

Section 404(b)(1) On-Site Alternatives Analysis
For
Folsom Plan Area Specific Plan – Backbone Infrastructure
City of Folsom, California

09 September 2012

Prepared For:
City of Folsom



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ENVIRONMENTAL CONSULTANTS

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Backbone Infrastructure**

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INTRODUCTION

An application package for Department of the Army permits under the authority of Section 404 of the Clean Water Act for the discharge of dredged or fill material to a total of 49.296 acres of aquatic features, including 47.897 acres of waters of the United States was submitted on November 20, 2009, for projects within the Folsom Specific Plan Area. Impacts include onsite development and offsite impacts due to a waterline and other offsite infrastructure such as road improvements and sewer connections. Onsite impacts total 40.754 acres, including 39.499 acres jurisdictional wetlands and 1.254 acres of isolated/non-jurisdictional wetlands. This 404(b)(1) Alternatives Analysis is for the City of Folsom's Backbone Infrastructure project. The Backbone Infrastructure portion of the SPA will impact a total of 13.845 acres of wetlands (13.793 acres of waters of the U.S. and 0.052 acre of isolated/non-jurisdictional features), which includes 11.438 acres of on-site impacts and 2.354 acres of off-site Backbone Infrastructure impacts.

PROJECT PROPONENT(S)

Each participant (Applicant) included in the Section 404 application package is listed below. Each has submitted an application or applications for an individual Section 404 permit at this time.

PROJECTS

Folsom Heights

Folsom South

Folsom 138

APPLICANTS

Hospitality Consultants
8525 Oak Arbor Court
Fair Oaks, California 95628
Contact: Bob Robinson

MJM Properties
1037 Suncast Lane, Suite 111
El Dorado Hills, California 95762
Contact: Mike McDougal

Eric Gragg
131 Egloff Circle
Folsom, California 95630
Contact: Eric Gragg

Folsom 560 (Hillsborough)

Easton Development Company, LLC
One Easton Place
P.O. Box 1209
Folsom, California 95763
Contact: David Hatch

Prairie City Road Business Park

Easton Development Company, LLC
One Easton Place
P.O. Box 1209
Folsom, California 95763
Contact: David Hatch

Carpenter Ranch

RedTail Acquisitions, LLC
4685 MacArthur Court, Suite 410
Newport Beach, California 92660
Contact: Tim Kihm

Javanifard & Zarghami

6236 Mahala Drive
Carmichael, CA 95608
Attn: Mr. Johnny Javanifard and Mr. Jason
Zarghami

Backbone Infrastructure
Off-site Water Line

City of Folsom
Community Development Department
50 Natoma Street,
Folsom, California 95630
Contact: Dave Miller

One property within the SPA, the Sacramento Country Day School property, has not yet submitted a Section 404 application.

AGENT:

Attn: ECORP Consulting, Inc.
Mr. Bjorn Gregersen
2525 Warren Drive
Rocklin, California 95677
Phone: (916) 782-9100
Fax: (916) 728-9134

PROJECT LOCATION

A map illustrating the total project area is shown as *Figure 1. Project Site and Vicinity*. The Backbone Infrastructure for the Folsom Plan Area Specific Plan (SPA), and the areas that may be involved in off-site improvements include portions of the Buffalo Creek, Clarksville, Folsom, and Folsom SE, California, 7.5-minute topographic quadrangles (USGS 1980), Township 9 North, Range 7 East: unsectioned, and Township 9 North, Range 8 East: Sections 15-22.

PROJECT DESCRIPTION

The purpose of the Backbone Infrastructure project (Figure 1) is to allow for phased implementation of the Folsom Plan Area Specific Plan Area project (SPA). The purpose of the SPA is to: 1) to construct a large-scale, mixed-use master-planned community consisting of mixed-density residential uses, a regional shopping center, and other employment-generating uses; (2) to provide associated supporting infrastructure including on-site backbone infrastructure, schools, parks, an on-site trail system, off-site sewer improvements, off-site roadway improvements, off-site highway interchanges, an off-site water supply pipeline from the Freeport Regional Water Authority diversion facility to the site, and an off-site water treatment plant; and (3) to permanently protect 30 percent of the site as open space for the preservation of oak woodlands and sensitive habitat areas in manner consistent with Measure W.

The infrastructure plan has been designed to serve the comprehensive needs of the entire plan area in a segmented, phased manner. Each phase of the project will implement the segments of the backbone infrastructure that are required to support that phase. The Backbone Infrastructure plan includes major roads and trails, water and sewer infrastructure, and storm drain infrastructure that occur primarily onsite.

BACKBONE INFRASTRUCTURE COMPONENTS

Roads

The proposed roadway network would include major circulation roads that will serve the entire SPA and region.

Pedestrian/Bicycle Trails

The proposed project includes a network of Class I and II bicycle trails that would provide connectivity to trails in Sacramento and El Dorado Counties. A multi-use trail system will provide pedestrian and bicycle linkage throughout the plan area. Typically, these are 8 to 12 foot wide paved trails. For the purposes of this infrastructure application, only those trails occurring within open space areas use and which would result in impacts to "waters" have been incorporated into the request for authorization. Wetland and other "waters" impacts accruing to trails within lotting plans areas have been assigned to those applications.

Sanitary Sewer

The main sanitary sewer system planned for SPA is included in the Backbone Infrastructure. This includes sewers in major roadways as well as separate sewer lines and offsite connection under Hwy 50.

Drainage and Flood Control

Included in the Backbone Infrastructure are detention and water quality basins that serve areas greater than the individual parcels on which they are located, including one basin that is located just west of the SPA, on the west side of the existing Prairie City Road.

Water Supply

A water treatment plant (WTP) is included in the Backbone Infrastructure project. The WTP is located in the southwest portion of the SPA, north of the Country Day School property and south of the Javanifard and Zarghami property.

ENVIRONMENTAL SETTING

Current Conditions

The southern and eastern portion of the property consists primarily of rolling terrain and grasslands. The northwestern portion property consists primarily of rolling terrain and oak woodland. Elevations range from approximately 250 to 800 feet above mean sea level. The majority of the site is currently used for cattle grazing.

Adjacent Land Uses

The SPA is surrounded by agricultural and rural residential land uses to the south. Land west of the project site is owned by the Aerojet-General Corporation and is planned for future residential/commercial development and ongoing Aerojet operations. Land east of the project site lies within El Dorado County and consists of residential housing. Residential and commercial development is located north of the project site, on the opposite side of U.S. 50. Regional access to the project site would be provided from U.S. 50, which also forms the site's northern boundary. Local access to the project site is provided by Prairie City Road, East Bidwell Street, and White Rock Road. Alder Creek transects the SPA diagonally from the south-central portion to the northwest corner of the plan area.

Vegetative Communities

The majority of the land within the SPA is comprised of annual grassland community, composed primarily of non-native annual grasses, including soft chess (*bromus hordeaceus*), ripgut brome (*bromus diandrus*), medusahead grass (*taeniatherum caput-medusae*), slender wild oat (*avena*

barbata), and little quaking grass (*briza minor*). Other herbaceous species observed in this community include filaree (*erodium botrys*), bicolored lupine (*lupinus bicolor*), sticky tarweed (*holocarpha virgata*), yellow star-thistle (*centaurea solstitialis*), rose clover (*trifolium hirtum*), shamrock clover (*trifolium dubium*), fremont's tidy-tips (*layia fremontii*), Valley tassels (*castilleja attenuata*), dwarf brodiaea (*brodiaea minor*), and hyacinth brodiaea (*triteleia hyacinthina*). Some areas within the SPA also include Blue oak woodland. Blue oaks (*quercus douglasii*) represent the dominant tree species in this community. Species observed in the understory were generally similar to those found in the annual grassland.

Soils

According to the Soil Survey of Sacramento County, California (U.S. Department of Agriculture, Soil Conservation Service 1993), 36 soil units, or types, have been mapped within the site (*Figure 2. Backbone – Natural Resources Conservation Service Soils Types*).

Hydrology

The SPA is located within the Lower American Watershed (#18020111), the Lower Sacramento Watershed (#18020109), the Lower Cosumnes-Lower Mokelumne Watershed (#18040005), and the Upper Cosumnes Watershed (#18040013) (U.S. Department of Interior, Geological Survey [USGS] 1978).

Wetlands / Waters of the U.S.

Wetland delineations have been conducted and submitted for each of the participating properties. The following delineations have been verified by the Corps: Carpenter Ranch, Prairie City Business Park, Folsom 560 (Hillsborough), Folsom South, Javanifard and Zarghami, and Folsom Heights. Based upon the best available information, approximately 84.944 acres of waters of the United States (U.S.) have been delineated within the SPA, including an additional 1.301 acres of isolate/non-jurisdictional features (*Figure 3. Wetland Delineation*). Of the 84.944 acres mapped on-site, development will result in direct impacts to approximately 40.754 acres, including 39.499 acres jurisdictional wetlands and 1.254 acres of isolated/non-jurisdictional

wetlands. The Backbone Infrastructure project will impact a total of 13.845 acres of wetlands (13.793 acres of waters of the U.S. and 0.052 acre of isolated/non-jurisdictional features), which includes 11.438 acres of on-site impacts and 2.354 acres of off-site Backbone Infrastructure impacts.

Each individual property application package provides more detail regarding wetland type and source of impact. In addition to the impacts on the individual participating projects, development of the common infrastructure elements would result in direct and indirect impacts both within and outside of the participating properties.

Table 1 – Backbone Infrastructure Wetland Acreages			
<u>Jurisdictional Wetlands/Waters</u>	<u>On-Site Existing</u>	<u>Off-Site Existing</u>	<u>Total Backbone Existing</u>
Vernal Pool	0.623	0.287	0.909
Seasonal Wetland	0.603	0.050	0.653
Seasonal Wetland Swale	5.961	0.055	6.016
Seep	0.729	0.000	0.729
Marsh	0.012	1.440	1.452
Creek/Channel	1.189	0.473	1.662
Intermittent Drainage	1.857	0.044	1.901
Ditch	0.304	0.007	0.312
Pond	0.159	0.000	0.159
Willow Scrub	0.000	0.000	0.000
Total:	11.438	2.354	13.793
<u>Isolated / Non-Jurisdictional</u>			
Isolated Vernal Pool	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.000	0.001
Ditch/Canal (NJ)	0.051	0.000	0.051
Pond (NJ)	0.000	0.000	0.000
Total:	0.052	0.000	0.052
Grand Total:	11.490	2.354	13.845

Wetlands

Vernal Pools

In general, vernal pools are topographic basins that are underlain with an impermeable or semi-permeable hardpan or duripan layer. Direct rainfall and surface runoff inundate the pools during the wet season. The pools remain inundated and/or the soil maintains saturation

through spring and they are dry by late spring through the following wet season. Vernal pools are scattered throughout the site. Dominant plants within the vernal pools included annual hairgrass (*Deschampsia danthenioides*), white-head navarretia (*Navarretia leucocephala*), Vasey's coyote-thistle (*Eryngium vaseyi*), Mediterranean barley, slender popcorn-flower (*Plagiobothrys stipitatus*), and dwarf wooly-heads (*Psilocarphus brevissimus*). Other species found within the vernal pools include downingia (*Downingia* species), dwarf brodiaea (*Brodiaea minor*), Sacramento mesamint (*Pogogyne zizyphoroides*), smooth goldfields (*Lasthenia glaberrima*), creeping spikerush (*Eleocharis macrostachya*), Fitch's spikeweed (*Hemizonia fitchii*), smooth cat's-ear, hairy hawkbit, sticky tarweed, soft chess, and ryegrass.

Seasonal Wetlands

Seasonal wetlands are ephemerally wet due to accumulation of surface runoff and rainwater within low-lying areas. Inundation periods tend to be relatively short and they are commonly dominated by non-native annual, and sometimes perennial, hydrophytic species. Seasonal wetlands occur scattered throughout the site, often in close association with vernal pools, seasonal wetland swales, and ephemeral drainages. Plant species identified within the seasonal wetlands included ryegrass, Mediterranean barley, Vasey's coyote-thistle, sticky tarweed, smooth cat's-ear, Sacramento mesamint, least spikerush (*Eleocharis acicularis*), blow-wives (*Achyrrachaena mollis*), annual hairgrass, marigold navarretia, poverty rush (*Juncus tenuis*), toad rush (*J. bufonius*), hyssop loosestrife (*Lythrum hyssopifolium*), little quaking grass (*Briza minor*), vulpia (*Vulpia bromoides*), nitgrass, Oregon wooly-heads (*Psilocarphus oregonus*), dwarf wooly-heads, annual rabbitsfoot grass (*Polypogon monspeliensis*), bracted popcornflower (*Plagiobothrys bracteatus*), dwarf brodiaea, white-tip clover (*Trifolium varigatum*), small-head clover (*T. microcephalum*), bull clover (*T. fucatum*), barnyard grass (*Echinochloa crus-galli*), swamp grass (*Crypsis schoenoides*), and medusahead grass.

Seasonal Wetland Swales

These are linear wetland features that do not exhibit an ordinary high water mark. Seasonal wetland swales occur throughout the site, often in close association with ephemeral drainages. Plant species identified within the seasonal wetland swales included Vasey's coyote-thistle,

sticky tarweed, toad rush, Mediterranean barley, mannagrass (*Glyceria declinata*), little quaking grass, white-tip clover, Sacramento mesamint, dwarf brodiaea, least spikerush, ryegrass, needle-leaf navarretia, vulpia, annual rabbitsfoot grass, annual hairgrass, nitgrass, little quaking grass, hairgrass, annual bluegrass (*Poa annua*), medusahead grass, soft chess, hairy hawkbit, and smooth cat's-ear.

Seep

Seeps are seasonally or perennially wet areas resulting from discharge of groundwater to the surface. A seep occurs in the northeastern portion of the site and is associated with a seasonal wetland. Plant species identified within the seep included barnyard grass, mannagrass, swamp smartweed (*Polygonum hydropiperoides*), water primrose (*Ludwigia peploides*), bull clover, and small-head clover.

Marsh

These marshes occur in areas that are permanently flooded, lack significant water currents, and are dominated by perennial emergent wetland plants that can reach 12 feet in height. Species found in this wetland type include broad-leaved cattail (*Typha latifolia*), as well as several low-growing perennial species. The latter include: rushes (*Juncus effusus*, *J. patens*, and *J. balticus*), tall nutsedge (*Cyperus eragrostis*), and spikerush (*Eleocharis montevidensis*). Vegetation in these wetlands can be very dense forming closed canopies that benefits breeding birds and mammals (Holland, 1986).

Creek/Channel

Alder Creek flows east to west through the northern portion of the site. This creek is identified as a blue-line feature on the "Folsom, California" and "Buffalo Creek, California" 7.5-minute quadrangles. The portion of Alder Creek located within the site conveys perennial flows; however, the creek becomes intermittent in areas within the site. The creek exhibits an ordinary high water mark with bed and bank characteristics. Plant species observed within and

adjacent to Alder Creek included cattail, willows (*Salix* species), South American vervain, soft rush (*Juncus effusus*), nutsedge, dallies grass, and Himalayan blackberry.

Wetland hydrology indicators observed within Alder Creek included soil inundation and saturation, water marks, drift lines, and scoured bed and bank. A soil pit was not excavated at the data point location due to the depth of the water. The soil matrix color in an adjacent upland area was 10YR4/3 without mottles.

Intermittent Drainage

Intermittent drainages are also linear features that exhibit an ordinary high water mark. Intermittent drainages differ from ephemeral drainages in that they receive groundwater recharge for all, or a portion, of the year. This usually results in greater flow of water and longer periods of flow, relative to ephemeral drainages. Intermittent drainages tend to be un-vegetated due to the depth and scouring effects of flowing water. Hydrophytic vegetation was present along the upper edges of the intermittent drainages on-site, and in areas where sediment accumulations provide a substrate suitable for plant establishment and growth. Plants observed along the upper edges and in the intermittent drainages include Fremont's cottonwood (*Populus fremontii*), swamp grass, water primrose, Spanish lotus, and swamp smartweed.

Ditch

Numerous constructed ditches occur within the site that pond water for a sufficient period of time during the growing season to support hydrophytic vegetation. These features were constructed on contour; however, they appear to no longer convey flow. Those constructed ditches that have fallen so far into disrepair that they no longer convey or pond water and are dominated by upland-associated plant species were not included on the wetland delineation map, as these features do not qualify as waters of the U.S. Dominant plant species within the constructed ditches included Vasey's coyote-thistle, Carter's buttercup, creeping spikerush, and annual hairgrass. Other species commonly observed within these features included hyssop loosestrife, smooth cat's-ear (*Hypochaeris glabra*), Mediterranean barley, and sticky tarweed.

Ponds

Stock ponds represent ponded areas that were either created or enhanced through the placement of an earthen dam in the course of a drainage and/or through excavation. Stock ponds exhibit an ordinary high water mark. Vegetation within these features generally occurs within the shallower areas along the margins. Plant species observed within and adjacent to the stock ponds included Goodding's black willow (*Salix gooddingii*), Fremont cottonwood (*Populus fremontii*), cattail, hyssop loosestrife, pennyroyal, dock, spikerush, and Vasey's coyote-thistle.

Wetland hydrology indicators observed at the stock ponds included soil inundation and saturation, water marks, sediment deposits, oxidized root channels, water stained leaves, and FAC-neutral test.

Willow Scrub

This habitat type may be associated with open wetlands and riparian habitats and provides valuable wildlife habitat. Plant species within the Project Areas associated with this type of vegetation include: red willow (*Salix laevigata*), arroyo willow (*Salix lasiolepis*), big-leaf maple (*Acer macrophyllum*), California blackberry, snowberry, poison oak, California buckeye (*Aesculus californica*). Wildlife found in these habitats are diverse including the previously mentioned raptors, songbirds, apodotes, mammals, amphibians, and reptiles.

REGULATORY BACKGROUND

Clean Water Act, Section 404 Application

The City of Folsom submitted an application to the U.S. Army Corps of Engineers (Corps) for permit to discharge dredged and/or fill materials into waters of the U. S. under the authority of the Corps pursuant to Section 404 of the Clean Water Act in November 2008 for the Backbone Infrastructure Project. The Applicants submitted applications to the U.S. Army Corps of

Engineers (Corps) for permits to discharge dredged and/or fill materials into waters of the U. S. under the authority of the Corps pursuant to Section 404 of the Clean Water Act in November 2008 for the individual projects within the Folsom SPA. Pursuant to these requirements, the Corps will conduct a two-part analysis: 1) the Corps will determine consistency with Section 404 (b)(1) Guidelines to consider practicable alternatives to the dredge or fill of waters of the U. S.; and 2) the Corps will conduct a public interest review. This document provides the analysis of practicable alternatives.

Purpose of Alternatives Analysis

The purpose of this analysis is to objectively evaluate the practicability of several alternatives to the proposed project and provide the Corps with documentation to be used in evaluating the proposed project permit application for compliance with Section 404(b)(1) (guidelines). The guidelines require that the alternatives analysis be adequate to establish that the project is the least environmentally damaging practicable alternative (LEDPA). This is accomplished by comparing the proposed project with other alternatives in terms of practicability, project purpose, and overall environmental effects. For this analysis, a reasonable statement of purpose has been developed and the alternatives have been evaluated in light of that purpose.

While it is understood that the information provided in this document must be verified by the Corps, the analysis is consistent with federal regulations and provides a fair and objective evaluation of alternatives.

This section presents an overview of the requirements of the 404(b)(1) guidelines and a discussion of the implementing guidance issued by the Corps. The 404(b)(1) guidelines are the substantive criteria used by the Corps in evaluating discharges of dredged or fill material into waters of the U.S. under Section 404 of the Clean Water Act. The guidelines require that four criteria be satisfied in order for the Corps to make a decision that a proposed discharge is in compliance. These criteria are:

1. *The discharge must be the least environmentally damaging practicable alternative:* This alternatives analysis evaluates a range of alternatives to the proposed project, in terms of environmental effects, practicability and consistency with the overall project purposes.
2. *The discharge must not violate any water quality standard, toxic effluent standard or jeopardize the continued existence of a threatened or endangered species:* Through the environmental review process, mitigation measures will be developed to insure that water quality and toxic effluent standards will not be violated. The U.S. Fish and Wildlife Service will be consulted regarding potential effects to federally listed species.
3. *The discharge must not result in a significant degradation of the waters of the United States:* Water quality impacts and potential impacts will be minimized through implementation of water quality management and erosion control plans as approved by the Regional Water Quality Control Board and the local planning jurisdiction.
4. *Unavoidable impacts to the aquatic ecosystem must be mitigated:* Based on an agreement between the Corps and EPA, efforts must first be directed at avoiding and reducing impacts to waters of the United States prior to the evaluation of potential compensatory mitigation measures. Mitigation may be applied only to unavoidable impacts. In keeping with this guidance, this alternatives analysis does not attempt to substitute mitigation for avoidance wherever the project goals may concurrently be met. Unavoidable impacts to biological resources associated with waters of the United States will be mitigated by either on-site construction of compensation wetlands, through the purchase of appropriate mitigation credits from agency-approved sources, or by a combination of mitigation measures acceptable to the regulatory agencies.

Before the Corps can issue a permit, they must find that the requirements of the guidelines have been satisfied. The key criteria for most permit applicants, and the focus of this analysis, is the requirement that the discharge be the least environmentally damaging, practicable alternative. The pertinent section of the regulation states:

"Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have a less adverse impact on the aquatic ecosystem so long as discharge does not have other significant adverse environmental consequences.

- a. For the purposes of this requirement, practicable alternatives include, but are not limited to:
 - 1) On-site activities that do not include a discharge into waters of the United States or ocean waters,
 - 2) Discharges of dredged or fill material at other locations in waters of the United States or ocean waters,
- b. An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded, or managed in order to fulfill the basic purpose of the proposed activity may be considered;
- c. Where the activity associated with a discharge which is proposed for a special aquatic site does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise."

The key provisions in the language are practicability and overall project purposes. An alternative is practicable if it is available to the applicant and capable of being accomplished by the applicant after consideration of costs, existing technology and logistics, in light of overall purposes. If a practicable alternative would have less impact on the aquatic ecosystem, and does not include other significant adverse impact, then the proposed project is not the least damaging practicable alternative.

ALTERNATIVES

The proposed Backbone Infrastructure project will directly impact 13.793 acres of jurisdictional wetlands, which are special aquatic sites as described above (Figure 4. *Backbone Proposed Impact Plan*). None of the proposed project components are considered to be water dependent. Therefore, according to the guidelines, less damaging alternatives are presumed to be available unless demonstrated otherwise. The following discussion presents the methodology of the analysis, followed by an evaluation of the alternatives for determination of the least damaging practicable alternative as compared to the proposed project. Alternatives have been developed and evaluated with the goals of practicability, consistency with the overall project purposes, and avoiding and minimizing impacts to waters of the United States.

Through consultation with the Corps of Engineers, potential alternative alignments were identified that could possibly result in less impacts to wetlands and waters. The range of alternatives considered includes six alternative alignments that consist of altering the proposed backbone infrastructure, including two locations along Easton Valley Parkway, Scott Road, Empire Ranch Road, Street "A", and Oak Avenue (Figure 5. *Backbone Alternatives - Overview*).

ALTERNATIVES ANALYSIS

In an effort to determine the least environmentally damaging practicable alternative for the site, the applicant analyzed the following alternative scenarios for the backbone infrastructure:

- **Alternative 1 – Easton Valley Parkway (West Location)**

The Easton Valley Parkway (West Location) alternative impacts approximately 12.732 acres of wetlands and avoids 1.060 additional acres of wetlands including portions of Alder Creek and seasonal wetlands in the northwest area of the project, by realigning Easton Valley Parkway (West Location) further to the south in impact areas. This alternative results in the loss 2.20 land-planned acres for development. There would be approximately \$854,000 in additional construction costs.

- **Alternative 2 – Easton Valley Parkway (East Location)**

The Easton Valley Parkway (East Location) alternative impacts approximately 13.583 acres of wetlands and avoids 0.210 addition acres of wetlands including a seep and portions of an intermittent drainage in the northeastern area of the project, by realigning Easton Valley Parkway (West Location) further to the north in impact areas. This alternative results in the loss of 0.40 land-planned acres for development. There would also be approximately \$375,000 to \$500,000 in additional construction costs.

- **Alternative 3 – Scott Road**

The Scott Road alternative impacts approximately 13.537 acres of wetlands and avoids 0.255 addition acres of wetlands including portions of an intermittent drainage in the southern area of the project, by realigning Scott Road further to the east in impact areas. This alternative results in the loss of 1.50 land-planned acres for development. There would also be approximately \$300,000 to \$400,000 in additional construction costs.

- **Alternative 4 – Empire Ranch Road**

The Empire Ranch Road alternative impacts approximately 13.717 acres of wetlands and avoids 0.076 addition acres of wetlands, including portions of a seasonal wetland swale in the eastern area of the project, by realigning Empire Ranch Road further to the west in impact areas. This alternative results in the loss of no land-planned acres for development. There would be approximately \$180,000 to \$250,000 in additional construction costs.

- **Alternative 5 – Street "A"**

The Street "A" alternative impacts approximately 13.720 acres of wetlands and avoids 0.072 addition acres of wetlands, including portions of an intermittent drainage in the southern area of the project, by realigning Street "A" further to the south in impact areas. This alternative results in the loss of 1.10 land-planned acres for development. There would be approximately \$260,000 in additional construction costs.

- **Alternative 6 – Oak Avenue**

The Oak Avenue alternative (realigning Oak Avenue to the east) impacts approximately 13.009 acres of wetlands. The alternative would preserve an additional 0.784 acres of wetlands, including vernal pools, seasonal wetlands, seasonal wetland swales, and intermittent drainage features.

As simply moving Oak Avenue to the east actually increases wetland impacts, the Oak Avenue alternative of the backbone alternative analysis relies on the practicability of an onsite alternative for the Folsom 560 project, which would avoid an additional 0.784 acre of wetlands within 36.7+ acres of newly designated preserves. The purpose of moving Oak Avenue to the east would be for the purpose of not precluding additional avoidance on Folsom 560. As such, we have analyzed the practicability of avoiding the seasonal wetland swale system and adjacent vernal pools within Folsom 560 in conjunction with the relocation of Oak Avenue. This alternative results in the loss of approximately 36.7 land-planned acres for development on the Folsom 560 project. There would be approximately \$5.5 million in additional construction costs.

- **Alternative 7 – Proposed Project Alignment**

The Proposed Backbone Infrastructure project impacts approximately 13.793 acres of wetlands. The purpose of the Backbone Infrastructure project is to allow for phased implementation of the Folsom Plan Area Specific Plan Area project (SPA). The purpose of the SPA is to: 1) to construct a large-scale, mixed-use master-planned community consisting of mixed-density residential uses, a regional shopping center, and other employment-generating uses; (2) to provide associated supporting infrastructure including on-site backbone infrastructure, schools, parks, an on-site trail system, off-site sewer improvements, off-site roadway improvements, off-site highway interchanges, an off-site water supply pipeline from the Freeport Regional Water Authority diversion facility to the site, and an off-site water treatment plant; and (3) to permanently protect 30 percent of the site as open space for the preservation of oak woodlands and sensitive habitat areas in manner consistent with Measure W.

A summary of Backbone Infrastructure Alternatives and wetland impact acreages are presented below in Table 2.

Table 2 – Backbone Infrastructure Alternatives

<u>Alternative Alignment Location</u>	<u>Impacts*</u>	<u>Additional Wetland Area Preserved</u>	<u>Development Land Lost Due To Alternative</u>
Easton Valley Parkway (West Location)	12.732	1.060	2.20
Easton Valley Parkway (East Location)	13.583	0.210	0.40
Scott Road	13.537	0.255	1.50
Empire Ranch Road	13.717	0.076	0.00
Street "A"	13.720	0.077	1.10
Oak Avenue	13.009**	0.784**	27.20
Proposed Project	13.793	0.000	0.00

*Does not include an additional 0.052 acres of non-jurisdictional wetland impacts.
** Includes additional avoidance that must be accomplished on Folsom 560.

Analysis of Alternatives

The practicability of on-site alternatives is analyzed using three basic criteria. First, the analysis considers whether the alternative would meet the Project Purpose; Secondly, any logistical issues that would render the alternative impracticable. This analysis primarily considers whether the infrastructure necessary to support the alternative could be feasibly installed. Next, the analysis considers basic cost factors, including an estimation of the cost of infrastructure and other development costs per developable acre for the Proposed Project and the other project alternatives. The analysis addresses project level costs that would make an alternative impracticable or otherwise incapable of being done. Each alternative is also analyzed in regards to environmental factors (impacts to wetlands/waters and federally listed species); and finally other factors that should be considered in regards to regional needs. To summarize, in an effort to determine the least environmentally damaging practicable alternative for the site, the applicant analyzed the alternatives based on the following criteria:

Factors Affecting Practicability

1. **Project Purpose** – does the Alternative contain an appropriate configuration to support a large-scale master planned multi-use, density diverse community with a regional mall and other regional commercial uses in a transit and pedestrian friendly environment in the Folsom Sphere of Influence (SOI)?

The purpose of the Backbone Infrastructure project (Figure 1) is to allow for phased implementation of the Folsom Plan Area Specific Plan Area project (SPA). The purpose of the SPA is to: 1) to construct a large-scale, mixed-use master-planned community consisting of mixed-density residential uses, a regional shopping center, and other employment-generating uses; (2) to provide associated supporting infrastructure including on-site backbone infrastructure, schools, parks, an on-site trail system, off-site sewer improvements, off-site roadway improvements, off-site highway interchanges, an off-site water supply pipeline from the Freeport Regional Water Authority diversion facility to the site, and an off-site water treatment plant; and (3) to permanently protect 30 percent of the site as open space for the preservation of oak woodlands and sensitive habitat areas in manner consistent with Measure W.

2. **Logistics** – does the Alternative conform to the land use plan circulation design and school and park, water treatment, flood control standards, and Measure W requirements?

The proposed backbone infrastructure alignment is configured in a way that complies with Measure W by providing 30% open space, provides flood protection, water quality treatment, preserves existing cultural resources while providing an appropriate balance of housing, educational, commercial and retail development to ensure a successful and viable development.

3. **Costs Impact Analysis** – does the backbone alternative have a development cost that is not substantially more than that of the proposed backbone alternative?

The current costs due to wetland avoidance, which includes additional construction, development, wetland avoidance, and cost per acre of wetlands preserved, totals \$15,781,000.

4. **Environmental Impacts** – does the alternative have significantly less impacts on waters of the U.S. than the proposed project alternative? Does the alternative have significantly less impacts on federal-listed species than the proposed project alternative?

Wetland delineations have been conducted and submitted for each of the participating properties. The following delineations have been verified by the Corps: Carpenter Ranch, Prairie City Business Park, Folsom 560 (Hillsborough), Folsom South, Javanifard and Zarghami, and Folsom Heights. On April 20, 2009, the Sacramento Country Day School verification expired. Based upon the best available information, approximately 84.944 acres of waters of the United States (U.S.) have been delineated within the SPA, including an additional 1.301 acres of isolate/non-jurisdictional features (Figure 3. *Wetland Delineation*). Of the 84.944 acres mapped on-site, development will result in direct impacts to approximately 40.590 acres of waters of the U.S. and avoidance/preservation of approximately 44.355 acres of waters of the U.S. The Backbone Infrastructure will impact a total of 13.845 acres of wetlands, which includes 11.490 acres of on-site impacts and 2.354 acres of off-site Backbone Infrastructure impacts. Included in the 11.490 acres of onsite impacts, 0.052 acre are isolated/non-jurisdictional features.

Determinate-level surveys for vernal pool fairy shrimp, vernal pool tadpole shrimp, and slender orcutt grass and Sacramento orcutt grass have been conducted for all portions of the Backbone Infrastructure alignment, including the Javanifard & Zarghami and Sacramento Country Day School properties. None of the target species have been found to occur after two years of surveys along the Backbone Infrastructure alignment, however a report has not been submitted to the USFWS.

5. **Overall** – an alternative is considered not practicable if does not meet all of the above criteria.

Alternative 1 – Easton Valley Parkway (West Location)

Overview

The Easton Valley Parkway (West Location) alternative impacts approximately 12.732 acres of wetlands and avoids 1.060 additional acres of wetlands including portions of Alder Creek and seasonal wetlands in the northwest area of the project, by realigning Easton Valley Parkway (West Location) further to the south in impact areas. This alternative results in the loss of 2.20 planned acres for development.

The additional cost relative to implementation (one-time cost) of measures to avoid the 1.060 acres of wetlands, result in approximately \$854,000 in additional construction costs. This cost equates to approximately \$805,000 per additional acre of wetland avoidance.

Project Purpose

This alternative would not affect the project purpose (Figure 6. *Conceptual Land Use Plan – Easton Valley Parkway, West Location, Alternative*)

Logistics

In order to preserve these wetland features, several horizontal and vertical alignments of Easton Valley Parkway, a major arterial through the Plan Area, were studied. The alignment study of Easton Valley Parkway determined that the wetland feature cannot be avoided by the requested 75-foot buffer. This is due to the design standards for major arterials, the steep terrain and the intersection locations of Easton Valley Parkway with Oak Avenue and Prairie City Road. The wetland feature can be substantially avoided by adjusting the horizontal and vertical alignment of Easton Valley Parkway however, slope embankments and a retaining wall would be required to be within feet of the wetland feature plus a Class 1 Trail would pass through portions of the feature in order to implement any type of avoidance.

This Alternative requires two separate retaining walls to be constructed. One retaining wall will be located north of Easton Valley Parkway and adjacent to the wetland feature being avoided. Most of the retaining wall construction would have to occur from the backside of the wall in order to minimize disturbance to the wetland feature. The retaining wall foundation and footing would be within a few feet of the wetland feature and depending on the soil types may need to encroach into the feature. The ground disturbed constructing the wall can be planted with native plant species.

A second retaining wall is required to be constructed at the back of the landscape corridor adjacent to the southern Easton Valley Parkway right-of-way. This wall is required to minimize the slope embankment construction and impacts to the adjacent single family development.

The Plan Area is required to construct a Class 1 Trail that follows the Alder Creek corridor. The Class 1 Trail crosses over three fingers of the wetland feature. Two of the crossings will have culverts to allow the passage of creek flows while the third would be permanently filled. The Class 1 Trail will be above the 100 year, 24-hour water surface through this segment of the Alder Creek corridor and would assist in providing separation from the feature.

The revised alignment of Easton Valley Parkway encroaches into Lot 39 thus requiring a revised Site plan. The impacts to Lot 39 are detailed in the Alternatives Analysis of Carpenter Ranch - Alternative C.

Costs

In order to quantify the cost impacts of implementing this alternative an estimate was prepared that compares the development cost of the Proposed Project and the Wetland Preserve Alternative. The unit prices from the Preliminary Cost Estimate, Folsom Plan Area, Proposed Project Estimate dated January 30, 2009 were utilized for this cost impacts analysis.

The cost impacts analysis is divided into three sections. One section identifies the development cost impacts due to the loss of use of the impacted land uses. Avoiding a wetland feature reduces the number of residential units and building areas that can be yielded per site. Since

the development area has been reduced, the cost to develop has also been reduced. This cost impact analysis incorporates these cost reductions.

Another section of the cost impacts analysis quantifies the Project Specific One-Time Cost Burdens. The size and cost of the backbone infrastructure improvements such as water treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, arterial and collector roadways does not change due to the loss of some residential units and building areas. Therefore, these costs are spread over less residential units and building areas increasing their portion of the backbone infrastructure burden. The cost for providing the required public facilities and services does change due to the loss of residential units and building areas since the potential for use of these facilities is reduced. The cost of public facilities and services such as fire and police personnel, stations and equipment, libraries, community centers and similar public amenities are reduced due to the smaller population within the Plan Area. As such, both of these revised one-time cost burdens have also been included in the cost impacts analysis.

The third section of the cost impacts analysis identifies the additional cost of on-site and off-site infrastructure improvements that would be required under the Wetland Preserve Alternative to serve the development. Additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridor and additional storm drainage water quality/detention basins have been quantified. Therefore, the cost of the additional infrastructure to implement the Wetland Preserve Alternative into the Site has been included in the cost impacts analysis.

In order to implement this Alternative the Backbone Infrastructure Cost burden will increase by \$854,000. This increased Backbone Burden is additional to the \$554,000 in cost impacts discussed in the Carpenter Ranch – Alternative C analysis. These combined cost of \$1,079,000 and could adversely affect the Plan Area from providing a development with competitive prices. Attachment A provides land use and the one-time cost impacts associated with implementing this alternative.

Environmental Impacts

The Easton Valley Parkway (Western Location) Backbone Alternative primarily shifts a portion of the proposed Backbone Alternative southward away from the Alder Creek corridor and a large seasonal wetland area that is hydrologically connected to Alder Creek. The shift would result in avoiding direct impacts to 0.001-acre of seasonal wetlands, and 1.052 acres of seasonal wetland swales, 0.007 acre of creek/channel and would allow for additional wetland preserve and open space acreage (Figure 7. *Easton Valley Parkway (West) Backbone Alternative*). The preservation of wetlands and associated wetland preserve and open space areas would increase the acreages and overall values of the Alder Creek wetland preserve corridor, allowing for greater connectivity of designated open areas within the FPA and effectively serving as a larger corridor for wildlife use and movement.

The shift would result in direct impacts to creek/channel features and associated wetland preserve and open space to the south, but is generally negated by shifting impacts from north to south on either side of the shift, resulting in a 0.007 decrease in terms of acreage impacts to these features. The shift would also result in minor infringements to wetland preserve and open space areas due to modifications that result in slight expansions of the infrastructure elements in areas along the northern side of the proposed shift. These changes, however are minimal and are negated by the overall increase of wetland preserve and open space within this alternative.

This alternative also excludes a small area on the southern edge of the shift at the confluence of two creek/channel features. This alternative element retracts direct impacts to creek/channel habitat and maintains the existing integrity of the channel confluence and associated wetland preserve and open space acreages.

The overall affect of this alternative would avoid 1.060 acres of impact to jurisdictional Waters of the U.S. and increase designated wetland preserve by 2.9 acres and open space by an additional 1.5 acres.

Table 3 – Easton Valley Parkway (Western Location) Backbone Alternative Acreages

	Overall Impacts		Changes Due to Alternative	
	Proposed Backbone	Alternative Backbone	Added to Backbone Impact	Removed from Backbone Impact
Wetlands/Waters				
Vernal Pool	0.909	0.909	0.000	0.000
Seasonal Wetland	0.653	0.651	0.000	0.001
Seasonal Wetland Swale	6.016	4.964	0.000	1.052
Seep	0.729	0.729	0.000	0.000
Marsh	1.452	1.452	0.000	0.000
Creek/Channel	1.662	1.655	0.000	0.007
Intermittent Drainage	1.901	1.901	0.000	0.000
Ditch	0.312	0.312	0.000	0.000
Pond	0.159	0.159	0.000	0.000
Willow Scrub	0.000	0.000	0.000	0.000
Total:	13.793	12.732	0.000	1.060
Isolated/Non-Jurisdictional				
Isolated Vernal Pool	0.000	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.001	0.000	0.000
Ditch/Canal (NJ)	0.051	0.051	0.000	0.000
Pond (NJ)	0.000	0.000	0.000	0.000
Total:	0.052	0.052	0.000	0.000
Grand Total:	13.845	12.784	0.000	1.060

Summary

This Alternative would not affect the project purpose of the project. Approximately 1.060 acres of additional avoidance can be achieved by shifting the alignment of Easton Valley Parkway to the south approximately 200 feet just west and east of its intersection with the proposed Oak Avenue extension. In order to accomplish this additional avoidance, a retaining wall on the north side of Easton Valley Parkway will be necessary and standard buffer widths would be not be feasible. The Class 1 bike trail would also need to cross the avoided seasonal wetland swale at two of its narrowest points. This alternative would result in approximately \$854,000 for construction costs in addition to \$225,000 costs for the loss of approximately 2.2 acres of residential development.

Alternative 2 – Easton Valley Parkway (East Location)

Overview

The Easton Valley Parkway (East Location) alternative impacts approximately 13.583 acres of wetlands and avoids 0.210 addition acres of wetlands including a seep and portions of an intermittent drainage in the northeastern area of the project, by realigning Easton Valley Parkway (East Location) further to the north in impact areas. This alternative results in the loss of 0.40 land planned acres for development.

The additional cost relative to implementation (one-time cost) of measures to avoid the 0.210 acres of wetlands, result in approximately \$375,000 to \$500,000 in additional construction costs. This cost equates to approximately \$1,786,000 to \$2,381,000 per additional acre of wetland avoidance.

Project Purpose

This alternative would not affect the project purpose (Figure 8. *Conceptual Land Use Plan – '96 Easton Valley Parkway (East Location) Alternative*)

Logistics

In order to preserve these wetland features, several horizontal and vertical alignments of Easton Valley Parkway, a collector street through this portion of the Plan Area, were studied. The alignment study of Easton Valley Parkway determined that a portion of the wetland feature cannot be avoided and other portion of the feature cannot be avoided by the requested 75-foot of buffer. This is due to the design standards for collector roadways and the steep terrain. However, potions of the wetland feature can be avoided by adjusting the horizontal and vertical alignment of Easton Valley Parkway and constructing a retaining wall and slope embankments near the wetland feature.

This Alternative requires a large retaining wall constructed south of Easton Valley Parkway and adjacent to the wetland feature being avoided. Most of the retaining wall construction could occur from the backside of the wall in order to minimize disturbance to the wetland feature. The retaining wall foundation and footing would be within a few feet of the wetland feature and depending on the soil types may need to encroach into the feature. The ground disturbed constructing the wall can be planted with native plant species.

The revised alignment of Easton Valley Parkway encroaches into Lot 88 thus reducing the developable area of the Site.

Costs

In order to quantify the cost impacts of implementing this alternative, an estimate was prepared that compares the Site development cost of the Proposed Project and the Wetland Preserve Project Alternative. The unit prices from the Preliminary Cost Estimate, Folsom Plan Area, Proposed Project Estimate dated January 30, 2009 were utilized for this cost impacts analysis.

The cost impacts analysis is divided into three sections. One section identifies the development cost impacts due to the loss of use of the Site. Avoiding a wetland feature reduces the number of single family units that can be yielded per site. Since the Site development area has been reduced, the cost to develop the site has also been reduced. This cost impact analysis incorporates these cost reductions.

Another section of the cost impacts analysis quantifies the Project Specific One-Time Cost Burdens. The size and cost of the backbone infrastructure improvements such as water treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, arterial and collector roadways does not change due to the loss of some single family units. Therefore, these costs are spread over less units increasing their portion of the backbone infrastructure burden. The cost for providing the required public facilities and services does change due to the loss of single family units since the potential for use of these facilities is reduced. The cost of public facilities and services such as fire and police personnel, stations

and equipment, libraries, community centers and similar public amenities are reduced due to the smaller population within the Plan Area. As such, both of these revised one-time cost burdens have also been included in the cost impacts analysis.

The third section of the cost impacts analysis identifies the additional cost of on-site and off-site infrastructure improvements that would be required under the Wetland Preserve Project Alternative to serve the Site. Additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridor and additional storm drainage water quality/detention basins have been quantified. Therefore, the cost of the additional infrastructure to implement the Wetland Preserve Project Alternative into the Site has been included in the cost impacts analysis.

In order to implement this Alternative the Backbone Infrastructure Cost burden will increase by \$375,000 to \$500,000. This increased Backbone Burden could adversely affect the Plan Area from providing a development with competitive prices. Attachment B provides land use and the one-time cost impacts associated with implementing this alternative.

Environmental Impacts

The Easton Valley Parkway (Eastern Location) Backbone Alternative primarily would exclude a portion of the proposed Backbone Alternative to avoid direct impacts to a network of intermittent drainage features that are hydrologically connected to Alder Creek. The wetland exclusion would result in avoiding direct impact to 0.172-acre of intermittent drainage, 0.002-acre of vernal pool, 0.036 acre of seep and would allow for additional wetland preserve and open space acreage (Figure 9. *Easton Valley Parkway (East) Backbone Alternative*).

The overall affect of this alternative would avoid 0.210-acre of impact to jurisdictional Waters of the U.S. and increase gross open space by 1.0 acres. It should be noted that the potential additional avoidance is comprised primarily of intermittent drainages that are tributary to the main drainage being preserved (ie avoiding the impacts does not provide any additional connectivity or defragmentation of wetlands upstream that are to be preserved and protected in perpetuity).

Table 4 – Easton Valley Parkway (Eastern Location) Backbone Alternative Acreages

	Overall Impacts		Changes Due to Alternative	
	Proposed Backbone	Alternative Backbone	Added to Backbone Impact	Removed from Backbone Impact
Wetlands/Waters				
Vernal Pool	0.909	0.908	0.000	0.002
Seasonal Wetland	0.653	0.653	0.000	0.000
Seasonal Wetland Swale	6.016	6.016	0.000	0.000
Seep	0.729	0.693	0.000	0.036
Marsh	1.452	1.452	0.000	0.000
Creek/Channel	1.662	1.662	0.000	0.000
Intermittent Drainage	1.901	1.729	0.000	0.172
Ditch	0.312	0.312	0.000	0.000
Pond	0.159	0.159	0.000	0.000
Willow Scrub	0.000	0.000	0.000	0.000
Total:	13.793	13.583	0.000	0.210
Isolated/Non-Jurisdictional				
Isolated Vernal Pool	0.000	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.001	0.000	0.000
Ditch/Canal (NJ)	0.051	0.051	0.000	0.000
Pond (NJ)	0.000	0.000	0.000	0.000
Total:	0.052	0.052	0.000	0.000
Grand Total:	13.845	13.635	0.000	0.210

Summary

This Alternative would not affect the project purpose of the project. Approximately 0.210 acres of additional avoidance can be achieved by shifting the alignment of Easton Valley Parkway (East Location) further to the north in impact locations. Due to design standards and steep terrain, a portion of the wetlands could not be avoided by the requested 75-foot buffer. In order to accomplish this additional avoidance, a retaining wall on the south side of Easton Valley Parkway (East Location) will be necessary and standard buffer widths would be not be feasible. Slope embankments near the wetland features would also be required for this Alternative. This alternative would result in approximately \$375,000 to \$500,000 in additional

construction costs and the loss of approximately 0.40 acres of residential development (\$1.78M to \$2.38M per acre of avoided wetland)

Alternative 3 – Scott Road Alternative

Overview

The Scott Road alternative impacts approximately 13.537 acres of wetlands and avoids 0.255 additional acres of wetlands including portions of an intermittent drainage in the southern area of the project, by realigning Scott Road further to the east in impact areas. This alternative results in the loss of 1.50 land planned acres for development.

The additional cost relative to implementation (one-time cost) of measures to avoid the 0.315 acres of wetlands, result in approximately \$300,000 to \$400,000 in additional construction costs. This cost equates to approximately \$1,200,000 to \$1,600,000 per additional acre of wetland avoidance.

Project Purpose

This alternative would not affect the project purpose (Figure 10. *Conceptual Land Use Plan – Scott Road Alternative*)

Logistics

The wetland feature requested to be protected is a tributary to Alder Creek. The Alder Creek tributary flows from the east towards the west, crosses under Scott Road, turns to the north and meanders along the western edge of Scott Road coming within 30-feet of the existing edge of pavement. In order to preserve the wetland feature requested, the centerline of Scott Road needs to be shifted 80-feet to the east so the proposed edge of pavement matches the existing edge of pavement. The shift in the alignment of Scott Road would eliminate the need to realign a 300-foot segment of the tributary. The revised alignment of Scott Road is approximately 3,200 feet long and impacts the adjacent land uses.

The existing culverts in place under Scott Road are not large enough to pass the existing undeveloped 100-year, 24-hour storm runoff flows and Scott Road is overtopped. Therefore, the proposed project is constructing storm drainage infrastructure to prevent the overtopping of Scott Road. The existing undersized culverts will be replaced with a larger culvert that requires the profile grades for Scott Road to be elevated. Due to the raised Scott Road profile grades, a large retaining wall is required to be constructed adjacent to the western edge of pavement to prevent the encroachment of roadway embankment slopes from impacting the wetland feature. The foundation and retaining wall footings may be within 20-feet of the wetland feature.

Costs

In order to quantify the cost impacts of implementing this Alternative, an estimate was prepared that compares the development cost of the Proposed Project and the Wetland Project Alternative. The unit prices from the Preliminary Cost Estimate, Folsom Plan Area, Proposed Project Estimate dated January 30, 2009 were utilized for the cost impacts analysis.

The cost impacts analysis is divided into three sections. One section identifies the development cost impacts due to the loss of available land to develop. Avoiding a wetland buffer corridor reduces the number of residential units and building areas that can be yielded per acre. Since the number of residential units and building areas have been reduced, the cost to develop has also been reduced. This cost impact analysis incorporates these development cost reductions.

Another section of the cost impacts analysis quantifies the Project Specific One-Time Cost Burdens. The size and cost of the backbone infrastructure improvements such as water treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, arterial and collector roadways does not change due to the loss of some residential units and building areas. Therefore, these costs are spread over fewer residential units and building areas increasing their share of the backbone infrastructure burden. However, the cost for providing the required public facilities and services does change due to the loss of residential units and building areas since the population is reduced that require these types of facilities. The cost of public facilities and services such as fire and police personnel, stations and equipment, libraries, community centers and similar public amenities are reduced due to

the smaller population within the Plan Area. As such, both of these cost one-time cost burdens have also been included in the cost impacts analysis.

The third section of the cost impacts analysis identifies the additional cost of on-site and off-site infrastructure improvements that would be required under the Wetland Preserve Alternative to serve the development. Additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridor and additional storm drainage water quality/detention basins have been quantified. Therefore the cost of the additional infrastructure to implement the Wetland Alternative into the Plan Area has been included in the cost impacts analysis.

In order to implement this alternative the Backbone Infrastructure cost burden will increase by \$1,114,000. This increased Backbone Burden could adversely affect the Plan Area from providing a Project with competitive prices. Attachment C provides land use and the one-time cost impacts associated with implementing this alternative.

Environmental Impacts

The Scott Road Backbone Alternative primarily shifts a large portion of the proposed Backbone Alternative eastward to avoid direct impacts to an intermittent drainage feature that is a tributary drainage of Alder Creek. The wetland exclusion would result in avoiding direct impact to 0.059-acre of seasonal wetland swale and 0.197-acre of intermittent drainage, and would allow for additional wetland preserve and open space acreage (Figure 11. *Scott Road Backbone Alternative*). The additional wetland preserve and open space acreage would allow for greater connectivity of designated open areas within this alternative and would effectively serve to create a larger movement corridor for wildlife species within the FPA.

The shift would result in direct impacts to the intermittent drainage feature and associated wetland preserve and open space to the east, but is negated by shifting impacts from west to east on either side of the shift, resulting in a 0.255 decrease in terms of acreage impacts to the intermittent drainage feature.

This alternative also excludes a small area on the eastern side of the shift that would reduce impacts to a seasonal wetland swale feature that is hydrologically connected to Alder Creek. This alternative element retracts direct impacts to seasonal wetland swale habitat in this location and increases the amount of wetland preserve and open space acreage in this alternative. The shift results in additional impacts to seasonal wetland swale acreage to the east of the originally proposed Backbone Infrastructure area, but is negated by the avoidance of seasonal wetlands resulting from the small area shift on the eastern side, effectively reducing overall impacts to seasonal wetlands by 0.059-acre.

The overall affect of this alternative would avoid 0.255-acre of impact to jurisdictional Waters of the U.S. and increase wetland preserve by 2.1 acres and open space by an additional 4.0 acres.

Table 5 – Scott Road Alternative Backbone Alternative Acreages

Wetlands/Waters	Overall Impacts		Changes Due to Alternative	
	Proposed Backbone	Alternative Backbone	Added to Backbone Impact	Removed from Backbone Impact
Vernal Pool	0.909	0.909	0.000	0.000
Seasonal Wetland	0.653	0.653	0.000	0.000
Seasonal Wetland Swale	6.016	5.957	0.000	0.059
Seep	0.729	0.729	0.000	0.000
Marsh	1.452	1.452	0.000	0.000
Creek/Channel	1.662	1.662	0.000	0.000
Intermittent Drainage	1.901	1.704	0.000	0.197
Ditch	0.312	0.312	0.000	0.000
Pond	0.159	0.159	0.000	0.000
Willow Scrub	0.000	0.000	0.000	0.000
Total:	13.793	13.537	0.000	0.255
Isolated/Non-Jurisdictional				
Isolated Vernal Pool	0.000	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.001	0.000	0.000
Ditch/Canal (NJ)	0.051	0.051	0.000	0.000
Pond (NJ)	0.000	0.000	0.000	0.000
Total:	0.052	0.052	0.000	0.000
Grand Total:	13.845	13.589	0.000	0.255

Summary

This Alternative would not affect the project purpose of the project. Approximately 0.255 acres of additional avoidance can be achieved by shifting the alignment of Scott Road further to the east in impact locations. In order to accomplish this additional avoidance, the centerline of Scott Road needs to be shifted 80-feet to the east so the proposed edge of pavement matches the existing pavement. The shift in the alignment of Scott Road would eliminate the need to realign a 300-foot segment of the tributary. This alternative would result in approximately \$300,000 to \$400,000 in additional construction costs and the loss of approximately 1.50 acres of residential development (\$1.2M to \$1.6M per acre of avoided wetland).

Alternative 4 – Empire Ranch Road Alternative

Overview

The Empire Ranch Road alternative impacts approximately 13.717 acres of wetlands and avoids 0.076 addition acres of wetlands, including portions of a seasonal wetland swale in the eastern area of the project, by realigning Empire Ranch Road further to the west in impact areas. This alternative results in the loss of no land planned acres for development.

The additional cost relative to implementation (one-time cost) of measures to avoid the 0.076 acres of wetlands, result in approximately \$180,000 to \$250,000 in additional construction costs. This cost equates to approximately \$2,400,000 to \$3,300,000 per additional acre of wetland avoidance.

Project Purpose

This alternative would not affect the project purpose (Figure 12. *Conceptual Land Use Plan – Empire Ranch Road Alternative*) although avoiding the intermittent drainage in this location would most likely preclude the construction of the Empire Ranch Road Interchange.

Logistics

The wetland feature requested to be protected is the uppermost reach of a tributary to Carson Creek. The Carson Creek tributary begins at the top of a hill within the Plan Area and flows from the north towards the south in a steep ravine. Empire Ranch Road is a major Arterial that connects Highway 50 to an Industrial/Business Park located south of the Plan Area. The alignment of Empire Ranch Road cannot be revised due to the already planned location of the Highway 50/Empire Ranch Road interchange and the very steep terrain. The portion of the feature requested to be avoided is currently impacted by a fill slope required for Empire Ranch Road.

The encroachment of the Empire Ranch Road fill slope into the Wetland Feature requested to be protected can be reduced by the construction of a large retaining. However the Wetland Feature cannot be completely avoided.

There is no land use impacts associated with this Alternative.

Costs

In order to quantify the cost impacts of implementing this alternative an estimate was prepared that compares the development cost of the Proposed Project and the Wetland Project Alternative. The unit prices from the Preliminary Cost Estimate, Folsom Plan Area, Proposed Project Estimate dated January 30, 2009 were utilized for this cost impacts analysis.

The cost impacts analysis is divided into three sections. One section identifies the development cost impacts due to the loss of use of the impacted land uses. Avoiding a wetland feature reduces the number of residential units and building area that can be yielded per lot. Since the development area has been reduced, the cost to develop has also been reduced. This cost impact analysis incorporates these development cost reductions.

Another section of the cost impacts analysis quantifies the Project Specific One-Time Cost Burdens. The size and cost of the backbone infrastructure improvements such as water treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, arterial and collector roadways does not change due to the loss of some

residential units and building areas. Therefore, these costs are spread over less units and building area increasing their portion of the backbone infrastructure burden. The cost for providing the required public facilities and services does change due to the loss of residential and building areas since the potential for use of these facilities is reduced. The cost of public facilities and services such as fire and police personnel, stations and equipment, libraries, community centers and similar public amenities are reduced due to the smaller population within the Plan Area. As such, both of these revised one-time cost burdens have also been included in the cost impacts analysis.

The third section of the cost impacts analysis identifies the additional cost of on-site and off-site infrastructure improvements that would be required under the Wetland Preserve Alternative to serve the development. Additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridor and additional storm drainage water quality/detention basins have been quantified. Therefore, the cost of the additional infrastructure to implement the Wetland Alternative into the development has been included in the cost impacts analysis.

In order to implement this Alternative the Backbone Infrastructure Cost burden will increase by \$217,000. This increased Backbone Burden could adversely affect the Plan Area from providing a development with competitive prices. Attachment D provides land use and one-time cost impacts associated with implementing this alternative.

Environmental Impacts

The Empire Ranch Road Backbone Alternative excludes two small portions of the Backbone Infrastructure area. These areas are located along the eastern edge of the proposed Backbone Infrastructure with one located along the southeastern edge and one along the northeastern edge. The proposed exclusion would result in avoiding direct impacts to 0.076-acre of seasonal wetland and associated wetland preserve and open space acreage. The additional wetland preserve and open space acreage would allow for greater connectivity of designated open areas located in the southeastern portion of this alternative, and would effectively serve to enlarge the movement corridor for wildlife species, albeit relatively small. The excluded segment of

seasonal wetland swale in the northeastern portion, however, would only preserve a small, isolated segment of a larger seasonal wetland that will be directly impacted during project grading, and would not likely continue to function as a wetland following project build-out. Furthermore, the remaining wetland would not be included within designated wetland preserve and open space and would not be connected to any preserved corridor, minimizing its value.

The overall affect of this alternative would avoid 0.076-acre of impact to jurisdictional Waters of the U.S. and increase wetland preserve by 0.4 acres and open space by an additional 0.4 acres (Figure 13. *Empire Ranch Road Backbone Alternative*). Preservation of the small segment of seasonal wetland swale in the northern portion is not recommended since it is likely that the remaining wetland piece would not continue to function as a viable wetland.

Table 6 – Empire Ranch Road Alternative Backbone Alternative Acreages

Wetlands/Waters	Overall Impacts		Changes Due to Alternative	
	Proposed Backbone	Alternative Backbone	Added to Backbone Impact	Removed from Backbone Impact
Vernal Pool	0.909	0.909	0.000	0.000
Seasonal Wetland	0.653	0.653	0.000	0.000
Seasonal Wetland Swale	6.016	5.940	0.000	0.076
Seep	0.729	0.729	0.000	0.000
Marsh	1.452	1.452	0.000	0.000
Creek/Channel	1.662	1.662	0.000	0.000
Intermittent Drainage	1.901	1.901	0.000	0.000
Ditch	0.312	0.312	0.000	0.000
Pond	0.159	0.159	0.000	0.000
Willow Scrub	0.000	0.000	0.000	0.000
Total:	13.793	13.717	0.000	0.076
Isolated/Non-Jurisdictional				
Isolated Vernal Pool	0.000	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.001	0.000	0.000
Ditch/Canal (NJ)	0.051	0.051	0.000	0.000
Pond (NJ)	0.000	0.000	0.000	0.000
Total:	0.052	0.052	0.000	0.000
Grand Total:	13.845	13.769	0.000	0.076

Summary

This Alternative would not affect the project purpose of the project. Approximately 0.076 acres of additional avoidance can be achieved by shifting the alignment of Empire Ranch Road further to the west in impact locations. The alignment of Empire Ranch Road cannot be revised due to the already planned location of the Highway 50/Empire Ranch Road interchange and the very steep terrain. Moreover, the portion of the feature requested to be avoided is currently impacted by a fill slope required for Empire Ranch Road. The encroachment of the Empire Ranch Road fill slope into the Wetland Feature requested to be protected can be reduced by the construction of a large retaining. However the Wetland Feature cannot be completely avoided. In order to accomplish this additional avoidance, a large retaining wall adjacent to Empire Ranch Road will be necessary and standard buffer widths would not be feasible. This alternative would result in approximately \$180,000 to \$250,000 in additional construction costs, however, due to the slope of the land, there is no loss of land planned acres (\$2.3M to \$3.30M per acre of avoided wetland).

Alternative 5 – Street “A” Alternative

Overview

The Street “A” alternative impacts approximately 13.720 acres of wetlands and avoids 0.077 additional acres of wetlands, including portions of an intermittent drainage in the southern area of the project, by realigning Street “A” further to the south in impact areas. Approximately 0.005 acre of seasonal wetlands would be impacted due to this alternative. This alternative results in the loss of 1.10 land planned acres for development.

The additional cost relative to implementation (one-time cost) of measures to avoid the 0.077 acres of wetlands, result in approximately \$260,000 in additional construction costs. This cost equates to approximately \$3,400,000 per additional acre of wetland avoidance.

Project Purpose

This alternative would not affect the project purpose (Figure 14. *Conceptual Land Use Plan – Street “A” Alternative*).

Logistics

The wetland feature requested to be protected is a tributary to Alder Creek. The Alder Creek tributary flows from the south towards the north crosses under the Plan Areas proposed Street "A", turns to the east and eventually connects to the Alder Creek. In order to reduce the impacts to the wetland feature requested to be preserved, the centerline of Street "A" was shifted approximately 50 feet to the south. The revised alignment of Street "A" avoids a short meandering section of the wetland feature.

The wetland feature will cross under Street "A" in a culvert. In order to avoid a short meandering section of the tributary on the north side of the roadway a large retaining wall is required. The retaining wall will impact a portion of the tributary. However the main tributary connectivity would be maintained as requested.

The realignment of Street "A" reduces the land uses of the adjacent developments.

Costs

In order to quantify the cost impacts of implementing this alternative an estimate was prepared that compares the development cost of the Proposed Project and the Wetland Project Alternative. The unit prices from the Preliminary Cost Estimate, Folsom Plan Area, Proposed Project Estimate dated January 30, 2009 were utilized for this cost impacts analysis.

The cost impacts analysis is divided into three sections. One section identifies the development cost impacts due to the loss of use of the impacted land uses. Avoiding a wetland feature reduces the number of residential units and building area that can be yielded per lot. Since the development area has been reduced, the cost to develop has also been reduced. This cost impact analysis incorporates these development cost reductions.

Another section of the cost impacts analysis quantifies the Project Specific One-Time Cost Burdens. The size and cost of the backbone infrastructure improvements such as water

treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, arterial and collector roadways does not change due to the loss of some residential units and building areas. Therefore, these costs are spread over less units and building area increasing their portion of the backbone infrastructure burden. The cost for providing the required public facilities and services does change due to the loss of residential and building areas since the potential for use of these facilities is reduced. The cost of public facilities and services such as fire and police personnel, stations and equipment, libraries, community centers and similar public amenities are reduced due to the smaller population within the Plan Area. As such, both of these revised one-time cost burdens have also been included in the cost impacts analysis.

The third section of the cost impacts analysis identifies the additional cost of on-site and off-site infrastructure improvements that would be required under the Wetland Preserve Alternative to serve the development. Additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridor and additional storm drainage water quality/detention basins have been quantified. Therefore, the cost of the additional infrastructure to implement the Wetland Alternative into the development has been included in the cost impacts analysis.

In order to implement this Alternative the Backbone Infrastructure Cost burden will increase by \$300,000. This increased Backbone Burden could adversely affect the Plan Area from providing a development with competitive prices. Attachment E provides land use and one-time cost impacts associated with implementing this alternative.

Environmental Impacts

The Street "A" Backbone Alternative shifts a portion of the proposed Backbone Alternative southward to minimize direct impacts to vernal pool, seasonal wetland swale, and intermittent drainage features. The shift would result in avoiding direct impact to 0.077-acre of Waters of the U.S. including 0.001-acre of vernal pool (one small pool), 0.008-acre of seasonal wetland swales, and 0.068-acre of intermittent drainage (Figure 15. *Street "A" Backbone Alternative*). These wetlands would be incorporated into established wetland preserve and open space areas

thereby increasing the acreage and overall values of the wetland preserve/open space corridor within the overall project and the FPA.

The shift would result in direct impacts to 0.005 acres of seasonal wetland swales and associated wetland preserve and open space to the south, but is negated by shifting impacts from north to south on either side of the shift, resulting in an overall decrease of 0.072-acre of impacts to these wetland features.

The overall affect of this alternative would avoid 0.077-acre of impact to jurisdictional Waters of the U.S. and increase wetland preserve by 0.4 acres

Table 7 – Street "A" Alternative Backbone Alternative Acreages

Wetlands/Waters	Overall Impacts		Changes Due to Alternative	
	Proposed Backbone	Alternative Backbone	Added to Backbone Impact	Removed from Backbone Impact
Vernal Pool	0.909	0.909	0.000	0.001
Seasonal Wetland	0.653	0.658	0.005	0.000
Seasonal Wetland Swale	6.016	6.008	0.000	0.008
Seep	0.729	0.729	0.000	0.000
Marsh	1.452	1.452	0.000	0.000
Creek/Channel	1.662	1.662	0.000	0.000
Intermittent Drainage	1.901	1.833	0.000	0.068
Ditch	0.312	0.312	0.000	0.000
Pond	0.159	0.159	0.000	0.000
Willow Scrub	0.000	0.000	0.000	0.000
Total:	13.793	13.720	0.005	0.077
Isolated/Non-Jurisdictional				
Isolated Vernal Pool	0.000	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.001	0.000	0.000
Ditch/Canal (NJ)	0.051	0.051	0.000	0.000
Pond (NJ)	0.000	0.000	0.000	0.000
Total:	0.052	0.052	0.000	0.000
Grand Total:	13.845	13.772	0.005	0.077

Summary

This Alternative would not affect the project purpose of the project. Approximately 0.077 acres of additional avoidance can be achieved by shifting the alignment of Street "A" further to the

south in impact locations. In order to reduce the impacts to the wetland feature requested to be preserved, the centerline of Street "A" was shifted approximately 50 feet to the south. The revised alignment of Street "A" avoids a short meandering section of the wetland feature. The wetland feature will cross under Street "A" in a culvert. In order to avoid a short meandering section of the tributary on the north side of the roadway a large retaining wall is required. This alternative would result in approximately \$260,000 in additional construction costs and the loss of approximately 1.10 acres of residential development, while avoiding only 0.085 additional acres of wetlands (\$3.4M per acre of avoided wetland).

Alternative 6 – Oak Avenue Alternative

Overview

The Oak Avenue alternative (realigning Oak Avenue and preservation of the seasonal wetland swale system on Folsom 560) impacts approximately 13.009 acres of wetlands. The alternative would preserve an additional 0.784 acres of wetlands, including vernal pools, seasonal wetlands, seasonal wetland swales, and intermittent drainage features by moving Oak Avenue further to the east and establishing a 36.7-acre preserve within the Folsom 560 Project.

The additional cost relative to implementation (one-time cost) of measures for this alternative would result in approximately \$5.57 million in additional construction costs. This cost equates to approximately \$7,010,000 per additional acre of wetland avoidance. The loss of 36.7 acres of developable land would also preclude the Folsom 560 project from being competitive as the increased infrastructure costs would be distributed over less units.

Project Purpose

This Alternative only results in less impacts to wetlands if analyzed in conjunction with an onsite alternative for the Folsom 560 project and would affect the project purpose of the project. The Folsom 560 project would lose 36.7 acres of developable land, putting an unbalanced burden on the Folsom 560 project (Figure 16. *Conceptual Land Use Plan – Oak Avenue Alternative*). The Folsom 560 Project, as proposed, already contains a significant amount of open space and wetland preserve. The project site is constrained by oak woodland in the north, a powerline easement that bisects the property from north to south, a regional park and several large detention basins. Parks, easements and open space areas for the proposed project total 225 acres or 40% of the project site.

The additional avoidance contemplated in this alternative would have significant adverse effects on the Folsom 560 project purpose. Approximately 37 acres of prime residential units, located in the heart of the project would be lost. The addition of the potential open space area would leave the project with even more fragmented developable areas than it are already constrained by proposed wetland avoidance, oak woodland preservation, utility easements, parks, water quality/detention basins, etc. The loss of the units, even without the additional cost of relocating Oak Avenue and bridge(s) would preclude the project from developing in an efficient enough manner to be able to provide residential units at competitive/reasonable prices.

Logistics

The wetland features that would be avoided under this alternative include a seasonal wetland swale, adjacent vernal pools and an intermittent drainage that are located in the middle of the Folsom 560 development. The swale system generally flows north into the pond that is located within the Open Space area in the northern portion of Folsom 560. In order to avoid the swale system, Oak Avenue must be realigned to the east on Folsom 560 (portions of Oak Avenue will also be required to be realigned on the Country Day School property to align at the property boundaries. Due to the topography of the area, a bridge will be required to cross the avoided

swale/intermittent drainages while allowing for a natural substrate and wildlife passage within the potential open space corridor and maintain roadway circulation within the Plan Area.

Street 'D' has been realigned to the south to avoid impacting the wetland buffer corridor. This realignment of Street 'D' added a few hundred feet to its length.

Storm water quality/detention basins are typically located in the lower areas of a drainage shed. Storm water quality/detention basins prevent untreated and uncontrolled storm runoff releases from entering the wetland preserve corridor and damaging the feature being protected. The proposed wetland buffer corridor requires an additional water quality/hydro-modification basin and the relocation of another water quality/hydro-modification basin. One of the basins would need to be relocated upstream from its original location and placed within an open space area on the eastern side of the wetland buffer corridor. An additional water quality/hydro-modification basin would be necessary and located on the western side of the wetland corridor at the northern end of the development (Figure 17. *Oak Avenue Alternative – Land Use Impact with Grading*).

Costs

In order to quantify the cost impacts of implementing this Alternative, an estimate was prepared that compares the development cost of the Proposed Project and the Wetland Project Alternative. The unit prices from the Preliminary Cost Estimate, Folsom Plan Area, Proposed Project Estimate dated January 30, 2009 were utilized for the cost impacts analysis.

The cost impacts analysis is divided into three sections. One section identifies the development cost impacts due to the loss of available land to develop. A wetland buffer corridor reduces the number of residential units that can be yielded per acre. Since the number of residential units has been reduced, the cost to develop has also been reduced. This cost impact analysis incorporates these development cost reductions.

Another section of the cost impacts analysis quantifies the Project Specific One-Time Cost Burdens. The size and cost of the backbone infrastructure improvements such as water

treatment plants, regional sanitary sewer pump stations, drainage detention basins, freeway interchanges, arterial and collector roadways does not change due to the loss of some residential units. Therefore, these costs are spread over fewer residential units increasing their share of the backbone infrastructure burden. However, the cost for providing the required public facilities and services does change due to the loss of residential units since the population is reduced that require these types of facilities. The cost of public facilities and services such as fire and police personnel, stations and equipment, libraries, community centers and similar public amenities are reduced due to the smaller population within the Plan Area. As such, both of these cost one-time cost burdens have also been included in the cost impacts analysis.

The third section of the cost impacts analysis identifies the additional cost of infrastructure improvements that would be required under the Wetland Preserve Alternative to serve the development. Additional sewer, water, drainage and roadway infrastructure improvements such as bridges, boring and jacking of utilities under the wetland buffer corridor and additional storm drainage water quality/detention basins have been quantified. Therefore the cost of the additional infrastructure to implement the Wetland Alternative into the Plan Area has been included in the cost impacts analysis.

As a result of having less development land to spread the Backbone Infrastructure Cost burden over together with the cost of additional infrastructure required to incorporate a wetland buffer corridor, the cost to develop this Alternative has increased by \$7,955,000 (Direct costs associated with Oak Avenue total \$5.5 million). This increased development cost coupled with the 36.7 acres of less development area, adversely affects this development from providing a Project with competitive prices.

Environmental Impacts

The Oak Avenue Backbone Alternative would shift a large portion of the proposed alternative eastward to avoid direct impacts to portions of a season wetland swale and intermittent drainage features that are tributary drainages to Alder Creek. This alternative would result in avoiding direct impacts to a total of 0.784 acres of wetlands and waters, including 0.174 acre of vernal pool, 0.511 acre of seasonal wetland swale, 0.044 acre of seasonal wetland, and 0.050-

acre of intermittent drainage, and 0.005 acre of ditch. (Figure 18. *Oak Avenue Backbone Alternative*).

Table 8 – Oak Avenue Backbone Alternative Acreages

	Overall Impacts		Changes Due to Alternative		Additional Project Avoidance*
	Proposed Backbone	Alternative Backbone	Added to Backbone Impact	Removed from Backbone Impact	
Wetlands/Waters					
Vernal Pool	0.909	0.735	0.000	0.000	0.174
Seasonal Wetland	0.653	0.609	0.000	0.000	0.044
Seasonal Wetland Swale	6.016	5.505	0.000	0.156	0.511
Seep	0.729	0.729	0.000	0.000	0.000
Marsh	1.452	1.452	0.000	0.000	0.000
Creek/Channel	1.662	1.662	0.000	0.000	0.000
Intermittent Drainage	1.901	1.851	0.000	0.036	0.050
Ditch	0.312	0.307	0.000	0.000	0.005
Pond	0.159	0.159	0.000	0.000	0.000
Willow Scrub	0.000	0.000	0.000	0.000	0.000
Total:	13.793	13.009	0.000	0.192	0.784
Isolated/Non-Jurisdictional					
Isolated Vernal Pool	0.000	0.000	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.001	0.000	0.000	0.000
Ditch/Canal (NJ)	0.051	0.051	0.000	0.000	0.000
Pond (NJ)	0.000	0.000	0.000	0.000	0.000
Total:	0.052	0.052	0.000	0.000	0.000
Grand Total:	13.845	14.359	0.000	0.192	0.163

*Areas of additional project avoidance with the addition of open space associated with the backbone alternative.

Summary

This alternative would preclude the Folsom 560 project from achieving its project purpose as the cost and impacts to land use designs would preclude the project from providing residential housing at competitive prices. This alternative results in only 0.784 acres of additional wetland avoidance while one-time construction costs total approximately \$5.5 million (\$7.01 million per acre of avoided wetland). The additional construction costs to move Oak Avenue alone are unreasonable given the amount of additional wetland avoidance that would be realized.

SUMMARY/CONCLUSION

The proposed project and the other alternatives are presented and summarized below in Table 9 – Assessment of Backbone Infrastructure Alternatives for Folsom Specific Plan Area. With the exception of Alternative 6 (realignment of Oak Avenue and additional avoidance on Folsom 560), none of the alternatives would preclude the project purpose from being achieved or are individually cost prohibitive. All of the alternatives are logistically feasible with the exception of the Empire Ranch Road Alternative which cannot be implemented without precluding the construction of the planned Empire Ranch Road Interchange at highway 50. Cumulatively, the alternatives result in \$7,800,000 in additional one-time construction costs. The Alternatives with the greatest additional avoidance (and highest overall value) are the realignment of Easton Valley Parkway and the realignment of Scott Road. These two alternatives would not only avoid an additional 1.31 acres of wetland habitat, but would also address fragmentation of wetland features that are currently proposed for preservation (the cost per acre of avoidance for these two alternatives are \$805K and \$1.6M respectively). Alternatives 2 (Easton Valley Parkway East), 4 (Empire Ranch Road), and 5 (Street "A") would cumulatively result in only 0.358 acre of additional avoidance at an average cost of \$2.37 million an acre (one time construction cost of approximately \$850,000). The avoided features in these alternatives are primarily upper reaches of drainages that do not have any connectivity to upstream habitat. Alternative 6 (Oak Avenue Realignment) would preclude Folsom 560 from achieving its project purpose, has a one-time construction cost of \$5,500,000, and results in only 0.784 acres of additional avoidance.

Implementation of Alternative 1 and 3 appear to be practicable and would result in the most significant avoidance and preservation of wetlands and wildlife habitat. The cost to implement Alternatives 2, 4, and 5 would not be reasonable given the amount and value of wetland avoidance that could be achieved, but are especially cost prohibitive (cumulatively), if Alternatives 1 and 3 are to be implemented. Alternative 6 would result in unreasonable costs, provide little additional avoidance (relative to cost), and would preclude the Folsom 560 project from achieving its project purpose. Regardless of the affects to the Folsom 560 project, the one-time additional cost of Alternative 6 is not reasonable given the amount of wetlands avoided (0.784 acre).

Table 9 – Assessment of Backbone Infrastructure Alternatives for Folsom Specific Plan Area*

Design Alternative	Project Purpose	Cost	Logistics	Environmental (Waters)	Environmental (Species)	Practicable
Easton Valley Parkway (West Location)	YES	YES	YES	YES	NO	YES
Easton Valley Parkway (East Location)	YES	YES	YES	NO	NO	NO
Scott Road	YES	YES	YES	YES**	NO	YES
Empire Ranch Road	YES	YES	NO	NO	NO	NO
Street "A"	YES	YES	YES	NO	NO	NO
Oak Avenue	NO	NO	YES	NO	NO	NO
Proposed Project	YES	PROJECT	YES	PROJECT	PROJECT	YES

*See individual alternative analysis for Alternative-specific details

**Although only 0.315 additional acres of wetlands will be preserved, this alternative allows for tributary to be maintained in an unfractured state.

Project Purpose – does the alternative contain sufficient acres of developable area available for large-scale mixed use community including a regional mall with sufficient acreage, configuration, and location within the Folsom Sphere of Influence (SOI)?

Cost – does the alternative result in construction costs that are NOT substantially higher than the proposed project? Does the alternative have a development cost per net developable acre that is not substantially more than that of the proposed project alternative or on any individual property owner?

Logistics – does the alternative conform to the land use plan circulation design and school and park, water treatment, flood control standards, and Measure W requirements?

Environmental/Waters – does the alternative have significantly less impacts on waters of the United States than the proposed project alternative?

Environmental/Species – does the alternative have significantly less impacts on federally listed species than the proposed project alternative?

Practicable – is this alternative practicable in light of all factors?

Additional Analysis

After an additional analysis of Alternative 1 – Easton Valley Parkway (West Location) and Alternative 3 – Scott Road, it was determined that both Alternative 1 and Alternative 3 would be possible to achieve and have been included into the Revised Backbone Infrastructure. With further analysis on the Backbone Infrastructure footprint, additional details were evaluated in the components of the Backbone Infrastructure, including trail locations, basin locations, and water tank locations. The Revised Backbone Infrastructure project includes an additional avoidance of 0.142 acres from Alternatives 1 and 3, as well as areas of additional impacts associated with trails and other component additions of the backbone infrastructure that were added since the original 404 application was submitted (*Figure 19. Current Backbone Infrastructure (includes additional components & changes of Alternative 1 & 3)*). The total

backbone impact acreage decreased from 13.793 acres of impacts to 13.651 acres of impacts, totaling an additional avoidance of 0.142 acres of wetlands in the Revised Backbone Infrastructure (Figure 20, Table 10).

<u>Jurisdictional Wetlands/Waters</u>	Proposed Backbone			Revised Backbone (3-1-12)*		
	On-Site Existing	Off-Site Existing	Total Backbone Existing	On-Site Existing	Off-Site Existing	Total Backbone Existing
Vernal Pool	0.623	0.287	0.909	0.624	0.316	0.940
Seasonal Wetland	0.603	0.050	0.653	1.231	0.061	1.292
Seasonal Wetland Swale	5.961	0.055	6.016	4.930	0.055	4.985
Seep	0.729	0.000	0.729	0.617	0.000	0.617
Marsh	0.012	1.440	1.452	0.017	1.440	1.457
Creek/Channel	1.189	0.473	1.662	1.181	0.426	1.607
Intermittent Drainage	1.857	0.044	1.901	1.494	0.044	1.538
Ditch	0.304	0.007	0.312	0.356	0.007	0.363
Pond	0.159	0.000	0.159	0.852	0.000	0.852
Willow Scrub	0.000	0.000	0.000	0.000	0.000	0.000
Total:	11.438	2.354	13.793	11.302	2.349	13.651
<u>Isolated/Non-Jurisdictional</u>						
Isolated Vernal Pool	0.000	0.000	0.000	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.000	0.001	0.001	0.000	0.001
Ditch/Canal (NJ)	0.051	0.000	0.051	0.051	0.000	0.051
Pond (NJ)	0.000	0.000	0.000	0.000	0.000	0.000
Total:	0.052	0.000	0.052	0.052	0.000	0.052
Grand Total:	11.490	2.354	13.845	11.354	2.349	13.703

*Includes additional avoidance of 0.142 acres from Alternatives 1 and 3, and areas of additional impacts associated with trails and other component additions of the backbone infrastructure that were added since the original 404 application.

Alternative 1 – Easton Valley Parkway (West Location)

With the Revised Backbone Infrastructure, the Easton Valley Parkway (West Location) alternative will avoid 1.060 additional acres of wetlands including portions of Alder Creek and seasonal wetlands in the northwest area of the project, by realigning Easton Valley Parkway (West Location) further to the south in impact areas. Although this Alternative would not affect the project purpose of the project, this a Alternative would result in approximately \$854,000 for construction costs in addition to \$225,000 costs for the loss of approximately 2.2 acres of residential development. However, approximately 1.060 acres of additional avoidance can be achieved by shifting the alignment of Easton Valley Parkway to the south approximately 200

feet just west and east of its intersection with the proposed Oak Avenue extension. In order to accomplish this additional avoidance, a retaining wall on the north side of Easton Valley Parkway will be necessary and standard buffer widths from wetlands would be not be feasible. The Class 1 bike trail would also need to cross the avoided seasonal wetland swale at two of its narrowest points. This alternative has been adopted and is now part of the Revised Proposed Backbone Infrastructure (Figure 21. *Detail of Alternative 1 Easton Valley Parkway (West) Land Use Change*).

Alternative 3 – Scott Road

With the Revised Backbone Infrastructure, the Scott Road alternative will avoid 0.255 additional acres of wetlands including portions of an intermittent drainage in the southern area of the project, by realigning Scott Road further to the east in impact areas. Although this Alternative would not affect the project purpose of the project, this Alternative would result in approximately \$300,000 to \$400,000 in additional construction costs and result in the loss of 1.50 land planned acres for development. However, approximately 0.255 acres of additional avoidance can be achieved by shifting the alignment of Scott Road further to the east in impact locations. In order to accomplish this additional avoidance, the centerline of Scott Road needs to be shifted 80-feet to the east so the proposed edge of pavement matches the existing pavement. The shift in the alignment of Scott Road would eliminate the need to realign a 300-foot segment of the tributary. This alternative would result in approximately \$300,000 to \$400,000 in additional construction costs and the loss of approximately 1.50 acres of residential development. This alternative has been adopted and is now part of the Revised Proposed Backbone Infrastructure (Figure 22. *Detail of Alternative 3 Scott Road Land Use Change*).

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- Figure 3. Wetland Delineation
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- Figure 6. Conceptual Land Use Plan - Easton Valley Parkway (West Location) Alternative
- Figure 7. Easton Valley Parkway (West) Backbone Alternative
- Figure 8. Conceptual Land Use Plan – '96 Easton Valley Parkway (East Location) Alternative
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- Figure 10. Conceptual Land Use Plan - Scott Road Alternative
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- Figure 20. Current Backbone Impact Plan (3/1/12)
- Figure 21. Detail of Alternative 1 Easton Valley Parkway (West) Land Use Change
- Figure 22. Detail of Alternative 3 Scott Road Land Use Change

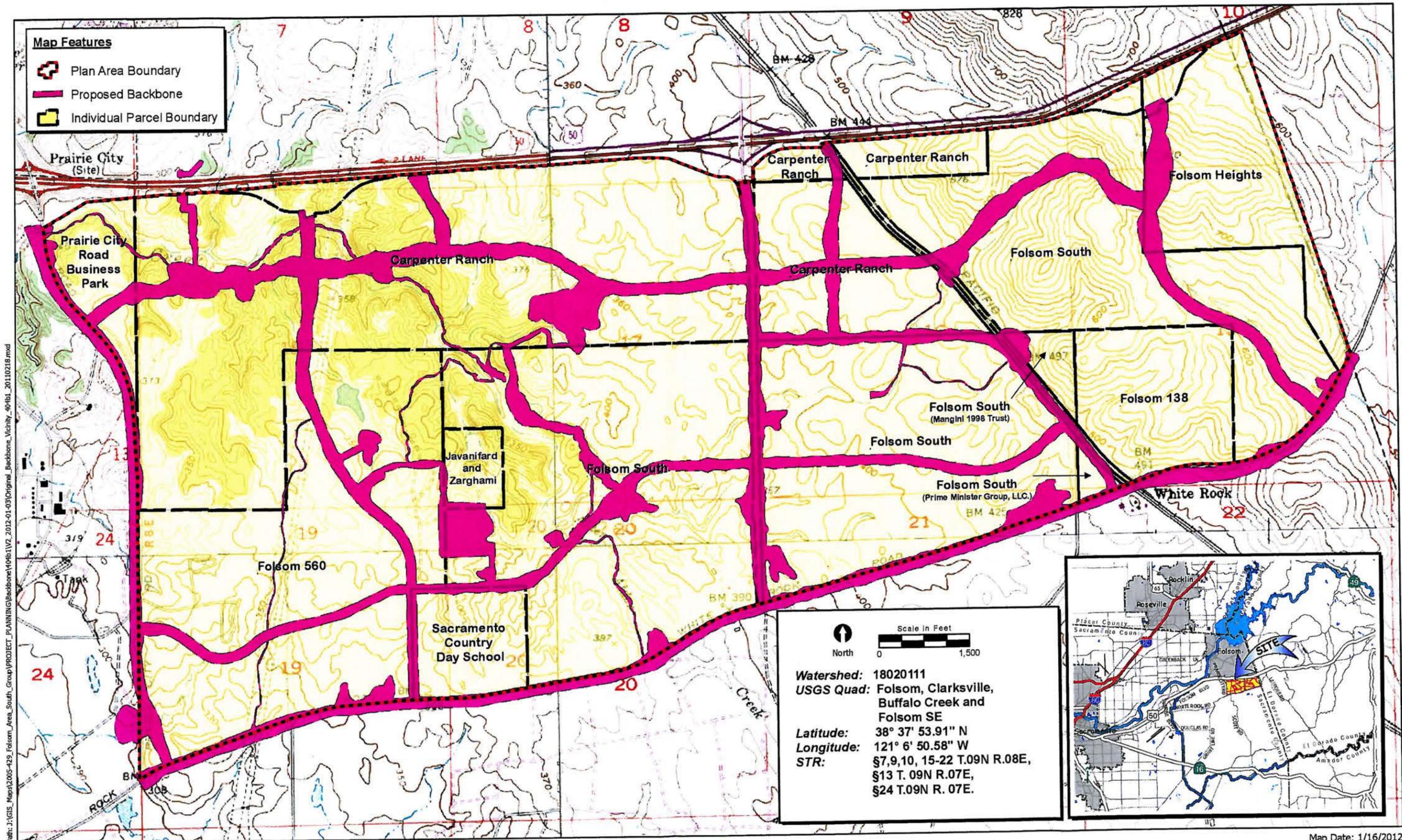
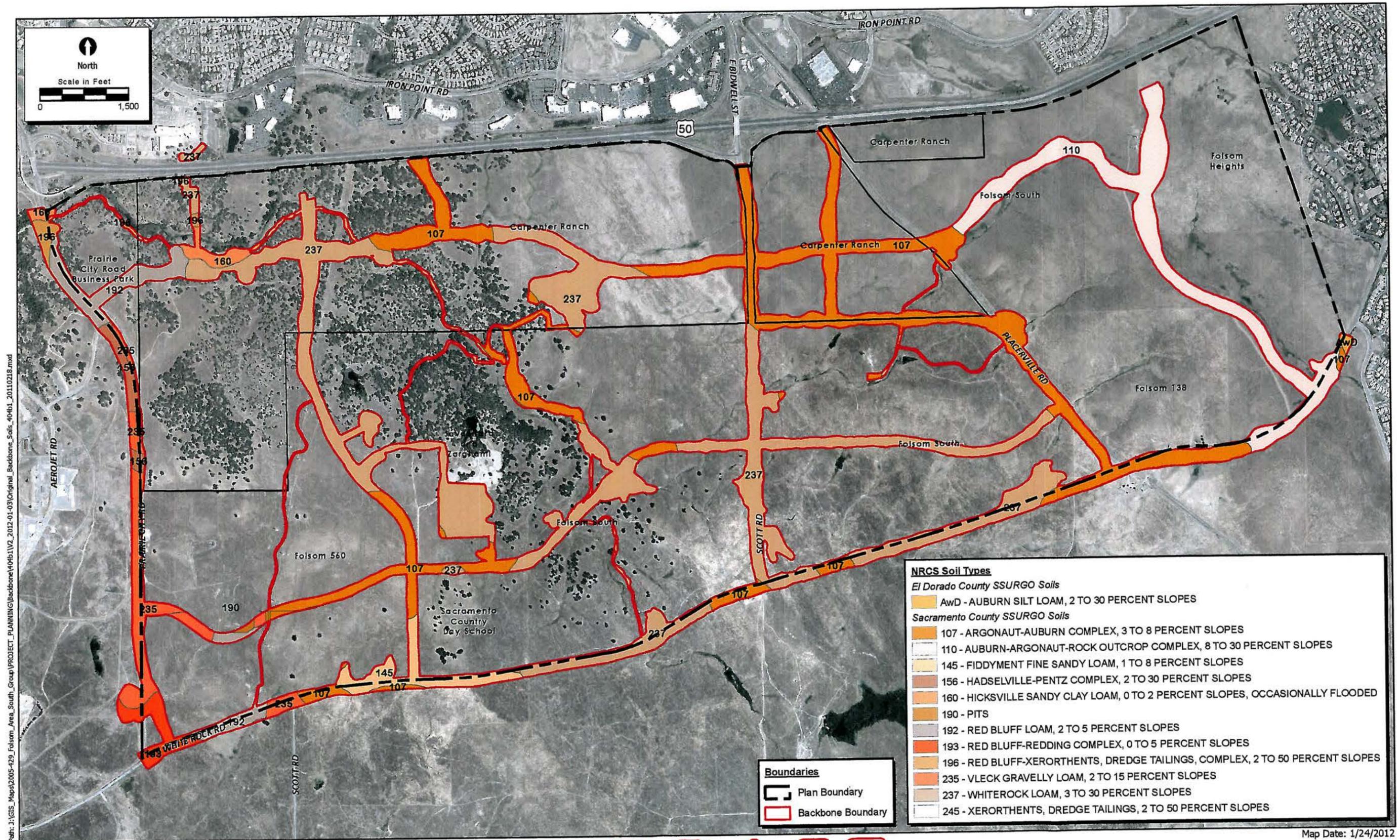


Figure 1. Project Site and Vicinity
2005-429 Folsom Plan Area Specific Plan

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Map Date: 1/24/2012
Photo: NAIP 2010

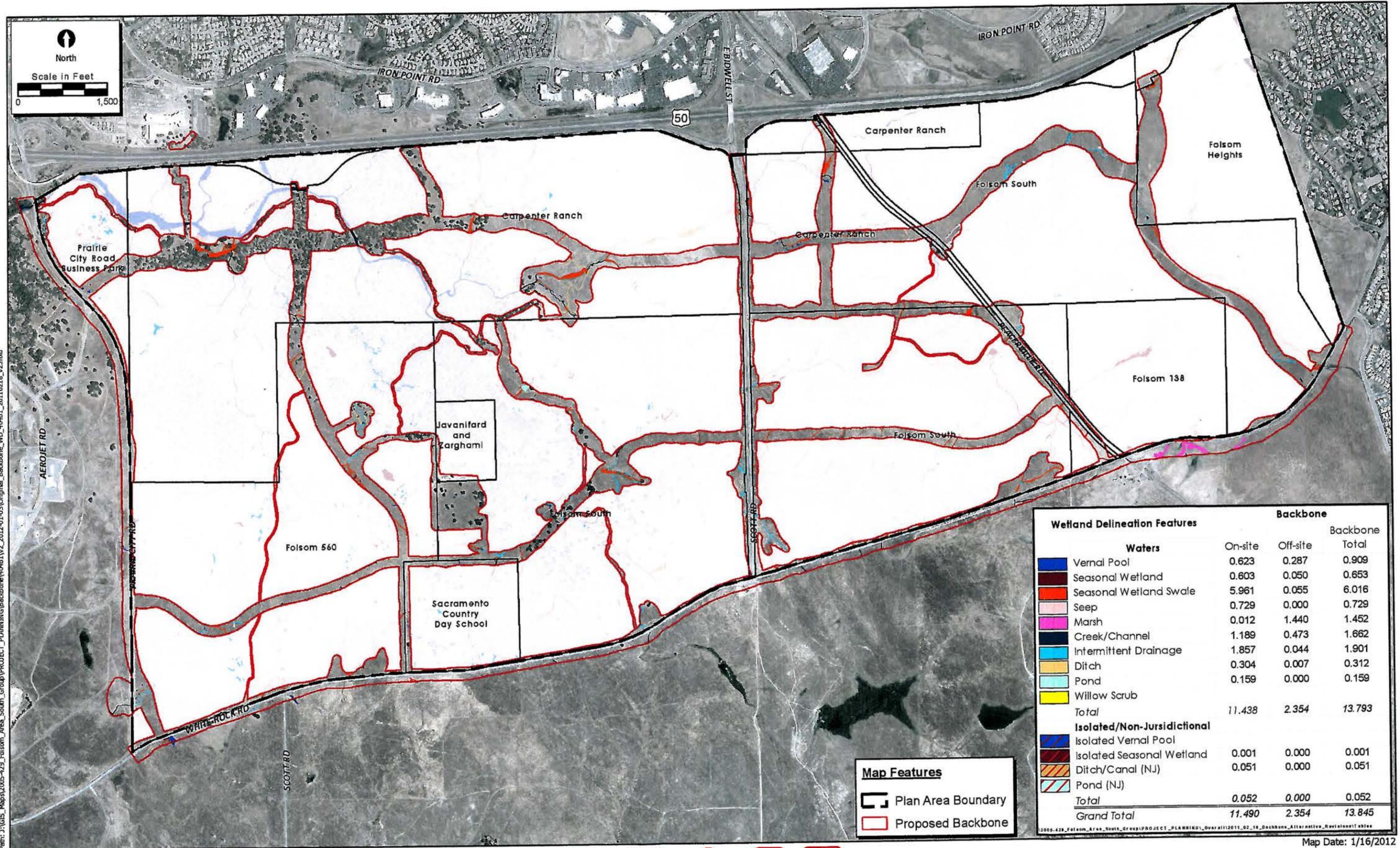


Figure 2. Backbone - Natural Resources Conservation Service (NRCS) Soil Types

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Figure 2. Backbone - Natural Resources Conservation Service (NRCS) Soil Types

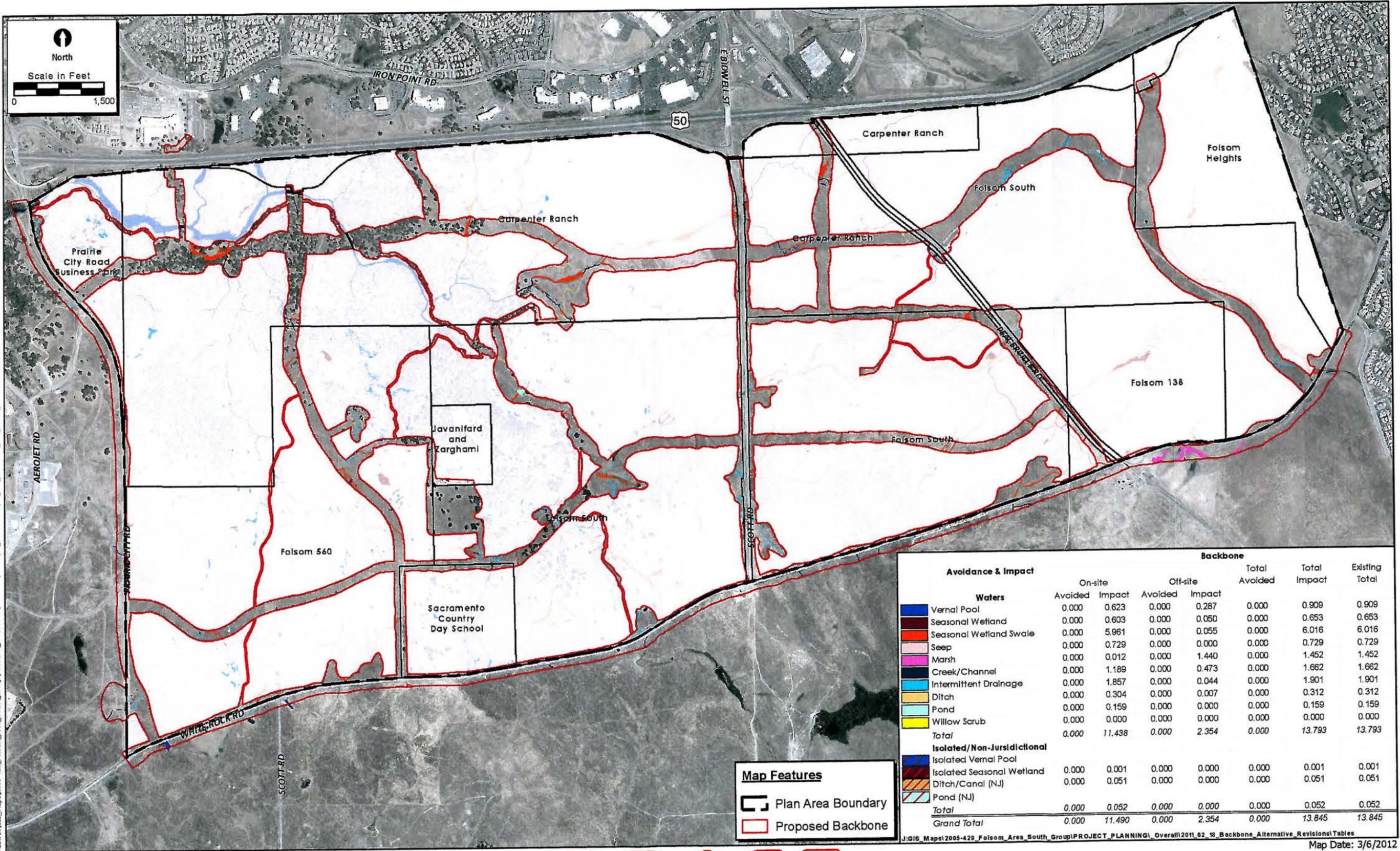
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Figure 3. Wetland Delineation
2005-429 Folsom Plan Area Specific Plan

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Map Date: 3/6/2012
Photo: NAIP 2010

Figure 4. Backbone - Proposed Impact Plan
2005-429 Folsom Plan Area Specific Plan

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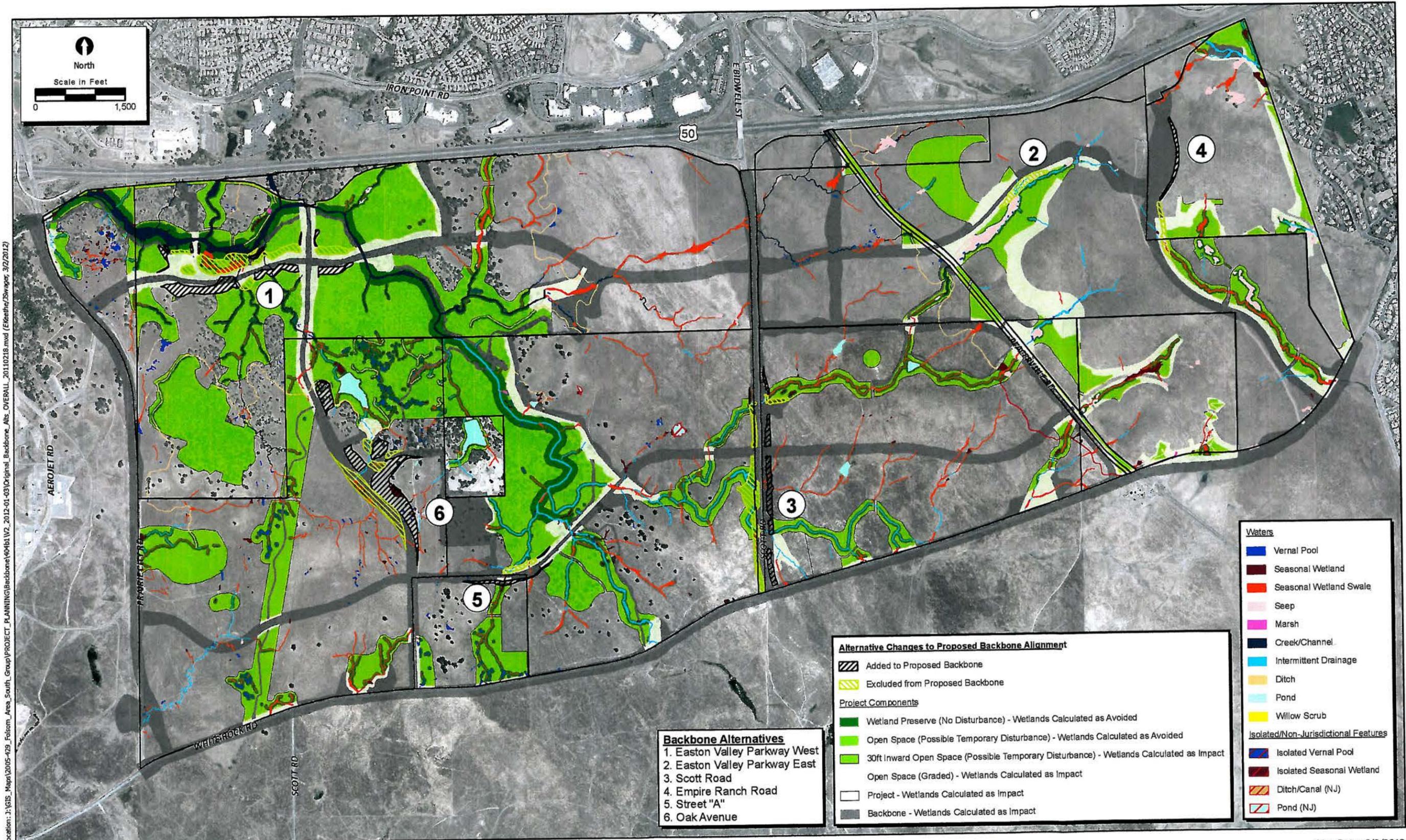
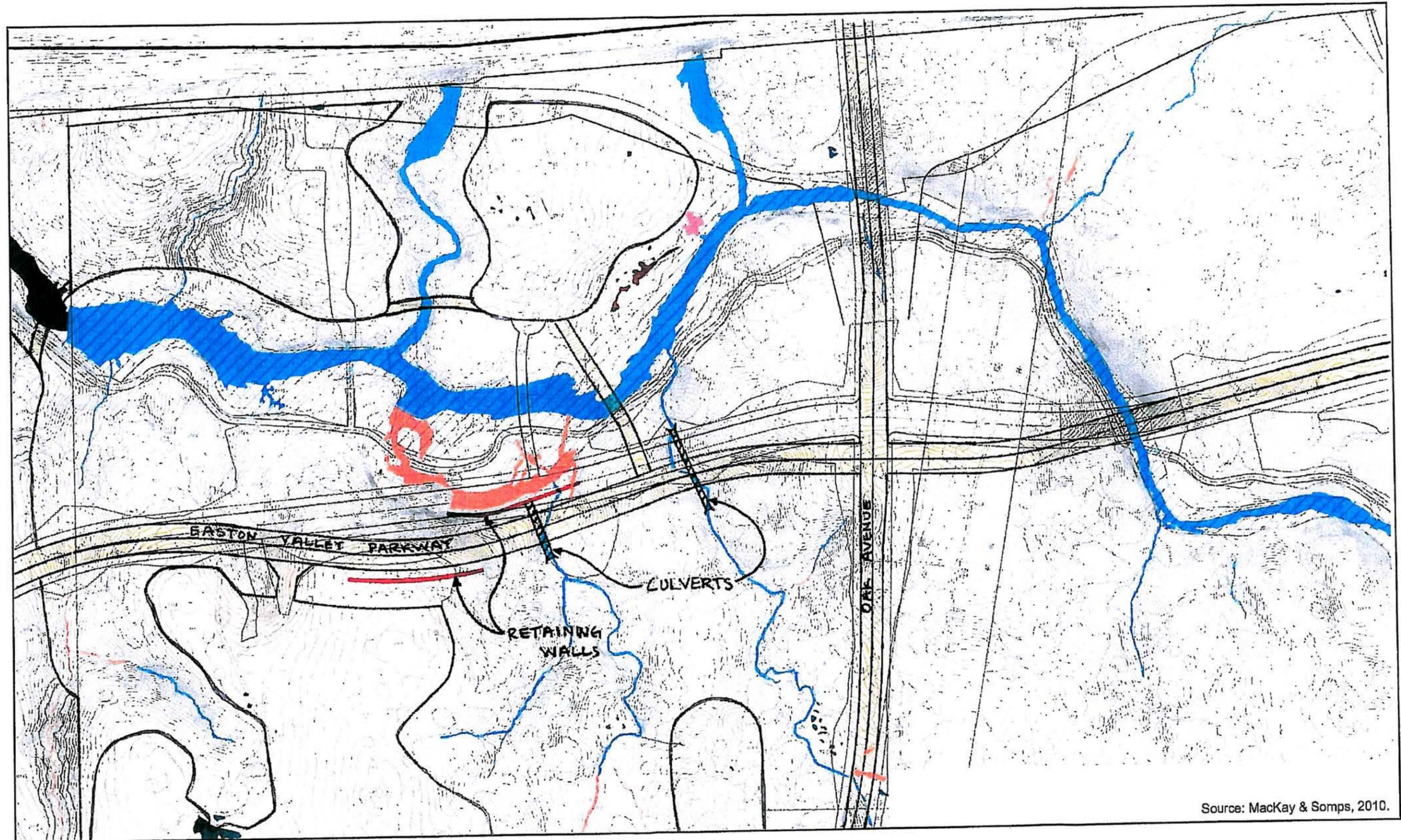


Figure 5. Backbone Alternatives - Overview
2005-429 Folsom Plan Area Specific Plan

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Source: MacKay & Soms, 2010.

Figure 6. Conceptual Land Use Plan - Easton Valley Parkway (West Location) Alternative

2005-429.2 Folsom SAG 2011

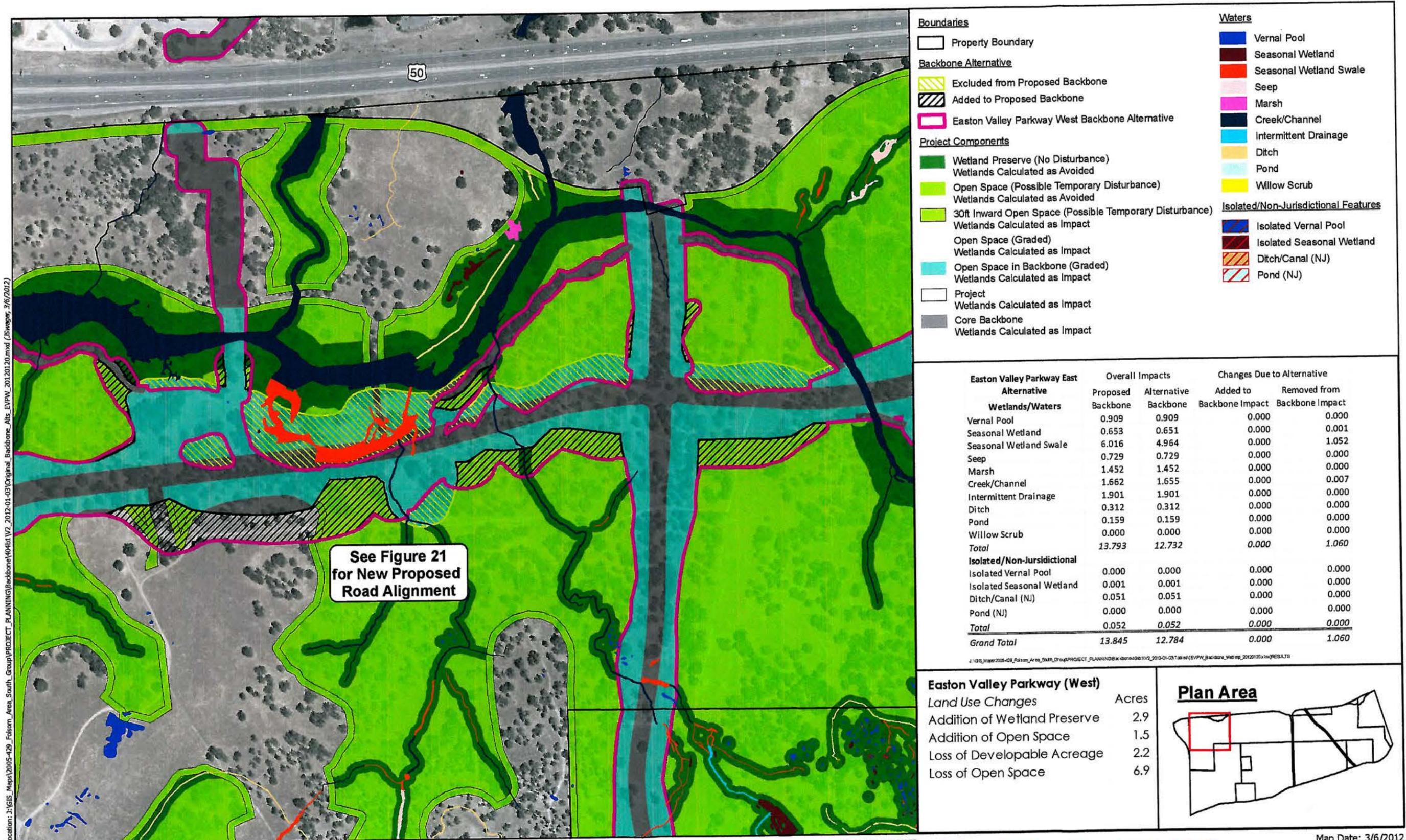
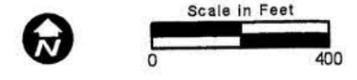
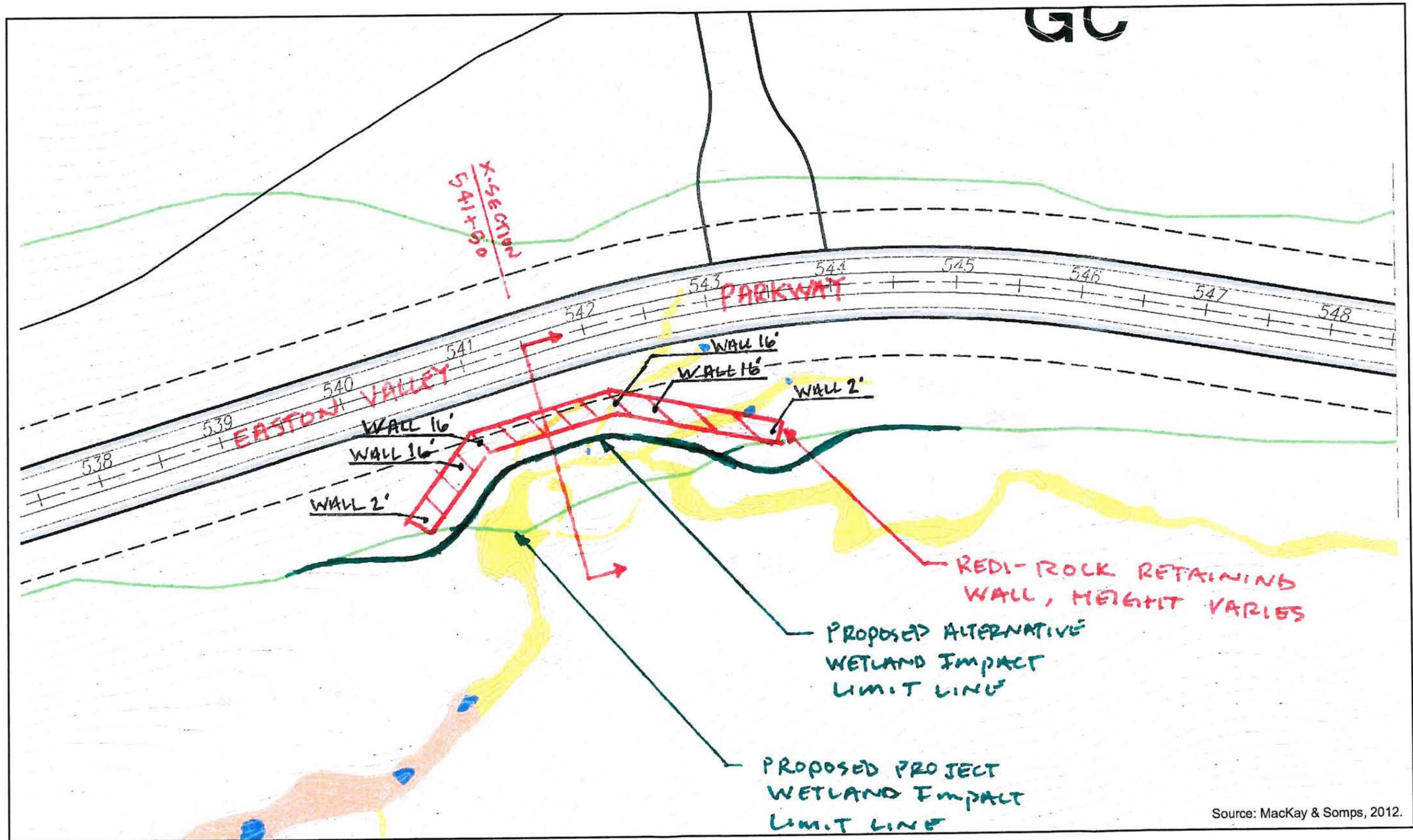


Figure 7. Easton Valley Parkway (West) Backbone Alternative
2005-429 Folsom Plan Area Specific Plan



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Source: MacKay & Somps, 2012.

Figure 8. Conceptual Land Use Plan –'96 Easton Valley Parkway (East Location) Alternative

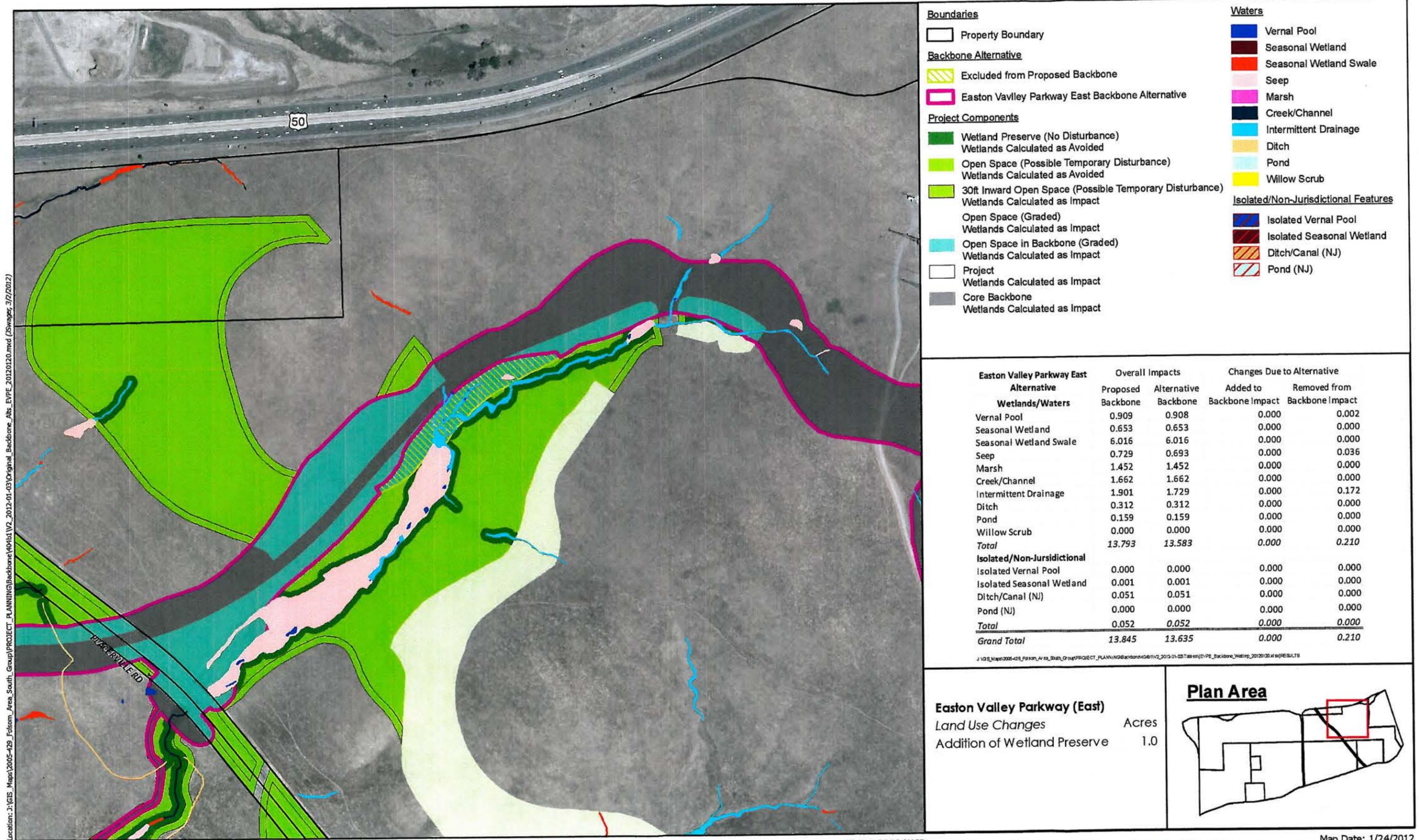
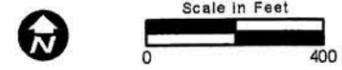
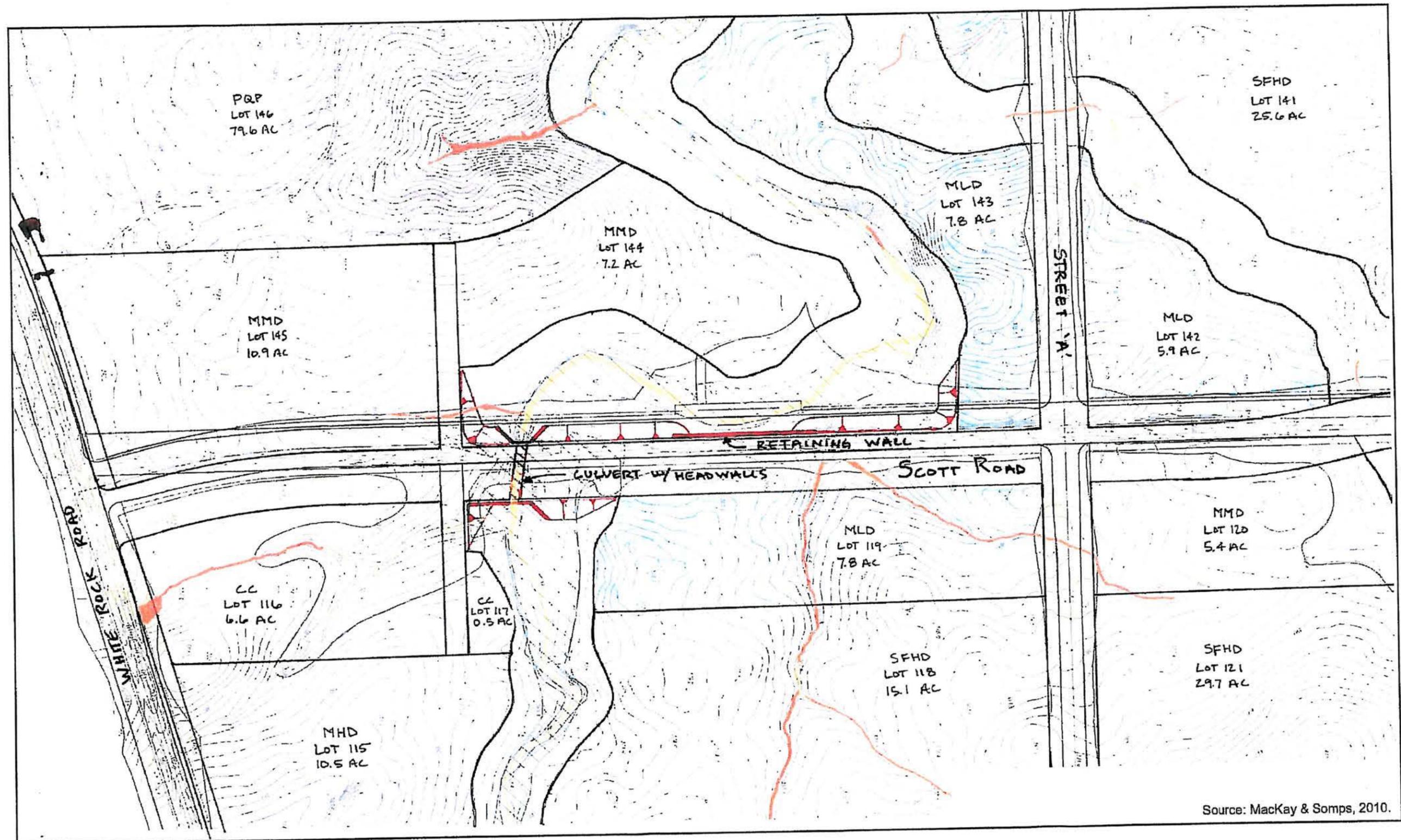


Figure 9. Easton Valley Parkway (East) Backbone Alternative
 2005-429 Folsom Plan Area Specific Plan



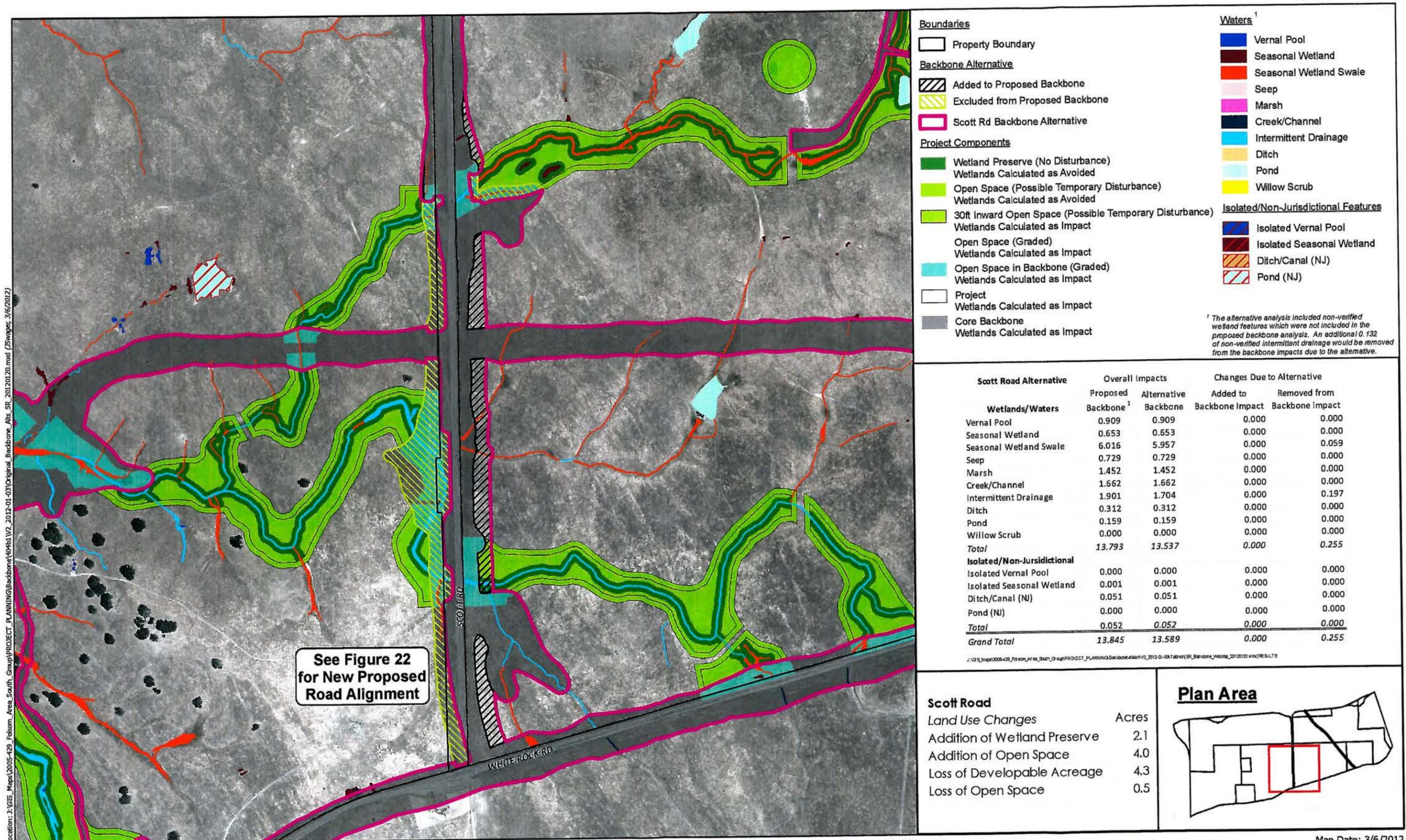
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Source: MacKay & Soms, 2010.

Figure 10. Conceptual Land Use Plan - Scott Road Alternative

2005-429.2 Folsom SAG 2011



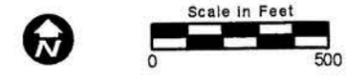
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See Figure 22 for New Proposed Road Alignment

Photo: 2010 NAIP

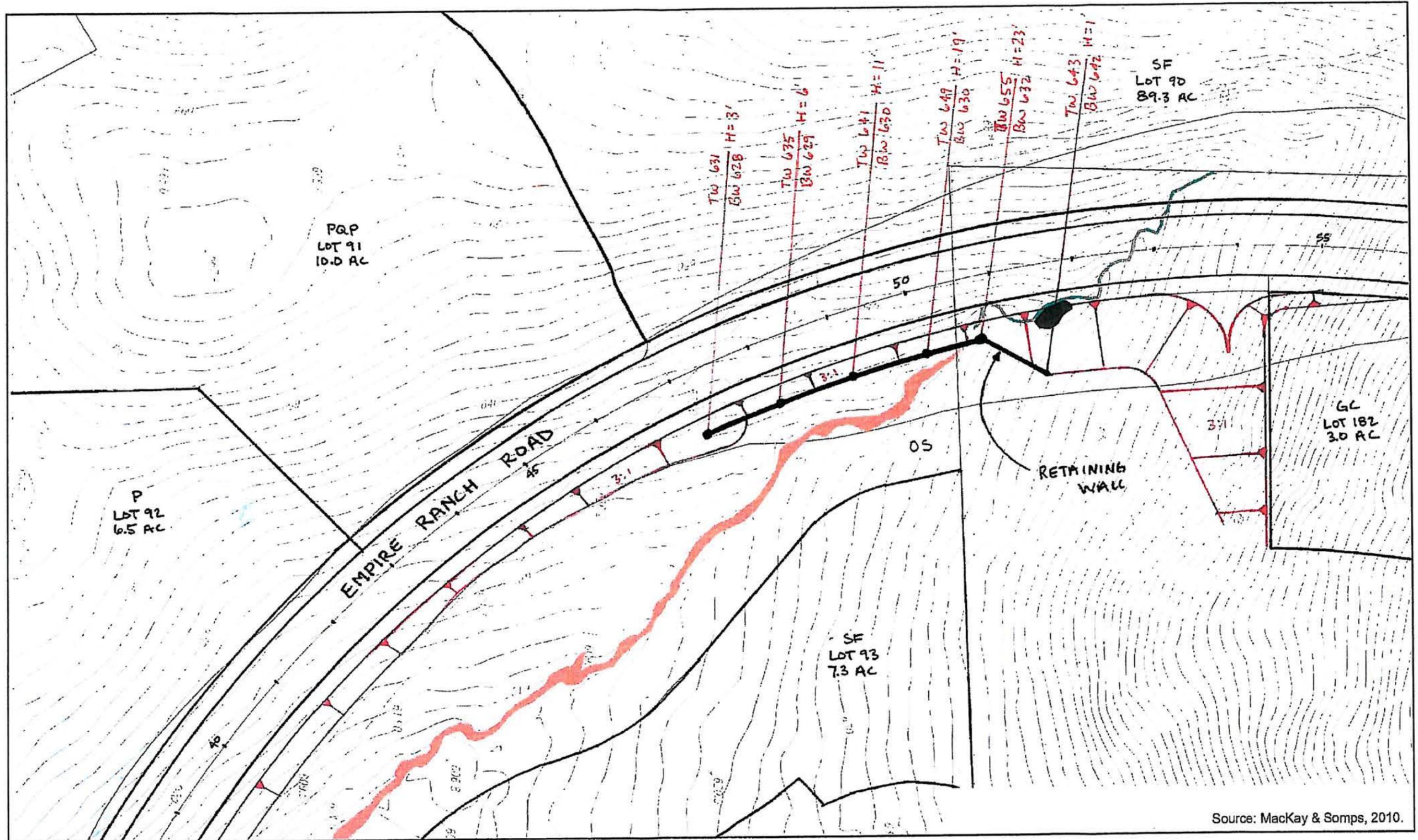
Map Date: 3/6/2012

Figure 11. Scott Road Backbone Alternative
2005-429 Folsom Plan Area Specific Plan



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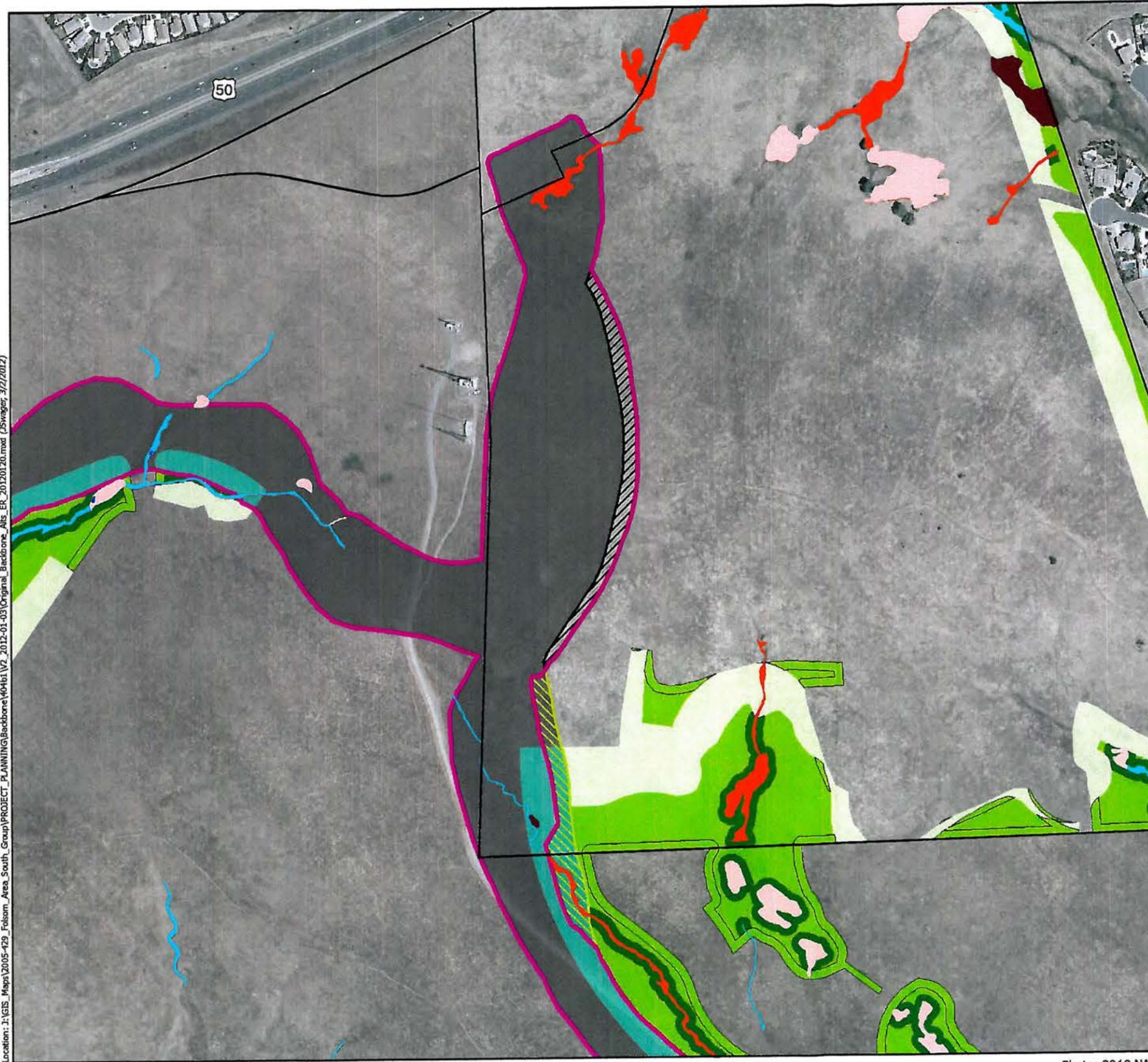


Source: MacKay & Soms, 2010.

Figure 12. Conceptual Land Use Plan - Empire Ranch Road Alternative

2005-429.2 Folsom SAG 2011

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Boundaries

- Property Boundary

Backbone Alternative

- Added to Proposed Backbone
- Excluded from Proposed Backbone
- Empire Ranch Road Backbone Alternative

Project Components

- Wetland Preserve (No Disturbance) Wetlands Calculated as Avoided
- Open Space (Possible Temporary Disturbance) Wetlands Calculated as Avoided
- 30ft Inward Open Space (Possible Temporary Disturbance) Wetlands Calculated as Impact
- Open Space (Graded) Wetlands Calculated as Impact
- Open Space in Backbone (Graded) Wetlands Calculated as Impact
- Project Wetlands Calculated as Impact
- Core Backbone Wetlands Calculated as Impact

Waters

- Vernal Pool
- Seasonal Wetland
- Seasonal Wetland Swale
- Seep
- Marsh
- Creek/Channel
- Intermittent Drainage
- Ditch
- Pond
- Willow Scrub

Isolated/Non-Jurisdictional Features

- Isolated Vernal Pool
- Isolated Seasonal Wetland
- Ditch/Canal (NJ)
- Pond (NJ)

Empire Ranch Rd Alternative	Overall Impacts		Changes Due to Alternative	
	Proposed Backbone	Alternative Backbone	Added to Backbone Impact	Removed from Backbone Impact
Wetlands/Waters				
Vernal Pool	0.909	0.909	0.000	0.000
Seasonal Wetland	0.653	0.653	0.000	0.000
Seasonal Wetland Swale	6.016	5.940	0.000	0.076
Seep	0.729	0.729	0.000	0.000
Marsh	1.452	1.452	0.000	0.000
Creek/Channel	1.662	1.662	0.000	0.000
Intermittent Drainage	1.901	1.901	0.000	0.000
Ditch	0.312	0.312	0.000	0.000
Pond	0.159	0.159	0.000	0.000
Willow Scrub	0.000	0.000	0.000	0.000
Total	13.793	13.717	0.000	0.076
Isolated/Non-Jurisdictional				
Isolated Vernal Pool	0.000	0.000	0.000	0.000
Isolated Seasonal Wetland	0.001	0.001	0.000	0.000
Ditch/Canal (NJ)	0.051	0.051	0.000	0.000
Pond (NJ)	0.000	0.000	0.000	0.000
Total	0.052	0.052	0.000	0.000
Grand Total	13.845	13.769	0.000	0.076

Empire Ranch Road

Land Use Changes	Acres
Addition of Wetland Preserve	0.4
Addition of Open Space	0.4
Loss of Developable Acreage	1.5

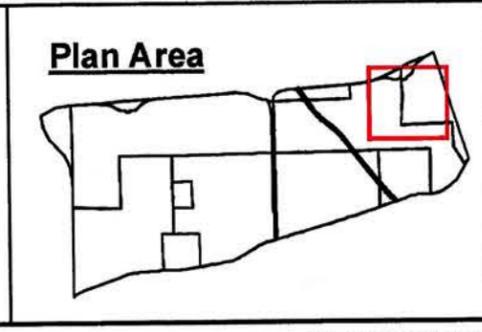
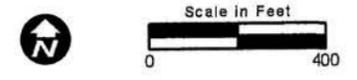


Photo: 2010 NAIP

Map Date: 1/24/2012

Figure 13. Empire Ranch Road Backbone Alternative
2005-429 Folsom Plan Area Specific Plan



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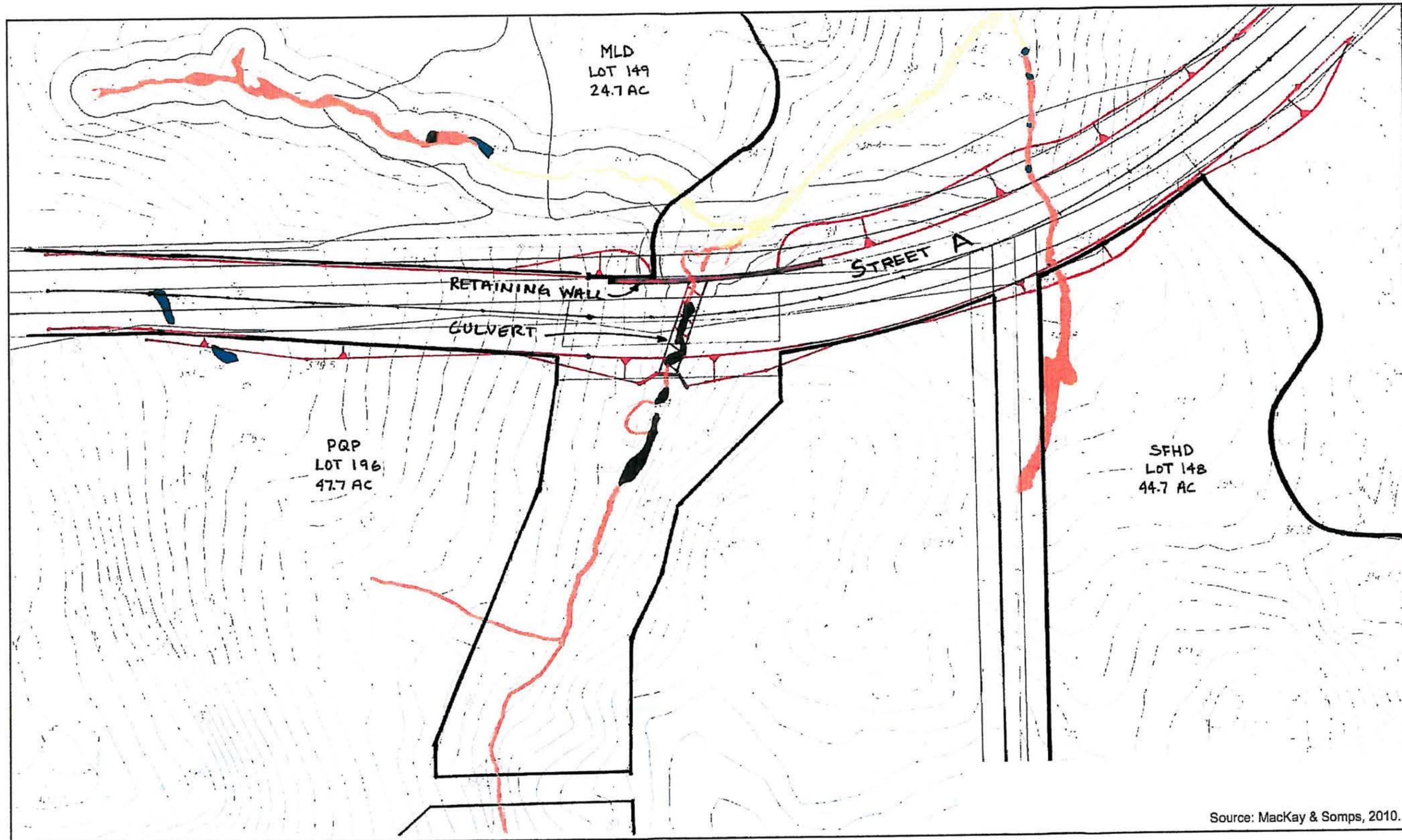


Figure 14. Conceptual Land Use Plan - Street "A" Alternative

2005-429.2 Folsom SAG 2011

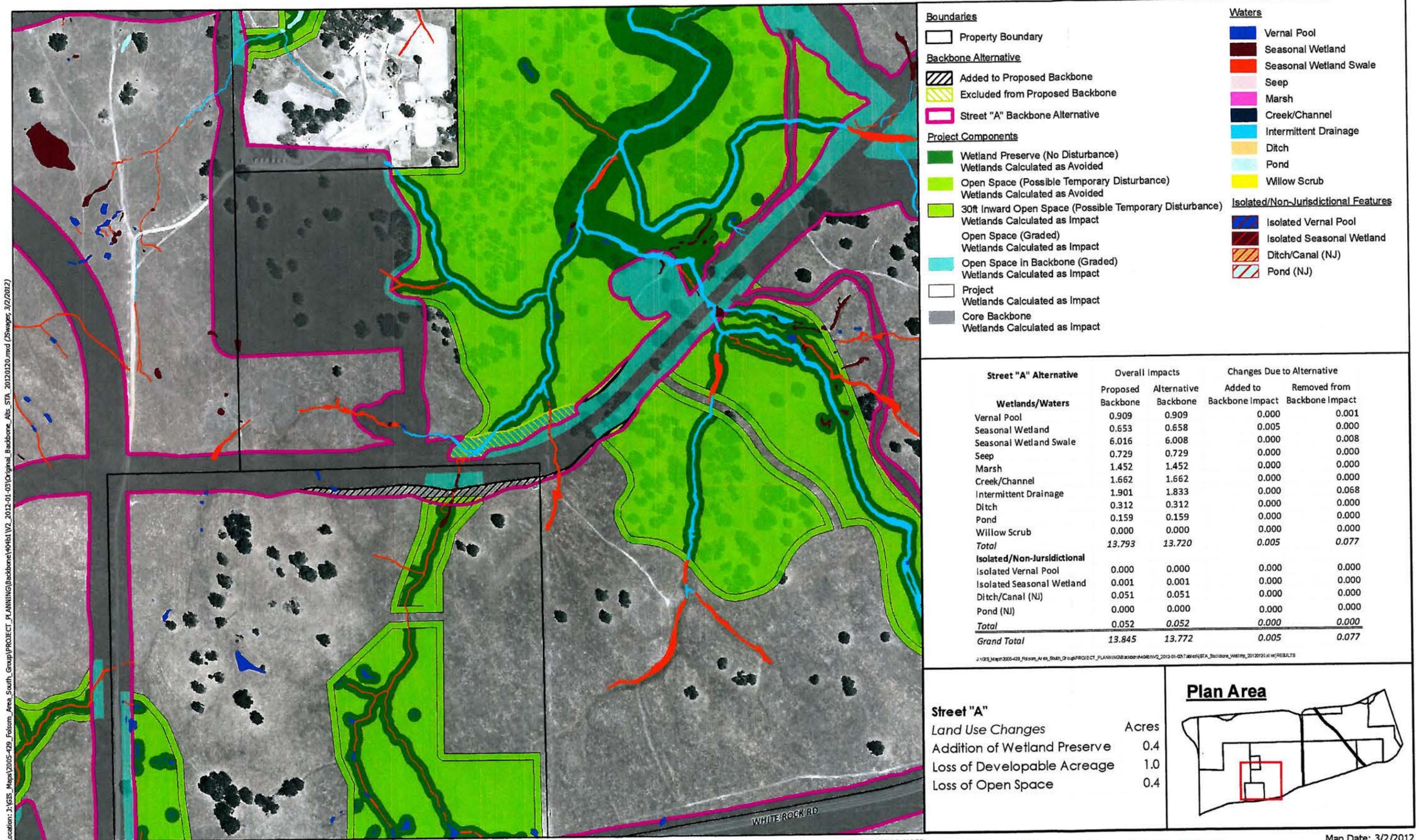
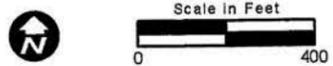
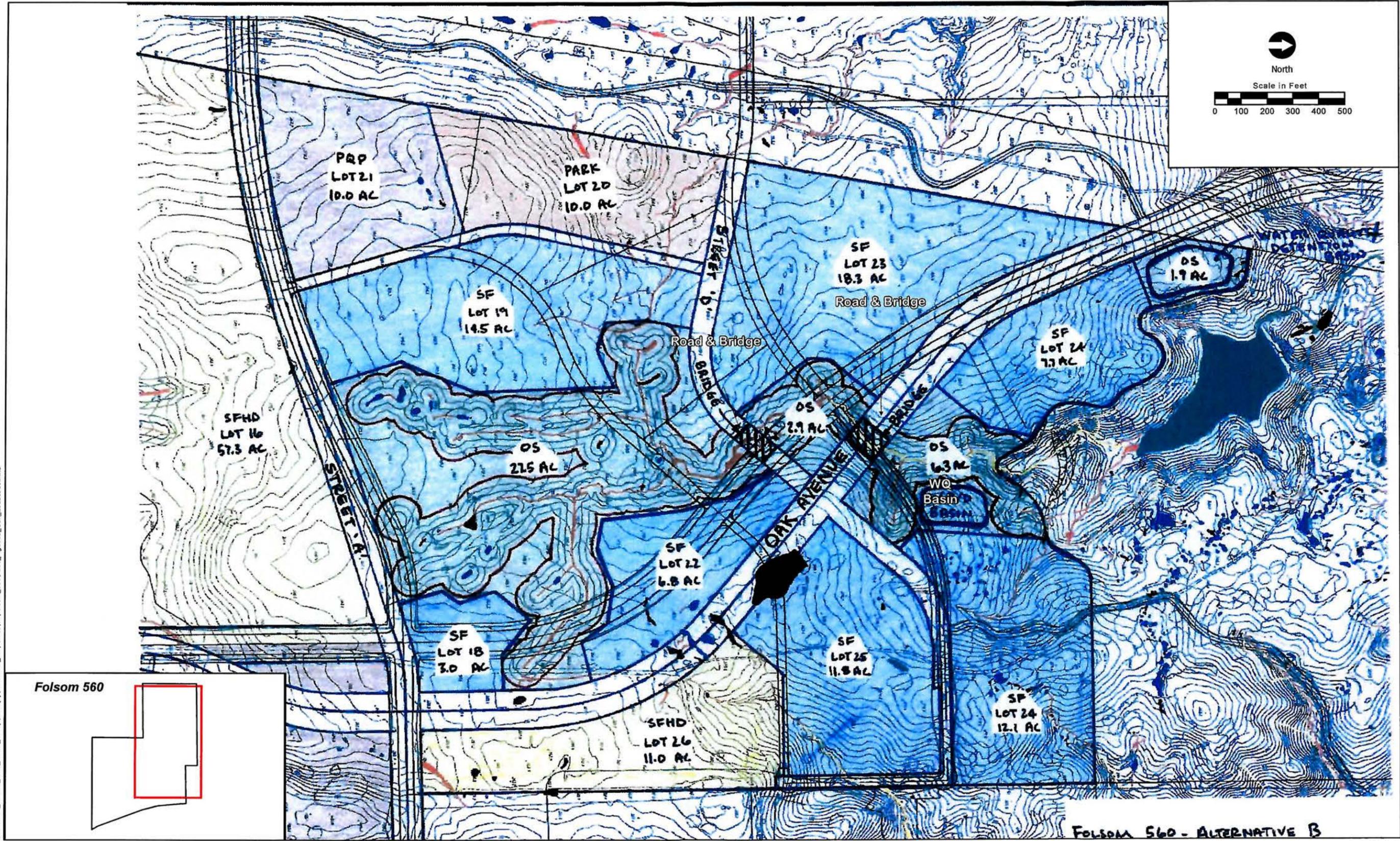


Figure 15. Street "A" Backbone Alternative
2005-429 Folsom Plan Area Specific Plan



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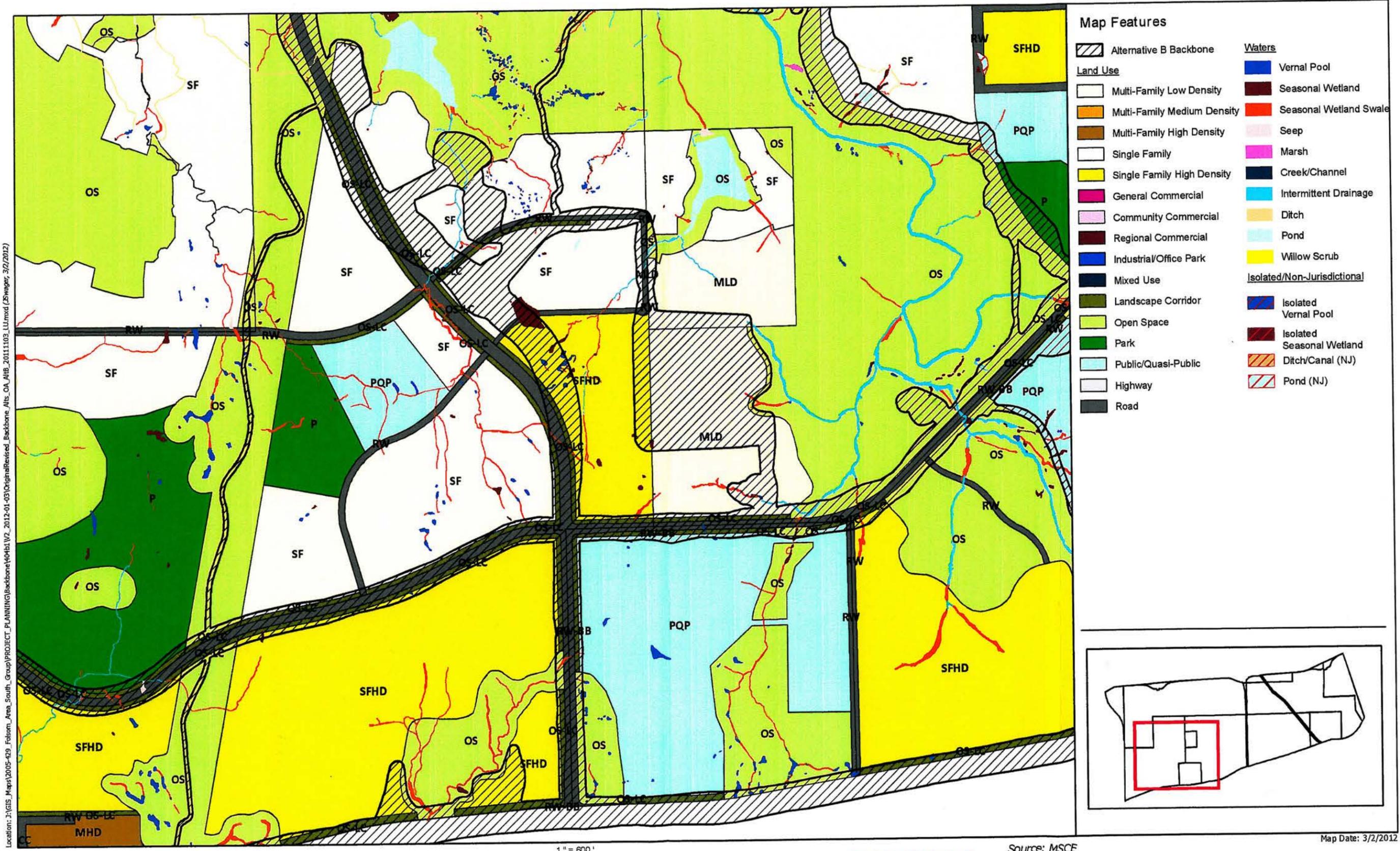




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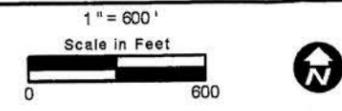
Figure 16. Conceptual Land Use Plan - Oak Avenue Alternative
2005-429 Folsom Plan Area Specific Plan

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Location: J:\GIS_Maps\2005-429_Folsom_Area_South_Group\PROJECT_PLANNING\Backbone\Map\AIB_20111103_LU.mod (Zwager, 3/2/2012)

Figure 17. Oak Avenue Alternative Land Use Impact with Grading
 2005-429 Folsom Plan Area Specific Plan



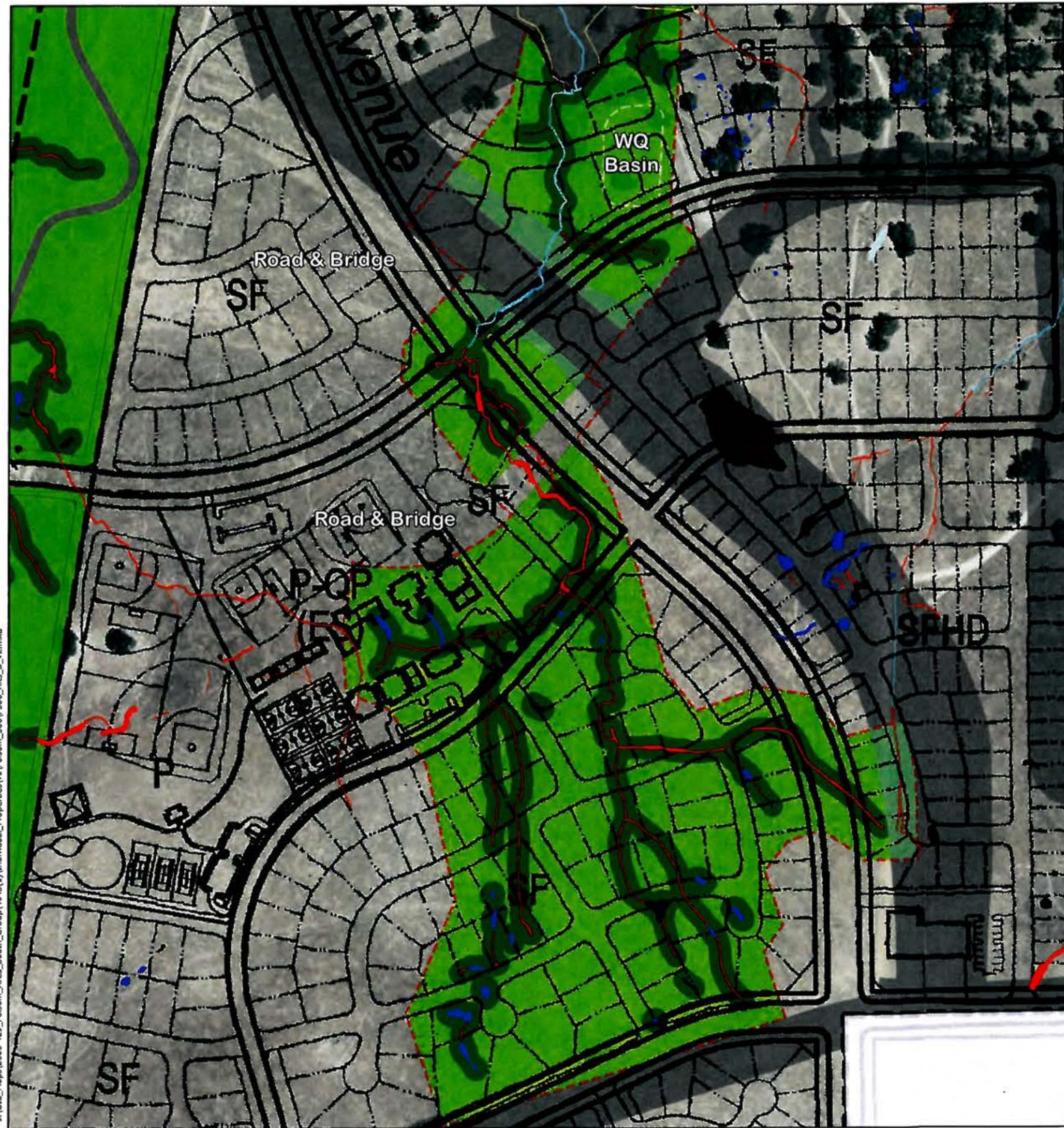
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Source: MSCE

Map Date: 3/2/2012



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Boundaries

- Property Boundary
- Alternative Avoidance Area

Project Components

- Wetland Preserve (No Disturbance) - Wetlands Calculated as Avoided
- Open Space (Possible Temporary Disturbance) - Wetlands Calculated as Avoided
- 30ft Inward Open Space (Possible Temporary Disturbance) - Wetlands Calculated as Impact
- Open Space (Graded) - Wetlands Calculated as Impact
- Open Space in Backbone (Graded) - Wetlands Calculated as Impact
- Project - Wetlands Calculated as Impact
- Realigned Core Backbone - Wetlands Calculated as Impact

Waters

- Vernal Pool
- Seasonal Wetland
- Seasonal Wetland Swale
- Seep
- Marsh
- Creek/Channel
- Intermittent Drainage
- Ditch
- Pond
- Willow Scrub

Isolated/Non-Jurisdictional Features

- Isolated Vernal Pool
- Isolated Seasonal Wetland
- Ditch/Canal (NJ)
- Pond (NJ)

Folsom 560 Alternative - B ¹	
Additional Wetland Avoidance	Acres
Vernal Pool	0.174
Seasonal Wetland	0.044
Seasonal Wetland Swale	0.511
Intermittent Drainage	0.050
Ditch	0.005
Total	0.784

¹ Alternative based on realigned backbone that results in 0.834 ac. of additional wetland impact

Alternatives Land Use and Wetland Summary

	Wetland Preserve Acreage(+/-)	Developable Land Lost Due to Additional Avoidance Acreage ¹ (+/-)	Preserved Waters of U.S.	Impacted Waters of U.S.	Additional Avoidance of Waters
Alternative B²	46.5	38.6	6.808	3.687	0.784
Proposed Project	36.8	N/A	6.024	4.471	N/A

¹ Provided by MSCE

² Alternative based on realigned backbone that results in 0.834 ac. of additional wetland impact

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North

Scale in Feet

0 300

Folsom 560

Map Date: 03/19/2010

Figure 18. Oak Avenue Realignment & Additional Avoidance on Folsom 560
2009-166 Hillsborough (Folsom 560)

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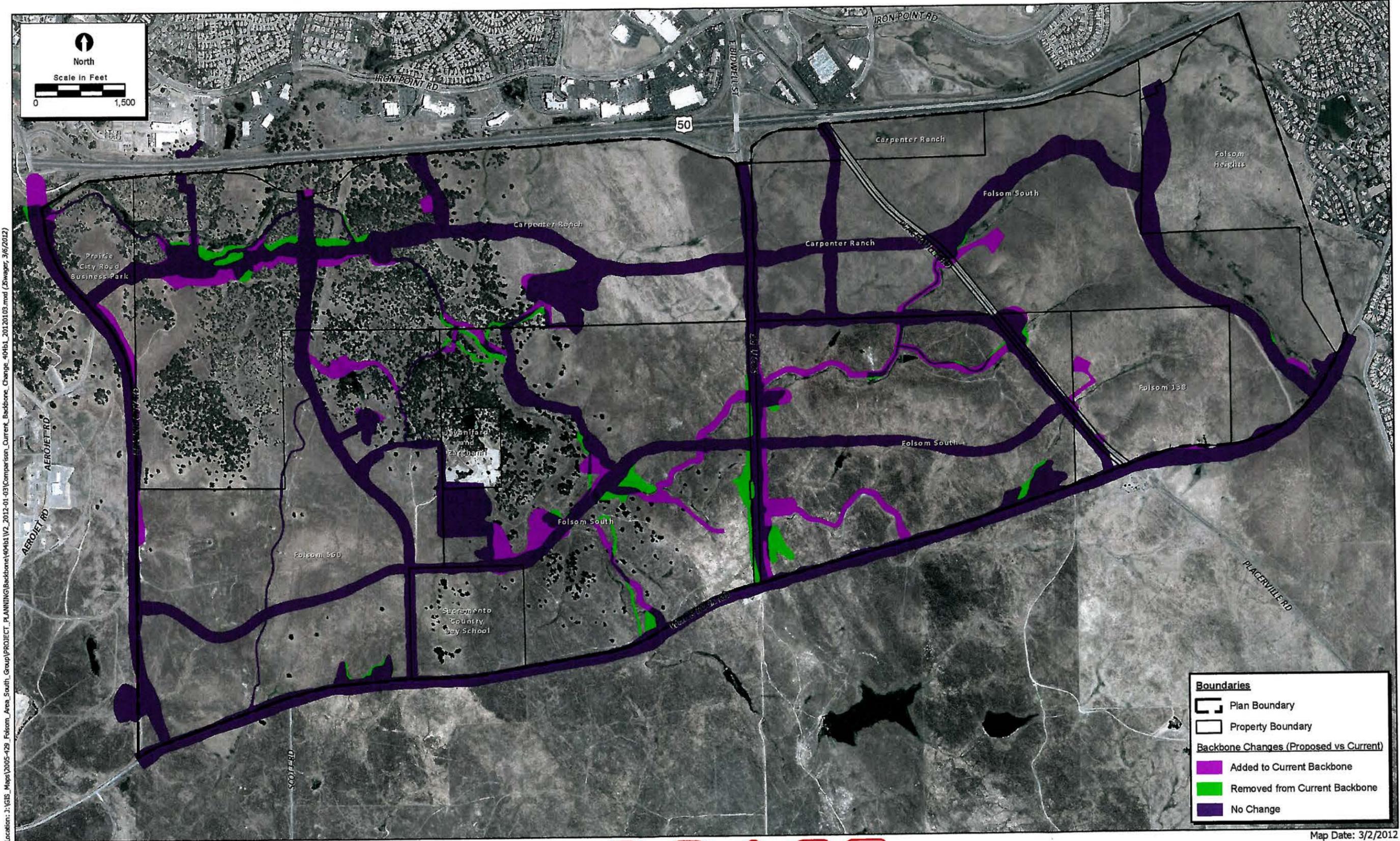


Figure 19. Current Backbone Infrastructure (includes additional components & changes of Alternatives 1 & 3)

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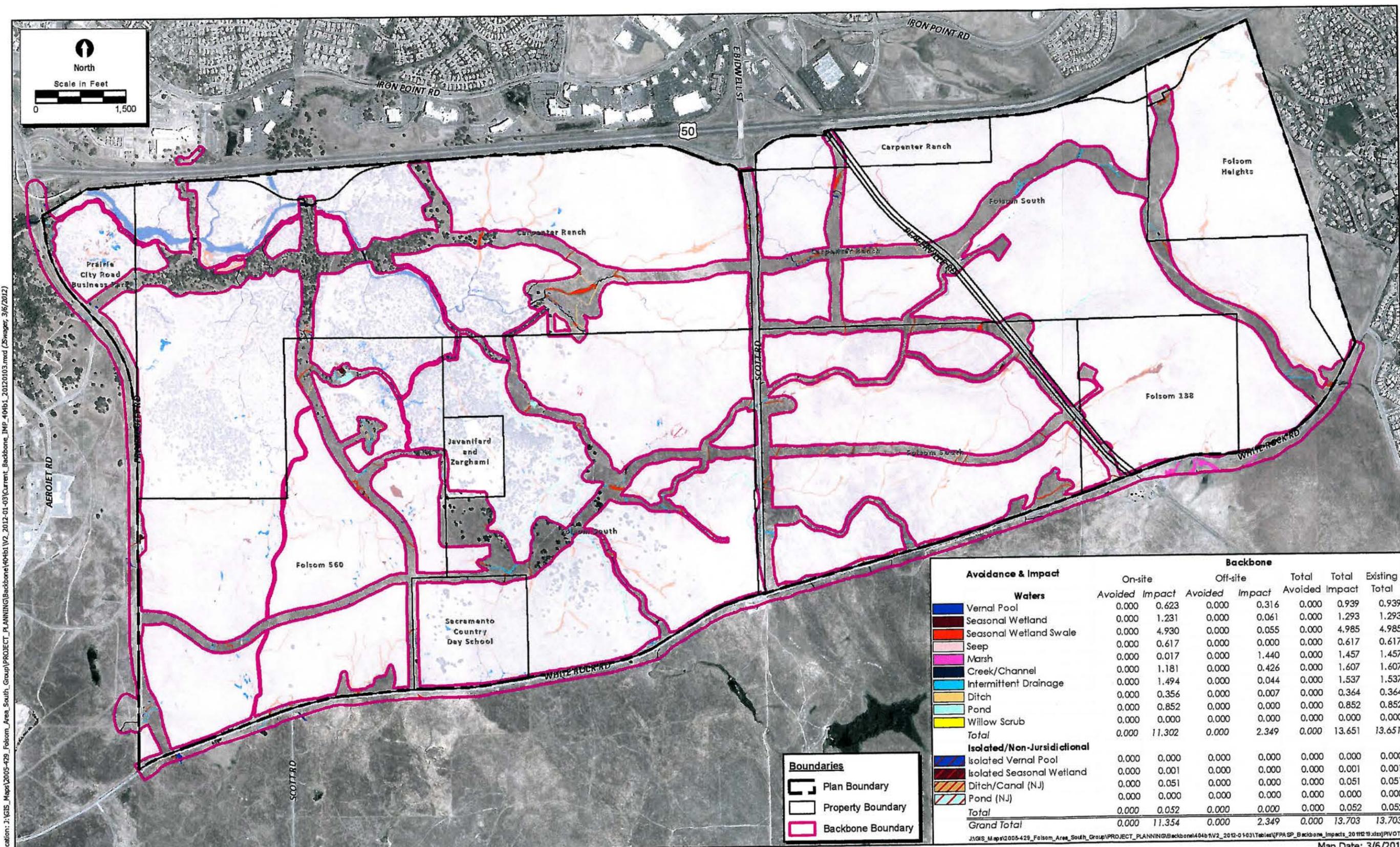
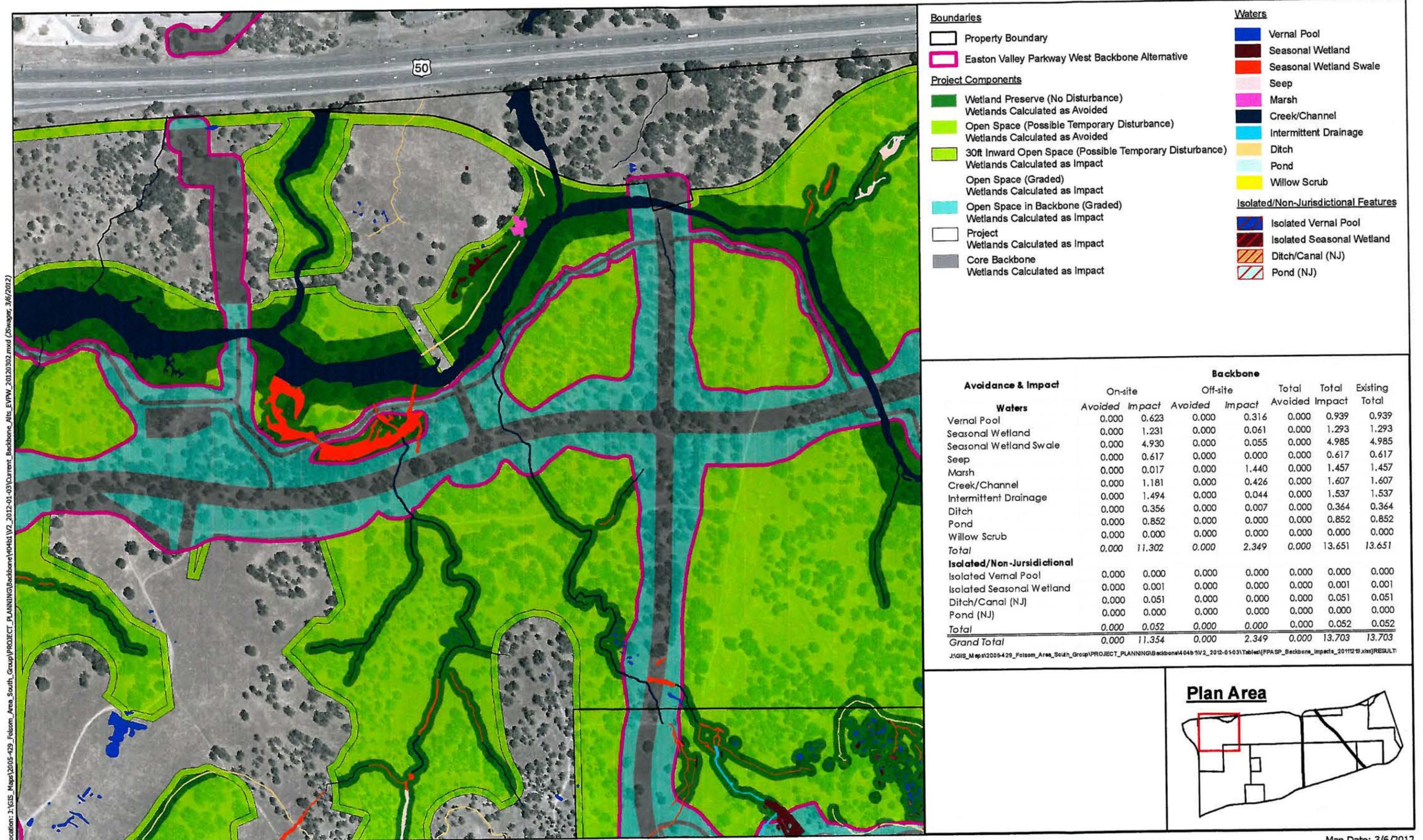


Figure 20. Current Backbone Impact Plan (3/1/12)
 2005-429 Folsom Plan Area Specific Plan

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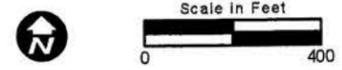


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Photo: 2010 NAIP

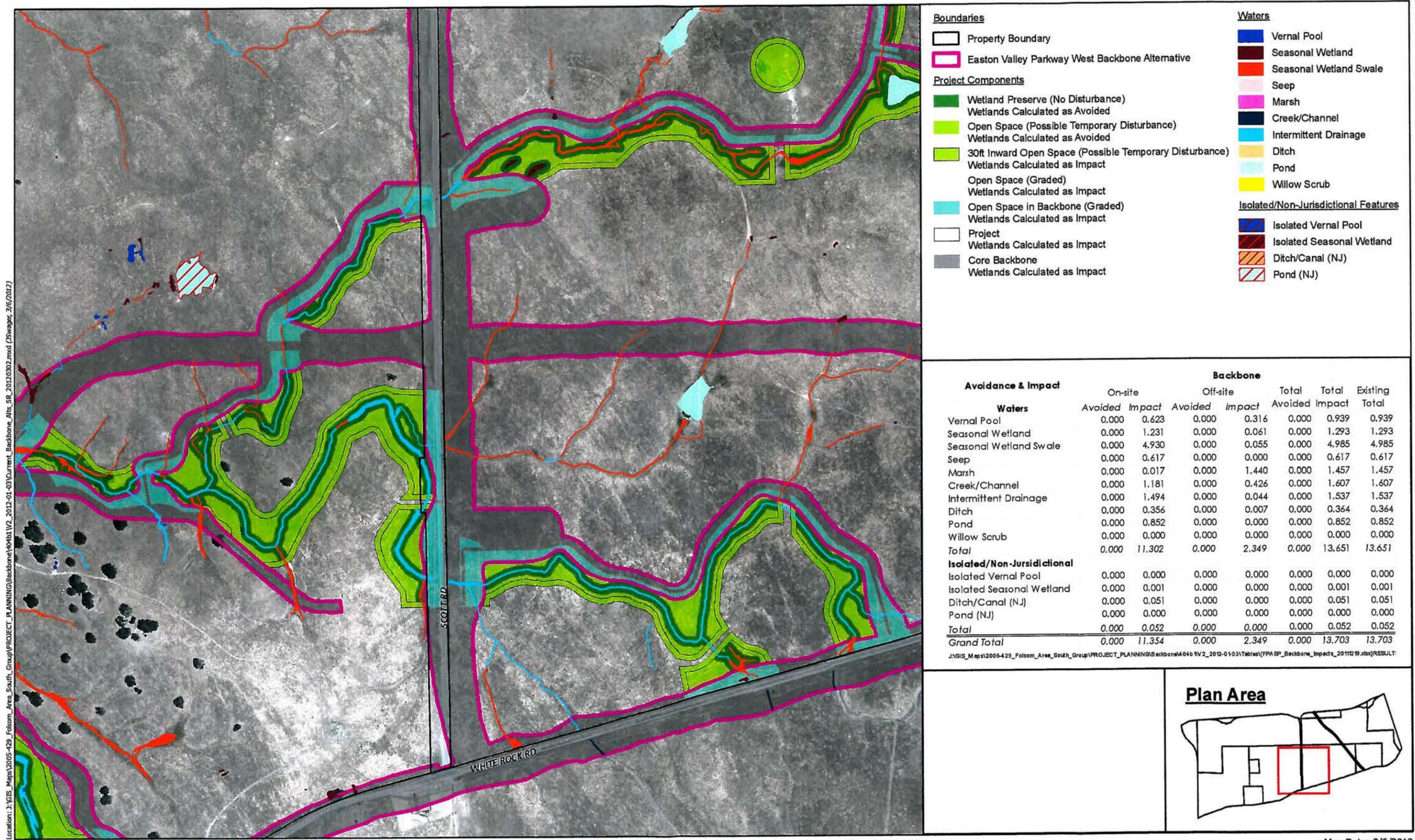
Map Date: 3/6/2012

Figure 21. Detail of Alternative 1 Easton Valley Parkway (West) Land Use Change
2005-429 Folsom Plan Area Specific Plan



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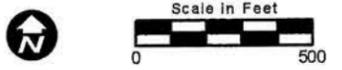


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Photo: 2010 NAIP

Map Date: 3/6/2012

Figure 22. Detail of Alternative 3 Scott Road Land Use Change
2005-429 Folsom Plan Area Specific Plan



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LIST OF ATTACHMENTS

Attachment A – Easton Valley Parkway (West) Realignment Cost Impacts due to
Additional Wetlands Preserve Area

Attachment B – Easton Valley Parkway (East) Realignment Cost Impacts due to
Additional Wetlands Preserve Area

Attachment C – Scott Road Realignment Cost Impacts due to Additional Wetlands
Preserve Area

Attachment D – Empire Ranch Road Cost Impacts due to Additional Wetlands Preserve
Area

Attachment E – Street 'A' Realignment Cost Impacts due to Additional Wetlands
Preserve Area

Attachment F – Oak Avenue Realignment Cost Impacts due to Additional Wetlands
Preserve Area

ATTACHMENT A

Easton Valley Parkway (West) Realignment Cost Impacts due to Additional Wetlands
Preserve Area

Folsom Plan Area Specific Plan
Backbone Infrastructure - Alternative 1
Easton Valley Parkway (West) Realignment
 Cost Impacts due to Additional Wetland Preserve Area

Description	Proposed Project	Alternative Project
Study Area Development Cost		
Single Family - Land Use Area	109.4	107.2
No. of Single Family Units	338	321
SF Development Cost (\$200,000 per acre)	\$21,880,000	\$21,440,000
Sub-Total Study Area Development Cost	\$21,880,000	\$21,440,000

Project Specific One-Time Cost Burdens		
SF Backbone Infrastructure Cost (\$65,980 per unit)	\$22,301,240	\$22,301,240
SF Public Facilities and Services Cost (\$21,920 per unit) ¹	\$7,408,960	\$7,036,320
Sub-Total Project Specific One-Time Burdens Cost	\$29,710,200	\$29,337,560

Total Study Area Development Cost	\$51,590,200	\$50,777,560
Total Study Area Development Cost per Acre	\$471,574	\$473,671
Increased Study Area Development Cost per Acre		\$2,097

Additional Development Cost Due to Wetland Avoidance		
Increased Development Cost per Acre		\$2,097
Revised Developable Land Use Area		107.2
Total Additional Development Cost Due to Wetland Avoidance		\$225,000
Additional Construction Cost Due to Wetland Avoidance		
Additional In-Tract Construction Cost		Cost
Additional Backbone Infrastructure Construction Cost		\$854,000
Total Additional Construction Cost Due to Wetland Avoidance		\$854,000

Cost to Preserve Additional Wetlands		
Total Additional Development Cost Due to Wetland Avoidance		Cost
Total Additional Construction Cost Due to Wetland Avoidance		\$225,000
Total Cost to Preserve Additional Wetlands		\$854,000
		\$1,079,000

Folsom Plan Area Specific Plan
Backbone Infrastructure - Alternative 1
Easton Valley Parkway (West) Realignment
 Cost Impacts due to Additional Wetland Preserve Area

Land Use Impacts	Dev. Land Use Area (ac)	Unit Allocation	Revised Land Use Area (ac)	Revised Dwelling Unit Allocation	Prop. Project Building SF	Alternative Project Bldg. SF
Single Family Lot 39	109.4	338	107.2	321		
Land Use Impacts Totals	109.4	338	107.2	321	0	0

Additional In-Tract Construction Cost	Units	Quantity	Unit Cost	Amount
Lot 39 Retaining Wall	sf	4,700	\$70	\$329,000
Easton Valley Parkway Additional Roadway Retaining Wall - North	LF SF	25 4,600	\$1,110.00 \$70.00	\$27,750.00 \$322,000.00
Retaining Walls - South	SF	2,500	\$70.00	\$175,000.00
Additional In-Tract Construction Cost Total				\$854,000

ATTACHMENT B

Easton Valley Parkway (East) Realignment Cost Impacts due to Additional Wetlands
Preserve Area

Folsom Plan Area Specific Plan
Backbone Infrastructure - Alternative 2
Easton Valley Parkway (East)
 Cost Impacts due to Additional Wetland Preserve Area

Additional Backbone Infrastructure Const. Cost	Units	Quantity	Unit Cost	Amount
Easton Valley Parkway Retaining Wall	SF	3,840	\$70.00	\$268,800.00
Backbone Infrastructure Cost Impacts Total				\$268,800.00

ATTACHMENT C

Scott Road Realignment Cost Impacts due to Additional Wetlands Preserve Area

**Folsom Plan Area Specific Plan
Backbone Infrastructure - Alternative 3
Scott Road Realignment**

Cost Impacts due to Additional Wetland Preserve Area

Description	Proposed Project	Alternative Project
Study Area Development Cost		
Multi Family Low Density - Land Use Area	22.0	21.5
No. of Multi Family Low Density Units	199	193
Multi Family Medium Density - Land Use Area	15.9	16.3
No. of Multi Family Medium Density Units	291	297
Community Commercial Land Use Area	8.0	6.6
MLD Development Cost (\$250,000 per acre)	\$5,500,000	\$5,375,000
MMD Development Cost (\$350,000 per acre)	\$5,565,000	\$5,705,000
CC Development Cost (\$250,000 per acre)	\$2,000,000	\$1,650,000
Sub-Total Study Area Development Cost	\$13,065,000	\$12,730,000
Project Specific One-Time Cost Burdens		
MLD Backbone Infrastructure Cost (\$35,980 per unit)	\$7,160,020	\$7,160,020
MLD Public Facilities and Services Cost (\$21,920 per unit) ¹	\$4,362,080	\$4,230,560
MMD Backbone Infrastructure Cost (\$28,580 per unit)	\$8,316,780	\$8,316,780
MMD Public Facilities and Services Cost (\$14,520 per unit) ¹	\$4,225,320	\$4,312,440
CC Backbone Infrastructure Cost (\$269,470 per acre)	\$2,155,760	\$2,155,760
CC Public Facilities and Services Cost (\$74,330 per acre) ¹	\$594,640	\$490,578
Sub-Total Project Specific One-Time Burdens Cost	\$26,814,600	\$26,666,138
Total Study Area Development Cost	\$39,879,600	\$39,396,138
Total Study Area Development Cost per Acre	\$868,837	\$887,300
Increased Study Area Development Cost per Acre		\$18,464
Additional Development Cost Due to Wetland Avoidance		\$18,464
Increased Development Cost per Acre		44.4
Revised Developable Land Use Area		\$820,000
Total Additional Development Cost Due to Wetland Avoidance		\$820,000
Additional Construction Cost Due to Wetland Avoidance		Cost
Additional In-Tract Construction Cost		\$0
Additional Infrastructure Construction Cost		\$294,000
Total Additional Construction Cost Due to Wetland Avoidance		\$294,000
Cost to Preserve Additional Wetlands		Cost
Total Additional Development Cost Due to Wetland Avoidance		\$820,000
Total Additional Construction Cost Due to Wetland Avoidance		\$294,000
Total Cost to Preserve Additional Wetlands		\$1,114,000

**Folsom Plan Area Specific Plan
Backbone Infrastructure - Alternative 3
Scott Road Realignment**

Cost Impacts due to Additional Wetland Preserve Area

Land Use Impacts	Dev. Land Use Area (ac)	Dwelling Unit Allocation	Revised Land Use Area (ac)	Revised Dwelling Unit Allocation	Prop. Project building SF	Alternative Project Bldg. SF
Multi Family Low Density						
Lot 119	9.6	87	7.8	70		
Lot 142	4.9	44	5.9	53		
Lot 143	7.5	68	7.8	70		
<i>Totals</i>	22.0	199	21.5	193		
Multi Family Medium Density						
Lot 120	6.4	117	5.4	99		
Lot 145	9.5	174	10.9	198		
<i>Totals</i>	15.9	291	16.3	297		
Community Commercial						
Lot 116	8.0		6.6		15,246	
<i>Totals</i>	8.0		6.6			
Land Use Impacts Totals	45.9	490	44.4	490	15,246	0
Additional Backbone Infrastructure Construction	Units	Quantity	Unit Cost	Amount		
Scott Road Retaining Wall	SF	4,200	\$70	\$294,000		
Backbone Infrastructure Cost Impacts Sub-Total				\$294,000		

ATTACHMENT D

Empire Ranch Road Cost Impacts due to Additional Wetlands Preserve Area

Folsom Plan Area Specific Plan
Backbone Infrastructure -Alternative 4
Empire Ranch Road
 Cost Impacts due to Additional Wetland Preserve Area

Description	Proposed Project	Alternative Project
Additional Construction Cost Due to Wetland Avoidance		
Additional In-Tract Construction Cost		\$0
Additional Backbone Infrastructure Construction Cost		\$217,000
Total Additional Construction Cost Due to Wetland Avoidance		\$217,000

Additional Backbone Infrastructure Const. Cost	Units	Quantity	Unit Cost	Amount
Empire Ranch Road Retaining Wall	SF	3,100	\$70	\$217,000
Backbone Infrastructure Construction Cost				\$217,000

ATTACHMENT E

Street 'A' Realignment Cost Impacts due to Additional Wetlands Preserve Area

**Folsom Plan Area Specific Plan
 Backbone Infrastructure - Alternative 5
 Street 'A' Realignment
 Cost Impacts due to Additional Wetland Preserve Area**

Description	Proposed Project	Alternative Project
Study Area Development Cost		
Single Family High Density - Land Use Area	44.8	44.7
No. of Single Family High Density Units	242	242
Public/Quasi Public Land Use	48.7	47.7
SFHD Development Cost (\$275,000 per acre)	\$12,320,000	\$12,292,500
PQP Development Cost (\$250,000 per acre)	\$12,175,000	\$11,925,000
Total Study Area Development Cost	\$24,495,000	\$24,217,500
Project Specific One-Time Cost Burdens		
SFHD Backbone Infrastructure Cost (\$45,380 per unit)	\$10,981,960	\$10,981,960
SFHD Public Facilities and Services Cost (\$21,920 per unit) ¹	\$5,304,640	\$5,304,640
PQP Backbone Infrastructure Cost (\$250,770 per acre)	\$12,212,499	\$11,961,729
PQP Public Facilities and Services Cost (\$121,130 per acre) ¹	\$5,899,031	\$5,777,901
Total Project Specific One-Time Burdens Cost	\$34,398,130	\$34,026,230
Total Study Area Development Cost	\$58,893,130	\$58,243,730
Increased Study Area Development Cost per Acre	\$629,873	\$630,343
Increased Development Cost per Acre		\$470
Revised Developable Land Use Area		92.4
Total Additional Development Cost Due to Wetland Avoidance		\$43,000
Additional Construction Cost Due to Wetland Avoidance		Cost
Additional In-Tract Construction Cost		\$0
Additional Backbone Infrastructure Construction Cost		\$257,000
Total Additional Construction Cost Due to Wetland Avoidance		\$257,000
Cost to Preserve Additional Wetlands		Cost
Total Additional Development Cost Due to Wetland Avoidance		\$43,000
Total Additional Construction Cost Due to Wetland Avoidance		\$257,000
Total Cost to Preserve Additional Wetlands		\$300,000

**Folsom Plan Area Specific Plan
Backbone Infrastructure - Alternative 5
Street 'A' Realignment**

Cost Impacts due to Additional Wetland Preserve Area

Land Use Impacts	Dev. Land Use Area (ac)	Dwelling Unit Allocation	Revised Land Use Area (ac)	Revised Dwelling Unit Allocation	Prop. Project Building SF	Alternative Project Bldg. SF
Single Family High Density Lot 148	44.8	242	44.7	242		
Public/Quasi Public Lot 196	48.7		47.7			
Land Use Impacts Totals	93.5	242	92.4	242		

Additional Backbone Infrastructure Const. Cost	Units	Quantity	Unit Cost	Amount
Street 'A'				
Additional Roadway	LF	15	\$790	\$11,850
Retaining Wall	SF	3,500	\$70	\$245,000
Additional Backbone Infrastructure Const. Cost Total				\$257,000

ATTACHMENT F

Oak Avenue Realignment Cost Impacts due to Additional Wetlands Preserve Area

**Folsom Plan Area Specific Plan
Folsom 560 - Alternative B
Oak Avenue Parkway Realignment
Proposed Project with Additional Avoidance Areas
Cost Impacts due to Extension of the Wetland Preserve**

Description	Proposed Project	Alternative B
Study Area Development Cost		
Single Family - Land Use Area	101.5	74.2
No. of Single Family Units	305	220
Single Family High Density - Land Use Area	79.6	68.3
No. of Single Family High Density Units	439	375
SF Development Cost (\$200,000 per acre)	\$20,300,000	\$14,840,000
SFHD Development Cost (\$275,000 per acre)	\$21,890,000	\$18,782,500
Sub-Total Study Area Development Cost	\$42,190,000	\$33,622,500
Project Specific One-Time Cost Burdens		
SF Backbone Infrastructure Cost (\$65,980 per unit)	\$20,123,900	\$20,123,900
SF Public Facilities and Services Cost (\$21,920 per unit) ¹	\$6,685,600	\$4,822,400
SFHD Backbone Infrastructure Cost (\$45,380 per unit)	\$19,921,820	\$19,921,820
SFHD Public Facilities and Services Cost (\$21,920 per unit) ¹	\$9,622,880	\$8,220,000
Sub-Total Project Specific One-Time Burdens Cost	\$56,354,200	\$53,088,120
Total Study Area Development Cost	\$98,544,200	\$86,710,620
Increased Study Area Development Cost per Acre	\$544,142	\$608,496
Increased Study Area Development Cost per Acre		\$64,353
Additional Development Cost Due to Wetlands Avoidance		142.5
Increased Development Cost per Acre		\$64,353
Revised Developable Land Use Area		142.5
Total Additional Development Cost Due to Wetlands Avoidance		\$9,170,000
Additional Construction Costs Due to Wetland Avoidance		Cost
Additional In-Tract Construction Cost		\$4,075,920
Additional Backbone Infrastructure Construction Cost		\$5,272,425
Total Additional Const. Cost Due to Wetland Avoidance		\$9,348,000
Cost to Preserve Additional Wetlands		Cost
Total Additional Development Cost Due to Wetland Avoidance		\$9,170,000
Total Additional Construction Cost Due to Wetland Avoidance		\$9,348,000
Total Cost to Preserve Additional Wetlands		\$18,518,000

**Folsom Plan Area Specific Plan
Folsom 560 - Alternative B
Oak Avenue Parkway Realignment
Proposed Project with Additional Avoidance Areas
Cost Impacts due to Extension of the Wetland Preserve**

Land Use Impacts	Dev. Land Use Area (ac)	Dwelling Unit Allocation	Revised Land Use Area (ac)	Revised Dwelling Unit Allocation	Prop. Project Building SF	Alternative Project Bldg. SF
Single Family						
Lot 18	28.9	87	3.0	9		
Lot 19	11.0	33	14.5	43		
Lot 22	3.7	11	6.8	20		
Lot 23	13.7	41	18.3	54		
Lot 24	28.0	84	19.8	59		
Lot 25	16.2	49	11.8	35		
<i>Single Family Totals</i>	101.5	305	74.2	220		
Single Family High Density						
Lot 16	58.7	324	57.3	315		
Lot 26	20.9	115	11.0	60		
<i>Single Family High Density Totals</i>	79.6	439	68.3	375		
<i>Developable LU Impacts Sub-Total</i>	181.1	744	142.5	595		
Non-Developable Land Uses						
Lot 21 (Park)	10.0		10.0			
Lot 22 (PQP)	10.0		10.0			
Lot 27 (OS)	0.0		27.5			
Lot 28 (OS)	0.0		2.9			
Lot 29 (OS)	0.0		6.3			
Lot 30 (OS)	0.0		1.9			
Additional ROW	0.0		0.5			
<i>Non-Developable LU Impacts Sub-Total</i>	20.0		59.1			
Land Use Impacts Totals	181.1	744	142.5	595	0	0

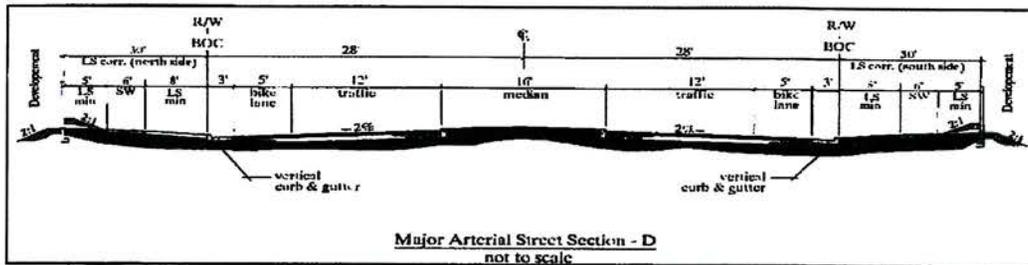
**Folsom Plan Area Specific Plan
Folsom 560 - Alternative B
Oak Avenue Parkway Realignment
Proposed Project with Additional Avoidance Areas
Cost Impacts due to Extension of the Wetland Preserve**

Additional Backbone Infrastructure Construction Cost	Units	Quantity	Unit Price	Amount
Oak Avenue Parkway	LF	75	\$1,140.00	\$85,500
Additional Roadway Bridge, 106' wide x 120' long	DSF	12,720	\$250.00	\$3,180,000
Bore & Jack 24" casing (water)	LF	300	\$500.00	\$150,000
Bore & Jack 24" casing (sewer)	LF	300	\$500.00	\$150,000
Water Quality Hydro-Mod. Basin	EA	1	\$45,000.00	\$45,000
Alder Creek WQ-Hydro 6A	ac-ft.	4	\$25,000.00	\$100,000
Additional 30" Outfall Struct.	EA	1	\$45,000.00	\$45,000
Additional Excavation	ac-ft.	6	\$25,000.00	\$150,000
Alder Creek WQ-Hydro 6B				
Additional 30" Outfall Struct.				
Additional Excavation				
Additional Backbone Infrastructure Const. Cost Sub-Total				\$3,905,500
Engineering/Plan Check/Inspection (15%) Contingency (20%)				\$781,100
Engineering/Plan Check/Inspection (15%)				\$585,825
Additional Backbone Infrastructure Construction Cost Total				\$5,272,425
Additional In-Tract Construction Cost				
Street 'D'	Units	Quantity	Unit Price	Amount
Additional Roadway	LF	230	\$790.00	\$181,700
Bridge, 70' wide x 145' long	DSF	10,150	\$250.00	\$2,537,500
Bore & Jack 20" casing (water)	LF	300	\$500.00	\$150,000
Bore & Jack 24" casing (sewer)	LF	300	\$500.00	\$150,000
Additional Backbone Infrastructure Const. Cost Sub-Total				\$3,019,200
Engineering/Plan Check/Inspection (15%) Contingency (20%)				\$603,840
Engineering/Plan Check/Inspection (15%)				\$452,880
Additional Backbone Infrastructure Construction Cost Total				\$4,075,920

Preliminary Cost Estimate
Folsom Plan Area Specific Plan
Proposed Project Backbone Infrastructure

Preliminary Cost Per Linear Foot
2 Lane Road
Collector-Street Section D

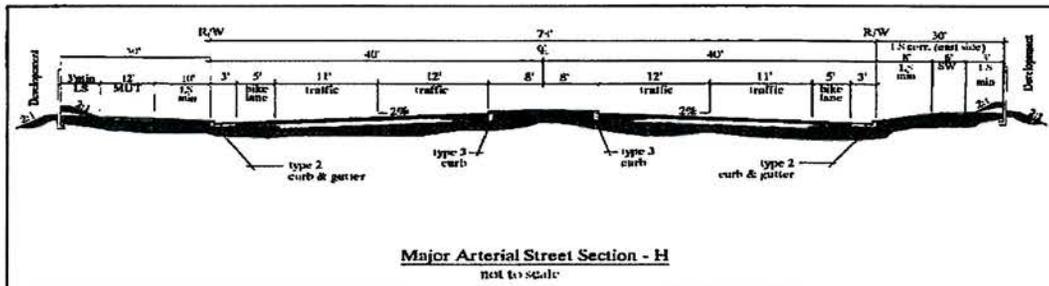
	ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT COST
1.	Subgrade Preparation	41	s.f	\$0.15	\$6.15
2.	Clear and Grub	120	s.f.	\$0.10	\$12.00
3.	Rough Grade Excavation	10.0	c.y.	\$3.00	\$30.00
4.	Roadway Excavation	3.8	c.y.	\$5.00	\$19.00
5.	5.5" Asphalt Concrete Paving	34	s.f.	\$2.75	\$93.50
6.	15" Aggregate Base	34	s.f.	\$3.00	\$102.00
7.	Curb & Gutter, Type 2 (Vertical Curb)	2	l.f.	\$25.00	\$50.00
8.	Median Curb, Type 3 (6" Barrier Curb)	2	l.f.	\$18.00	\$36.00
9.	Median Landscaping & Irrigation	15	s.f.	\$6.00	\$90.00
10.	Median Top Soil Import (12")	0	c.y.	\$25.00	\$0.00
11.	Planting Strip	3	s.f.	\$6.00	\$18.00
12.	PCC Sidewalk w/6" AB	12	s.f.	\$6.00	\$72.00
13.	Signing & Striping (4-lanes)	2	l.f.	\$1.00	\$2.00
14.	Erosion Control	120	s.f.	\$0.25	\$30.00
15.	Local Drainage	1	l.f.	\$70.00	\$70.00
16.	Local Water	1	l.f.	\$80.00	\$80.00
17.	Local Sewer	1	l.f.	\$60.00	\$60.00
18.	Street Lights (Type A, 220' spacing, both sides)	1	l.f.	\$18.00	\$18.00
	Subtotal				\$788.65
	Use				\$790.00

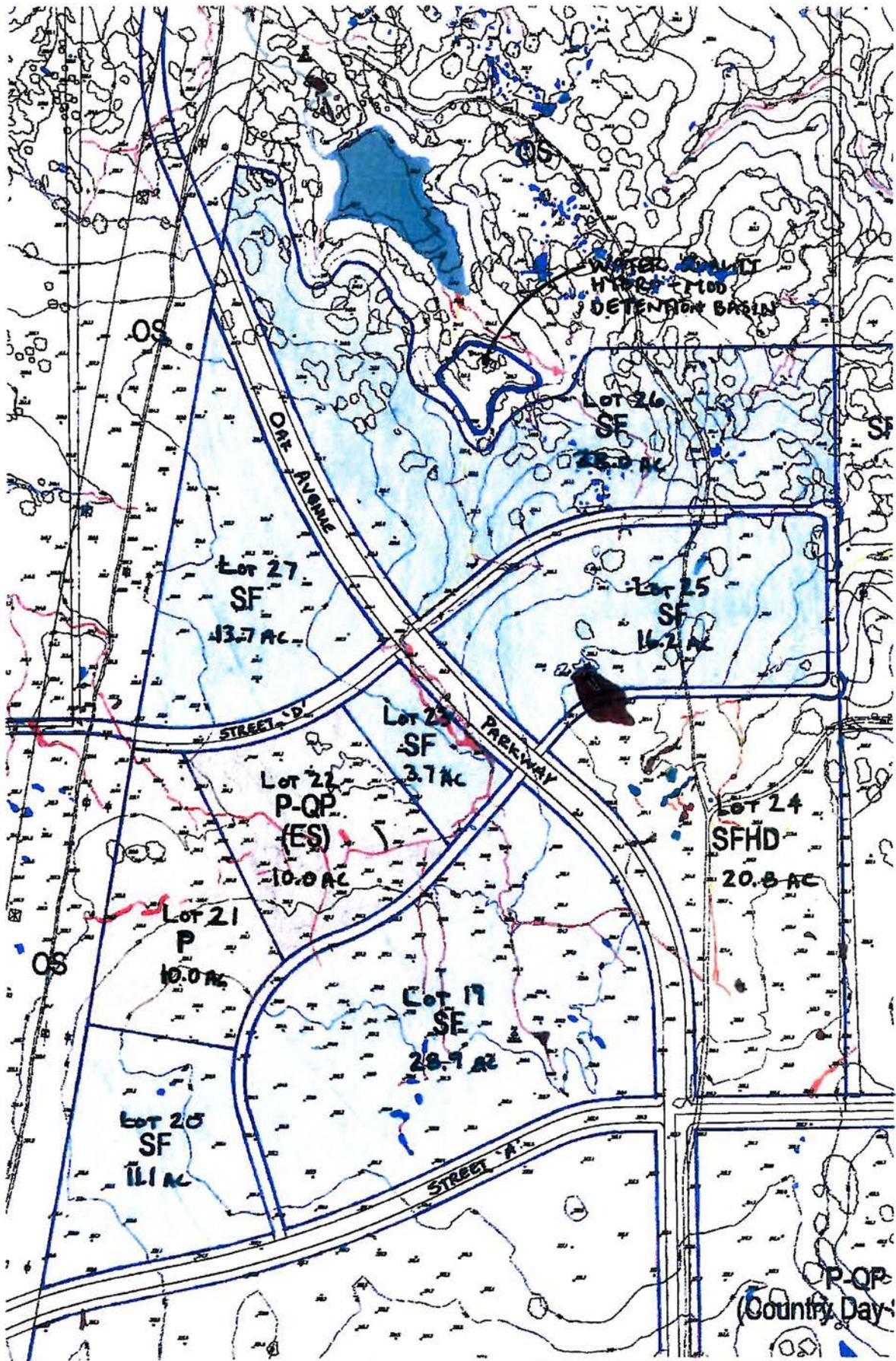


Preliminary Cost Estimate
Folsom Plan Area Specific Plan
Proposed Project Backbone Infrastructure

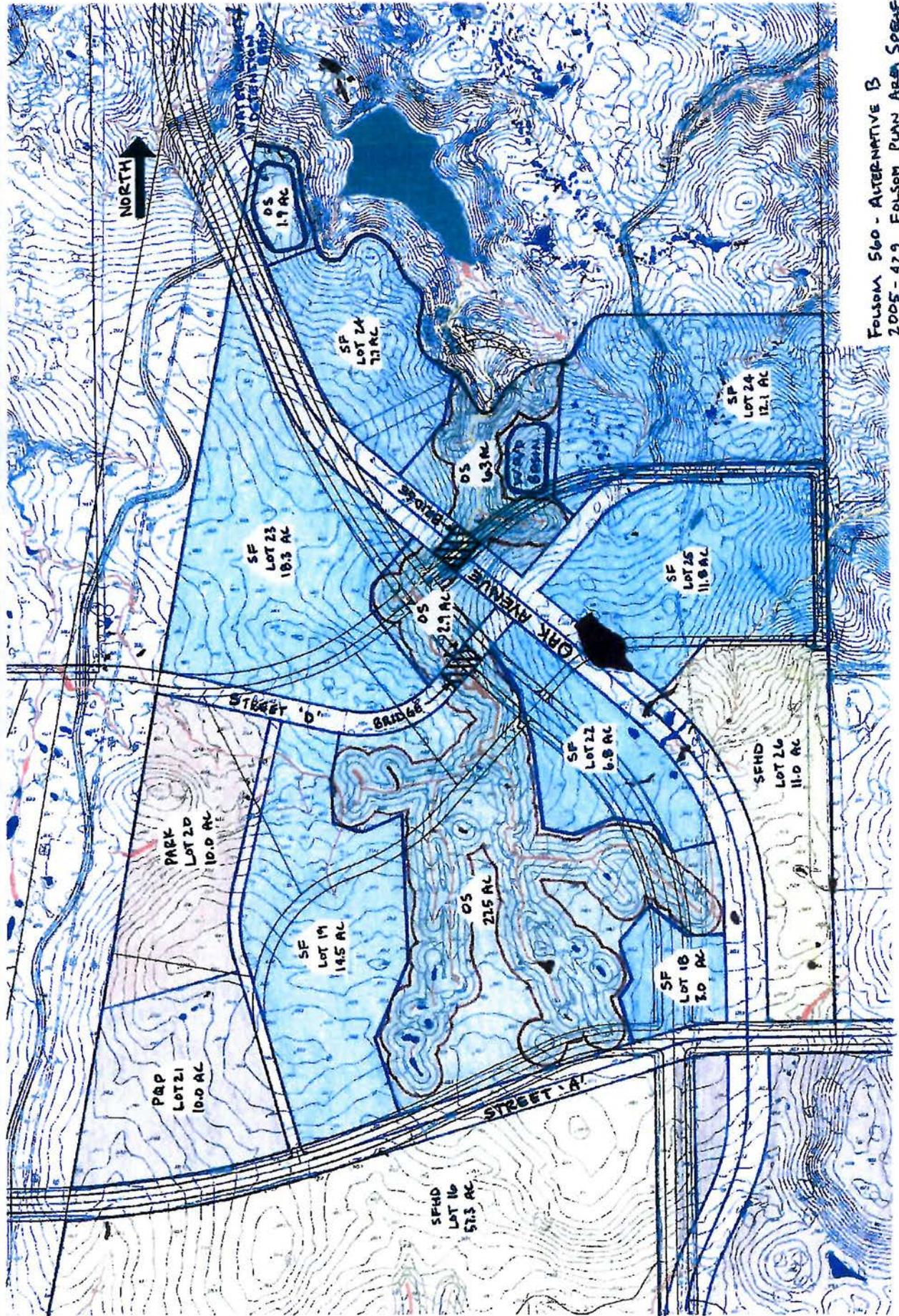
Preliminary Cost Per Linear Foot
4 Lane Road
Major Arterial-Street Section H

	ITEM	QUANTITY	UNIT	UNIT PRICE	PER FT. COST
1.	Subgrade Preparation	63	s.f	\$0.15	\$9.45
2.	Clear and Grub	200	s.f.	\$0.10	\$20.00
3.	Rough Grade Excavation	15.0	c.y.	\$3.00	\$45.00
4.	Roadway Excavation	5.9	c.y.	\$5.00	\$29.50
5.	6" Asphalt Concrete Paving	56	s.f.	\$3.00	\$168.00
6.	23" Aggregate Base	56	s.f.	\$4.60	\$257.60
7.	Curb & Gutter, Type 2 (Vertical Curb)	2	l.f.	\$25.00	\$50.00
8.	Median Curb, Type 3 (6" Barrier Curb)	2	l.f.	\$18.00	\$36.00
9.	Median Landscaping & Irrigation	15	s.f.	\$6.00	\$90.00
10.	Median Top Soil Import (12")	0.0	c.y.	\$25.00	\$0.00
11.	Planting Strip	9	s.f.	\$6.00	\$54.00
12.	PCC Sidewalk w/6" AB	18	s.f.	\$6.00	\$108.00
13.	Signing & Striping (4-lanes)	4	l.f.	\$1.00	\$4.00
14.	Erosion Control	138	s.f.	\$0.25	\$34.50
15.	Local Drainage	1	l.f.	\$70.00	\$70.00
16.	Local Water	1	l.f.	\$80.00	\$80.00
17.	Local Sewer	1	l.f.	\$60.00	\$60.00
18.	Street Lights (Type A, 220' spacing, both sides)	1	l.f.	\$18.00	\$18.00
Subtotal					\$1,134.05
Use					\$1,140.00





FALSDAL SLO- ALTERNATIVE 'B'
 OAK AVENUE PARKWAY REALIGNMENT
 PROPOSED PROJECT STUDY AREA LAND USE EXHIBIT



FOLSOM 560 - ALTERNATIVE B
 2005-429 FOLSOM PLUN AREA SPECIFIC PLAN