill 10yr	1302.74	4.80	13.63		13.80	0.000222	3.23	403.75	65.16	0.23
ELDER	REACH2	0.394	fvcp nospill	1887 79	4 80	14.87		15.10	0.000272	3.88	486.71	69.08	0.26
ELDER	REACH2	0.388	NoSpill 10yr	1924 18	4 80	13.16		13.58	0 000606	5.15	373.51	63.66	0.37
ELDER	REACH2	0.388	fvcp nospill	2610 67	4 80	14 34		14.86	0 000649	5.80	450.38	67.39	0.40
ELDER	REACH2	0.216	NoSpill 10yr	1924 10	4 30	12 52		12.99	0 000698	5.45	353.13	61.48	0.40
ELDER	REACH2	0.216	fvcp nospill	2610 48	4 30	13 63		14.22	0.000766	6 17	422.87	65.09	0.43
ELDER	REACH2	0.2	NoSpill 10yr	1924 10	4 30	12.45		12.93	0.000724	5 52	348.76	61.25	0.41
ELDER	REACH2	0.2	fvcp nospill	2610.48	4 30	13 55		14 15	0.000793	6 25	417 65	64.82	0.43
ELDER	REACH2	0.019	NoSpill 10yr	1924.08	5.50	11 11	9 52	11 87	0.001500	6 99	275.16	59.99	0.58
ELDER	REACH2	0.019	fvcp nospill	2610.45	5.50	12.14	10.33	13.06	0.001500	7 71	338.80	63 49	0.59

RAS Model Data

For

Elder and Gerber Creeks – Stand Alone with Laguna Spill

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table

RAS Model Data

For

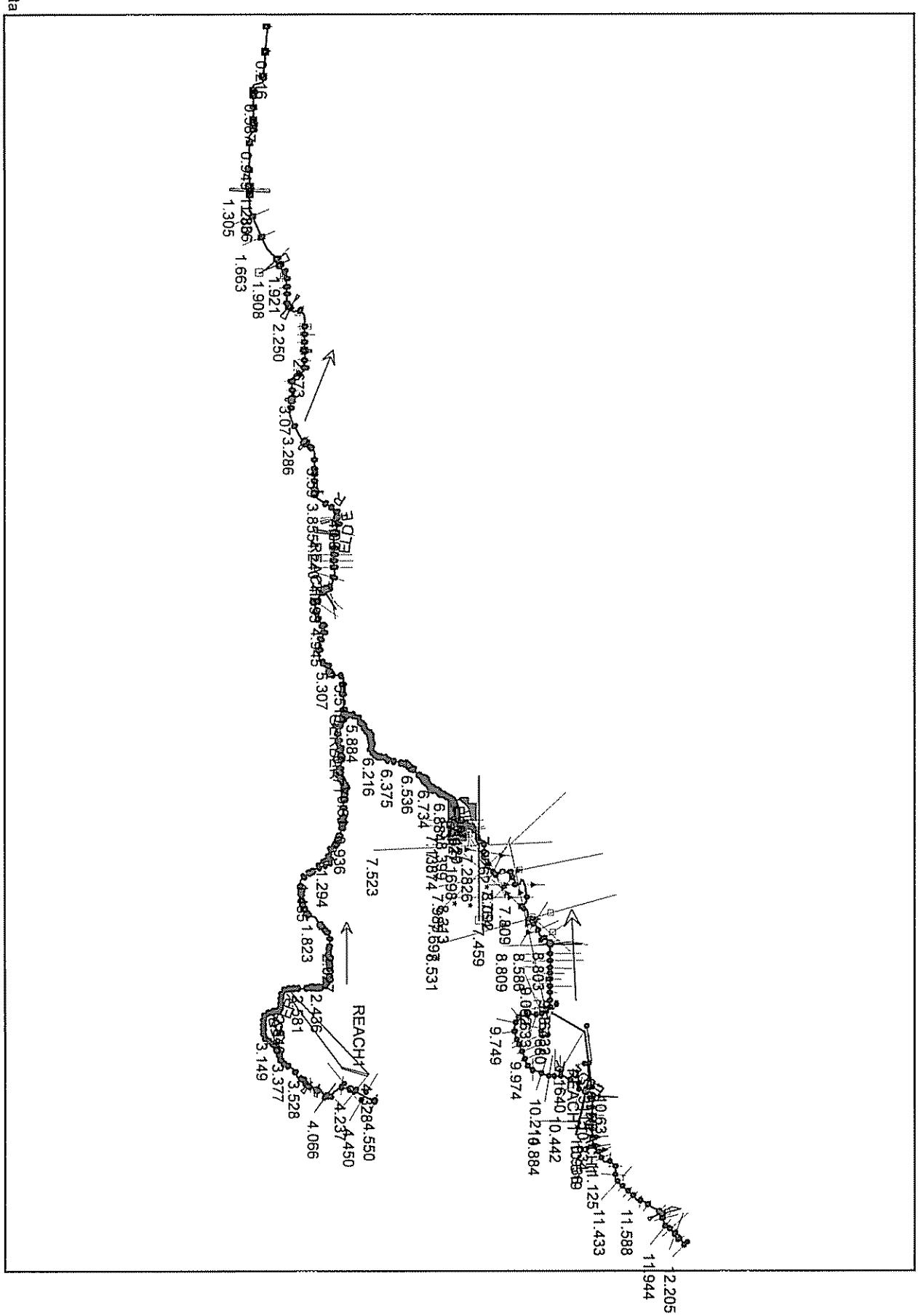
Elder and Gerber Creeks – Stand Alone without Laguna Spill

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table

Partial GIS data



RAS Input Hydro h Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
ELDER	REACH1	12.205		Flow Hydrograph	Standalone.dss	/ELDER GE/E1A/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	11.063		Lateral Inflow Hydrograph	EFG-24HR.dss	/ELDER CREEK/R-RE1B/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	10.272		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/RETE1B/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	9.438		Lateral Inflow Hydrograph	dss	/ELDER CRK RD REACH1/680/FLOW/02JAN2000/10MIN/FVCP NOSPILL/
ELDER	REACH1	7.809		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/CE3E/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	12.02	11.944	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E1C/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	10.507	7.809	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E2/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	6.872		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E4A/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	6.752	6.244	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E5/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	6.684	5.884	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E5B/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	5.359		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E6/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	5.307	4.693	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E7A/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	4.945		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E7B/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	4.642	4.485	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E7C/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	4.391	4.240	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E8/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	4.06	3.855	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E9/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	3.286	3.141	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E10/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	3.01	2.794	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E11/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	2.736	2.354	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E12/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	2.219	1.978	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E13/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	1.280		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/R-E14/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	0.394		Lateral Inflow Hydrograph	EFG-24HR.dss	/FLORIN CREEK/R-CF15/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	0.019		Friction Slope=0.0015		
ELDER CRK RI	REACH1	3115		Flow Hydrograph	Standalone.dss	
ELDER CRK RI	REACH1	680		Friction Slope=0.0015		
GERBER	REACH1	4.550		Flow Hydrograph	Standalone.dss	/ELDER GE/G2A/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	3.883	2.581	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G2B/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	2.360		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3A/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	2.052		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3B/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.831	1.800	Uniform Lateral Inflow Hydrograph	EFG-24HR.dss	/TRANSFER REACH TRANSFER REACH/600/FLOW/31DEC1999/10MIN/100YR-24HR/
GERBER	REACH1	1.823	1.434	Uniform Lateral Inflow Hydrograph	EFG-24HR.dss	/GERBER CREEK/G3D/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.402	1.343	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3C/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.182	1.013	Uniform Lateral Inflow Hydrograph	EFG-24HR.dss	/CTRR REACH CTRR REACH/200/FLOW/31DEC1999/10MIN/100YR-24HR/
GERBER	REACH1	1.133		Lateral Inflow Hydrograph	EFG-24HR.dss	/GERBER CREEK/G4/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.068	0.051	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G5/FLOW/31DEC1999/1MIN/100YR-24HR/
		E28		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/CE4B/FLOW/31DEC1999/1MIN/100YR-24HR/
		E31		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E4B3/FLOW/31DEC1999/1MIN/100YR-24HR/

RAS Input Hydrc ph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
ELDER	REACH1	12.205		Flow Hydrograph	Standalone.dss	/ELDER GE/E1A/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	11.063		Lateral Inflow Hydrograph	EFG-24HR.dss	/ELDER CREEK/R-RE1B/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	10.272		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/RETE1B/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	9.438		Lateral Inflow Hydrograph	dss	/ELDER CRK RD REACH1/680/FLOW/02JAN2000/10MIN/FVCP NOSPILL/
ELDER	REACH1	7.809		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/CE3E/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	12.02	11.944	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E1C/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	10.507	7.809	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E2/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	6.872		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E4A/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	6.752	6.244	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E5/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH1	6.684	5.884	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E5B/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	5.359		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E6/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	5.307	4.693	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E7A/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	4.945		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E7B/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	4.642	4.485	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E7C/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	4.391	4.240	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E8/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	4.06	3.855	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E9/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	3.286	3.141	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E10/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	3.01	2.794	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E11/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	2.736	2.354	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E12/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	2.219	1.978	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E13/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	1.280		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/R-E14/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	0.394		Lateral Inflow Hydrograph	EFG-24HR.dss	/FLORIN CREEK/R-CF15/FLOW/31DEC1999/1MIN/100YR-24HR/
ELDER	REACH2	0.019		Friction Slope=0.0015		
ELDER CRK RI	REACH1	3115		Flow Hydrograph	Standalone.dss	
ELDER CRK RI	REACH1	680		Friction Slope=0.0015		
GERBER	REACH1	4.550		Flow Hydrograph	Standalone.dss	/ELDER GE/G2A/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	3.883	2.581	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G2B/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	2.360		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3A/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	2.052		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3B/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.823	1.434	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3D/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.800		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3DB/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.756	1.719	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3A2/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.485		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/RG3DC/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.402	1.343	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G3C/FLOW/31DEC1999/1MIN/100YR-24HR/
GERBER	REACH1	1.068	0.051	Uniform Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/G5/FLOW/31DEC1999/1MIN/100YR-24HR/
		E28		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/CE4B/FLOW/31DEC1999/1MIN/100YR-24HR/
		E31		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/E4B3/FLOW/31DEC1999/1MIN/100YR-24HR/
		G43		Lateral Inflow Hydrograph	Standalone.dss	/ELDER GE/CG3A1/FLOW/31DEC1999/1MIN/100YR-24HR/

HEC-RAS Profile: Max WS

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	4.550	Stand10yr	215.70	68.30	70.49		70.52	0.000857	1.46	211.10	273.97	0.21
GERBER	REACH1	4.550	SA with Spil	371.02	68.30	70.80		70.84	0.001096	1.66	297.79	289.31	0.24
GERBER	REACH1	4.550	SA NS 10YR	215.70	68.30	70.49		70.52	0.000852	1.46	211.63	274.06	0.21
GERBER	REACH1	4.550	SA-NOSpill	371.02	68.30	70.80		70.84	0.001096	1.66	297.80	289.31	0.24
GERBER	REACH1	4.540	Stand10yr	214.60	68.30	70.44		70.47	0.000994	1.54	196.94	271.38	0.22
GERBER	REACH1	4.540	SA with Spil	369.80	68.30	70.73		70.78	0.001292	1.97	278.34	285.94	0.26
GERBER	REACH1	4.540	SA NS 10YR	215.19	68.30	70.44		70.47	0.000993	1.54	197.54	271.49	0.22
GERBER	REACH1	4.540	SA-NOSpill	369.80	68.30	70.73		70.78	0.001292	1.97	278.35	285.94	0.26
GERBER	REACH1	4.450	Stand10yr	196.45	67.20	70.22		70.22	0.000035	0.36	549.66	265.55	0.04
GERBER	REACH1	4.450	SA with Spil	349.73	67.20	70.44		70.44	0.000084	0.58	608.08	277.47	0.07
GERBER	REACH1	4.450	SA NS 10YR	196.02	67.20	70.22		70.23	0.000036	0.36	550.20	265.67	0.04
GERBER	REACH1	4.450	SA-NOSpill	349.74	67.20	70.44		70.44	0.000084	0.58	608.08	277.47	0.07
GERBER	REACH1	4.370	Stand10yr	193.55	66.20	70.21		70.21	0.000036	0.46	596.42	1107.53	0.05
GERBER	REACH1	4.370	SA with Spil	342.54	66.20	70.40		70.41	0.000076	0.70	817.09	1137.51	0.07
GERBER	REACH1	4.370	SA NS 10YR	194.65	66.20	70.21		70.21	0.000036	0.46	598.50	1107.81	0.05
GERBER	REACH1	4.370	SA-NOSpill	342.54	66.20	70.40		70.41	0.000076	0.70	817.11	1137.51	0.07
GERBER	REACH1	4.328		Lat Struct									
GERBER	REACH1	4.285	Stand10yr	59.58	65.70	70.20		70.20	0.000001	0.06	1149.77	1177.20	0.01
GERBER	REACH1	4.285	SA with Spil	64.18	65.70	70.39		70.39	0.000001	0.06	1375.38	1188.74	0.01
GERBER	REACH1	4.285	SA NS 10YR	59.53	65.70	70.20		70.20	0.000001	0.06	1151.93	1177.31	0.01
GERBER	REACH1	4.285	SA-NOSpill	64.19	65.70	70.39		70.39	0.000001	0.06	1375.40	1188.74	0.01
GERBER	REACH1	4.237	Stand10yr	59.39	65.50	70.20		70.20	0.000013	0.26	298.16	469.51	0.03
GERBER	REACH1	4.237	SA with Spil	63.80	65.50	70.39		70.39	0.000011	0.24	388.42	474.69	0.03
GERBER	REACH1	4.237	SA NS 10YR	59.48	65.50	70.20		70.20	0.000013	0.26	299.02	469.55	0.03
GERBER	REACH1	4.237	SA-NOSpill	63.81	65.50	70.39		70.39	0.000011	0.24	388.43	474.69	0.03
GERBER	REACH1	4.120	Stand10yr	59.27	65.40	70.19		70.19	0.000011	0.25	270.70	262.20	0.03
GERBER	REACH1	4.120	SA with Spil	63.59	65.40	70.38		70.39	0.000009	0.24	322.11	272.39	0.02
GERBER	REACH1	4.120	SA NS 10YR	59.32	65.40	70.19		70.20	0.000011	0.25	271.18	262.29	0.03
GERBER	REACH1	4.120	SA-NOSpill	63.60	65.40	70.38		70.39	0.000009	0.24	322.12	272.39	0.02
GERBER	REACH1	4.066	Stand10yr	59.24	65.50	70.19	65.70	70.19	0.000001	0.07	1035.25	333.89	0.01
GERBER	REACH1	4.066	SA with Spil	63.56	65.50	70.38	65.71	70.38	0.000001	0.07	1099.83	336.94	0.01
GERBER	REACH1	4.066	SA NS 10YR	59.29	65.50	70.19	65.70	70.19	0.000001	0.07	1035.87	333.92	0.01
GERBER	REACH1	4.066	SA-NOSpill	63.56	65.50	70.38	65.71	70.38	0.000001	0.07	1099.83	336.94	0.01
GERBER	REACH1	4.064		Inl Struct									
GERBER	REACH1	3.985	Stand10yr	59.24	66.00	70.19		70.19	0.000002	0.13	708.70	249.83	0.01
GERBER	REACH1	3.985	SA with Spil	63.56	66.00	70.38		70.38	0.000002	0.13	757.06	252.48	0.01
GERBER	REACH1	3.985	SA NS 10YR	59.29	66.00	70.19		70.19	0.000002	0.13	709.17	249.85	0.01
GERBER	REACH1	3.985	SA-NOSpill	63.56	66.00	70.38		70.38	0.000002	0.13	757.06	252.48	0.01
GERBER	REACH1	3.982	Stand10yr	59.24	66.00	70.19		70.19	0.000002	0.13	708.70	249.83	0.01
GERBER	REACH1	3.982	SA with Spil	63.56	66.00	70.38		70.38	0.000002	0.13	757.06	252.48	0.01
GERBER	REACH1	3.982	SA NS 10YR	59.29	66.00	70.19		70.19	0.000002	0.13	709.16	249.85	0.01
GERBER	REACH1	3.982	SA-NOSpill	63.56	66.00	70.38		70.38	0.000002	0.13	757.06	252.48	0.01
GERBER	REACH1	3.974		Culvert									
GERBER	REACH1	3.967	Stand10yr	59.24	66.00	66.63		66.67	0.004651	1.69	39.66	93.29	0.40
GERBER	REACH1	3.967	SA with Spil	63.56	66.00	66.66		66.70	0.004248	1.68	43.10	96.54	0.39
GERBER	REACH1	3.967	SA NS 10YR	59.28	66.00	66.63		66.67	0.004647	1.69	39.69	93.32	0.40
GERBER	REACH1	3.967	SA-NOSpill	63.56	66.00	66.66		66.70	0.004248	1.68	43.10	96.54	0.39
GERBER	REACH1	3.912	Stand10yr	59.24	62.80	65.23		65.39	0.004340	3.16	18.73	11.22	0.43
GERBER	REACH1	3.912	SA with Spil	63.56	62.80	65.30		65.47	0.004462	3.26	19.52	11.42	0.44
GERBER	REACH1	3.912	SA NS 10YR	59.28	62.80	65.23		65.39	0.004341	3.16	18.73	11.22	0.43
GERBER	REACH1	3.912	SA-NOSpill	63.56	62.80	65.30		65.47	0.004461	3.26	19.52	11.42	0.44
GERBER	REACH1	3.893	Stand10yr	59.24	63.30	64.98		65.06	0.002198	2.17	27.26	16.20	0.30
GERBER	REACH1	3.893	SA with Spil	63.55	63.30	65.05		65.13	0.002247	2.24	28.33	16.20	0.30
GERBER	REACH1	3.893	SA NS 10YR	59.28	63.30	64.98		65.06	0.002199	2.17	27.27	16.20	0.30
GERBER	REACH1	3.893	SA-NOSpill	63.55	63.30	65.05		65.13	0.002247	2.24	28.33	16.20	0.30
GERBER	REACH1	3.888		Culvert									
GERBER	REACH1	3.883	Stand10yr	59.19	63.10	64.18	64.49	65.21	0.133231	8.14	7.27	10.48	1.72
GERBER	REACH1	3.883	SA with Spil	61.16	63.10	64.34	64.52	65.06	0.076304	6.82	8.97	11.20	1.34
GERBER	REACH1	3.883	SA NS 10YR	59.23	63.10	64.18	64.49	65.21	0.133101	8.14	7.28	10.48	1.72
GERBER	REACH1	3.883	SA-NOSpill	61.18	63.10	64.35	64.52	65.05	0.075679	6.74	9.08	11.24	1.32
GERBER	REACH1	3.642	Stand10yr	59.30	56.30	58.68		58.69	0.000412	0.77	76.56	39.29	0.10
GERBER	REACH1	3.642	SA with Spil	61.59	56.30	61.07		61.07	0.000035	0.33	187.24	53.59	0.03
GERBER	REACH1	3.642	SA NS 10YR	59.31	56.30	58.69		58.70	0.000408	0.77	76.87	39.34	0.10
GERBER	REACH1	3.642	SA-NOSpill	61.58	56.30	61.07		61.07	0.000035	0.33	187.30	53.60	0.03
GERBER	REACH1	3.604	Stand10yr	62.97	56.20	58.59		58.60	0.000451	0.81	77.79	40.01	0.10
GERBER	REACH1	3.604	SA with Spil	63.98	56.20	61.06		61.06	0.000034	0.33	195.44	55.46	0.03
GERBER	REACH1	3.604	SA NS 10YR	63.07	56.20	58.60		58.61	0.000447	0.81	78.14	40.06	0.10
GERBER	REACH1	3.604	SA-NOSpill	63.96	56.20	61.06		61.06	0.000034	0.33	195.51	55.47	0.03

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	3.566	Stand10yr	65.80	56.00	58.53		58.54	0.000410	0.80	82.45	40.22	0.10
GERBER	REACH1	3.566	SA with Spil	65.77	56.00	61.05		61.05	0.000031	0.32	203.19	55.42	0.03
GERBER	REACH1	3.566	SA NS 10YR	65.98	56.00	58.54		58.55	0.000406	0.80	82.83	40.28	0.10
GERBER	REACH1	3.566	SA-NOSpill	65.74	56.00	61.05		61.06	0.000031	0.32	203.25	55.43	0.03
GERBER	REACH1	3.528	Stand10yr	72.60	55.80	58.35		58.36	0.000487	0.87	83.11	40.28	0.11
GERBER	REACH1	3.528	SA with Spil	70.02	55.80	61.04		61.04	0.000031	0.33	213.40	56.44	0.03
GERBER	REACH1	3.528	SA NS 10YR	72.92	55.80	58.36		58.37	0.000484	0.87	83.54	40.34	0.11
GERBER	REACH1	3.528	SA-NOSpill	69.96	55.80	61.04		61.04	0.000031	0.33	213.46	56.45	0.03
GERBER	REACH1	3.490	Stand10yr	79.39	55.60	58.12		58.14	0.000601	0.97	82.21	40.14	0.12
GERBER	REACH1	3.490	SA with Spil	74.23	55.60	61.03		61.03	0.000030	0.33	224.08	57.57	0.03
GERBER	REACH1	3.490	SA NS 10YR	79.80	55.60	58.14		58.15	0.000597	0.97	82.69	40.22	0.12
GERBER	REACH1	3.490	SA-NOSpill	74.20	55.60	61.03		61.03	0.000030	0.33	224.15	57.57	0.03
GERBER	REACH1	3.452	Stand10yr	83.12	55.50	57.99		58.01	0.000690	1.03	80.92	39.95	0.13
GERBER	REACH1	3.452	SA with Spil	76.62	55.50	61.02		61.02	0.000030	0.33	229.50	58.13	0.03
GERBER	REACH1	3.452	SA NS 10YR	83.59	55.50	58.00		58.02	0.000685	1.03	81.43	40.03	0.13
GERBER	REACH1	3.452	SA-NOSpill	76.59	55.50	61.02		61.02	0.000030	0.33	229.57	58.14	0.03
GERBER	REACH1	3.415	Stand10yr	86.74	55.30	57.85		57.87	0.000689	1.04	83.33	40.31	0.13
GERBER	REACH1	3.415	SA with Spil	79.02	55.30	61.02		61.02	0.000028	0.33	240.89	59.29	0.03
GERBER	REACH1	3.415	SA NS 10YR	87.25	55.30	57.87		57.88	0.000684	1.04	83.89	40.39	0.13
GERBER	REACH1	3.415	SA-NOSpill	78.90	55.30	61.02		61.02	0.000028	0.33	240.97	59.30	0.03
GERBER	REACH1	3.377	Stand10yr	90.24	55.10	57.71		57.73	0.000685	1.05	85.79	40.66	0.13
GERBER	REACH1	3.377	SA with Spil	81.42	55.10	61.01		61.01	0.000026	0.32	252.54	60.46	0.03
GERBER	REACH1	3.377	SA NS 10YR	90.80	55.10	57.73		57.74	0.000680	1.05	86.41	40.77	0.13
GERBER	REACH1	3.377	SA-NOSpill	81.29	55.10	61.01		61.01	0.000026	0.32	252.61	60.47	0.03
GERBER	REACH1	3.339	Stand10yr	93.68	54.90	57.61		57.61	0.000454	0.79	118.78	64.24	0.10
GERBER	REACH1	3.339	SA with Spil	83.71	54.90	61.01		61.01	0.000012	0.22	381.47	90.20	0.02
GERBER	REACH1	3.339	SA NS 10YR	94.25	54.90	57.62		57.63	0.000448	0.79	119.82	64.37	0.10
GERBER	REACH1	3.339	SA-NOSpill	83.68	54.90	61.01		61.01	0.000012	0.22	381.58	90.21	0.02
GERBER	REACH1	3.301	Stand10yr	96.97	54.70	57.51		57.52	0.000471	0.81	119.94	64.22	0.10
GERBER	REACH1	3.301	SA with Spil	86.10	54.70	61.00		61.01	0.000012	0.22	391.67	91.37	0.02
GERBER	REACH1	3.301	SA NS 10YR	97.59	54.70	57.53		57.54	0.000464	0.81	121.06	64.35	0.10
GERBER	REACH1	3.301	SA-NOSpill	86.07	54.70	61.01		61.01	0.000012	0.22	391.79	91.38	0.02
GERBER	REACH1	3.263	Stand10yr	100.16	54.50	57.41		57.43	0.000486	0.83	121.23	64.20	0.11
GERBER	REACH1	3.263	SA with Spil	88.48	54.50	61.00		61.00	0.000011	0.22	401.87	92.26	0.02
GERBER	REACH1	3.263	SA NS 10YR	100.90	54.50	57.43		57.44	0.000478	0.82	122.45	64.35	0.11
GERBER	REACH1	3.263	SA-NOSpill	88.47	54.50	61.00		61.00	0.000011	0.22	401.98	92.27	0.02
GERBER	REACH1	3.225	Stand10yr	103.10	54.40	57.30		57.31	0.000614	1.05	97.82	42.53	0.12
GERBER	REACH1	3.225	SA with Spil	90.88	54.40	61.00		61.00	0.000021	0.31	296.65	64.92	0.03
GERBER	REACH1	3.225	SA NS 10YR	103.91	54.40	57.32		57.33	0.000608	1.05	98.69	42.65	0.12
GERBER	REACH1	3.225	SA-NOSpill	90.70	54.40	61.00		61.00	0.000021	0.31	296.73	64.93	0.03
GERBER	REACH1	3.187	Stand10yr	105.77	54.20	57.18		57.19	0.000583	1.04	101.34	42.99	0.12
GERBER	REACH1	3.187	SA with Spil	93.28	54.20	60.99		61.00	0.000020	0.30	309.22	65.93	0.02
GERBER	REACH1	3.187	SA NS 10YR	106.64	54.20	57.20		57.22	0.000577	1.04	102.27	43.12	0.12
GERBER	REACH1	3.187	SA-NOSpill	93.10	54.20	61.00		61.00	0.000020	0.30	309.30	65.94	0.02
GERBER	REACH1	3.149	Stand10yr	108.23	54.00	57.06		57.08	0.000555	1.03	104.66	43.37	0.12
GERBER	REACH1	3.149	SA with Spil	95.50	54.00	60.99		60.99	0.000019	0.30	321.32	66.94	0.02
GERBER	REACH1	3.149	SA NS 10YR	109.18	54.00	57.08		57.10	0.000550	1.03	105.67	43.51	0.12
GERBER	REACH1	3.149	SA-NOSpill	95.50	54.00	60.99		60.99	0.000019	0.30	321.40	66.95	0.02
GERBER	REACH1	3.112	Stand10yr	110.60	53.80	56.95		56.97	0.000520	1.02	108.70	43.92	0.11
GERBER	REACH1	3.112	SA with Spil	97.90	53.80	60.99		60.99	0.000017	0.29	334.57	68.12	0.02
GERBER	REACH1	3.112	SA NS 10YR	111.63	53.80	56.98		56.99	0.000515	1.02	109.74	44.07	0.11
GERBER	REACH1	3.112	SA-NOSpill	97.70	53.80	60.99		60.99	0.000017	0.29	334.65	68.12	0.02
GERBER	REACH1	3.074	Stand10yr	112.83	53.70	56.85		56.86	0.000545	1.04	108.50	43.97	0.12
GERBER	REACH1	3.074	SA with Spil	100.31	53.70	60.98		60.98	0.000017	0.29	341.96	68.91	0.02
GERBER	REACH1	3.074	SA NS 10YR	113.92	53.70	56.87		56.89	0.000540	1.04	109.57	44.12	0.12
GERBER	REACH1	3.074	SA-NOSpill	100.10	53.70	60.98		60.98	0.000017	0.29	342.05	68.92	0.02
GERBER	REACH1	3.036	Stand10yr	114.92	53.50	56.74		56.76	0.000511	1.03	112.08	44.18	0.11
GERBER	REACH1	3.036	SA with Spil	102.48	53.50	60.98		60.98	0.000016	0.29	352.53	69.27	0.02
GERBER	REACH1	3.036	SA NS 10YR	116.21	53.50	56.77		56.78	0.000508	1.03	113.19	44.33	0.11
GERBER	REACH1	3.036	SA-NOSpill	102.50	53.50	60.98		60.98	0.000016	0.29	352.62	69.28	0.02
GERBER	REACH1	2.998	Stand10yr	117.17	53.30	56.64		56.66	0.000473	1.00	116.70	44.75	0.11
GERBER	REACH1	2.998	SA with Spil	104.89	53.30	60.98		60.98	0.000016	0.29	365.85	70.23	0.02
GERBER	REACH1	2.998	SA NS 10YR	118.52	53.30	56.67		56.68	0.000470	1.01	117.67	44.90	0.11
GERBER	REACH1	2.998	SA-NOSpill	104.91	53.30	60.98		60.98	0.000016	0.29	365.94	70.24	0.02
GERBER	REACH1	2.960	Stand10yr	119.46	53.10	56.55		56.57	0.000441	0.99	121.19	45.25	0.11
GERBER	REACH1	2.960	SA with Spil	107.31	53.10	60.97		60.97	0.000015	0.28	376.71	71.22	0.02
GERBER	REACH1	2.960	SA NS 10YR	120.76	53.10	56.58		56.59	0.000437	0.99	122.40	45.41	0.11
GERBER	REACH1	2.960	SA-NOSpill	107.07	53.10	60.97		60.97	0.000015	0.28	376.81	71.22	0.02
GERBER	REACH1	2.922	Stand10yr	122.00	52.90	56.50		56.50	0.000186	0.60	202.41	83.98	0.07

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	2.922	SA with Spil	109.73	52.90	60.97		60.97	0.000005	0.17	662.97	121.87	0.01
GERBER	REACH1	2.922	SA NS 10YR	123.34	52.90	56.52		56.53	0.000184	0.60	204.70	84.21	0.07
GERBER	REACH1	2.922	SA-NOSpill	109.47	52.90	60.97		60.97	0.000005	0.17	663.13	121.88	0.01
GERBER	REACH1	2.884	Stand10yr	124.63	52.80	56.45		56.46	0.000257	0.73	171.80	68.61	0.08
GERBER	REACH1	2.884	SA with Spil	111.82	52.80	60.97		60.97	0.000007	0.19	574.10	109.39	0.01
GERBER	REACH1	2.884	SA NS 10YR	126.02	52.80	56.48		56.48	0.000254	0.73	173.70	68.86	0.08
GERBER	REACH1	2.884	SA-NOSpill	111.86	52.80	60.97		60.97	0.000007	0.19	574.24	109.40	0.01
GERBER	REACH1	2.846	Stand10yr	127.16	52.60	56.38		56.40	0.000354	0.93	136.77	47.32	0.10
GERBER	REACH1	2.846	SA with Spil	114.22	52.60	60.97		60.97	0.000013	0.27	415.67	74.36	0.02
GERBER	REACH1	2.846	SA NS 10YR	128.60	52.60	56.41		56.42	0.000353	0.93	138.10	47.48	0.10
GERBER	REACH1	2.846	SA-NOSpill	114.27	52.60	60.97		60.97	0.000013	0.27	415.77	74.37	0.02
GERBER	REACH1	2.808	Stand10yr	129.77	52.40	56.31		56.33	0.000325	0.91	143.09	48.10	0.09
GERBER	REACH1	2.808	SA with Spil	116.64	52.40	60.96		60.97	0.000012	0.27	430.45	75.53	0.02
GERBER	REACH1	2.808	SA NS 10YR	131.17	52.40	56.34		56.36	0.000323	0.91	144.45	48.27	0.09
GERBER	REACH1	2.808	SA-NOSpill	116.34	52.40	60.97		60.97	0.000012	0.27	430.55	75.53	0.02
GERBER	REACH1	2.771	Stand10yr	132.29	52.20	56.25		56.27	0.000295	0.88	150.38	49.20	0.09
GERBER	REACH1	2.771	SA with Spil	118.67	52.20	60.96		60.96	0.000012	0.26	448.16	77.30	0.02
GERBER	REACH1	2.771	SA NS 10YR	133.82	52.20	56.28		56.29	0.000294	0.88	151.79	49.37	0.09
GERBER	REACH1	2.771	SA-NOSpill	118.75	52.20	60.96		60.96	0.000012	0.26	448.27	77.31	0.02
GERBER	REACH1	2.733	Stand10yr	134.89	52.10	56.19		56.20	0.000322	0.94	143.97	45.41	0.09
GERBER	REACH1	2.733	SA with Spil	121.09	52.10	60.96		60.96	0.000013	0.29	417.24	69.20	0.02
GERBER	REACH1	2.733	SA NS 10YR	136.47	52.10	56.22		56.23	0.000321	0.94	145.26	45.55	0.09
GERBER	REACH1	2.733	SA-NOSpill	121.16	52.10	60.96		60.96	0.000013	0.29	417.34	69.21	0.02
GERBER	REACH1	2.695	Stand10yr	137.55	51.90	56.13		56.14	0.000269	0.86	160.17	50.69	0.09
GERBER	REACH1	2.695	SA with Spil	123.52	51.90	60.96		60.96	0.000011	0.26	475.30	79.97	0.02
GERBER	REACH1	2.695	SA NS 10YR	139.10	51.90	56.16		56.17	0.000268	0.86	161.65	50.87	0.09
GERBER	REACH1	2.695	SA-NOSpill	123.59	51.90	60.96		60.96	0.000011	0.26	475.41	79.98	0.02
GERBER	REACH1	2.657	Stand10yr	273.14	51.70	55.95		55.99	0.000969	1.61	169.35	54.74	0.16
GERBER	REACH1	2.657	SA with Spil	296.57	51.70	60.94		60.95	0.000050	0.56	529.96	89.69	0.04
GERBER	REACH1	2.657	SA NS 10YR	275.84	51.70	55.98		56.02	0.000962	1.61	170.99	54.94	0.16
GERBER	REACH1	2.657	SA-NOSpill	296.57	51.70	60.94		60.95	0.000050	0.56	530.09	89.70	0.04
GERBER	REACH1	2.619	Stand10yr	275.80	51.50	55.75		55.79	0.000983	1.62	169.73	54.84	0.16
GERBER	REACH1	2.619	SA with Spil	298.99	51.50	60.93		60.94	0.000046	0.55	548.07	91.21	0.04
GERBER	REACH1	2.619	SA NS 10YR	278.52	51.50	55.78		55.82	0.000974	1.62	171.45	55.06	0.16
GERBER	REACH1	2.619	SA-NOSpill	298.99	51.50	60.93		60.94	0.000046	0.55	548.20	91.22	0.04
GERBER	REACH1	2.581	Stand10yr	278.42	51.30	55.54	52.76	55.59	0.001058	1.70	164.03	52.32	0.17
GERBER	REACH1	2.581	SA with Spil	301.41	51.30	60.92	52.63	60.93	0.000047	0.56	538.71	86.97	0.04
GERBER	REACH1	2.581	SA NS 10YR	281.19	51.30	55.58	52.77	55.62	0.001047	1.70	165.77	52.54	0.17
GERBER	REACH1	2.581	SA-NOSpill	301.41	51.30	60.92	52.63	60.93	0.000047	0.56	538.84	86.98	0.04
GERBER	REACH1	2.535		Bridge									
GERBER	REACH1	2.518	Stand10yr	278.30	50.90	55.24		55.31	0.001040	2.22	125.28	39.76	0.22
GERBER	REACH1	2.518	SA with Spil	300.76	50.90	56.35		56.39	0.000885	1.74	172.60	45.36	0.16
GERBER	REACH1	2.518	SA NS 10YR	281.04	50.90	55.27		55.35	0.001018	2.22	126.72	39.94	0.22
GERBER	REACH1	2.518	SA-NOSpill	300.76	50.90	56.37		56.42	0.000869	1.73	173.78	45.49	0.16
GERBER	REACH1	2.483	Stand10yr	278.20	50.50	55.06		55.08	0.000565	1.16	240.50	86.18	0.12
GERBER	REACH1	2.483	SA with Spil	300.70	50.50	56.28		56.29	0.000216	0.86	351.23	96.10	0.08
GERBER	REACH1	2.483	SA NS 10YR	280.81	50.50	55.10		55.12	0.000552	1.15	243.88	86.49	0.12
GERBER	REACH1	2.483	SA-NOSpill	300.68	50.50	56.30		56.31	0.000212	0.85	353.89	96.33	0.08
GERBER	REACH1	2.465	Stand10yr	278.06	50.40	55.01		55.03	0.000523	1.11	250.98	90.67	0.12
GERBER	REACH1	2.465	SA with Spil	300.67	50.40	56.26		56.27	0.000194	0.81	370.80	101.61	0.07
GERBER	REACH1	2.465	SA NS 10YR	280.81	50.40	55.05		55.07	0.000511	1.10	254.64	91.03	0.12
GERBER	REACH1	2.465	SA-NOSpill	300.62	50.40	56.29		56.30	0.000190	0.80	373.65	101.85	0.07
GERBER	REACH1	2.436	Stand10yr	277.89	50.10	54.93		54.95	0.000542	1.14	243.27	86.03	0.12
GERBER	REACH1	2.436	SA with Spil	300.63	50.10	56.23		56.24	0.000198	0.83	362.31	97.21	0.08
GERBER	REACH1	2.436	SA NS 10YR	280.45	50.10	54.97		54.99	0.000529	1.14	246.92	86.39	0.12
GERBER	REACH1	2.436	SA-NOSpill	300.55	50.10	56.26		56.27	0.000194	0.82	365.10	97.46	0.07
GERBER	REACH1	2.415	Stand10yr	277.69	49.90	54.87		54.89	0.000518	1.10	251.47	90.20	0.12
GERBER	REACH1	2.415	SA with Spil	300.30	49.90	56.21		56.22	0.000181	0.79	380.04	102.24	0.07
GERBER	REACH1	2.415	SA NS 10YR	280.22	49.90	54.91		54.93	0.000503	1.10	255.43	90.60	0.12
GERBER	REACH1	2.415	SA-NOSpill	300.52	49.90	56.24		56.25	0.000177	0.78	383.03	102.50	0.07
GERBER	REACH1	2.396	Stand10yr	277.22	49.70	54.81		54.84	0.000539	1.25	222.20	68.41	0.12
GERBER	REACH1	2.396	SA with Spil	300.24	49.70	56.18		56.20	0.000226	0.92	325.08	81.79	0.08
GERBER	REACH1	2.396	SA NS 10YR	279.71	49.70	54.86		54.88	0.000528	1.24	225.29	68.85	0.12
GERBER	REACH1	2.396	SA-NOSpill	300.51	49.70	56.21		56.23	0.000222	0.92	327.50	82.08	0.08
GERBER	REACH1	2.360	Stand10yr	276.35	49.30	54.71		54.74	0.000505	1.27	217.93	62.06	0.12
GERBER	REACH1	2.360	SA with Spil	299.71	49.30	56.14		56.15	0.000219	0.95	314.75	73.55	0.08
GERBER	REACH1	2.360	SA NS 10YR	278.78	49.30	54.76		54.78	0.000496	1.26	220.85	62.43	0.12
GERBER	REACH1	2.360	SA-NOSpill	300.05	49.30	56.17		56.18	0.000216	0.95	317.00	73.80	0.08
GERBER	REACH1	2.332	Stand10yr	387.62	49.00	54.51		54.58	0.001265	2.05	188.88	51.37	0.19

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	2.332	SA with Spil	552.09	49.00	55.96		56.02	0.000975	2.05	269.71	60.27	0.17
GERBER	REACH1	2.332	SA NS 10YR	392.82	49.00	54.56		54.62	0.001254	2.05	191.35	51.66	0.19
GERBER	REACH1	2.332	SA-NOSpill	552.84	49.00	55.99		56.06	0.000954	2.03	271.75	60.48	0.17
GERBER	REACH1	2.305	Stand10yr	387.46	48.80	54.39		54.43	0.000837	1.68	231.08	63.02	0.15
GERBER	REACH1	2.305	SA with Spil	552.38	48.80	55.87		55.91	0.000630	1.66	333.10	74.52	0.14
GERBER	REACH1	2.305	SA NS 10YR	392.67	48.80	54.44		54.48	0.000828	1.68	234.19	63.40	0.15
GERBER	REACH1	2.305	SA-NOSpill	552.23	48.80	55.91		55.95	0.000616	1.64	335.78	74.80	0.14
GERBER	REACH1	2.268	Stand10yr	387.19	48.40	54.23		54.27	0.000746	1.62	238.45	62.44	0.15
GERBER	REACH1	2.268	SA with Spil	551.86	48.40	55.75		55.80	0.000569	1.61	341.98	73.69	0.13
GERBER	REACH1	2.268	SA NS 10YR	392.53	48.40	54.28		54.33	0.000739	1.62	241.63	62.82	0.15
GERBER	REACH1	2.268	SA-NOSpill	551.71	48.40	55.79		55.83	0.000556	1.60	344.82	73.98	0.13
GERBER	REACH1	2.220	Stand10yr	387.08	47.90	54.01		54.06	0.000943	1.88	206.40	50.98	0.16
GERBER	REACH1	2.220	SA with Spil	551.44	47.90	55.57		55.63	0.000736	1.88	293.25	59.73	0.15
GERBER	REACH1	2.220	SA NS 10YR	392.32	47.90	54.06		54.11	0.000935	1.88	209.08	51.27	0.16
GERBER	REACH1	2.220	SA-NOSpill	551.31	47.90	55.62		55.67	0.000719	1.86	295.80	59.97	0.15
GERBER	REACH1	2.194	Stand10yr	386.98	47.70	53.92		53.95	0.000587	1.45	266.49	69.16	0.13
GERBER	REACH1	2.194	SA with Spil	551.41	47.70	55.52		55.55	0.000435	1.42	387.60	82.66	0.12
GERBER	REACH1	2.194	SA NS 10YR	392.31	47.70	53.98		54.01	0.000581	1.45	270.21	69.61	0.13
GERBER	REACH1	2.194	SA-NOSpill	551.29	47.70	55.56		55.59	0.000424	1.41	391.26	83.04	0.11
GERBER	REACH1	2.177	Stand10yr	386.98	47.50	53.89		53.91	0.000348	1.30	298.28	60.61	0.10
GERBER	REACH1	2.177	SA with Spil	551.39	47.50	55.49		55.52	0.000308	1.38	400.74	67.54	0.10
GERBER	REACH1	2.177	SA NS 10YR	392.29	47.50	53.94		53.97	0.000347	1.30	301.54	60.84	0.10
GERBER	REACH1	2.177	SA-NOSpill	551.27	47.50	55.53		55.56	0.000301	1.37	403.77	67.73	0.10
GERBER	REACH1	2.172	Stand10yr	386.98	47.50	53.88		53.91	0.000276	1.19	325.74	63.05	0.09
GERBER	REACH1	2.172	SA with Spil	551.38	47.50	55.48		55.51	0.000250	1.28	431.39	69.01	0.09
GERBER	REACH1	2.172	SA NS 10YR	392.29	47.50	53.94		53.96	0.000275	1.19	329.13	63.25	0.09
GERBER	REACH1	2.172	SA-NOSpill	551.26	47.50	55.53		55.55	0.000245	1.27	434.49	69.18	0.09
GERBER	REACH1	2.150	Stand10yr	386.97	47.30	53.85		53.87	0.000347	1.02	377.08	108.69	0.10
GERBER	REACH1	2.150	SA with Spil	551.34	47.30	55.47		55.48	0.000210	0.98	559.80	116.76	0.08
GERBER	REACH1	2.150	SA NS 10YR	392.27	47.30	53.91		53.92	0.000339	1.02	383.80	108.96	0.10
GERBER	REACH1	2.150	SA-NOSpill	551.22	47.30	55.51		55.53	0.000204	0.98	565.11	116.99	0.08
GERBER	REACH1	2.13	Stand10yr	386.97	47.10	53.77		53.81	0.000726	1.71	226.23	52.84	0.15
GERBER	REACH1	2.13	SA with Spil	551.30	47.10	55.40		55.44	0.000579	1.72	319.73	62.07	0.13
GERBER	REACH1	2.13	SA NS 10YR	392.25	47.10	53.82		53.87	0.000721	1.71	229.14	53.15	0.15
GERBER	REACH1	2.13	SA-NOSpill	551.19	47.10	55.44		55.49	0.000565	1.71	322.66	62.34	0.13
GERBER	REACH1	2.116	Stand10yr	386.96	46.90	53.68		53.75	0.001031	2.10	184.04	39.27	0.17
GERBER	REACH1	2.116	SA with Spil	551.28	46.90	55.32		55.39	0.000880	2.18	252.99	45.12	0.16
GERBER	REACH1	2.116	SA NS 10YR	392.24	46.90	53.74		53.81	0.001026	2.11	186.22	39.47	0.17
GERBER	REACH1	2.116	SA-NOSpill	551.18	46.90	55.37		55.44	0.000859	2.16	255.20	45.29	0.16
GERBER	REACH1	2.103		Culvert									
GERBER	REACH1	2.092	Stand10yr	386.96	46.70	53.15		53.25	0.001943	2.53	153.22	41.10	0.23
GERBER	REACH1	2.092	SA with Spil	551.16	46.70	54.18		54.30	0.001965	2.78	198.56	46.56	0.24
GERBER	REACH1	2.092	SA NS 10YR	392.24	46.70	53.19		53.29	0.001942	2.53	154.82	41.30	0.23
GERBER	REACH1	2.092	SA-NOSpill	551.18	46.70	54.23		54.35	0.001906	2.74	200.86	46.82	0.23
GERBER	REACH1	2.052	Stand10yr	386.96	46.40	52.74		52.83	0.001992	2.51	154.25	42.86	0.23
GERBER	REACH1	2.052	SA with Spil	551.07	46.40	53.77		53.89	0.001963	2.73	201.82	48.81	0.24
GERBER	REACH1	2.052	SA NS 10YR	392.21	46.40	52.78		52.87	0.001986	2.51	155.95	43.08	0.23
GERBER	REACH1	2.052	SA-NOSpill	551.15	46.40	53.84		53.95	0.001884	2.69	204.97	49.18	0.23
GERBER	REACH1	2.027	Stand10yr	400.64	46.10	52.44		52.55	0.002185	2.64	151.88	41.87	0.24
GERBER	REACH1	2.027	SA with Spil	583.59	46.10	53.45		53.59	0.002300	2.96	197.21	47.50	0.26
GERBER	REACH1	2.027	SA NS 10YR	406.41	46.10	52.48		52.59	0.002183	2.65	153.55	42.09	0.24
GERBER	REACH1	2.027	SA-NOSpill	584.77	46.10	53.53		53.66	0.002196	2.91	200.94	47.94	0.25
GERBER	REACH1	1.968	Stand10yr	400.49	45.70	51.78		51.88	0.002159	2.51	159.72	47.78	0.24
GERBER	REACH1	1.968	SA with Spil	581.60	45.70	52.78		52.90	0.002156	2.75	211.22	54.82	0.25
GERBER	REACH1	1.968	SA NS 10YR	406.37	45.70	51.82		51.92	0.002150	2.51	161.71	48.07	0.24
GERBER	REACH1	1.968	SA-NOSpill	584.48	45.70	52.90		53.01	0.002002	2.68	217.88	55.66	0.24
GERBER	REACH1	1.914	Stand10yr	400.29	45.20	51.11		51.21	0.002427	2.56	156.47	49.76	0.25
GERBER	REACH1	1.914	SA with Spil	57.34	45.20	52.36		52.36	0.000020	0.25	225.25	62.29	0.02
GERBER	REACH1	1.914	SA NS 10YR	406.35	45.20	51.16		51.26	0.002405	2.56	158.79	50.13	0.25
GERBER	REACH1	1.914	SA-NOSpill	584.25	45.20	52.31		52.42	0.002123	2.63	222.09	61.38	0.24
GERBER	REACH1	1.883	Stand10yr	400.18	44.90	50.72		50.82	0.002452	2.56	156.26	50.14	0.26
GERBER	REACH1	1.883	SA with Spil	57.34	44.90	52.36		52.36	0.000014	0.23	249.30	63.27	0.02
GERBER	REACH1	1.883	SA NS 10YR	406.35	44.90	50.77		50.87	0.002420	2.56	158.84	50.54	0.25
GERBER	REACH1	1.883	SA-NOSpill	584.23	44.90	51.99		52.09	0.001944	2.58	226.33	60.30	0.23
GERBER	REACH1	1.843	Stand10yr	400.07	44.60	50.30	47.44	50.38	0.001725	2.25	177.99	53.45	0.22
GERBER	REACH1	1.843	SA with Spil	57.28	44.60	52.36	45.84	52.36	0.000008	0.19	302.99	68.27	0.02
GERBER	REACH1	1.843	SA NS 10YR	406.27	44.60	50.36	47.46	50.44	0.001697	2.24	181.07	53.86	0.22
GERBER	REACH1	1.843	SA-NOSpill	584.19	44.60	51.67	47.97	51.75	0.001347	2.27	257.49	63.28	0.20
GERBER	REACH1	1.832		Bridge									

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	1.831	Stand10yr	400.06	44.60	50.23		50.31	0.000815	2.30	174.08	52.92	0.22
GERBER	REACH1	1.831	SA with Spil	57.27	44.60	52.36		52.36	0.000004	0.19	302.96	68.27	0.02
GERBER	REACH1	1.831	SA NS 10YR	406.21	44.60	50.29		50.37	0.000802	2.29	177.05	53.32	0.22
GERBER	REACH1	1.831	SA-NOSpill	584.18	44.60	51.59		51.68	0.000628	2.31	252.94	62.76	0.20
GERBER	REACH1	1.823	Stand10yr	405.73	44.40	49.47		49.53	0.001606	2.00	203.20	70.04	0.21
GERBER	REACH1	1.823	SA with Spil	764.97	44.40	51.95		52.01	0.000833	1.87	408.63	94.54	0.16
GERBER	REACH1	1.823	SA NS 10YR	403.20	44.40	49.59		49.65	0.001421	1.91	211.46	71.25	0.20
GERBER	REACH1	1.823	SA-NOSpill	583.51	44.40	51.13		51.18	0.000853	1.75	333.59	87.22	0.16
GERBER	REACH1	1.800	Stand10yr	412.04	44.20	49.31		49.36	0.001181	1.81	227.73	71.94	0.18
GERBER	REACH1	1.800	SA with Spil	898.18	44.20	51.81		51.88	0.000917	2.07	433.06	92.05	0.17
GERBER	REACH1	1.800	SA NS 10YR	403.73	44.20	49.45		49.49	0.001000	1.70	237.97	73.07	0.17
GERBER	REACH1	1.800	SA-NOSpill	587.96	44.20	51.04		51.08	0.000634	1.61	364.81	85.88	0.14
GERBER	REACH1	1.756	Stand10yr	421.54	43.80	49.03		49.08	0.001230	1.86	226.76	70.90	0.18
GERBER	REACH1	1.756	SA with Spil	898.96	43.80	51.60		51.67	0.000893	2.06	437.32	92.37	0.17
GERBER	REACH1	1.756	SA NS 10YR	411.71	43.80	49.22		49.26	0.000995	1.71	240.36	72.48	0.17
GERBER	REACH1	1.756	SA-NOSpill	610.54	43.80	50.89		50.94	0.000636	1.63	373.75	86.45	0.14
GERBER	REACH1	1.719	Stand10yr	429.71	43.50	48.78		48.84	0.001205	1.92	223.37	65.15	0.18
GERBER	REACH1	1.719	SA with Spil	899.60	43.50	51.42		51.49	0.000895	2.15	417.56	81.83	0.17
GERBER	REACH1	1.719	SA NS 10YR	415.41	43.50	49.02		49.07	0.000923	1.74	239.41	66.68	0.16
GERBER	REACH1	1.719	SA-NOSpill	623.26	43.50	50.76		50.81	0.000627	1.71	365.05	77.67	0.14
GERBER	REACH1	1.687	Stand10yr	436.65	43.20	48.57		48.63	0.001236	1.92	227.85	68.28	0.18
GERBER	REACH1	1.687	SA with Spil	900.32	43.20	51.28		51.35	0.000829	2.04	440.58	88.62	0.16
GERBER	REACH1	1.687	SA NS 10YR	502.23	43.20	48.79		48.85	0.001366	2.07	242.81	69.91	0.20
GERBER	REACH1	1.687	SA-NOSpill	785.08	43.20	50.58		50.65	0.000947	2.06	380.45	83.38	0.17
GERBER	REACH1	1.643	Stand10yr	446.01	42.90	48.28		48.34	0.001221	1.95	228.18	65.53	0.18
GERBER	REACH1	1.643	SA with Spil	901.14	42.90	51.10		51.16	0.000789	2.06	437.17	83.14	0.16
GERBER	REACH1	1.643	SA NS 10YR	506.38	42.90	48.47		48.54	0.001352	2.10	240.59	66.71	0.20
GERBER	REACH1	1.643	SA-NOSpill	792.32	42.90	50.37		50.43	0.000916	2.09	378.21	78.57	0.17
GERBER	REACH1	1.610	Stand10yr	453.21	42.60	48.14		48.18	0.000660	1.49	304.25	83.33	0.14
GERBER	REACH1	1.610	SA with Spil	902.00	42.60	51.02		51.05	0.000426	1.58	572.60	103.41	0.12
GERBER	REACH1	1.610	SA NS 10YR	509.70	42.60	48.32		48.36	0.000727	1.60	318.97	84.55	0.14
GERBER	REACH1	1.610	SA-NOSpill	798.05	42.60	50.27		50.31	0.000497	1.60	497.35	98.19	0.13
GERBER	REACH1	1.570	Stand10yr	461.74	42.30	47.94		48.00	0.001029	1.84	250.85	69.44	0.17
GERBER	REACH1	1.570	SA with Spil	902.95	42.30	50.89		50.94	0.000616	1.86	485.00	89.46	0.14
GERBER	REACH1	1.570	SA NS 10YR	513.60	42.30	48.10		48.16	0.001127	1.96	261.81	70.51	0.18
GERBER	REACH1	1.570	SA-NOSpill	805.05	42.30	50.12		50.18	0.000740	1.93	418.11	84.23	0.15
GERBER	REACH1	1.485	Stand10yr	479.58	41.60	47.50		47.55	0.000955	1.77	271.69	76.09	0.16
GERBER	REACH1	1.485	SA with Spil	904.94	41.60	50.66		50.70	0.000474	1.63	555.17	103.42	0.12
GERBER	REACH1	1.485	SA NS 10YR	521.82	41.60	47.62		47.68	0.001029	1.86	281.07	77.15	0.17
GERBER	REACH1	1.485	SA-NOSpill	819.61	41.60	49.83		49.88	0.000606	1.74	472.27	96.24	0.14
GERBER	REACH1	1.434	Stand10yr	490.35	41.20	47.25		47.29	0.000912	1.78	275.32	73.31	0.16
GERBER	REACH1	1.434	SA with Spil	905.26	41.20	50.54		50.58	0.000399	1.64	553.20	98.23	0.12
GERBER	REACH1	1.434	SA NS 10YR	526.62	41.20	47.35		47.40	0.000981	1.87	282.99	74.10	0.17
GERBER	REACH1	1.434	SA-NOSpill	832.76	41.20	49.67		49.72	0.000560	1.75	475.01	91.75	0.13
GERBER	REACH1	1.417		Culvert									
GERBER	REACH1	1.402	Stand10yr	489.62	41.00	46.76		46.86	0.001298	2.56	191.51	60.64	0.20
GERBER	REACH1	1.402	SA with Spil	905.47	41.00	48.89		49.06	0.001333	3.30	274.76	70.24	0.22
GERBER	REACH1	1.402	SA NS 10YR	527.96	41.00	46.78		46.90	0.001486	2.74	192.41	60.94	0.22
GERBER	REACH1	1.402	SA-NOSpill	828.76	41.00	48.27		48.44	0.001515	3.31	250.75	67.53	0.23
GERBER	REACH1	1.343	Stand10yr	509.58	40.70	46.57		46.59	0.000285	1.01	506.77	134.14	0.09
GERBER	REACH1	1.343	SA with Spil	906.40	40.70	48.76		48.78	0.000211	1.11	814.84	147.53	0.08
GERBER	REACH1	1.343	SA NS 10YR	554.30	40.70	46.57		46.59	0.000339	1.10	506.03	134.11	0.10
GERBER	REACH1	1.343	SA-NOSpill	878.90	40.70	48.10		48.12	0.000291	1.22	718.48	143.48	0.10
GERBER	REACH1	1.294	Stand10yr	509.39	40.50	46.53		46.54	0.000131	0.68	750.60	201.22	0.06
GERBER	REACH1	1.294	SA with Spil	906.37	40.50	48.73		48.74	0.000093	0.75	1208.65	214.68	0.06
GERBER	REACH1	1.294	SA NS 10YR	553.76	40.50	46.52		46.52	0.000157	0.74	747.77	201.14	0.07
GERBER	REACH1	1.294	SA-NOSpill	878.22	40.50	48.06		48.07	0.000129	0.82	1065.37	210.56	0.06
GERBER	REACH1	1.252	Stand10yr	509.38	40.40	46.51		46.51	0.000104	0.60	843.42	226.35	0.06
GERBER	REACH1	1.252	SA with Spil	906.27	40.40	48.72		48.72	0.000073	0.67	1360.23	241.02	0.05
GERBER	REACH1	1.252	SA NS 10YR	553.73	40.40	46.49		46.49	0.000125	0.66	839.13	226.22	0.06
GERBER	REACH1	1.252	SA-NOSpill	878.19	40.40	48.04		48.04	0.000102	0.73	1197.50	236.50	0.06
GERBER	REACH1	1.219	Stand10yr	509.37	40.20	46.46	42.72	46.48	0.000260	0.97	523.84	136.54	0.09
GERBER	REACH1	1.219	SA with Spil	906.26	40.20	48.68	43.19	48.70	0.000202	1.06	854.07	161.22	0.08
GERBER	REACH1	1.219	SA NS 10YR	553.57	40.20	46.44	42.78	46.45	0.000314	1.06	520.12	136.24	0.10
GERBER	REACH1	1.219	SA-NOSpill	877.71	40.20	47.99	43.14	48.01	0.000280	1.18	744.93	153.50	0.09
GERBER	REACH1	1.200		Bridge									
GERBER	REACH1	1.182	Stand10yr	509.34	39.90	46.24		46.29	0.000832	1.79	284.25	69.57	0.16
GERBER	REACH1	1.182	SA with Spil	906.22	39.90	48.47		48.54	0.000700	1.99	455.40	83.31	0.15

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	1.182	SA NS 10YR	553.00	39.90	46.16		46.22	0.001032	1.98	279.26	69.13	0.17
GERBER	REACH1	1.182	SA-NOSpill	876.46	39.90	47.71		47.79	0.000982	2.23	393.81	78.64	0.18
GERBER	REACH1	1.133	Stand10yr	519.37	39.60	46.04		46.08	0.000729	1.64	315.76	80.02	0.15
GERBER	REACH1	1.133	SA with Spil	954.74	39.60	48.30		48.36	0.000625	1.84	518.17	98.59	0.14
GERBER	REACH1	1.133	SA NS 10YR	552.54	39.60	45.92		45.97	0.000895	1.80	306.59	79.08	0.16
GERBER	REACH1	1.133	SA-NOSpill	875.08	39.60	47.50		47.56	0.000818	1.98	441.05	91.96	0.16
GERBER	REACH1	1.09	Stand10yr	567.33	39.40	45.84		45.89	0.000870	1.82	312.30	77.87	0.16
GERBER	REACH1	1.09	SA with Spil	998.91	39.40	48.15		48.21	0.000679	1.95	512.08	94.95	0.15
GERBER	REACH1	1.09	SA NS 10YR	552.09	39.40	45.72		45.77	0.000897	1.82	302.99	76.95	0.16
GERBER	REACH1	1.09	SA-NOSpill	873.73	39.40	47.31		47.37	0.000820	2.01	434.89	89.09	0.16
GERBER	REACH1	1.068	Stand10yr	571.64	39.20	45.74		45.79	0.000899	1.73	329.80	90.76	0.16
GERBER	REACH1	1.068	SA with Spil	1021.21	39.20	48.08		48.13	0.000610	1.82	559.67	105.10	0.14
GERBER	REACH1	1.068	SA NS 10YR	551.95	39.20	45.62		45.67	0.000928	1.73	318.74	89.95	0.16
GERBER	REACH1	1.068	SA-NOSpill	873.70	39.20	47.23		47.28	0.000731	1.85	472.06	100.53	0.15
GERBER	REACH1	1.032	Stand10yr	580.39	39.00	45.55		45.60	0.001005	1.80	323.04	91.50	0.17
GERBER	REACH1	1.032	SA with Spil	1057.05	39.00	47.95		48.00	0.000661	1.88	562.03	108.14	0.15
GERBER	REACH1	1.032	SA NS 10YR	553.59	39.00	45.43		45.48	0.001017	1.78	311.75	90.63	0.17
GERBER	REACH1	1.032	SA-NOSpill	876.15	39.00	47.08		47.14	0.000755	1.86	471.33	102.14	0.15
GERBER	REACH1	1.013	Stand10yr	584.77	38.90	45.44		45.51	0.000832	2.12	276.10	74.16	0.16
GERBER	REACH1	1.013	SA with Spil	1074.97	38.90	47.82		47.93	0.000803	2.67	402.00	90.06	0.17
GERBER	REACH1	1.013	SA NS 10YR	554.48	38.90	45.32		45.39	0.000808	2.06	269.75	73.36	0.16
GERBER	REACH1	1.013	SA-NOSpill	877.58	38.90	46.97		47.06	0.000795	2.46	356.98	84.37	0.17
GERBER	REACH1	1.004		Culvert									
GERBER	REACH1	0.997	Stand10yr	583.78	38.70	45.01		45.16	0.001682	3.09	188.69	68.77	0.23
GERBER	REACH1	0.997	SA with Spil	1074.96	38.70	47.07		47.33	0.001941	4.12	260.72	81.12	0.27
GERBER	REACH1	0.997	SA NS 10YR	553.39	38.70	44.93		45.07	0.001593	2.98	185.74	68.27	0.23
GERBER	REACH1	0.997	SA-NOSpill	872.31	38.70	46.40		46.61	0.001748	3.68	237.35	77.12	0.25
GERBER	REACH1	0.994	Stand10yr	584.10	38.70	45.07		45.14	0.000996	1.98	295.42	71.39	0.17
GERBER	REACH1	0.994	SA with Spil	1074.97	38.70	47.21		47.30	0.000956	2.33	462.24	84.63	0.16
GERBER	REACH1	0.994	SA NS 10YR	553.72	38.70	44.98		45.04	0.000952	1.92	289.02	70.83	0.17
GERBER	REACH1	0.994	SA-NOSpill	873.79	38.70	46.51		46.58	0.000919	2.16	404.23	80.28	0.17
GERBER	REACH1	0.936	Stand10yr	586.08	38.50	44.83		44.88	0.000691	1.64	356.58	87.12	0.14
GERBER	REACH1	0.936	SA with Spil	1075.14	38.50	46.99		47.05	0.000641	1.91	562.41	103.40	0.14
GERBER	REACH1	0.936	SA NS 10YR	556.17	38.50	44.75		44.79	0.000658	1.59	349.68	86.52	0.14
GERBER	REACH1	0.936	SA-NOSpill	877.84	38.50	46.30		46.34	0.000623	1.78	491.92	98.13	0.14
GERBER	REACH1	0.895	Stand10yr	587.50	38.40	44.75		44.77	0.000298	1.11	530.32	125.48	0.09
GERBER	REACH1	0.895	SA with Spil	1075.26	38.40	46.92		46.95	0.000277	1.31	822.98	143.57	0.10
GERBER	REACH1	0.895	SA NS 10YR	558.01	38.40	44.67		44.69	0.000283	1.07	520.84	124.85	0.09
GERBER	REACH1	0.895	SA-NOSpill	881.29	38.40	46.22		46.25	0.000269	1.22	724.46	137.75	0.09
GERBER	REACH1	0.872	Stand10yr	588.49	38.40	44.71		44.73	0.000380	1.09	540.34	156.45	0.10
GERBER	REACH1	0.872	SA with Spil	1075.32	38.40	46.90		46.92	0.000266	1.19	902.14	174.34	0.09
GERBER	REACH1	0.872	SA NS 10YR	559.23	38.40	44.63		44.65	0.000367	1.06	528.73	155.84	0.10
GERBER	REACH1	0.872	SA-NOSpill	883.02	38.40	46.19		46.21	0.000276	1.13	781.80	168.60	0.09
GERBER	REACH1	0.844	Stand10yr	589.53	38.30	44.62		44.65	0.000635	1.57	375.43	92.47	0.14
GERBER	REACH1	0.844	SA with Spil	1075.40	38.30	46.81		46.86	0.000569	1.80	597.76	110.31	0.14
GERBER	REACH1	0.844	SA NS 10YR	560.39	38.30	44.55		44.58	0.000603	1.52	369.00	91.90	0.13
GERBER	REACH1	0.844	SA-NOSpill	885.24	38.30	46.11		46.15	0.000562	1.69	522.66	104.62	0.13
GERBER	REACH1	0.769	Stand10yr	592.34	38.10	44.34		44.38	0.000735	1.66	357.03	90.29	0.15
GERBER	REACH1	0.769	SA with Spil	1075.58	38.10	46.57		46.62	0.000622	1.86	579.21	108.97	0.14
GERBER	REACH1	0.769	SA NS 10YR	563.71	38.10	44.28		44.32	0.000692	1.60	352.12	89.84	0.14
GERBER	REACH1	0.769	SA-NOSpill	891.14	38.10	45.87		45.92	0.000626	1.76	505.06	103.12	0.14
GERBER	REACH1	0.702	Stand10yr	594.79	37.90	44.07		44.11	0.000792	1.73	344.32	86.53	0.15
GERBER	REACH1	0.702	SA with Spil	1075.58	37.90	46.34		46.40	0.000646	1.92	560.82	103.25	0.15
GERBER	REACH1	0.702	SA NS 10YR	566.51	37.90	44.03		44.07	0.000738	1.66	341.12	86.25	0.15
GERBER	REACH1	0.702	SA-NOSpill	896.20	37.90	45.64		45.69	0.000661	1.83	489.78	98.47	0.14
GERBER	REACH1	0.693	Stand10yr	594.96	37.90	43.87		44.05	0.002227	3.39	175.51	62.51	0.27
GERBER	REACH1	0.693	SA with Spil	1075.24	37.90	46.08		46.36	0.002157	4.25	252.77	75.44	0.28
GERBER	REACH1	0.693	SA NS 10YR	566.34	37.90	43.85		44.01	0.002046	3.24	174.79	62.38	0.26
GERBER	REACH1	0.693	SA-NOSpill	895.77	37.90	45.41		45.64	0.002071	3.91	229.30	72.14	0.27
GERBER	REACH1	0.679		Culvert									
GERBER	REACH1	0.666	Stand10yr	594.24	37.70	43.51		43.79	0.003612	4.28	138.88	57.94	0.34
GERBER	REACH1	0.666	SA with Spil	1072.62	37.70	45.51		45.98	0.003808	5.51	194.83	69.93	0.37
GERBER	REACH1	0.666	SA NS 10YR	564.55	37.70	43.53		43.78	0.003220	4.05	139.39	58.05	0.32
GERBER	REACH1	0.666	SA-NOSpill	887.68	37.70	44.88		45.27	0.003572	5.01	177.29	66.17	0.35
GERBER	REACH1	0.655	Stand10yr	594.72	37.60	43.56		43.62	0.000988	1.91	311.45	79.25	0.17
GERBER	REACH1	0.655	SA with Spil	1073.71	37.60	45.68		45.76	0.000859	2.17	494.64	93.19	0.17
GERBER	REACH1	0.655	SA NS 10YR	565.34	37.60	43.57		43.62	0.000864	1.81	312.53	79.34	0.16
GERBER	REACH1	0.655	SA-NOSpill	890.69	37.60	45.01		45.07	0.000860	2.06	433.26	88.76	0.16

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	0.627	Stand10yr	595.52	37.50	43.43		43.48	0.000901	1.74	342.06	94.02	0.16
GERBER	REACH1	0.627	SA with Spil	1073.36	37.50	45.59		45.64	0.000681	1.90	564.53	109.02	0.15
GERBER	REACH1	0.627	SA NS 10YR	566.00	37.50	43.46		43.50	0.000796	1.64	344.71	94.30	0.15
GERBER	REACH1	0.627	SA-NOSpill	891.25	37.50	44.91		44.96	0.000715	1.81	491.33	106.28	0.15
GERBER	REACH1	0.61	Stand10yr	596.24	37.40	43.41		43.42	0.000227	0.97	614.14	144.50	0.08
GERBER	REACH1	0.61	SA with Spil	1073.26	37.40	45.58		45.60	0.000199	1.14	944.94	158.61	0.08
GERBER	REACH1	0.61	SA NS 10YR	566.62	37.40	43.44		43.45	0.000200	0.92	618.62	144.72	0.08
GERBER	REACH1	0.61	SA-NOSpill	892.83	37.40	44.90		44.91	0.000200	1.07	837.41	155.43	0.08
GERBER	REACH1	0.598	Stand10yr	596.57	37.40	43.34		43.39	0.000874	1.80	331.64	162.28	0.16
GERBER	REACH1	0.598	SA with Spil	1073.30	37.40	45.57		45.59	0.000206	1.10	1040.35	207.66	0.08
GERBER	REACH1	0.598	SA NS 10YR	566.97	37.40	43.38		43.42	0.000767	1.69	334.93	162.94	0.15
GERBER	REACH1	0.598	SA-NOSpill	893.89	37.40	44.89		44.90	0.000226	1.08	898.87	204.77	0.08
GERBER	REACH1	0.586	Stand10yr	597.06	37.30	43.28		43.33	0.000907	1.83	326.73	102.96	0.16
GERBER	REACH1	0.586	SA with Spil	1072.84	37.30	45.52		45.57	0.000583	1.84	632.96	144.44	0.14
GERBER	REACH1	0.586	SA NS 10YR	567.10	37.30	43.33		43.37	0.000791	1.72	330.61	104.01	0.15
GERBER	REACH1	0.586	SA-NOSpill	894.36	37.30	44.83		44.88	0.000641	1.81	534.56	141.35	0.14
GERBER	REACH1	0.567	Stand10yr	597.52	37.20	43.20		43.25	0.000869	1.79	333.23	109.45	0.16
GERBER	REACH1	0.567	SA with Spil	1072.55	37.20	45.46		45.51	0.000539	1.76	653.46	145.51	0.13
GERBER	REACH1	0.567	SA NS 10YR	567.52	37.20	43.25		43.30	0.000751	1.68	338.17	111.06	0.15
GERBER	REACH1	0.567	SA-NOSpill	895.45	37.20	44.77		44.82	0.000595	1.75	553.49	142.47	0.14
GERBER	REACH1	0.555	Stand10yr	598.00	37.10	43.16		43.20	0.000674	1.60	373.91	92.84	0.14
GERBER	REACH1	0.555	SA with Spil	1072.22	37.10	45.42		45.47	0.000542	1.80	596.49	103.39	0.13
GERBER	REACH1	0.555	SA NS 10YR	567.85	37.10	43.22		43.25	0.000580	1.50	379.83	93.13	0.13
GERBER	REACH1	0.555	SA-NOSpill	895.94	37.10	44.73		44.78	0.000547	1.70	526.06	100.17	0.13
GERBER	REACH1	0.539	Stand10yr	598.49	37.10	43.09		43.14	0.000744	1.66	360.80	90.40	0.15
GERBER	REACH1	0.539	SA with Spil	1071.50	37.10	45.37		45.43	0.000563	1.89	566.86	90.40	0.13
GERBER	REACH1	0.539	SA NS 10YR	568.34	37.10	43.17		43.20	0.000633	1.55	367.39	90.40	0.14
GERBER	REACH1	0.539	SA-NOSpill	896.74	37.10	44.68		44.73	0.000572	1.78	504.37	90.40	0.13
GERBER	REACH1	0.527	Stand10yr	598.89	37.00	43.04		43.09	0.000894	1.79	334.20	87.11	0.16
GERBER	REACH1	0.527	SA with Spil	1071.14	37.00	45.33		45.39	0.000602	1.93	555.74	105.85	0.15
GERBER	REACH1	0.527	SA NS 10YR	568.39	37.00	43.12		43.16	0.000758	1.67	341.33	87.78	0.15
GERBER	REACH1	0.527	SA-NOSpill	897.14	37.00	44.64		44.69	0.000704	1.85	484.23	100.18	0.15
GERBER	REACH1	0.486	Stand10yr	600.14	36.80	42.85		42.90	0.000817	1.73	347.01	89.11	0.15
GERBER	REACH1	0.486	SA with Spil	1068.76	36.80	45.20		45.25	0.000612	1.85	577.53	107.72	0.14
GERBER	REACH1	0.486	SA NS 10YR	568.99	36.80	42.97		43.00	0.000677	1.59	357.00	90.00	0.14
GERBER	REACH1	0.486	SA-NOSpill	898.94	36.80	44.50		44.55	0.000635	1.78	504.12	102.17	0.14
GERBER	REACH1	0.459	Stand10yr	601.05	36.70	42.77		42.81	0.000524	1.41	426.35	107.22	0.12
GERBER	REACH1	0.459	SA with Spil	1067.04	36.70	45.14		45.18	0.000392	1.51	704.54	127.74	0.11
GERBER	REACH1	0.459	SA NS 10YR	569.69	36.70	42.90		42.93	0.000430	1.29	439.92	108.31	0.11
GERBER	REACH1	0.459	SA-NOSpill	900.69	36.70	44.44		44.47	0.000408	1.46	616.83	121.65	0.11
GERBER	REACH1	0.434	Stand10yr	601.92	36.50	42.68		42.72	0.000714	1.60	376.51	98.88	0.14
GERBER	REACH1	0.434	SA with Spil	1065.21	36.50	45.07		45.12	0.000504	1.66	641.66	122.37	0.13
GERBER	REACH1	0.434	SA NS 10YR	570.31	36.50	42.82		42.86	0.000578	1.46	390.78	100.31	0.13
GERBER	REACH1	0.434	SA-NOSpill	902.33	36.50	44.37		44.41	0.000536	1.62	557.39	115.72	0.13
GERBER	REACH1	0.367	Stand10yr	604.14	36.20	42.41		42.46	0.000777	1.70	356.01	90.87	0.15
GERBER	REACH1	0.367	SA with Spil	1057.99	36.20	44.89		44.93	0.000535	1.74	607.19	112.31	0.13
GERBER	REACH1	0.367	SA NS 10YR	571.40	36.20	42.61		42.65	0.000603	1.53	374.36	92.60	0.13
GERBER	REACH1	0.367	SA-NOSpill	905.82	36.20	44.17		44.21	0.000576	1.71	528.60	106.07	0.14
GERBER	REACH1	0.346	Stand10yr	604.68	36.10	42.23		42.34	0.001409	2.74	220.44	71.27	0.21
GERBER	REACH1	0.346	SA with Spil	1023.53	36.10	44.70		44.85	0.001087	3.13	326.73	84.00	0.20
GERBER	REACH1	0.346	SA NS 10YR	570.90	36.10	42.47		42.56	0.001079	2.47	230.73	72.70	0.19
GERBER	REACH1	0.346	SA-NOSpill	905.25	36.10	43.98		44.12	0.001186	3.06	295.74	81.77	0.21
GERBER	REACH1	0.338		Culvert									
GERBER	REACH1	0.329	Stand10yr	604.26	35.90	42.06		42.18	0.001587	2.86	211.40	63.55	0.22
GERBER	REACH1	0.329	SA with Spil	1022.72	35.90	44.20		44.36	0.001394	3.39	301.37	76.40	0.22
GERBER	REACH1	0.329	SA NS 10YR	569.12	35.90	42.33		42.43	0.001182	2.55	222.80	65.17	0.20
GERBER	REACH1	0.329	SA-NOSpill	897.23	35.90	43.62		43.78	0.001423	3.24	276.90	72.90	0.22
GERBER	REACH1	0.293	Stand10yr	605.30	35.70	41.94		41.97	0.000579	1.47	410.52	103.47	0.13
GERBER	REACH1	0.293	SA with Spil	1022.79	35.70	44.15		44.19	0.000407	1.58	647.94	110.94	0.12
GERBER	REACH1	0.293	SA NS 10YR	569.67	35.70	42.25		42.27	0.000406	1.29	442.74	104.52	0.11
GERBER	REACH1	0.293	SA-NOSpill	898.60	35.70	43.55		43.59	0.000436	1.54	582.05	108.92	0.12
GERBER	REACH1	0.271	Stand10yr	605.99	35.60	41.85		41.89	0.000723	1.67	363.01	89.71	0.15
GERBER	REACH1	0.271	SA with Spil	1022.76	35.60	44.09		44.13	0.000538	1.75	582.85	106.94	0.13
GERBER	REACH1	0.271	SA NS 10YR	569.95	35.60	42.19		42.22	0.000508	1.45	393.51	92.30	0.12
GERBER	REACH1	0.271	SA-NOSpill	898.07	35.60	43.48		43.53	0.000573	1.73	519.71	102.29	0.14
GERBER	REACH1	0.216	Stand10yr	607.44	35.30	41.65		41.69	0.000676	1.64	371.48	90.13	0.14
GERBER	REACH1	0.216	SA with Spil	1022.73	35.30	43.94		43.98	0.000499	1.71	597.67	107.67	0.13
GERBER	REACH1	0.216	SA NS 10YR	570.60	35.30	42.05		42.08	0.000457	1.40	408.06	93.19	0.12
GERBER	REACH1	0.216	SA-NOSpill	896.69	35.30	43.32		43.37	0.000529	1.68	533.31	102.97	0.13

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
GERBER	REACH1	0.155	Stand10yr	609.22	35.00	41.42		41.47	0.000720	1.69	360.44	87.07	0.15
GERBER	REACH1	0.155	SA with Spil	1022.46	35.00	43.77		43.82	0.000515	1.74	585.94	104.77	0.13
GERBER	REACH1	0.155	SA NS 10YR	571.08	35.00	41.90		41.93	0.000461	1.42	402.85	90.67	0.12
GERBER	REACH1	0.155	SA-NOSpill	891.65	35.00	43.15		43.20	0.000541	1.71	522.22	100.09	0.13
GERBER	REACH1	0.093	Stand10yr	611.05	34.60	41.21		41.25	0.000583	1.58	387.51	88.53	0.13
GERBER	REACH1	0.093	SA with Spil	1022.05	34.60	43.62		43.67	0.000427	1.65	620.52	104.87	0.12
GERBER	REACH1	0.093	SA NS 10YR	571.92	34.60	41.77		41.80	0.000360	1.31	437.76	92.30	0.11
GERBER	REACH1	0.093	SA-NOSpill	884.07	34.60	43.00		43.04	0.000436	1.59	556.04	100.61	0.12
GERBER	REACH1	0.051	Stand10yr	612.25	34.40	41.09		41.13	0.000571	1.57	389.70	88.09	0.13
GERBER	REACH1	0.051	SA with Spil	1021.71	34.40	43.53		43.57	0.000415	1.64	624.82	104.34	0.12
GERBER	REACH1	0.051	SA NS 10YR	572.55	34.40	41.69		41.72	0.000343	1.29	444.23	92.11	0.10
GERBER	REACH1	0.051	SA-NOSpill	877.20	34.40	42.90		42.94	0.000415	1.56	560.55	100.16	0.12
GERBER	REACH1	0.000	Stand10yr	611.94	34.00	40.97		41.00	0.000401	1.31	468.31	107.24	0.11
GERBER	REACH1	0.000	SA with Spil	1020.67	34.00	43.45		43.48	0.000265	1.37	745.60	113.10	0.09
GERBER	REACH1	0.000	SA NS 10YR	571.91	34.00	41.63		41.64	0.000229	1.06	539.72	110.36	0.08
GERBER	REACH1	0.000	SA-NOSpill	869.01	34.00	42.82		42.85	0.000265	1.29	674.54	113.10	0.09
ELDER	REACH1	12.205	Stand10yr	260.08	89.50	91.68		91.74	0.002595	2.00	129.80	119.06	0.34
ELDER	REACH1	12.205	SA with Spil	453.86	89.50	92.22		92.30	0.002422	2.24	202.24	148.61	0.34
ELDER	REACH1	12.205	SA NS 10YR	260.08	89.50	91.68		91.74	0.002595	2.00	129.80	119.06	0.34
ELDER	REACH1	12.205	SA-NOSpill	453.86	89.50	92.22		92.30	0.002426	2.25	202.12	148.57	0.34
ELDER	REACH1	12.144	Stand10yr	258.40	88.36	90.91		90.98	0.002107	2.17	123.26	110.09	0.32
ELDER	REACH1	12.144	SA with Spil	452.30	88.36	91.52		91.62	0.001819	2.55	197.56	131.28	0.31
ELDER	REACH1	12.144	SA NS 10YR	258.41	88.36	90.91		90.98	0.002108	2.17	123.24	110.09	0.32
ELDER	REACH1	12.144	SA-NOSpill	452.68	88.36	91.52		91.62	0.001833	2.56	197.13	131.20	0.32
ELDER	REACH1	12.072	Stand10yr	240.14	87.50	90.32		90.36	0.001108	1.59	151.86	112.76	0.23
ELDER	REACH1	12.072	SA with Spil	446.70	87.50	91.03		91.08	0.001033	1.92	249.78	177.63	0.24
ELDER	REACH1	12.072	SA NS 10YR	240.14	87.50	90.32		90.36	0.001112	1.59	151.70	112.67	0.23
ELDER	REACH1	12.072	SA-NOSpill	442.85	87.50	91.02		91.08	0.001025	1.91	248.78	176.84	0.24
ELDER	REACH1	12.02	Stand10yr	230.81	86.52	90.09		90.13	0.000585	1.80	239.29	281.55	0.19
ELDER	REACH1	12.02	SA with Spil	434.88	86.52	90.83		90.86	0.000483	1.90	466.80	335.66	0.18
ELDER	REACH1	12.02	SA NS 10YR	230.81	86.52	90.09		90.13	0.000588	1.80	238.64	281.38	0.19
ELDER	REACH1	12.02	SA-NOSpill	431.33	86.52	90.83		90.86	0.000481	1.89	464.53	335.17	0.18
ELDER	REACH1	11.944	Stand10yr	441.74	85.50	89.99		90.00	0.000183	1.14	743.33	424.11	0.11
ELDER	REACH1	11.944	SA with Spil	895.86	85.50	90.71		90.73	0.000275	1.59	1062.10	452.95	0.14
ELDER	REACH1	11.944	SA NS 10YR	440.78	85.50	89.99		90.00	0.000183	1.14	742.16	423.89	0.11
ELDER	REACH1	11.944	SA-NOSpill	887.07	85.50	90.71		90.72	0.000272	1.58	1059.25	452.74	0.14
ELDER	REACH1	11.883	Stand10yr	440.61	85.50	89.96		89.96	0.000064	0.67	1189.18	578.58	0.06
ELDER	REACH1	11.883	SA with Spil	874.40	85.50	90.66		90.67	0.000109	0.99	1664.37	696.17	0.09
ELDER	REACH1	11.883	SA NS 10YR	440.46	85.50	89.95		89.96	0.000065	0.67	1187.47	578.36	0.06
ELDER	REACH1	11.883	SA-NOSpill	847.01	85.50	90.65		90.66	0.000102	0.96	1661.03	696.05	0.08
ELDER	REACH1	11.848	Stand10yr	440.43	82.50	89.91		89.94	0.000229	1.33	332.23	552.98	0.12
ELDER	REACH1	11.848	SA with Spil	867.18	82.50	90.64		90.65	0.000053	0.72	2440.61	1198.50	0.06
ELDER	REACH1	11.848	SA NS 10YR	440.24	82.50	89.91		89.94	0.000230	1.33	331.98	552.89	0.12
ELDER	REACH1	11.848	SA-NOSpill	785.55	82.50	90.65		90.65	0.000044	0.65	2442.31	1198.55	0.05
ELDER	REACH1	11.835		Culvert									
ELDER	REACH1	11.822	Stand10yr	440.41	82.50	87.18		87.62	0.003369	5.36	82.13	78.17	0.44
ELDER	REACH1	11.822	SA with Spil	993.54	82.50	88.27		88.55	0.003403	4.60	362.30	375.48	0.45
ELDER	REACH1	11.822	SA NS 10YR	440.20	82.50	87.18		87.62	0.003368	5.36	82.12	78.14	0.44
ELDER	REACH1	11.822	SA-NOSpill	982.79	82.50	88.25		88.54	0.003400	4.79	357.87	372.34	0.45
ELDER	REACH1	11.724	Stand10yr	440.15	83.19	86.16		86.24	0.001598	2.65	252.46	201.80	0.30
ELDER	REACH1	11.724	SA with Spil	959.04	83.19	87.10		87.21	0.001732	3.44	471.83	253.54	0.33
ELDER	REACH1	11.724	SA NS 10YR	439.96	83.19	86.16		86.24	0.001598	2.65	252.37	201.76	0.30
ELDER	REACH1	11.724	SA-NOSpill	957.42	83.19	87.10		87.21	0.001739	3.44	470.59	253.39	0.33
ELDER	REACH1	11.659	Stand10yr	440.07	82.38	85.66		85.72	0.001390	2.53	271.80	181.86	0.28
ELDER	REACH1	11.659	SA with Spil	946.02	82.38	86.47		86.59	0.001918	3.59	441.31	234.55	0.35
ELDER	REACH1	11.659	SA NS 10YR	439.88	82.38	85.66		85.72	0.001390	2.53	271.74	181.84	0.28
ELDER	REACH1	11.659	SA-NOSpill	943.27	82.38	86.46		86.58	0.001924	3.59	439.85	234.33	0.35
ELDER	REACH1	11.586	Stand10yr	439.81	81.30	84.85		85.01	0.003075	3.88	218.22	233.44	0.42
ELDER	REACH1	11.586	SA with Spil	935.61	81.30	85.71		85.85	0.002583	4.28	448.98	304.05	0.40
ELDER	REACH1	11.586	SA NS 10YR	439.63	81.30	84.85		85.01	0.003075	3.88	218.12	233.41	0.42
ELDER	REACH1	11.586	SA-NOSpill	926.43	81.30	85.70		85.84	0.002577	4.27	445.79	303.22	0.40
ELDER	REACH1	11.538	Stand10yr	439.58	80.77	84.32		84.37	0.001440	2.81	317.89	256.32	0.29
ELDER	REACH1	11.538	SA with Spil	922.88	80.77	85.24		85.30	0.001386	3.31	581.58	315.53	0.30
ELDER	REACH1	11.538	SA NS 10YR	439.40	80.77	84.31		84.37	0.001440	2.81	317.77	256.29	0.29
ELDER	REACH1	11.538	SA-NOSpill	912.83	80.77	85.23		85.29	0.001379	3.30	577.85	314.77	0.30
ELDER	REACH1	11.482	Stand10yr	439.46	80.23	83.82		83.90	0.001610	3.19	269.53	183.96	0.33
ELDER	REACH1	11.482	SA with Spil	912.93	80.23	84.65		84.77	0.002382	4.31	454.12	258.76	0.39
ELDER	REACH1	11.482	SA NS 10YR	439.29	80.23	83.82		83.89	0.001610	3.19	269.46	183.94	0.33
ELDER	REACH1	11.482	SA-NOSpill	903.97	80.23	84.64		84.75	0.002374	4.30	451.14	257.81	0.39

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	11.433	Stand10yr	439.10	79.88	83.23		83.31	0.002738	3.70	248.94	194.08	0.39
ELDER	REACH1	11.433	SA with Spil	859.07	79.88	83.90		84.01	0.003019	4.50	387.17	217.46	0.43
ELDER	REACH1	11.433	SA NS 10YR	438.91	79.88	83.23		83.31	0.002738	3.70	248.87	194.07	0.39
ELDER	REACH1	11.433	SA-NOSpill	859.10	79.88	83.90		84.01	0.003024	4.50	386.97	217.42	0.43
ELDER	REACH1	11.376	Stand10yr	437.66	79.20	82.67		82.71	0.001154	2.42	466.38	532.74	0.26
ELDER	REACH1	11.376	SA with Spil	851.17	79.20	83.39		83.41	0.000781	2.33	880.18	628.22	0.22
ELDER	REACH1	11.376	SA NS 10YR	437.49	79.20	82.67		82.71	0.001154	2.42	466.15	532.69	0.26
ELDER	REACH1	11.376	SA-NOSpill	850.17	79.20	83.39		83.41	0.000781	2.33	879.16	628.01	0.22
ELDER	REACH1	11.313	Stand10yr	437.11	78.70	82.38		82.41	0.000724	1.97	446.83	342.63	0.21
ELDER	REACH1	11.313	SA with Spil	847.86	78.70	83.15		83.18	0.000699	2.27	718.53	365.23	0.21
ELDER	REACH1	11.313	SA NS 10YR	436.93	78.70	82.38		82.41	0.000724	1.97	446.66	342.61	0.21
ELDER	REACH1	11.313	SA-NOSpill	847.32	78.70	83.15		83.18	0.000700	2.27	717.88	365.17	0.21
ELDER	REACH1	11.252	Stand10yr	436.92	78.41	82.10		82.15	0.001045	2.37	345.62	257.17	0.25
ELDER	REACH1	11.252	SA with Spil	846.71	78.41	82.85		82.91	0.001127	2.88	556.75	297.19	0.27
ELDER	REACH1	11.252	SA NS 10YR	436.73	78.41	82.10		82.15	0.001045	2.37	345.50	257.14	0.25
ELDER	REACH1	11.252	SA-NOSpill	845.40	78.41	82.85		82.91	0.001126	2.88	556.22	297.12	0.27
ELDER	REACH1	11.175	Stand10yr	436.51	77.70	81.40		81.55	0.002566	3.63	209.76	197.81	0.39
ELDER	REACH1	11.175	SA with Spil	841.30	77.70	82.09		82.27	0.002830	4.44	376.27	291.45	0.42
ELDER	REACH1	11.175	SA NS 10YR	436.32	77.70	81.40		81.54	0.002565	3.63	209.71	197.79	0.39
ELDER	REACH1	11.175	SA-NOSpill	840.03	77.70	82.09		82.27	0.002831	4.44	375.71	291.34	0.42
ELDER	REACH1	11.125	Stand10yr	435.77	77.27	80.94		81.01	0.001300	2.65	305.68	300.24	0.28
ELDER	REACH1	11.125	SA with Spil	834.19	77.27	81.58		81.67	0.001462	3.23	474.24	383.12	0.31
ELDER	REACH1	11.125	SA NS 10YR	435.48	77.27	80.94		81.01	0.001298	2.65	305.69	300.24	0.28
ELDER	REACH1	11.125	SA-NOSpill	832.37	77.27	81.58		81.67	0.001461	3.23	473.64	382.83	0.31
ELDER	REACH1	11.063	Stand10yr	433.98	76.84	80.47		80.58	0.001654	3.04	263.50	548.13	0.32
ELDER	REACH1	11.063	SA with Spil	823.02	76.84	81.12		81.22	0.001591	3.42	463.47	656.37	0.32
ELDER	REACH1	11.063	SA NS 10YR	434.03	76.84	80.47		80.58	0.001653	3.04	263.61	548.16	0.32
ELDER	REACH1	11.063	SA-NOSpill	821.76	76.84	81.11		81.22	0.001593	3.42	462.68	655.87	0.32
ELDER	REACH1	10.995	Stand10yr	513.70	76.40	80.00		80.05	0.001095	2.49	355.98	221.97	0.26
ELDER	REACH1	10.995	SA with Spil	894.83	76.40	80.61		80.69	0.001290	3.07	537.71	509.93	0.29
ELDER	REACH1	10.995	SA NS 10YR	513.94	76.40	80.00		80.05	0.001095	2.49	356.08	221.99	0.26
ELDER	REACH1	10.995	SA-NOSpill	892.56	76.40	80.61		80.69	0.001289	3.07	536.91	509.42	0.29
ELDER	REACH1	10.936	Stand10yr	513.00	76.10	79.79		79.81	0.000421	1.59	576.04	313.75	0.16
ELDER	REACH1	10.936	SA with Spil	889.40	76.10	80.33		80.36	0.000770	2.40	799.26	501.77	0.22
ELDER	REACH1	10.936	SA NS 10YR	513.16	76.10	79.79		79.81	0.000421	1.59	576.19	313.75	0.16
ELDER	REACH1	10.936	SA-NOSpill	887.07	76.10	80.32		80.36	0.000769	2.39	798.00	501.46	0.22
ELDER	REACH1	10.884	Stand10yr	512.47	75.80	79.67		79.69	0.000429	1.68	642.38	425.86	0.16
ELDER	REACH1	10.884	SA with Spil	886.14	75.80	80.14		80.17	0.000639	2.24	857.33	526.26	0.20
ELDER	REACH1	10.884	SA NS 10YR	512.56	75.80	79.67		79.69	0.000429	1.68	642.56	425.90	0.16
ELDER	REACH1	10.884	SA-NOSpill	884.39	75.80	80.13		80.16	0.000639	2.24	856.05	526.12	0.20
ELDER	REACH1	10.834	Stand10yr	512.14	75.60	79.56		79.58	0.000416	1.53	579.75	374.48	0.16
ELDER	REACH1	10.834	SA with Spil	884.67	75.60	79.96		79.99	0.000669	2.12	735.21	407.62	0.21
ELDER	REACH1	10.834	SA NS 10YR	512.35	75.60	79.56		79.58	0.000416	1.53	579.90	374.51	0.16
ELDER	REACH1	10.834	SA-NOSpill	882.84	75.60	79.95		79.99	0.000668	2.11	734.28	407.43	0.21
ELDER	REACH1	10.775	Stand10yr	511.87	75.45	79.46		79.46	0.000172	1.10	805.49	374.49	0.10
ELDER	REACH1	10.775	SA with Spil	883.87	75.45	79.81		79.83	0.000350	1.67	937.06	410.64	0.15
ELDER	REACH1	10.775	SA NS 10YR	512.17	75.45	79.46		79.48	0.000172	1.10	805.61	374.53	0.10
ELDER	REACH1	10.775	SA-NOSpill	881.69	75.45	79.81		79.83	0.000349	1.66	936.23	410.46	0.15
ELDER	REACH1	10.717	Stand10yr	511.80	75.25	79.43		79.44	0.000139	1.10	921.20	398.80	0.10
ELDER	REACH1	10.717	SA with Spil	883.54	75.25	79.71		79.73	0.000299	1.69	1037.31	417.33	0.14
ELDER	REACH1	10.717	SA NS 10YR	512.09	75.25	79.43		79.44	0.000139	1.10	921.32	398.82	0.10
ELDER	REACH1	10.717	SA-NOSpill	881.43	75.25	79.71		79.73	0.000298	1.68	1036.58	417.15	0.14
ELDER	REACH1	10.691	Stand10yr	511.79	74.00	79.42		79.42	0.000074	0.86	1050.84	1060.88	0.07
ELDER	REACH1	10.691	SA with Spil	883.43	74.00	79.69		79.70	0.000167	1.35	1157.39	1084.28	0.11
ELDER	REACH1	10.691	SA NS 10YR	512.05	74.00	79.42		79.42	0.000074	0.86	1050.95	1060.91	0.07
ELDER	REACH1	10.691	SA-NOSpill	881.49	74.00	79.68		79.70	0.000166	1.34	1156.73	1084.15	0.11
ELDER	REACH1	10.689		Culvert									
ELDER	REACH1	10.686	Stand10yr	510.88	74.00	78.33		78.35	0.000379	1.62	869.92	952.80	0.16
ELDER	REACH1	10.686	SA with Spil	882.89	74.00	78.58		78.60	0.000602	2.14	1103.44	976.27	0.20
ELDER	REACH1	10.686	SA NS 10YR	511.24	74.00	78.33		78.35	0.000379	1.62	870.40	952.85	0.16
ELDER	REACH1	10.686	SA-NOSpill	880.99	74.00	78.57		78.60	0.000601	2.14	1102.24	976.15	0.20
ELDER	REACH1	10.63		Lat Struct									
ELDER	REACH1	10.619	Stand10yr	481.31	71.00	78.26		78.26	0.000031	0.54	1411.74	677.57	0.05
ELDER	REACH1	10.619	SA with Spil	845.39	71.00	78.45		78.46	0.000077	0.88	1540.94	684.13	0.07
ELDER	REACH1	10.619	SA NS 10YR	481.61	71.00	78.26		78.26	0.000031	0.54	1412.08	677.59	0.05
ELDER	REACH1	10.619	SA-NOSpill	843.39	71.00	78.45		78.45	0.000077	0.88	1540.29	684.09	0.07
ELDER	REACH1	10.613		Culvert									
ELDER	REACH1	10.607	Stand10yr	481.15	71.00	74.78		75.04	0.002074	4.11	117.20	71.38	0.37

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	10.607	SA with Spill	845.01	71.00	75.31		75.93	0.004129	6.32	133.65	103.50	0.54
ELDER	REACH1	10.607	SA NS 10YR	481.43	71.00	74.78		75.04	0.002075	4.11	117.22	71.42	0.37
ELDER	REACH1	10.607	SA-NOSpill	842.77	71.00	75.31		75.93	0.004112	6.31	133.59	103.41	0.54
ELDER	REACH1	10.562	Stand10yr	481.03	70.10	74.65		74.71	0.000692	2.38	373.28	248.30	0.21
ELDER	REACH1	10.562	SA with Spill	844.51	70.10	75.14		75.24	0.001076	3.20	505.76	292.89	0.27
ELDER	REACH1	10.562	SA NS 10YR	481.36	70.10	74.65		74.71	0.000692	2.38	373.48	248.34	0.21
ELDER	REACH1	10.562	SA-NOSpill	842.50	70.10	75.14		75.24	0.001074	3.20	505.13	292.62	0.27
ELDER	REACH1	10.507	Stand10yr	480.93	70.50	74.39		74.51	0.001653	3.25	311.93	421.43	0.32
ELDER	REACH1	10.507	SA with Spill	843.69	70.50	74.88		74.99	0.001718	3.64	546.45	516.36	0.33
ELDER	REACH1	10.507	SA NS 10YR	481.25	70.50	74.39		74.51	0.001653	3.25	312.21	421.55	0.32
ELDER	REACH1	10.507	SA-NOSpill	841.71	70.50	74.88		74.99	0.001718	3.63	545.40	516.05	0.33
ELDER	REACH1	10.442	Stand10yr	484.03	70.48	73.80		73.90	0.002005	3.27	342.20	423.14	0.34
ELDER	REACH1	10.442	SA with Spill	847.17	70.48	74.29		74.38	0.001958	3.59	576.80	530.17	0.35
ELDER	REACH1	10.442	SA NS 10YR	484.40	70.48	73.80		73.90	0.002005	3.27	342.46	423.22	0.34
ELDER	REACH1	10.442	SA-NOSpill	845.40	70.48	74.29		74.37	0.001958	3.59	575.78	529.98	0.35
ELDER	REACH1	10.361	Stand10yr	488.02	70.32	73.21		73.24	0.001005	2.19	509.90	481.25	0.24
ELDER	REACH1	10.361	SA with Spill	851.41	70.32	73.68		73.71	0.001104	2.56	752.91	556.37	0.26
ELDER	REACH1	10.361	SA NS 10YR	488.43	70.32	73.21		73.24	0.001005	2.19	510.17	481.34	0.24
ELDER	REACH1	10.361	SA-NOSpill	849.90	70.32	73.68		73.71	0.001104	2.56	751.90	556.13	0.26
ELDER	REACH1	10.312	Stand10yr	490.28	70.20	72.82		72.87	0.002015	2.43	414.75	507.98	0.32
ELDER	REACH1	10.312	SA with Spill	854.43	70.20	73.36		73.40	0.001384	2.41	708.98	576.15	0.28
ELDER	REACH1	10.312	SA NS 10YR	490.72	70.20	72.82		72.87	0.002014	2.43	415.08	508.06	0.32
ELDER	REACH1	10.312	SA-NOSpill	852.99	70.20	73.36		73.40	0.001385	2.41	707.95	575.93	0.28
ELDER	REACH1	10.272	Stand10yr	492.17	69.63	72.39		72.44	0.002026	2.76	354.00	313.25	0.33
ELDER	REACH1	10.272	SA with Spill	856.79	69.63	73.04		73.09	0.001610	2.89	573.29	366.79	0.31
ELDER	REACH1	10.272	SA NS 10YR	492.61	69.63	72.39		72.44	0.002026	2.76	354.23	313.31	0.33
ELDER	REACH1	10.272	SA-NOSpill	855.44	69.63	73.04		73.09	0.001609	2.89	572.70	366.65	0.31
ELDER	REACH1	10.214	Stand10yr	570.53	68.78	71.77		71.83	0.002135	3.05	352.21	274.82	0.35
ELDER	REACH1	10.214	SA with Spill	1050.09	68.78	72.44		72.53	0.002259	3.69	591.09	416.78	0.37
ELDER	REACH1	10.214	SA NS 10YR	570.97	68.78	71.77		71.83	0.002135	3.05	352.42	274.90	0.35
ELDER	REACH1	10.214	SA-NOSpill	1048.89	68.78	72.44		72.52	0.002260	3.69	590.47	416.59	0.37
ELDER	REACH1	10.141	Stand10yr	573.64	67.65	71.04		71.12	0.001876	2.79	355.40	315.11	0.32
ELDER	REACH1	10.141	SA with Spill	1056.14	67.65	71.72		71.81	0.001739	3.19	587.54	364.87	0.33
ELDER	REACH1	10.141	SA NS 10YR	574.11	67.65	71.04		71.12	0.001875	2.79	355.67	315.17	0.32
ELDER	REACH1	10.141	SA-NOSpill	1054.78	67.65	71.72		71.81	0.001739	3.19	586.99	364.76	0.33
ELDER	REACH1	10.09	Stand10yr	575.88	66.80	70.49		70.64	0.002072	3.66	304.19	280.45	0.36
ELDER	REACH1	10.09	SA with Spill	1060.67	66.80	71.20		71.35	0.002090	4.20	528.38	353.46	0.37
ELDER	REACH1	10.09	SA NS 10YR	576.34	66.80	70.50		70.64	0.002071	3.66	304.45	280.56	0.36
ELDER	REACH1	10.09	SA-NOSpill	1059.32	66.80	71.20		71.35	0.002089	4.19	527.91	353.33	0.37
ELDER	REACH1	10.034	Stand10yr	578.40	66.41	69.84		69.97	0.002383	3.71	302.28	251.99	0.38
ELDER	REACH1	10.034	SA with Spill	1064.87	66.41	70.44		70.61	0.002973	4.68	519.03	425.98	0.44
ELDER	REACH1	10.034	SA NS 10YR	578.94	66.41	69.84		69.97	0.002384	3.71	302.49	252.10	0.38
ELDER	REACH1	10.034	SA-NOSpill	1063.55	66.41	70.44		70.61	0.002972	4.68	518.55	425.83	0.44
ELDER	REACH1	9.974	Stand10yr	581.02	66.02	69.41		69.43	0.000773	2.09	649.32	545.01	0.22
ELDER	REACH1	9.974	SA with Spill	1068.45	66.02	69.90		69.93	0.000963	2.59	928.36	593.07	0.25
ELDER	REACH1	9.974	SA NS 10YR	581.54	66.02	69.41		69.43	0.000773	2.09	649.74	545.09	0.22
ELDER	REACH1	9.974	SA-NOSpill	1067.50	66.02	69.90		69.93	0.000963	2.59	927.76	592.97	0.25
ELDER	REACH1	9.919	Stand10yr	582.90	65.50	68.80		68.92	0.003070	4.06	358.13	453.74	0.42
ELDER	REACH1	9.919	SA with Spill	1068.36	65.50	69.38		69.47	0.002314	4.00	659.88	542.59	0.38
ELDER	REACH1	9.919	SA NS 10YR	583.55	65.50	68.80		68.92	0.003068	4.06	358.70	454.74	0.42
ELDER	REACH1	9.919	SA-NOSpill	1067.23	65.50	69.38		69.47	0.002313	4.00	659.43	542.51	0.38
ELDER	REACH1	9.878	Stand10yr	583.27	65.13	68.31		68.37	0.001820	2.98	437.76	408.27	0.32
ELDER	REACH1	9.878	SA with Spill	1065.65	65.13	69.00		69.06	0.001501	3.16	750.69	500.70	0.31
ELDER	REACH1	9.878	SA NS 10YR	584.05	65.13	68.31		68.37	0.001817	2.98	438.49	408.51	0.32
ELDER	REACH1	9.878	SA-NOSpill	1064.66	65.13	69.00		69.05	0.001501	3.16	750.33	500.60	0.31
ELDER	REACH1	9.813	Stand10yr	584.58	64.02	67.89		67.93	0.000592	1.90	579.56	497.61	0.19
ELDER	REACH1	9.813	SA with Spill	1065.33	64.02	68.65		68.69	0.000534	2.09	1062.75	702.53	0.19
ELDER	REACH1	9.813	SA NS 10YR	585.70	64.02	67.90		67.93	0.000591	1.90	580.65	497.97	0.19
ELDER	REACH1	9.813	SA-NOSpill	1064.49	64.02	68.65		68.69	0.000534	2.09	1062.29	702.44	0.19
ELDER	REACH1	9.749	Stand10yr	586.35	63.84	67.50		67.58	0.001589	2.93	378.75	304.31	0.31
ELDER	REACH1	9.749	SA with Spill	1066.27	63.84	68.27		68.36	0.001534	3.39	713.20	644.14	0.32
ELDER	REACH1	9.749	SA NS 10YR	587.41	63.84	67.50		67.58	0.001587	2.93	379.49	304.63	0.31
ELDER	REACH1	9.749	SA-NOSpill	1065.95	63.84	68.27		68.36	0.001535	3.39	712.77	643.95	0.32
ELDER	REACH1	9.701	Stand10yr	587.55	63.10	67.20		67.24	0.000879	2.09	478.11	378.88	0.23
ELDER	REACH1	9.701	SA with Spill	1068.31	63.10	67.98		68.04	0.000794	2.37	813.06	470.37	0.23
ELDER	REACH1	9.701	SA NS 10YR	588.85	63.10	67.20		67.24	0.000879	2.09	479.09	379.18	0.23
ELDER	REACH1	9.701	SA-NOSpill	1067.63	63.10	67.98		68.03	0.000794	2.37	812.74	470.29	0.23
ELDER	REACH1	9.633	Stand10yr	590.20	62.68	66.85		66.91	0.000978	2.51	469.25	369.01	0.25
ELDER	REACH1	9.633	SA with Spill	1072.38	62.68	67.68		67.74	0.000847	2.72	804.08	438.18	0.24
ELDER	REACH1	9.633	SA NS 10YR	591.52	62.68	66.86		66.91	0.000977	2.51	470.28	369.21	0.25

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	9.633	SA-NOSpill	1071.85	62.68	67.68		67.74	0.000847	2.72	803.83	438.13	0.24
ELDER	REACH1	9.566	Stand10yr	592.88	62.13	66.07		66.29	0.003097	4.26	211.86	163.28	0.43
ELDER	REACH1	9.566	SA with Spil	1077.63	62.13	66.73		67.06	0.003946	5.50	345.63	239.31	0.51
ELDER	REACH1	9.566	SA NS 10YR	594.21	62.13	66.07		66.29	0.003103	4.26	212.14	163.46	0.44
ELDER	REACH1	9.566	SA-NOSpill	1077.24	62.13	66.73		67.06	0.003946	5.50	345.48	239.24	0.51
ELDER	REACH1	9.524	Stand10yr	594.69	61.85	65.74		65.76	0.000657	1.94	618.62	433.90	0.20
ELDER	REACH1	9.524	SA with Spil	1081.43	61.85	66.29		66.33	0.001078	2.79	998.92	1022.60	0.26
ELDER	REACH1	9.524	SA NS 10YR	596.08	61.85	65.74		65.76	0.000659	1.94	619.05	433.97	0.20
ELDER	REACH1	9.524	SA-NOSpill	1081.03	61.85	66.26		66.33	0.001080	2.79	998.00	1021.98	0.26
ELDER	REACH1	9.486	Stand10yr	596.26	61.30	64.57		64.95	0.009242	5.40	155.88	480.67	0.70
ELDER	REACH1	9.486	SA with Spil	1082.25	61.30	65.22		65.63	0.007685	6.02	290.93	739.62	0.67
ELDER	REACH1	9.486	SA NS 10YR	597.61	61.30	64.57		64.95	0.009228	5.40	156.33	482.07	0.70
ELDER	REACH1	9.486	SA-NOSpill	1081.61	61.30	65.22		65.63	0.007681	6.01	290.84	739.18	0.67
ELDER	REACH1	9.438	Stand10yr	596.39	59.80	63.52		63.63	0.001192	2.82	279.64	177.67	0.27
ELDER	REACH1	9.438	SA with Spil	1076.61	59.80	64.33		64.49	0.001415	3.57	492.39	841.85	0.31
ELDER	REACH1	9.438	SA NS 10YR	597.65	59.80	63.52		63.63	0.001191	2.82	280.36	178.00	0.27
ELDER	REACH1	9.438	SA-NOSpill	1077.79	59.80	64.33		64.49	0.001415	3.56	491.97	841.71	0.31
ELDER	REACH1	9.221	Stand10yr	632.91	59.40	63.37		63.39	0.000285	1.57	778.06	359.20	0.14
ELDER	REACH1	9.221	SA with Spil	1117.85	59.40	64.14		64.17	0.000513	2.37	1141.85	881.88	0.19
ELDER	REACH1	9.221	SA NS 10YR	634.53	59.40	63.37		63.39	0.000285	1.57	779.54	359.54	0.14
ELDER	REACH1	9.221	SA-NOSpill	1114.06	59.40	64.14		64.17	0.000510	2.37	1141.32	881.84	0.19
ELDER	REACH1	9.163	Stand10yr	634.41	58.30	63.04		63.18	0.001409	3.23	286.11	261.93	0.30
ELDER	REACH1	9.163	SA with Spil	1120.25	58.30	63.71		63.90	0.001736	4.02	509.69	400.71	0.34
ELDER	REACH1	9.163	SA NS 10YR	636.10	58.30	63.04		63.19	0.001408	3.23	287.19	262.78	0.30
ELDER	REACH1	9.163	SA-NOSpill	1116.82	58.30	63.71		63.90	0.001718	4.00	510.94	401.35	0.34
ELDER	REACH1	9.116	Stand10yr	635.46	57.40	62.69		62.80	0.001606	2.92	377.79	415.80	0.31
ELDER	REACH1	9.116	SA with Spil	1122.91	57.40	63.39		63.48	0.001360	3.11	698.33	510.98	0.29
ELDER	REACH1	9.116	SA NS 10YR	637.37	57.40	62.70		62.80	0.001597	2.91	380.15	416.57	0.31
ELDER	REACH1	9.116	SA-NOSpill	1103.86	57.40	63.40		63.49	0.001291	3.04	703.91	512.49	0.29
ELDER	REACH1	9.062	Stand10yr	635.58	56.40	61.66		62.00	0.004394	4.67	136.09	49.77	0.50
ELDER	REACH1	9.062	SA with Spil	1115.10	56.40	62.70		62.94	0.002787	4.47	459.50	923.05	0.42
ELDER	REACH1	9.062	SA NS 10YR	637.66	56.40	61.67		62.01	0.004393	4.67	136.44	49.84	0.50
ELDER	REACH1	9.062	SA-NOSpill	1113.72	56.40	62.70		62.94	0.002784	4.47	459.13	922.82	0.42
ELDER	REACH1	9.019	Stand10yr	633.77	55.60	61.19		61.35	0.001231	3.22	196.86	48.41	0.28
ELDER	REACH1	9.019	SA with Spil	1108.14	55.60	62.05	59.32	62.38	0.002115	4.60	261.69	442.75	0.38
ELDER	REACH1	9.019	SA NS 10YR	636.38	55.60	61.20		61.36	0.001235	3.23	197.19	48.44	0.28
ELDER	REACH1	9.019	SA-NOSpill	1111.97	55.60	62.09		62.41	0.002054	4.55	279.66	445.59	0.37
ELDER	REACH1	8.977	Stand10yr	633.07	55.51	61.02		61.11	0.000881	2.82	410.07	347.57	0.24
ELDER	REACH1	8.977	SA with Spil	1107.08	55.51	61.89		61.97	0.000849	3.02	812.60	566.24	0.24
ELDER	REACH1	8.977	SA NS 10YR	635.84	55.51	61.02		61.12	0.000881	2.82	412.49	349.43	0.24
ELDER	REACH1	8.977	SA-NOSpill	1106.13	55.51	61.88		61.97	0.000852	3.03	810.51	565.40	0.24
ELDER	REACH1	8.925	Stand10yr	633.28	55.37	60.82		60.89	0.000637	2.36	470.68	441.72	0.20
ELDER	REACH1	8.925	SA with Spil	1108.26	55.37	61.70		61.76	0.000573	2.49	939.89	623.21	0.20
ELDER	REACH1	8.925	SA NS 10YR	636.17	55.37	60.83		60.90	0.000636	2.36	473.82	443.14	0.20
ELDER	REACH1	8.925	SA-NOSpill	1106.37	55.37	61.70		61.76	0.000575	2.49	937.31	622.36	0.20
ELDER	REACH1	8.873	Stand10yr	633.84	55.28	60.61		60.70	0.000820	2.53	397.95	377.80	0.23
ELDER	REACH1	8.873	SA with Spil	1111.14	55.28	61.52		61.59	0.000709	2.65	769.55	454.13	0.22
ELDER	REACH1	8.873	SA NS 10YR	637.08	55.28	60.62		60.70	0.000820	2.53	400.72	378.33	0.23
ELDER	REACH1	8.873	SA-NOSpill	1109.69	55.28	61.51		61.59	0.000712	2.65	767.42	448.42	0.22
ELDER	REACH1	8.809	Stand10yr	635.55	55.14	60.19		60.33	0.001414	3.02	264.01	381.80	0.29
ELDER	REACH1	8.809	SA with Spil	1115.68	55.14	61.23		61.33	0.000899	2.89	707.02	477.72	0.24
ELDER	REACH1	8.809	SA NS 10YR	638.76	55.14	60.20		60.34	0.001412	3.02	267.02	382.43	0.29
ELDER	REACH1	8.809	SA-NOSpill	1114.08	55.14	61.23		61.32	0.000904	2.90	704.11	477.11	0.25
ELDER	REACH1	8.803	Stand10yr	635.76	54.90	60.20	56.61	60.29	0.000557	2.35	329.75	384.68	0.18
ELDER	REACH1	8.803	SA with Spil	1116.10	54.90	61.21	57.39	61.30	0.000581	2.70	759.03	492.80	0.19
ELDER	REACH1	8.803	SA NS 10YR	639.05	54.90	60.21	56.61	60.29	0.000559	2.36	332.59	385.24	0.18
ELDER	REACH1	8.803	SA-NOSpill	1114.49	54.90	61.20	57.39	61.29	0.000583	2.70	756.05	490.71	0.19
ELDER	REACH1	8.798		Bridge									
ELDER	REACH1	8.768	Stand10yr	635.69	54.90	60.05		60.15	0.000637	2.47	257.56	363.32	0.19
ELDER	REACH1	8.768	SA with Spil	1116.10	54.90	60.96		61.08	0.000750	2.98	645.15	442.55	0.21
ELDER	REACH1	8.768	SA NS 10YR	638.89	54.90	60.06		60.16	0.000640	2.48	258.01	365.83	0.19
ELDER	REACH1	8.768	SA-NOSpill	1114.49	54.90	60.96		61.07	0.000754	2.99	642.31	442.07	0.21
ELDER	REACH1	8.724	Stand10yr	637.22	54.05	59.92		59.95	0.000493	1.51	423.27	170.84	0.17
ELDER	REACH1	8.724	SA with Spil	1118.68	54.05	60.82		60.87	0.000469	1.78	782.61	481.73	0.17
ELDER	REACH1	8.724	SA NS 10YR	640.40	54.05	59.92		59.96	0.000494	1.51	424.77	171.31	0.17
ELDER	REACH1	8.724	SA-NOSpill	1117.45	54.05	60.81		60.86	0.000472	1.79	779.22	480.70	0.17
ELDER	REACH1	8.645	Stand10yr	633.80	53.00	58.78		59.19	0.003765	5.26	156.80	464.42	0.48
ELDER	REACH1	8.645	SA with Spil	1112.07	53.00	59.49		60.02	0.004659	6.55	286.03	548.53	0.54
ELDER	REACH1	8.645	SA NS 10YR	636.93	53.00	58.79		59.20	0.003776	5.27	157.62	465.10	0.48

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	8.645	SA-NOSpill	1110.69	53.00	59.48		60.02	0.004658	6.54	285.69	548.45	0.54
ELDER	REACH1	8.586	Stand10yr	630.98	52.80	58.35		58.40	0.000504	1.78	388.39	556.16	0.18
ELDER	REACH1	8.586	SA with Spil	1096.64	52.80	58.89		58.97	0.000782	2.46	594.74	968.74	0.22
ELDER	REACH1	8.586	SA NS 10YR	633.51	52.80	58.36		58.40	0.000505	1.78	389.82	560.46	0.18
ELDER	REACH1	8.586	SA-NOSpill	1093.71	52.80	58.88		58.97	0.000780	2.46	594.04	967.69	0.22
ELDER	REACH1	8.531	Stand10yr	626.64	52.60	58.13		58.20	0.000961	2.54	624.50	1667.11	0.24
ELDER	REACH1	8.531	SA with Spil	1081.28	52.60	58.72		58.75	0.000591	2.22	1278.03	3571.55	0.20
ELDER	REACH1	8.531	SA NS 10YR	629.19	52.60	58.14		58.20	0.000949	2.53	631.85	1668.94	0.24
ELDER	REACH1	8.531	SA-NOSpill	1065.50	52.60	58.72		58.75	0.000574	2.18	1278.49	3571.75	0.19
ELDER	REACH1	8.432	Stand10yr	621.79	52.20	57.80		57.83	0.000718	2.25	577.56	339.53	0.21
ELDER	REACH1	8.432	SA with Spil	988.98	52.20	58.42		58.45	0.000864	2.73	1177.31	3075.51	0.23
ELDER	REACH1	8.432	SA NS 10YR	623.79	52.20	57.81		57.84	0.000710	2.24	581.06	339.99	0.20
ELDER	REACH1	8.432	SA-NOSpill	1043.92	52.20	58.37		58.41	0.001110	3.07	1116.72	2975.53	0.26
ELDER	REACH1	8.399	Stand10yr	614.18	52.15	57.68		57.74	0.000999	2.55	439.12	297.83	0.25
ELDER	REACH1	8.399	SA with Spil	989.90	52.15	58.30		58.36	0.000922	2.75	681.54	2321.94	0.24
ELDER	REACH1	8.399	SA NS 10YR	616.06	52.15	57.69		57.75	0.000987	2.54	442.63	299.30	0.24
ELDER	REACH1	8.399	SA-NOSpill	1031.24	52.15	58.22		58.30	0.001191	3.08	786.09	2286.22	0.28
ELDER	REACH1	8.313	Stand10yr	571.56	52.04	57.43		57.47	0.000490	2.03	781.97	1411.41	0.18
ELDER	REACH1	8.313	SA with Spil	987.53	52.04	58.10		58.12	0.000331	1.85	1403.61	2026.08	0.15
ELDER	REACH1	8.313	SA NS 10YR	574.57	52.04	57.45		57.48	0.000476	2.01	795.39	1414.96	0.18
ELDER	REACH1	8.313	SA-NOSpill	1026.66	52.04	57.96		57.98	0.000481	2.18	1262.56	1526.50	0.18
ELDER	REACH1	8.092	Stand10yr	553.98	51.60	57.14		57.15	0.000188	1.27	1219.44	1850.59	0.11
ELDER	REACH1	8.092	SA with Spil	931.31	51.60	57.92		57.92	0.000086	0.95	2603.65	2075.23	0.08
ELDER	REACH1	8.092	SA NS 10YR	559.50	51.60	57.16		57.17	0.000182	1.26	1242.62	1857.10	0.11
ELDER	REACH1	8.092	SA-NOSpill	1031.65	51.60	57.63		57.64	0.000236	1.53	1727.23	1992.59	0.12
ELDER	REACH1	8.029	Stand10yr	555.29	51.33	55.73		56.32	0.006510	6.15	90.25	29.45	0.61
ELDER	REACH1	8.029	SA with Spil	1321.91	51.33	56.34		56.71	0.005959	6.53	539.90	1266.77	0.60
ELDER	REACH1	8.029	SA NS 10YR	561.09	51.33	55.74		56.34	0.006571	6.19	90.60	30.08	0.61
ELDER	REACH1	8.029	SA-NOSpill	1124.96	51.33	56.24		56.63	0.005948	6.40	451.23	1246.53	0.59
ELDER	REACH1	7.985	Stand10yr	556.18	51.13	55.11		55.12	0.000326	1.32	892.57	819.00	0.14
ELDER	REACH1	7.985	SA with Spil	1275.99	51.13	55.71		55.74	0.000501	1.87	1427.59	936.42	0.18
ELDER	REACH1	7.985	SA NS 10YR	562.13	51.13	55.11		55.13	0.000327	1.33	898.08	820.29	0.14
ELDER	REACH1	7.985	SA-NOSpill	1107.06	51.13	55.61		55.63	0.000458	1.75	1327.32	915.55	0.17
ELDER	REACH1	7.809	Stand10yr	557.36	50.55	54.99		54.99	0.000308	1.15	912.66	1955.86	0.13
ELDER	REACH1	7.809	SA with Spil	1252.11	50.55	55.51		55.53	0.000646	1.90	1268.74	2484.47	0.19
ELDER	REACH1	7.809	SA NS 10YR	563.29	50.55	54.99		55.00	0.000311	1.16	916.39	1961.54	0.13
ELDER	REACH1	7.809	SA-NOSpill	1105.91	50.55	55.42		55.44	0.000576	1.76	1204.14	2390.82	0.18
ELDER	REACH1	7.764	Stand10yr	581.30	50.36	54.77		54.83	0.001256	2.89	612.77	1758.39	0.27
ELDER	REACH1	7.764	SA with Spil	1292.26	50.36	55.20		55.27	0.001637	3.57	1055.21	1883.61	0.32
ELDER	REACH1	7.764	SA NS 10YR	587.93	50.36	54.77		54.84	0.001265	2.91	617.08	1759.23	0.27
ELDER	REACH1	7.764	SA-NOSpill	1152.72	50.36	55.12		55.19	0.001595	3.48	977.91	1877.01	0.31
ELDER	REACH1	7.697	Stand10yr	581.11	50.16	54.30		54.35	0.001672	2.21	664.92	1815.78	0.29
ELDER	REACH1	7.697	SA with Spil	1247.75	50.16	54.82		54.84	0.000836	1.86	1698.44	2169.30	0.22
ELDER	REACH1	7.697	SA NS 10YR	587.74	50.16	54.30		54.35	0.001659	2.21	675.01	1816.91	0.29
ELDER	REACH1	7.697	SA-NOSpill	1141.69	50.16	54.73		54.76	0.000943	1.92	1514.82	2122.09	0.23
ELDER	REACH1	7.617	Stand10yr	579.31	49.88	53.45		53.60	0.002835	3.87	332.05	482.92	0.41
ELDER	REACH1	7.617	SA with Spil	1214.00	49.88	54.08		54.24	0.003139	4.67	1062.28	2649.73	0.44
ELDER	REACH1	7.617	SA NS 10YR	586.12	49.88	53.46		53.61	0.002826	3.87	337.03	486.94	0.41
ELDER	REACH1	7.617	SA-NOSpill	1126.05	49.88	54.01		54.24	0.004122	5.27	863.65	2630.79	0.51
ELDER	REACH1	7.574	Stand10yr	575.46	49.72	53.11		53.12	0.000452	1.50	900.73	1509.81	0.16
ELDER	REACH1	7.574	SA with Spil	1192.57	49.72	53.69		53.70	0.000537	1.86	1540.16	2011.55	0.18
ELDER	REACH1	7.574	SA NS 10YR	582.68	49.72	53.12		53.13	0.000452	1.50	911.02	1518.40	0.16
ELDER	REACH1	7.574	SA-NOSpill	1120.21	49.72	53.63		53.65	0.000530	1.83	1477.20	1988.82	0.18
ELDER	REACH1	7.523	Stand10yr	574.40	49.61	53.03		53.03	0.000190	1.00	1598.65	1670.28	0.10
ELDER	REACH1	7.523	SA with Spil	1190.61	49.61	53.59		53.60	0.000190	1.13	2567.52	1751.59	0.11
ELDER	REACH1	7.523	SA NS 10YR	581.54	49.61	53.04		53.04	0.000188	1.00	1616.53	1671.67	0.10
ELDER	REACH1	7.523	SA-NOSpill	1118.09	49.61	53.54		53.55	0.000186	1.11	2480.82	1743.82	0.11
ELDER	REACH1	7.459	Stand10yr	574.15	49.00	53.00	52.27	53.01	0.000265	1.13	1208.63	1166.51	0.12
ELDER	REACH1	7.459	SA with Spil	1188.11	49.00	53.56	52.49	53.57	0.000304	1.36	1934.02	1458.54	0.14
ELDER	REACH1	7.459	SA NS 10YR	581.41	49.00	53.01	52.27	53.02	0.000264	1.13	1221.35	1167.83	0.12
ELDER	REACH1	7.459	SA-NOSpill	1117.63	49.00	53.51	52.47	53.52	0.000297	1.33	1863.49	1426.78	0.13
ELDER	REACH1	7.457		Bridge									
ELDER	REACH1	7.454	Stand10yr	574.05	49.00	52.99		52.99	0.000240	1.07	1254.20	1171.36	0.12
ELDER	REACH1	7.454	SA with Spil	1188.11	49.00	53.55		53.56	0.000282	1.32	1990.92	1484.25	0.13
ELDER	REACH1	7.454	SA NS 10YR	581.32	49.00	53.00		53.01	0.000239	1.07	1266.96	1172.67	0.12
ELDER	REACH1	7.454	SA-NOSpill	1117.29	49.00	53.50		53.51	0.000275	1.29	1919.30	1452.56	0.13
ELDER	REACH1	7.392	Stand10yr	573.71	48.59	52.87		52.89	0.000561	1.79	761.27	768.56	0.18
ELDER	REACH1	7.392	SA with Spil	1179.49	48.59	53.41		53.44	0.000692	2.22	1174.40	771.30	0.21
ELDER	REACH1	7.392	SA NS 10YR	580.99	48.59	52.88		52.91	0.000558	1.79	770.04	768.62	0.18

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	7.392	SA-NOSpill	1114.60	46.59	53.36		53.39	0.000675	2.18	1140.11	771.08	0.21
ELDER	REACH1	7.339	Stand10yr	573.60	46.05	52.70		52.72	0.000546	1.70	684.66	495.51	0.18
ELDER	REACH1	7.339	SA with Spil	1169.97	46.05	53.13		53.17	0.000992	2.51	900.20	500.46	0.24
ELDER	REACH1	7.339	SA NS 10YR	580.85	46.05	52.71		52.73	0.000546	1.70	690.44	495.68	0.18
ELDER	REACH1	7.339	SA-NOSpill	1030.51	46.05	53.11		53.14	0.000802	2.25	686.12	499.89	0.22
ELDER	REACH1	7.3202*	Stand10yr	573.58	47.97	52.67		52.69	0.000667	1.94	609.79	483.71	0.20
ELDER	REACH1	7.3202*	SA with Spil	1169.38	47.97	53.13		53.14	0.000324	1.48	1668.56	1100.68	0.14
ELDER	REACH1	7.3202*	SA NS 10YR	580.85	47.97	52.68		52.71	0.000667	1.94	615.48	485.81	0.20
ELDER	REACH1	7.3202*	SA-NOSpill	1029.41	47.97	53.10		53.11	0.000262	1.33	1642.97	1092.37	0.13
ELDER	REACH1	7.3014*	Stand10yr	573.56	47.88	52.63		52.67	0.000728	2.08	577.39	552.41	0.21
ELDER	REACH1	7.3014*	SA with Spil	1169.03	47.88	53.11		53.13	0.000320	1.52	1680.48	1090.00	0.14
ELDER	REACH1	7.3014*	SA NS 10YR	580.83	47.88	52.64		52.68	0.000727	2.08	583.96	557.00	0.21
ELDER	REACH1	7.3014*	SA-NOSpill	1028.10	47.88	53.09		53.10	0.000257	1.35	1657.71	1084.65	0.13
ELDER	REACH1	7.2826*	Stand10yr	573.57	47.80	52.53		52.64	0.001660	3.17	362.49	442.92	0.32
ELDER	REACH1	7.2826*	SA with Spil	1153.31	47.80	53.10		53.11	0.000306	1.52	1686.77	1055.86	0.14
ELDER	REACH1	7.2826*	SA NS 10YR	580.82	47.80	52.54		52.65	0.001653	3.17	368.09	445.79	0.31
ELDER	REACH1	7.2826*	SA-NOSpill	1107.68	47.80	53.06		53.07	0.000303	1.50	1644.65	1047.10	0.14
ELDER	REACH1	7.2638*	Stand10yr	573.56	47.71	52.37		52.55	0.002336	3.75	272.36	358.77	0.37
ELDER	REACH1	7.2638*	SA with Spil	1145.95	47.71	53.09		53.10	0.000295	1.53	1684.96	1020.66	0.14
ELDER	REACH1	7.2638*	SA NS 10YR	580.81	47.71	52.39		52.57	0.002322	3.75	277.50	359.29	0.37
ELDER	REACH1	7.2638*	SA-NOSpill	1107.56	47.71	53.05		53.07	0.000295	1.52	1646.30	1013.19	0.14
ELDER	REACH1	7.245*	Stand10yr	573.56	47.63	52.20		52.40	0.002594	3.91	240.94	307.06	0.39
ELDER	REACH1	7.245*	SA with Spil	1141.95	47.63	53.08		53.09	0.000288	1.54	1674.03	980.24	0.14
ELDER	REACH1	7.245*	SA NS 10YR	580.81	47.63	52.21		52.42	0.002570	3.91	246.18	307.50	0.39
ELDER	REACH1	7.245*	SA-NOSpill	1107.56	47.63	53.04		53.05	0.000289	1.54	1636.87	975.49	0.14
ELDER	REACH1	7.2262*	Stand10yr	573.55	47.55	52.01		52.23	0.002861	4.05	214.91	285.59	0.41
ELDER	REACH1	7.2262*	SA with Spil	1167.72	47.55	53.03		53.04	0.000333	1.68	1612.91	934.38	0.15
ELDER	REACH1	7.2262*	SA NS 10YR	580.81	47.55	52.02		52.25	0.002864	4.06	218.56	285.83	0.41
ELDER	REACH1	7.2262*	SA-NOSpill	1107.54	47.55	52.91		53.10	0.002260	4.29	485.14	324.52	0.38
ELDER	REACH1	7.2074*	Stand10yr	573.55	47.46	51.84		52.03	0.002615	3.82	210.52	140.55	0.39
ELDER	REACH1	7.2074*	SA with Spil	1167.63	47.46	52.87		53.08	0.002459	4.54	475.41	296.57	0.40
ELDER	REACH1	7.2074*	SA NS 10YR	580.80	47.46	51.85		52.04	0.002624	3.84	212.49	140.82	0.40
ELDER	REACH1	7.2074*	SA-NOSpill	1107.53	47.46	52.77		52.98	0.002471	4.47	444.98	289.86	0.40
ELDER	REACH1	7.1886*	Stand10yr	573.54	47.38	51.63		51.83	0.002844	3.90	199.54	123.51	0.41
ELDER	REACH1	7.1886*	SA with Spil	1167.63	47.38	52.67		52.94	0.003018	4.95	385.30	210.00	0.44
ELDER	REACH1	7.1886*	SA NS 10YR	580.80	47.38	51.65		51.85	0.002857	3.92	201.18	123.70	0.41
ELDER	REACH1	7.1886*	SA-NOSpill	1107.51	47.38	52.56		52.83	0.003033	4.87	363.12	210.00	0.44
ELDER	REACH1	7.1698*	Stand10yr	573.50	47.29	51.37		51.60	0.003446	4.14	179.81	105.43	0.45
ELDER	REACH1	7.1698*	SA with Spil	1167.60	47.29	52.33		52.74	0.004462	5.78	310.92	190.93	0.53
ELDER	REACH1	7.1698*	SA NS 10YR	580.80	47.29	51.39		51.62	0.003473	4.17	181.02	105.54	0.45
ELDER	REACH1	7.1698*	SA-NOSpill	1107.48	47.29	52.22		52.63	0.004495	5.68	289.98	188.92	0.53
ELDER	REACH1	7.151	Stand10yr	570.13	47.21	50.71		51.16	0.008660	5.60	121.82	87.46	0.68
ELDER	REACH1	7.151	SA with Spil	1167.64	47.21	51.55		52.28	0.009733	7.42	197.59	92.99	0.76
ELDER	REACH1	7.151	SA NS 10YR	580.78	47.21	50.85		51.24	0.006913	5.23	134.57	88.40	0.61
ELDER	REACH1	7.151	SA-NOSpill	1107.44	47.21	51.56		52.21	0.008647	7.01	198.48	93.06	0.72
ELDER	REACH1	7.15		Lat Struct									
ELDER	REACH1	7.1445*	Stand10yr	281.72	47.18	50.81		50.86	0.001220	2.13	198.23	174.94	0.26
ELDER	REACH1	7.1445*	SA with Spil	710.25	47.18	51.80		51.88	0.001344	2.87	373.98	180.00	0.29
ELDER	REACH1	7.1445*	SA NS 10YR	321.43	47.18	50.93		50.99	0.001223	2.21	219.33	175.63	0.26
ELDER	REACH1	7.1445*	SA-NOSpill	675.90	47.18	51.76		51.84	0.001277	2.78	367.91	180.00	0.28
ELDER	REACH1	7.138*	Stand10yr	281.71	47.15	50.69		50.76	0.001612	2.30	184.22	192.47	0.29
ELDER	REACH1	7.138*	SA with Spil	710.25	47.15	51.69		51.77	0.001448	2.87	381.29	200.00	0.29
ELDER	REACH1	7.138*	SA NS 10YR	321.43	47.15	50.82		50.88	0.001551	2.35	208.22	193.70	0.29
ELDER	REACH1	7.138*	SA-NOSpill	675.82	47.15	51.66		51.74	0.001369	2.77	375.69	200.00	0.29
ELDER	REACH1	7.1315*	Stand10yr	281.70	47.11	50.45		50.57	0.003507	3.03	127.90	186.81	0.42
ELDER	REACH1	7.1315*	SA with Spil	710.24	47.11	51.54		51.65	0.001953	3.17	342.75	200.00	0.34
ELDER	REACH1	7.1315*	SA NS 10YR	321.42	47.11	50.61		50.72	0.002911	2.94	158.26	190.10	0.38
ELDER	REACH1	7.1315*	SA-NOSpill	675.40	47.11	51.52		51.62	0.001620	3.05	339.16	200.00	0.33
ELDER	REACH1	7.125	Stand10yr	281.70	47.08	49.57		50.05	0.011985	5.53	50.98	31.21	0.76
ELDER	REACH1	7.125	SA with Spil	710.03	47.08	51.01		51.36	0.007330	5.22	196.15	192.87	0.63
ELDER	REACH1	7.125	SA NS 10YR	321.32	47.08	49.75		50.25	0.011642	5.66	56.76	32.77	0.76
ELDER	REACH1	7.125	SA-NOSpill	669.33	47.08	51.17		51.41	0.004625	4.35	228.03	200.00	0.50
ELDER	REACH1	7.120	Stand10yr	281.70	46.70	49.16		49.32	0.005137	3.13	90.05	43.07	0.38
ELDER	REACH1	7.120	SA with Spil	708.08	46.70	50.23		50.64	0.010704	5.10	138.94	48.03	0.53
ELDER	REACH1	7.120	SA NS 10YR	321.03	46.70	49.38		49.54	0.005945	3.23	99.41	44.21	0.38
ELDER	REACH1	7.120	SA-NOSpill	663.59	46.70	50.72		50.98	0.005828	4.08	162.56	49.15	0.40
ELDER	REACH1	7.119		Lat Struct									
ELDER	REACH1	7.10425*	Stand10yr	281.69	46.05	48.59		48.76	0.007279	3.26	85.81	43.63	0.41

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	7.10425*	SA with Spil	512.06	46.05	49.89		50.08	0.004935	3.46	147.27	51.00	0.36
ELDER	REACH1	7.10425*	SA NS 10YR	327.33	46.05	48.80		48.99	0.007230	3.44	95.16	44.83	0.42
ELDER	REACH1	7.10425*	SA-NOSpill	664.80	46.05	50.23		50.46	0.005975	4.03	164.81	52.53	0.40
ELDER	REACH1	7.0885*	Stand10yr	281.68	45.40	47.94		48.12	0.008159	3.39	83.18	44.00	0.43
ELDER	REACH1	7.0885*	SA with Spil	524.40	45.40	49.53		49.70	0.004107	3.26	160.65	53.27	0.33
ELDER	REACH1	7.0885*	SA NS 10YR	329.63	45.40	48.15		48.34	0.008159	3.57	92.45	45.21	0.44
ELDER	REACH1	7.0885*	SA-NOSpill	678.00	45.40	49.74		49.98	0.005631	3.94	172.12	54.50	0.39
ELDER	REACH1	7.07275*	Stand10yr	281.58	44.75	47.31		47.48	0.007248	3.25	86.66	44.56	0.41
ELDER	REACH1	7.07275*	SA with Spil	523.29	44.75	49.29		49.41	0.002685	2.81	186.45	56.25	0.27
ELDER	REACH1	7.07275*	SA NS 10YR	329.46	44.75	47.51		47.70	0.007381	3.44	95.74	45.75	0.42
ELDER	REACH1	7.07275*	SA-NOSpill	677.08	44.75	49.38		49.58	0.004153	3.53	191.68	56.80	0.34
ELDER	REACH1	7.057	Stand10yr	281.45	44.10	46.89		47.00	0.004052	2.68	104.98	46.43	0.31
ELDER	REACH1	7.057	SA with Spil	522.86	44.10	49.15		49.24	0.001561	2.32	225.09	59.88	0.21
ELDER	REACH1	7.057	SA NS 10YR	329.13	44.10	47.07		47.21	0.004408	2.90	113.51	47.51	0.33
ELDER	REACH1	7.057	SA-NOSpill	675.49	44.10	49.16		49.30	0.002598	3.00	225.30	59.90	0.27
ELDER	REACH1	7.04066*	Stand10yr	281.33	43.43	46.64		46.72	0.002505	2.27	123.84	48.93	0.25
ELDER	REACH1	7.04066*	SA with Spil	522.46	43.43	49.06		49.12	0.001044	2.01	259.78	63.42	0.18
ELDER	REACH1	7.04066*	SA NS 10YR	328.78	43.43	46.79		46.89	0.002886	2.50	131.33	49.84	0.27
ELDER	REACH1	7.04066*	SA-NOSpill	674.33	43.43	49.00		49.10	0.001618	2.64	255.71	63.04	0.23
ELDER	REACH1	7.02433*	Stand10yr	281.24	42.77	46.49		46.55	0.001464	1.88	149.24	52.07	0.20
ELDER	REACH1	7.02433*	SA with Spil	522.43	42.77	49.00		49.05	0.000709	1.75	298.71	67.21	0.15
ELDER	REACH1	7.02433*	SA NS 10YR	328.51	42.77	46.62		46.69	0.001764	2.11	155.83	52.83	0.22
ELDER	REACH1	7.02433*	SA-NOSpill	673.12	42.77	48.89		48.97	0.001264	2.31	291.21	66.54	0.19
ELDER	REACH1	7.008	Stand10yr	281.20	42.10	46.41		46.45	0.000853	1.56	180.29	55.59	0.15
ELDER	REACH1	7.008	SA with Spil	522.01	42.10	48.96		49.00	0.000488	1.53	341.70	71.08	0.12
ELDER	REACH1	7.008	SA NS 10YR	328.28	42.10	46.52		46.57	0.001060	1.76	186.28	56.24	0.17
ELDER	REACH1	7.008	SA-NOSpill	673.09	42.10	48.82		48.88	0.000883	2.03	331.42	70.19	0.16
ELDER	REACH1	6.98		Lat Struct									
ELDER	REACH1	6.97906*	Stand10yr	302.31	41.50	46.36		46.39	0.000593	1.40	216.42	59.85	0.13
ELDER	REACH1	6.97906*	SA with Spil	640.12	41.50	48.90		48.94	0.000518	1.65	388.03	75.20	0.13
ELDER	REACH1	6.97906*	SA NS 10YR	351.76	41.50	46.45		46.49	0.000746	1.58	222.05	60.42	0.15
ELDER	REACH1	6.97906*	SA-NOSpill	689.97	41.50	48.76		48.82	0.000648	1.83	377.95	74.38	0.14
ELDER	REACH1	6.978	Stand10yr	302.31	40.90	46.33		46.35	0.000367	1.18	257.28	64.27	0.10
ELDER	REACH1	6.978	SA with Spil	687.47	40.90	48.86		48.90	0.000426	1.57	439.22	79.46	0.12
ELDER	REACH1	6.978	SA NS 10YR	351.67	40.90	46.41		46.44	0.000466	1.34	262.83	64.78	0.12
ELDER	REACH1	6.978	SA-NOSpill	689.91	40.90	48.73		48.77	0.000456	1.61	429.11	78.69	0.12
ELDER	REACH1	6.960		Lat Struct									
ELDER	REACH1	6.95819*	Stand10yr	505.22	40.50	46.24		46.29	0.000743	1.70	297.56	73.01	0.15
ELDER	REACH1	6.95819*	SA with Spil	1058.23	40.50	48.75		48.82	0.000749	2.12	499.76	88.16	0.15
ELDER	REACH1	6.95819*	SA NS 10YR	533.06	40.50	46.33		46.38	0.000778	1.75	303.97	73.54	0.15
ELDER	REACH1	6.95819*	SA-NOSpill	1038.67	40.50	48.62		48.69	0.000769	2.13	488.64	87.39	0.16
ELDER	REACH1	6.956	Stand10yr	595.43	40.10	46.20		46.24	0.000500	1.53	388.03	82.12	0.12
ELDER	REACH1	6.956	SA with Spil	1143.06	40.10	48.72		48.77	0.000495	1.86	613.47	95.22	0.13
ELDER	REACH1	6.956	SA NS 10YR	610.55	40.10	46.29		46.33	0.000497	1.54	395.53	82.67	0.12
ELDER	REACH1	6.956	SA-NOSpill	1111.30	40.10	48.60		48.65	0.000495	1.85	601.64	94.85	0.13
ELDER	REACH1	6.946		Culvert									
ELDER	REACH1	6.927	Stand10yr	595.25	39.90	45.93		45.99	0.001029	1.96	304.37	77.01	0.17
ELDER	REACH1	6.927	SA with Spil	1138.39	39.90	48.30		48.37	0.000897	2.25	505.06	92.81	0.17
ELDER	REACH1	6.927	SA NS 10YR	610.55	39.90	46.02		46.08	0.001016	1.96	311.15	77.59	0.17
ELDER	REACH1	6.927	SA-NOSpill	1108.23	39.90	48.18		48.26	0.000902	2.24	494.42	92.04	0.17
ELDER	REACH1	6.903	Stand10yr	595.18	39.70	45.82		45.87	0.000842	1.77	336.79	85.67	0.16
ELDER	REACH1	6.903	SA with Spil	1136.97	39.70	48.21		48.27	0.000720	2.02	563.12	104.12	0.15
ELDER	REACH1	6.903	SA NS 10YR	610.55	39.70	45.91		45.96	0.000831	1.77	344.47	86.36	0.16
ELDER	REACH1	6.903	SA-NOSpill	1108.20	39.70	48.09		48.15	0.000727	2.01	551.08	103.23	0.15
ELDER	REACH1	6.884	Stand10yr	595.12	39.60	45.77		45.80	0.000524	1.42	418.23	103.51	0.12
ELDER	REACH1	6.884	SA with Spil	1135.56	39.60	48.17		48.21	0.000454	1.65	689.93	123.03	0.12
ELDER	REACH1	6.884	SA NS 10YR	610.54	39.60	45.86		45.89	0.000517	1.43	427.60	104.25	0.12
ELDER	REACH1	6.884	SA-NOSpill	1108.12	39.60	48.05		48.10	0.000459	1.64	675.60	122.08	0.12
ELDER	REACH1	6.872	Stand10yr	595.12	39.50	45.75		45.77	0.000441	1.31	454.55	112.14	0.11
ELDER	REACH1	6.872	SA with Spil	1135.54	39.50	48.15		48.19	0.000380	1.51	749.75	132.63	0.11
ELDER	REACH1	6.872	SA NS 10YR	610.54	39.50	45.84		45.86	0.000435	1.31	464.76	112.95	0.11
ELDER	REACH1	6.872	SA-NOSpill	1108.06	39.50	48.03		48.07	0.000386	1.51	734.22	132.23	0.11
ELDER	REACH1	6.858	Stand10yr	610.46	39.40	45.70		45.74	0.000525	1.43	425.45	104.31	0.13
ELDER	REACH1	6.858	SA with Spil	1170.08	39.40	48.11		48.15	0.000465	1.67	700.77	124.58	0.12
ELDER	REACH1	6.858	SA NS 10YR	628.49	39.40	45.79		45.83	0.000523	1.45	434.92	105.07	0.13
ELDER	REACH1	6.858	SA-NOSpill	1141.86	39.40	47.99		48.03	0.000470	1.66	686.06	123.58	0.12
ELDER	REACH1	6.847	Stand10yr	610.46	39.30	45.66		45.70	0.000697	1.62	377.61	95.55	0.14
ELDER	REACH1	6.847	SA with Spil	1170.06	39.30	48.07		48.12	0.000601	1.84	634.87	117.96	0.14

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	6.847	SA NS 10YR	628.43	39.30	45.75		45.79	0.000693	1.63	386.31	96.40	0.14
ELDER	REACH1	6.847	SA-NOSpill	1141.85	39.30	47.95		48.00	0.000609	1.84	620.90	116.85	0.14
ELDER	REACH1	6.824	Stand10yr	610.35	39.10	45.62		45.64	0.000315	1.10	553.32	137.39	0.10
ELDER	REACH1	6.824	SA with Spil	1169.96	39.10	48.04		48.07	0.000265	1.28	911.04	157.73	0.09
ELDER	REACH1	6.824	SA NS 10YR	628.43	39.10	45.71		45.73	0.000312	1.11	565.90	138.15	0.10
ELDER	REACH1	6.824	SA-NOSpill	1141.00	39.10	47.92		47.95	0.000268	1.28	892.18	156.73	0.09
ELDER	REACH1	6.807	Stand10yr	610.34	39.00	45.59		45.61	0.000391	1.10	557.31	163.64	0.10
ELDER	REACH1	6.807	SA with Spil	1168.57	39.00	48.02		48.04	0.000253	1.19	976.15	181.93	0.09
ELDER	REACH1	6.807	SA NS 10YR	628.42	39.00	45.68		45.70	0.000381	1.10	572.40	164.33	0.10
ELDER	REACH1	6.807	SA-NOSpill	1141.75	39.00	47.90		47.92	0.000259	1.19	956.28	181.03	0.09
ELDER	REACH1	6.795	Stand10yr	610.25	39.00	45.57		45.58	0.000272	1.04	588.22	143.52	0.09
ELDER	REACH1	6.795	SA with Spil	1168.55	39.00	48.01		48.03	0.000230	1.22	961.24	162.38	0.09
ELDER	REACH1	6.795	SA NS 10YR	628.37	39.00	45.66		45.68	0.000270	1.04	601.49	144.23	0.09
ELDER	REACH1	6.795	SA-NOSpill	1141.29	39.00	47.89		47.91	0.000233	1.21	941.69	161.45	0.09
ELDER	REACH1	6.782	Stand10yr	610.24	38.90	45.51		45.55	0.000639	1.62	376.73	88.70	0.14
ELDER	REACH1	6.782	SA with Spil	1168.51	38.90	47.95		48.00	0.000590	1.90	615.15	107.24	0.14
ELDER	REACH1	6.782	SA NS 10YR	628.36	38.90	45.60		45.65	0.000637	1.63	384.93	89.40	0.14
ELDER	REACH1	6.782	SA-NOSpill	1141.29	38.90	47.83		47.88	0.000598	1.90	602.22	106.32	0.14
ELDER	REACH1	6.774	Stand10yr	610.16	38.80	45.47	41.61	45.52	0.000850	1.92	318.11	71.11	0.16
ELDER	REACH1	6.774	SA with Spil	1167.27	38.80	47.89	42.54	47.97	0.000832	2.31	506.14	83.98	0.17
ELDER	REACH1	6.774	SA NS 10YR	628.36	38.80	45.56	41.65	45.62	0.000851	1.94	324.65	71.60	0.16
ELDER	REACH1	6.774	SA-NOSpill	1141.28	38.80	47.77	42.50	47.85	0.000842	2.30	495.99	83.33	0.17
ELDER	REACH1	6.764		Bridge									
ELDER	REACH1	6.752	Stand10yr	609.99	38.60	44.84		44.89	0.000855	1.84	330.81	79.48	0.16
ELDER	REACH1	6.752	SA with Spil	1165.94	38.60	47.11		47.18	0.000825	2.21	527.11	93.45	0.16
ELDER	REACH1	6.752	SA NS 10YR	628.26	38.60	44.92		44.98	0.000856	1.86	337.62	80.00	0.16
ELDER	REACH1	6.752	SA-NOSpill	1140.83	38.60	46.99		47.07	0.000838	2.21	516.33	92.74	0.17
ELDER	REACH1	6.745	Stand10yr	610.04	38.60	44.83		44.86	0.000698	1.54	396.79	108.89	0.14
ELDER	REACH1	6.745	SA with Spil	1166.01	38.60	47.11		47.16	0.000578	1.72	678.57	136.77	0.14
ELDER	REACH1	6.745	SA NS 10YR	628.33	38.60	44.91		44.95	0.000694	1.55	406.20	109.98	0.14
ELDER	REACH1	6.745	SA-NOSpill	1140.92	38.60	47.00		47.04	0.000591	1.72	662.69	135.48	0.14
ELDER	REACH1	6.734	Stand10yr	610.13	38.50	44.79		44.82	0.000640	1.55	394.81	100.00	0.14
ELDER	REACH1	6.734	SA with Spil	1164.73	38.50	47.07		47.13	0.000541	1.84	633.86	107.54	0.13
ELDER	REACH1	6.734	SA NS 10YR	628.42	38.50	44.87		44.91	0.000637	1.56	403.44	100.66	0.14
ELDER	REACH1	6.734	SA-NOSpill	1140.57	38.50	46.96		47.01	0.000552	1.84	621.28	107.31	0.13
ELDER	REACH1	6.697	Stand10yr	610.20	38.40	44.79		44.80	0.000118	0.73	838.98	187.28	0.06
ELDER	REACH1	6.697	SA with Spil	1164.66	38.40	47.09		47.11	0.000116	0.90	1287.98	203.26	0.06
ELDER	REACH1	6.697	SA NS 10YR	628.50	38.40	44.88		44.89	0.000118	0.73	855.20	187.88	0.06
ELDER	REACH1	6.697	SA-NOSpill	1141.18	38.40	46.98		46.99	0.000118	0.90	1264.15	202.45	0.06
ELDER	REACH1	6.684	Stand10yr	610.22	38.30	44.77		44.79	0.000328	1.18	517.20	119.39	0.10
ELDER	REACH1	6.684	SA with Spil	1165.01	38.30	47.06		47.09	0.000384	1.40	833.54	168.33	0.11
ELDER	REACH1	6.684	SA NS 10YR	628.60	38.30	44.85		44.86	0.000328	1.19	527.52	120.08	0.10
ELDER	REACH1	6.684	SA-NOSpill	1140.90	38.30	46.94		46.97	0.000389	1.40	813.87	165.11	0.11
ELDER	REACH1	6.665	Stand10yr	610.46	38.30	44.69		44.74	0.000710	1.65	369.04	91.31	0.15
ELDER	REACH1	6.665	SA with Spil	1164.16	38.30	46.98		47.04	0.000646	1.95	598.28	107.17	0.15
ELDER	REACH1	6.665	SA NS 10YR	628.83	38.30	44.78		44.82	0.000709	1.67	376.92	92.02	0.15
ELDER	REACH1	6.665	SA-NOSpill	1141.40	38.30	46.86		46.92	0.000662	1.95	585.56	106.66	0.15
ELDER	REACH1	6.635	Stand10yr	610.70	38.20	44.58		44.62	0.000731	1.74	351.37	81.96	0.15
ELDER	REACH1	6.635	SA with Spil	1163.55	38.20	46.86		46.93	0.000716	2.10	554.31	95.46	0.15
ELDER	REACH1	6.635	SA NS 10YR	629.21	38.20	44.66		44.71	0.000733	1.76	358.41	82.46	0.15
ELDER	REACH1	6.635	SA-NOSpill	1141.75	38.20	46.74		46.81	0.000732	2.10	542.73	94.74	0.15
ELDER	REACH1	6.581	Stand10yr	611.24	38.00	44.36		44.40	0.000790	1.77	344.84	82.76	0.15
ELDER	REACH1	6.581	SA with Spil	1162.13	38.00	46.65		46.72	0.000742	2.11	551.68	97.22	0.16
ELDER	REACH1	6.581	SA NS 10YR	629.93	38.00	44.44		44.49	0.000791	1.79	351.92	83.29	0.15
ELDER	REACH1	6.581	SA-NOSpill	1142.26	38.00	46.53		46.60	0.000765	2.12	539.28	95.42	0.16
ELDER	REACH1	6.558	Stand10yr	611.45	37.90	44.28		44.32	0.000595	1.55	395.01	94.28	0.13
ELDER	REACH1	6.558	SA with Spil	1161.30	37.90	46.59		46.65	0.000552	1.84	632.57	109.68	0.13
ELDER	REACH1	6.558	SA NS 10YR	630.21	37.90	44.37		44.41	0.000597	1.56	403.08	94.93	0.13
ELDER	REACH1	6.558	SA-NOSpill	1142.35	37.90	46.46		46.52	0.000573	1.85	618.26	109.29	0.14
ELDER	REACH1	6.536	Stand10yr	611.73	37.80	44.19		44.24	0.000793	1.76	344.07	167.90	0.15
ELDER	REACH1	6.536	SA with Spil	1160.51	37.80	46.50		46.57	0.000748	2.10	553.71	200.11	0.16
ELDER	REACH1	6.536	SA NS 10YR	630.52	37.80	44.28		44.33	0.000795	1.80	351.11	169.06	0.15
ELDER	REACH1	6.536	SA-NOSpill	1142.85	37.80	46.37		46.44	0.000777	2.11	540.45	198.39	0.16
ELDER	REACH1	6.522	Stand10yr	611.64	37.80	44.14		44.18	0.000782	1.73	353.48	67.72	0.15
ELDER	REACH1	6.522	SA with Spil	1159.51	37.80	46.46		46.52	0.000704	2.01	578.09	131.63	0.15
ELDER	REACH1	6.522	SA NS 10YR	630.70	37.80	44.22		44.27	0.000783	1.75	360.95	88.39	0.15
ELDER	REACH1	6.522	SA-NOSpill	1142.62	37.80	46.32		46.38	0.000734	2.03	563.68	129.96	0.15
ELDER	REACH1	6.504	Stand10yr	612.02	37.70	44.08		44.11	0.000637	1.49	410.58	110.09	0.14
ELDER	REACH1	6.504	SA with Spil	1159.93	37.70	46.42		46.46	0.000510	1.65	701.12	135.64	0.13

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	6.504	SA NS 10YR	630.93	37.70	44.16		44.20	0.000636	1.50	420.00	111.16	0.14
ELDER	REACH1	6.504	SA-NOSpill	1143.30	37.70	46.28		46.32	0.000539	1.68	682.27	135.13	0.13
ELDER	REACH1	6.470	Stand10yr	612.39	37.60	43.93		43.99	0.000814	1.81	338.70	80.69	0.16
ELDER	REACH1	6.470	SA with Spil	1158.26	37.60	46.28		46.35	0.000748	2.12	545.07	94.97	0.16
ELDER	REACH1	6.470	SA NS 10YR	631.39	37.60	44.02		44.07	0.000817	1.83	345.54	81.23	0.16
ELDER	REACH1	6.470	SA-NOSpill	1143.72	37.60	46.13		46.20	0.000786	2.15	531.24	94.38	0.16
ELDER	REACH1	6.416	Stand10yr	613.01	37.40	43.70		43.75	0.000831	1.83	335.74	79.93	0.16
ELDER	REACH1	6.416	SA with Spil	1155.93	37.40	46.06		46.13	0.000746	2.14	541.38	92.94	0.16
ELDER	REACH1	6.416	SA NS 10YR	632.12	37.40	43.78		43.84	0.000835	1.85	342.43	80.44	0.16
ELDER	REACH1	6.416	SA-NOSpill	1144.23	37.40	45.90		45.96	0.000792	2.17	526.65	92.29	0.16
ELDER	REACH1	6.375	Stand10yr	613.47	37.20	43.53		43.58	0.000774	1.70	361.51	91.81	0.15
ELDER	REACH1	6.375	SA with Spil	1154.55	37.20	45.93		45.99	0.000637	1.90	606.11	110.85	0.14
ELDER	REACH1	6.375	SA NS 10YR	632.68	37.20	43.62		43.66	0.000776	1.71	369.16	92.56	0.15
ELDER	REACH1	6.375	SA-NOSpill	1144.82	37.20	45.76		45.82	0.000686	1.95	587.42	109.78	0.15
ELDER	REACH1	6.344	Stand10yr	613.82	37.10	43.40		43.45	0.000836	1.60	340.60	83.17	0.16
ELDER	REACH1	6.344	SA with Spil	1153.03	37.10	45.81		45.88	0.000708	2.05	561.24	98.47	0.15
ELDER	REACH1	6.344	SA NS 10YR	633.10	37.10	43.48		43.53	0.000840	1.62	347.46	83.75	0.16
ELDER	REACH1	6.344	SA-NOSpill	1145.18	37.10	45.63		45.70	0.000766	2.11	543.72	97.59	0.16
ELDER	REACH1	6.309	Stand10yr	614.25	37.00	43.24		43.29	0.000805	1.76	349.84	86.87	0.15
ELDER	REACH1	6.309	SA with Spil	1152.76	37.00	45.69		45.75	0.000654	1.97	584.32	103.50	0.15
ELDER	REACH1	6.309	SA NS 10YR	633.58	37.00	43.33		43.38	0.000809	1.77	356.96	87.49	0.15
ELDER	REACH1	6.309	SA-NOSpill	1145.67	37.00	45.50		45.56	0.000716	2.03	564.69	102.82	0.15
ELDER	REACH1	6.287	Stand10yr	614.50	37.00	43.14		43.20	0.000872	1.82	337.20	83.94	0.16
ELDER	REACH1	6.287	SA with Spil	1151.14	37.00	45.61		45.67	0.000706	2.04	565.23	101.39	0.15
ELDER	REACH1	6.287	SA NS 10YR	633.86	37.00	43.23		43.28	0.000876	1.84	344.02	84.51	0.16
ELDER	REACH1	6.287	SA-NOSpill	1145.83	37.00	45.41		45.48	0.000774	2.10	545.26	99.98	0.16
ELDER	REACH1	6.267	Stand10yr	614.74	36.90	43.05		43.10	0.000888	1.86	331.30	81.21	0.16
ELDER	REACH1	6.267	SA with Spil	1150.56	36.90	45.53		45.59	0.000723	2.08	552.28	97.12	0.15
ELDER	REACH1	6.267	SA NS 10YR	634.14	36.90	43.13		43.18	0.000893	1.88	337.85	81.73	0.16
ELDER	REACH1	6.267	SA-NOSpill	1145.96	36.90	45.32		45.39	0.000796	2.15	532.38	95.87	0.16
ELDER	REACH1	6.244	Stand10yr	615.02	36.80	42.93		42.99	0.000968	1.98	310.47	72.97	0.17
ELDER	REACH1	6.244	SA with Spil	1150.06	36.80	45.42		45.50	0.000799	2.28	504.58	81.36	0.16
ELDER	REACH1	6.244	SA NS 10YR	634.42	36.80	43.01		43.07	0.000976	2.01	316.28	73.35	0.17
ELDER	REACH1	6.244	SA-NOSpill	1146.54	36.80	45.21		45.29	0.000883	2.35	487.02	80.65	0.17
ELDER	REACH1	6.216	Stand10yr	615.14	36.80	42.79		42.84	0.000987	1.92	320.83	81.09	0.17
ELDER	REACH1	6.216	SA with Spil	1149.29	36.80	45.32		45.39	0.000740	2.10	547.17	96.29	0.16
ELDER	REACH1	6.216	SA NS 10YR	634.49	36.80	42.87		42.92	0.000992	1.94	327.23	81.62	0.17
ELDER	REACH1	6.216	SA-NOSpill	1146.47	36.80	45.09		45.16	0.000832	2.18	525.13	95.44	0.16
ELDER	REACH1	6.188	Stand10yr	615.26	36.70	42.63		42.69	0.001099	2.03	303.30	75.83	0.18
ELDER	REACH1	6.188	SA with Spil	1147.52	36.70	45.19		45.27	0.000810	2.23	515.61	87.60	0.16
ELDER	REACH1	6.188	SA NS 10YR	535.29	36.70	42.72		42.76	0.000779	1.73	310.22	76.35	0.15
ELDER	REACH1	6.188	SA-NOSpill	1146.42	36.70	44.95		45.03	0.000924	2.32	494.04	87.40	0.17
ELDER	REACH1	6.166	Stand10yr	615.35	36.60	42.52		42.57	0.000951	1.77	346.85	96.60	0.16
ELDER	REACH1	6.166	SA with Spil	1146.71	36.60	45.14		45.19	0.000576	1.83	626.05	112.10	0.14
ELDER	REACH1	6.166	SA NS 10YR	535.80	36.60	42.65		42.68	0.000656	1.49	358.74	97.90	0.14
ELDER	REACH1	6.166	SA-NOSpill	1146.31	36.60	44.88		44.94	0.000669	1.92	597.30	112.04	0.15
ELDER	REACH1	6.147	Stand10yr	615.41	36.50	42.42		42.47	0.001009	1.88	326.70	86.33	0.17
ELDER	REACH1	6.147	SA with Spil	1145.91	36.50	45.07		45.13	0.000647	2.01	569.90	94.30	0.14
ELDER	REACH1	6.147	SA NS 10YR	536.25	36.50	42.57		42.61	0.000678	1.58	340.26	87.07	0.14
ELDER	REACH1	6.147	SA-NOSpill	1146.51	36.50	44.80		44.87	0.000748	2.10	544.69	94.30	0.15
ELDER	REACH1	6.124	Stand10yr	615.50	36.40	42.31		42.36	0.000878	1.74	353.34	95.00	0.16
ELDER	REACH1	6.124	SA with Spil	1146.10	36.40	45.01		45.06	0.000537	1.80	635.51	110.40	0.13
ELDER	REACH1	6.124	SA NS 10YR	536.70	36.40	42.50		42.54	0.000578	1.44	371.82	96.78	0.13
ELDER	REACH1	6.124	SA-NOSpill	1146.47	36.40	44.73		44.79	0.000625	1.90	604.93	109.50	0.14
ELDER	REACH1	6.106	Stand10yr	615.58	36.30	42.28		42.30	0.000329	1.14	540.34	132.08	0.10
ELDER	REACH1	6.106	SA with Spil	1146.23	36.30	45.00		45.02	0.000225	1.25	913.69	142.69	0.09
ELDER	REACH1	6.106	SA NS 10YR	537.22	36.30	42.48		42.50	0.000215	0.95	567.39	132.87	0.08
ELDER	REACH1	6.106	SA-NOSpill	1146.66	36.30	44.72		44.74	0.000259	1.31	873.75	141.59	0.09
ELDER	REACH1	6.087	Stand10yr	615.61	36.20	42.24		42.27	0.000387	1.26	490.46	116.27	0.11
ELDER	REACH1	6.087	SA with Spil	1145.51	36.20	44.97		45.00	0.000277	1.39	821.82	126.78	0.10
ELDER	REACH1	6.087	SA NS 10YR	537.65	36.20	42.46		42.48	0.000252	1.04	515.86	117.11	0.09
ELDER	REACH1	6.087	SA-NOSpill	1146.85	36.20	44.68		44.72	0.000318	1.46	785.81	125.68	0.10
ELDER	REACH1	6.070	Stand10yr	615.66	36.20	42.18		42.22	0.000596	1.55	396.39	94.06	0.13
ELDER	REACH1	6.070	SA with Spil	1145.66	36.20	44.92		44.97	0.000419	1.73	663.60	99.40	0.12
ELDER	REACH1	6.070	SA NS 10YR	538.07	36.20	42.42		42.45	0.000384	1.28	418.85	94.76	0.11
ELDER	REACH1	6.070	SA-NOSpill	1147.04	36.20	44.63		44.68	0.000484	1.81	634.60	99.40	0.13
ELDER	REACH1	6.039	Stand10yr	615.68	36.00	42.03		42.09	0.001030	1.94	317.71	61.66	0.17
ELDER	REACH1	6.039	SA with Spil	1145.10	36.00	44.82		44.88	0.000641	2.06	555.74	87.60	0.14
ELDER	REACH1	6.039	SA NS 10YR	538.74	36.00	42.33		42.36	0.000629	1.58	341.93	82.55	0.14
ELDER	REACH1	6.039	SA-NOSpill	1147.34	36.00	44.51		44.58	0.000753	2.17	528.68	87.60	0.16

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH1	6.013	Stand10yr	615.54	35.90	41.83		41.91	0.001515	2.32	264.00	68.89	0.21
ELDER	REACH1	6.013	SA with Spil	1143.75	35.90	44.68		44.77	0.000908	2.40	475.84	76.70	0.17
ELDER	REACH1	6.013	SA NS 10YR	539.30	35.90	42.21		42.26	0.000880	1.85	291.26	70.64	0.16
ELDER	REACH1	6.013	SA-NOSpill	1147.48	35.90	44.35		44.45	0.001086	2.55	450.31	76.70	0.19
ELDER	REACH1	6.001		Culvert									
ELDER	REACH1	5.993	Stand10yr	614.76	35.70	41.52		41.61	0.001995	2.36	260.93	62.60	0.23
ELDER	REACH1	5.993	SA with Spil	1124.79	35.70	43.86		43.94	0.001153	2.33	483.58	102.10	0.19
ELDER	REACH1	5.993	SA NS 10YR	539.24	35.70	42.01		42.06	0.001027	1.78	302.66	88.57	0.17
ELDER	REACH1	5.993	SA-NOSpill	1146.61	35.70	43.52		43.62	0.001523	2.55	448.87	102.10	0.21
ELDER	REACH1	5.978	Stand10yr	614.41	35.60	41.40		41.47	0.001586	2.15	285.84	87.65	0.21
ELDER	REACH1	5.978	SA with Spil	1120.69	35.60	43.79		43.86	0.000944	2.12	528.51	111.30	0.17
ELDER	REACH1	5.978	SA NS 10YR	539.52	35.60	41.95		41.99	0.000786	1.61	335.99	94.25	0.15
ELDER	REACH1	5.978	SA-NOSpill	1146.75	35.60	43.42		43.51	0.001266	2.35	487.94	110.39	0.20
ELDER	REACH1	5.927	Stand10yr	612.04	35.30	41.06		41.11	0.001051	1.86	328.48	91.61	0.17
ELDER	REACH1	5.927	SA with Spil	1107.61	35.30	43.59		43.64	0.000667	1.87	591.17	116.09	0.15
ELDER	REACH1	5.927	SA NS 10YR	540.57	35.30	41.79		41.82	0.000477	1.36	398.16	98.70	0.12
ELDER	REACH1	5.927	SA-NOSpill	1146.61	35.30	43.14		43.21	0.000915	2.12	540.83	111.81	0.17
ELDER	REACH1	5.884	Stand10yr	302.24	34.80	41.00		41.01	0.000197	0.83	363.65	96.87	0.08
ELDER	REACH1	5.884	SA with Spil	816.62	34.80	43.51		43.53	0.000292	1.28	636.60	116.10	0.10
ELDER	REACH1	5.884	SA NS 10YR	541.48	34.80	41.70		41.72	0.000387	1.25	433.19	103.95	0.11
ELDER	REACH1	5.884	SA-NOSpill	1146.58	34.80	42.96		43.02	0.000793	2.00	572.76	115.69	0.16
ELDER	REACH1	5.845	Stand10yr	302.23	34.40	40.97		40.98	0.000157	0.78	389.86	97.26	0.07
ELDER	REACH1	5.845	SA with Spil	814.95	34.40	43.45		43.48	0.000253	1.24	657.55	114.60	0.09
ELDER	REACH1	5.845	SA NS 10YR	541.18	34.40	41.63		41.65	0.000326	1.19	455.78	103.53	0.10
ELDER	REACH1	5.845	SA-NOSpill	669.17	34.40	42.02		42.04	0.000241	1.14	586.23	112.41	0.09
ELDER	REACH2	5.779	Stand10yr	914.17	33.80	40.97		41.03	0.000927	2.02	451.72	101.02	0.17
ELDER	REACH2	5.779	SA with Spil	1835.62	33.80	43.45		43.55	0.000916	2.55	720.88	110.30	0.18
ELDER	REACH2	5.779	SA NS 10YR	1113.09	33.80	41.63		41.70	0.000928	2.14	519.96	106.93	0.17
ELDER	REACH2	5.779	SA-NOSpill	1538.18	33.80	42.02		42.91	0.000888	2.36	651.57	110.30	0.17
ELDER	REACH2	5.665	Stand10yr	913.69	33.30	40.40		40.46	0.000959	2.04	448.87	102.12	0.17
ELDER	REACH2	5.665	SA with Spil	1834.93	33.30	42.90		43.00	0.000920	2.55	720.71	110.40	0.18
ELDER	REACH2	5.665	SA NS 10YR	1112.41	33.30	41.06		41.13	0.000950	2.15	518.20	107.97	0.17
ELDER	REACH2	5.665	SA-NOSpill	1537.68	33.30	42.29		42.38	0.000882	2.35	653.58	110.40	0.17
ELDER	REACH2	5.591	Stand10yr	913.51	33.00	40.02		40.09	0.000982	2.05	444.78	101.63	0.17
ELDER	REACH2	5.591	SA with Spil	1834.30	33.00	42.54		42.64	0.000928	2.55	719.13	110.70	0.18
ELDER	REACH2	5.591	SA NS 10YR	1112.29	33.00	40.68		40.76	0.000971	2.16	514.22	107.77	0.17
ELDER	REACH2	5.591	SA-NOSpill	1537.46	33.00	41.95		42.03	0.000884	2.35	653.63	110.70	0.17
ELDER	REACH2	5.510	Stand10yr	913.45	32.60	39.75		39.85	0.000132	2.46	370.78	72.61	0.19
ELDER	REACH2	5.510	SA with Spil	1833.99	32.60	42.24		42.41	0.000156	3.29	557.52	77.10	0.22
ELDER	REACH2	5.510	SA NS 10YR	1112.21	32.60	40.41		40.52	0.000136	2.66	418.90	73.92	0.20
ELDER	REACH2	5.510	SA-NOSpill	1537.37	32.60	41.68		41.82	0.000140	2.99	514.04	76.45	0.20
ELDER	REACH2	5.450	Stand10yr	913.43	32.30	39.72		39.81	0.000114	2.37	385.38	70.24	0.18
ELDER	REACH2	5.450	SA with Spil	1833.98	32.30	42.20		42.36	0.000147	3.24	565.46	75.20	0.21
ELDER	REACH2	5.450	SA NS 10YR	1112.20	32.30	40.38		40.46	0.000121	2.58	431.81	71.55	0.18
ELDER	REACH2	5.450	SA-NOSpill	1537.37	32.30	41.64		41.77	0.000130	2.94	523.69	74.08	0.19
ELDER	REACH2	5.428	Stand10yr	913.43	32.20	39.71	35.39	39.80	0.000099	2.44	375.04	70.61	0.17
ELDER	REACH2	5.428	SA with Spil	1833.98	32.20	42.16	36.59	42.35	0.000130	3.50	524.56	75.51	0.21
ELDER	REACH2	5.428	SA NS 10YR	1112.19	32.20	40.36	35.67	40.47	0.000105	2.68	414.71	71.91	0.18
ELDER	REACH2	5.428	SA-NOSpill	1537.36	32.20	41.61	36.23	41.76	0.000114	3.13	491.02	74.41	0.19
ELDER	REACH2	5.414		Bridge									
ELDER	REACH2	5.402	Stand10yr	913.43	32.00	39.45		39.54	0.000838	2.35	387.89	68.25	0.17
ELDER	REACH2	5.402	SA with Spil	1833.85	32.00	41.87		42.05	0.001104	3.38	542.63	103.87	0.20
ELDER	REACH2	5.402	SA NS 10YR	1112.19	32.00	40.10		40.21	0.000886	2.59	429.27	92.40	0.18
ELDER	REACH2	5.402	SA-NOSpill	1537.33	32.00	41.34		41.48	0.000963	3.02	508.54	100.36	0.19
ELDER	REACH2	5.359	Stand10yr	913.41	31.70	39.29		39.35	0.000849	2.08	438.90	87.12	0.16
ELDER	REACH2	5.359	SA with Spil	1833.71	31.70	41.69		41.81	0.001053	2.75	666.30	101.91	0.19
ELDER	REACH2	5.359	SA NS 10YR	1112.18	31.70	39.93		40.01	0.000888	2.24	496.30	91.08	0.17
ELDER	REACH2	5.359	SA-NOSpill	1537.33	31.70	41.17		41.27	0.000929	2.50	614.33	98.72	0.18
ELDER	REACH2	5.307	Stand10yr	934.21	31.60	39.06		39.12	0.000839	2.00	466.77	98.20	0.16
ELDER	REACH2	5.307	SA with Spil	1842.03	31.60	41.43		41.54	0.000919	2.57	718.33	109.50	0.18
ELDER	REACH2	5.307	SA NS 10YR	1135.17	31.60	39.69		39.76	0.000863	2.14	530.99	103.31	0.17
ELDER	REACH2	5.307	SA-NOSpill	1583.11	31.60	40.93		41.02	0.000873	2.39	662.94	109.23	0.17
ELDER	REACH2	5.195	Stand10yr	936.22	31.20	38.58		38.63	0.000792	1.91	489.66	105.51	0.16
ELDER	REACH2	5.195	SA with Spil	1843.46	31.20	40.92		41.02	0.000841	2.47	746.33	111.30	0.17
ELDER	REACH2	5.195	SA NS 10YR	1137.42	31.20	39.21		39.27	0.000791	2.04	557.05	108.08	0.16
ELDER	REACH2	5.195	SA-NOSpill	1587.94	31.20	40.44		40.52	0.000789	2.29	693.12	111.30	0.16
ELDER	REACH2	5.113	Stand10yr	937.88	30.90	38.20		38.27	0.000906	2.02	463.27	101.72	0.17
ELDER	REACH2	5.113	SA with Spil	1843.95	30.90	40.52		40.63	0.000963	2.57	717.21	113.10	0.18

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	5.113	SA NS 10YR	1139.21	30.90	38.83		38.90	0.000924	2.15	528.77	107.31	0.17
ELDER	REACH2	5.113	SA-NOSpill	1591.40	30.90	40.07		40.16	0.000910	2.39	665.73	113.10	0.17
ELDER	REACH2	5.056	Stand10yr	939.03	30.70	37.93		37.99	0.000895	1.97	476.18	107.98	0.17
ELDER	REACH2	5.056	SA with Spil	1844.42	30.70	40.25		40.34	0.000920	2.47	745.23	120.80	0.18
ELDER	REACH2	5.056	SA NS 10YR	1140.44	30.70	38.56		38.62	0.000906	2.09	545.45	114.29	0.17
ELDER	REACH2	5.056	SA-NOSpill	1593.82	30.70	39.80		39.89	0.000865	2.30	692.13	120.04	0.17
ELDER	REACH2	5.009	Stand10yr	939.99	30.60	37.68		37.75	0.001051	2.14	439.52	99.30	0.18
ELDER	REACH2	5.009	SA with Spil	1844.70	30.60	39.97		40.09	0.001102	2.71	681.68	110.10	0.19
ELDER	REACH2	5.009	SA NS 10YR	1141.47	30.60	38.30		38.38	0.001054	2.27	502.69	103.77	0.18
ELDER	REACH2	5.009	SA-NOSpill	1595.90	30.60	39.55		39.65	0.001015	2.51	635.02	108.51	0.18
ELDER	REACH2	4.998	Stand10yr	940.22	30.50	37.66		37.70	0.000651	1.72	547.95	120.74	0.14
ELDER	REACH2	4.998	SA with Spil	1844.80	30.50	39.96		40.04	0.000690	2.19	841.38	132.05	0.15
ELDER	REACH2	4.998	SA NS 10YR	1141.71	30.50	38.28		38.33	0.000653	1.83	624.88	125.34	0.14
ELDER	REACH2	4.998	SA-NOSpill	1596.40	30.50	39.54		39.61	0.000635	2.03	786.17	130.37	0.15
ELDER	REACH2	4.945	Stand10yr	941.32	30.30	37.40		37.47	0.001030	2.10	448.79	102.95	0.18
ELDER	REACH2	4.945	SA with Spil	1845.16	30.30	39.69		39.80	0.001027	2.65	695.78	108.70	0.18
ELDER	REACH2	4.945	SA NS 10YR	1142.92	30.30	38.02		38.09	0.001037	2.22	514.38	108.70	0.18
ELDER	REACH2	4.945	SA-NOSpill	1598.62	30.30	39.29		39.38	0.000945	2.45	652.71	108.70	0.18
ELDER	REACH2	4.887	Stand10yr	957.27	30.10	37.13		37.19	0.000773	1.89	505.42	106.42	0.15
ELDER	REACH2	4.887	SA with Spil	1851.20	30.10	39.42		39.51	0.000827	2.45	755.98	110.40	0.16
ELDER	REACH2	4.887	SA NS 10YR	1160.28	30.10	37.75		37.81	0.000784	2.03	571.91	109.25	0.16
ELDER	REACH2	4.887	SA-NOSpill	1633.32	30.10	39.04		39.12	0.000773	2.29	713.72	110.40	0.16
ELDER	REACH2	4.810	Stand10yr	958.83	30.50	36.66		36.75	0.001361	2.48	386.08	84.42	0.20
ELDER	REACH2	4.810	SA with Spil	1851.73	30.50	38.68		39.03	0.001548	3.14	590.31	99.82	0.23
ELDER	REACH2	4.810	SA NS 10YR	1161.95	30.50	37.26		37.37	0.001401	2.65	438.08	88.60	0.21
ELDER	REACH2	4.810	SA-NOSpill	1635.16	30.50	38.54		38.67	0.001419	2.94	556.84	97.47	0.22
ELDER	REACH2	4.795	Stand10yr	959.11	30.50	36.56		36.67	0.000782	2.73	351.76	81.15	0.23
ELDER	REACH2	4.795	SA with Spil	1851.79	30.50	38.79		38.94	0.000776	3.18	663.93	240.31	0.24
ELDER	REACH2	4.795	SA NS 10YR	1162.27	30.50	37.15		37.28	0.000838	2.89	402.74	89.90	0.24
ELDER	REACH2	4.795	SA-NOSpill	1635.50	30.50	38.45		38.59	0.000779	3.05	583.05	229.05	0.24
ELDER	REACH2	4.713	Stand10yr	960.84	29.84	36.28		36.40	0.000463	2.76	347.56	81.55	0.24
ELDER	REACH2	4.713	SA with Spil	1852.56	29.84	38.49		38.67	0.000475	3.35	568.81	148.12	0.25
ELDER	REACH2	4.713	SA NS 10YR	1164.10	29.84	36.86		36.99	0.000482	2.94	396.57	87.60	0.24
ELDER	REACH2	4.713	SA-NOSpill	1638.60	29.84	38.16		38.31	0.000458	3.16	522.86	128.30	0.24
ELDER	REACH2	4.693	Stand10yr	961.38	29.90	36.16	33.54	36.33	0.000759	3.39	283.86	71.10	0.30
ELDER	REACH2	4.693	SA with Spil	1852.82	29.90	38.34	34.75	38.60	0.000740	4.09	452.47	83.10	0.31
ELDER	REACH2	4.693	SA NS 10YR	1164.67	29.90	36.73	33.85	36.93	0.000749	3.58	325.54	74.25	0.30
ELDER	REACH2	4.693	SA-NOSpill	1639.19	29.90	38.03	34.49	38.25	0.000686	3.84	426.34	81.36	0.30
ELDER	REACH2	4.684		Bridge									
ELDER	REACH2	4.671	Stand10yr	961.38	29.90	35.92		36.12	0.000906	3.60	267.07	69.80	0.32
ELDER	REACH2	4.671	SA with Spil	1852.72	29.90	38.11		38.39	0.000839	4.28	432.88	81.80	0.33
ELDER	REACH2	4.671	SA NS 10YR	1164.65	29.90	36.50		36.72	0.000876	3.78	308.45	72.90	0.32
ELDER	REACH2	4.671	SA-NOSpill	1638.33	29.90	37.81		38.06	0.000771	4.00	409.09	80.19	0.31
ELDER	REACH2	4.642	Stand10yr	961.37	30.00	35.89		36.01	0.000495	2.75	349.43	87.16	0.24
ELDER	REACH2	4.642	SA with Spil	1852.72	30.00	38.13		38.28	0.000508	3.19	586.58	174.14	0.25
ELDER	REACH2	4.642	SA NS 10YR	1164.65	30.00	36.48		36.61	0.000509	2.89	403.00	95.38	0.25
ELDER	REACH2	4.642	SA-NOSpill	1638.61	30.00	37.82		37.96	0.000477	3.01	544.47	115.62	0.24
ELDER	REACH2	4.564	Stand10yr	972.79	28.70	35.45		35.70	0.000996	4.08	238.68	54.07	0.34
ELDER	REACH2	4.564	SA with Spil	1856.56	28.70	37.54		37.91	0.001373	4.85	382.97	85.90	0.40
ELDER	REACH2	4.564	SA NS 10YR	1176.58	28.70	35.98		36.27	0.001138	4.37	269.14	60.66	0.37
ELDER	REACH2	4.564	SA-NOSpill	1657.43	28.70	37.29		37.61	0.001233	4.58	361.84	81.38	0.38
ELDER	REACH2	4.485	Stand10yr	985.27	28.60	34.67		35.14	0.001658	4.21	233.80	75.40	0.42
ELDER	REACH2	4.485	SA with Spil	1860.75	28.60	37.09		37.37	0.001163	4.30	432.82	104.24	0.37
ELDER	REACH2	4.485	SA NS 10YR	1189.59	28.60	35.43		35.71	0.001533	4.26	277.67	82.46	0.41
ELDER	REACH2	4.485	SA-NOSpill	1677.90	28.60	36.86		37.12	0.001097	4.10	409.28	101.23	0.36
ELDER	REACH2	4.437	Stand10yr	985.26	28.40	34.75		34.87	0.000460	2.78	354.01	81.99	0.24
ELDER	REACH2	4.437	SA with Spil	1860.67	28.40	36.99		37.16	0.000494	3.30	563.05	106.37	0.25
ELDER	REACH2	4.437	SA NS 10YR	1189.57	28.40	35.32		35.45	0.000478	2.96	401.84	87.27	0.24
ELDER	REACH2	4.437	SA-NOSpill	1677.48	28.40	36.77		36.92	0.000446	3.11	539.85	103.58	0.24
ELDER	REACH2	4.391	Stand10yr	985.25	28.30	34.62		34.75	0.000502	2.91	338.26	77.74	0.25
ELDER	REACH2	4.391	SA with Spil	1860.59	28.30	36.91		37.05	0.000478	3.11	876.77	497.55	0.25
ELDER	REACH2	4.391	SA NS 10YR	1189.55	28.30	35.18		35.33	0.000516	3.11	382.72	81.38	0.25
ELDER	REACH2	4.391	SA-NOSpill	1677.42	28.30	36.68		36.82	0.000463	3.03	764.75	482.56	0.24
ELDER	REACH2	4.343	Stand10yr	992.25	28.20	34.48		34.62	0.000561	2.98	333.17	80.75	0.26
ELDER	REACH2	4.343	SA with Spil	1863.61	28.20	36.71		36.90	0.000568	3.48	535.21	103.52	0.27
ELDER	REACH2	4.343	SA NS 10YR	1197.15	28.20	35.04		35.19	0.000569	3.16	379.42	85.18	0.26
ELDER	REACH2	4.343	SA-NOSpill	1690.60	28.20	36.51		36.67	0.000514	3.28	514.68	100.86	0.26
ELDER	REACH2	4.240	Stand10yr	1000.16	28.10	33.94	31.54	34.18	0.001041	3.93	254.30	64.05	0.35
ELDER	REACH2	4.240	SA with Spil	1867.10	28.10	36.19	32.79	36.44	0.001143	4.02	540.45	554.89	0.36

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	4.240	SA NS 10YR	1205.76	28.10	34.43	31.86	34.71	0.001205	4.20	286.83	73.05	0.37
ELDER	REACH2	4.240	SA-NOSpill	1705.78	28.10	35.98	32.57	36.22	0.001159	3.95	432.27	118.46	0.36
ELDER	REACH2	4.239		Bridge									
ELDER	REACH2	4.229	Stand10yr	1000.10	28.10	33.75		34.01	0.001199	4.13	242.04	62.98	0.37
ELDER	REACH2	4.229	SA with Spil	1867.04	28.10	35.45		35.83	0.001800	4.98	374.91	100.57	0.45
ELDER	REACH2	4.229	SA NS 10YR	1205.70	28.10	34.22		34.53	0.001240	4.42	272.67	65.64	0.38
ELDER	REACH2	4.229	SA-NOSpill	1705.78	28.10	35.18		35.55	0.001734	4.90	348.42	93.15	0.45
ELDER	REACH2	4.221	Stand10yr	1000.10	28.00	33.67		33.97	0.000395	2.52	396.94	95.83	0.22
ELDER	REACH2	4.221	SA with Spil	1867.07	28.00	35.62		35.77	0.000554	3.19	584.51	127.54	0.26
ELDER	REACH2	4.221	SA NS 10YR	1205.70	28.00	34.37		34.48	0.000416	2.70	445.81	100.95	0.23
ELDER	REACH2	4.221	SA-NOSpill	1705.78	28.00	35.34		35.49	0.000509	3.10	550.73	117.93	0.25
ELDER	REACH2	4.156	Stand10yr	1000.08	28.00	33.76		33.84	0.000343	2.36	423.71	101.50	0.20
ELDER	REACH2	4.156	SA with Spil	1867.05	28.00	35.46		35.60	0.000455	3.03	615.80	125.20	0.24
ELDER	REACH2	4.156	SA NS 10YR	1205.69	28.00	34.25		34.35	0.000369	2.54	474.78	107.50	0.21
ELDER	REACH2	4.156	SA-NOSpill	1705.77	28.00	35.19		35.33	0.000437	2.92	583.28	121.37	0.24
ELDER	REACH2	4.112	Stand10yr	1000.07	28.00	33.32	31.46	33.63	0.001690	4.47	223.76	67.61	0.43
ELDER	REACH2	4.112	SA with Spil	1867.04	28.00	34.92	32.78	35.38	0.001655	5.49	340.30	672.79	0.45
ELDER	REACH2	4.112	SA NS 10YR	1205.68	28.00	33.78	31.82	34.13	0.001707	4.70	256.34	72.25	0.44
ELDER	REACH2	4.112	SA-NOSpill	1705.76	28.00	34.67	32.56	35.11	0.001654	5.29	322.40	666.09	0.45
ELDER	REACH2	4.105		Bridge									
ELDER	REACH2	4.097	Stand10yr	1000.07	28.00	29.92	31.46	36.08	0.054520	19.92	50.21	34.95	2.93
ELDER	REACH2	4.097	SA with Spil	1866.58	28.00	30.67	32.78	39.31	0.053388	23.58	79.14	42.00	3.03
ELDER	REACH2	4.097	SA NS 10YR	1205.67	28.00	30.13	31.82	36.91	0.053675	20.90	57.68	36.89	2.95
ELDER	REACH2	4.097	SA-NOSpill	1705.21	28.00	31.31	32.56	35.18	0.018906	15.78	108.05	48.04	1.85
ELDER	REACH2	4.06	Stand10yr	1000.07	21.50	27.49		27.65	0.000301	3.25	307.48	63.73	0.26
ELDER	REACH2	4.06	SA with Spil	1866.07	21.50	29.67		29.93	0.000339	4.09	455.82	72.51	0.29
ELDER	REACH2	4.06	SA NS 10YR	1205.65	21.50	28.10		28.29	0.000308	3.47	347.35	66.20	0.27
ELDER	REACH2	4.06	SA-NOSpill	1703.97	21.50	29.44		29.68	0.000313	3.88	439.68	71.60	0.28
ELDER	REACH2	4.009	Stand10yr	1006.14	21.30	27.41		27.57	0.000287	3.22	312.77	63.52	0.26
ELDER	REACH2	4.009	SA with Spil	1868.61	21.30	29.58		29.84	0.000327	4.07	459.36	71.70	0.28
ELDER	REACH2	4.009	SA NS 10YR	1212.46	21.30	28.02		28.21	0.000295	3.44	352.30	65.83	0.26
ELDER	REACH2	4.009	SA-NOSpill	1717.41	21.30	29.36		29.59	0.000306	3.87	443.42	70.85	0.27
ELDER	REACH2	3.958	Stand10yr	1012.15	21.10	27.34		27.50	0.000274	3.19	317.57	62.92	0.25
ELDER	REACH2	3.958	SA with Spil	1871.04	21.10	29.49		29.75	0.000318	4.05	461.57	70.61	0.28
ELDER	REACH2	3.958	SA NS 10YR	1219.25	21.10	27.95		28.13	0.000284	3.42	356.47	65.09	0.26
ELDER	REACH2	3.958	SA-NOSpill	1730.72	21.10	29.27		29.50	0.000300	3.88	445.83	69.81	0.27
ELDER	REACH2	3.855	Stand10yr	1024.00	20.70	27.19		27.35	0.000255	3.15	324.60	60.91	0.24
ELDER	REACH2	3.855	SA with Spil	1876.12	20.70	29.32		29.58	0.000310	4.06	461.56	67.66	0.27
ELDER	REACH2	3.855	SA NS 10YR	1232.60	20.70	27.79		27.97	0.000270	3.41	361.65	62.86	0.25
ELDER	REACH2	3.855	SA-NOSpill	1756.95	20.70	29.09		29.33	0.000300	3.94	446.16	67.12	0.27
ELDER	REACH2	3.842	Stand10yr	1024.00	20.70	27.17		27.33	0.000293	3.24	316.25	63.98	0.26
ELDER	REACH2	3.842	SA with Spil	1876.12	20.70	29.31		29.56	0.000352	4.00	468.94	79.44	0.29
ELDER	REACH2	3.842	SA NS 10YR	1232.60	20.70	27.77		27.95	0.000308	3.47	355.59	67.36	0.27
ELDER	REACH2	3.842	SA-NOSpill	1756.95	20.70	29.06		29.31	0.000343	3.90	450.82	77.86	0.29
ELDER	REACH2	3.832	Stand10yr	1023.90	20.60	27.13	23.56	27.31	0.000329	3.44	297.73	60.29	0.27
ELDER	REACH2	3.832	SA with Spil	1875.04	20.60	29.25	24.94	29.54	0.000379	4.32	434.70	69.14	0.30
ELDER	REACH2	3.832	SA NS 10YR	1232.60	20.60	27.73	23.93	27.94	0.000342	3.69	334.37	62.76	0.28
ELDER	REACH2	3.832	SA-NOSpill	1756.94	20.60	29.02	24.76	29.29	0.000368	4.19	419.18	68.19	0.30
ELDER	REACH2	3.825		Bridge									
ELDER	REACH2	3.816	Stand10yr	1023.80	20.50	27.04		27.23	0.000346	3.50	292.46	59.92	0.28
ELDER	REACH2	3.816	SA with Spil	1875.95	20.50	29.14		29.44	0.000398	4.39	427.07	68.67	0.31
ELDER	REACH2	3.816	SA NS 10YR	1232.50	20.50	27.63		27.85	0.000360	3.75	328.36	62.36	0.29
ELDER	REACH2	3.816	SA-NOSpill	1756.94	20.50	28.91		29.20	0.000386	4.27	411.90	67.74	0.30
ELDER	REACH2	3.808	Stand10yr	1023.80	20.50	26.98		27.22	0.000471	3.89	263.33	58.09	0.32
ELDER	REACH2	3.808	SA with Spil	1875.95	20.50	29.06		29.42	0.000504	4.77	393.09	66.53	0.35
ELDER	REACH2	3.808	SA NS 10YR	1232.50	20.50	27.56		27.83	0.000478	4.14	297.96	60.46	0.33
ELDER	REACH2	3.808	SA-NOSpill	1756.90	20.50	28.84		29.18	0.000491	4.64	378.57	65.64	0.34
ELDER	REACH2	3.746	Stand10yr	1023.68	20.40	26.82		27.06	0.000478	3.91	261.73	57.84	0.32
ELDER	REACH2	3.746	SA with Spil	1875.66	20.40	28.89		29.25	0.000513	4.81	389.95	66.13	0.35
ELDER	REACH2	3.746	SA NS 10YR	1232.39	20.40	27.40		27.67	0.000486	4.16	296.01	60.17	0.33
ELDER	REACH2	3.746	SA-NOSpill	1756.92	20.40	28.68		29.02	0.000500	4.67	375.83	65.27	0.34
ELDER	REACH2	3.698	Stand10yr	1023.59	20.30	26.71		26.94	0.000471	3.89	263.36	58.13	0.32
ELDER	REACH2	3.698	SA with Spil	1875.78	20.30	28.76		29.12	0.000509	4.79	391.64	66.45	0.35
ELDER	REACH2	3.698	SA NS 10YR	1232.38	20.30	27.26		27.55	0.000480	4.14	297.69	60.47	0.33
ELDER	REACH2	3.698	SA-NOSpill	1756.90	20.30	28.55		28.89	0.000495	4.65	377.70	65.60	0.34
ELDER	REACH2	3.657	Stand10yr	1023.58	20.10	26.61		26.84	0.000462	3.86	265.14	58.29	0.32
ELDER	REACH2	3.657	SA with Spil	1875.77	20.10	28.66		29.01	0.000504	4.77	393.19	66.62	0.35
ELDER	REACH2	3.657	SA NS 10YR	1232.37	20.10	27.16		27.45	0.000472	4.12	299.43	60.63	0.33

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	3.657	SA-NOSpill	1756.89	20.10	28.45		28.78	0.000489	4.63	379.44	65.78	0.34
ELDER	REACH2	3.59	Stand10yr	1023.50	20.00	26.45		26.68	0.000456	3.85	265.66	57.99	0.32
ELDER	REACH2	3.59	SA with Spil	1875.70	20.00	28.48		28.83	0.000506	4.79	391.62	66.08	0.35
ELDER	REACH2	3.59	SA NS 10YR	1232.30	20.00	27.02		27.28	0.000469	4.11	299.46	60.27	0.33
ELDER	REACH2	3.59	SA-NOSpill	1756.68	20.00	28.28		28.61	0.000489	4.64	378.40	65.28	0.34
ELDER	REACH2	3.496	Stand10yr	1023.49	19.70	26.21	23.20	26.45	0.000453	3.93	260.19	54.27	0.32
ELDER	REACH2	3.496	SA with Spil	1875.63	19.70	28.18	24.53	28.57	0.000539	5.02	373.77	60.94	0.36
ELDER	REACH2	3.496	SA NS 10YR	1232.28	19.70	26.77	23.56	27.05	0.000476	4.24	290.96	56.15	0.33
ELDER	REACH2	3.496	SA-NOSpill	1756.79	19.70	28.00	24.36	28.36	0.000516	4.85	362.45	60.31	0.35
ELDER	REACH2	3.490		Bridge									
ELDER	REACH2	3.483	Stand10yr	1023.45	19.60	26.06		26.30	0.000469	3.96	258.55	54.03	0.32
ELDER	REACH2	3.483	SA with Spil	1875.57	19.60	27.99		28.39	0.000560	5.06	370.96	61.57	0.36
ELDER	REACH2	3.483	SA NS 10YR	1176.27	19.60	26.61		26.87	0.000447	4.06	289.47	56.77	0.32
ELDER	REACH2	3.483	SA-NOSpill	1756.68	19.60	27.81		28.18	0.000535	4.88	359.94	60.94	0.35
ELDER	REACH2	3.442	Stand10yr	1023.44	19.50	26.10	22.68	26.22	0.000248	2.83	362.12	81.67	0.24
ELDER	REACH2	3.442	SA with Spil	1875.61	19.50	28.10	23.82	28.29	0.000271	3.48	538.37	94.48	0.26
ELDER	REACH2	3.442	SA NS 10YR	1176.26	19.50	26.66	22.91	26.79	0.000231	2.87	409.44	85.20	0.23
ELDER	REACH2	3.442	SA-NOSpill	1756.79	19.50	27.91	23.67	28.09	0.000261	3.38	520.43	93.14	0.25
ELDER	REACH2	3.431		Bridge									
ELDER	REACH2	3.420	Stand10yr	1023.40	19.50	25.98		26.11	0.000267	2.90	352.75	80.94	0.24
ELDER	REACH2	3.420	SA with Spil	1875.51	19.50	27.98		28.17	0.000288	3.56	526.52	93.60	0.26
ELDER	REACH2	3.420	SA NS 10YR	1176.26	19.50	26.56		26.69	0.000245	2.94	400.56	84.57	0.24
ELDER	REACH2	3.420	SA-NOSpill	1756.79	19.50	27.79		27.98	0.000277	3.45	509.22	92.28	0.26
ELDER	REACH2	3.419	Stand10yr	1023.40	19.50	25.98		26.11	0.000268	2.87	356.86	83.66	0.24
ELDER	REACH2	3.419	SA with Spil	1875.51	19.50	27.98		28.17	0.000285	3.47	540.06	99.39	0.26
ELDER	REACH2	3.419	SA NS 10YR	1176.26	19.50	26.56		26.69	0.000246	2.89	406.57	88.18	0.24
ELDER	REACH2	3.419	SA-NOSpill	1756.79	19.50	27.80		27.97	0.000276	3.37	521.60	97.95	0.26
ELDER	REACH2	3.286	Stand10yr	1023.39	18.90	25.36		25.73	0.000872	4.91	208.63	52.01	0.43
ELDER	REACH2	3.286	SA with Spil	1875.40	18.90	27.21		27.77	0.000947	5.97	314.17	61.74	0.47
ELDER	REACH2	3.286	SA NS 10YR	1175.69	18.90	25.99		26.36	0.000756	4.84	242.77	55.28	0.41
ELDER	REACH2	3.286	SA-NOSpill	1755.30	18.90	27.07		27.59	0.000894	5.74	305.63	61.00	0.45
ELDER	REACH2	3.141	Stand10yr	1037.44	18.30	24.43		24.90	0.001278	5.47	189.70	53.93	0.51
ELDER	REACH2	3.141	SA with Spil	1882.72	18.30	26.39		26.97	0.001132	6.06	310.43	68.96	0.50
ELDER	REACH2	3.141	SA NS 10YR	1253.01	18.30	25.11		25.58	0.001145	5.50	227.98	59.25	0.49
ELDER	REACH2	3.141	SA-NOSpill	1788.27	18.30	26.25		26.80	0.001115	5.96	300.27	67.76	0.50
ELDER	REACH2	3.092	Stand10yr	1037.44	18.30	24.46	21.37	24.67	0.000383	3.64	285.07	59.52	0.29
ELDER	REACH2	3.092	SA with Spil	1882.72	18.30	26.43	22.60	26.76	0.000448	4.61	408.73	66.73	0.33
ELDER	REACH2	3.092	SA NS 10YR	1252.95	18.30	25.14	21.71	25.37	0.000378	3.84	326.21	61.90	0.29
ELDER	REACH2	3.092	SA-NOSpill	1788.25	18.30	26.28	22.46	26.59	0.000433	4.48	398.90	66.10	0.32
ELDER	REACH2	3.081		Bridge									
ELDER	REACH2	3.071	Stand10yr	1037.44	18.30	24.36		24.57	0.000410	3.72	278.66	59.14	0.30
ELDER	REACH2	3.071	SA with Spil	1882.68	18.30	26.28		26.63	0.000479	4.72	398.95	66.11	0.34
ELDER	REACH2	3.071	SA NS 10YR	1252.98	18.30	25.03		25.27	0.000401	3.92	319.63	61.52	0.30
ELDER	REACH2	3.071	SA-NOSpill	1788.25	18.30	26.14		26.47	0.000461	4.58	390.04	65.53	0.33
ELDER	REACH2	3.07	Stand10yr	1037.42	18.20	23.95		24.60	0.001800	6.44	161.13	46.02	0.61
ELDER	REACH2	3.07	SA with Spil	1882.59	18.20	25.81		26.64	0.001676	7.31	257.48	57.45	0.61
ELDER	REACH2	3.07	SA NS 10YR	1252.98	18.20	24.65		25.29	0.001578	6.43	194.72	50.38	0.58
ELDER	REACH2	3.07	SA-NOSpill	1788.16	18.20	25.70		26.49	0.001616	7.12	251.23	56.81	0.60
ELDER	REACH2	3.01	Stand10yr	1037.41	18.00	23.85		24.19	0.000742	4.63	224.26	53.99	0.40
ELDER	REACH2	3.01	SA with Spil	1882.59	18.00	25.76		26.25	0.000788	5.62	335.23	62.62	0.43
ELDER	REACH2	3.01	SA NS 10YR	1252.87	18.00	24.58		24.93	0.000676	4.73	264.73	57.27	0.39
ELDER	REACH2	3.01	SA-NOSpill	1788.03	18.00	25.65		26.11	0.000753	5.45	328.31	62.12	0.42
ELDER	REACH2	2.944	Stand10yr	1040.76	17.20	23.22		23.79	0.001524	6.09	171.03	46.64	0.56
ELDER	REACH2	2.944	SA with Spil	1884.38	17.20	25.10		25.86	0.001466	6.98	270.06	58.37	0.57
ELDER	REACH2	2.944	SA NS 10YR	1270.90	17.20	24.00		24.57	0.001316	6.06	209.60	51.64	0.53
ELDER	REACH2	2.944	SA-NOSpill	1794.87	17.20	25.02		25.73	0.001391	6.76	265.54	57.89	0.56
ELDER	REACH2	2.861	Stand10yr	1044.97	16.85	22.64		23.17	0.001302	5.82	179.45	45.45	0.52
ELDER	REACH2	2.861	SA with Spil	1854.04	16.85	24.54		25.23	0.001256	6.69	277.17	56.51	0.53
ELDER	REACH2	2.861	SA NS 10YR	1293.64	16.85	23.48		24.01	0.001146	5.88	220.00	50.90	0.50
ELDER	REACH2	2.861	SA-NOSpill	1803.66	16.85	24.48		25.15	0.001233	6.59	273.53	56.19	0.53
ELDER	REACH2	2.794	Stand10yr	1048.37	16.50	22.73		22.83	0.000212	2.51	417.77	101.53	0.22
ELDER	REACH2	2.794	SA with Spil	1858.47	16.50	24.76		24.89	0.000196	2.91	638.86	117.02	0.22
ELDER	REACH2	2.794	SA NS 10YR	1311.98	16.50	23.60		23.70	0.000188	2.58	508.60	108.32	0.21
ELDER	REACH2	2.794	SA-NOSpill	1810.79	16.50	24.68		24.81	0.000194	2.87	630.16	116.46	0.22
ELDER	REACH2	2.736	Stand10yr	1048.32	16.38	22.36		22.71	0.000751	4.70	223.27	52.96	0.40
ELDER	REACH2	2.736	SA with Spil	1857.15	16.38	24.29		24.76	0.000751	5.60	331.89	59.80	0.42
ELDER	REACH2	2.736	SA NS 10YR	1311.16	16.38	23.23		23.60	0.000674	4.85	270.41	56.03	0.39
ELDER	REACH2	2.736	SA-NOSpill	1810.68	16.38	24.23		24.70	0.000737	5.52	328.16	59.58	0.41

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	2.673	Stand10yr	1052.55	16.00	22.10	19.72	22.46	0.000731	4.82	218.44	48.35	0.40
ELDER	REACH2	2.673	SA with Spil	1863.00	16.00	23.97	21.06	24.51	0.000802	5.94	313.71	53.53	0.43
ELDER	REACH2	2.673	SA NS 10YR	1332.28	16.00	22.95	20.23	23.35	0.000701	5.11	260.56	50.73	0.40
ELDER	REACH2	2.673	SA-NOSpill	1820.30	16.00	23.91	20.99	24.44	0.000787	5.86	310.65	53.37	0.43
ELDER	REACH2	2.665		Bridge									
ELDER	REACH2	2.656	Stand10yr	1052.55	16.00	21.91		22.30	0.000826	5.02	209.50	47.82	0.42
ELDER	REACH2	2.656	SA with Spil	1863.00	16.00	23.73		24.32	0.000904	6.19	300.93	52.88	0.46
ELDER	REACH2	2.656	SA NS 10YR	1332.28	16.00	22.76		23.20	0.000779	5.30	251.18	50.22	0.42
ELDER	REACH2	2.656	SA-NOSpill	1820.19	16.00	23.68		24.26	0.000884	6.10	298.35	52.74	0.45
ELDER	REACH2	2.603	Stand10yr	1056.40	15.90	21.70		22.07	0.000790	4.93	214.34	47.94	0.41
ELDER	REACH2	2.603	SA with Spil	1867.97	15.90	23.48		24.06	0.000898	6.12	305.11	53.72	0.45
ELDER	REACH2	2.603	SA NS 10YR	1351.36	15.90	22.53		22.97	0.000779	5.29	255.58	50.65	0.41
ELDER	REACH2	2.603	SA-NOSpill	1828.96	15.90	23.44		24.00	0.000882	6.04	302.59	53.56	0.45
ELDER	REACH2	2.546	Stand10yr	1060.28	15.68	21.31		21.78	0.001143	5.54	191.55	48.72	0.49
ELDER	REACH2	2.546	SA with Spil	1871.96	15.68	23.08		23.75	0.001153	6.58	284.32	55.53	0.51
ELDER	REACH2	2.546	SA NS 10YR	1370.81	15.68	22.14		22.67	0.001089	5.87	233.66	52.29	0.49
ELDER	REACH2	2.546	SA-NOSpill	1837.80	15.68	23.03		23.69	0.001140	6.52	281.82	55.38	0.51
ELDER	REACH2	2.487	Stand10yr	1064.30	16.00	21.02		21.43	0.001065	5.17	205.89	55.71	0.47
ELDER	REACH2	2.487	SA with Spil	1874.71	16.00	22.87		23.42	0.000954	5.93	316.35	63.61	0.47
ELDER	REACH2	2.487	SA NS 10YR	1391.11	16.00	21.87		22.34	0.000973	5.45	255.11	59.26	0.46
ELDER	REACH2	2.487	SA-NOSpill	1846.99	16.00	22.82		23.36	0.000954	5.90	313.04	63.38	0.47
ELDER	REACH2	2.354	Stand10yr	1073.24	14.88	20.50		20.80	0.000727	4.42	243.07	62.89	0.40
ELDER	REACH2	2.354	SA with Spil	1890.55	14.88	22.43		22.82	0.000685	5.01	377.66	77.27	0.40
ELDER	REACH2	2.354	SA NS 10YR	1435.77	14.88	21.36		21.71	0.000727	4.79	299.68	68.50	0.40
ELDER	REACH2	2.354	SA-NOSpill	1867.45	14.88	22.39		22.77	0.000684	4.99	374.29	76.86	0.40
ELDER	REACH2	2.269	Stand10yr	1073.22	14.80	20.22	17.51	20.50	0.000589	4.28	250.74	53.00	0.35
ELDER	REACH2	2.269	SA with Spil	1889.28	14.80	22.06	18.71	22.52	0.000661	5.42	348.42	53.00	0.37
ELDER	REACH2	2.269	SA NS 10YR	1435.74	14.80	21.04	18.07	21.41	0.000643	4.86	294.08	53.00	0.37
ELDER	REACH2	2.269	SA-NOSpill	1867.44	14.80	22.02	18.68	22.47	0.000658	5.39	346.31	53.00	0.37
ELDER	REACH2	2.258		Bridge									
ELDER	REACH2	2.250	Stand10yr	1073.05	14.90	19.22		19.69	0.001143	5.47	196.12	48.26	0.48
ELDER	REACH2	2.250	SA with Spil	1914.57	14.90	21.01		21.69	0.001195	6.60	290.10	53.00	0.50
ELDER	REACH2	2.250	SA NS 10YR	1432.01	14.90	20.07		20.62	0.001200	5.96	240.38	53.00	0.49
ELDER	REACH2	2.250	SA-NOSpill	1867.15	14.90	20.94		21.60	0.001184	6.52	286.28	53.00	0.49
ELDER	REACH2	2.219	Stand10yr	1073.04	13.60	19.18		19.52	0.000897	4.67	229.70	63.91	0.43
ELDER	REACH2	2.219	SA with Spil	1915.50	13.60	21.09		21.52	0.000773	5.31	360.55	73.42	0.42
ELDER	REACH2	2.219	SA NS 10YR	1431.98	13.60	20.08		20.46	0.000814	4.95	289.03	68.26	0.42
ELDER	REACH2	2.219	SA-NOSpill	1867.15	13.60	21.01		21.44	0.000769	5.26	354.69	73.01	0.42
ELDER	REACH2	2.149	Stand10yr	1075.09	13.26	18.89		19.20	0.000810	4.50	238.91	65.30	0.41
ELDER	REACH2	2.149	SA with Spil	1918.61	13.26	20.85		21.25	0.000684	5.12	375.10	73.86	0.40
ELDER	REACH2	2.149	SA NS 10YR	1441.36	13.26	19.81		20.17	0.000732	4.79	300.92	69.07	0.40
ELDER	REACH2	2.149	SA-NOSpill	1871.36	13.26	20.77		21.17	0.000682	5.07	369.13	73.48	0.40
ELDER	REACH2	2.098	Stand10yr	1076.59	12.91	18.64		18.98	0.000863	4.62	232.97	64.13	0.43
ELDER	REACH2	2.098	SA with Spil	1920.42	12.91	20.65		21.07	0.000706	5.18	370.81	73.40	0.41
ELDER	REACH2	2.098	SA NS 10YR	1448.14	12.91	19.59		19.96	0.000776	4.90	295.38	68.40	0.42
ELDER	REACH2	2.098	SA-NOSpill	1874.35	12.91	20.57		20.98	0.000704	5.14	364.86	72.95	0.40
ELDER	REACH2	2.036	Stand10yr	1076.42	12.57	18.29		18.66	0.001037	4.91	219.45	63.25	0.46
ELDER	REACH2	2.036	SA with Spil	1921.91	12.57	20.39		20.83	0.000757	5.30	362.51	72.95	0.42
ELDER	REACH2	2.036	SA NS 10YR	1456.49	12.57	19.27		19.68	0.000884	5.13	284.00	67.78	0.44
ELDER	REACH2	2.036	SA-NOSpill	1877.62	12.57	20.31		20.74	0.000756	5.27	356.49	72.57	0.42
ELDER	REACH2	1.978	Stand10yr	1080.03	12.13	18.11		18.40	0.000569	4.34	249.03	61.98	0.38
ELDER	REACH2	1.978	SA with Spil	1923.99	12.13	20.25		20.62	0.000576	4.91	391.68	71.65	0.37
ELDER	REACH2	1.978	SA NS 10YR	1464.11	12.13	19.11		19.45	0.000633	4.68	313.01	66.38	0.38
ELDER	REACH2	1.978	SA-NOSpill	1880.89	12.13	20.16		20.53	0.000575	4.88	385.71	71.23	0.37
ELDER	REACH2	1.921	Stand10yr	1079.87	12.00	18.05		18.27	0.000211	3.77	286.12	65.50	0.32
ELDER	REACH2	1.921	SA with Spil	1924.54	12.00	20.21		20.51	0.000199	4.38	439.67	76.52	0.32
ELDER	REACH2	1.921	SA NS 10YR	1464.09	12.00	19.06		19.32	0.000211	4.13	354.78	70.73	0.32
ELDER	REACH2	1.921	SA-NOSpill	1880.89	12.00	20.12		20.42	0.000198	4.34	433.23	76.10	0.32
ELDER	REACH2	1.908	Stand10yr	1080.02	10.80	18.10	14.22	18.26	0.000109	3.15	343.38	59.87	0.23
ELDER	REACH2	1.908	SA with Spil	1924.53	10.80	20.24	15.35	20.49	0.000131	4.05	475.12	63.12	0.26
ELDER	REACH2	1.908	SA NS 10YR	1464.63	10.80	19.10	14.76	19.31	0.000123	3.62	404.16	61.62	0.25
ELDER	REACH2	1.908	SA-NOSpill	1880.88	10.80	20.16	15.29	20.41	0.000129	4.00	469.67	63.05	0.26
ELDER	REACH2	1.893		Bridge									
ELDER	REACH2	1.865	Stand10yr	1079.00	10.70	17.45		17.64	0.000147	3.47	310.73	58.91	0.27
ELDER	REACH2	1.865	SA with Spil	1915.93	10.70	19.72		20.01	0.000154	4.27	448.88	62.77	0.28
ELDER	REACH2	1.865	SA NS 10YR	1459.20	10.70	18.53		18.76	0.000153	3.89	374.86	60.79	0.28
ELDER	REACH2	1.865	SA-NOSpill	1879.87	10.70	19.64		19.92	0.000153	4.24	443.63	62.70	0.28

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	1.864	Stand10yr	1076.87	10.50	17.35		17.64	0.000237	4.33	249.01	48.30	0.34
ELDER	REACH2	1.864	SA with Spil	1914.16	10.50	19.58		20.01	0.000256	5.25	364.54	55.44	0.36
ELDER	REACH2	1.864	SA NS 10YR	1458.36	10.50	18.40		18.76	0.000253	4.84	301.35	51.66	0.35
ELDER	REACH2	1.864	SA-NOSpill	1879.62	10.50	19.50		19.92	0.000255	5.22	359.99	55.18	0.36
ELDER	REACH2	1.663	Stand10yr	1076.20	8.80	16.81		17.16	0.000664	4.77	226.12	46.45	0.38
ELDER	REACH2	1.663	SA with Spil	1910.29	8.80	19.00		19.50	0.000704	5.64	338.82	56.42	0.41
ELDER	REACH2	1.663	SA NS 10YR	1454.09	8.80	17.82		18.25	0.000713	5.29	275.05	51.02	0.40
ELDER	REACH2	1.663	SA-NOSpill	1878.27	8.80	18.92		19.41	0.000707	5.62	334.04	56.03	0.41
ELDER	REACH2	1.495	Stand10yr	1077.39	8.50	16.21		16.57	0.000680	4.82	223.69	46.04	0.39
ELDER	REACH2	1.495	SA with Spil	1907.20	8.50	18.35		18.66	0.000735	5.74	332.16	55.48	0.41
ELDER	REACH2	1.495	SA NS 10YR	1450.14	8.50	17.15		17.60	0.000750	5.39	268.98	50.20	0.41
ELDER	REACH2	1.495	SA-NOSpill	1876.90	8.50	18.25		18.77	0.000742	5.74	327.14	55.07	0.41
ELDER	REACH2	1.336	Stand10yr	1076.83	7.50	15.85		16.10	0.000427	4.02	267.71	50.45	0.31
ELDER	REACH2	1.336	SA with Spil	1905.75	7.50	17.95		18.34	0.000496	5.00	380.87	57.34	0.34
ELDER	REACH2	1.336	SA NS 10YR	1447.94	7.50	16.75		17.08	0.000490	4.60	314.43	53.41	0.33
ELDER	REACH2	1.336	SA-NOSpill	1876.08	7.50	17.86		18.24	0.000500	5.00	375.40	57.03	0.34
ELDER	REACH2	1.305	Stand10yr	1076.95	6.50	15.91	10.76	16.05	0.000199	3.00	358.69	56.88	0.21
ELDER	REACH2	1.305	SA with Spil	1906.16	6.50	18.05	12.17	18.28	0.000266	3.84	496.76	70.35	0.25
ELDER	REACH2	1.305	SA NS 10YR	1448.54	6.50	16.83	11.43	17.02	0.000246	3.49	415.11	63.81	0.24
ELDER	REACH2	1.305	SA-NOSpill	1876.31	6.50	17.95	12.12	18.18	0.000267	3.63	490.02	69.83	0.25
ELDER	REACH2	1.292		Bridge									
ELDER	REACH2	1.281	Stand10yr	1076.83	6.50	15.84		15.98	0.000205	3.04	354.47	58.49	0.22
ELDER	REACH2	1.281	SA with Spil	1905.75	6.50	17.93		18.17	0.000277	3.90	488.82	69.74	0.26
ELDER	REACH2	1.281	SA NS 10YR	1447.95	6.50	16.73		16.93	0.000255	3.54	409.01	63.30	0.25
ELDER	REACH2	1.281	SA-NOSpill	1875.84	6.50	17.84		18.07	0.000279	3.89	482.14	69.22	0.26
ELDER	REACH2	1.280	Stand10yr	1076.71	7.10	15.78		15.98	0.000315	3.60	298.80	53.06	0.27
ELDER	REACH2	1.280	SA with Spil	1905.33	7.10	17.84		18.17	0.000390	4.59	414.67	59.33	0.31
ELDER	REACH2	1.280	SA NS 10YR	1447.31	7.10	16.66		16.93	0.000374	4.18	346.53	55.73	0.30
ELDER	REACH2	1.280	SA-NOSpill	1875.84	7.10	17.74		18.07	0.000393	4.59	408.99	59.04	0.31
ELDER	REACH2	1.263	Stand10yr	1247.32	7.10	15.66		15.89	0.000353	3.80	328.27	59.85	0.29
ELDER	REACH2	1.263	SA with Spil	2079.20	7.10	17.77		18.08	0.000379	4.48	464.40	69.56	0.31
ELDER	REACH2	1.263	SA NS 10YR	1617.83	7.10	16.56		16.83	0.000387	4.22	383.51	63.99	0.30
ELDER	REACH2	1.263	SA-NOSpill	2049.73	7.10	17.67		17.98	0.000384	4.48	457.57	69.11	0.31
ELDER	REACH2	1.148	Stand10yr	1246.94	6.90	15.32		15.63	0.000506	4.42	282.07	52.63	0.34
ELDER	REACH2	1.148	SA with Spil	2078.33	6.90	17.38		17.60	0.000540	5.22	398.09	60.42	0.36
ELDER	REACH2	1.148	SA NS 10YR	1616.61	6.90	16.17		16.55	0.000560	4.93	327.84	55.83	0.36
ELDER	REACH2	1.148	SA-NOSpill	2049.24	6.90	17.27		17.70	0.000549	5.23	391.84	60.02	0.36
ELDER	REACH2	0.949	Stand10yr	1246.61	6.50	14.82		15.11	0.000476	4.36	285.99	52.16	0.33
ELDER	REACH2	0.949	SA with Spil	2077.90	6.50	16.81		17.24	0.000529	5.23	397.05	59.06	0.36
ELDER	REACH2	0.949	SA NS 10YR	1616.07	6.50	15.59		15.96	0.000549	4.94	327.12	54.82	0.36
ELDER	REACH2	0.949	SA-NOSpill	2048.81	6.50	16.70		17.13	0.000540	5.25	390.26	58.67	0.36
ELDER	REACH2	0.835	Stand10yr	1246.52	6.00	14.52		14.82	0.000495	4.39	284.03	52.73	0.33
ELDER	REACH2	0.835	SA with Spil	2077.64	6.00	16.48		16.91	0.000550	5.26	394.63	59.91	0.36
ELDER	REACH2	0.835	SA NS 10YR	1615.66	6.00	15.23		15.62	0.000582	5.01	322.65	55.34	0.37
ELDER	REACH2	0.835	SA-NOSpill	2048.66	6.00	16.36		16.79	0.000563	5.29	387.20	59.45	0.37
ELDER	REACH2	0.804	Stand10yr	1246.52	6.00	14.55	10.45	14.75	0.000302	3.62	344.41	60.06	0.27
ELDER	REACH2	0.804	SA with Spil	2077.64	6.00	16.54	11.70	16.84	0.000348	4.41	471.11	67.40	0.29
ELDER	REACH2	0.804	SA NS 10YR	1615.63	6.00	15.28	11.04	15.55	0.000359	4.15	389.16	62.75	0.29
ELDER	REACH2	0.804	SA-NOSpill	2048.74	6.00	16.41	11.66	16.72	0.000356	4.43	462.76	66.94	0.30
ELDER	REACH2	0.797		Bridge									
ELDER	REACH2	0.789	Stand10yr	1246.52	6.00	14.49		14.70	0.000310	3.66	340.97	59.85	0.27
ELDER	REACH2	0.789	SA with Spil	2077.49	6.00	16.35		16.67	0.000375	4.53	458.70	66.72	0.30
ELDER	REACH2	0.789	SA NS 10YR	1615.41	6.00	15.20		15.47	0.000372	4.20	384.26	62.46	0.30
ELDER	REACH2	0.789	SA-NOSpill	2048.66	6.00	16.30		16.61	0.000373	4.50	454.91	66.51	0.30
ELDER	REACH2	0.788	Stand10yr	1246.46	5.90	14.36		14.70	0.000571	4.69	265.53	49.32	0.36
ELDER	REACH2	0.788	SA with Spil	2077.49	5.90	16.16		16.67	0.000687	5.76	360.51	56.32	0.40
ELDER	REACH2	0.788	SA NS 10YR	1615.41	5.90	15.02		15.47	0.000692	5.40	299.16	51.91	0.40
ELDER	REACH2	0.788	SA-NOSpill	2048.57	5.90	16.10		16.61	0.000684	5.73	357.43	56.11	0.40
ELDER	REACH2	0.76	Stand10yr	1246.46	5.90	14.30		14.62	0.000529	4.53	275.23	51.13	0.34
ELDER	REACH2	0.76	SA with Spil	2077.32	5.90	16.09		16.57	0.000639	5.56	373.43	58.53	0.39
ELDER	REACH2	0.76	SA NS 10YR	1615.13	5.90	14.95		15.38	0.000643	5.22	309.47	53.73	0.38
ELDER	REACH2	0.76	SA-NOSpill	2048.57	5.90	16.04		16.51	0.000636	5.53	370.23	58.29	0.39
ELDER	REACH2	0.671	Stand10yr	1246.45	5.60	14.13		14.40	0.000417	4.15	300.01	53.28	0.31
ELDER	REACH2	0.671	SA with Spil	2077.29	5.60	15.88		16.30	0.000523	5.21	398.45	59.21	0.35
ELDER	REACH2	0.671	SA NS 10YR	1615.08	5.60	14.74		15.10	0.000521	4.85	333.12	55.35	0.35
ELDER	REACH2	0.671	SA-NOSpill	2048.47	5.60	15.82		16.24	0.000520	5.18	395.28	59.03	0.35
ELDER	REACH2	0.587	Stand10yr	1246.45	5.40	13.69		14.13	0.000812	5.29	235.64	47.80	0.42
ELDER	REACH2	0.587	SA with Spil	2076.94	5.40	15.31		15.97	0.000998	6.52	318.67	55.02	0.48
ELDER	REACH2	0.587	SA NS 10YR	1613.52	5.40	14.14		14.75	0.001067	6.26	257.78	49.83	0.48

HEC-RAS Profile: Max WS (Continued)

River	Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
				(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
ELDER	REACH2	0.587	SA-NOSpill	2048.18	5.40	15.26		15.91	0.000993	6.48	315.92	54.80	0.48
ELDER	REACH2	0.574	Stand10yr	1246.45	5.30	13.89		14.08	0.000276	3.46	360.61	63.03	0.25
ELDER	REACH2	0.574	SA with Spil	2077.09	5.30	15.61		15.91	0.000354	4.38	474.54	69.75	0.30
ELDER	REACH2	0.574	SA NS 10YR	1614.25	5.30	14.43		14.69	0.000357	4.09	395.10	65.14	0.29
ELDER	REACH2	0.574	SA-NOSpill	2048.36	5.30	15.55		15.85	0.000352	4.35	470.83	69.54	0.29
ELDER	REACH2	0.569	Stand10yr	1246.45	5.50	13.87	10.06	14.07	0.000308	3.59	346.73	61.28	0.27
ELDER	REACH2	0.569	SA with Spil	2076.93	5.50	15.58	11.18	15.90	0.000413	4.53	458.03	70.29	0.31
ELDER	REACH2	0.569	SA NS 10YR	1614.25	5.50	14.40	10.59	14.68	0.000396	4.25	379.58	62.82	0.30
ELDER	REACH2	0.569	SA-NOSpill	2048.26	5.50	15.52	11.15	15.84	0.000412	4.51	454.26	70.27	0.31
ELDER	REACH2	0.556		Bridge									
ELDER	REACH2	0.543	Stand10yr	1246.45	5.50	13.76		13.97	0.000326	3.67	340.04	60.96	0.27
ELDER	REACH2	0.543	SA with Spil	2076.93	5.50	15.40		15.74	0.000449	4.66	445.88	70.21	0.33
ELDER	REACH2	0.543	SA NS 10YR	1613.92	5.50	14.24		14.53	0.000428	4.37	369.48	62.35	0.32
ELDER	REACH2	0.543	SA-NOSpill	2048.18	5.50	15.35		15.68	0.000446	4.63	442.26	70.19	0.33
ELDER	REACH2	0.394	Stand10yr	1246.40	4.80	13.61		13.76	0.000205	3.10	402.15	65.08	0.22
ELDER	REACH2	0.394	SA with Spil	2076.48	4.80	15.19		15.45	0.000289	4.08	509.01	70.10	0.27
ELDER	REACH2	0.394	SA NS 10YR	1570.62	4.80	14.04		14.25	0.000267	3.65	430.63	66.45	0.25
ELDER	REACH2	0.394	SA-NOSpill	2048.07	4.80	15.14		15.40	0.000287	4.05	505.47	69.93	0.27
ELDER	REACH2	0.388	Stand10yr	1902.00	4.80	13.12		13.53	0.000604	5.13	370.87	63.53	0.37
ELDER	REACH2	0.388	SA with Spil	2811.75	4.80	14.65		15.20	0.000660	5.96	471.59	68.38	0.40
ELDER	REACH2	0.388	SA NS 10YR	2166.16	4.80	13.60		14.05	0.000623	5.40	401.49	65.05	0.38
ELDER	REACH2	0.388	SA-NOSpill	2780.28	4.80	14.60		15.15	0.000659	5.94	468.25	68.22	0.40
ELDER	REACH2	0.216	Stand10yr	1901.93	4.30	12.49		12.94	0.000696	5.42	350.74	61.35	0.40
ELDER	REACH2	0.216	SA with Spil	2811.62	4.30	13.92		14.55	0.000782	6.36	442.16	66.05	0.43
ELDER	REACH2	0.216	SA NS 10YR	2165.96	4.30	12.93		13.44	0.000725	5.72	376.48	62.81	0.41
ELDER	REACH2	0.216	SA-NOSpill	2780.17	4.30	13.87		14.50	0.000780	6.33	439.07	65.90	0.43
ELDER	REACH2	0.2	Stand10yr	1901.92	4.30	12.41		12.88	0.000721	5.49	346.40	61.12	0.41
ELDER	REACH2	0.2	SA with Spil	2811.61	4.30	13.84		14.48	0.000810	6.44	436.71	65.78	0.44
ELDER	REACH2	0.2	SA NS 10YR	2165.96	4.30	12.86		13.38	0.000751	5.79	373.79	62.57	0.42
ELDER	REACH2	0.2	SA-NOSpill	2780.17	4.30	13.79		14.43	0.000808	6.41	433.66	65.63	0.44
ELDER	REACH2	0.019	Stand10yr	1901.88	5.50	11.07	9.50	11.82	0.001500	6.97	272.99	59.86	0.57
ELDER	REACH2	0.019	SA with Spil	2811.54	5.50	12.42	10.55	13.38	0.001500	7.89	356.51	64.43	0.59
ELDER	REACH2	0.019	SA NS 10YR	2165.88	5.50	11.49	9.82	12.31	0.001500	7.26	298.21	61.28	0.58
ELDER	REACH2	0.019	SA-NOSpill	2780.16	5.50	12.37	10.53	13.33	0.001500	7.86	353.77	64.29	0.59

RAS Model Data

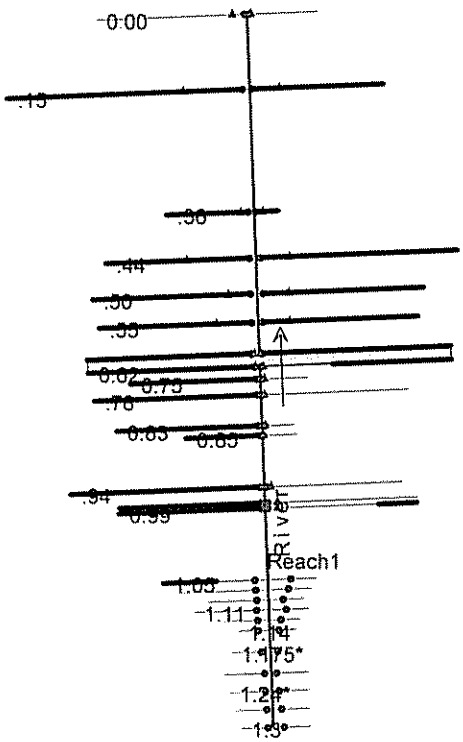
For

Elder and Gerber Creeks – Interim Pre

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table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River
Reach1
1.03
1.11
1.14
1.175*
1.24*
1.3

RAS Input Hy raph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
River	Reach1	1.3		Flow Hydrograph	hcalc.dss	/ELDER GE/E3/FLOW/01JAN2000/1MIN/100YR-24HR/
River	Reach1	1.21		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E3A/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	1.11	1.05	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E3B/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	1.05	0.62	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/FBNE/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	.78		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E3D/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.75		Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E3C/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	.55	.15	Uniform Lateral Inflow Hydrograph	hcalc.dss	/ELDER GE/E3E/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.00		Stage Hydrograph	FVCP.dss	/ELDER REACH1/0.195/STAGE/01JAN2000/5MIN/100YR EXT/

HEC-RAS Plan: pre100 River: River Reach: Reach1 Profile: Max WS

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach1	1.3	103.78	67.96	69.14		69.17	0.002443	1.33	77.97	129.90	0.30
Reach1	1.27*	103.66	67.55	68.75		68.78	0.002339	1.35	76.69	117.49	0.29
Reach1	1.24*	103.63	67.14	68.39		68.42	0.002023	1.33	77.74	109.04	0.28
Reach1	1.21	103.27	66.73	68.12		68.14	0.001433	1.23	83.89	105.65	0.24
Reach1	1.175*	141.56	66.06	67.66		67.70	0.002885	1.65	85.69	113.68	0.34
Reach1	1.14	141.37	65.39	67.14		67.19	0.002442	1.66	85.34	99.46	0.32
Reach1	1.122*	141.33	65.20	66.92		66.96	0.002537	1.66	85.33	102.37	0.32
Reach1	1.11	141.30	64.81	66.79		66.81	0.000768	0.99	142.09	149.55	0.18
Reach1	1.104*	145.65	65.01	66.48		66.55	0.004869	2.11	69.13	94.27	0.43
Reach1	1.068*	150.02	64.62	66.18		66.21	0.002466	1.50	100.34	137.44	0.31
Reach1	1.05	154.38	64.43	65.68		65.75	0.007664	2.13	72.32	135.91	0.52
Reach1	0.99	158.38	61.70	64.90		64.92	0.000503	1.16	217.63	757.58	0.16
Reach1	0.98	Culvert									
Reach1	0.97	158.41	61.50	64.59		64.67	0.003904	2.48	97.22	349.43	0.41
Reach1	.94	161.16	61.34	63.91		64.02	0.005242	2.66	60.57	609.96	0.47
Reach1	0.85	169.80	59.50	62.66		62.68	0.000396	1.34	186.97	329.30	0.15
Reach1	0.84	Culvert									
Reach1	0.83	166.74	59.30	62.00		62.03	0.001009	1.68	159.16	349.15	0.23
Reach1	.78	166.60	59.00	61.87		61.87	0.000059	0.36	571.96	1113.62	0.05
Reach1	0.75	193.34	58.50	61.86		61.87	0.000051	0.40	520.66	1302.81	0.05
Reach1	0.62	231.73	54.90	61.86		61.86	0.000005	0.21	1357.82	1474.87	0.02
Reach1	0.61	Culvert									
Reach1	.60	231.73	54.90	59.45		59.47	0.000759	1.40	242.54	479.07	0.19
Reach1	.55	225.58	55.00	59.03		59.05	0.002164	1.70	208.70	1306.94	0.30
Reach1	.50	187.08	55.00	58.68		58.69	0.000561	1.17	241.91	1516.01	0.16
Reach1	.44	174.86	54.50	58.60		58.60	0.000028	0.31	854.18	2220.73	0.04
Reach1	.36	180.56	54.50	57.99		58.03	0.002753	1.87	119.82	564.12	0.33
Reach1	.15	110.52	53.71	56.41		56.41	0.000051	0.40	468.86	1587.35	0.05
Reach1	0.00	70.25	52.67	56.39	53.88	56.39	0.000000	0.05	2299.93	1982.75	0.01

RAS Model Data

For

Elder and Gerber Creeks – Interim Post

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table

RAS Input Hy· ·aph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
River	Reach1	1.3	1.14	Flow Hydrograph	ETribPos.dss	/VINTAGE/E3/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	1.21		Lateral Inflow Hydrograph	ETribPos.dss	/VINTAGE/E3A/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	1.175*		Lateral Inflow Hydrograph	ETribPos.dss	/VINTAGE/VR/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	1.14	1.05	Uniform Lateral Inflow Hydrograph	ETribPos.dss	/VINTAGE/E3B/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.99	0.62	Uniform Lateral Inflow Hydrograph	ETribPos.dss	/VINTAGE/FBNEHI/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.83		Lateral Inflow Hydrograph	ETribPos.dss	/VINTAGE/E3D/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.75		Lateral Inflow Hydrograph	ETribPos.dss	/VINTAGE/E3C/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	.55	.15	Uniform Lateral Inflow Hydrograph	ETribPos.dss	/VINTAGE/E3E/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.00		Stage Hydrograph	FVCP.dss	/ELDER REACH1/8.195/STAGE/01JAN2000/5MIN/100YR EXT/
		FBDET		Lateral Inflow Hydrograph	ETribPos.dss	/VINTAGE/FBNELO/FLOW/31DEC1999/1MIN/100YR-24HR/

RAS Model Data

For

Elder and Gerber Creeks – Interim Ultimate

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table

RAS Input Hyd aph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
River	Reach1	1.3	1.14	Flow Hydrograph	ElderTrib-ult.dss	/VINTAGE/E3/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	1.21		Lateral Inflow Hydrograph	ElderTrib-ult.dss	/VINTAGE/E3A/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	1.175*		Lateral Inflow Hydrograph	ElderTrib-ult.dss	/VINTAGE/VR/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	1.14	1.05	Uniform Lateral Inflow Hydrograph	ElderTrib-ult.dss	/VINTAGE/E3B/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.99	0.62	Uniform Lateral Inflow Hydrograph	ElderTrib-ult.dss	/VINTAGE/FBNE/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.83		Lateral Inflow Hydrograph	ElderTrib-ult.dss	/VINTAGE/E3D/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.75		Lateral Inflow Hydrograph	ElderTrib-ult.dss	/VINTAGE/E3C/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	.55	.15	Uniform Lateral Inflow Hydrograph	ElderTrib-ult.dss	/VINTAGE/E3E/FLOW/31DEC1999/1MIN/100YR-24HR/
River	Reach1	0.00		Stage Hydrograph	FVCP.dss	/ELDER REACH1/8.195/STAGE/01JAN2000/5MIN/100YR EXT/

HEC-RAS River: River Reach: Reach1 Profile: Max WS

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach1	1.3	10-yr	55.21	67.96	68.88		68.90	0.002534	1.13	48.98	104.61	0.29
Reach1	1.3	100-yr	99.67	67.96	69.12		69.15	0.002496	1.32	75.30	127.43	0.30
Reach1	1.3	Ult2 100yr	99.72	67.96	69.12		69.15	0.002496	1.32	75.34	127.54	0.30
Reach1	1.27*	10-yr	55.16	67.55	68.48		68.50	0.002376	1.14	48.24	96.12	0.28
Reach1	1.27*	100-yr	99.54	67.55	68.73		68.76	0.002355	1.34	74.44	116.47	0.29
Reach1	1.27*	Ult2 100yr	99.58	67.55	68.73		68.76	0.002364	1.34	74.32	116.29	0.30
Reach1	1.24*	10-yr	55.10	67.14	68.10		68.12	0.002265	1.14	48.18	92.59	0.28
Reach1	1.24*	100-yr	99.50	67.14	68.37		68.40	0.002034	1.32	75.50	108.17	0.28
Reach1	1.24*	Ult2 100yr	99.54	67.14	68.37		68.40	0.002088	1.33	74.85	107.91	0.28
Reach1	1.21	10-yr	55.07	66.73	67.79		67.81	0.001652	1.05	52.63	91.17	0.24
Reach1	1.21	100-yr	99.15	66.73	68.09		68.12	0.001439	1.21	81.63	101.94	0.24
Reach1	1.21	Ult2 100yr	99.28	66.73	68.09		68.11	0.001473	1.22	81.09	101.85	0.24
Reach1	1.175*	10-yr	75.20	66.06	67.33		67.36	0.002952	1.45	52.04	85.83	0.33
Reach1	1.175*	100-yr	136.49	66.06	67.66		67.70	0.002694	1.60	85.55	113.57	0.32
Reach1	1.175*	Ult2 100yr	136.46	66.06	67.66		67.70	0.002667	1.59	85.86	113.81	0.32
Reach1	1.14	10-yr	81.13	65.39	66.77		66.80	0.002694	1.55	52.24	72.17	0.32
Reach1	1.14	100-yr	144.16	65.39	67.11		67.16	0.002835	1.76	81.98	97.68	0.34
Reach1	1.14	Ult2 100yr	143.79	65.39	67.15		67.19	0.002485	1.67	85.87	99.76	0.32
Reach1	1.13		Lat Struct									
Reach1	1.122*	10-yr	80.21	65.20	66.50		66.54	0.003058	1.61	49.76	71.52	0.34
Reach1	1.122*	100-yr	133.79	65.20	66.87		66.92	0.002558	1.65	81.24	98.89	0.32
Reach1	1.122*	Ult2 100yr	144.31	65.20	66.91		66.95	0.002729	1.71	84.28	101.61	0.33
Reach1	1.11	10-yr	81.07	64.81	66.39		66.40	0.000899	0.91	88.65	119.07	0.19
Reach1	1.11	100-yr	133.65	64.81	66.75		66.76	0.000756	0.98	135.95	143.93	0.18
Reach1	1.11	Ult2 100yr	145.13	64.81	66.81		66.83	0.000756	1.00	145.76	151.30	0.18
Reach1	1.104*	10-yr	81.95	65.01	66.19		66.24	0.004745	1.83	44.70	73.65	0.41
Reach1	1.104*	100-yr	135.08	65.01	66.47		66.53	0.004371	1.98	68.05	93.60	0.41
Reach1	1.104*	Ult2 100yr	145.79	65.01	66.67		66.71	0.002614	1.65	88.12	108.32	0.32
Reach1	1.068*	10-yr	82.80	64.62	65.91		65.93	0.002546	1.26	65.74	119.28	0.30
Reach1	1.068*	100-yr	135.95	64.62	66.23		66.25	0.001679	1.27	107.25	141.03	0.26
Reach1	1.068*	Ult2 100yr	146.64	64.62	66.60		66.61	0.000598	0.89	164.90	170.15	0.16
Reach1	1.05	10-yr	65.01	64.43	65.37		65.43	0.009890	1.88	34.59	95.26	0.55
Reach1	1.05	100-yr	137.97	64.43	65.58		65.66	0.011323	2.33	59.14	130.37	0.61
Reach1	1.05	Ult2 100yr	68.43	64.43	65.46		65.50	0.006216	1.54	44.53	117.13	0.44
Reach1	0.99	10-yr	83.83	58.90	60.19		60.31	0.004733	2.72	30.87	27.76	0.45
Reach1	0.99	100-yr	137.93	58.90	61.73		61.77	0.000780	1.71	80.46	36.95	0.20
Reach1	0.99	Ult2 100yr	106.52	58.90	61.62		61.65	0.000533	1.39	76.72	36.34	0.17
Reach1	0.97	10-yr	83.83	58.30	60.14		60.19	0.001370	1.79	46.89	31.03	0.26
Reach1	0.97	100-yr	137.93	58.30	61.71		61.74	0.000385	1.34	103.23	40.49	0.15
Reach1	0.97	Ult2 100yr	107.86	58.30	61.62		61.63	0.000263	1.09	99.28	39.90	0.12
Reach1	.94	10-yr	83.82	57.60	60.12		60.14	0.000440	1.21	69.35	35.10	0.15
Reach1	.94	100-yr	137.91	57.60	61.69		61.70	0.000194	1.05	131.77	44.51	0.11
Reach1	.94	Ult2 100yr	111.85	57.60	61.59		61.60	0.000139	0.88	127.68	43.96	0.09
Reach1	0.85	10-yr	60.46	56.40	59.92		59.96	0.001195	1.49	40.59	13.04	0.15
Reach1	0.85	100-yr	113.36	56.40	60.93		61.00	0.002219	2.05	55.32	17.97	0.21
Reach1	0.85	Ult2 100yr	123.48	56.40	61.37		61.43	0.001820	1.95	63.43	19.19	0.19
Reach1	0.83	10-yr	60.55	56.30	59.93		59.94	0.000059	0.54	112.24	41.80	0.06
Reach1	0.83	100-yr	113.40	56.30	60.88		60.88	0.000085	0.73	154.38	47.47	0.07
Reach1	0.83	Ult2 100yr	126.65	56.30	61.39		61.40	0.000069	0.71	179.64	50.56	0.07
Reach1	.78	10-yr	85.35	55.90	59.91		59.91	0.000080	0.67	128.23	44.03	0.07
Reach1	.78	100-yr	165.60	55.90	60.83		60.84	0.000135	0.97	171.49	49.57	0.09
Reach1	.78	Ult2 100yr	193.81	55.90	61.35		61.36	0.000124	0.98	197.97	52.68	0.09
Reach1	0.75	10-yr	85.18	55.60	59.90		59.90	0.000061	0.60	141.29	45.78	0.06
Reach1	0.75	100-yr	167.39	55.60	60.81		60.83	0.000110	0.90	185.80	51.28	0.08
Reach1	0.75	Ult2 100yr	198.55	55.60	61.33		61.35	0.000106	0.93	213.21	283.96	0.08
Reach1	0.63		Lat Struct									
Reach1	0.62	10-yr	136.53	54.90	59.85		59.87	0.000465	1.24	111.99	219.81	0.15
Reach1	0.62	100-yr	207.06	54.90	60.77		60.80	0.000297	1.25	167.28	700.93	0.13
Reach1	0.62	Ult2 100yr	284.77	54.90	61.30		61.31	0.000360	1.03	271.46	720.26	0.10

HEC-RAS River: River Reach: Reach1 Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach1	0 61		Culvert									
Reach1	.60	10-yr	137.52	54.90	59.27		59.32	0.001268	1 70	80.66	426.24	0.24
Reach1	.60	100-yr	206.15	54.90	59.51		59.59	0.001806	2.21	93.37	500.72	0.30
Reach1	.60	Ult2 100yr	281.98	54.70	59.00		59.05	0.001412	1.80	157 05	118.20	0.19
Reach1	.55	10-yr	134.72	55.00	58.88		58.90	0.001825	1.40	138 64	914 58	0.26
Reach1	.55	100-yr	200 91	55.00	58.98		59.01	0.002325	1.71	185 93	1219 64	0.30
Reach1	.55	Ult2 100yr	280.28	54.45	58.69		58.72	0.001040	1.32	217 83	121 35	0.16
Reach1	.50	10-yr	132 16	55.00	58.14		58.21	0.003467	2.24	79 30	379 99	0.38
Reach1	.50	100-yr	175 76	55.00	58.63		58.65	0.000595	1.18	225.24	1427 73	0.17
Reach1	.50	Ult2 100yr	286.69	54.20	58.40		58.43	0.001180	1.35	214.03	112 99	0.17
Reach1	.44	10-yr	127.85	54 50	58.05		58.05	0.000136	0.56	399.82	1827.62	0 08
Reach1	.44	100-yr	161.54	54 50	58.55		58.55	0.000028	0.31	811.55	2202.91	0 04
Reach1	.44	Ult2 100yr	294.69	53.80	58.09		58.11	0.000841	1.20	250.05	137.64	0 14
Reach1	.36	10-yr	131.06	54.50	57 88		57.91	0.002614	1.68	99.24	516.02	0 32
Reach1	.36	100-yr	174.65	54.50	58.00		58.04	0.002467	1.78	121.55	567 30	0 32
Reach1	.36	Ult2 100yr	303.52	53.57	57 69		57.73	0.001013	1.59	193.92	74.16	0 16
Reach1	.15	10-yr	138.02	53.71	55 73		55 76	0 001502	1.59	128.38	539.40	0.26
Reach1	.15	100-yr	91.60	53.71	56.40		56 40	0 000036	0.33	465.55	1582.78	0.04
Reach1	.15	Ult2 100yr	42.70	52.59	56.40		56 40	0.000020	0.20	217.91	102.25	0 02
Reach1	0.00	10-yr	137.80	52.67	54 73	54 43	54 75	0 001530	1.55	142.35	393.64	0 26
Reach1	0.00	100-yr	43.97	52.67	56.39	53 70	56 39	0.000000	0.03	2299.93	1982.75	0 00
Reach1	0.00	Ult2 100yr	26.40	52 00	56.39	52 37	56.39	0.000001	0.08	390.85	1982.75	0 01

RAS Model Data

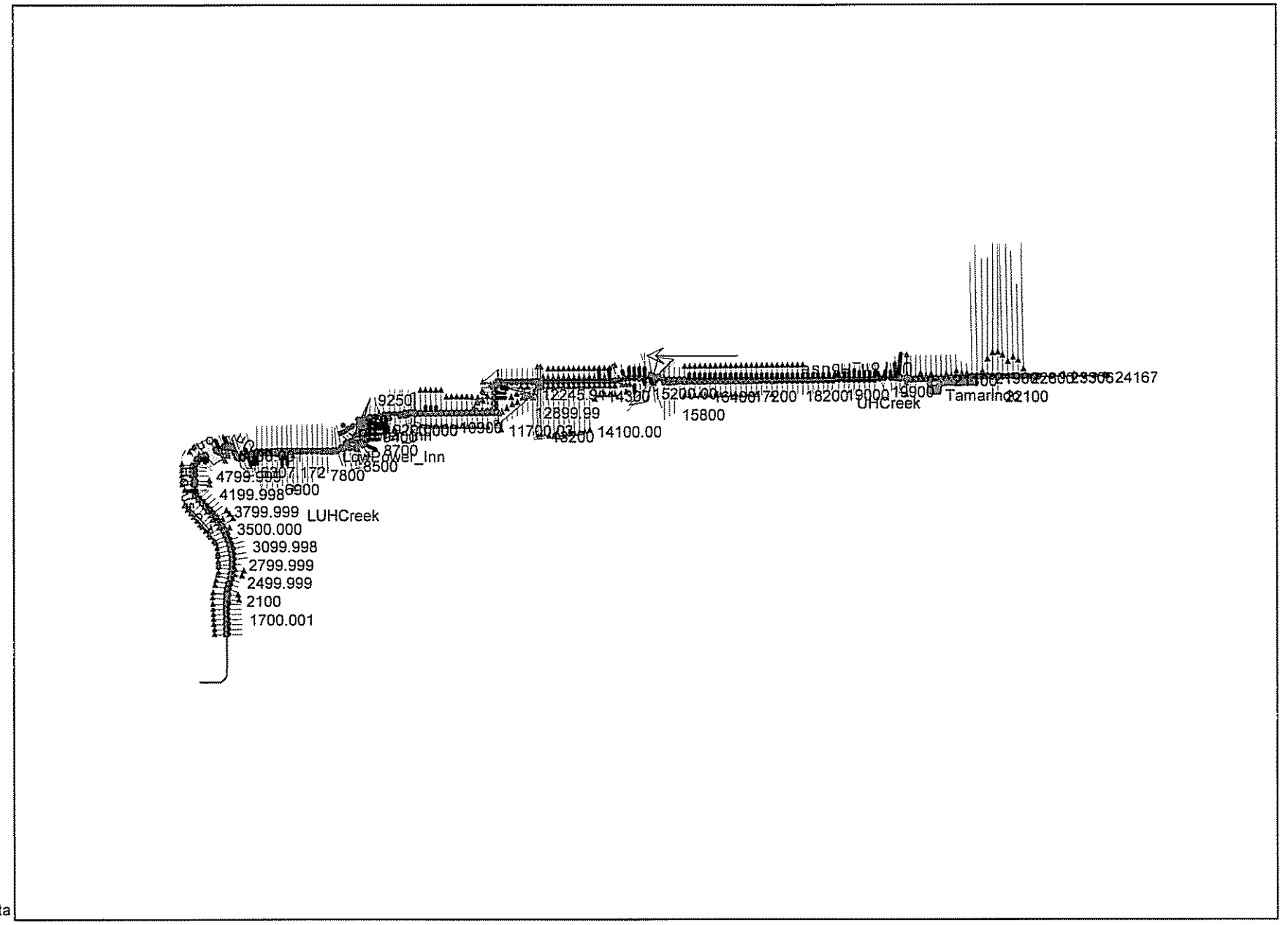
For

Unionhouse Creek – Pre Fvcp

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table



Partial GIS data

RAS Input Hy[illegible]raph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
Power Inn	Power In	12		Flow Hydrograph	hcalcpre.dss	
Union House	UHCreek	24167		Flow Hydrograph	hcalcpre.dss	/UHPRE/C-UH1E/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	23306	23095	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	[illegible]/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	22800.00	20318.09	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-1A2/FLOW/31DEC1999/1MIN/100YR-24HR/
Union_House	UHCreek	20600.00		Lateral Inflow Hydrograph	Trib.dss	/UNION TRIBUTARY/0.00/FLOW/01JAN2000/10MIN/100-YR EX/
Union House	UHCreek	20167.24	15407.07	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-2/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	19000	15000	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-3/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	15000	10999.99	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-4/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	14900	11999.99	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-5/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	13999.99	11999.99	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-6/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	11200	9002.068	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-8/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	20021.42	19000	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/TAM1/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	10999.99	9002.068	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-7/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	9002.068	8400.000	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-9/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	LUHCreek	6000.001	5000	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-10/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	LUHCreek	1400.001		Rating Curve	#N/A	#N/A

HEC-RAS Plan: UHPre Profile: Max WS

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	24167	150.65	42.00	44.91	44.86	45 87	0.020068	7.87	19.15	9.48	0.98
UHCreek	24130	152 13	41.00	45.13		45.22	0.000941	2 52	60 45	18.95	0.25
UHCreek	23930	150.73	40 30	44.91		45.02	0.001072	2.70	55.76	15 78	0 25
UHCreek	23729	150.62	39.90	44.77		44 85	0.000691	2.26	66.66	19.64	0.22
UHCreek	23518	150 13	39.70	44.66		44.72	0.000552	2 05	73 17	21 53	0.20
UHCreek	23306	150.10	39.20	44.61		44.64	0.000219	1.37	109.20	30.83	0 13
UHCreek	23095	233.11	39.00	44.24		44.41	0 001450	3.32	70.13	20.06	0.31
UHCreek	22900	232 73	38.90	43.76		43.95	0.002112	3 43	67 83	20.61	0.33
UHCreek	22800.00	232.69	38.90	43.54		43.73	0.002189	3.49	66.60	20.10	0 34
UHCreek	22700	240.13	38.78	43.32		43.50	0 002132	3 48	69.08	20.66	0.33
UHCreek	22600	247.56	38.60	43.12		43.29	0.001903	3.32	74 66	22 41	0.32
UHCreek	22500	254.97	38.23	42.92		43.09	0.001841	3.32	76.89	22.31	0 31
UHCreek	22400.00	262.38	37.83	42.71		42.89	0 001937	3.46	75.83	20.82	0.32
UHCreek	22300.00	269.79	37 58	42 47		42.68	0.002174	3.63	74.40	20 94	0.34
UHCreek	22199.99	277.25	37.53	42.18		42.42	0.002724	3.93	70.63	21.40	0 38
UHCreek	22100	284 67	37.50	41.90		42.14	0 002700	3 87	73 51	23.12	0.38
UHCreek	22000.00	292.07	37.50	41 72		41.90	0.001906	3.33	87.71	27 28	0 33
UHCreek	21900	303.17	37.44	41.57		41.71	0 001577	3.05	99.49	31.23	0.30
UHCreek	21800	310.54	37.25	41.41		41.55	0.001496	3.00	103 40	31 87	0.29
UHCreek	21700	317.89	36.98	41.23		41 39	0.001622	3.15	100.90	30.53	0 31
UHCreek	21600	164 01	36.49	40.98		41 05	0 000789	2.14	76.79	23.17	0.21
UHCreek	21599	Lat Struct									
UHCreek	21500	162.00	36.20	40.94		40.98	0.000554	1.72	94.61	35.00	0 18
UHCreek	21400.00	143.60	36.20	40.92		40.95	0 000373	1.41	104.05	40.39	0.15
UHCreek	21300.00	147 14	36.17	40.83		40.89	0.000760	2.06	71 37	22 06	0.20
UHCreek	21200	150.55	35.87	40.75		40.81	0.000713	2.03	74.14	22.25	0 20
UHCreek	21100	153 98	35.61	40.68		40.74	0 000678	2 01	77 25	25.61	0.19
UHCreek	21000	157.42	35.49	40 61		40.67	0.000686	2.02	78.09	23 15	0 19
UHCreek	20899.99	160.76	35.29	40.54		40.60	0.000689	2.02	79.73	23.92	0.19
UHCreek	20800	164 18	34.90	40.47		40.53	0.000658	2.02	81.29	23.04	0.19
UHCreek	20790	Lat Struct									
UHCreek	20700	191.62	34.51	40.35		40.43	0.000852	2 34	81.89	22.09	0.21
UHCreek	20600.00	195.01	34.01	40 29		40.36	0.000584	2.05	95.04	23.25	0 18
UHCreek	20500.00	344.94	33.51	39.95		40 13	0.001463	3.35	102.88	23.74	0.28
UHCreek	20400	348 19	33.20	39.90		40.01	0.000834	2.69	129.34	27.96	0.22
UHCreek	20334.09	350.46	32.94	39 91		39.97	0.000361	1.90	184.09	37.60	0.15
UHCreek	20318.09	351.01	31.87	39.84		39 96	0 000360	2.81	124.84	38.23	0.18
UHCreek	20261.68	Culvert									
UHCreek	20200.55	350.23	31 62	39.25		39.38	0.000439	2.95	118.80	42 07	0 19
UHCreek	20167.24	350.51	31.51	39.32		39 36	0.000264	1.70	206.52	39.44	0.13
UHCreek	20110.75	352 48	31.34	39.30		39.35	0.000314	1.85	206.06	47.19	0.14
UHCreek	20021.42	355.28	30.85	39.25		39.32	0.000372	2.02	175.50	30.40	0 15
UHCreek	19900	362.88	30.45	39.10		39.23	0.001031	2.86	126.70	29.30	0 24
UHCreek	19800	369 41	30.20	39.01		39.13	0 000939	2 77	133.21	30.27	0.23
UHCreek	19697.19	375.88	29.91	38 91		39.03	0.000883	2.73	137.91	30.62	0.23
UHCreek	19600	382.28	29.79	38.82		38.94	0 000926	2.79	137.05	30.37	0.23
UHCreek	19500	388 63	29.77	38.71		38.84	0.001001	2 88	134.78	30.18	0.24
UHCreek	19400.00	395.24	29.75	38.59		38.73	0.001073	2.99	132.33	29.50	0 25
UHCreek	19300	401.87	29.73	38.45		38.61	0.001249	3.14	127.87	29.73	0 27
UHCreek	19200	408 32	29.71	38.32		38.48	0.001301	3.21	127 08	29.57	0.27
UHCreek	19109.82	414.32	29.70	38.19		38.35	0.001307	3.24	127.89	29.58	0 27
UHCreek	19000	421.58	29.70	38.08		38.22	0 001088	2.96	142.49	33.87	0.25
UHCreek	18900.00	428 56	29.94	38.05		38.13	0.000519	2 30	186.39	37.44	0.18
UHCreek	18800.00	435.55	29.80	37 99		38.08	0.000520	2.31	188.21	37.41	0 18
UHCreek	18700.00	442.54	29.66	37.94		38.02	0 000520	2 33	190.11	37.38	0.18
UHCreek	18600.00	449 52	29.53	37 88		37.97	0.000523	2.34	191 75	37 34	0.18
UHCreek	18500	456.47	29.39	37.83		37.91	0.000521	2.35	193.93	57.17	0 18
UHCreek	18399.99	463 42	29.25	37.77		37.86	0.000522	2 37	195 73	196.31	0.18
UHCreek	18300	470.23	29.11	37 72		37.80	0.000522	2.38	197.40	37.27	0 18
UHCreek	18200	477.13	28.97	37.66		37 75	0 000518	2.38	200.31	37.55	0.18
UHCreek	18100	483 80	28.82	37.61		37.70	0.000508	2 38	203.63	37.72	0.18
UHCreek	18000	490 38	28.68	37.56		37.64	0.000500	2.37	206.89	37 99	0.18
UHCreek	17900	497.18	28.53	37 50		37.59	0.000490	2.36	210.47	38.28	0 18
UHCreek	17800	503.61	28.38	37.46		37 54	0 000480	2.35	214.19	44.78	0.18
UHCreek	17700	509 94	28.24	37.41		37.49	0.000471	2.34	217 73	38 87	0.17
UHCreek	17600	516.17	28.09	37 36		37.44	0.000460	2.33	221.55	39.16	0 17
UHCreek	17500.00	522.31	27.95	37.31		37.40	0 000450	2 30	226.74	40.29	0.17
UHCreek	17400.00	528 35	27 80	37.27		37.35	0.000440	2.31	229.14	40.07	0 17
UHCreek	17300.00	534.29	27.66	37.22		37 30	0.000431	2.29	232.87	74.61	0 17
UHCreek	17200	540.16	27.51	37.18		37.26	0 000420	2.28	237.04	96.43	0.17
UHCreek	17099.99	545 98	27 37	37.14		37.22	0.000410	2.27	240.94	175.23	0.16
UHCreek	16999.99	552.42	27.22	37 10		37.17	0.000401	2.25	245.16	94.44	0 16
UHCreek	16900	558.15	27.07	37.06		37.13	0 000390	2.24	249.56	115.95	0.16
UHCreek	16800	563.00	26 93	37.02		37.09	0.000380	2.22	253.61	194 90	0.16

HEC-RAS Plan: UHPre Profile: Max WS (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	16700	567.58	26.76	36.98		37 05	0.000368	2.20	258.06	107.24	0.16
UHCreek	16600	572.88	26.64	36.94		37 02	0.000359	2 18	262 42	120 88	0.15
UHCreek	16500	578 11	26 49	36.91		36.98	0.000348	2.16	267.10	121 69	0 15
UHCreek	16400	582.28	26.35	36.87		36 94	0.000338	2.14	271.64	125.07	0.15
UHCreek	16300.00	587.34	26.20	36.84		36.91	0.000328	2 13	276 35	161.76	0.15
UHCreek	16200.00	592 34	26 06	36.81		36.87	0.000319	2.11	281.14	143 28	0.15
UHCreek	16100.00	597.27	25.91	36.77		36.84	0.000309	2.09	286.00	184.07	0.14
UHCreek	16000.00	602.13	25.76	36.74		36.81	0.000300	2.07	291 06	149 52	0 14
UHCreek	15900.00	606.91	25.62	36 71		36.78	0.000291	2.05	297.81	226.00	0.14
UHCreek	15800	612 67	25.47	36.69		36.75	0.000280	2 03	307 39	504 16	0.14
UHCreek	15699.99	618 39	25 33	36 66		36.72	0.000273	2.02	313.05	802.15	0.14
UHCreek	15599.99	624.16	25.18	36.63		36.70	0.000260	1.99	328.55	774.87	0.13
UHCreek	15460.35	632.55	24.98	36.61		36.66	0.000189	1 80	386 36	589 62	0.12
UHCreek	15422.51	634.78	24.92	36 61		36.66	0.000161	1.71	432.25	953.33	0.11
UHCreek	15407.07	635.61	24.90	36.48		36 68	0 000372	3 67	173.29	1135.93	0.19
UHCreek	15382.57	Culvert									
UHCreek	15363.52	635.36	24.50	33.28		33.64	0.000426	4.83	131.43	33.38	0.29
UHCreek	15335.44	636.25	24.48	33.49		33.61	0 000262	2 78	228 82	38.18	0.19
UHCreek	15300	637 30	24.46	33.48		33.60	0.000277	2.84	224.10	41.35	0.19
UHCreek	15200.00	640.28	24.40	33 43		33.57	0.000315	2.99	214.14	32.03	0.20
UHCreek	15099.99	643.25	24.33	33.38		33 54	0 000359	3 15	204.33	31.22	0.22
UHCreek	15000	646 22	24.27	33 33		33.50	0.000415	3.33	194.26	56.72	0.23
UHCreek	14900	647.50	24.19	33.28		33.46	0.000432	3.38	191.66	31.78	0.24
UHCreek	14798.67	651.59	24.07	33.26		33.41	0.000394	3.24	231 54	107 48	0.23
UHCreek	14699.99	655.57	23.99	33 19		33.37	0.000711	3.63	231.43	110.35	0.28
UHCreek	14600	659.56	23.97	33.15		33 31	0 000600	3.43	254.16	176.48	0.26
UHCreek	14500.00	663 58	23.94	33.14		33.25	0.000324	2 91	316.99	115 74	0.20
UHCreek	14400.00	667.60	23.92	33 10		33.21	0.000502	3.06	299.74	113.84	0.23
UHCreek	14300	671.61	23.89	33.05		33 17	0 000453	3 10	309.68	121.18	0.23
UHCreek	14200	675.62	23.87	33.00		33.13	0.000386	3.11	302.71	203.61	0.22
UHCreek	14100.00	679.62	23 84	32 92		33.09	0.000542	3.47	252.29	148.17	0.26
UHCreek	13999.99	683.62	23.81	32.85		33 03	0 000729	3.61	263.28	132.02	0.28
UHCreek	13900	694 81	23.79	32.82		32.96	0.000415	3.19	299.91	544.69	0.23
UHCreek	13800	705.98	23.76	32 75		32.91	0.000626	3.46	284.42	263.44	0.27
UHCreek	13699.99	717.14	23.74	32.75		32 84	0 000330	2.85	375.11	239 91	0.21
UHCreek	13600	728 31	23.71	32 71		32.81	0.000314	2.81	372.84	210.57	0.20
UHCreek	13500	739.36	23.68	32.65		32 78	0 000402	3.14	327.47	161.16	0.23
UHCreek	13400	750.45	23.66	32.59		32.74	0.000481	3.36	315 42	184.41	0 25
UHCreek	13300.00	761.50	23.63	32 56		32.68	0.000360	3.11	355.91	443.89	0.22
UHCreek	13200	772.39	23.61	32.55		32 64	0 000222	2 68	422.55	237.76	0.18
UHCreek	13168.90	775 83	23.60	32.52		32.64	0.000479	3.15	353 92	229.03	0 25
UHCreek	13152.90	777.16	23.59	32.51		32 64	0.000372	3.28	354.94	250.03	0.24
UHCreek	13124.50	Culvert									
UHCreek	13093.93	777 00	23.41	32 49		32.60	0.000332	3.17	374.59	245.40	0 22
UHCreek	13062.00	780.09	23.28	32.50		32 58	0.000257	2.73	423.86	227.47	0.19
UHCreek	13000	787.05	23.24	32.51		32.56	0 000172	2 24	662 91	639.09	0.15
UHCreek	12899.99	797 97	23.18	32 44		32.55	0.000310	3.01	372.85	564.01	0 21
UHCreek	12799.99	808.92	23.11	32 46		32.51	0.000166	2.23	704.42	357.87	0.15
UHCreek	12700.00	819.85	23.05	32.40		32.51	0 000283	2 92	488 63	337.35	0.20
UHCreek	12600.00	830 82	22 99	32 37		32.48	0.000289	2.97	488.29	343.19	0.20
UHCreek	12496.47	842.18	22.92	32.36		32 44	0 000233	2.71	545.39	321.58	0.18
UHCreek	12399.79	852.78	22.86	32.35		32.41	0.000193	2 50	657 99	369.03	0.17
UHCreek	12349.00	858 36	22 82	32.35		32.40	0.000134	2.12	800.43	452 30	0 14
UHCreek	12327.31	860.79	22.80	32 36		32.39	0.000075	1.71	1070.75	632.39	0.11
UHCreek	12284.62	Culvert									
UHCreek	12245.91	860 76	22.60	31.95		32.27	0.000401	4.89	296.34	366.56	0 28
UHCreek	12213.87	864.24	22 59	32 00		32.18	0.000507	3.67	347.89	327.65	0.26
UHCreek	12199.05	865.86	22.59	31.98		32 19	0 000573	3 81	324 31	329.38	0.27
UHCreek	12099.99	876.65	22 56	31.93		32.12	0.000522	3.78	330.25	324.96	0 26
UHCreek	11999.99	887.54	22.51	31.79		32 07	0.000679	4.29	242.33	250.28	0.30
UHCreek	11896.30	888.79	22.46	31.79		32.00	0.000560	3 90	326 57	288.33	0.27
UHCreek	11800.00	889 93	22 38	31.64		31.94	0.000688	4.40	213.94	162 58	0 30
UHCreek	11700.03	891.06	22.32	31.55		31 87	0.000751	4.51	199.31	107.63	0.31
UHCreek	11600.17	892.18	22.27	31.48		31.79	0.000778	4.52	211 41	95 40	0 32
UHCreek	11500.67	893.42	22.22	31.41		31.72	0.000763	4.51	214.25	39.22	0.31
UHCreek	11399.70	894.53	22.17	31.31		31.64	0.000803	4 62	200 56	136 92	0.32
UHCreek	11300	895.59	22.12	31.24		31.56	0.000777	4.54	218.32	230 09	0 32
UHCreek	11200	896.35	22 07	31 13		31.47	0.000827	4.67	195.68	37.33	0.33
UHCreek	11099.99	900.09	22.02	31.07		31.39	0.000809	4 62	211 55	40 75	0.32
UHCreek	10999.99	903.83	21.97	30.95		31.30	0.000873	4.78	189 09	243 61	0 34
UHCreek	10900	908 71	21 92	30.86		31.21	0.000878	4.78	198.32	37.48	0 34
UHCreek	10800.00	913.59	21.87	30.78		31.12	0.000863	4.74	210.42	39.19	0.33
UHCreek	10700.00	918.47	21.82	30.65		31.03	0.000951	4 95	185 73	154.19	0.35
UHCreek	10600	923 35	21 77	30 53		30.92	0.000986	5.02	183.83	122.60	0 36

HEC-RAS Plan: UHPre Profile: Max WS (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	10500	928.24	21 71	30.42		30.82	0.001020	5.09	182 28	365.86	0.36
UHCreek	10399.99	933.27	21.66	30.30		30.71	0.001060	5.17	180.44	103.11	0 37
UHCreek	10299.99	938.12	21.61	30.17		30 60	0 001104	5.26	178.51	135.69	0.38
UHCreek	10200	942.79	21 56	30.06		30.49	0.001115	5.27	191 30	114 89	0.38
UHCreek	10176.90	943.88	21.55	30.16		30 42	0.000655	4.26	353.54	325.99	0 29
UHCreek	10145.31	Culvert									
UHCreek	10110.68	943.24	21.35	29 74		30.11	0.001034	4.92	211.06	58 84	0 33
UHCreek	10067.70	945.35	21.34	29.81		30 06	0.000858	4.16	339.70	226.19	0.31
UHCreek	10000	948.41	21 30	29 86		29.97	0.000455	2.73	499.88	269 05	0.23
UHCreek	9899.999	952.94	22.14	29.82		29 93	0 000423	2.88	537.83	277.78	0.22
UHCreek	9799.999	957 34	21.77	29.74		29.89	0.000485	3 15	375.19	203.17	0.24
UHCreek	9700.001	961.87	21.40	29.78		29.83	0.000186	1.95	683.07	272 31	0.15
UHCreek	9600.000	966.38	21.09	29.69		29.82	0.000452	3.06	472.66	260.39	0 23
UHCreek	9500.000	970.88	21.06	29.67		29 78	0 000399	3.06	550.74	213.69	0.22
UHCreek	9400	975.27	21 03	29.63		29.73	0.000266	2.62	454.37	132 76	0.18
UHCreek	9300	979.77	21.00	29.60		29.70	0.000273	2.63	451.91	132.16	0 18
UHCreek	9250	Lat Struct									
UHCreek	9200.000	980.92	20.97	29.61		29.67	0.000174	2.18	531 01	135 31	0.15
UHCreek	9150	Lat Struct									
UHCreek	9100	977 73	20.90	29.51		29 66	0 000449	3.34	369.17	92.74	0.23
UHCreek	9050	Lat Struct									
UHCreek	9002.068	981.93	20.83	29.47		29 61	0.000452	3.34	370.76	94.92	0 23
UHCreek	8950	Lat Struct									
UHCreek	8901.280	993.69	20.75	29.37		29.59	0.000223	3.89	332.53	85.19	0 27
UHCreek	8799.999	1005.20	20.68	29.34		29 56	0 000230	3.96	331.86	84.52	0.27
UHCreek	8700	1015.32	20.60	29 26		29.54	0.000273	4.29	277 79	84 01	0.29
UHCreek	8661.555	1021.83	20.55	29.35		29.51	0.000107	3.18	321.15	51.62	0 20
UHCreek	8593.049	Culvert									
UHCreek	8541.392	980.30	20.57	28 11		28.34	0.000765	3.79	268.31	77 58	0 27
UHCreek	8500	968.64	20.55	27.99		28 31	0.001484	4.82	273.55	116.92	0.35
UHCreek	8400.000	948 89	20.49	27.79		28.14	0.001621	4.96	247 51	98.24	0.36
UHCreek	8300	926.50	20.43	27 66		27.97	0.001496	4.73	269.76	127.81	0 35
LUHCreek	8200.000	931 81	20.33	27.66		27.76	0.000638	3 14	657.56	416.91	0.23
LUHCreek	8100.001	924.84	20 16	27 62		27.69	0.000484	2.75	787 66	486 69	0.20
LUHCreek	8000.001	920.36	20.07	27.58		27.63	0.000420	2.54	799.68	373.03	0 18
LUHCreek	7900.001	918.19	20.03	27.57		27.59	0.000205	1 79	1072.06	470.87	0.13
LUHCreek	7800	918.18	19.99	27 56		27.57	0.000028	0.66	2222.41	653 99	0.05
LUHCreek	7700.001	918.16	19.94	27.56		27 57	0.000030	0.69	2401.96	768.02	0 05
LUHCreek	7600.000	918.12	19.90	27.56		27 56	0.000054	0 94	2502.27	1042.17	0.07
LUHCreek	7500.000	915.49	19.86	27.53		27.56	0.000235	1 95	1233.90	870 74	0.14
LUHCreek	7400.000	913.86	19.81	27.50		27.54	0.000277	2.13	1145.29	914.50	0 15
LUHCreek	7300.000	911 60	19.77	27.47		27.51	0.000359	2 39	911.00	662.94	0.17
LUHCreek	7199.999	911.58	19.71	27.45		27.48	0.000137	1.58	1131.84	667 26	0 11
LUHCreek	7100.000	910.88	19.63	27.44		27 46	0.000118	1.48	1112.55	723.38	0 11
LUHCreek	6999.999	910.24	19 55	27.42		27.45	0.000120	1 51	1148.80	821 36	0.11
LUHCreek	6900	909.67	19.47	27.40		27.44	0.000158	1.74	877.46	845.71	0 12
LUHCreek	6800.000	909.63	19.39	27.39		27 43	0.000147	1.69	987.80	1052.47	0.12
LUHCreek	6700.000	909.19	19 31	27.37		27.41	0.000162	1 78	769.85	578.12	0.12
LUHCreek	6600	909.18	19.23	27 36		27.39	0.000123	1.56	1156.67	1008.74	0 11
LUHCreek	6500.000	909.17	19.15	27.35		27 38	0.000111	1 48	1206.98	812.23	0.10
LUHCreek	6407.855	909.16	19 07	27 34		27.37	0.000148	1.68	948.68	527 34	0.12
LUHCreek	6307.172	908.95	18.99	27.26		27.36	0.000397	2.61	396.99	147.30	0 19
LUHCreek	6225.466	908.76	18.92	27.19		27.33	0.000562	3.08	396.49	299.15	0.22
LUHCreek	6189.529	908.75	18 90	27.22		27.30	0.000287	2.40	546 07	548 23	0.16
LUHCreek	6155.953	Culvert									
LUHCreek	6121.657	907 00	19.50	26.63		26.84	0.000405	3 69	245 83	274.62	0.24
LUHCreek	6089.903	907.22	19.29	26.71		26.81	0.000506	2.98	539.48	394 13	0 24
LUHCreek	6000.001	907.36	19.23	26.72		26 74	0.000127	1.76	920.13	400.85	0.13
LUHCreek	5885.397	908.83	19 10	26.53		26.81	0.000684	4.29	262 52	185 16	0.29
LUHCreek	5850.958	Culvert									
LUHCreek	5826.177	908.04	19.50	26.04		26 25	0.000643	3 99	351.57	217.45	0.29
LUHCreek	5779.689	908.78	19 44	26.01		26.20	0.000540	3.65	278 75	173 04	0.27
LUHCreek	5699.999	910.23	19.25	26.08		26.15	0.000420	2.42	487.23	246.48	0 21
LUHCreek	5600.000	911.42	19.03	25.69		26 10	0.002324	5.30	193.92	210.67	0.48
LUHCreek	5556.143	912 40	18 93	25.85		26.00	0.000490	3.22	300 33	175 47	0.25
LUHCreek	5530.179	912.37	18.90	25.41		26.04	0.001359	6.37	143.29	45.56	0 44
LUHCreek	5458.309	Culvert									
LUHCreek	5304.188	911 07	17 19	25.04		25.48	0.000741	5.28	172 45	179.48	0.33
LUHCreek	5252.774	912.12	17.18	25.10		25.43	0.001174	4.70	211.71	117.99	0 36
LUHCreek	5200.000	912.63	17.17	24.94		25.36	0.001422	5.17	177.11	177.31	0.39
LUHCreek	5100.001	914 13	17.15	24.83		25.21	0.001454	5 00	187 81	150.47	0.39
LUHCreek	5000	915.68	17 10	24.67		25.07	0.001404	5.09	184.39	42 10	0 39
LUHCreek	4899.998	914.65	16.93	24.39		24 91	0.001838	5.78	158.17	29.13	0 44
LUHCreek	4799.999	915 28	16.71	24.55		24.76	0.000601	3 76	262 65	54.01	0.27

HEC-RAS Plan: UHPre Profile: Max WS (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
LUHCreek	4696.301	914.66	16.50	24.38		24.71	0.000555	4.61	198 53	189.94	0.29
LUHCreek	4661.887	Culvert									
LUHCreek	4618.869	912.88	16.50	24.06		24 42	0 000313	4.82	190.61	222.78	0 31
LUHCreek	4500.000	912 88	16.38	24.03		24.37	0.000541	4 64	197.60	59.90	0.35
LUHCreek	4400.001	913.13	16.27	24 05		24.32	0.000438	4.24	227.56	133 45	0.33
LUHCreek	4299.999	912.36	16.17	23.87		24 27	0 000667	5.03	181.94	177.73	0 39
LUHCreek	4199.998	912 35	16.06	23.82		24.20	0.000647	4 96	183 97	108.65	0.39
LUHCreek	4099.999	912.10	15.96	23.76		24.14	0.000597	4.91	185.64	101.65	0 39
LUHCreek	4000.000	912 10	15.85	23.81		24.08	0 000506	4 18	218.34	119.98	0.35
LUHCreek	3899.999	911.85	15.75	23.72		24.03	0.000524	4.50	203.51	82 05	0.36
LUHCreek	3799.999	911.60	15.64	23.66		23 98	0 000434	4.54	203.30	53.95	0 37
LUHCreek	3700	911 59	15.54	23.63		23.94	0 000506	4.47	204.42	171.87	0.34
LUHCreek	3600	911.35	15.43	23.55		23.88	0.000538	4.64	196 35	128 49	0.35
LUHCreek	3500.000	911.11	15.33	23.52		23 83	0.000516	4.48	203.52	55.96	0 34
LUHCreek	3399.999	911 11	15.23	23.51		23.78	0 000558	4 17	218.75	51.51	0.36
LUHCreek	3299.999	910.88	15.12	23.44		23.72	0.000561	4.24	214.58	48 94	0.36
LUHCreek	3200.000	910.88	15.02	23.45		23 67	0.000387	3.80	239.89	48.83	0 30
LUHCreek	3099.998	910.87	14.91	23.43		23.64	0.000363	3 63	251.04	52.39	0.29
LUHCreek	3000	910.64	14.81	23.35		23.60	0.000458	3.98	228.62	49 15	0.33
LUHCreek	2900.000	910 64	14.70	23.32		23 55	0 000410	3 89	234.51	63.00	0 31
LUHCreek	2799.999	910.41	14.60	23.24		23.51	0.000414	4 16	223.37	74.34	0.31
LUHCreek	2699.999	910.60	14.49	23.29		23 46	0.000286	3.38	390.31	247.92	0 26
LUHCreek	2599.999	910 40	14.39	23.24		23.43	0.000340	3 46	265 52	151.41	0.28
LUHCreek	2499.999	910.40	14.28	23.20		23 40	0.000323	3.56	257.89	82.37	0 28
LUHCreek	2399.999	910 40	14.18	23.16		23.36	0.000363	3 62	251.53	52.44	0.29
LUHCreek	2300.000	910.23	14.07	23 11		23.33	0.000348	3.72	244 83	52 97	0.29
LUHCreek	2200	910.38	13.97	23.12		23 30	0.000273	3.37	288.15	167.24	0 26
LUHCreek	2100	910 23	13.87	23.06		23.27	0.000293	3 67	248 34	227.36	0.27
LUHCreek	1999.999	910.35	13.76	23 10		23.24	0.000233	3.04	320.32	165 53	0.24
LUHCreek	1900.000	910.34	13.66	23.04		23 22	0 000286	3.49	316.58	132.86	0 26
LUHCreek	1800.000	910 32	13.55	23.04		23.19	0 000195	3 22	385.09	153.00	0.22
LUHCreek	1700.001	910.31	13.45	23.03		23.17	0.000197	3.07	410.12	188 12	0.22
LUHCreek	1600.001	910.30	13.34	23.00		23 15	0.000202	3.17	360.64	146.12	0.22
LUHCreek	1500.001	910.30	13.24	22.96		23.13	0.000232	3 32	316.37	143.22	0.24
LUHCreek	1400.001	910.29	13.13	22 94	17.74	23.10	0.000253	3.25	292 99	114 51	0.25

RAS Model Data

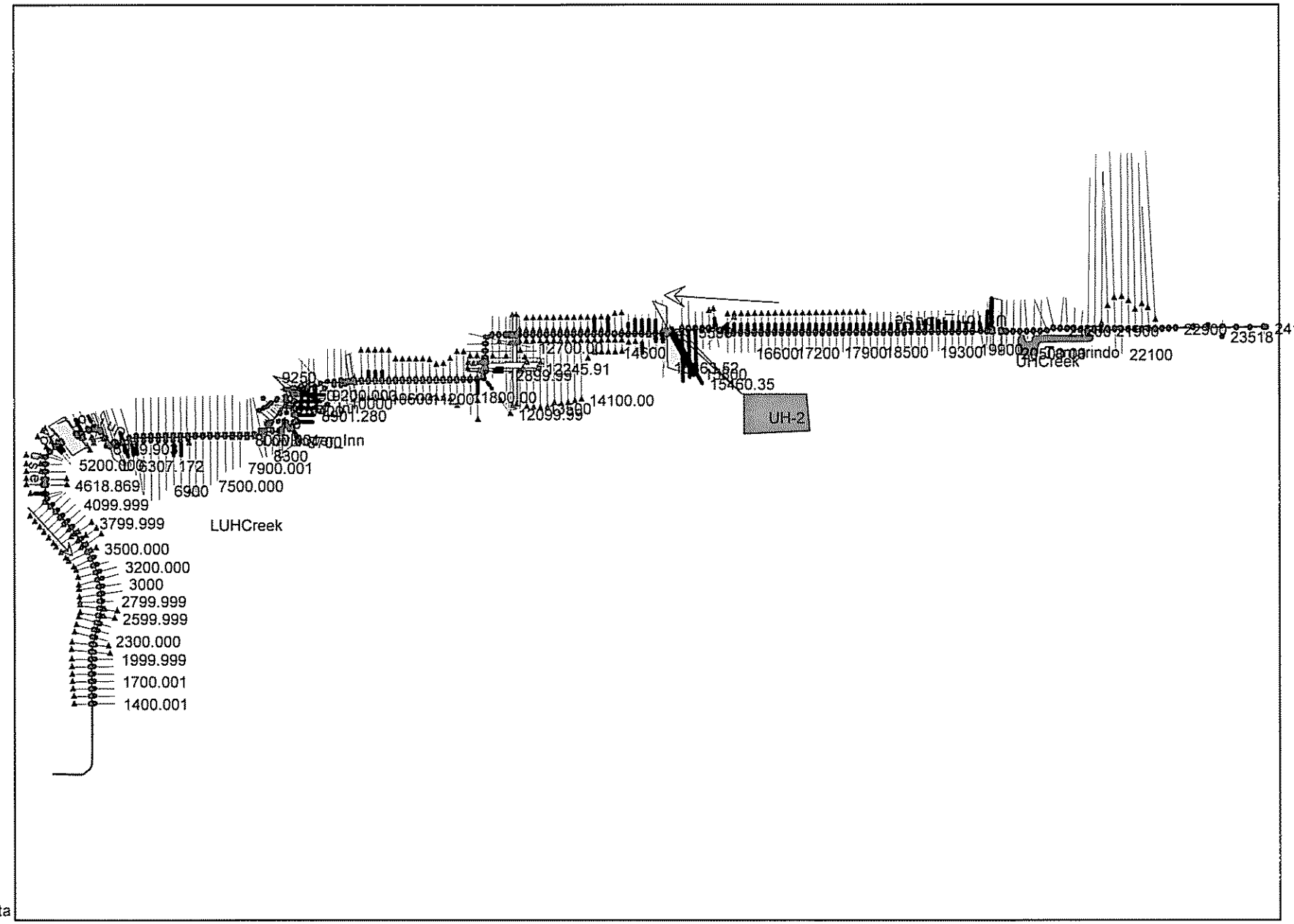
For

Unionhouse Creek – Post Fvcp

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table



Partial GIS data

RAS Input H ɔgraph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
Power Inn	Power In	12		Flow Hydrograph	hcalcpost.dss	
Union House	UHCreek	24167		Flow Hydrograph	hcalcpost.dss	/UHPOST/C-UH1E/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	24130	23930	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-1C/FLOW/31DEC1999/1MIN/100YR-24HR/
Union_House	UHCreek	22900	22800.00	Uniform Lateral Inflow Hydrograph	Trib.dss	/UNION TRIBUTARY/1536/FLOW/01JAN2000/10MIN/100-YEAR/
Union House	UHCreek	22800.00	20318.09	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-1A/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	20400		Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/TAM1/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	20200.55	15422.51	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-3/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	20167.24	17700	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-2A/FLOW/01JAN2000/1MIN/100YR-24HR/
Union House	UHCreek	17700	16200.00	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH2BHI/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	15335.44	14900	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-4/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	15300	12349.00	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-5/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	14699.99	11300	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-6/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	12327.31	9200.000	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-7/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	UHCreek	11200	8661.555	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-8/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	LUHCreek	8100.001	6225.466	Uniform Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-9/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	LUHCreek	6000.001		Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH-10/FLOW/31DEC1999/1MIN/100YR-24HR/
Union House	LUHCreek	1400.001		Rating Curve	hcalcpost.dss	
		UH-2		Lateral Inflow Hydrograph	hcalcpost.dss	/UHPOST/UH2-LO/FLOW/31DEC1999/1MIN/100YR-24HR/

HEC-RAS Profile: Max WS

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	24167	10-year	100.18	42.00	44.67		45.21	0.012401	5.93	16.90	9.01	0.76
UHCreek	24167	UH-2	127.07	42.00	46.05		46.31	0.003857	4.06	31.27	11.70	0.44
UHCreek	24130	10-year	102.14	41.00	44.77		44.83	0.000587	1.90	53.82	18.25	0.19
UHCreek	24130	UH-2	145.19	41.00	46.16		46.21	0.000380	1.79	81.06	20.97	0.16
UHCreek	23930	10-year	149.63	40.30	44.37		44.52	0.001651	3.16	47.41	14.96	0.31
UHCreek	23930	UH-2	199.42	40.30	45.87		45.99	0.000947	2.78	71.62	17.24	0.24
UHCreek	23729	10-year	143.15	39.90	44.14		44.24	0.001071	2.62	54.69	18.11	0.27
UHCreek	23729	UH-2	195.20	39.90	45.77		45.84	0.000557	2.23	87.40	22.04	0.20
UHCreek	23518	10-year	128.23	39.70	43.97		44.04	0.000724	2.17	58.98	19.65	0.22
UHCreek	23518	UH-2	191.17	39.70	45.68		45.74	0.000420	1.98	96.73	24.34	0.17
UHCreek	23306	10-year	125.61	39.20	43.91		43.94	0.000272	1.42	88.45	28.08	0.14
UHCreek	23306	UH-2	189.19	39.20	45.66		45.68	0.000166	1.32	143.62	34.91	0.11
UHCreek	23095	10-year	124.66	39.00	43.78		43.85	0.000597	2.03	61.28	18.92	0.20
UHCreek	23095	UH-2	180.09	39.00	45.58		45.63	0.000340	1.81	99.27	23.44	0.16
UHCreek	22900	10-year	123.16	38.90	43.63		43.68	0.000662	1.89	65.09	20.25	0.19
UHCreek	22900	UH-2	172.66	38.90	45.50		45.54	0.000332	1.60	107.70	25.19	0.14
UHCreek	22800.00	10-year	201.59	38.90	43.28		43.45	0.002047	3.28	61.51	19.51	0.33
UHCreek	22800.00	UH-2	399.30	38.90	44.96		45.22	0.002277	4.10	97.37	23.33	0.35
UHCreek	22700	10-year	209.33	38.78	43.07		43.24	0.001997	3.27	64.09	20.12	0.32
UHCreek	22700	UH-2	411.38	38.78	44.72		44.98	0.002248	4.11	100.14	23.71	0.35
UHCreek	22600	10-year	217.09	38.60	42.88		43.04	0.001788	3.13	69.44	21.80	0.31
UHCreek	22600	UH-2	423.07	38.60	44.51		44.75	0.001987	3.90	108.39	25.80	0.34
UHCreek	22500	10-year	224.85	38.23	42.70		42.85	0.001722	3.13	71.93	21.75	0.30
UHCreek	22500	UH-2	435.26	38.23	44.29		44.54	0.002023	3.96	109.80	25.76	0.34
UHCreek	22400.00	10-year	232.32	37.83	42.50		42.66	0.001790	3.25	71.49	20.43	0.31
UHCreek	22400.00	UH-2	447.47	37.83	44.02		44.30	0.002303	4.27	104.79	23.28	0.35
UHCreek	22300.00	10-year	240.12	37.58	42.28		42.46	0.002007	3.41	70.37	20.49	0.32
UHCreek	22300.00	UH-2	459.68	37.58	43.73		44.04	0.002630	4.48	102.52	23.83	0.38
UHCreek	22199.99	10-year	247.52	37.53	42.01		42.22	0.002516	3.70	66.94	20.94	0.36
UHCreek	22199.99	UH-2	471.89	37.53	43.37		43.73	0.003206	4.83	97.75	23.93	0.42
UHCreek	22100	10-year	253.50	37.50	41.75		41.95	0.002460	3.62	69.94	22.71	0.36
UHCreek	22100	UH-2	484.06	37.50	43.14		43.42	0.002543	4.37	171.81	353.60	0.38
UHCreek	22000.00	10-year	260.80	37.50	41.58		41.73	0.001731	3.11	83.77	26.86	0.31
UHCreek	22000.00	UH-2	495.10	37.50	42.91		43.16	0.002175	4.06	122.00	30.75	0.36
UHCreek	21900	10-year	273.11	37.44	41.43		41.56	0.001452	2.87	95.20	30.78	0.29
UHCreek	21900	UH-2	513.82	37.44	42.73		42.95	0.001796	3.72	138.02	35.01	0.33
UHCreek	21800	10-year	281.30	37.25	41.28		41.41	0.001378	2.83	99.31	31.46	0.28
UHCreek	21800	UH-2	526.27	37.25	42.54		42.76	0.001767	3.72	141.53	35.54	0.33
UHCreek	21700	10-year	289.63	36.98	41.12		41.25	0.001491	2.98	97.35	30.16	0.29
UHCreek	21700	UH-2	538.75	36.98	42.31		42.56	0.002025	3.97	135.57	33.85	0.35
UHCreek	21600	10-year	296.87	36.49	40.74		41.01	0.003171	4.16	71.33	22.54	0.41
UHCreek	21600	UH-2	548.42	36.49	41.63		42.18	0.005277	5.93	92.47	24.90	0.54
UHCreek	21599		Lat Struct									
UHCreek	21500	10-year	161.24	36.20	40.91		40.96	0.000560	1.73	93.83	34.69	0.18
UHCreek	21500	UH-2	225.78	36.20	42.11		42.16	0.000369	1.65	142.87	43.53	0.15
UHCreek	21400.00	10-year	170.31	36.20	40.86		40.90	0.000557	1.71	101.53	39.68	0.18
UHCreek	21400.00	UH-2	238.51	36.20	42.08		42.11	0.000352	1.61	156.75	47.86	0.15
UHCreek	21300.00	10-year	179.19	36.17	40.70		40.80	0.001256	2.61	68.60	21.70	0.26
UHCreek	21300.00	UH-2	250.68	36.17	41.94		42.05	0.000935	2.56	97.85	25.26	0.23
UHCreek	21200	10-year	188.14	35.87	40.55		40.67	0.001313	2.70	69.78	21.69	0.26
UHCreek	21200	UH-2	262.91	35.87	41.83		41.94	0.000965	2.63	101.13	27.88	0.23
UHCreek	21100	10-year	197.42	35.61	40.40		40.52	0.001407	2.81	70.42	22.50	0.27
UHCreek	21100	UH-2	275.93	35.61	41.72		41.83	0.001009	2.67	107.61	31.99	0.24

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	21000	10-year	206.72	35.49	40.22		40.35	0.001640	2.99	69.22	21.96	0.30
UHCreek	21000	UH-2	288.38	35.49	41.59		41.71	0.001095	2.80	105.50	31.63	0.25
UHCreek	20899.99	10-year	216.02	35.29	40.00		40.16	0.001964	3.21	67.38	22.21	0.32
UHCreek	20899.99	UH-2	301.56	35.29	41.46		41.59	0.001177	2.93	103.03	26.97	0.26
UHCreek	20800	10-year	225.32	34.90	39.76		39.94	0.002218	3.43	65.60	20.99	0.34
UHCreek	20800	UH-2	314.28	34.90	41.30		41.45	0.001323	3.10	101.50	25.44	0.27
UHCreek	20790		Lat Struct									
UHCreek	20700	10-year	234.61	34.51	39.47		39.69	0.002542	3.69	63.55	19.84	0.36
UHCreek	20700	UH-2	327.59	34.51	41.13		41.30	0.001431	3.27	100.23	26.54	0.28
UHCreek	20600.00	10-year	243.89	34.01	39.27		39.45	0.001895	3.36	72.62	20.73	0.32
UHCreek	20600.00	UH-2	340.93	34.01	41.02		41.16	0.001133	3.03	112.49	25.02	0.25
UHCreek	20500.00	10-year	253.16	33.51	39.13		39.28	0.001355	3.01	84.22	21.79	0.27
UHCreek	20500.00	UH-2	354.26	33.51	40.93		41.05	0.000872	2.79	127.13	26.05	0.22
UHCreek	20400	10-year	262.42	33.20	39.07		39.16	0.000795	2.45	106.96	25.82	0.21
UHCreek	20400	UH-2	367.62	33.20	40.89		40.97	0.000538	2.32	158.26	30.50	0.18
UHCreek	20334.09	10-year	309.81	32.94	39.03		39.09	0.000478	2.04	152.03	34.82	0.17
UHCreek	20334.09	UH-2	436.56	32.94	40.86		40.92	0.000340	1.98	221.01	40.57	0.15
UHCreek	20318.09	10-year	311.27	31.87	38.97		39.08	0.000399	2.74	113.56	35.79	0.18
UHCreek	20318.09	UH-2	437.87	31.87	40.77		40.91	0.000372	3.08	142.36	45.38	0.18
UHCreek	20261.68		Culvert									
UHCreek	20200.55	10-year	308.95	31.62	38.52		38.65	0.000481	2.88	107.15	37.43	0.20
UHCreek	20200.55	UH-2	433.83	31.62	39.76		39.94	0.000540	3.42	126.92	45.92	0.21
UHCreek	20167.24	10-year	310.72	31.51	38.58		38.63	0.000310	1.74	178.37	37.08	0.14
UHCreek	20167.24	UH-2	435.27	31.51	39.86		39.91	0.000311	1.91	228.13	41.17	0.14
UHCreek	20110.75	10-year	313.90	31.34	38.56		38.61	0.000376	1.92	172.95	42.11	0.15
UHCreek	20110.75	UH-2	439.92	31.34	39.83		39.89	0.000370	2.08	232.15	50.83	0.15
UHCreek	20021.42	10-year	318.18	30.85	38.51		38.57	0.000430	2.07	153.43	28.78	0.16
UHCreek	20021.42	UH-2	447.20	30.85	39.77		39.85	0.000465	2.34	191.49	31.53	0.17
UHCreek	19900	10-year	324.32	30.45	38.31		38.46	0.001369	3.10	104.69	26.63	0.28
UHCreek	19900	UH-2	456.35	30.45	39.59		39.75	0.001218	3.23	141.32	30.95	0.27
UHCreek	19800	10-year	329.21	30.20	38.19		38.33	0.001255	3.00	109.58	27.45	0.26
UHCreek	19800	UH-2	464.49	30.20	39.47		39.63	0.001127	3.14	147.71	31.87	0.26
UHCreek	19697.19	10-year	334.93	29.91	38.06		38.20	0.001190	2.96	113.09	27.73	0.26
UHCreek	19697.19	UH-2	472.06	29.91	39.36		39.51	0.001076	3.11	151.90	32.14	0.25
UHCreek	19600	10-year	339.61	29.79	37.93		38.08	0.001266	3.05	111.50	27.39	0.27
UHCreek	19600	UH-2	479.92	29.79	39.24		39.40	0.001143	3.20	150.18	31.79	0.26
UHCreek	19500	10-year	344.39	29.77	37.78		37.94	0.001409	3.18	108.30	27.05	0.28
UHCreek	19500	UH-2	487.22	29.77	39.10		39.27	0.001249	3.31	146.99	31.52	0.27
UHCreek	19400.00	10-year	349.10	29.75	37.61		37.78	0.001580	3.33	104.83	26.55	0.30
UHCreek	19400.00	UH-2	494.48	29.75	38.95		39.14	0.001354	3.45	143.20	30.50	0.28
UHCreek	19300	10-year	352.92	29.73	37.40		37.60	0.001936	3.58	98.52	26.15	0.33
UHCreek	19300	UH-2	502.47	29.73	38.78		38.98	0.001603	3.65	137.62	30.83	0.30
UHCreek	19200	10-year	356.51	29.71	37.18		37.39	0.002112	3.72	95.71	25.66	0.34
UHCreek	19200	UH-2	509.65	29.71	38.59		38.81	0.001712	3.76	135.37	30.52	0.32
UHCreek	19109.82	10-year	359.34	29.70	36.97		37.19	0.002196	3.80	94.45	25.33	0.35
UHCreek	19109.82	UH-2	515.98	29.70	38.42		38.65	0.001768	3.83	134.83	30.48	0.32
UHCreek	19000	10-year	362.91	29.70	36.76		36.96	0.002014	3.59	101.15	28.59	0.34
UHCreek	19000	UH-2	524.55	29.70	38.27		38.46	0.001495	3.52	149.00	34.63	0.30
UHCreek	18900.00	10-year	366.92	29.94	36.70		36.81	0.000838	2.64	139.07	32.72	0.23
UHCreek	18900.00	UH-2	532.36	29.94	38.23		38.35	0.000728	2.76	193.16	38.06	0.22
UHCreek	18800.00	10-year	370.91	29.80	36.61		36.72	0.000840	2.65	139.84	32.63	0.23
UHCreek	18800.00	UH-2	540.18	29.80	38.15		38.27	0.000736	2.78	194.12	37.95	0.22

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	18700.00	10-year	375.90	29.66	36.53		36.64	0.000845	2.67	140.70	32.55	0.23
UHCreek	18700.00	UH-2	547.38	29.66	38.07		38.19	0.000742	2.81	195.12	37.83	0.22
UHCreek	18600.00	10-year	379.81	29.53	36.44		36.55	0.000850	2.69	141.29	32.45	0.23
UHCreek	18600.00	UH-2	555.22	29.53	37.99		38.12	0.000753	2.84	195.82	37.71	0.22
UHCreek	18500	10-year	383.69	29.39	36.35		36.46	0.000847	2.70	142.35	32.42	0.23
UHCreek	18500	UH-2	563.04	29.39	37.91		38.04	0.000759	2.86	197.06	63.34	0.22
UHCreek	18399.99	10-year	387.53	29.25	36.26		36.37	0.000849	2.71	143.07	32.34	0.23
UHCreek	18399.99	UH-2	570.85	29.25	37.83		37.96	0.000769	2.89	197.86	196.67	0.22
UHCreek	18300	10-year	392.37	29.11	36.17		36.29	0.000855	2.73	143.73	32.22	0.23
UHCreek	18300	UH-2	578.64	29.11	37.75		37.88	0.000779	2.92	198.49	37.36	0.22
UHCreek	18200	10-year	396.14	28.97	36.08		36.20	0.000849	2.73	145.18	32.36	0.23
UHCreek	18200	UH-2	586.41	28.97	37.66		37.80	0.000781	2.93	200.36	37.55	0.22
UHCreek	18100	10-year	399.87	28.82	36.00		36.11	0.000832	2.72	147.12	32.48	0.23
UHCreek	18100	UH-2	594.18	28.82	37.58		37.71	0.000776	2.93	202.61	37.63	0.22
UHCreek	18000	10-year	403.58	28.68	35.91		36.03	0.000820	2.71	148.91	32.65	0.22
UHCreek	18000	UH-2	601.93	28.68	37.50		37.63	0.000774	2.94	204.77	37.80	0.22
UHCreek	17900	10-year	408.29	28.53	35.83		35.94	0.000809	2.70	150.96	32.84	0.22
UHCreek	17900	UH-2	609.68	28.53	37.42		37.55	0.000769	2.94	207.21	38.00	0.22
UHCreek	17800	10-year	411.96	28.38	35.75		35.86	0.000792	2.69	153.15	33.04	0.22
UHCreek	17800	UH-2	617.42	28.38	37.34		37.47	0.000763	2.94	209.76	38.19	0.22
UHCreek	17700	10-year	416.61	28.24	35.67		35.78	0.000782	2.69	155.14	33.24	0.22
UHCreek	17700	UH-2	625.16	28.24	37.26		37.39	0.000759	2.95	212.07	38.39	0.22
UHCreek	17600	10-year	437.37	28.09	35.57		35.69	0.000841	2.79	156.59	33.36	0.23
UHCreek	17600	UH-2	635.17	28.09	37.18		37.31	0.000759	2.96	214.55	38.58	0.22
UHCreek	17500.00	10-year	438.05	27.95	35.49		35.60	0.000819	2.76	158.94	33.96	0.22
UHCreek	17500.00	UH-2	645.14	27.95	37.10		37.23	0.000761	2.96	218.18	39.54	0.22
UHCreek	17400.00	10-year	438.77	27.80	35.41		35.52	0.000786	2.73	160.86	33.74	0.22
UHCreek	17400.00	UH-2	655.13	27.80	37.02		37.15	0.000762	2.99	219.27	38.94	0.22
UHCreek	17300.00	10-year	439.53	27.66	35.33		35.45	0.000761	2.70	162.99	33.94	0.22
UHCreek	17300.00	UH-2	665.10	27.66	36.93		37.07	0.000764	3.00	221.47	47.97	0.22
UHCreek	17200	10-year	440.34	27.51	35.26		35.37	0.000732	2.66	165.55	34.17	0.21
UHCreek	17200	UH-2	675.07	27.51	36.85		36.99	0.000763	3.01	224.05	74.90	0.22
UHCreek	17099.99	10-year	442.80	27.37	35.19		35.30	0.000712	2.64	167.92	34.38	0.21
UHCreek	17099.99	UH-2	685.01	27.37	36.77		36.91	0.000764	3.03	226.30	123.35	0.22
UHCreek	16999.99	10-year	443.68	27.22	35.12		35.23	0.000685	2.60	170.59	34.61	0.21
UHCreek	16999.99	UH-2	694.94	27.22	36.69		36.83	0.000764	3.04	228.81	89.59	0.22
UHCreek	16900	10-year	446.10	27.07	35.06		35.16	0.000662	2.57	173.46	34.86	0.20
UHCreek	16900	UH-2	704.85	27.07	36.61		36.75	0.000761	3.05	231.44	94.79	0.22
UHCreek	16800	10-year	447.08	26.93	34.99		35.09	0.000639	2.54	176.07	35.09	0.20
UHCreek	16800	UH-2	714.47	26.93	36.53		36.67	0.000762	3.06	233.68	131.75	0.22
UHCreek	16700	10-year	449.49	26.78	34.93		35.03	0.000617	2.51	179.07	35.34	0.20
UHCreek	16700	UH-2	724.31	26.78	36.45		36.59	0.000760	3.07	236.24	94.13	0.22
UHCreek	16600	10-year	451.86	26.64	34.87		34.97	0.000597	2.48	181.97	35.60	0.19
UHCreek	16600	UH-2	734.13	26.64	36.37		36.51	0.000760	3.08	238.65	100.70	0.22
UHCreek	16500	10-year	453.01	26.49	34.82		34.91	0.000572	2.45	185.21	35.88	0.19
UHCreek	16500	UH-2	743.92	26.49	36.29		36.43	0.000757	3.08	241.31	100.65	0.22
UHCreek	16400	10-year	455.39	26.35	34.76		34.85	0.000552	2.42	188.33	36.15	0.19
UHCreek	16400	UH-2	753.10	26.35	36.21		36.35	0.000755	3.09	243.80	97.02	0.22
UHCreek	16300.00	10-year	457.75	26.20	34.71		34.80	0.000532	2.39	191.66	36.42	0.18
UHCreek	16300.00	UH-2	762.80	26.20	36.13		36.28	0.000752	3.10	246.40	110.57	0.22
UHCreek	16200.00	10-year	459.10	26.06	34.66		34.75	0.000510	2.35	195.05	55.32	0.18
UHCreek	16200.00	UH-2	771.63	26.06	36.05		36.20	0.000748	3.10	249.01	115.79	0.22

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	16100.00	10-year	461.49	25.91	34.61		34.70	0.000491	2.32	198.55	84.97	0.18
UHCreek	16100.00	UH-2	775.85	25.91	35.97		36.12	0.000734	3.08	251.87	151.75	0.22
UHCreek	16000.00	10-year	463.87	25.76	34.57		34.65	0.000472	2.29	202.27	71.34	0.17
UHCreek	16000.00	UH-2	780.04	25.76	35.90		36.05	0.000718	3.06	254.93	113.13	0.22
UHCreek	15900.00	10-year	466.23	25.62	34.52		34.60	0.000456	2.27	205.74	63.11	0.17
UHCreek	15900.00	UH-2	784.20	25.62	35.83		35.98	0.000704	3.04	257.70	133.46	0.22
UHCreek	15800	10-year	468.57	25.47	34.48		34.56	0.000437	2.24	209.63	72.48	0.17
UHCreek	15800	UH-2	787.57	25.47	35.76		35.90	0.000687	3.02	260.93	139.64	0.21
UHCreek	15699.99	10-year	470.91	25.33	34.44		34.51	0.000421	2.21	213.42	52.37	0.16
UHCreek	15699.99	UH-2	791.75	25.33	35.70		35.84	0.000673	3.00	263.99	114.87	0.21
UHCreek	15599.99	10-year	473.24	25.18	34.40		34.47	0.000404	2.18	217.52	38.53	0.16
UHCreek	15599.99	UH-2	795.93	25.18	35.63		35.77	0.000657	2.98	267.42	68.21	0.21
UHCreek	15599		Lat Struct									
UHCreek	15470		Lat Struct									
UHCreek	15460.35	10-year	476.48	24.98	34.36		34.42	0.000323	1.96	243.00	43.58	0.15
UHCreek	15460.35	UH-2	551.21	24.98	35.72		35.77	0.000227	1.80	306.79	57.14	0.13
UHCreek	15422.51	10-year	477.33	24.92	34.35		34.41	0.000302	1.93	249.36	124.10	0.14
UHCreek	15422.51	UH-2	552.76	24.92	35.71		35.76	0.000202	1.76	332.05	285.49	0.12
UHCreek	15407.07	10-year	477.31	24.90	34.23		34.41	0.000431	3.42	139.70	153.78	0.20
UHCreek	15407.07	UH-2	552.75	24.90	35.59		35.77	0.000367	3.45	160.01	398.69	0.19
UHCreek	15382.57		Culvert									
UHCreek	15363.52	10-year	474.95	24.50	32.53		32.77	0.000321	3.95	120.16	32.07	0.25
UHCreek	15363.52	UH-2	550.41	24.50	33.23		33.51	0.000325	4.21	130.75	33.31	0.25
UHCreek	15335.44	10-year	475.47	24.48	32.67		32.75	0.000207	2.36	201.81	31.87	0.16
UHCreek	15335.44	UH-2	550.83	24.48	33.40		33.49	0.000204	2.44	225.56	36.14	0.16
UHCreek	15300	10-year	479.41	24.46	32.65		32.74	0.000222	2.43	197.52	31.39	0.17
UHCreek	15300	UH-2	557.54	24.46	33.38		33.48	0.000221	2.52	220.87	37.56	0.17
UHCreek	15200.00	10-year	492.44	24.40	32.61		32.71	0.000265	2.62	188.26	30.50	0.19
UHCreek	15200.00	UH-2	580.10	24.40	33.33		33.45	0.000270	2.75	210.75	31.83	0.19
UHCreek	15099.99	10-year	505.16	24.33	32.55		32.68	0.000317	2.82	179.08	29.63	0.20
UHCreek	15099.99	UH-2	602.21	24.33	33.27		33.41	0.000331	3.00	200.65	30.99	0.21
UHCreek	15000	10-year	516.63	24.27	32.49		32.64	0.000383	3.05	169.53	29.32	0.22
UHCreek	15000	UH-2	622.75	24.27	33.19		33.36	0.000408	3.27	190.16	47.90	0.23
UHCreek	14900	10-year	527.49	24.19	32.43		32.59	0.000417	3.16	166.78	28.49	0.23
UHCreek	14900	UH-2	642.32	24.19	33.12		33.30	0.000455	3.44	186.79	29.88	0.24
UHCreek	14798.67	10-year	529.96	24.07	32.40		32.55	0.000391	3.08	183.31	34.65	0.22
UHCreek	14798.67	UH-2	644.98	24.07	33.09		33.26	0.000419	3.31	217.15	76.59	0.23
UHCreek	14699.99	10-year	527.18	23.99	32.29		32.50	0.000616	3.69	151.25	64.36	0.26
UHCreek	14699.99	UH-2	641.45	23.99	33.00		33.21	0.000605	3.79	213.12	97.06	0.26
UHCreek	14600	10-year	531.74	23.97	32.24		32.44	0.000578	3.60	165.81	103.79	0.25
UHCreek	14600	UH-2	646.29	23.97	32.96		33.15	0.000543	3.63	234.42	165.76	0.25
UHCreek	14500.00	10-year	537.67	23.94	32.24		32.38	0.000381	3.04	219.91	101.90	0.22
UHCreek	14500.00	UH-2	658.09	23.94	32.96		33.08	0.000364	3.04	295.99	112.71	0.22
UHCreek	14400.00	10-year	542.17	23.92	32.17		32.34	0.000547	3.45	208.69	93.24	0.24
UHCreek	14400.00	UH-2	663.09	23.92	32.90		33.03	0.000592	3.25	278.53	107.50	0.25
UHCreek	14300	10-year	545.24	23.89	32.12		32.28	0.000499	3.38	210.53	97.69	0.24
UHCreek	14300	UH-2	669.49	23.89	32.84		32.98	0.000530	3.29	285.08	115.69	0.25
UHCreek	14200	10-year	549.63	23.87	32.07		32.23	0.000454	3.28	195.75	94.60	0.24
UHCreek	14200	UH-2	675.74	23.87	32.78		32.93	0.000456	3.32	274.31	179.19	0.24
UHCreek	14100.00	10-year	552.57	23.84	31.98		32.16	0.000572	3.63	161.95	74.03	0.26
UHCreek	14100.00	UH-2	680.37	23.84	32.68		32.89	0.000653	3.73	227.14	124.28	0.28
UHCreek	13999.99	10-year	555.27	23.81	31.88		32.11	0.000746	3.96	165.80	83.46	0.28

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	13999.99	UH-2	684.81	23.81	32.59		32.81	0.000922	3.95	233.87	109.42	0.31
UHCreek	13900	10-year	560.81	23.79	31.87		32.04	0.000489	3.38	199.72	218.56	0.25
UHCreek	13900	UH-2	693.62	23.79	32.56		32.72	0.000507	3.44	270.65	417.72	0.25
UHCreek	13800	10-year	561.87	23.76	31.77		31.99	0.000694	3.86	179.00	95.83	0.27
UHCreek	13800	UH-2	699.61	23.76	32.47		32.66	0.000794	3.78	251.05	238.67	0.30
UHCreek	13699.99	10-year	568.77	23.74	31.78		31.91	0.000414	3.11	258.80	114.06	0.23
UHCreek	13699.99	UH-2	708.33	23.74	32.47		32.59	0.000401	3.07	340.52	207.13	0.23
UHCreek	13600	10-year	572.84	23.71	31.75		31.87	0.000383	2.99	264.44	106.51	0.22
UHCreek	13600	UH-2	717.04	23.71	32.44		32.55	0.000377	3.00	339.47	154.05	0.22
UHCreek	13500	10-year	575.50	23.68	31.67		31.83	0.000480	3.34	222.66	100.68	0.25
UHCreek	13500	UH-2	723.14	23.68	32.36		32.51	0.000486	3.36	295.67	149.14	0.25
UHCreek	13400	10-year	578.03	23.66	31.60		31.78	0.000553	3.55	204.24	119.47	0.26
UHCreek	13400	UH-2	729.07	23.66	32.29		32.46	0.000579	3.59	279.45	169.89	0.27
UHCreek	13300.00	10-year	583.34	23.63	31.57		31.72	0.000457	3.26	240.45	149.63	0.24
UHCreek	13300.00	UH-2	736.21	23.63	32.26		32.40	0.000451	3.31	319.11	359.41	0.24
UHCreek	13200	10-year	588.63	23.61	31.58		31.67	0.000269	2.68	304.98	122.26	0.19
UHCreek	13200	UH-2	744.63	23.61	32.25		32.35	0.000256	2.80	386.00	221.14	0.19
UHCreek	13168.90	10-year	588.96	23.60	31.52		31.67	0.000731	3.51	234.70	112.08	0.30
UHCreek	13168.90	UH-2	746.01	23.60	32.21		32.35	0.000589	3.38	316.38	204.42	0.27
UHCreek	13152.90	10-year	589.59	23.59	31.54		31.65	0.000254	2.84	285.15	134.74	0.20
UHCreek	13152.90	UH-2	748.24	23.59	32.22		32.34	0.000252	3.01	360.58	228.51	0.20
UHCreek	13124.50		Culvert									
UHCreek	13093.93	10-year	585.55	23.41	31.47		31.58	0.000258	2.87	293.96	129.91	0.20
UHCreek	13093.93	UH-2	745.78	23.41	32.17		32.28	0.000254	3.03	370.08	214.23	0.20
UHCreek	13062.00	10-year	586.99	23.28	31.47		31.57	0.000313	2.75	298.74	139.96	0.20
UHCreek	13062.00	UH-2	748.09	23.28	32.17		32.27	0.000302	2.85	381.70	208.21	0.20
UHCreek	13000	10-year	590.16	23.24	31.46		31.55	0.000272	2.57	382.38	254.98	0.19
UHCreek	13000	UH-2	753.18	23.24	32.18		32.24	0.000223	2.46	565.39	555.25	0.17
UHCreek	12899.99	10-year	593.96	23.18	31.39		31.52	0.000383	3.05	253.01	135.16	0.23
UHCreek	12899.99	UH-2	759.08	23.18	32.10		32.23	0.000364	3.15	332.88	402.20	0.22
UHCreek	12799.99	10-year	599.00	23.11	31.39		31.48	0.000279	2.61	392.32	247.02	0.19
UHCreek	12799.99	UH-2	768.24	23.11	32.11		32.18	0.000219	2.47	595.04	305.73	0.17
UHCreek	12700.00	10-year	603.05	23.05	31.31		31.46	0.000398	3.12	251.67	144.77	0.23
UHCreek	12700.00	UH-2	775.43	23.05	32.04		32.17	0.000354	3.15	390.70	250.22	0.22
UHCreek	12600.00	10-year	607.10	22.99	31.27		31.42	0.000404	3.15	248.54	142.96	0.23
UHCreek	12600.00	UH-2	782.59	22.99	32.00		32.14	0.000361	3.20	389.86	243.45	0.22
UHCreek	12496.47	10-year	612.31	22.92	31.26		31.37	0.000339	2.91	304.41	176.08	0.21
UHCreek	12496.47	UH-2	790.93	22.92	31.99		32.09	0.000285	2.88	450.96	241.02	0.20
UHCreek	12399.79	10-year	617.15	22.86	31.24		31.34	0.000284	2.71	366.62	216.08	0.20
UHCreek	12399.79	UH-2	798.71	22.86	31.98		32.06	0.000233	2.66	549.07	308.38	0.18
UHCreek	12349.00	10-year	619.69	22.82	31.25		31.31	0.000195	2.29	428.02	265.24	0.17
UHCreek	12349.00	UH-2	802.81	22.82	31.98		32.04	0.000168	2.29	612.62	375.03	0.16
UHCreek	12327.31	10-year	620.36	22.80	31.26		31.30	0.000096	1.77	546.17	309.71	0.12
UHCreek	12327.31	UH-2	804.54	22.80	31.99		32.03	0.000093	1.84	781.83	581.12	0.12
UHCreek	12284.62		Culvert									
UHCreek	12245.91	10-year	617.67	22.60	30.89		31.17	0.000365	4.31	180.87	86.64	0.26
UHCreek	12245.91	UH-2	803.91	22.60	31.93		32.07	0.000335	3.15	375.05	358.51	0.21
UHCreek	12213.87	10-year	619.68	22.59	30.92		31.09	0.000489	3.45	215.38	104.29	0.25
UHCreek	12213.87	UH-2	805.39	22.59	31.90		32.06	0.000462	3.49	328.28	262.63	0.24
UHCreek	12199.05	10-year	619.61	22.59	30.90		31.09	0.000539	3.53	199.54	120.13	0.26
UHCreek	12199.05	UH-2	806.39	22.59	31.88		32.07	0.000536	3.67	304.23	303.92	0.26
UHCreek	12099.99	10-year	623.73	22.56	30.84		31.03	0.000527	3.57	199.57	128.00	0.26

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	12099.99	UH-2	813.04	22.56	31.83		32.01	0.000479	3.60	314.15	292.04	0.25
UHCreek	11999.99	10-year	627.86	22.51	30.76		30.97	0.000578	3.73	170.73	130.00	0.27
UHCreek	11999.99	UH-2	819.24	22.51	31.71		31.96	0.000605	4.03	235.29	231.39	0.28
UHCreek	11896.30	10-year	632.10	22.46	30.69		30.91	0.000589	3.76	176.69	152.92	0.27
UHCreek	11896.30	UH-2	826.60	22.46	31.70		31.69	0.000517	3.73	311.07	276.83	0.26
UHCreek	11800.00	10-year	635.62	22.38	30.64		30.85	0.000566	3.71	171.26	62.39	0.27
UHCreek	11800.00	UH-2	832.73	22.38	31.57		31.84	0.000627	4.17	207.63	150.63	0.29
UHCreek	11700.03	10-year	639.75	22.32	30.57		30.79	0.000596	3.80	168.46	77.36	0.28
UHCreek	11700.03	UH-2	839.43	22.32	31.48		31.77	0.000687	4.29	196.79	102.81	0.30
UHCreek	11600.17	10-year	643.89	22.27	30.50		30.73	0.000622	3.86	173.56	35.25	0.28
UHCreek	11600.17	UH-2	846.15	22.27	31.41		31.70	0.000721	4.34	208.34	84.93	0.30
UHCreek	11500.67	10-year	647.57	22.22	30.44		30.66	0.000621	3.86	178.37	35.03	0.28
UHCreek	11500.67	UH-2	852.84	22.22	31.33		31.62	0.000717	4.36	211.31	38.66	0.30
UHCreek	11399.70	10-year	651.73	22.17	30.35		30.60	0.000655	3.95	165.60	87.56	0.29
UHCreek	11399.70	UH-2	859.59	22.17	31.23		31.54	0.000767	4.50	196.87	133.52	0.31
UHCreek	11300	10-year	656.13	22.12	30.29		30.53	0.000659	3.96	173.83	205.02	0.29
UHCreek	11300	UH-2	866.23	22.12	31.16		31.46	0.000756	4.46	214.22	226.53	0.31
UHCreek	11200	10-year	657.21	22.07	30.21		30.46	0.000674	4.00	164.57	30.16	0.29
UHCreek	11200	UH-2	868.05	22.07	31.05		31.38	0.000804	4.59	192.72	36.71	0.32
UHCreek	11099.99	10-year	659.90	22.02	30.15		30.39	0.000661	3.96	177.42	35.31	0.29
UHCreek	11099.99	UH-2	872.38	22.02	30.99		31.30	0.000787	4.53	208.38	39.63	0.32
UHCreek	10999.99	10-year	662.60	21.97	30.07		30.32	0.000697	4.06	163.38	190.34	0.30
UHCreek	10999.99	UH-2	876.72	21.97	30.87		31.21	0.000848	4.69	186.83	232.02	0.33
UHCreek	10900	10-year	665.30	21.92	30.00		30.25	0.000702	4.07	167.61	33.60	0.30
UHCreek	10900	UH-2	881.05	21.92	30.79		31.13	0.000853	4.70	195.62	37.15	0.33
UHCreek	10800.00	10-year	667.99	21.87	29.94		30.18	0.000686	4.02	176.50	36.12	0.30
UHCreek	10800.00	UH-2	885.38	21.87	30.71		31.04	0.000837	4.65	207.71	38.94	0.33
UHCreek	10700.00	10-year	670.69	21.82	29.84		30.11	0.000732	4.14	162.01	74.10	0.31
UHCreek	10700.00	UH-2	889.72	21.82	30.58		30.95	0.000917	4.85	183.74	148.67	0.34
UHCreek	10600	10-year	673.39	21.77	29.76		30.03	0.000747	4.17	161.31	72.29	0.31
UHCreek	10600	UH-2	893.10	21.77	30.48		30.85	0.000945	4.90	182.15	118.22	0.35
UHCreek	10500	10-year	676.09	21.71	29.68		29.95	0.000760	4.21	160.78	299.92	0.31
UHCreek	10500	UH-2	897.29	21.71	30.37		30.75	0.000974	4.96	180.81	363.45	0.35
UHCreek	10399.99	10-year	678.79	21.66	29.60		29.88	0.000776	4.24	160.06	67.29	0.31
UHCreek	10399.99	UH-2	901.48	21.66	30.26		30.65	0.001008	5.03	179.21	90.50	0.36
UHCreek	10299.99	10-year	681.41	21.61	29.51		29.79	0.000792	4.28	159.34	71.67	0.32
UHCreek	10299.99	UH-2	905.65	21.61	30.14		30.54	0.001044	5.10	177.54	134.34	0.37
UHCreek	10200	10-year	683.39	21.56	29.43		29.71	0.000800	4.29	164.55	80.62	0.32
UHCreek	10200	UH-2	906.62	21.56	30.04		30.44	0.001044	5.09	190.18	110.13	0.37
UHCreek	10176.90	10-year	683.18	21.55	29.41		29.70	0.000599	4.35	180.99	115.85	0.29
UHCreek	10176.90	UH-2	910.63	21.55	30.12		30.37	0.000627	4.16	341.49	317.56	0.28
UHCreek	10145.31		Culvert									
UHCreek	10110.68	10-year	669.76	21.35	28.43		28.96	0.001027	5.79	115.59	33.26	0.39
UHCreek	10110.68	UH-2	901.62	21.35	29.40		29.93	0.001257	5.90	164.93	40.64	0.39
UHCreek	10067.70	10-year	674.42	21.34	28.65		28.90	0.000975	4.02	170.43	59.45	0.32
UHCreek	10067.70	UH-2	903.95	21.34	29.51		29.78	0.000977	4.32	278.72	176.10	0.33
UHCreek	10000	10-year	676.86	21.30	28.72		28.84	0.000459	2.77	277.48	145.04	0.23
UHCreek	10000	UH-2	906.38	21.30	29.57		29.69	0.000499	2.88	429.65	220.34	0.24
UHCreek	9899.999	10-year	678.40	22.14	28.66		28.79	0.000561	2.98	272.45	157.22	0.25
UHCreek	9899.999	UH-2	910.07	22.14	29.52		29.65	0.000499	3.05	456.98	260.17	0.24
UHCreek	9799.999	10-year	680.76	21.77	28.61		28.74	0.000517	2.89	268.18	70.81	0.24
UHCreek	9799.999	UH-2	913.81	21.77	29.44		29.59	0.000535	3.22	332.47	95.67	0.25

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
UHCreek	9700.001	10-year	683.10	21.40	28.63		28.69	0.000230	1.92	429.10	194.97	0.16
UHCreek	9700.001	UH-2	917.50	21.40	29.48		29.53	0.000211	2.02	606.86	228.21	0.16
UHCreek	9600.000	10-year	684.82	21.09	28.53		28.66	0.000546	2.97	274.77	99.95	0.24
UHCreek	9600.000	UH-2	921.09	21.09	29.38		29.52	0.000524	3.20	398.53	207.74	0.25
UHCreek	9500.000	10-year	687.13	21.06	28.48		28.61	0.000557	3.17	332.48	162.07	0.25
UHCreek	9500.000	UH-2	924.81	21.06	29.35		29.47	0.000473	3.22	486.91	195.08	0.23
UHCreek	9400	10-year	689.44	21.03	28.46		28.55	0.000298	2.42	306.88	122.40	0.19
UHCreek	9400	UH-2	927.86	21.03	29.31		29.42	0.000297	2.67	412.98	127.82	0.19
UHCreek	9300	10-year	691.76	21.00	28.43		28.52	0.000307	2.43	304.46	122.24	0.19
UHCreek	9300	UH-2	931.49	21.00	29.28		29.39	0.000305	2.69	410.25	127.60	0.19
UHCreek	9250		Lat Struct									
UHCreek	9200.000	10-year	694.08	20.97	28.44		28.50	0.000182	1.98	384.47	109.66	0.15
UHCreek	9200.000	UH-2	935.21	20.97	29.28		29.36	0.000192	2.22	487.54	135.31	0.16
UHCreek	9150		Lat Struct									
UHCreek	9100	10-year	695.06	20.90	28.27		28.47	0.000643	3.57	194.53	84.43	0.27
UHCreek	9100	UH-2	936.45	20.90	29.18		29.34	0.000516	3.46	338.26	92.74	0.24
UHCreek	9050		Lat Struct									
UHCreek	9002.058	10-year	696.35	20.83	28.21		28.41	0.000652	3.61	192.93	82.58	0.27
UHCreek	9002.058	UH-2	938.37	20.83	29.13		29.29	0.000511	3.45	339.64	86.92	0.24
UHCreek	8950		Lat Struct									
UHCreek	8901.280	10-year	697.66	20.75	28.16		28.36	0.000238	3.64	191.62	80.53	0.27
UHCreek	8901.280	UH-2	940.44	20.75	29.03		29.26	0.000242	3.95	303.67	84.83	0.28
UHCreek	8799.999	10-year	698.99	20.68	28.13		28.34	0.000241	3.66	190.75	80.29	0.27
UHCreek	8799.999	UH-2	941.89	20.68	29.01		29.23	0.000244	3.97	303.67	84.22	0.28
UHCreek	8700	10-year	700.29	20.60	28.10		28.31	0.000240	3.66	191.17	65.33	0.27
UHCreek	8700	UH-2	943.73	20.60	28.93		29.21	0.000281	4.25	250.37	83.77	0.29
UHCreek	8661.555	10-year	700.91	20.55	28.20		28.30	0.000080	2.55	274.78	48.45	0.17
UHCreek	8661.555	UH-2	944.68	20.55	29.04		29.19	0.000103	3.06	308.41	50.13	0.20
UHCreek	8593.049		Culvert									
UHCreek	8541.392	10-year	700.91	20.57	27.59		27.73	0.000492	2.96	238.09	58.48	0.22
UHCreek	8541.392	UH-2	944.68	20.57	27.96		28.18	0.000762	3.75	258.44	74.63	0.27
UHCreek	8500	10-year	700.78	20.55	27.48		27.72	0.001156	4.01	218.93	99.40	0.30
UHCreek	8500	UH-2	944.59	20.55	27.81		28.16	0.001617	4.93	253.59	110.48	0.36
UHCreek	8400.000	10-year	700.36	20.49	27.35		27.60	0.001243	4.12	206.16	91.53	0.31
UHCreek	8400.000	UH-2	943.58	20.49	27.60		27.99	0.001857	5.19	229.29	93.60	0.38
UHCreek	8300	10-year	699.89	20.43	27.24		27.48	0.001196	4.03	219.91	109.02	0.31
UHCreek	8300	UH-2	839.17	20.43	27.46		27.76	0.001435	4.53	245.76	121.02	0.34
LUHCreek	8200.000	10-year	703.82	20.33	27.24		27.34	0.000620	2.95	496.43	370.79	0.22
LUHCreek	8200.000	UH-2	844.46	20.33	27.46		27.57	0.000668	3.14	580.14	384.10	0.23
LUHCreek	8100.001	10-year	701.68	20.16	27.21		27.27	0.000452	2.54	603.58	407.04	0.19
LUHCreek	8100.001	UH-2	841.14	20.16	27.43		27.50	0.000490	2.71	696.96	455.91	0.20
LUHCreek	8000.001	10-year	698.49	20.07	27.10		27.15	0.000427	2.43	622.47	364.78	0.18
LUHCreek	8000.001	UH-2	840.55	20.07	27.39		27.44	0.000441	2.55	727.85	368.97	0.19
LUHCreek	7900.001	10-year	694.83	20.03	26.86		27.15	0.001415	4.34	160.20	29.92	0.33
LUHCreek	7900.001	UH-2	841.05	20.03	27.37		27.39	0.000209	1.77	985.25	430.90	0.13
LUHCreek	7800	10-year	689.09	19.99	26.70		27.00	0.001479	4.40	156.77	29.73	0.34
LUHCreek	7800	UH-2	842.91	19.99	27.37		27.37	0.000027	0.63	2104.21	576.46	0.05
LUHCreek	7700.001	10-year	691.38	19.94	26.71		26.72	0.000038	0.71	1431.77	276.96	0.05
LUHCreek	7700.001	UH-2	844.73	19.94	27.37		27.37	0.000029	0.66	2258.12	703.06	0.05
LUHCreek	7600.000	10-year	692.30	19.90	26.70		26.71	0.000086	1.07	1130.56	338.58	0.08
LUHCreek	7600.000	UH-2	845.36	19.90	27.36		27.37	0.000044	0.82	2305.12	988.10	0.06

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
LUHCreek	7500.000	10-year	680.04	19.86	26.59		26.77	0.001049	3.71	263.53	164.22	0.28
LUHCreek	7500.000	UH-2	846.11	19.86	27.34		27.37	0.000259	2.01	1072.08	788.40	0.14
LUHCreek	7400.000	10-year	687.86	19.81	26.39		26.64	0.001333	4.13	202.58	78.32	0.32
LUHCreek	7400.000	UH-2	845.83	19.81	27.30		27.34	0.000315	2.22	970.05	825.38	0.16
LUHCreek	7300.000	10-year	685.64	19.77	26.16		26.49	0.001714	4.61	157.65	44.25	0.36
LUHCreek	7300.000	UH-2	845.65	19.77	27.26		27.31	0.000401	2.47	786.12	556.19	0.18
LUHCreek	7199.999	10-year	689.30	19.71	26.26		26.35	0.000425	2.50	276.57	63.54	0.19
LUHCreek	7199.999	UH-2	847.53	19.71	27.25		27.27	0.000131	1.52	1043.46	547.48	0.11
LUHCreek	7100.000	10-year	691.13	19.63	26.26		26.32	0.000237	1.90	364.02	71.99	0.15
LUHCreek	7100.000	UH-2	848.50	19.63	27.23		27.26	0.000123	1.49	978.15	600.94	0.11
LUHCreek	6999.999	10-year	692.86	19.55	26.25		26.30	0.000223	1.86	381.88	138.43	0.14
LUHCreek	6999.999	UH-2	849.52	19.55	27.22		27.25	0.000128	1.53	997.86	692.33	0.11
LUHCreek	6900	10-year	694.59	19.47	26.22		26.27	0.000213	1.83	379.25	70.71	0.14
LUHCreek	6900	UH-2	850.65	19.47	27.19		27.24	0.000165	1.75	716.28	696.56	0.13
LUHCreek	6800.000	10-year	695.99	19.39	26.20		26.25	0.000203	1.80	396.35	128.54	0.14
LUHCreek	6800.000	UH-2	852.50	19.39	27.18		27.22	0.000156	1.71	785.93	851.86	0.12
LUHCreek	6700.000	10-year	697.77	19.31	26.18		26.23	0.000204	1.81	387.05	84.60	0.14
LUHCreek	6700.000	UH-2	854.34	19.31	27.16		27.21	0.000167	1.77	659.68	477.99	0.13
LUHCreek	6600	10-year	699.55	19.23	26.17		26.21	0.000192	1.76	483.00	271.19	0.13
LUHCreek	6600	UH-2	856.16	19.23	27.15		27.19	0.000132	1.59	952.69	840.42	0.11
LUHCreek	6500.000	10-year	701.31	19.15	26.15		26.20	0.000182	1.72	543.73	317.63	0.13
LUHCreek	6500.000	UH-2	857.97	19.15	27.14		27.17	0.000121	1.52	1044.47	752.50	0.11
LUHCreek	6407.855	10-year	702.69	19.07	26.13		26.18	0.000237	1.93	499.93	272.70	0.15
LUHCreek	6407.855	UH-2	859.61	19.07	27.13		27.16	0.000159	1.71	846.31	469.48	0.12
LUHCreek	6307.172	10-year	704.66	18.99	26.04		26.15	0.000482	2.61	274.80	81.08	0.20
LUHCreek	6307.172	UH-2	861.27	18.99	27.05		27.15	0.000402	2.58	369.04	123.38	0.19
LUHCreek	6225.466	10-year	706.10	18.92	25.95		26.10	0.000731	3.15	223.81	45.13	0.25
LUHCreek	6225.466	UH-2	862.77	18.92	26.98		27.12	0.000590	3.10	339.13	240.07	0.23
LUHCreek	6189.529	10-year	706.10	18.90	25.95		26.08	0.000356	2.91	242.64	50.69	0.19
LUHCreek	6189.529	UH-2	862.76	18.90	26.98		27.13	0.000337	3.10	278.15	372.67	0.19
LUHCreek	6155.953		Culvert									
LUHCreek	6121.657	10-year	705.90	19.50	25.59		25.76	0.000414	3.36	210.06	74.26	0.24
LUHCreek	6121.657	UH-2	861.81	19.50	26.38		26.58	0.000411	3.63	237.24	163.43	0.24
LUHCreek	6089.903	10-year	705.90	19.29	25.48		25.75	0.001384	4.21	187.61	133.32	0.38
LUHCreek	6089.903	UH-2	861.81	19.29	26.43		26.57	0.000678	3.32	433.50	361.45	0.27
LUHCreek	6000.001	10-year	705.87	19.23	25.55		25.59	0.000245	2.11	558.02	237.22	0.17
LUHCreek	6000.001	UH-2	861.93	19.23	26.45		26.48	0.000147	1.83	817.05	368.38	0.13
LUHCreek	5885.397	10-year	716.29	19.10	25.30		25.63	0.000765	4.62	154.98	33.38	0.33
LUHCreek	5885.397	UH-2	873.96	19.10	26.24		26.54	0.000759	4.42	216.61	126.04	0.30
LUHCreek	5850.958		Culvert									
LUHCreek	5826.177	10-year	714.84	19.50	24.75		25.21	0.001355	5.46	130.83	81.09	0.42
LUHCreek	5826.177	UH-2	873.12	19.50	25.80		26.02	0.000695	4.04	306.81	178.22	0.30
LUHCreek	5779.689	10-year	715.43	19.44	24.96		25.15	0.000695	3.62	218.39	163.79	0.29
LUHCreek	5779.689	UH-2	873.12	19.44	25.78		25.98	0.000578	3.67	265.34	171.04	0.27
LUHCreek	5699.999	10-year	715.43	19.25	24.99		25.09	0.000571	3.08	326.41	164.22	0.26
LUHCreek	5699.999	UH-2	873.23	19.25	25.85		25.92	0.000480	2.54	443.76	218.40	0.22
LUHCreek	5600.000	10-year	714.95	19.03	24.52		25.03	0.002321	5.72	126.03	133.60	0.48
LUHCreek	5600.000	UH-2	872.79	19.03	25.41		25.88	0.002013	5.58	171.32	182.07	0.46
LUHCreek	5556.143	10-year	715.23	18.93	24.77		24.93	0.000672	3.23	223.95	59.01	0.28
LUHCreek	5556.143	UH-2	872.99	18.93	25.62		25.78	0.000526	3.23	281.62	152.30	0.26
LUHCreek	5530.179	10-year	714.80	18.90	24.39		24.94	0.001471	5.91	120.86	43.93	0.44
LUHCreek	5530.179	UH-2	872.58	18.90	25.19		25.81	0.001393	6.30	138.46	45.21	0.44

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
LUHCreek	5458.309		Culvert									
LUHCreek	5304.188	10-year	713 93	17.19	24.14		24.48	0.000685	4.68	152 52	88 46	0.31
LUHCreek	5304.188	UH-2	871.17	17.19	24.85		25.26	0.000737	5.18	168.09	159 92	0 33
LUHCreek	5252.774	10-year	713 73	17.18	24.11		24.43	0.001327	4.59	162.85	44.29	0 37
LUHCreek	5252.774	UH-2	871 31	17 18	24.88		25.22	0.001230	4.70	200.14	96.46	0 36
LUHCreek	5200.000	10-year	713 52	17 17	23.99		24.36	0.001420	4.84	147.52	70.88	0 38
LUHCreek	5200.000	UH-2	870 88	17 17	24.74		25.14	0.001435	5.12	170.05	152.47	0 39
LUHCreek	5100.001	10-year	713.08	17.15	23.84		24 20	0.001618	4 84	148.16	63.11	0.40
LUHCreek	5100.001	UH-2	870.73	17.15	24.61		25 00	0.001505	4 98	178 48	143.78	0.40
LUHCreek	5000	10-year	712.63	17.10	23.67		24 04	0.001652	4 91	145 61	35.29	0.41
LUHCreek	5000	UH-2	870.31	17.10	24.46		24 85	0.001449	5.05	175 55	40.65	0.39
LUHCreek	4899.998	10-year	711.40	16.93	23.40		23 86	0.001899	5.46	130.37	27.21	0.44
LUHCreek	4899.998	UH-2	869.42	16 93	24 18		24.69	0.001850	5.72	152.11	28.72	0.44
LUHCreek	4799.999	10-year	711.90	16 71	23.52		23 72	0.000662	3 60	209.59	49.11	0.28
LUHCreek	4799.999	UH-2	870.01	16.71	24.34		24 54	0.000612	3 73	250 97	52.94	0.27
LUHCreek	4696.301	10-year	711.66	16.50	23.40		23.66	0.000523	4 09	173 85	39.76	0.27
LUHCreek	4696.301	UH-2	869.58	16.50	24.17		24.48	0.000548	4 50	193 31	124.55	0.29
LUHCreek	4661.887		Culvert									
LUHCreek	4618.869	10-year	709.99	16.50	23.15		23.43	0.000291	4 27	167 39	184.19	0.29
LUHCreek	4618.869	UH-2	868.30	16.50	23.87		24.21	0.000309	4 71	185 74	214.33	0.31
LUHCreek	4500.000	10-year	709 80	16.38	23.09		23.38	0.000537	4.34	164.10	49.90	0 35
LUHCreek	4500.000	UH-2	868.30	16.38	23.83		24.16	0.000541	4.59	190.30	57.67	0 35
LUHCreek	4400.001	10-year	709 98	16.27	23.06		23.33	0.000525	4.13	175.18	106.52	0 35
LUHCreek	4400.001	UH-2	868.45	16.27	23.84		24.11	0.000454	4.22	216.01	127.88	0 34
LUHCreek	4299.999	10-year	709.44	16 17	22 92		23.27	0.000686	4.75	149.36	134.68	0 39
LUHCreek	4299.999	UH-2	867 99	16 17	23.67		24.06	0.000671	4.97	174.87	168.50	0 39
LUHCreek	4199.998	10-year	709.43	16.06	22 86		23.20	0.000667	4.70	151.03	89.48	0 39
LUHCreek	4199.998	UH-2	867.84	16.06	23.62		23.99	0.000652	4.91	176.79	103.33	0 39
LUHCreek	4099.999	10-year	709.27	15 96	22 80		23.14	0.000589	4.66	152.28	76.97	0 38
LUHCreek	4099.999	UH-2	867.69	15.96	23 56		23.93	0.000597	4.87	178.28	96.73	0 39
LUHCreek	4000.000	10-year	709.42	15.85	22 82		23.08	0.000526	4.09	173.42	41.57	0.35
LUHCreek	4000.000	UH-2	867.83	15.85	23.60		23.87	0.000513	4.17	208.26	108.83	0 35
LUHCreek	3899.999	10-year	709.27	15.75	22 74		23.03	0 000552	4.33	163.63	37.27	0.36
LUHCreek	3899.999	UH-2	867.69	15.75	23 51		23.82	0 000531	4.47	194.53	55.13	0.36
LUHCreek	3799.999	10-year	709.11	15.64	22.67		22 98	0 000501	4.43	159.92	37.90	0.38
LUHCreek	3799.999	UH-2	867.54	15.64	23 46		23.77	0 000448	4.52	193.32	50.95	0.37
LUHCreek	3700	10-year	709.11	15.54	22.64		22 92	0 000549	4.26	166.57	98.44	0.35
LUHCreek	3700	UH-2	867.53	15.54	23.42		23.72	0 000518	4.42	196.17	153.08	0.35
LUHCreek	3600	10-year	708.95	15.43	22 57		22 87	0 000546	4.37	162.26	33.43	0.35
LUHCreek	3600	UH-2	867.40	15.43	23 34		23.67	0 000541	4.59	188.95	110.89	0.35
LUHCreek	3500.000	10-year	708.95	15.33	22.54		22 82	0 000516	4 23	167 52	34.70	0.34
LUHCreek	3500.000	UH-2	867.26	15.33	23.31		23.62	0 000515	4 43	195.63	38.68	0.34
LUHCreek	3399.999	10-year	708.95	15.23	22.50		22.76	0.000561	4.12	172.20	40 79	0.35
LUHCreek	3399.999	UH-2	867.26	15.23	23.30		23.57	0.000565	4.17	208.01	49 24	0.35
LUHCreek	3299.999	10-year	708.95	15.12	22.44		22.71	0.000514	4.13	171.69	37 51	0.34
LUHCreek	3299.999	UH-2	867.13	15.12	23.23		23.51	0.000556	4.24	204.50	46 28	0.36
LUHCreek	3200.000	10-year	708.94	15.02	22.46		22.66	0.000382	3.64	195.02	41 67	0.30
LUHCreek	3200.000	UH-2	867.26	15.02	23.24		23.46	0.000389	3.77	229.83	47 30	0.30
LUHCreek	3099.998	10-year	708.94	14.91	22.44		22.63	0.000376	3.50	202 27	45 43	0.29
LUHCreek	3099.998	UH-2	867.13	14.91	23.22		23.42	0.000368	3.61	240.16	50 92	0.29
LUHCreek	3000	10-year	708.81	14.81	22.35		22.59	0.000454	3.86	183.86	40.83	0.32
LUHCreek	3000	UH-2	867.01	14.81	23.14		23.38	0 000461	3.97	218.42	47.33	0.33

HEC-RAS Profile: Max WS (Continued)

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
LUHCreek	2900.000	10-year	708.81	14.70	22.31		22.54	0.000489	3.80	186.29	45.14	0.33
LUHCreek	2900.000	UH-2	867.01	14.70	23.11		23.34	0.000431	3.87	223.95	53.22	0.32
LUHCreek	2799.999	10-year	708.81	14.60	22.26		22.49	0.000413	3.91	181.28	35.95	0.31
LUHCreek	2799.999	UH-2	866.88	14.60	23.03		23.30	0.000423	4.12	210.77	44.57	0.31
LUHCreek	2699.999	10-year	708.80	14.49	22.28		22.46	0.000338	3.41	208.07	45.13	0.28
LUHCreek	2699.999	UH-2	866.99	14.49	23.08		23.25	0.000307	3.43	336.01	247.16	0.27
LUHCreek	2599.999	10-year	708.80	14.39	22.24		22.42	0.000380	3.40	208.77	76.60	0.29
LUHCreek	2599.999	UH-2	866.98	14.39	23.03		23.22	0.000354	3.46	251.65	128.58	0.29
LUHCreek	2499.999	10-year	708.79	14.28	22.21		22.39	0.000311	3.38	209.96	42.72	0.27
LUHCreek	2499.999	UH-2	866.88	14.28	22.99		23.18	0.000323	3.53	245.48	48.41	0.28
LUHCreek	2399.999	10-year	708.79	14.18	22.16		22.35	0.000367	3.49	203.10	44.81	0.29
LUHCreek	2399.999	UH-2	866.88	14.18	22.95		23.15	0.000367	3.60	240.55	50.81	0.29
LUHCreek	2300.000	10-year	708.70	14.07	22.12		22.32	0.000352	3.55	199.91	41.34	0.28
LUHCreek	2300.000	UH-2	866.79	14.07	22.90		23.11	0.000363	3.70	234.52	50.46	0.29
LUHCreek	2200	10-year	708.78	13.97	22.12		22.28	0.000279	3.23	219.51	113.69	0.26
LUHCreek	2200	UH-2	866.87	13.97	22.91		23.08	0.000283	3.39	256.25	159.04	0.26
LUHCreek	2100	10-year	708.70	13.87	22.08		22.26	0.000296	3.41	208.06	165.10	0.26
LUHCreek	2100	UH-2	866.79	13.87	22.85		23.05	0.000291	3.62	239.47	192.38	0.27
LUHCreek	1999.999	10-year	708.77	13.76	22.09		22.23	0.000243	2.93	241.87	53.29	0.24
LUHCreek	1999.999	UH-2	866.86	13.76	22.88		23.02	0.000246	3.03	297.17	151.06	0.24
LUHCreek	1900.000	10-year	708.70	13.66	22.02		22.20	0.000327	3.40	209.26	59.95	0.27
LUHCreek	1900.000	UH-2	866.85	13.66	22.82		23.00	0.000302	3.49	288.51	126.33	0.27
LUHCreek	1800.000	10-year	708.75	13.55	22.03		22.17	0.000229	3.10	256.37	119.82	0.24
LUHCreek	1800.000	UH-2	866.85	13.55	22.82		22.97	0.000203	3.20	354.52	143.40	0.23
LUHCreek	1700.001	10-year	708.74	13.45	22.01		22.15	0.000219	3.01	277.96	126.89	0.23
LUHCreek	1700.001	UH-2	866.84	13.45	22.81		22.95	0.000203	3.07	380.07	164.22	0.22
LUHCreek	1600.001	10-year	708.73	13.34	21.98		22.13	0.000218	3.03	238.84	88.90	0.23
LUHCreek	1600.001	UH-2	866.84	13.34	22.78		22.93	0.000206	3.16	331.02	136.83	0.23
LUHCreek	1500.001	10-year	708.73	13.24	21.95		22.10	0.000249	3.13	227.29	51.92	0.24
LUHCreek	1500.001	UH-2	866.85	13.24	22.74		22.91	0.000239	3.30	286.92	128.06	0.24
LUHCreek	1400.001	10-year	708.73	13.13	21.93	17.13	22.08	0.000256	3.09	229.00	45.79	0.24
LUHCreek	1400.001	UH-2	866.84	13.13	22.72	17.62	22.88	0.000260	3.23	271.59	76.60	0.25

RAS Model Data

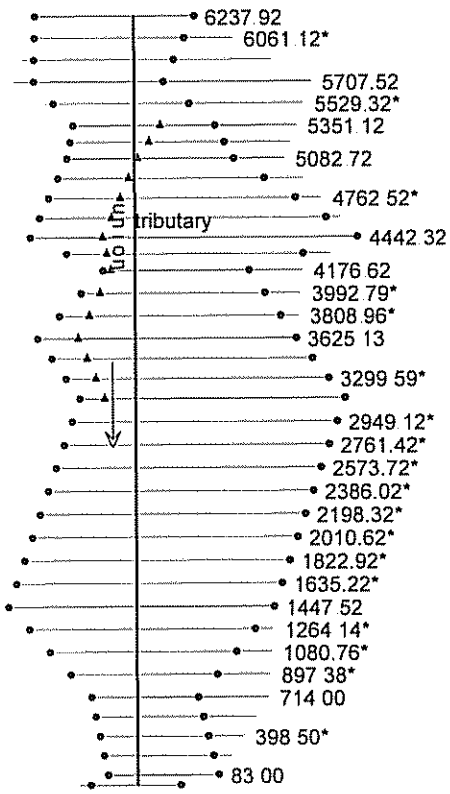
For

Unionhouse Creek – Tributary Pre Fvcp

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table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tributary
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2010.62*
1822.92*
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897.38*
714.00
398.50*
83.00

RAS Input Hyd ıph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
union	tributar	6237.92		Flow Hydrograph	hcalcpre.dss	/UHPRE/UH-1B/FLOW/31DEC1999/1MIN/100YR-24HR/
union	tributar	5351.12	3136.82	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-1G/FLOW/31DEC1999/1MIN/100YR-24HR/
union	tributar	3136.82	83.00	Uniform Lateral Inflow Hydrograph	hcalcpre.dss	/UHPRE/UH-1A1/FLOW/31DEC1999/1MIN/100YR-24HR/
union	tributar	0.00		Normal depth	#N/A	Friction slope =0.0005

HEC-RAS Plan: 100-yr Ex River: union Reach: tributary Profile: Max WS

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
tributary	6237.92	156.50	50.00	50.45		50.45	0.001828	0.54	290.15	797.69	0.16
tributary	6061.12*	151.27	49.60	50.10		50.11	0.002099	0.58	258.80	700.02	0.17
tributary	5884.32*	149.02	49.20	49.68		49.70	0.005585	0.86	174.22	554.51	0.27
tributary	5707.52	144.71	48.80	49.22		49.28	0.044425	1.85	78.13	369.69	0.71
tributary	5529.32*	134.98	48.40	48.94		48.94	0.000817	0.41	329.67	749.47	0.11
tributary	5351.12	131.92	48.00	48.80		48.80	0.000756	0.54	242.68	1038.89	0.11
tributary	5216.92*	135.59	48.00	48.71		48.71	0.000625	0.46	294.66	1085.67	0.10
tributary	5082.72	138.88	48.00	48.62		48.63	0.000608	0.42	329.68	1126.39	0.10
tributary	4922.62*	142.61	48.00	48.52		48.53	0.000656	0.39	365.74	1316.75	0.10
tributary	4762.52*	146.24	48.00	48.41		48.41	0.001024	0.42	351.16	1485.74	0.12
tributary	4602.42*	24.90	48.00	48.34		48.34	0.000039	0.07	344.45	1654.46	0.02
tributary	4442.32	151.54	48.00	48.20		48.21	0.005931	0.64	235.47	1779.90	0.26
tributary	4309.47*	155.45	47.65	48.10		48.11	0.001057	0.42	368.14	1257.63	0.12
tributary	4176.62	159.24	47.30	47.90		47.91	0.002103	0.52	307.43	1022.31	0.16
tributary	3992.79*	164.59	46.87	47.50		47.50	0.002344	0.57	287.45	924.90	0.18
tributary	3808.96*	168.72	46.43	47.07		47.07	0.002304	0.58	291.22	915.85	0.18
tributary	3625.13	170.66	46.00	46.80		46.80	0.000693	0.38	444.95	1152.72	0.10
tributary	3462.36*	173.51	46.00	46.69		46.70	0.000573	0.36	476.74	1112.44	0.09
tributary	3299.59*	176.81	46.00	46.60		46.60	0.000560	0.36	488.03	1136.47	0.09
tributary	3136.82	180.15	46.00	46.43		46.43	0.001614	0.51	353.67	1155.93	0.15
tributary	2949.12*	183.57	45.78	46.16		46.16	0.001290	0.44	420.27	1221.11	0.13
tributary	2761.42*	186.84	45.56	45.92		45.92	0.001347	0.43	430.41	1304.02	0.13
tributary	2573.72*	189.97	45.33	45.68		45.68	0.001277	0.42	453.79	1394.95	0.13
tributary	2386.02*	192.95	45.11	45.44		45.44	0.001267	0.41	470.87	1485.67	0.13
tributary	2198.32*	195.84	44.89	45.21		45.21	0.001242	0.40	489.65	1578.73	0.13
tributary	2010.62*	198.33	44.67	44.98		44.98	0.001292	0.40	498.91	1671.53	0.13
tributary	1822.92*	200.54	44.44	44.74		44.74	0.001247	0.39	519.10	1767.74	0.13
tributary	1635.22*	202.26	44.22	44.55		44.55	0.000849	0.34	598.96	1870.34	0.11
tributary	1447.52	205.09	44.00	44.22		44.23	0.002667	0.47	436.10	1955.78	0.18
tributary	1264.14*	206.39	43.50	43.78		43.78	0.002276	0.50	413.17	1503.13	0.17
tributary	1080.76*	203.46	43.00	43.53		43.53	0.000572	0.37	549.18	1110.37	0.09
tributary	897.38*	204.45	42.50	43.45		43.46	0.000252	0.33	622.49	816.31	0.07
tributary	714.00	206.13	42.00	43.36		43.37	0.000703	0.51	401.27	579.94	0.11
tributary	556.25*	207.61	42.00	43.25		43.26	0.000723	0.53	394.53	561.53	0.11
tributary	398.50*	209.26	42.00	43.13		43.14	0.000779	0.55	383.82	548.03	0.11
tributary	240.75*	211.03	42.00	43.00		43.00	0.000944	0.59	360.17	532.81	0.13
tributary	83.00	212.89	42.00	42.78		42.79	0.001738	0.72	294.04	500.68	0.17
tributary	0.00	212.86	42.00	42.70	42.14	42.70	0.000500	0.43	491.48	710.76	0.09

RAS Model Data

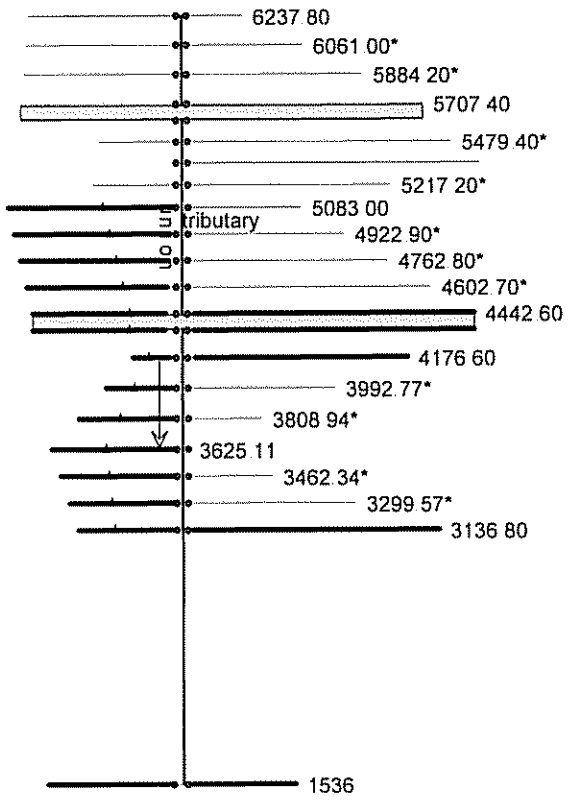
For

Unionhouse Creek – Tributary Post Fvcp

Model Schematic Layout

Input Hydrograph Summary

Summary Output Table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Jo ut tributary
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3992.77*
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3462.34*
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3136.80
1536

RAS Input H raph Summary

River	Reach	Starts or Location	Ends at Xsect	Type	DSS File	DSS Path
union	tributar	6237.80		Flow Hydrograph	hcaicpost.dss	/UHPOST/UH-1B/FLOW/31DEC1999/1MIN/100YR-24HR/
union	tributar	4442.60	3625.11	Uniform Lateral Inflow Hydrograph	hcaicpost.dss	/UHPOST/UH-1G/FLOW/31DEC1999/1MIN/100YR-24HR/
union	tributar	1536		Stage Hydrograph	UnionHouse.dss	/UNION_HOUSE UHCREEK/22900/STAGE/01JAN2000/10MIN/UH-2/

HEC-RAS River: union Reach: tributary Profile: Max WS

Reach	River Sta	Plan	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
tributary	6237.80	100-year	151.38	42 00	46 58		46.61	0 000352	1.38	109.56	37.79	0.14
tributary	6237.80	10-year Trib	103.86	42.00	45 23		45.27	0 000718	1.63	63.90	29.58	0.19
tributary	6061.00*	100-year	146.87	41.67	46 54		46.56	0.000256	1.22	120.49	39.48	0.12
tributary	6061.00*	10-year Trib	98.86	41.67	45 14		45.17	0.000487	1.39	71.01	30.98	0.16
tributary	5884.20*	100-year	144.22	41.33	46.51		46.53	0 000190	1.09	132.74	41 27	0.11
tributary	5884.20*	10-year Trib	95.41	41.33	45 07		45.10	0 000330	1.20	79.75	32 61	0.13
tributary	5707.40	100-year	142.95	41 00	46.48		46 50	0.000146	0.98	145 54	43.08	0.09
tributary	5707.40	10-year Trib	93.87	41 00	45.03		45 05	0.000235	1.05	89 30	34.32	0.11
tributary	5657.40		Culvert									
tributary	5607.40	100-year	130 31	41.00	46.13		46.15	0.000161	1.00	130.81	40.97	0 10
tributary	5607.40	10-year Trib	78 79	41.00	44.84		44.85	0.000203	0.95	82.86	33.16	0 11
tributary	5479.40*	100-year	129.51	40.95	46.12		46.13	0.000147	0.95	136.16	42.72	0.09
tributary	5479.40*	10-year Trib	78.05	40.95	44.82		44.83	0.000185	0.91	86.03	34 50	0.10
tributary	5351.40	100-year	129.47	40.90	46.10		46.11	0.000135	0.91	141.90	44.58	0.09
tributary	5351.40	10-year Trib	76.89	40.90	44.80		44.81	0.000165	0.86	89.47	35.92	0.10
tributary	5217.20*	100-year	128 84	40.85	46.08		46.10	0.000122	0.87	148.39	46.70	0.09
tributary	5217.20*	10-year Trib	76 39	40.85	44.78		44.79	0.000150	0.82	93.36	37.54	0.09
tributary	5083.00	100-year	128 80	40.80	46.07		46.08	0.000111	0.83	155.45	48 99	0.08
tributary	5083.00	10-year Trib	75 92	40.80	44.76		44.77	0.000135	0 78	97.63	39 30	0.09
tributary	4922.90*	100-year	128.31	40.78	46.05		46.06	0.000108	0.82	157.17	49.60	0.08
tributary	4922.90*	10-year Trib	75.08	40.78	44.74		44.75	0.000130	0.76	98.50	39.74	0.09
tributary	4762.80*	100-year	128.26	40.75	46.04		46.05	0 000104	0.80	159.39	50 29	0.08
tributary	4762.80*	10-year Trib	74.30	40.75	44 72		44.73	0.000124	0.74	99.80	40 26	0.08
tributary	4602.70*	100-year	128.17	40.72	46 02		46.03	0.000101	0.79	161.77	51 02	0.08
tributary	4602.70*	10-year Trib	73.56	40.72	44.70		44.71	0.000118	0.73	101 22	40.82	0.08
tributary	4442.60	100-year	127.99	40 70	46.01		46.02	0.000098	0.78	163.96	51.80	0.08
tributary	4442.60	10-year Trib	69.56	40 70	44.69		44 69	0.000103	0.68	102.51	41.41	0.08
tributary	4392.60		Culvert									
tributary	4342.60	100-year	123.01	40.60	45.71		45.72	0.000109	0 81	152 55	49.71	0.08
tributary	4342.60	10-year Trib	68.21	40.60	44.56		44.57	0.000104	0.68	100.49	40.76	0.08
tributary	4176.60	100-year	146.45	40 50	45.68		45.70	0.000139	0.91	160.38	51.88	0.09
tributary	4176.60	10-year Trib	75.68	40 50	44.54		44 55	0.000112	0.71	106.31	42.64	0 08
tributary	3992.77*	100-year	172.79	40.33	45.64		45 66	0.000237	1.03	167 73	53.16	0.10
tributary	3992.77*	10-year Trib	73.52	40.33	44.52		44 52	0.000124	0.65	113.14	44.03	0.07
tributary	3808.94*	100-year	198.77	40.17	45.58		45.60	0.000364	1 14	173.80	54.27	0 11
tributary	3808.94*	10-year Trib	80 90	40.17	44.49		44 50	0.000165	0.68	119.64	45.37	0.07
tributary	3625.11	100-year	224.96	40 00	45.51		45.54	0.000240	1.25	180.67	55.53	0.12
tributary	3625.11	10-year Trib	87.84	40 00	44.47		44 47	0.000095	0.69	127.04	46.89	0.07
tributary	3462.34*	100-year	224.71	39 83	45.47		45 49	0.000379	1.20	187 98	56.72	0 12
tributary	3462.34*	10-year Trib	94.04	39.83	44.44		44 45	0.000164	0.70	134.42	48.25	0.07
tributary	3299.57*	100-year	223.89	39.67	45.41		45.43	0.000269	1 15	195.03	57.91	0 11
tributary	3299.57*	10-year Trib	100.29	39.67	44.42		44.43	0.000128	0 71	141.59	49.62	0.07
tributary	3136.80	100-year	222.44	39 50	45.38		45.40	0.000172	1.09	203.89	59.36	0.10
tributary	3136.80	10-year Trib	93.31	39 50	44.41		44 41	0.000069	0.62	150.11	51.19	0.06
tributary	1536	100-year	186.91	38 90	45.21	40.41	45 21	0.000024	0 47	442.31	119.45	0 04
tributary	1536	10-year Trib	92 57	38.90	44.34	39 95	44.34	0.000014	0 30	338.89	119.45	0 03

APPENDIX C

SWMM MODELS

Florin Creek Pipe System Summary - 10 Year

Link Name	Upstream Node Name	Downstream Node Name	Shape	Roughness	Diameter	Length	Conduit Slope (%)	Upstream Invert Elevation	Upstream Ground Elevation	Upstream HGL	Downstream Invert Elevation	Downstream Ground Elevation	Downstream HGL
LE6-11.1	E6-11	E6-15	Circular	0.015	2	390	0.41	49.71	56	53.723	48.11	54	53.507
LE6-15.1	E6-15	MH7-5	Circular	0.015	3	1690	0.24	47.11	54	53.507	43.07	52	50.116
LMH7-5.1	MH7-5	MH7-2	Circular	0.015	4	660	0.2	42.07	52	50.116	40.78	52	47.618
LMH7-2	MH7-2	MH6DET	Circular	0.015	4	440	0.16	40.78	52	47.618	40.06	49	44.798
LE6-5.1	E6-5	E6-2	Circular	0.015	2.5	640	0.3	46.49	56	55.389	44.57	52	51.524
LE6-2.1	E6-2	MH7-3	Circular	0.015	3	1150	0.24	44.07	52	51.524	41.31	50	45.964
LMH7-3.1	MH7-3	MH6DET	Circular	0.015	3.5	310	0.24	40.81	50	45.964	40.06	49	44.798
LMH6-5.1	MH6-5	MH6DET	Circular	0.015	2	570	0.41	42.41	52	51.355	40.06	49	44.798
LMH6DET	MH6DET	MH4-9	Circular	0.015	5	1350	0.12	39.56	49	44.798	37.93	50	43.193
LMH4-9	MH4-9	MH4-7	Circular	0.015	5	1050	0.12	37.93	50	43.193	36.66	46	42.023
LSWATT	SWATTD	MH4-7	Circular	0.015	5	70	0.11	36.74	46	42.024	36.66	46	42.023
LMH4-7	MH4-7	MH0-7	Circular	0.015	5	230	0.12	36.66	46	42.023	36.38	46	41.774
LMH3-15.1	MH3-15	MH3-11	Circular	0.015	2.5	920	0.12	41.67	47	46.607	40.58	47	45.744
LMH3-11.1	MH3-11	MH1-51	Circular	0.015	3	170	0.14	40.08	47	45.744	39.85	47	44.989
LMH1-51.1	MH1-51	MH1-55	Circular	0.015	4	450	0.09	38.85	47	44.989	38.43	46	44.103
LMH1-55.1	MH1-55	MH1-53	Circular	0.015	4	460	0.09	38.43	46	44.103	38.01	45	42.356
LMH1-53	MH1-53	MH0-7	Circular	0.015	4.5	690	0.09	37.51	45	42.356	36.88	46	41.774
LMH0-7	MH0-7	MH2-3	Circular	0.015	5	1400	0.07	36.38	46	41.774	35.43	44	39.773
LMH2-3	MH2-3	MH2-1	Circular	0.015	5	520	0.07	35.43	44	39.773	35.07	44	38.856
LMH2-1	MH2-1	DETF4C	Circular	0.015	5	60	0.12	35.07	44	38.856	35	42	38.727
LMH1-37.1	MH1-37	MH1-25	Circular	0.015	3	700	0.17	38.69	44	43.673	37.48	44	43.329
LMH1-25.1	MH1-25	MH1-23	Circular	0.015	3	490	0.17	37.48	44	43.329	36.64	42	41.435
LMH1-23.1	MH1-23	MH1-7	Circular	0.015	4	740	0.05	35.64	42	41.435	35.28	42	40.416
LMH1-7.1	MH1-7	DETF4C	Circular	0.015	4	580	0.05	35.28	42	40.416	35	42	38.727
LSC2R71	SC2R71	SC2R67	Circular	0.015	4	50	0.1	39.51	48	43.726	39.46	52	43.715
LSC2R67	SC2R67	SC2R65	Circular	0.015	4	429.94	0.064	39.46	52	43.715	39.18	50	43.538
LSC2R65	SC2R65	SC2R61	Circular	0.015	4	1093.25	0.064	39.18	50	43.538	38.48	47.1	42.946
LSC2R61	SC2R61	SC2R57	Circular	0.015	4	127	0.04	38.48	47.1	42.946	38.43	45.81	42.849
LSC2R57	SC2R57	SC2R55	Circular	0.015	4	213.2	0.14	38.43	45.81	42.849	37.56	45.81	42.763
LSC2R55	SC2R55	SC2R51	Circular	0.015	4	213.2	0.07	37.56	45.81	42.763	37.41	45.81	42.55
LSC2R51	SC2R51	SC2R49	Circular	0.015	4	216.3	0.18	37.41	45.81	42.55	37.02	45.56	42.036
LSC2R49	SC2R49	SC2R47	Circular	0.015	4	546	0.13	37.02	45.56	42.036	36.31	44.85	40.803
LSC2R47	SC2R47	SC2R45	Circular	0.015	4	471	0.221	36.31	44.85	40.803	35.27	43.95	39.488
LSC2R45	SC2R45	SC2R37	Circular	0.015	5.5	480.2	0.19	34.27	43.95	39.488	33.36	43.35	39.222
LSC2R37	SC2R37	WQDETSC2	Circular	0.015	5.5	267.33	0.041	33.36	43.35	39.222	33.25	44	39.047
LWQDETSC2	DETSC2OUT	SCR37	Circular	0.015	5.5	267.33	0.03	33.25	44	38.911	33.14	43.35	38.743
LSCR37	SCR37	SC2R27	Circular	0.015	5.5	553.8	0.11	33.14	43.35	38.743	32.53	42.4	38.419
LSC2R27	SC2R27	SC2R26	Circular	0.015	5.5	46.34	0.45	32.53	42.4	38.419	32.32	42.4	38.388
LSC2R26	SC2R26	SC2R19	Circular	0.015	5.5	451.1	0.06	32.32	42.4	38.388	32.16	42.6	38.094
LSC2R19	SC2R19	SC2R18	Circular	0.015	5.5	33	0.152	32.16	42.6	38.094	32.11	42.5	38.065
LSC2R18	SC2R18	SC2R17	Circular	0.015	5.5	420	0.143	32.11	42.5	38.065	31.51	42.2	37.707
LSC2R17	SC2R17	SC2R15	Circular	0.015	5.5	430	0.067	31.51	42.2	37.707	31.22	39.97	37.312
LSC2R15	SC2R15	SC2ROUT	Circular	0.015	5.5	162	0.12	31.22	39.97	37.312	31.1	40	37.107

Florin Creek Pipe System Summary - 100 Year

Link Name	Upstream Node Name	Downstream Node Name	Shape	Roughness	Diameter	Length	Conduit Slope (%)	Upstream Invert Elevation	Upstream Ground Elevation	Upstream HGL	Downstream Invert Elevation	Downstream Ground Elevation	Downstream HGL
LE6-11.1	E6-11	E6-15	Circular	0.015	2	390	0.41	49.71	56	53.934	48.11	54	53.828
LE6-15.1	E6-15	MH7-5	Circular	0.015	3	1690	0.24	47.11	54	53.828	43.07	52	51.871
LMH7-5.1	MH7-5	MH7-2	Circular	0.015	4	660	0.2	42.07	52	51.871	40.78	52	50.531
LMH7-2	MH7-2	MH6DET	Circular	0.015	4	440	0.16	40.78	52	50.531	40.06	49	47.947
LE6-5.1	E6-5	E6-2	Circular	0.015	2.5	640	0.3	46.49	56	55.536	44.57	52	51.81
LE6-2.1	E6-2	MH7-3	Circular	0.015	3	1150	0.24	44.07	52	51.81	41.31	50	49.377
LMH7-3.1	MH7-3	MH6DET	Circular	0.015	3.5	310	0.24	40.81	50	49.377	40.06	49	47.947
LMH6-5.1	MH6-5	MH6DET	Circular	0.015	2	570	0.41	42.41	52	51.494	40.06	49	47.947
LMH6DET	MH6DET	MH4-9	Circular	0.015	5	1350	0.12	39.56	49	47.947	37.93	50	45.864
LMH4-9	MH4-9	MH4-7	Circular	0.015	5	1050	0.12	37.93	50	45.864	36.66	46	44.287
LSWATT	SWATTD	MH4-7	Circular	0.015	5	70	0.11	36.74	46	44.289	36.66	46	44.287
LMH4-7	MH4-7	MH0-7	Circular	0.015	5	230	0.12	36.66	46	44.287	36.38	46	43.917
LMH3-15.1	MH3-15	MH3-11	Circular	0.015	2.5	920	0.12	41.67	47	46.994	40.58	47	46.757
LMH3-11.1	MH3-11	MH1-51	Circular	0.015	3	170	0.14	40.08	47	46.757	39.85	47	46.425
LMH1-51.1	MH1-51	MH1-55	Circular	0.015	4	450	0.09	38.85	47	46.425	38.43	46	45.508
LMH1-55.1	MH1-55	MH1-53	Circular	0.015	4	460	0.09	38.43	46	45.508	38.01	45	44.414
LMH1-53	MH1-53	MH0-7	Circular	0.015	4.5	690	0.09	37.51	45	44.414	36.88	46	43.917
LMH0-7	MH0-7	MH2-3	Circular	0.015	5	1400	0.07	36.38	46	43.917	35.43	44	40.855
LMH2-3	MH2-3	MH2-1	Circular	0.015	5	520	0.07	35.43	44	40.855	35.07	44	39.593
LMH2-1	MH2-1	DETF4C	Circular	0.015	5	60	0.12	35.07	44	39.593	35	42	39.445
LMH1-37.1	MH1-37	MH1-25	Circular	0.015	3	700	0.17	38.69	44	43.926	37.48	44	43.582
LMH1-25.1	MH1-25	MH1-23	Circular	0.015	3	490	0.17	37.48	44	43.582	36.64	42	41.987
LMH1-23.1	MH1-23	MH1-7	Circular	0.015	4	740	0.05	35.64	42	41.987	35.28	42	41.652
LMH1-7.1	MH1-7	DETF4C	Circular	0.015	4	580	0.05	35.28	42	41.652	35	42	39.445
LSC2R71	SC2R71	SC2R67	Circular	0.015	4	50	0.1	39.51	48	46.65	39.46	52	46.635
LSC2R67	SC2R67	SC2R65	Circular	0.015	4	429.94	0.064	39.46	52	46.635	39.18	50	46.406
LSC2R65	SC2R65	SC2R61	Circular	0.015	4	1093.25	0.064	39.18	50	46.406	38.48	47.1	45.805
LSC2R61	SC2R61	SC2R57	Circular	0.015	4	127	0.04	38.48	47.1	45.805	38.43	45.81	45.77
LSC2R57	SC2R57	SC2R55	Circular	0.015	4	213.2	0.14	38.43	45.81	45.77	37.56	45.81	45.713
LSC2R55	SC2R55	SC2R51	Circular	0.015	4	213.2	0.07	37.56	45.81	45.713	37.41	45.81	45.444
LSC2R51	SC2R51	SC2R49	Circular	0.015	4	216.3	0.18	37.41	45.81	45.444	37.02	45.56	44.729
LSC2R49	SC2R49	SC2R47	Circular	0.015	4	546	0.13	37.02	45.56	44.729	36.31	44.85	43.071
LSC2R47	SC2R47	SC2R45	Circular	0.015	4	471	0.221	36.31	44.85	43.071	35.27	43.95	41.005
LSC2R45	SC2R45	SC2R37	Circular	0.015	5.5	480.2	0.19	34.27	43.95	41.005	33.36	43.35	40.548
LSC2R37	SC2R37	WQDETSC2	Circular	0.015	5.5	267.33	0.041	33.36	43.35	40.548	33.25	44	40.289
LWQDETSC2	DETSC2OUT	SCR37	Circular	0.015	5.5	267.33	0.03	33.25	44	40.186	33.14	43.35	40.306
LSCR37	SCR37	SC2R27	Circular	0.015	5.5	553.8	0.11	33.14	43.35	40.306	32.53	42.4	39.608
LSC2R27	SC2R27	SC2R26	Circular	0.015	5.5	46.34	0.45	32.53	42.4	39.608	32.32	42.4	39.588
LSC2R26	SC2R26	SC2R19	Circular	0.015	5.5	451.1	0.06	32.32	42.4	39.588	32.16	42.6	39.135
LSC2R19	SC2R19	SC2R18	Circular	0.015	5.5	33	0.152	32.16	42.6	39.135	32.11	42.5	39.075
LSC2R18	SC2R18	SC2R17	Circular	0.015	5.5	420	0.143	32.11	42.5	39.075	31.51	42.2	38.585
LSC2R17	SC2R17	SC2R15	Circular	0.015	5.5	430	0.067	31.51	42.2	38.585	31.22	39.97	37.802
LSC2R15	SC2R15	SC2ROUT	Circular	0.015	5.5	162	0.12	31.22	39.97	37.802	31.1	40	37.498

APPENDIX D

CSDS MODELS

CS DRAINAGE STUDIO

Combined Hydraulics & Hydrology for Unit Peak Discharge Methods Software Package

A Civil Solutions Product

OUTPUT RESULTS FOR FILE	P:\projects\2004.21A\file_out\20070919\TOCD\csds\Complete
PROJECT DESCRIPTION	
PRINTED ON DATE	10-12-2007
PRINTED BY USER	

This Printout Report Contains :

1) Jurisdiction File Information (hydrology basis)
2) Contributing Areas Information
3) Cumulative Areas Information
4) Node Connection Outline Information
5) Conveyance Description Information
6) Conveyance Profiles Information
7) Node Results Summary
8) Convey Results Summary

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CONVERGENCE CONTROL VARIABLES :
This software requires the use of several control variables to force the system of calculations to be convergent. These need to be adjusted for each system, to meet jur. requirements, and to provide accurate results. The variables used in this analysis are described below.

****

DESCRIPTION:	Variable Value	Unit
Horizontal Length Increment used for Backwater Calculations	3	Feet
Computational Time Interval for Hydrograph Calculations	5	Min.
Backwater Calculations Depth Tolerance	.001	Feet
Backwater Calculations Distance Tolerance	.01	Feet
Tolerance for Flow based Calculations	.005	cfs
Tolerance for Froud based Calculations	.005	
Maximum Travel Time Allowed Between Two Connected Nodes (Tt)	10	Min.
Minimum Flow Percentage in Parallel Conveyances to Contribute to Tt	30	%
Maximum Number of Iterations Allowed at any Iterative Calculation	200	
Convergence Tr Test Tolerance	0.05	min.
Flow Diversion Calculations were DISABLED for this calculation.		

Tr time Solved By : LAG time at merge nodes solved by largest Contributing Response Time

****
Jurisdiction File Information:
(used for hydrology basis)
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Description:	Variable Value
Computer Model Analysis Type	UQDUALRC
Jurisdiction Name	Sacramento County (Nolte) Zone 3 Design Storm by Dual rating Curves Method.
Jurisdiction Title	NolteSZ3
Jurisdiction Description	Sacramento County Design Storm by (Nolte) Dual Rating Curves From figures 2-2 to 2-7, drainage manual.
Jurisdiction Date	July 7, 1997
Jurisdiction Location	Sacramento County
Jurisdiction State	California
Jurisdiction File Created By	Civil Solutions

****
FLOW CALCULATION PARAMETERS AS FOLLOWS:
****

DESCRIPTION	UNIT	Not Used	% Impervious	I Coef :
Highways & Parking :	Acre	2	95	90
Commercial Offices :	Acre	2	90	90
Intensive Industrial :	Acre	2	85	90
Apartments HDR :	Acre	2	80	90
Mobile Home Park :	Acre	2	75	80
Condominiums, MDR :	Acre	2	70	80
Residential: 8-10 du/acre, Ext Indust :	Acre	2	60	70
Residential: 6-8 du/acre, LDR, School :	Acre	2	50	60
Residential: 4-6 du/acre :	Acre	2	40	50
Residential 3-4 du/acre :	Acre	2	30	50
Residential: 2-3 du/acre :	Acre	2	25	45
Residential: 1-2 du/acre :	Acre	2	20	40
Residential: 0.5-1 du/acre :	Acre	2	15	40
Residential: 0.2-0.5 du/acre, Ag. Res :	Acre	2	10	35
Residential: <0.2 du/acre, Recreation :	Acre	2	5	35
Open Space, Grassland, Ag. :	Acre	2	2	35
Open Space, Woodland, Natural :	Acre	2	1	35
Dense Oak, Shrubs, Vines :	acre	2	1	35

Flow Rating Curve #1 Information:

Area (Acre)	Flow (cfs)
0	.01
5	1
10	2
15	3
20	3.9
30	6
40	8.2
50	11
60	14
70	17.5
80	22
90	25
100	30
120	40
140	52
160	67
200	90
300	135
400	180
500	223
600	265
640	285

Flow Rating Curve #2 Information:

Area (Acre)	Flow (cfs)
0	.01
5	2.5
10	5
20	10
50	25
70	33.5
90	42
100	46
110	51
120	55
130	60
140	65
150	70
160	75
200	100
300	150
400	195
500	240
640	310

****
Node Contributing Areas Information:
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#	Node Name	Total Trib Area	Trib Area	Contrib Area by type
1	G7	27.7	27.7	Residential: 2-3 du/acre :
2	G5-3	39.4	39.4	Residential: 2-3 du/acre :
3	G6	26.5	26.5	Residential: 0.5-1 du/acre :
4	G4-3	38.8	38.8	Residential: 0.5-1 du/acre :
5	G3-3	40.1	40.1	Residential: 0.5-1 du/acre :
6	G2-3	41.8	41.8	Residential: 0.5-1 du/acre :
7	G8	0.	26.1	Residential: 0.2-0.5 du/acre Ag. Res :
8	G3A	7.2	7.2	Residential: 4-6 du/acre :
9	G3D	157.3	157.3	Residential: 4-6 du/acre :
10	G1-3A	32.8	32.8	Residential: 4-6 du/acre :
11	G1-3B	0.	46.4	Residential: 6-8 du/acre LDR School :
12	G9	15.7	5.6	Apartments HDR :
			4.5	Residential: 4-6 du/acre :
			5.6	Apartments HDR :
13	G43	0.	0.	
14	MH9-13	30.7	30.7	Residential: 4-6 du/acre :
15	MH9-11	26.3	26.3	Residential: 6-8 du/acre, LDR, School :
16	MH9-7A	28.2	28.2	Residential: 6-8 du/acre, LDR, School :
17	MH9-7B	30.8	30.8	Residential: 6-8 du/acre, LDR, School :
18	MH9-3	17.	17.	Residential: 6-8 du/acre, LDR, School :
19	WQDETE28	0	0.	
20	MH10-9	26.4	26.4	Apartments HDR :
21	MH10-7	29.	29.	Residential: 4-6 du/acre :
22	MH10-5	34.	34.	Residential: 4-6 du/acre :
23	MH10-1	36.9	36.9	Residential: 4-6 du/acre :
24	WQMH10	0.	0.	
25	MH11-9	30.5	30.5	Residential: 4-6 du/acre :
26	MH11-7	30.8	30.8	Residential: 4-6 du/acre :
27	MH11-5	20.2	20.2	Residential: 4-6 du/acre :
28	MH11-1	18.1	18.1	Residential: 4-6 du/acre :
29	MH11-17	30.7	30.7	Residential: 6-8 du/acre, LDR, School :
30	MH11-15	19.1	19.1	Residential: 6-8 du/acre, LDR, School :
31	MH11-13	21.3	21.3	Residential: 6-8 du/acre, LDR, School :
32	MH11-29	19.1	2.1	Highways & Parking :
			14.9	Residential: 6-8 du/acre, LDR, School :
			2.1	Highways & Parking :
33	MH11-27	29.8	29.8	Residential: 4-6 du/acre :
34	MH11-25	26.6	26.6	Residential: 6-8 du/acre, LDR, School :
35	MH11-21	36.	36.	Residential: 6-8 du/acre, LDR, School :
36	MH11-23	30.1	30.1	Residential: 6-8 du/acre, LDR, School :
37	MH11-11	37.8	37.8	Residential: 4-6 du/acre :
38	WQMH11	0.	0.	
39	MH13-9	17.	8.5	Apartments HDR :
			8.5	Apartments HDR :
40	MH13-7	56.	28.	Residential: 4-6 du/acre :
			28.	Residential: 4-6 du/acre :
41	MH13-3	36.	18.	Residential: 0.5-1 du/acre :
			18.	Residential: 0.5-1 du/acre :
42	WQUH1AN	0.	0.	
43	MH14-1	40.5	40.5	Residential: 0.5-1 du/acre :
44	WQMH14	0.	0.	
45	MH15-12	29.9	29.9	Residential: 4-6 du/acre :
46	MH15-11	24.6	24.6	Residential: 4-6 du/acre :
47	MH15-9	29.6	29.6	Residential: 4-6 du/acre :
48	MH15-5	21.9	21.9	Residential: 4-6 du/acre :
49	MH15-3	9.8	9.8	Residential: 4-6 du/acre :
50	MH15-8	28.8	28.8	Residential: 4-6 du/acre :
51	MH15-6	30.7	30.7	Residential: 4-6 du/acre :
52	WQUH2	0.	0.	
53	SC-J39	46.1	4.57	Residential: 4-6 du/acre :

			7.6	Residential: 0.2-0.5 du/acre, Ag. Res :
			13.57	Open Space, Grassland, Ag. :
			20.36	Residential: 0.5-1 du/acre :
54	SC-J1	0.	0.	
55	SC-J39a	45.54	7.21	Residential: 4-6 du/acre :
			20.45	Residential: 0.2-0.5 du/acre, Ag. Res :
			10.92	Open Space, Grassland, Ag. :
			6.96	Residential: 0.5-1 du/acre :
56	SC-J1a	0.	0.	
57	SC-K9	32.7	32.7	Residential: 6-8 du/acre, LDR, School :
58	SC-K5	14.	14.	Residential: 6-8 du/acre, LDR, School :
59	SC-K3	12.8	12.8	Residential: 6-8 du/acre, LDR, School :
60	WQSCK	0.	0.	
61	SC-F65	48.	48.	Residential: 0.5-1 du/acre :
62	SC-F63	31.	15.4	Open Space, Grassland, Ag. :
			4.9	Residential: 4-6 du/acre :
			10.7	Residential: 0.5-1 du/acre :
63	SC-F1	0.	0.	
64	E4-17	33.3	33.3	Intensive Industrial :
65	E4-15	32.4	32.4	Intensive Industrial :
66	E4-13	33.9	33.9	Intensive Industrial :
67	E4-11	28.9	28.9	Intensive Industrial :
68	E31	0.	0.	
69	E6-11	27.4	27.4	Commercial Offices :
70	E6-15	28.1	28.1	Commercial Offices :
71	MH7-5	35.4	35.4	Residential: 6-8 du/acre, LDR, School :
72	MH7-2	33.7	33.7	Residential: 6-8 du/acre, LDR, School :
73	MH7OUT	0.	0.	
74	E6-5	32.	32.	Commercial Offices :
75	E6-2	25.4	25.4	Commercial Offices :
76	MH7-3	17.	17.	Residential: 6-8 du/acre, LDR, School :
77	E6OUT	0.	0.	
78	MH6-5	33.3	6.5	Commercial Offices :
			26.8	Residential: 4-6 du/acre :
79	MH6OUT	0.	0.	
80	MH3-15	31.	31.	Residential: 6-8 du/acre, LDR, School :
81	MH3-11	18.3	12.2	Residential: 6-8 du/acre, LDR, School :
			6.1	Residential: 8-10 du/acre, Ext Indust :
82	MH1-51	0.	0.	
83	MH1-55	14.4	14.4	Residential: 8-10 du/acre, Ext Indust :
84	MH1-53	9.3	9.3	Residential: 8-10 du/acre, Ext Indust :
85	MH0-7	0.	0.	
86	MH1-37	31.3	4.8	Residential: 6-8 du/acre, LDR, School :
			8.3	Residential: 8-10 du/acre, Ext Indust :
			5.1	Apartments HDR :
			13.1	Residential: 4-6 du/acre :
87	MH1-25	18.4	18.4	Residential: 6-8 du/acre, LDR, School :
88	MH1-23	11.2	11.2	Residential: 6-8 du/acre, LDR, School :
89	MH1-7	27.6	27.6	Residential: 6-8 du/acre, LDR, School :
90	DETF4C	0.	0	
91	E3	136.5	136.5	Open Space, Grassland, Ag. :
92	E3-10	55.6	55.6	Open Space, Grassland, Ag. :
93	E3-8	0.	33.2	Residential 3-4 du/acre :
94	E3D	54.6	54.6	Open Space, Grassland, Ag. :
95	E3-9	45.1	45.1	Commercial Offices :
96	E3-7	39.9	39.9	Intensive Industrial :
97	E3-5	38.5	38.5	Intensive Industrial :
98	E3-5CH	0.	0.	
99	E3-3CH	66.5	66.5	Intensive Industrial :
100	WQE3	0.	0.	
101	MH12-21	133.7	133.7	Residential: 4-6 du/acre :
102	MH12-21OUT	0.	0.	Residential: 4-6 du/acre :
103	MH12-17	185.3	185.3	Residential: 4-6 du/acre :
104	MH12-17OUT	0.	0.	Residential: 4-6 du/acre :
105	MH12-15	239.3	239.3	Residential: 4-6 du/acre :
106	UH-OUT	0	0.	Residential: 4-6 du/acre :

107	E5-17	48.7	48.7	Intensive Industrial :
108	E5-15	41.9	41.9	Intensive Industrial :
109	E5-7	44.3	44.3	Intensive Industrial :
110	E5-5	49.9	49.9	Intensive Industrial :
111	E5-6	36.9	36.9	Intensive Industrial :
112	E5-3	17.5	17.5	Intensive Industrial :
113	E5-3A	45.4	45.4	Intensive Industrial :
114	E5-2	18.4	18.4	Intensive Industrial :
115	E5-1	0.	0.	
116	WQDET28	0.	0.	
117	MC80	22.37	22.37	Intensive Industrial :
118	MC65	27.32	27.32	Intensive Industrial :
119	MC60B	45.66	45.66	Intensive Industrial :
120	OffSITE	50.22	50.22	Intensive Industrial :
121	MC60A	48.14	48.14	Intensive Industrial :

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Node Cumulative Areas Information:
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#	Node Name	Total Cumulative Area	Cumulative Area by Type	Cumulative Area by type
1	G7	27.7	27.7	Residential: 2-3 du/acre :
2	G5-3	67.1	67.1	Residential: 2-3 du/acre :
3	G6	26.5	26.5	Residential: 0.5-1 du/acre :
4	G4-3	65.3	65.3	Residential: 0.5-1 du/acre :
5	G3-3	105.4	105.4	Residential: 0.5-1 du/acre :
6	G2-3	147.2	147.2	Residential: 0.5-1 du/acre :
7	G8	214.3	67.1	Residential: 2-3 du/acre :
			147.2	Residential: 0.5-1 du/acre :
8	G3A	221.5	7.2	Residential: 4-6 du/acre :
			67.1	Residential: 2-3 du/acre :
			147.2	Residential: 0.5-1 du/acre :
9	G3D	157.3	157.3	Residential: 4-6 du/acre :
10	G1-3A	190.1	190.1	Residential: 4-6 du/acre :
11	G1-3B	190.1	190.1	Residential: 4-6 du/acre :
12	G9	205.8	11.2	Apartments HDR :
			194.6	Residential: 4-6 du/acre :
13	G43	427.3	11.2	Apartments HDR :
			201.8	Residential: 4-6 du/acre :
			67.1	Residential: 2-3 du/acre :
			147.2	Residential: 0.5-1 du/acre :
14	MH9-13	30.7	30.7	Residential: 4-6 du/acre :
15	MH9-11	57.	26.3	Residential: 6-8 du/acre, LDR, School :
			30.7	Residential: 4-6 du/acre :
16	MH9-7A	85.2	54.5	Residential: 6-8 du/acre, LDR, School :
			30.7	Residential: 4-6 du/acre :
17	MH9-7B	30.8	30.8	Residential: 6-8 du/acre, LDR, School :
18	MH9-3	47.8	47.8	Residential: 6-8 du/acre, LDR, School :
19	WQDETE28	133.	102.3	Residential: 6-8 du/acre, LDR, School :
			30.7	Residential: 4-6 du/acre :
20	MH10-9	26.4	26.4	Apartments HDR :
21	MH10-7	55.4	26.4	Apartments HDR :
			29.	Residential: 4-6 du/acre :
22	MH10-5	89.4	26.4	Apartments HDR :
			63.	Residential: 4-6 du/acre :
23	MH10-1	126.3	26.4	Apartments HDR :
			99.9	Residential: 4-6 du/acre :
24	WQMH10	126.3	26.4	Apartments HDR :
			99.9	Residential: 4-6 du/acre :
25	MH11-9	30.5	30.5	Residential: 4-6 du/acre :
26	MH11-7	61.3	61.3	Residential: 4-6 du/acre :
27	MH11-5	81.5	81.5	Residential: 4-6 du/acre :
28	MH11-1	99.6	99.6	Residential: 4-6 du/acre :
29	MH11-17	30.7	30.7	Residential: 6-8 du/acre, LDR, School :
30	MH11-15	49.8	49.8	Residential: 6-8 du/acre, LDR, School :
31	MH11-13	71.1	71.1	Residential: 6-8 du/acre, LDR, School :
32	MH11-29	19.1	4.2	Highways & Parking :
			14.9	Residential: 6-8 du/acre, LDR, School :
33	MH11-27	29.8	29.8	Residential: 4-6 du/acre :
34	MH11-25	75.5	4.2	Highways & Parking :
			41.5	Residential: 6-8 du/acre, LDR, School :
			29.8	Residential: 4-6 du/acre :
35	MH11-21	111.5	4.2	Highways & Parking :
			77.5	Residential: 6-8 du/acre, LDR, School :
			29.8	Residential: 4-6 du/acre :
36	MH11-23	141.6	4.2	Highways & Parking :
			107.6	Residential: 6-8 du/acre, LDR, School :
			29.8	Residential: 4-6 du/acre :
37	MH11-11	250.5	4.2	Highways & Parking :
			178.7	Residential: 6-8 du/acre, LDR, School :

			67.6	Residential: 4-6 du/acre :
38	WQMH11	350.1	4.2	Highways & Parking :
			178.7	Residential: 6-8 du/acre, LDR, School :
			167.2	Residential: 4-6 du/acre :
39	MH13-9	17.	17.	Apartments HDR :
40	MH13-7	73.	17.	Apartments HDR :
			56.	Residential: 4-6 du/acre :
41	MH13-3	109.	17.	Apartments HDR :
			56.	Residential: 4-6 du/acre :
			36.	Residential: 0.5-1 du/acre :
42	WQUH1AN	109.	17.	Apartments HDR :
			56.	Residential: 4-6 du/acre :
			36.	Residential: 0.5-1 du/acre :
43	MH14-1	40.5	40.5	Residential: 0.5-1 du/acre :
44	WQMH14	40.5	40.5	Residential: 0.5-1 du/acre :
45	MH15-12	29.9	29.9	Residential: 4-6 du/acre :
46	MH15-11	54.5	54.5	Residential: 4-6 du/acre :
47	MH15-9	84.1	84.1	Residential: 4-6 du/acre :
48	MH15-5	106.	106.	Residential: 4-6 du/acre :
49	MH15-3	115.8	115.8	Residential: 4-6 du/acre :
50	MH15-8	28.8	28.8	Residential: 4-6 du/acre :
51	MH15-6	59.5	59.5	Residential: 4-6 du/acre :
52	WQUH2	175.3	175.3	Residential: 4-6 du/acre :
53	SC-J39	46.1	4.57	Residential: 4-6 du/acre :
			20.36	Residential: 0.5-1 du/acre :
			7.6	Residential: 0.2-0.5 du/acre, Ag. Res :
			13.57	Open Space, Grassland, Ag. :
54	SC-J1	46.1	4.57	Residential: 4-6 du/acre :
			20.36	Residential: 0.5-1 du/acre :
			7.6	Residential: 0.2-0.5 du/acre, Ag. Res :
			13.57	Open Space, Grassland, Ag. :
55	SC-J39a	45.54	7.21	Residential: 4-6 du/acre :
			6.96	Residential: 0.5-1 du/acre :
			20.45	Residential: 0.2-0.5 du/acre, Ag. Res :
			10.92	Open Space, Grassland, Ag. :
56	SC-J1a	45.54	7.21	Residential: 4-6 du/acre :
			6.96	Residential: 0.5-1 du/acre :
			20.45	Residential: 0.2-0.5 du/acre, Ag. Res :
			10.92	Open Space, Grassland, Ag. :
57	SC-K9	32.7	32.7	Residential: 6-8 du/acre, LDR, School :
58	SC-K5	46.7	46.7	Residential: 6-8 du/acre, LDR, School :
59	SC-K3	59.5	59.5	Residential: 6-8 du/acre, LDR, School :
60	WQSCK	59.5	59.5	Residential: 6-8 du/acre, LDR, School :
61	SC-F65	48.	48.	Residential: 0.5-1 du/acre :
62	SC-F63	79.	4.9	Residential: 4-6 du/acre :
			58.7	Residential: 0.5-1 du/acre :
			15.4	Open Space, Grassland, Ag. :
63	SC-F1	79	4.9	Residential: 4-6 du/acre :
			58.7	Residential: 0.5-1 du/acre :
			15.4	Open Space, Grassland, Ag. :
64	E4-17	33.3	33.3	Intensive Industrial :
65	E4-15	65.7	65.7	Intensive Industrial :
66	E4-13	99.6	99.6	Intensive Industrial :
67	E4-11	128.5	128.5	Intensive Industrial :
68	E31	128.5	128.5	Intensive Industrial :
69	E6-11	27.4	27.4	Commercial Offices :
70	E6-15	55.5	55.5	Commercial Offices :
71	MH7-5	90.9	55.5	Commercial Offices :
			35.4	Residential: 6-8 du/acre, LDR, School :
72	MH7-2	124.6	55.5	Commercial Offices :
			69.1	Residential: 6-8 du/acre, LDR, School :
73	MH7OUT	124.6	55.5	Commercial Offices :
			69.1	Residential: 6-8 du/acre, LDR, School :
74	E6-5	32.	32	Commercial Offices :
75	E6-2	57.4	57.4	Commercial Offices :
76	MH7-3	74.4	57.4	Commercial Offices :

			17.	Residential: 6-8 du/acre, LDR, School :
77	E6OUT	74.4	57.4	Commercial Offices :
			17.	Residential: 6-8 du/acre, LDR, School :
78	MH6-5	33.3	6.5	Commercial Offices :
			26.8	Residential: 4-6 du/acre :
79	MH6OUT	33.3	6.5	Commercial Offices :
			26.8	Residential: 4-6 du/acre :
80	MH3-15	31.	31.	Residential: 6-8 du/acre, LDR, School :
81	MH3-11	49.3	6.1	Residential: 8-10 du/acre, Ext Indust :
			43.2	Residential: 6-8 du/acre, LDR, School :
82	MH1-51	49.3	6.1	Residential: 8-10 du/acre, Ext Indust :
			43.2	Residential: 6-8 du/acre, LDR, School :
83	MH1-55	63.7	20.5	Residential: 8-10 du/acre, Ext Indust :
			43.2	Residential: 6-8 du/acre, LDR, School :
84	MH1-53	73.	29.8	Residential: 8-10 du/acre, Ext Indust :
			43.2	Residential: 6-8 du/acre, LDR, School :
85	MH0-7	73.	29.8	Residential: 8-10 du/acre, Ext Indust :
			43.2	Residential: 6-8 du/acre, LDR, School :
86	MH1-37	31.3	5.1	Apartments HDR :
			8.3	Residential: 8-10 du/acre, Ext Indust :
			4.8	Residential: 6-8 du/acre, LDR, School :
			13.1	Residential: 4-6 du/acre :
87	MH1-25	49.7	5.1	Apartments HDR :
			8.3	Residential: 8-10 du/acre, Ext Indust :
			23.2	Residential: 6-8 du/acre, LDR, School :
			13.1	Residential: 4-6 du/acre :
88	MH1-23	60.9	5.1	Apartments HDR :
			8.3	Residential: 8-10 du/acre, Ext Indust :
			34.4	Residential: 6-8 du/acre, LDR, School :
			13.1	Residential: 4-6 du/acre :
89	MH1-7	88.5	5.1	Apartments HDR :
			8.3	Residential: 8-10 du/acre, Ext Indust :
			62.	Residential: 6-8 du/acre, LDR, School :
			13.1	Residential: 4-6 du/acre :
90	DETF4C	88.5	5.1	Apartments HDR :
			8.3	Residential: 8-10 du/acre, Ext Indust :
			62.	Residential: 6-8 du/acre, LDR, School :
			13.1	Residential: 4-6 du/acre :
91	E3	136.5	136.5	Open Space, Grassland, Ag. :
92	E3-10	55.6	55.6	Open Space, Grassland, Ag. :
93	E3-8	192.1	192.1	Open Space, Grassland, Ag. :
94	E3D	54.6	54.6	Open Space, Grassland, Ag. :
95	E3-9	291.8	45.1	Commercial Offices :
			246.7	Open Space, Grassland, Ag. :
96	E3-7	39.9	39.9	Intensive Industrial :
97	E3-5	78.4	78.4	Intensive Industrial :
98	E3-5CH	370.2	45.1	Commercial Offices :
			78.4	Intensive Industrial :
			246.7	Open Space, Grassland, Ag. :
99	E3-3CH	436.7	45.1	Commercial Offices :
			144.9	Intensive Industrial :
			246.7	Open Space, Grassland, Ag. :
100	WQE3	436.7	45.1	Commercial Offices :
			144.9	Intensive Industrial :
			246.7	Open Space, Grassland, Ag. :
101	MH12-21	133.7	133.7	Residential: 4-6 du/acre :
102	MH12-21OUT	133.7	133.7	Residential: 4-6 du/acre :
103	MH12-17	185.3	185.3	Residential: 4-6 du/acre :
104	MH12-17OUT	185.3	185.3	Residential: 4-6 du/acre :
105	MH12-15	239.3	239.3	Residential: 4-6 du/acre :
106	UH-OUT	239.3	239.3	Residential: 4-6 du/acre :
107	E5-17	48.7	48.7	Intensive Industrial :
108	E5-15	90.6	90.6	Intensive Industrial :
109	E5-7	134.9	134.9	Intensive Industrial :
110	E5-5	49.9	49.9	Intensive Industrial :
111	E5-6	221.7	221.7	Intensive Industrial :

112	E5-3	17.5	17.5	Intensive Industrial :
113	E5-3A	284.6	284.6	Intensive Industrial :
114	E5-2	18.4	18.4	Intensive Industrial :
115	E5-1	303.	303.	Intensive Industrial :
116	WQDET28	303.	303.	Intensive Industrial :
117	MC80	22.37	22.37	Intensive Industrial :
118	MC65	95.35	95.35	Intensive Industrial :
119	MC60B	45.66	45.66	Intensive Industrial :
120	OffSITE	50.22	50.22	Intensive Industrial :
121	MC60A	48.14	48.14	Intensive Industrial :
122	Node A	145.57	145.57	Intensive Industrial :
123	creek1	145.57	145.57	Intensive Industrial :
124	creek2	48.14	48.14	Intensive Industrial :

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          |<--G7
        |<--G5-3
        |        |<--G6
        |     |<--G4-3
        |  |<--G3-3
        |<--G2-3
     |<--G8
  |<--G3A
  |        |<--G3D
  |     |<--G1-3A
  |  |<--G1-3B
  |<--G9
--G43
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     |<--MH9-11
  |<--MH9-7A
  |  |<--MH9-7B
  |<--MH9-3
--WQDETE28
          |<--MH10-9
        |<--MH10-7
     |<--MH10-5
  |<--MH10-1
--WQMH10
          |<--MH11-9
        |<--MH11-7
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  |<--MH11-1
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  |  |  |<--MH11-21
  |  |<--MH11-23
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  |<--MH13-3
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  |<--MH14-1
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             |<--MH15-12
          |<--MH15-11
        |<--MH15-9
     |<--MH15-5
  |<--MH15-3
  |  |<--MH15-8
  |<--MH15-6
--WQUH2
  |<--SC-J39
--SC-J1
  |<--SC-J39a
--SC-J1a
        |<--SC-K9
     |<--SC-K5
  |<--SC-K3
--WQSCK
     |<--SC-F65
  |<--SC-F63
--SC-F1
          |<--E4-17
        |<--E4-15
     |<--E4-13
```

```
  |<--E4-11
--E31
          |<--E6-11
        |<--E6-15
      |<--MH7-5
  |<--MH7-2
--MH7OUT
        |<--E6-5
      |<--E6-2
  |<--MH7-3
--E6OUT
  |<--MH6-5
--MH6OUT
              |<--MH3-15
          |<--MH3-11
        |<--MH1-51
      |<--MH1-55
  |<--MH1-53
--MH0-7
          |<--MH1-37
        |<--MH1-25
      |<--MH1-23
  |<--MH1-7
--DETF4C
              |<--E3
              |<--E3-10
          |<--E3-8
          |<--E3D
        |<--E3-9
        |  |<--E3-7
        |<--E3-5
      |<--E3-5CH
  |<--E3-3CH
--WQE3
  |<--MH12-21
--MH12-21OUT
  |<--MH12-17
--MH12-17OUT
  |<--MH12-15
--UH-OUT
                |<--E5-17
              |<--E5-15
          |<--E5-7
          |<--E5-5
        |<--E5-6
        |<--E5-3
      |<--E5-3A
      |<--E5-2
  |<--E5-1
--WQDET28
        |<--MC80
        |<--MC60B
      |<--MC65
      |<--OffSITE
  |<--Node A
--creek1
  |<--MC60A
--creek2
```

****
Conveyance Description Information:
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1	G7 to G5-3	G7	G5-3	PIPE	24	'n'= 015	'Z'= 0	
2	G5-3 to G8	G5-3	G8	PIPE	36 Inch	'n'= 015	'Z'= 0	
3	G6 to G4-3	G6	G4-3	PIPE	30	'n'= 015	'Z'= 0	
4	G4-3 to G3-3	G4-3	G3-3	PIPE	36	'n'= 015	'Z'= 0	
5	G3-3 to G2-3	G3-3	G2-3	PIPE	42	'n'= 015	'Z'= 0	
6	G2-3 to G8	G2-3	G8	TRAPEZOIDAL	8	'n'= 06	'Z'= 4	
7	G8 to G3A	G8	G3A	TRAPEZOIDAL	8	'n'= 06	'Z'= 4	
8	G3A to G43	G3A	G43	TRAPEZOIDAL	8	'n'= 06	'Z'= 4	
9	G3D to G1-3A	G3D	G1-3A	PIPE	54	'n'= 015	'Z'= 0	
10	G1-3A to G1-3B	G1-3A	G1-3B	PIPE	60	'n'= 015	'Z'= 0	
11	G1-3B to G9	G1-3B	G9	PIPE	66	'n'= 015	'Z'= 0	
12	G9 to G43 G9	G43	PIPE	66	'n'= 015	'Z'= 0		
13	MH9-13 to MH9-11	MH9-13	MH9-11	PIPE	24	'n'= 015	'Z'= 0	
14	MH9-11 to MH9-7A	MH9-11	MH9-7A	PIPE	30	'n'= 015	'Z'= 0	
15	MH9-7A to WQDETE28		MH9-7A	WQDETE28		PIPE	36	'n'= 015 'Z'= 0
16	MH9-7B to MH9-3	MH9-7B	MH9-3	PIPE	24	'n'= 015	'Z'= 0	
17	MH9-3 to WQDETE28		MH9-3	WQDETE28		PIPE	30	'n'= 015 'Z'= 0
18	MH10-9 to MH10-7	MH10-9	MH10-7	PIPE	24	'n'= 015	'Z'= 0	
19	MH10-7 to MH10-5	MH10-7	MH10-5	PIPE	30	'n'= 015	'Z'= 0	
20	MH10-5 to MH10-1	MH10-5	MH10-1	PIPE	36	'n'= 015	'Z'= 0	
21	MH10-1 to WQMH10		MH10-1	WQMH10	PIPE	42	'n'= 015	'Z'= 0
22	MH11-9 to MH11-7	MH11-9	MH11-7	PIPE	24	'n'= 015	'Z'= 0	
23	MH11-7 to MH11-5	MH11-7	MH11-5	PIPE	30	'n'= 015	'Z'= 0	
24	MH11-5 to MH11-1	MH11-5	MH11-1	PIPE	36	'n'= 015	'Z'= 0	
25	MH11-1 to WQMH11		MH11-1	WQMH11	PIPE	42	'n'= 015	'Z'= 0
26	MH11-17 to MH11-15		MH11-17	MH11-15	PIPE	24	'n'= 015	'Z'= 0
27	MH11-15 to MH11-13		MH11-15	MH11-13	PIPE	30	'n'= 015	'Z'= 0
28	MH11-13 to MH11-11		MH11-13	MH11-11	PIPE	36	'n'= 015	'Z'= 0
29	MH11-29 to MH11-25		MH11-29	MH11-25	PIPE	36	'n'= 015	'Z'= 0
30	MH11-27 to MH11-25		MH11-27	MH11-25	PIPE	36	'n'= 015	'Z'= 0
31	MH11-25 to MH11-21		MH11-25	MH11-21	PIPE	42	'n'= 015	'Z'= 0
32	MH11-21 to MH11-23		MH11-21	MH11-23	PIPE	48	'n'= 015	'Z'= 0
33	MH11-23 to MH11-11		MH11-23	MH11-11	PIPE	54	'n'= 015	'Z'= 0
34	MH11-11 to WQMH11		MH11-11	WQMH11	PIPE	60	'n'= 015	'Z'= 0
35	MH13-9 to MH13-7	MH13-9	MH13-7	PIPE	42	'n'= 015	'Z'= 0	
36	MH13-7 to MH13-3	MH13-7	MH13-3	PIPE	48	'n'= 015	'Z'= 0	
37	MH13-3 to WQUH1AN		MH13-3	WQUH1AN		PIPE	48	'n'= 015 'Z'= 0
38	MH14-1 to WQMH14		MH14-1	WQMH14	PIPE	24	'n'= 015	'Z'= 0
39	MH15-12 to MH15-11		MH15-12	MH15-11	PIPE	30 Inch	'n'= 015	'Z'= 0
40	MH15-11 to MH15-9		MH15-11	MH15-9	PIPE	30 Inch	'n'= 015	'Z'= 0
41	MH15-9 to MH15-5	MH15-9	MH15-5	PIPE	36	'n'= 015	'Z'= 0	
42	MH15-5 to MH15-3	MH15-5	MH15-3	PIPE	54 Inch	'n'= 015	'Z'= 0	
43	MH15-3 to WQUH2	MH15-3	WQUH2	PIPE	54 Inch	'n'= 015	'Z'= 0	
44	MH15-8 to MH15-6	MH15-8	MH15-6	PIPE	24	'n'= 015	'Z'= 0	
45	MH15-6 to WQUH2	MH15-6	WQUH2	PIPE	30	'n'= 015	'Z'= 0	
46	SC-J39 to SC-J1	SC-J39	SC-J1	PIPE	24	'n'= 015	'Z'= 0	
47	SC-J39a to SC-J1a	SC-J39a	SC-J1a	PIPE	24	'n'= 015	'Z'= 0	
48	SC-K9 to SC-K5	SC-K9	SC-K5	PIPE	30 Inch	'n'= 015	'Z'= 0	
49	SC-K5 to SC-K3	SC-K5	SC-K3	PIPE	30 Inch	'n'= 015	'Z'= 0	
50	SC-K3 to WQSCK	SC-K3	WQSCK	PIPE	30 Inch	'n'= 015	'Z'= 0	
51	SC-F65 to SC-F63	SC-F65	SC-F63	PIPE	24	'n'= 015	'Z'= 0	
52	SC-F63 to SC-F1	SC-F63	SC-F1	PIPE	24	'n'= 015	'Z'= 0	
53	E4-17 to E4-15	E4-17	E4-15	PIPE	30	'n'= 015	'Z'= 0	
54	E4-15 to E4-13	E4-15	E4-13	PIPE	36	'n'= 015	'Z'= 0	
55	E4-13 to E4-11	E4-13	E4-11	PIPE	48	'n'= 015	'Z'= 0	
56	E4-11 to E31	E4-11	E31	PIPE	54	'n'= 015	'Z'= 0	
57	E6-11 to E6-15	E6-11	E6-15	PIPE	24	'n'= 015	'Z'= 0	
58	E6-15 to MH7-5	E6-15	MH7-5	PIPE	36	'n'= 015	'Z'= 0	
59	MH7-5 to MH7-2	MH7-5	MH7-2	PIPE	48	'n'= 015	'Z'= 0	
60	MH7-2 to MH7OUT	MH7-2	MH7OUT	PIPE	48	'n'= 015	'Z'= 0	
61	E6-5 to E6-2	E6-5	E6-2	PIPE	30	'n'= 015	'Z'= 0	
62	E6-2 to MH7-3	E6-2	MH7-3	PIPE	36	'n'= 015	'Z'= 0	

63	MH7-3 to E6OUT	MH7-3	E6OUT	PIPE	42	'n'= 015	'Z'= 0		
64	MH6-5 to MH6OUT	MH6-5	MH6OUT	PIPE	24	'n'= 015	'Z'= 0		
65	MH3-15 to MH3-11	MH3-15	MH3-11	PIPE	30	'n'= 015	'Z'= 0		
66	MH3-11 to MH1-51	MH3-11	MH1-51	PIPE	36	'n'= 015	'Z'= 0		
67	MH1-51 to MH1-55	MH1-51	MH1-55	PIPE	48	'n'= 015	'Z'= 0		
68	MH1-55 to MH1-53	MH1-55	MH1-53	PIPE	48	'n'= 015	'Z'= 0		
69	MH1-53 to MH0-7	MH1-53	MH0-7	PIPE	54	'n'= 015	'Z'= 0		
70	MH1-37 to MH1-25	MH1-37	MH1-25	PIPE	36	'n'= 015	'Z'= 0		
71	MH1-25 to MH1-23	MH1-25	MH1-23	PIPE	36	'n'= 015	'Z'= 0		
72	MH1-23 to MH1-7	MH1-23	MH1-7	PIPE	48	'n'= 015	'Z'= 0		
73	MH1-7 to DETF4C	MH1-7	DETF4C	PIPE	48	'n'= 015	'Z'= 0		
74	E3 to E3-8E3	E3-8	TRAPEZOIDAL		10	'n'= 06	'Z'= 4		
75	E3-10 to E3-8	E3-10	E3-8	PIPE	30	'n'= 015	'Z'= 0		
76	E3-8 to E3-9	E3-8	E3-9	TRAPEZOIDAL		10	'n'= 06	'Z'= 4	
77	E3D to E3-9	E3D	E3-9	PIPE	30	'n'= 015	'Z'= 0		
78	E3-9 to E3-5CH	E3-9	E3-5CH	TRAPEZOIDAL		10	'n'= 06	'Z'= 4	
79	E3-7 to E3-5	E3-7	E3-5	PIPE	30	'n'= 015	'Z'= 0		
80	E3-5 to E3-5CH	E3-5	E3-5CH	PIPE	36	'n'= 015	'Z'= 0		
81	E3-5CH to E3-3CH	E3-5CH	E3-3CH	TRAPEZOIDAL		10	'n'= 06	'Z'= 4	
82	E3-3CH to WQE3	E3-3CH	WQE3	TRAPEZOIDAL		10	'n'= 06	'Z'= 4	
83	MH12-21 to MH12-21OUT		MH12-21	MH12-21OUT		PIPE	36	'n'= 015	'Z'= 0
84	MH12-17 to MH12-17OUT		MH12-17	MH12-17OUT		PIPE	48	'n'= 015	'Z'= 0
85	MH12-15 to UH-OUT		MH12-15	UH-OUT	PIPE	72 Inch	'n'= 04	'Z'= 3	
P- 85	MH12-15 to UH-OUT		MH12-15	UH-OUT	PIPE	60 Inch	'n'= 015	'Z'= 2	
86	E5-17 to E5-15	E5-17	E5-15	PIPE	42	'n'= 015	'Z'= 0		
87	E5-15 to E5-7	E5-15	E5-7	PIPE	48	'n'= 015	'Z'= 0		
88	E5-7 to E5-6	E5-7	E5-6	PIPE	66	'n'= 015	'Z'= 0		
89	E5-5 to E5-6	E5-5	E5-6	PIPE	36	'n'= 015	'Z'= 0		
90	E5-6 to E5-3A	E5-6	E5-3A	PIPE	72	'n'= 015	'Z'= 0		
91	E5-3 to E5-3A	E5-3	E5-3A	PIPE	24	'n'= 015	'Z'= 0		
92	E5-3A to E5-1	E5-3A	E5-1	PIPE	72	'n'= 015	'Z'= 0		
93	E5-2 to E5-1	E5-2	E5-1	PIPE	24	'n'= 015	'Z'= 0		
94	E5-1 to WQDET28	E5-1	WQDET28		PIPE	72	'n'= 015	'Z'= 0	
95	MC80 to MC65	MC80	MC65	PIPE	48	'n'= 015	'Z'= 2		
96	MC60B to MC65	MC60B	MC65	PIPE	48	'n'= 015	'Z'= 2		
97	MC65 to Node A	MC65	Node A	PIPE	54	'n'= 015	'Z'= 2		
98	OffSITE to Node A	OffSITE	Node A	PIPE	60	'n'= 015	'Z'= 2		
99	Node A to creek1	Node A	creek1	PIPE	66	'n'= 015	'Z'= 2		
100	MC60A to creek2	MC60A	creek2	PIPE	42	'n'= 015	'Z'= 2		

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Conveyance Profile Information:
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#	Convey Name	Distance	Invert Elevation
1	G7 to G5-3	0.	53.82
1		2260.	51.5
2	G5-3 to G8	0.	50.5
2		1475.	49.12
3	G6 to G4-3	0.	52.91
3		540.	52.27
4	G4-3 to G3-3	0.	51.77
4		1300.	50.56
5	G3-3 to G2-3	0.	50.06
5		1230.	49.12
6	G2-3 to G8	0.	49.12
6		60.	49.
7	G8 to G3A	0.	49.
7		350.	48.3
8	G3A to G43	0.	48.3
8		250.	47.8
9	G3D to G1-3A	0.	49.28
9		930.	47.98
10	G1-3A to G1-3B	0.	47.48
10		1200.	46.03
11	G1-3B to G9	0.	45.53
11		1220.	44.23
12	G9 to G43	0.	44.23
12		214.	44.
13	MH9-13 to MH9-11	0.	48.48
13		920.	46.35
14	MH9-11 to MH9-7A	0.	45.85
14		870.	44.36
15	MH9-7A to WQDETE28	0.	43.86
15		470.	43.
16	MH9-7B to MH9-3	0.	45.57
16		430.	44.58
17	MH9-3 to WQDETE28	0.	44.08
17		630.	43.
18	MH10-9 to MH10-7	0.	46.44
18		650.	43.77
19	MH10-7 to MH10-5	0.	43.27
19		650.	41.28
20	MH10-5 to MH10-1	0.	40.78
20		1210.	37.89
21	MH10-1 to WQMH10	0.	37.39
21		200.	37.
22	MH11-9 to MH11-7	0.	37.93
22		1120.	36.13
23	MH11-7 to MH11-5	0.	35.63
23		470.	35.07
24	MH11-5 to MH11-1	0.	34.57
24		720.	33.9
25	MH11-1 to WQMH11	0.	33.4
25		520.	33.
26	MH11-17 to MH11-15	0.	40.55
26		650.	39.51
27	MH11-15 to MH11-13	0.	39.01
27		790.	37.65
28	MH11-13 to MH11-11	0.	37.15
28		720.	35.83
29	MH11-29 to MH11-25	0.	39.94
29		730.	38.6
30	MH11-27 to MH11-25	0.	40.28
30		1790.	38.6
31	MH11-25 to MH11-21	0.	38.1

31		780.	36.94
32	MH11-21 to MH11-23	0	36.44
32		620	35.67
33	MH11-23 to MH11-11	0	35.17
33		780	34.33
34	MH11-11 to WQMH11	0	33.83
34		900.	33.
35	MH13-9 to MH13-7	0.	37.49
35		260.	37.29
36	MH13-7 to MH13-3	0.	36.79
36		500.	36.47
37	MH13-3 to WQUH1AN	0.	36.47
37		740.	36.
38	MH14-1 to WQMH14	0.	39.29
38		410.	38.
39	MH15-12 to MH15-11	0.	35.21
39		690	33.62
40	MH15-11 to MH15-9	0	33.12
40		1020	31.37
41	MH15-9 to MH15-5	0	30.87
41		790	29.42
42	MH15-5 to MH15-3	0	28.92
42		1000	27.43
43	MH15-3 to WQUH2	0	27.43
43		220.	27.
44	MH15-8 to MH15-6	0.	33.53
44		1370.	30.37
45	MH15-6 to WQUH2	0.	29.87
45		940.	27.
46	SC-J39 to SC-J1	0.	53.71
46		660.	51.
47	SC-J39a to SC-J1a	0.	52.53
47		660	51.
48	SC-K9 to SC-K5	0	36.73
48		560.	35.81
49	SC-K5 to SC-K3	0	35.81
49		250	34.45
50	SC-K3 to WQSCK	0	34.45
50		800.	34.
51	SC-F65 to SC-F63	0	52.4
51		970.	48.41
52	SC-F63 to SC-F1	0.	48.41
52		100.	48.
53	E4-17 to E4-15	0.	50.84
53		1035.	47.68
54	E4-15 to E4-13	0.	47.18
54		630.	45.67
55	E4-13 to E4-11	0.	44.67
55		680.	43.56
56	E4-11 to E31	0.	43.06
56		80.	43.
57	E6-11 to E6-15	0.	49.71
57		390.	48.11
58	E6-15 to MH7-5	0.	47.11
58		1690.	43.07
59	MH7-5 to MH7-2	0.	42.07
59		660.	40.78
60	MH7-2 to MH7OUT	0.	40.78
60		440.	40.06
61	E6-5 to E6-2	0.	46.49
61		640.	44.57
62	E6-2 to MH7-3	0.	44.07
62		1150.	41.31
63	MH7-3 to E6OUT	0.	40.81
63		310.	40.06
64	MH6-5 to MH6OUT	0.	42.41

64		570.	40.06
65	MH3-15 to MH3-11	0.	41.67
65		920.	40.58
66	MH3-11 to MH1-51	0.	40.08
66		170.	39.85
67	MH1-51 to MH1-55	0.	38.85
67		450.	38.43
68	MH1-55 to MH1-53	0.	38.43
68		460.	38.01
69	MH1-53 to MH0-7	0.	37.51
69		690.	36.88
70	MH1-37 to MH1-25	0	38.69
70		700	37.48
71	MH1-25 to MH1-23	0	37.48
71		490	36.64
72	MH1-23 to MH1-7	0	35.64
72		740.	35.28
73	MH1-7 to DETF4C	0.	35.28
73		580.	35.
74	E3 to E3-8	0.	60.32
74		460.	59.4
75	E3-10 to E3-8	0.	60.8
75		460.	59.4
76	E3-8 to E3-9	0.	59.4
76		2018.	55.36
77	E3D to E3-9	0.	56.65
77		750.	55.36
78	E3-9 to E3-5CH	0.	55.36
78		1095.	54.27
79	E3-7 to E3-5	0.	59.28
79		1300.	55.32
80	E3-5 to E3-5CH	0.	54.82
80		230.	54.27
81	E3-5CH to E3-3CH	0.	54.27
81		1115.	53.15
82	E3-3CH to WQE3	0.	53.15
82		2150.	51.
83	MH12-21 to MH12-21OUT	0.	48.54
83		100.	48.
84	MH12-17 to MH12-17OUT	0.	47.26
84		60.	47.
85	MH12-15 to UH-OUT	0.	39.56
85		1850.	39.
P - 85		0.	39.56
P - 85		1850.	39.
86	E5-17 to E5-15	0.	51.37
86		1400.	50.31
87	E5-15 to E5-7	0	49.81
87		1940	48.03
88	E5-7 to E5-6	0	46.53
88		650	46.
89	E5-5 to E5-6	0	49.73
89		515.	48.5
90	E5-6 to E5-3A	0.	45.5
90		870.	44.67
91	E5-3 to E5-3A	0.	50.72
91		500.	48.67
92	E5-3A to E5-1	0.	44.67
92		900.	43.59
93	E5-2 to E5-1	0.	49.77
93		530.	47.59
94	E5-1 to WQDET28	0.	43.59
94		490.	43
95	MC80 to MC65	0.	48
95		400.	46.
96	MC60B to MC65	0.	52.

96		800	46.
97	MC65 to Node A	0.	45.5
97		800.	43.5
98	OffSITE to Node A	0.	47.
98		400.	43.
99	Node A to creek1	0.	43.
99		400.	36.
100	MC60A to creek2	0.	50.5
100		800.	40.

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Node Results Information:
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#	Node Name	Trib Area	Cumul Area	Unit Peak Flow (cfs/ac)	Trib Qp (cfs)	Cumul Qp (cfs)	Known WS Elevation	RIM or GRATE Elev	Node HGL	Node EGL	Tr (min)
1	G7	27.70	27.70	0.16	4.48	4.48	N/A	58.00	55.25	55.31	0.00
2	G5-3	39.40	67.10	0.22	8.52	14.51	N/A	58.00	53.02	53.11	10.00
3	G6	26.50	26.50	0.12	3.27	3.27	N/A	58.00	54.73	54.74	0.00
4	G4-3	38.80	65.30	0.18	7.10	11.94	N/A	58.00	54.61	54.66	10.00
5	G3-3	40.10	105.40	0.27	10.92	28.70	N/A	56.00	53.95	54.11	20.00
6	G2-3	41.80	147.20	0.37	15.50	54.60	N/A	54.00	51.91	51.92	26.87
7	G8	0.00	214.30	0.44	0.00	94.18	N/A	56.00	51.82	51.87	27.87
8	G3A	7.20	221.50	0.44	3.17	97.42	N/A	54.00	50.99	51.05	31.17
9	G3D	157.30	157.30	0.41	64.98	64.98	N/A	58.00	53.86	54.15	0.00
10	G1-3A	32.80	190.10	0.44	14.55	84.31	N/A	60.00	52.48	52.80	3.79
11	G1-3B	0.00	190.10	0.44	0.00	84.31	N/A	58.00	49.29	49.70	8.44
12	G9	15.70	205.80	0.45	7.11	93.17	N/A	56.00	47.85	48.40	12.61
13	G43	0.00	427.30	0.45	0.00	190.50	48.00	54.00	48.00	48.00	33.03
14	MH9-13	30.70	30.70	0.20	6.15	6.15	N/A	54.00	49.77	49.91	0.00
15	MH9-11	26.30	57.00	0.26	6.84	14.82	N/A	55.00	48.76	48.91	7.13
16	MH9-7A	28.20	85.20	0.31	8.67	26.18	N/A	52.00	47.16	47.40	11.94
17	MH9-7B	30.80	30.80	0.28	8.48	8.48	N/A	51.00	47.83	47.95	0.00
18	MH9-3	17.00	47.80	0.29	4.89	13.76	N/A	52.00	47.01	47.15	2.65
19	WQDETE28	0.00	133.00	0.38	0.00	50.43	46.20	N/A	46.20	46.20	14.05
20	MH10-9	26.40	26.40	0.50	13.20	13.20	N/A	52.00	50.42	50.72	0.00
21	MH10-7	29.00	55.40	0.35	10.27	19.61	N/A	52.00	47.50	47.78	2.58
22	MH10-5	34.00	89.40	0.33	11.34	29.82	N/A	53.00	45.49	45.80	5.29
23	MH10-1	36.90	126.30	0.37	13.67	46.78	N/A	46.00	42.17	42.58	10.07
24	WQMH10	0.00	126.30	0.37	0.00	46.78	42.00	N/A	42.00	42.00	10.76
25	MH11-9	30.50	30.50	0.20	6.11	6.11	N/A	42.00	41.00	41.06	0.00
26	MH11-7	30.80	61.30	0.24	7.26	14.46	N/A	42.00	39.82	39.97	9.60
27	MH11-5	20.20	81.50	0.28	5.56	22.45	N/A	42.00	39.02	39.20	12.26
28	MH11-1	18.10	99.60	0.30	5.42	29.80	N/A	41.00	37.94	38.11	16.04
29	MH11-17	30.70	30.70	0.28	8.45	8.45	N/A	46.00	44.37	44.49	0.00
30	MH11-15	19.10	49.80	0.29	5.54	14.43	N/A	44.00	43.13	43.28	4.03
31	MH11-13	21.30	71.10	0.31	6.59	21.99	N/A	43.00	41.81	41.98	8.50
32	MH11-29	19.10	19.10	0.32	6.15	6.15	N/A	46.00	43.01	43.02	0.00
33	MH11-27	29.80	29.80	0.20	5.96	5.96	N/A	46.00	43.07	43.09	0.00
34	MH11-25	26.60	75.50	0.31	8.12	23.04	N/A	45.00	42.84	42.93	10.00
35	MH11-21	36.00	111.50	0.35	12.62	39.10	N/A	44.00	42.22	42.39	15.43
36	MH11-23	30.10	141.60	0.40	11.90	55.97	N/A	43.00	41.56	41.78	18.75
37	MH11-11	37.80	250.50	0.46	17.38	115.17	N/A	42.00	40.34	40.94	22.44
38	WQMH11	0.00	350.10	0.46	0.00	159.64	37.50	N/A	37.50	37.50	25.00
39	MH13-9	17.00	17.00	0.50	8.50	8.50	N/A	44.00	41.89	41.90	0.00
40	MH13-7	56.00	73.00	0.31	17.31	22.56	N/A	44.00	41.82	41.87	4.90
41	MH13-3	36.00	109.00	0.33	11.78	35.67	N/A	44.00	41.57	41.71	9.55
42	WQUH1AN	0.00	109.00	0.33	0.00	35.67	41.10	N/A	41.10	41.10	13.89
43	MH14-1	40.50	40.50	0.13	5.36	5.36	N/A	44.00	41.86	41.91	0.00
44	WQMH14	0.00	40.50	0.13	0.00	5.36	41.60	N/A	41.60	41.60	4.00
45	MH15-12	29.90	29.90	0.20	5.98	5.98	N/A	40.00	36.27	36.43	0.00
46	MH15-11	24.60	54.50	0.23	5.57	12.35	N/A	40.00	35.31	35.43	4.73
47	MH15-9	29.60	84.10	0.28	8.18	23.23	N/A	39.00	34.12	34.30	11.42
48	MH15-5	21.90	106.00	0.31	6.82	33.00	N/A	36.00	32.94	33.03	15.43
49	MH15-3	9.80	115.80	0.33	3.21	37.90	N/A	36.00	32.51	32.61	23.38
50	MH15-8	28.80	28.80	0.20	5.75	5.75	N/A	40.00	35.01	35.10	0.00
51	MH15-6	30.70	59.50	0.23	7.15	13.85	N/A	38.00	33.79	33.93	10.00
52	WQUH2	0.00	175.30	0.43	0.00	75.80	32.50	N/A	32.50	32.50	24.92
53	SC-J39	46.10	46.10	0.13	6.19	6.19	N/A	66.00	54.68	54.97	0.00
54	SC-J1	0.00	46.10	0.13	0.00	6.19	N/A	56.00	0.00	0.00	2.69
55	SC-J39a	45.54	45.54	0.13	5.89	5.89	N/A	60.00	53.67	53.85	0.00
56	SC-J1a	0.00	45.54	0.13	0.00	5.89	N/A	56.00	0.00	0.00	3.46
57	SC-K9	32.70	32.70	0.28	9.03	9.03	N/A	42.00	41.53	41.59	0.00
58	SC-K5	14.00	46.70	0.29	4.02	13.39	N/A	42.00	41.10	41.23	5.07

59	SC-K3	12.80	59.50	0.30	3.80	17.65	N/A	42.00	40.65	40.87	6.60
60	WQSCK	0.00	59.50	0.30	0.00	17.65	38.90	40.00	38.90	38.90	10.31
61	SC-F65	48.00	48.00	0.15	7.05	7.05	N/A	72.00	53.50	53.77	0.00
62	SC-F63	31.00	79.00	0.22	6.85	17.47	N/A	56.00	50.79	51.33	5.55
63	SC-F1	0.00	79.00	0.22	0.00	17.47	N/A	54.00	0.00	0.00	5.85
64	E4-17	33.30	33.30	0.50	16.65	16.65	N/A	56.00	52.90	53.16	0.00
65	E4-15	32.40	65.70	0.48	15.62	31.67	N/A	54.00	50.56	50.91	4.99
66	E4-13	33.90	99.60	0.46	15.60	45.84	N/A	52.00	48.67	48.90	7.33
67	E4-11	28.90	128.50	0.46	13.33	59.25	N/A	51.00	47.60	47.84	10.44
68	E31	0.00	128.50	0.46	0.00	59.25	45.90	N/A	45.90	45.90	10.80
69	E6-11	27.40	27.40	0.50	13.70	13.70	N/A	56.00	52.01	52.34	0.00
70	E6-15	28.10	55.50	0.49	13.84	27.34	N/A	54.00	49.34	49.75	1.49
71	MH7-5	35.40	90.90	0.41	14.57	37.42	N/A	52.00	45.52	45.70	7.31
72	MH7-2	33.70	124.60	0.41	13.86	51.25	N/A	52.00	44.78	45.07	10.90
73	MH7OUT	0.00	124.60	0.41	0.00	51.25	N/A	N/A	0.00	0.00	12.69
74	E6-5	32.00	32.00	0.50	16.00	16.00	N/A	56.00	48.29	48.60	0.00
75	E6-2	25.40	57.40	0.49	12.45	28.15	N/A	52.00	46.36	46.77	2.54
76	MH7-3	17.00	74.40	0.44	7.46	32.65	N/A	50.00	43.09	43.51	6.43
77	E6OUT	0.00	74.40	0.44	0.00	32.65	N/A	N/A	0.00	0.00	7.48
78	MH6-5	33.30	33.30	0.26	8.66	8.66	N/A	52.00	43.63	43.95	0.00
79	MH6OUT	0.00	33.30	0.26	0.00	8.66	N/A	N/A	0.00	0.00	2.20
80	MH3-15	31.00	31.00	0.28	8.54	8.54	N/A	47.00	43.09	43.24	0.00
81	MH3-11	18.30	49.30	0.30	5.45	14.69	N/A	47.00	41.91	42.09	5.14
82	MH1-51	0.00	49.30	0.30	0.00	14.69	N/A	47.00	40.80	40.90	6.01
83	MH1-55	14.40	63.70	0.32	4.62	20.43	N/A	46.00	40.34	40.55	9.15
84	MH1-53	9.30	73.00	0.34	3.12	24.46	N/A	45.00	39.69	39.87	11.31
85	MH0-7	0.00	73.00	0.34	0.00	24.46	N/A	46.00	0.00	0.00	14.90
86	MH1-37	31.30	31.30	0.30	9.41	9.41	N/A	44.00	40.31	40.41	0.00
87	MH1-25	18.40	49.70	0.30	5.60	15.14	N/A	44.00	39.93	40.03	6.24
88	MH1-23	11.20	60.90	0.31	3.46	18.80	N/A	42.00	39.64	39.68	9.84
89	MH1-7	27.60	88.50	0.33	9.12	29.25	N/A	42.00	39.32	39.41	18.08
90	DETF4C	0.00	88.50	0.33	0.00	29.25	N/A	N/A	0.00	0.00	22.23
91	E3	136.50	136.50	0.33	44.89	44.89	N/A	N/A	62.49	62.51	0.00
92	E3-10	55.60	55.60	0.13	7.17	7.17	N/A	67.00	62.29	62.38	0.00
93	E3-8	0.00	192.10	0.43	0.00	81.86	N/A	N/A	62.09	62.12	8.14
94	E3D	54.60	54.60	0.13	6.91	6.91	N/A	62.00	59.77	59.80	0.00
95	E3-9	45.10	291.80	0.44	19.93	128.94	N/A	N/A	59.50	59.52	18.14
96	E3-7	39.90	39.90	0.50	19.95	19.95	N/A	65.00	63.37	63.66	0.00
97	E3-5	38.50	78.40	0.47	18.20	37.07	N/A	61.00	59.09	59.56	5.33
98	E3-5CH	0.00	370.20	0.45	0.00	167.85	N/A	N/A	58.58	58.62	28.14
99	E3-3CH	66.50	436.70	0.46	30.35	199.29	N/A	N/A	57.45	57.50	38.14
100	WQE3	0.00	436.70	0.46	0.00	199.29	N/A	N/A	0.00	0.00	48.14
101	MH12-21	133.70	133.70	0.36	48.22	48.22	N/A	N/A	51.70	52.50	0.00
102	MH12-21OUT	0.00	133.70	0.36	0.00	48.22	N/A	N/A	0.00	0.00	0.24
103	MH12-17	185.30	185.30	0.44	81.55	81.55	N/A	N/A	50.36	51.41	0.00
104	MH12-17OUT	0.00	185.30	0.44	0.00	81.55	N/A	N/A	0.00	0.00	0.13
105	MH12-15	239.30	239.30	0.45	107.69	107.69	N/A	48.00	46.27	46.30	0.00
106	UH-OUT	0.00	239.30	0.45	0.00	107.69	44.44	N/A	44.44	44.44	8.98
107	E5-17	48.70	48.70	0.50	24.35	24.35	N/A	58.00	55.99	56.10	0.00
108	E5-15	41.90	90.60	0.47	19.53	42.24	N/A	58.00	54.81	55.01	9.22
109	E5-7	44.30	134.90	0.46	20.51	62.45	N/A	56.00	52.65	52.77	18.84
110	E5-5	49.90	49.90	0.50	24.95	24.95	N/A	56.00	53.22	53.43	0.00
111	E5-6	36.90	221.70	0.50	18.45	110.85	N/A	56.00	52.21	52.47	22.96
112	E5-3	17.50	17.50	0.50	8.75	8.75	N/A	54.00	52.51	52.66	0.00
113	E5-3A	45.40	284.60	0.50	22.70	142.30	N/A	54.00	51.24	51.68	26.66
114	E5-2	18.40	18.40	0.50	9.20	9.20	N/A	53.00	51.27	51.50	0.00
115	E5-1	0.00	303.00	0.50	0.00	151.35	N/A	53.00	49.83	50.33	29.64
116	WQDET28	0.00	303.00	0.50	0.00	151.35	46.20	N/A	46.20	46.20	31.16
117	MC80	22.37	22.37	0.50	11.19	11.19	N/A	54.00	48.97	49.36	15.00
118	MC65	27.32	95.35	0.46	12.65	44.14	N/A	52.00	47.80	48.30	17.34
119	MC60B	45.66	45.66	0.50	22.83	22.83	N/A	54.00	53.41	53.98	15.00
120	OffSITE	50.22	50.22	0.50	25.09	25.09	N/A	54.00	48.38	48.94	15.00
121	MC60A	48.14	48.14	0.50	24.07	24.07	N/A	56.00	52.01	52.64	15.00
122	Node A	0.00	145.57	0.47	0.00	67.79	N/A	50.00	45.25	46.20	19.81

123	creek1	0.00	145.57	0.47	0.00	67.79	45.00	N/A	45.00	45.00	21.66
124	creek2	0.00	48.14	0.50	0.00	24.07	47.00	N/A	47.00	47.00	18.23

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Convey Results Information:
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#	Convey Name	Upstream Critical Elevation	Upstream HGL	Downstream HGL	Upstream EGL	Downstream EGL	Exit Velocity (fps)	Travel Time (min)	Flow (cfs)
1	G7 to G5-3	54.56	55.25	53.06	55.31	53.11	1.7	20.39	4.48
2	G5-3 to G8	51.71	53.02	51.79	53.11	51.87	2.19	10.78	14.51
3	G6 to G4-3	53.5	54.73	54.65	54.74	54.66	0.68	12.05	3.27
4	G4-3 to G3-3	52.87	54.61	54.06	54.66	54.11	1.69	12.8	11.94
5	G3-3 to G2-3	51.71	53.95	52.62	54.11	52.77	2.98	6.87	28.7
6	G2-3 to G8	50.08	51.91	51.85	51.92	51.87	0.99	0.99	54.6
7	G8 to G3A	50.3	51.82	50.99	51.87	51.05	1.86	3.31	94.18
8	G3A to G43	49.63	50.99	49.13	51.05	49.62	5.51	1.85	97.42
9	G3D to G1-3A	53.78	53.86	52.51	54.15	52.8	4.09	3.79	64.98
10	G1-3A to G1-3B	52.48	52.48	51.03	52.8	51.35	4.29	4.65	84.31
11	G1-3B to G9	48.06	49.29	47.99	49.7	48.4	4.87	4.17	84.31
12	G9 to G43	46.89	47.85	47.35	48.4	48.	6.15	0.61	93.17
13	MH9-13 to MH9-11	49.36	49.77	48.85	49.91	48.91	1.96	7.13	6.15
14	MH9-11 to MH9-7A	47.15	48.76	47.25	48.91	47.4	3.02	4.8	14.82
15	MH9-7A to WQDETE28	45.51	47.16	46.2	47.4	46.44	3.7	2.11	26.18
16	MH9-7B to MH9-3	46.61	47.83	47.02	47.95	47.15	2.7	2.65	8.48
17	MH9-3 to WQDETE28	46.58	47.01	46.07	47.15	46.2	2.8	3.74	13.76
18	MH10-9 to MH10-7	48.44	50.42	47.47	50.72	47.78	4.2	2.58	13.2
19	MH10-7 to MH10-5	45.77	47.5	45.52	47.78	45.8	4.	2.71	19.61
20	MH10-5 to MH10-1	43.78	45.49	42.27	45.8	42.58	4.22	4.78	29.82
21	MH10-1 to WQMH10	40.89	42.17	41.59	42.58	42	4.86	0.69	46.78
22	MH11-9 to MH11-7	38.8	41.	39.91	41.06	39.97	1.94	9.6	6.11
23	MH11-7 to MH11-5	38.13	39.82	39.05	39.97	39.2	2.94	2.66	14.46
24	MH11-5 to MH11-1	37.57	39.02	37.94	39.2	38.11	3.18	3.78	22.45
25	MH11-1 to WQMH11	35.08	37.94	37.34	38.11	37.5	3.1	2.8	29.8
26	MH11-17 to MH11-15	41.58	44.37	43.16	44.49	43.28	2.69	4.03	8.45
27	MH11-15 to MH11-13	40.29	43.13	41.83	43.28	41.98	2.94	4.48	14.43
28	MH11-13 to MH11-11	38.66	41.81	40.77	41.98	40.94	3.11	3.86	21.99
29	MH11-29 to MH11-25	40.72	43.01	42.92	43.02	42.94	0.87	13.99	6.15
30	MH11-27 to MH11-25	41.05	43.07	42.92	43.09	42.94	0.84	35.35	5.96
31	MH11-25 to MH11-21	39.57	42.84	42.29	42.93	42.39	2.39	5.43	23.04
32	MH11-21 to MH11-23	38.3	42.22	41.61	42.39	41.78	3.11	3.32	39.1
33	MH11-23 to MH11-11	39.67	41.56	40.72	41.78	40.94	3.52	3.69	55.97
34	MH11-11 to WQMH11	36.89	40.34	38.	40.94	38.59	5.87	2.56	115.17
35	MH13-9 to MH13-7	38.37	41.89	41.86	41.9	41.87	0.88	4.9	8.5
36	MH13-7 to MH13-3	38.19	41.82	41.65	41.87	41.71	1.8	4.64	22.56
37	MH13-3 to WQUH1AN	38.25	41.57	40.96	41.71	41.1	2.84	4.34	35.67
38	MH14-1 to WQMH14	40.11	41.86	41.55	41.91	41.6	1.71	4.	5.36
39	MH15-12 to MH15-11	36.02	36.27	35.39	36.43	35.44	1.61	4.73	5.98
40	MH15-11 to MH15-9	34.3	35.31	34.2	35.43	34.31	2.52	6.7	12.35
41	MH15-9 to MH15-5	32.42	34.12	32.84	34.3	33.03	3.29	4.01	23.23
42	MH15-5 to MH15-3	30.57	32.94	32.54	33.03	32.61	2.07	7.95	33.
43	MH15-3 to WQUH2	29.2	32.51	32.4	32.61	32.5	2.38	1.54	37.9
44	MH15-8 to MH15-6	34.38	35.01	33.87	35.1	33.93	1.83	12.22	5.75
45	MH15-6 to WQUH2	31.12	33.79	32.36	33.93	32.5	2.82	5.55	13.85
46	SC-J39 to SC-J1	54.59	54.68	51.88	54.97	52.25	4.66	2.69	6.19
47	SC-J39a to SC-J1a	53.39	53.67	51.86	53.85	52.22	4.57	3.46	5.89
48	SC-K9 to SC-K5	37.73	41.53	41.17	41.59	41.23	1.84	5.07	9.03
49	SC-K5 to SC-K3	38.31	41.1	40.74	41.23	40.87	2.73	1.53	13.39
50	SC-K3 to WQSCK	35.87	40.65	38.68	40.87	38.9	3.59	3.71	17.65
51	SC-F65 to SC-F63	53.34	53.5	51.24	53.77	51.33	2.24	5.55	7.05
52	SC-F63 to SC-F1	50.41	50.79	50.	51.33	50.53	5.56	0.3	17.47
53	E4-17 to E4-15	52.22	52.9	50.71	53.16	50.91	3.39	4.99	16.65
54	E4-15 to E4-13	50.18	50.56	48.67	50.91	49.02	4.48	2.34	31.67
55	E4-13 to E4-11	48.67	48.67	47.61	48.9	47.84	3.65	3.11	45.84
56	E4-11 to E31	45.3	47.6	47.5	47.84	47.74	3.73	0.36	59.25
57	E6-11 to E6-15	51.71	52.01	50.11	52.34	50.44	4.36	1.49	13.7
58	E6-15 to MH7-5	48.8	49.34	45.29	49.75	45.7	4.88	5.82	27.34
59	MH7-5 to MH7-2	43.89	45.52	44.91	45.7	45.07	2.98	3.59	37.42

60	MH7-2 to MH7OUT	42.93	44.78	44.06	45 07	44 35	4.08	1.79	51 25
61	E6-5 to E6-2	47.84	48.29	46.5	48 6	46 77	3.94	2.54	16
62	E6-2 to MH7-3	45.79	46.36	43.03	46 77	43 81	6.73	3.89	28 15
63	MH7-3 to E6OUT	42.58	43.09	41.93	43 51	42 6	6.23	1.05	32 65
64	MH6-5 to MH6OUT	43.46	43.63	41.11	43.95	41.57	5.19	2.2	8.66
65	MH3-15 to MH3-11	42 64	43.09	41.92	43.24	42.1	3.18	5.14	8.54
66	MH3-11 to MH1-51	41.3	41.91	41.07	42.09	41.58	5.44	0.87	14.69
67	MH1-51 to MH1-55	39.97	40.8	40.46	40.9	40.55	2.3	3.14	14.69
68	MH1-55 to MH1-53	39 76	40.34	39.7	40.55	39.98	4.06	2.16	20.43
69	MH1-53 to MH0-7	38.92	39.69	38.29	39.87	38.86	5.73	3.59	24.46
70	MH1-37 to MH1-25	39.66	40.31	39.99	40.41	40.03	1.49	6.24	9.41
71	MH1-25 to MH1-23	40.48	39 93	39 6	40.03	39.68	2.15	3 6	15.14
72	MH1-23 to MH1-7	36.91	39.64	39 38	39.68	39.41	1.5	8 24	18.8
73	MH1-7 to DETF4C	36.89	39.32	39	39 41	39.09	2.33	4.15	29.25
74	E3 to E3-8	61.09	62.49	62 11	62.51	62.12	0.79	8 14	44.89
75	E3-10 to E3-8	61.69	62.29	62 09	62.38	62.12	1.46	4 54	7.17
76	E3-8 to E3-9	60.49	62.09	59.51	62.12	59.52	0.74	28.39	81.86
77	E3D to E3-9	57.52	59.77	59.48	59.8	59 52	1.41	8.87	6.91
78	E3-9 to E3-5CH	56.78	59.5	58.6	59.52	58 62	1.09	15.74	128.94
79	E3-7 to E3-5	61.78	63.37	59.28	63.66	59 56	4.06	5.33	19.95
80	E3-5 to E3-5CH	57.82	59.09	58.14	59.56	58 62	5.24	0.73	37.07
81	E3-5CH to E3-3CH	55 91	58.58	57.46	58.62	57.5	1.43	13.02	167.85
82	E3-3CH to WQE3	54 96	57.45	52.81	57.5	53.47	6.4	19.42	199.29
83	MH12-21 to MH12-21OUT	51.54	51.7	51.	52.5	51 8	6 82	0.24	48.22
84	MH12-17 to MH12-17OUT	50.	50.36	49.74	51.41	51 1	8.91	0.13	81.55
85	MH12-15 to UH-OUT	45 56	46.27	45.	46.3	45.03	1 28	10.	36.11
P - 85		44 56	46 07	44.21	46.3	44.44	3 65	8.46	71.57
86	E5-17 to E5-15	52.88	55 99	54.9	56.1	55.01	2 53	9.22	24.35
87	E5-15 to E5-7	53.81	54.81	52 58	55.01	52.77	3.36	9 62	42.24
88	E5-7 to E5-6	48.7	52.65	52.36	52.77	52.47	2.63	4.12	62.45
89	E5-5 to E5-6	52.73	53.22	52.26	53.43	52.47	3.53	2.43	24.95
90	E5-6 to E5-3A	48.34	52.21	51.42	52.47	51.68	3.92	3.7	110.85
91	E5-3 to E5-3A	52.72	52.51	51.55	52.66	51.68	2.79	2.98	8.75
92	E5-3A to E5-1	47.9	51.24	49.89	51.68	50.33	5.03	2.98	142 3
93	E5-2 to E5-1	51.77	51.27	50.18	51.5	50.33	2.93	2.91	9 2
94	E5-1 to WQDET28	49 59	49.83	49.	50.33	49 49	5.35	1.53	151 35
95	MC80 to MC65	48.97	48.97	48.26	49.36	48 3	1.53	2.27	11 19
96	MC60B to MC65	53.41	53.41	48.1	53.98	48 3	3.41	2.34	22 83
97	MC65 to Node A	47.41	47.8	45.41	48 3	46 22	6.86	2.47	44 14
98	OffSITE to Node A	48.38	48.38	46.13	48 94	46 2	1.94	1.39	25 09
99	Node A to creek1	45.25	45.25	44.86	46.2	45.	2 85	1.85	67.79
100	MC60A to creek2	52.01	52 01	46.89	52.64	47.	2 5	3.23	24.07

APPENDIX J

WATER QUALITY DRAWDOWN CURVES

FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

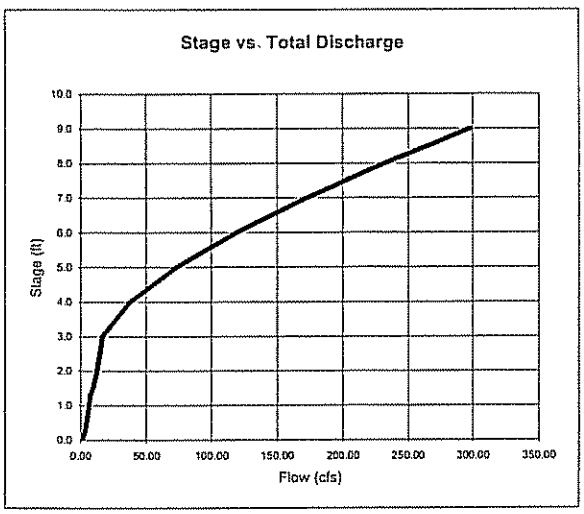
Basin Identifier/Location:	DETF4C

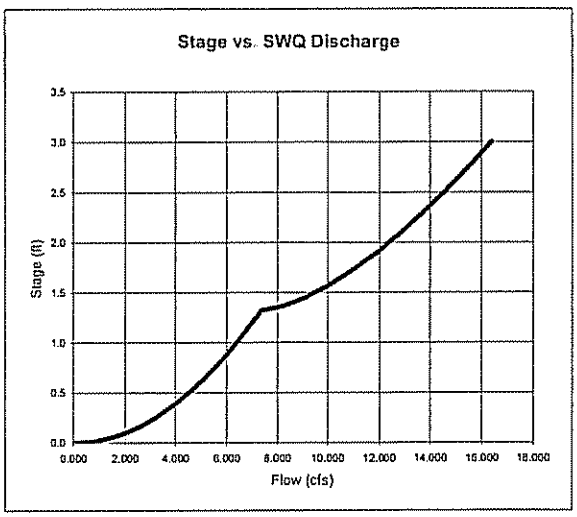
Riser Calculations Using the Orifice Equation for perforations

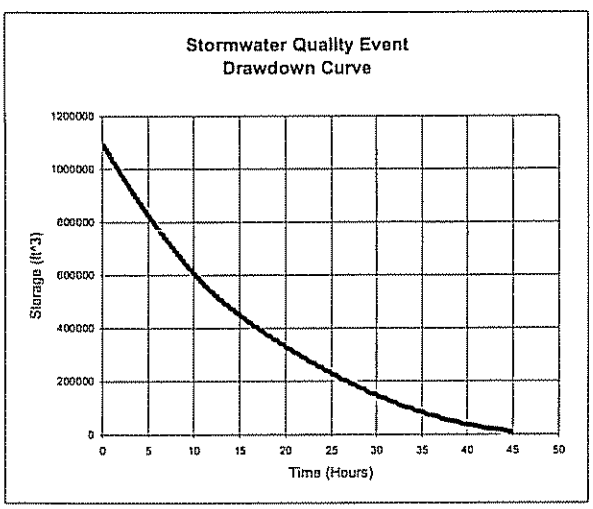
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

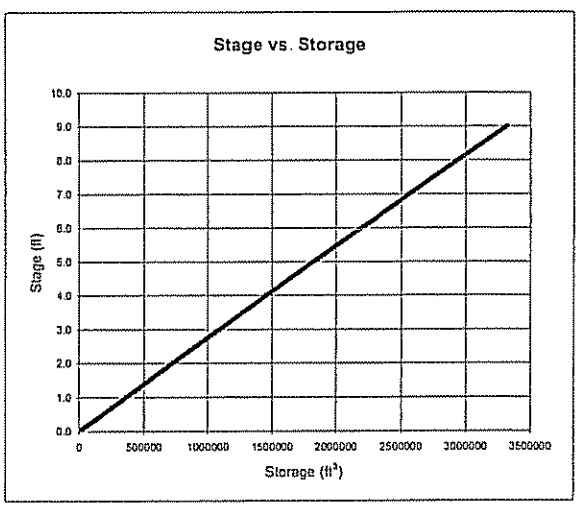
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	15	1	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 12" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	12	1	1.33

% Discharge Complete at Hour 24	78%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	44.8	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	25.0	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

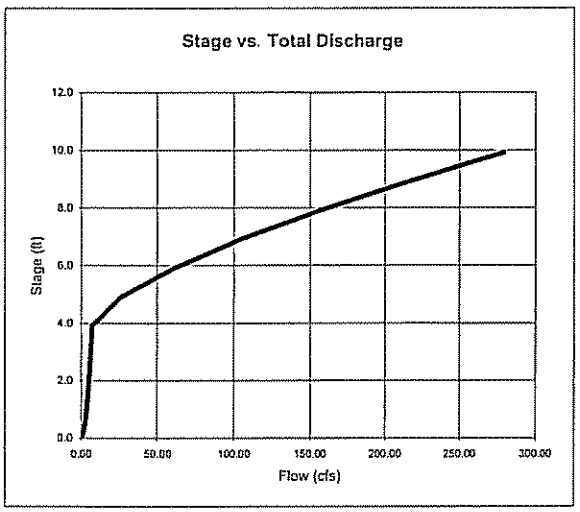
Basin Identifier/Location:	E21WQ

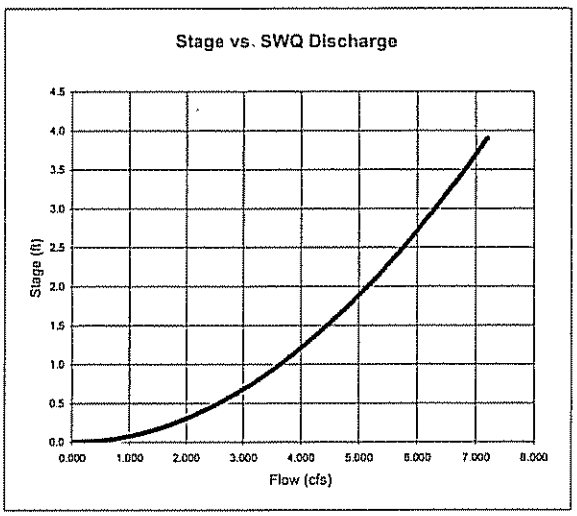
Riser Calculations Using the Orifice Equation for perforations

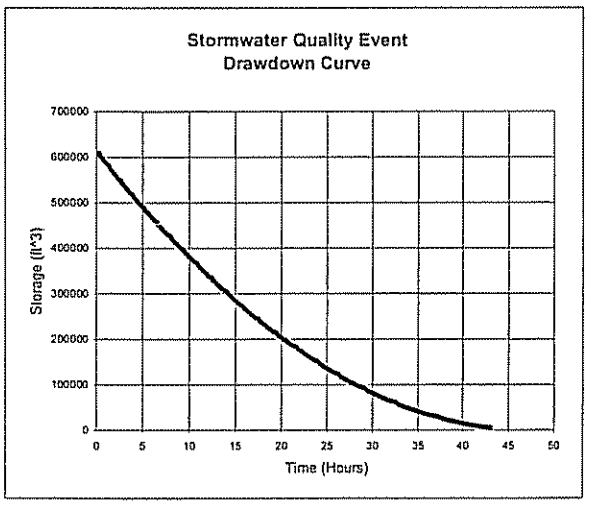
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

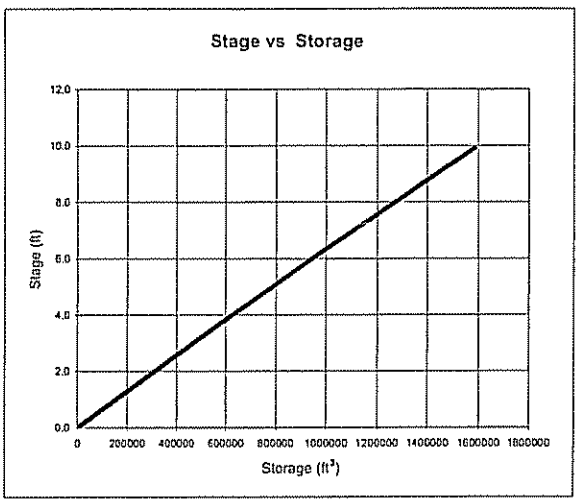
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	8	2	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 11" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	0	0	1.33

% Discharge Complete at Hour 24	76%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	43.0	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	14.0	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

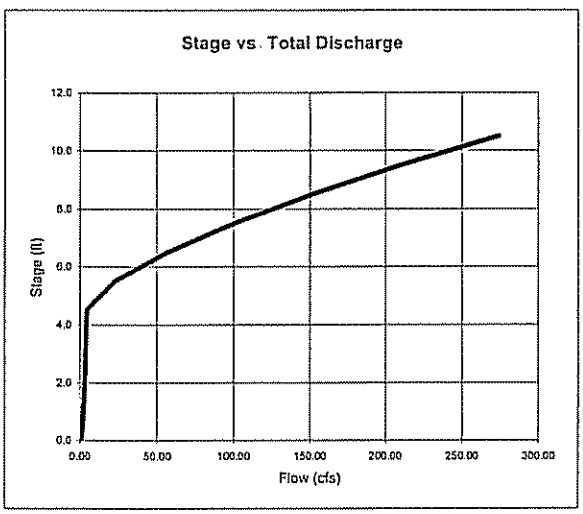
Basin Identifier/Location:	WQDETSC2

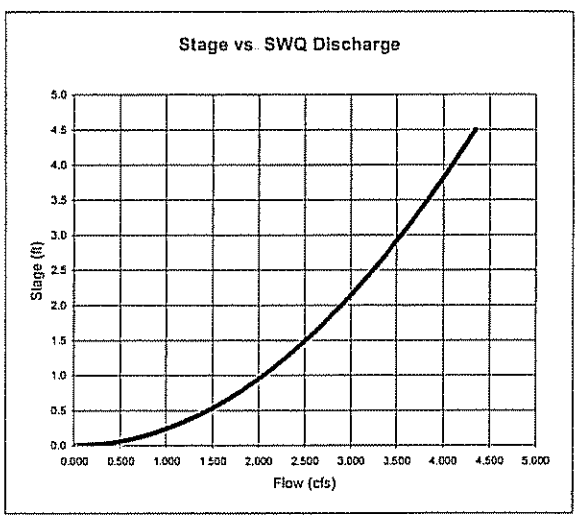
Riser Calculations Using the Orifice Equation for perforations

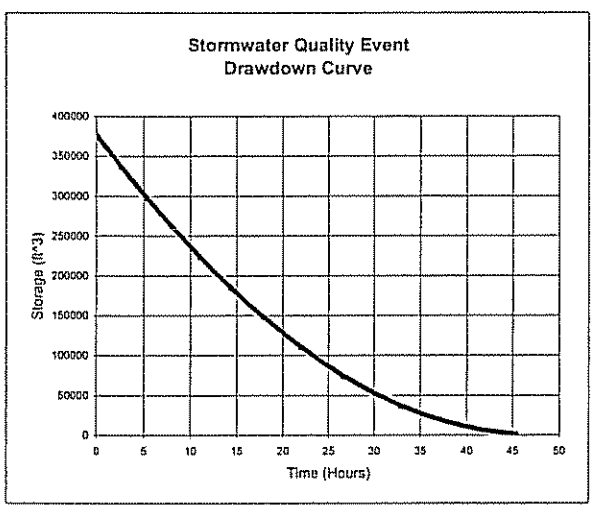
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

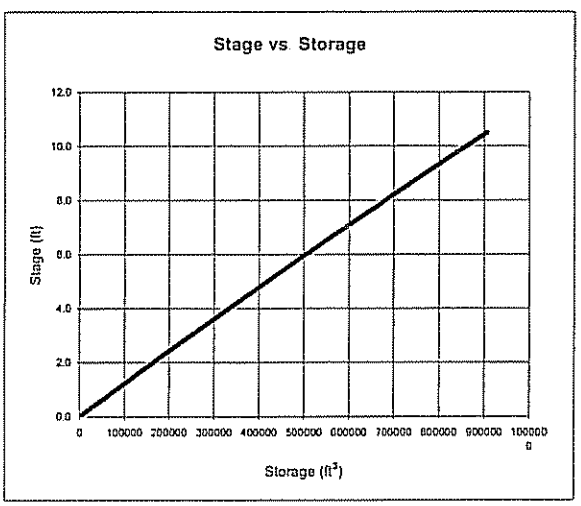
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	6	2	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 11" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	0	0	1.33

% Discharge Complete at Hour 24	75%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	43.8	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	8.6	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

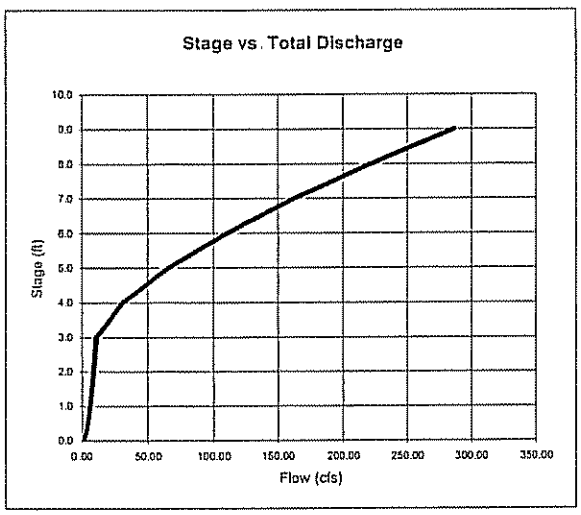
Basin Identifier/Location:	WQE28

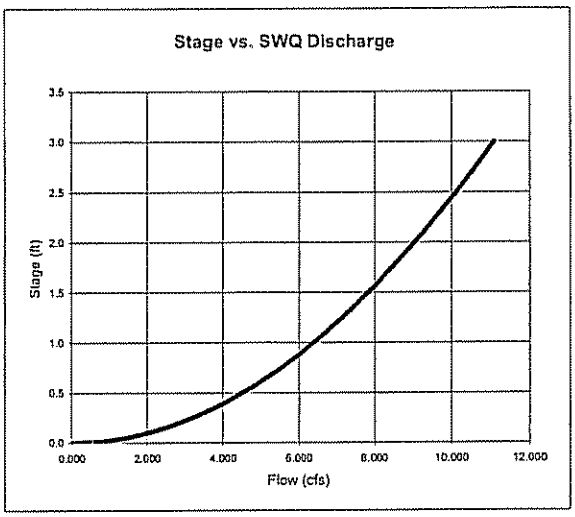
Riser Calculations Using the Orifice Equation for perforations

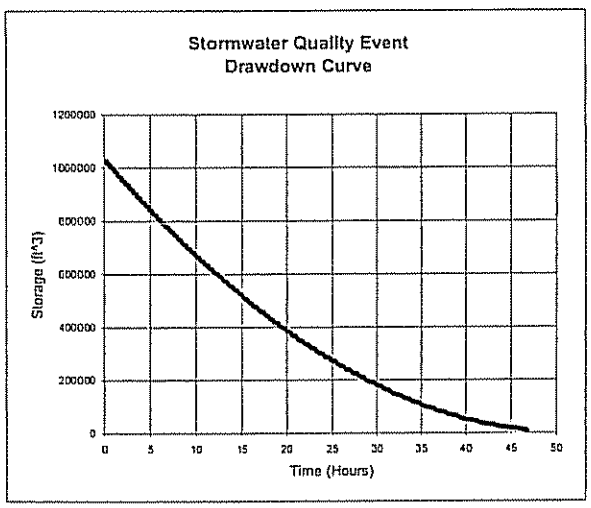
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

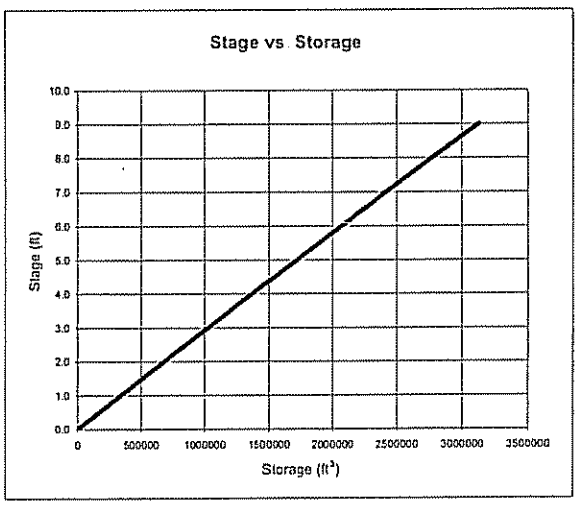
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	15	1	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 11" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	0	0	1.33

% Discharge Complete at Hour 24	72%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	46.7	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	23.5	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

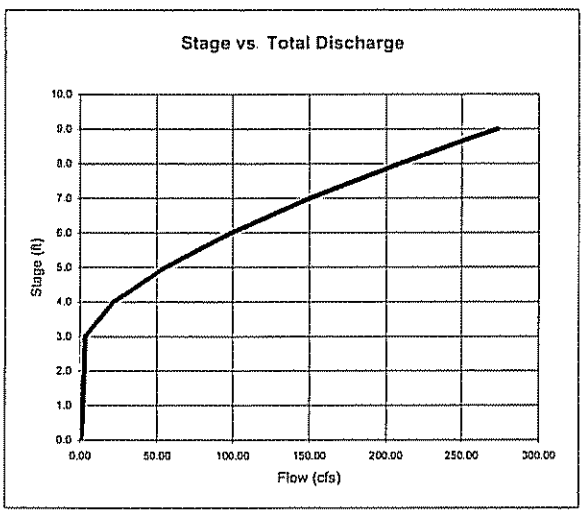
Basin Identifier/Location:	WQE31

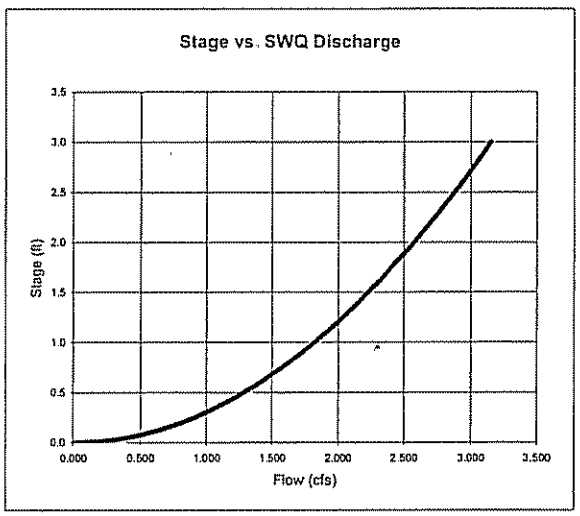
Riser Calculations Using the Orifice Equation for perforations

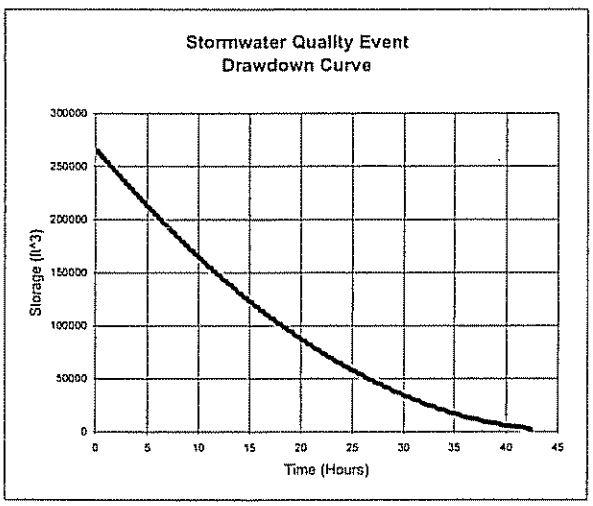
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

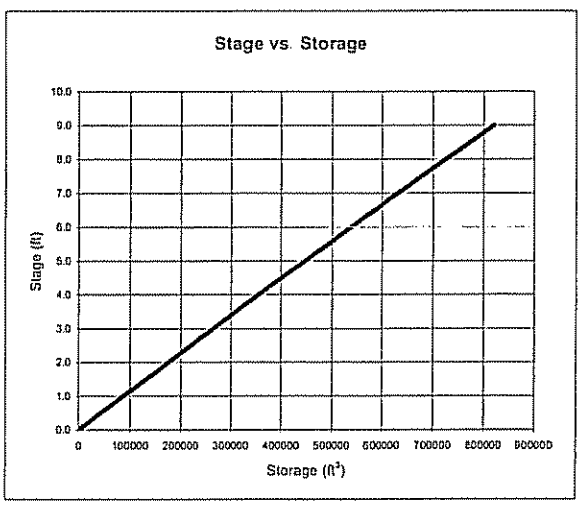
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	8	1	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 11" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	0	0	1.33

% Discharge Complete at Hour 24	77%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	42.3	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	6.1	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

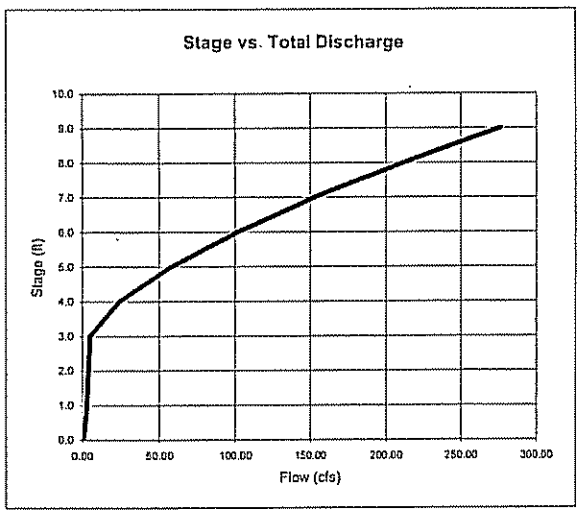
Basin Identifier/Location:	G43

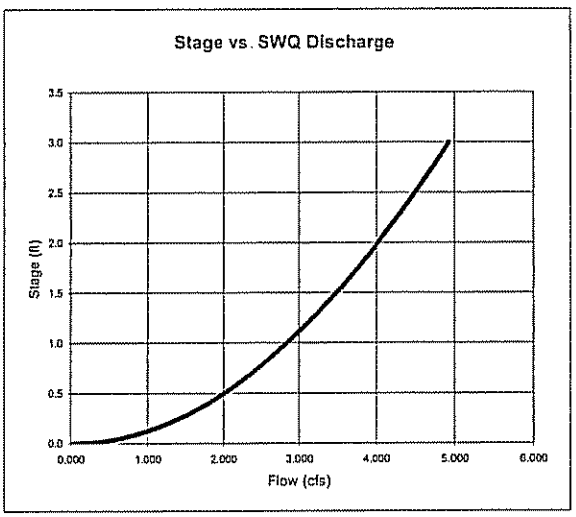
Riser Calculations Using the Orifice Equation for perforations

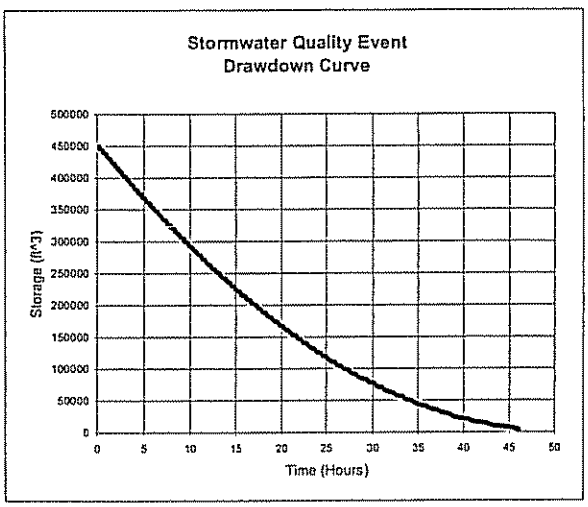
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32.2

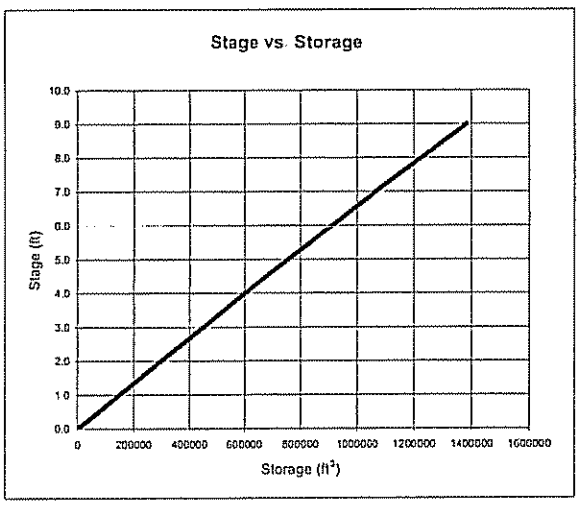
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	10	1	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 11" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	0	0	1.33

% Discharge Complete at Hour 24	72%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	46.0	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	10.3	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

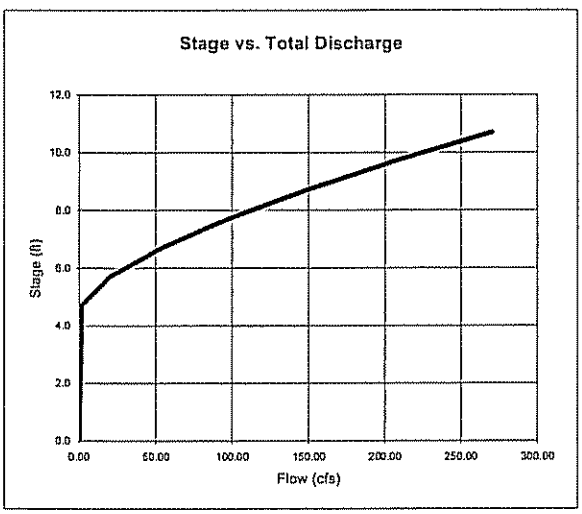
Basin Identifier/Location:	WQGC

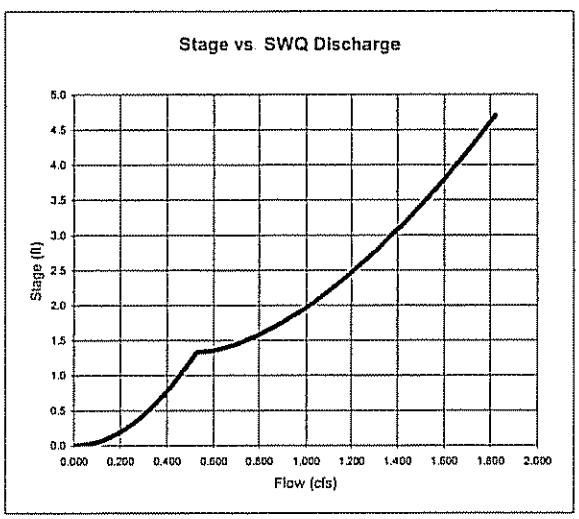
Riser Calculations Using the Orifice Equation for perforations

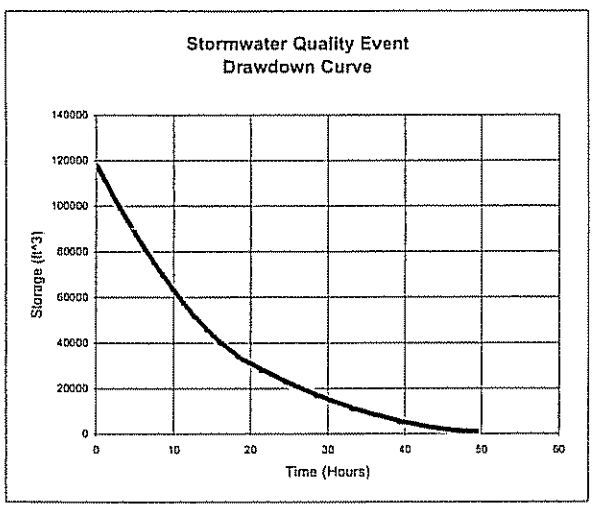
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

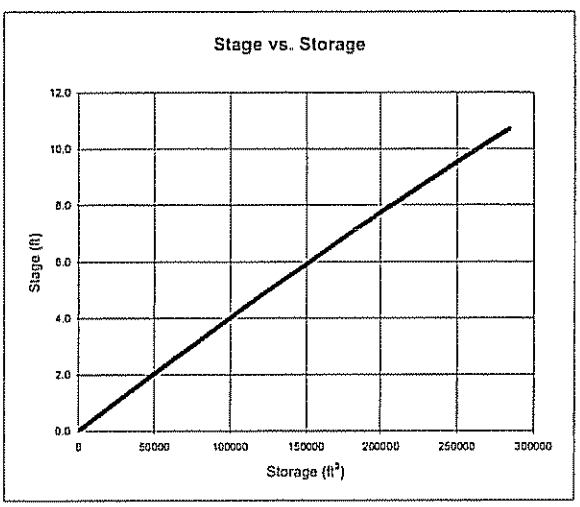
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	4	1	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 11" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	4	1	1.33

% Discharge Complete at Hour 24	80%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	46.3	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	2.7	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

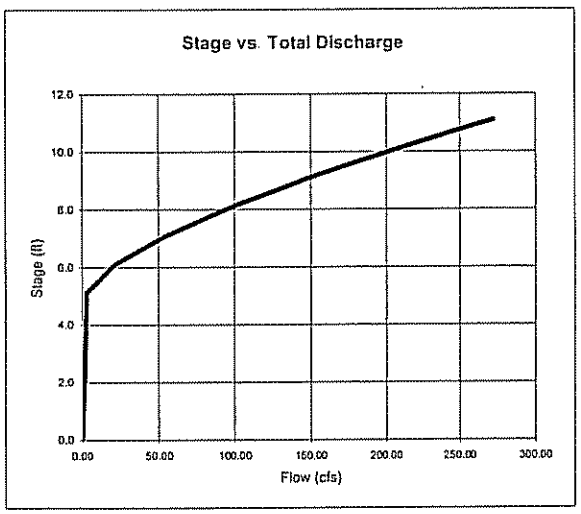
Basin Identifier/Location:	WQMH10

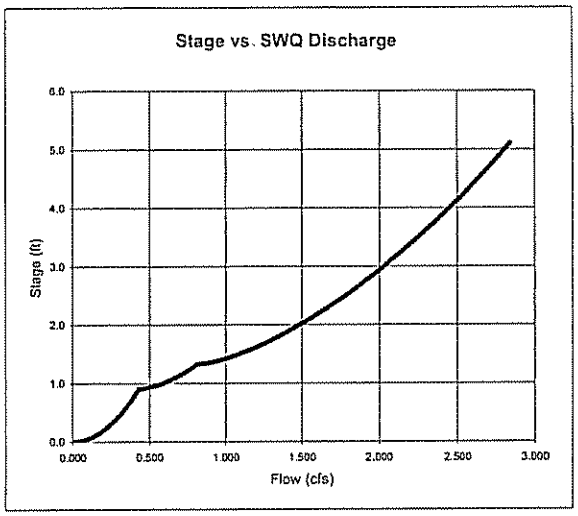
Riser Calculations Using the Orifice Equation for perforations

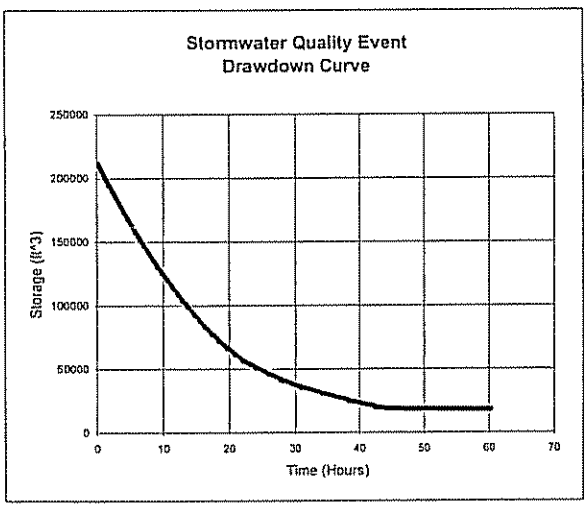
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

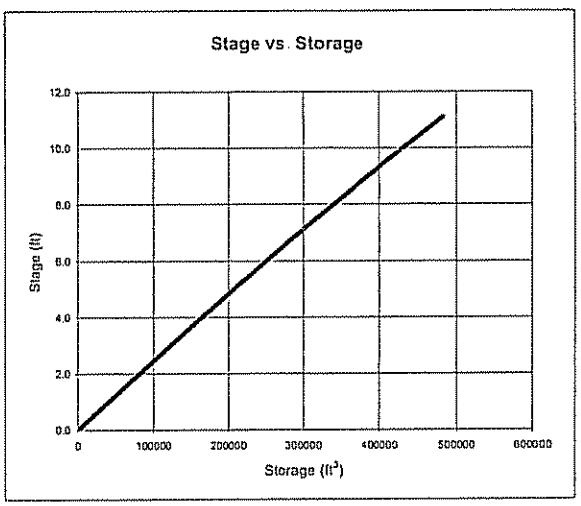
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	4	1	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 11" above invert - Pipe 1	4	1	0.92
Lift #4 - 16" above invert - Pipe 1	4	1	1.33

% Discharge Complete at Hour 24	76%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	43.8	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	4.9	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

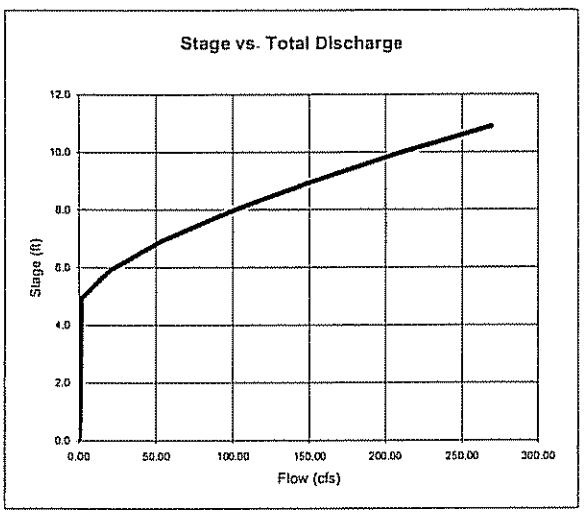
Basin Identifier/Location:	WQSCK

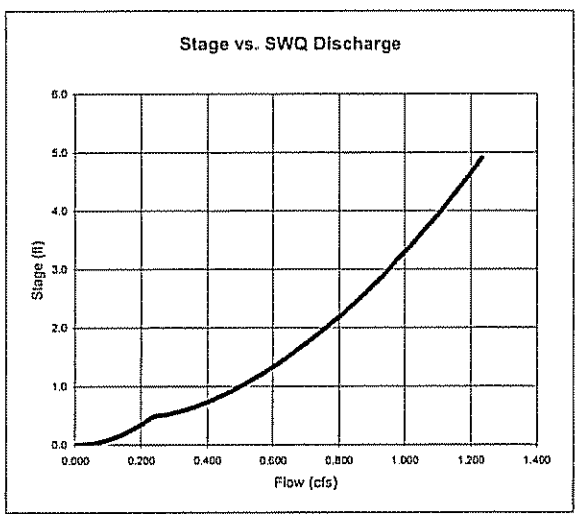
Riser Calculations Using the Orifice Equation for perforations

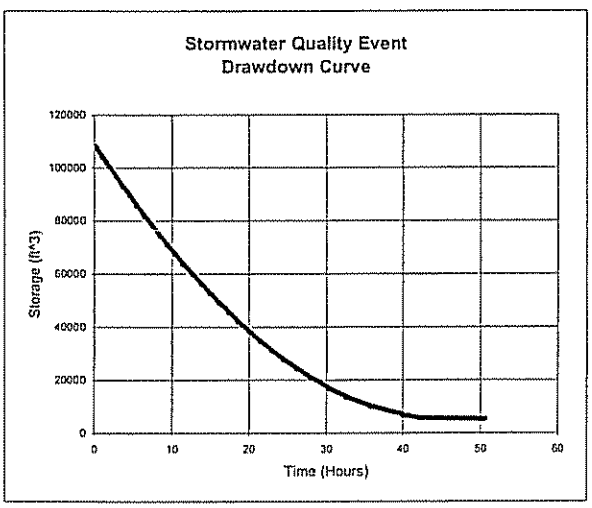
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

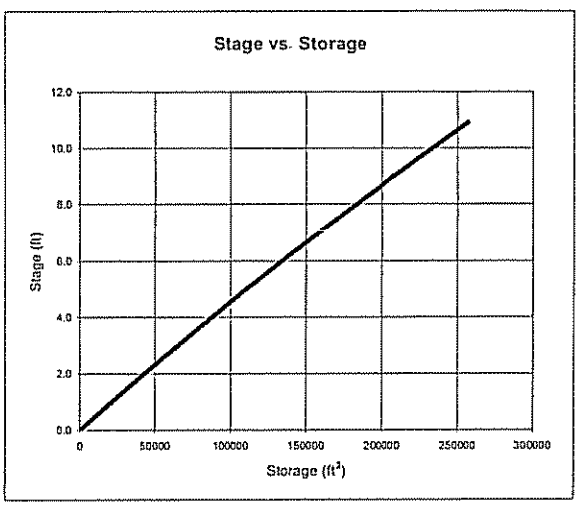
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	2	3	0.00
Lift #2 - 6" above invert - Pipe1	2	2	0.50
Lift #3 - 11" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	0	0	1.33

% Discharge Complete at Hour 24	74%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	42.1	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	2.5	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

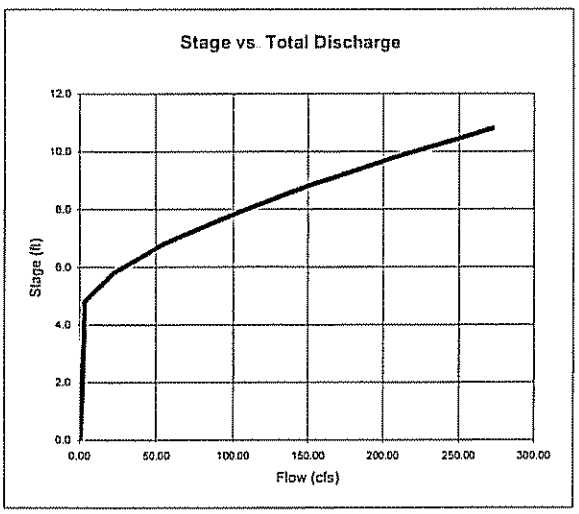
Basin Identifier/Location:	WQUH1A

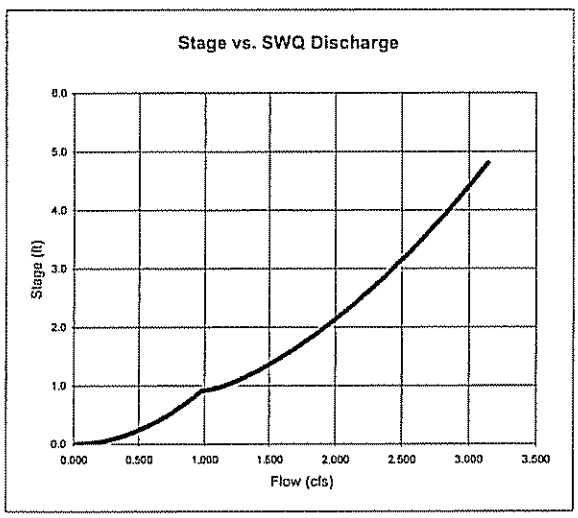
Riser Calculations Using the Orifice Equation for perforations

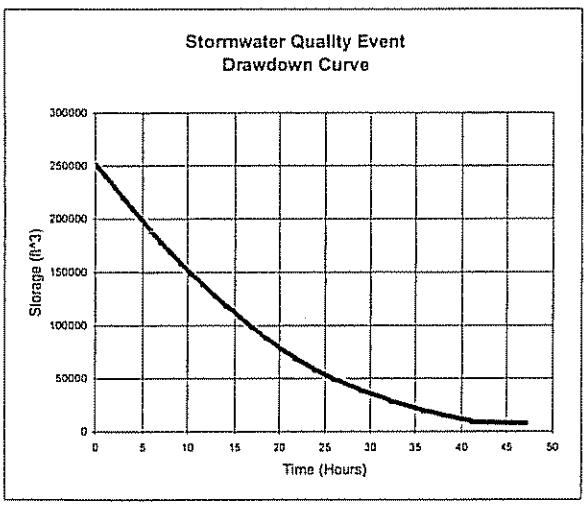
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32.2

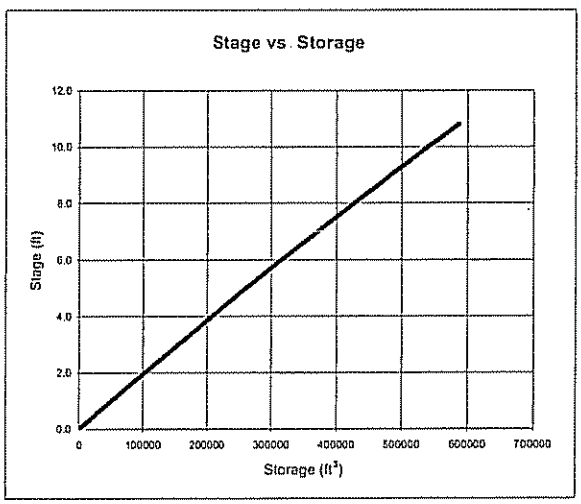
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	6	1	0.00
Lift #2 - 6" above invert - Pipe1	0	0	0.50
Lift #3 - 11" above invert - Pipe 1	4	1	0.92
Lift #4 - 16" above invert - Pipe 1	0	0	1.33

% Discharge Complete at Hour 24	77%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	41.7	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	5.8	Acre Feet









FLORIN VINEYARDS - STORMWATER QUALITY BASIN DRAWDOWN COMPUTATIONS
FOR SWQ STORAGE/PERFORATED RISER/OVERFLOW WEIR

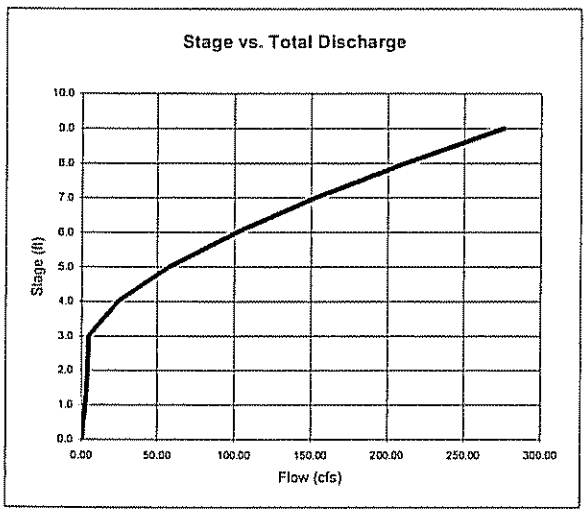
Basin Identifier/Location:	UHDET2

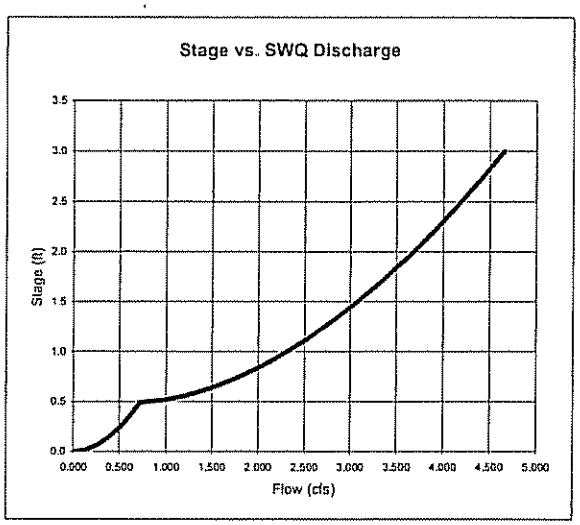
Riser Calculations Using the Orifice Equation for perforations

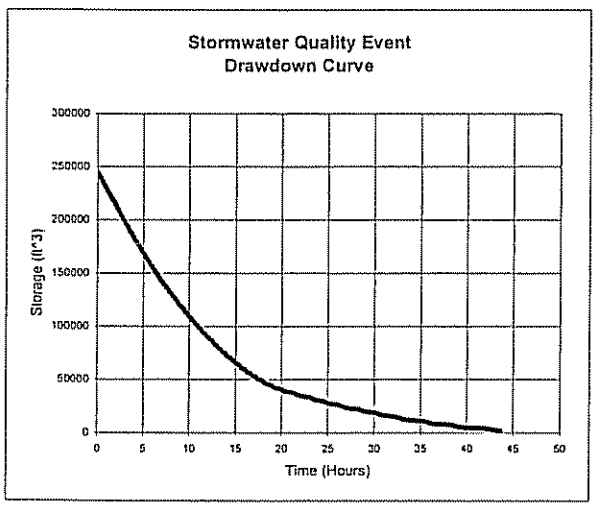
Orifice Equation
Q = CA(2gh)^(1/2)
C=0.65
g=32 2

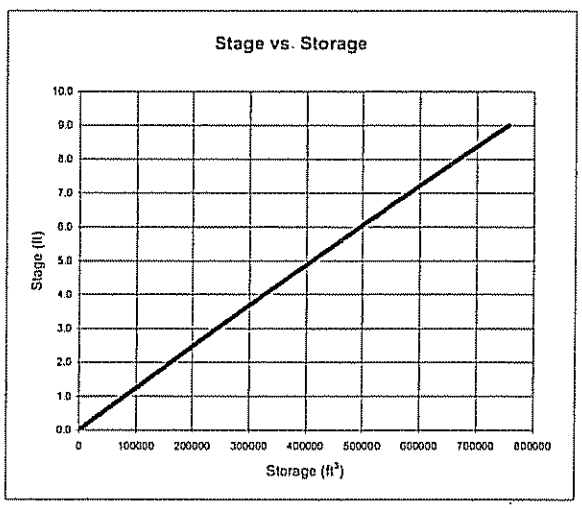
Weep Holes Data Table:	Dia (in)	# of Holes	Elev
Lift #1 - 0" above invert - Pipe 1	6	1	0.00
Lift #2 - 6" above invert - Pipe1	8	1	0.50
Lift #3 - 11" above invert - Pipe 1	0	0	0.92
Lift #4 - 16" above invert - Pipe 1	0	0	1.33

% Discharge Complete at Hour 24	88%	(Objective is 24 hour discharge >=75%)
Time of Complete Discharge (hr) :	43.6	(Objective is to discharge 100% within 48 hours)
Max Stormwater Quality Storage =	5.6	Acre Feet



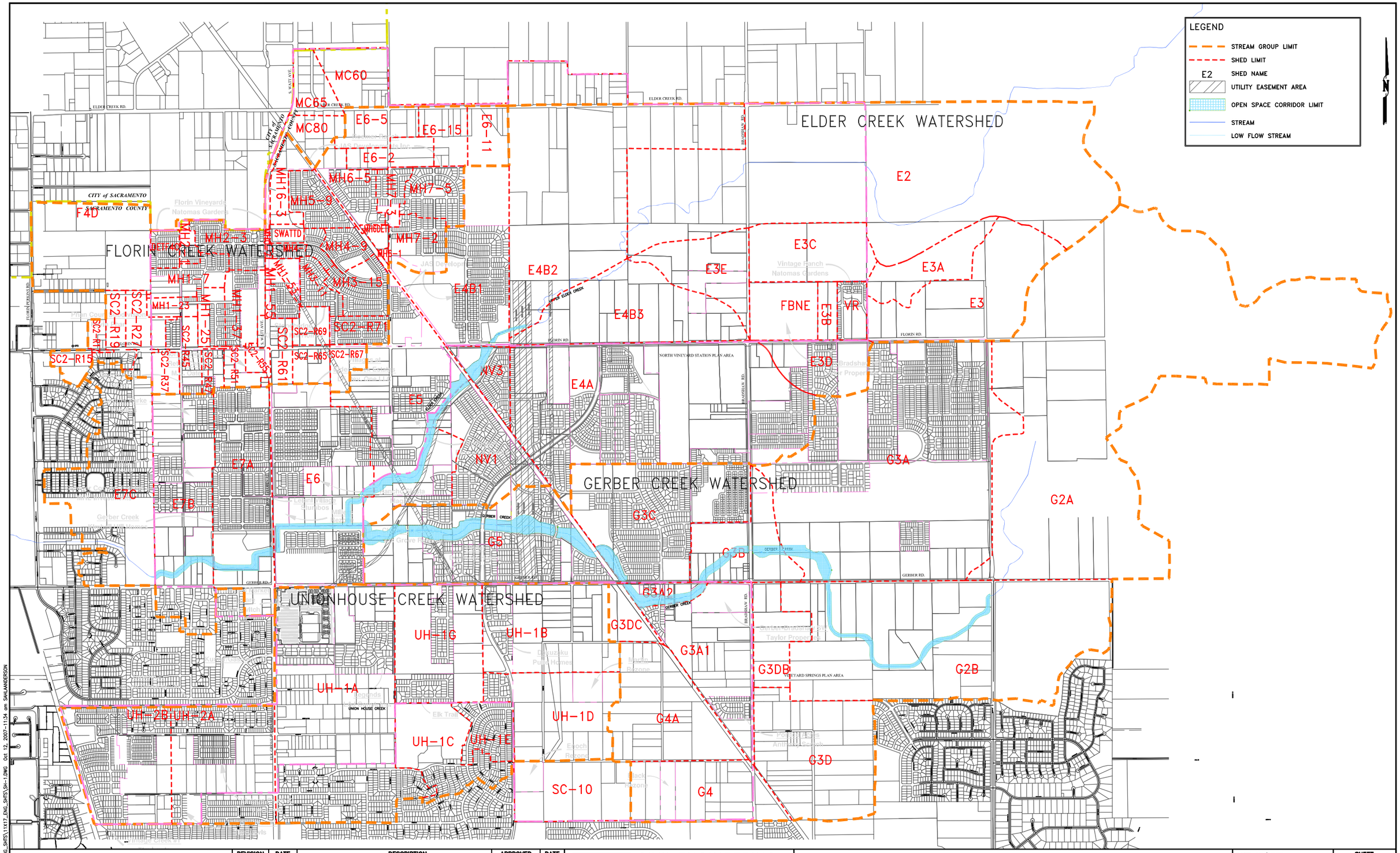






APPENDIX E

EXHIBITS



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DRAWN BY: L.J.H.	DESIGN BY: B.A.T.		
CHECKED BY: B.A.T.	DWG: SH-1.dwg		
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CIVIL ENGINEERING SOLUTIONS
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN
POST PROJECT SHED BOUNDARY

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET SH-1 OF 1

NOTE:
UNLESS OTHERWISE SPECIFIED DETENTION BASIN LAYOUT AND LOCATION ARE APPROXIMATE

ADVISORY NOTE:
THE IDENTIFIED TENTATIVE SUBDIVISION MAPS ARE NOT YET APPROVED AND AS SUCH SUBJECT TO REVISION.

LEGEND
- WATERSHED BOUNDARY
- PIPESHED LIMIT
- PIPESHED NAME
- NVSSP DETENTION BASIN IDENTIFIER
- W.Q.B./D.B. WATER QUALITY BASIN OR DETENTION BASIN LABEL
- WATER QUALITY OR DETENTION BASIN
- UTILITY EASEMENT AREA
- OPEN SPACE CORRIDOR LIMIT
- AREAS REQUIRING LOCAL WATER QUALITY TREATMENT
- PROPOSED STORM DRAIN TRUNK
- EXISTING STORM DRAIN TRUNK
- STREAM
- LOW FLOW STREAM
- PROPOSED DITCH ALIGNMENT
- TRUNK NODE NAME
- EXISTING TRUNK NODE NAME

ALTERNATE BASIN "DETF4C" LOCATION
ALTERNATE PIPES FOR ALTERNATE BASIN "DETF4C" LOCATION

CITY of SACRAMENTO
SACRAMENTO COUNTY
ELDER CREEK RD.
FLORIN RD.
GERBER RD.
BRUCEVILLE RD.
S. WATT AVE.
BRAUNSHAW RD.
FLORIN PERKINS RD.
NORTH VINEYARD STATION PLAN AREA
VINEYARD SPECIAL PLANNING AREA
MATCHLINE SHEET 1
MATCHLINE SHEET 2
MATCHLINE SHEET 3
MATCHLINE SHEET 4
PROJECT BOUNDARY

REVISION	DATE	DESCRIPTION	APPROVED	DATE

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Dwg.

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(916) 563 - 7300
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F-395

FLORIN VINEYARD GAP COMMUNITY PLAN
STORM DRAIN MASTER PLAN

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET SD OF 1

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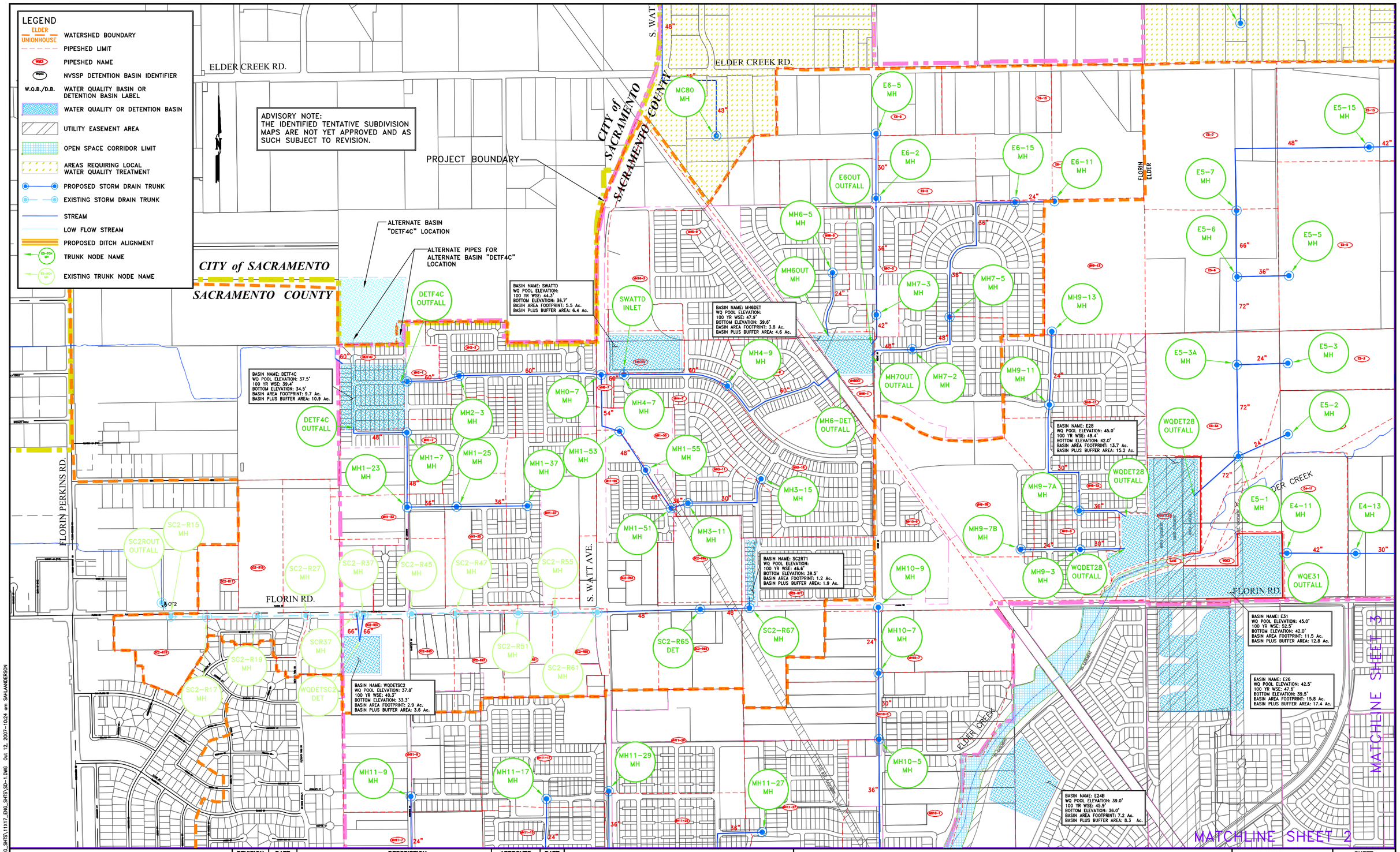

DRAWN BY: L.J.H. DESIGN BY: B.A.T.

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FLORIN VINEYARD GAP COMMUNITY PLAN
STORM DRAIN MASTER PLAN

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET SD-1 OF 4

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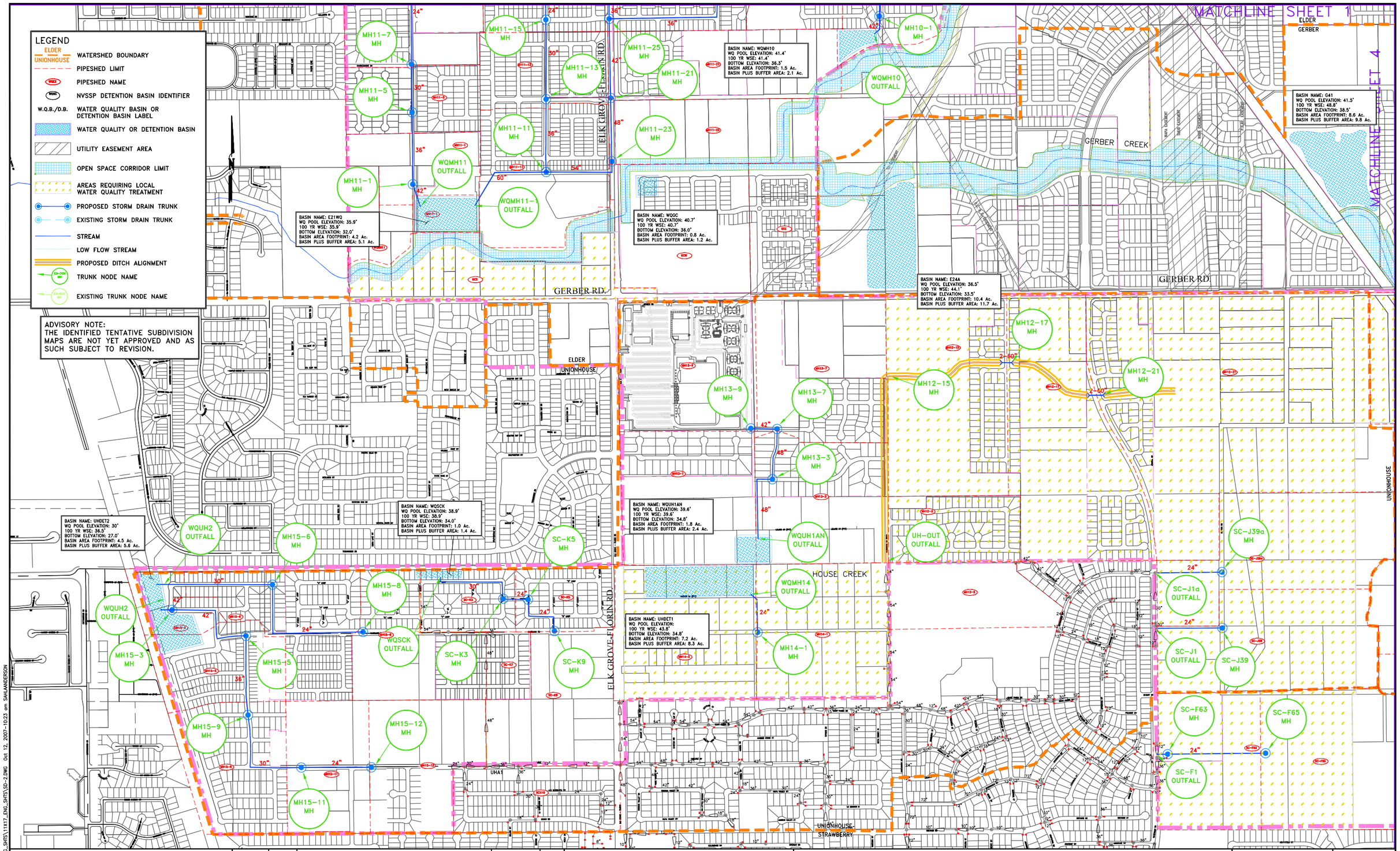

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FLORIN VINEYARD GAP COMMUNITY PLAN
STORM DRAIN MASTER PLAN

SACRAMENTO COUNTY CALIFORNIA

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W.O. NO. 2004.21A

SHEET SD-2 OF 4

ELDER CREEK RD.

MORRISON ELDER

BRADSHAW RD.

E5-17 MH

42"

E3-10 MH

E3-9 OUTFALL

30"

E4-15 MH

E4-17 MH

30"

24"

E3D MH

E3-8 OUTFALL

E3 OUTFALL

FLORIN RD.

NORTH VINEYARD STATION PLAN AREA

BRADSHAW RD.

MATCHLINE SHEET 1

MATCHLINE SHEET 4

GERBER LAGUNA

LEGEND

- ELDER / UNIONHOUSE — WATERSHED BOUNDARY
- PIPESHED LIMIT
- PIPESHED NAME
- NVSSP DETENTION BASIN IDENTIFIER
- W.Q.B./D.B. — WATER QUALITY BASIN OR DETENTION BASIN LABEL
- WATER QUALITY OR DETENTION BASIN
- UTILITY EASEMENT AREA
- OPEN SPACE CORRIDOR LIMIT
- AREAS REQUIRING LOCAL WATER QUALITY TREATMENT
- PROPOSED STORM DRAIN TRUNK
- EXISTING STORM DRAIN TRUNK
- STREAM
- LOW FLOW STREAM
- PROPOSED DITCH ALIGNMENT
- TRUNK NODE NAME
- EXISTING TRUNK NODE NAME

ADVISORY NOTE:
THE IDENTIFIED TENTATIVE SUBDIVISION MAPS ARE NOT YET APPROVED AND AS SUCH SUBJECT TO REVISION.

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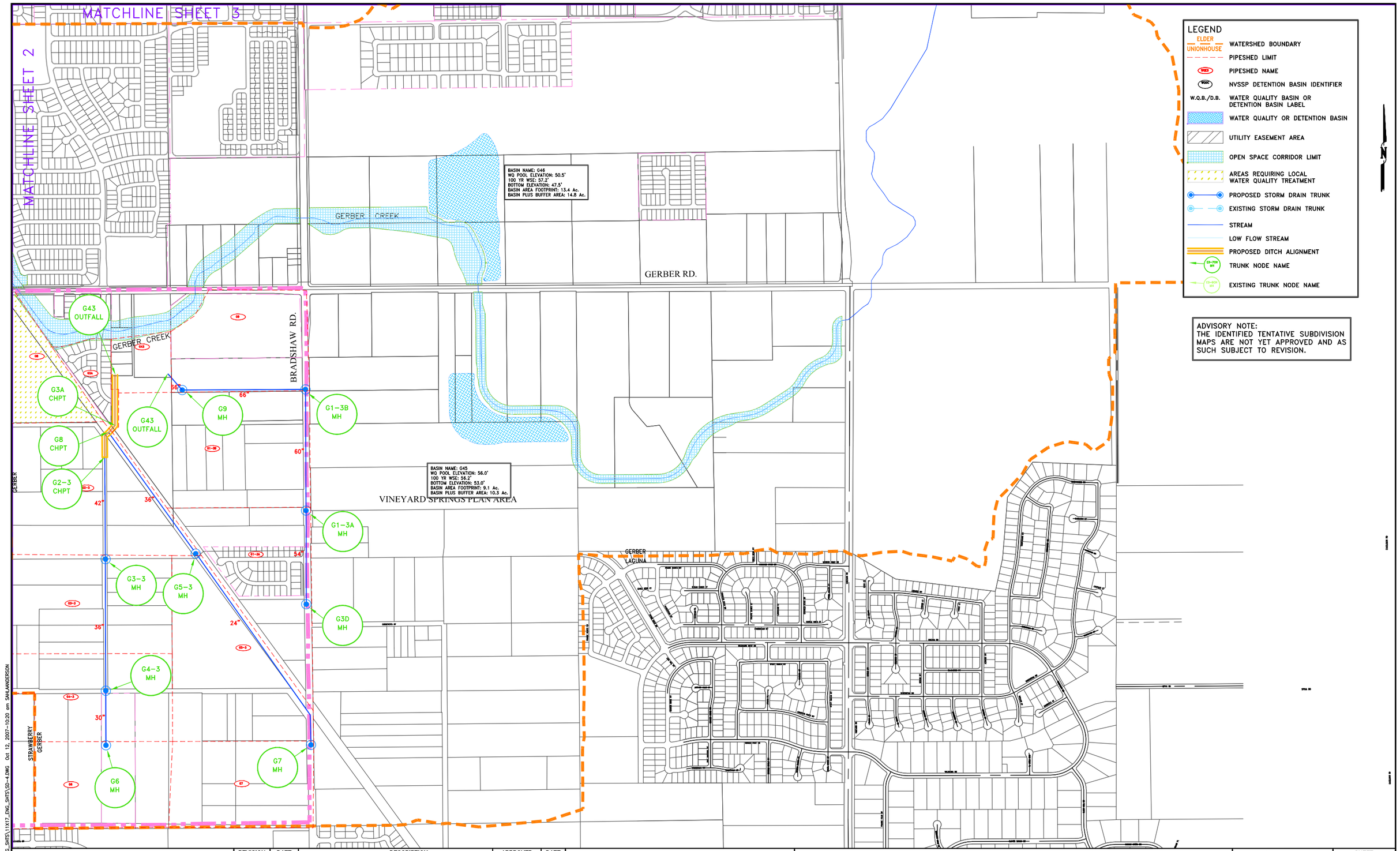
FLORIN VINEYARD GAP COMMUNITY PLAN
STORM DRAIN MASTER PLAN

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET SD-3 OF 4



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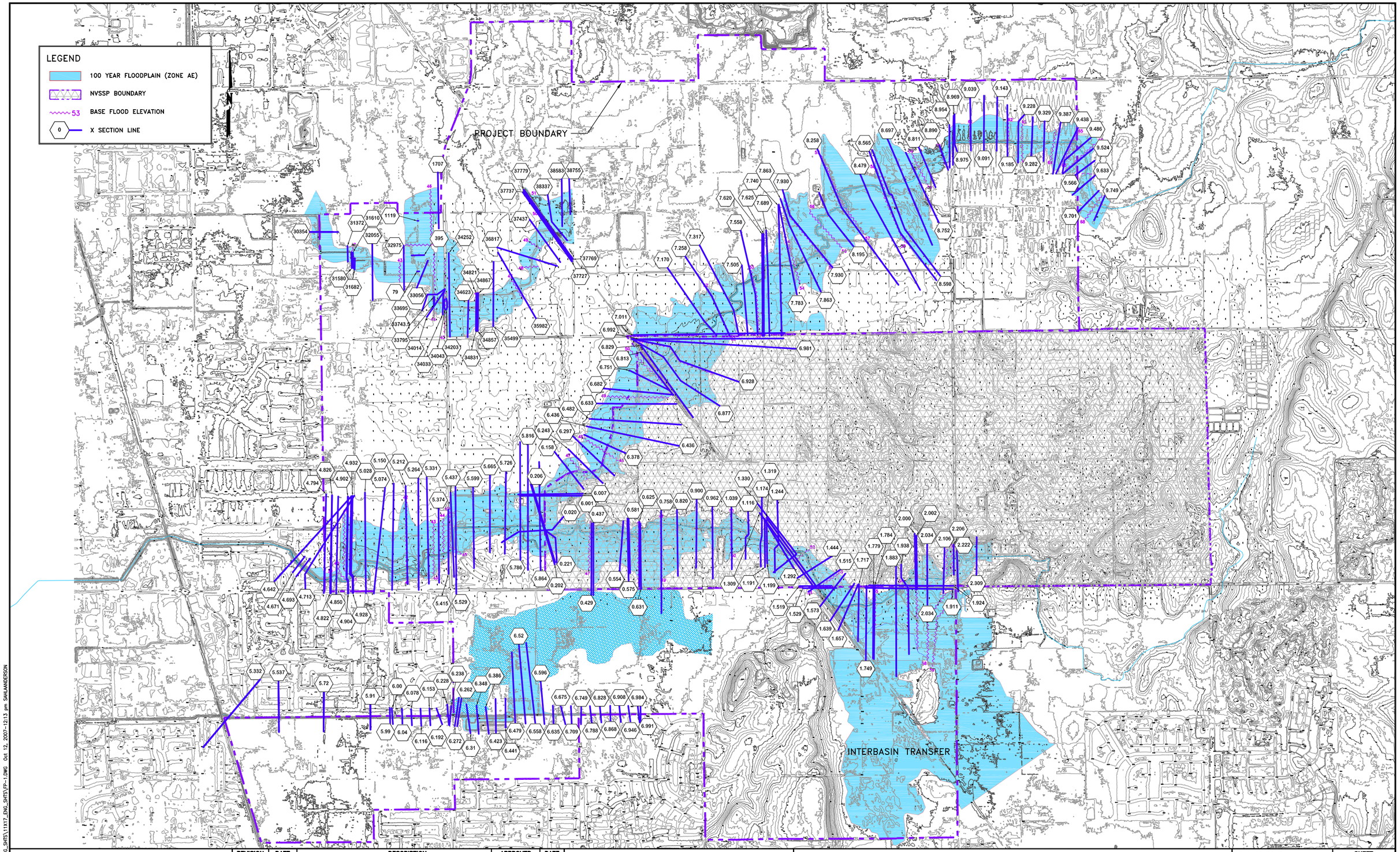
FLORIN VINEYARD GAP COMMUNITY PLAN
STORM DRAIN MASTER PLAN

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET SD-4 OF 4



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CHECKED BY: B.A.T.	DWG: FP-1.dwg		
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FLORIN VINEYARD GAP COMMUNITY PLAN
PRE PROJECT FLOODPLAIN MAP

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET FP-1 OF 4

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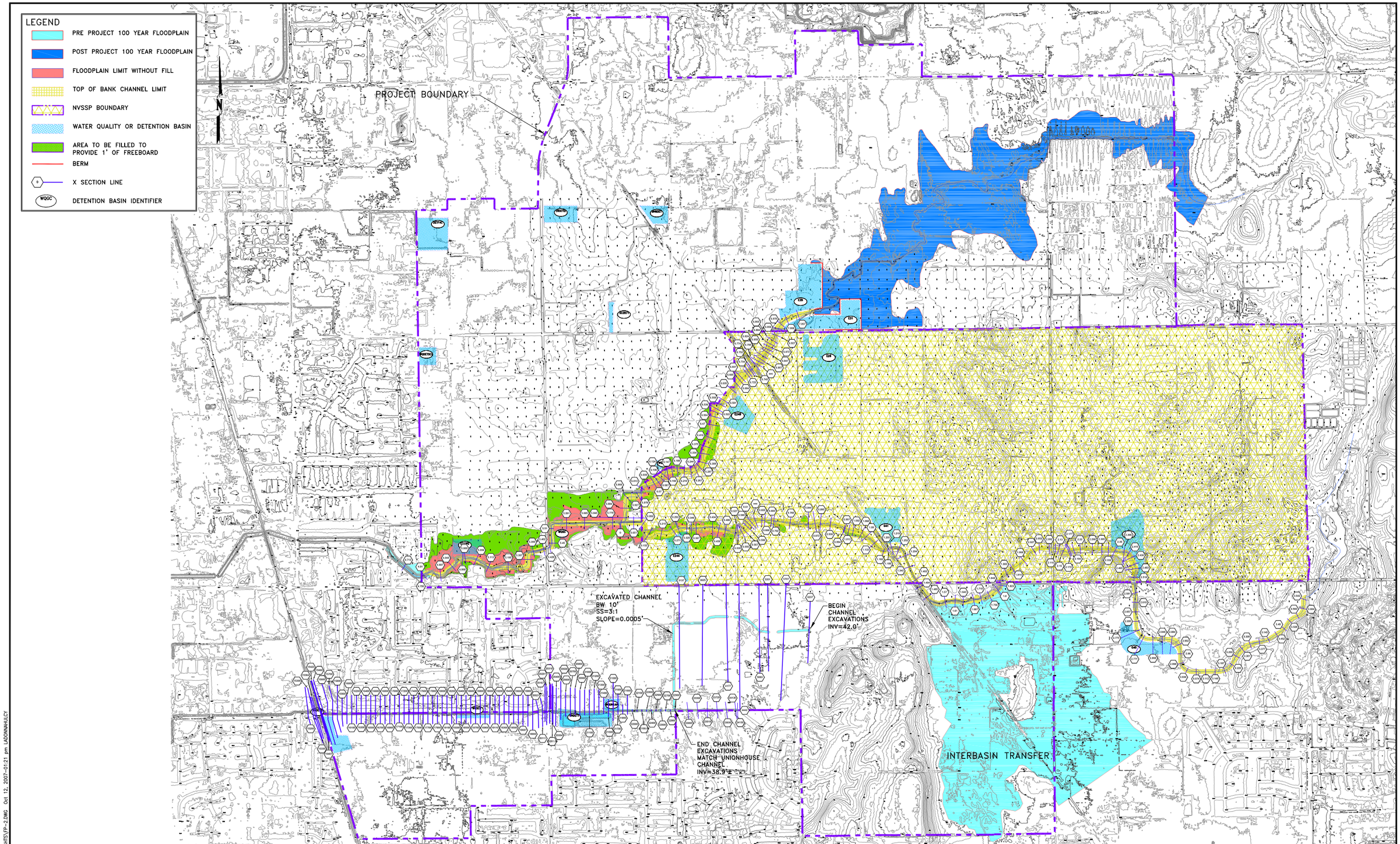

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CHECKED BY: B.A.T.	DWG: FP-2.dwg		
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FLORIN VINEYARD GAP COMMUNITY PLAN
POST PROJECT FLOODPLAIN MAP
WITH LAGUNA SPILL

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: 1"=850'
W.O. NO. 2004.21A

SHEET FP-2 OF 4

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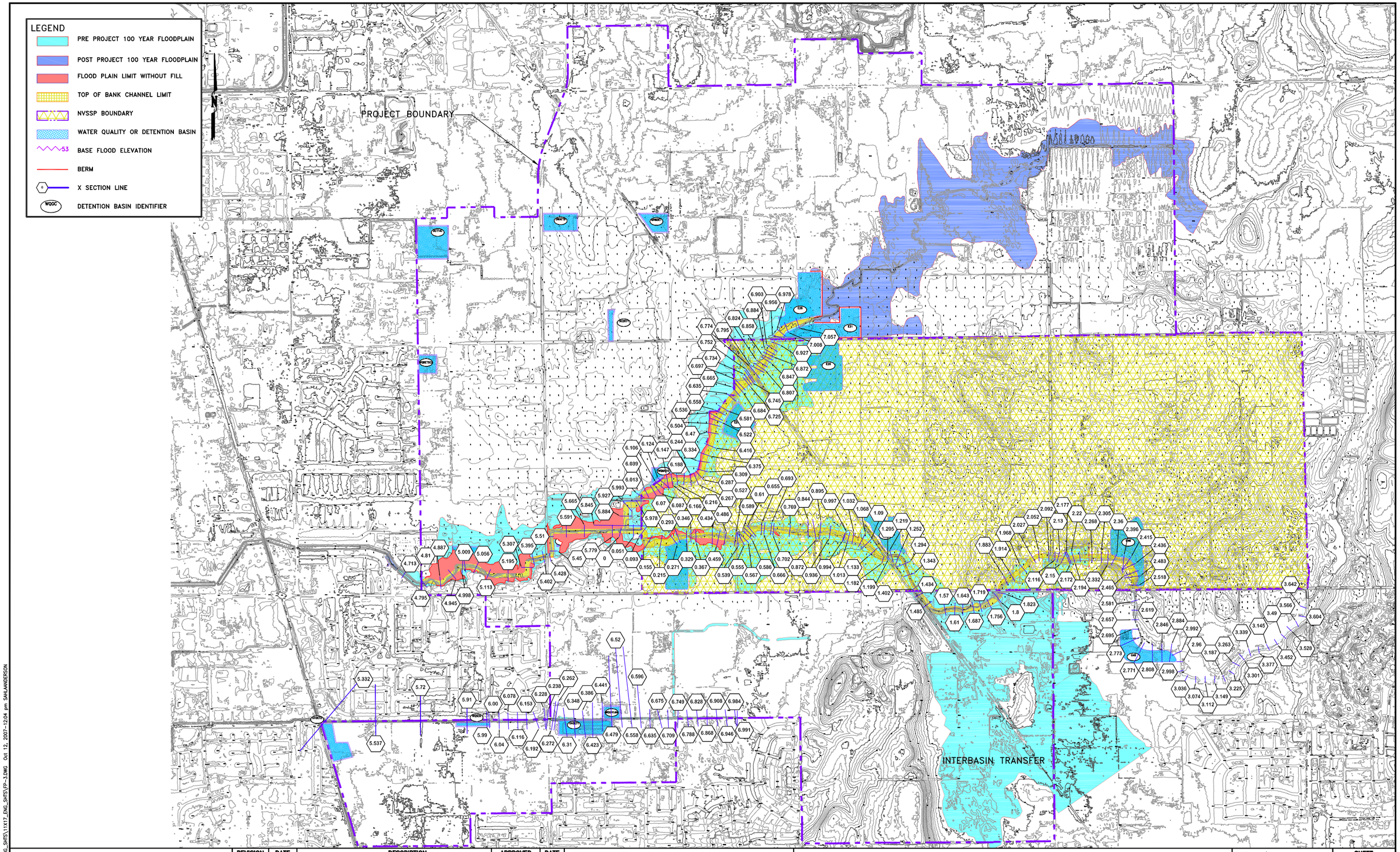

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FLORIN VINEYARD GAP COMMUNITY PLAN PRE & POST PROJECT FLOODPLAIN MAP WITH LAGUNA SPILL

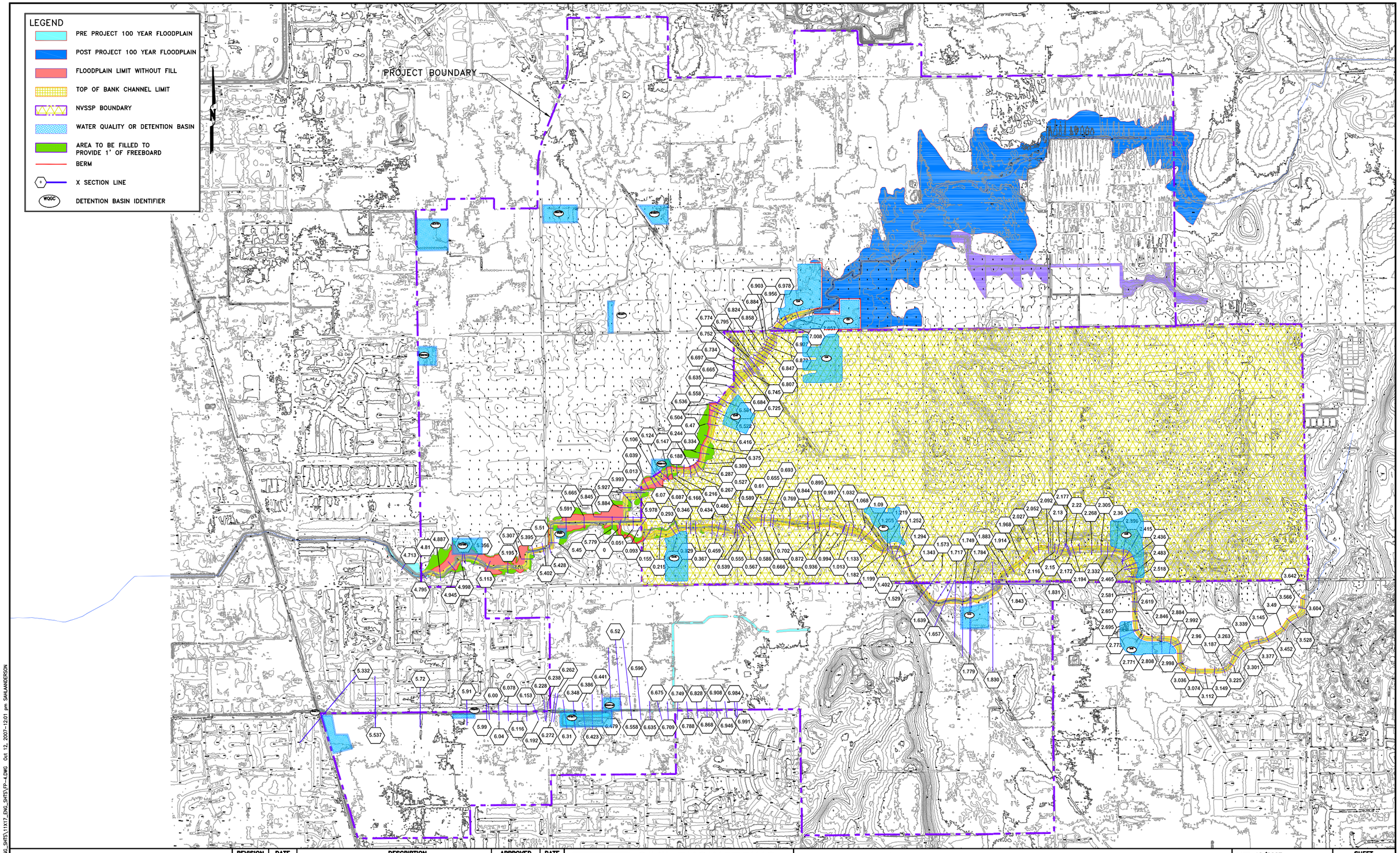
SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007

SCALE: N.T.S.

W.O. NO. 2004.21A

SHEET FP-3 OF 4



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CHECKED BY: B.A.T. DWG: FP-4.dwg

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Sacramento CA. 95825
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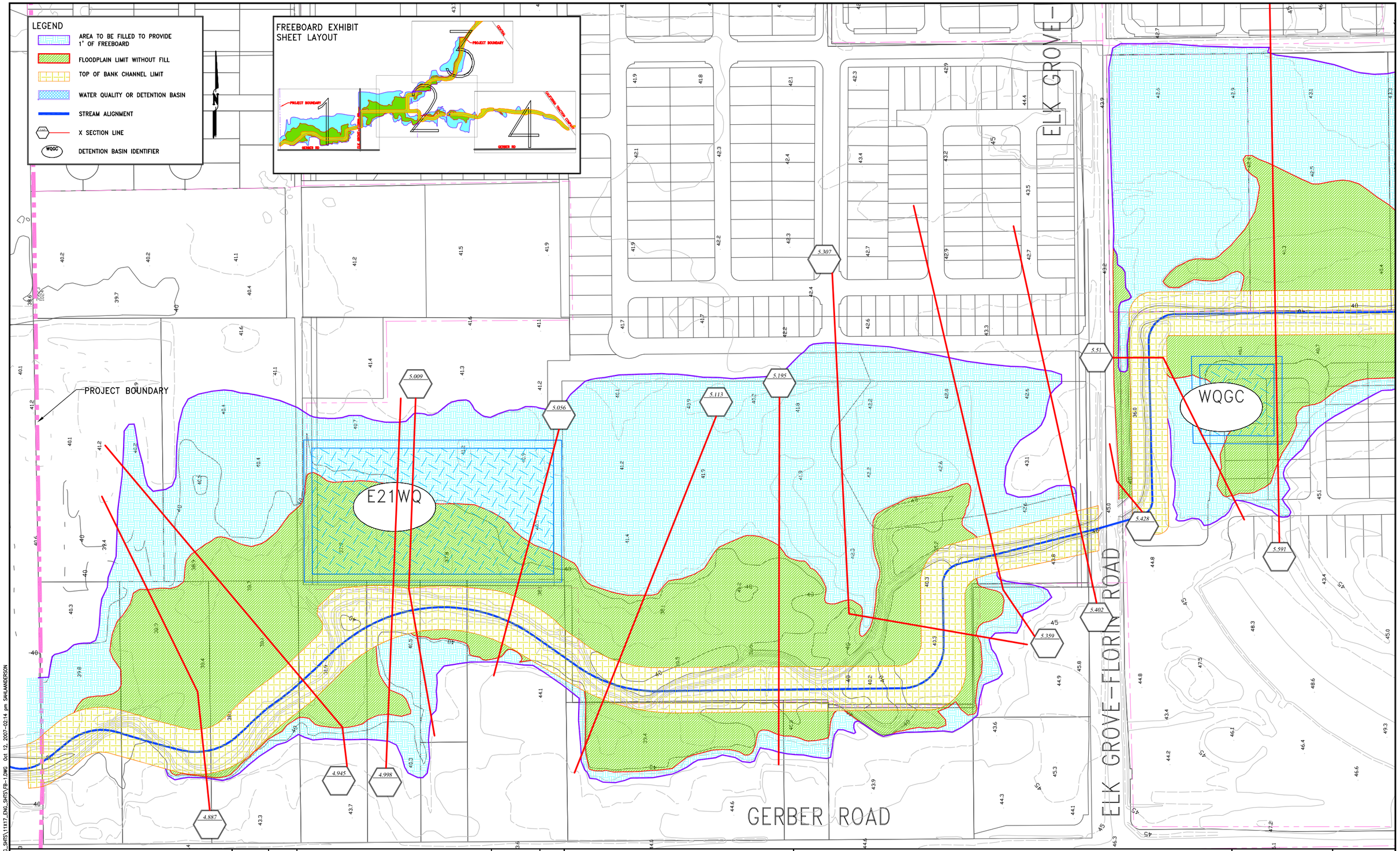
FLORIN VINEYARD GAP COMMUNITY PLAN
POST PROJECT FLOODPLAIN MAP
WITHOUT LAGUNA SPILL

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET FP-4 OF 4



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CHECKED BY: R.H.	DWG: FB-1.dwg					
Dwg.						

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1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN
FREEBOARD EXHIBIT
WITH LAGUNA SPILL

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET FB-1 OF 7

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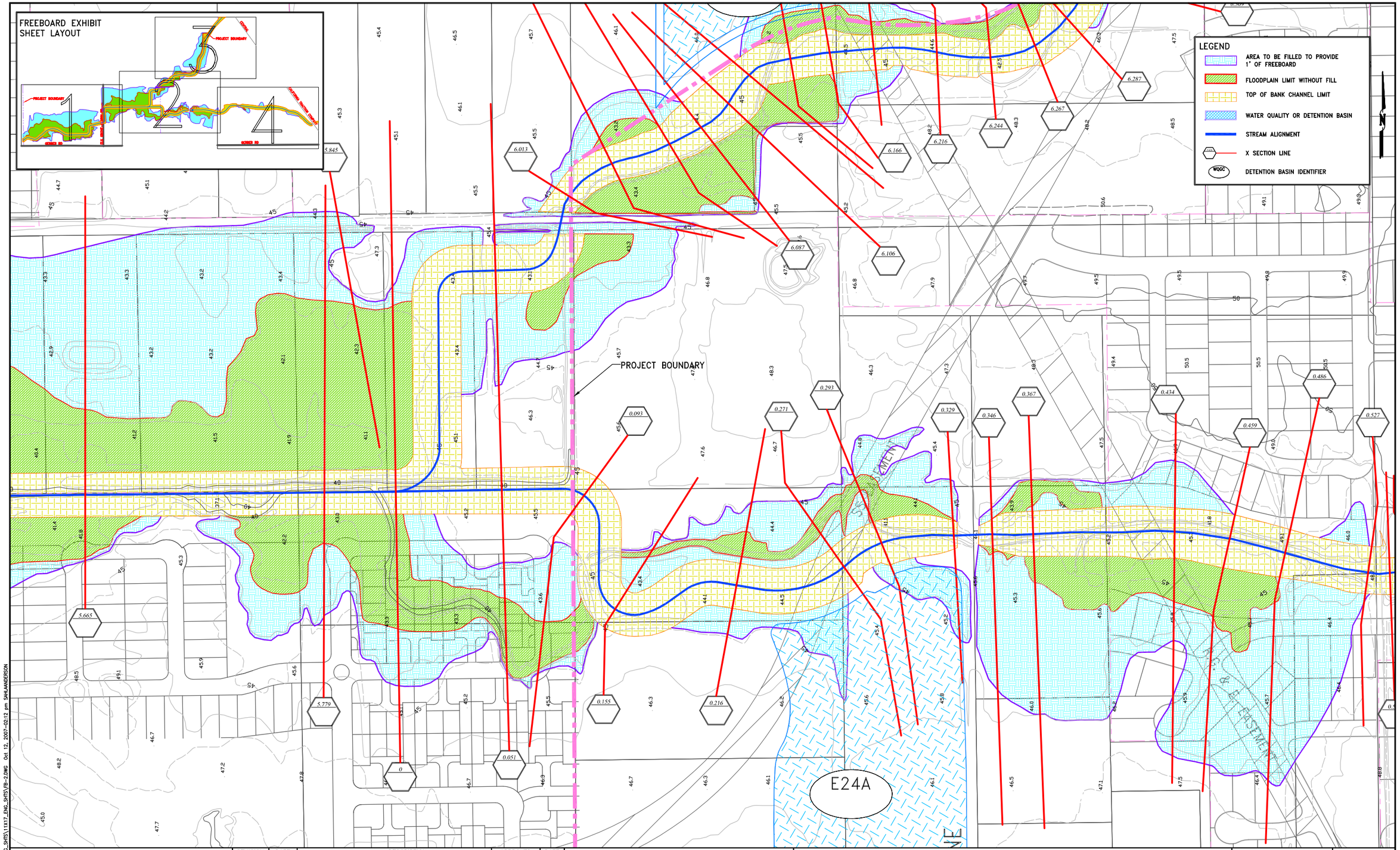

DRAWN BY: L.J.H.	DESIGN BY: B.A.T.
CHECKED BY: R.H.	DWG: FB-2.dwg
Dwg.	

REVISION	DATE	DESCRIPTION	APPROVED	DATE

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA, 95825
(916) 563 - 7300 Fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN
FREEBOARD EXHIBIT
WITH LAGUNA SPILL

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET FB-2 OF 7

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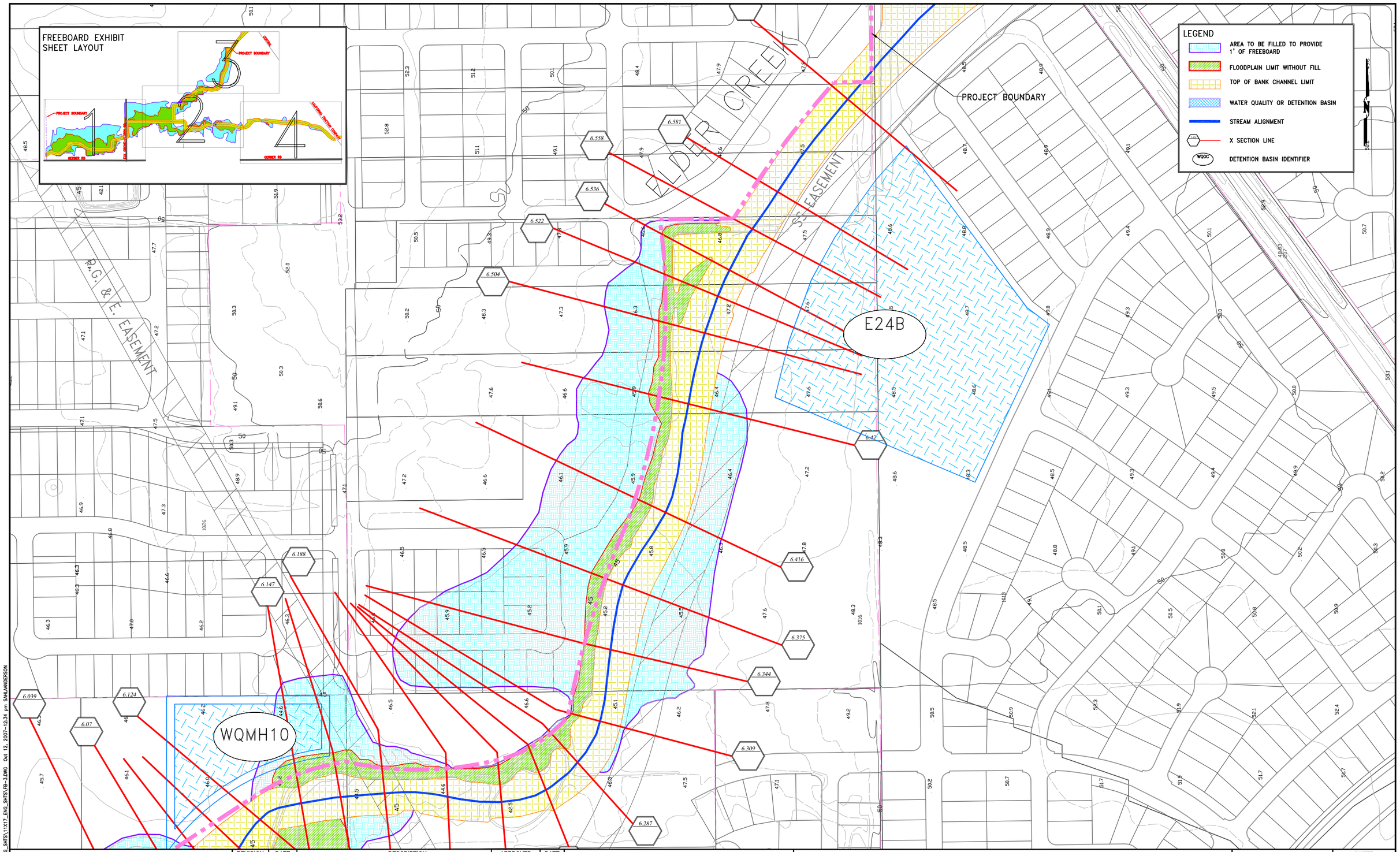

REVISION	DATE	DESCRIPTION	APPROVED	DATE

DRAWN BY: L.J.H. DESIGN BY: B.A.T.

CHECKED BY: R.H. DWG: FB-3.dwg

Dwg.

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FLORIN VINEYARD GAP COMMUNITY PLAN
FREEBOARD EXHIBIT
WITH LAGUNA SPILL

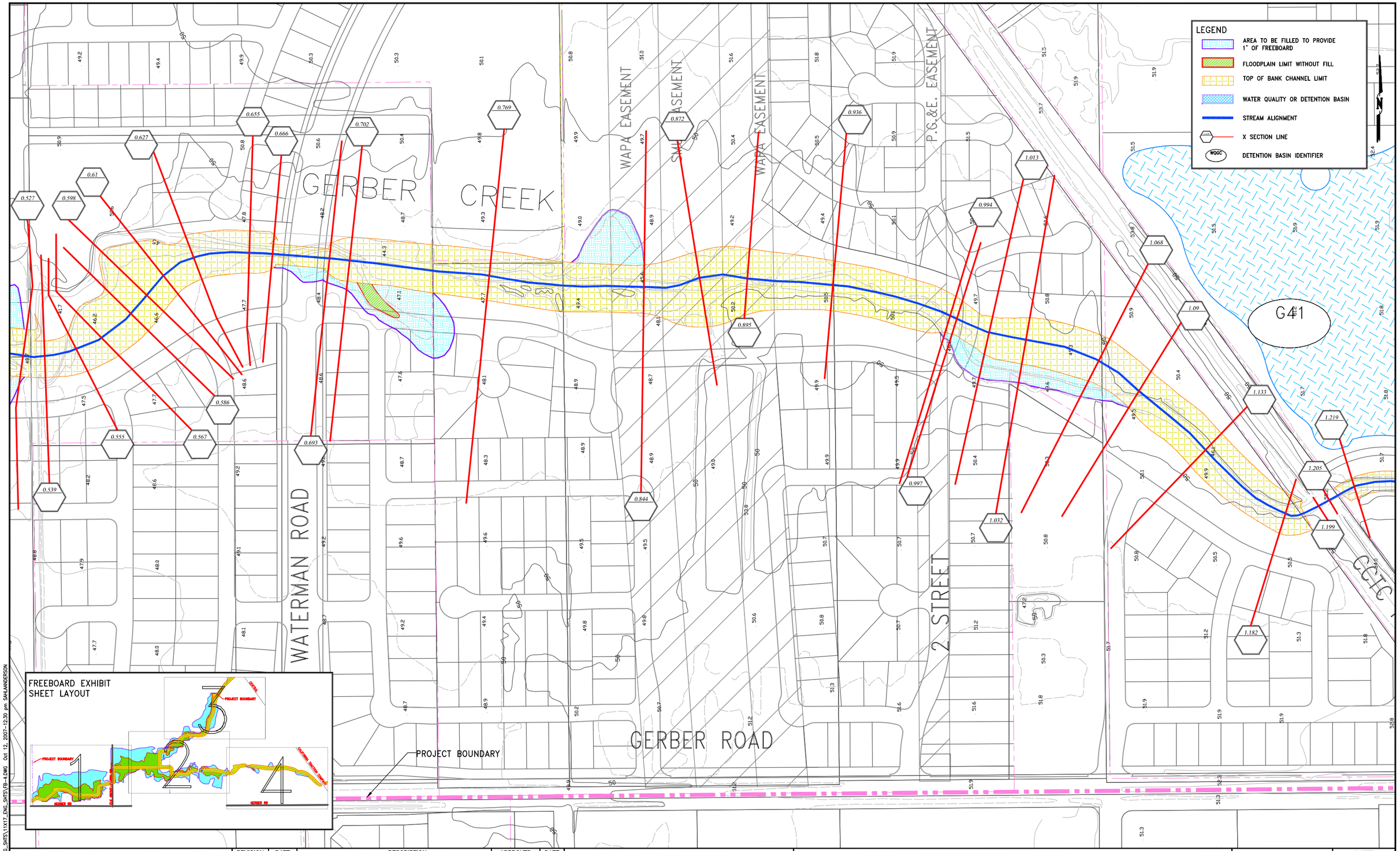
SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007

SCALE: N.T.S.

W.O. NO. 2004.21A

SHEET FB-3 OF 7



DRAWN BY: L.J.H.	DESIGN BY: B.A.T.		
CHECKED BY: R.H.	DWG: FB-4.dwg		
Dwg.			

REVISION	DATE	DESCRIPTION	APPROVED	DATE

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FLORIN VINEYARD GAP COMMUNITY PLAN
FREEBOARD EXHIBIT
WITH LAGUNA SPILL

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET FB-4 OF 7

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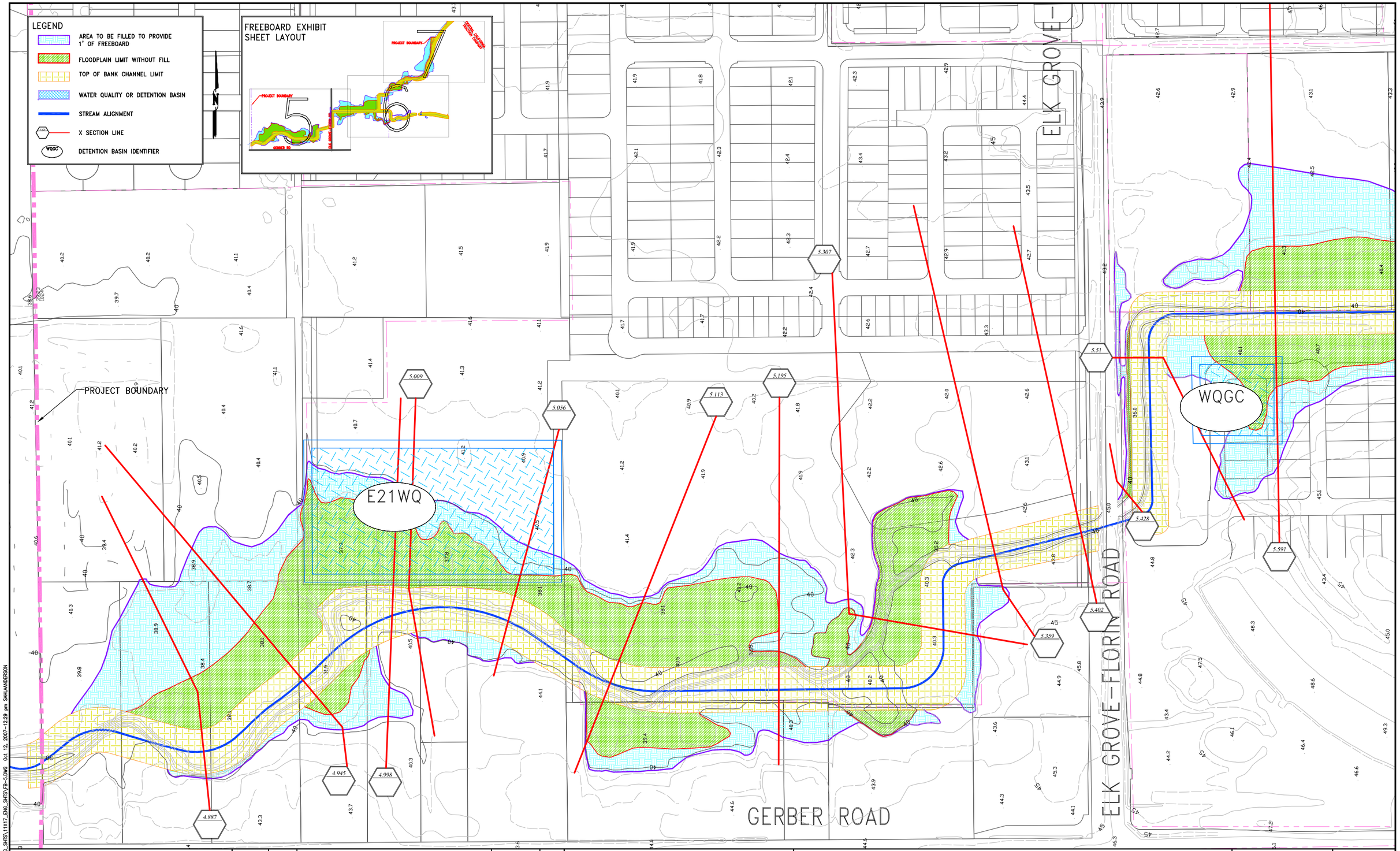

REVISION	DATE	DESCRIPTION	APPROVED	DATE

DRAWN BY: L.J.H. DESIGN BY: B.A.T.

CHECKED BY: R.H. DWG: FB-5.dwg

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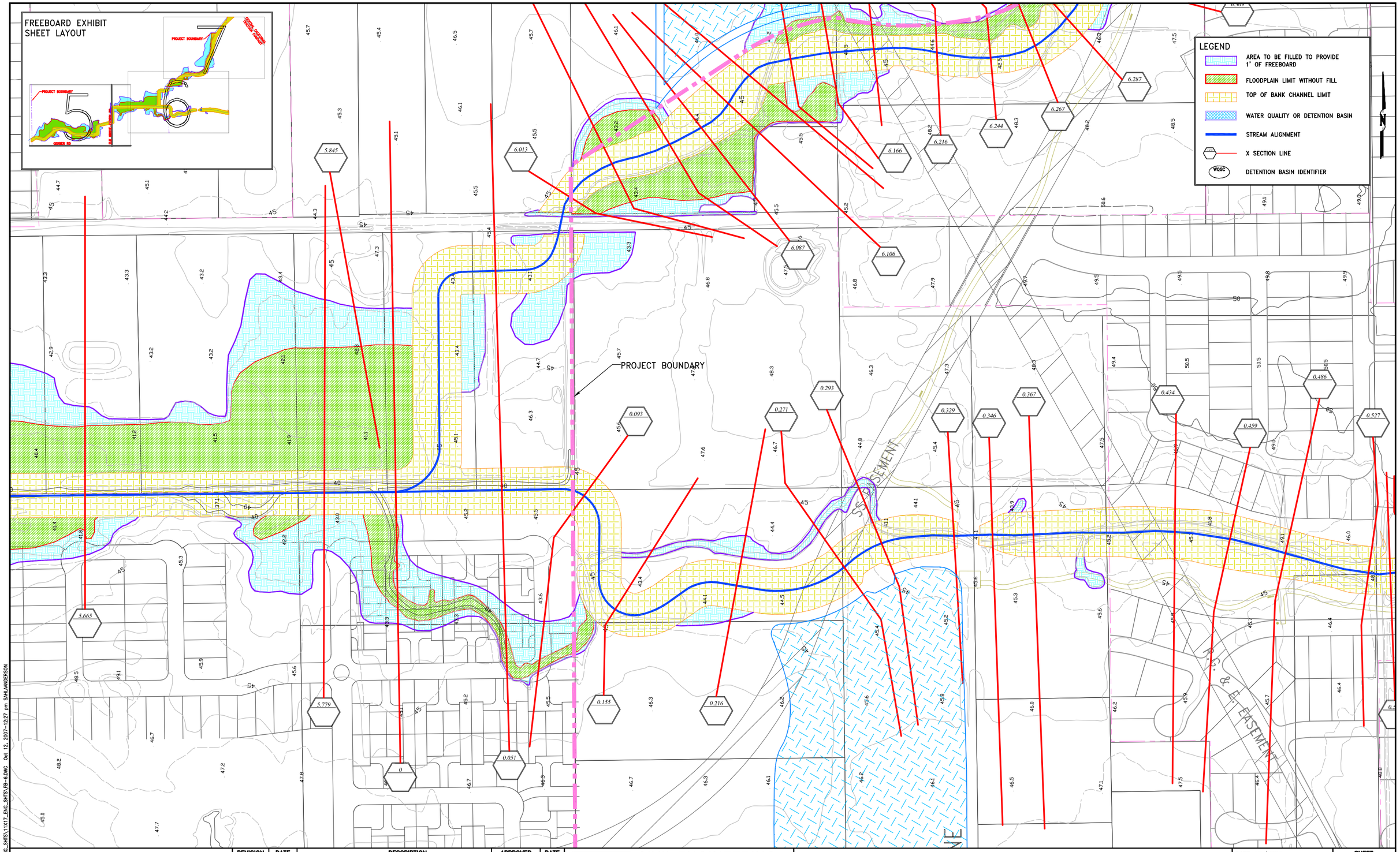
FLORIN VINEYARD GAP COMMUNITY PLAN
FREEBOARD EXHIBIT
WITHOUT LAGUNA SPILL

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.

W.O. NO. 2004.21A

SHEET FB-5 OF 7



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DRAWN BY: L.J.H.	DESIGN BY: B.A.T.		
CHECKED BY: R.H.	DWG: FB-6.dwg		
Dwg.			

REVISION	DATE	DESCRIPTION	APPROVED	DATE

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1325 Howe Avenue, Suite 202
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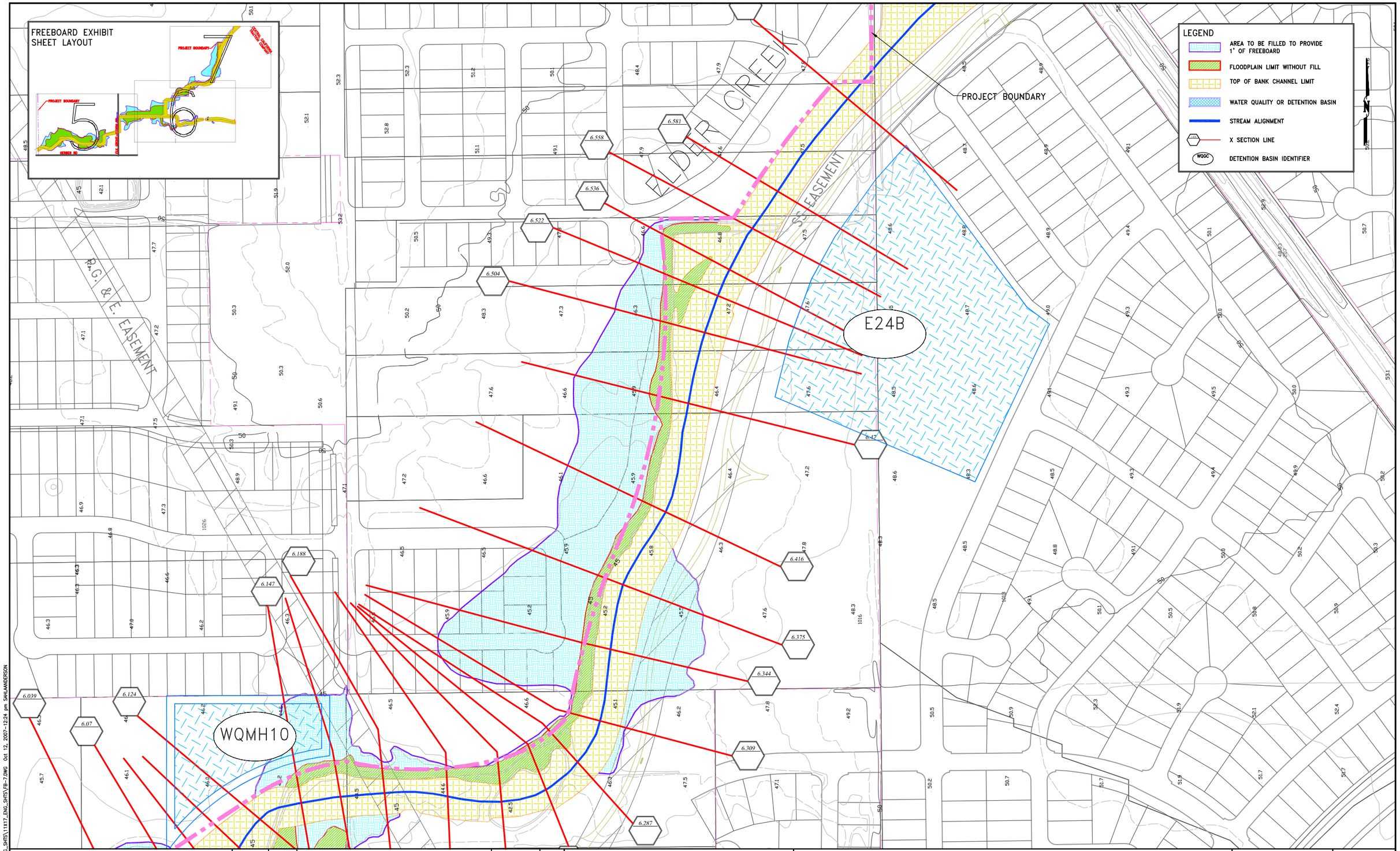
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN
FREEBOARD EXHIBIT
WITHOUT LAGUNA SPILL

SACRAMENTO COUNTY CALIFORNIA

DATE: 05/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET FB-6 OF 7



REVISION	DATE	DESCRIPTION	APPROVED	DATE

DRAWN BY: L.J.H. DESIGN BY: B.A.T.

CHECKED BY: R.H. DWG: FB-7.dwg

Dwg.

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1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN
FREEBOARD EXHIBIT
WITHOUT LAGUNA SPILL

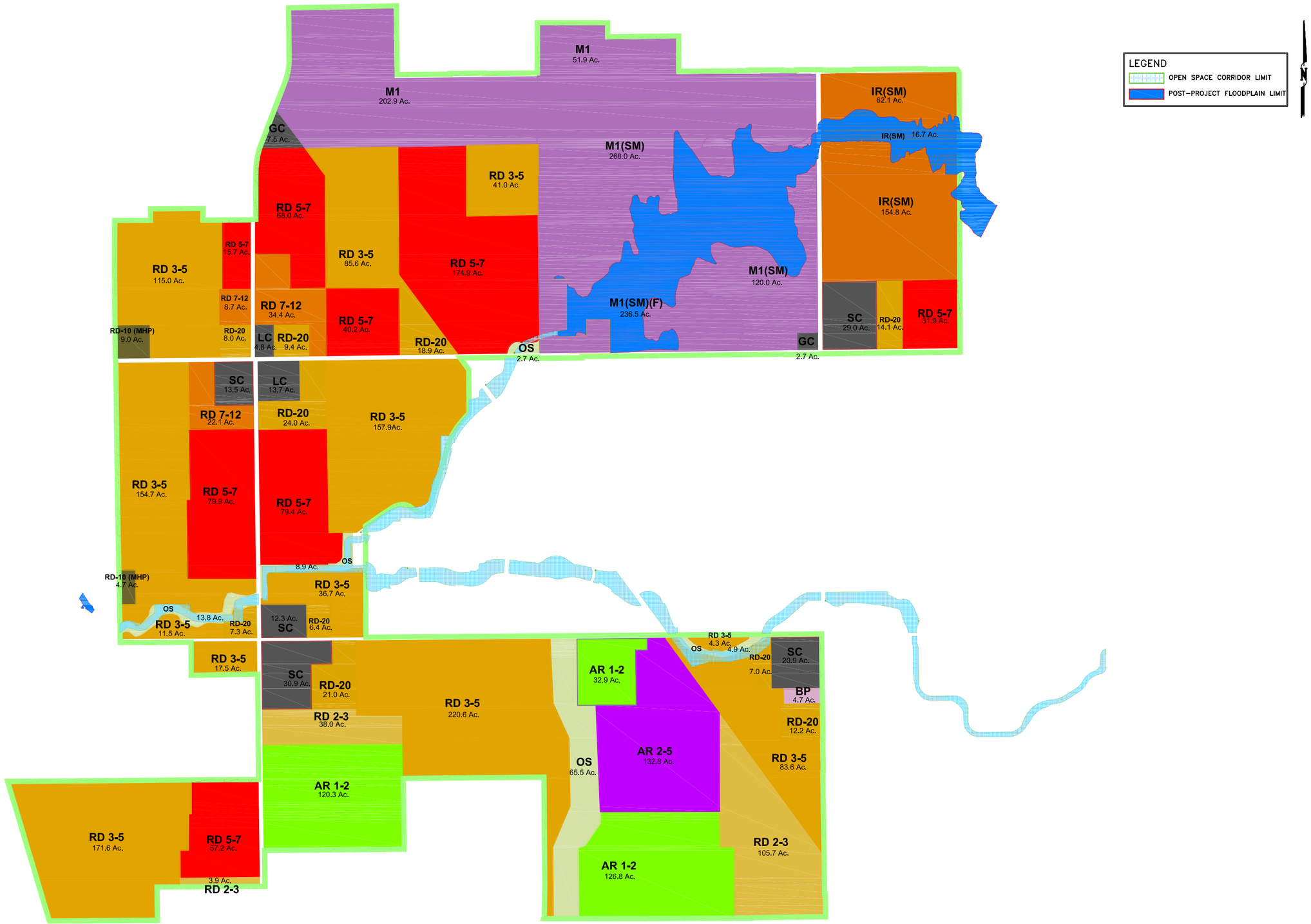
SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007

SCALE: N.T.S.

W.O. NO. 2004.21A

SHEET FB-7 OF 7



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DRAWN BY: L.J.H.	DESIGN BY: B.A.T.	REVISION	DATE	DESCRIPTION	APPROVED	DATE
CHECKED BY: B.A.T.	DWG: LU-1.dwg					
Dwg.						

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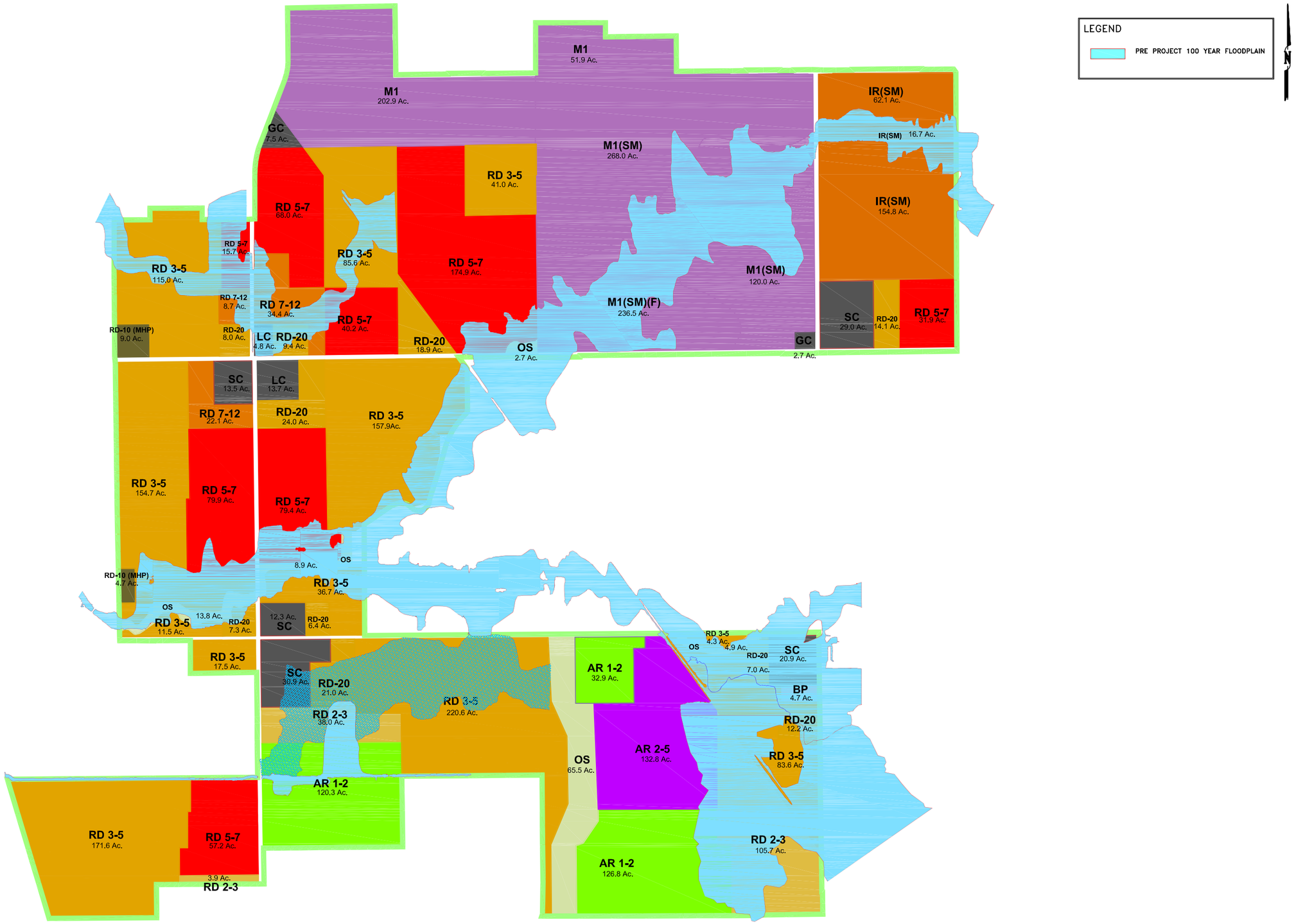
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN
PLANNING DEPARTMENT DRAFT LAND USE
WITH OPEN SPACE CORRIDOR

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET LU-1 OF 4



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DRAWN BY: L.J.H.	DESIGN BY: B.A.T.	REVISION	DATE	DESCRIPTION	APPROVED	DATE
CHECKED BY: B.A.T.	DWG: LU-1.dwg					
Dwg.						

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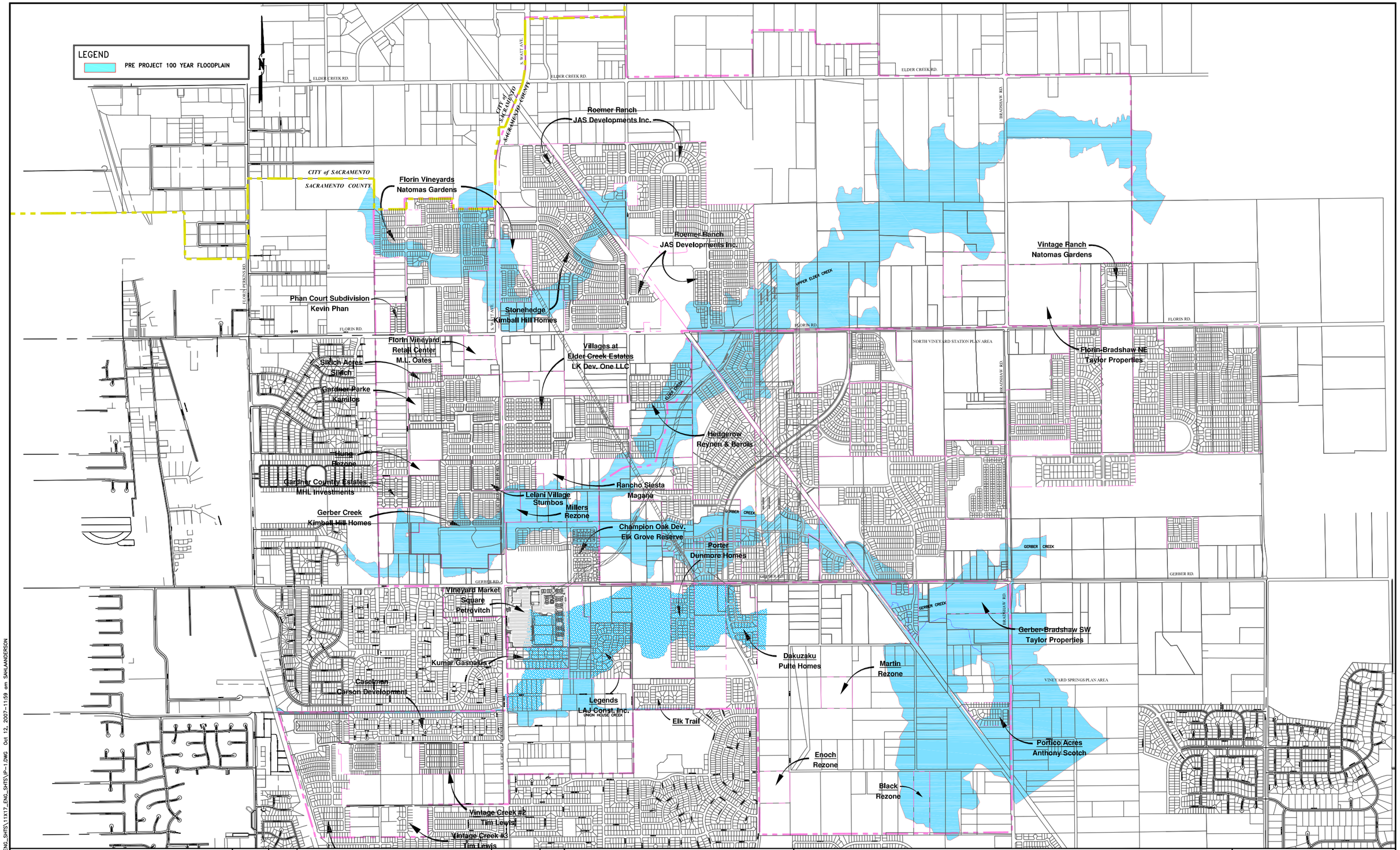
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN PLANNING DEARTMENT DRAFT LAND USE WITH PRE-PROJECT FLOODPLAIN

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET LU-2 OF 4



REVISION	DATE	DESCRIPTION	APPROVED	DATE

DRAWN BY: L.J.H. DESIGN BY: B.A.T.

CHECKED BY: B.A.T. DWG: IP1.dwg

Dwg.

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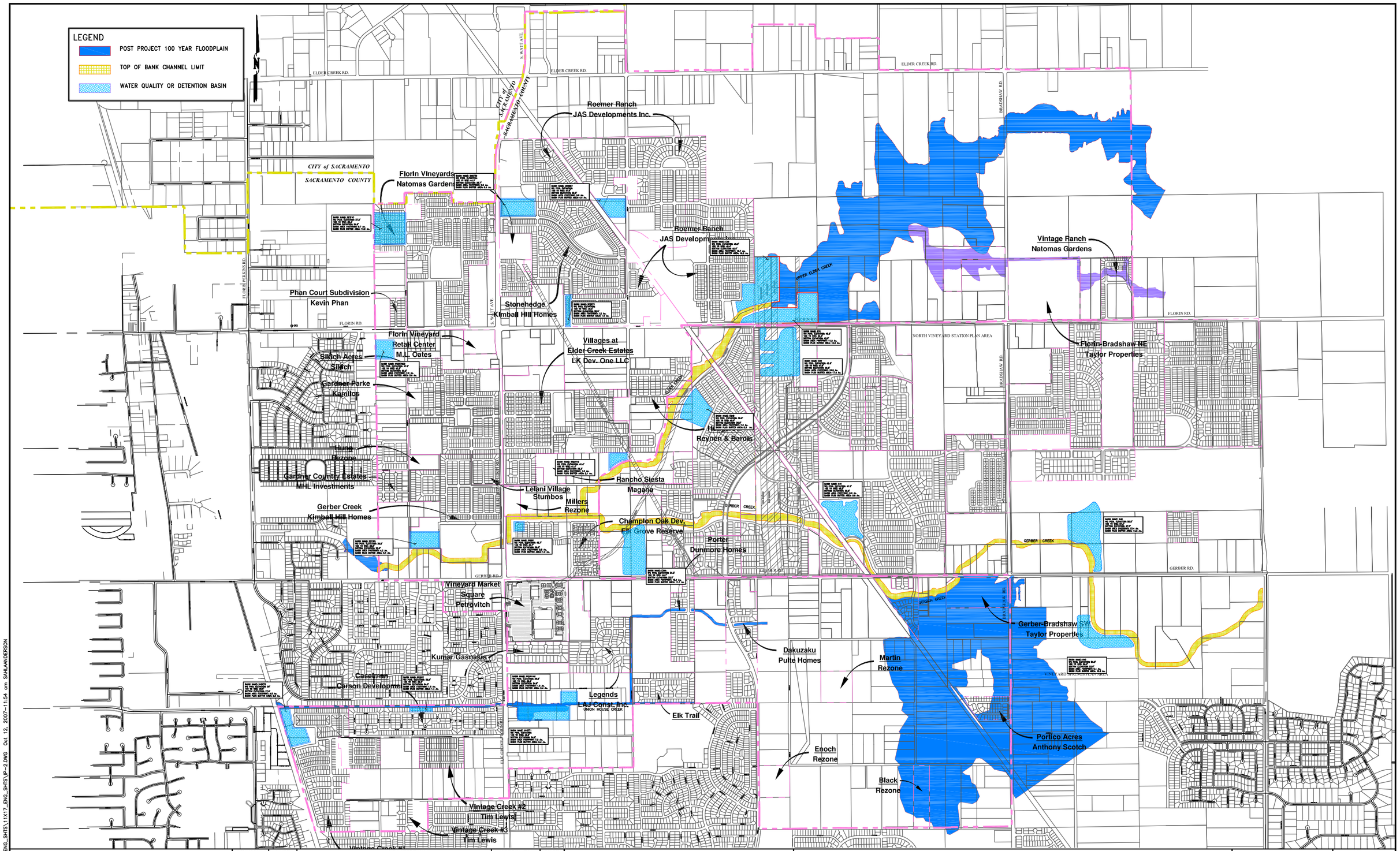
CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA, 95825
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN INDIVIDUAL PROJECTS WITH PRE PROJECT FLOODPLAIN BOUNDARY

SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET IP-1 OF 2



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DRAWN BY: L.J.H. DESIGN BY: B.A.T.

CHECKED BY: B.A.T. DWG: IP-2.dwg

Dwg.

REVISION	DATE	DESCRIPTION	APPROVED	DATE

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN INDIVIDUAL PROJECTS WITH POST PROJECT FLOODPLAIN BOUNDARY

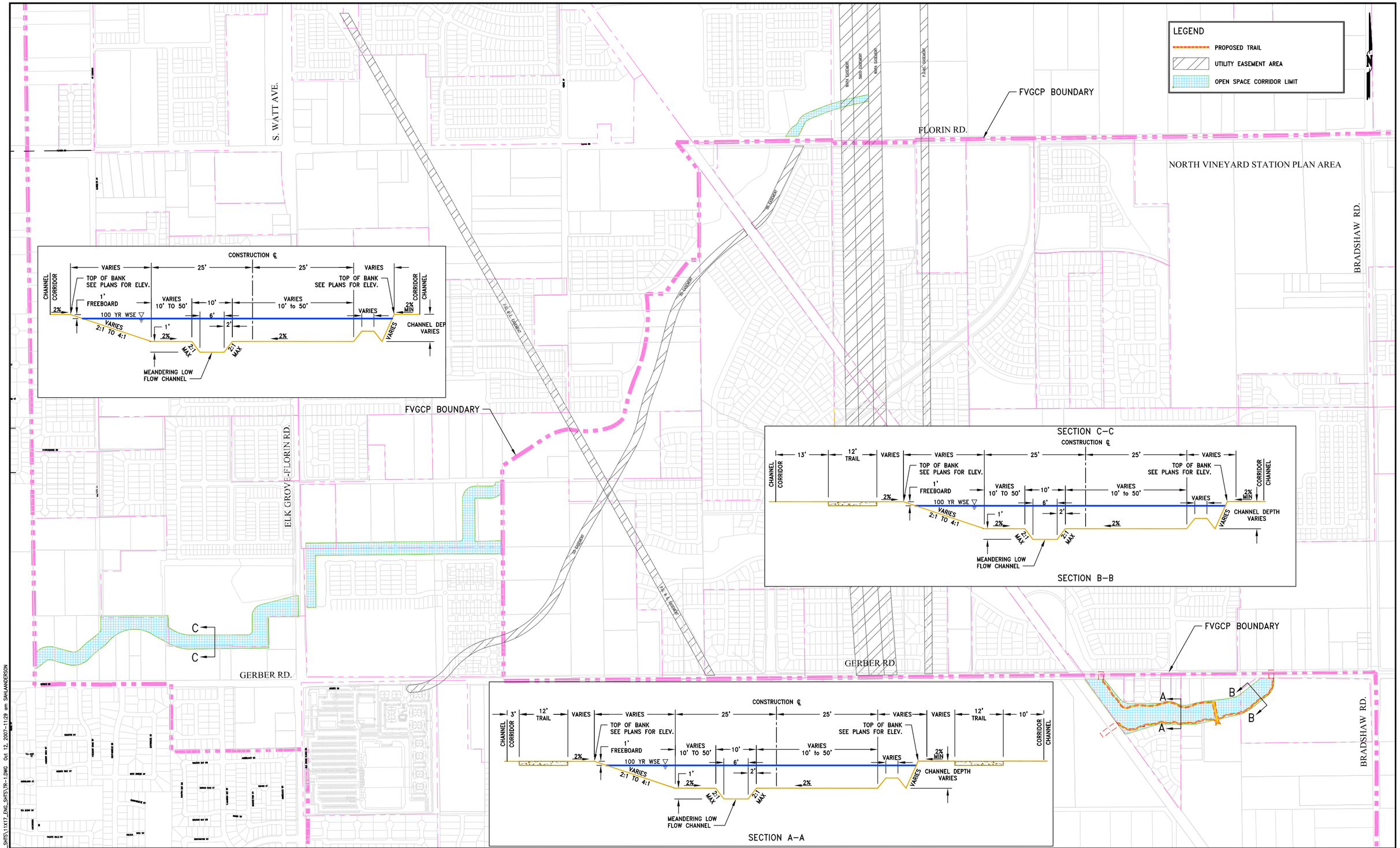
SACRAMENTO COUNTY CALIFORNIA

DATE: 10/2007

SCALE: N.T.S.

W.O. NO. 2004.21A

SHEET IP-2 OF 2



DRAWN BY: L.J.H.	DESIGN BY: B.A.T.
CHECKED BY: B.A.T.	DWG: TR-1.dwg
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REVISION	DATE	DESCRIPTION	APPROVED	DATE

CIVIL ENGINEERING SOLUTIONS
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300 fax (916) 563 - 7362

FLORIN VINEYARD GAP COMMUNITY PLAN TRAIL EXHIBIT

SACRAMENTO COUNTY — CALIFORNIA

DATE: 10/2007
SCALE: N.T.S.
W.O. NO. 2004.21A

SHEET TR-1 OF 1

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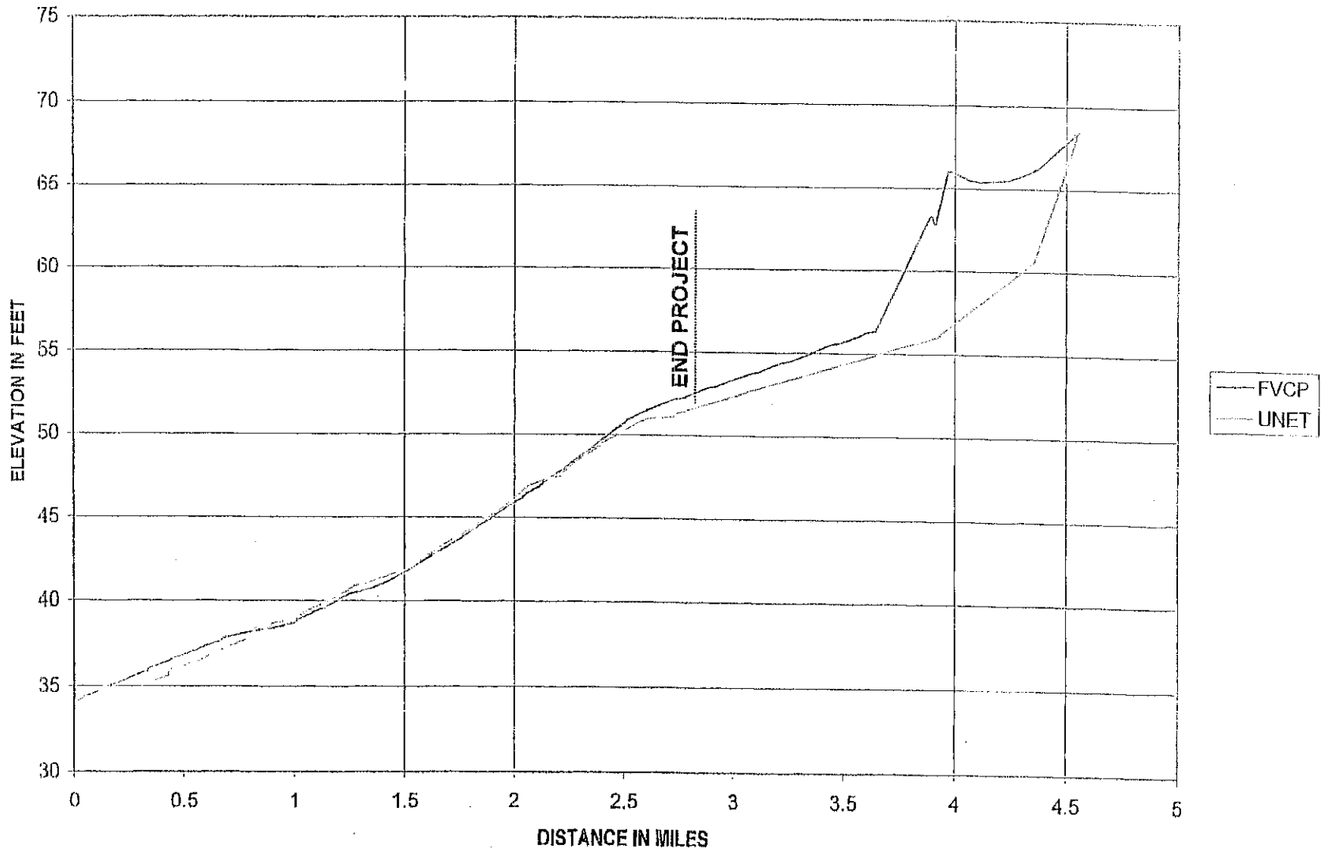
APPENDIX F

CD

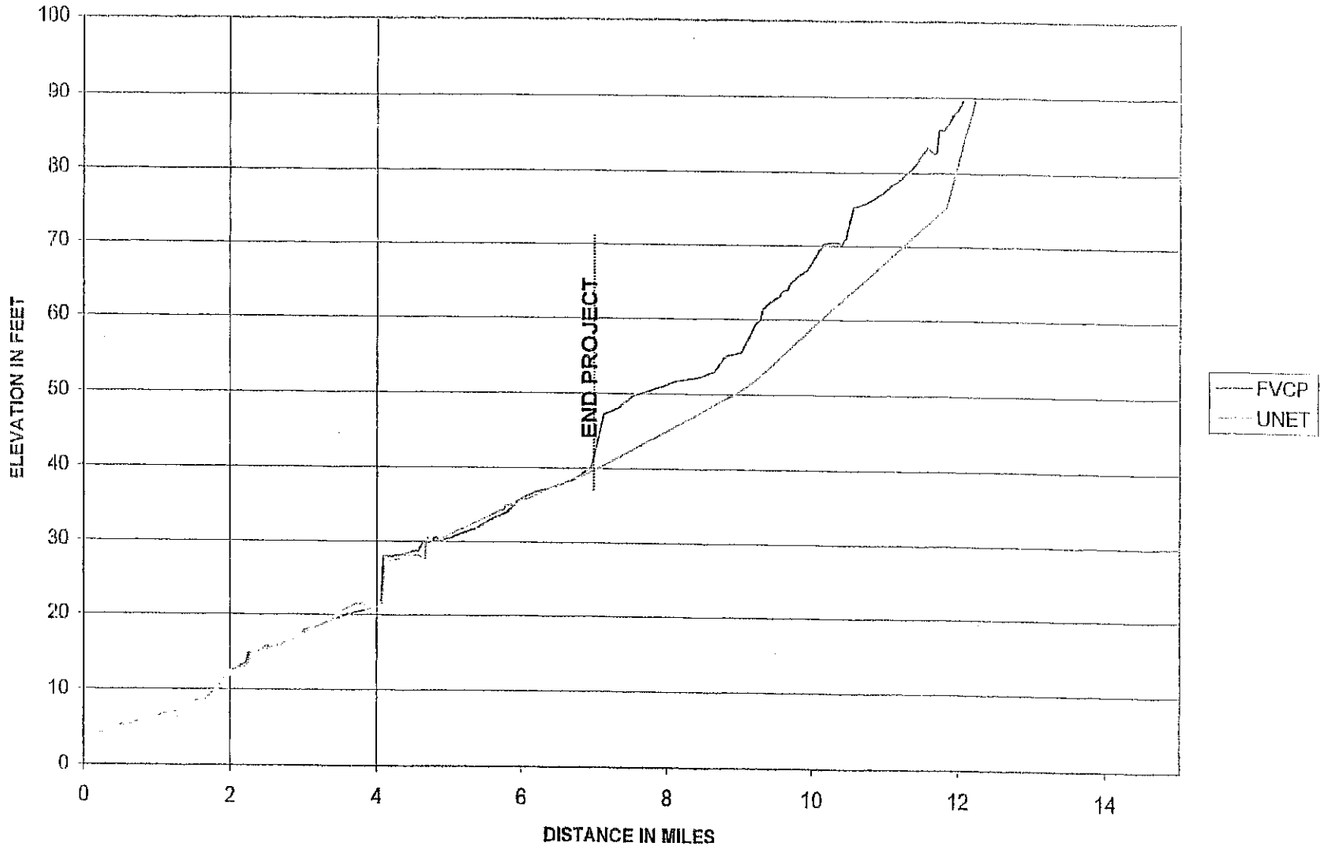
APPENDIX G

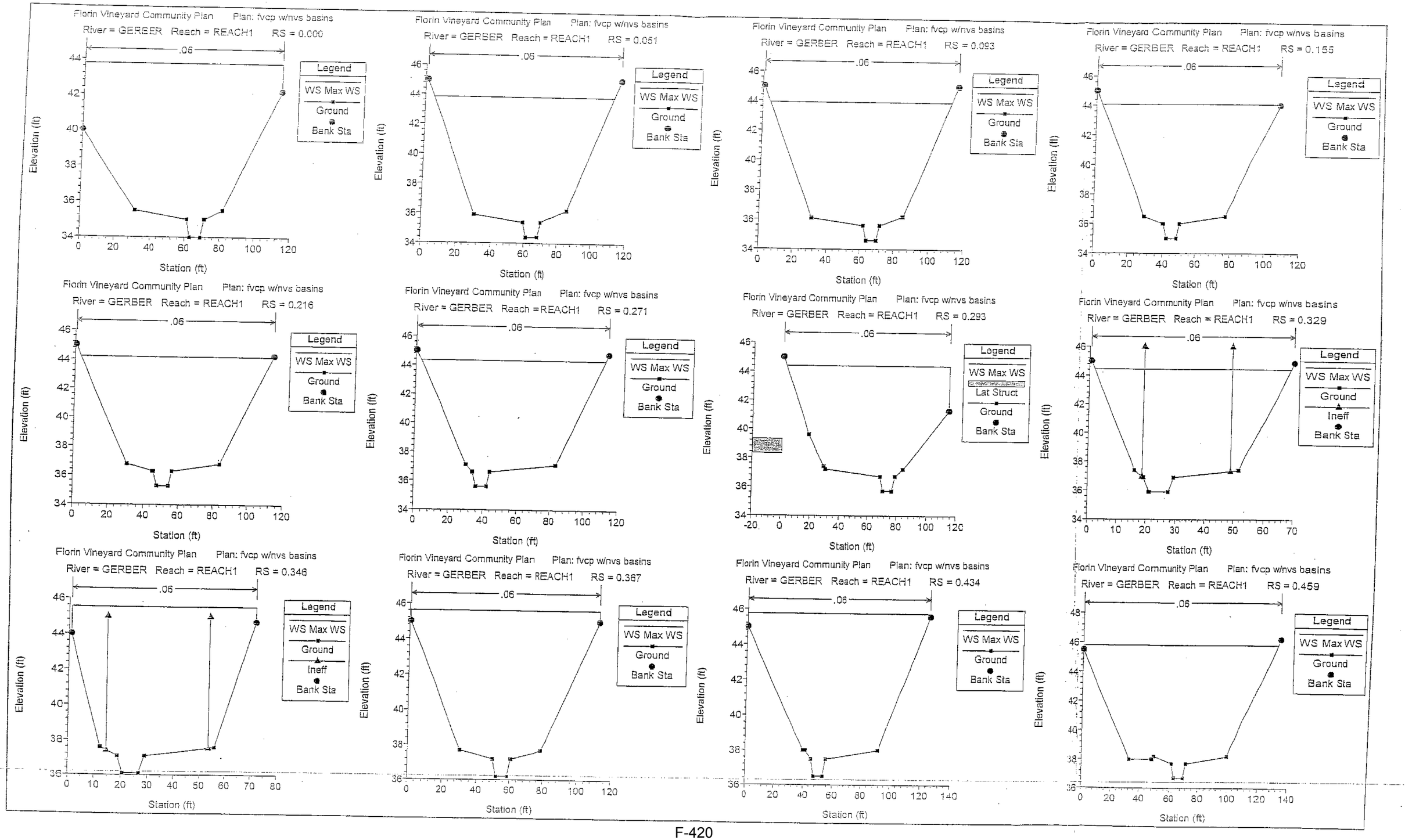
ELDER AND GERBER CREEK PROFILE AND CROSS SECTIONS

COMPARISON OF FVCP AND UNET CHANNEL INVERT ELEVATIONS GERBER CREEK



COMPARISON OF FVCP AND UNET CHANNEL INVERT ELEVATIONS ELDER CREEK

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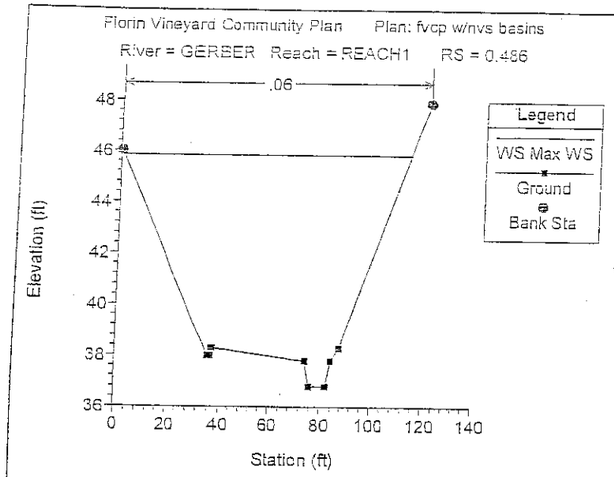
River = GERBER Reach = REACH1 RS = 0.000
River = GERBER Reach = REACH1 RS = 0.051
River = GERBER Reach = REACH1 RS = 0.093
River = GERBER Reach = REACH1 RS = 0.155
River = GERBER Reach = REACH1 RS = 0.216
River = GERBER Reach = REACH1 RS = 0.271
River = GERBER Reach = REACH1 RS = 0.293
River = GERBER Reach = REACH1 RS = 0.329
River = GERBER Reach = REACH1 RS = 0.346
River = GERBER Reach = REACH1 RS = 0.367
River = GERBER Reach = REACH1 RS = 0.434
River = GERBER Reach = REACH1 RS = 0.459
.06
Elevation (ft)
Station (ft)
Legend
WS Max WS
Lat Struct
Ground
Ineff
Bank Sta


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
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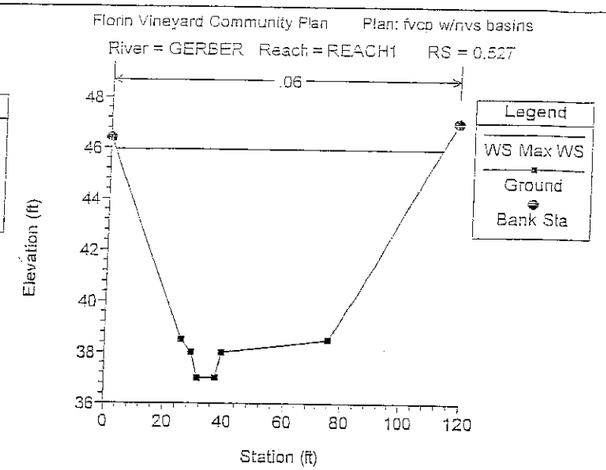
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 0.527
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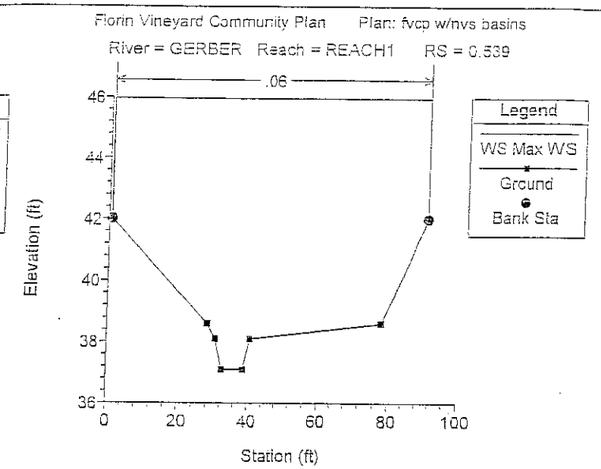
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
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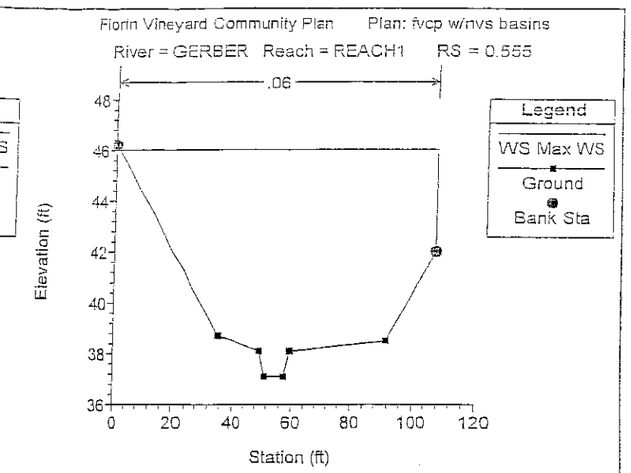
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
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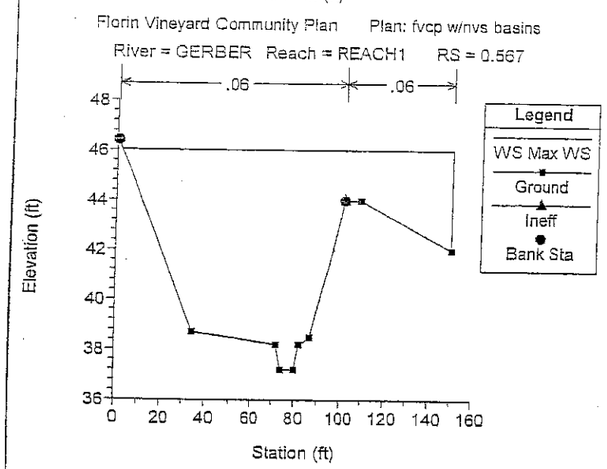
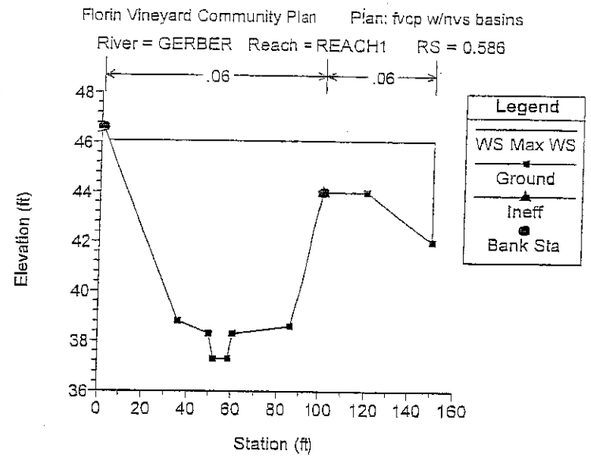
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 0.567
.06
.06
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 0.586
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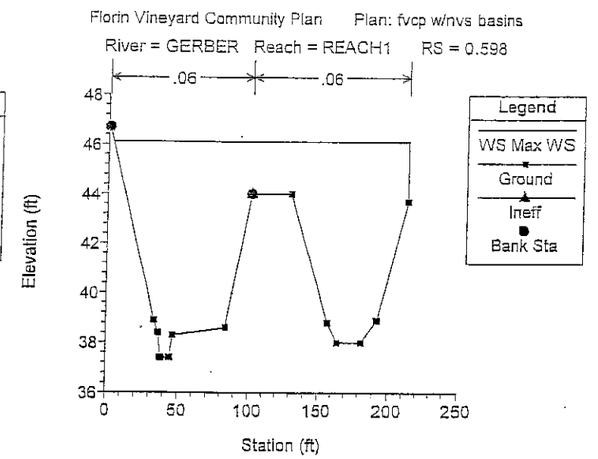
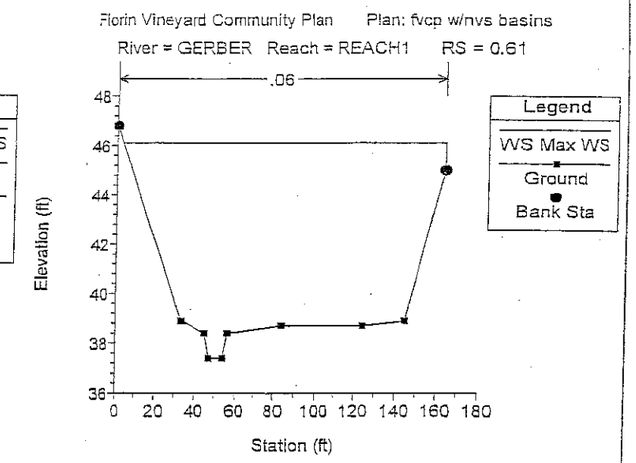
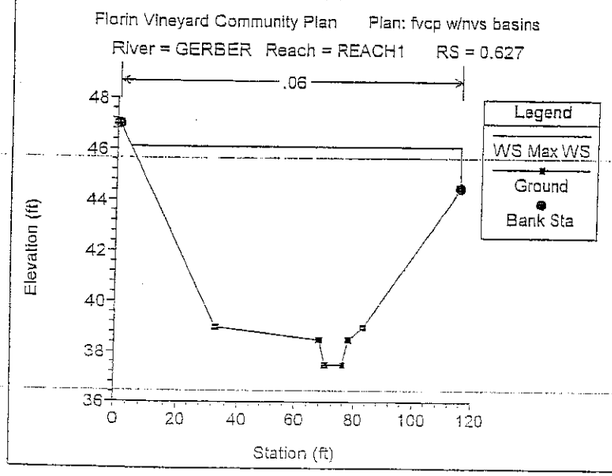
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 0.598
.06
.06
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 0.61
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 0.627
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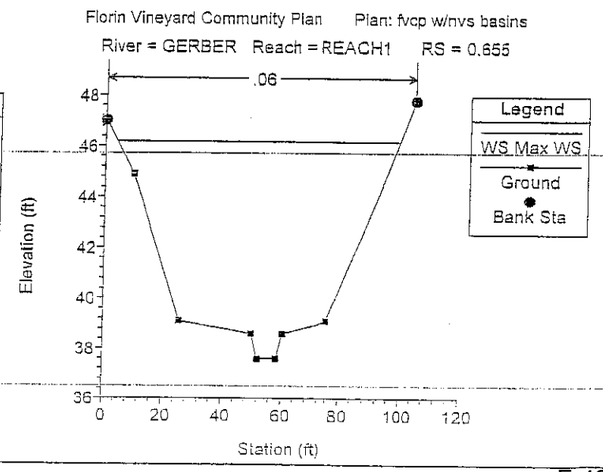
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
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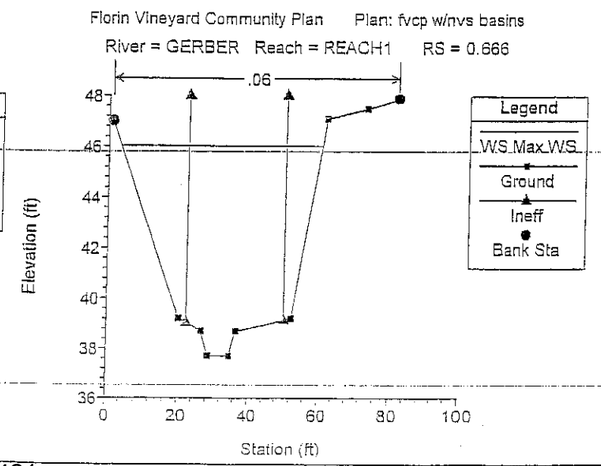
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)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River = GERBER Reach = REACH1 RS = 0.666
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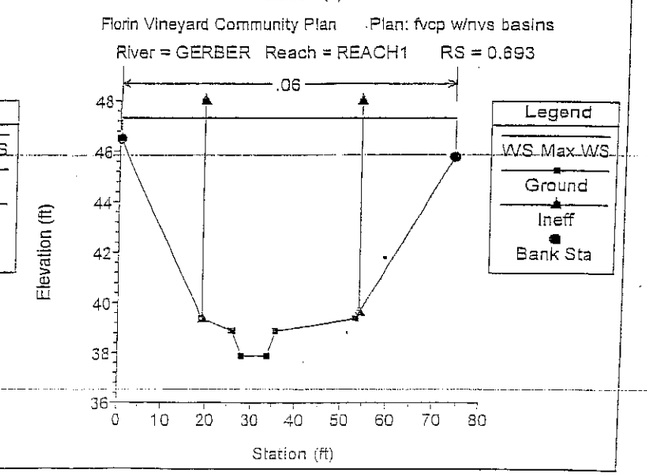
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
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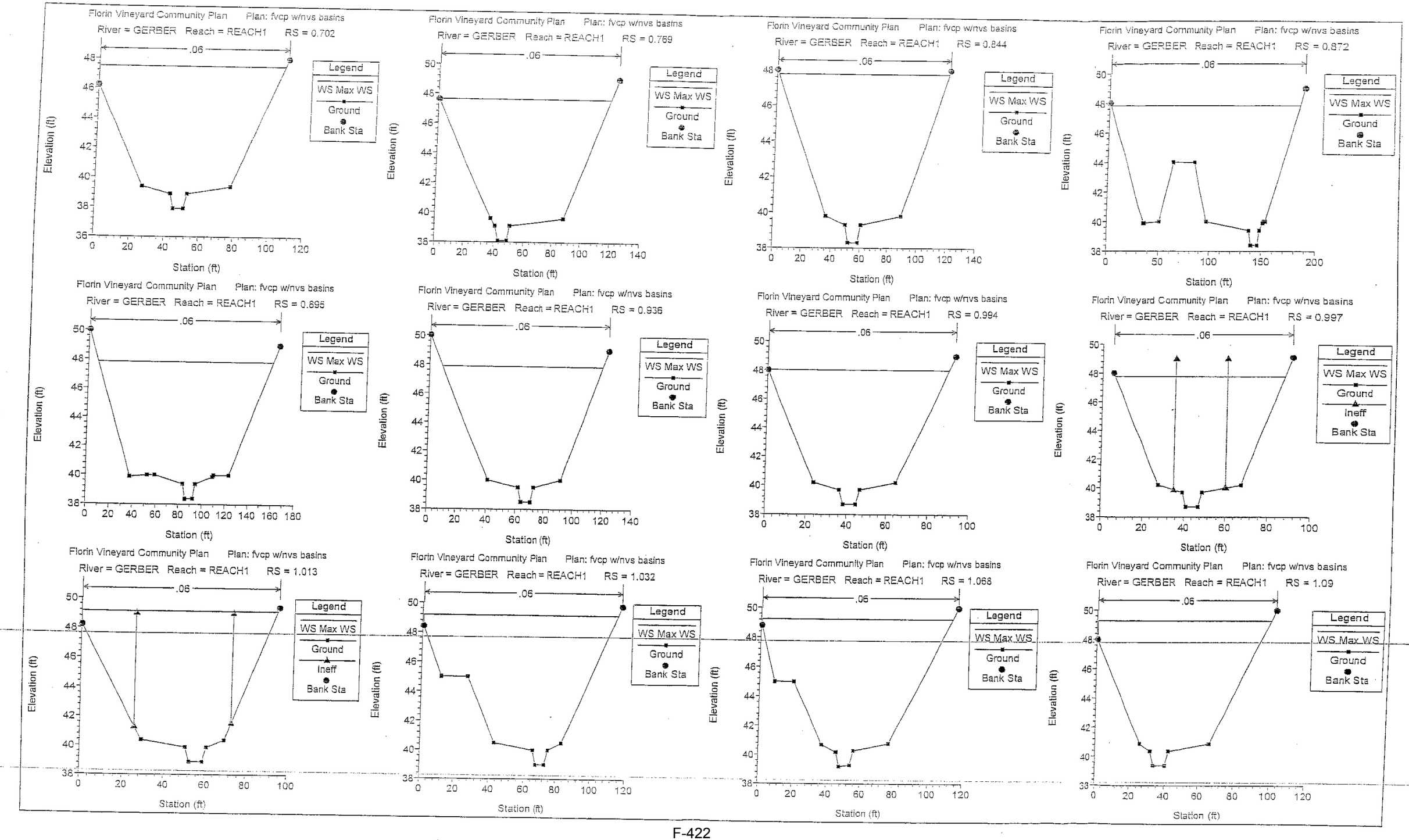
.06
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
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River = GERBER Reach = REACH1 RS = 0.769
River = GERBER Reach = REACH1 RS = 0.844
River = GERBER Reach = REACH1 RS = 0.872
River = GERBER Reach = REACH1 RS = 0.895
River = GERBER Reach = REACH1 RS = 0.936
River = GERBER Reach = REACH1 RS = 0.994
River = GERBER Reach = REACH1 RS = 0.997
River = GERBER Reach = REACH1 RS = 1.013
River = GERBER Reach = REACH1 RS = 1.032
River = GERBER Reach = REACH1 RS = 1.068
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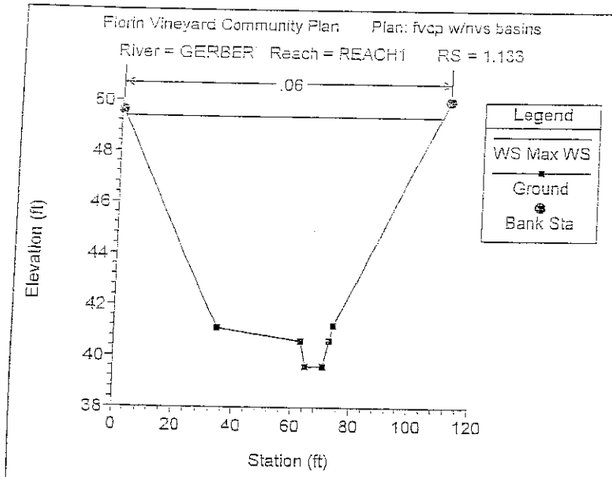
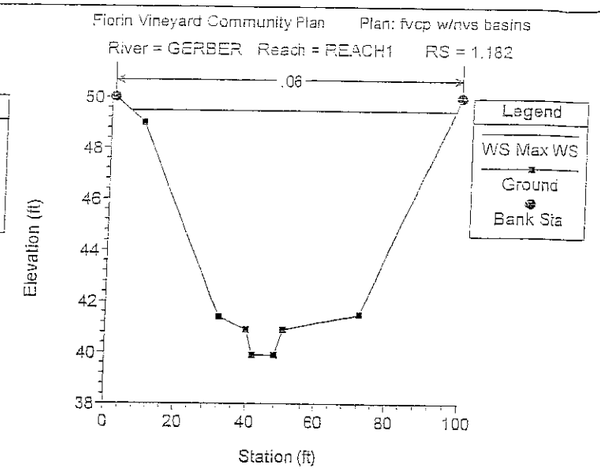
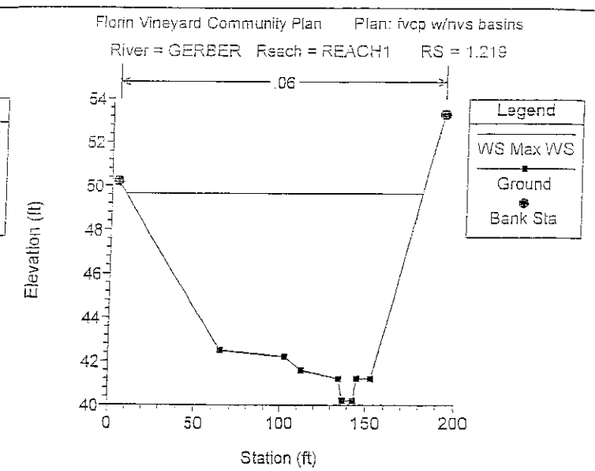
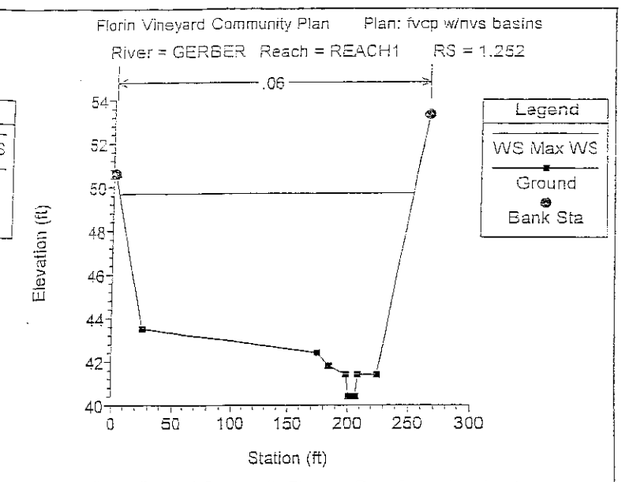
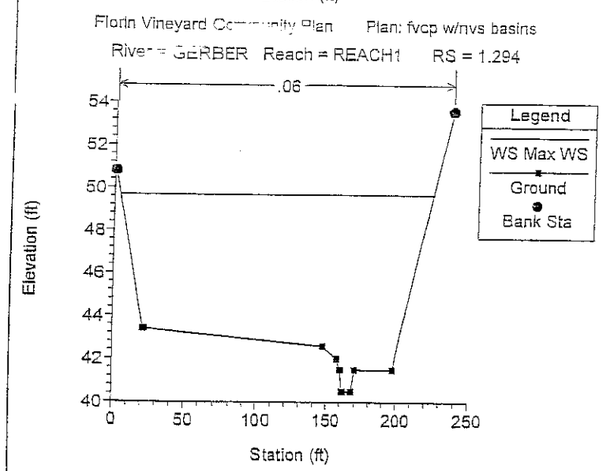
.06
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

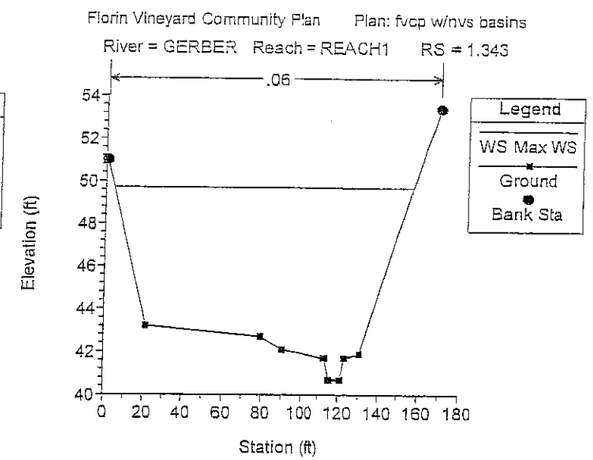

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.133
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

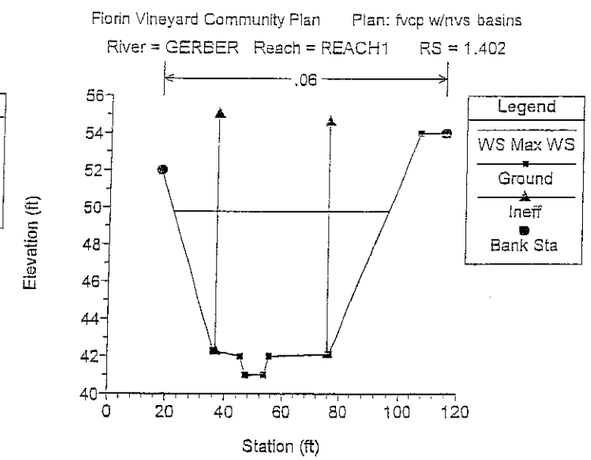

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.182
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

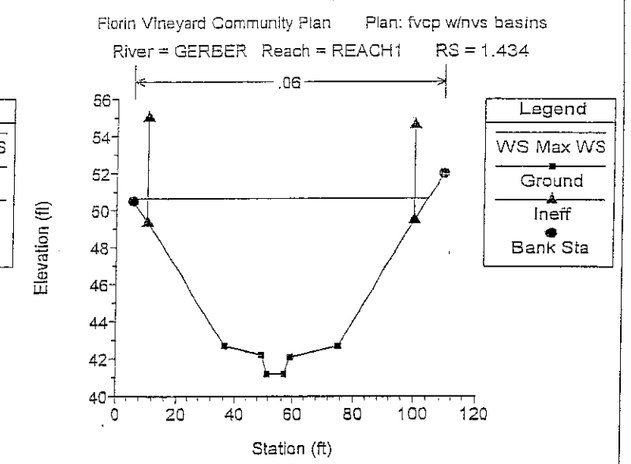

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.219
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

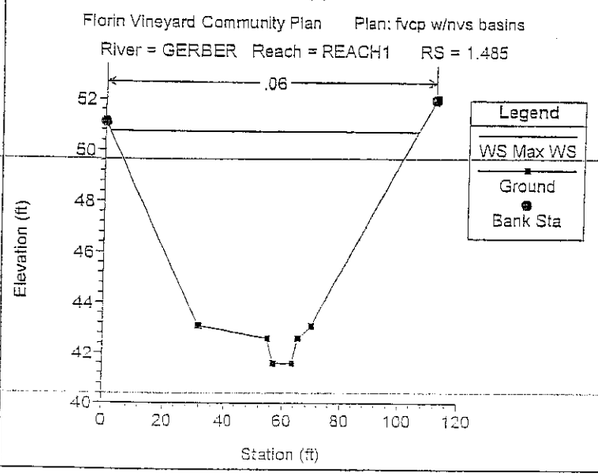

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.252
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

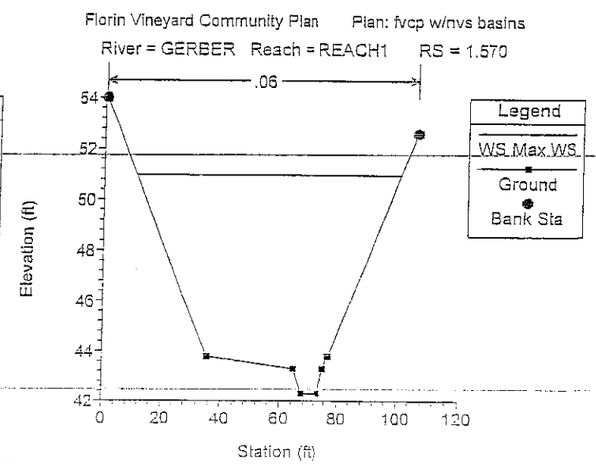

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.294
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

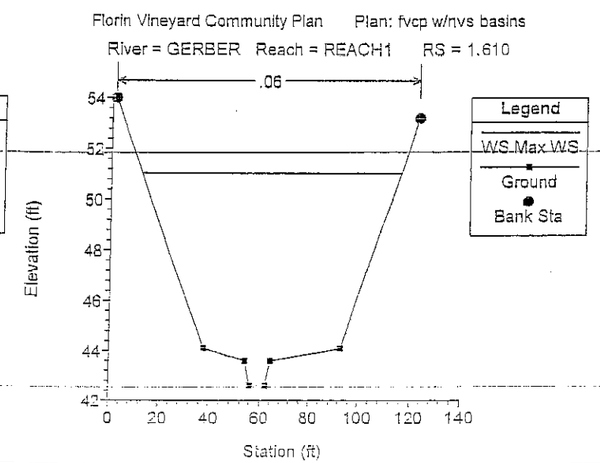

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.343
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

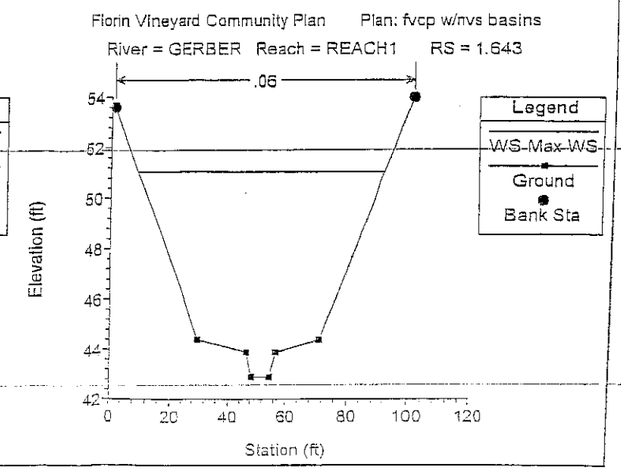

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.402
.06
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

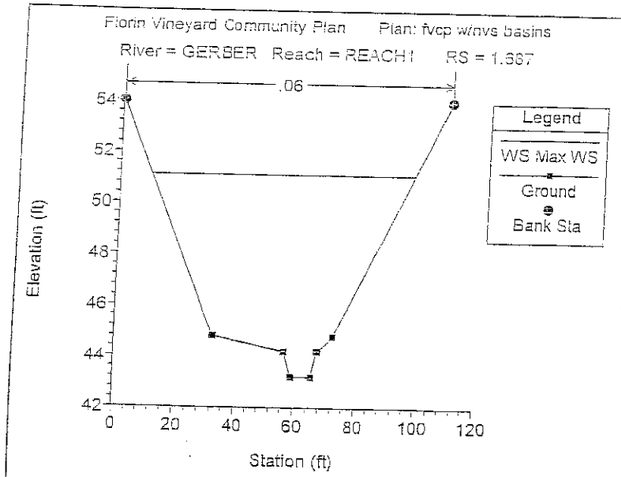

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.434
.06
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

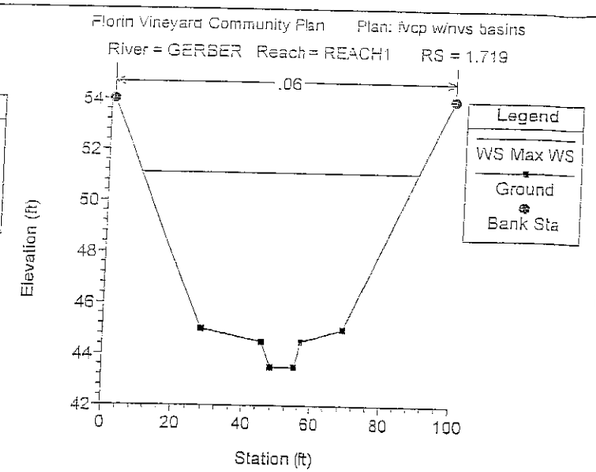

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.485
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

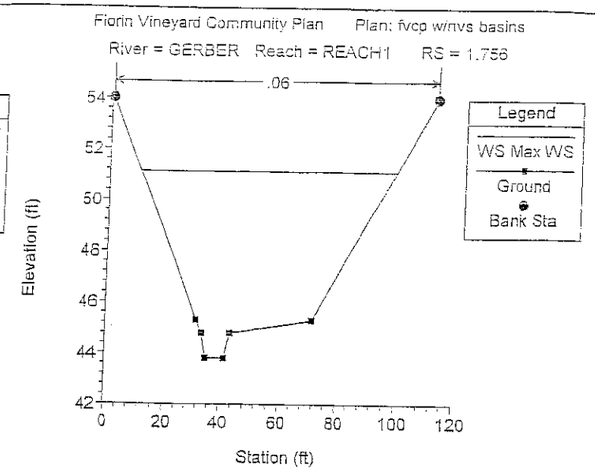

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.570
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

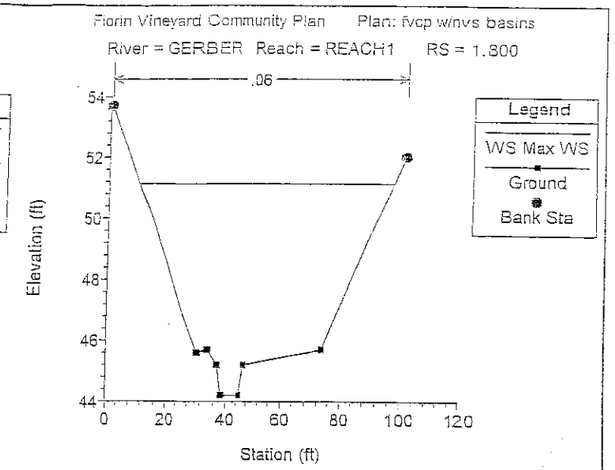

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.610
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

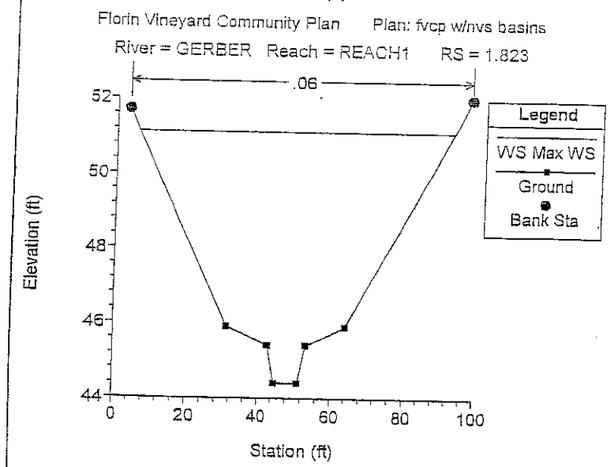

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.643
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

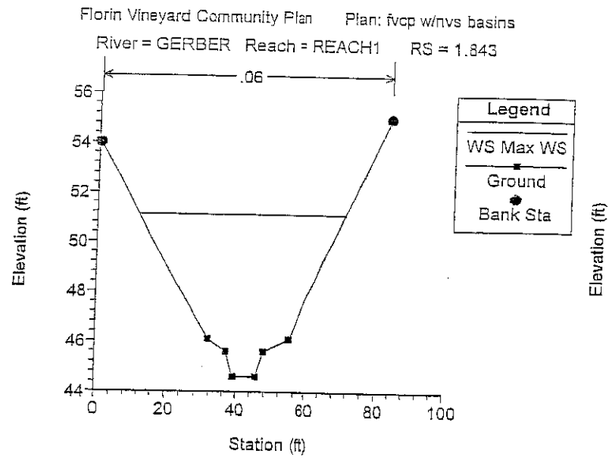

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.667
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

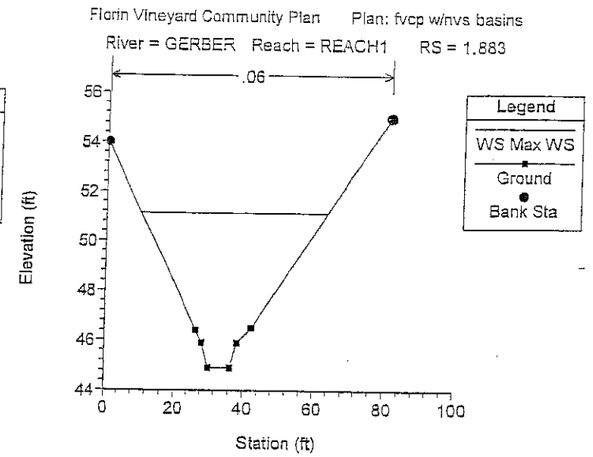

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.719
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

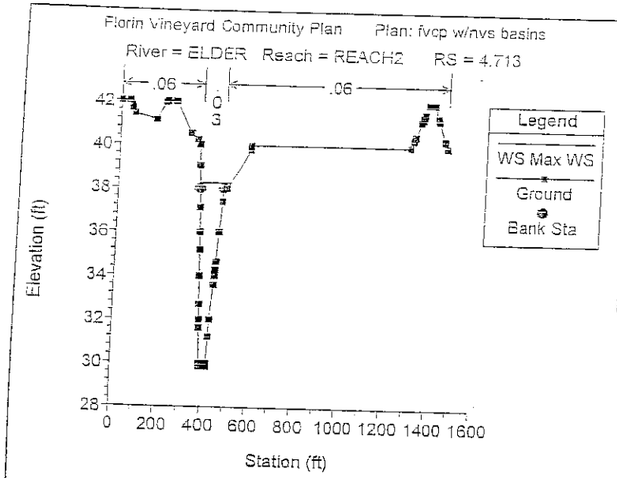

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.756
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

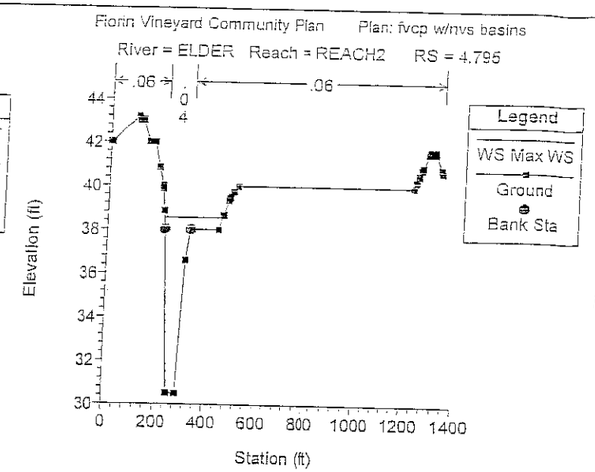

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.800
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

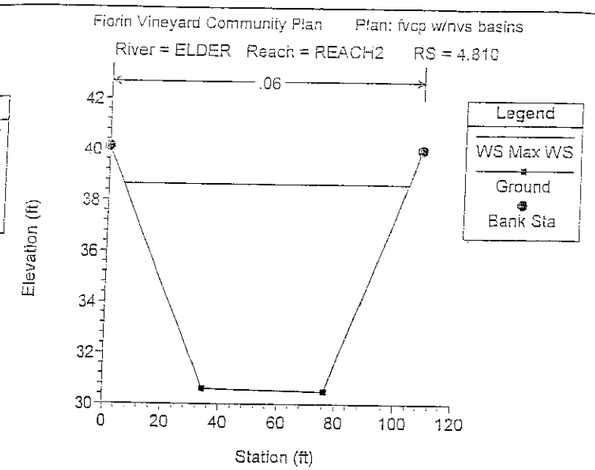

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.823
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

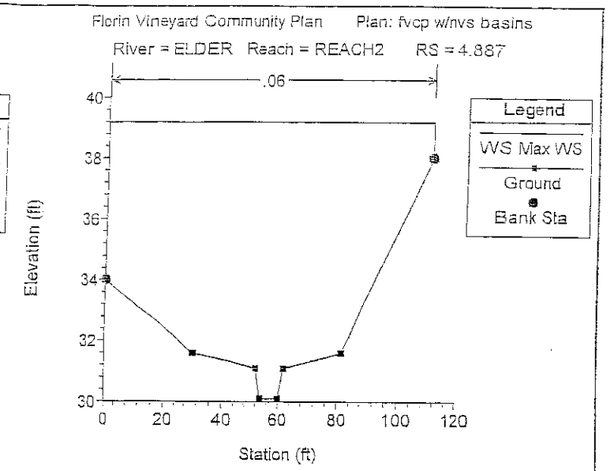

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.843
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

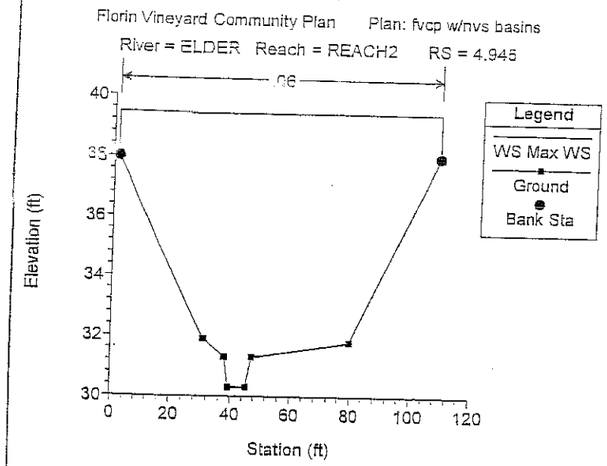

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = GERBER Reach = REACH1 RS = 1.883
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

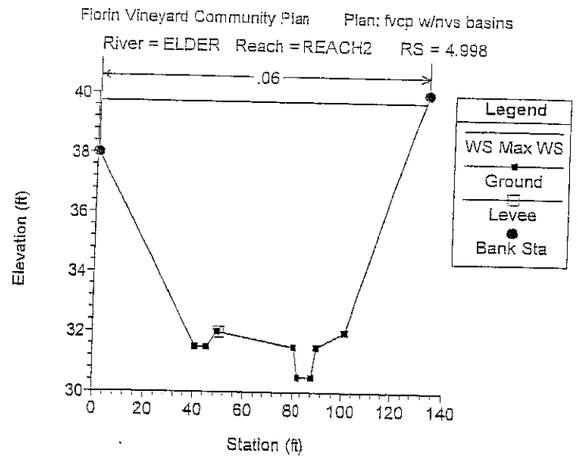

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 4.713
.06
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

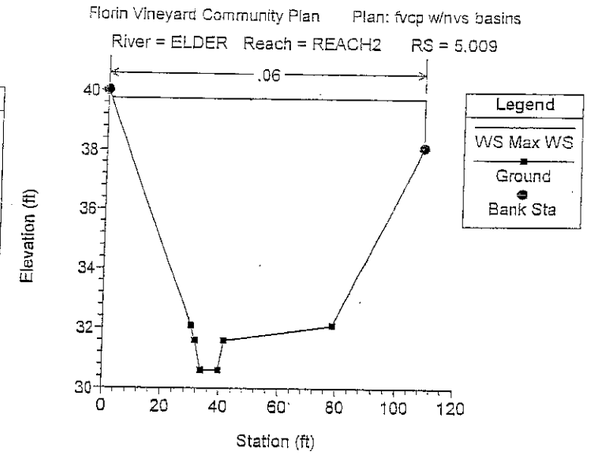

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 4.795
.06
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

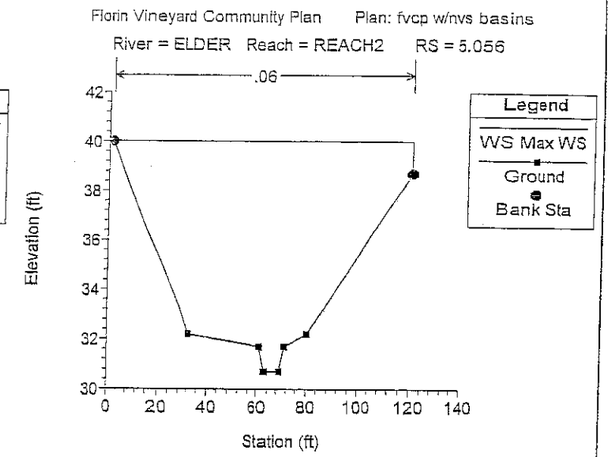

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 4.810
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

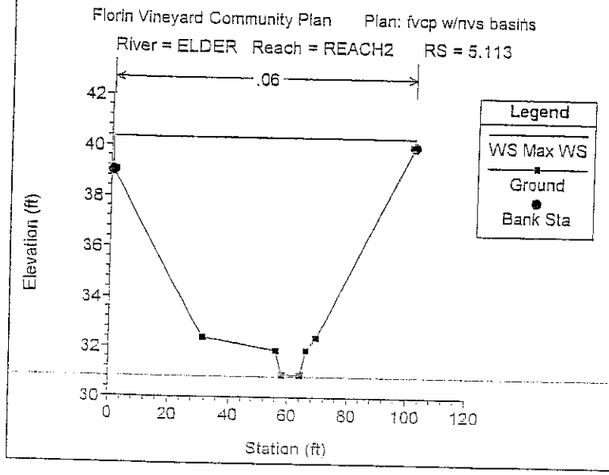

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 4.887
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

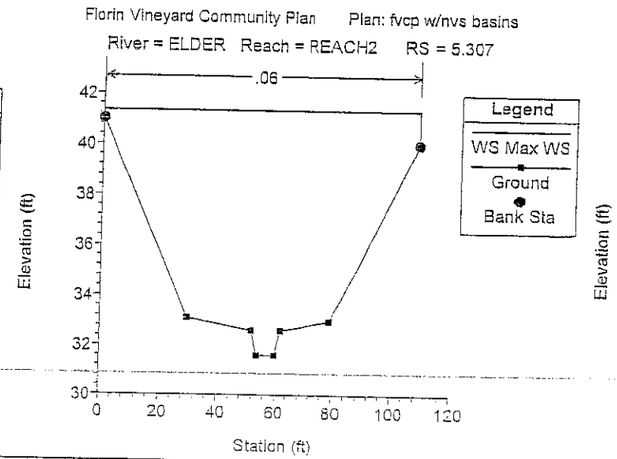

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 4.945
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

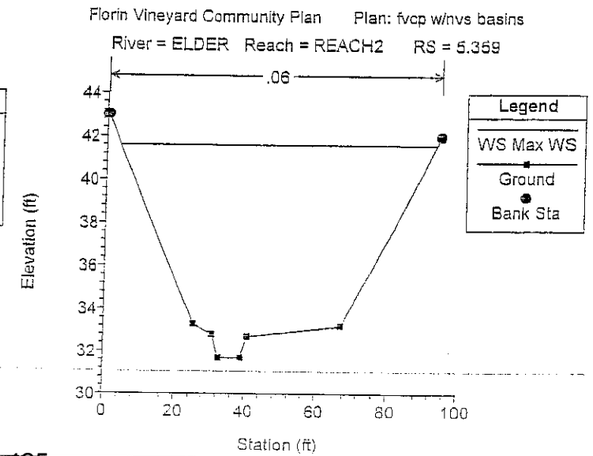

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 4.998
.06
Legend
WS Max WS
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

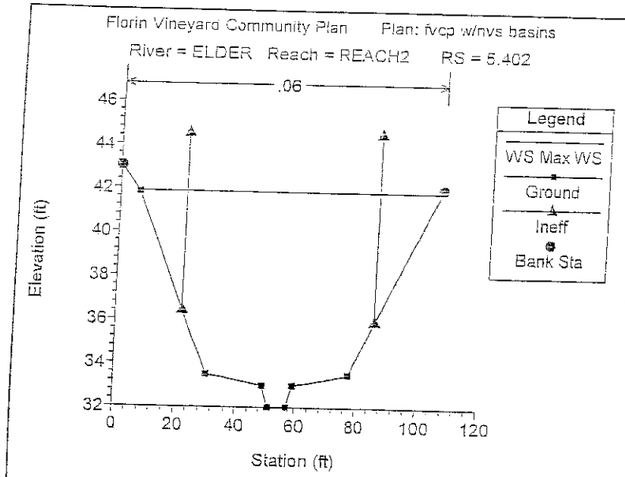

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.009
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

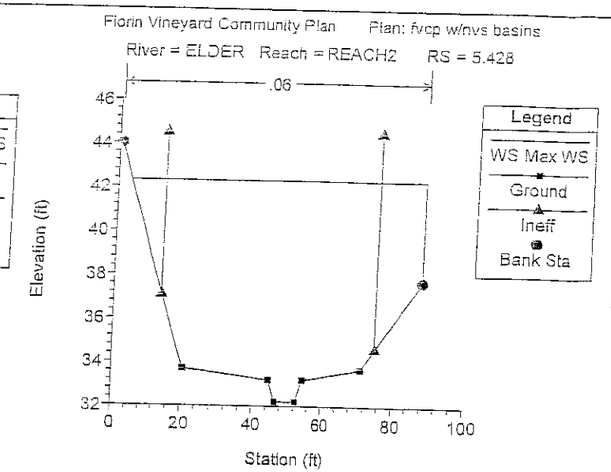

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.056
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

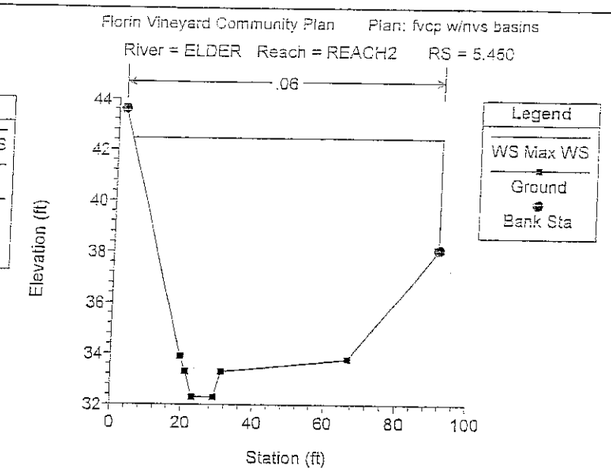

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.113
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

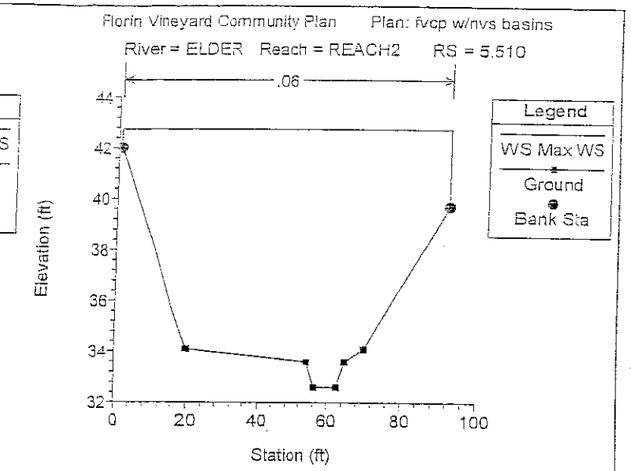

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.307
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

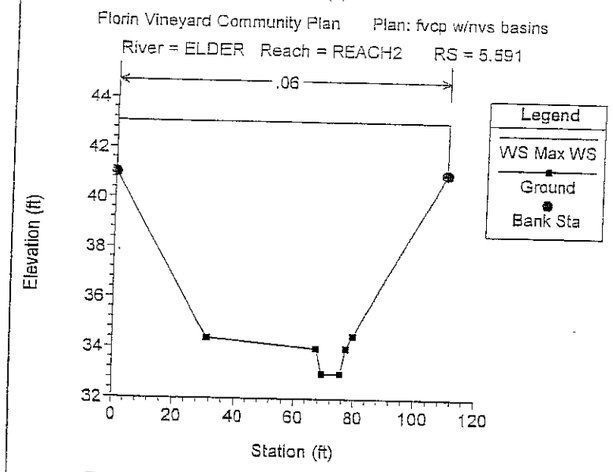

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.359
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

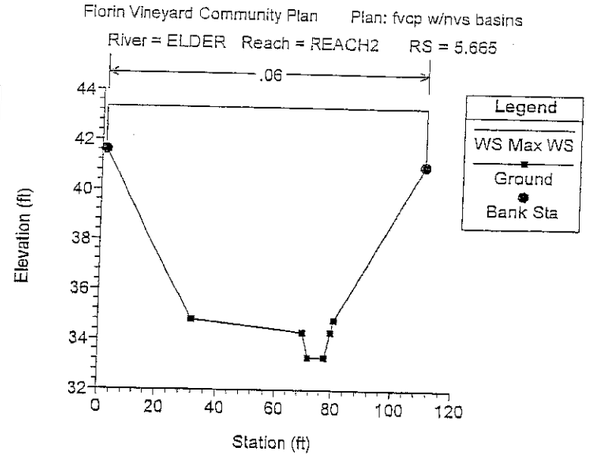

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.402
.06
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

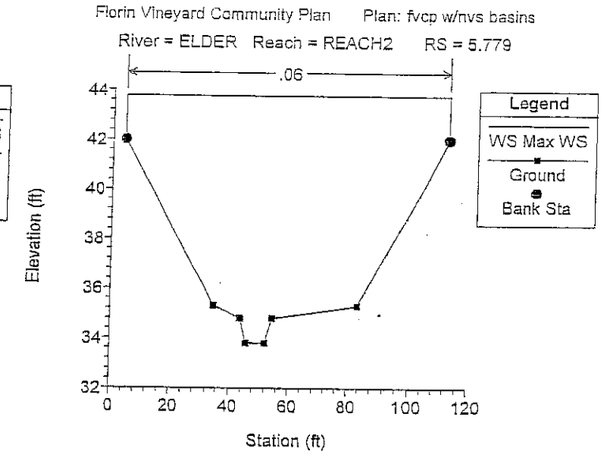

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.428
.06
Legend
WS Max WS
Ground
Ineff
Bank Sta
Elevation (ft)
Station (ft)

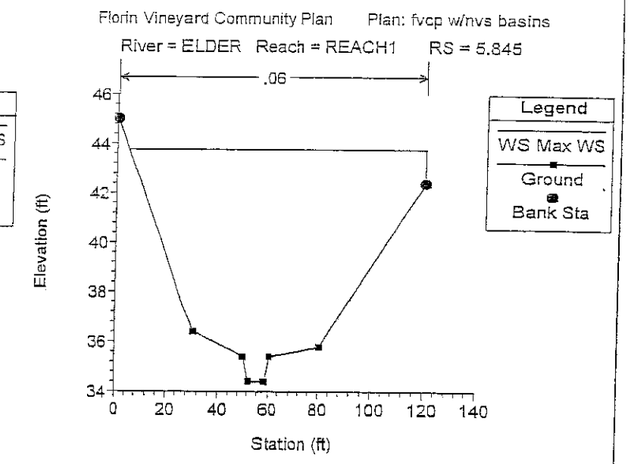

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.460
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

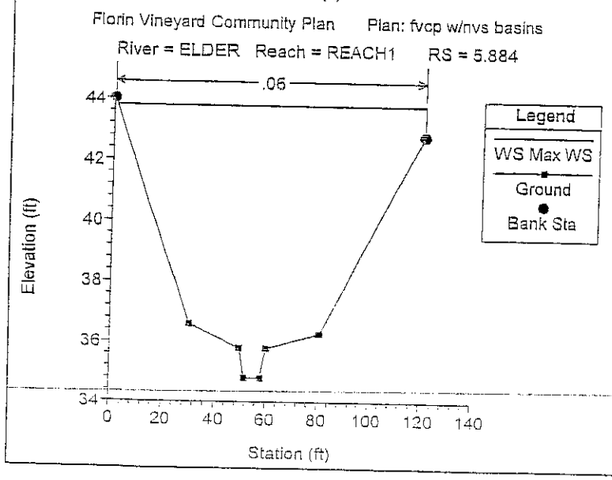

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.510
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

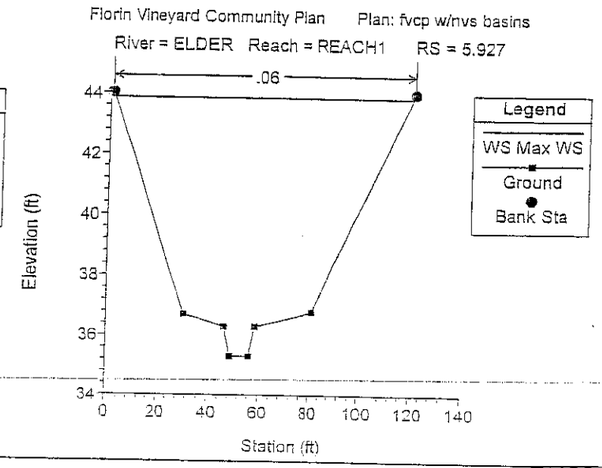

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.591
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

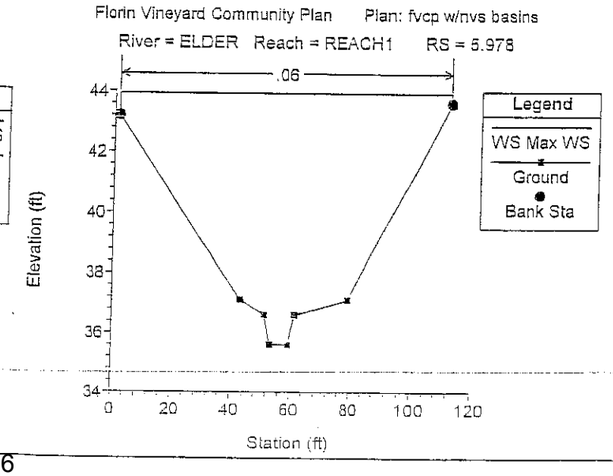

Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.665
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH2 RS = 5.779
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH1 RS = 5.845
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH1 RS = 5.884
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)


Florin Vineyard Community Plan Plan: fvcp w/nvs basins
River = ELDER Reach = REACH1 RS = 5.927
.06
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)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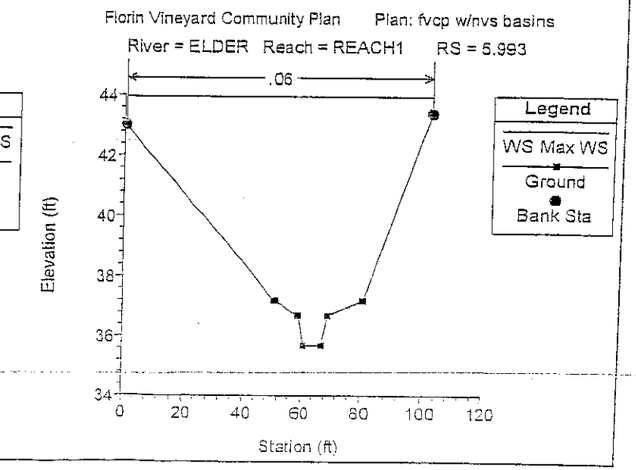
Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)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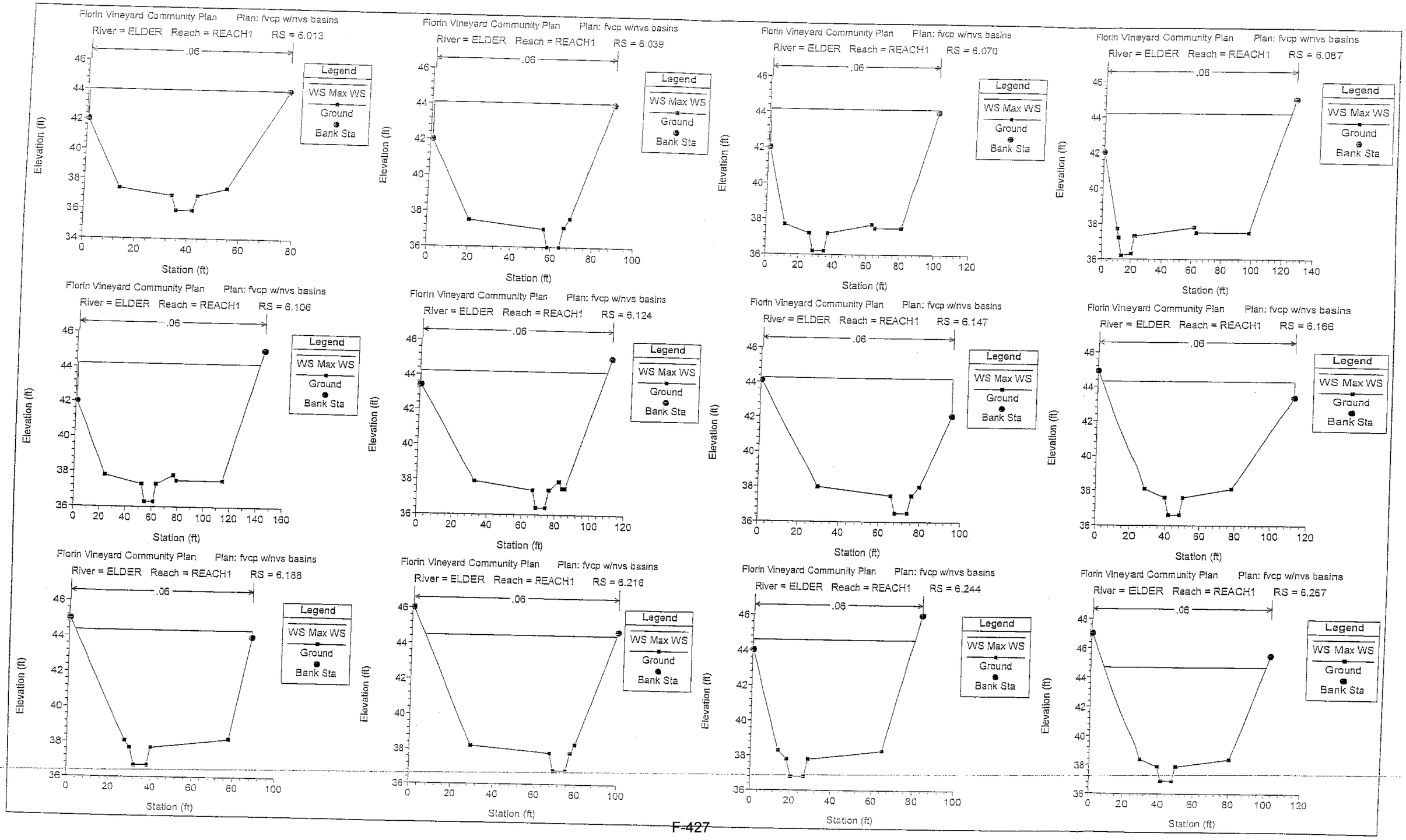
Ground
Bank Sta
Elevation (ft)
Station (ft)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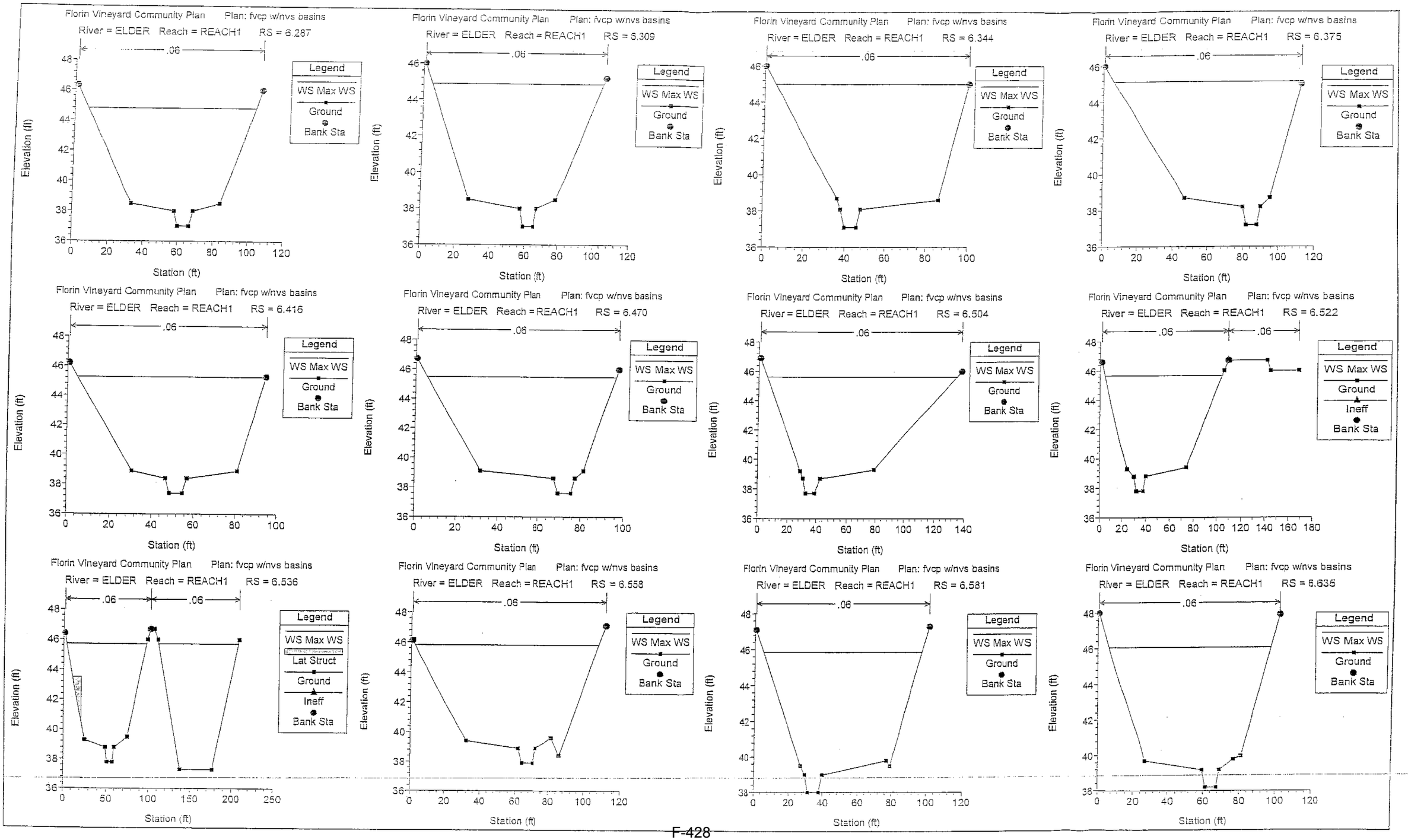
Elevation (ft)
Station (ft)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WS Max WS
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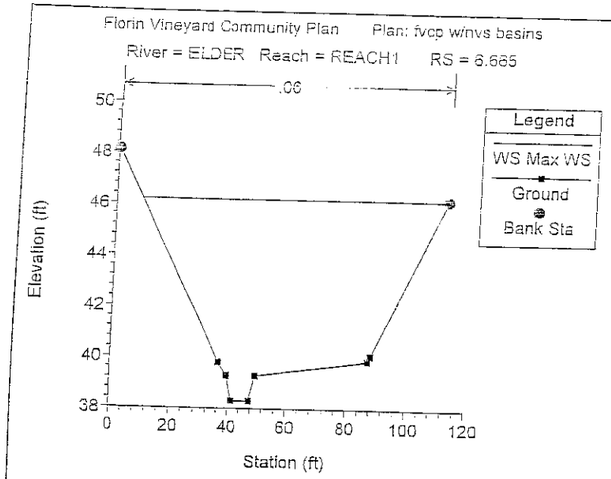
Elevation (ft)
Station (ft)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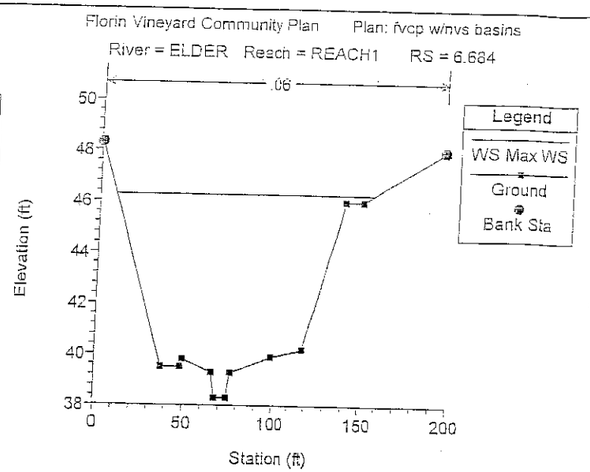
Station (ft)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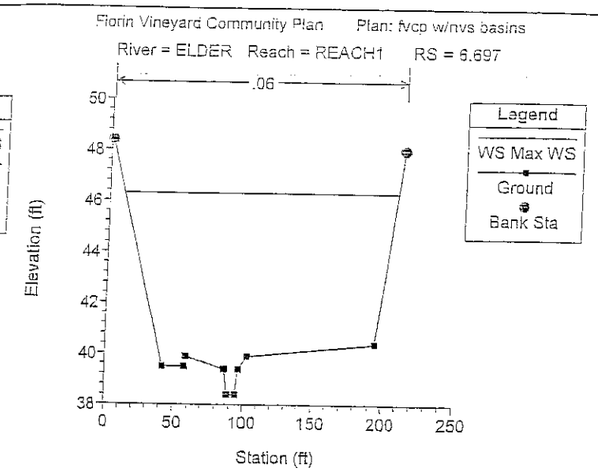
Station (ft)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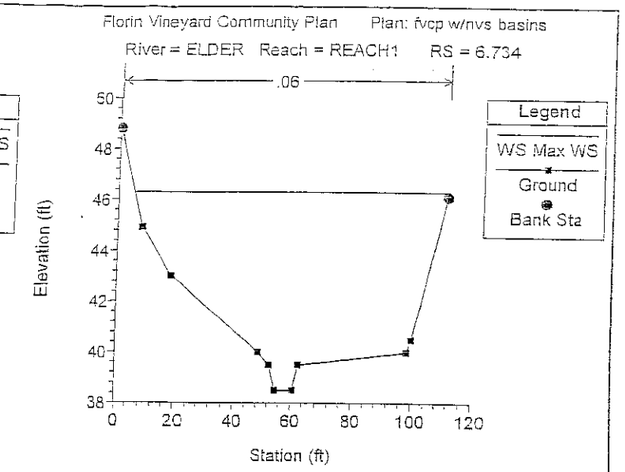
Station (ft)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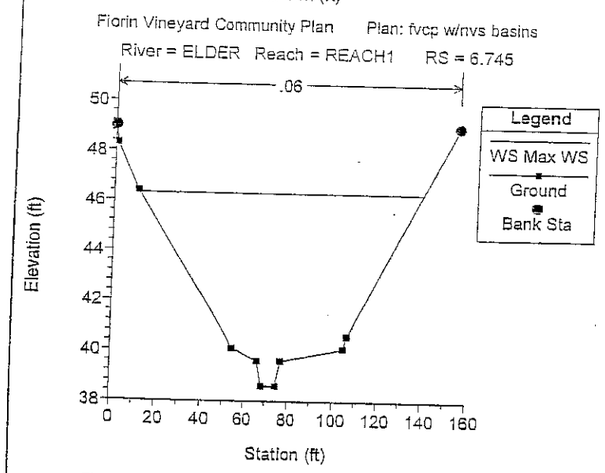
Station (ft)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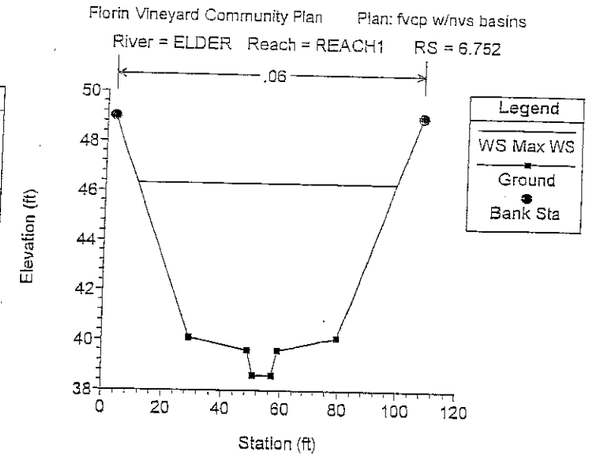
Station (ft)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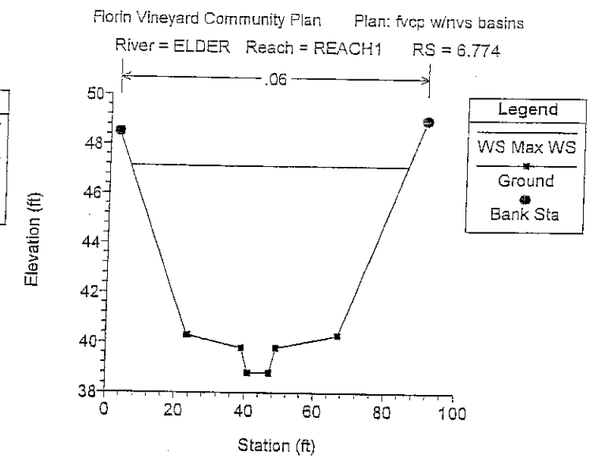
Station (ft)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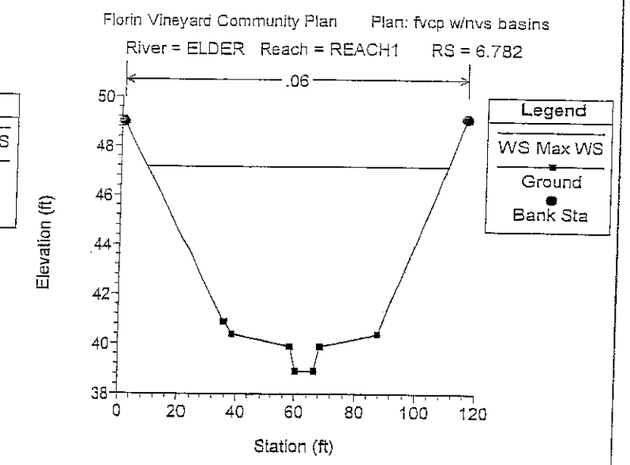
Ground
Bank Sta
Elevation (ft)
Station (ft)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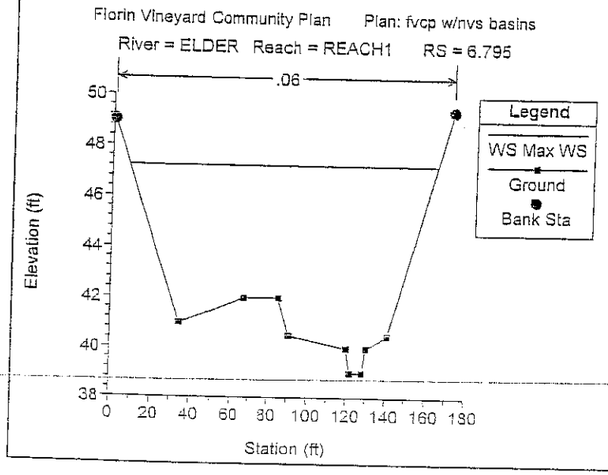
Bank Sta
Elevation (ft)
Station (ft)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Bank Sta
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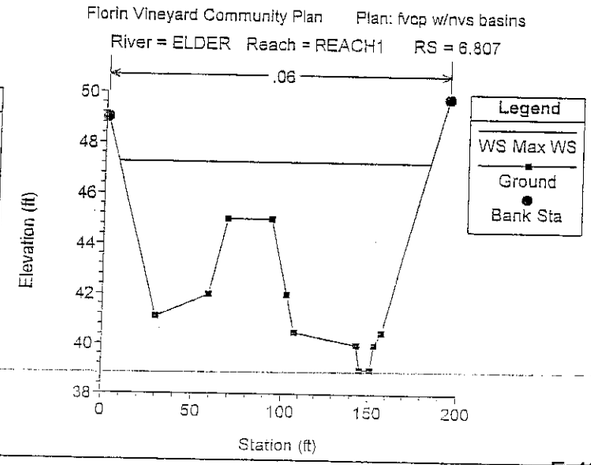
Station (ft)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Ground
Bank Sta
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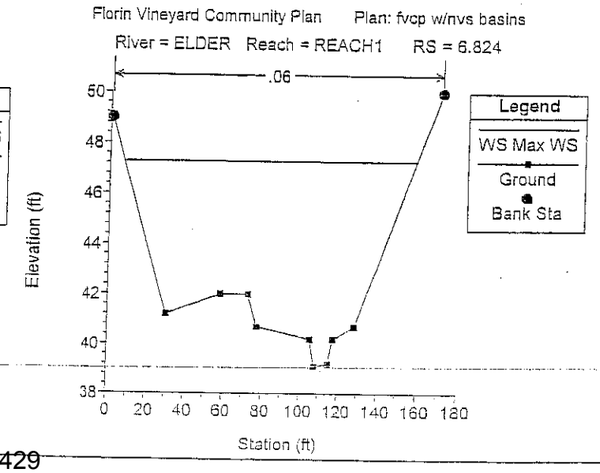
Station (ft)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Bank Sta
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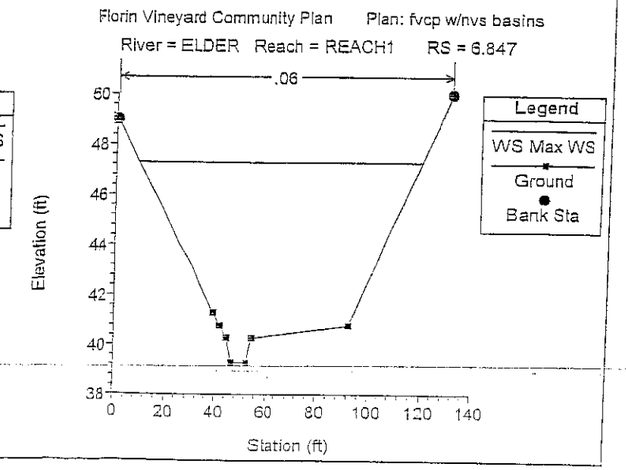
Station (ft)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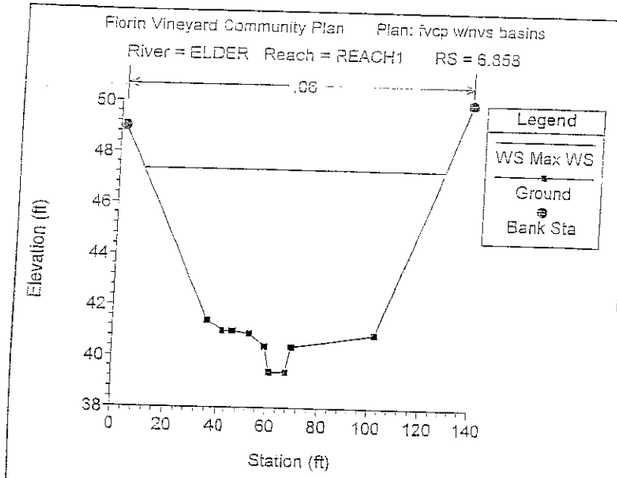
Ground
Bank Sta
Elevation (ft)
Station (ft)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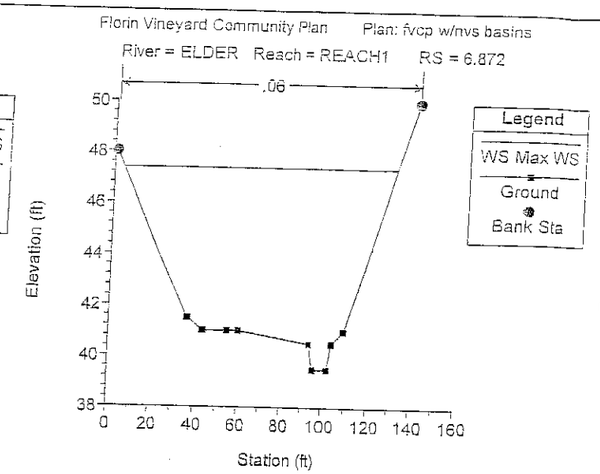
Ground
Bank Sta
Elevation (ft)
Station (ft)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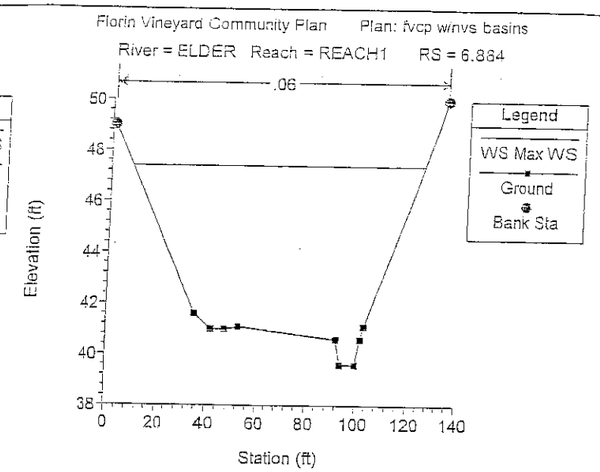
Bank Sta
Elevation (ft)
Station (ft)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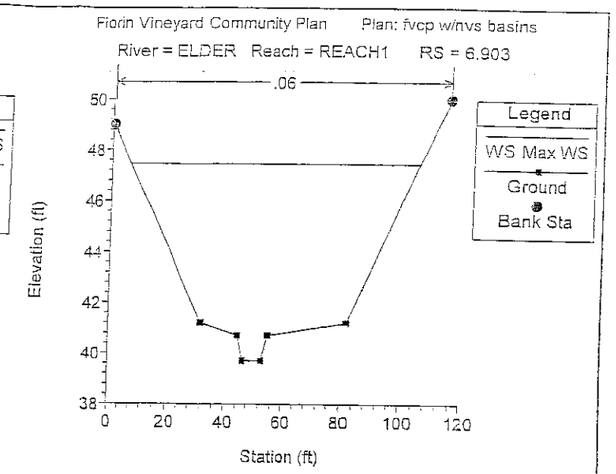
Bank Sta
Elevation (ft)
Station (ft)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Bank Sta
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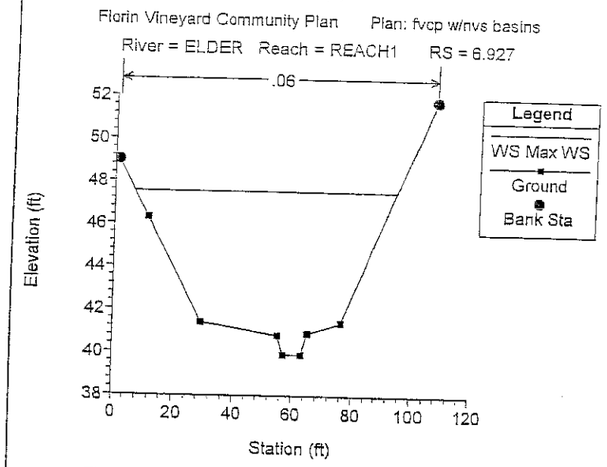
Station (ft)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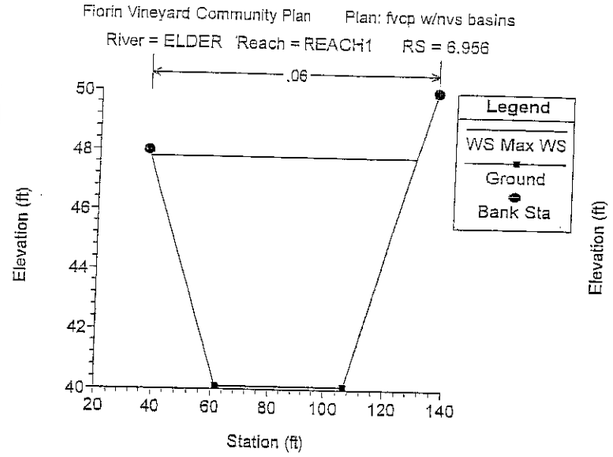
Station (ft)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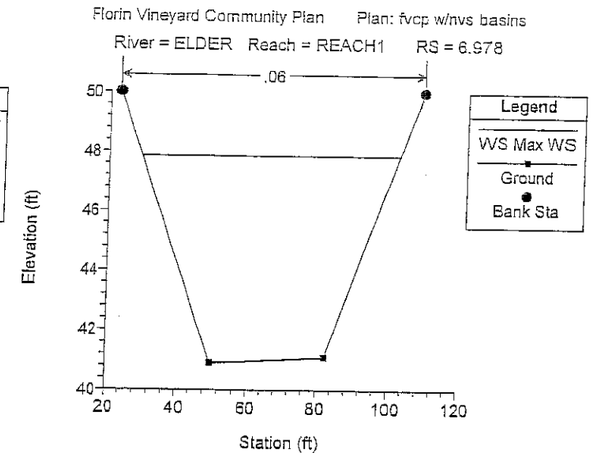
Station (ft)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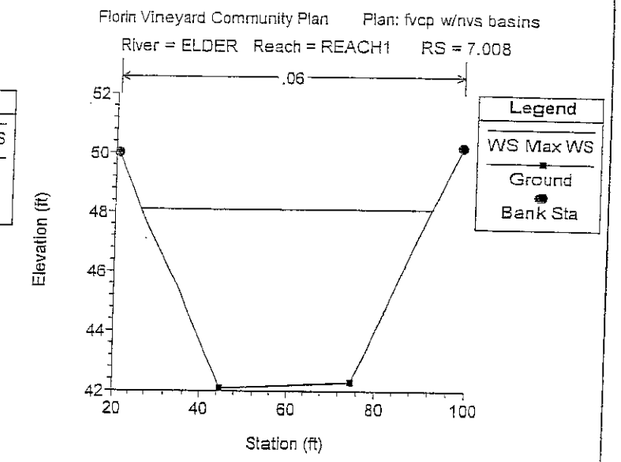
Ground
Bank Sta
Elevation (ft)
Station (ft)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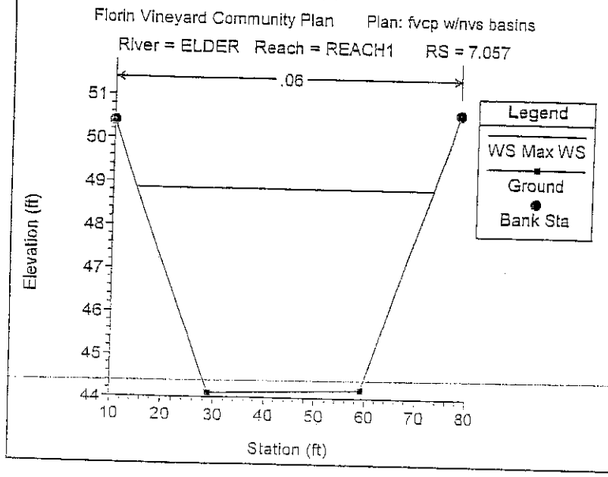
Elevation (ft)
Station (ft)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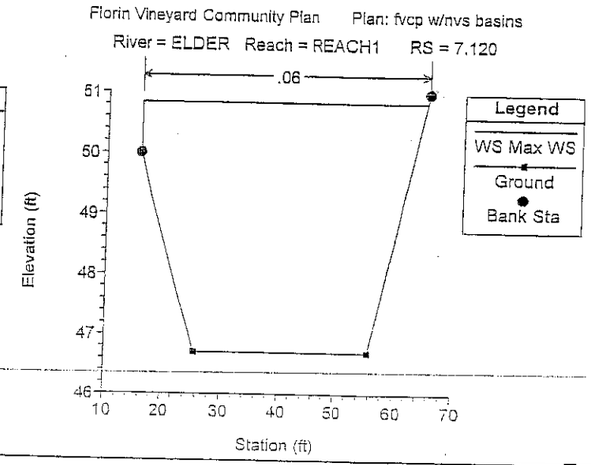
Ground
Bank Sta
Elevation (ft)
Station (ft)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Legend
WS Max WS
Ground
Bank Sta
Elevation (ft)
Station (ft)

APPENDIX H

STREET PONDING REQUIREMENT

From: Viray. Brian (MSA) [mailto:virayb@SacCounty.NET]
Sent: Friday, January 05, 2007 2:54 PM
To: thomas@civilsolutions.com
Cc: Hall. Peter (MSA)
Subject: FW: FVCP DS (Dec.5,2006)-preliminary review comments

Tom,

I left a few messages at Transportation and I haven't received a response. However to expedite the process, I can say the following:

1. Per Section 9-15 of the 2006 Improvement Standards,
   A. "Certain collector streets will require dry lanes in the 100-year storm, as determined by the Sacramento County Department of Transportation".
   B. "Overland flow passing over street vertical curves shall not exceed a depth of six inches (6") over the back of walk."
   D. "Streets, parking lots, playgrounds, pedestrian areas, pedestrian walkways, utility easements, and other space areas may be considered compatible uses for overland release routing."
2. The biggest streets within the Florin Vineyard Community Plan are not collector streets but are the smaller arterial streets. These streets are Elk Grove-Florin Rd./South Watt Ave., Bradshaw Rd, Florin Road, Elder Creek Rd., and Gerber Rd.
3. All roads (including collector or residential) must have no greater than 6" of ponding.

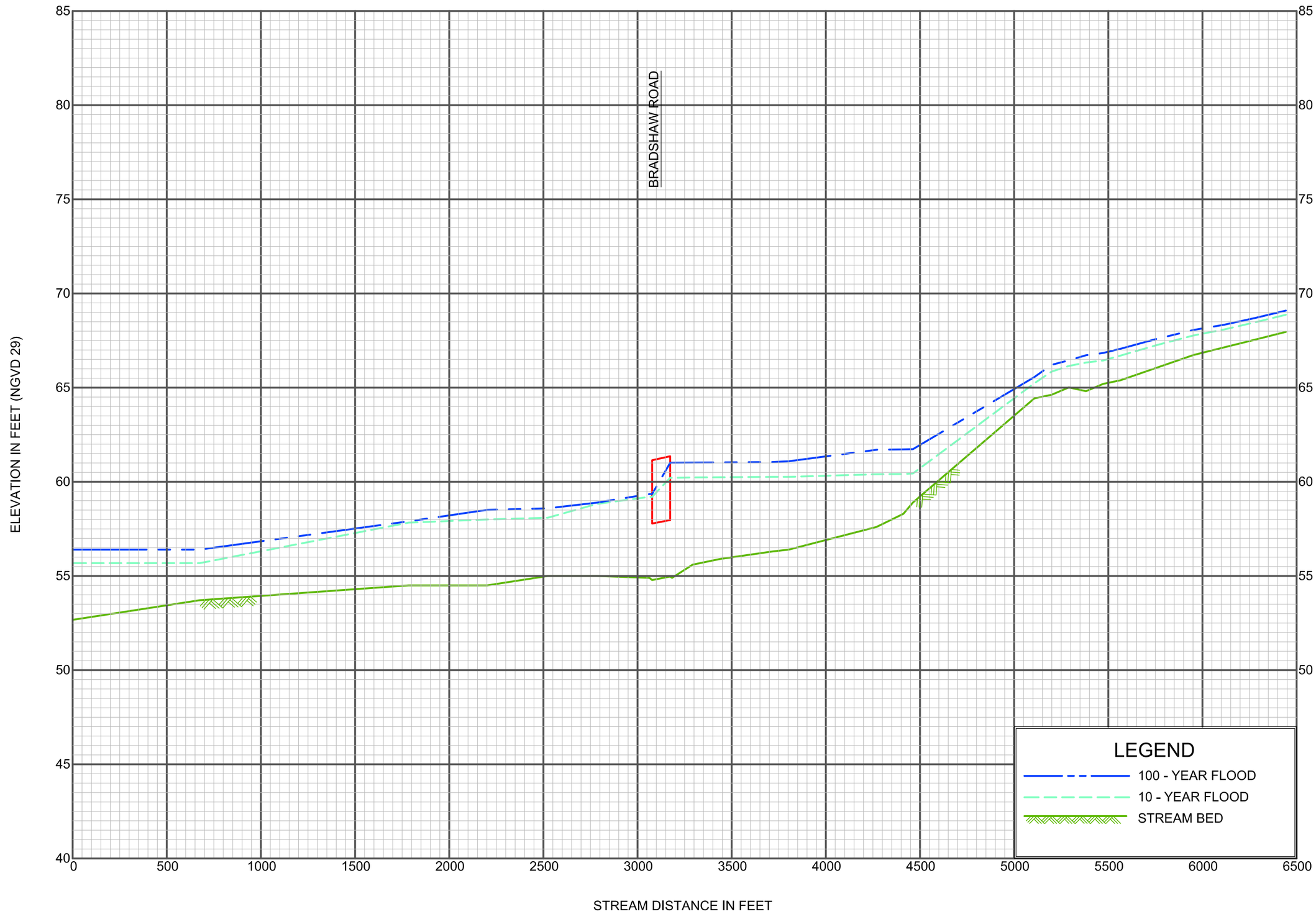
When I talk to somebody in Transportation and they tell me something different such as allowing a greater amount of ponding on the streets or on which streets, I'll let you know.

Please let me know if you have questions.

Sincerely,
Brian Viray, P.E.
Sac County DOWR Drainage / Development
(916) 874-8569

APPENDIX I

WATER SURFACE PROFILES



FLOOD PROFILES

ELDER CREEK TRIBUTARY

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300
fax (916) 563 - 7362

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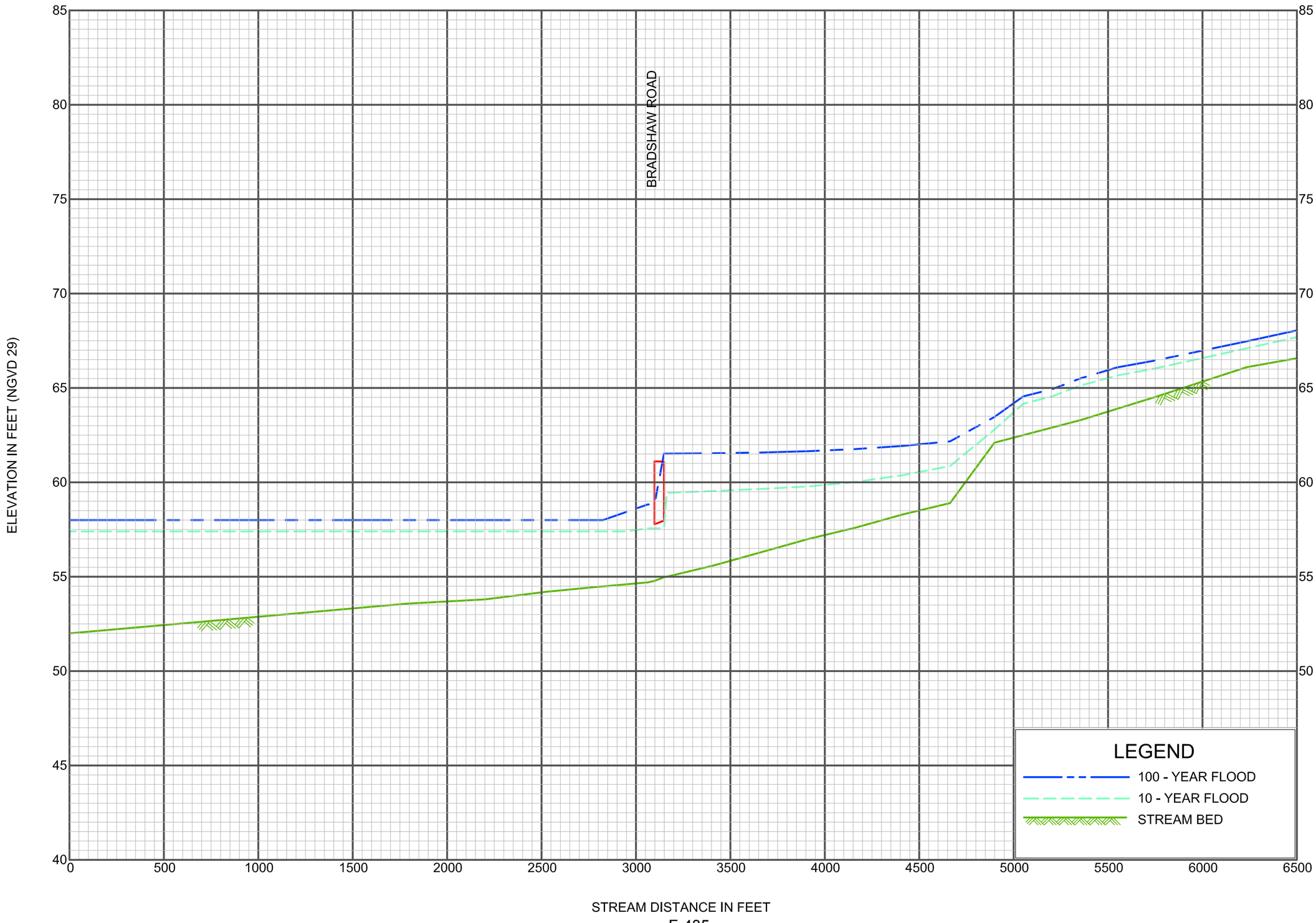

FLOOD PROFILES

NORTHEAST INTERIM CHANNEL

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA. 95825
(916) 563 - 7300
fax (916) 563 - 7362

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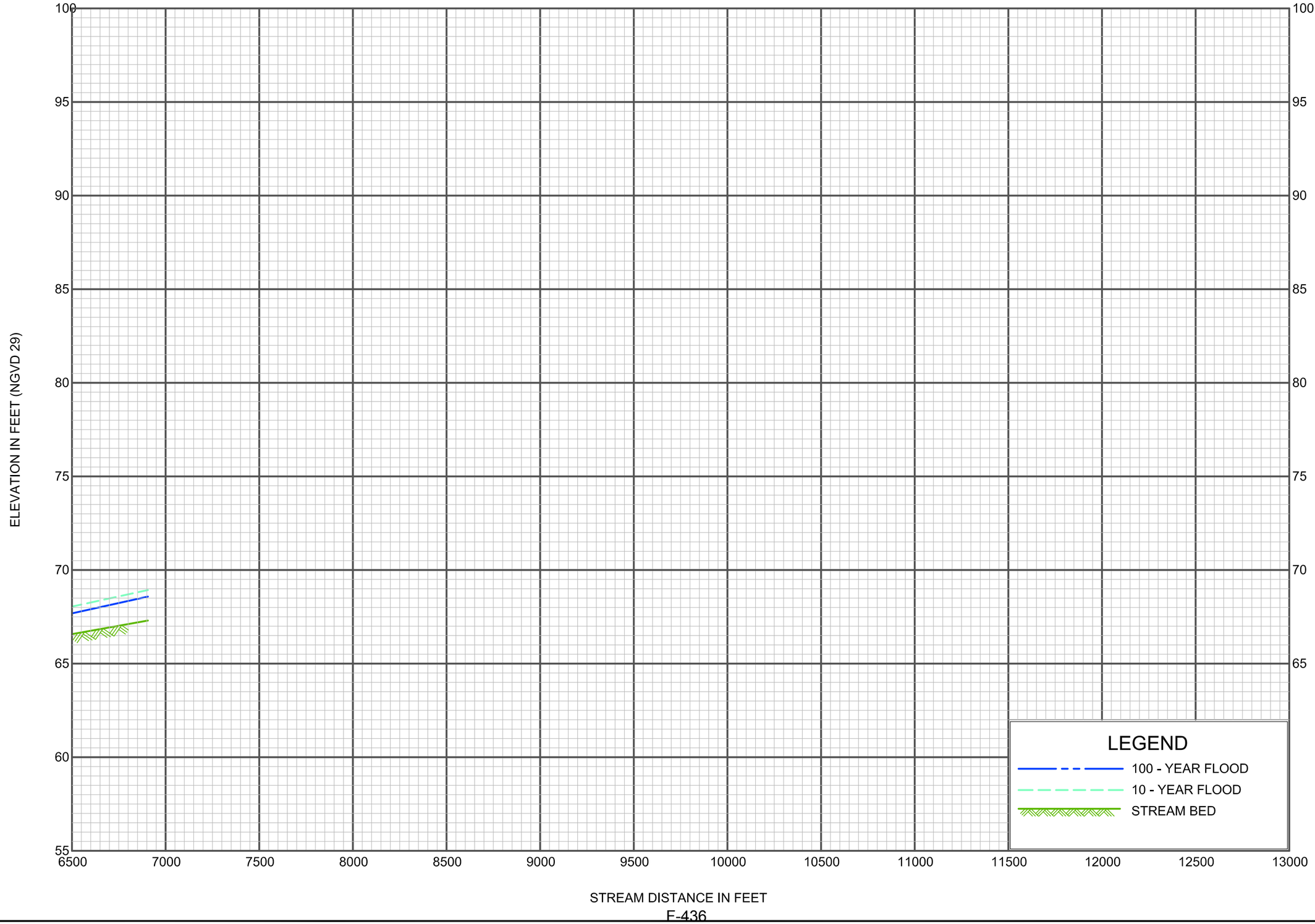

FLOOD PROFILES

NORTHEAST INTERIM CHANNEL

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA, 95825
(916) 563 - 7300
fax (916) 563 - 7362

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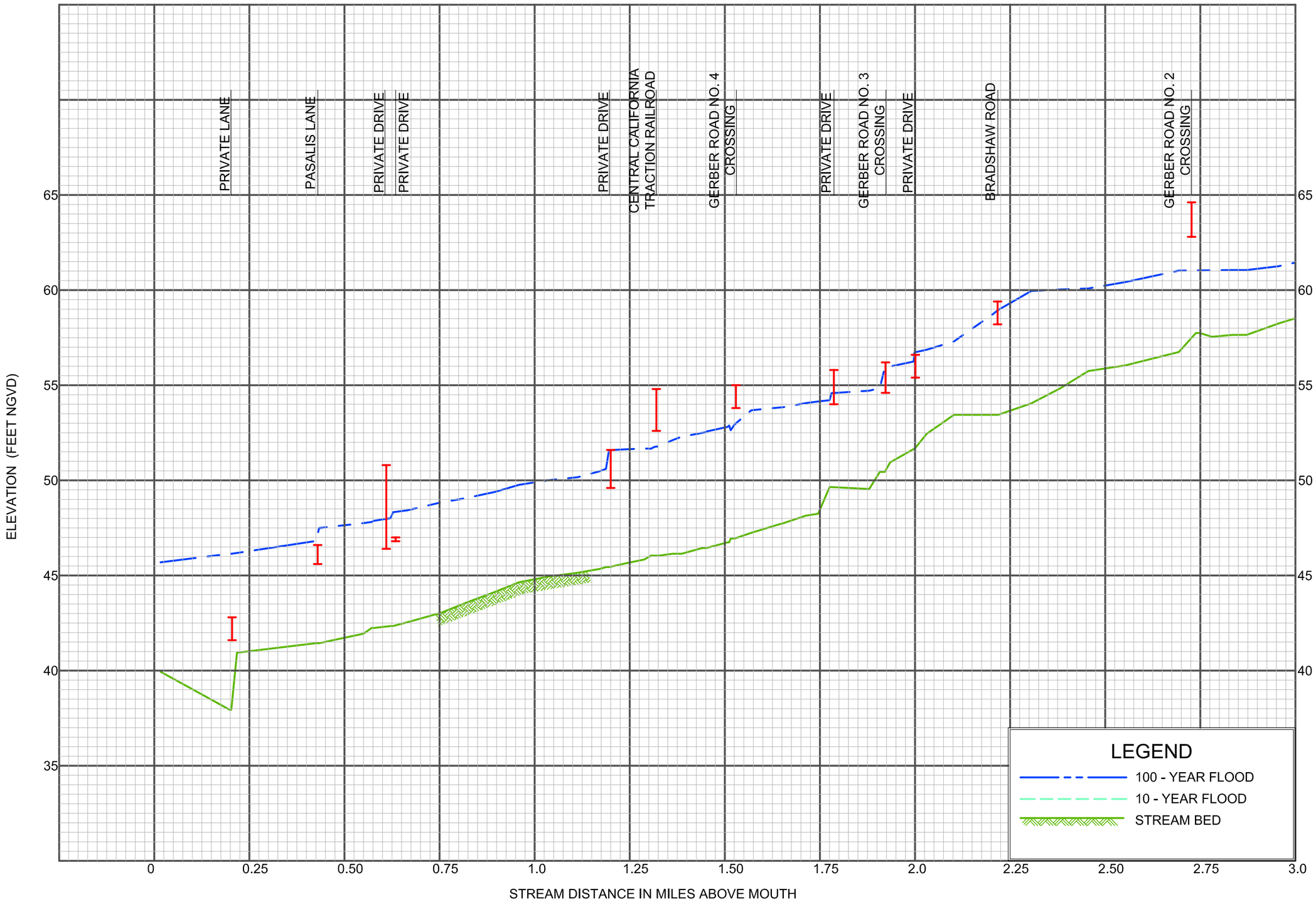

FLOOD PROFILES

GERBER CREEK-PRE PROJECT

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento, CA 95825
(916) 565 - 7300
fax (916) 565 - 7362

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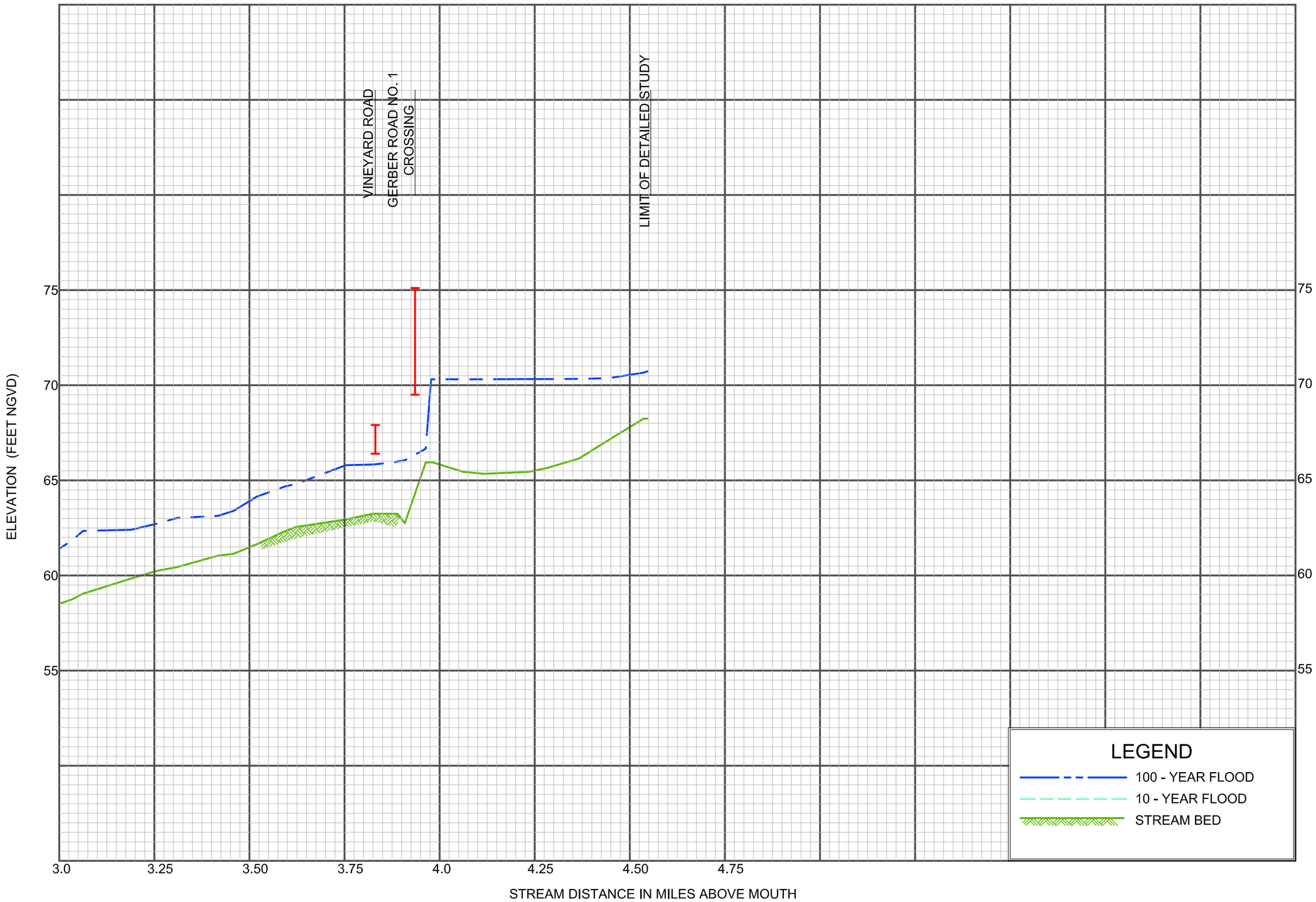

FLOOD PROFILES

GERBER CREEK-PRE PROJECT

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento CA 95825
(916) 565 - 7300
fax (916) 565 - 7362

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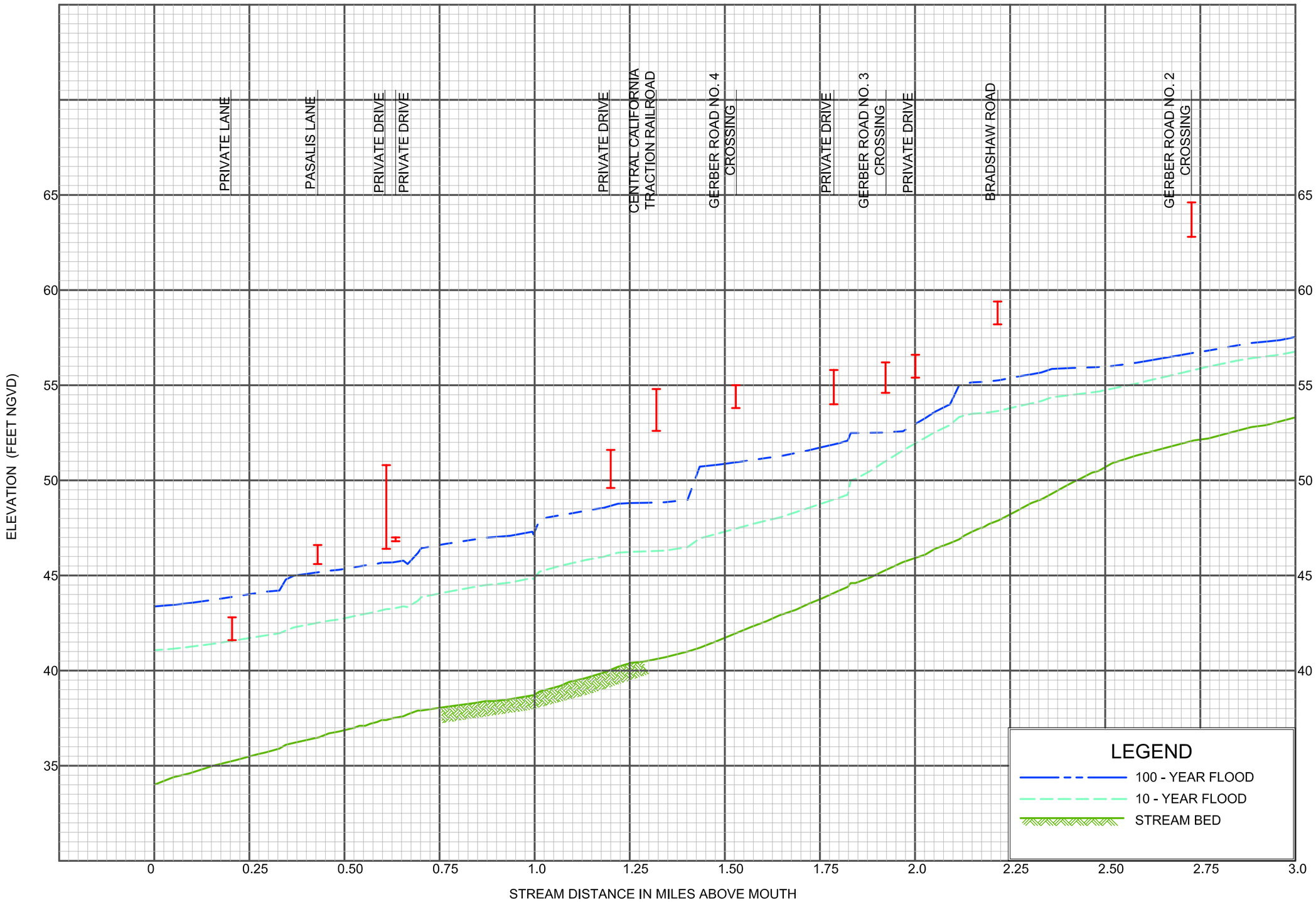

FLOOD PROFILES

GERBER CREEK-WITH LAGUNA SPILL

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento, CA 95825
(916) 565 - 7300
fax (916) 565 - 7362

1 of 2

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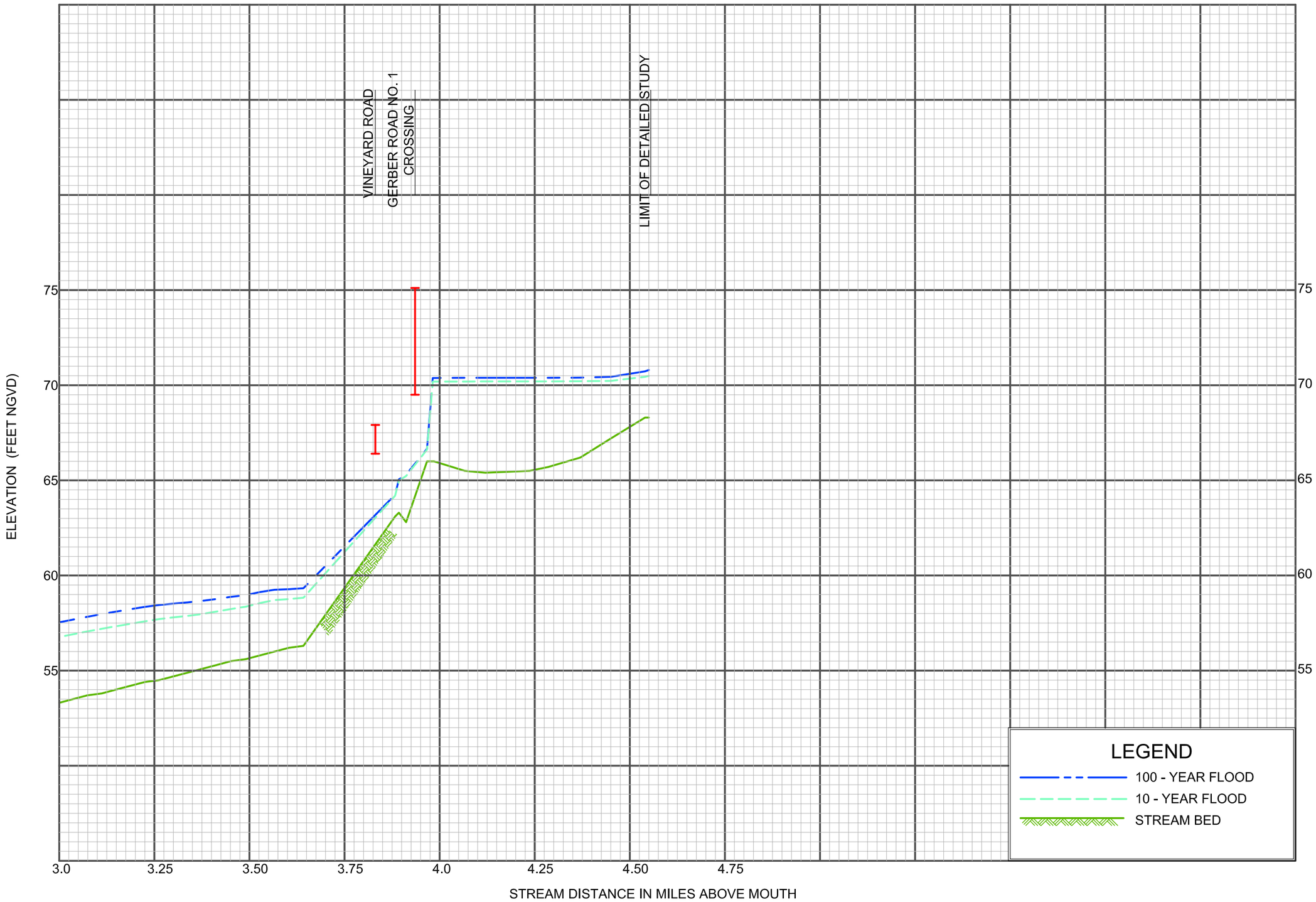

FLOOD PROFILES

GERBER CREEK-WITH LAGUNA SPILL

CIVIL ENGINEERING SOLUTIONS, INC.
1325 Howe Avenue, Suite 202
Sacramento, CA 95825
(916) 565 - 7300
fax (916) 565 - 7362

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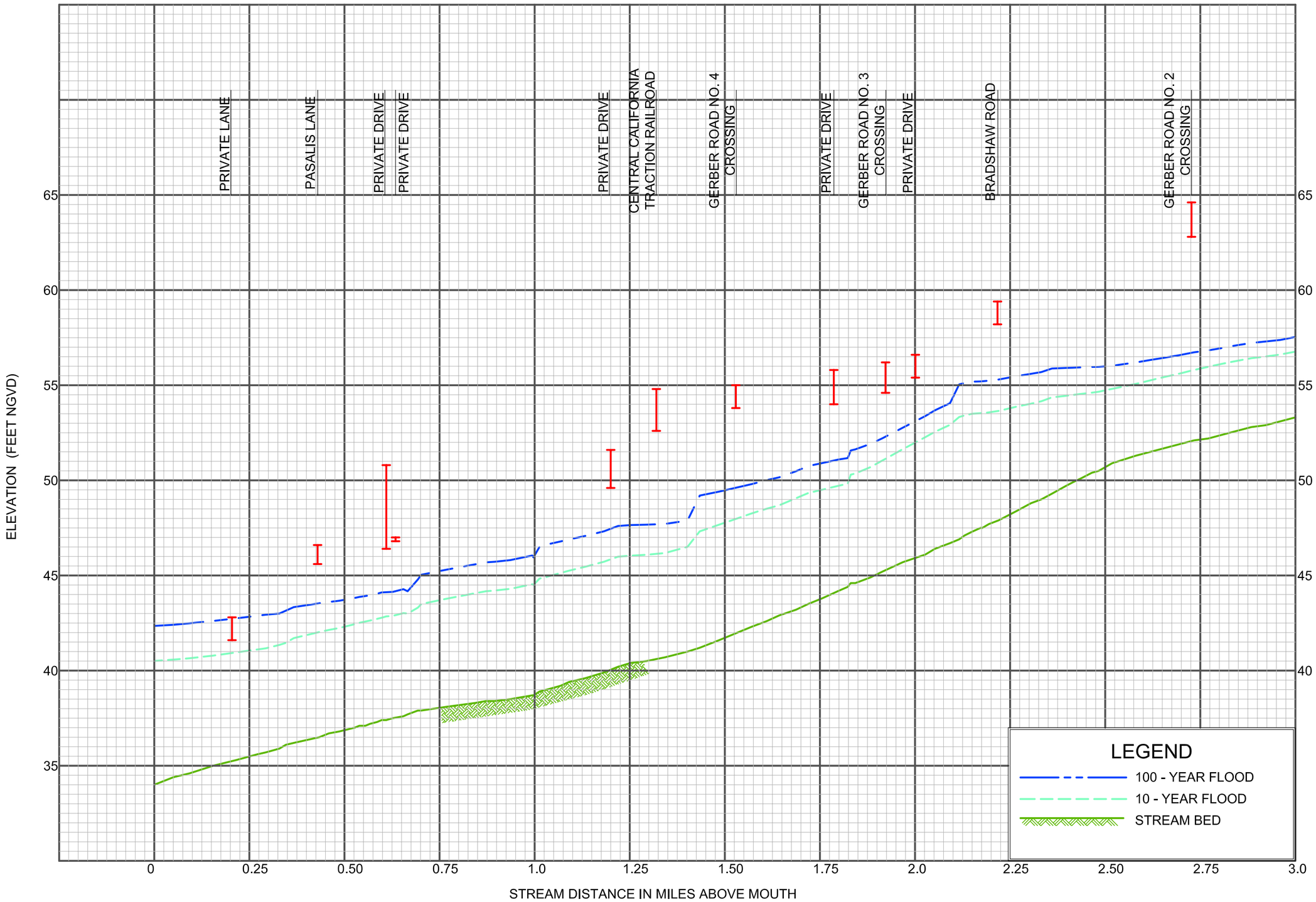

FLOOD PROFILES

GERBER CREEK-WITHOUT LAGUNA SPILL

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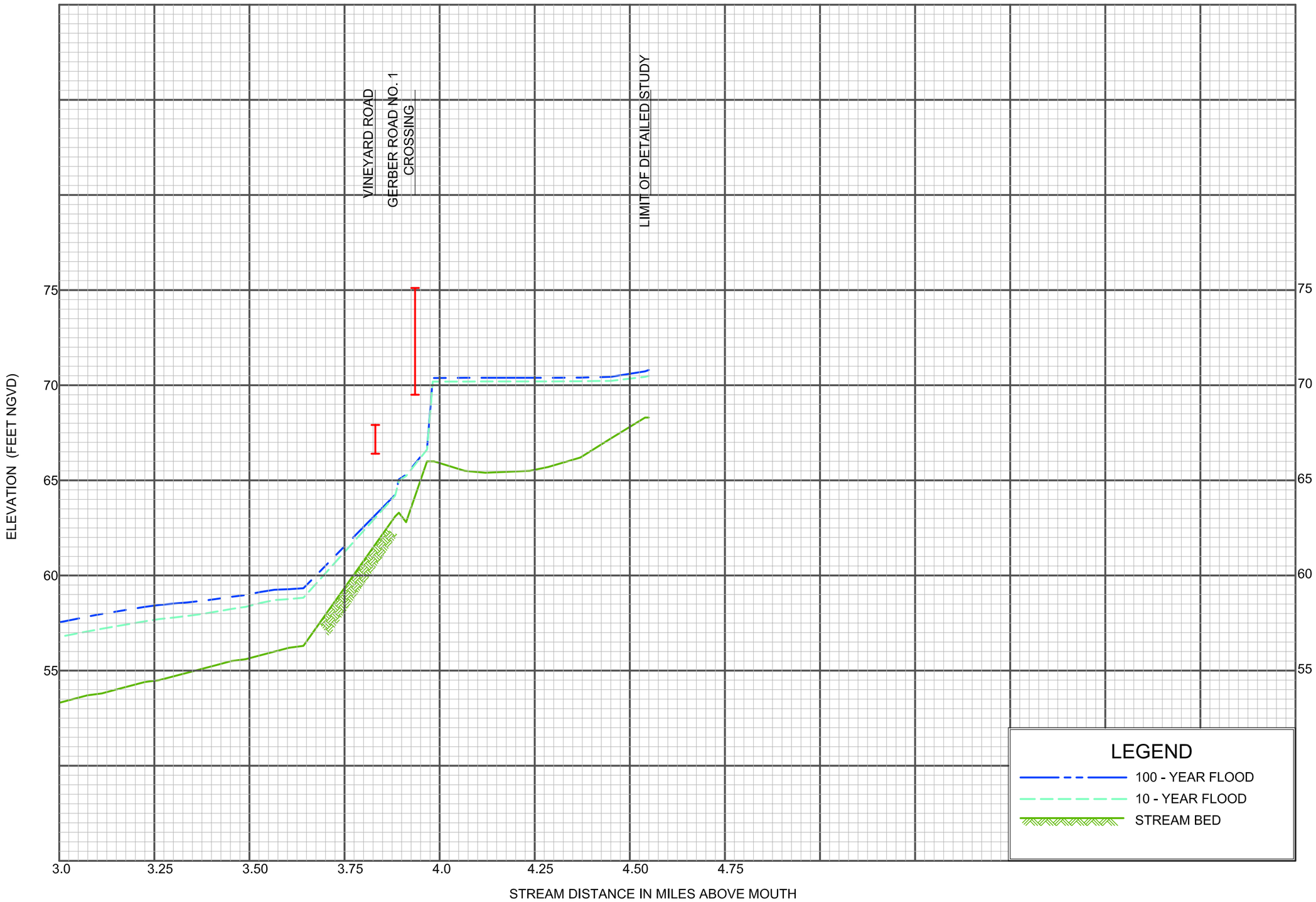

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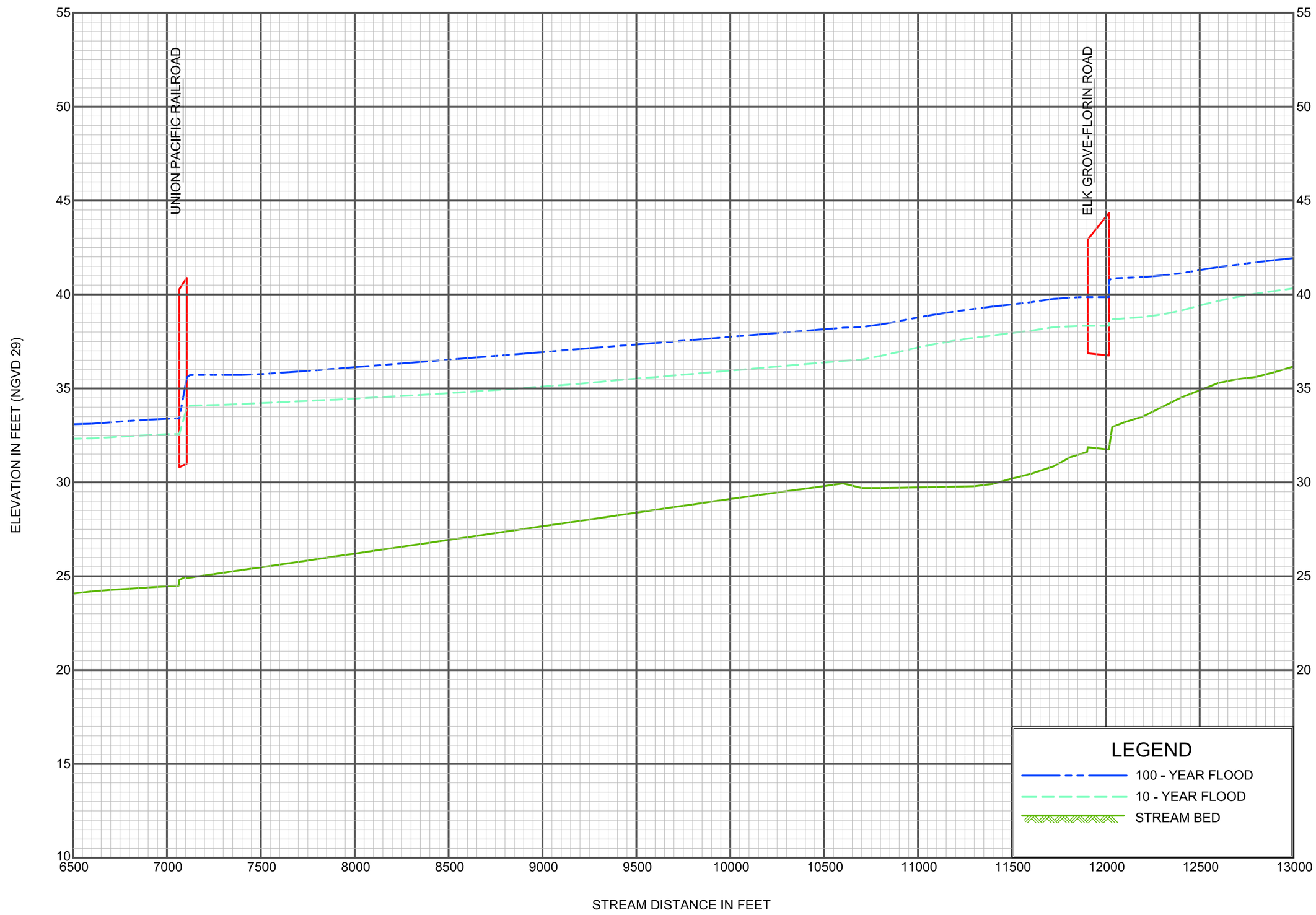

FLOOD PROFILES

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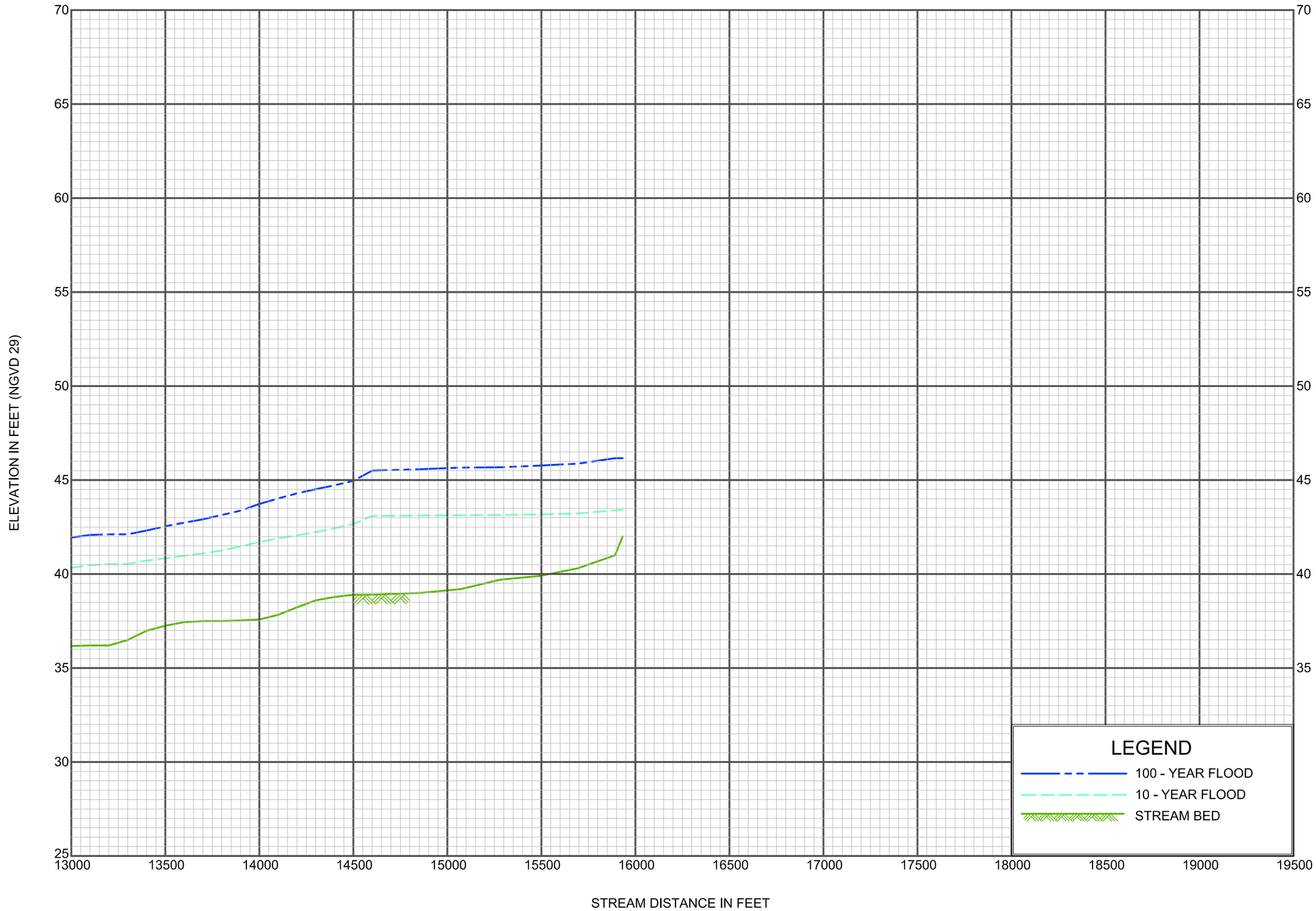

FLOOD PROFILES

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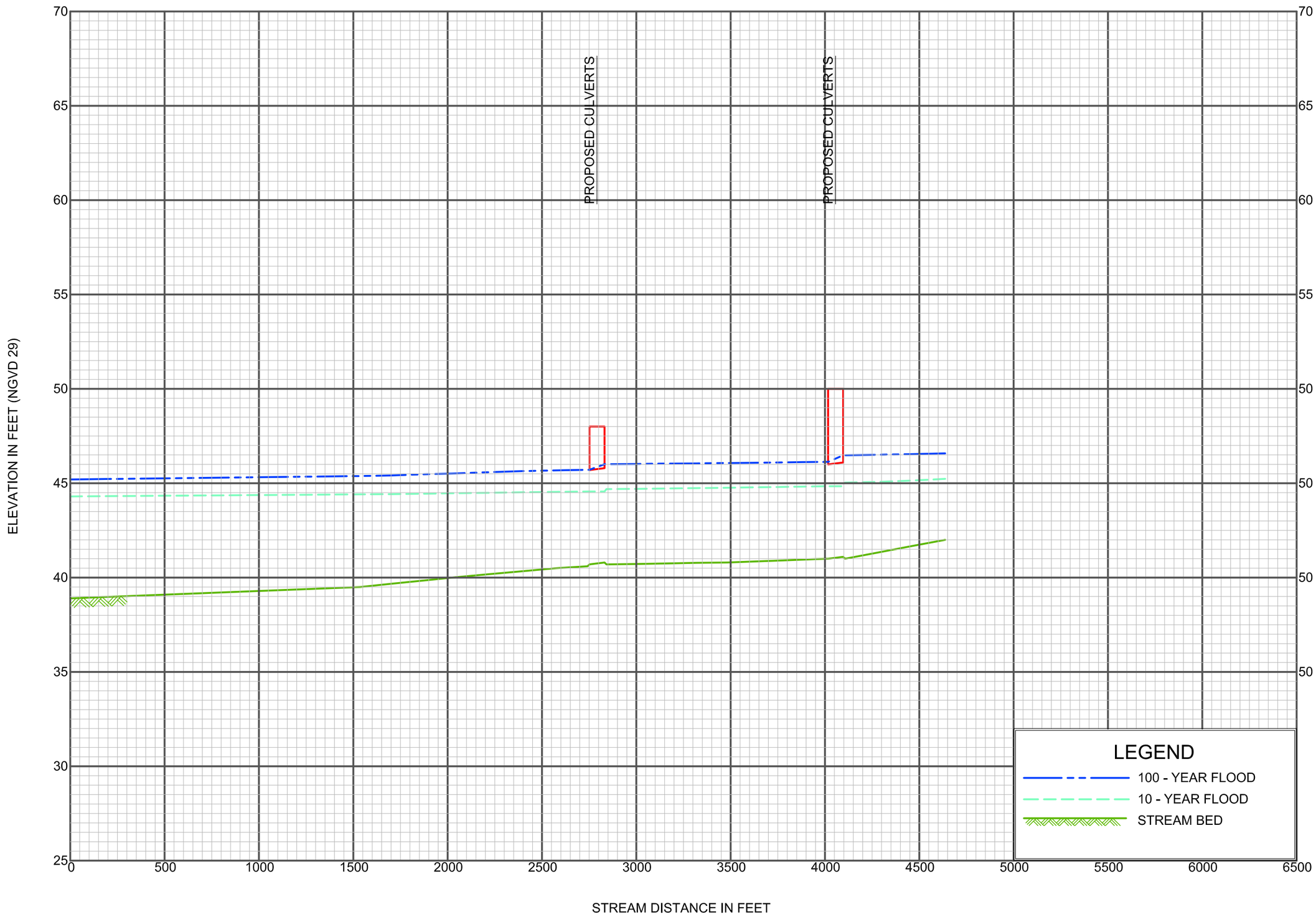

FLOOD PROFILES

UNIONHOUSE TRIBUTARY

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APPENDIX J

WATER QUALITY DRAWDOWN CURVES

APPENDIX G

PUBLIC FACILITIES FINANCING PLAN

Economic & Planning Systems

Public Finance
Real Estate Economics
Regional Economics
Land Use Policy

PUBLIC REVIEW DRAFT REPORT

FLORIN VINEYARD COMMUNITY PLAN
PUBLIC FACILITIES FINANCING PLAN

Prepared for:

Florin Vineyard Owners' Group

Prepared by:

Economic & Planning Systems, Inc.

October 30, 2008

EPS #14559

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I. INTRODUCTION AND PROJECT SUMMARY

This Public Facilities Financing Plan (Financing Plan) presents a strategy to finance backbone infrastructure and other public facilities required to serve the proposed land uses in the Florin Vineyard Community Plan (FVCP). The proposed strategy is designed to be flexible enough to accommodate the development plans of a diverse set of multiple FVCP property owners while assuring Sacramento County (County) that the required facilities are constructed when necessary. The Financing Plan includes existing fee programs, the development of the Florin Vineyard Fee Program (FVFP), the use of Mello-Roos bond financing, and other funding mechanisms.

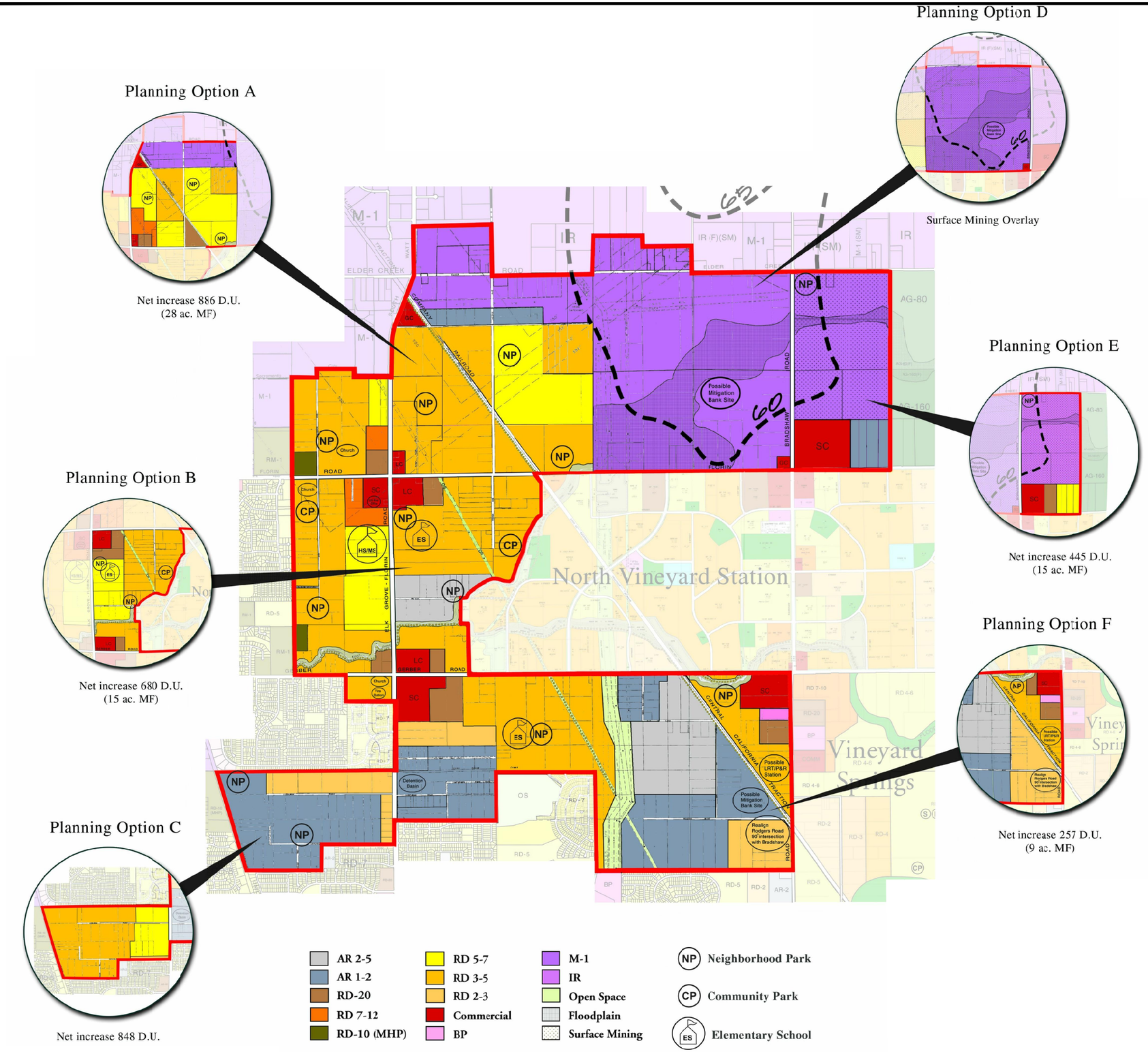
PROJECT SUMMARY

The Florin Vineyard Community Plan is approximately 3,766 acres in size. Reflective of its alternative name, the "Florin Vineyard Gap," the FVCP is irregular in shape and wraps halfway around the North Vineyard Station Specific Plan and into the Florin portion of South Sacramento. The FVCP includes large areas between Elder Creek Road and Florin Road from west of South Watt Avenue to east of Bradshaw Road, on both sides of Elk-Grove Florin Road between Florin Road and Gerber Road, and south of Gerber Road between the Union Pacific Railroad alignment and Bradshaw Road. **Map 1** shows the location of the FVCP.

The FVCP is characterized as a primarily underdeveloped, semi-rural area containing a scattering of 556 older residences and a few nonresidential uses. In 2003, the County outlined two land use plans for the FVCP: the Citizen's Advisory Committee (CAC) Preferred Plan and the Planning Department Plan. The land use assumptions used in the Financing Plan correspond to the Planning Department Plan for the FVCP.

EPS has derived two land use tables, using the Planning Department Land Use Plan. **Table 1** shows the land uses, as shown in the Planning Department Land Use Plan, with no adjustments. **Table 2** adjusts the unit counts by using a mapping factor of 90 percent. The mapping factor is used to compensate for the possibility that fewer units will be constructed than anticipated.

Table 2 also assumes that development of the 879 industrial (M-1) acres is uncertain within a foreseeable timeframe. Currently, there are no applicants to develop these industrial acres, and the area in which they are located is encumbered by a flood plain and extensive wetlands. Therefore, all M-1 acres have removed for purposes of this financing plan. In the event that there is a development proposal for these acres, such a proposal would warrant either an update to this financing plan or the creation of a separate and distinct financing plan for industrial development.



Planning Options A-F represent the Planning Department Options Land Use Plan

Map 1

CAC LAND USE PLAN

and

PLANNING DEPARTMENT OPTIONS LAND USE PLAN

for the

Florin-Vineyard Gap Community Plan

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7748-00 1/17/05

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Table 1
Florin Vineyard Public Facilities Financing Plan
Land Use Summary Based on County Planning Department Plan

No Mapping Factor

Land Use	Phase 1 Acres	Phase 1 Units	Buildout Acres	Buildout Units
RESIDENTIAL DEVELOPMENT				
Existing Single-Family Units [1]				556
Single-Family				
AR 2-5	10	3	129.0	43
AR 1-2	3	2	271.0	181
RD 2-3	40.6	102	140.5	351
RD 3-5	531.1	2,390	1,084.5	4,880
RD 5-7	485.7	2,914	572.5	3,435
RD 7-12	32.6	326	69.0	690
RD-10	10	100	13.7	137
Subtotal Single-Family	**1,112.9**	**5,837**	**2,280.2**	**9,717**
Multifamily				
RD-20	76.1	1,370	130.5	2,349
Subtotal Multifamily	**76.1**	**1,370**	**130.5**	**2,349**
TOTAL RESIDENTIAL	**1,189.0**	**7,207**	**2,410.7**	**12,066**
NONRESIDENTIAL DEVELOPMENT				
General Commercial (GC)	-	-	**10.0**	-
Shopping Center (SC)	**88.9**	-	**113.5**	-
Limited Commercial (LC)	**-**	-	**18.3**	-
Business Professional (BP)	-	-	**5.0**	-
Industrial (M-1) [3]	**-**	-	**879.0**	-
Industrial Reserve (IR) [3]	-	-	**240.0**	-
Open Space (OS)	**17.2**	-	**89.5**	-
TOTAL NONRESIDENTIAL	**106.1**	**-**	**1,355.3**	**-**
TOTAL FLORIN VINEYARD PLAN AREA	**1,295.1**	**7,207**	**3,766**	**12,066**

"lu"

Source: Florin Vineyard Community Plan Land Use Application Table dated January 10, 2008; prepared by MacKay & Somps. The "Planning Department Option" portion of the table is referenced in this report.

[1] Existing units are not included in the total unit count because they will not pay any new fees.
[2] Ag-Residential development is not included in this version of the financing plan; however, it will be included in a subsequent version.
[3] Because of the high probability that much of the M-1 and Industrial Reserve land may not develop in the foreseeable future, fees have not been assigned to these land uses. At the time they do develop, additional studies would be required to identify needed facilities and funding thereof.

DRAFT

Table 2
Florin Vineyard Public Facilities Financing Plan
Land Use Summary Based on Mapping Factor [1]

Mapping Factor Included

Land Use		Phase 1 Acres	Phase 1 Units	Buildout Acres	Buildout Units
Mapping Factor [1]	**90%**				
RESIDENTIAL DEVELOPMENT					
Single-Family					
AR 2-5 [2]		-	-	-	-
AR 1-2 [2]		-	-	-	-
RD 2-3		36.5	92	126.5	316
RD 3-5		478.0	2,151	976.1	4,392
RD 5-7		437.1	2,623	515.3	3,092
RD 7-12		29.3	293	62.1	621
RD 10		9.0	90	12.3	123
Subtotal Single-Family		**990.0**	**5,249**	**1,692.2**	**8,544**
Multifamily					
RD-20		68.5	1,233	117.5	2,114
Subtotal Multifamily		**68.5**	**1,233**	**117.5**	**2,114**
TOTAL RESIDENTIAL		**1,058.5**	**6,482**	**1,809.6**	**10,658**
NONRESIDENTIAL DEVELOPMENT					
General Commercial (GC)		**-**	**-**	**9.0**	**-**
Shopping Center (SC)		**80.0**	**-**	**102.2**	**-**
Limited Commercial (LC)		**-**	**-**	**16.5**	**-**
Business Professional (BP)		**-**	**-**	**4.5**	**-**
Industrial (M-1) [3]		**-**	**-**	**-**	**-**
Industrial Reserve (IR) [4]		**-**	**-**	**-**	**-**
Open Space (OS)		**17.2**	**-**	**89.5**	**-**
TOTAL NONRESIDENTIAL		**97.2**	**-**	**221.6**	**-**
TOTAL FLORIN VINEYARD PLAN AREA		**1,155.7**	**6,482**	**2,031.3**	**10,658**

"lu_map_factor"

Source: MacKay & Somps; and County of Sacramento Planning Department - " Proposed Land Use Designations and Potential Dwelling Yield dated December 4, 2003.

[1] The mapping factor is used to compensate for the possibility that fewer units will be constructed than the Planning Department has estimated. The mapping factor is used to reduce the number of units used for calculation of total fee revenue.
[2] This version of the report assumes no Ag-Residential development. EPS has identified a need to include this land use, however, and therefore Ag-Residential development will be included in a subsequent version of this Financing Plan.
[3] As there are no applications to develop the 879 industrial (M-1) acres, and the area in which this land lies is encumbered by a floodplain and extensive wetlands, all M-1 acres have been removed for purposes of this financing plan. If there is a development proposal for this land in the future, an update to this financing plan or a separate and distinct financing plan would be necessary.
[4] Because of the high probability that much of the Industrial Reserve land may not develop in the foreseeable future, all Industrial Reserve acres have been removed for purposes of this financing plan. At the time it does develop, additional studies would be required to identify needed facilities and funding thereof.

The mapping-factor adjusted land uses shown in **Table 2** are used for the calculations shown in this financing plan. As **Table 2** shows, the FVCP plans for 10,658 housing units, consisting of 8,544 single-family units and 2,114 multifamily units. Including the 556 existing residences and the 224 agriculture residential units brings the total to 11,438 units. The FVCP also includes 142 acres of commercial, 5 acres of business professional, 879 acres of industrial, 240 acres of industrial reserve, and 90 acres of open space land uses. As noted earlier, industrial and industrial-reserve land uses are not assumed to develop within the timeframe of this financing plan and therefore are not included in this financing plan.

The southeast portion of the Florin Vineyard Community Plan has been located within the Vineyard Public Facilities Financing Plan (Vineyard PFFP) since 1993. These lands south of Gerber Road and east of Elk Grove-Florin Road comprise over 1,100 acres, or about 30 percent of the entire FVCP. Although lacking urban land use designations, they are currently included in the Vineyard PFFP nexus analysis based on rural development potential and are subject to Vineyard Plan Area fees. EPS recommends for purposes of the conceptual FVCP PFFP that areas currently within the Vineyard PFFP be treated no differently than the rest of the FVCP. EPS further recommends during implementation of an approved Florin Vineyard Fee Program that the Vineyard PFFP and Fee Program be concurrently updated to exclude these FVCP areas.

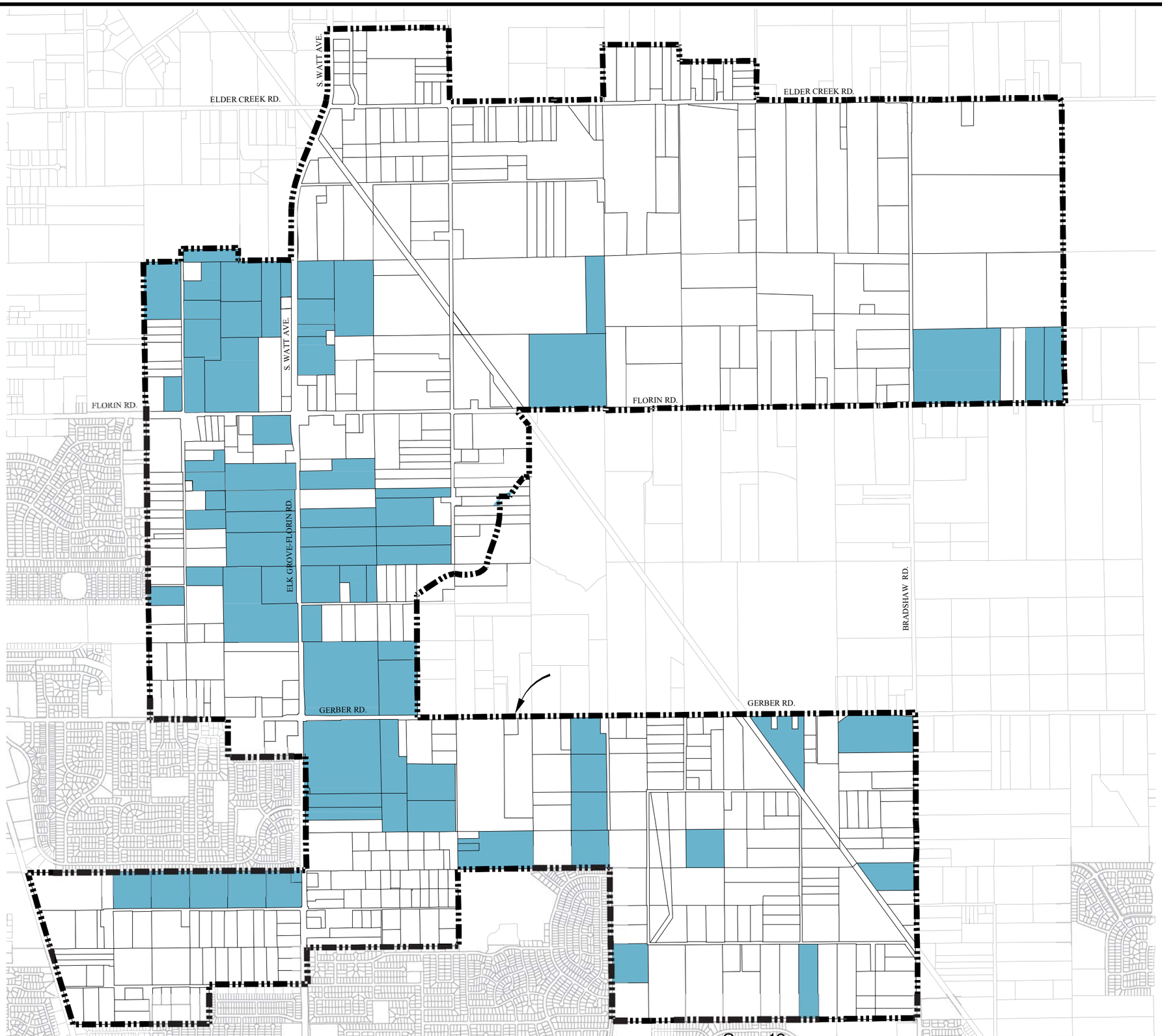
PHASING OF THE FINANCING PLAN

The FVCP is anticipated to build out over a period of many years. Many of the property owners have filed concurrent rezone and tentative map applications and will participate in development at the outset. Those with participating planning applications are considered Phase 1 for purposes of this report. They are expected to develop over a 5 to 15 year period and will include all of the current applicants. Non-participants are included in the FVCP but are not expected to move forward with development at the time of community plan approval. These non-participants are considered remaining development, or buildout, in this report. If the non-participants move forward, their projects will be subject to the Community Plan policies, including this financing plan and other conditions set forth therein.

Map 1 details the FVCP based on the County Planning Department's proposed land use plan. **Map 2** shows the FVCP participants (considered Phase 1 in this report) and the non-participants (representing buildout when added to the Phase 1 participants).[1]

---

[1] Phase 1 of the Financing Plan does not correspond to Phase 1 of the Roadway CIP in Appendix A. Phase 1 of the Financing Plan consists of the concurrent planning application sites which require the roadway improvements of Phases 1 to 5 of the Roadway CIP (see page 50 and Appendix A).



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LEGEND

PARTICIPATING PROPERTY

MAP 2
FLORIN-VINEYARD COMMUNITY PLAN PARTICIPANTS

SACRAMENTO COUNTY, CALIFORNIA

MACKAY & SOMPS
CIVILENGINEERS, INC.
CIVIL ENGINEERING • LAND PLANNING • LAND SURVEYING
SACRAMENTO, CALIFORNIA (916)929-6092
JobNumber:7748-00 Date:06/05/06
Revised: 07/18/08

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BACKBONE INFRASTRUCTURE AND PUBLIC FACILITIES SUMMARY

Buildout of the FVCP will require construction of $225.1 million in roadway, water, sewer, and drainage backbone infrastructure. In addition, the FVCP will require approximately $277.7 million in public facilities costs, including parks, schools, library, and transit. Although a fee is collected for fire facilities, no fire station is planned for the Florin Vineyard Specific Plan. Therefore, fire fees collected will go to fund fire stations throughout the district, including stations that will serve the FVCP.

Total facility costs are estimated to be $502.7 million at buildout and $348.7 million in Phase 1, as summarized in **Table 3**. A summary of the key infrastructure components for each phase has not been completed at this time. While it is possible to separate water, sewer, and roadway improvements in Phase 1, it is not possible for drainage facilities. The FVCP and the NVSSP overlap with respect to the Gerber Creek and Elder Creek drainage sheds and associated facilities. In addition, FEMA has mapped a floodplain spill from Gerber Creek into Unionhouse Creek, and from Laguna Creek shed into Gerber Creek shed in FVCP. These overlaps make drainage facilities regional across phases and specific plan areas, with phasing of required facilities linked to which specific project application develops first.

More detail regarding the costs of infrastructure and public facilities can be included in subsequent versions of the Financing Plan as they are developed further.

Appendices A through **H** contain detailed Capital Improvement Programs (CIP) for each type of backbone infrastructure and public facilities required to serve the FVCP. CIP cost estimates include only infrastructure required to serve the FVCP directly. Offsite facilities not scheduled to be built as a part of the FVCP CIP will be funded through existing fee programs and are not included in the cost estimates. In addition, the backbone infrastructure and other public facility cost estimates do not include the costs of in-tract and other subdivision-specific improvements, which the Financing Plan assumes will be privately financed.

The costs in this Financing Plan were prepared primarily by MacKay & Somps Civil Engineers, Inc. (MacKay & Somps). If the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

Table 3
Florin Vineyard Public Facilities Financing Plan
Preliminary Cost Estimates by Phase (2008 $)

Facility	Reference: Financing Plan Chapter	Reference: Appendix	Phase 1	Buildout
Major Infrastructure				
Roadway [1]	V	A	$126,999,500	$147,979,100
Frontage Lane [1]	V	A	$19,820,700	$23,095,000
Water - Zone 40	VI	B	$4,683,600	$14,942,300
Water - Cal Am	VI	B	$4,627,400	$4,627,400
Sewer	VII	C	$7,446,000	$11,152,000
Drainage - Zone 11A	VIII	D	$15,757,300	$21,410,500
Drainage - FVCP Supp.	VIII	D	$1,613,400	$1,859,900
Subtotal Major Infrastructure			**$180,947,900**	**$225,066,200**
Public Facilities				
Parks and Recreation	IX	E	$37,264,200	$61,613,100
Schools	X	F	$116,402,048	$190,573,700
Library	XI	G	$8,220,000	$13,581,000
Fire Protection [1]	XII	- -	$0	$0
Transit	XIII	H	$5,842,000	$11,907,500
Subtotal Public Facilities			**$167,728,248**	**$277,675,300**
TOTAL COSTS			**$348,676,148**	**$502,741,500**

"total_cost"

Source: MacKay & Somps and EPS.

[1] Total roadway costs in Appendix A allocated 86.5% roadway and 13.5% frontage lanes. See Table 19 for details.
[2] There is no new fire station planned within the FVCP. Fee revenue generated will help fund new Stations 52 and 54 in nearby Vineyard Springs and Rosemont respectively, and other local stations that will provide fire protection services to FVCP.

FINANCING SUMMARY

PURPOSE

The purpose of the FVCP Financing Plan is to recommend the appropriate financing mechanisms to fund the necessary backbone infrastructure and other public facility costs required to serve the FVCP. The goal is to identify financing mechanisms flexible enough to ensure the required improvements are constructed when necessary. The financing mechanisms used will depend on the types and timing of the needed facilities. Construction will be phased so that facilities are available when needed.

The Financing Plan recommends a combination of existing fee programs, the proposed Florin Vineyard Fee Program (FVFP), bond-funding mechanisms, and other financing mechanisms to fund the backbone infrastructure and public facilities costs required to serve the FVCP at buildout and Phase 1, as shown in **Tables 4** and **5.** Existing fee programs will be used extensively; however, it is not anticipated that these mechanisms will fully fund all of the needed improvements. Therefore, to provide for funding for the total cost of improvements, the Financing Plan recommends the establishment of a new FVFP.

Tables 4 and **5** show those construction costs within the boundaries of the FVCP that are the direct responsibility of developers in the FVCP. Many other fee programs construct infrastructure benefiting the area but are the sole responsibility of the agencies administering those fee programs to construct. The cost of these items is not included in the Financing Plan.

The Financing Plan also anticipates the use of other funding mechanisms such as developer advances, the Elk Grove Unified School District's (EGUSD's) existing Mello-Roos Community Facilities District (CFD) No. 1, and matching State school funding. Developer advances or bond financing through a FVCP CFD formed by the County will be used to fund infrastructure improvements needed during the development of the FVCP before the collection of sufficient fees or other sources of revenue for reimbursement. For details of each financing mechanism, refer to **Chapter III**.

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Table 4
Florin Vineyard Public Facilities Financing Plan
Sources and Uses of Funding - Buildout (2008 $)

Facility	Estimated Costs Buildout	Funding Sources: Existing Fee Programs: Program	Existing Fee Programs: Amount	Proposed FVFP	Privately Funded	Surplus/ (Deficit)
Major Infrastructure						
Roadway [1]	$147,979,100	- -	$0	$147,979,100	$0	**$0**
Frontage Lane	$23,095,000	- -	$0	$23,095,000	$0	**$0**
Water [2]	$14,942,300	Zone 40	$111,957,100	$0	$0	**$97,014,800**
Cal Am Water	$4,627,400	- -	$0	$0	$4,627,400	**$0**
Sewer [2]	$11,152,000	SASD	$29,126,300	$0	$0	**$17,974,300**
Drainage - Zone 11A [2]	$21,410,500	Zone 11A	$28,676,000	$0	$0	**$7,265,500**
Drainage - Supplemental	$1,859,900	- -	$0	$1,859,900	$0	**$0**
Subtotal Major Infrastructure	**$225,066,200**		**$169,759,400**	**$172,934,000**	**$4,627,400**	**$122,254,600**
Public Facilities						
Parks and Recreation	$61,613,100	- -	$0	$61,613,100	$0	**$0**
Schools [3]	$190,573,700	EGUSD/ State Funding	$190,573,700	$0	$0	**$0**
Library	$13,581,000	- -	$0	$13,581,000	$0	**$0**
Fire Protection [2] [4]	$0	SMFD	$15,135,000	$0	$0	**$15,135,000**
Transit [1]	$11,907,500	- -	$0	$11,907,500	$0	**$0**
Subtotal Public Facilities	**$277,675,300**		**$205,708,700**	**$87,101,600**	**$0**	**$15,135,000**
TOTAL	**$502,741,500**		**$375,468,100**	**$260,035,600**	**$4,627,400**	**$137,389,600**

"sources_buildout"

[1] The FVFP roadway fee will fund all improvements in the FVCP and receive credits/reimbursements from the County Roadway Fee program for overlapping projects.
[2] Any surplus at buildout in actual fees collected over actual cost of facilities needed to serve the FVFP is a result of selection of what infrastructure costs to identify in the Financing Plan. Any surpluses shown here will likely fund facilities that also directly serve or benefit FVCP development.
[3] Includes funding from Elk Grove Unified School District Level 2 fees, EGUSD CFD No. 1 and the State.
[4] There is no new fire station planned within the FVCP. Fee revenue generated will help fund new planned stations in nearby areas that will serve FVCP.

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Table 5
Florin Vineyard Public Facilities Financing Plan
Sources and Uses - Phase 1 (2008 $)

Facility	Estimated Costs Phase 1	Funding Sources: Existing Fee Programs: Program	Existing Fee Programs: Amount	Proposed FVFP	Privately Funded	Surplus/ (Deficit)
Major Infrastructure						
Roadway	$126,999,500	- -	$0	$88,789,500	$0	**($38,210,000)**
Frontage Lane	$19,820,700	- -	$0	$13,541,200	$0	**($6,279,500)**
Water [1]	$4,683,600	Zone 40	$77,029,200	$0	$0	**$72,345,600**
Cal Am Water	$4,627,400	- -	$0	$0	$4,627,400	**$0**
Sewer [1]	$7,446,000	SASD	$17,077,500	$0	$0	**$9,631,500**
Drainage - Zone 11A [1]	$15,757,300	Zone 11A	$17,046,600	$0	$0	**$1,289,300**
Drainage - Supplemental	$1,613,400	- -	$0	$1,128,400	$0	**($485,000)**
Subtotal Major Infrastructure	**$180,947,900**		**$111,153,300**	**$103,459,100**	**$4,627,400**	**$38,291,900**
Public Facilities						
Parks and Recreation	$37,264,200	- -	$0	$37,264,200	$0	**$0**
Schools [2]	$116,402,048	EGUSD/ State Funding	$116,402,048	$0	$0	**$0**
Library	$8,220,000	- -	$0	$8,220,000	$0	**$0**
Fire Protection [3]	$0	SMFD	$9,159,600	$0	$0	**$9,159,600**
Transit	$5,842,000	- -	$0	$5,842,000	$0	**$0**
Subtotal Public Facilities	**$167,728,248**		**$125,561,648**	**$51,326,200**	**$0**	**$9,159,600**
TOTAL	**$348,676,148**		**$236,714,948**	**$154,785,300**	**$4,627,400**	**$47,451,500**

"sources_phase1"

Note: Totals may not add due to rounding.

[1] Any surplus at buildout in actual fees collected over actual cost of facilities needed to serve the FVFP is a result of selection of what infrastructure costs to identify in the Financing Plan. Any surpluses shown here will likely fund facilities that also directly serve or benefit FVCP development.
[2] Includes funding from Elk Grove Unified School District Level 2 fees, EGUSD CFD 1 and the State.
[3] There is no new fire station planned within the FVCP. Fee revenue generated will help fund new planned stations in nearby areas that will serve FVCP.

EXISTING FEE PROGRAMS

Existing fee programs include County development impact fee programs and the EGUSD's mitigation fees, as outlined below:

- Sacramento County Transportation Development Fee Program (SCTDF) District IV Roadway and Transit Fees (Interim rates as presented to the County Board of Supervisors on September 30, 2008).
- Sacramento Transportation Authority (STA)—Measure A.
- Sacramento County Water Agency (SCWA) Zone 40 Water Fees.
- Sacramento Area Sanitation District (SASD) Sewer Fees.
- Sacramento Regional County Sanitation District (SRCSD) Sewer Fees.
- Sacramento County Zone 11A Drainage Fees.
- Sacramento Metro Fire District (SMFD) Capital Fire Facilities Fee.
- EGUSD School Fee Program.

PROPOSED FLORIN VINEYARD FEE PROGRAM

A new FVFP is recommended to fund roadway, drainage, parks and recreation, the fair share of a library, and transit facilities. Proposed fees are shown in **Table 7** in **Chapter II**. Fees for roadway, drainage, parks and recreation, library, and transit are estimated on a per-acre basis based on dwelling unit equivalent (DUE) factors provided by the County (see **Appendix I**).

OTHER FUNDING MECHANISMS

Developer Advances

The Financing Plan anticipates that developer advances or construction will be used to advance fund any infrastructure improvements needed early in Phase 1 of the FVCP and before the collection of fees or other revenue sources.

EGUSD's CFD No. 1 and State Funding

The school fee revenue differences will be funded by expected revenue from the EGUSD's existing district-wide CFD No. 1 and State funding, as detailed in **Chapter X.**

BOND-FUNDING MECHANISMS

Although the FVCP infrastructure and public facilities are included primarily in fee programs to ensure that each development pays its fair share of these costs, many major improvements will be required at the onset of Phase 1. Multiple CFDs may be formed to provide public-debt financing for improvements needed early in the development of Phase 1. Fee credits will be provided for appropriate facilities that also are funded by the existing and new fee programs.

Assuming that all FVCP development identified in **Table 2** participates in the CFDs, the amount of CFD-bond proceeds for construction is estimated to be $119.7 million. Detailed estimates for the CFD bonds and special taxes are found in **Chapter III**.

ORGANIZATION OF THE REPORT

This report is organized as follows:

- **Chapter II** outlines Financing Plan policy and methodology and provides information sources for the Financing Plan.
- **Chapter III** summarizes funding sources and the financing strategy.
- **Chapter IV** describes the FVCP land uses.
- **Chapters V** through **XIII** identify the estimated costs, funding sources, and phasing for the various backbone infrastructure and other public facilities anticipated for the FVCP.

Several appendices are included in this document:

- **Appendices A** through **H** show the detailed CIPs for each backbone infrastructure facility and other public facilities required to serve the FVCP.
- **Appendix I** contains a summary of the project DUE factors.
- **Appendix J** contains a comparison of development impact fees and infrastructure bond debt for a single-family residential unit in several development projects in the greater Sacramento region.
- **Appendix K** shows the FVCP Mello-Roos estimated bond size and construction proceeds for Phase 1 and Buildout.

II. FINANCING PLAN POLICY AND METHODOLOGY

Preparation of the Financing Plan complies with the Sacramento County General Plan Policy LU-8-requirement related to public facility financing, which states:

> *Infrastructure financing plans, which specify the extent, timing, and estimated cost of all necessary infrastructure shall be approved by the Board of Supervisors together with the approval of zoning for any urban uses in urban growth land. The resulting financing mechanisms shall be implemented before the approval of all entitlements in urban growth areas.*

INFORMATION SOURCES

The first part of the Sacramento County General Plan Policy LU-8 states that the Financing Plan must specify the extent, timing, and cost of all infrastructure required to serve the project. To fulfill this requirement, preparation of this financing plan relied upon the following information.

- Land use designations, as shown in Sacramento County Planning Department Plan of Proposed Land Use Designations and Potential Dwelling Yield, dated December 4, 2003.
- Infrastructure costs and phasing from the following reports:
    1. Traffic Impact Analysis Final Report for the Florin Vineyard Community Plan (Fehr & Peers, May 30, 2008), as well as cost estimates provided by MacKay & Somps.
    2. Sanitary Sewer Master Plan for the Florin Vineyard Gap Community Plan (MacKay & Somps, June 8, 2006).
    3. Master Water Study for the Florin Vineyard Community Plan (MWH for Sacramento County Water Agency, November 2006).
    4. Preliminary Water Study—Florin Vineyard Community Plan (MacKay & Somps for the California-American Water Company, November 5, 2004).
    5. Preliminary Drainage Study, Florin Vineyard Gap Community Plan (Civil Engineering Solutions, Inc., October 12, 2007).
- Public facilities data provided by Southgate Recreation and Park District, the Sacramento Public Library Authority, the Regional Transit Planning Department, Sacramento Metropolitan Fire District, and the Elk Grove Unified School District.
- Existing County fee programs.

DETERMINATION OF FINANCING MECHANISMS

As part of General Plan Policy LU-8, once the extent, timing, and cost of all infrastructure required to serve the project is determined, the financing plan must determine the mechanisms needed to finance the improvements. To the extent possible, development of project-related facilities should be funded on a pay-as-you-go basis through the payment of development impact fees or private financing. The goal of the financing plan is to determine the optimal combination of existing and proposed financing mechanisms so as not to burden undeveloped land while assuring that necessary facilities are constructed when needed. The first step in the determination of financing mechanisms is to analyze to what extent existing funding mechanisms will cover the cost of required infrastructure and public facilities.

EXISTING FEE PROGRAMS

- SCTDF District IV Road and Transit Fees
- STA Measure A
- SCWA Zone 40 Water Fees
- SASD Sewer Fees
- SRCSD Sewer Fees
- County Zone 11A Drainage Fees
- SMFD Capital Fire Facilities Fee
- EGUSD School Fee Program

A mapping factor of 90 percent was applied to the unit count to estimate the total amount of fee revenue anticipated from the plan area based on the County's Planning Department Land Use Plan. Fee revenue was calculated by multiplying the existing fee per unit by the reduced, mapping-factor number of units. Details of estimated fee revenue at buildout for the existing fee programs are shown in **Table 8** and discussed in **Chapter III.**

PROPOSED FVFP

Any costs of plan-wide improvements not covered under existing fee programs or other funding mechanisms will be funded by a new FVFP. The new FVFP will fund roadways, frontage lanes, parks and recreation, library, and transit facilities. The FVFP also includes a Supplemental Drainage fee proposed as a sub-zone of Zone 11.

The basis for calculating fees in the fee program is the Cost Allocation Method (CAM). The CAM uses DUE factors to spread the cost of infrastructure and other public facilities over the developed land uses. Assuming that the extent, timing, and cost of all infrastructure not covered by existing fee programs and other funding mechanisms required to serve the project has been obtained, the steps in the CAM process are as follows:

- *Step 1:* Determine appropriate DUE factors for each land use or zoning category. In this case, DUE factors were provided by Sacramento County Municipal Services Agency. DUE factors for drainage facilities were obtained from the North Vineyard Station Specific Plan Public Facilities Financing Plan dated November 10, 2004. DUEs are shown in **Appendix I.**
- *Step 2:* Determine cost allocation. Use DUE factors to allocate infrastructure costs to individual land use or zoning categories for each infrastructure facility. Apply the appropriate DUE factors to the acreage of each proposed zoning category to determine the percentage cost allocation. For purposes of estimating DUEs, certain assumptions were made on the percent allocation of allowable zoning categories in each land use designation of the community plan.
- *Step 3:* Allocate the cost of the various improvements to each benefiting land use by multiplying the total cost for each improvement by the percentage allocation of costs for each land use.
- *Step 4:* Divide the total cost allocated to each land use–zoning category by total acreage of land uses. Proposed fees are shown on a per-acre basis.
- The fees in the FVFP estimated in the Financing Plan are preliminary and subject to change when the actual fee program is established via completion of a Florin Vineyard Fee Nexus Study (Nexus Study). The per-unit or per-acre fees in the FVFP could be different from those estimated in the Nexus Study if additional contingencies are included in the Nexus Study to avoid under-funding the fee program, or if updated or more detailed facilities cost estimates become available. Contingencies for infrastructure cost items (roadway, water, sewer, etc.) are shown in the Appendix for each cost item. The fees will be set on a per-acre or per-unit basis, and development projects will pay at the adopted rate regardless of the number of units actually constructed. This approach avoids under-funding the fee program if too few units are developed.

Development impact fees are set under the conditions of Government Code 66000 *et seq.*, also known as AB 1600. These code sections set forth the procedural requirements for establishing and collecting development impact fees. The AB 1600 procedures require that "a reasonable relationship or nexus must exist between a governmental exaction

and the purpose of the condition." Specifically, each local agency imposing a fee must perform the following tasks:

- Identify the purpose of the fee.
- Identify how the fee is to be used.
- Determine how a reasonable relationship exists between the need for the public facility and the type of development project on which the fee is imposed.
- Demonstrate a reasonable relationship between the amount of the fee and the cost of public facility or portion of the public facility attributable to the development on which the fee is imposed.

The County will adopt the appropriate fee ordinance and resolution to implement the fee. The timing and payment of the fee will be specified in the implementing ordinance and resolution.

FEES APPLICABLE TO THE FVCP

Fees collected from existing fee programs are shown in **Table 6.** The Financing Plan assumes that these existing mechanisms will be used as primary funding sources. The proposed FVCP fees are shown in **Table 7**. It is estimated that the FVCP will generate $521.5 million in existing fee program revenue at buildout and $260.0 million in FVFP fee revenue at buildout, as shown in **Table 8.** A mapping factor of 90 percent was used to estimate the total amount of fee revenue anticipated from the plan area. Fee revenue was calculated by multiplying the existing fee per unit by the reduced, mapping factor number of units in the Planning Department Land Use Plan.

OTHER FUNDING MECHANISMS

Developer Advances

In some cases, developers may need to advance fund the initial phases of infrastructure construction required to serve the FVCP. The Financing Plan assumes that fee credits or reimbursements for facilities otherwise funded by the existing or proposed fee programs will be available if developers advance fund facilities.

EGUSD's CFD No. 1 and State Funding

The school fee revenue shortfalls not funded by existing school mitigation fees will be funded by expected revenue from the existing district-wide CFD No. 1 and State funding.

Table 6
Florin Vineyard Public Facilities Financing Plan
Existing Fee Program Summary - Buildout

Buildout	Total	RD 2-3	RD 3-5	RD 5-7	RD 7-12	RD-10	RD-20	General Commercial	Shopping Center	Limited Commercial	Business Professional
LAND USE INFORMATION											
Estimated Units	**10,658**	316	4,392	3,092	621	123	2,114	-	-	-	-
Acres	**1,941.8**	126.5	976.1	515.3	62.1	12.3	117.5	9.0	102.2	16.5	4.5
Typical Units per Acre		2	4	6	10	10	20	-	-	-	-
Floor Area Ratio (FAR)		-	-	-	-	-	-	0.25	0.25	0.25	0.34
Assumed Average Sq. Ft. of Structures		2,800	2,700	2,500	2,100	1,500	1,100	98,010	1,112,414	179,358	66,647
EXISTING FEE PROGRAMS				*Per Unit*					*Per Acre*		
County of Sacramento											
Applicable to Region											
Roadway and Transit - SCTDF District IV [1]		$11,773	$11,773	$11,773	$11,773	$11,773	$7,182	$143,639	$208,979	$208,979	$200,533
Sewer - SRCSD		$7,450	$7,450	$7,450	$7,450	$7,450	$5,588	$8,113	$8,113	$8,113	$22,067
Measure A - STA [3]		$1,000	$1,000	$1,000	$1,000	$1,000	$700	$40,347	$40,347	$40,347	$17,772
Fire Facilities Fee - SMFD		$1,568	$1,512	$1,400	$1,176	$840	$616	$8,168	$8,168	$8,168	$11,108
Applicable to FVCP											
Water - Zone 40		$13,103	$13,103	$13,103	$12,952	$12,952	$10,308	$8,751	$8,860	$9,187	$9,626
Sewer - SASD [4]		$6,002	$3,334	$2,500	$1,500	$1,500	$750	$15,000	$15,000	$15,000	$15,000
Drainage - Zone 11A [5]		$4,996	$3,168	$2,466	$1,681	$1,681	$896	$19,777	$19,777	$19,777	$19,777
Subtotal County of Sacramento		**$45,892**	**$41,339**	**$39,691**	**$37,532**	**$37,196**	**$26,039**	**$243,795**	**$309,244**	**$309,571**	**$295,884**
Elk Grove School District		$11,676	$11,259	$10,425	$8,757	$6,255	$4,587	$5,118	$5,118	$5,118	$6,961
Total Existing Fees per Unit		**$57,568**	**$52,598**	**$50,116**	**$46,289**	**$43,451**	**$30,626**	**-**	-	-	-
Total Existing Fees per Acre		**-**	**-**	**-**	**-**	**-**	**-**	**$248,913**	**$314,362**	**$314,689**	**$302,845**

"fee_per_unit"

[1] This analysis assumes the proposed Sacramento County Transportation Development Fees as presented to the County Board of Supervisors on Sept. 30, 2008. Hearing will continue on Dec. 9, 2008. This analysis has combined the Roadway and Transit fees as there are additional components such as Bikeways and Walkways. The County has not determined how the additional components will be allocated between the Roadway and Transit fees.

[2] This Financing Plan shows both the proposed Roadway and Transit District IV fees and the Florin Vineyard Roadway Plan Area Fee. At this time, no credits for overlap between these two fee programs is shown, however, credit adjustments for overlap will be made to these fees in the future.

[3] The Sacramento Transportation Authority Measure A transportation mitigation fee will go into effect on April 1, 2009.

[4] The SASD sewer fee is applied to all residential development at a rate of $15,000 per acre based on the 2008 sewer fee structure. Per unit rates shown here are estimates based on average density.

[5] These fees were obtained from the Sacramento County Department of Water Resources Zone 11A Fee Schedule. They have been estimated here based on an average density for each zoning category. However, a specific fee applies to each individual density. Table 24 provides a more accurate estimate of the fees based on exact density.

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Table 7
Florin Vineyard Public Facilities Financing Plan
Proposed Florin Vineyard Fee Program Summary - Buildout

Buildout	Total	RD 2-3	RD 3-5	RD 5-7	RD 7-12	RD 10	RD 20	General Commercial	Shopping Center	Limited Commercial	Business Professional
LAND USE INFORMATION											
Estimated Units	**10,658**	316	4,392	3,092	621	123	2,114	-	-	-	-
Acres	**1,941.8**	126.5	976.1	515.3	62.1	12.3	117.5	9.0	102.2	16.5	4.5
Typical Units per Acre		2	4	6	10	10	20	-	-	-	-
Assumed Average Sq. Ft. of Structures		2,800	2,700	2,500	2,100	1,500	1,100	98,010	1,112,414	179,358	66,647
PROPOSED FVFP FEE PER ACRE [1]											
Roadway		$38,391	$56,941	$70,765	$100,274	$103,139	$146,114	$233,496	$191,954	$233,496	$193,386
Frontage Lane		$11,894	$11,894	$11,894	$11,894	$11,894	$11,894	$11,894	$11,894	$11,894	$11,894
Supplemental Drainage [2]		$510	$798	$1,001	$1,319	$1,373	$1,373	$1,825	$1,825	$1,825	$1,825
Parks and Recreation		$17,720	$27,814	$34,895	$48,706	$47,424	$74,982	$10,895	$13,458	$16,022	$20,508
Library		$4,025	$6,318	$7,927	$11,064	$10,773	$17,033	$0	$0	$0	$0
Transit		$1,616	$2,332	$2,876	$6,328	$7,132	$22,271	$30,864	$38,814	$30,864	$21,570
Subtotal Per Acre		**$74,156**	**$106,098**	**$129,358**	**$179,585**	**$181,735**	**$273,667**	**$288,973**	**$257,945**	**$294,100**	**$249,182**
Plus 5% Administration		$3,710	$5,300	$6,470	$8,980	$9,090	$13,680	$14,450	$12,900	$14,710	$12,460
Total Proposed FVFP Fee per Acre		**$77,866**	**$111,398**	**$135,828**	**$188,565**	**$190,825**	**$287,347**	**$303,423**	**$270,845**	**$308,810**	**$261,642**
Proposed FVFP Fees per Unit [1]		**$31,159**	**$24,756**	**$22,634**	**$18,857**	**$19,129**	**$15,964**	n/a	n/a	n/a	n/a

"fv_fee_program"

[1] Fees are based on DUE factors per acre as shown in the individual infrastructure chapters and Appendix I. Estimate of fees per unit shown is derived based on total acres and total number of units.

[2] Supplemental Drainage fee will be incorporated as a sub-component of the Zone 11 Fee Program.

Table 8
Florin Vineyard Public Facilities Financing Plan
Fee Revenue Summary - Buildout

Buildout

Buildout	Total	RD 2-3	RD 3-5	RD 5-7	RD 7-12	RD-10	RD-20	General Commercial	Shopping Center	Limited Commercial	Business Professional
				Units					*Acres*		
LAND USE INFORMATION											
Units	**10,658**	316	4,392	3,092	621	123	2,114				
Acres	**1,941.8**	126.5	976.1	515.3	62.1	12.3	117.5	9.0	102.2	16.5	4.5
Assumed Average Sq. Ft. of Structures		2,800	2,700	2,500	2,100	1,500	1,100	98,010	1,112,414	179,358	66,647
Floor Area Ratio								0.25	0.25	0.25	0.34
Units per Acre Used for Fee Calculation		2	4	6	10	10	20				
EXISTING FEE PROGRAMS											
County of Sacramento											
Applicable to Region											
Roadway & Transit - SCTDF District IV	$142,755,500	$3,720,268	$51,707,016	$36,402,116	$7,311,033	$1,448,079	$15,182,748	$1,292,752	$21,347,215	$3,441,886	$902,398
Sewer - SRCSD	$76,599,500	$2,354,200	$32,720,400	$23,035,400	$4,626,450	$916,350	$11,811,975	$73,017	$828,748	$133,622	$99,304
Measure A - STA	$15,252,900	$316,000	$4,392,000	$3,092,000	$621,000	$123,000	$1,479,800	$363,127	$4,121,492	$664,523	$79,976
Fire Facilities Fee - SMFD	$15,135,000	$495,488	$6,640,704	$4,328,800	$730,296	$103,320	$1,744,050	$73,508	$834,310	$134,519	$49,985
Applicable to FVCP											
Water - Zone 40 [1]	$111,957,100	$3,787,974	$44,452,989	$33,881,323	$7,687,359	$1,522,617	$19,626,905	$67,977	$771,539	$124,398	$33,989
Sewer - SASD	$29,126,300	$1,896,750	$14,640,750	$7,728,750	$931,500	$184,950	$1,761,750	$135,000	$1,532,250	$247,050	$67,500
Drainage - Zone 11A	$28,676,000	$1,492,173	$13,591,610	$7,776,135	$1,103,269	$206,788	$1,893,087	$177,993	$2,020,221	$325,727	$88,997
Subtotal County of Sacramento	**$419,502,200**	**$14,062,853**	**$168,145,469**	**$116,244,524**	**$23,010,907**	**$4,505,104**	**$53,500,315**	**$2,183,374**	**$31,455,775**	**$5,071,724**	**$1,322,148**
Elk Grove School District	**$101,962,100**	**$3,689,616**	**$49,449,528**	**$32,234,100**	**$5,438,097**	**$769,365**	**$9,696,918**	**$46,065**	**$522,834**	**$84,298**	**$31,324**
Total Existing Fee Programs	**$521,464,300**	**$17,752,469**	**$217,594,997**	**$148,478,624**	**$28,449,004**	**$5,274,469**	**$63,197,233**	**$2,229,439**	**$31,978,609**	**$5,156,022**	**$1,353,472**
PROPOSED FVFP											
Florin Vineyard Fee Program [1]											
Roadway	$147,979,100	$4,854,505	$55,577,691	$36,461,644	$6,227,030	$1,271,706	$17,161,075	$2,101,461	$19,608,053	$3,845,674	$870,237
Frontage Lane	$23,095,000	$1,503,985	$11,609,051	$6,128,337	$738,612	$146,652	$1,396,940	$107,045	$1,214,963	$195,893	$53,523
Supplemental Drainage	$1,859,900	$64,443	$778,826	$515,519	$81,902	$16,924	$161,214	$16,422	$186,387	$30,052	$8,211
Parks and Recreation	$61,613,100	$2,240,701	$27,147,614	$17,979,837	$3,024,650	$584,743	$8,806,610	$98,053	$1,374,762	$263,878	$92,285
Library	$13,581,000	$509,014	$6,167,048	$4,084,430	$687,101	$132,834	$2,000,573	$0	$0	$0	$0
Transit	$11,907,500	$204,379	$2,276,502	$1,481,857	$392,955	$87,932	$2,615,779	$277,779	$3,964,876	$508,336	$97,065
Total Proposed FVFP	**$260,035,600**	**$9,377,026**	**$103,556,733**	**$66,651,624**	**$11,152,249**	**$2,240,791**	**$32,142,191**	**$2,600,761**	**$26,349,041**	**$4,843,833**	**$1,121,321**
TOTAL FEE REVENUE	**$781,499,900**	**$27,129,495**	**$321,151,729**	**$215,130,248**	**$39,601,253**	**$7,515,260**	**$95,339,424**	**$4,830,199**	**$58,327,650**	**$9,999,855**	**$2,474,792**

"fee_rev"

Note: Totals may not add due to rounding.

[1] FVFP fees are based on fees per acre as established by DUE factors as shown in the individual infrastructure chapters and Appendix I.

BOND-FUNDING MECHANISMS

It is the strategy of this financing plan that bond-funding mechanisms such as CFDs or Assessment Districts could be used when pay-as-you-go fee funding is not sufficient to fund on a timely basis the required public facilities.

The Financing Plan recommends that a series of CFDs be formed during buildout of the FVCP. Because of the diverse ownership of the property in the FVCP and the long-term buildout, it is unlikely that a single CFD could be formed to include all the property in the FVCP boundaries. Although a series of CFDs is recommended, one or more Assessment Districts could be implemented as an alternative bond-funding mechanism.

Community Facilities District

The 1982 Mello-Roos Community Facilities District Act enables cities, counties, and special districts to establish CFDs and to levy special taxes to fund a wide variety of facilities and services. The proceeds of the Mello-Roos special tax can be used for direct funding or to retire bonds. A series of CFDs could be implemented based on the specific financing considerations in proposed new developments.

The establishment of CFD(s) requires a two-thirds affirmative vote of the CFD electorate. For CFDs with fewer than 12 registered voters, a landowner election is held with each acre of land representing one vote. For CFDs with 12 or more registered voters, a registered-voter election is held. CFDs will exclude non-developing landowners.

Assessment District

California statutes give local governments the authority to levy several special assessments for specific public improvements such as streets, storm drains, sewers, streetlights, curbs, gutters, and sidewalks. The County can create a special assessment district defining both the area to benefit from the improvements and the properties that will pay for the improvements. Thereafter, each property in the district will be assessed a share of the cost of improvements that is proportional to the benefit it receives from those improvements.

There is a variety of assessment district acts available to finance public facilities. The most likely act to fund improvements for the FVCP would be the Improvement Bond Act of 1915. This act also provides a vehicle for issuing assessment bonds for assessments authorized under the 1911 and 1913 Benefit Assessment Acts.

Facilities in the FVCP that could be funded by Assessment Districts include major roads, sewer, water, and drainage improvements when there is direct benefit to specific parcels. The establishment of Assessment Districts will be subject to the provisions of

Proposition 218, which was adopted in November 1996. These provisions, among other things, require a vote of property owners being assessed with the vote weighted by the amount of property assessment.

IMPLEMENTATION

Implementation of the Financing Plan ensures that new development will be committed to pay its fair share of the cost of backbone infrastructure and other public facilities required to serve the project area. Facilities will be constructed, as needed, to serve new development. The County Municipal Services Agency Infrastructure Finance Section (IFS) will administer implementation of the Financing Plan, which will stipulate the following requirements:

- Coordinating closely with all appropriate County departments and other service providers to implement the Financing Plan.
- Reviewing the CIPs.
- Estimating fee program cash flows.
- Preparing a Nexus Study and Ordinances to implement the FVFP.
- Forming the CFD(s) and administrating subsequent bond sales and tax collection.
- Monitoring identified revenue sources.
- Implementing mechanisms that will result in more equitable sharing of cost burdens for infrastructure improvements that jointly benefit the Florin Vineyard, North Vineyard Station, and Vineyard Financing Plan areas.
- Accounting for fee payments, fee credits, or reimbursements.
- Updating and adjusting the fee program as new infrastructure cost, land use, and revenue information become available.

UPDATES

Project areas in the FVCP are expected to develop at differing times. For example, Phase 1 is expected to develop over a 5 to 15 year period. In addition, it is anticipated that as the Financing Plan is implemented, the infrastructure costs and available funding sources will change as development occurs. Therefore, the implementation mechanisms identified in the Financing Plan will need to be updated periodically as modifications to financing programs, land uses, and cost estimates for infrastructure and public facilities occur. Changes should be re-evaluated in the context of the overall financing strategy to

ensure required funding is available when needed. The costs and funding sources also will need to be adjusted periodically to reflect inflation costs. Some possible changes are listed below:

- New or revised infrastructure projects.
- New cost information based on actual construction costs, updated engineering estimates, or changes in the land use plan.
- Implementing mechanisms that will result in more equitable sharing of cost burdens for infrastructure that jointly benefits the Florin Vineyard, North Vineyard Station, and Vineyard Financing Plan areas.
- New funding source data.
- Inclusion of industrial land uses.
- Inflationary adjustment to cost and funding data.

III. FUNDING SOURCES

PURPOSE

The purpose of the FVCP Financing Plan is to recommend the appropriate financing mechanisms to fund the necessary backbone infrastructure and other public facility costs required to serve the FVCP. The goal is to identify financing mechanisms flexible enough to ensure the required improvements are constructed when necessary. The financing mechanisms used will depend on the types and timing of the needed facilities. Construction will be phased so that facilities are available when needed.

The Financing Plan recommends a combination of existing fee programs, the proposed FVFP, bond funding, and other financing mechanisms to fund the backbone infrastructure and public facilities costs required to serve the FVCP. The Financing Plan anticipates that bond financing may be used to advance fund any of the infrastructure improvements needed in the initial phases of the FVCP and before the collection of fees or other revenue sources.

The costs and proposed funding sources are estimated based on the most current information available. Actual public-facility costs funded under each category may be revised when more detailed information regarding project phasing and facility construction becomes available.

Table 4 shows the recommended funding mechanisms for each public facility at buildout of the FVCP. Under this funding strategy, existing fee programs and other funding from the EGUSD CFD No. 1 and State funding will provide approximately $375.5 million in improvements, which includes several funding surpluses. The FVFP is estimated to fund $260.0 million of improvements. It is anticipated that the timing of fee revenue will not always match the construction timing of improvements required in each phase. Thus, in most cases, a difference may exist in fee revenue and costs expended for construction. Although this difference is anticipated to occur, there is no anticipated shortfall between total costs and total funding at buildout.

Tables 9 and **10** outline the estimated revenues from all funding sources and compare them to costs for each phase of development. **Table 9** outlines the estimated cumulative difference between the cost of major infrastructure and the estimated fee revenue per phase. For example, in Phase 1 there is an estimated funding deficit of $45.0 million for roadway, frontage lane and supplemental drainage improvements. These differences will be made up from CFD-bond financing or developer advances. **Table 10** outlines the estimated cumulative difference between the cost of public facilities and the estimated fee revenue per phase.

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Table 9
Florin Vineyard Public Facilities Financing Plan
Preliminary Estimates of Fee Revenue Compared to Costs For Major Infrastructure (2008 $)

Major Infrastructure	Reference: Financing Plan Chapter	Reference: Appendix	Phase 1	Buildout
Buildout Schedule (Cumulative % of SF & MF Units)			**61%**	
Single-Family Units			5,249	8,544
Multifamily Units			1,233	2,114
Commercial/BP/Industrial Acres			80.0	132.1
Roadway	V	A		
Beginning Balance Fees			$0	$0
FVFP Road Fees			$88,789,453	$147,979,076
Construction Cost			($126,999,453)	($147,979,076)
Ending Surplus/ (Deficit)			**($38,209,999)**	**$0**
Frontage Lane Improvements	V	A		
Beginning Balance Fees			$0	$0
FVFP Frontage Lane Fees			$13,541,217	$23,095,000
Construction Cost			($19,820,724)	($23,095,000)
Ending Surplus/ (Deficit)			**($6,279,507)**	**$0**
Water	VI	B		
Beginning Balance Fees			$0	$0
Zone 40 Fees			$77,029,167	$111,957,069
Construction Cost			($4,683,600)	($14,942,300)
Ending Surplus/ (Deficit)			**$72,345,567**	**$97,014,769**
Sewer	VII	C		
Beginning Balance Fees			$0	$0
SASD Fees			$17,077,500	$29,126,250
Construction Cost			($7,446,000)	($11,152,000)
Ending Surplus/ (Deficit)			**$9,631,500**	**$17,974,250**
Drainage - Zone 11A	VIII	D		
Beginning Balance Fees			$0	$0
Zone 11A Fees			$17,046,558	$28,675,998
Construction Cost			($15,757,300)	($21,410,500)
Ending Surplus/ (Deficit)			**$1,289,258**	**$7,265,498**
Drainage - Supplemental Fees	VIII	D		
Beginning Balance Fees			$0	$0
FVFP Supplemental Fees			$1,128,435	$1,859,900
Construction Cost			($1,613,400)	($1,859,900)
Ending Surplus/ (Deficit)			**($484,965)**	**$0**
Cumulative Deficit [1]			**($44,974,471)**	**$0**
Mello-Roos Bonding Capacity (Assumes 2% Escalation)			**$92,145,000**	**$152,456,100**
Construction Proceeds Avail.		K	**$72,333,000**	**$119,678,200**

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Note: Totals may not add due to rounding.

[1] Sums only negative balances from each infrastructure category.

Table 10
Florin Vineyard Public Facilities Financing Plan
Preliminary Estimates of Fee Revenue Compared to Costs For Public Facilities (2008 $)

Public Facilities	Reference: Financing Plan Chapter	Reference: Appendix	Phase 1	Buildout
Parks & Recreation	IX	E		
Beginning Balance Fees			$0	$0
FVFP Park and Rec. Fees [2]			$37,264,153	$61,613,133
Construction Cost			($37,264,153)	($61,613,133)
Ending Surplus (Deficit)			**$0**	**$0**
Schools	X	F		
Beginning Balance Fees			$0	$0
EGUSD Fees			$61,831,113	$101,962,145
EGUSD CFD and State Funding			$54,570,935	$88,611,571
Construction Cost			($116,402,048)	($190,573,716)
Ending Surplus (Deficit)			**$0**	**$0**
Library	XI	G		
Beginning Balance Fees			$0	$0
FVFP Library Fees			$8,220,000	$13,581,000
Construction Cost			($8,220,000)	($13,581,000)
Ending Surplus (Deficit)			**$0**	**$0**
Fire Protection	XII	- -		
Beginning Balance Fees			$0	$0
SMFD Fire Protection Fees			$9,159,643	$15,134,979
Construction Cost [1]			$0	$0
Ending Surplus (Deficit)			**$9,159,643**	**$15,134,979**
Transit	XIII	H		
Beginning Balance Fees			$0	$0
FVFP Transit Fees [2]			$5,841,973	$11,907,460
Construction Cost			($5,841,973)	($11,907,460)
Ending Surplus (Deficit)			**$0**	**$0**
Cumulative Deficit [3]			**$0**	**$0**

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Source: EPS.

Note: Totals may not add due to rounding.

[1] There is no new fire station planned within the FVCP area. Fee revenue generated will help fund new Stations 52 & 54 and other local stations in nearby areas.

[2] Phasing of cost information is not yet available for these items. In these cases, the Phase 1 cost is set equal to the Phase 1 fee revenue. Once phased costs are available, they will be included in this Financing Plan, and surpluses or shortages may result.

[3] Sums only negative balances from each infrastructure category.

EXISTING FEE PROGRAMS

Existing fee programs include County development impact–fee programs and EGUSD's mitigation fees. This financing plan assumes that these existing fee programs, along with the other revenues provided from EGUSD CFD No. 1 and State funding, will be used as primary funding sources.

COUNTY DEVELOPMENT IMPACT–FEE PROGRAMS

The County has existing development impact–fee programs to fund countywide roadway, water, sewer, and drainage infrastructure. Development in the FVCP is expected to pay these fees. Existing water and sewer fees are anticipated to cover fully the cost of infrastructure in FVCP. Any difference in actual fees collected over the actual cost of facilities needed to serve the FVCP will be applicable to other regional facilities benefiting areas, as described in each individual infrastructure section.

Currently, County fees are paid at the time building permits are issued or at final map. The project developers have requested that FVFP fees other than existing County fees be collected at the earlier of improvement plan or final map approval. The required timing of collection of fees will be determined when the County Municipal Services Agency develops the Implementation Plan as described in **Chapter II**.

In some cases, developers may need to advance fund the initial phases of infrastructure construction required to serve the FVCP. The Financing Plan assumes that fee credits or reimbursements for facilities otherwise funded by County fee programs may be available if developers fund and construct fee-funded facilities. Fee credits for completed improvements may be offset against fees until the fee credits are expended. If the cost of the facility exceeds the potential credits for a developer, the County may enter into a reimbursement agreement with the developer. Fee credits and reimbursements are available within different timeframes, depending upon the type of facilities constructed.

As is typical with most fee programs, County fee programs are subject to periodic updates as new infrastructure cost, land use, and revenue information becomes available. County fee programs typically are adjusted for inflation on an annual basis. When updates occur, the implementation mechanisms identified in the Financing Plan will need to be adjusted to account for the updated information. The following County fee programs are applicable to the FVCP:

- Roadway Fee—SCTDF District IV
- Transit Fee—SCTDF District IV
- Measure A—STA
- Water Fee—Zone 40
- Sewer Fees—SASD and SRCSD
- Drainage Fees—Zone 11A
- Capital Fire Facilities Fee—SMFD

These fees are described below.

Roadway and Transit Fees (SCTDF—District IV)

The FVCP area is located within the boundaries of District IV of the SCTDF program. Development in the FVCP will be required to pay the District IV fees. The County is in the process of updating these fees at this time, and fees shown are proposed fees from the SCTDF Program Final Report (September 2008) as presented to the Board of Supervisors on September 30, 2008.

Fee revenue generated from the roadway portion of the SCTDF fees is meant to fund major regional roadway improvements, including roadway facilities both onsite and offsite to the FVCP that are included in the draft FVFP, necessary to handle the traffic generated by new development in the unincorporated County. Fee revenue generated from the transit portion of the SCTDF fees will also fund some regional transit facilities both onsite and offsite to FVCP.

At this time, credit for overlap between these fees and the FVFP Roadway Fee has not been estimated. However, the SCTDF program describes a process whereby credits under the SCTDF fee would be established during or subsequent to the implementation of special district fee programs an FVFP Roadway Fee to ensure that development is not double charged for facilities improvements. Since the roadway funding and construction timing associated with the SCTDF Program may not meet the timing requirements that may be imposed on FVCP, the FVFP will fund and construct some facilities included in the SCTDF Program, with credits/reimbursements as appropriate. The FVCP will pay an estimated total of $142.8 million in roadway and transit fees through the SCTDF program, as shown in **Table 8**.

Sacramento Transportation Authority Measure A

The FVCP area is located within the boundaries of the Sacramento Transportation Authority Measure A. The Measure A Ordinance, which requires the establishment of a

Transportation Mitigation Fee in each jurisdiction receiving a sales tax allocation, was approved by voters in the County in 2004. The fee will be used to partially fund the Capital Improvement Projects in the New Measure A Expenditure Plan. This fee will be collected as of April 1, 2009, and will be in effect through March 31, 2039. The FVCP will pay an estimated total of $15.3 million in Measure A fees, as shown in **Table 8**.

Water Fee (Sacramento County Water Agency Zone 40)

The majority of the FVCP is located within the boundaries of the Sacramento County Water Agency (SCWA) Zone 40. Development in the FVCP will be required to pay the Zone 40 fee. Revenue generated from this fee is meant to fund water supply and treatment and transmission facilities in Zone 40.

The FVCP is expected to generate approximately $112.0 million in Zone 40 fee revenue, as shown in **Table 8**. A detailed summary of the Zone 40 water portion of the FVCP is shown in **Chapter VI** of this financing plan.

Developers that advance fund the initial phases of Zone 40 infrastructure required to serve the FVCP are subject to reimbursement within a 5-year period. Two hundred dollars of the Zone 40 fee is paid before improvement plan approval. The remainder of the fee is paid before building permit issuance.

A small portion of the FVCP (approximately 1,170 units in the southwest portion) is within the jurisdiction of the California American Water Company (CAWC). The CAWC will provide domestic service of water to customers in their service area. A detailed summary of the CAWC water costs is shown in **Chapter VI**.

Sewer Fees (SASD and SRCSD)

The FVCP is located within the boundaries of SASD and SRCSD. Development in the FVCP will be required to pay the SASD trunk fee and the SRCSD capital investment–equalization fee. Fee revenue generated from the SASD fee is meant to fund construction of trunk sewer improvements. Trunk sewer pipelines are pipelines that carry flow greater than or equal to 1 million gallons per day (MGD). It is estimated that the FVCP will generate $29.1 million in SASD fees, as shown in **Table 8**. The amount is more than sufficient to cover the cost of SASD eligible trunk sewer improvements in the FVCP. A detailed summary of the sewer portion of the FVCP is shown in **Chapter VII** of this financing plan.

It is estimated that the FVCP will generate $76.6 million in SRCSD fee revenue that is meant to fund contributions to regional sewer interceptors and treatment facilities. The FVCP sanitary sewer CIP does not include any sewer facilities reimbursable under the SRCSD fee program.

Drainage Fee (SCWA Zone 11A)

The FVCP is located within the boundaries of SCWA Zone 11A. Development in the FVCP will be required to pay the Zone 11A fee. Fee revenue generated from the Zone 11A fee is meant to fund region-wide trunk drainage, storm drainage pipes, drainage channel and detention/water quality basin construction, manholes, and related improvements. The fee revenue collected is applicable toward the FVCP drainage CIP improvements. It is estimated that approximately $28.7 million Zone 11A fee revenue will be generated by the FVCP, as shown in **Table 8**. This amount covers the estimated $21.4 million in Zone 11A drainage costs. A detailed summary of the drainage portion of the FVCP is shown in **Chapter VIII** of this financing plan.

Sacramento Metro Fire Fee

The FVCP is located within the boundaries of the Sacramento Metropolitan Fire District. The Sacramento Metropolitan Fire District has a districtwide Capital Fire Facilities Fee Schedule (Ordinance No. 3-02) for new development. Details are shown in **Chapter XII** of this financing plan. It is estimated that approximately $15.1 million in fire fee revenue will be generated by the FVCP, as shown in **Table 8**. Two fire stations are currently located within the FVCP and a new station is planned for a site just outside the FVCP boundaries in the Vineyard Springs area. This fire fee revenue will help fund this new station and others in local areas that will potentially help serve development in the FVCP.

EGUSD FEE PROGRAM

The EGUSD fee revenue is generated by the EGUSD's fee of $4.17 per square foot for residential development and $0.47 per square foot for nonresidential development. Based on these fee amounts, the FVCP is expected to generate $102.0 million at buildout. A detailed summary of the school portion of the FVCP is shown in **Chapter X** of this financing plan.

PROPOSED FVFP

The Financing Plan anticipates that, in some cases, fee revenues collected from the existing fee programs, mentioned above, and other funding mechanisms outlined in the following section will not be enough to cover the total cost of the backbone infrastructure and public facilities required in the FVCP. For this reason, the FVCP Financing Plan proposes the new FVFP to bridge any funding gaps that may exist. Projects funded by the FVFP are to be constructed to the standards of, and ultimately approved, accepted, and maintained by, the respective agencies such as the County and Southgate Recreation and Park District.

The new FVFP will fund a total of $260.0 million of FVCP infrastructure and public facility improvements. Typically, these types of fees are collected at building permit issuance in the County. The required timing of collection of fees will be determined when County Municipal Service Agency develops the Implementation Plan, as described in **Chapter II**.

The fees in the FVFP are as follows and are summarized below:

- Roadway Fee
- Frontage Lane Fee
- Supplemental Drainage Fee
- Parks and Recreation Fee
- Library Fee
- Transit Fee

The cost estimates shown in this section are up-to-date cost estimates and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information. The FVFP will require the completion of a Florin Vineyard Public Facilities Plan Fee Nexus Study. Any per-unit or per-acre fees in the Fee Program may be higher than that estimated in the Financing Plan.

ROADWAY FEE

The roadway fee component will fund the cost of roadway infrastructure required to serve the FVCP for which funding is not assured in a timely manner. This will be accomplished by previously established financing programs such as cases where the same facilities are included in the existing or proposed Sacramento County Transportation Development Fee program, the North Vineyard Station Roadway Fee program, or other potential funding programs. This roadway fee component will fund the cost of roadway improvements and right-of-way (ROW) acquisition benefiting the FVCP.

Road fees collected from the FVCP are estimated to be $148.0 million at buildout, as shown in **Table 8**. Implementation of the FVFP roadway fee will require mechanisms including appropriate credits and reimbursements to be established between this and other roadway fee programs to assure equitable cost burdens and timely traffic mitigation. A detailed summary of the roadway portion of the FVFP is shown in **Chapter V** of this financing plan.

At this time, credit for overlap between this fee and the proposed County Roadway and Transit fees has not been estimated. However, credit adjustments for overlap will be made to these fees in the future.

The cost of preparing the Financing Plan, including all engineering and related studies, and the cost of implementing the FVFP are included in the Phase 1 roadway component of the FVFP. This cost is estimated at $___ million <*Cost to be determined later*>, as shown in **Appendix A**. These costs are included in the roadway fee component in order to be consistent with other plan area fee programs. In addition, including the plan preparation costs in the roadway fee component provides for earlier reimbursement of the costs advanced to fund the implementation of the fee program and administrative ease in managing the fee program since plan preparation and implementation costs do not warrant a separate fee component.

FRONTAGE LANE FEE

This Financing Plan proposes a frontage lane fee for funding comprehensive frontage lane segments during the development of the FVCP. At this time, frontage lane improvements are included in the cost of roadways, and have not been estimated separately. For the final report of the Financing Plan, the engineer will calculate the actual share of frontage lane improvement costs included in the roadway CIP of the FVCP. As such, cost and fee estimates shown in this report are placeholder estimates and may differ significantly from actual costs.

To estimate a probable frontage lane fee for the FVCP at this time, this Financing Plan assumes that frontage lane improvements costs will constitute approximately 13.5 percent or $23.1 million of total roadway costs shown in the roadway CIP in **Appendix A**. This is based on the share of frontage lane costs as a percentage of total roadway costs estimated for the NVSSP PFFP.[2] Fees collected from the FVCP area will fund an estimated $23.1 million of the frontage lane improvements as shown in **Table 8**. A detailed summary of the frontage lane improvements portion of the FVFP is shown in **Chapter V** of this Financing Plan.

SUPPLEMENTAL DRAINAGE FEE

The supplemental drainage fee component will cover the cost of drainage infrastructure not covered by the existing County Zone 11A drainage fee program. These costs include riparian enhancement and landscaping, and supplemental land acquisition. The

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[2] North Vineyard Station Specific Plan Public Facilities Financing Plan, Final Report (November 10, 2004), Prepared by EPS for the County of Sacramento.

supplemental drainage fee is proposed to be a subcomponent of the Zone 11 fee program. The supplemental drainage fees collected from the FVCP area will fund an estimated $1.9 million of the drainage CIP, as shown in **Table 8**. A detailed summary of the drainage portion of the FVCP is shown in **Chapter VIII** of this financing plan.

PARKS AND RECREATION FEE

The parks and recreation fee component collected from the FVCP area will fund an estimated $61.6 million of facilities included in the parks and recreation CIP, as shown in **Table 8**. A detailed summary of the parks and recreation portion of the FVCP is shown in **Chapter IX** of this financing plan.

LIBRARY FEE

The library fee component collected from the FVCP area will fund an estimated $13.6 million of facilities included in the library CIP, as shown in **Table 8**. A detailed summary of the FVCP library portion is shown in **Chapter XI** of this financing plan.

TRANSIT FEE

The transit fee component will cover the cost of transit facilities not covered by the existing County District IV transit fee program. The transit fee component will fund the cost of transit-related facilities benefiting the FVCP. The fee will cover the cost of new buses to serve the FVCP, land acquisition and construction of a park-and-ride facility, the FVCP's share of a contribution toward a new bus maintenance facility, and the cost of bus shelters in the FVCP. The transit fees collected from the FVCP area will fund an estimated $11.9 million of transit facilities included in the transit CIP, as shown in **Table 8**. A detailed summary of the transit portion of the FVCP is shown in **Chapter XIII**.

OTHER FUNDING MECHANISMS

DEVELOPER ADVANCES

Developer advances may be required to fund infrastructure improvements needed in Phase 1 of the FVCP before the collection of fees or other revenue sources. The Financing Plan assumes that fee credits or reimbursements for facilities otherwise funded by the FVFP fee program may be available if developers fund and construct fee-funded facilities. Fee credits for completed improvements may be offset against fees

until the fee credits are expended. If the cost of the facility exceeds the potential credits for a developer, the County may enter into a reimbursement agreement with the developer. Fee credits and reimbursements are available within different timeframes, depending upon the type of facilities constructed.

EGUSD CFD 1 AND STATE FUNDING

School buildout cost is expected to be funded through the existing school mitigation–fee program as outlined above, and any difference will be funded through the existing EGUSD CFD No. 1 and the State School Building Program. A detailed summary of the school portion of the FVCP is shown in **Chapter X** of this financing plan.

BOND-FUNDING MECHANISMS

The Financing Plan proposes that one or more phases of the FVCP form a bond-financing district such as a CFD. Bond financing would be used to advance fund public improvements included in established fee programs. Fee credits will be provided for appropriate facilities funded through the financing districts. Infrastructure costs in excess of bond proceeds will be carried by developers until fee credits or reimbursements are used.

Table 11 shows a preliminary estimate of the bonding capacity at buildout of the FVCP. Estimates are based on a 2-percent annual tax rate–escalation factor. The estimate is based on residential properties only to be conservative; bonding capacity will increase if non-residential properties participate. A set of conservative assumptions regarding tax rates, reserve fund requirements, and interest rates are used. The total bond size is estimated to be approximately $152.5 million at buildout. **Tables K-1** and **K-2** in **Appendix K** show the estimated bond size and construction proceeds for Phase 1 and buildout. As shown in **Table 12**, construction proceeds are estimated to be $119.7 million at buildout.

It is possible that the initial bond issue will be constrained by the appraised value of land in the CFD at the time bonds are sold. In addition, it is important to note that estimates of bond capacity are preliminary and likely will vary once a land-secured financing mechanism is implemented.

Individual development projects or a group of development projects may form additional subarea CFDs if (1) the infrastructure requirement for a subarea of the FVCP is disproportionate to the level of development projected; (2) the facilities to be funded

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Table 11
Florin Vineyard Public Facilities Financing Plan
Summary of Bonding Capacity by Phase (Residential Only)

Bonding Capacity	Assumption	Phase 1	Buildout
UNIT INFORMATION			
Plan Area Units		6,482	10,658
Plan Area Acres		1,058.5	1,809.6
Assuming Level Debt Service			
Annual Special Tax Revenue		**$7,179,000**	**$11,878,000**
Less Delinquency	10.0%	$719,000	$1,189,000
Less Administrative	2.5%	$179,000	$297,000
Amount Remaining for Debt Service		**$6,281,000**	**$10,392,000**
BOND SIZING [1]			
Total Bond Size		**$76,614,000**	**$126,761,000**
Term (Years)	25		
Less Estimated Issuance Costs	5.0%	$3,831,000	$6,337,000
Less Bond Reserve Fund	10.0%	$7,662,000	$12,676,000
Less Capitalized Interest for 12 Months	6.5%	$4,980,000	$8,240,000
Construction Proceeds		**$60,141,000**	**$99,508,000**
Construction Proceeds per Unit		**$9,278**	**$9,336**
Assuming 2% Annual Escalator			
Total Bond Size (rounded) [2]		**$92,145,000**	**$152,456,100**
Construction Proceeds (rounded)		**$72,333,000**	**$119,678,200**
Construction Proceeds per Unit		**$11,159**	**$11,229**

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Note: Totals may not add due to rounding.

[1] Assuming levels of debt service listed above.
[2] Assumes bond size with 2% escalation is 20% higher than bond size with no escalation.

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Table 12
Florin Vineyard Public Facilities Financing Plan
Bonding Capacity - Buildout (Residential Only)

Bonding Capacity	Assumptions	Buildout Total	RD 2-3	RD 3-5	RD 5-7	RD 7-12	RD-10	RD-20
UNIT INFORMATION								
Housing Units		**10,658**	316	4,392	3,092	621	123	2,114
Acres		**1,809.6**	126.5	976.1	515.3	62.1	12.3	117.5
Units per Acre			2.5	4.5	6.0	10.0	10.0	18.0
Maximum Special Tax for Infrastructure								
Monthly Special Tax Per Unit			$117	$117	$104	$104	$79	$21
Annual Special Tax Per Unit			$1,400	$1,400	$1,250	$1,250	$950	$250
Annual Special Tax per Acre			$3,499	$6,300	$7,501	$12,500	$9,477	$5,000
Assuming Level Debt Service								
Annual Special Tax Revenue		**$11,878,000**	**$442,000**	**$6,149,000**	**$3,865,000**	**$776,000**	**$117,000**	**$529,000**
Less Delinquency	10.0%	$1,189,000	$44,000	$615,000	$387,000	$78,000	$12,000	$53,000
Less Administrative	2.5%	$297,000	$11,000	$154,000	$97,000	$19,000	$3,000	$13,000
Remaining Left for Debt Service		**$10,392,000**	**$387,000**	**$5,380,000**	**$3,381,000**	**$679,000**	**$102,000**	**$463,000**
BOND SIZING [1]								
Total Bond Size		**$126,761,000**	**$4,721,000**	**$65,625,000**	**$41,241,000**	**$8,282,000**	**$1,244,000**	**$5,648,000**
Term (Years)	25							
Less Estimated Issuance Costs	5.0%	$6,337,000	$236,000	$3,281,000	$2,062,000	$414,000	$62,000	$282,000
Less Bond Reserve Fund	10.0%	$12,676,000	$472,000	$6,563,000	$4,124,000	$828,000	$124,000	$565,000
Less Capitalized Interest for 12 Months	6.5%	$8,240,000	$307,000	$4,266,000	$2,681,000	$538,000	$81,000	$367,000
Construction Proceeds		**$99,508,000**	**$3,706,000**	**$51,515,000**	**$32,374,000**	**$6,502,000**	**$977,000**	**$4,434,000**
Construction Proceeds per Unit			**$11,700**	**$11,700**	**$10,500**	**$10,500**	**$7,900**	**$2,100**
Estimated Bonds per Unit			**$17,966**	**$17,971**	**$16,042**	**$16,041**	**$12,163**	**$3,212**
Assuming 2% Annual Escalator								
Total Bond Size [2]		**$152,456,100**	**$5,677,100**	**$78,928,100**	**$49,602,300**	**$9,961,700**	**$1,496,000**	**$6,790,900**
Construction Proceeds		**$119,678,200**	**$4,456,500**	**$61,958,600**	**$38,937,900**	**$7,819,900**	**$1,174,400**	**$5,330,900**
Construction Proceeds per Unit			**$14,103**	**$14,107**	**$12,593**	**$12,592**	**$9,548**	**$2,522**

"mello_buildout"

Note: Totals may not add due to rounding.

[1] Assuming levels of debt service listed above.
[2] Assumes bond size with 2% escalation is 20% higher than bond size with no escalation.

in the CFD meet County guidelines; or (3) the area under consideration is large enough to justify the formation of a CFD and to support the bond debt.

If a facility included in a County fee program is instead funded with bond financing in a CFD, a developer may be given a non-transferable "fee reduction" or fee credit.

FVCP FINANCING STRATEGY

The financing strategy and funding sources for FVCP at buildout are summarized in **Table 8**. Approximately $521.5 million will be funded through the existing fee programs, including EGUSD fees. Approximately $260.0 million will be paid through the new FVFP for roadways, frontage lanes, parks, libraries, and transit. The FVFP also includes a supplemental drainage fee that is proposed as a sub zone of Zone 11. Also, a portion of school costs will be funded through EGUSD CFD No. 1 and State funding.

Table 4 compares projected FVCP buildout funding revenues from all sources to buildout cost estimates. This comparison shows that projected FVCP buildout fee revenue will cover buildout costs with additional funds collected for agencies such as Zone 40 (Water), SASD (Sewer), Zone 11A (Drainage), and Sacramento Metro Fire. Any difference in actual fees each agency collects over the actual cost of facilities needed to serve the FVCP will be applicable to other regional facilities benefiting areas as described in each individual infrastructure section.

Developers will finance privately the construction of many of the facilities needed during the first development phase. After constructing such facilities, developers will be reimbursed for their advances from FVFP revenues as well as from existing fee program revenues. Developers will receive either fee credits or reimbursements for eligible projects, based on the County's reimbursement policies.

Because of the diverse ownership patterns in the FVCP and the uncertain development timing, the financing strategy includes a provision for forming multiple CFDs for bond financing of some facilities that may be needed at different times during development of the FVCP. The proposed initial CFD would fund all or a portion of the infrastructure improvement costs for roadways, frontage lanes, water, sewer, and drainage for the areas described in Phase 1. Property owners expected to develop after Phase 1 may join the initial CFD or set up additional subarea CFDs that would be formed for an individual project or group of projects to fund facilities. To the extent that bond financing is used, the developer may receive credits against the appropriate fees. Some development projects may not require bond funding and would handle their infrastructure cost responsibilities through either payment of fees or developer advances.

The proposed cost estimates and funding sources are only estimates. The actual costs funded under each category may be adjusted as information regarding project development and the facility-construction schedule changes. Fee credits will be determined by each responsible agency before the sale of CFD bonds.

PHASE 1 FINANCING STRATEGY

Phase 1 is assumed the first development area of the FVCP. Facilities will be constructed, as needed, to serve new development. As in all development fee programs, however, there is a lag between when the fees are generated and when the facilities are constructed. Development projects will be conditioned to construct facilities as needed. Developers will receive either fee credits or reimbursements for eligible projects based on the County's reimbursement policies. Properties participating in the CFDs will receive fee credits for eligible facilities funded by the CFD, as determined by each responsible agency.

Associated with the designated Phase 1, there are approximately $348.7 million in major infrastructure and public facilities costs as shown in **Table 5**. Existing fee programs will fund approximately $236.7 million. The proposed FVFP will fund an additional $154.8 million in costs not covered by existing fee programs. Phase 1 roadway, frontage lane, and supplemental drainage fee revenue shortfalls of $38.2 million, $6.3 million, and $485,000, respectively, will be advance-funded by developers or CFD bond proceeds.

Because of large up-front costs, the Financing Plan also anticipates that developer advances may be used to fund any infrastructure improvements needed early in Phase 1 before the collection of fees or other revenue reimbursement sources. Fee credits or reimbursements for facilities otherwise funded by County fee programs may be available if developers fund and construct fee-funded facilities. Fee credits for completed improvements may be offset against fees until the fee credits are expended. If the cost of the facility exceeds the potential credits for a developer, the County may enter into a reimbursement agreement with the developer. Fee credits and reimbursements are available within different timeframes, depending upon the type of facilities constructed.

In addition to developer advances, one or more CFDs is planned to finance several categories of facilities with land secured bonds. These categories include roadways, Zone 40 water, SASD sewer, Zone 11A drainage, and supplementary drainage infrastructure. **Table 13** compares the costs for these facilities with the total bond proceeds available by phase. Costs exceed estimated bond proceeds for both Phase 1 and Buildout. It is expected that the facilities list and bond amounts will be refined during the formation of the CFDs.

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Table 13
Florin Vineyard Public Facilities Financing Plan
Proposed Authorized Facilities For Phase 1 and Buildout (Residential Only) [1]

		Infrastructure Cost		Estimated Fee Revenue		Difference From Cost	
Infrastructure	**Source**	Phase 1	Buildout	Phase 1	Buildout	Phase 1	Buildout
Roadways (Incl. Frontage Lanes) - FVCP	Appendix A	$146,820,200	$171,074,100	$102,330,670	$171,074,100	($44,490,000)	$0
Water - Zone 40	Appendix B	$4,683,600	$14,942,300	$77,029,167	$111,957,100	$72,346,000	$97,015,000
Sewer - SASD	Appendix C	$7,446,000	$11,152,000	$17,077,500	$29,126,300	$9,632,000	$17,974,000
Drainage - Zone 11A	Appendix D	$15,757,300	$21,410,500	$17,046,558	$28,676,000	$1,289,000	$7,266,000
Supplemental Drainage - FVCP	Appendix D	$1,613,400	$1,859,900	$1,128,435	$1,859,900	($485,000)	$0
Improvement Costs Proposed To Be Eligible for CFD Funding		**$176,320,500**	**$220,438,800**	**$214,612,330**	**$342,693,400**	**$38,292,000**	**$122,255,000**
Bond Proceeds Available	Table K-1	**$72,333,000**	**$119,678,200**				
Estimated Bond Proceeds Shortfall To Be Developer Advanced For CFD Eligible Facilities [1] [2] [3]		**($103,987,500)**	**($100,760,600)**				

"auth_facilities"

[1] This represents one possible cash flow scenario. This scenario will be refined during implementation.
[2] At this stage of planning for the CFD, the eligible facilities list is larger than the amount of estimated bond proceeds. The list of eligible facilities will be updated based on the conditions at the time of CFD formation.
[3] Developer advances in excess of available CFD funds will be eligible for standard fee credits or reimbursements through the FVFP.

IV. LAND USE

PROJECT LOCATION

The FVCP is approximately 3,766 acres in size. Reflective of its alternative name, the "Florin Vineyard Gap," the FVCP is irregular in shape and wraps halfway around the North Vineyard Station Specific Plan and into the Florin portion of South Sacramento. It includes large areas between Elder Creek Road and Florin Road from west of South Watt Avenue to east of Bradshaw Road, on both sides of Elk-Grove Florin Road between Florin Road and Gerber Road, and south of Gerber Road between the Union Pacific Railroad alignment and Bradshaw Road. **Maps 1** and **2** show the location of the FVCP.

PROPOSED LAND USES

The FVCP is characterized as a primarily underdeveloped, semi-rural area containing a scattering of 556 older residences and a few nonresidential uses. In 2003, the County outlined two land use plans for the FVCP: the CAC Preferred Plan and the Planning Department Plan. The Financing Plan uses the Planning Department Plan, which is the denser of the two plans.

EPS has derived two land use tables, using the Planning Department Land Use Plan. **Table 14** shows the land uses, as shown in the Planning Department Land Use Plan, with no adjustments. In **Table 15,** the unit counts are adjusted by a mapping factor of 90 percent. The mapping factor is used to compensate for the possibility that fewer units will be constructed than anticipated.

Table 14 also assumes that development of the 879 industrial (M-1) and the 240 industrial reserve (IR) acres are uncertain within a foreseeable timeframe. Currently, there are no applicants to develop these acres, and the area in which they are located is encumbered by a flood plain and extensive wetlands. Therefore, all M-1 acres have removed for purposes of this financing plan. In the event that there is a development proposal for these acres, such a proposal would warrant either an update to this financing plan or the creation of a separate and distinct financing plan for industrial development.

The mapping factor–adjusted land uses shown in **Table 15** are used for the calculations shown in this financing plan. As **Table 14** shows, for the FVCP plans for 10,658 housing units, including 8,544 single-family units and 2,114 multifamily units. Including the 556 existing residences and the 224 agriculture residential units brings the total to 11,438 units. The FVCP also includes 142 acres of commercial, 5 acres of business professional, 879 acres of industrial, 240 acres of industrial reserve, and 90 acres of open

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Table 14
Florin Vineyard Public Facilities Financing Plan
Land Use Summary Based on County Planning Department Plan

No Mapping Factor

Land Use	Phase 1 Acres	Phase 1 Units	Buildout Acres	Buildout Units
RESIDENTIAL DEVELOPMENT				
Existing Single-Family Units [1]				556
Single-Family				
AR 2-5	10	3	129.0	43
AR 1-2	3	2	271.0	181
RD 2-3	40.6	102	140.5	351
RD 3-5	531.1	2,390	1,084.5	4,880
RD 5-7	485.7	2,914	572.5	3,435
RD 7-12	32.6	326	69.0	690
RD-10	10	100	13.7	137
Subtotal Single-Family	**1,112.9**	**5,837**	**2,280.2**	**9,717**
Multifamily				
RD-20	76.1	1,370	130.5	2,349
Subtotal Multifamily	**76.1**	**1,370**	**130.5**	**2,349**
TOTAL RESIDENTIAL	**1,189.0**	**7,207**	**2,410.7**	**12,066**
NONRESIDENTIAL DEVELOPMENT				
General Commercial (GC)	-	-	**10.0**	-
Shopping Center (SC)	**88.9**	-	**113.5**	-
Limited Commercial (LC)	**-**	-	**18.3**	-
Business Professional (BP)	-	-	**5.0**	-
Industrial (M-1) [3]	**-**	-	**879.0**	-
Industrial Reserve (IR) [3]	-	-	**240.0**	-
Open Space (OS)	**17.2**	-	**89.5**	-
TOTAL NONRESIDENTIAL	**106.1**	**-**	**1,355.3**	**-**
TOTAL FLORIN VINEYARD PLAN AREA	**1,295.1**	**7,207**	**3,766**	**12,066**

"lu"

Source: Florin Vineyard Community Plan Land Use Application Table dated January 10, 2008; prepared by MacKay & Somps. The "Planning Department Option" portion of the table is referenced in this report.

[1] Existing units are not included in the total unit count because they will not pay any new fees.
[2] Ag-Residential development is not included in this version of the financing plan; however, it will be included in a subsequent version.
[3] Because of the high probability that much of the M-1 and Industrial Reserve land may not develop in the foreseeable future, fees have not been assigned to these land uses. At the time they do develop, additional studies would be required to identify needed facilities and funding thereof.

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Table 15
Florin Vineyard Public Facilities Financing Plan
Land Use Summary Based on Mapping Factor [1]

Mapping Factor Included

Land Use		Phase 1 Acres	Phase 1 Units	Buildout Acres	Buildout Units
Mapping Factor [1]	**90%**				
RESIDENTIAL DEVELOPMENT					
Single-Family					
AR 2-5 [2]		-	-	-	-
AR 1-2 [2]		-	-	-	-
RD 2-3		36.5	92	126.5	316
RD 3-5		478.0	2,151	976.1	4,392
RD 5-7		437.1	2,623	515.3	3,092
RD 7-12		29.3	293	62.1	621
RD 10		9.0	90	12.3	123
Subtotal Single-Family		**990.0**	**5,249**	**1,692.2**	**8,544**
Multifamily					
RD-20		68.5	1,233	117.5	2,114
Subtotal Multifamily		**68.5**	**1,233**	**117.5**	**2,114**
TOTAL RESIDENTIAL		**1,058.5**	**6,482**	**1,809.6**	**10,658**
NONRESIDENTIAL DEVELOPMENT					
General Commercial (GC)		**-**	**-**	**9.0**	**-**
Shopping Center (SC)		**80.0**	**-**	**102.2**	**-**
Limited Commercial (LC)		**-**	**-**	**16.5**	**-**
Business Professional (BP)		**-**	**-**	**4.5**	**-**
Industrial (M-1) [3]		**-**	**-**	**-**	**-**
Industrial Reserve (IR) [4]		**-**	**-**	**-**	**-**
Open Space (OS)		**17.2**	**-**	**89.5**	**-**
TOTAL NONRESIDENTIAL		**97.2**	**-**	**221.6**	**-**
TOTAL FLORIN VINEYARD PLAN AREA		**1,155.7**	**6,482**	**2,031.3**	**10,658**

"lu_map_factor"

Source: MacKay & Somps; and County of Sacramento Planning Department - " Proposed Land Use Designations and Potential Dwelling Yield dated December 4, 2003.

[1] The mapping factor is used to compensate for the possibility that fewer units will be constructed than the Planning Department has estimated. The mapping factor is used to reduce the number of units used for calculation of total fee revenue.
[2] This version of the report assumes no Ag-Residential development. EPS has identified a need to include this land use, however, and therefore Ag-Residential development will be included in a subsequent version of this Financing Plan.
[3] As there are no applications to develop the 879 industrial (M-1) acres, and the area in which this land lies is encumbered by a floodplain and extensive wetlands, all M-1 acres have been removed for purposes of this financing plan. If there is a development proposal for this land in the future, an update to this financing plan or a separate and distinct financing plan would be necessary.
[4] Because of the high probability that much of the Industrial Reserve land may not develop in the foreseeable future, all Industrial Reserve acres have been removed for purposes of this financing plan. At the time it does develop, additional studies would be required to identify needed facilities and funding thereof.

space land uses. As noted earlier, industrial and industrial-reserve land uses are not assumed to develop within the timeframe of this financing plan and therefore are not included in this financing plan.

PHASING

The FVCP is anticipated to build out over a 10- to 20-year period, with the exception of the M-1 and IR designated properties. The property owners with concurrent development applications are considered Phase 1 in this report. Those likely to participate in development at the outset will be drawn from these property owners. Non-participants are included in the FVCP, but are not expected to move forward with development at the time of approval. These non-participants are considered remaining development, or buildout, in this report. If the non-participants move forward, their projects will be subject to the Community Plan policies, including this financing plan and other conditions set forth therein.

Map 2 details the FVCP participants (considered Phase 1 in this report) and the non-participants (representing buildout when added to the Phase 1 participants).

V. ROADWAY

The FVCP provides a comprehensive transportation network designed in accordance with anticipated traffic volumes and travel demands of the planned land uses, as well as the regional system envisioned by the County General Plan. The circulation system is designed to adhere to the County's Level of Service (LOS) standards.

Roadway infrastructure cost and phasing is shown in the Roadway CIP as prepared by MacKay & Somps. The FVCP roadway CIP is outlined in **Appendix A**.

EXISTING INFRASTRUCTURE

In general, most of the FVCP area roadways are rural, two-lane facilities with narrow lane widths and unimproved shoulders. The FVCP is accessible from two major freeways. US Highway 50 is approximately 4.5 miles north of the plan area. State Route 99 is approximately 3 miles to the west of the plan area. Specific details of planned roadway improvements can be found in the Roadway CIP in **Appendix A.**

PROPOSED INFRASTRUCTURE COSTS, FUNDING SOURCES, AND PHASING

The cost estimates shown in this section are up-to-date cost estimates and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

Development in the FVCP area will have impacts on the entire local circulation network. Many roadway improvements required to mitigate the traffic impacts of the FVCP are also required for traffic mitigation for other plan areas, which are presently funding these improvements. The FVCP is contiguous with the north, west, and south sides of the North Vineyard Station (NVS) Specific Plan Area, and many improvements funded by the NVS Roadway Fee Program will benefit both areas. The FVCP also includes about 1,100 acres south of Gerber Road that are presently within the Vineyard PFFP and Fee Program. Roadway improvements previously and currently funded by the Vineyard PFFP Roadway CIP also will benefit both Vineyard and FVCP developments. Likewise, some roadway improvements proposed to be funded by the FVCP roadway CIP will also benefit the balance of the Vineyard PFFP area and the NVS Specific Plan Area.

The roadway CIP detailed in **Appendix A** is based on traffic mitigation measures identified in the Traffic Impact Analysis Report for the Florin Vineyard Community Plan prepared by Fehr and Peers and dated May 30, 2008. The analyses identified roadway segments and intersections that would be adversely impacted by buildout of the FVCP under existing plus proposed project conditions as well as cumulative conditions. It is estimated that the FVCP will be responsible for $171.1 million of the total local and regional roadway improvements, including frontage lane improvements. This amount includes ROW acquisition costs.

PRIORITIZED ROADWAY CIP

Fehr & Peers developed the prioritized FVCP roadway CIP that is detailed in **Appendix A.** The proposed roadway CIP infrastructure improvements include widening, reconstruction, or construction of new and existing major arterial roadways, bridges, signalization, and intersection projects. According to the traffic analysis, first priority should be given to South Watt Avenue/Elk Grove Florin Road. Second priority should be given to other major roads that provide primary access to the FVCP, and third priority to the improvements on the remaining roads Phased improvements, like installing traffic signals and adding through lanes at intersections, should be pursued as appropriate and reasonable where substantial benefit can be achieved.

The roadway CIP typically includes cost estimates for medians and interior lanes of onsite major roadways. Typically, frontage improvements not adjacent to open space corridors, parks, drainage channels, and power line corridors are constructed and financed by adjacent development with no reimbursement from the financing plan. The FVFP includes a provision, however, that will fund "logical segments" of frontage improvements, typically 0.5+/- miles at a time, when fronting development occurs. This concept is discussed in more detail under "Frontage Lane Improvements" below.

FRONTAGE LANE IMPROVEMENTS

Sacramento County imposes development conditions on new development to install frontage lane improvements at the designated road width as stipulated in the County General Plan. Roadway widening can be constructed as a public project or by private developers.

The full completion of roadway segments is dependent on developers on both sides of the roadway completing their outer sections unless the County conditions one property owner to complete the full width improvements. Contiguous road segments across multiple property owners are dependent on all property owners along the route. Thus,

noncontiguous development caused by incongruent development timing and, in some cases, property owners that never plan to develop, could result in roadways of varying widths and a mixture of improvement conditions that create traffic "bottlenecks" and a lack of continuity for vehicles, bicycles, and pedestrians. These noncontiguous roadway segments are commonly referred to as "sawtooth road frontage". In addition to the aesthetic and convenience issues, these unfinished roadway segments can present safety problems for vehicles, bicycles, and pedestrians within those transportation corridors.

Similar to the North Vineyard Station Fee Program, the FVFP would include a fee component to pay for the elimination of gaps in frontage lane improvements**.** Developers would be required to improve comprehensive segments of frontage when any portion of their respective project's frontage is to be improved. They would receive fee credits or reimbursements for the frontage lane component of the fee program. Those developers not required to construct frontage improvements would be required to pay the fee.

ROW ACQUISITION

Anticipated right-of-way requirements were determined by overlaying the proposed roadway widths (including 12.5' wide PUEs along the Florin Vineyard Community Plan frontages, if needed) over the County's GIS database areas. Those shown as not currently located in a public right-of-way were assumed to be acquired. Actual right-of-way needs are subject to change and may vary significantly from those shown based on accurate property title information.

This Financing Plan proposes a conceptual plan for the acquisition of right-of-way needed for improving major roadway frontage lanes in comprehensive segments in the plan area. The Financing Plan includes a Frontage Lane Fee component as discussed above, and it is anticipated that the fees will cover the acquisition costs of all the necessary ROW. It is assumed for purposes of this Financing Plan that the necessary land for ROW will be acquired through either land dedication or land acquisition.

Land Dedication

In some instances, the ROW will be dedicated concurrent with the approval of rezones. In cases of land dedication, the dedicating party may be in a position to receive fee credits against applicable FVFP fees by entering into an agreement with the County based on the implementation mechanisms established for the FVFP. The value of the credit or amount of reimbursement for the reimbursement agreement shall be established by the value of ROW contained in the FVFP at the time of dedication.

Land Acquisition

In some cases, the ROW will be acquired before a rezoning or other entitlement is approved which would have allowed for dedication. In this case, the property which received the acquisition compensation for such ROW shall be required to participate in the established financing mechanism that funds the ROW acquisition program at such time as entitlements or building permits for said property are approved, which otherwise would have allowed for said ROW to be dedicated. This equalizes the burden of ROW acquisition through the buildout of the Plan Area.

The exact details of ROW acquisition will be determined when County IFS implements the Financing Plan as described in **Chapter II**.

FUNDING SOURCES

Existing Fee Program

Roadway Fee (SCTDF District IV)

The FVCP area is located within the boundaries of District IV of the SCTDF program. Development in the FVCP will be required to pay the District IV fee. Fee revenue generated from this fee is meant to fund major regional roadway improvements necessary to handle the traffic generated by new development in the unincorporated County. The FVCP will pay an estimated total of $142.8 million in District IV fees, as shown in **Table 8**, but because this amount is in addition to the estimated cost to fund FVCP roadway improvements as outlined in the roadway CIP, it is not included in **Tables 16** and **17** as a roadway-funding source. District IV funding, as identified in the SCTDF Program, however, was accounted for as a roadway-funding source.

Sacramento Transportation Authority Measure A

The FVCP area is located within the boundaries of the Sacramento Transportation Authority Measure A. The Measure A Ordinance, which allows the establishment of a Transportation Mitigation Fee, was approved by voters in the County in 2004. The fee will be used to fund in part the CIPs in the New Measure A Expenditure Plan. This fee will be collected as of April 1, 2009, and will be in effect through March 31, 2039.

The FVCP will pay an estimated total of $15.3 million in Measure A fees, as shown in **Table 8,** but since this amount is in addition to the estimated cost to fund FVCP roadway improvements as outlined in the roadway CIP, it is not included in **Tables 16** and **17** as a roadway-funding source**.** Only Measure A funding included in the SCTDF Program for roadway improvement projects related to the FVFP roadway CIP is included here. The SCTDF Program includes a total of approximately $18.8 million in

Measure A funding for the following roadway improvement projects related to the draft FVFP roadway CIP:

- Bradshaw Road—improvements from Kiefer Boulevard to Elder Creek Road and Florin Road to Calvine Road (approximately $12.7 million).
- South Watt Avenue—improvements from State Route 16 to Kiefer Boulevard (approximately $780,000).
- State Route 16—improvements from Bradshaw Road to Excelsior Road (approximately $5.3 million).

Proposed FVFP

Roadway Fee Component

The FVCP Financing Plan proposes a FVFP roadway fee component that funds all of the costs associated with roadway improvements identified as FVCP traffic mitigation requirements while identifying existing and proposed sources of funding that may be available to reimburse the construction costs for some of these improvements. These other funding sources include the SCTDF Program District 4 Fee, the NVS PFFP Fee Program, the Vineyard PFFP Fee Program, as well as funding administered by other jurisdictions and the STA. The FVFP roadway fee component will fund up to $145.0 million in roadway improvements. The calculation of the FVFP roadway fee is shown in **Table 16,** and the estimated fee collection by phase is shown in **Table 17.** FVFP fee amounts were calculated using the CAM method discussed in **Chapter II**.

Developer Funded Obligations and the North Vineyard Station PFFP

There is considerable overlap for roadway projects that benefit both the FVCP and the North Vineyard Station Specific Plan (NVSSP). This situation has two significant impacts on the FVFP:

- First, the NVSSP Fee Program was assigned the financial responsibility for many of these roadway costs because the NVSSP was entitled by the County prior to the entitlement processing of the FVCP. As a result, the roadway component of the NVSSP Fee Program is higher at $19,800 per DUE than the roadway component shown in the FVFP at $14,325 per DUE. Since both plan areas benefit from the same set of roadway, the fee programs for each area will need to be adjusted to reflect a fair share allocation of roadway costs.
- Second, because both the NVSSP and the FVCP will be developing at the same time, the timing of construction and funding responsibility for some of the roadway facilities could be triggered by either of the plan areas.

These financing and timing conflicts will be fully resolved following approval of the FVCP. The County will update the existing NVSSP Development Fee Program at the

same time it implements the FVFP to reconcile these differences. The result will be a reduction in the NVSSP roadway fee component and an increase in the FVFP roadway component shown in this FVFP.

The FVFP recognizes that these issues will not be fully resolved until after approval of the FVCP, but prior to any development within the FVCP. At this time, the cost overlap in roadway facilities is shown in **Appendix A**. **Table A-36** shows the facilities that are included in the NVS PFFP, but could be triggered by development in the FVCP. The cost of these facilities is identified as "Potential FVCP Overlap" in **Table 18**. The total cost of these facilities including ROW acquisition costs is estimated at $44.5 million and the cost per equivalent dwelling unit is estimated at $4,308.

The future update to the NVS PFFP and the implementation of the FVFP will address the assignment of responsibility for roadway costs as well as the roadway construction triggers for the two Plan Areas.

Frontage Lane Improvement Fee Component

One of the main reasons for sawtooth road frontage conditions is lack of funding or a County funding mechanism. The FVCP proposes a FVFP frontage lane improvement fee component to fund construction of contiguous frontage lane improvements, including the outside travel lane, curb and gutter, and associated drainage system improvements. The FVFP frontage lane fee component will fund approximately $23.1 million in frontage lane improvements.[3] The fee calculation is shown in **Table 19**, and the estimated fee collection by phase is shown in **Table 20**. The FVFP fee per acre was calculated by dividing total frontage lane costs by the total acreage for residential, commercial, and business professional land uses.

Bond-Funding Mechanisms and Other Funding Sources

The Financing Plan anticipates that developer advances or bond financing will be used to advance fund any infrastructure improvements needed in the initial phases of the FVCP and before the collection of fees or other revenue sources. The Financing Plan assumes that fee credits or reimbursements for facilities otherwise funded by fee programs may be available if developers fund and construct fee-funded facilities.

[3] Note that cost estimate shown is a placeholder estimate that assumes that frontage lane improvements are likely to constitute 13.5 percent of the total roadway costs in Appendix A. Actual engineering cost estimates will be calculated for the final report of the Financing Plan.

PHASING

In conjunction with the County Transportation Division, construction of the roadway CIP projects will be prioritized based on traffic study results, availability of other funding sources, and the County's overall transportation priorities. The CIP lists a prioritized estimate of roadway improvements for each phase of development. The Roadway CIP includes 6 roadway improvement phases, Phase 1 to 5 and the buildout phase. Phases 1 to 5 of the Roadway improvements correspond to Phase 1 of the Financing Plan, as noted on page 5.

Roadway improvement phases were defined based on construction of a specified number of housing units. The Phase 1 improvements need either to be constructed or be able to demonstrate substantial progress towards being constructed before construction of the 1,401st dwelling unit. Phase 2 improvements will correspond to construction of units 1,401 to 2,000 and the 2,001st unit will trigger Phase 3 improvements. Phase 4 improvements will occur between the 3,201st unit and the 4,400th unit. Phase 5 improvements will occur from the 4,401st through the 5,600th unit. Completion of Phase 5 will trigger improvements in the buildout phase.

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Table 16
Florin Vineyard Public Facilities Financing Plan
Roadway Fee Calculation

Land Use	Total Acres	% Acres [1]	DUE Factor	Total DUEs	Cost Allocation	Fee Per Acre
CONSTRUCTION COST [2]					**$147,979,076**	
RD 2-3						
RD-2	19.0	15%	2.00	38	$543,415	$28,650
RD-3	107.5	85%	2.80	301	$4,311,090	$40,110
Total RD 2-3	**126.5**	**100%**		**339**	**$4,854,505**	**$38,391**
RD 3-5						
RD 3	48.8	5%	2.80	137	$1,957,453	$40,110
RD 4	97.6	10%	3.50	342	$4,893,633	$50,137
RD 5	829.6	85%	4.10	3,402	$48,726,604	$58,732
Total RD 3-5	**976.1**	**100%**		**3,880**	**$55,577,691**	**$56,941**
RD 5-7						
RD 5	25.8	5%	4.10	106	$1,513,084	$58,732
RD 6	438.0	85%	4.90	2,146	$30,741,447	$70,192
RD 7	51.5	10%	5.70	294	$4,207,113	$81,652
Total RD 5-7	**515.3**	**100%**		**2,545**	**$36,461,644**	**$70,765**
RD 7-12						
RD 7	15.5	25%	5.70	88	$1,267,645	$81,652
RD 9	15.5	25%	6.50	101	$1,445,560	$93,112
RD 10	15.5	25%	7.20	112	$1,601,236	$103,139
RD 12	15.5	25%	8.60	134	$1,912,588	$123,194
Total RD 7-12	**62.1**	**100%**		**435**	**$6,227,030**	**$100,274**
RD 10	**12.3**	**100%**	**7.20**	**89**	**$1,271,706**	**$103,139**
RD 20	**117.5**	**100%**	**10.20**	**1,198**	**$17,161,075**	**$146,114**
General Commercial (GC)	**9.0**	**100%**	**16.30**	**147**	**$2,101,461**	**$233,496**
Shopping Center (SC)	**102.2**	**100%**	**13.40**	**1,369**	**$19,608,053**	**$191,954**
Limited Commercial (LC)	**16.5**	**100%**	**16.30**	**268**	**$3,845,674**	**$233,496**
Business Professional (BP)	**4.5**	**100%**	**13.50**	**61**	**$870,237**	**$193,386**
Industrial (M-1)	**0.0**	**100%**	**7.00**	**0**	**$0**	**$0**
TOTAL	**1,941.8**			**10,330**	**$147,979,076**	
Fee per DUE						**$14,325**

"road_alloc"

Source: Mackay & Somps and County of Sacramento.

[1] % acres per land use and DUE factors provided by Sacramento County Municipal Services Agency.
[2] Total cost shown here is 86.5% of total cost shown in Table A-1. The remaining 13.5% of the total cost is assumed to be frontage lane improvement costs. See Table 19 for allocation assumptions.

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Table 17
Florin Vineyard Public Facilities Financing Plan
Roadway Infrastructure Cash Flow by Phase

Land Use	Fee per Acre	Acres per Phase		Fee Revenue vs. Constr. Cost	
		Phase 1	Buildout	Phase 1 [1]	Buildout
CONSTRUCTION COST [2]				**$126,999,453**	**$147,979,076**
RD 2-3					
RD-2	$28,650	5.5	19.0	$157,029	$543,415
RD 3	$40,110	31.1	107.5	$1,245,767	$4,311,090
Total RD 2-3		**36.5**	**126.5**	**$1,402,796**	**$4,854,505**
RD 3-5					
RD 3	$40,110	23.9	48.8	$958,602	$1,957,453
RD 4	$50,137	48	97.6	$2,396,504	$4,893,633
RD 5	$58,732	406	829.6	$23,862,300	$48,726,604
Total RD 3-5		**478.0**	**976.1**	**$27,217,406**	**$55,577,691**
RD 5-7					
RD 5	$58,732	21.9	25.8	$1,283,677	$1,513,084
RD 6	$70,192	371.6	438.0	$26,080,560	$30,741,447
RD 7	$81,652	43.7	51.5	$3,569,200	$4,207,113
Total RD 5-7		**437.1**	**515.3**	**$30,933,437**	**$36,461,644**
RD 7-12					
RD 7	$81,652	7.3	15.5	$598,916	$1,267,645
RD 9	$93,112	7.3	15.5	$682,975	$1,445,560
RD 10	$103,139	7.3	15.5	$756,500	$1,601,236
RD 12	$123,194	7.3	15.5	$903,628	$1,912,588
Total RD 7-12		**29.3**	**62.1**	**$2,942,020**	**$6,227,030**
RD 10	**$103,139**	**9.0**	**12.3**	**$928,253**	**$1,271,706**
RD 20	**$146,114**	**68.5**	**117.5**	**$10,007,340**	**$17,161,075**
General Commercial (GC)	**$233,496**	**-**	**9.0**	**$0**	**$2,101,461**
Shopping Center (SC)	**$191,954**	**80.0**	**102.2**	**$15,358,202**	**$19,608,053**
Limited Commercial (LC)	**$233,496**	**-**	**16.5**	**$0**	**$3,845,674**
Business Professional (BP)	**$193,386**	**-**	**4.5**	**$0**	**$870,237**
Industrial (M-1)	**-**	**-**	**-**	**$0**	**$0**
TOTAL		**1,139**	**1,942**	**$88,789,453**	**$147,979,076**
				---	---
Difference (Fees less Cost)				**($38,209,999)**	**$0**
CUMULATIVE				Cumulative	
Fee Revenue				**$88,789,453**	**$147,979,076**
Construction Cost				**$126,999,453**	**$147,979,076**
				---	---
Difference (Fees less Cost)				**($38,209,999)**	**$0**

"road_cash_flow"

[1] Note that Phase 1 of the Financing Plan corresponds to Phases 1 - 5 of the roadway CIP shown in Table A-1 in Appendix A.
[2] Costs shown here are 86.5% of total costs shown in Table A-1. The remaining 13.5% of total costs is assumed to be frontage lane improvement costs. See Table 19 for allocation assumptions.

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Table 18
Florin Vineyard Public Facilities Financing Plan
NVS Roadway CIP Overlapping Project Funding [1]

Land Use	Total Acres	% Acres [2]	DUE Factor	Total DUEs	Potential FVCP Overlap: Cost Allocation	Potential FVCP Overlap: Fee Per Acre
CONSTRUCTION COST [3]					**$44,503,000**	
RD 2-3						
RD-2	19.0	15%	2.00	38	$163,400	$8,615
RD-3	107.5	85%	2.80	301	$1,296,500	$12,062
Total RD 2-3	**126.5**	**100%**		**339**	**$1,459,900**	**$11,545**
RD 3-5						
RD 3	48.8	5%	2.80	137	$588,700	$12,063
RD 4	97.6	10%	3.50	342	$1,471,700	$15,078
RD 5	829.6	85%	4.10	3,402	$14,654,000	$17,663
Total RD 3-5	**976.1**	**100%**		**3,880**	**$16,714,400**	**$17,125**
RD 5-7						
RD 5	25.8	5%	4.10	106	$455,000	$17,661
RD 6	438.0	85%	4.90	2,146	$9,245,100	$21,109
RD 7	51.5	10%	5.70	294	$1,265,200	$24,555
Total RD 5-7	**515.3**	**100%**		**2,545**	**$10,965,300**	**$21,282**
RD 7-12						
RD 7	15.5	25%	5.70	88	$381,200	$24,554
RD 9	15.5	25%	6.50	101	$434,700	$28,000
RD 10	15.5	25%	7.20	112	$481,600	$31,021
RD 12	15.5	25%	8.60	134	$575,200	$37,050
Total RD 7-12	**62.1**	**100%**		**435**	**$1,872,700**	**$30,156**
RD 10	**12.3**	**100%**	**7.20**	**89**	**$382,500**	**$31,022**
RD 20	**117.5**	**100%**	**10.20**	**1,198**	**$5,161,000**	**$43,942**
General Commercial (GC)	**9.0**	**100%**	**16.30**	**147**	**$631,990**	**$70,221**
Shopping Center (SC)	**102.2**	**100%**	**13.40**	**1,369**	**$5,896,896**	**$57,728**
Limited Commercial (LC)	**16.5**	**100%**	**16.30**	**268**	**$1,156,542**	**$70,221**
Business Professional (BP)	**4.5**	**100%**	**13.50**	**61**	**$261,714**	**$58,159**
Industrial (M-1)	**0.0**	**100%**	**7.00**	**0**	**$0**	**$0**
TOTAL	**1,941.8**			**10,330**	**$44,502,942**	
Overlap Cost per DUE						**$4,308**

"road_overlap"

Source: Mackay & Somps and County of Sacramento.

[1] Shows the potential amount of facilities included in the FVFP that may also be included in the North Vineyard Station Fee Program.
[2] % acres per land use and DUE factors provided by Sacramento County Municipal Services Agency.
[3] Total cost shown includes acquisition costs calculated at 10% of construction cost.

Table 19
Florin Vineyard Public Facilities Financing Plan
Calculation of Frontage Lane Fee (Placeholder Estimate)

Item	Formula	Amount
Cost Assumptions from NVSSP PFFP [1]		**2004$**
NVS Roadway Construction Cost	*a*	$63,207,800
NVS Frontage Lane Cost	*b*	$9,873,200
Total NVS Roadway Cost	*c = a + b*	**$73,081,000**
Frontage Lane Costs as % of Total Costs	*d = b / c*	**13.5%**
Estimated Allocation of Roadway & Frontage Lane Costs in FVCP [1]		**2008$**
FVCP Roadway Cost (including Frontage Lanes) [2]	*e*	**$ 171,074,076**
Estimated Frontage Lane Cost Component	*f = d * e*	$23,095,000
Estimated Roadway Cost Component	*g = e - f*	$ 147,979,076
Developable Acres in FVCP	*h*	**1,942**
Frontage Lane Fee Per Acre (Placeholder Estimate)	*i = f / h*	**$11,894**

"frontage_fee"

Source: North Vineyard Station Specific Plan Public Facilities Financing Plan (NVSSP PFFP), Final Report, November 10, 2004.

[1] Frontage lane costs for the FVCP are included in the roadway CIP in Appendix A. Because separate engineer's cost estimates for frontage lane improvements are not available, EPS used the ratio of frontage lane to total roadway costs in NVSSP PFFP to estimate the probable share of frontage lane costs included in the FVCP roadway CIP. The fee estimate calculated here is thus a PLACEHOLDER estimate. Actual fee estimate will be calculated in the final FVCP PFFP after frontage lane costs are separately estimated by the engineer.

[2] From Table A-1 in Appendix A.

Table 20
Florin Vineyard Public Facilities Financing Plan
Frontage Lane Improvements Cash Flow by Phase

Land Use	Fee per Acre	Acres per Phase		Fee Revenue vs. Construction	
		Phase 1	Buildout	Phase 1	Buildout
CONSTRUCTION COST [1]				**$19,820,724**	**$23,095,000**
RD 2-3					
RD-2	$11,894	5.5	19.0	$65,191	$225,598
RD-3	$11,894	31.1	107.5	$369,413	$1,278,387
Total RD 2-3		**36.5**	**126.5**	**$434,603**	**$1,503,985**
RD 3-5					
RD 3	$11,894	23.9	48.8	$284,259	$580,453
RD 4	$11,894	47.8	97.6	$568,517	$1,160,905
RD 5	$11,894	406.3	829.6	$4,832,395	$9,867,693
Total RD 3-5		**478.0**	**976.1**	**$5,685,170**	**$11,609,051**
RD 5-7					
RD 5	$11,894	21.9	25.8	$259,959	$306,417
RD 6	$11,894	371.6	438.0	$4,419,307	$5,209,087
RD 7	$11,894	43.7	51.5	$519,919	$612,834
Total RD 5-7		**437.1**	**515.3**	**$5,199,185**	**$6,128,337**
RD 7-12					
RD 7	$11,894	7.3	15.5	$87,242	$184,653
RD 9	$11,894	7.3	15.5	$87,242	$184,653
RD 10	$11,894	7.3	15.5	$87,242	$184,653
RD 12	$11,894	7.3	15.5	$87,242	$184,653
Total RD 7-12		**29.3**	**62.1**	**$348,967**	**$738,612**
RD 10	$11,894	**9.0**	**12.3**	$107,045	$146,652
RD 20	$11,894	**68.5**	**117.5**	$814,614	$1,396,940
General Commercial (GC)	$11,894	**-**	**9.0**	$0	$107,045
Shopping Center (SC)	$11,894	**80.0**	**102.2**	$951,632	$1,214,963
Limited Commercial (LC)	$11,894	**-**	**16.5**	$0	$195,893
Business Professional (BP)	$11,894	**-**	**4.5**	$0	$53,523
Industrial (M-1)	$11,894	**-**	**-**	$0	$0
TOTAL		**1,139**	**1,942**	**$13,541,217**	**$23,095,000**
Difference (Fees less Costs)				**($6,279,507)**	**$0**
CUMULATIVE				Cumulative	
Fee Revenue				**$13,541,217**	**$23,095,000**
Construction Cost				**$19,820,724**	**$23,095,000**
Difference (Fees less Costs)				**($6,279,507)**	**$0**

"frontage_cash_flow"

Source: Mackay & Somps and County of Sacramento.

[1] Assumes frontage lane improvements constitute 13.5% of total roadway costs shown in Appendix A. See Table 19.

VI. WATER

The County General Plan requires that new development identify long-term water supply alternatives, treatment, and distribution facilities needed to serve the project before completion of the entitlement process.

The SCWA Zone 40 Expanded Study developed the ultimate water supply and distribution demands for a majority of the area encompassing the FVCP. It is proposed that this portion of the FVCP will be annexed into and receive water service from SCWA Zone 40. The southwest portion of the FVCP (approximately 1,170 units) is in the California American Water Company's (CAWC) water service–franchise area. CAWC will provide domestic service of water to customers in their service area. **Map 3** shows the water purveyors in the FVCP.

Water Infrastructure cost and phasing estimates for CAWC and Zone 40 were prepared by MacKay & Somps. The FVCP water cost estimates for both districts are outlined in **Appendix B**.

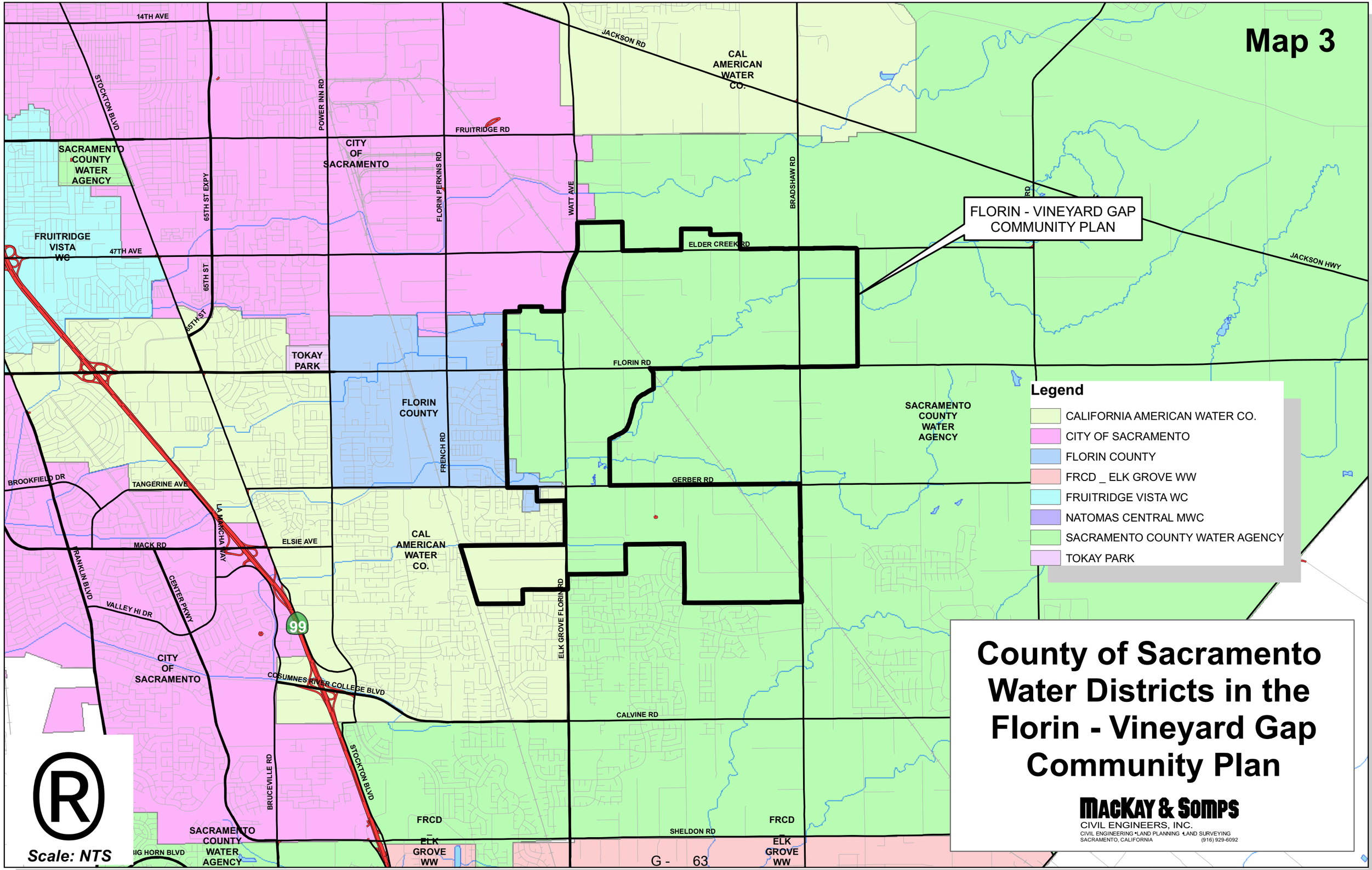
EXISTING INFRASTRUCTURE

Currently, a public water distribution system does not exist in the FVCP. Water for domestic use is obtained from privately owned and operated wells.

PROPOSED INFRASTRUCTURE COSTS, FUNDING SOURCES, AND PHASING

The cost estimates shown in this section are up-to-date and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

The southwest portion of the FVCP (approximately 1,170 units) is in CAWC's water service–franchise area. CAWC will provide domestic service of water to customers in their service area. **Table 21** shows that the estimated cost for water facilities to serve the units under CAWC's jurisdiction is approximately $4.6 million or an average cost of $3,965 per unit. CAWC facilities are privately funded and CAWC would reimburse developers who advance fund these facilities. Additional detail of the CAWC water costs are show in **Appendix B**.



County of Sacramento Water Districts in the Florin - Vineyard Gap Community Plan

Table 21
Florin Vineyard Public Facilities Financing Plan
Estimated Water Facilities Costs per Unit

Water District	Phase 1	Buildout	Units	Cost Per Unit
Cal Am [1]	$4,627,400	$4,627,400	1,167	$3,965
Zone 40	$4,683,600	$14,942,300	9,491	$1,574
Total /Average	**$9,311,000**	**$19,569,700**	**10,658**	**$1,836**

"water_per_unit"

[1] All Cal Am water costs will be incurred in Phase 1.

Water for the majority of the FVCP will be provided by Zone 40. The FVCP ultimately will be served by wells, surface water, distribution mains, and treatment and storage facilities located in the FVCP and in conjunction with other sources provided by Zone 40. MacKay & Somps has estimated the cost of Zone 40 water facilities within the FVCP boundaries will total approximately $14.9 million at buildout, as shown in **Table 21** and detailed in **Appendix B. Table 22** summarizes the estimated cash flow. Units located in the CAWC's water system have been netted out of unit costs used in this table to estimate Zone 40 fee revenue.

FUNDING SOURCES

Existing Fee Program

The majority of the FVCP is located within the boundaries of SCWA Zone 40, which will own, operate, and maintain the necessary water facilities. Development in that portion of the FVCP located in Zone 40 will be required to pay the Zone 40 fee. Fee revenue generated from this fee is meant to fund water supply, treatment, and transmission facilities in Zone 40. The southwest portion of the FVCP (approximately 1,170 units) is in the California American Water Company's (CAWC) water service–franchise area. CAWC will provide domestic service of water to customers in their service area.

All of the fee revenue collected is applicable toward the FVCP water CIP improvements listed in **Appendix B**.

As shown in **Table 22**, the FVCP is expected to generate approximately $112.0 million in Zone 40 fee revenue for buildout. However, FVCP Zone 40 facilities costs total only $14.9 million and include only transmission mains (**Appendix B**). Much of the $97.0 million in fees surplus will go toward the cost of wells, treatment plants, and conjunctive use facilities outside the boundaries of the FVCP that will directly serve the FVCP.

In cases in which developers advance fund the initial phases of Zone 40 infrastructure required to serve the FVCP, the developers are subject to reimbursement within a 5-year time frame. Thirteen hundred dollars of the Zone 40 water fees is paid before improvement plan approval. This portion is not fee creditable. The remainder of the fee is paid before building permit issuance.

Bond-Funding Mechanisms and Other Funding Sources

The Financing Plan anticipates that developer advances or bond financing will be used to advance fund any infrastructure improvements needed in the initial phase of the

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Table 22
Florin Vineyard Public Facilities Financing Plan
Zone 40 Water Infrastructure Cash Flow by Phase

Land Use	Fee per Unit	Proposed Units [1] Phase 1	Proposed Units [1] Buildout [2]	Fee Revenue vs. Construction Cost Phase 1	Fee Revenue vs. Construction Cost Buildout
CONSTRUCTION COST				**$4,683,600**	**$14,942,300**
RD 2-3					
RD-2	$12,379	14	46	$173,306	$569,434
RD-3	$12,379	78	260	$965,562	$3,218,540
Total RD 2-3		**92**	**306**	**$1,138,868**	**$3,787,974**
RD 3-5					
RD 3	$12,379	108	180	$1,336,932	$2,228,220
RD 4	$12,379	215	359	$2,661,485	$4,444,061
RD 5	$12,379	1,828	3,052	$22,628,812	$37,780,708
Total RD 3-5		**2,151**	**3,591**	**$26,627,229**	**$44,452,989**
RD 5-7					
RD 5	$12,379	131	137	$1,621,649	$1,695,923
RD 6	$12,379	2,230	2,326	$27,605,170	$28,793,554
RD 7	$12,379	262	274	$3,243,298	$3,391,846
Total RD 5-7		**2,623**	**2,736**	**$32,470,117**	**$33,881,323**
RD 7-12					
RD 7	$12,379	73	155	$903,667	$1,918,745
RD 9	$12,379	73	155	$903,667	$1,918,745
RD 10	$12,379	73	155	$903,667	$1,918,745
RD 12	$12,379	74	156	$916,046	$1,931,124
Total RD 7-12		**293**	**621**	**$3,627,047**	**$7,687,359**
RD 10	$12,379	**90**	**123**	**$1,114,110**	**$1,522,617**
RD 20	$9,284	**1,233**	**2,114**	**$11,447,480**	**$19,626,905**
	Fee per Acre	Acres			
General Commercial (GC)	$7,553	-	9.0	$0	$67,977
Shopping Center (SC)	$7,553	80.0	102.2	$604,316	$771,539
Limited Commercial (LC)	$7,553	-	16.5	$0	$124,398
Business Professional (BP)	$7,553	-	4.5	$0	$33,989
Industrial (M-1)	$7,553	-	-	$0	$0
TOTAL FEES				**$77,029,167**	**$111,957,069**
Difference (Fees less Costs)				**$72,345,567**	**$97,014,769**
CUMULATIVE				Cumulative	
Fee Revenue				**$77,029,167**	**$111,957,069**
Construction Cost				**$4,683,600**	**$14,942,300**
Difference (Fees less Costs)				**$72,345,567**	**$97,014,769**

"water_cash_flow"

[1] Acreage estimates per land use and DUE factors provided by Sacramento County Municipal Services Agency.
[2] Cal Am units have been netted out of buildout totals.

FVCP and before the collection of fees or other revenue sources. The Financing Plan assumes that fee credits or reimbursements for facilities otherwise funded by fee programs may be available if developers fund and construct fee-funded facilities. It is currently anticipated that the Zone 40 fee program will cover the Phase 1 costs.

PHASING

Phase 1

Initial water supply will be provided by SCWA on a first-come-first-served basis from existing sources outside the FVCP. The availability of water from the existing system is subject to change, reflecting ongoing development and increasing water demands outside the FVCP area. SCWA will re-evaluate available capacity before approval of infrastructure improvement plans. The total cost of Phase 1 is estimated to be $4.7 million.

VII. SEWER

The County has established a countywide policy to provide public sewer service to all new residential developments of densities greater than one dwelling unit per acre. The FVCP is located within the boundaries of the Sacramento Regional County Sanitation District (SRCSD) and Sacramento Area Sanitation District (SASD).

Costs for SASD sewer infrastructure to serve the FVCP were estimated by MacKay & Somps Civil Engineering. The FVCP sewer CIP is outlined in **Appendix C**.

EXISTING INFRASTRUCTURE

The Central Interceptor located in the Elk Grove-Florin Road/South Watt Avenue alignment from Brittany Park Drive to Fruitridge Road runs through the FVCP. The Bradshaw Interceptor, which joins the Central Interceptor alignment south of Gerber Road and roughly follows the Elder Creek alignment northeasterly to Bradshaw Road, is under construction with an estimated completion date of 2008.

PROPOSED INFRASTRUCTURE COSTS, FUNDING SOURCES, AND PHASING

The cost estimates shown in this section are up-to-date cost estimates and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

The total estimated cost of FVCP sewer infrastructure is approximately $11.2 million at buildout. This estimate includes only the SASD trunk sewer lines and lift stations needed to supplement those being constructed by the North Vineyard Station Specific Plan area that also benefit the FVCP. It does not include regional facilities being constructed by the North Vineyard Station Specific Plan area that also benefit the FVCP. **Appendix C** contains a detailed list of sanitary sewer improvements required for the FVCP.

FUNDING SOURCES

Existing Fee Programs

Sewer Fees (SASD and SRCSD)

The FVCP is located within the boundaries of SRCSD and SASD. Development in the FVCP will be required to pay the SASD trunk fee and the "SRCSD capital investment equalization" fee.

Fee revenue generated from the SASD fee is meant to fund construction of trunk sewer improvements. All of the fee revenue collected is applicable toward the FVCP sewer CIP trunk improvements listed in **Appendix C**. As shown in **Table 23**, the FVCP is expected to generate approximately $29.1 million in SASD fee revenue at buildout, resulting in a surplus of $18.0 million over estimated costs shown here. Any surplus in actual fees collected over the actual cost of facilities needed to serve the FVCP, including some constructed by NVS development (not costed here), will be applicable to other areas benefiting from the regional facilities of the SASD system.

Fee revenue generated from the SRCSD fee is meant to fund contributions to regional sewer interceptor and treatment facilities. The FVCP sanitary sewer CIP does not include any sewer facilities that are reimbursable under the SRCSD fee program. Total SRCSD fees paid by the FVCP are estimated to be $76.6 million, as shown in **Table 8**.

Bond-Funding Mechanisms and Other Funding Sources

The Financing Plan anticipates that developer advances or bond financing will be used to advance fund any infrastructure improvements needed in the initial phase of the FVCP and before the collection of fees or other revenue sources. The Financing Plan assumes that fee credits or reimbursements for facilities otherwise funded by fee programs may be available if developers fund and construct fee-funded facilities. It is not anticipated that there will be a funding difference in the initial phase of sewer development in the FVCP. If there are any revenue differences, they will have to be funded by alternative financing such as Mello-Roos or developer funding.

PHASING

Installation of sewer improvements will be determined by the phasing of development projects to be served by sewer facilities. Individual projects will be required to complete sewer facility improvements as conditions of project approval. SASD will ensure adequate sewer facility improvements are constructed to meet the demands of new development.

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Table 23
Florin Vineyard Public Facilities Financing Plan
SASD Sewer Facilities Cash Flow by Phase

Land Use	Fee per Acre	Acres per Phase		Fee Revenue vs. Construction Cost	
		Phase 1	Buildout	Phase 1	Buildout
CONSTRUCTION COST				**$7,446,000**	**$11,152,000**
RD-2	$15,000	5.5	19.0	$82,215	$284,513
RD-3	$15,000	31.1	107.5	$465,885	$1,612,238
Total RD 2-3		**36.5**	**126.5**	**$548,100**	**$1,896,750**
RD 3-5					
RD 3	$15,000	23.9	48.8	$358,493	$732,038
RD 4	$15,000	47.8	97.6	$716,985	$1,464,075
RD 5	$15,000	406.3	829.6	$6,094,373	$12,444,638
Total RD 3-5		**478.0**	**976.1**	**$7,169,850**	**$14,640,750**
RD 5-7					
RD 5	$15,000	21.9	25.8	$327,848	$386,438
RD 6	$15,000	371.6	438.0	$5,573,408	$6,569,438
RD 7	$15,000	43.7	51.5	$655,695	$772,875
Total RD 5-7		**437.1**	**515.3**	**$6,556,950**	**$7,728,750**
RD 7-12					
RD 7	$15,000	7.3	15.5	$110,025	$232,875
RD 9	$15,000	7.3	15.5	$110,025	$232,875
RD 10	$15,000	7.3	15.5	$110,025	$232,875
RD 12	$15,000	7.3	15.5	$110,025	$232,875
Total RD 7-12		**29.3**	**62.1**	**$440,100**	**$931,500**
RD 10	$15,000	**9.0**	**12.3**	**$135,000**	**$184,950**
RD 20	$15,000	**68.5**	**117.5**	**$1,027,350**	**$1,761,750**
General Commercial (GC)	$15,000	**-**	**9.0**	**$0**	**$135,000**
Shopping Center (SC)	$15,000	**80.0**	**102.2**	**$1,200,150**	**$1,532,250**
Limited Commercial (LC)	$15,000	**-**	**16.5**	**$0**	**$247,050**
Business Professional (BP)	$15,000	**-**	**4.5**	**$0**	**$67,500**
Industrial (M-1)	$15,000	**-**	**-**	**$0**	**$0**
Total Acres		**1,138.5**	**1,941.8**		
TOTAL FEES				**$17,077,500**	**$29,126,250**
Construction Cost				**$7,446,000**	**$11,152,000**
				---	---
Difference (Fees - Cost)				**$9,631,500**	**$17,974,250**

"sewer_cash_flow"

[1] Acreage estimates per land use provided by Sacramento County Municipal Services Agency.

VIII. DRAINAGE

The County Water Resources Department requires new development to follow specific guidelines to protect new and existing structures from the consequences of a 100-year flood event. The FVCP must provide storm drainage facilities to modify peak flows such that they do not exceed pre-development flows.

The FVCP lies in the drainage sheds of Unionhouse Creek, Florin Creek, and Elder/Gerber Creeks.

SCWA Zone 11A will manage and maintain storm drainage facilities in the FVCP. The FVCP drainage CIP is outlined in **Appendix D**.

PROPOSED INFRASTRUCTURE COSTS, FUNDING SOURCES, AND PHASING

The cost estimates shown in this section are up-to-date cost estimates and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

The FVCP ultimately will be served by a drainage system that includes channel improvements, flood control detention ponds, storm water–quality basins, new bridges, and trunk pipes and appurtenances. The total estimated cost of the FVCP drainage improvements is $23.3 million at buildout, which includes the estimated cost of ROW acquisition for drainage improvements. Of this amount, $21.4 million is for construction of drainage improvements eligible for Zone 11A funding. **Appendix D** contains the drainage facilities CIP.

Based on significant existing environmental constraints, required drainage improvements to allow development of the light industrial zoning area north of Florin Road have not yet been identified, and therefore costs of any improvements have not yet been included in this financing plan. If development applications are made in the future for projects in this area, additional analysis will be required to identify necessary backbone drainage facilities and related funding.

FUNDING SOURCES

Existing Fee Program

Drainage Fee (Zone 11A)

The FVCP is located within the boundaries of SCWA Zone 11A. Development in the FVCP will be required to pay the Zone 11A fee. Fee revenue generated from the Zone 11A fee is meant to fund region-wide trunk drainage, storm drainage pipes, drainage channel and detention/water quality basin construction, manholes, and related improvements. The fee revenue collected is applicable toward the FVCP drainage CIP improvements. It is estimated that approximately $28.7 million in Zone 11A fee revenue will be generated by the FVCP, as shown in **Table 24**. The estimated construction cost of Zone 11A improvements, however, is $21.4 million. Any surplus in fee revenue over the actual cost of facilities needed to serve the FVCP, including many drainage improvements constructed by NVS development (not costed here), will go to fund facilities for other areas benefiting from the regional facilities in the Zone 11A program.

Drainage CIP improvements are listed in **Appendix D**. The remainder of the drainage infrastructure improvements that is not eligible for Zone 11A reimbursement will be funded by a newly proposed FVFP Supplemental Drainage Fee as a subcomponent of Zone 11A.

Proposed FVFP

Supplemental Drainage Fee Component

The FVCP proposes a FVFP Supplemental Drainage Fee component to cover the cost of drainage infrastructure costs not covered by the existing County Zone 11A drainage fee program. The Supplemental Drainage Fee will be a subcomponent of the Zone 11 fee program. FVFP Supplemental Drainage Fees collected from the FVCP will fund an estimated $1.9 million of drainage facilities and ROW acquisition included in the drainage CIP shown in **Appendix D.** The calculation of the fee amount is shown in **Table 25**, and the estimated fee collection per phase is shown in **Table 26**.

Bond-Funding Mechanisms and Other Funding Sources

The Financing Plan anticipates that developer advances or bond financing will be used to advance fund any infrastructure improvements needed in the initial phase of the FVCP and before the collection of fees or other revenue sources. The Financing Plan assumes that fee credits or reimbursements for facilities otherwise funded by fee programs may be available if developers fund and construct fee-funded facilities. It is anticipated that there will be funding differences during Phase 1, as shown in **Table 26**. Any deficits will be funded by CFD bond funding or developer funding.

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Table 24
Florin Vineyard Public Facilities Financing Plan
Drainage Zone 11A Infrastructure Cash Flow by Phase

Land Use	Fee per Unit	Proposed Units [1]		Fee Revenue vs. Construction Cost	
		Phase 1	Buildout	Phase 1	Buildout
CONSTRUCTION COST				**$15,757,300**	**$21,410,500**
RD 2-3					
RD-2	$6,242	14	47	$87,388	$293,374
RD-3	$4,457	78	269	$347,607	$1,198,799
Total RD 2-3		**92**	**316**	**$434,995**	**$1,492,173**
RD 3-5					
RD 3	$4,457	108	220	$481,302	$980,430
RD 4	$3,564	215	439	$766,206	$1,564,486
RD 5	$2,959	1,828	3,733	$5,409,418	$11,046,694
Total RD 3-5		**2,151**	**4,392**	**$6,656,926**	**$13,591,610**
RD 5-7					
RD 5	$2,959	131	155	$387,655	$458,676
RD 6	$2,524	2,230	2,628	$5,628,892	$6,633,510
RD 7	$2,213	262	309	$579,918	$683,949
Total RD 5-7		**2,623**	**3,092**	**$6,596,465**	**$7,776,135**
RD 7-12					
RD 7	$2,213	73	155	$161,580	$343,081
RD 9	$1,795	73	155	$131,019	$278,191
RD 10	$1,681	73	155	$122,728	$260,586
RD 12	$1,419	74	156	$105,028	$221,411
Total RD 7-12		**293**	**621**	**$520,355**	**$1,103,269**
RD 10	$1,681	**90**	**123**	**$151,308**	**$206,788**
RD 20	$896	**1,233**	**2,114**	**$1,104,152**	**$1,893,087**
		Acres			
General Commercial (GC)	$19,777	**-**	**9.0**	**$0**	**$177,993**
Shopping Center (SC)	$19,777	**80.0**	**102.2**	**$1,582,358**	**$2,020,221**
Limited Commercial (LC)	$19,777	**-**	**16.5**	**$0**	**$325,727**
Business Professional (BP)	$19,777	**-**	**4.5**	**$0**	**$88,997**
Industrial (M-1)	$19,423	**-**	**-**	**$0**	**$0**
TOTAL FEES				**$17,046,558**	**$28,675,998**
Difference (Fees - Cost)				**$1,289,258**	**$7,265,498**
CUMULATIVE					
Fee Revenue				**$17,046,558**	**$28,675,998**
Construction Cost				**$15,757,300**	**$21,410,500**
Difference (Fees less Costs)				**$1,289,258**	**$7,265,498**

"zone_11A"

Source: Sacramento County Water Resources Zone 11A Fee Schedule; and MacKay & Somps.

[1] Acreage estimates per land use provided by Sacramento County Municipal Services Agency.

Table 25
Florin Vineyard Public Facilities Financing Plan
Supplemental Drainage Fee Calculation

Land Use	Total Acres	% Acres [1]	DUE Factor	Total DUEs	Cost Allocation	Fee per Acre
CONSTRUCTION COST					**$1,859,900**	
RD 2-3						
RD-2	19.0	15%	2.00	38	$6,971	$368
RD-3	107.5	85%	2.91	313	$57,472	$535
Total RD 2-3	**126.5**	**100%**		**351**	**$64,443**	**$510**
RD 3-5						
RD 3	48.8	5%	2.91	142	$26,095	$535
RD 4	97.6	10%	3.72	363	$66,718	$684
RD 5	829.6	85%	4.50	3,733	$686,013	$827
Total RD 3-5	**976.1**	**100%**		**4,238**	**$778,826**	**$798**
RD 5-7						
RD 5	25.8	5%	4.50	116	$21,302	$827
RD 6	438.0	85%	5.40	2,365	$434,570	$992
RD 7	51.5	10%	6.30	325	$59,647	$1,158
Total RD 5-7	**515.3**	**100%**		**2,806**	**$515,519**	**$1,001**
RD 7-12						
RD 7	15.5	25%	6.30	98	$17,972	$1,158
RD 9	15.5	25%	7.47	116	$21,310	$1,373
RD 10	15.5	25%	7.47	116	$21,310	$1,373
RD 12	15.5	25%	7.47	116	$21,310	$1,373
Total RD 7-12	**62.1**	**100%**		**446**	**$81,902**	**$1,319**
RD 10	**12.3**	**100%**	**7.47**	**92**	**$16,924**	**$1,373**
RD 20	**117.5**	**100%**	**7.47**	**877**	**$161,214**	**$1,373**
General Commercial (GC)	**9.0**	**100%**	**9.93**	**89**	**$16,422**	**$1,825**
Shopping Center (SC)	**102.2**	**100%**	**9.93**	**1,014**	**$186,387**	**$1,825**
Limited Commercial (LC)	**16.5**	**100%**	**9.93**	**164**	**$30,052**	**$1,825**
Business Professional (BP)	**4.5**	**100%**	**9.93**	**45**	**$8,211**	**$1,825**
Industrial (M-1)	**0.0**	**100%**	**8.71**	**0**	**$0**	**$0**
TOTAL	**1,941.8**			**10,122**	**$1,859,900**	
Fee per DUE						**$184**

"supp_drainage_alloc"

Source: Mackay & Somps and County of Sacramento.

[1] % acres per land use and DUE factors provided by Sacramento County Municipal Services Agency.

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Table 26
Florin Vineyard Public Facilities Financing Plan
Supplemental Drainage Infrastructure Cash Flow by Phase

Land Use	Fee per Acre	Acres per Phase [1]		Fee Revenue vs. Construction Cost	
		Phase 1	Buildout	Phase 1	Buildout
CONSTRUCTION COST				**$1,613,400**	**$1,859,900**
RD 2-3					
RD-2	$368	5.5	19.0	$2,014	$6,971
RD 3	$535	31.1	107.5	$16,608	$57,472
Total RD 2-3		**36.5**	**126.5**	**$18,622**	**$64,443**
RD 3-5					
RD 3	$535	23.9	48.80	$12,779	$26,095
RD 4	$684	48	97.61	$32,673	$66,718
RD 5	$827	406	829.64	$335,953	$686,013
Total RD 3-5		**478.0**	**976.05**	**$381,406**	**$778,826**
RD 5-7					
RD 5	$827	21.9	25.8	$18,073	$21,302
RD 6	$992	371.6	438.0	$368,682	$434,570
RD 7	$1,158	43.7	51.5	$50,603	$59,647
Total RD 5-7		**437.1**	**515.3**	**$437,358**	**$515,519**
RD 7-12					
RD 7	$1,158	7.3	15.5	$8,491	$17,972
RD 9	$1,373	7.3	15.5	$10,068	$21,310
RD 10	$1,373	7.3	15.5	$10,068	$21,310
RD 12	$1,373	7.3	15.5	$10,068	$21,310
Total RD 7-12		**29.3**	**62.1**	**$38,696**	**$81,902**
RD 10	**$1,373**	**9.0**	**12.3**	**$12,354**	**$16,924**
RD 20	**$1,373**	**68.5**	**117.5**	**$94,011**	**$161,214**
General Commercial (GC)	**$1,825**	**-**	**9.0**	**$0**	**$16,422**
Shopping Center (SC)	**$1,825**	**80.0**	**102.2**	**$145,990**	**$186,387**
Limited Commercial (LC)	**$1,825**	**-**	**16.5**	**$0**	**$30,052**
Business Professional (BP)	**$1,825**	**-**	**4.5**	**$0**	**$8,211**
Industrial (M-1)	**$0**	**-**	**-**	**$0**	**$0**
TOTAL		**1,138.5**	**1,941.8**	**$1,128,435**	**$1,859,900**
Difference				**($484,965)**	**$0**
CUMULATIVE				Cumulative	
Fee Revenue				$1,128,435	**$1,859,900**
Construction Cost				$1,613,400	**$1,859,900**
Difference (Fees - Cost)				**($484,965)**	**$0**

"supp_drainage_cash_flow"

[1] Acreage estimates per land use and DUE factors provided by Sacramento County Municipal Services Agency.

PHASING

The phasing of drainage improvements is highly dependent upon the geographic location and timing of development. If development does not proceed in the sequence anticipated, a detailed hydraulic analysis will need to be prepared to demonstrate to the satisfaction of the County Department of Water Resources that development does not negatively impact existing floodplain elevations.

Phase 1

The necessary improvements to allow Phase 1 development to proceed consist of construction of trunk drainage pipes, detention and water quality–treatment basins, and minor open channel improvements. In addition, Phase 1 development located in the Elder/Gerber Creeks shed is dependent on channel improvements identified in the North Vineyard Station Specific Plan Public Facilities Financing Plan. If construction of those facilities by North Vineyard Station development does not precede Phase 1 development in the FVCP, it is likely that they would have to be funded and constructed by FVCP development proponents. These costs would then be reimbursable through reimbursement agreements with SCWA Zone 11A.

Buildout

The costs for both Zone 11A and supplemental backbone drainage improvements needed for buildout of all residential components of the FVCP are expected to be incurred entirely in Phase 1. At the time the Industrial (M-1) land use is proposed to develop, however, drainage improvements would need to be re-examined and an update to this financing plan or a separate and distinct financing plan would be necessary.

IX. PARKS AND RECREATION

The FVCP is located within the Southgate Recreation and Park District (SRPD), which operates 44 parks, 4 community centers, 2 pools, and a golf course. Areas served by the SRPD have a current population of over 110,000 people and encompass 52 square miles in the South Sacramento and Vineyard Communities. The boundaries are shown on **Map 4**. The FVCP comprises almost 6 square miles in the center of the SRPD and amounts to about 11 percent of the District's territory.

Information about park facilities was obtained from SRPD. These costs are detailed in **Appendix E**.

EXISTING FACILITIES

Currently, SRPD has developed no parks within the boundaries of the FVCP. Existing and planned park facilities are located immediately to the west, south, and east of the FVCP. Examples of neighboring developed parks include Sunrise Florin Park on Fletcher Farm Drive, Churchill Downs Community Park on Waterman Road, and Wildhawk Golf Club on Vineyard Road.

PROPOSED FACILITY COSTS, FUNDING SOURCES, AND PHASING

The cost estimates shown in this section are up-to-date cost estimates and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

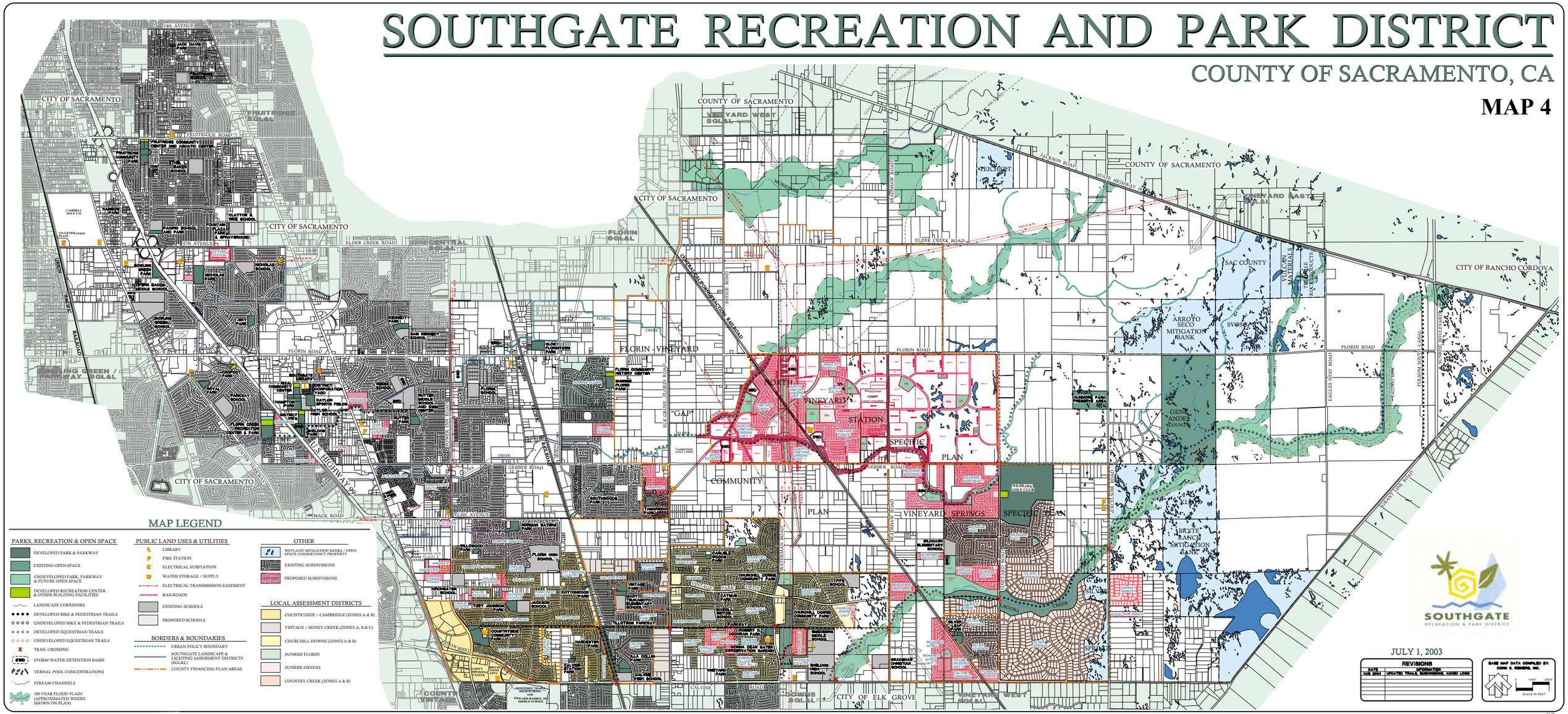
The SRPD requires land dedication of 5 acres per 1,000 residents. According to SRPD, there will be 17.9 acres of mini-parks, 54.1 acres of small neighborhood parks, 41.1 acres of large neighborhood parks, and 24.6 acres of community parks. The parks-and-recreation CIP also includes parkway and trail facilities, playground facilities, and two community centers serving the FVCP totaling 25,000 square feet.

The total cost of parks is estimated to be $61.6 million. This amount includes $20.5 million for basic park development, $11.7 million for two community centers, $4.0 million for creek corridor and open space trail facilities, $339,600 for pedestrian signal crossings, $2.8 million for parkway facilities, and $16.7 million for playground and other park facilities. The total cost also includes approximately $5.7 million in contingency and master plan costs.

SOUTHGATE RECREATION AND PARK DISTRICT

COUNTY OF SACRAMENTO, CA

MAP 4



FUNDING SOURCES

Existing Fee Programs

Aside from Quimby in-lieu fees, the only part of the FVCP currently subject to park development fees is the 1,100 acres of land south of Gerber Road and east of Elk Grove-Florin Road, which is within the current Vineyard Financing Plan Fee Program. The Vineyard fees include a park fee for improvement of Southgate Recreation and Park District parks.

Proposed FVFP

Parks and Recreation Fee Component

The FVCP proposes a FVFP parks and recreation fee component to cover the cost of park infrastructure. The calculation of the fee is shown in **Table 27**, and the estimated fee collection by phase is shown in **Table 28**. It is estimated that the FVFP parks and recreation fees collected from the FVCP area will fund an estimated $61.6 million of facilities included in the parks and recreation CIP at buildout. A detailed summary of the park and recreation cost portion of the FVFP has been provided by Southgate Recreation and Park District and is shown in **Appendix E**. FVFP fee amounts were calculated using the CAM method discussed in **Chapter II**.

Bond-Funding Mechanisms and Other Funding Sources

The Financing Plan anticipates that developer advances or bond financing will be used to advance fund any infrastructure improvements needed in the initial phase of the FVCP and before the collection of fees or other revenue sources. The Financing Plan assumes that fee credits or reimbursements for facilities otherwise funded by fee programs may be available if developers fund and construct fee-funded facilities.

PHASING

Park development phasing will be the responsibility of Southgate Recreation and Park District. The share of the park facilities CIP funded at any stage of FVCP development will correspond to the cumulative share of buildout development. Historically, development has not fronted the cost of park improvements in the district. Agreements for turnkey or developer-advanced funding of park improvements will be determined on a case-by-case basis with the district.

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Table 27
Florin Vineyard Public Facilities Financing Plan
Park Fee Calculation

Land Use	Total Acres	% Acres [1]	DUE Factor (Appx J)	Total DUEs	Cost Allocation	Fee per Acre
CONSTRUCTION COST					**$61,613,133**	
RD 2-3						
RD-2	19.0	15%	2.00	38	$243,114	$12,817
RD-3	107.5	85%	2.90	312	$1,997,587	$18,585
Total RD 2-3	**126.5**	**100%**		**350**	**$2,240,701**	**$17,720**
RD 3-5						
RD 3	48.8	5%	2.90	142	$907,006	$18,585
RD 4	97.6	10%	3.70	361	$2,314,428	$23,712
RD 5	829.6	85%	4.50	3,733	$23,926,181	$28,839
Total RD 3-5	**976.1**	**100%**		**4,236**	**$27,147,614**	**$27,814**
RD 5-7						
RD 5	25.8	5%	4.50	116	$742,968	$28,839
RD 6	438.0	85%	5.40	2,365	$15,156,557	$34,607
RD 7	51.5	10%	6.30	325	$2,080,312	$40,375
Total RD 5-7	**515.3**	**100%**		**2,806**	**$17,979,837**	**$34,895**
RD 7-12						
RD 7	15.5	25%	6.30	98	$626,819	$40,375
RD 9	15.5	25%	8.10	126	$805,910	$51,910
RD 10	15.5	25%	7.40	115	$736,263	$47,424
RD 12	15.5	25%	8.60	134	$855,657	$55,115
Total RD 7-12	**62.1**	**100%**		**472**	**$3,024,650**	**$48,706**
RD 10	**12.3**	**100%**	**7.40**	**91**	**$584,743**	**$47,424**
RD 20	**117.5**	**100%**	**11.70**	**1,374**	**$8,806,610**	**$74,982**
General Commercial (GC)	**9.0**	**100%**	**1.70**	**15**	**$98,053**	**$10,895**
Shopping Center (SC)	**102.2**	**100%**	**2.10**	**215**	**$1,374,762**	**$13,458**
Limited Commercial (LC)	**16.5**	**100%**	**2.50**	**41**	**$263,878**	**$16,022**
Business Professional (BP)	**4.5**	**100%**	**3.20**	**14**	**$92,285**	**$20,508**
Industrial (M-1)	**0.0**	**100%**	**1.50**	**0**	**$0**	**$0**
TOTAL	**1,941.8**	**-**	**-**	**9,614**	**$61,613,133**	**-**
Fee per DUE						**$6,409**

"park_alloc"

Source: Southgate Recreation and Park District, Mackay & Somps and County of Sacramento.

[1] % acres per land use and DUE factors provided by Sacramento County Municipal Services Agency.

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Table 28
Florin Vineyard Public Facilities Financing Plan
Park Infrastructure Cash Flow by Phase

Land Use	Fee per Acre	Acres per Phase [1] Phase 1	Acres per Phase [1] Buildout	Fee Revenue vs. Construction Cost Phase 1	Fee Revenue vs. Construction Cost Buildout
CONSTRUCTION COST [2]				**$37,264,153**	**$61,613,133**
RD 2-3					
RD-2	$12,817	5.5	19.0	$70,252	$243,114
RD 3	$18,585	31.1	107.5	$577,239	$1,997,587
Total RD 2-3		**36.5**	**126.5**	**$647,491**	**$2,240,701**
RD 3-5					
RD 3	$18,585	23.9	48.80	$444,178	$907,006
RD 4	$23,712	48	97.61	$1,133,419	$2,314,428
RD 5	$28,839	406	829.64	$11,717,100	$23,926,181
Total RD 3-5		**478.0**	**976.05**	**$13,294,696**	**$27,147,614**
RD 5-7					
RD 5	$28,839	21.9	25.8	$630,323	$742,968
RD 6	$34,607	371.6	438.0	$12,858,585	$15,156,557
RD 7	$40,375	43.7	51.5	$1,764,904	$2,080,312
Total RD 5-7		**437.1**	**515.3**	**$15,253,811**	**$17,979,837**
RD 7-12					
RD 7	$40,375	7.3	15.5	$296,149	$626,819
RD 9	$51,910	7.3	15.5	$380,763	$805,910
RD 10	$47,424	7.3	15.5	$347,858	$736,263
RD 12	$55,115	7.3	15.5	$404,267	$855,657
Total RD 7-12		**29.3**	**62.1**	**$1,429,037**	**$3,024,650**
RD 10	**$47,424**	**9.0**	**12.3**	**$426,819**	**$584,743**
RD 20	**$74,982**	**68.5**	**117.5**	**$5,135,502**	**$8,806,610**
General Commercial (GC)	**$10,895**	**-**	**9.0**	**$0**	**$98,053**
Shopping Center (SC)	**$13,458**	**80.0**	**102.2**	**$1,076,796**	**$1,374,762**
Limited Commercial (LC)	**$16,022**	**-**	**16.5**	**$0**	**$263,878**
Business Professional (BP)	**$20,508**	**-**	**4.5**	**$0**	**$92,285**
Industrial (M-1)	**$0**	**-**	**-**	**$0**	**$0**
TOTAL	**-**	**1,138.5**	**1,941.8**	**$37,264,153**	**$61,613,133**
				---	---
Difference (Fees - Cost)				**$0**	**$0**
CUMULATIVE				Cumulative	
Fee Revenue				**$37,264,153**	**$61,613,133**
Construction Cost				**$37,264,153**	**$61,613,133**
				---	---
Difference (Fees - Cost)				**$0**	**$0**

"park_cash_flow"

[1] Acreage estimates per land use and DUE factors provided by Sacramento County Public Infrastructure Finance Section.

X. SCHOOLS

The FVCP is within the boundaries of the EGUSD.

Information regarding school costs was obtained from the EGUSD Development Fee Justification Study/School Facilities Needs Analysis (SFNA) dated July 2008.

EXISTING AND PROPOSED FACILITIES

According to the EGUSD, students in the FVCP primarily will initially attend Sierra Enterprise Elementary School, Katherine Albiani Middle School, and Pleasant Grove High School. Based on the number of units expected in the FVCP, and student yield factors from the District's School Facilities Needs Analysis, the EGUSD plans to eventually fund and construct approximately four new elementary schools in the plan area. This purpose of this construction is to meet the needs of the future students who will be generated by development of the FVCP plan area at buildout.

PROPOSED FACILITY COSTS, FUNDING SOURCES, AND PHASING

The cost estimates shown in this section are up-to-date cost estimates and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

The EGUSD estimates school-facility costs by using anticipated enrollment and average costs per student as quantified in the District's SFNA documentation. Based on State law, a district's SFNA should be updated annually. Current student generation rates, student-housing costs, and the calculation of the total costs are shown in **Appendix F**. This methodology determines the anticipated demand for school facilities or estimated student-housing cost (i.e., number of students and average cost per student), rather than actual cost of school facilities that will be constructed in the FVCP. The estimated student-housing cost versus actual cost of school facilities constructed in the FVCP will vary as, in most cases; school facilities may be completed only in entire units (i.e., one complete elementary school).

The estimated cost for schools is outlined in **Appendix F**. Using the estimated student-housing cost methodology, the EGUSD has determined the need for $190.6 million in school facilities. The elementary school portion is $92.5 million. Although no new middle schools or high school campuses are proposed within the FVCP, the

$98.0 million in needed middle and high school funding will go toward middle and high school facilities located nearby, which will serve the 1,039 middle school students and 1,995 high school students estimated to be generated by FVCP development at buildout.

FUNDING SOURCES

Existing Fee Program

School Mitigation Fees

To deal with enrollment growth within its boundaries successfully, the EGUSD had implemented a three-part financing plan to build new schools and refurbish existing schools. The District's plan includes funding from local Mello-Roos bonds, statewide school bonds, and developer mitigation fees. Proposition 1A, which governs school financing statewide, restricts cities and counties from placing school mitigation conditions on development approvals, as a result, the EGUSD adopted a school fee of $4.17 per square foot for residential development and $0.47 per square foot for nonresidential development. Based on these fee amounts, as shown in **Table 29**, the FVCP is expected to generate $102.0 million at buildout.

Other Funding Sources

EGUSD CFD No. 1 and State Funding

Developing properties within the boundaries of the EGUSD also are required to participate in the district's Mello-Roos CFD No. 1 annual special tax. In an effort to replace the deficiency in funding, the EGUSD Board of Education approved this special tax in 1987. It is anticipated that the annual tax for CFD No. 1 will be collected from development until Fiscal Year 2038-2039.

Newly developed properties within the boundaries of the EGUSD CFD No. 1 currently pay an annual tax of approximately $200 per single-family unit. Newly developed nonresidential development currently pays an annual tax of $800 per acre. Developing properties within the boundaries of the EGUSD also are required to pay the school impact fees authorized by State law as discussed earlier in this chapter.

PHASING

The EGUSD will manage the construction of school facilities. At this time, phasing information is not available. Phasing for schools will depend on State funding.

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Table 29
Florin Vineyard Public Facilities Financing Plan
EGUSD Level 2 Fee Cash Flow by Phase

Land Use	Fee per Sq. Ft.	Sq. Ft. Per Unit [1]	Units per Phase Phase 1	Units per Phase Buildout	Fee Revenue vs. Construction Cost Phase 1	Fee Revenue vs. Construction Cost Total
CONSTRUCTION COST					**$116,402,048**	**$190,573,716**
RD 2-3						
RD-2	$4.17	2,800	14	47	$163,464	$548,772
RD-3	$4.17	2,800	78	269	$910,728	$3,140,844
Total RD 2-3			**92**	**316**	**$1,074,192**	**$3,689,616**
RD 3-5						
RD 3	$4.17	2,700	108	220	$1,215,972	$2,476,980
RD 4	$4.17	2,700	215	439	$2,420,685	$4,942,701
RD 5	$4.17	2,700	1,828	3,733	$20,581,452	$42,029,847
Total RD 3-5			**2,151**	**4,392**	**$24,218,109**	**$49,449,528**
RD 5-7						
RD 5	$4.17	2,500	131	155	$1,365,675	$1,615,875
RD 6	$4.17	2,500	2,230	2,628	$23,247,750	$27,396,900
RD 7	$4.17	2,500	262	309	$2,731,350	$3,221,325
Total RD 5-7			**2,623**	**3,092**	**$27,344,775**	**$32,234,100**
RD 7-12						
RD 7	$4.17	2,100	73	155	$639,261	$1,357,335
RD 9	$4.17	2,100	73	155	$639,261	$1,357,335
RD 10	$4.17	2,100	73	155	$639,261	$1,357,335
RD 12	$4.17	2,100	74	156	$648,018	$1,366,092
Total RD 7-12			**293**	**621**	**$2,565,801**	**$5,438,097**
RD 10	$4.17	1,500	**90**	**123**	**$562,950**	**$769,365**
RD 20	$4.17	1,100	**1,233**	**2,114**	**$5,655,771**	**$9,696,918**
			Acres			
General Commercial (GC)	$0.47	[2]	**-**	**9.0**	**$0**	**$46,065**
Shopping Center (SC)	$0.47	[2]	**80.0**	**102.2**	**$409,515**	**$522,834**
Limited Commercial (LC)	$0.47	[2]	**-**	**16.5**	**$0**	**$84,298**
Business Professional (BP)	$0.47	[2]	**-**	**4.5**	**$0**	**$31,324**
Industrial (M-1)	$0.47	[2]	**-**	**-**	**$0**	**$0**
TOTAL FEES					**$61,831,113**	**$101,962,145**
Difference (Fees - Cost) [3]					**($54,570,935)**	**($88,611,571)**
CUMULATIVE					Cumulative	
Fee Revenue					**$61,831,113**	**$101,962,145**
Construction Cost					**$116,402,048**	**$190,573,716**
Difference (Fees - Cost) [3]					**($54,570,935)**	**($88,611,571)**

"school_cash_flow"

[1] Square feet per unit is an estimate made for each land use category. Actual square footage will vary from unit to unit.
[2] Total sq. ft. based on FAR = Acres x FAR x 43,560. (BP FAR = 0.34, Commercial FAR = 0.25 and Industrial FAR = 0.40).
[3] Difference to be funded by existing EGUSD Mello-Roos CFD and the State School Building Program.

XI. LIBRARY

Library services for the FVCP are under the purview of the Sacramento Public Library Authority. The FVCP will be required to contribute towards the provision of library services for its residents.

PROPOSED FACILITY COSTS, FUNDING SOURCES, AND PHASING

The cost estimates shown in this section are up-to-date cost estimates and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

Current Library Authority standards require one 20,000-square-foot library to serve 50,000 residents. Based on the estimated build-out population of the FVCP and this standard, the FVCP would not justify its own new library, but rather will be required to contribute toward library facilities created to serve a larger community area.

According to the Sacramento Public Library Authority, the FVCP will benefit from and therefore be required to contribute to a the new Vineyard 1 Library, as outlined in the Sacramento Public Library Authority Facilities Master Plan 2007–2025, dated November 2006. The North Vineyard Station Fee Program and Vineyard Fee Program areas also benefit from and presently contribute to the Vineyard 1 Library through their library fees. EPS and the Sacramento Public Library Authority have estimated that the FVCP's share of the Vineyard 1 library cost is approximately $13.6 million, as detailed in **Table G-1** of **Appendix G**. As with the North Vineyard Station and Vineyard Financing Plans, the resulting FVFP library fee that is proposed includes a share of Vineyard 1 Library financing costs in order to enable construction after 10 years. The total library cost estimate includes construction hard costs, furniture, technology, public art, library materials, site acquisition costs, soft costs, and financing costs.

FUNDING SOURCES

Existing Fee Programs

In the FVCP, there are no existing fee programs, aside from the Vineyard Fee Program library fee in the southeast one-third of the plan area.

Proposed FVFP

Library Fee Component

The FVCP proposes a FVFP library fee component to fund the estimated $13.6 million fair share of library facilities included in the library CIP as outlined **Appendix G**. The fee calculation is shown in **Table 30**, and the estimated fee revenue collected per phase is shown in **Table 31**. In the Financing Plan area, the FVFP Library Fee will be charged to all residential zoned properties but not commercial or industrial zoned properties. FVFP fee amounts were calculated using the CAM method discussed in **Chapter II**.

The Sacramento Public Library staff is aware that the entire fee proceeds will not be received until the entire financing plan areas are developed. Therefore, an interim source of financing must be secured to build the proposed facility before the final buildout of all the contributing financing plan areas. Development fees can be used to reimburse the interim source as fee proceeds are received. The Sacramento Public Library Authority anticipates that it would begin construction of the Vineyard Library at mid-point (Year 10) in the anticipated 20-year lifespan of the fee program. The Sacramento Public Library Authority is assuming it would borrow and finance the remaining half of the FVFP library facilities cost at year 10 in order to build the library. This calculation of financing costs is shown in **Table G-1** in **Appendix G**.

PHASING

The Library Authority will manage the phasing of library facilities. As the FVCP likely will be contributing fee revenue for library facilities, the phasing of development in the FVCP likely will not have an impact upon the phasing of library facility construction.

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Table 30
Florin Vineyard Public Facilities Financing Plan
Library Fee Calculation

Land Use	Total Acres	% Acres [1]	DUE Factor [1]	Total DUEs	Cost Allocation	Fee per Acre
CONSTRUCTION COST					**$13,581,000**	
RD 2-3						
RD-2	19.0	15%	2.00	38	$55,228	$2,912
RD-3	107.5	85%	2.90	312	$453,786	$4,222
Total RD 2-3	**126.5**	**100%**		**350**	**$509,014**	**$4,025**
RD 3-5						
RD 3	48.8	5%	2.90	142	$206,042	$4,222
RD 4	97.6	10%	3.70	361	$525,762	$5,387
RD 5	829.6	85%	4.50	3,733	$5,435,244	$6,551
Total RD 3-5	**976.1**	**100%**		**4,236**	**$6,167,048**	**$6,318**
RD 5-7						
RD 5	25.8	5%	4.50	116	$168,778	$6,551
RD 6	438.0	85%	5.40	2,365	$3,443,073	$7,862
RD 7	51.5	10%	6.30	325	$472,579	$9,172
Total RD 5-7	**515.3**	**100%**		**2,806**	**$4,084,430**	**$7,927**
RD 7-12						
RD 7	15.5	25%	6.30	98	$142,393	$9,172
RD 9	15.5	25%	8.10	126	$183,076	$11,792
RD 10	15.5	25%	7.40	115	$167,255	$10,773
RD 12	15.5	25%	8.60	134	$194,377	$12,520
Total RD 7-12	**62.1**	**100%**		**472**	**$687,101**	**$11,064**
RD 10	**12.3**	**100%**	**7.40**	**91**	**$132,834**	**$10,773**
RD 20	**117.5**	**100%**	**11.70**	**1,374**	**$2,000,573**	**$17,033**
General Commercial (GC)	**9.0**	**100%**	**0.00**	**0**	**$0**	**$0**
Shopping Center (SC)	**102.2**	**100%**	**0.00**	**0**	**$0**	**$0**
Limited Commercial (LC)	**16.5**	**100%**	**0.00**	**0**	**$0**	**$0**
Business Professional (BP)	**4.5**	**100%**	**0.00**	**0**	**$0**	**$0**
Industrial (M-1)	**0.0**	**100%**	**0.00**	**0**	**$0**	**0**
TOTAL	**1,941.8**			**9,329**	**$13,581,000**	
Fee per DUE						**$1,456**

"library_alloc"

Source: Sacramento Public Library Authority, Mackay & Somps and County of Sacramento.

Note: Non-residential land uses do not pay library fees.
[1] % acres per land use and DUE factors provided by Sacramento County Municipal Services Agency.

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Table 31
Florin Vineyard Public Facilities Financing Plan
Library Infrastructure Cash Flow by Phase

Land Use	Fee per Acre	Acres per Phase [1]		Fee Revenue vs. Construction Cost	
		Phase 1	Buildout	Phase 1	Buildout
CONSTRUCTION COST				**$8,220,000**	**$13,581,000**
RD 2-3					
RD-2	$2,912	5.5	19.0	$16,000	$55,228
RD 3	$4,222	31.1	107.5	$131,100	$453,786
Total RD 2-3		**36.5**	**126.5**	**$147,100**	**$509,014**
RD 3-5					
RD 3	$4,222	23.9	48.80	$100,900	$206,042
RD 4	$5,387	48	97.61	$257,500	$525,762
RD 5	$6,551	406	829.64	$2,661,700	$5,435,244
Total RD 3-5		**478.0**	**976.05**	**$3,020,100**	**$6,167,048**
RD 5-7					
RD 5	$6,551	21.9	25.8	$143,200	$168,778
RD 6	$7,862	371.6	438.0	$2,921,000	$3,443,073
RD 7	$9,172	43.7	51.5	$400,900	$472,579
Total RD 5-7		**437.1**	**515.3**	**$3,465,100**	**$4,084,430**
RD 7-12					
RD 7	$9,172	7.3	15.5	$67,300	$142,393
RD 9	$11,792	7.3	15.5	$86,500	$183,076
RD 10	$10,773	7.3	15.5	$79,000	$167,255
RD 12	$12,520	7.3	15.5	$91,800	$194,377
Total RD 7-12		**29.3**	**62.1**	**$324,600**	**$687,101**
RD 10	**$10,773**	**9.0**	**12.3**	**$96,959**	**$132,834**
RD 20	**$17,033**	**68.5**	**117.5**	**$1,166,618**	**$2,000,573**
General Commercial (GC)	**$0**	**-**	**9.0**	**$0**	**$0**
Shopping Center (SC)	**$0**	**80.0**	**102.2**	**$0**	**$0**
Limited Commercial (LC)	**$0**	**-**	**16.5**	**$0**	**$0**
Business Professional (BP)	**$0**	**-**	**4.5**	**$0**	**$0**
Industrial (M-1)	**$0**	**-**	**-**	**$0**	**$0**
TOTAL		**1,138.5**	**1,941.8**	**$8,220,000**	**$13,581,000**
Difference (Fees - Cost)				**$0**	**$0**
CUMULATIVE				Cumulative	
Fee Revenue				$8,220,000	**$13,581,000**
Construction Cost				$8,220,000	**$13,581,000**
				---	---
Difference (Fees - Cost)				**$0**	**$0**

"library_cash_flow"

[1] Acreage estimates per land use and DUE factors provided by Sacramento County Municipal Services Agency.

XII. FIRE PROTECTION

The FVCP is within the boundaries of Sacramento Metropolitan Fire District (SMFD), as shown on **Map 5** (The FVCP is within the area marked by the red circle).

EXISTING AND PLANNED FACILITIES

EXISTING FACILITIES

Currently, the SMFD provides fire protection and emergency medical services from the following fire stations near FVCP:

- Station 50 (8880 Gerber Road)—a 4-bay station located within the western boundary of the FVCP area.
- Station 54 (8900 Fredric Avenue)—located approximately 2 miles north of the FVCP. This is an outmoded facility that is proposed to be replaced with a new fire station at a to-be-determined location serving the Rosemont area.
- Station 55 (7776 Excelsior Road)—a 3-bay station located 2 miles east of the FVCP.
- Station 62 (3646 Bradshaw Road)—located approximately 3 miles north of the FVCP.
- Station 52 (9780 Elder Creek Road)—an unused, outdated facility located one-quarter mile east of Bradshaw Road within the northern boundary of the FVCP.

PLANNED FACILITIES

Within the vicinity of FVCP, SMFD has planned to construct a new fire station (Station 52) just outside the FVCP within the next several years and to replace the Rosemont area fire station (Station 54) in the near future in order to best serve future development. Specific timing will be determined in part by patterns of development as they emerge. These projects have been included in the SMFD Initial Fire Station Replacement Program CIP with funding from the District's existing Capital Fire Facilities Fee. District staff estimates the cost of a new fire station at approximately $5 million, excluding the cost of land.

- Proposed Station 52 (8101 Bradshaw Road) is a replacement fire station located just south of the FVCP boundary at the southeast corner of Bradshaw Road and Vintage Park Drive. SMFD already acquired this site.

- Station 54 (8900 Fredric Avenue) is located approximately 2 miles north of the FVCP. This is an outmoded facility that is proposed to be replaced with a new fire station at a to-be-determined location serving the Rosemont area.

SMFD retains the prerogative of modifying its response to development within its large territory according to the actual patterns of development that may unfold in the future. SMFD encompasses several approved specific/comprehensive planning areas including North Vineyard Station and Vineyard Springs, as well as GenCorp's Easton project, and additional urban areas contemplated in the County's General Plan Update (Jackson Road and Grant Line East/Cordova Hills). The current SMFD capital facilities plan is intended to be flexible and may be modified as needed in the future to best deploy the District's resources in providing fire protection and emergency medical services to serve residents and businesses in the District.

FUNDING SOURCES AND PHASING

FUNDING SOURCES

Existing Fee Program

The existing Capital Fire Facilities Fee Program of the SMFD is currently slated to fund several planned facilities improvements that will directly benefit the FVCP, which is expected to help contribute through the payment of this impact fee. As illustrated by the revenues projected in this report, since no new fire station is planned within the boundaries of the FVCP area, fee revenue generated from the SMFD Capital Fire Facilities Fee could be used to help fund the new Station 52 in Vineyard Springs nearby and other stations within the vicinity of FVCP that will potentially help serve development in the FVCP. The SMFD Capital Fire Facilities Fee program is anticipated to generate an estimated $15.1 million in fee revenue during FVCP buildout, as shown in **Table 32**. In any case, SMFD reserves the right to update, supplement, or replace the Capital Fire Facilities Fee with modifications to its current capital financing strategy as needed to respond to the service requirements of the District.

PHASING

Sacramento Metropolitan Fire District will be responsible for phasing its facilities to best serve FVCP development. SMFD service standards such as response times will continue to guide District facilities planning.

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Table 32
Florin Vineyard Public Facilities Financing Plan
SMFD Capital Fire Facilities Fee Revenue by Phase [1]

Land Use	Fee per Sq. Ft.	Est. Sq. Ft.	Units per Phase		Fee Revenue	
			Phase 1	Buildout	Phase 1	Buildout
RD 2-3						
RD-2	$0.56	2,800	14	47	$21,952	$73,696
RD-3	$0.56	2,800	78	269	$122,304	$421,792
Total RD 2-3			**92**	**316**	**$144,256**	**$495,488**
RD 3-5						
RD 3	$0.56	2,700	108	220	$163,296	$332,640
RD 4	$0.56	2,700	215	439	$325,080	$663,768
RD 5	$0.56	2,700	1,828	3,733	$2,763,936	$5,644,296
Total RD 3-5			**2,151**	**4,392**	**$3,252,312**	**$6,640,704**
RD 5-7						
RD 5	$0.56	2,500	131	155	$183,400	$217,000
RD 6	$0.56	2,500	2,230	2,628	$3,122,000	$3,679,200
RD 7	$0.56	2,500	262	309	$366,800	$432,600
Total RD 5-7			**2,623**	**3,092**	**$3,672,200**	**$4,328,800**
RD 7-12						
RD 7	$0.56	2,100	73	155	$85,848	$182,280
RD 9	$0.56	2,100	73	155	$85,848	$182,280
RD 10	$0.56	2,100	73	155	$85,848	$182,280
RD 12	$0.56	2,100	74	156	$87,024	$183,456
Total RD 7-12			**293**	**621**	**$344,568**	**$730,296**
RD 10	$0.56	1,500	**90**	**123**	**$75,600**	**$103,320**
RD 20	$0.75	1,100	**1,233**	**2,114**	**$1,017,225**	**$1,744,050**
			Acres			
General Commercial (GC)	$0.75	[2]	**-**	**9.0**	**$0**	**$73,508**
Shopping Center (SC)	$0.75	[2]	**80.0**	**102.2**	**$653,482**	**$834,310**
Limited Commercial (LC)	$0.75	[2]	**-**	**16.5**	**$0**	**$134,519**
Business Professional (BP)	$0.75	[2]	**-**	**4.5**	**$0**	**$49,985**
Industrial (M-1)	$0.75	[2]	**-**	**-**	**$0**	**$0**
TOTAL FEES					**$9,159,643**	**$15,134,979**

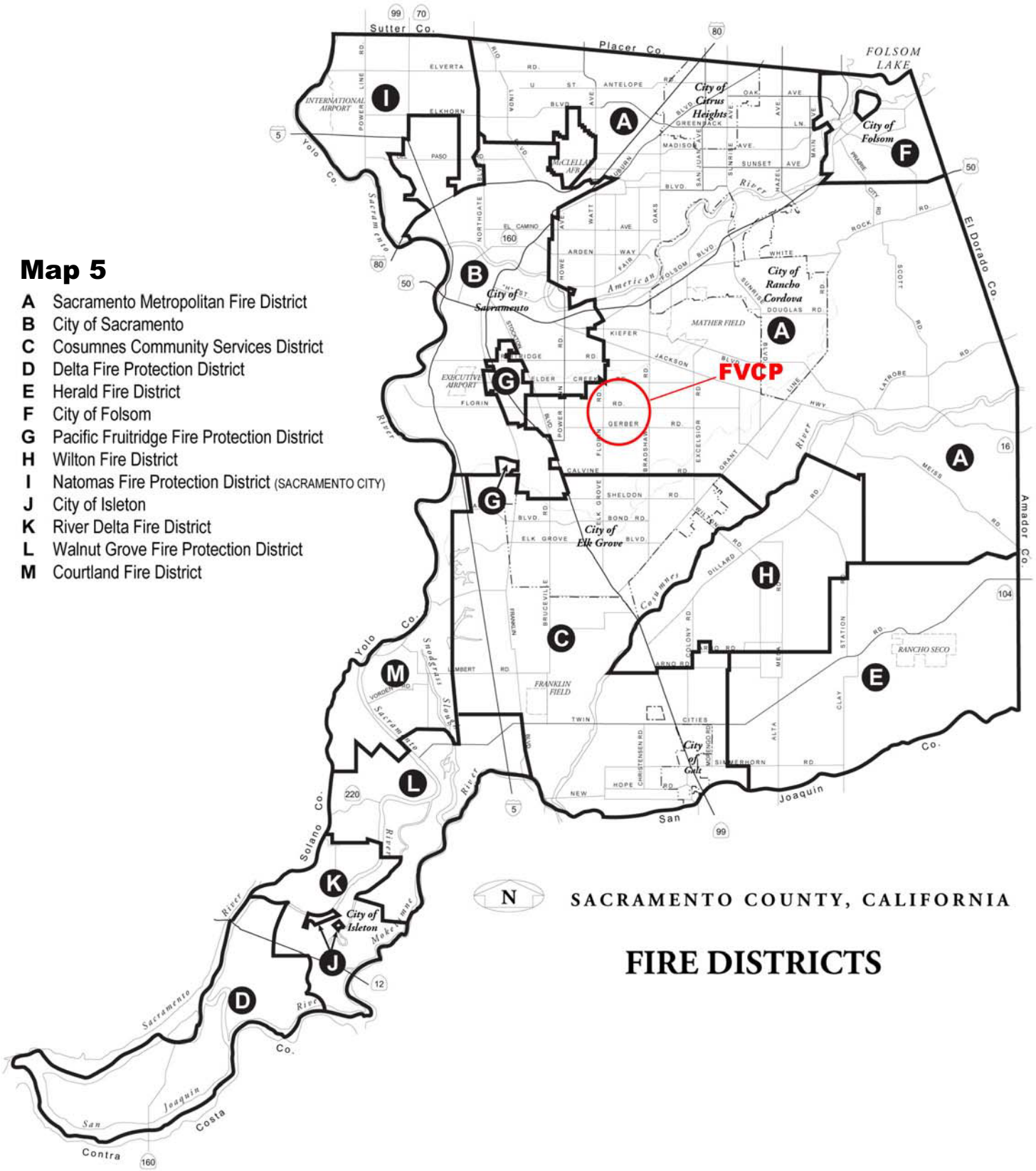
"fire_fee_revenue"

[1] No fire station is planned for the Florin Vineyard Specific Plan. Therefore, fire fees collected will go to fund facilities throughout the District, including those that will serve the FVCP.

[2] Total sq. ft. based on FAR = Acres x FAR x 43,560. (BP FAR = 0.34 and Commercial FAR = 0.25, BP FAR = 0.34 and Industrial FAR = 0.40).

Map 5

- **A** Sacramento Metropolitan Fire District
- **B** City of Sacramento
- **C** Cosumnes Community Services District
- **D** Delta Fire Protection District
- **E** Herald Fire District
- **F** City of Folsom
- **G** Pacific Fruitridge Fire Protection District
- **H** Wilton Fire District
- **I** Natomas Fire Protection District (SACRAMENTO CITY)
- **J** City of Isleton
- **K** River Delta Fire District
- **L** Walnut Grove Fire District
- **M** Courtland Fire District



SACTO_FIRE_DIST_METRO_2/07

XIII. TRANSIT

Conventional transit services for the FVCP will be the responsibility of Sacramento Regional Transit (RT) while complementary trip reduction services including shuttle transit will be provided by annexation of the FVCP to County Service Area No. 10 (CSA 10). The adjacent North Vineyard Station Specific Plan area has already been annexed to CSA 10. Development in the FVCP will be required to contribute towards the provision of both RT transit facilities and CSA 10 trip reduction services for its residents.

RT transit facilities needs were analyzed by the RT Planning Department and are the subject of this section.

EXISTING FACILITIES

RT currently does not provide service to the FVCP or elsewhere in the Vineyard community. The closest RT bus service is on Gerber Road west of French Road and on Power Inn Road. The nearest service by Elk Grove's E-Tran bus system is the intersection of Calvine Road at Elk Grove-Florin Road. Both bus systems access the RT Meadowview light rail station.

PROPOSED FACILITY COST, FUNDING SOURCES, AND PHASING

The cost estimates shown in this section are up-to-date and are subject to revision as better information becomes available. As the description of facilities and associated cost estimates change, the implementation mechanisms identified in the Financing Plan will be updated with the most current information.

Regional Transit is currently undertaking an update of its Master Plan to help guide the agency for the next 30 years. RT's current 20 year-vision includes Bus Rapid Transit (BRT) service along the Elk Grove-Florin/Watt Avenue and Florin Road corridors. Bus trunk line service is planned on Bradshaw and Calvine Roads. These items have only been proposed in discussions and this information may change. The provision of future transit services will depend on communitywide land-use patterns, densities/intensities, street configurations, and the availability of capital and operating funds.

RT has conceptually designated a 5-acre transit site ultimately to provide 500 parking spaces for carpools and buses. The FVCP, however, currently does not designate a

location for such a site. Consequently, if such a site is not available, RT may be able to satisfy this requirement by locating the transit site in a nearby plan area.

The FVCP transit cost is shown in detail in **Appendix H**. It is estimated that transit improvements will cost $11.9 million.

FUNDING SOURCES

Existing Fee Program

No funding programs exist.

Proposed FVFP

Transit Fee Component

The FVCP proposes a FVFP transit fee component to cover the cost of transit-related facility infrastructure costs. The fee revenues will cover the cost of new buses to serve the FVCP, land acquisition and construction cost of the planned park-and-ride facility, the FVCP's share of a new bus-maintenance facility, and bus shelters in the FVCP. **Table 33** shows the transit fee calculation, and **Table 34** shows that the FVFP transit fees collected from the FVCP will fund an estimated $11.9 million of transit facilities included in the transit CIP. A detailed summary of the transit portion of the FVCP is shown in **Appendix H**. FVCP fee amounts were calculated using the CAM method discussed in **Chapter II**.

PHASING

RT will manage the installation of transit facilities. Phasing of the bus-stop facilities will depend on the construction of adjacent projects with frontage on these major arterial or thoroughfare roadways. RT will determine the construction timing of the transit center/park-and-ride facility, based on RT's implementation of bus routes and possible extension of light rail to serve the area. RT does not see the need for the park-and-ride facility in the early stages of development. In addition, this facility could be constructed in stages consistent with fee collections. The park-and-ride facility also could be split into several smaller park-and-ride facilities. If ultimately it is determined that all or a portion of the transit center/park-and-ride facility will not be required, then the fee proceeds may be used for other public transit–related improvements serving the FVCP area including, but not limited to, light rail facilities.

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Table 33
Florin Vineyard Public Facilities Financing Plan
Transit Fee Calculation

Land Use	Total Acres	% Acres [1]	DUE Factor (Appx J)	Total DUEs	Cost Allocation	Fee per Acre
CONSTRUCTION COST					**$11,907,460**	
RD 2-3						
RD-2	19.0	15%	2.00	38	$22,175	$1,169
RD-3	107.5	85%	2.90	312	$182,204	$1,695
Total RD 2-3	**126.5**	**100%**		**350**	**$204,379**	**$1,616**
RD 3-5						
RD 3	48.8	5%	2.90	142	$82,730	$1,695
RD 4	97.6	10%	3.60	351	$205,399	$2,104
RD 5	829.6	85%	4.10	3,402	$1,988,374	$2,397
Total RD 3-5	**976.1**	**100%**		**3,894**	**$2,276,502**	**$2,332**
RD 5-7						
RD 5	25.8	5%	4.10	106	$61,744	$2,397
RD 6	438.0	85%	4.90	2,146	$1,254,458	$2,864
RD 7	51.5	10%	5.50	283	$165,655	$3,215
Total RD 5-7	**515.3**	**100%**		**2,535**	**$1,481,857**	**$2,876**
RD 7-12						
RD 7	15.5	25%	5.50	85	$49,913	$3,215
RD 9	15.5	25%	11.00	171	$99,827	$6,430
RD 10	15.5	25%	12.20	189	$110,717	$7,132
RD 12	15.5	25%	14.60	227	$132,497	$8,534
Total RD 7-12	**62.1**	**100%**		**672**	**$392,955**	**$6,328**
RD 10	**12.3**	**100%**	**12.20**	**150**	**$87,932**	**$7,132**
RD 20	**117.5**	**100%**	**38.10**	**4,475**	**$2,615,779**	**$22,271**
General Commercial (GC)	**9.0**	**100%**	**52.80**	**475**	**$277,779**	**$30,864**
Shopping Center (SC)	**102.2**	**100%**	**66.40**	**6,783**	**$3,964,876**	**$38,814**
Limited Commercial (LC)	**16.5**	**100%**	**52.80**	**870**	**$508,336**	**$30,864**
Business Professional (BP)	**4.5**	**100%**	**36.90**	**166**	**$97,065**	**$21,570**
Industrial (M-1)	**0.0**	**100%**	**9.20**	**0**	**$0**	**$0**
TOTAL	**1,941.8**			**20,370**	**$11,907,460**	
Fee per DUE						**$585**

"transit_alloc"

Source: Regional Transit Planning Department, Mackay & Somps and County of Sacramento.

[1] % acres per land use and DUE factors provided by Sacramento County Municipal Services Agency.

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Table 34
Florin Vineyard Public Facilities Financing Plan
Transit Infrastructure Cash Flow by Phase

Land Use	Fee per Acre	Acres per Phase [1]		Fee Revenue vs. Construction Cost	
		Phase 1	Buildout	Phase 1	Buildout
CONSTRUCTION COST				**$5,841,973**	**$11,907,460**
RD 2-3					
RD-2	$1,169	5.5	19.0	$6,408	$22,175
RD 3	$1,695	31.1	107.5	$36,311	$182,204
Total RD 2-3		**36.5**	**126.5**	**$42,719**	**$204,379**
RD 3-5					
RD 3	$1,695	23.9	48.80	$27,941	$82,730
RD 4	$2,104	48	97.61	$55,882	$205,399
RD 5	$2,397	406	829.64	$474,997	$1,988,374
Total RD 3-5		**478.0**	**976.05**	**$558,820**	**$2,276,502**
RD 5-7					
RD 5	$2,397	21.9	25.8	$25,553	$61,744
RD 6	$2,864	371.6	438.0	$434,393	$1,254,458
RD 7	$3,215	43.7	51.5	$51,105	$165,655
Total RD 5-7		**437.1**	**515.3**	**$511,050**	**$1,481,857**
RD 7-12					
RD 7	$3,215	7.3	15.5	$8,575	$49,913
RD 9	$6,430	7.3	15.5	$8,575	$99,827
RD 10	$7,132	7.3	15.5	$8,575	$110,717
RD 12	$8,534	7.3	15.5	$8,575	$132,497
Total RD 7-12		**29.3**	**62.1**	**$34,302**	**$392,955**
RD 10	**$7,132**	**9.0**	**12.3**	**$64,184**	**$87,932**
RD 20	**$22,271**	**68.5**	**117.5**	**$1,525,370**	**$2,615,779**
General Commercial (GC)	**$30,864**	**-**	**9.0**	**$0**	**$277,779**
Shopping Center (SC)	**$38,814**	**80.0**	**102.2**	**$3,105,528**	**$3,964,876**
Limited Commercial (LC)	**$30,864**	**-**	**16.5**	**$0**	**$508,336**
Business Professional (BP)	**$21,570**	**-**	**4.5**	**$0**	**$97,065**
Industrial (M-1)	**$0**	**-**	**-**	**$0**	**$0**
TOTAL		**1,138.5**	**1,941.8**	**$5,841,973**	**$11,907,460**
Difference (Fees - Cost)				**$0**	**$0**
CUMULATIVE				Cumulative	
Fee Revenue				$5,841,973	$11,907,460
Construction Cost				$5,841,973	$11,907,460
Difference (Fees - Cost)				**$0**	**$0**

"transit_cash_flow"

[1] Acreage estimates per land use and DUE factors provided by Sacramento County Municipal Services Agency.

APPENDICES

APPENDIX A: ROADWAY CIP

APPENDIX B: WATER CIP

APPENDIX C: SEWER CIP

APPENDIX D: DRAINAGE CIP

APPENDIX E: PARK COST ESTIMATES

APPENDIX F: SCHOOL COST ESTIMATES

APPENDIX G: LIBRARY COST ESTIMATES

APPENDIX H: TRANSIT COST ESTIMATES

APPENDIX I: DUE FACTORS

APPENDIX J: SINGLE-FAMILY HOME FEE COMPARISONS

APPENDIX K: MELLO-ROOS BONDING CAPACITY

APPENDIX A

ROADWAY CIP

Table A-1 contains summary roadway construction cost estimates prepared by MacKay & Somps for each roadway improvement project. Roadway improvement projects are based on mitigation measures recommended by the Traffic Impact Analysis Report for the Florin Vineyard Community Plan (Fehr & Peers, May 30, 2008). Projects are arranged by Roadway project phase (Phase 1 to Buildout), based on a specified amount of housing development. Phases 1 to 5 of the Roadway improvements correspond to Phase 1 of the Financing Plan, as noted on pages 5 and 50. Total roadway costs include standard 30-percent contingencies and right-of-way acquisition costs. Right-of-way acquisition costs were calculated at 10 percent of net construction costs based on a detailed right-of-way analysis prepared by Mackay & Somps for the North Vineyard Station roadway Environmental Impact Report project.

Please note that total roadway costs in **Table A-1** include frontage lane improvement costs. MacKay & Somps will estimate frontage lane improvements costs separately for the final version of the Financing Plan. In order to estimate probable fee estimates for roadway and frontage lane improvements, EPS allocated 86.5 percent of total costs to roadway improvements and 13.5 percent to frontage lane improvements as shown in **Table 19**. This assumes a similar cost structure as in the NVSSP PFFP.

Exhibit A-1 references each roadway improvement project, and additional regional exhibits (**Exhibits A-2** to **A-7**) depict roadway projects specific to each roadway project phase. **Exhibit A-8** shows typical roadway sections in the Florin Vineyard Community Plan.

Tables A-2 to **A-35** include detailed cost estimates for roadway cross sections, roadway drainage structures, traffic signals, and intersections. **Table A-36** shows roadway improvements common to both the Florin Vineyard Community Plan and the North Vineyard Station Specific Plan and have funding under the North Vineyard Station Public Facilities Financing Plan.

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Table A-1
Florin Vineyard Community Plan
Roadway CIP Summary
Cumulative Plus Planning Dept. Landuse Plan

Proj #	Roadway Segment/ Item	Project Description	Fin Plan Ref Table	Mit Meas	Qty	Unit	Unit Price	Total Estimated Cost	Other (partial) Funding Sources*(	Total Est. Cost of Reimbursable Project	Net Construction Cost (FVCP)	Cumulative Total Estimated Net Cost (FVCP)
PHASE- 1 (<= 1,400 DU)												
SR-16												
1	At South Watt Ave.	Widen ex. Intx. to mod. 4x6 Intersection (future mod. 6x6) & Signalization	A-1.4.3	EP 43	1	L.S.	$ 2,104,000	$ 2,104,000	SCTDF	$ -	$ 2,104,000	$ 2,104,000
2	At Bradshaw	Widen ex. Intx. & Signal relocation (add NB,EB,SB,WB lanes - mod. 4x6))	A-1.4.3	EP 44	1	L.S.	$ 2,031,000	$ 2,031,000	Sunridge PFFP	$ 1,714,063	$ 316,937	$ 2,420,937
	Sub-total SR-16							**$ 4,135,000**		**$ 1,714,063**	**$ 2,420,937**	**$ 2,420,937**
Fruitridge Rd.												
3	At Florin-Perkins Rd.	Widen ex. Intx. to 4x6 Intersection, relocate signal	A-1.4.5	EP 45	1	L.S.	$ -	(cost incl. in EP15)			$ -	$ 2,420,937
4	At South Watt Ave.	Replace rural Intx w/4X6 Intx, Signalization, 4-way (project built summer '08)	A-1.4.3	EP 46, CP 48	1	L.S.	n/a	n/a			n/a	$ 2,420,937
	Sub-total Fruitridge Rd.							**$ -**		**$ -**	**$ -**	**$ 2,420,937**
Elder Creek Rd.												
3.1.1	Power Inn Rd. to Florin-Perkins Rd.	Widen ex. 2-lane rural section to 4-lane arterial	A-1.3.2	EP 5	2,465	L.F.	$ 1,588	$ 3,914,000			$ 3,914,000	$ 6,334,937
3.1.2	Power Inn Rd. to Florin-Perkins Rd.	Widen ex. 3-lane+median section to 4-lane arterial (add WB frontage)	1.3.12	EP 5	1,865	L.F.	$ 418	$ 780,000			$ 780,000	$ 7,114,937
3.1r	Power Inn Rd. to Florin-Perkins Rd.	4-lane at-grade replacement of exist RR X-ing, incl. appurtenances			1	L.S.	$ 700,000	$ 700,000			$ 700,000	$ 7,814,937
5	At Florin-Perkins Rd.	Widen ex. Intx. to mod. 4X4 Intersection & relocate Signal (add EB & NB l-turn lanes)	A-1.4.5	CP 50	1	L.S.	$ 553,000	$ 553,000	Fair Share = 15%	$ 470,000	$ 83,000	$ 7,897,937
6	At South Watt Ave.	Re-stripe ex. Intx. to 2x4 Intersection, modify Signal	A-1.4.1		1	L.S.	$ 32,500	$ 33,000	NVS	$ 33,000	$ -	$ 7,897,937
7	At Bradshaw	Widen ex. 2x4 to mod. 2x6 intx (add NB & SB shared through/r-turn lanes)	A-1.4.4	EP 51	1	L.S.	$ 981,500	$ 982,000	NVS, SCTDF	$ 706,132	$ 275,868	$ 8,173,805
	Sub-total Elder Creek Rd.							**$ 6,962,000**		**$ 1,209,132**	**$ 5,752,868**	**$ 8,173,805**
Florin Rd.												
8	At Excelsior Rd.	2X2 Intersection (fut. 4x2 w/ dual LT) & Signalization, 4-way	A-1.4.4	EP 58	1	L.S.	$ 1,364,000	$ 1,364,000	NVS	$ 313,885	$ 1,050,115	$ 9,223,920
12	At Power Inn Rd.	Restripe to provide shared through/right turn on WB approach		EP 52	1	L.S.	$ 10,000	$ 10,000			$ 10,000	$ 9,233,920
	Sub-total Florin Rd.							**$ 1,374,000**		**$ 313,885**	**$ 1,060,115**	**$ 9,233,920**
Gerber Rd.												
9	At Elk Grove-Florin Rd.	Widen ex. Intx. to 4X6 Intersection, relocate Signal	A-1.4.5	EP 61, CP 64	1	L.S.	$ 553,000	$ 553,000	SCTDF, NVS	$ -	$ 553,000	$ 9,786,920
10	At Bradshaw	Widen ex. Intx. to 4X4 Intx (fut 6x4), Signalization	A-1.4.2	EP 64	1	L.S.	$ 2,227,000	$ 2,227,000	SCTDF, NVS	$ 329,250	$ 1,897,750	$ 11,684,670
11	At Vineyard	2X2 Signalization, 3-way	A-1.4.1	EP 65	1	L.S.	$ 260,000	$ 260,000	VSCP, NVS	$ 260,000	$ -	$ 11,684,670
	Sub-total Gerber Rd.							**$ 3,040,000**		**$ 589,250**	**$ 2,450,750**	**$ 11,684,670**
South Watt Ave.												
7.2	Kiefer Blvd. to SR-16	Widen from ex. sect. to 3 lanes each direction		EP 20 CP 23	2,200	L.S.	$ 7,080,000	$ 7,080,000	SCTDF, Meas. A	$ 3,304,800	$ 3,775,200	$ 15,459,870
21	At Kiefer Blvd.	Widen ex. Intx. To Add NB & SB through lanes, re-locate signal	A-1.4.5	EP 40	1	L.S.	$ 553,000	$ 553,000	SCTDF		$ 553,000	$ 16,012,870
7.3	SR-16 to Fruitridge Rd.	Widen existing 2-lane rural to 4-lane thoroughfare center section	A-1.3.5	EP4,21,27 CP6,19,24,30	4,470	L.F.	$ 1,462	$ 6,535,000	SCTDF, NVS	$ 329,250	$ 6,205,750	$ 22,218,620
7.4	Fruitridge Rd. to Elder Creek Rd.	Widen existing 2-lane rural to 4-lane thoroughfare center section	A-1.3.5	EP4,22,27,48 CP6,24,25,30	5,260	L.F.	$ 1,462	$ 7,690,000	SCTDF, NVS	$ 387,418	$ 7,302,582	$ 29,521,202
7.4d	Fruitridge Rd. to Elder Creek Rd.	Widen ex. bridge over Morrison Creek to 108' ROW			1	L.S.	$ 2,252,000	$ 2,252,000	SCTDF		$ 2,252,000	$ 31,773,202
7.5	Elder Creek Rd. to Florin Rd.	Widen existing 2-lane rural to 4-lane thoroughfare center section	A-1.3.5	EP23,48, CP 26	3,785	L.F.	$ 1,462	$ 5,534,000	90.62% SCTDF, 9.38% NVS	$ 367,663	$ 5,166,337	$ 36,939,539
7.5r	Elder Creek Rd. to Florin Rd.	4-lane at-grade replacement of exist RR X-ing, incl. Appurtenances			1	L.S.	$ 700,000	$ 700,000	SCTDF	$ -	$ 700,000	$ 37,639,539
13	At Folsom Blvd.	Widen ex. Intx. to 4X6 Intersection, Signalization (improvements under construction)	A-1.4.5	EP 39 , CP 40			n/a	$ -	(under construction)	$ -	$ -	$ 37,639,539
	Sub-total South Watt Ave.							**$ 30,344,000**		**$ 4,389,131**	**$ 25,954,869**	**$ 37,639,539**
Elk Grove-Florin Rd.												
8.1	Florin Rd. to Gerber Rd.	Widen existing 2-lane rural to 4-lane thoroughfare center section	A-1.3.5	EP 24, CP 27	4,390	L.F.	$ 1,462	$ 7,434,000	SCTDF, NVS, Vineyard	$ 5,225,738	$ 2,208,262	$ 39,847,801
8.1d	Florin Rd. to Gerber Rd.	Replace exist creek bridge w/6-lane bridge			1	L.S.	$ 2,252,000	$ 2,252,000	Fed (HBP)	$ 2,252,000	$ -	$ 39,847,801
	Sub-total Elk Grove-Florin Rd.							**$ 9,686,000**		**$ 7,477,738**	**$ 2,208,262**	**$ 39,847,801**
Bradshaw Rd.												
9.5	Kiefer Blvd. to SR-16	Widen Exist. Section from 4 to 6 Lanes (add median & outside lanes)	A-1.3.7 plus A-1.3.8	EP 28, CP 31	4,520	L.F.	$ 1,206	$ 5,451,000	70% SCTDF, 30% Meas. A	$ 1,453,500	$ 3,997,500	$ 43,845,301
19	At Kiefer Blvd.	Widen ex. mod. 4x4 intx. to mod. 4x6 Intx. (add thru & rt-lanes, NB & SB), relocate Signal	A-1.4.5	EP 41	1	L.S.	$ 553,000	$ 553,000	SCTDF		$ 553,000	$ 44,398,301
9.1	SR-16 to Elder Creek Rd.	Widen Exist. 4-lane to 6-lane thoroughfare	A-1.3.7	EP 32, CP 32	5,040	L.F.	$ 892	$ 4,496,000	64% SCTDF, 36% Meas. A	$ 1,375,200	$ 3,120,800	$ 47,519,101
9.1d	SR-16 to Elder Creek Rd.	Widen exist Morrison Creek bridge w/6-lane bridge			1	L.S.	$ 819,000	$ 819,000	64% SCTDF, 36% Meas. A	$ 294,840	$ 524,160	$ 48,043,261
9.3	Florin Rd. to Calvine Rd.	Widen Exist. 2-lane rural to 4-lane thoroughfare center section		EP 29, 33, 34	1	L.S.	$ 28,294,000	$ 28,294,000	County '07 TIP	$ 28,294,000	$ -	$ 48,043,261
	Sub-total Bradshaw Rd.							**$ 39,613,000**		**$ 31,417,540**	**$ 8,195,460**	**$ 48,043,261**
Calvine Rd.						,						
10.1.1	Power Inn Rd. to Elk Grove-Florin Rd.	Widen ex. Section from 4 to 6 lanes (add WB & frontage)	A-1.3.7	EP 12, CP 15	970	L.S.	$ 4,081,677	$ 4,081,677	SCTDF, Vineyard	$ 1,777,677	$ 2,304,000	$ 50,347,261
10.1r	Railroad Crossing	At-grade widening of exist. (EB), incl. appurtenances			1	L.S.	$ 175,000	$ 175,000	50% Vineyard, 50% Elk Grove	$ 175,000	$ -	$ 50,347,261
	Sub-total Calvine Rd.							**$ 4,256,677**		**$ 1,952,677**	**$ 2,304,000**	**$ 50,347,261**
Florin-Perkins Rd.												
6.2	SR-16 to Fruitridge Rd.	Widen ex. Arterial Center Section from 4 to 6 Lanes (requires GPA)	A-1.3.7	EP 15	6,100	L.F.	$ 8,215,000	$ 8,215,000			$ 8,215,000	$ 58,562,261
6.2r	SR-16 to Fruitridge Rd.	Replacement of at-grade dual-track crossing RR X-ing(requires GPA)			1	L.S.	$ 1,260,000	$ 1,260,000			$ 1,260,000	$ 59,822,261
	Sub-total Florin-Perkins Rd.							**$ 9,475,000**		**$ -**	**$ 9,475,000**	**$ 59,822,261**
	Preparation of P.F.F.P. and technical Studies	Consultant fees										
	Sub-total Net Construction Cost (FVCP)										**$ 59,822,261**	**$ 59,822,261**
	Right of Way Acquistion 10% of Net Construction Cost (FVCP)[3]										$ 5,982,226	**$ 65,804,487**
Total Phase - 1								**$ 108,885,677**		**$ 49,063,416**	**$ 65,804,487**	**$ 65,804,487**

Table A-1
Florin Vineyard Community Plan
Roadway CIP Summary
Cumulative Plus Planning Dept. Landuse Plan

Proj #	Roadway Segment/ Item	Project Description	Fin Plan Ref Table	Mit Meas	Qty	Unit	Unit Price	Total Estimated Cost	Other (partial) Funding Sources*(	Total Est. Cost of Reimbursable Project	Net Construction Cost (FVCP)	Cumulative Total Estimated Net Cost (FVCP)
PHASE - 2 (1,401 <= 2,000 DU)												
Fruitridge Rd.												
2.1	Florin-Perkins Rd. to South Watt Ave.	Widen ex. 2-lane rural section to 4-lane arterial	A-1.3.2	EP3	3,470	L.F.	$ 1,570	$ 5,448,000			$ 5,448,000	$ 71,252,487
2.1r	Florin-Perkins Rd. to South Watt Ave.	4-lane at-grade replacement of exist RR X-ing, incl. appurtenances			1	L.S.	$ 700,000	$ 700,000			$ 700,000	$ 71,952,487
	Sub-total Fruitridge Rd.							**$ 6,148,000**		**$ -**	**$ 6,148,000**	**$ 71,952,487**
Florin Rd.												
14	At Florin-Perkins Rd.	Widen ex. Intx. (add WB right turn lane)	A-1.4.5	EP 53, CP 56	1	L.S.	$ 276,500	$ 277,000	SCTDF		$ 277,000	$ 72,229,487
15	At South Watt Ave.	Widen ex. partial 4x4 Intx. to full 6x6 (NE corner done), relocate Signal	A-1.4.4	EP 55, CP 58	1	L.S.	$ 1,364,000	$ 1,364,000	SCTDF, NVS	$ 199,745	$ 1,164,255	$ 73,393,742
16	At Bradshaw Rd.	No intersection-specific imp's req'd (system-wide study area mitigation)	A-1.4.4	EP 57	1	L.S.	$ -	$ -	NVS	$ -	$ -	$ 73,393,742
	Sub-total Florin Rd.							**$ 1,641,000**		**$ 199,745**	**$ 1,441,255**	**$ 73,393,742**
Gerber Rd.												
17	At Power Inn Rd.	No intersection-specific imp's req'd (system-wide study area mitigation)		EP 59	1	L.S.	$ -	$ -			$ -	$ 73,393,742
18	At French Rd.	Exist. Imp's - EB (2 lt, 1 thru, 1 shared thru/rt)		EP 60	1	L.S.	$ -	$ -			$ -	$ 73,393,742
	Sub-total Gerber Rd.							**$ -**		**$ -**	**$ -**	**$ 73,393,742**
Calvine Rd.												
44	At Waterman Rd.	Widen EB & WB approaches, relocate Signal		EP 70	1	L.S.	$ 553,000	$ 553,000			$ 553,000	$ 73,946,742
	Sub-total Calvine Rd.							**$ 553,000**		**$ -**	**$ 553,000**	**$ 73,946,742**
French Road												
12.1.1	Florin Road to Gerber Road	Widen ex. 2-lane rural section to 4-lane arterial	110% of A-1.3.2	EP 8,18; CP 18,22	1,100	L.F.	$ 1,727	$ 1,900,000			$ 1,900,000	$ 75,846,742
12.1.2	Florin Road to Gerber Road	Widen ex. section to 4-lane arterial (add SB lane w/ frontage)	72'half	EP 8,18; CP 18,22	1,480	L.F.	$ 765	$ 1,132,000			$ 1,132,000	$ 76,978,742
12.1.3	Florin Road to Gerber Road	Restripe (4 lanes & grind ex)		EP 8,18; CP 18,22	1,700	L.F.	$ 50	$ 85,000			$ 85,000	$ 77,063,742
12.1d	Florin Road to Gerber Road	Creek Crossing - Widen Elder Creek Bridge from 76' to 84' ROW			1	L.S.	$ 342,000	$ 342,000			$ 342,000	$ 77,405,742
	Sub-total French Rd.							**$ 3,459,000**		**$ -**	**$ 3,459,000**	**$ 77,405,742**
	Sub-total Net Construction Cost (FVCP)										**$ 11,601,255**	**$ 77,405,742**
	Right of Way Acquistion 10% of Net Construction Cost (FVCP)										$ 1,160,126	$ 78,565,868
Total Phase - 2								**$ 11,801,000**		**$ 199,745**	**$ 12,761,381**	**$ 78,565,868**
PHASE - 3 (2,001 <= 3,200 DU)												
SR-16												
1.1	South Watt Ave. to Bradshaw Rd.	Widen ex. partial Arterial Center Section from 2 to 4-lane thoroughfare center section	1.3.4	EP 2	4,130	L.F.	$ 573	$ 12,833,068	SCTDF, NVS (14.26%)	$ 3,055,008	$ 9,778,060	$ 88,343,928
67	at Hedge Ave.	move signal & constr. southern curb returns (EB & WB lanes incl. in proj. 1.1)			1	L.S.	$ 150,000	$ 150,000		$ -	$ 150,000	$ 88,493,928
	Sub-total SR-16							**$ 12,833,068**		**$ 3,055,008**	**$ 9,778,060**	**$ 88,493,928**
Calvine Rd.												
20	At Elk Grove Florin Rd.	Re-stripe ex. Intx. to 4X6 Intersection	A-1.4.5	EP 69	1	L.S.	$ 10,000	$ 10,000			$ 10,000	$ 88,503,928
	Sub-total Calvine Rd.							**$ 10,000**		**$ -**	**$ 10,000**	**$ 88,503,928**
Elk Grove-Florin Rd.												
8.2	Gerber Rd. to Unionhouse Creek	Widen exist. thoroughfare Center Section from 4 to 6 Lanes (add NB frontage)	A-1.3.11	EP 25, CP 28	2,190	L.F.	$ 482	$ 1,056,000	SCTDF	$ -	$ 1,056,000	$ 89,559,928
8.3	Unionhouse Creek to Caselman Rd.	Widen exist. thoroughfare Center Section from 4 to 6 Lanes	A-1.3.11	EP 25,67 CP 28	710	L.F.	$ 964	$ 684,000	SCTDF	$ -	$ 684,000	$ 90,243,928
8.4	Caselman Rd. to Carlisle Ave.	Widen exist. thoroughfare Center Section from 4 to 6 Lanes (add NB frontage)	A-1.3.11	EP 25, CP 28	620	L.F.	$ 482	$ 299,000	SCTDF	$ -	$ 299,000	$ 90,542,928
8.5	Vintage Park Dr. to 380' south of Britany Park	Widen exist. thoroughfare Center Section from 4 to 6 Lanes (add SB frontage)	A-1.3.7	EP 26, CP 29	380	L.F.	$ 446	$ 169,000	SCTDF	$ -	$ 169,000	$ 90,711,928
8.6	380' south of Britany Park to Calvine Rd.	Widen exist. thoroughfare Center Section from 4 to 6 Lanes	A-1.3.7	EP 26, CP 29	1,540	L.F.	$ 892	$ 1,374,000	SCTDF	$ -	$ 1,374,000	$ 92,085,928
30	At Caselman	Widening to mod. 2X6 Intersection & Signalization (EB dual l-turn lanes)	A-1.4.4	EP 68, CP 70	1	L.S.	$ 682,000	$ 682,000		$ -	$ 682,000	$ 92,767,928
	Sub-total Elk Grove-Florin Rd.							**$ 4,264,000**		**$ -**	**$ 4,264,000**	**$ 92,767,928**
South Watt Ave.												
7.3	SR-16 to Fruitridge Rd.	Widen exist. thoroughfare Center Section from 4 to 6 Lanes	A-1.3.7	EP4,21,27, CP6,19,24,30	4,470	L.F.	$ 892	$ 3,987,000	SCTDF, NVS	$ 169,015	$ 3,817,985	$ 96,585,913
7.4	Fruitridge Rd. to Elder Creek Rd.	Widen exist. thoroughfare Center Section from 4 to 6 Lanes	A-1.3.7	EP4,22,27,48, CP6,24,25,30	5,260	L.F.	$ 892	$ 4,692,000	SCTDF, NVS	$ 196,648	$ 4,495,352	$ 101,081,265
7.5	Elder Creek Rd. to Florin	Widen exist. thoroughfare Center Section from 4 to 6 Lanes	A-1.3.11	EP 48, CP 26	3,785	L.F.	$ 964	$ 3,649,000	SCTDF, NVS	$ 188,770	$ 3,460,230	$ 104,541,495
7.5r	Elder Creek Rd. to Florin Rd.	Widen ex. 4-lane RR X-ing to 6 lanes			1	E.A.	$ 300,000	$ 300,000	SCTDF	$ -	$ 300,000	$ 104,841,495
6	At Elder Creek Rd.	re-stripe ex. 4x4 Intx. to 4x6 Intersection (minor imp's on 3 frontages req'd)	A-1.4.1	EP 49, CP 51	1	L.S.	$ 214,000	$ 214,000	NVS	$ 214,000	$ -	$ 104,841,495
	Sub-total South Watt Ave.							**$ 12,842,000**		**$ 768,433**	**$ 12,073,567**	**$ 104,841,495**
	Sub-total Net Construction Cost (FVCP)										**$ 26,125,627**	**$ 104,841,495**
	Right of Way Acquistion 10% of Net Construction Cost (FVCP)										$ 2,612,563	$ 107,454,057
Total Phase - 3								**$ 29,949,068**		**$ 3,823,441**	**$ 28,738,190**	**$ 107,454,057**

Table A-1
Florin Vineyard Community Plan
Roadway CIP Summary
Cumulative Plus Planning Dept. Landuse Plan

Proj #	Roadway Segment/ Item	Project Description	Fin Plan Ref Table	Mit Meas	Qty	Unit	Unit Price	Total Estimated Cost	Other (partial) Funding Sources*(	Total Est. Cost of Reimbursable Project	Net Construction Cost (FVCP)	Cumulative Total Estimated Net Cost (FVCP)
PHASE - 4 (3,201 <= 4,400 DU)												
SR-16												
1.2	Folsom Blvd. to South Watt Ave.	Widen ex. 2-lane rural section to 4-lane thoroughfare center section	A-1.3.5	EP 1, 14; CP 2	6,810	L.F.	$ 1,462	$ 9,956,000	SCTDF		$ 9,956,000	$ 117,410,057
22	At Folsom Blvd.	Modify Traffic Signal Timing		EP 37	1	L.S.	$ -	$ -			$ -	$ 117,410,057
23	At Florin-Perkins Rd.	Widen ex. Intx. to 4X6 Intersection (4-way) (cost of NB & SB widening in Proj 6.2 - EP15)		EP 42, CP 43	1	L.S.	$ 147,000	$ 147,000			$ 147,000	$ 117,557,057
	Sub-total SR-16							**$ 10,103,000**		**$ -**	**$ 10,103,000**	**$ 117,557,057**
Elder Creek Rd.												
3.2.1	Florin-Perkins Rd. to South Watt Ave.	Widen ex. 2-lane rural section to 4-lane arterial	A-1.3.2	EP 6	970	L.F.	$ 1,570	$ 1,523,000			$ 1,523,000	$ 119,080,057
3.2.2	Florin-Perkins Rd. to South Watt Ave.	Widen ex. 3-lane+median section to 4-lane arterial (add various frontage segments)	A-1.3.12	EP 6	3,970	L.F.	$ 418	$ 1,659,000			$ 1,659,000	$ 120,739,057
3.2r	Florin-Perkins Rd. to South Watt Ave.	4-lane at-grade RR replacement of exist, incl. appurtenances			1	L.S.	$ 700,000	$ 700,000			$ 700,000	$ 121,439,057
	Sub-total Elder Creek Rd.							**$ 3,882,000**		**$ -**	**$ 3,882,000**	**$ 121,439,057**
Elk Grove-Florin Rd.												
8.1	Florin Rd. to Gerber Rd.	Widen exist. thoroughfare Center Section from 4 to 6 Lanes	A-1.3.11	EP 24, CP 27	4,390	L.F.	$ 964	$ 4,232,000	SCTDF, NVS, Vineyard	$ 3,385,600	$ 846,400	$ 122,285,457
	Sub-total Elk Grove-Florin Rd.							**$ 4,232,000**		**$ 3,385,600**	**$ 846,400**	**$ 122,285,457**
	Sub-total Net Construction Cost (FVCP)										**$ 14,831,400**	**$ 122,285,457**
	Right of Way Acquistion 10% of Net Construction Cost (FVCP)										$ 1,483,140	$ 123,768,597
Total Phase - 4								**$ 18,217,000**		**$ 3,385,600**	**$ 16,314,540**	**$ 123,768,597**
PHASE - 5 (4,401 <= 5,600 DU)												
Fruitridge Rd.												
25	At Hedge Ave.	widen exist Intx. to 2X2 Intx. (fut. 4x2), Signalization, 4-way	A-1.4.4	EP 47, CP 49	1	L.S.	$ 1,364,000	$ 1,364,000		$ -	$ 1,364,000	$ 125,132,597
	Sub-total Fruitridge Rd.							**$ 1,364,000**		**$ -**	**$ 1,364,000**	**$ 125,132,597**
Elder Creek Rd.												
26	At Hedge	Widen ex. Intx. to 2x4 intx, signalize	A-1.4.4	EP 50, CP 52	1	L.S.	$ 1,364,000	$ 1,364,000		$ -	$ 1,364,000	$ 126,496,597
3.4	South Watt Ave. to Hedge Ave	Widen ex. 2-lane rural section to 4-lane arterial	A-1.3.2	EP 30, CP 35	1,050	L.F.	$ 1,570	$ 1,649,000	SCTDF, NVS, NVS Other	$ 386,921	$ 1,262,079	$ 127,758,676
3.5	Hedge Ave. to Bradshaw Rd.	Widen ex. 2-lane rural section to 4-lane arterial	A-1.3.2	EP 31, CP 7	7,000	L.F.	$ 1,570	$ 10,990,000	SCTDF, NVS, NVS Other	$ 2,580,098	$ 8,409,902	$ 136,168,578
	Sub-total Elder Creek Rd.							**$ 14,003,000**		**$ 2,967,019**	**$ 11,035,981**	**$ 136,168,578**
Florin Rd.												
4.1	South Watt Ave. to Hedge Ave	Widen ex. 2-lane rural section to 4-lane thoroughfare center section	A-1.3.5	EP 9, CP 12	1,900	L.F.	$ 1,462	$ 2,778,000	NVS, NVS Other	$ 2,778,000	$ -	$ 136,168,578
4.1f.n	South Watt Ave. to Hedge Ave	Frontage on-site impr. (north side)	A-1.3.11		1,900	L.F.	$ 482	$ 916,000		$ -	$ 916,000	$ 137,084,578
4.1f.s	South Watt Ave. to Hedge Ave	Frontage on-site impr. (south side)	A-1.3.11		1,900	L.F.	$ 482	$ 916,000		$ -	$ 916,000	$ 138,000,578
27	At Gardner Ave	Widen ex. Intx. to 2X6 Intersection, Signalization, 4-way (north leg by adjacent project)	A-1.4.8	EP 54, CP 57	1	L.S.	$ 1,685,000	$ 1,685,000		$ -	$ 1,685,000	$ 139,685,578
28	At Hedge Ave	2X4 Intersection widening (E/W legs incl. in road segm't) & Signalization, 4-way	50% of A-1.4.5	EP 56, CP 59	1	L.S.	$ 366,500	$ 367,000	NVS	$ 167,000	$ 200,000	$ 139,885,578
	Sub-total Florin Rd.							**$ 6,662,000**		**$ 2,945,000**	**$ 3,717,000**	**$ 139,885,578**
Gerber Rd.												
5.2	Elk Grove-Florin Rd. to Bradshaw Rd.	Widen ex. 2-lane section to 4-lane arterial (east-bound frontage only req'd)	A-1.311	EP 11	8,840	L.F.	$ 482	$ 4,261,000		$ -	$ 4,261,000	$ 144,146,578
29	At Waterman	Constr. 2x4 Intx. - CR's on south side only (fut. 4x4), Signalization	10% of A-1.4.3 plus...	EP 62	1	L.S.	$ 534,000	$ 534,000		$ -	$ 534,000	$ 144,680,578
	Sub-total Gerber Rd.							**$ 4,795,000**		**$ -**	**$ 4,795,000**	**$ 144,680,578**
Waterman Rd.												
14.1.2	Vintage Park Dr. to Gerber Rd.	Constr. 2-lane arterial center section w/median	A-1.3.3 minus...	EP 26	2,440	L.F.	$ 888	$ 2,167,000	Vineyard	$ 2,123,000	$ 44,000	$ 144,724,578
	Sub-total Waterman Rd.							**$ 2,167,000**		**$ 2,123,000**	**$ 44,000**	**$ 144,724,578**
	Sub-total Net Construction Cost (FVCP)										**$ 20,955,981**	**$ 144,724,578**
	Right of Way Acquistion 10% of Net Construction Cost (FVCP)										$ 2,095,598	$ 146,820,176
Total Phase - 5								**$ 33,255,000**		**$ 8,035,019**	**$ 23,051,579**	**$ 146,820,176**

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Florin Vineyard Community Plan
Roadway CIP Summary
Cumulative Plus Planning Dept. Landuse Plan

Proj #	Roadway Segment/ Item	Project Description	Fin Plan Ref Table	Mit Meas	Qty	Unit	Unit Price	Total Estimated Cost	Other (partial) Funding Sources*(	Total Est. Cost of Reimbursable Project	Net Construction Cost (FVCP)	Cumulative Total Estimated Net Cost (FVCP)
BUILDOUT PHASE ("CUMULATIVE + PROJECT" CONDITIONS) - triggered subsequent to Phase - 5 projects												
Elder Creek Rd.												
33	At Bradshaw	Widen mod. 2x6 to mod. 4x6 intx (add through lanes & RT-lanes, 4-way)	A-1.4.10	CP 53	1	L.S.	$ 1,087,500	$ 1,088,000	Fair Share = 29%	$ 772,000	$ 316,000	$ 147,136,176
34	At Exelsior	Replace ex rural intx - add NB left turn lane & EB right turn lane, signalization	75% of A-1.4.4	CP 54	1	L.S.	$ 1,096,000	$ 1,096,000	Fair Share = 16%	$ 921,000	$ 175,000	$ 147,311,176
64	At Waterman Rd.	Constr. 4x4 intx (3-way), signalize	75% of A-1.4.2	CP 52, CP 59	1		$ 1,743,500	$ 1,744,000	Fair Share = 39%	$ 1,063,840	$ 680,000	$ 147,991,176
	Sub-total Elder Creek Rd.							**$ 3,928,000**		**$ 2,756,840**	**$ 1,171,000**	**$ 147,991,176**
SR-16												
1.3	South Watt Ave to Bradshaw Rd	Widen ex. 4-lane (thoroughfare section) to 6-lane (2 frontages)	A-1.3.7	CP 3	6,810	L.F.	$ 892	$ 6,075,000	SCTDF, NVS (fair share = 9%)	$ 5,528,000	$ 547,000	$ 148,538,176
1.4	Bradshaw Rd to Excelsior Rd.	Widen ex. 2-lane rural section to 4-lane arterial (thoroughfare center section)	A-1.3.5	CP 4	10,330	L.F.	$ 1,462	$ 15,102,000	70% SCTDF, 30% Meas. A (fair share < 1%)	$ 14,951,000	$ 151,000	$ 148,689,176
1.4d	Bradshaw Rd to Excelsior Rd.	Creek Crossing - Morrison Creek Bridge new bridge 6 lane thoroughfare	A-1.5.4		1	L.S.	$ 3,575,000	$ 3,575,000	70% SCTDF, 30% Meas. A (fair share < 1%)	$ 3,539,000	$ 36,000	$ 148,725,176
1.5	Excelsior Rd. to Sunrise Blvd.	Widen ex. 2-lane rural section to 4-lane arterial (thoroughfare center section)	SCTDF	CP 4	10,600	L.S.	$ 20,526,000	$ 20,526,000	SCTDF (fair share = 1%)	$ 20,321,000	$ 205,000	$ 148,930,176
63	At Bradshaw	Widen 4x6 Intx. to 6x6 Intersection (CAC only, yet consistent w/CP-2 and CP-26)	A-1.4.5	CP 45	1	L.S.	$ 733,000	$ 733,000	Sunridge PFFP, NVS (fair share = 14%)	$ 630,000	$ 103,000	$ 149,033,176
35	At Excelsior	Widen ex. 2x2 to mod. 4x4 intx; relocate signal	A-1.4.10 plus…	CP 46	1	L.S.	$ 1,380,500	$ 1,381,000	Sunridge PFFP, NVS (fair share = 5%)	$ 1,312,000	$ 69,000	$ 149,102,176
36	At South Watt Ave.	Widen ex. mod. 4x6 intx to mod. 6x6 intx.	A-1.4.5	CP 44	1	L.S.	$ 440,500	$ 441,000	SCTDF (fair share = 22%)	$ 344,000	$ 97,000	$ 149,199,176
	Sub-total SR-16							**$ 47,833,000**		**$ 46,625,000**	**$ 1,208,000**	**$ 149,199,176**
Gerber Rd.												
38	At French Rd.	widen WB approach (add rt-lane); all other imp's exist. - may be R.O.W. constrained	A-1.3.14	CP 63	0	L.S.	$ 178,000	$ -	fair share = 24%	$ -	$ -	$ 149,199,176
40	At Bradshaw	Widen 4x4 Intx. to 4X6 Intx.	A-1.4.5	CP 67	1	L.S.	$ 440,500	$ 441,000	NVS (fair share = 32%)	$ 335,000	$ 106,000	$ 149,305,176
41	At Waterman	Exist. Improvements (see EP 62)		CP 65	1	L.S.	$ -	$ -	Fair Share = 38%	$ -	$ -	$ 149,305,176
42	At Bardu Lane	Constr. 4x2 Intx., Signalize (E/W improvements incl. in Gerber Road widening)		EP 63, CP 66	1	L.S.	$ 310,000	$ 310,000	Fair Share = 53%	$ 146,000	$ 164,000	$ 149,469,176
60	At Vineyard	Modify from 3-way to 4 way & widen (NB)	30% of A-1.4.4	CP 68	1	L.S.	$ 409,200	$ 409,000	NVS (fair share = 20%)	$ 327,000	$ 82,000	$ 149,551,176
43	At Exelsior	Replace ex rural intx. w/mod. 4x2, 4-way, signalize		EP 66, CP 69	1	L.S.	$ 1,071,000	$ 1,071,000	NVS (fair share = 7%)	$ 996,000	$ 75,000	$ 149,626,176
	Sub-total Gerber Rd.							**$ 2,231,000**		**$ 1,804,000**	**$ 427,000**	**$ 149,626,176**
South Watt Ave.												
61	At Kiefer Blvd.	Widen ex. Intx. to add NB right turn lane	50% of A-1.4.5	CP 41	1	L.S.	$ 276,500	$ 277,000	SCTDF (fair share = 13%)	$ 241,000	$ 36,000	$ 149,662,176
	Sub-total South Watt Ave.							**$ 277,000**		**$ 241,000**	**$ 36,000**	**$ 149,662,176**
Calvine Rd.												
44	At Waterman Rd.	Widen ex. Intx. to 6x4 intx, relocate signal (imp's included in project EP 70)		CP 73	1	L.S.	$ -	$ -	Fair Share = 13%	$ -	$ -	$ 149,662,176
45	At Exelsior	Widen ex. Intx (add left turn lanes), signalize (4-way) (CAC plan mitigation only)	A-1.4.6	CP 74	1	L.S.	$ 1,174,000	$ 1,174,000	Fair Share = 3%	$ 1,139,000	$ 23,000	$ 149,685,176
10.2.1	Elk Grove-Florin Rd to Grand Cru Drive	Widen Exist. Thoroughfare Center Section from 4 to 6 Lanes	A-1.3.7	CP 16	690	L.F.	$ 892	$ 615,000	Vineyard, Vineyard Other (Fair share = 8%)	$ 566,000	$ 49,000	$ 149,734,176
10.2.2	Elk Grove-Florin Rd to Grand Cru Drive	Widen Exist. Thoroughfare Center Section from 4 to 6 Lanes (add WB frontage)	A-1.3.7	CP 16	1,330	L.F.	$ 446	$ 593,000	Vineyard, Vineyard Other (Fair share = 8%)	$ 546,000	$ 47,000	$ 149,781,176
	Sub-total Calvine Rd.							**$ 2,382,000**		**$ 2,251,000**	**$ 119,000**	**$ 149,781,176**
Elk Grove-Florin Rd.												
46	At Calvine Rd	Restripe intersection to 6x6 intx.		EP 69, CP 72	1	LS	$ 15,000	$ 15,000	Fair share = 16%	$ 13,000	$ 1,000	$ 149,782,176
47	At Vintage Park Drive	Modify exist. signal and add "no U-Turn" sign		EP 71, CP 71	1	L.S.	$ 10,000	$ 10,000	Fair Share = 29%	$ 7,000	$ 3,000	$ 149,785,176
	Sub-total Elk Grove-Florin Rd.							**$ 25,000**		**$ 20,000**	**$ 4,000**	**$ 149,785,176**
Bradshaw Road												
9.2	Elder Creek Rd. to Florin Rd.	Widen Exist. Thoroughfare Center Section from 4 to 6 Lanes	A-1.3.11	CP 33	4,400	L.F.	$ 964	$ 4,242,000	NVS, SCTDF (Fair share = 25%)	$ 3,182,000	$ 1,060,000	$ 150,845,176
9.6	Florin Rd. to Gerber Rd.	Widen Exist. Thoroughfare Center Section from 4 to 6 Lanes	A-1.3.11	CP 37	4,436	L.F.	$ 964	$ 4,276,000	NVS (Fair share = 27%)	$ 3,121,000	$ 1,155,000	$ 152,000,176
65	At Kiefer Blvd.	Widen exist. mod. 4x6 intx. (add 2nd. Lt-lanes - EB & WB, rt-lane EB)	A-1.4.5	CP 42	1	L.S.	$ 553,000	$ 553,000	SCTDF (Fair share = 14%)	$ 476,000	$ 77,000	$ 152,077,176
	Sub-total Bradshaw Rd.							**$ 9,071,000**		**$ 6,779,000**	**$ 2,292,000**	**$ 152,077,176**

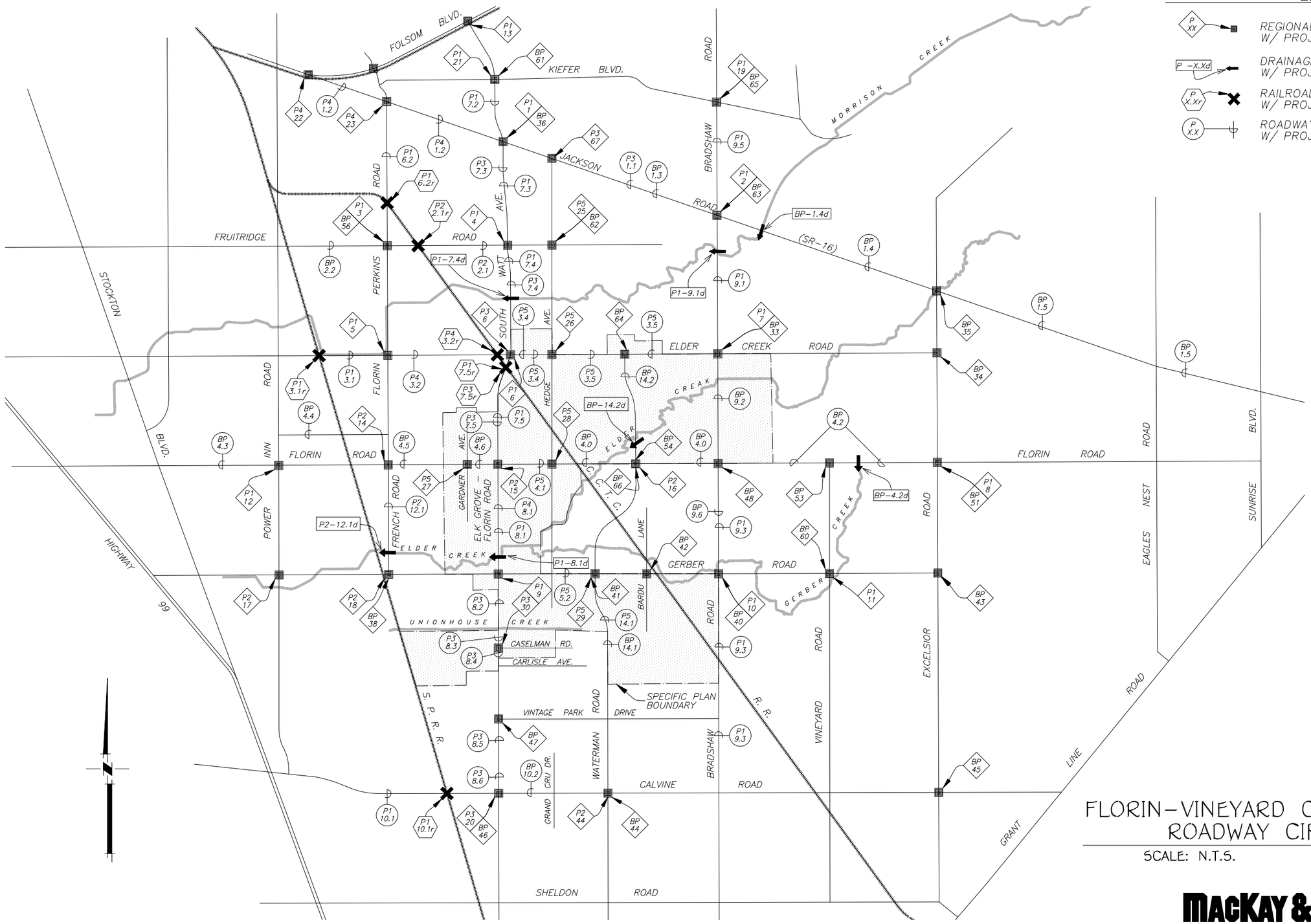
Table A-1
Florin Vineyard Community Plan
Roadway CIP Summary
Cumulative Plus Planning Dept. Landuse Plan

Proj #	Roadway Segment/ Item	Project Description	Fin Plan Ref Table	Mit Meas	Qty	Unit	Unit Price	Total Estimated Cost	Other (partial) Funding Sources*(	Total Est. Cost of Reimbursable Project	Net Construction Cost (FVCP)	Cumulative Total Estimated Net Cost (FVCP)
BUILDOUT PHASE continued ("CUMULATIVE + PROJECT" CONDITIONS) - triggered subsequent to Phase - 5 projects												
Florin Rd.												
4.2	Bradshaw Rd. to Excelsior Rd.	Widen ex. 2-lane rural section to 4-lane thoroughfare center section	A-1.3.5	CP 36	9,720	L.F.	$ 1,488	$ 14,463,000	SCTDF, NVS (Fair Share = 31%)	$ 9,979,000	$ 4,484,000	$ 156,561,176
4.2f.n	Bradshaw Rd. to 2650' west of Vineyard Rd.	Frontage on-site impr. (north side)	A-1.3.11		2,200	L.F.	$ 482	$ 1,060,000	Fair Share = 36%	$ 678,000	$ 382,000	$ 156,943,176
4.2d	Bradshaw Rd. to Excelsior Rd.	Replace Gerber Creek Bridge with 6 lane thoroughfare bridge	A-1.5.10		1	L.S.	$ 1,502,000	$ 1,502,000	SCTDF, NVS (Fair share = 29%)	$ 1,066,000	$ 436,000	$ 157,379,176
48	At Bradshaw	Widen ex. mod 2x4 Intx. to 4X6 Intx.(add 1 thru each way, rt-lane WB; CAC mitigation only)	A-1.4.10	CP 60	1	L.S.	$ 1,187,500	$ 1,188,000	NVS (Fair Share = 31%)	$ 820,000	$ 368,000	$ 157,747,176
51	At Excelsior Rd.	Constr. 4x 2 intx.	80% of A-1.4.4 plus…	CP 62	1	L.S.	$ 1,149,700	$ 1,150,000	NVS (Fair Share = 19%)	$ 932,000	$ 218,000	$ 157,965,176
53	At Vineyard Rd.	Constr. 2x4 intx., signalize 4-way	A-1.4.4	CP 61	1	L.S.	$ 1,364,000	$ 1,364,000	NVS (Fair Share = 25%)	$ 1,023,000	$ 341,000	$ 158,306,176
54	At Waterman Rd.	Constr. 4x4 intx (future 4x6); 3-way; signalize (intx. legs incl. in main line segments)	25% of A-1.4.2	CP 59	1	L.S.	$ 776,125	$ 776,000	NVS (Fair Share = 41%)	$ 458,000	$ 318,000	$ 158,624,176
4.4	Power Inn Road to Florin- Perkins Road	Const. Alta Florin Rd (2-lane arterial center section) from Power Inn Rd to Florin-Perkins Rd.	(SCTDF)	CP 9	4,700	L.F.		$ 30,000,000	SCTDF	$ 30,000,000	$ -	$ 158,624,176
4.3	Stockton Blvd to Power Inn Road	Widen Exist. Thoroughfare Center Section from 4 to 6 Lanes	A-1.3.7	EP 7, CP 8	4,010	L.F.	$ 892	$ 3,577,000	SCTDF (Fair share = 22%)	$ 2,790,000	$ 787,000	$ 159,411,176
4.5	Florin-Perkins Rd to Gardner Ave.	Widen Exist. Thoroughfare Center Section from 4 to 6 Lanes	A-1.3.7	EP 35, CP 10	2,400	L.F.	$ 892	$ 2,141,000	SCTDF (Fair share = 54%)	$ 985,000	$ 1,156,000	$ 160,567,176
4.6	Gardner Ave. to South Watt Ave.	Widen Exist. Thoroughfare Center Section from 4 to 6 Lanes	A-1.3.11	EP 36, CP 11	1,125	L.F.	$ 964	$ 1,085,000	SCTDF (Fair share = 59%)	$ 445,000	$ 640,000	$ 161,207,176
4.0f.n	Hedge Ave. to Bradshaw Rd.	Frontage on-site impr. (north side)	A-1.3.11		7,250	L.F.	$ 482	$ 3,495,000	Fair Share = 50%	$ 1,748,000	$ 1,747,000	$ 162,954,176
4.0f.s	Hedge Ave. to CCTC	Frontage on-site impr. (south side)	A-1.3.11		1,170	L.F.	$ 482	$ 564,000	Fair Share = 50%	$ 282,000	$ 282,000	$ 163,236,176
	Sub-total Florin Rd.							**$ 62,365,000**		**$ 51,206,000**	**$ 11,159,000**	**$ 163,236,176**
Fruitridge Rd.												
62	At Hedge Ave.	widen exist Intx. (add rt-lane, EB))	A-1.4.4	CP 49	1	L.S.	$ 178,000	$ 178,000	Fair Share = 8%	$ 164,000	$ 14,000	$ 163,250,176
	Sub-total Fruitridge Rd.							**$ 178,000**		**$ 164,000**	**$ 14,000**	**$ 163,250,176**
Waterman Rd												
14.1.1	Vintage Park Dr to Gerber Rd	Widen ex.section to 4-lane arterial (add NB frontage & median)	A-1.3.13, A-1.3.8	CP 34	3,300	L.F.	$ 792	$ 2,614,000	Fair Share = 33%	$ 1,751,000	$ 863,000	$ 164,113,176
14.1.2	Vintage Park Dr to Gerber Rd	Widen ex.2-lane arterial center section to 4-lane arterial	A-1.3.13	CP 34	2,440	L.F.	$ 1,008	$ 2,460,000	Fair Share = 33%	$ 1,648,000	$ 812,000	$ 164,925,176
14.2	Florin Rd. to Elder Creek Rd.	Constr. 4-lane arterial	A-1.3.2	CP 52	4,480	L.F.	$ 1,570	$ 7,034,000	Fair Share = 38%	$ 4,361,000	$ 2,673,000	$ 167,598,176
14.2d	Florin Rd. to Elder Creek Rd.	Constr. Elder Creek bridge		CP 52	1	L.S.	$ 2,717,000	$ 2,717,000	Fair Share = 38%	$ 1,685,000	$ 1,032,000	$ 168,630,176
66	At Florin Rd.	Widen exist 4x4 3-way intx. to 4x4 4-way intx (NB - future 6x4), modify signal	25% of A-1.4.2 plus...		1	L.S.	$ 583,600	$ 584,000	Fair Share = 41%	$ 345,000	$ 239,000	$ 168,869,176
	Sub-total Waterman Rd.							**$ 15,409,000**		**$ 9,790,000**	**$ 5,619,000**	**$ 168,869,176**
	Sub-total Net Construction Cost (FVCP)										**$ 22,049,000**	**$ 168,869,176**
	Right of Way Acquistion 10% of Net Construction Cost (FVCP)										$ 2,204,900	$ 171,074,076
Total Build-out Conditions Phase								**$ 143,699,000**		**$ 121,636,840**	**$ 24,253,900**	**$ 171,074,076**
Infeasible Mitigation Measures ("Significant and Unavoidable" Impacts												
Florin-Perkins Rd.												
6.1	Fruitridge Rd. to Elder Creek Rd.	Widen ex. Arterial Center Section from 4 to 6 Lanes (requires GPA; r.o.w. constrained)		EP 16, CP 20	4,400	L.F.	n/a	$ -			$ -	$ 171,074,076
6.1d	Fruitridge Rd. to Elder Creek Rd.	Widen ex. bridge over Morrison Creek to 96' ROW (requires GPA; r.o.w. constrained)			1	L.S.	n/a	$ -			$ -	$ 171,074,076
6.3	Elder Creek Rd. to Florin Rd.	Widen ex. Arterial Center Section from 4 to 6 Lanes (requires GPA; r.o.w. constrained)		EP 17, CP 21	4,400	L.F.	n/a	$ -			$ -	$ 171,074,076
6.3d	Elder Creek Rd. to Florin Rd.	Widen ex. Florin Creek culvert to 96' ROW (requires GPA; r.o.w. constrained)			1	L.S.	n/a	$ -			$ -	$ 171,074,076
24	At Folsom Blvd.	Mitigation Infeasible (4X6 widening)		EP 38, CP 39	1	L.S.	n/a	$ -			$ -	$ 171,074,076
South Watt Ave.												
7.1	Folsom Blvd. to Kiefer Blvd.	Mitigation Infeasible (widen to 8 lanes; requires GPA; r.o.w. constrained)		EP 19	1,530	L.F.	n/a	$ -			$ -	$ 171,074,076
Gerber Rd.												
5.1	Power Inn Rd. to French Rd	Widen ex. Arterial Center Section from 4 to 6 Lanes (requires GPA; r.o.w. constrained)		EP 10, CP 13	4,350	L.F.	n/a	$ -			$ -	$ 171,074,076
5.1d	Creek Crossing	Widen Elder Creek Bridge from 4 to 6 lanes (requires GPA; r.o.w. constrained)			1	L.S.	n/a	$ -			$ -	$ 171,074,076
5.3	French Rd to Elk Grove-Florin Rd	Widen ex. Arterial Center Section from 4 to 6 Lanes (requires GPA; r.o.w. constrained)		CP 14	2,150	L.F.	n/a	$ -			$ -	$ 171,074,076
SR-16												
37	At Folsom Blvd.	Widen EB approach by adding 2nd right turn lane (mitigation not feasible - ROW constraints)		CP 38	0	L.S.	n/a	$ -			$ -	$ 171,074,076
Fruitridge Rd.												
2.2	Power Inn Rd. to Florin-Perkins Rd.	Widen ex. Arterial Section from 4 to 6 Lanes (requires GPA; r.o.w. constrained)		CP 5	4,380	L.F.	n/a	$ -			$ -	$ 171,074,076
56	At Florin-Perkins Rd.	Widen ex. Intx. To 4x4 intx, relocate Signal - dual lefts, 4-way (infeasible; r.o.w. constrained)		CP 47	0	L.S.	n/a	$ -			$ -	$ 171,074,076
Folsom Blvd												
13.1	SR-16 to Watt Ave.	Widen Exist. Arterial Center Section from 4 to 6 Lanes (requires GPA; r.o.w. constrained)		CP 1	4,800	L.F.	n/a	$ -			$ -	$ 171,074,076
Power Inn Road												
11.1	Elder Creek Road to Florin Road	Widen Exist. Arterial Center Section from 4 to 6 Lanes (requires GPA; r.o.w. constrained)		EP 13, CP 17	4,355	L.F.	n/a	$ -			$ -	$ 171,074,076
Florin Rd.												
12	At Power Inn Rd.	Widen SB approach (add shared through/RT lane)		CP 55	1	L.S.	n/a	$ -			$ -	$ 171,074,076
	TOTAL ROW Acquistion										**$ 15,538,552**	
	TOTAL PROJECT COST							**$ 489,505,745**		**$ 307,780,901**	**$ 170,924,076**	**$ 171,074,076**

[1](SCTDF project inclusion noted, though assumed that reimbursements will be given in the form of credit against the SCTDF fee. Alternatively, FVCP could pay 100% of the SCTDF fee and then be relieved of further funding obligation of projects included in the SCTDF program.
[2](Required improvements in excess of (inconsistent with) existing General Plan Transportation Element roadway designations are deemed infeasible.
[3](Right-of-way acquisition cost as a percentage of construction cost is derived from detailed right-of-way analyses performed for North Vineyard Station. Prior to the actual acuisition process starting, similarly detailed analysis will need to be performed for the Florin Vineyard Community Plan right-of-way needs.
[4](Fair Share funding for projects included in the SCTDF should be given credit against the regional SCTDF fee.

Abbreviations
d - drainage
r - railroad
n - north
s - south
e - east
w - west
f - frontage

Exhibit A-1



LEGEND

- P XX — REGIONAL INTERSECTION IMPROVEMENTS W/ PROJECT NUMBER
- P -X.Xd — DRAINAGE CROSSING IMPROVEMENTS W/ PROJECT NUMBER
- P X.Xr — RAILROAD CROSSING IMPROVEMENTS W/ PROJECT NUMBER
- P X.X — ROADWAY IMPROVEMENTS W/ PROJECT NUMBER

PROJECT PHASES

P1 – PHASE 1
P2 – PHASE 2
P3 – PHASE 3
P4 – PHASE 4
P5 – PHASE 5
P6 – PHASE 6
BP – BUILDOUT PHASE
P – NEW

FLORIN-VINEYARD COMMUNITY PLAN ROADWAY CIP EXHIBIT

SCALE: N.T.S. JULY 11, 2008

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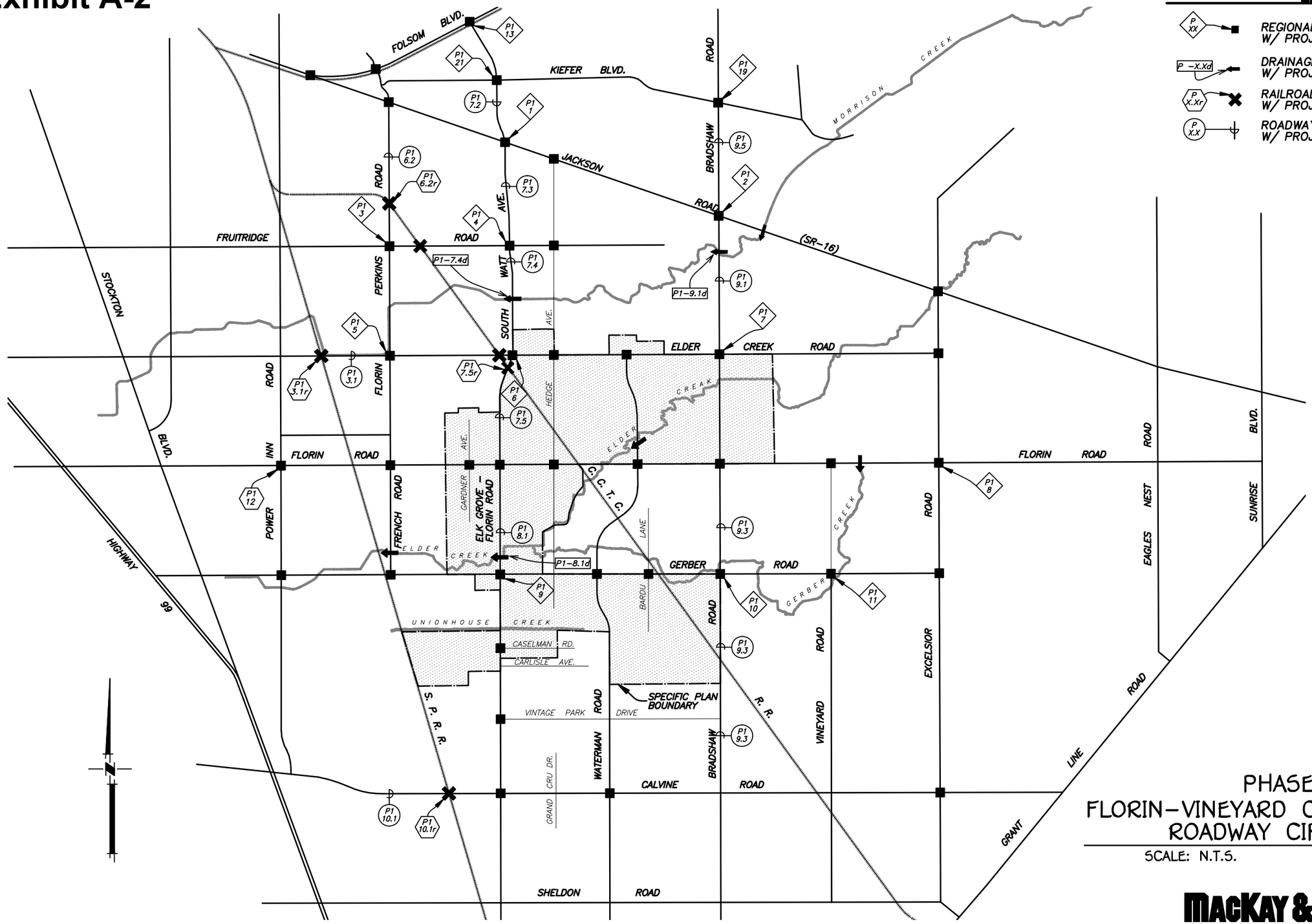
Exhibit A-2



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- P X.X — ROADWAY IMPROVEMENTS W/ PROJECT NUMBER

PHASE 1
FLORIN-VINEYARD COMMUNITY PLAN
ROADWAY CIP EXHIBIT

SCALE: N.T.S. JULY 11, 2008

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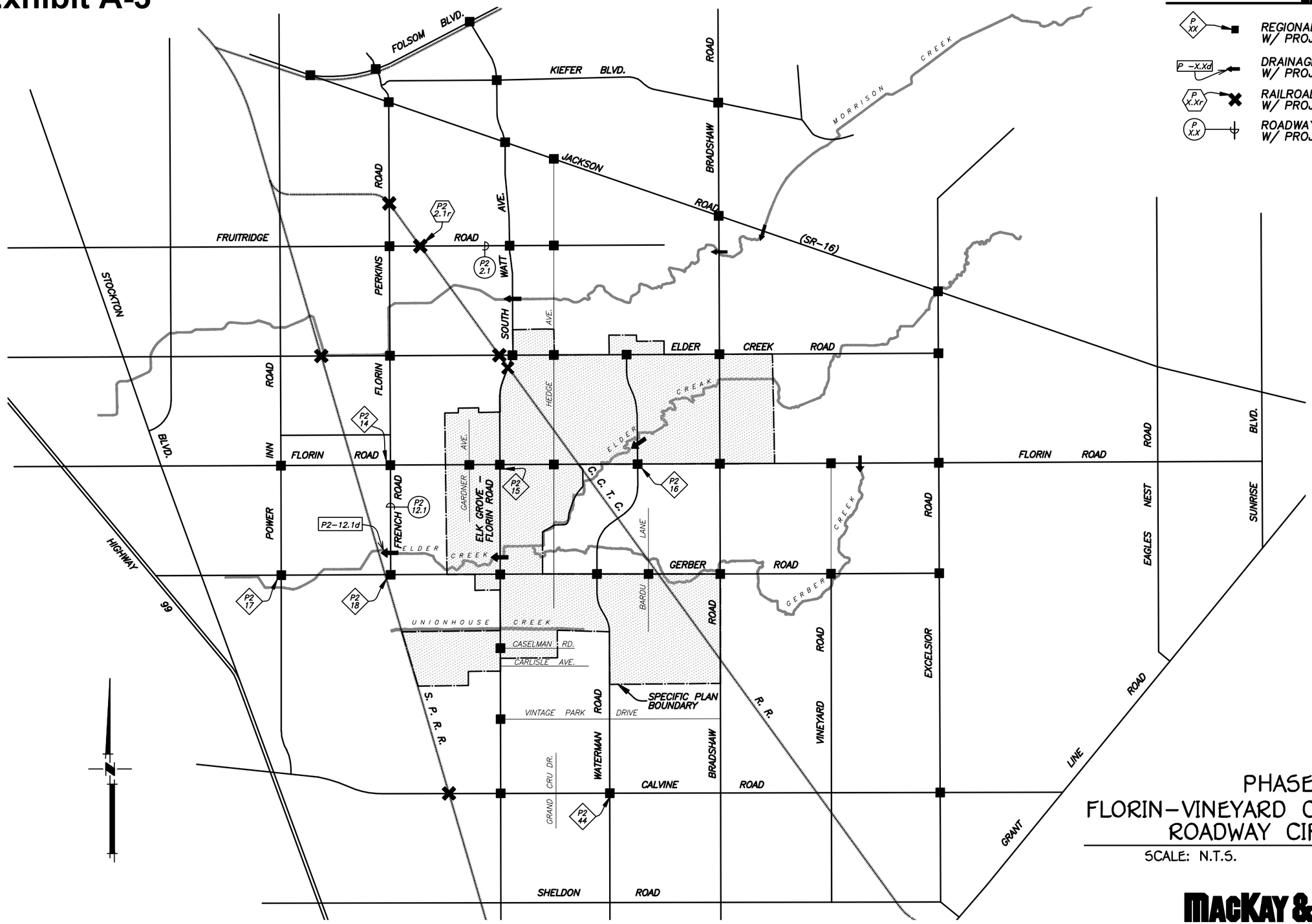

PHASE 2
FLORIN-VINEYARD COMMUNITY PLAN
ROADWAY CIP EXHIBIT

SCALE: N.T.S. JULY 11, 2008

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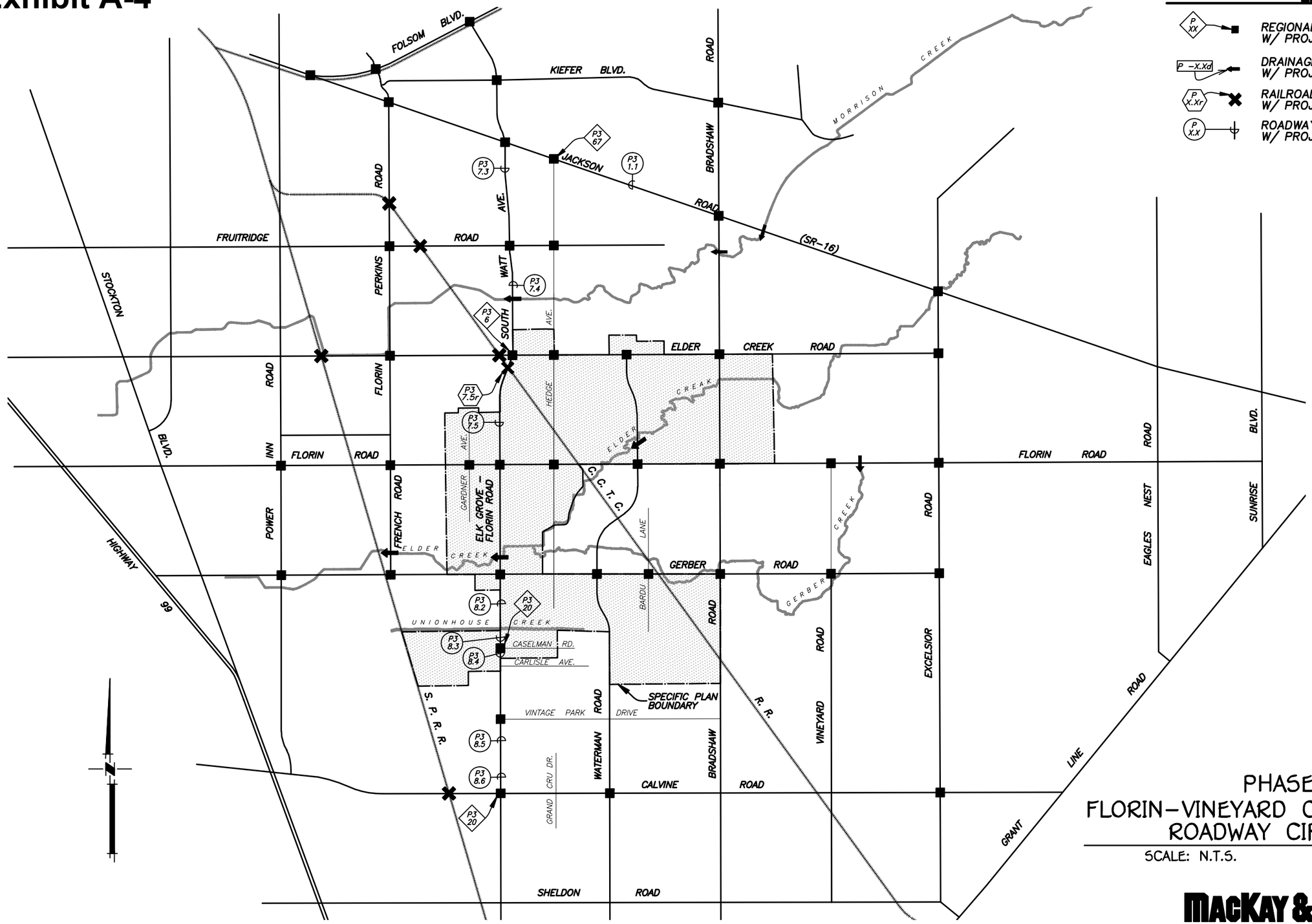

PHASE 3
FLORIN-VINEYARD COMMUNITY PLAN
ROADWAY CIP EXHIBIT

SCALE: N.T.S. JULY 11, 2008

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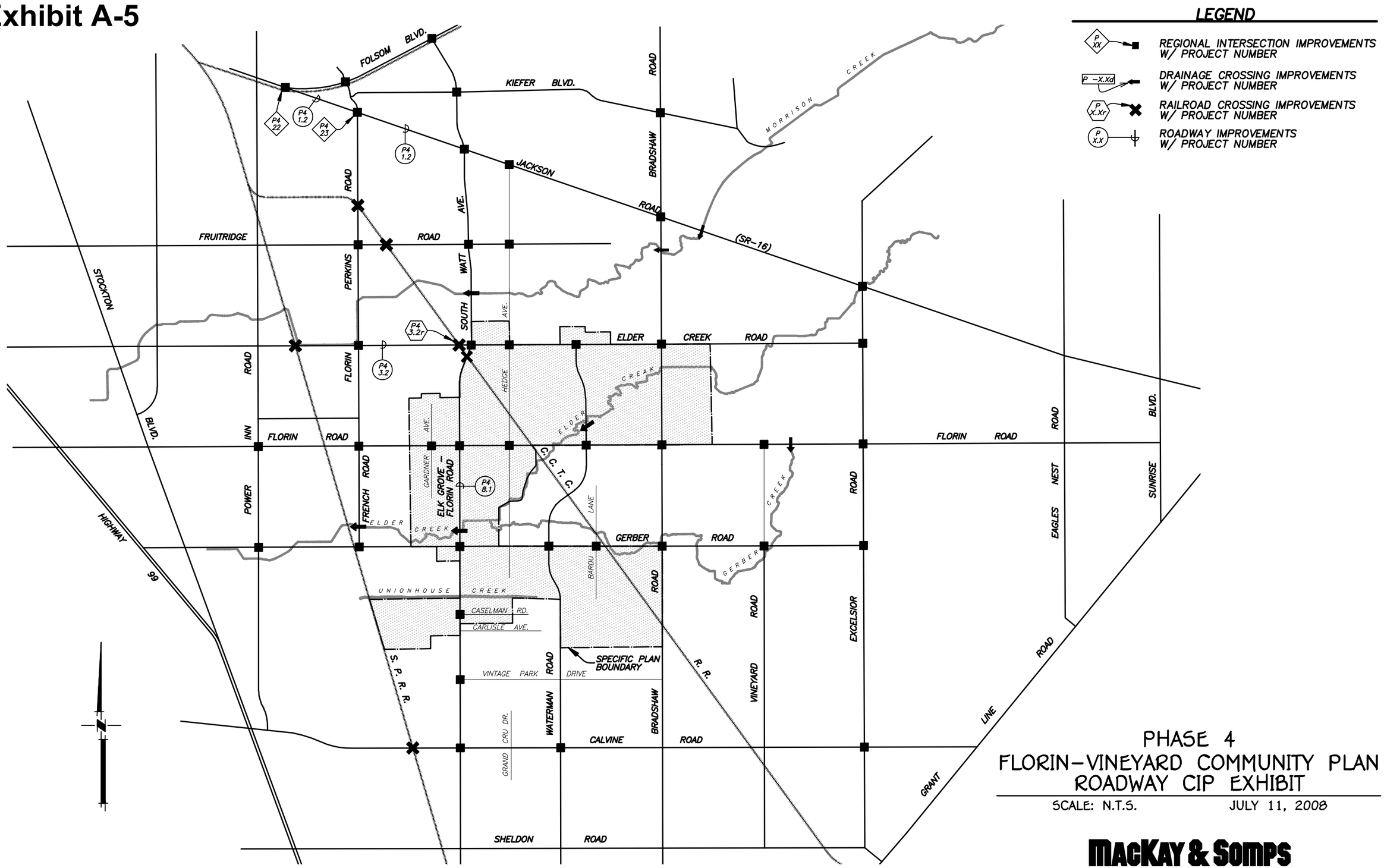
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RAILROAD CROSSING IMPROVEMENTS W/ PROJECT NUMBER
ROADWAY IMPROVEMENTS W/ PROJECT NUMBER
FOLSOM BLVD.
KIEFER BLVD.
JACKSON ROAD (SR-16)
FRUITRIDGE ROAD
ELDER CREEK ROAD
FLORIN ROAD
GERBER ROAD
CALVINE ROAD
SHELDON ROAD
STOCKTON BLVD.
HIGHWAY 99
POWER INN ROAD
PERKINS ROAD
FRENCH ROAD
FLORIN ROAD
WATT AVE.
SOUTH AVE.
HEDGE AVE.
GARDINER AVE.
ELK GROVE - FLORIN ROAD
BRADSHAW ROAD
WATERMAN ROAD
VINEYARD ROAD
EXCELSIOR ROAD
EAGLES NEST ROAD
SUNRISE BLVD.
GRANT LINE ROAD
MORRISON CREEK
ELDER CREEK
GERBER CREEK
UNIONHOUSE CREEK
BARDU LANE
C. C. T. C.
S. P. R. R.
R. R.
CASELMAN RD.
CARLISLE AVE.
VINTAGE PARK DRIVE
GRAND CRU DR.
SPECIFIC PLAN BOUNDARY
P4 22
P4 1.2
P4 23
P4 1.2
P4 3.2r
P4 3.2
P4 8.1
PHASE 4
FLORIN-VINEYARD COMMUNITY PLAN
ROADWAY CIP EXHIBIT
SCALE: N.T.S.
JULY 11, 2008
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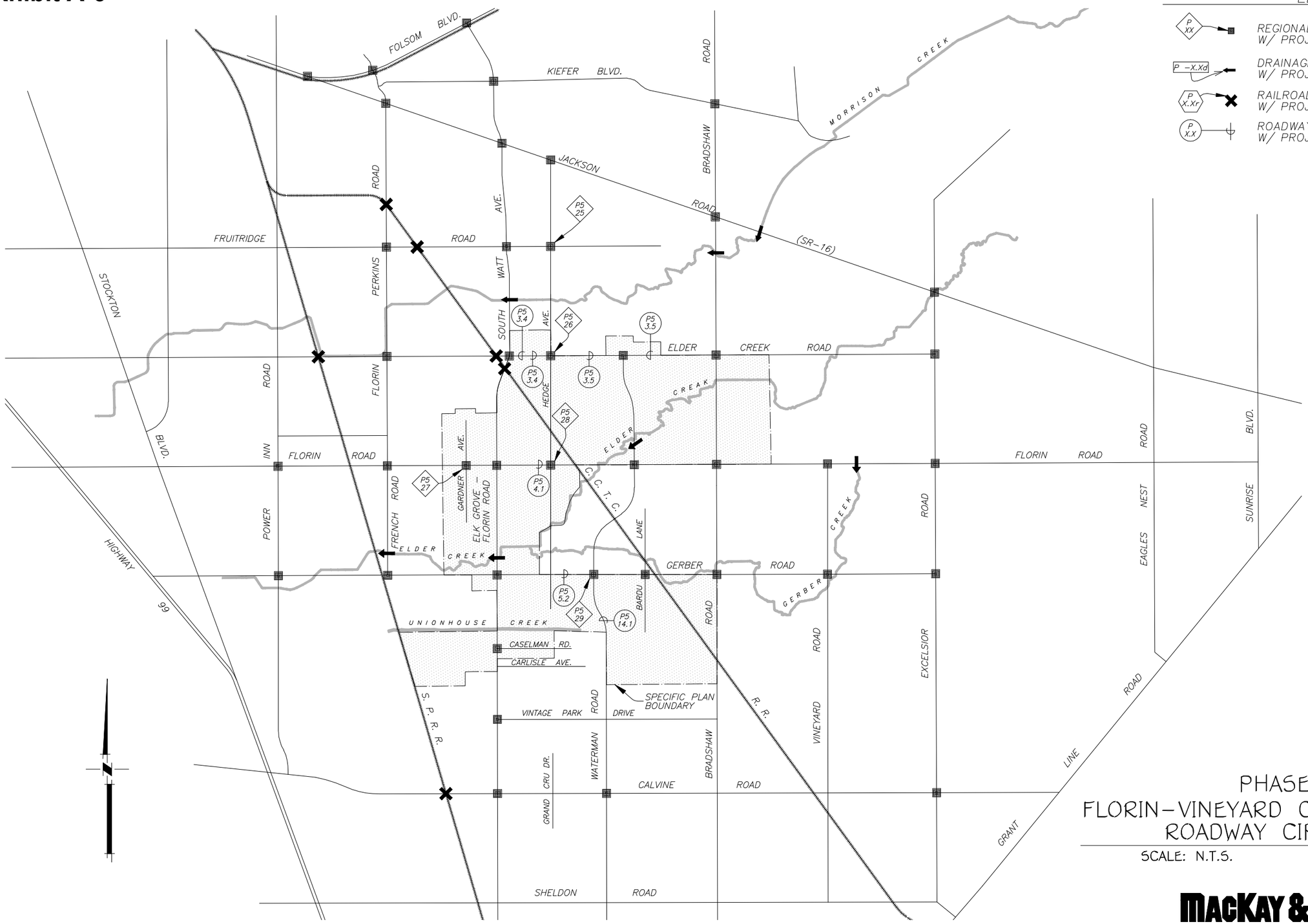
Exhibit A-6



PHASE 5
FLORIN-VINEYARD COMMUNITY PLAN
ROADWAY CIP EXHIBIT

SCALE: N.T.S. JULY 11, 2008

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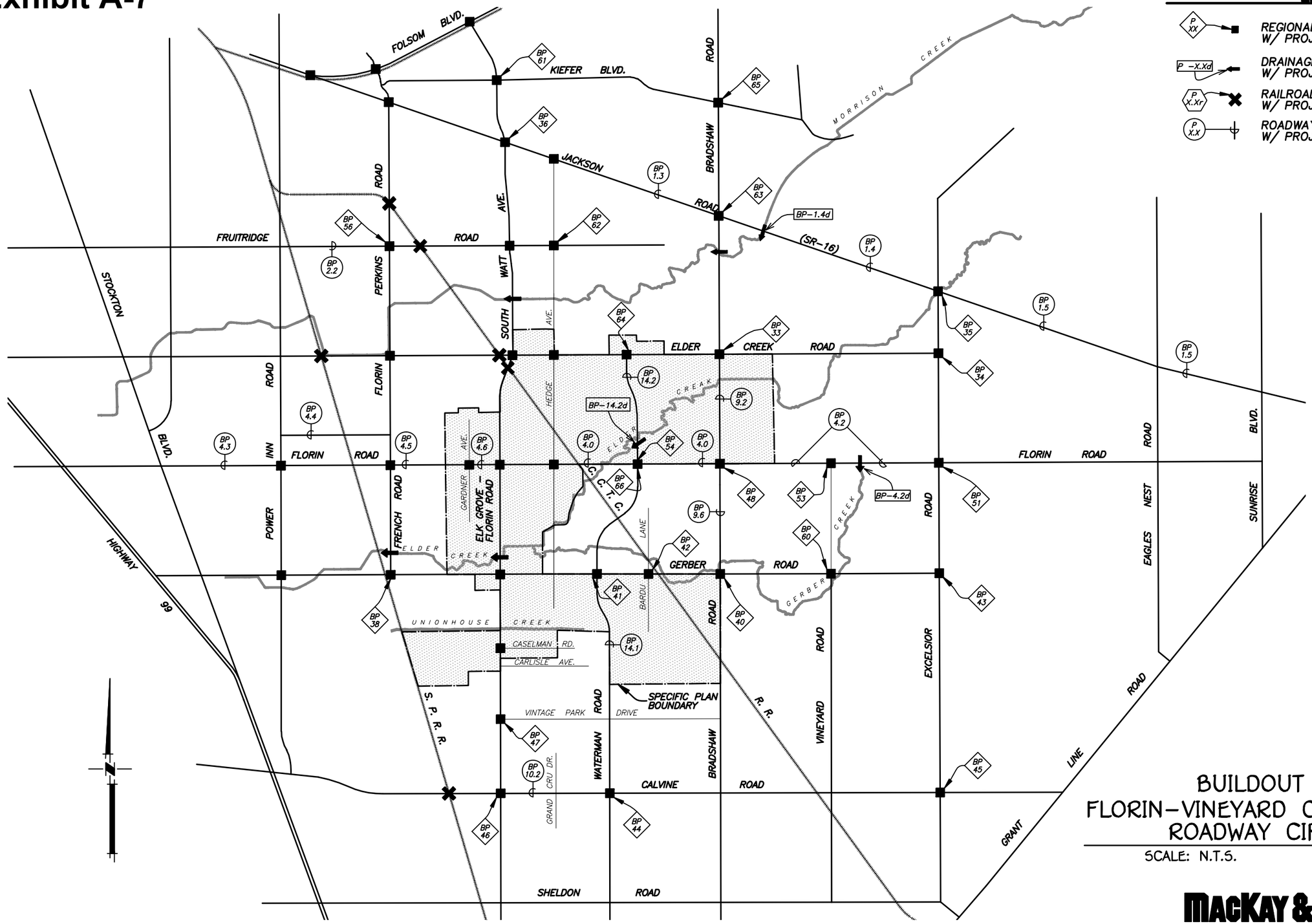
Exhibit A-7



LEGEND

- P XX — REGIONAL INTERSECTION IMPROVEMENTS W/ PROJECT NUMBER
- P -X.Xd — DRAINAGE CROSSING IMPROVEMENTS W/ PROJECT NUMBER
- P X.Xr — RAILROAD CROSSING IMPROVEMENTS W/ PROJECT NUMBER
- P X.X — ROADWAY IMPROVEMENTS W/ PROJECT NUMBER

BUILDOUT PHASE
FLORIN-VINEYARD COMMUNITY PLAN
ROADWAY CIP EXHIBIT

SCALE: N.T.S. JULY 11, 2008

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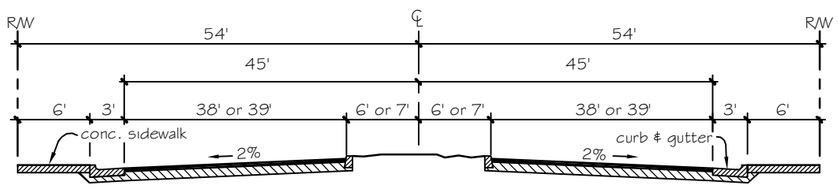
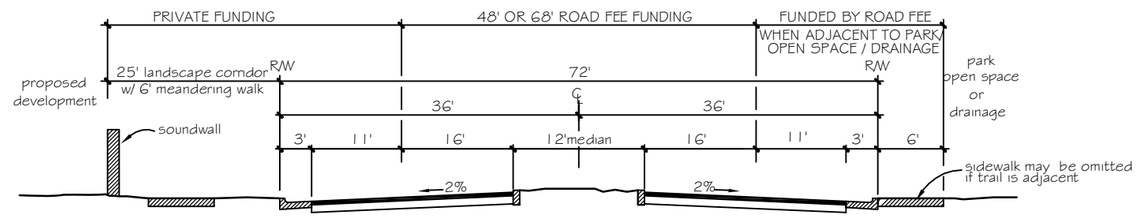


OFFSITE 108' STREET
(THOROUGHFARE)
not to scale



ONSITE 72' STREET
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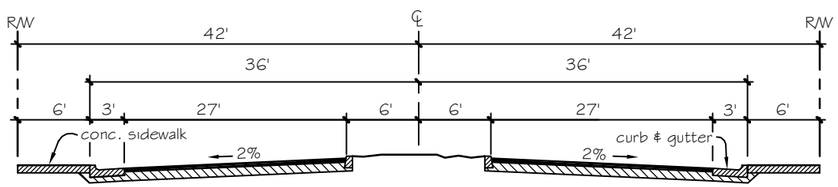
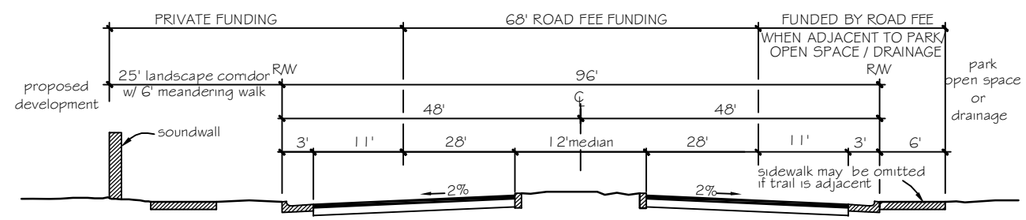


OFFSITE 84' STREET
(ARTERIAL)
not to scale



ONSITE 96' STREET
(THOROUGHFARE)
not to scale

Florin - Vineyard Community Plan

Roadway Capital Improvement Program

Typical Roadway Sections

Sacramento County California
Scale: N.T.S. January 09, 2008

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Table A-2
Florin Vineyard Gap Community Plan
Figure A-1.3
Roadway Cross Section Index
Summary of Preliminary Per Foot Cost Estimates

SHEET	PROJECT NAME	TOTAL COST PER L.F.
A-1.3.1	108' R/W (Thoroughfare) Full Section	$ 2,074.00
A-1.3.2	84' R/W (Arterial) Full Section	$ 1,570.00
A-1.3.3	72' R/W (Arterial) Center Section	$ 953.00
A-1.3.4	Widen Exist. 2-lane Thoroughfare Center Section to 4 Lanes	$ 573.00
A-1.3.5	96' R/W (Thoroughfare) Center Section	$ 1,462.00
A-1.3.6	108' R/W (Thoroughfare) Half Section w/ median	$ 1,037.00
A-1.3.7	Off-Site Thoroughfare Frontage Lane	$ 446.00
A-1.3.8	12' Median	$ 314.00
A-1.3.9	South Side Center Lane	$ 379.00
A-1.3.10	96' R/W (Thoroughfare) Half Section	$ 654.00
A-1.3.11	On-Site Thoroughfare Frontage Lane	$ 482.00
A-1.3.12	Off-Site Arterial Frontage Lane	$ 418.00
A-1.3.13	On-Site Arterial Frontage Lane	$ 504.00
A-1.3.14	Addition of Right-Turn Lane	$ 178,000.00

DRAFT

revised: 8/15/08

Table A-3
Florin Vineyard Gap Community Plan
Figure A-1.3.1
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical 108' R/W Thoroughfare

Project Description:
12' Landscaped Median (39' Pavement, 6' Sidewalk and 3' C&G Each Side = 96')

ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1. Clearing & Grubbing, Subgrade Preparation	96	S.F.	$ 0.35	$ 33.60
2. Pavement removal	20	S.F.	$ 1.50	$ 30.00
3. Excavation- Major Road	7	C.Y.	$ 30.00	$ 210.00
4. Asphaltic Concrete, 6.5"	78	S.F.	$ 4.50	$ 351.00
5. Aggregate Base, 23"	78	S.F.	$ 6.40	$ 499.20
6. Conc.-Median Curb, Type 3	2	L.F.	$ 18.00	$ 36.00
7. Conc.-Curb and Gutter, Type 2	2	L.F.	$ 25.00	$ 50.00
8. Conc.- 6' Sidewalk W/ 6" AB	12	S.F.	$ 10.00	$ 120.00
9. Median Landscaping & Irrigation (turf & street trees)	11	S.F.	$ 11.00	$ 121.00
10. Local Drainage- Street Storm Drain System	2	L.F.	$ 25.00	$ 50.00
11. Signing & Striping	2	L.F.	$ 7.50	$ 15.00
12. Intx.-Traffic Signal Interconnect	1	L.F.	$ 10.00	$ 10.00
13. Street Lights-Major Rd., Type A 220' Spacing	2	L.F.	$ 18.75	$ 37.50
14. Erosion Control	1	L.F.	$ 12.25	$ 12.25
15. Traffic Control	1	L.F.	$ 20.00	$ 20.00
		Subtotal		**$ 1,595.55**
30% (surveys, design, inspection and contingency)				$ 478.67
		Grand Total per Foot		**$ 2,074.22**
		Use		**$ 2,074.00**
		In case of utility pole relocation (1-side) use		**$ 2,092.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 6.55" AC over 23" AB roadway section.

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Table A-4
Florin Vineyard Gap Community Plan
Figure A-1.3.2
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical 84' R/W Arterial

Project Description:
12' Landscaped Median (27' Pavement, 6' Sidewalk and 3' C&G Each Side = 72')

ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1. Clearing & Grubbing, Subgrade Preparation	72	S.F.	$ 0.35	$ 25.20
2. Pavement removal	20	S.F.	$ 1.50	$ 30.00
3. Excavation- Major Road	5.6	C.Y.	$ 30.00	$ 168.00
4. Asphaltic Concrete, 5.5"	54	S.F.	$ 3.80	$ 205.20
5. Aggregate Base, 20.5"	54	S.F.	$ 5.70	$ 307.80
6. Conc.-Median Curb, Type 3	2	L.F.	$ 18.00	$ 36.00
7. Conc.-Curb and Gutter, Type 2	2	L.F.	$ 25.00	$ 50.00
8. Conc.- 6' Sidewalk W/ 6" AB	12	S.F.	$ 10.00	$ 120.00
9. Median Landscaping & Irrigation (turf & street trees)	11	S.F.	$ 11.00	$ 121.00
10. Local Drainage- Street Storm Drain System	2	L.F.	$ 25.00	$ 50.00
11. Signing & Striping	2	L.F.	$ 7.50	$ 15.00
12. Intx.-Traffic Signal Interconnect	1	L.F.	$ 10.00	$ 10.00
13. Street Lights-Major Rd., Type A 220' Spacing	2	L.F.	$ 18.75	$ 37.50
14. Erosion Control	1	L.F.	$ 12.25	$ 12.25
15. Traffic Control	1	L.F.	$ 20.00	$ 20.00
		Subtotal		**$ 1,207.95**
30% (surveys, design, inspection and contingency)				$ 362.39
		Grand Total per Foot		**$ 1,570.34**
		Use		**$ 1,570.00**
		In case of utility pole relocation (1-side) use		**$ 1,588.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5.5" AC over 20.5" AB roadway section.

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Table A-5
Florin Vineyard Gap Community Plan
Figure A-1.3.3
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical 72' R/W (Arterial) Center-Section

Project Description:
12' Landscape Median, 17' Pavement, and 6' Roadside Ditch (Each Side) = 58'

	ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1.	Clearing & Grubbing, Subgrade Preparation	58	S.F.	$ 0.35	$ 20.30
2.	Pavement Removal	20	S.F.	$ 1.50	$ 30.00
3.	Excavation- Major Road	4	C.Y	$ 30.00	$ 120.00
4.	Asphaltic Concrete, 5.5"	34	S.F.	$ 3.80	$ 129.20
5.	Aggregate Base, 20.5"	34	S.F.	$ 5.70	$ 193.80
6.	Conc.-Median Curb, Type 3	2	L.F.	$ 18.00	$ 36.00
7.	Median Landscaping & Irrigation (turf & street trees)	11	S.F.	$ 11.00	$ 121.00
8.	Drainage-Roadside Drainage	2	L.F.	$ 17.00	$ 34.00
9.	Signing & Striping	1	L.F.	$ 6.50	$ 6.50
10.	Intx.-Traffic Signal Interconnect	1	L.F.	$ 10.00	$ 10.00
11.	Erosion Control	1	L.F.	$ 12.25	$ 12.25
12.	Traffic Control	1	L.F.	$ 20.00	$ 20.00
			Subtotal		**$ 733.05**
	30% (surveys, design, inspection and contingency)				$ 219.92
			Grand Total per Foot		**$ 952.97**
			Use		**$ 953.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Landscaping and soundwall are excluded.
4. Assumes a 5.5" AC over 20.5" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are not included.

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Table A-6
Florin Vineyard Gap Community Plan
Figure A-1.3.4
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Widen 96' R/W (Thoroughfare) 2-Lane Center Section to 4 Lanes

Project Description:
11' Pavement and 6' Roadside Ditch Each Side = 34'

ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1. Clearing & Grubbing, Subgrade Preparation	34	S.F.	$ 0.35	$ 11.90
2. Sawcut Exist. Pavement	2	L.F.	$ 1.00	$ 2.00
3. Excavation- Major Road	3	C.Y.	$ 30.00	$ 90.00
4. Asphaltic Concrete, 6.5"	22	S.F.	$ 4.50	$ 99.00
5. Aggregate Base, 23"	22	S.F.	$ 6.40	$ 140.80
6. Local Drainage - Roadside Drainage	2	L.F.	$ 17.00	$ 34.00
7. Signing & Striping	2	L.F.	$ 6.50	$ 13.00
8. Utility Pole Relocation	1	L.F.	$ 18.00	$ 18.00
9. Erosion Control	1	L.F.	$ 12.25	$ 12.25
10. Traffic Control	1	L.F.	$ 20.00	$ 20.00
		Subtotal		**$ 440.95**
30% (surveys, design, inspection and contingency)				$ 132.29
		Grand Total per Foot		**$ 573.24**
		Use		**$ 573.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 6.5" AC over 23" AB roadway section.
5. Outside 11' travel lane, curb, gutter & s/w are not included.

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Table A-7
Florin Vineyard Gap Community Plan
Figure A-1.3.5
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical 96' R/W (Thoroughfare) Center Section Only

Project Description:
12' Landscaped Median, 28' Pavement and 6' Roadside Ditch Each Side = 80'

ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1. Clearing & Grubbing, Subgrade Preparation	80	S.F.	$ 0.35	$ 28.00
2. Pavement removal	20	S.F.	$ 1.50	$ 30.00
3. Excavation- Major Road	7	C.Y.	$ 30.00	$ 210.00
4. Asphaltic Concrete, 6.5"	56	S.F.	$ 4.50	$ 252.00
5. Aggregate Base, 23"	56	S.F.	$ 6.40	$ 358.40
6. Conc.-Median Curb, Type 3	2	L.F.	$ 18.00	$ 36.00
7. Median Landscaping & Irrigation (turf & street trees)	11	S.F.	$ 11.00	$ 121.00
8. Local Drainage - Roadside Drainage	2	L.F.	$ 17.00	$ 34.00
9. Signing & Striping	2	L.F.	$ 6.50	$ 13.00
10. Intx.-Traffic Signal Interconnect	1	L.F.	$ 10.00	$ 10.00
11. Erosion Control	1	L.F.	$ 12.25	$ 12.25
12. Traffic Control	1	L.F.	$ 20.00	$ 20.00
		Subtotal		**$ 1,124.65**
30% (surveys, design, inspection and contingency)				$ 337.40
		Grand Total per Foot		**$ 1,462.05**
		Use		**$ 1,462.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 6.5" AC over 23" AB roadway section.
5. Outside 11' travel lane, curb, gutter & s/w are not included.

Florin Vineyard Gap Community Plan
Figure A-1.3.6
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical Off-Site Thoroughfare half section w/ median

Project Description:
12' Median, 39' Pavement, 6' Sidewalk, 3' C&G = 48' (w/o Soundwall)
Widening/Outside Travel Lane - One Side Only

ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1. Clearing & Grubbing, Subgrade Preparation	48	S.F.	$ 0.35	$ 16.80
2. Sawcut Existing Pavement	1	L.F.	$ 1.00	$ 1.00
3. Excavation- Major Road	1	C.Y.	$ 30.00	$ 30.00
4. Asphaltic Concrete, 6.5"	39	S.F.	$ 4.50	$ 175.50
5. Aggregate Base, 23"	39	S.F.	$ 6.40	$ 249.60
6. Conc.-Median Curb, Type 3	2	L.F.	$ 18.00	$ 36.00
7. Median Landscaping & Irrigation (turf & street trees)	11	S.F.	$ 11.00	$ 121.00
8. Conc.-Curb and Gutter, Type 2	1	L.F.	$ 25.00	$ 25.00
9. Conc.- 6' Sidewalk W/ 6" AB	6	S.F.	$ 10.00	$ 60.00
10. Local Drainage- Street Storm Drain System	1	L.F.	$ 25.00	$ 25.00
11. Street Lights-Major Rd., Type A 220' Spacing	1	L.F.	$ 18.75	$ 18.75
12. Signing & Striping	1	L.F.	$ 6.50	$ 6.50
13 Erosion Control	1	L.F.	$ 12.25	$ 12.25
14. Traffic Control	1	L.F.	$ 20.00	$ 20.00
		Subtotal		**$ 797.40**
30% (surveys, design, inspection and contingency)				$ 239.22
		Grand Total per Foot		**$ 1,036.62**
		Use		**$ 1,037.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 6.5" AC over 23" AB roadway section.

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Table A-9
Florin Vineyard Gap Community Plan
Figure A-1.3.7
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical Off-Site Thoroughfare Frontage Lane

Project Description:
11' Pavement, 3' C&G, 6' Sidewalk = 20' (w/o Soundwall)
Widening/Outside Travel Lane - One Side Only

ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1. Clearing & Grubbing, Subgrade Preparation	20	S.F.	$ 0.35	$ 7.00
2. Sawcut Existing Pavement	1	L.F.	$ 1.00	$ 1.00
3. Excavation- Major Road	1	C.Y.	$ 30.00	$ 30.00
4. Asphaltic Concrete, 6.5"	11	S.F.	$ 4.50	$ 49.50
5. Aggregate Base, 23"	11	S.F.	$ 6.40	$ 70.40
6. Conc.-Curb and Gutter, Type 2	1	L.F.	$ 25.00	$ 25.00
7. Conc.- 6' Sidewalk W/ 6" AB	6	S.F.	$ 10.00	$ 60.00
8. Local Drainage- Street Storm Drain System	1	L.F.	$ 25.00	$ 25.00
9. Street Lights-Major Rd., Type A 220' Spacing	1	L.F.	$ 18.75	$ 18.75
10. Utility Pole Relocation	1	L.F.	$ 18.00	$ 18.00
11. Signing & Striping	1	L.F.	$ 6.50	$ 6.50
13 Erosion Control	1	L.F.	$ 12.25	$ 12.25
14. Traffic Control	1	L.F.	$ 20.00	$ 20.00
		Subtotal		**$ 343.40**
30% (surveys, design, inspection and contingency)				$ 103.02
		Grand Total per Foot		**$ 446.42**
		Use		**$ 446.00**
		In Case of Both Sides of Street Use		**$ 892.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 6.5" AC over 23" AB roadway section.

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Table A-10
Florin Vineyard Gap Community Plan
Figure A-1.3.8
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
12' Median

Project Description:
12' Landscape Median = 12'

	ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1.	Clearing & Grubbing, Subgrade Preparation	12	S.F.	$ 0.35	$ 4.20
2.	Pavement Removal	12	S.F.	$ 1.50	$ 18.00
3.	Excavation- Major Road	1	C.Y	$ 30.00	$ 30.00
4.	Conc.-Median Curb, Type 3	2	L.F.	$ 18.00	$ 36.00
5.	Median Landscaping & Irrigation (turf & street trees)	11	S.F.	$ 11.00	$ 121.00
6.	Erosion Control	1	L.F.	$ 12.25	$ 12.25
7.	Traffic Control	1	L.F.	$ 20.00	$ 20.00
			Subtotal		**$ 241.45**
	30% (surveys, design, inspection and contingency)				$ 72.44
			Grand Total per Foot		**$ 313.89**
			Use		**$ 314.00**

Note:
Right-of-way costs are excluded.

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Table A-11
Florin Vineyard Gap Community Plan
Figure A-1.3.9
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
South Side Center Lane

Project Description:
17' Pavement and 6' Roadside Ditch (South Side) = 23'

	ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1.	Clearing & Grubbing, Subgrade Preparation	23	S.F.	$ 0.35	$ 8.05
2.	Pavement Removal	4	S.F.	$ 1.50	$ 6.00
3.	Excavation- Major Road	2	C.Y	$ 30.00	$ 60.00
4.	Asphaltic Concrete, 5.5"	17	S.F.	$ 3.80	$ 64.60
5.	Aggregate Base, 20.5"	17	S.F.	$ 5.70	$ 96.90
6.	Drainage-Roadside Drainage	1	L.F.	$ 17.00	$ 17.00
7.	Signing & Striping	1	L.F.	$ 6.50	$ 6.50
8.	Erosion Control	1	L.F.	$ 12.25	$ 12.25
9.	Traffic Control	1	L.F.	$ 20.00	$ 20.00
			Subtotal		**$ 291.30**
	30% (surveys, design, inspection and contingency)				$ 87.39
			Grand Total per Foot		**$ 378.69**
			Use		**$ 379.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Landscaping and soundwall are excluded.
4. Assumes a 5.5" AC over 20.5" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are not included.

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Table A-12
Florin Vineyard Gap Community Plan
Figure A-1.3.10
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical 96' R/W (Thoroughfare) South Side Only

Project Description:
28' Pavement and 6' Roadside Ditch South Side Only = 34'

ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1. Clearing & Grubbing, Subgrade Preparation	34	S.F.	$ 0.35	$ 11.90
2. Pavement removal	10	S.F.	$ 1.50	$ 15.00
3. Excavation- Major Road	3.5	C.Y.	$ 30.00	$ 105.00
4. Asphaltic Concrete, 6.5"	28	S.F.	$ 4.50	$ 126.00
5. Aggregate Base, 23"	28	S.F.	$ 6.40	$ 179.20
6. Local Drainage - Roadside Drainage	1	L.F.	$ 17.00	$ 17.00
7. Signing & Striping	1	L.F.	$ 6.50	$ 6.50
8. Intx.-Traffic Signal Interconnect	1	L.F.	$ 10.00	$ 10.00
9. Erosion Control	1	L.F.	$ 12.25	$ 12.25
10. Traffic Control	1	L.F.	$ 20.00	$ 20.00
		Subtotal		**$ 502.85**
30% (surveys, design, inspection and contingency)				$ 150.86
		Grand Total per Foot		**$ 653.71**
		Use		**$ 654.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 6.5" AC over 23" AB roadway section.
5. Outside 11' travel lane, curb, gutter & s/w are not included.

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Table A-13
Florin Vineyard Gap Community Plan
Figure A-1.3.11
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical On-Site Thoroughfare Frontage Lane

Project Description:
11' Pavement, 3' C&G, 6' Sidewalk = 20' (w/o Soundwall)
Widening/Outside Travel Lane - One Side Only

	ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1.	Clearing & Grubbing, Subgrade Preparation	20	S.F.	$ 0.35	$ 7.00
2.	Sawcut Existing Pavement	1	L.F.	$ 1.00	$ 1.00
3.	Excavation - Major Road	1	C.Y.	$ 30.00	$ 30.00
4.	Asphaltic Concrete, 6.5"	11	S.F.	$ 4.50	$ 49.50
5.	Aggregate Base, 23"	11	S.F.	$ 6.40	$ 70.40
6.	Conc. - Curb and Gutter, Type 2	1	L.F.	$ 25.00	$ 25.00
7.	Conc. - 6' Sidewalk w/ 6" AB	6	S.F.	$ 10.00	$ 60.00
8.	Local Drainage - Street Storm Drain System	1	L.F.	$ 25.00	$ 25.00
9.	Street Lights-Major Road, Type A 220' Spacing	1	L.F.	$ 18.75	$ 18.75
10.	Joint Trench	1	L.F.	$ 52.00	$ 52.00
11.	Utility Contracts (incl. material & inspection)	1	L.F.	$ 26.00	$ 26.00
12.	Signing & Striping	1	L.F.	$ 6.50	$ 6.50
			Subtotal		**$ 371.15**
	30% (surveys, design, inspection and contingency)				$ 111.35
				Grand Total per Foot	**$ 482.50**
			Use		**$ 482.00**
			In Case of Both Sides of Street Use		**$ 964.00**

Notes:
1. Right-of-way costs are excluded.
2. Frontage Landscaping and soundwall are excluded.
3. Assumes a 6.5" AC over 23" AB roadway section.

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Table A-14
Florin Vineyard Gap Community Plan
Figure A-1.3.12
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical Off-Site 72' R/W (Arterial) Frontage Lane Improvements

Project Description:
11' Pavement, 3' C&G, 6' Sidewalk (w/o Soundwall) = 20'
Widening/Outside Travel Lane - One Side Only

	ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1.	Clearing & Grubbing, Subgrade Preparation	20.0	S.F.	$ 0.35	$ 7.00
2.	Sawcut exist. pavement	1.0	L.F.	$ 1.00	$ 1.00
4.	Excavation- Major Road	1	C.Y.	$ 30.00	$ 30.00
5.	Asphaltic Concrete, 5.5"	11	S.F.	$ 3.80	$ 41.80
6.	Aggregate Base, 20.5"	11	S.F.	$ 5.70	$ 62.70
7.	Conc.-Curb and Gutter, Type 2	1	L.F.	$ 25.00	$ 25.00
8.	Conc.- 6' Sidewalk W/ 6" AB	6	S.F.	$ 10.00	$ 60.00
9.	Local Drainage- Street Storm Drain System	1	L.F.	$ 25.00	$ 25.00
10.	Signing & Striping	1	L.F.	$ 6.50	$ 6.50
11.	Erosion Control	1	L.F.	$ 6.00	$ 6.00
12.	Traffic Control	1	L.F.	$ 20.00	$ 20.00
13.	Street Lights-Major Rd., Type A 220' Spacing	1	L.F.	$ 18.75	$ 18.75
14.	Utility Pole Relocation	1	L.F.	$ 18.00	$ 18.00
			Subtotal		**$ 321.75**
	30% (surveys, design, inspection and contingency)				$ 96.53
			Grand Total per Foot		**$ 418.28**
			Use		**$ 418.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Landscaping and soundwall are excluded.
4. Assumes a 5.5"AC over 20.5" AB roadway section.

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Table A-15
Florin Vineyard Gap Community Plan
Figure A-1.3.13
Roadway Cross Section Index
Preliminary Per Foot Cost Estimate
Typical On-Site 72' R/W (Arterial) Frontage Lane Improvements

Project Description:
11' Pavement, 3' C&G, 6' Sidewalk (w/o Soundwall) = 20'
Widening/Outside Travel Lane - One Side Only

	ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1.	Clearing & Grubbing, Subgrade Preparation	20.0	S.F.	$ 0.35	$ 7.00
2.	Sawcut exist. pavement	1.0	L.F.	$ 1.00	$ 1.00
4.	Excavation- Major Road	1.2	C.Y.	$ 30.00	$ 36.00
5.	Asphaltic Concrete, 5.5"	11	S.F.	$ 3.80	$ 41.80
6.	Aggregate Base, 20.5"	11	S.F.	$ 5.70	$ 62.70
7.	Conc.-Curb and Gutter, Type 2	1	L.F.	$ 25.00	$ 25.00
8.	Conc.- 6' Sidewalk W/ 6" AB	6	S.F.	$ 10.00	$ 60.00
9.	Local Drainage- Street Storm Drain System	1	L.F.	$ 25.00	$ 25.00
10.	Signing & Striping	1	L.F.	$ 6.50	$ 6.50
11.	Erosion Control	1	L.F.	$ 6.00	$ 6.00
12.	Traffic Control	1	L.F.	$ 20.00	$ 20.00
13.	Street Lights-Major Rd., Type A 220' Spacing	1	L.F.	$ 18.75	$ 18.75
14.	Joint Trench	1	L.F.	$ 52.00	$ 52.00
15.	Utility Contracts (incl. material & inspection)	1	L.F.	$ 26.00	$ 26.00
			Subtotal		**$ 387.75**
	30% (surveys, design, inspection and contingency)				$ 116.33
			Grand Total per Foot		**$ 504.08**
			Use		**$ 504.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Landscaping and soundwall are excluded.
4. Assumes a 5.5"AC over 20.5" AB roadway section.

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Table A-16
Florin Vineyard Gap Community Plan
Figure A-1.3.14
Roadway Cross Section Index
Preliminary Lump Sum Estimate
Additional Right-Turn Lane

Project Description:
Additional Right-Turn Lane at Exist. Intersection
(incl. 11' lane, C&G, S/W, w/250' lane transition)

4.	Clearing & Grubbing, Subgrade Preparation	8,875	S.F.	$	0.35	$	3,106.25
8.	Asphaltic Concrete, 5.5"	5,500	S.F.	$	3.80	$	20,900.00
9.	Aggregate Base, 20.5"	5,500	S.F.	$	5.70	$	31,350.00
10.	Conc.-Curb and Gutter, Type 2	650	L.F.	$	25.00	$	16,250.00
11.	Handicap Ramp	1	EA	$	3,500.00	$	3,500.00
12.	Conc.- 6' Sidewalk W/ 6" AB	3,900	S.F.	$	10.00	$	39,000.00
13.	Signing & Striping	1	L.S.	$	20,000.00	$	20,000.00
14.	Erosion Control	10,800	S.F.	$	0.25	$	2,700.00
					Subtotal	**$**	**136,900.00**
	30% (surveys, design, inspection and contingency)					$	41,070.00
					Total	**$**	**177,970.00**
					Use	**$**	**178,000.00**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Landscaping and soundwall are excluded.
4. Assumes a 5.5"AC over 20.5" AB roadway

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Table A-17
Roadway Drainage Structure Cost Index
Summary of Costs

SHEET	PROJECT NAME	TOTAL COST
A-1.5.1	Morrison Creek Crossing @ Florin Perkins Rd.(existing)	$ -
A-1.5.2	Morrison Creek Crossing @ South Watt Ave.	$ 2,252,000
A-1.5.3	Morrison Creek Crossing @ Bradshaw Rd.	$ 819,000
A-1.5.4	Morrison Creek Crossing @ SR-16	$ 2,503,000
A-1.5.5	Elder Creek Crossing @ Gerber Rd.(GPA)	$ -
A-1.5.6	Elder Creek Crossing @ French Rd.	$ 164,000
A-1.5.7	Elder Creek Crossing @ ElK Grove Florin Rd.	$ 2,252,000
A-1.5.8	Elder Creek Crossing @ SR-16	$ 302,000
A-1.5.9	Channel Crossing @ SR-16	$ 2,377,000
A-1.5.10	Gerber Creek Crossing @ Bradshaw Rd.	$ 1,502,000
	GRAND TOTAL	**$ 12,171,000**

NOTES:

1. TOTAL COST INCLUDES THE FOLLOWING:
   30% surveys, desing, inspection and contingency

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Table A-18
Roadway Drainage Structure Cost Index
Cost Detail - Morrison Creek Crossing @ South Watt Ave.

PROJECT NO. : P1-7.1d
PROJECT NAME: Morrison Creek Crossing @ South Watt Ave.

PROJECT DESCRIPTION: NEW BRIDGE CONSTRUCTION (108' R/W)

PROJECT COSTS:

Item	Quantity	Unit	Unit Cost	Total Cost
Constr. New Bridge	9,900	S.F.	$175.00	$1,732,500
		Subtotal		**$1,732,500**
30% (surveys, design, inspection and contingency)				$519,750
		Total Cost		**$2,252,000**

NOTES:

1. Width = 108' + 2' = 110'
2. Span = 90'
3. s.f. to construct = 9,900 s.f.
4. Cost includes demolition, erosion control, etc.
5. Rev. eng. & contingency from 10% & 10% to 30% total consistent with Roadway Items. 2-5-97

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Table A-19
Roadway Drainage Structure Cost Index
Cost Detail - Morrison Creek Crossing @ Bradshaw Rd.

PROJECT NO. : P-9.1d
PROJECT NAME: Morrison Creek Crossing @ Bradshaw Rd.

PROJECT DESCRIPTION: NEW BRIDGE CONSTRUCTION (108' R/W)

PROJECT COSTS:

Item	Quantity	Unit	Unit Cost	Total Cost
Constr. New Bridge	3,600	S.F.	$175.00	$630,000
		Subtotal		**$630,000**
30% (surveys, design, inspection and contingency)				$189,000
		Total Cost		**$819,000**

NOTES:

1. Width = 108' + 2' = 110' - 70'(ex) = 40'
2. Span = 90'
3. s.f. to construct = 3,600 s.f.
4. Cost includes demolition, erosion control, etc.
5. Rev. eng. & contingency from 10% & 10% to 30% total consistent with Roadway Items. 2-5-97

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Table A-20
Roadway Drainage Structure Cost Index
Cost Detail - Morrison Creek Crossing @ SR-16

PROJECT NO. : P-1.4d
PROJECT NAME: Morrison Creek Crossing @ SR-16

PROJECT DESCRIPTION: NEW BRIDGE CONSTRUCTION (108' R/W)

PROJECT COSTS:

Item	Quantity	Unit	Unit Cost	Total Cost
Constr. New Bridge	11,000	S.F.	$175.00	$1,925,000
		Subtotal		**$1,925,000**
30% (surveys, design, inspection and contingency)				$577,500
		Total Cost		**$2,503,000**

NOTES:

1. Width = 108' + 2' = 110'
2. Span = 100'
3. s.f. to construct = 11,000 s.f.
4. Cost includes demolition, erosion control, etc.
5. Rev. eng. & contingency from 10% & 10% to 30% total consistent with Roadway Items. 2-5-97

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Table A-21
Roadway Drainage Structure Cost Index
Cost Detail - Elder Creek Crossing @ French Rd.

PROJECT NO. : P-12d
PROJECT NAME: Elder Creek Crossing @ French Rd.

PROJECT DESCRIPTION: Widen Elder Creek Bridge from 76' to 84' ROW

PROJECT COSTS:

Item	Quantity	Unit	Unit Cost	Total Cost
Constr. New Bridge	720	S.F.	$175.00	$126,000
		Subtotal		**$126,000**
30% (surveys, design, inspection and contingency)				$37,800
		Total Cost		**$164,000**

NOTES:

1. Width = 84' - 76' = 8'
2. Span = 90'
3. s.f. to construct = 720 s.f.
4. Cost includes demolition, erosion control, etc.
5. Rev. eng. & contingency from 10% & 10% to 30% total consistent with Roadway Items. 2-5-97

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Table A-22
Roadway Drainage Structure Cost Index
Cost Detail - Elder Creek Crossing @ Elk Grove Florin Rd.

PROJECT NO. : P1-8.1d
PROJECT NAME: Elder Creek Crossing @ Elk Grove Florin Rd.

PROJECT DESCRIPTION: NEW BRIDGE CONSTRUCTION (108' R/W)

PROJECT COSTS:

Item	Quantity	Unit	Unit Cost	Total Cost
Constr. New Bridge	9,900	S.F.	$175.00	$1,732,500
		Subtotal		**$1,732,500**
30% (surveys, design, inspection and contingency)				$519,750
		Total Cost		**$2,252,000**

NOTES:

1. Width = 108' + 2' = 110'
2. Span = 90'
3. s.f. to construct = 9,900 s.f.
4. Cost includes demolition, erosion control, etc.
5. Rev. eng. & contingency from 10% & 10% to 30% total consistent with Roadway Items. 2-5-97

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Table A-23
Roadway Drainage Structure Cost Index
Cost Detail - Elder Creek Crossing @ SR-16

PROJECT NO. : BP - 35d
PROJECT NAME: Elder Creek Crossing @ SR-16

PROJECT DESCRIPTION: (2) 8'x6' BOX CULVERT CONSTR. w/ HEADWALLS (84' ROW)

PROJECT COSTS:

Item	Quantity	Unit	Unit Cost	Total Cost
8' x 6' Conc. Box Culvert	100	L.F.	$1,500.00	$150,000
Headwall & Wingwalls	2	EA	$36,000.00	$72,000
Erosion Protection	1	L.S.	$10,000.00	$10,000
		Subtotal		**$232,000**
30% (surveys, design, inspection and contingency)				$69,600
		Total Cost		**$302,000**

NOTES:
1. New crossing construction
2. Channel excav. incl. in Gerber Creek reach 2A channel improvements.
3. Rev. eng. & contingency from 10% & 10% to 30% total consistent with Roadway Items. 2-5-97

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Table A-24
Roadway Drainage Structure Cost Index
Cost Detail - Channel Crossing @ SR-16

PROJECT NO. : P-1.6d
PROJECT NAME: Channel Crossing @ SR-16

PROJECT DESCRIPTION: NEW BRIDGE CONSTRUCTION (108' R/W)

PROJECT COSTS:

Item	Quantity	Unit	Unit Cost	Total Cost
Constr. New Bridge	10,450	S.F.	$175.00	$1,828,750
		Subtotal		**$1,828,800**
30% (surveys, design, inspection and contingency)				$548,640
		Total Cost		**$2,377,000**

NOTES:

1. Width = 108' + 2' = 110'
2. Span = 95'
3. s.f. to construct = 10,450 s.f.
4. Cost includes demolition, erosion control, etc.
5. Rev. eng. & contingency from 10% & 10% to 30% total consistent with Roadway Items. 2-5-97

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Table A-25
Roadway Drainage Structure Cost Index
Cost Detail - Gerber Creek Crossing @ Bradshaw Rd.

PROJECT NO. : P1-9.3d
PROJECT NAME: Gerber Creek Crossing @ Bradshaw Rd.

PROJECT DESCRIPTION: NEW BRIDGE CONSTRUCTION (108' R/W)

PROJECT COSTS:

Item	Quantity	Unit	Unit Cost	Total Cost
Constr. New Bridge	6,600	S.F.	$175.00	$1,155,000
		Subtotal		**$1,155,000**
30% (surveys, design, inspection and contingency)				$346,500
		Total Cost		**$1,502,000**

NOTES:

1. Width = 108' + 2' = 110'
2. Span = 60'
3. s.f. to construct = 6,600 s.f.
4. Cost includes demolition, erosion control, etc.
5. Rev. eng. & contingency from 10% & 10% to 30% total consistent with Roadway Items. 2-5-97

Table A-26
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index

Description	Traffic Signals	Eng., Design, Survey, Inspection, & Cont. 30%	Total
3 Way: 6X2X6 & 4X2X4	$ 200,000	$ 60,000	$ 260,000
4 Way: 6x6x2x2 & 4x4x2x2	$ 225,000	$ 67,500	$ 293,000

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Table A-27
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Typical 4x4 Intersection
Replacement of Two-Lane Rural Intersection

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	70,100	S.F.	$ 0.35	$ 24,535
2. Pavement removal	53,100	S.F.	$ 1.50	$ 79,650
3. Excavation- Major Road	7,700	C.Y.	$ 30.00	$ 231,000
4. Asphaltic Concrete, 5"	111,400	S.F.	$ 3.50	$ 389,900
5. Aggregate Base, 20"	111,400	S.F.	$ 5.60	$ 623,840
6. Conc.-Curb and Gutter, Type 2	200	L.F.	$ 25.00	$ 5,000
7. Local Drainage - Street Storm Drain System	1,560	L.F.	$ 25.00	$ 39,000
8. Traffic Signal	1	L.S.	$225,000.00	$ 225,000
9. Signing & Striping	1,800	L.F.	$ 6.50	$ 11,700
10. Conc.- 6' Sidewalk w/ 6" AB	1,060	S.F.	$ 10.00	$ 10,600
11. Handicap Ramp	8	EA.	$3,500.00	$ 28,000
		Subtotal		**$ 1,640,225**
30% (surveys, design, inspection and contingency)				$ 492,068
			Grand Total	**$ 2,132,293**
			Use	**$ 2,132,000**
			Without Traffic Signal Use	**$ 1,839,500**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are the responsibility of fronting properties; 100' tapers from curb returns provided
6. Includes 450' intersection legs each way

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Table A-28
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Typical 6x4 Intersection
Replacement of Two-Lane Rural Intersection

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	88,500	S.F.	$ 0.35	$ 30,975
2. Pavement removal	53,100	S.F.	$ 1.50	$ 79,650
3. Excavation- Major Road	8,900	C.Y.	$ 30.00	$ 267,000
4. Asphaltic Concrete, 5"	125,000	S.F.	$ 3.50	$ 437,500
5. Aggregate Base, 20"	125,000	S.F.	$ 5.60	$ 700,000
6. Conc.-Curb and Gutter, Type 2	200	L.F.	$ 25.00	$ 5,000
7. Conc.-Median Curb	1,560	L.F.	$ 18.00	$ 28,080
8. Median Landscaping (turf only)	4,920	S.F.	$ 11.00	$ 54,120
9. Local Drainage - Street Storm Drain System	1,560	L.F.	$ 25.00	$ 39,000
10. Traffic Signal	1	L.S.	$225,000.00	$ 225,000
11. Signing & Striping	1,800	L.F.	$ 6.50	$ 11,700
12. Conc.- 6' Sidewalk w/ 6" AB	1,060	S.F.	$ 10.00	$ 10,600
11. Handicap Ramp	8	EA.	$3,500.00	$ 28,000
		Subtotal		**$ 1,888,625**
30% (surveys, design, inspection and contingency)				$ 566,588
			Grand Total	**$ 2,455,213**
			Use	**$ 2,455,000**
			Without Traffic Signal Use	**$ 2,162,500**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are the responsibility of fronting properties; 100' tapers from curb returns provided
6. Includes 450' intersection legs each way

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Table A-29
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Typical 2x2 Intersection & 4x2 Intersection Widening
Widen two-lane rural intersection incl. Protective turn lane

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	35,050	S.F.	$ 0.35	$ 12,268
2. Pavement removal	26,550	S.F.	$ 1.50	$ 39,825
3. Excavation- Major Road	7,700	C.Y.	$ 30.00	$ 231,000
4. Asphaltic Concrete, 5"	55,700	S.F.	$ 3.50	$ 194,950
5. Aggregate Base, 20"	55,700	S.F.	$ 5.60	$ 311,920
6. Traffic Signal	1	L.S.	$225,000.00	$ 225,000
7. Signing & Striping	1,800	L.F.	$ 6.50	$ 11,700
		Subtotal		**$ 1,026,663**
30% (surveys, design, inspection and contingency)				$ 307,999
			Grand Total	**$ 1,334,661**
			Use	**$ 1,335,000**
			Without Traffic Signal Use	**$ 1,042,500**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are the responsibility of fronting properties; 100' tapers from curb returns provided
6. Includes 450' intersection legs each way

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Table A-30
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Typical 6x4 Intersection
Widen Existing 4 x 4 to 4 X 6

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	18,400	S.F.	$ 0.35	$ 6,440
2. Excavation- Major Road	1,200	C.Y.	$ 30.00	$ 36,000
3. Asphaltic Concrete, 5"	13,600	S.F.	$ 3.50	$ 47,600
4. Aggregate Base, 20"	13,600	S.F.	$ 5.60	$ 76,160
5. Conc.-Curb and Gutter, Type 2	200	L.F.	$ 25.00	$ 5,000
6. Conc.-Median Curb	1,560	L.F.	$ 18.00	$ 28,080
7. Median Landscaping (turf only)	4,920	S.F.	$ 11.00	$ 54,120
8. Local Drainage - Street Storm Drain System	1,560	L.F.	$ 25.00	$ 39,000
9. Traffic Signal	1	L.S.	$225,000.00	$ 225,000
10. Signing & Striping	1,800	L.F.	$ 6.50	$ 11,700
11. Conc.- 6' Sidewalk w/ 6" AB	1,060	S.F.	$ 10.00	$ 10,600
11. Handicap Ramp	8	EA.	$3,500.00	$ 28,000
		Subtotal		**$ 539,700**
30% (surveys, design, inspection and contingency)				$ 161,910
			Grand Total	**$ 701,610**
			Use	**$ 702,000**
			Without Traffic Signal Use	**$ 409,500**
			Modified Traffic Signal Use	**$ 522,000**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are the responsibility of fronting properties; 100' tapers from curb returns provided
6. Includes 450' intersection legs each way

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Table A-31
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Typical 6x6 Intersection
Construction of four way left-turn lane

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	36,800	S.F.	$ 0.35	$ 12,880
2. Excavation- Major Road	2,400	C.Y.	$ 30.00	$ 72,000
3. Asphaltic Concrete, 5"	27,200	S.F.	$ 3.50	$ 95,200
4. Aggregate Base, 20"	27,200	S.F.	$ 5.60	$ 152,320
5. Conc.-Curb and Gutter, Type 2	400	L.F.	$ 25.00	$ 10,000
6. Conc.-Median Curb	3,120	L.F.	$ 18.00	$ 56,160
7. Median Landscaping (turf only)	9,840	S.F.	$ 11.00	$ 108,240
8. Local Drainage - Street Storm Drain System	3,120	L.F.	$ 25.00	$ 78,000
9. Traffic Signal	1	L.S.	$225,000.00	$ 225,000
10. Signing & Striping	3,600	L.F.	$ 6.50	$ 23,400
11. Conc.- 6' Sidewalk w/ 6" AB	2,120	S.F.	$ 10.00	$ 21,200
11. Handicap Ramp	8	EA.	$3,500.00	$ 28,000
		Subtotal		**$ 854,400**
30% (surveys, design, inspection and contingency)				$ 256,320
			Grand Total	**$ 1,110,720**
			Use	**$ 1,111,000**
			Without Traffic Signal Use	**$ 818,500**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are the responsibility of fronting properties; 100' tapers from curb returns provided
6. Includes 450' intersection legs each way

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Table A-32
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Typical 6x6 Intersection
Replacement of Two-Lane Rural Intersection - two legs only

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	44,250	S.F.	$ 0.35	$ 15,488
2. Pavement removal	26,550	S.F.	$ 1.50	$ 39,825
3. Excavation- Major Road	4,450	C.Y.	$ 30.00	$ 133,500
4. Asphaltic Concrete, 5"	62,500	S.F.	$ 3.50	$ 218,750
5. Aggregate Base, 20"	62,500	S.F.	$ 5.60	$ 350,000
6. Conc.-Curb and Gutter, Type 2	100	L.F.	$ 25.00	$ 2,500
7. Conc.-Median Curb	780	L.F.	$ 18.00	$ 14,040
8. Median Landscaping (turf only)	2,460	S.F.	$ 11.00	$ 27,060
9. Local Drainage - Street Storm Drain System	780	L.F.	$ 25.00	$ 19,500
10. Traffic Signal	1	L.S.	$225,000.00	$ 225,000
11. Signing & Striping	900	L.F.	$ 6.50	$ 5,850
12. Conc.- 6' Sidewalk w/ 6" AB	530	S.F.	$ 10.00	$ 5,300
11. Handicap Ramp	8	EA.	$3,500.00	$ 28,000
		Subtotal		**$ 1,056,813**
30% (surveys, design, inspection and contingency)				$ 317,044
			Grand Total	**$ 1,373,856**
			Use	**$ 1,374,000**
			Without Traffic Signal Use	**$ 1,081,500**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are the responsibility of fronting properties; 100' tapers from curb returns provided
6. Includes 450' intersection legs each way

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Table A-33
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Typical 6x2-Plus Intersection (3-way)
Replacement of Two-Lane Rural Intersection

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	52,575	S.F.	$ 0.35	$ 18,401
2. Pavement removal	39,825	S.F.	$ 1.50	$ 59,738
3. Excavation- Major Road	1,925	C.Y.	$ 30.00	$ 57,750
4. Asphaltic Concrete, 5"	83,550	S.F.	$ 3.50	$ 292,425
5. Aggregate Base, 20"	83,550	S.F.	$ 5.60	$ 467,880
6. Conc.-Curb and Gutter, Type 2	150	L.F.	$ 25.00	$ 3,750
7. Local Drainage - Street Storm Drain System	1,170	L.F.	$ 25.00	$ 29,250
8. Traffic Signal	1	L.S.	$200,000.00	$ 200,000
9. Signing & Striping	1,350	L.F.	$ 6.50	$ 8,775
10. Conc.- 6' Sidewalk w/ 6" AB	795	S.F.	$ 10.00	$ 7,950
11. Handicap Ramp	8	EA.	$3,500.00	$ 28,000
		Subtotal		**$ 1,145,919**
30% (surveys, design, inspection and contingency)				$ 343,776
			Grand Total	**$ 1,489,694**
			Use	**$ 1,490,000**
			Without Traffic Signal Use	**$ 1,230,000**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are the responsibility of fronting properties; 100' tapers from curb returns provided
6. Includes 450' intersection legs each way

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Table A-34
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Intersection widening (3-way)
shoulder improvements

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	32,400	S.F.	$ 0.35	$ 11,340
2. Excavation- Major Road	1,350	C.Y.	$ 30.00	$ 40,500
3. Asphaltic Concrete, 5"	16,200	S.F.	$ 3.50	$ 56,700
4. Aggregate Base, 20"	16,200	S.F.	$ 5.60	$ 90,720
5. Local Drainage - Roadside Ditch	1,170	L.F.	$ 17.00	$ 19,890
6. Traffic Signal	1	L.S.	$225,000.00	$ 225,000
7. Signing & Striping	1,350	L.F.	$ 6.50	$ 8,775
		Subtotal		**$ 452,925**
30% (surveys, design, inspection and contingency)				$ 135,878
			Grand Total	**$ 588,803**
			Use	**$ 589,000**
			Without Traffic Signal Use	**$ 296,500**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Outside 11' travel lane, curb, gutter, & s/w are the responsibility of fronting properties; 100' tapers from curb returns provided
6. Includes 450' intersection legs each way

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Table A-35
Florin Vineyard Gap Community Plan
Traffic Signals and Intersection Index
Preliminary Cost Estimate - Typical 6x6 Intersection
Widen Existing 4 x 4 to 6 X 6 (exist. CR's and signal in ult. location)

ITEM	QUANTITY	UNIT	UNIT PRICE	COST
1. Clearing & Grubbing	68,640	S.F.	$ 0.35	$ 24,024
2. Excavation- Major Road	2,400	C.Y.	$ 30.00	$ 72,000
3. Asphaltic Concrete, 5"	34,300	S.F.	$ 3.50	$ 120,050
4. Aggregate Base, 20"	34,300	S.F.	$ 5.60	$ 192,080
5. Conc.-Curb and Gutter, Type 2	3,120	L.F.	$ 25.00	$ 78,000
6. Local Drainage - Street Storm Drain System	3,120	L.F.	$ 25.00	$ 78,000
7. modify Traffic Signal	1	L.S.	$ 25,000.00	$ 25,000
8. Signing & Striping	3,600	L.F.	$ 6.50	$ 23,400
9. Conc.- 6' Sidewalk w/ 6" AB	18,720	S.F.	$ 10.00	$ 187,200
		Subtotal		**$ 799,754**
30% (surveys, design, inspection and contingency)				$ 239,926
			Grand Total	**$ 1,039,680**
			Use	**$ 1,040,000**
			Without Traffic Signal Use	**$ 1,007,500**
			Re-locate Traffic Signal Use	**$ 1,107,500**

Notes:
1. Joint Trench costs are excluded.
2. Right-of-way costs are excluded.
3. Frontage Landscaping and soundwall are excluded.
4. Assumes a 5" AC over 20" AB roadway section.
5. Includes 450' intersection legs each way

Table A-36
Florin Vineyard Community Plan
Mitigation Projects with Funding by the North Vineyard Station Financing Plan

Prj #	Roadway Segment/ Item	Project Description	NVS Fin Plan Ref Table	F&P Threshold Trigger Units	NVS Mit Meas
Waterman Road					
R 7.3.1	Gerber (NVS Bndry) to CCTC RR Crossing	4 Lane 72' R/W cent. sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.3	900	
R 7.12	Gerber Creek Crossing	2-8' X 6' Box Culverts With Headwalls (84' R/W)	A-1.5.3		
	Subtotal - Waterman Road				
Florin Road					
R 3.3	CCTC RR (NVS Boundary) to Waterman	6 Lane 96' R/W center sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.5	4500	TC-14
R 3.11	CCTC RR Crossing	Reconstruct at-grade RR crossing (108' R/W)	N/A	1800	TC-14
R 3.12	Crossing at Elder Creek	New Bridge Construction (108' R/W)	A-1.5.2	1800	TC-14
R 3.4.1	Waterman to 1,350' east of Waterman	6 Lane 96' R/W; center sect. w/ med. (excludes outside lanes & ftg.)	A-1.3.5	4500	TC-14
R 3.4.2	1,350' east of Waterman to Bradshaw	4 Lane 72' R/W center sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.3	1800	TC-14
R 3.2	Elk Grove-Florin to NVS boundary (CCTC RR crossing)	Widen shoulders to provide minimum pavement width	A-1.3.1	900	
R 4.4	At Hedge Avenue	Widen 2 lane intersect. (incl. Protective turn lane & Signal)	A-1.4.4	800	
R 32.1	At Excelsior Rd.	4 X 2 Intersection Signalization, 4-way	A-1.4.1	800	TC-10
R 29	At Waterman Rd.	6 X 4 Intersection & Signalization, 3-way	A-1.4.3		
R 3.4.2	1,350' east of Waterman to Bradshaw	Widen from 2 to 4 lanes both sides (excludes outside lanes & ftg.)	A-1.3.4	4500	TC-14
R 3.5	Bradshaw to Vineyard (NVS Bndry)	Widen shoulders to provide minimum pavement width	A-1.3.1	2500	
R 28.1	At Elk Grove-Florin Rd.	Signalization (modify existing)	N/A	2500	
R 28.2	At Elk Grove-Florin Rd.	Turn Lane installation (westbound right-turn)	A-1.4.6	2500	
R 3.6	Vineyard (NVS boundary) to Excelsior	Widen shoulders to provide minimum pavement width	A-1.3.1	1800	
R 3.13	Trib No. 1 to Gerber Creek Crossing (E of Bradshaw Rd)	Bridge/Culvert Improvements (lengthen to upgraded 2)	A-1.5.8	1800	
R 32.2	At Excelsior Rd.	4 X 2 Intersection Widening, 4-way (incl. 450' intx. leg imps.)	A-1.4.4	1800	TC-9
R 3.5	Bradshaw to 3,320' east of Bradshaw	96' R/W Half-section (s. side, excl. median & outside 11' pvmt. & ftg.)	A-1.5.10		
R 30	At Bradshaw Rd.	Construct third thru lane north&south legs and turn lane installation (eastbound left-turn), no signal	A-1.4.5		TC-23
R 30	At Bradshaw Rd.	Construct east & west legs of intersection only (no signalization)	A-1.4.7		
R 3.5	3,320' east of Bradshaw to Vineyard	96' R/W Half-section (s, side, excl. median & outside 11' pvmt. & ftg.)	A-1.3.10		
R 31	At Vineyard Rd.	6 X 2-plus Intersection & Signalization, 3-way (incl. 450' intx. leg imps.)	A-1.4.8		
R 3.2	Elk-Grove Florin to CCTC RR (NVS boundary)	6 Lane 108' R/W center sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.5	4500	TC-14
R 28.2	At Elk Grove-Florin Rd.	Construct third thru lane north&south legs of intersection only, no signal	A-1.4.5	5700	TC-22
	Subtotal - Florin Road				
Gerber Road					
R 37	At Excelsior Rd.	4 X 2 Intersection Signalization, 4-way	A-1.4.1	800	TC-10
R 35	At Bradshaw Rd.	Widen exist. 4 x 4 to 4 X 6 Intersection, 4-way (450' intx. east & west leg	A-1.4.5		
R 37	At Excelsior Rd.	4 X 2 Intersection Widening, 3-way (incl. 450' intx. Leg imps.)	A-1.4.4	2200	TC-10
R 4.2	Elk-Grove Florin to NVS boundary	12' Median	A-1.3.8		TC-4
R 4.2	Elk-Grove Florin to NVS boundary	South Side Center Lane	A-1.3.9		TC-4
R 4.3	NVS Boundary to Waterman	12' Median	A-1.3.8		TC-4
R 4.3	NVS Boundary to Waterman	South Side Center Lane	A-1.3.9		TC-4
	Subtotal - Gerber Road				
South Watt					
R 25.1	At Elder Creek Rd.	4 X 6 Intersection Signalization, 4-way	A-1.4.1	1200	TC-7
R 25.2	At Elder Creek Rd.	4 X 6 Intersection Widening, 4-way Turn Lane installation (left-turn)	A-1.4.6	1200	TC-7
R 6.4	Florin to Elder Creek	6 Lane 108' R/W center sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.5	2500	
R 6.5	Elder Creek to Fruitridge	6 Lane 108' R/W center sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.5	4500	TC-2
R 6.6	Fruitridge to Jackson	6 Lane 108' R/W center sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.5	4500	TC-2
R 6.4	Florin to Elder Creek	Widen from 4 to 6 lanes (outside 11' pvmt., c&g), both sides	A-1.3.7	5700	
R 6.5	Elder Creek to Fruitridge	Widen from 4 to 6 lanes (outside 11' pvmt., c&g), both sides	A-1.3.7	5700	TC-16
R 6.6	Fruitridge to Jackson	Widen from 4 to 6 lanes (outside 11' pvmt., c&g), both sides	A-1.3.7	5700	TC-16
	Subtotal - South Watt				
Elk Grove-Florin Road					
R 6.3	Gerber to Florin	6 Lane 108' R/W center sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.5	2500	TC-3
R 6.12	Elder Creek Crossing	New Bridge Construction (108' R/W)	A-1.5.1	2500	
	Subtotal - Elk Grove Florin Road				
Elder Creek Road					
R 27	At Excelsior Rd.	Intx.-Widening, 3-way (shoulder improvements)	A-1.4.9		
R 2.2	South Watt to Bradshaw	Widen shoulders to provide minimum pavement width	A-1.3.1	5700	
R 26	At Bradshaw Rd.	Construct east&west legs of intersection only, no signal	A-1.4.3	5700	
R 26	At Bradshaw Rd.	Construct third thru lane north&south legs of intersection only, no signal	A-1.4.5	5700	TC-21
	Subtotal - Elder Creek Road				
Jackson Road					
R 1.2	So. Watt Ave to Bradshaw	6 Lane 108' R/W center sect. w/ med. (excludes outside 11' pvmt. & ftg.)	A-1.3.5	5700	
	Subtotal - Jackson Road				

Notes to Tables

[1] 50% funding participation by VSCP ($2.04 mil.) shifted to Gerber Rd. Improvements east of Bradshaw Rd. in exchange for NVS assuming 100% of the funding for Gerber Rd. imp. West of Bradshaw (even trade).

[2] SCTDF

[3] Measure A Development Fees, sales tax or other.

[4] 80% EGWV

[5] Costs shown taken from approved NVSSP PFFP (2005 $). To bring them current, County IFS has adjusted the NVSSP PFFP every year for a combined 9.75% (1008 $)

Table A-36
Florin Vineyard Community Plan
Mitigation Projects with Funding by the North Vineyard Station Financing Plan

Prj #	Roadway Segment/ Item	Qty	Unit	Unit Price [5]	Private Const. Discount	Total Estimated Cost	Other Funding Sources	Net NVS Funding/ Cost	Cumulative Total Estimated Net Cost
Waterman Road									
R 7.3.1	Gerber (NVS Bndry) to CCTC RR Crossing	3,100	L.F.	$ 815	$ 734	$ 2,274,000		$ 2,274,000	$ 2,274,000
R 7.12	Gerber Creek Crossing	1	L.S.	$ 290,000	$ 261,000	$ 261,000		$ 261,000	$ 2,535,000
	Subtotal - Waterman Road					**$ 2,535,000**		**$ 2,535,000**	**$ 2,535,000**
Florin Road									
R 3.3	CCTC RR (NVS Boundary) to Waterman	3,440	L.F.	$ 1,120	$ 1,008	$ 3,468,000		$ 3,468,000	$ 6,003,000
R 3.11	CCTC RR Crossing	1	L.S.	$ 510,000		$ 510,000		$ 510,000	$ 6,513,000
R 3.12	Crossing at Elder Creek	1	L.S.	$ 1,287,000	$ 1,158,300	$ 1,158,000		$ 1,158,000	$ 7,671,000
R 3.4.1	Waterman to 1,350' east of Waterman	1,350	L.F.	$ 1,120	$ 1,008	$ 1,361,000		$ 1,361,000	$ 9,032,000
R 3.4.2	1,350' east of Waterman to Bradshaw	1,520	L.F.	$ 815	$ 734	$ 1,115,000		$ 1,115,000	$ 10,147,000
R 3.2	Elk Grove-Florin to NVS boundary (CCTC RR crossing)	3,860	L.F.	$ 219		$ 845,000		$ 845,000	$ 10,992,000
R 4.4	At Hedge Avenue	1	L.S.	$ 1,071,000		$ 1,071,000		$ 1,070,999	$ 12,062,999
R 32.1	At Excelsior Rd.	1	L.S.	$ 286,000		$ 286,000		$ 285,998	$ 12,348,997
R 29	At Waterman Rd.	1	L.S.	$ 1,857,000	$ 1,671,300	$ 1,671,000		$ 1,671,000	$ 14,019,997
R 3.4.2	1,350' east of Waterman to Bradshaw	1,520	L.F.	$ 391	$ 352	$ 535,000		$ 535,000	$ 14,554,997
R 3.5	Bradshaw to Vineyard (NVS Bndry)	4,850	L.F.	$ 219	$ 197	$ 956,000		$ 956,000	$ 15,510,997
R 28.1	At Elk Grove-Florin Rd.	1	EA.	$ 75,000		$ 75,000	[3]	$ 15,000	$ 15,525,997
R 28.2	At Elk Grove-Florin Rd.	1	L.S.	$ 166,500		$ 167,000		$ 167,000	$ 15,692,997
R 3.6	Vineyard (NVS boundary) to Excelsior	4,890	L.F.	$ 219		$ 1,071,000		$ 1,071,000	$ 16,763,997
R 3.13	Trib No. 1 to Gerber Creek Crossing (E of Bradshaw Rd)	1	L.S.	$ 136,000		$ 136,000		$ 136,000	$ 16,899,997
R 32.2	At Excelsior Rd.	1	L.S.	$ 1,071,000		$ 1,071,000		$ 1,071,000	$ 17,970,997
R 3.5	Bradshaw to 3,320' east of Bradshaw	2,870	L.F.	$ 474	$ 427	$ 1,224,000		$ 1,224,000	$ 19,194,997
R 30	At Bradshaw Rd.	1	L.S.	$ 333,000	$ 299,700	$ 300,000		$ 300,000	$ 19,494,997
R 30	At Bradshaw Rd.	1	L.S.	$ 786,000	$ 707,400	$ 707,000		$ 707,000	$ 20,201,997
R 3.5	3,320' east of Bradshaw to Vineyard	1,950	L.F.	$ 474	$ 427	$ 832,000		$ 832,000	$ 21,033,997
R 31	At Vineyard Rd.	1	L.S.	$ 1,094,000	$ 984,600	$ 985,000		$ 985,000	$ 22,018,997
R 3.2	Elk-Grove Florin to CCTC RR (NVS boundary)	3,860	L.F.	$ 1,120		$ 4,323,000		$ 4,323,000	$ 26,341,997
R 28.2	At Elk Grove-Florin Rd.	1	L.S.	$ 333,000		$ 333,000		$ 333,000	$ 26,674,997
	Subtotal - Florin Road					**$ 24,200,000**		**$ 24,139,997**	**$ 26,674,997**
Gerber Road									
R 37	At Excelsior Rd.	1	L.S.	$ 286,000		$ 286,000		$ 286,000	$ 26,960,997
R 35	At Bradshaw Rd.	1	L.S.	$ 333,000	$ 299,700	$ 300,000		$ 300,000	$ 27,260,997
R 37	At Excelsior Rd.	1	EA.	$ 1,071,000		$ 1,071,000		$ 1,071,000	$ 28,331,997
R 4.2	Elk-Grove Florin to NVS boundary	1,570	L.F.	$ 306		$ 480,000	[1]	$ 480,000	$ 28,811,997
R 4.2	Elk-Grove Florin to NVS boundary	1,570	L.F.	$ 288		$ 452,000	[1]	$ 452,000	$ 29,263,997
R 4.3	NVS Boundary to Waterman	2,620	L.F.	$ 306		$ 802,000	[1]	$ 802,000	$ 30,065,997
R 4.3	NVS Boundary to Waterman	2,620	L.F.	$ 288		$ 755,000	[1]	$ 755,000	$ 30,820,997
	Subtotal - Gerber Road					**$ 4,146,000**		**$ 4,146,000**	**$ 30,820,997**
South Watt									
R 25.1	At Elder Creek Rd.	1	EA.	$ 286,000		$ 286,000		$ 286,000	$ 31,106,997
R 25.2	At Elder Creek Rd.	1	L.S.	$ 666,000		$ 666,000		$ 666,000	$ 31,772,997
R 6.4	Florin to Elder Creek	4,990	L.F.	$ 1,120		$ 5,589,000	[2]	$ 335,000	$ 32,107,997
R 6.5	Elder Creek to Fruitridge	5,260	L.F.	$ 1,120		$ 5,891,000	[2]	$ 353,000	$ 32,460,997
R 6.6	Fruitridge to Jackson	4,470	L.F.	$ 1,120		$ 5,006,000	[2]	$ 300,000	$ 32,760,997
R 6.4	Florin to Elder Creek	4,990	L.F.	$ 574		$ 2,864,000	[2]	$ 172,000	$ 32,932,997
R 6.5	Elder Creek to Fruitridge	5,260	L.F.	$ 574		$ 3,019,000	[2]	$ 181,000	$ 33,113,997
R 6.6	Fruitridge to Jackson	4,470	L.F.	$ 574		$ 2,566,000	[2]	$ 154,000	$ 33,267,997
	Subtotal - South Watt					**$ 25,887,000**		**$ 2,447,000**	**$ 33,267,997**
Elk Grove-Florin Road									
R 6.3	Gerber to Florin	4,850	L.F.	$ 1,120		$ 5,432,000	[4]	$ 1,086,400	$ 34,354,397
R 6.12	Elder Creek Crossing	1	L.S.	$ 1,201,000		$ 1,201,000	[4]	$ 240,200	$ 34,594,597
	Subtotal - Elk Grove Florin Road					**$ 6,633,000**		**$ 1,326,600**	**$ 34,594,597**
Elder Creek Road									
R 27	At Excelsior Rd.	1	EA.	$ 216,000		$ 216,000		$ 216,000	$ 34,810,597
R 2.2	South Watt to Bradshaw	10,030	L.F.	$ 219		$ 2,197,000		$ 2,197,000	$ 37,007,597
R 26	At Bradshaw Rd.	1	L.S.	$ 776,000		$ 776,000	[3]	$ 310,400	$ 37,317,997
R 26	At Bradshaw Rd.	1	L.S.	$ 333,000		$ 333,000		$ 333,000	$ 37,650,997
	Subtotal - Elder Creek Road					**$ 3,522,000**		**$ 3,056,400**	**$ 37,650,997**
Jackson Road									
R 1.2	So. Watt Ave to Bradshaw	10,440	L.F.	$ 1,120		$ 11,693,000	[2]	$ 2,806,320	$ 40,457,317
	Subtotal - Jackson Road					**$ 11,693,000**		**$ 2,806,320**	**$ 40,457,317**

Notes to Tables

[1] 50% funding participation by VSCP ($2.04 mil.) shifted to Gerber Rd. Improvements east of Bradshaw Rd. in exchange for NVS assuming 100% of the funding for Gerber Rd. imp. West of Bradshaw (even trade).

[2] SCTDF

[3] Measure A Development Fees, sales tax or other.

[4] 80% EGWV

[5] Costs shown taken from approved NVSSP PFFP (2005 $). To bring them current, County IFS has adjusted the NVSSP PFFP every year for a combined 9.75% (1008 $)

APPENDIX B

WATER CIP

Table B-1 Summary of Estimated Water Infrastructure Costs B-1
Table B-2 Estimated Water Cost per Unit B-2
Table B-3 Units and Acres in CAWC Service Area B-3
Table B-4 Preliminary Cost Estimate B-4
Map B-1 Proposed Water Distribution Facilities B-5
Map B-2 Phase 1 Water Transmission Main Facilities B-6
Map B-3 Facility Phasing in the Florin Vineyard Community Plan Area—Phase 4 ..... B-7
Water Cost Detail B-8

Table B-1
Florin Vineyard Public Facilities Financing Plan
Summary of Estimated Water Infrastructure Costs

Water District	Estimated Cost	
	Phase 1	Buildout
Sacramento County Zone 40 Water District	$ 4,683,600	$14,942,300
CAWC Water District	$4,627,400	$4,627,400
Total Cost	**$ 9,311,000**	**$19,569,700**

"total_water_costs"

Source: MacKay & Somps.

Table B-2
Florin Vineyard Public Facilities Financing Plan
Estimated Water Costs per Unit

Water District	Phase 1	Buildout	Units	Cost Per Unit
Cal Am [1]	$4,627,400	$4,627,400	1,167	$3,965
Zone 40	$4,683,600	$14,942,300	9,491	$1,574
Total /Average	**$9,311,000**	**$19,569,700**	**10,658**	**$1,836**

"water_per_unit"

[1] All Cal Am water costs will be incurred in Phase 1.

Table B-3
Florin Vineyard Public Facilities Financing Plan
Units and Acres in CAWC Service Area

Land Use	Acres	DUs/ Acre	Dwelling Units
RD 2-3	3.9	2.5	10
RD 3-5	177.9	4.5	801
RD 5-7	59.3	6.0	356
Total	**241.1**		**1,167**

"cal_am_units"

Source: MacKay & Somps.

PRELIMINARY COST ESTIMATE

Florin Vineyard Gap Community Plan

County of Sacramento

Based on CalAm-reviewed Water Study
dated October 6, 2004

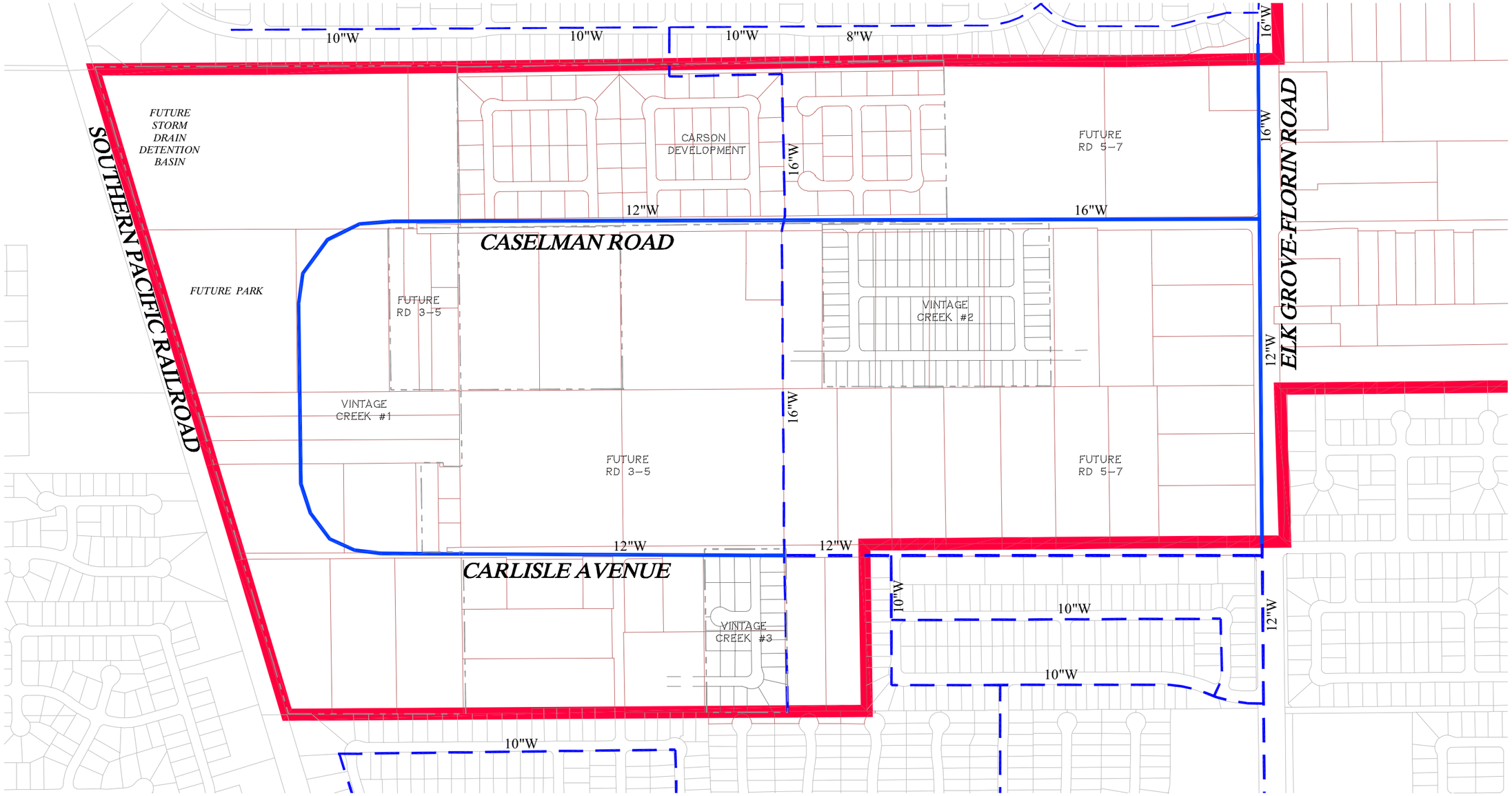
CONSTRUCTION COSTS

1.	2	EA	Connect to Existing	1,500.00	3,000.00
2.	7,830	LF	12" PVC C900 CL150 Water Main	65.00	508,950.00
3.	2,200	LF	16" PVC C900 CL150 Water Main	72.00	158,400.00
4.	19	EA	12" Butterfly Valve	2,200.00	41,800.00
5.	5	EA	16" Butterfly Valve	3,100.00	15,500.00
6.	1	EA	*Groundwater Well, Wellhead Treatment & Pump	1,500,000.00	1,500,000.00
7.	1	EA	*1.5 MG Storage Tank	1,200,000.00	1,200,000.00
				TOTAL WATER FACILITIES	**$3,427,700**
				35% Contingency	**$1,199,700**
				GRAND TOTAL CONSTRUCTION COST	**$4,627,400**

*** These Facilities may not be needed - actual facility requirements will be determined during the design and review process**

Prepared by: hf

Reviewed by: hf



Map B-1

MACKAY & SOMPS
CIVIL ENGINEERS, INC.
CIVIL ENGINEERING • LAND PLANNING • LAND SURVEYING
SACRAMENTO, CALIFORNIA (916) 929-6092
7748-00 10/10/04

Legend

- *Project Boundaries*
- *Florin-Vineyard Community Plan Boundary*
- *Existing Water Line*
- *Proposed Water Line (Size as Noted)*

Note: Only back-bone water facilities are shown for clarity. Subdivision-internal distribution mains to be determined & designed by individual project application.

0 100 200 400
SCALE: 1" = 200'

DRAFT

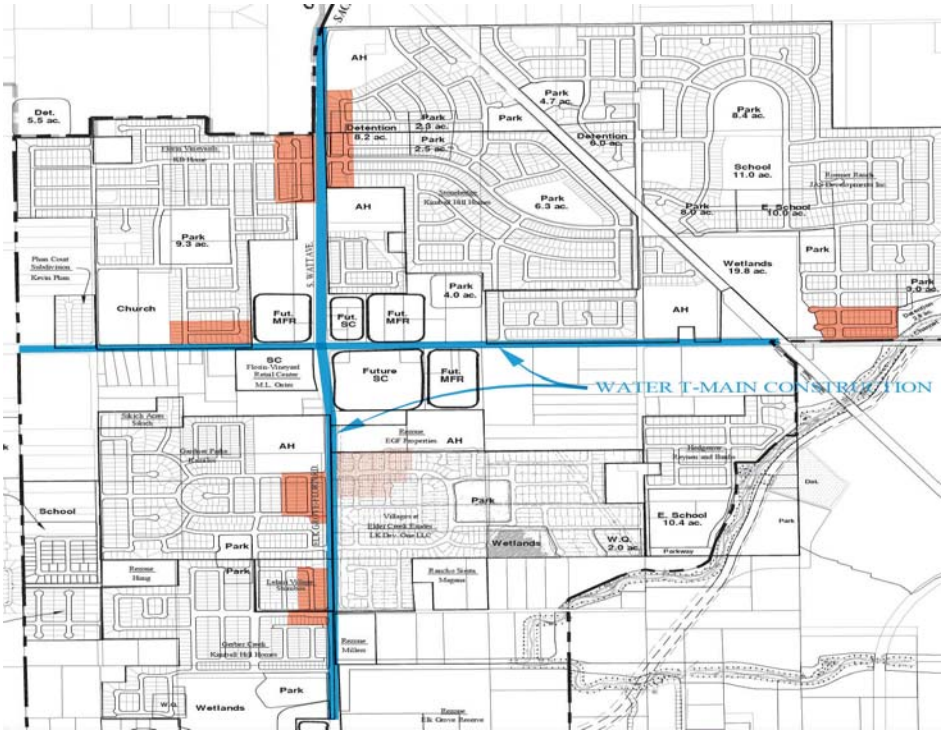
Proposed Water Distribution Facilities

for the
California-American Water Co. Service Area
of the

Florin-Vineyard Community Plan

Map B-2

FLORIN-VINEYARD GAP COMMUNITY PLAN
Phase-1 Water Transmission Main Facilities (Zone 40)



FVCP Phase-1 Water Transmission Main Facilities Zone 40 only)

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	COST	(Rounded)
1	16" Water transmission main	8,618	L.F.	$ 175	$	1,508,200
2	36" Water transmission main	6,487	L.F.	$ 300	$	1,946,100
3	Flow Control Valve	1	EA	$ 15,000	$	15,000
				SUBTOTAL	**$**	**3,469,300**
				20% CONTINGENCY	$	693,900
				15% DESIGN & ETC.	$	520,400
				GRAND TOTAL ESTIMATED COST	**$**	**4,683,600**

FUNDING SOURCES:

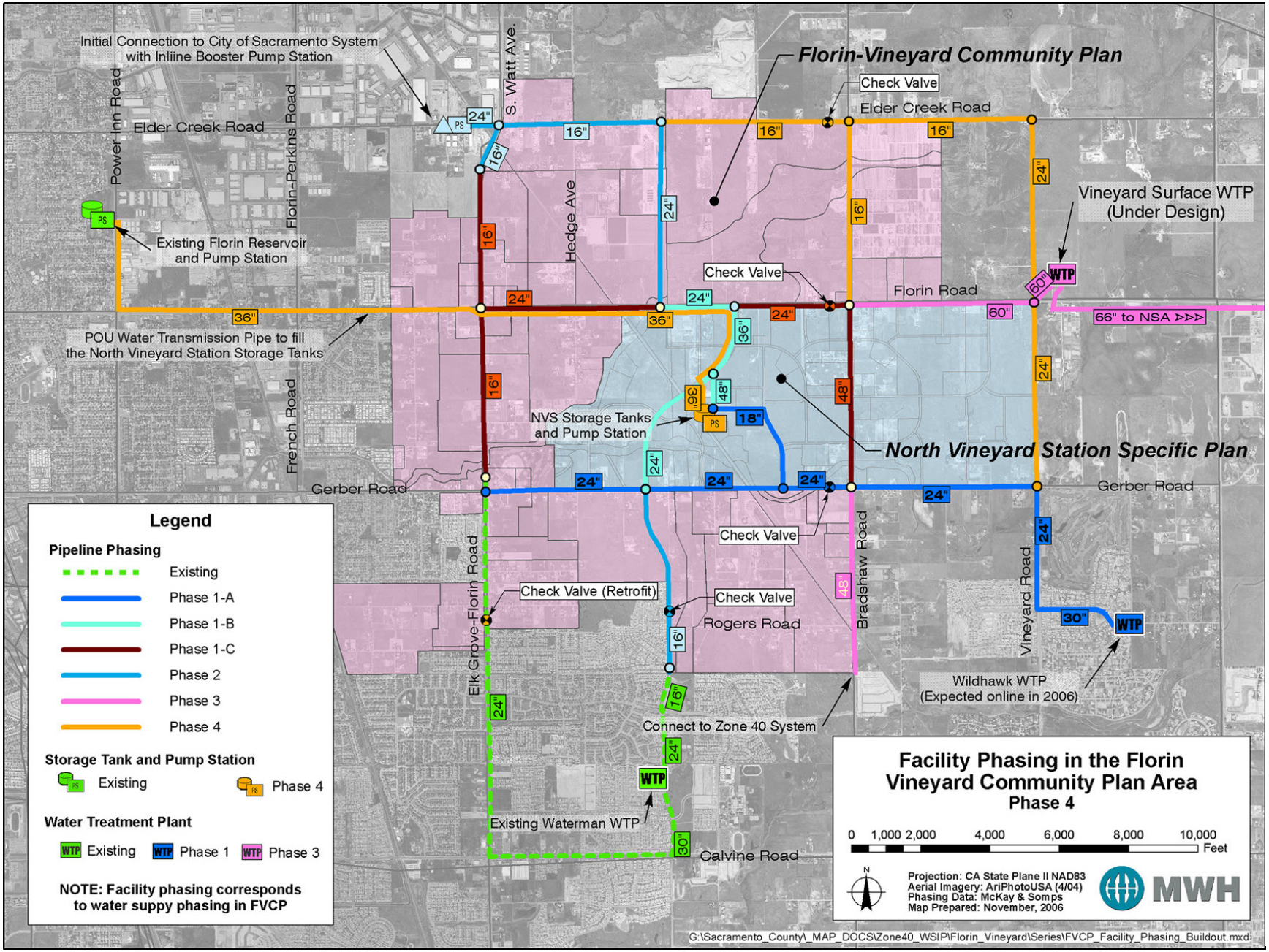
1. Full reimbursement for construction cost if installation is per Sacramento County Zone 40 reimbursement requirements.

NOTES:

1. Transmission main costs include fittings and valves.
2. All facilities sized per "Water Supply Facilities Requirements and Phasing for North Vineyard Station Specific Plan and Zone 40 POU Area" by MWH dated 8-3-05.
3. T-Main construction cost assumes construction concurrent with road improvements: excludes pavement removal and replacement, utility conflict resolution.
4. Unit costs based on 2006 contractor's bid prices.
5. Pipe lengths based on County GIS data base.
6. Identified facilities do not include area-wide facilities identied as required for buildout of the NVS SP.

Map B-3

Figure 6. Water Infrastructure Requirements for the Florin-Vineyard Community Plan Build-out Water Supply



Florin Vineyard Community Plan
CIP
WATER COST DETAIL

7748-00
Date: 3-9-06
By: HF
Revised: _____
Revised by:_____

Project No: _____ **Project Name:** FVCP Buildout Water Transmission Main Facilities

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	COST (Rounded)
1	16" Water transmission main	29,080	L.F.	$ 97	$ 2,820,800
2	24" Water transmission main	14,760	L.F.	$ 129	$ 1,904,000
3	36" Water transmission main	5,630	L.F.	$ 194	$ 1,092,200
4	48" Water transmission main	6,480	L.F.	$ 275	$ 1,782,000
				SUBTOTAL	**$ 7,599,000**
				20% CONTINGENCY	$ 1,519,800
				15% DESIGN & ETC.	$ 1,139,900
				GRAND TOTAL ESTIMATED COST	**$ 10,258,700**

FUNDING SOURCES:

1. Full reimbursement for construction cost if installation is per Sacramento County Zone 40 reimbursement requirements.

NOTES:

1. Transmission main costs include fittings and valves.
2. All facilities sized per "Water Supply Facilities Requirements and Phasing for North Vineyard Station Specific Plan and Zone 40 POU Area" by MWH dated 8-3-05.
3. T-Main construction cost assumes construction concurrent with road improvements: excludes pavement removal and replacement, utility conflict resolution.
4. Unit costs based on 2005 contractor's bid prices.
5. Pipe lengths based on County GIS data base.
6. Identified facilities do not include area-wide facilities identified as required for buildout of the NVS SP.

APPENDIX C

SEWER CIP

Table C-1 Summary of Trunk Sewer Costs C-1
Table C-2 Sanitary Sewer—Gerber Road Trunk Sewer C-2
Table C-3 Sanitary Sewer—Florin Road Trunk Sewer C-3
Table C-4 Sanitary Sewer—CE Elk Grove Florin Trunk C-4
Table C-5 Sanitary Sewer—Gerber Florin Supplemental C-5
Table C-6 Sanitary Sewer—CE Gravel Area West Trunk C-6
Table C-7 Sanitary Sewer—BR Elder Creek Trunk C-7

Table C-1
Florin Vineyard Public Facilities Financing Plan
Summary of Trunk Sewer Costs

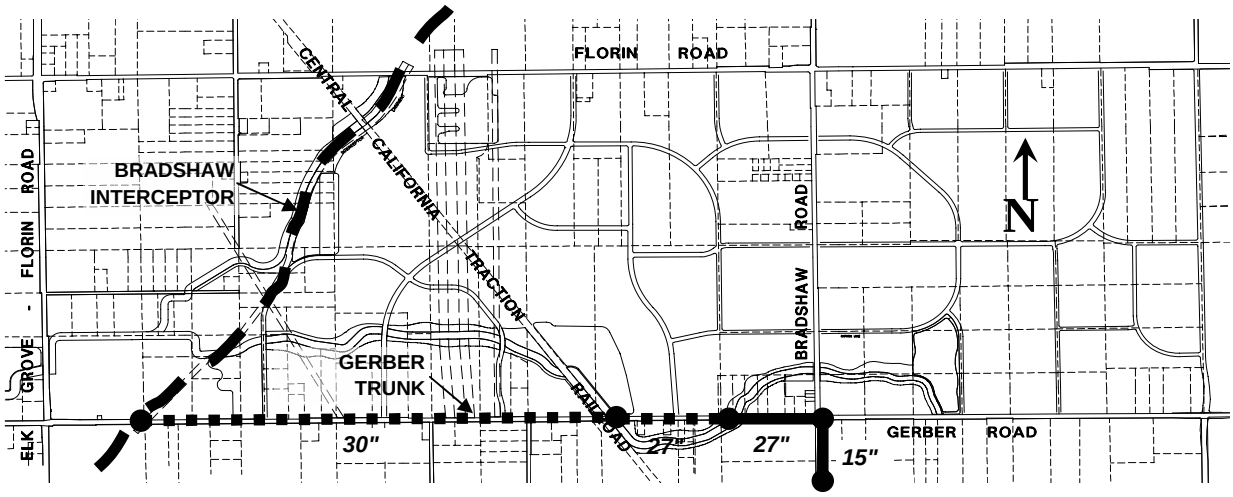
Item	Cost
Phase 1	
Gerber Road Trunk Sewer	$1,203,000
Florin Road Trunk Sewer	$3,828,000
CE Elk Grove Florin Trunk Sewer	$1,278,000
Gerber Florin Supplemental	$1,137,000
Subtotal Phase 1	**$7,446,000**
Buildout	
CE Gravel Area West Trunk	$2,153,000
BR Elder Creek Trunk	$1,553,000
Subtotal Buildout	**$3,706,000**
Total Trunk Sewer Costs at Buildout	**$11,152,000**

"sewer_sum"

Source: MacKay & Somps.

Table C-2

Florin Vineyard Community Plan
CIP
Sanitary Sewer (Phase-1)



SANITARY SEWER ~ Gerber Road Trunk Sewer

N.T.S.

ITEM	DESCRIPTION	DEPTH (Feet)	QUANTITY	UNIT	UNIT PRICE	COST (Rounded)
1	15" CSD-1 trunk sewer line (Bradshaw Road) incl. mh's	25	2,450	L.F.	$ 150	$ 367,500
2	27" CSD-1 trunk sewer line incl. mh's	20 - 24	1,350	L.F.	$ 260	$ 351,000
3	Traffic Control	N/A	3,800	L.F.	$ 10	$ 38,000
4	Mobilization & demobilization (5% of 1-2)	N/A	1	L.S.	$ 35,925	$ 35,900
5	Contingencies for unknown subsurface conditions (30% of 1-2)	N/A	1	L.S.	$ 215,550	$ 215,600
6	Erosion Control	N/A	3,800	L.F.	$ 10	$ 38,000
		SUBTOTAL				$ 1,046,000
		15% DESIGN & ETC.				$ 157,000
		FVCP GERBER ROAD TRUNK SEWER ESTIMATED COST				***$ 1,203,000***

FUNDING SOURCES:

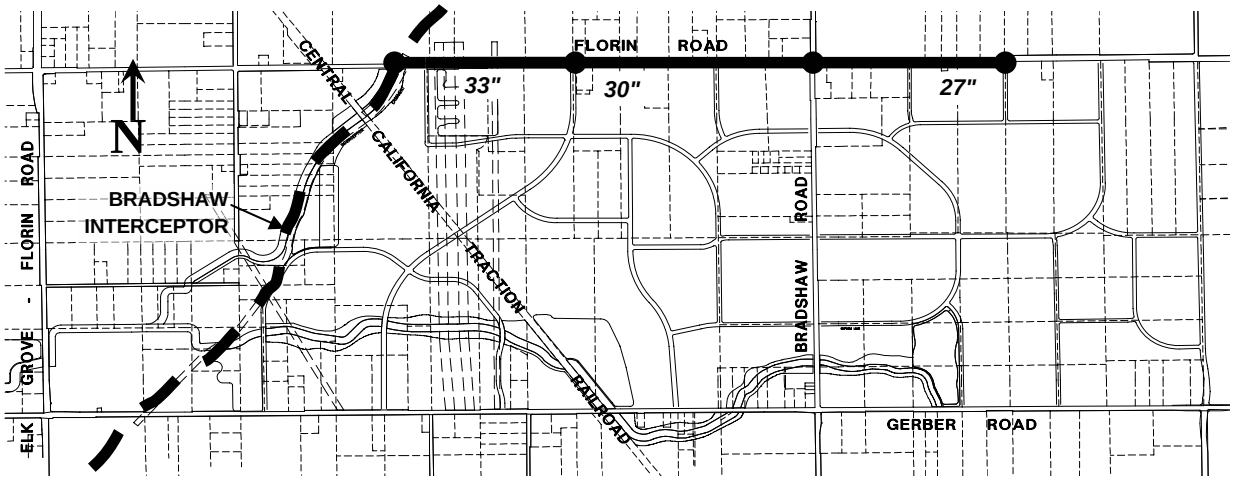
1. See Page XX of this report.

NOTES:

1. Trunk sewer assumes construction concurrent with road improvements (See Gerber Road Improvement Plans by MacKay & Somps): excludes pavement removal and replacement, and reduces traffic, roadway and errosion control related items.
2. **Unit costs per 2002 ENR-based CSD-1 Capital Improvement Program costs adjusted to 2006 ENR index.**
3. If project is not bid per CSD-1 criteria, reimbusement is subject to the CSD-1 reimbursement schedule for the current year.

Table C-3

Florin Vineyard Community Plan
CIP
Sanitary Sewer (Phase-1)



SANITARY SEWER ~ Florin Road Trunk Sewer

N.T.S.

ITEM	DESCRIPTION	DEPTH (Feet)	QUANTITY	UNIT	UNIT PRICE	COST (Rounded)
1	27" CSD-1 trunk sewer line incl. mh's	25 - 30	2,645	L.F.	$ 280	$ 740,600
2	30" CSD-1 trunk sewer line incl. mh's	16 - 20	2,460	L.F.	$ 260	$ 639,600
3	30" CSD-1 trunk sewer line incl. mh's	20 - 24	840	L.F.	$ 290	$ 243,600
4	33" CSD-1 trunk sewer line incl. mh's	16 - 20	2,320	L.F.	$ 310	$ 719,200
5	Traffic Control	N/A	8,265	L.F.	$ 10	$ 82,700
6	Mobilization & demobilization (5% of 1-4)	N/A	1	L.S.	$ 117,150	$ 117,200
7	Contingencies for unknown subsurface conditions (30% of 1-4)	N/A	1	L.S.	$ 702,900	$ 702,900
8	Erosion Control	N/A	8,265	L.F.	$ 10	$ 82,700
		SUBTOTAL				$ 3,329,000
		15% DESIGN & ETC.				$ 499,000
		FVCP FLORIN ROAD TRUNK SEWER ESTIMATED COST				***$ 3,828,000***

FUNDING SOURCES:

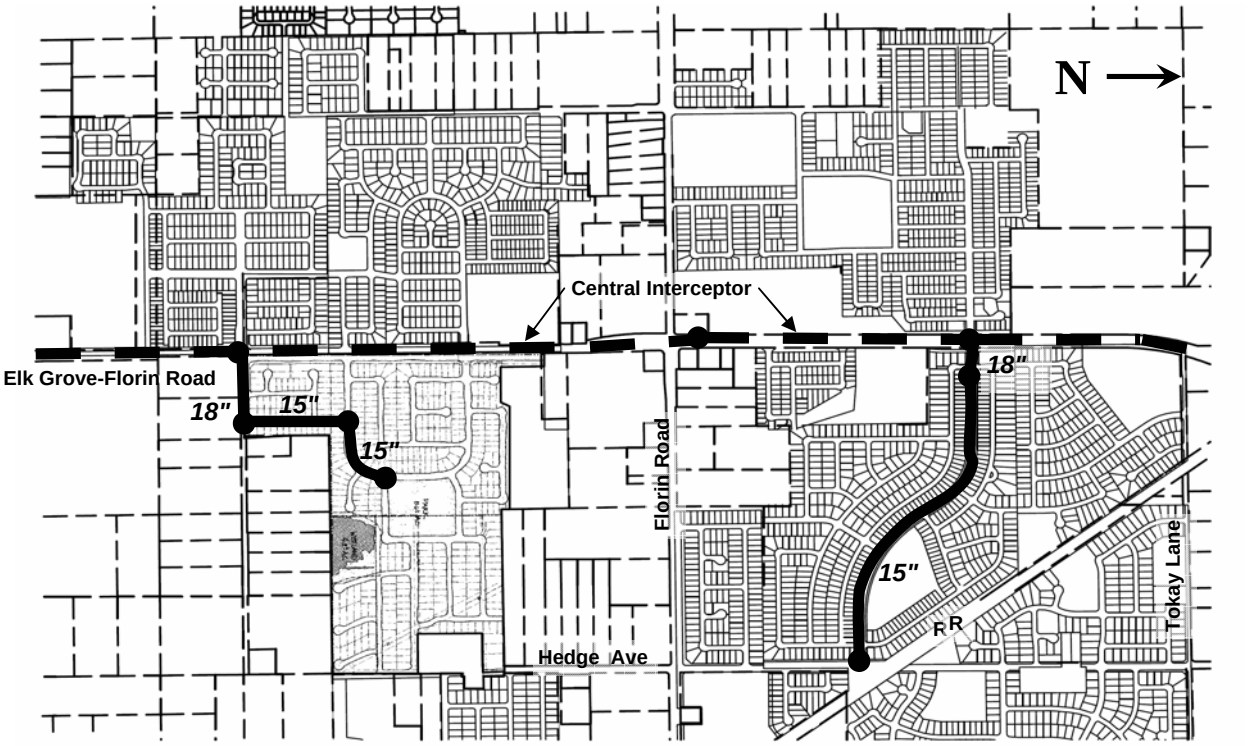
1. See Page XX of this report.

NOTES:

1. Trunk sewer assumes construction concurrent with road improvements: excludes pavement removal and replacement, and reduces traffic, roadway and errosion control related items.
2. **Unit costs per 2002 ENR-based CSD-1 Capital Improvement Program costs adjusted to 2006 ENR index.**
3. If project is not bid per CSD-1 criteria, reimbusement is subject to the CSD-1 reimbursement schedule for the current year.

Table C-4

Florin Vineyard Community Plan
CIP
Sanitary Sewer (Phase-1)



SANITARY SEWER ~ CE Elk Grove Florin Trunk

N.T.S.

ITEM	DESCRIPTION	DEPTH (Feet)	QUANTITY	UNIT	UNIT PRICE	COST (Rounded)
1	15" CSD-1 trunk sewer line incl. mh's	16 - 20	2,820	L.F.	$ 140	$ 394,800
2	15" CSD-1 trunk sewer line incl. mh's	20 - 25	1,420	L.F.	$ 150	$ 213,000
3	18" CSD-1 trunk sewer line incl. mh's	20 - 25	780	L.F.	$ 180	$ 140,400
4	Traffic Control	N/A	5,020	L.F.	$ 10	$ 50,200
5	Mobilization & demobilization (5% of 1-3)	N/A	1	L.S.	$ 37,410	$ 37,400
6	Contingencies for unknown subsurface conditions (30% of 1-3)	N/A	1	L.S.	$ 224,460	$ 224,500
7	Erosion Control	N/A	5,020	L.F.	$ 10	$ 50,200
		SUBTOTAL				$ 1,111,000
		15% DESIGN & ETC.				$ 167,000

FVCP CE ELK GROVE FLORIN TRUNK SEWER ESTIMATED COST $ 1,278,000

FUNDING SOURCES:

1. See Page XX of this report.

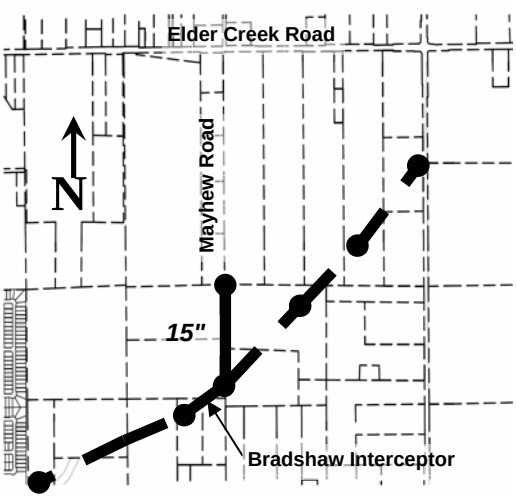
NOTES:

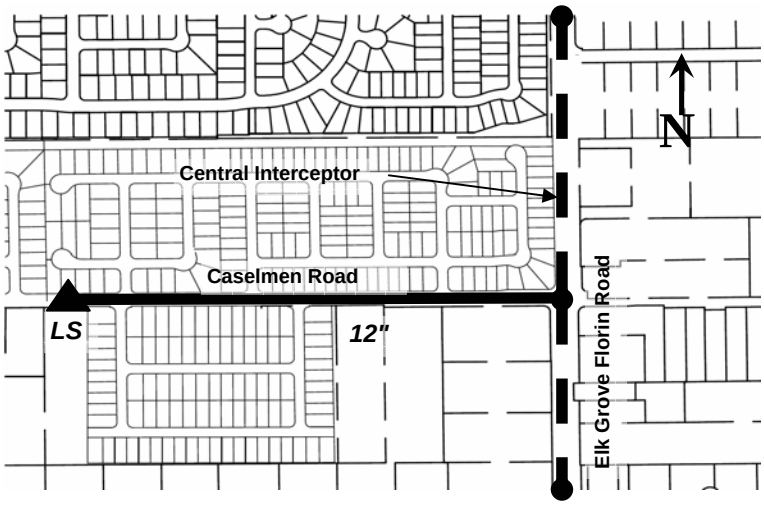
1. Trunk sewer assumes construction concurrent with road improvements: excludes pavement removal and replacement, and reduces traffic, roadway and errosion control related items.
2. **Unit costs per 2002 ENR-based CSD-1 Capital Improvement Program costs adjusted to 2006 ENR index.**
3. If project is not bid per CSD-1 criteria, reimbusement is subject to the CSD-1 reimbursement schedule for the current year.

MacKay & Somps, Inc.

Table C-5

Florin Vineyard Community Plan
CIP
Sanitary Sewer (Phase-1)





SANITARY SEWER ~ Gerber Florin Supplemental

N.T.S.

ITEM	DESCRIPTION	DEPTH (Feet)	QUANTITY	UNIT	UNIT PRICE	COST (Rounded)
1	12" CSD-1 trunk sewer line incl. mh's	16 - 20	1,770	L.F.	$ 130	$ 230,100
2	15" CSD-1 trunk sewer line incl. mh's	16 - 20	940	L.F.	$ 140	$ 131,600
3	1.2 MGD Lift Station	N/A	1	EA	$ 425,000	$ 425,000
4	Traffic Control	N/A	2,710	L.F.	$ 10	$ 27,100
5	Mobilization & demobilization (5% of 1-3)	N/A	1	L.S.	$ 39,335	$ 39,300
6	Contingencies for unknown subsurface conditions (30% of 1-3)	N/A	1	L.S.	$ 108,510	$ 108,500
7	Erosion Control	N/A	2,710	L.F.	$ 10	$ 27,100
		SUBTOTAL				$ 989,000
		15% DESIGN & ETC.				$ 148,000

FVCP GERBER FLORIN SUPPLEMENTAL TRUNK SEWER ESTIMATED COST $ 1,137,000

FUNDING SOURCES:

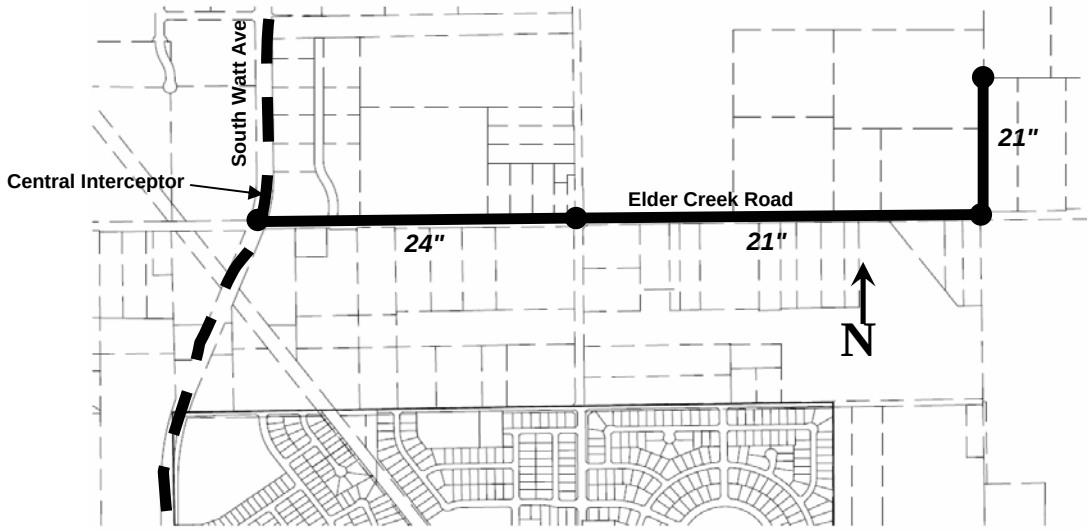
1. See Page XX of this report.

NOTES:

1. Trunk sewer assumes construction concurrent with road improvements: excludes pavement removal and replacement, and reduces traffic, roadway and errosion control related items.
2. **Unit costs per 2002 ENR-based CSD-1 Capital Improvement Program costs adjusted to 2006 ENR index.**
3. If project is not bid per CSD-1 criteria, reimbusement is subject to the CSD-1 reimbursement schedule for the current year.

Table C-6

Florin Vineyard Community Plan
CIP
Sanitary Sewer (Future Buildout)



SANITARY SEWER ~ CE Gravel Area West Trunk

N.T.S.

ITEM	DESCRIPTION	DEPTH (Feet)	QUANTITY	UNIT	UNIT PRICE	COST (Rounded)
1	21" CSD-1 trunk sewer line incl. mh's	16 - 20	2,710	L.F.	$ 200	$ 542,000
2	21" CSD-1 trunk sewer line incl. mh's	20 - 25	1,290	L.F.	$ 210	$ 270,900
3	24" CSD-1 trunk sewer line incl. mh's	20 - 25	2,100	L.F.	$ 230	$ 483,000
4	Traffic Control	N/A	6,100	L.F.	$ 10	$ 61,000
5	Mobilization & demobilization (5% of 1-3)	N/A	1	L.S.	$ 64,795	$ 64,800
6	Contingencies for unknown subsurface conditions (30% of 1-3)	N/A	1	L.S.	$ 388,770	$ 388,800
7	Erosion Control	N/A	6,100	L.F.	$ 10	$ 61,000
		SUBTOTAL				$ 1,872,000
		15% DESIGN & ETC.				$ 281,000
		FVCP CE GRAVEL AREA WEST TRUNK SEWER ESTIMATED COST				***$ 2,153,000***

FUNDING SOURCES:

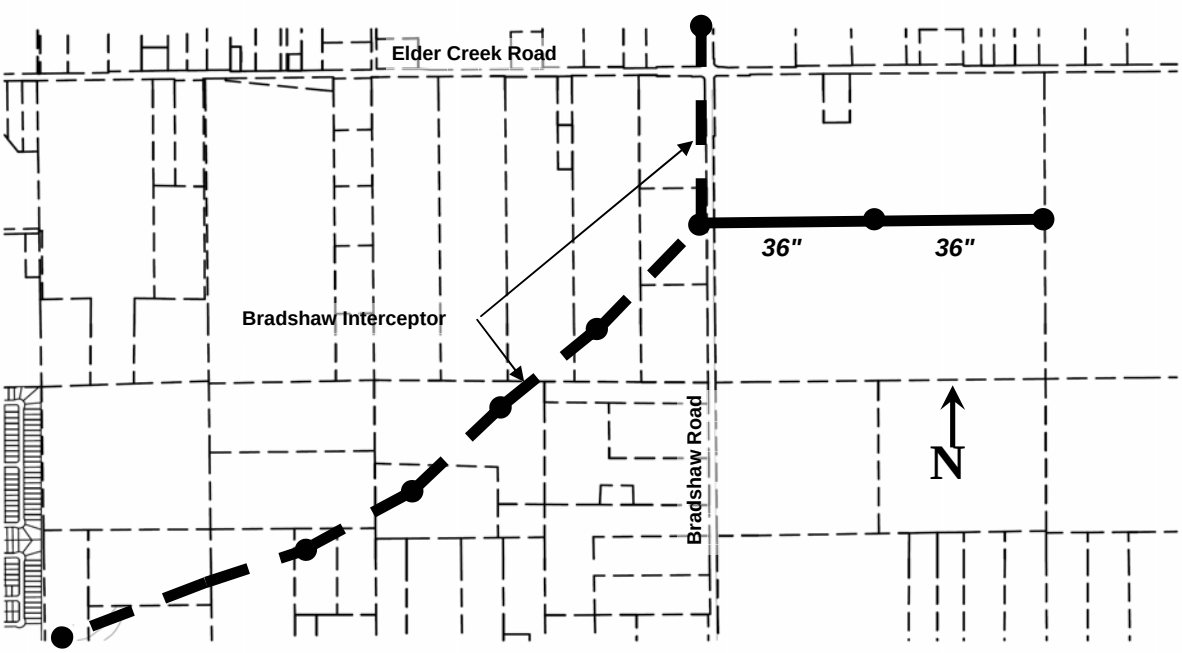
1. See Page XX of this report.

NOTES:

1. Trunk sewer assumes construction concurrent with road improvements: excludes pavement removal and replacement, and reduces traffic, roadway and errosion control related items.
2. **Unit costs per 2002 ENR-based CSD-1 Capital Improvement Program costs adjusted to 2006 ENR index.**
3. If project is not bid per CSD-1 criteria, reimbusement is subject to the CSD-1 reimbursement schedule for the current year.

Table C-7

Florin Vineyard Community Plan
CIP
Sanitary Sewer (Future Buildout)



SANITARY SEWER ~ BR Elder Creek Trunk

N.T.S.

ITEM	DESCRIPTION	DEPTH (Feet)	QUANTITY	UNIT	UNIT PRICE	COST (Rounded)
1	36" CSD-1 trunk sewer line incl. mh's	26 - 30	2,740	L.F.	$ 350	$ 959,000
2	Traffic Control	N/A	2,740	L.F.	$ 10	$ 27,400
3	Mobilization & demobilization (5% of 1)	N/A	1	L.S.	$ 47,950	$ 48,000
4	Contingencies for unknown subsurface conditions (30% of 1)	N/A	1	L.S.	$ 287,700	$ 287,700
5	Erosion Control	N/A	2,740	L.F.	$ 10	$ 27,400
		SUBTOTAL				$ 1,350,000
		15% DESIGN & ETC.				$ 203,000
		FVCP BR ELDER CREEK TRUNK SEWER ESTIMATED COST				***$ 1,553,000***

FUNDING SOURCES:

1. See Page XX of this report.

NOTES:

1. Trunk sewer assumes construction concurrent with road improvements: excludes pavement removal and replacement, and reduces traffic, roadway and errosion control related items.
2. **Unit costs per 2002 ENR-based CSD-1 Capital Improvement Program costs adjusted to 2006 ENR index.**
3. If project is not bid per CSD-1 criteria, reimbusement is subject to the CSD-1 reimbursement schedule for the current year.

APPENDIX D

DRAINAGE CIP

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DRAFT

Table D-1
Florin Vineyard Public Facilities Financing Plan
Summary of Drainage Costs [1]

Drainage Shed	Zone 11A Reimbursable	FVCP Fee Program	Total Project Cost
PHASE 1			
Unionhouse Creek Shed	$3,642,100	$482,700	**$4,124,800**
Florin Creek Shed	$6,690,700	$114,300	**$6,805,000**
Elder/Gerber Creek Shed	$5,424,500	$1,016,400	**$6,440,900**
Subtotal Drainage Cost Phase 1	**$15,757,300**	**$1,613,400**	**$17,370,700**
ADDITIONAL BUILDOUT COSTS			
Unionhouse Creek Shed	$0	$0	**$0**
Florin Creek Shed	$0	$0	**$0**
Elder/Gerber Creek Shed	$5,653,200	$246,500	**$5,899,700**
Subtotal Drainage Cost - Additional Costs at Buildout	**$5,653,200**	**$246,500**	**$5,899,700**
TOTAL BUILDOUT DRAINAGE COST	**$21,410,500**	**$1,859,900**	**$23,270,400**

"drain_sum"

Source: MacKay & Somps Civil Engineers, Inc.

[1] According to MacKay & Somps, all backbone drainage facilities required for buildout of the residential components of the FVCP will be complete in Phase 1.

Table D-2
Florin Vineyard Public Facilities Financing Plan
Summary of FVCP Supplemental Drainage Costs at Buildout

Drainage Shed	Drainage Facilities	Channel Corridor & Detention Basin Land Acquisition	Buildout Total
Unionhouse Creek Shed	$72,300	$410,400	$482,700
Florin Creek Shed	$114,300	$0	$114,300
Elder Gerber Creeks Shed	$355,700	$907,200	$1,262,900
Total Costs	**$542,300**	**$1,317,600**	**$1,859,900**
Percent of Total	**29%**	**71%**	**100%**

"drain_suppl"

Source: MacKay & Somps Civil Engineers, Inc.

Table D-3

date: June 26, 2006
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

UNIONHOUSE CREEK SHED

MAJOR DRAINAGE FACILITIES BUILDOUT SUMMARY

SHEET	PROJECT NAME	Zone 11A Reimbursable	FVCP Fee Program	Total Project Cost
	BASINS			
1	UHDET2	$ 976,900	$ 28,900	$ 1,005,800
3	WQSCK	$ 68,800	$ 161,100	$ 229,900
4	DETUH1	$ 213,000	$ 16,100	$ 229,100
7	WQUH1AN	$ 106,400	$ 276,600	$ 383,000
	TRUNK PIPE SYSTEM			
9	Trunk Storm Drain	$ 2,277,000	$ -	$ 2,277,000
	TOTAL (UNIONHOUSE CREEK):	**$ 3,642,100**	**$ 482,700**	**$ 4,124,800**

Table D-4

date: June 26, 2006
by: DD
revised by: hf
date: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

UNIONHOUSE CREEK SHED

Trunk Drainage System

N.T.S.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE (2007)	COST (Rounded)
1	24" Storm Drain	570	LF	$ 49.60	$ 28,300
2	30" Storm Drain	1,560	LF	$ 59.22	$ 92,400
3	36" Storm Drain	4,200	LF	$ 72.43	$ 304,200
4	42" Storm Drain	310	LF	$ 99.14	$ 30,700
5	48" Storm Drain	4,830	LF	$ 114.11	$ 551,200
6	54" Storm Drain	690	LF	$ 121.18	$ 83,600
7	60" Storm Drain	4,650	LF	$ 135.04	$ 627,900
8	48" Manhole (at 300' spacing)	9	EA	$ 2,923.41	$ 26,300
9	60" Manhole (at 300' spacing)	20	EA	$ 4,254.04	$ 85,100
10	72" Manhole (at 300' spacing)	18	EA	$ 5,249.57	$ 94,500
11	84" Manhole (at 300' spacing)	18	EA	$ 6,129.74	$ 110,300
12	30" Outfall Structure	2	EA	$ 12,314.00	$ 24,600
13	36" Outfall Structure	1	EA	$ 12,314.00	$ 12,300
14	48" Outfall Structure	1	EA	$ 12,314.00	$ 12,300
15	60" Outfall Structure	2	EA	$ 12,314.00	$ 24,600
		SUBTOTAL			**$ 2,108,300**
	Engineering/Contingency	8%			$ 168,700
		TOTAL			**$ 2,277,000**

SUMMARY	
Zone 11A	**$ 2,277,000**
FVCP Fee Program	**$ -**
TOTAL ESTIMATED COST - UNIONHOUSE CREEK SHED TRUNK SYSTEM	***$ 2,277,000***

Notes:
1. Trunk storm drain construction assumed concurrent with road improvements - excludes pavement removal and replacement.
2. Unit costs based on 2008 Zone 11A schedule.
3. Soft costs in excess of 5% of the total construction cost for Zone 11A reimbursable items are not reimbursable through Zone 11A and as such shall be borne by the developer.
4. When a 2008 Zone 11 Fee Schedule price was not available, costs identified in the approved 2004 NVSSP PFFP were extended by 11.82% consistent with the Zone 11A Fee Schedule increase over the same period.

Table D-5

date: June 26, 2006
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

UNIONHOUSE CREEK SHED

Detention and Water Quality Treatment Basin UHDET2

(31.8 ac ft detention & water quality treatment)

CONSTRUCTION

Item	QTY	Unit	Total Project Cost: Unit Cost	Total Project Cost: Subtotal
	a		*b*	*c=a*b*
ZONE 11A				
1. Clear & Grub	5.6	acres	$1,000.00	$ 5,600
2. Basin Excavation	58,600	c.y.	$ 3.71	$ 217,406
3. Hydroseed	65,000	sf	$ 0.41	$ 26,390
4. Basin Access Ramp	1	each	$ 15,000.00	$ 15,000
5. Pipe Gate	1	each	$ 2,946.99	$ 2,947
6. Fencing - Post & Cable	1,980	l.f.	$ 10.90	$ 21,582
7 Land Acquisition (Zone 11)	6	acres	$ 108,000.00	$ 604,800
Subtotal - Zone 11A				**$ 888,100**
Engineering/Contingency		5%		$ 44,400
Construction/Contingency		5%		$ 44,400
TOTAL ZONE 11A				**$ 976,900**
FVCP SUPPLEMENTAL FEE PROGRAM				
8. Landscaping (basin sides)	1,980	lf	$ 10.79	$ 21,364
Subtotal - FVCP Suppl. Fee Program				**$ 21,400**
Engineering/Contingency		35%		$ 7,500
Land Acquisition (Supplemental)	2.0	acres	$ -	$ -
TOTAL FVCP SUPPL. FEE PROGRAM				**$ 28,900**

SUMMARY

Zone 11A Reimbursable	**$ 976,900**
FVCP Suppl. Fee Program	**$ 28,900**
TOTAL PROJECT COST (Basin UHDET2)	**$ 1,005,800**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

Table D-6

date: June 26, 2006
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

UNIONHOUSE CREEK SHED

Water Quality Treatment Basin WQSCK

(2.4 ac ft water quality treatment)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	1.4	acres		$1,000.00	$	1,400
2. Basin Excavation	6,590	c.y.	$	3.71	$	24,449
3. Hydroseed	31,500	sf	$	0.41	$	12,789
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	680	l.f.	$	10.90	$	7,412
Subtotal - Zone 11A					**$**	**62,600**
Engineering/Contingency		5%			$	3,100
Construction/Contingency		5%			$	3,100
TOTAL ZONE 11A					**$**	**68,800**
FVCP SUPPLEMENTAL FEE PROGRAM						
8. Landscaping (basin sides)	680	lf	$	10.79	$	7,337
Subtotal - FVCP Suppl. Fee Program					**$**	**7,300**
Engineering/Contingency		35%			$	2,600
Land Acquisition (Supplemental)	1.4	acres	$	108,000.00	$	151,200
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**161,100**
SUMMARY						
Zone 11A Reimbursable					**$**	**68,800**
FVCP Suppl. Fee Program					**$**	**161,100**
TOTAL PROJECT COST (Basin WQSCK)					**$**	**229,900**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

Table D-7

date: June 26, 2006
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

UNIONHOUSE CREEK SHED

Detention / Water Quality Basin DETUH1

(37.0 ac ft detention & water quality treatment- 25 ac-ft exist.)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit	Unit Cost		Subtotal	
	a		*b*		*c=a*b*	
ZONE 11A						
1. Clear & Grub	3.0	acres		$1,000.00	$	3,000
2. Basin - Excavation	31,000	c.y.	$	3.71	$	115,010
3. Hydroseed	160,000	sf	$	0.41	$	64,960
4. Basin Access Ramp	0	each	$	15,000.00	$	-
5. Pipe Gate	0	each	$	2,946.99	$	-
6. Fencing - Post & Cable	1,250	l.f.	$	10.90	$	13,625
Subtotal - Zone 11A					**$**	**193,600**
Engineering/Contingency		5%			$	9,700
Construction/Contingency		5%			$	9,700
Land Acquisition (Zone 11A)	0.0	acres	$	108,000.00	$	-
TOTAL ZONE 11A					**$**	**213,000**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	1,100	lf	$	10.79	$	11,869
Subtotal - FVCP Suppl. Fee Program					**$**	**11,900**
Engineering/Contingency		35%			$	4,200
Land Acquisition (Supplemental)	0.0	acres	$	-	$	-
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**16,100**
SUMMARY						
Zone 11A Reimbursable					**$**	**213,000**
FVCP Suppl. Fee Program					**$**	**16,100**
TOTAL PROJECT COST (Basin DETUH1)					**$**	**229,100**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition not required as entire parcel is allready owned by the County
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

Table D-8

date: June 26, 2006
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

UNIONHOUSE CREEK SHED

Water Quality Treatment Basin WQUH1AN

(6.1 ac ft water quality treatment)

CONSTRUCTION

Item	QTY	Unit	Total Project Cost: Unit Cost	Total Project Cost: Subtotal
	a		*b*	*c=a*b*
ZONE 11A				
1. Clear & Grub	2.4	acres	$1,000.00	$ 2,400
2. Basin - Excavation	10,000	c.y.	$ 3.66	$ 36,600
3. Hydroseed	79,000	sf	$ 0.40	$ 31,600
4. Basin Access Ramp	1	each	$ 15,000.00	$ 15,000
5. Pipe Gate	1	each	$ 2,500.00	$ 2,500
6. Fencing - Post & Cable	1,200	l.f.	$ 9.25	$ 11,100
Subtotal - Zone 11A				**$ 96,800**
Engineering/Contingency		5%		$ 4,800
Construction/Contingency		5%		$ 4,800
TOTAL ZONE 11A				**$ 106,400**
FVCP SUPPLEMENTAL FEE PROGRAM				
8. Landscaping	1,200	lf	$ 10.79	$ 12,948
Subtotal - FVCP Suppl. Fee Program				**$ 12,900**
Engineering/Contingency		35%		$ 4,500
Land Acquisition (Supplemental)	2.4	acres	$ 108,000.00	$ 259,200
TOTAL FVCP SUPPL. FEE PROGRAM				**$ 276,600**
SUMMARY				
Zone 11A Reimbursable				**$ 106,400**
FVCP Suppl. Fee Program				**$ 276,600**
TOTAL PROJECT COST (Water Quality Basin WQUH1AN)				**$ 383,000**

NOTES:

1. Unit Costs based on 2007 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

Table D-9

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN CREEK SHED

MAJOR DRAINAGE FACILITIES BUILDOUT SUMMARY

SHEET	PROJECT NAME	Zone 11A Reimbursable	FVCP Fee Program	Total Project Cost
	BASIN			
1	MH6DET	$ 799,900	$ 24,000	$ 823,900
2	SWATTD	$ 1,172,300	$ 30,000	$ 1,202,300
3	DETF4C	$ 1,953,900	$ 43,700	$ 1,997,600
4	SC2-R71	$ 487,600	$ 16,600	$ 504,200
	TRUNK PIPE SYSTEM			
5	Trunk Storm Drain	$ 2,277,000	$ -	$ 2,277,000
	TOTAL:	**$ 6,690,700**	**$ 114,300**	**$ 6,805,000**

Table D-10

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

FLORIN CREEK SHED

Trunk Drainage System

N.T.S.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE (2007)	COST (Rounded)
1	24" Storm Drain	570	LF	$ 49.60	$ 28,300
2	30" Storm Drain	1,560	LF	$ 59.22	$ 92,400
3	36" Storm Drain	4,200	LF	$ 72.43	$ 304,200
4	42" Storm Drain	310	LF	$ 99.14	$ 30,700
5	48" Storm Drain	4,830	LF	$ 114.11	$ 551,200
6	54" Storm Drain	690	LF	$ 121.18	$ 83,600
7	60" Storm Drain	4,650	LF	$ 135.04	$ 627,900
8	48" Manhole (at 300' spacing)	9	EA	$ 2,923.41	$ 26,300
9	60" Manhole (at 300' spacing)	20	EA	$ 4,254.04	$ 85,100
10	72" Manhole (at 300' spacing)	18	EA	$ 5,249.57	$ 94,500
11	84" Manhole (at 300' spacing)	18	EA	$ 6,129.74	$ 110,300
12	30" Outfall Structure	2	EA	$ 12,314.00	$ 24,600
13	36" Outfall Structure	1	EA	$ 12,314.00	$ 12,300
14	48" Outfall Structure	1	EA	$ 12,314.00	$ 12,300
15	60" Outfall Structure	2	EA	$ 12,314.00	$ 24,600
		SUBTOTAL			**$ 2,108,300**
	Engineering/Contingency	8%			$ 168,700
		TOTAL			**$ 2,277,000**

SUMMARY	
Zone 11A	**$ 2,277,000**
FVCP Fee Program	**$ -**
TOTAL ESTIMATED COST - FLORIN CREEK SHED TRUNK SYSTEM	***$ 2,277,000***

Notes:
1. Trunk storm drain construction assumed concurrent with road improvements - excludes pavement removal and replacement.
2. Unit costs based on 2008 Zone 11A schedule.
3. Soft costs in excess of 5% of the total construction cost for Zone 11A reimbursable items are not reimbursable through Zone 11A and as such shall be borne by the developer.
4. When a 2008 Zone 11 Fee Schedule price was not available, costs identified in the approved 2004 NVSSP PFFP were extended by 11.82% consistent with the Zone 11A Fee Schedule increase over the same period.

Table D-11

date: June 26, 2007
by: DD
revised by: hf
revised: July 8, 2009

FLORIN VINEYARD COMMUNITY PLAN

FLORIN CREEK SHED

Detention Basin MH6DET

(21.6 ac ft detention)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	4.6	acres		$1,000.00	$	4,600
2. Basin - Excavation	43,100	c.y.	$	3.71	$	159,901
3. Hydroseed	196,300	sf	$	0.41	$	79,698
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	1,650	l.f.	$	10.90	$	17,985
Subtotal - Zone 11A					**$**	**275,500**
Engineering/Contingency		5%			$	13,800
Construction/Contingency		5%			$	13,800
Land Acquisition (Zone 11A)	4.6	acres	$	108,000.00	$	496,800
TOTAL ZONE 11A					**$**	**799,900**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	1,650	lf	$	10.79	$	17,804
Subtotal - FVCP Suppl. Fee Program					**$**	**17,800**
Engineering/Contingency		35%			$	6,200
Land Acquisition (Supplemental)	4.6	acres	$	-	$	-
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**24,000**
SUMMARY						
Zone 11A Reimbursable					**$**	**799,900**
FVCP Suppl. Fee Program					**$**	**24,000**
TOTAL PROJECT COST (Drainage Basin MH6DET)					**$**	**823,900**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.
4. Zone 11A Land Acquisition unit cost to be determined by appraisal (assumed to be $108,000).

Table D-12

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

FLORIN CREEK SHED

Detention Basin SWATTD

(35.8 ac ft detention)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	6.4	acres		$1,000.00	$	6,400
2. Basin - Excavation	72,400	c.y.	$	3.71	$	268,604
3. Hydroseed	315,900	sf	$	0.41	$	128,255
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	2,060	l.f.	$	10.90	$	22,454
Subtotal - Zone 11A					**$**	**437,300**
Engineering/Contingency		5%			$	21,900
Construction/Contingency		5%			$	21,900
Land Acquisition (Zone 11A)	6.4	acres	$	108,000.00	$	691,200
TOTAL ZONE 11A					**$**	**1,172,300**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	2,060	lf	$	10.79	$	22,227
Subtotal - FVCP Suppl. Fee Program					**$**	**22,200**
Engineering/Contingency		35%			$	7,800
Land Acquisition (Supplemental)	6.4	acres	$	-	$	-
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**30,000**
SUMMARY						
Zone 11A Reimbursable					**$**	**1,172,300**
FVCP Suppl. Fee Program					**$**	**30,000**
TOTAL PROJECT COST (Drainage Basin SWATTD)					**$**	**1,202,300**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.
4. Zone 11A Land Acquisition unit cost to be determined by appraisal (assumed to be $108,000).

Table D-13

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

FLORIN CREEK SHED

Detention Basin SC2-R71

(7.4 ac ft detention)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit	Unit Cost		Subtotal	
	a		*b*		*c=a*b*	
ZONE 11A						
1. Clear & Grub	1.9	acres		$1,000.00	$	1,900
2. Basin - Excavation	21,300	c.y.	$	3.71	$	79,023
3. Hydroseed	87,500	sf	$	0.41	$	35,525
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	1,140	l.f.	$	109.00	$	124,260
Subtotal - Zone 11A					**$**	**256,800**
Engineering/Contingency		5%			$	12,800
Construction/Contingency		5%			$	12,800
Land Acquisition (Zone 11A)	1.9	acres	$	108,000.00	$	205,200
TOTAL ZONE 11A					**$**	**487,600**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	1,140	lf	$	10.79	$	12,301
Subtotal - FVCP Suppl. Fee Program					**$**	**12,300**
Engineering/Contingency		35%			$	4,300
Land Acquisition (Supplemental)	1.9	acres	$	-	$	-
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**16,600**
SUMMARY						
Zone 11A Reimbursable					**$**	**487,600**
FVCP Suppl. Fee Program					**$**	**16,600**
TOTAL PROJECT COST (Drainage Basin SC2-R71)					**$**	**504,200**

NOTES:

Table D-14

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

FLORIN CREEK SHED

Detention Basin DETF4C

(45.5 ac ft detention)

CONSTRUCTION

Item	QTY	Unit	Total Project Cost: Unit Cost	Total Project Cost: Subtotal
	a		*b*	*c=a*b*
ZONE 11A				
1. Clear & Grub	10.9	acres	$1,000.00	$ 10,900
2. Basin - Excavation	73,500	c.y.	$ 3.71	$ 272,685
3. Hydroseed	218,000	sf	$ 0.41	$ 88,508
4. Basin Access Ramp	1	each	$ 15,000.00	$ 15,000
5. Pipe Gate	1	each	$ 2,946.99	$ 2,947
6. Fencing - Post & Cable	3,000	l.f.	$ 109.00	$ 327,000
Subtotal - Zone 11A				**$ 706,100**
Engineering/Contingency		5%		$ 35,300
Construction/Contingency		5%		$ 35,300
Land Acquisition (Zone 11A)	10.9	acres	$ 108,000.00	$ 1,177,200
TOTAL ZONE 11A				**$ 1,953,900**
FVCP SUPPLEMENTAL FEE PROGRAM				
7. Landscaping	3,000	lf	$ 10.79	$ 32,370
Subtotal - FVCP Suppl. Fee Program				**$ 32,400**
Engineering/Contingency		35%		$ 11,300
Land Acquisition (Supplemental)	10.9	acres	$ -	$ -
TOTAL FVCP SUPPL. FEE PROGRAM				**$ 43,700**

SUMMARY

Zone 11A Reimbursable	**$ 1,953,900**
FVCP Suppl. Fee Program	**$ 43,700**
TOTAL PROJECT COST (Drainage Basin DETF4C)	**$ 1,997,600**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.
4. Zone 11A Land Acquisition unit cost to be determined by appraisal (assumed to be $108,000).

date: June 26, 2007
by: DD
revised by: hf

ELDER / GERBER CREEKS SHED

MAJOR DRAINAGE FACILITIES SUMMARY

SHEET	PROJECT NAME	Zone 11A Reimbursable	FVCP Fee Program	Total Project Cost
	OPEN CHANNEL			
1	Trap Channel G3CH (Buildout)	$ 76,300	$ 11,900	$ 88,200
2	Trap Channel E3CH (Buildout)	$ 963,000	$ 159,800	$ 1,122,800
	BASIN			
3	G43	$ 1,109,100	$ 32,000	$ 1,141,100
4	E31 (Buildout)	$ 1,659,200	$ 45,100	$ 1,704,300
5	WQ221	$ 236,000	$ 580,000	$ 816,000
6	WQMH10	$ 110,300	$ 241,400	$ 351,700
7	WQGC	$ 70,000	$ 136,900	$ 206,900
8	E28 (Phase 1)	$ 839,700	$ 26,100	$ 865,800
9	E28 (Buildout)	$ 1,873,800	$ 29,700	$ 1,903,500
	TRUNK PIPE SYSTEM			
10	Trunk Storm Drain (Phase 1)	$ 3,059,400	$ -	$ 3,059,400
11	Trunk Storm Drain (Buildout)	$ 1,080,900	$ -	$ 1,080,900
	TOTAL (ELDER / GERBER CREEKS):	**$ 11,077,700**	**$ 1,262,900**	**$ 12,340,600**

Table D-16

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Phase 1 Trunk Drainage System

N.T.S.

ITEM	DESCRIPTION	UNIT PRICE (2008)	COST (Rounded)
1	24" Storm Drain	$ 49.60	$ 78,900
2	30" Storm Drain	$ 59.22	$ 302,900
3	36" Storm Drain	$ 72.43	$ 560,600
4	42" Storm Drain	$ 99.14	$ 196,300
5	48" Storm Drain	$ 114.11	$ 369,700
6	54" Storm Drain	$ 121.18	$ 216,900
7	60" Storm Drain	$ 135.04	$ 283,600
8	66" Storm Drain	$ 172.10	$ 358,700
10	48" Manhole (at 300' spacing)	$ 2,923.41	$ 5,800
11	60" Manhole (at 300' spacing)	$ 4,254.04	$ 55,300
12	72" Manhole (at 300' spacing)	$ 5,249.57	$ 220,500
13	84" Manhole (at 300' spacing)	$ 6,129.74	$ 91,900
14	108" Manhole/Junction Structure	$ 7,544.29	$ 30,200
15	30" Outfall Structure	$ 12,314.00	$ 12,300
16	36" Outfall Structure	$ 12,314.00	$ 24,600
17	42" Outfall Structure	$ 12,314.00	$ 12,300
18	66" Outfall Structure	$ 12,314.00	$ 12,300
			$ 2,832,800
	Engineering/Contingency		$ 226,600
			$ 3,059,400
	SUMMARY		
	Zone 11A		**$ 3,059,400**
	FVCP Fee Program		**$ -**
	TOTAL ESTIMATED COST - ELDER / GERBER CREEKS SHED TRUNK SYST		***$ 3,059,400***

Notes:
1. Trunk storm drain construction assumed concurrent with road improvements - excludes pavement removal and replacement.
2. Unit costs based on 2008 Zone 11A schedule.
3. Soft costs in excess of 5% of the total construction cost for Zone 11A reimbursable items are not reimbursable through Zone 11A and as such shall be borne by the developer.
4. When a 2008 Zone 11 Fee Schedule price was not available, costs identified in the approved 2004 N were extended by 11.82% consistent with the Zone 11A Fee Schedule increase over the same perio

Table D-17

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Buildout Trunk Drainage System

N.T.S.

ITEM	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE (2008)	COST (Rounded)
1	24" Storm Drain	2,070	LF	$ 49.60	$ 102,700
2	30" Storm Drain	630	LF	$ 59.22	$ 37,300
3	36" Storm Drain	520	LF	$ 72.43	$ 37,700
4	42" Storm Drain	2,150	LF	$ 99.14	$ 213,200
9	72" Storm Drain	2,260	LF	$ 199.22	$ 450,200
10	48" Manhole (at 300' spacing)	11	EA	$ 2,923.41	$ 32,200
11	60" Manhole (at 300' spacing)	7	EA	$ 4,254.04	$ 29,800
13	84" Manhole (at 300' spacing)	7	EA	$ 6,129.74	$ 42,900
14	108" Manhole/Junction Structure	4	EA	$ 7,544.29	$ 30,200
17	42" Outfall Structure	1	EA	$ 12,314.00	$ 12,300
19	72" Outfall Structure	1	EA	$ 12,314.00	$ 12,300
		SUBTOTAL			**$ 1,000,800**
	Engineering/Contingency	8%			$ 80,100
		TOTAL			**$ 1,080,900**

SUMMARY	
Zone 11A	**$ 1,080,900**
FVCP Fee Program	**$ -**
TOTAL ESTIMATED COST - ELDER / GERBER CREEKS SHED TRUNK SYSTEM	***$ 1,080,900***

Notes:
1. Trunk storm drain construction assumed concurrent with road improvements - excludes pavement removal and replacement.
2. Unit costs based on 2008 Zone 11A schedule.
3. Soft costs in excess of 5% of the total construction cost for Zone 11A reimbursable items are not reimbursable through Zone 11A and as such shall be borne by the developer.
4. When a 2008 Zone 11 Fee Schedule price was not available, costs identified in the approved 2004 NVSSP PFFP were extended by 11.82% consistent with the Zone 11A Fee Schedule increase over the same period.
5. Buildout drainage facilities are conceptual in nature - identified to serve future industrial area

Table D-18

date: June 26 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Trapezoidal Channel G3CH (Buildout)

(6' bottom width, 3:1 side slopes, 550' length)

CONSTRUCTION

Item	QTY	Unit	Total Project Cost: Unit Cost	Total Project Cost: Subtotal
	a		*b*	*c=a*b*
ZONE 11A				
1. Clear & Grub	1.0	acres	$1,000.00	$ 1,000
2. Channel Excavation	7,350	c.y.	$ 3.71	$ 27,269
3. Hydroseed (2/3 channel sides, bottom, upland)	29,700	sf	$ 0.41	$ 12,058
4. Channel Access Ramp	1	each	$ 15,000.00	$ 15,000
5. Pipe Gate	1	each	$ 2,946.99	$ 2,947
6. Fencing - Post & Cable	1,100	l.f.	$ 10.90	$ 11,990
Subtotal - Zone 11A				**$ 69,300**
Engineering/Contingency		5%		$ 3,500
Construction/Contingency		5%		$ 3,500
TOTAL ZONE 11A				**$ 76,300**
FVCP SUPPLEMENTAL FEE PROGRAM				
8. Landscaping	1,100	lf	$ 8.00	$ 8,800
Subtotal - FVCP Suppl. Fee Program				**$ 8,800**
Engineering/Contingency		35%		$ 3,100
Land Acquisition (Supplemental)	1.0	acres	$ -	$ -
TOTAL FVCP SUPPL. FEE PROGRAM				**$ 11,900**

SUMMARY

Zone 11A Reimbursable	**$ 76,300**
FVCP Suppl. Fee Program	**$ 11,900**
TOTAL PROJECT COST (Channel G3CH)	**$ 88,200**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on channel surface area (at exist. ground) plus upland for path and 2' buffers.
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

Table D-19

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Trapezoidal Channel E3CH (Buildout)

(6' bottom width, 4:1 side slopes, 7,400' length)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit	Unit Cost		Subtotal	
	a		*b*		*c=a*b*	
ZONE 11A						
1. Clear & Grub	14.8	acres		$1,000.00	$	14,800
2. Channel Excavation	126,100	c.y.	$	3.71	$	467,831
3. Hydroseed	562,400	sf	$	0.41	$	228,334
4. Channel Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	14,800	l.f.	$	10.90	$	161,320
Subtotal - Zone 11A					**$**	**875,400**
Engineering/Contingency		5%			$	43,800
Construction/Contingency		5%			$	43,800
TOTAL ZONE 11A					**$**	**963,000**
FVCP SUPPLEMENTAL FEE PROGRAM						
8. Landscaping	14,800	lf	$	8.00	$	118,400
Subtotal - FVCP Suppl. Fee Program					**$**	**118,400**
Engineering/Contingency		35%			$	41,400
Land Acquisition (Supplemental)	14.8	acres	$	-	$	-
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**159,800**
SUMMARY						
Zone 11A Reimbursable					**$**	**963,000**
FVCP Suppl. Fee Program					**$**	**159,800**
TOTAL PROJECT COST (Channel E3CH - Buildout)					**$**	**1,122,800**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on channel surface area (at exist. ground) plus upland (2' buffers).
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

Table D-20

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Detention Basin E28 (Phase 1)

(28.39 ac ft detention & water quality treatment)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	4.6	acres		$1,000.00	$	4,600
2. Basin - Excavation	51,300	c.y.	$	3.71	$	190,323
3. Hydroseed	206,700	sf	$	0.41	$	83,920
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	1,790	l.f.	$	10.90	$	19,511
Subtotal - Zone 11A					**$**	**311,700**
Engineering/Contingency		5%			$	15,600
Construction/Contingency		5%			$	15,600
Land Acquisition (Zone 11A)	4.6	acres	$	108,000.00	$	496,800
TOTAL ZONE 11A					**$**	**839,700**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	1,790	lf	$	10.79	$	19,314
Subtotal - FVCP Suppl. Fee Program					**$**	**19,300**
Engineering/Contingency		35%			$	6,800
Land Acquisition (Supplemental)	4.6	acres	$	-	$	-
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**26,100**
SUMMARY						
Zone 11A Reimbursable					**$**	**839,700**
FVCP Suppl. Fee Program					**$**	**26,100**
TOTAL PROJECT COST (Drainage Basin E28 - Phase 1))					**$**	**865,800**

NOTES:

Table D-21

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Detention Basin E28 (Buildout)

(66.25 ac ft detention & water quality treatment)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	10.6	acres		$1,000.00	$	10,600
2. Basin - Excavation	119,800	c.y.	$	3.71	$	444,458
3. Hydroseed	482,900	sf	$	0.41	$	196,057
4. Basin Access Ramp	0	each	$	15,000.00	$	-
5. Pipe Gate	0	each	$	2,946.99	$	-
6. Fencing - Post & Cable	2,040	l.f.	$	10.90	$	22,236
Subtotal - Zone 11A					**$**	**662,800**
Engineering/Contingency		5%			$	33,100
Construction/Contingency		5%			$	33,100
Land Acquisition (Zone 11A)	10.6	acres	$	108,000.00	$	1,144,800
TOTAL ZONE 11A					**$**	**1,873,800**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	2,040	lf	$	10.79	$	22,012
Subtotal - FVCP Suppl. Fee Program					**$**	**22,000**
Engineering/Contingency		35%			$	7,700
Land Acquisition (Supplemental)	10.6	acres	$	-	$	-
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**29,700**
SUMMARY						
Zone 11A Reimbursable					**$**	**1,873,800**
FVCP Suppl. Fee Program					**$**	**29,700**
TOTAL PROJECT COST (Drainage Basin E28)					**$**	**1,903,500**

NOTES:

Table D-22

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Detention Basins E31 (Buildout)

(95.53 ac ft detention & water quality treatment)

CONSTRUCTION

Item	QTY	Unit	Total Project Cost: Unit Cost	Total Project Cost: Subtotal
	a		*b*	*c=a*b*
ZONE 11A				
1. Clear & Grub	12.8	acres	$1,000.00	$ 12,800
2. Basin - Excavation	172,700	c.y.	$ 3.71	$ 640,717
3. Hydroseed	576,600	sf	$ 0.41	$ 234,100
4. Basin Access Ramp	1	each	$ 15,000.00	$ 15,000
5. Pipe Gate	1	each	$ 2,946.99	$ 2,947
6. Fencing - Post & Cable	3,100	l.f.	$ 10.90	$ 33,790
Subtotal - Zone 11A				**$ 926,600**
Engineering/Contingency		5%		$ 46,300
Construction/Contingency		5%		$ 46,300
Land Acquisition (Zone 11A) (exist. powerline easement)	12.8	acres	$ 50,000.00	$ 640,000
TOTAL ZONE 11A				**$ 1,659,200**
FVCP SUPPLEMENTAL FEE PROGRAM				
8. Landscaping	3,100	lf	$ 10.79	$ 33,449
Subtotal - FVCP Suppl. Fee Program				**$ 33,400**
Engineering/Contingency		35%		$ 11,700
Land Acquisition (Supplemental)	12.8	acres	$ -	$ -
TOTAL FVCP SUPPL. FEE PROGRAM				**$ 45,100**
SUMMARY				
Zone 11A Reimbursable				**$ 1,659,200**
FVCP Suppl. Fee Program				**$ 45,100**
TOTAL PROJECT COST (Drainage Basin E31)				**$ 1,704,300**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.
4. Zone 11A Land Acquisition unit cost to be determined by appraisal (assumed to be $10,000) based on date of reservation agreement.

Table D-23

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Detention Basin G43 (Buildout)

(24.72 ac ft detention & water quality treatment)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	6.9	acres		$1,000.00	$	6,900
2. Basin - Excavation	49,400	c.y.	$	3.71	$	183,274
3. Hydroseed	260,300	sf	$	0.41	$	105,682
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	2,200	l.f.	$	10.90	$	23,980
Subtotal - Zone 11A					**$**	**330,900**
Engineering/Contingency		5%			$	16,500
Construction/Contingency		5%			$	16,500
Land Acquisition (Zone 11A)	6.9	acres	$	108,000.00	$	745,200
TOTAL ZONE 11A					**$**	**1,109,100**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	2,200	lf	$	10.79	$	23,738
Subtotal - FVCP Suppl. Fee Program					**$**	**23,700**
Engineering/Contingency		35%			$	8,300
Land Acquisition (Supplemental)	6.9	acres	$	-	$	-
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**32,000**
SUMMARY						
Zone 11A Reimbursable					**$**	**1,109,100**
FVCP Suppl. Fee Program					**$**	**32,000**
TOTAL PROJECT COST (Drainage Basin G43)					**$**	**1,141,100**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.
4. Zone 11A Land Acquisition unit cost to be determined by appraisal (assumed to be $108,000) based on date of reservation agreement.

Table D-24

date: June 26, 2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Water Quality Basin WQE21

(16.8 ac ft water quality treatment)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	5.1	acres		$1,000.00	$	5,100
2. Basin - Excavation	27,100	c.y.	$	3.71	$	100,541
3. Hydroseed	183,000	sf	$	0.41	$	74,298
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	2,000	l.f.	$	10.90	$	21,800
Subtotal - Zone 11A					**$**	**214,600**
Engineering/Contingency		5%			$	10,700
Construction/Contingency		5%			$	10,700
TOTAL ZONE 11A					**$**	**236,000**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	2,000	lf	$	10.79	$	21,580
Subtotal - FVCP Suppl. Fee Program					**$**	**21,600**
Engineering/Contingency		35%			$	7,600
Land Acquisition (Supplemental)	5.1	acres	$	108,000.00	$	550,800
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**580,000**
SUMMARY						
Zone 11A Reimbursable					**$**	**236,000**
FVCP Suppl. Fee Program					**$**	**580,000**
TOTAL PROJECT COST (Water Quality Basin WQE21)					**$**	**816,000**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

Table D-25

date: June 26,2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Water Quality Basin WQMH10

(7.5 ac ft water quality treatment)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	2.1	acres		$1,000.00	$	2,100
2. Basin - Excavation	12,100	c.y.	$	3.71	$	44,891
3. Hydroseed	65,340	sf	$	0.41	$	26,528
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	1,000	l.f.	$	10.90	$	10,900
Subtotal - Zone 11A					**$**	**100,300**
Engineering/Contingency		5%			$	5,000
Construction/Contingency		5%			$	5,000
TOTAL ZONE 11A					**$**	**110,300**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	1,000	lf	$	10.79	$	10,790
Subtotal - FVCP Suppl. Fee Program					**$**	**10,800**
Engineering/Contingency		35%			$	3,800
Land Acquisition (Supplemental)	2.1	acres	$	108,000.00	$	226,800
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**241,400**
SUMMARY						
Zone 11A Reimbursable					**$**	**110,300**
FVCP Suppl. Fee Program					**$**	**241,400**
TOTAL PROJECT COST (Water Quality Basin WQMH10)					**$**	**351,700**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

Table D-26

date: June 26,2007
by: DD
revised by: hf
revised: July 9, 2008

FLORIN VINEYARD COMMUNITY PLAN

ELDER / GERBER CREEKS SHED

Water Quality Basin WQGC

(4.6 ac ft water quality treatment)

CONSTRUCTION						
			Total Project Cost			
Item	QTY	Unit		Unit Cost		Subtotal
	a			*b*		*c=a*b*
ZONE 11A						
1. Clear & Grub	1.2	acres		$1,000.00	$	1,200
2. Basin - Excavation	7,500	c.y.	$	3.71	$	27,825
3. Hydroseed	30,500	sf	$	0.41	$	12,383
4. Basin Access Ramp	1	each	$	15,000.00	$	15,000
5. Pipe Gate	1	each	$	2,946.99	$	2,947
6. Fencing - Post & Cable	500	l.f.	$	10.90	$	5,450
Subtotal - Zone 11A					**$**	**63,600**
Engineering/Contingency		5%			$	3,200
Construction/Contingency		5%			$	3,200
TOTAL ZONE 11A					**$**	**70,000**
FVCP SUPPLEMENTAL FEE PROGRAM						
7. Landscaping	500	lf	$	10.79	$	5,395
Subtotal - FVCP Suppl. Fee Program					**$**	**5,400**
Engineering/Contingency		35%			$	1,900
Land Acquisition (Supplemental)	1.2	acres	$	108,000.00	$	129,600
TOTAL FVCP SUPPL. FEE PROGRAM					**$**	**136,900**
SUMMARY						
Zone 11A Reimbursable					**$**	**70,000**
FVCP Suppl. Fee Program					**$**	**136,900**
TOTAL PROJECT COST (Water Quality Basin WQGC)					**$**	**206,900**

NOTES:

1. Unit Costs based on 2008 Zone 11A schedule.
2. Land Acquisition Acreage based on basin surface area (at exist. ground) plus 20%
3. Soft costs in excess of 5% of the total construction cost for Zone 11 reimbursable items are not reimbursable through Zone 11 and as such shall be borne by the developer.

APPENDIX E

PARK COST ESTIMATES

This Capital Improvement Program provides park improvements as identified in the May 2007 Preliminary Draft of the Florin-Vineyard Community Plan Area Park and Recreation Capital Improvement Plan (CIP) Summary prepared by the Southgate Recreation and Park District (SRPD). The estimated construction costs were updated to reflect 2008 market costs.

Park and recreation facilities planned for Florin Vineyard Community Plan include approximately 17.6 acres of mini-parks, 95.2 acres of small and large neighborhood parks, 24.6 acres of community parks, and an additional 13.0 acres of parkland will be provided as parkways along Gardner Avenue, Hedge Avenue, and Florencia Lane, for a total of approximately 150 acres of parks.

The park facilities and costs in the CIP are based in large part on the park sites designated in tentative subdivision map applications as of May 2007 and Plan Area Land Use densities. The proposed park sites and/or facilities will be revised prior to the Final EIR due to revisions to and withdrawals of some of the concurrent tentative map projects, as such CIP facilities and costs used in this report may change significantly.

LIST OF EXHIBITS

GAP Park and Recreation CIP Summary Fax E-1
Park and Recreation Capital Improvement Plan Summary E-2
Park Facilities E-3
Parks, Trails and Parkways E-4

SOUTHGATE
RECREATION & PARK DISTRICT

6000 Orange Avenue
Sacramento, CA 95823
FAX (916) 428-7334
PH (916) 428-1171, ext.28

Fax

To:	Rich Blackmar @ County of Sac	**From:**	Maureen Casey
Fax:	874-8421	**Pages:**	2 including Cover Page
Phone:	874-7127	**Date:**	9/4/2008
Re:	GAP Park & Recreation CIP Summary	**CC:**	

☐ **Urgent** ☐ **For Review** ☐ **Please Comment** ☐ **Please Reply** ☐ **Please Recycle**

Hi Rich,

Enclosed is a copy of the *May 2007 Preliminary Draft of the Florin-Vineyard Community Plan Area Park and Recreation Capital Improvement Plan Summary* with updated construction costs to reflect 2008 market costs. I recently updated the park CIP for the Vineyard PFFP and used the same unit cost figures. We have not made any changes to the Florin-Vineyard Plan proposed park sites or facilities based on the revisions to the subdivision map applications. We will have to do that before the Final EIR.

I sent a copy of this revised summary to Rosanna Helms at EPS as well. Let me know if you have any questions.

Thanks.

Maureen

SEPT 2008 COST UPDATE

Southgate Recreation and Park District

PRELIMINARY DRAFT MAY 2007

Florin-Vineyard Community Plan

Park & Recreation Capital Improvement Plan Summary

Improvement Description	Units		Cost per Unit	Total Cost
Phase I - Basic Park Development Costs				
1 to 3 acres Mini-Parks	17.90	acres	$ 203,666	$ 3,645,821
3+ to 6 acres Small Neighborhood Parks	54.13	acres	$ 131,046	$ 7,093,520
6+ to 11 acres Large Neighborhood Parks	41.05	acres	$ 150,886	$ 6,193,870
11+ acres Community Parks	24.60	acres	$ 145,926	$ 3,589,760
Total Phase I Basic Park Development	137.68	acres		$ 20,522,791
Community Center Facilities (#1)	25,000	square feet	$ 370	$ 9,250,000
Site Improvements (4 acres)		lump sum		$ 1,155,000
Architectural & Engineering Fees @ 12%		percentage		$ 1,248,600
Total Community Center Facilities				$ 11,653,600
Parkway and Other Trail Facilities				
Creek Corridor and Open Space/Trails				
Gerber Creek (Sof Gerber Rd.E of CCTRR)	2,131	linear feet	$ 150.00	$ 319,650
Elder Creek W of Elk Grove-Florin Rd.	3,249	linear feet	$ 150.00	$ 487,350
Elder Creek S of Florin Rd. E of EGF Rd.	6,432	linear feet	$ 150.00	$ 964,800
Elder Creek N of Florin Rd.	11,081	linear feet	$ 150.00	$ 1,662,150
Powerline Open Space Corridor	5,328	linear feet	$ 100.00	$ 532,800
Total Trails	28,221			$ 3,966,750
Pedestrian Signal Crossings				
Elder Creek at Florin Rd.	1	lump sum	$ 84,893	$ 84,893
Elder Creek at Elk Grove-Florin Rd.	1	lump sum	$ 84,893	$ 84,893
Gerber Creek at Gerber Rd. (West)	1	lump sum	$ 84,893	$ 84,893
Powerline Trail at Gerber Rd.	1	lump sum	$ 84,893	$ 84,893
Total Pedestrian Crossings	4			$ 339,570
Parkway Facilities				
Gardner Avenue Parkway; 35' wide	5.8	acres	$ 202,826	$ 1,159,853
Hedge Avenue North Parkway; 20' wide	2.4	acres	$ 202,826	$ 490,583
Hedge Avenue Parkway South; 35' wide	2.1	acres	$ 202,826	$ 434,964
Florencia Lane Parkway; 35' wide	3.3	acres	$ 202,826	$ 665,728
Total Parkways	13.6			$ 2,761,228
Total Parkway and Other Trail Facilities				$ 7,067,548
Phase II - Park Improvement Costs				
Park Playground Facilities				
Playground Equipment - Small	24	each	$ 86,250	$ 2,070,000
Playground Equipment - Large	23	each	$ 147,500	$ 3,392,500
Additional Park Facilities				
Soccer Fields	22	each	$ 5,500	$ 121,000
Youth Baseball Fields/Softball Fields Backstops Only	4	each	$ 20,000	$ 80,000
Youth Baseball Fields/Softball Fields	15	each	$ 85,000	$ 1,275,000
Tennis Court W/Fence (set of 2)	6	each	$ 150,000	$ 900,000
Sports Lighting Fixtures (multiple fields for 6 parks)	246	each	$ 15,000	$ 3,690,000
Basketball Courts (1/2 Court)	26	each	$ 38,000	$ 988,000
Shade Structures - Large	5	each	$ 70,000	$ 350,000
Shade Structures - Small	51	each	$ 30,000	$ 1,530,000
Restroom Buildings (3 sm & 3 Lg)	6	each	$ 150,000	$ 900,000
Parking Lots (6 Lots: 3 @ 70 & 3 @ 160 stalls)	660	stall	$ 2,150	$ 1,419,000
Total Phase II Park Improvements				$ 16,715,500
SUB-TOTAL Capital Improvement Costs				$ 55,583,433
Contingency Allowance @ 10%		percentage		$ 5,585,944
District Park, Recreation & Open Space Master Plan		lump sum		$ 57,750
TOTAL Capital Improvement PLan Costs				$ 61,613,133
Total Estimated Dwelling Units (#2)	12,000			
Fee per Dwelling Unit (Without Detention Basins)				$ 5,134

Notes:

#1 Based on a population estimate of 30,000-35,000 for this plan area we are proposing two community center facilities for a total of 25,000 sq.ft.

#2 Based on the high-end DU build-out estimate from County Planning of 12,066 (CPAC proposal was 8,950).

Southgate Recreation & Park District
FLORIN-VINEYARD COMMUNITY PLAN
Park Facilities

	Playgrounds & Phase II Park Facilities Park (Subdivision) Name	Type	Approximate Park Sizes Acres	Soccer Fields	Softball Fields (Adult)	Youth Baseball Fields (LL)	Tennis Courts (set of 2)	Basketball Courts (1/2 Ct.)	SM Shade Shelter & Tables	LG Shade Shelter & Tables	LARGE Playground	SMALL Playground	Restrooms	Parking Lot	Sports Field Lighting
1	**"Stonehedge" Park**	N	6.15	1		1		2	2		1	1			
2	**"Florin-Vineyard" Park**	N	9.50	2		2		2	3	1	1	1	1	1	X
3	**"Gardner Parke" Park**	M	2.20	1					2			1			
4	**"Gerber Creek" Park**	N	5.13	2		1			2		1	1			
5	**"Villages at Elder Creek" Park #1**	N	7.40	2		1		2	2	1	1	1	1	1	X
	"Villages at Elder Creek" Park #2	M	2.00						2		1	1			
6	**"Vintage Creek #1" Park**	N	5.50	1		1		1	2		1	1			
7	*Park Site - SW of Caselman Rd & EGF Rd.*	N	10.00	2	2		3	2	2	1	2	1	1	1	X
8	*Park Site - S of Gerber/School (*"Elk Trail"*)*	N	8.00	1		2		2	2		1	1	1	1	X
9	**"Legends" *Park Site***	M	2.00						2		1				
10	**"Dakuzaku Village" *Park (Phase 1)***	N	4.00	1		1		1	2		1				
	"Dakuzaku Village" Park (Phase 2)		2.00						1			1			
11	*Park Site - S of Gerber E of Waterman*	N	6.00	2		1		2	2		1				
12	**"Lawson"/*Gerber Crk -W of Brad (Phase 1)***		0.50						2						
	"Lawson"/Gerber Crk -W of Brad (Phase 2)	N	5.50						2		1				
13	**"Vintage Ranch" Park**	M	1.80						1			1			
14	**"Roemer Ranch" Park**	M	2.00						2		1	1			
15	**"Roemer Ranch" Park**	M	2.10						1			1			
16	**"Roemer Ranch" Park**	M	2.50					1	2		1	1			
17	**"Roemer Ranch" Park**	M	*1.80*						1			1			
18	**"Champion Oaks" *Mini-Park Site***	N	*3.50*						1			1			
19	*Park Site -S of Florin E of So. Watt*	N	*6.00*	1		1		1	2		1	1			
20	*"Florin Terrace" Park Exp. on German Rd.**	M	*1.50*						1			1			
21	*Park Site -S of Florin W of So. Watt*	N	*4.00*	1				2	2		1	1			
22	*Park Site -N of Florin W of So. Watt*	N	*6.00*	1		1		1	2		1	1			
23	*Park Sites -N of Florin E of So. Watt*	N	*6.00*	1		1		1	2		1	1			
24	*Sunrise-Florin Community Park Extension*	C	12.00	3	2			2	2	1	2	1	1	1	X
25	**"Roemer Ranch" Community Park**	C	*12.60*	2		2	3	4	2	1	2	2	1	1	X
	TOTAL		137.7	22	4	15	6	26	51	5	23	24	6	6	

C=Community Park; M=Mini Park; N=Neighborhood Park

Notes:

* This park site will be added to the adjoining 0.75 acre parcel for Florin Terrace Unit #8 to create a 2.25 acre park.

(1) Parks planned as part of Tentative Subdivision Maps are identified in table with Subdivision Name in quotes and bolded.

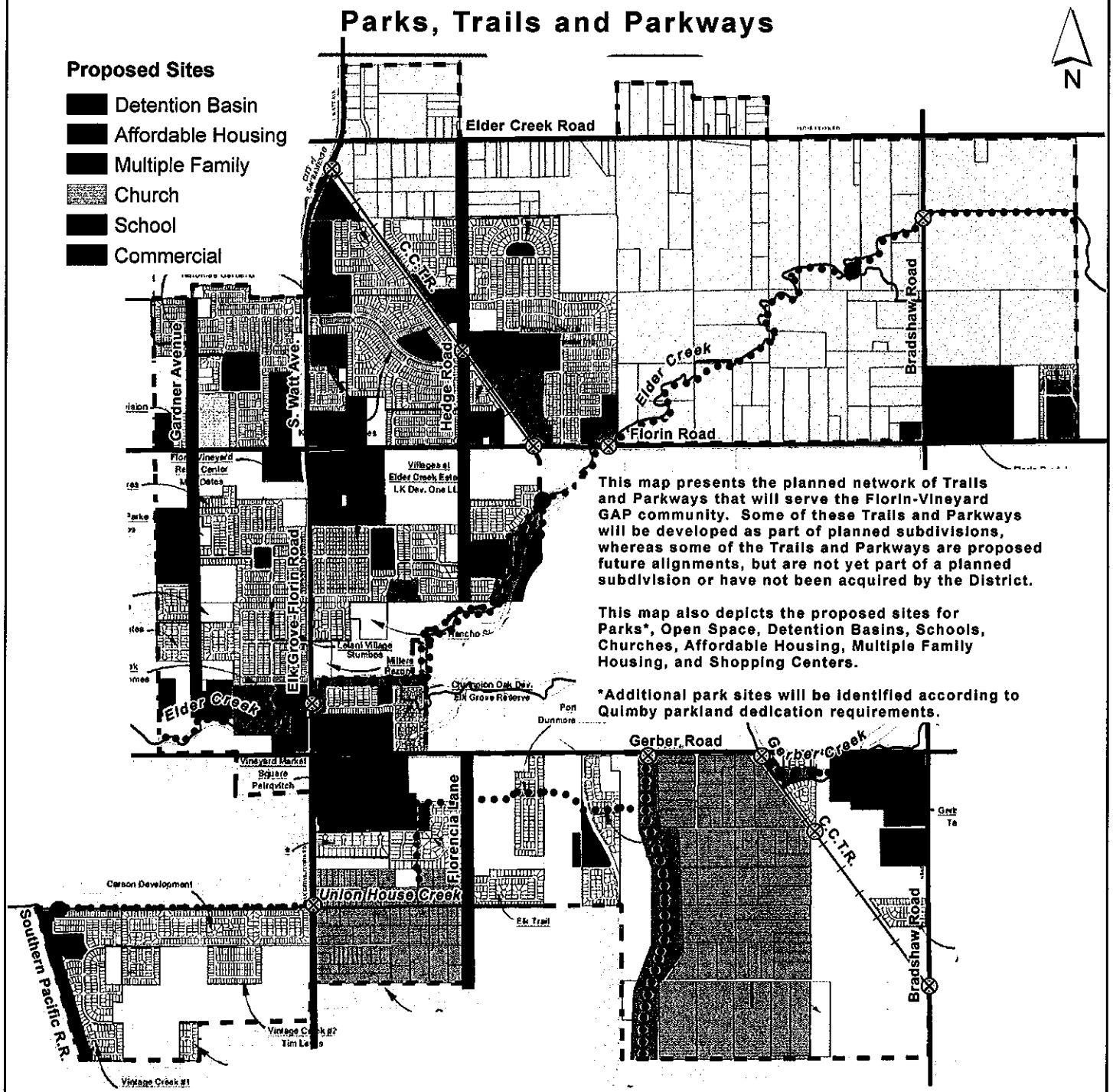
(2) Total parkland acreage based on proposed Tentative Subdivision Maps and Plan Area Land Use densities. County Planning Dept. Dwelling Unit Estimate was 12,066 and CPAC was 8,950 for Plan Area.

(3) Additional parkland will be provided as Parkways along Gardner Ave., Hedge Ave. and Florencia Lane. These Parkway corridors are estimated at approximately 13 acres based on estimated street length and a total landscaped corridor width of 20-35 feet.

P:_Planning\Financing Plans\Florin-Vineyard GAP Plan\GAP Park Facilities TABLE.XLS

Florin-Vineyard GAP Planning Area

Parks, Trails and Parkways



This map presents the planned network of Trails and Parkways that will serve the Florin-Vineyard GAP community. Some of these Trails and Parkways will be developed as part of planned subdivisions, whereas some of the Trails and Parkways are proposed future alignments, but are not yet part of a planned subdivision or have not been acquired by the District.

This map also depicts the proposed sites for Parks*, Open Space, Detention Basins, Schools, Churches, Affordable Housing, Multiple Family Housing, and Shopping Centers.

*Additional park sites will be identified according to Quimby parkland dedication requirements.

Trails and Parkways and Parks and Open Space as of May 2007

- Proposed Parks
- Open Space
- Parkways
- Planned Trail
- Proposed Future Trail

Other Features

- Major Roads
- Creeks
- GAP Boundary
- Bike/Ped Bridge Crossing (3)
- Bike/Ped Street Crossing (11)

SOUTHGATE RECREATION & PARK DISTRICT

Miles: 0, 0.25, 0.5, 0.75, 1

Map Created 1/2007 Randerson GAP_Composite_GeneralLayout.mxd Last Revised May 1, 2007

APPENDIX F

SCHOOL COST ESTIMATES

Table F-1 School Construction Cost by Phase F-1

DRAFT

Table F-1
Florin Vineyard Public Facilities Financing Plan
School Construction Costs by Phase

Item	Assumptions	Phase 1	Buildout
DEVELOPMENT			
Residential Units			
Single-Family		5,249	8,544
Multifamily		1,233	2,114
Total Residential Units		**6,482**	**10,658**
STUDENT GENERATION			
K-6 Students	*Yield Rate*		
Students from Single-Family	0.3941	2,069	3,367
Students from Multifamily	0.2077	256	439
K-6 Total Students		**2,325**	**3,806**
7-8 Students	*Yield Rate*		
Students from Single-Family	0.1086	570	928
Students from Multifamily	0.0525	65	111
7-8 Total Students		**635**	**1,039**
9-12 Students	*Yield Rate*		
Students from Single-Family	0.2042	1,072	1,745
Students from Multifamily	0.1184	146	250
9-12 Total Students		**1,218**	**1,995**
STUDENT HOUSING COSTS	*Cost*		
Estimated Student Housing Costs	*per Student [1]*		
Elementary	$24,310	$56,520,750	$92,523,860
Middle	$29,074	$18,461,990	$30,207,886
High School/Continuation	$34,006	$41,419,308	$67,841,970
Total Estimated Student Housing Cost		**$116,402,048**	**$190,573,716**

"school_cost"

Source: Elk Grove USD Development Fee Justification Study / School Facilities Needs Analysis , July 2008.

[1] Contains three cost components: site acquisition, site development, and building construction.

	K-6	7-8	9-12
Site Acquisition	$2,544	$4,836	$4,836
Site Development	$3,770	$5,160	$4,970
Building Construction	$17,996	$19,078	$24,200
Total	**$24,310**	**$29,074**	**$34,006**

APPENDIX G

LIBRARY COST ESTIMATES

Table G-1 Allocation of Library Costs to Florin Vineyard G-1
Table G-2 Estimate of Total Costs for Vineyard 1 Library G-2

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Table G-1
Florin Vineyard Public Facilities Financing Plan
Allocation of Library Costs to Florin Vineyard

	Total	Phase 1	Buildout
ESTIMATED FVCP SHARE OF COSTS [1]			
Estimated Community Library Size (sq. ft.)	**30,000 sq. ft.**		
Total Population Served	**60,000 persons**		
LIBRARY COSTS			
Construction Hard Costs [2]	$14,233,000		
Furniture, Technology, and Public Art Costs [2]	$2,016,400		
Soft Costs	$5,829,000		
Library Materials Costs [2]	$3,210,000		
Site Acquisition Costs (3.5 acres @ $275,000 per acre) [3]	$962,500		
Total Estimated Library Costs	**$26,250,900**		
ALLOCATION			
Step 1: Estimate FVCP Population			
Estimated DUEs	9,329		
x 2.88 DUE Factor [4]	2.88		
Total FVCP Population	26,866		
Step 2: Determine the Share of Sq. Ft. of Community Library to Be Funded			
(FVCP Population * Com. Library Sq. ft.)/Total Population Served [2]	13,433		
Step 3: Determine Allocation %			
Step 2 / Community Library Sq. Ft.	44.78%		
Step 4: Florin Vineyard Fee Program Share			
Step 3 * Total Estimated Library Costs	$11,754,432		
Step 5: Amount to Be Financed at 10-Year Midpoint [5]	$5,877,216		
Step 3 * 0.5			
Step 6: Financing for 10 Years at 5.25% [5]	$1,826,728		
Step 4: Determine FVCP Total Cost			
Step 4 + Step 6	**$13,581,000**	**$8,221,000**	**$13,581,000**

"fv_share_library"

Source: Sacramento Public Library Authority Facilities Master Plan 2007-2025, dated November 2006.

[1] Because the population of the FVSP area is too small for its own community library, it will fund the square footage of library space that would be associated with its share of the community library.
[2] Escalated to 2008 $ using the ENR Construction Cost Index and Consumer Price Index.
[3] Site acquisition costs estimated by EPS based on an average cost of $275,000 per acre and a site area of 3.5 acres.
[4] DUE factor (number of persons per household) provided by Sacramento County Public Works Infrastructure Finance Section.
[5] The library plans to finance half of the NVSSP library costs at mid-point in the anticipated 20-year lifespan of the fee program to begin construction on the Vineyard Library at the mid-point of the life of the fee program. The cost of financing assumes a 5.25% APR for 10 years.

Prepared by EPS 7/15/2008

P:\14000\14559 Florin Vineyard Specific Plan Financing Plan\Models\14559 PFFP 4.xls

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Table G-2
Florin Vineyard Public Facilities Financing Plan
Estimate of Total Costs for Vineyard 1 Library [1]

Cost Item	Quantity	Unit	Unit Cost [2]	Total Project Cost
Construction Hard Costs				
Site Clearing and Grading	126,000	GSF	$3.07	$387,000
New Construction	30,000	GSF	$378.86	$11,366,000
Parking Surface	48,000	GSF	$10.24	$491,000
Hardscape	7,200	GSF	$15.36	$111,000
Landscape	40,800	GSF	$8.19	$334,000
Site Utilities		Lump Sum		$250,000
Construction Contingency	10%			$1,294,000
Subtotal Construction Hard Costs				**$14,233,000**
Furniture, Technology, and Public Art Costs				
FF&E	30,000	GSF	$20.58	$617,000
Technology	30,000	GSF	$31.90	$957,000
Furniture & Technology Contingency	10%			$157,400
Public Art	2%	Of Const. Cost		$285,000
Subtotal Furniture, Technoloyg, and Public Art Costs				**$2,016,400**
Total Hard Costs				**$16,249,400**
Soft Costs				
Design, Engineering & Construction Management	35%	Of Hard Costs		$5,687,000
Moving Costs	1%	Of Const. Cost		$142,000
Subtotal Soft Costs				**$5,829,000**
Library Material Costs	104,000	Items	$30.87	**$3,210,000**
Total Estimated Library Cost- Vineyard Library 1 [1]				**$25,288,400**

"library_costs"

Source: Sacramento Public Library Authority Facilities Master Plan 2007-2025, dated November 2006.

[1] The Vineyard 1 Library will serve several project areas. Therefore, costs shown here will be shared between Florin Vineyard and other nearby plan areas which will also benefit from its services.
[2] Unit construction costs escalated using the ENR Construction Cost Index for San Francisco and the 20-City Average. FF&E, Technology and Library Material costs escalated to 2008 $ using the San Francisco CPI.

APPENDIX H

TRANSIT COST ESTIMATES

Table H-1 Estimated Cost of Transit Infrastructure and Equipment H-1
Table H-2 Estimate of Transit Trip Generation H-2

Table H-1
Sacramento Regional Transit District Analysis
of Florin-Vineyard Public Facilities Financing Plan
Estimated Cost of Transit Infrastructure and Equipment

Bus Vehicles		
Cost per Unit (2008$) [1]	$	407,500
Quantity		15
Estimated Cost	**$**	**6,112,500**
RT staff recommends that the quantity of bus vehicles be flexible to purchase fewer full size buses if smaller, neighborhood shuttle vehicles would better meet future transit demand.		
Park & Ride Facility		
Land Acquisition Cost (five acres)	$	1,166,000
Construction Cost (2008$) [2]		
Assumptions		
500 parking spaces		
100 spaces per acre @ five acres	$	2,713,500
Total Cost	**$**	**3,879,500**
Bus Maintenance Facility		
Estimated Cost of New Bus Maintenance Facility [2]	$	24,257,600
Proposed Capacity of New Facility (No. of Buses)		250
Estimated Cost of New Facility per Bus	$	97,030
Quantity of Buses to Purchase for Specific Plan Area		15
Proposed Specific Area Contribution Toward New Bus Maintenance Facility	**$**	**1,455,460**
Bus Shelters		
Number of Shelters Within Specific Plan Area		40
Cost to Construct Pad/Install Shelter [2]	$	11,500
Total Cost	**$**	**460,000**
GRAND TOTAL - TRANSIT FACILITIES & EQUIPMENT	**$**	**11,907,460**

Source: Regional Transit; and EPS.

[1] Bus vehicle costs escalated to 2008 dollars by EPS using the Producer Price Index for Transportation Equipment.
[2] Construction costs escalated to 2008 dollars by EPS using the average of the San Francisco and 20-City Construction Cost Indices published in the Engineering News Record.

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Table H-2
Sacramento Regional Transit District
Analysis of Florin-Vineyard Public Facilities Financing Plan
Estimate of Transit Trip Generation

Land Uses	Number	Type
Single-Family Dwellings	8,544	dwelling unit
Multi-Family Dwellings	2,114	dwelling unit
Commercial	141.80	acre
Business Professional	5.00	acre

ITE Trip Generation Rates	Weekday	AM Peak	PM Peak
Single-Family Detached Housing (210)	9.57	0.77	1.02
Apartment (220)	6.72	0.55	0.67
Office Park (750)	195.11	25.65	28.28

Estimated Trips	Weekday	AM Peak	PM Peak
Single-Family Detached Housing (210)	81,766	6,579	8,715
Apartment (220)	14,206	1,163	1,416
Office Park (750)	28,642	3,765	4,152

Estimated Transit Trips*	Weekday	AM Peak	PM Peak
Single-Family Detached Housing (210)	4,906	395	523
Apartment (220)	852	70	85
Office Park (750)	1,719	226	249

Estimated Infrastructure Need	Weekday	AM Peak	PM Peak
Estimated Passengers Per Hour **	623	690	857
Estimated Bus Capacity	60	60	60
Number of Buses Needed Per Hour	10	12	14
Additional Fleet Spare Vehicles	1	1	1

Total Buses Needed to Service Florin Vineyard Community Plan Area	**15**

* Assumes 6 percent mode split
** Assume 12-hour per day operation

APPENDIX I

DUE FACTORS

Table I-1 Summary of DUEs at Buildout I-1
Table I-2 Roadway Facility DUEs I-2
Table I-3 Drainage Facility DUEs I-3
Table I-4 Park Improvement Facility DUEs I-4
Table I-5 Library Facility DUEs I-5
Table I-6 Transit Facility DUEs I-6

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Table I-1
Florin Vineyard Public Facilities Financing Plan
Summary of DUEs at Buildout

Land Use	Acres	Roadway DUEs	Drainage DUEs	Park DUEs	Library DUEs	Transit DUEs
RD 2-3						
RD-2	19.0	38	38	38	38	38
RD-3	107.5	301	313	312	312	312
Total RD 2-3	**126.5**	**339**	**351**	**350**	**350**	**350**
RD 3-5						
RD 3	48.8	137	142	142	142	142
RD 4	97.6	342	363	361	361	351
RD 5	829.6	3,402	3,733	3,733	3,733	3,402
Total RD 3-5	**976.1**	**3,880**	**4,238**	**4,236**	**4,236**	**3,894**
RD 5-7						
RD 5	25.8	106	116	116	116	106
RD 6	438.0	2,146	2,365	2,365	2,365	2,146
RD 7	51.5	294	325	325	325	283
Total RD 5-7	**515.3**	**2,545**	**2,806**	**2,806**	**2,806**	**2,535**
RD 7-12						
RD 7	15.5	88	98	98	98	85
RD 9	15.5	101	116	126	126	171
RD 10	15.5	112	116	115	115	189
RD 12	15.5	134	116	134	134	227
Total RD 7-12	**62.1**	**435**	**446**	**472**	**472**	**672**
RD 10	**12.3**	**89**	**92**	**91**	**91**	**150**
RD 20	**117.5**	**1,198**	**877**	**1,374**	**1,374**	**4,475**
General Commercial (GC)	**9.0**	**147**	**89**	**15**	**0**	**475**
Shopping Center (SC)	**102.2**	**1,369**	**1,014**	**215**	**0**	**6,783**
Limited Commercial (LC)	**16.5**	**268**	**164**	**41**	**0**	**870**
Business Professional (BP)	**4.5**	**61**	**45**	**14**	**0**	**166**
Industrial (M-1)	**0.0**	**0**	**0**	**0**	**0**	**0**
TOTAL DUEs		**10,330**	**10,122**	**9,614**	**9,329**	**20,370**
Construction Cost		**$184,363,000**	**$21,339,100**	**$56,029,783**	**$13,581,000**	**$8,375,740**
Total DUEs		**10,330**	**10,122**	**9,614**	**9,329**	**20,370**
Fee per DUE [1]		**$17,847**	**$2,108**	**$5,828**	**$1,456**	**$411**

"due_summary"

[1] Cost per DUE is shown for estimating purposes only. The actual fees per DUE for the various facilities will vary when the PFFP is updated.

Table I-2

ROADWAY FACILITY DUES

I. RESIDENTIAL DWELLING UNIT EQUIVALENT (DUE) FACTORS

ZONING	A MAXIMUM ZONING DENSITY PER ACRE	B ASSUMED DENSITY	C ASSUMED YIELD UNITS PER ACRE **(A x B)**	D PEAK HOUR TRIPS PER UNIT	E PEAK HOUR TRIPS PER ACRE (DUE FACTOR) **(C x D)**
AG-80	0.01	100%	0.01	1.0	0.01
AG-20	0.05	100%	0.05	1.0	0.05
AR-10	0.1	100%	0.10	1.0	0.1
AR-5	0.2	100%	0.20	1.0	0.2
AR-2	0.5	100%	0.50	1.0	0.5
AR-1	1	100%	1.00	1.0	1.0
RD-1	1	100%	1.00	1.0	1.0
RD-2	2	100%	2.00	1.0	2.0
RD-3	3	97%	2.91	0.97	2.8
RD-4	4	93%	3.72	0.93	3.5
RD-5	5	90%	4.50	0.9	4.1
RD-6	6	90%	5.40	0.9	4.9
RD-7	7	90%	6.30	0.9	5.7
RD-9	9	90%	8.10	0.8	6.5
RD-10	10	90%	9.00	0.8	7.2
RD-12	12	90%	10.80	0.8	8.6
RD-15	15	90%	13.50	0.7	9.5
RD-20	20	85%	17.00	0.6	10.2
RD-25	25	80%	20.00	0.6	12.0
RD-30	30	80%	24.00	0.6	14.4

II. NON-RESIDENTIAL DWELLING UNIT EQUIVALENT (DUE) FACTORS

ZONING	ASSUMED FLOOR AREA RATIO	FLOORSPACE PER ACRE	PEAK HOUR TRIPS PER ACRE (DUE FACTOR)
M-1/M-2	35%	15,246	7
MP	40%	17,424	18
BP *	35%	15,246	13.5
SC *	28%	12,197	13.4
GC *	25%	10,890	16.3
LC *	25%	10,890	16.3
TC *	25%	10,890	16.3

* DUE FACTOR FROM ANTELOPE PUBLIC FACILITIES FINANCING PLAN WAS USED

Table I-3

DRAINAGE FACILITY DUES

I. RESIDENTIAL DWELLING UNIT EQUIVALENT FACTORS

ZONING	DUE FACTOR
AG-80	0.01
AG-20	0.03
AR-10	0.05
AR-5	0.10
AR-2	0.25
AR-1	1.00
RD-1	1.00
RD-2	2.00
RD-3	2.91
RD-4	3.72
RD-5	4.50
RD-6	5.40
RD-7	6.30
RD-9	7.47
RD-10	7.47
RD-12	7.47
RD-15	7.47
RD-20	7.47
RD-25	7.47
RD-30	7.47

II. NON-RESIDENTIAL DUE FACTORS

ZONING	DUE FACTOR
M1 / M2	8.71
MP	8.71
BP	9.93
SC	9.93
GC	9.93
LC	9.93
TC	9.93

Source: Addendum to the Laguna South Public Facilites Fee Program Nexus Study - Lent Ranch Update, February 2003.

Table I-4

PARK IMPROVEMENT FACILITY DUES

I. RESIDENTIAL DWELLING UNIT EQUIVALENT (DUE) FACTORS

ZONING	A MAXIMUM ZONING DENSITY PER ACRE	B ASSUMED YIELD UNITS PER ACRE	C PERSONS PER HOUSEHOLD	D PERSONS PER ACRE **(B x C)**	E DUE FACTOR **(D / 2.88)**
AG-80	0.01	0.01	2.88	0.04	0.01
AG-20	0.05	0.05	2.88	0.14	0.05
AR-10	0.1	0.1	2.88	0.29	0.1
AR-5	0.2	0.2	2.88	0.58	0.2
AR-2	0.5	0.5	2.88	1.44	0.5
AR-1	1	1.00	2.88	2.88	1.0
RD-1	1	1.00	2.88	2.88	1.0
RD-2	2	2.00	2.88	5.76	2.0
RD-3	3	2.91	2.88	8.38	2.9
RD-4	4	3.72	2.88	10.71	3.7
RD-5	5	4.50	2.88	12.96	4.5
RD-6	6	5.40	2.88	15.55	5.4
RD-7	7	6.30	2.88	18.14	6.3
RD-9	9	8.10	2.88	23.33	8.1
RD-10	10	9.00	2.36	21.24	7.4
RD-12	12	10.80	2.28	24.62	8.6
RD-15	15	13.50	2.17	29.30	10.2
RD-20	20	17.00	1.98	33.66	11.7
RD-25	25	20.00	1.98	39.60	13.8
RD-30	30	24.00	1.98	47.52	16.5

II. NON-RESIDENTIAL DWELLING UNIT EQUIVALENT (DUE) FACTORS

ZONING	A EMPLOYEES PER ACRE	B EMPLOYEE DENSITY **(A x .25)**	C DUE FACTOR PERSONS/ACRE **(B / 2.88)**
M1 / M2	17.35	4.34	1.5
MP	40.60	10.15	3.5
BP	37.30	9.33	3.2
SC	23.90	5.98	2.1
GC	19.80	4.95	1.7
LC	28.75	7.19	2.5
TC	34.60	8.65	3.0

FROM 1990 CENSUS DATA, PER SACOG:

HOUSING TYPE	PERSONS PER HOUSEHOLD IN UNINCORPORATED COUNTY
SINGLE FAMILY:	2.88
DUPLEX-QUADPLEX:	2.36
5+ MULTIFAMILY APTS.:	1.98

Table I-5

LIBRARY FACILITY DUES

RESIDENTIAL DWELLING UNIT EQUIVALENT (DUE) FACTORS

ZONING	A MAXIMUM ZONING DENSITY PER ACRE	B ASSUMED YIELD UNITS PER ACRE	C PERSONS PER HOUSEHOLD	D PERSONS PER ACRE **(B x C)**	E DUE FACTOR COL. D / 2.88 **(D / 2.88)**
AG-80	0.01	0.01	2.88	0.04	0.01
AG-20	0.05	0.05	2.88	0.14	0.05
AR-10	0.1	0.1	2.88	0.29	0.1
AR-5	0.2	0.2	2.88	0.58	0.2
AR-2	0.5	0.5	2.88	1.44	0.5
AR-1	1	1.00	2.88	2.88	1.0
RD-1	1	1.00	2.88	2.88	1.0
RD-2	2	2.00	2.88	5.76	2.0
RD-3	3	2.91	2.88	8.38	2.9
RD-4	4	3.72	2.88	10.71	3.7
RD-5	5	4.50	2.88	12.96	4.5
RD-6	6	5.40	2.88	15.55	5.4
RD-7	7	6.30	2.88	18.14	6.3
RD-9	9	8.10	2.88	23.33	8.1
RD-10	10	9.00	2.36	21.24	7.4
RD-12	12	10.80	2.28	24.62	8.6
RD-15	15	13.50	2.17	29.30	10.2
RD-20	20	17.00	1.98	33.66	11.7
RD-25	25	20.00	1.98	39.60	13.8
RD-30	30	24.00	1.98	47.52	16.5

NOTE : NON-RESIDENTIAL USE PROPERTIES DO NOT PAY LIBRARY FEES

FROM 1990 CENSUS DATA, PER SACOG:

HOUSING TYPE	PERSONS PER HOUSEHOLD IN UNINCORPORATED COUNTY
SINGLE FAMILY:	2.88
DUPLEX-QUADPLEX:	2.36
5+ MULTIFAMILY APTS.:	1.98

Table I-6

TRANSIT FACILITY DUES

I. RESIDENTIAL DWELLING UNIT EQUIVALENT (DUE) FACTORS

ZONING	A PEAK HOUR VEHICLE TRIPS PER ACRE	B TYPICAL VEHICLE OCCUPANCY	C PEAK HOUR TRIPS PER ACRE **(A x B)**	D PERCENT TRANSIT TRIPS **NOTE (1)**	E PEAK HOUR TRANSIT TRIPS / ACRE **(C x D)**	F DUE FACTOR **(E / 0.05)**
AG-80	0.01	1.62	0.02	0.032	0.001	0.01
AG-20	0.05	1.62	0.08	0.032	0.003	0.05
AR-10	0.1	1.62	0.16	0.032	0.005	0.1
AR-5	0.2	1.62	0.32	0.032	0.010	0.2
AR-2	0.5	1.62	0.81	0.032	0.026	0.5
AR-1	1.0	1.62	1.62	0.032	0.052	1.0
RD-1	1.0	1.62	1.62	0.032	0.052	1.0
RD-2	2.0	1.62	3.24	0.032	0.104	2.0
RD-3	2.8	1.62	4.54	0.032	0.145	2.9
RD-4	3.5	1.62	5.67	0.032	0.181	3.6
RD-5	4.1	1.62	6.64	0.032	0.213	4.1
RD-6	4.9	1.62	7.94	0.032	0.254	4.9
RD-7	5.7	1.57	8.95	0.032	0.286	5.5
RD-9	6.5	1.57	10.21	0.056	0.571	11.0
RD-10	7.2	1.57	11.30	0.056	0.633	12.2
RD-12	8.6	1.57	13.50	0.056	0.756	14.6
RD-15	10.8	1.57	16.96	0.056	0.950	18.3
RD-20	10.2	1.56	15.91	0.124	1.973	38.1
RD-25	12.0	1.56	18.72	0.124	2.321	44.8
RD-30	14.4	1.56	22.46	0.124	2.786	53.7

II. NON-RESIDENTIAL DWELLING UNIT EQUIVALENT (DUE) FACTORS

ZONING	A PEAK HOUR VEHICLE TRIPS PER ACRE	B TYPICAL VEHICLE OCCUPANCY	C PEAK HOUR PERSON TRIPS / ACRE **(A x B)**	D PERCENT TRANSIT TRIPS **NOTE (1)**	E PEAK HOUR TRANSIT TRIPS / ACRE **(C x D)**	F DUE FACTOR **9.2 (E / 0.48)**
M-1/M-2	6.8	1.40	9.52	0.05	0.48	9.2
MP	18.0	1.40	25.20	0.05	1.26	24.4
BP	28.3	1.35	38.21	0.05	1.91	36.9
SC	69.8	1.64	114.47	0.03	3.43	66.4
GC	55.5	1.64	91.02	0.03	2.73	52.8
LC	55.5	1.64	91.02	0.03	2.73	52.8
TC	55.5	1.64	91.02	0.01	0.91	17.6

NOTE (1): FROM NCHRP REPORT 187, TRANSPORTATION RESEARCH BOARD, 1978

Economic & Planning Systems

Public Finance
Real Estate Economics
Regional Economics
Land Use Policy

APPENDIX J

SINGLE-FAMILY HOME FEE COMPARISONS

EPS Fee Calculation Analysis Disclaimer J-1

Chart J-1 Single-Family Homes Infrastructure Burden Comparison J-2

Table J-1 Summary of Infrastructure Costs per Unit J-3

Table J-2 City/County Development Impact Fees per Unit J-4

Table J-3 Plan Area Fees per Unit J-5

Table J-4 Estimated School Mitigation per Unit J-6

Table J-5 Special Taxes and Assessments per Unit J-7

ECONOMIC & PLANNING SYSTEMS, INC.

FEE CALCULATION ANALYSIS
DISCLAIMER

The tables in the EPS fee calculation analysis are estimates meant for initial planning purposes or for comparing infrastructure cost burdens between different project areas. The analysis is not designed to be an exact calculation of the fees payable at the issuance of a building permit because it does not provide a Building Department's level of review, nor does it provide all fees payable at building permit. For example, the analysis does not include administrative, plumbing, mechanical, engineering, and other miscellaneous fees due at building permit, nor does it typically include the site portion of plan check fees.

In addition, EPS makes no representation that all items for all areas are current as of today. Some of the fees/taxes/assessments may have been updated by the jurisdiction since estimates shown in the analysis were made.

Finally, the analysis does not typically include improvement plan fees incurred before building permit; however, some fees paid at improvement plan stage (typically drainage fees or water fees) may be shown as fees paid at building permit to provide a more comprehensive infrastructure cost burden comparison between different project areas.

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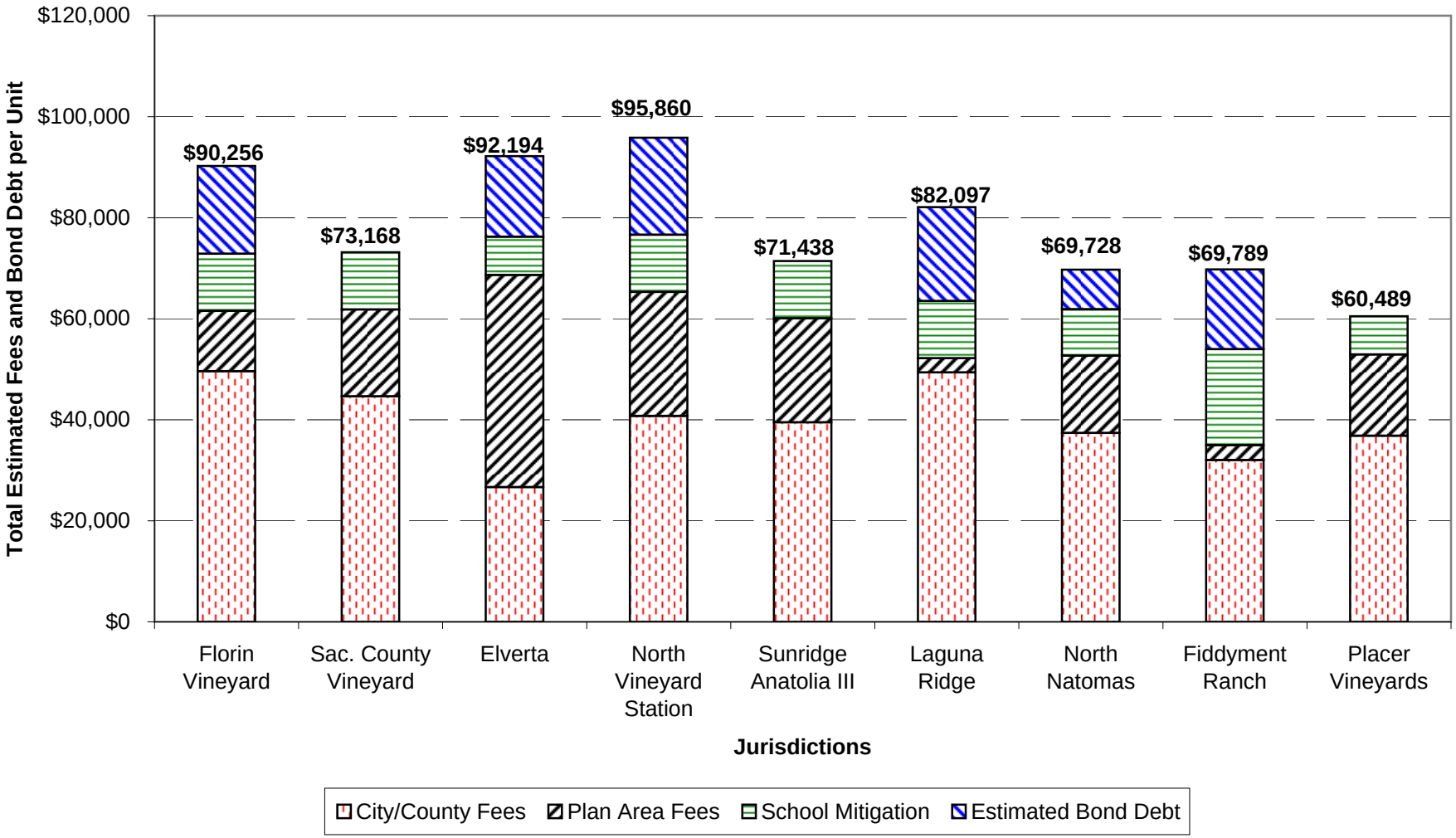
Chart J-1
Single-Family Homes Infrastructure Burden Comparison
2,200-Sq.-Ft. Home, 5 Units per Acre



Prepared by EPS 10/16/2008

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Table J-1
SINGLE-FAMILY HOMES
Summary of Infrastructure Costs per Unit
2,200-Sq.-Ft. Home, 450-Sq.-Ft. Garage, 3 Bedrooms
2 Bathrooms, 5 Units per Net Acre

	Sacramento County							Placer County	
	Unincorporated				Rancho Cordova	Elk Grove	Sacramento	Roseville	Unincorporated
Summary of Infrastructure Costs per Unit	Florin Vineyard	Sac. County Vineyard	Elverta	North Vineyard Station	SunRidge Anatolia III	Laguna Ridge South Shed	North Natomas Quad 4, Basin 8c	Fiddyment Ranch	Placer Vineyards
Current as of	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*
Total City-/Countywide Development Impact Fees (from Table J-2)	$49,628	$44,658	$26,671	$40,774	$39,494	$49,381	$37,391	$32,049	$36,859
Plan Area Fees (from Table J-3)	$11,916	$17,171	$41,999	$24,529	$20,605	$2,807	$15,301	$2,933	$16,062
Total School Mitigation (from Table J-4)	$11,339	$11,339	$7,568	$11,339	$11,339	$11,339	$9,196	$18,997	$7,568
Estimated Bond Debt of Special Taxes and Assessments (from Table J-5)	$17,373	$0	$15,955	$19,217	$0	$18,570	$7,840	$15,810	$0
Total Infrastructure Cost per Unit	**$90,256**	**$73,168**	**$92,194**	**$95,860**	**$71,438**	**$82,097**	**$69,728**	**$69,789**	**$60,489**
Total Fees (City, County, Schools, and Plan Area)	**$70,718**	**$71,003**	**$76,238**	**$74,477**	**$69,273**	**$61,362**	**$61,888**	**$53,979**	**$60,489**
Total Annual Taxes	**$1,600**	**$200**	**$1,303**	**$1,657**	**$200**	**$1,730**	**$945**	**$1,061**	**$0**

"summary"

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Table J-2
SINGLE-FAMILY HOMES
City/County Development Impact Fees per Unit
2,200-Sq.-Ft. Home, 450-Sq.-Ft. Garage, 3 Bedrooms
2 Bathrooms, 5 Units per Net Acre

	Sacramento County							Placer County	
City/County Development Impact Fees per Unit: These are fees charged by the City or County and do not include fees for a special plan area.	Unincorporated				Rancho Cordova	Elk Grove	Sacramento	Roseville	Unincorporated
	Florin Vineyard	Sac. County Vineyard	Elverta	North Vineyard Station	SunRidge Anatolia III [1]	Laguna Ridge South Shed	North Natomas Quad 2, Basin 1	Fiddyment Ranch	Placer Vineyards
Current as of	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*
CITY/COUNTY FEES PER UNIT									
Processing Fees per Unit [2]									
Building Permit	$2,610	$2,610	$2,610	$2,610	$1,577	$989	$1,853	$1,474	$728
Plan Check	$1,740	$1,740	$1,740	$1,740	$526	$658	$778	$884	$728
Energy Fee	-	-	-	-	-	-	-	-	$98
Technology Surcharge	$162	$162	$162	$162	-	$86	$211	-	-
Seismic/Strong Motion	$30	$30	$30	$30	$23		$21	$22	$21
Fire Review Fee	$140	$140	$140	$140	$140	-	-	-	-
Other Building Permit or Processing Fees	$878	$878	$878	$878	$467	$268	$428	-	$105
Total Processing Fees per Unit	**$5,560**	**$5,560**	**$5,560**	**$5,560**	**$2,733**	**$2,001**	**$3,292**	**$2,380**	**$1,680**
Development Impact Fees per Unit									
Sewer	$10,450	$10,450	$10,450	$10,450	$10,450	$10,450	$10,450	$6,215	$7,505
Water	$12,755	$12,755	-	$12,755	$12,755	$12,755	$5,032	$5,425	$14,735
Zone 40 Special Services Area A Fee	$724	$724	-	$724	-	$724		-	-
Traffic [3]	$11,773	$6,803	$2,295	$2,919	$6,025	$10,258	$1,714	$1,286	$4,141
Transit [3]	-	-	-	-	$175	-	-	-	-
Regional Traffic Fees	-	-	-	-	-	-	-	$1,680	$680
Drainage	$2,959	$2,959	$2,959	$2,959	$2,959	$2,959	-	$399	$173
Parks - Neighborhood	-	-	-	-	-	-	-	$3,168	$3,745
Parks - Citywide [4]	-	-	-	-	-	-	$4,868	$2,041	-
Fire/Police	$1,232	$1,232	$1,232	$1,232	$1,232	1,691	-	$1,086	$629
SAFCA Capital Investment Equalization Fee	-	-	-	-	-	-	$3,938	-	-
Habitat/Greenbelt Preservation [5]	$4,175	$4,175	$4,175	$4,175	-	-	$7,627	-	-
Affordable Housing [6]	See Note [6]	See Note [6]	See Note [6]	See Note [6]	-	$4,335	-	-	-
Capital Improvements/Public Facilities	-	-	-	-	$3,165	$4,002	-	$2,995	-
Other General Fees/One-Time Taxes	-	-	-	-	-	205	$471	$3,421	-
County-Wide Fees	-	-	-	-	-	-	-	$1,953	$3,570
Total Development Impact Fees per Unit	**$44,068**	**$39,098**	**$21,111**	**$35,214**	**$36,761**	**$47,379**	**$34,099**	**$29,669**	**$35,178**
TOTAL CITY/COUNTY FEES PER UNIT	**$49,628**	**$44,658**	**$26,671**	**$40,774**	**$39,494**	**$49,381**	**$37,391**	**$32,049**	**$36,859**

"city/county"

[1] The total Roadway fee for the City of Rancho Cordova is $18,915 per dwelling unit. This fee will be reduced by the Sun ridge Plan Area Roadway Fee of $12,890.
[2] Processing fees exclude mechanical, electrical, plumbing, and other similar review fees.
[3] This analysis assumes the proposed Sacramento County Transportation Development Fees as presented to the County Board of Supervisors on Sept. 30, 2008. Hearing will continue on Dec. 9, 2008. This analysis has combined the Roadway and Transit fees as there are additional components such as Bikeways and Walkways. The County has not determined how the additional components will be allocated between the Roadway and Transit fees.
[4] The City of Rancho Cordova Park fee has not yet been adopted. This analysis assumes the rate negotiated in Development Agreements.
[5] The City of Rancho Cordova has not adopted a Swainson's hawk mitigation fee or standard. In the mean time, mitigation for such impacts will vary and be based on the habitat value of the project site, the overall biological mitigation that occurs in conjunction with the project, and the Cities' consultations with the department of Fish and Game.
Since the **Elverta Financing Plan** contains more than 40 acres, the project applicant shall acquire suitable Swainson's hawk foraging habitat, as determined by the Department of Fish and Game and approved by the County. In addition, the applicant shall be required to pay the County's mitigation operations and maintenance fee not to exceed $3,500 per acre.
[6] **Unincorporated Sacramento County -** depending on the size and other characteristics of the development project, options include constructing affordable units providing land for affordable developments or paying a fee of $10,000. Projects with 100 or more units must construct affordable housing or dedicate land and pay the escrow fee of $3,000 per unit.

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Table J-3
SINGLE-FAMILY HOMES
Plan Area Fees per Unit
2,200-Sq.-Ft. Home, 450-Sq.-Ft. Garage, 3 Bedrooms
2 Bathrooms, 5 Units per Net Acre

	Sacramento County							Placer County	
Plan Area Fees: These fees are charged only	Unincorporated				Rancho Cordova	Elk Grove	Sacramento	Roseville	Unincorporated
in a certain area of a county or city to fund	Florin	Sac. County		North Vineyard	SunRidge	Laguna Ridge	North Natomas	Fiddyment	Placer
facilities to serve a specific development project.	Vineyard	Vineyard	Elverta [1]	Station	Anatolia III	South Shed [2]	Quad 2, Basin 1	Ranch	Vineyards [3]
Current as of	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*
PLAN AREA FEES PER UNIT									
Infrastructure Fee	-	-	-	-	-	-	$6,812	-	-
Roadway	$12,954	$10,912	$16,173	$15,770	$12,890	-	-	$175	-
Frontage Lane Fee	$2,706	-	-	$3,340	-	-	-	-	-
Transit	$466	$815	$223	$751	$71	-	$422	$54	$565
Park Improvement	$5,563	$3,924	$7,547	$5,153	$4,302	$2,807	-	-	$9,555
Fire/Police Protection	-	-	-	-	-	-	-	-	$1,851
Library	$1,264	$860	$1,036	$807	$581	-	-	-	-
Drainage	$1,831	-	$9,037	$7,792	-	-	-	-	-
Sewer	-	-	-	-	$865	-	-	-	-
Water	-	-	$11,261	$200	$1,254	-	-	$140	-
Landscape Corridors	-	-	$4,960	-	-	-	-	-	-
Fee Program Formation Administration	$1,239	$660	-	$1,291	$568	-	-	-	$893
Air Quality Fees	-	-	-	-	-	-	-	$91	-
Public Benefit Fee	-	-	-	-	-	-	-	$1,280	-
General Fund Contribution	-	-	-	-	-	-	-	$1,060	-
Public Land and Regional Park Acquisition Fees	-	-	-	-	-	-	$8,067	-	-
South Placer Animal Control Shelter Fee	-	-	-	-	-	-	-	-	-
Other General Fees	-	-	$688	-	$74	-	-	$134	$3,198
Less Bond Proceeds	($14,107)	-	($8,926)	($10,575)	-	-	-	-	-
TOTAL PLAN AREA FEES PER UNIT	**11,916**	**$17,171**	**41,999**	**$24,529**	**$20,605**	**$2,807**	**$15,301**	**$2,933**	**$16,062**

"plan area"

[1] Elverta plan area fees are proposed and have not been adopted by the Board of Supervisors.
[2] Through development conditions of approval, the City of Elk Grove has included requirements to fund backbone infrastructure and other public facilities that do not currently show up on this comparison of infrastructure burdens. Costs for these facilities may total an estimated $48,000 per unit.
[3] Placer Vineyards plan area fees are proposed and have not been adopted by the County.

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Table J-4
SINGLE-FAMILY HOMES
Estimated School Mitigation Per Unit
2,200-Sq.-Ft. Home, 450-Sq.-Ft. Garage, 3 Bedrooms
2 Bathrooms, 5 Units per Net Acre

	Sacramento County							Placer County	
	Unincorporated				Rancho Cordova	Elk Grove	Sacramento	Roseville	Unincorporated
	Florin Vineyard	Sac. County Vineyard	Elverta	North Vineyard Station	SunRidge Anatolia III	Laguna Ridge South Shed	North Natomas Quad 2, Basin 1	Fiddyment Ranch	Placer Vineyards [1]
Estimated School Mitigation per Unit	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*
Current as of	*Elk Grove USD*	*Elk Grove USD*	*Center USD*	*Elk Grove USD*	*Elk Grove USD*	*Elk Grove USD*	*Natomas USD*	*Roseville City Elem & Roseville JUHSD*	*Center USD*
School District									
Annual School Mello-Roos CFD Taxes	$200	$200	-	$200	$200	$200	-	-	-
A. **Present Value of School CFD Tax**	**$2,165**	**$2,165**	**$0**	**$2,165**	**$2,165**	**$2,165**	**$0**	**$0**	**$0**
B. School Fee per Sq. Ft.:									
Stirling Fee	-	-	$3.44	-	-	-	-	-	$3.44
C. Level 2 (or 3) SB50 Fee	$4.17	$4.17	-	$4.17	$4.17	$4.17	$4.18	-	-
Mitigation Agreement	-	-	-	-	-	-	-	$2.95	-
Total School Fee:									
Stirling Fee	-	-	-	-	-	-	-	-	-
D. Level 2 (or 3) SB50 Fee	$9,174	$9,174	$7,568	$9,174	$9,174	$9,174	$9,196	$6,490	$7,568
Mitigation Agreement	-	-	-	-	-	-	-	$12,507	-
E. Total School Mitigation (B+D)	**$11,339**	**$11,339**	**$7,568**	**$11,339**	**$11,339**	**$11,339**	**$9,196**	**$18,997**	**$7,568**

"school"

[1] This analysis assumes a $3.44 per sq. ft. Center School District Fee, pending a mitigation agreement with Placer Vineyards.

Table J-5
SINGLE-FAMILY HOMES
Special Taxes and Assessments per Unit
2,200-Sq.-Ft. Home, 450-Sq.-Ft. Garage, 3 Bedrooms
2 Bathrooms, 5 Units per Net Acre

	Sacramento County							Placer County	
	Unincorporated				Rancho Cordova	Elk Grove	Sacramento	Roseville	Unincorporated
Special Taxes and Assessments per Unit for Infrastructure [1]	Florin Vineyard	Sac. County Vineyard	Elverta	North Vineyard Station	SunRidge Anatolia III	Laguna Ridge South Shed	North Natomas Quad 4, Basin 8c	Fiddyment Ranch	Placer Vineyards
Current as of	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*	*Oct-08*
Annual Special Taxes and Assessments per Unit									
Infrastructure CFD	$1,400	-	$1,200	$1,457	-	$1,530	$843	$1,061	-
Infrastructure Assessment District	-	-	-	-	-	-	-	-	-
SAFCA A.D. (Local Project)	-	-	$103	-	-	-	$102	-	-
Total Annual Taxes and Assessments	**$1,400**	**$0**	**$1,303**	**$1,457**	**$0**	**$1,530**	**$945**	**$1,061**	**$0**
Estimated Bond Debt of Special Taxes and Assessments									
Infrastructure CFD	$17,373	-	$14,891	$19,217	-	$18,570	$6,578	$15,810	-
Infrastructure Assessment District	-	-	-	-	-	-	-	-	-
SAFCA A.D. (Local Project)	-	-	$1,065	-	-	-	$1,262	-	-
Total Estimated Bond Debt	**$17,373**	**$0**	**$15,955**	**$19,217**	**$0**	**$18,570**	**$7,840**	**$15,810**	**$0**

"taxes"

[1] Taxes and Assessments for schools can be found in Table J-4.

J-7

APPENDIX K

MELLO-ROOS BONDING CAPACITY

Table K-1 Bonding Capacity—Buildout K-1
Table K-2 Bonding Capacity—Phase 1 ..... K-2

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Table K-1
Florin Vineyard Public Facilities Financing Plan
Bonding Capacity - Buildout (Residential Only)

Bonding Capacity	Assumptions	Buildout Total	RD 2-3	RD 3-5	RD 5-7	RD 7-12	RD-10	RD-20
UNIT INFORMATION								
Housing Units		**10,658**	316	4,392	3,092	621	123	2,114
Acres		**1,809.6**	126.5	976.1	515.3	62.1	12.3	117.5
Units per Acre			2.5	4.5	6.0	10.0	10.0	18.0
Maximum Special Tax for Infrastructure								
Monthly Special Tax Per Unit			$117	$117	$104	$104	$79	$21
Annual Special Tax Per Unit			$1,400	$1,400	$1,250	$1,250	$950	$250
Annual Special Tax per Acre			$3,498	$6,300	$7,500	$12,500	$9,500	$5,000
Assuming Level Debt Service								
Annual Special Tax Revenue		**$11,877,000**	**$442,000**	**$6,149,000**	**$3,864,000**	**$776,000**	**$117,000**	**$529,000**
Less Delinquency	10.0%	$1,188,000	$44,000	$615,000	$386,000	$78,000	$12,000	$53,000
Less Administrative	2.5%	$297,000	$11,000	$154,000	$97,000	$19,000	$3,000	$13,000
Remaining Left for Debt Service		**$10,392,000**	**$387,000**	**$5,380,000**	**$3,381,000**	**$679,000**	**$102,000**	**$463,000**
BOND SIZING [1]								
Total Bond Size		**$126,761,000**	**$4,721,000**	**$65,625,000**	**$41,241,000**	**$8,282,000**	**$1,244,000**	**$5,648,000**
Term (Years)	25							
Less Estimated Issuance Costs	5.0%	$6,337,000	$236,000	$3,281,000	$2,062,000	$414,000	$62,000	$282,000
Less Bond Reserve Fund	10.0%	$12,676,000	$472,000	$6,563,000	$4,124,000	$828,000	$124,000	$565,000
Less Capitalized Interest for 12 Months	6.5%	$8,240,000	$307,000	$4,266,000	$2,681,000	$538,000	$81,000	$367,000
Construction Proceeds		**$99,508,000**	**$3,706,000**	**$51,515,000**	**$32,374,000**	**$6,502,000**	**$977,000**	**$4,434,000**
Construction Proceeds per Unit			**$11,700**	**$11,700**	**$10,500**	**$10,500**	**$7,900**	**$2,100**
Estimated Bonds per Unit			**$17,971**	**$17,971**	**$16,045**	**$16,041**	**$12,133**	**$3,212**
Assuming 2% Annual Escalator								
Total Bond Size [2]		**$152,456,100**	**$5,677,100**	**$78,928,100**	**$49,602,300**	**$9,961,700**	**$1,496,000**	**$6,790,900**
Construction Proceeds		**$119,678,200**	**$4,456,500**	**$61,958,600**	**$38,937,900**	**$7,819,900**	**$1,174,400**	**$5,330,900**
Construction Proceeds per Unit			**$14,107**	**$14,107**	**$12,595**	**$12,592**	**$9,525**	**$2,522**

"mello_buildout"

Note: Totals may not add due to rounding.

[1] Assuming levels of debt service listed above.
[2] Assumes bond size with 2% escalation is 20% higher than bond size with no escalation.

K-1

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Table K-2
Florin Vineyard Public Facilities Financing Plan
Bonding Capacity - Phase 1 (Residential Only)

Bonding Capacity	Assumptions	Phase 1 Total	RD 2-3	RD 3-5	RD 5-7	RD 7-12	RD-10	RD-20
UNIT INFORMATION								
Housing Units		**6,481**	91	2,151	2,623	293	90	1,233
Acres		**1,058.5**	36.5	478.0	437.1	29.3	9.0	68.5
Maximum Special Tax for Infrastructure								
Monthly Special Tax Per Unit			$117	$117	$104	$104	$79	$21
Annual Special Tax Per Unit			$1,400	$1,400	$1,250	$1,250	$950	$250
Assuming Level Debt Service								
Annual Special Tax Revenue		**$7,178,000**	**$128,000**	**$3,011,000**	**$3,278,000**	**$367,000**	**$86,000**	**$308,000**
Less Delinquency	10.0%	$719,000	$13,000	$301,000	$328,000	$37,000	$9,000	$31,000
Less Administrative	2.5%	$179,000	$3,000	$75,000	$82,000	$9,000	$2,000	$8,000
Remaining Left for Debt Service		**$6,280,000**	**$112,000**	**$2,635,000**	**$2,868,000**	**$321,000**	**$75,000**	**$269,000**
BOND SIZING [1]								
Total Bond Size		**$76,603,000**	**$1,366,000**	**$32,141,000**	**$34,984,000**	**$3,916,000**	**$915,000**	**$3,281,000**
Term (Years)	25							
Less Estimated Issuance Costs	5.0%	$3,830,000	$68,000	$1,607,000	$1,749,000	$196,000	$46,000	$164,000
Less Bond Reserve Fund	10.0%	$7,661,000	$137,000	$3,214,000	$3,498,000	$392,000	$92,000	$328,000
Less Capitalized Interest for 12 Months	6.5%	$4,979,000	$89,000	$2,089,000	$2,274,000	$255,000	$59,000	$213,000
Construction Proceeds		**$60,133,000**	**$1,072,000**	**$25,231,000**	**$27,463,000**	**$3,073,000**	**$718,000**	**$2,576,000**
Construction Proceeds per Unit			**$11,700**	**$11,700**	**$10,500**	**$10,500**	**$8,000**	**$2,100**
Assuming 2% Annual Escalator								
Total Bond Size [2]		**$ 92,128,000**	**$ 1,642,600**	**$ 38,655,000**	**$42,075,300**	**$4,708,000**	**$1,100,700**	**$ 3,946,500**
Construction Proceeds		**$72,321,000**	**$1,289,400**	**$ 30,344,100**	**$ 33,029,100**	**$ 3,695,800**	**$ 864,100**	**$ 3,098,000**
Construction Proceeds per Unit			**$14,100**	**$14,100**	**$12,600**	**$12,600**	**n/a**	**$2,500**

"mello_phase1"

[1] Assuming levels of debt service listed above.
[2] Assumes bond size with 2% escalation is 20% higher than bond size with no escalation.

Prepared by EPS 7/16/2008

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