Attachment 7: Technical Justification of Project Physical Benefits

1. PROJECT PHYSICAL BENEFITS

1.1. Protection From Flooding

As discussed in the Goals and Objectives portion of the application, the Technical Justification for the Florin Creek Multi-Use Basin project is based upon hydraulic and hydrologic analysis performed by Wood Rodgers, Inc. (Wood Rodgers) within the South Sacramento Streams Group (SSSG) on behalf of the City of Sacramento, the County of Sacramento, the Sacramento Area Flood Control Agency (SAFCA), and the Sacramento District of the US Army Corps of Engineers (USACE). The primary benefit of the project is the removal of homes and structures from 100-year or greater floodplains and the corresponding reduction in Expected Annual Damages from flooding. The model's development is documented in the report by Wood Rodgers entitled: *City of Sacramento, Department of Utilities, Existing Conditions and Channel Improvements Modeling, South Sacramento Streams Group, Sacramento, CA*, which is included as Attachment 7 Parts 2-4 of 5 of this application. The location of the project in relation to surrounding drainage and flood control infrastructure is shown on Figure 1 (Figures are included at the end of this part (Part 1 of 5) of Attachment 7).

The Florin Creek Multi-Use Basin will work in conjunction with the USACE's project to increase the capacity of Florin Creek (Federal Project). The design of the Federal Project is described in the report prepared by Pacific Civil and Structural Engineers, LLC (PCSC), a joint venture of Wood Rodgers and MGE Engineering, Inc. (MGE), entitled: *35% Design Documentation Report, South Sacramento Streams Project, Flood Damage Reduction Group, Florin Creek from Franklin Boulevard to Highway 99 (Section 2D1)*, November 21, 2012, which is included as Attachment 7 part 5 of 5 of this application. Due to existing infrastructure located within and adjacent to the creek corridor (homes near both the left and right banks and bridges crossing over the creek), it is economically infeasible for the USACE to construct a project which fully contains the 100-year design flow. In collaborating on the Federal Project, the USACE and SAFCA have agreed that the USACE will design and construct the Florin Creek channel improvements in order to maximize the available real estate along both sides of the creek, and SAFCA will lead this follow-on project to construct the Florin Creek Multi-Use Basin to attenuate the 100-year storm event.

The configuration of the Florin Creek Multi-Use Basin is shown on Figure 2. It consists of two separate flood control basins connected by a riparian corridor. The flood control basins encompass approximately 30-acre feet of detention storage. In addition, seasonal wetland/water quality ponds are incorporated into both the lower and upper detention storage basins.

To determine the flood damage reduction benefits for the Florin Creek Park Multi-Use Basin, Wood Rodgers modeled the Federal Project and determined the extent of floodplains that would result with and without the construction of the Basin. The with-Federal Project scenario is considered to be the base case because the Federal Project is underway on a schedule in which construction will begin in 2014. A series of storm events were simulated for the base case and the resulting floodplains were mapped. The 10-year, 50-year, 100-year, 200-year, 500-year, and

1000-year events were evaluated and the 50-, 100-, 200-, 500- and 1,000 year floodplains are shown on Figure 3 through Figure 11. The floodplains in the exhibits are color-coded to show depth of inundation, which is a factor in the determination of Expected Annual Damage within the economic analysis. The events considered in the analyses were selected so that the most frequent event (10-year event) results in no damage with or without the project, and the least frequent event (1000-year event) produces a similar level of damage with or without the project. The number of structures impacted by the resulting floodplain of each storm event with or without the project is shown in Table A below. Table A assumes the Federal Project at Florin Creek has been completed.

Table A – Number of Structures Impacted by Storm Events

Storm Frequency Event	Structures Impacted by Event without Florin Creek Multi-Use Basin	Structures Impacted by Event with Florin Creek Multi-Use Basin
10-year	0	0
100-year	185	4
200-year	211	4
500-year	230	6
1000-year	620	620
Completion of Federal Project is assumed.		

It is noted that the four structures that are impacted by the 100-year and 200-year with project scenario can be addressed by either: (1) Purchasing the properties and removing the structures, or (2) constructing floodwalls at the right bank of the Florin Creek upstream of Persimmon Avenue as part of the Federal Project.

Although the project is designed to work in conjunction with the Federal Project, the project provides independent utility without the Federal Project to provide flood control benefits. Figure 12 shows the 100-year floodplain that would occur with the Federal Project on Florin Creek and both with and without the Florin Creek Park Multi-use Basin. Figure 13 shows the 200-year floodplain that would occur with the Federal Project on Florin Creek both with and without the Florin Creek Multi-Use Basin. Figure 14 shows the reduction in the 100-year floodplain as mapped by the effective FEMA FIRM that would occur without the Federal Project on Florin Creek and with the Florin Creek Park Multi-Use Basin. This figure demonstrates the reduction in the current floodplain that would occur if only the Florin Creek Multi-Use Basin were constructed. The total number of structures that would be impacted with the Florin Creek Multi-Use Basin with and without the Federal Project is shown below in Table B. Without the Federal Project, the Florin Park Multi-Use Basin removes more structures from the 100-year floodplain than with it, so benefits measured assuming the construction of the Federal Project are conservative. The project is independently useful if the Federal Project is not completed.

Table B – Number of Structures Impacted with and without Federal Project With the Florin Creek Multi-Use Basin in Place		
Storm Frequency Event	**Structures Impacted by Event without Federal Project**	**Structures Impacted by Event with Federal Project**
100-year	103	4

The Expected Annual Damage (EAD) from the without project condition is $192,175 and with the project, the EAD is $11,858. This reduction in EAD is shown in Attachment 8 of this application. The quantity of structures and contents damage, the estimated unit price for the various damage categories, and the total cost of the damage are shown in Table C (Table C is several pages long and is included at the end of this part (Part 1 of 5) of Attachment 7). The relationship between depth of inundation and total structure damage is based upon the guidance provided in the USACE document entitled Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures with Basements. The total project cost is shown in Attachment 4 of this application.

The removal of structures from the 100-year floodplain also benefits property owners in the vicinity by reducing flood insurance premiums. The benefits associated with the reduction in flood insurance premiums are quantified in Attachment 8 of the application. Flood insurance costs were estimated using the National Flood Insurance Program (NFIP) website at http://www.floodsmart.gov/floodsmart/. This website provides a range of flood insurance costs related to structure and content values. The cost of flood insurance was estimated making the following assumptions:

1) The average structure value within the area was estimate at $83,000 based on the assessed values taken from the Sacramento County Assessor's Parcel Viewer for recently sold parcels.
2) The flood insurance would be purchased for both the structure and contents.

Table D shows the annual physical water storage benefits of the project. The project proposes to construct a 30 to 40 acre-foot basin, depending on final design of this project and the Federal Project. The conceptual design on this application is based shows storage of 35 acre-feet.

Table D (PSP Table 7) – Annual Project Physical Benefits Project Name: Florin Creek Multi-Use Basin			
Type of Benefit Claimed: Flood Protection			
Measure of Benefit Claimed (Name of Units): Acre-Feet			
Additional Information About this Measure:			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2013-2062	0	35	35
Comments: Actual amount may vary with final project design and design of the Federal Project.			

References for Protection from Flooding:

National Flood Insurance Program. 2013. Accessed several times in January, 2013. http://www.floodsmart.gov/floodsmart/

US Army Corps of Engineers (USACE). 2003. Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures with Basements. October 10.

Wood Rodgers, Inc. City of Sacramento, Department of Utilities, Existing Conditions and Channel Improvements Modeling, South Sacramento Streams Group, Sacramento, CA. (Attachment 7 Parts 2-4 of 5).

Wood Rodgers and MGE Engineering, Inc. (MGE). 2012. 35% Design Documentation Report, South Sacramento Streams Project, Flood Damage Reduction Group, Florin Creek from Franklin Boulevard to Highway 99 (Section 2D1). November 21, 2012 (Attachment 7 Part 5 of 5).

1.2. Water supply

The project would detain water throughout the basin in periods of flood and in the wetland area throughout the year. Park land has one of the lowest runoff coefficients (i.e. slowest water flow and highest infiltration) of all urban land uses, ranging from 0.1 to 0.25 (Technical Advisory Council on Citizen Monitoring, 2001).

The project will encourage infiltration compared to existing conditions. Water percolating into the ground can contribute to stream flow at later times of the year as it discharges into a stream intersecting the phreatic surface (Mount, 1995). Because the increase in infiltration attributable to the project is expected to be slow and infrequent this unquantified benefit is considered positive but low, and is shown as zero in Table E.

Table E (PSP Table 7) – Annual Project Physical Benefits Project Name: Florin Creek Multi-Use Basin			
Type of Benefit Claimed: Water Supply			
Measure of Benefit Claimed (Name of Units): Acre-Feet			
Additional Information About this Measure:			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2013-2062	0	0	0
Comments: This benefit is not quantifiable and is expected to be positive, but is shown as zero for lack of certainty on its magnitude.			

References for Water Supply:

Mount, Jeffrey. F. 1995. California Rivers and Streams. The Conflict Between Fluvial Process and Land Use.

Technical Advisory Council on Citizen Monitoring. 2001. Guidelines for Citizen Monitors: Products of the 2000-2001 Technical Advisory Council on Citizen Monitoring. Downloaded 1/24/2013 at http://www.waterboards.ca.gov/water_issues/programs/swamp/cwt_guidance.shtml.

1.3. Water Quality Improvement

The project will be designed to incorporate a "wet basin." This is an area of the detention basin intended to persist as a permanent pool of water. This wet basin will predominantly be located in the southern extents of the detention basin, although an option may include either a wet basin or seasonal basin in the northern extents of the detention basin. The wet basin will be designed to remain inundated to a certain depth year-round. However, seasonal flushing of the wet basin to minimize water stagnation will occur through the winter and spring runoff periods through a system of culverts connecting the wet basin to the Upper Florin Creek.

The wet basin will be further enhanced with the inclusion of native wetland/aquatic vegetation, and a riparian fringe. In addition the wet basin may include one or two islands to include planting areas of riparian and shrubby/scrub vegetation with a wetland vegetation fringe. Terraces around the wet basin and island(s) will be designed to seasonally inundate during extended periods every winter, when higher flows pass through Upper Florin Creek. These seasonally inundated areas of the wet basins will be particularly beneficial for habitat and water quality function.

The native vegetation included in the wet basins will have significant water quality improvement benefits. Native vegetation will assist in the removal of nutrients, (nitrogen and phosphorous), improve water filtration through the diverse vertical structure of plantings, and reduce the velocity of water flowing through several layers of vegetation, which allows more suspended sediments and particulate matter to settle out and be captured. In addition, the wet basins will

provide habitat for micro-organisms that remove nutrients dissolved in the water, and provide habitat for insects such as dragonflies that eat mosquitoes. The Sacramento-Yolo Mosquito & Vector Control District will be consulted and Best Management Practices will be used to minimize mosquito production (SYMVCD, Undated).

The US Environmental Protection Agency (USEPA) has determined that wetlands are an important tool for controlling nonpoint source pollution (USEPA, 2005)). The USEPA cites a Tahoe study in which constructed wetlands removed 85% of total suspended solids (TSS), 85-90% of total nitrogen, 20% of soluble phosphorous, 47% of solid phosphorous, and 84% of iron in incoming runoff. A team of researchers for Caltrans found that retrofitted detention basins in Los Angeles and San Diego removed 73% of TSS, 61-75% of total metals, and 17% of nitrate (Taylor et al, 2001). Because pollutants can be present as sediments or can be adsorbed onto sediments, high sediment removal leads to reduction of these other pollutants as well.

This benefit is not measured because it is dependent on the volume of water that will be diverted into the created wetland in each year. At the current level of design, this is not known. The basin will improve the quality of water being discharged, but the amount of water affected will be limited because the concept is to divert water into the wetland approximately once per year and into the larger basin no more frequently than about every 10 years. However, the existing pond in Florin Creek Park has low water quality due in part to a lack of flushing. The water quality in this feature will be improved by both the flushing and the uptake of nutrients by the wetland and riparian plants.

Table F (PSP Table 7) – Annual Project Physical Benefits Project Name: Florin Creek Multi-Use Basin			
Type of Benefit Claimed: Water Quality Improvement			
Measure of Benefit Claimed (Name of Units): N/A			
Additional Information About this Measure:			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2013-2062	0	0	0
Comments: Although the project is expected to improve water quality, lacking a characterization of constituents in the creek now and the final project design parameters, this is shown as zero at this time.			

References for Water Quality Improvement:

Claytor, R., and T. Schueler. (1996). Design of Stormwater Filtering Systems. The Center for Watershed Protection. Silverspring, Maryland. P. 6-1, 6-14.

CRC Press (1997). Creating Freshwater Wetlands.

Oki, L et al. (2011). Evaluating Best Management Practices (BMPs) Effectiveness to Reduce Volumes of Runoff and Improve the Quality of Runoff from Urban Environments, for the State Water Resources Control Board, Agreement Number 04-231-550-03.

Placer County (2012). Low Impact Development Guidebook, produced by cbec eco engineering, CKB Environmental, and Placer County.

Prince George's County, Maryland, Department of Environmental Resources (PGCMDER). 1993. Design Manual for Use of Bioretention in Stormwater Management. Prince George's County, Maryland. p. 5.

Prince George's County, Maryland, Department of Environmental Resources (PGCMDER). 2002. Bioretention Manual. Prince George's County, Maryland. P. iv, 16.

Sacramento-Yolo Mosquito & Vector Control District (SYMVCD). Undated. Mosquito Reduction Best Management Practices. Accessed 1/25/2013. http://www.fightthebite.net/download/ecomanagement/SYMVCD_BMP_Manual.pdf

Taylor, Scott, L. Hansen, and C. Beitia. 2001. Assessment of Costs and Benefits of Detention for Water Quality Enhancement. Accessed 1/25/2013 at http://www.owp.csus.edu/research/papers-reports-presentations.php.

US Environmental Protection Agency (USEPA). 2005. National Management Measures to Protect and Restore Wetlands and Riparian Areas for the Abatement of Nonpoint Source Pollution. Accessed 1/24/2013 at http://water.epa.gov/polwaste/nps/wetmeasures/index.cfm.

1.4. Environmental Benefits

The project's environmental benefits include the water quality benefits described above. In addition, the project will create about an acre of mixed willow/scrub shrub and riparian vegetation with some native grasses in addition to replacing the existing open water feature on the site. These habitats are of great importance in California because 95% of the state's historic wetlands have been destroyed (Bogiatto et al., 2009). The project's proximity to the creek will make this especially valuable for wildlife using the creek corridor. Notwithstanding the urban nature of the creek, it serves as a vital movement corridor for wildlife, which would be expected to include wading birds and raptors that have adapted to the presence of humans. The Sacramento Audubon Society lists 91 species of birds found in urban and suburban areas of Sacramento County (Sacramento Audubon Society 2009), and most of these species would be expected to use the project site, which will have much better native habitat than most urban areas. At the similar Unionhouse Creek to the south, wildlife observed has included great egret, red-shouldered hawk, and California king snake (Klasson, pers. comm). Use of the site by threatened or endangered species is expected to be low as these species are typically less tolerant of human activity and urbanization.

The project will provide interpretive panels to help interest park visitors in the relationship of healthy wetlands to watershed and wildlife health. The panels will provide passive recreation and

educational benefits that will generate their own environmental benefits. As author Richard Louv, author of *Last Child in the woods: Saving Our Children from Nature-Deficit Disorder* has written "the more [people] fish, the more they care about the quality of water and watershed" (CDFW, Undated). Louv's comment was specifically directed to the California Department of Fish and Wildlife's (CDFW's) successful Fishing in the City Program, which is conducted throughout the state, including at Florin Creek Park, and the reconstructed wetland and pond will make this a better venue for the activity with a clearer connection to natural environments.

Table G (PSP Table 7) – Annual Project Physical Benefits Project Name: Florin Creek Multi-Use Basin			
Type of Benefit Claimed: Habitat improved or created			
Measure of Benefit Claimed (Name of Units): Acres			
Additional Information About this Measure:			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2013-2062	0.15	1.15	1.0
Comments: A 6,400 square foot landscaped wetland on the site is choked with cattails and has low habitat quality or diversity. It will be replaced with an enlarged wetland and swale with perimeter plantings of diverse native riparian species.			

References for Environmental Benefits:

Bogiatto Raymond J. and Sabrina M. Wright-Myers, Stacy H. Kraus, Jennifer L. Moore, and John W. Hunt. 2009. California Fish and Game. The Use of Eastern Sacramento Valley Vernal Pool Habitats by Geese and Swans. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=47331

California Department of Fish and Wildlife (CDFW). Undated. Richard Louv on Urban Fishing. Accessed 1/25/2013 at http://www.dfg.ca.gov/fishinginthecity/docs/Fly_Fishing_for_Sharks_quote.pdf.

Klasson, Mick. 1/25/2012. Personal communication, klassonm@sbcglobal.net.

Sacramento Audubon Society. 2009. Checklist of the Birds of the Sacramento Area (Urban). Accessed 1/25/2013 at http://www.sacramentoaudubon.org/birdquestions/checklist.html.

1.5. Recreation Resources

The project will add 2.84 acres to Florin Creek Park and it will develop existing undeveloped park land. The total increase in developed park acreage is estimated at 4.7 acres. Although the park district does not have current visitor-day data for this park, the American River Parkway in Sacramento County gets about 2,000 visitor days per acre per year (The Dangermond Group and

County of Sacramento Department of Regional Parks, 2006). Since a developed park with play fields has potential for much higher density of use than an open space park oriented towards passive recreation, this is considered a conservative estimate of the use the expanded part of Florin Creek Park will receive on a per-acre basis. In total, the project should yield 9,400 visitor-days of use per year. This value is not monetized because the value of a visitor day of use in Sacramento neighborhood parks is not well established.

Many studies have been performed to determine the effects park development has on the surrounding property values. According to the study written by Peter Harnik and Ben Welle for the Trust for Public Land titled “Measuring the Economic Value of a City Park System,” dated 2009, property values for those properties within 500 feet of a park increase by an average of 5%. This finding is also supported by a study prepared by John L. Crompton titled “The Impact of Parks on Property Values: Empirical Evidence from the Past Two Decades in the United States,” dated October 2005.

The parks in these studies were newly developed parks. The Florin Creek Multi-Use Basin project will be expanding the existing Florin Creek Park. As such, the increase in property values will be less than the value provided in the studies. For the purpose of determining the value added to the surrounding properties by the expansion of the existing Florin Creek Park, the average increase in property value of 5% for properties within 500 feet of the park, as determined in the studies referenced above, was reduced by the ratio of new park area to the old park area. This reduced percentage (1.9%) was then applied to the average property value for properties recently sold within the project area ($110,000) as provided by the Sacramento County Assessor Parcel Viewer.

Qualitative measures that may increase the benefits of the project include better access than currently exists (the park will have a new frontage along Orange Avenue, allowing better walking access from the north), and higher quality facilities. Among the higher quality features will be improved water quality in the pond, better wildlife and native habitats increasing viewing opportunities, nature interpretation panels, and a greater extent of trails for walking within the park. In addition, the project will double the number of soccer fields. The park now has one large field that can be used for two fields for younger players, and with the project it will have one large and one medium field that together can serve as a total of four fields of young players, allowing families to visit the park while their children play simultaneous games.

Table H (PSP Table 7) – Annual Project Physical Benefits Project Name: Florin Creek Multi-Use Basin			
Type of Benefit Claimed: Recreation			
Measure of Benefit Claimed (Name of Units): Acre			
Additional Information About this Measure:			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2013-2062	12.5	17.2	4.7
Comments:			

References for Recreation Resources:

Crompton, John L. 2005. The Impact of Parks on Property Values: Empirical Evidence from the Past Two Decades in the United States. Leisure Management 10, 203-218. October. Accessed 1/29/2013 at http://agrilifecdn.tamu.edu/cromptonrpts/files/2011/06/4_1_6.pdf.

The Dangermond Group and County of Sacramento Department of Regional Parks. 2006. American River Parkway 2006 Financial Needs Study Update. http://www.msa2.saccounty.net/parks/Documents/ARP-Financial-Needs-Study-Update-2006.pdf

Harnik, Peter and Ben Welle. 2009. Measuring the Economic Value of a City Park System. Trust for Public Land. Accessed 1/25/2013. http://cloud.tpl.org/pubs/ccpe-econvalueparks-rpt.pdf.

Sacramento County. Undated. Assessor's Parcel Viewer. Web Application accessed 1/29/2013 at http://www.assessor.saccounty.net/AssessorsParcelViewerApplication/default.htm.

1.6. Energy and Greenhouse Gases

The project would make more park facilities available in an underserved area. This would reduce vehicle trips originating within the park service area and going to out-of-area parks. The CalEEMod emissions model (Environ, 2011b) assumes that urban parks generate approximately 1.59 vehicle trips per acre per day (actual use is much higher due to the high proportion of walking or biking trips to a neighborhood facility). It is assumed these trips are now being made to more distant parks due to a lack of available facilities at Florin Park. As described in more detail in Attachment 9, the area falls 2.26 acres/1,000 people short of the County standard of 5 park acres/1,000 population. Based on these numbers, and assuming that trips to substitute parks average 0.5 mile further than vehicle trips to the neighborhood park, the 4.7 acres of additional developed park land with the project would reduce regional vehicle trips by about 1,360 vehicle miles per year. At an average fuel economy of 24 miles per gallon (Automotive Fleet, 2012), this corresponds to about 56 gallons of gas conserved in the first year, decreasing annually to perhaps less than half that due to increasingly stringent corporate average fuel efficiency (CAFE). The

reduction in vehicle miles travelled (VMT) is shown in Table I rather than the reduction in fuel consumption because the rate at which fuel consumption changes depends not just on CAFE standards but on the rate at which older, less efficient vehicles are retired and new ones purchased, which is beyond the scope of this analysis.

Table I (PSP Table 7) – Annual Project Physical Benefits Project Name: Florin Creek Multi-Use Basin			
Type of Benefit Claimed: Vehicle Trip Reduction			
Measure of Benefit Claimed (Name of Units): Reduction in Vehicle Miles Travelled (VMT)			
Additional Information About this Measure:			
(a)	(b)	(c)	(d)
	Physical Benefits		
Year	Without Project	With Project	Change Resulting from Project (c) – (b)
2013-2062	0	1,360	1,360
Comments: This benefit is measured as a reduction in VMT, so it is considered 0 (no reduction) without project and 1,360 (i.e. 1,360 fewer miles travelled) with project.			

Based on 0.396 kilograms of CO_2 per mile (0.873 pounds/mile) (Groth et al.) the vehicle travel savings will account for a 1,190 pound per year reduction in greenhouse gas emissions in the first year, also declining over time as vehicles get more fuel efficient and fuel becomes less carbon intensive. As with fuel savings, VMT in Table I can be used as a proxy for carbon emissions savings.

In addition, urban trees sequester approximately 78 pounds of carbon (0.0354 metric tons) per tree per year over a 20 year period (Environ, 2011b). The project may plant 100 trees or more (i.e. around the perimeter of the wetlands, both sides of a swale, and along the trail to Orange Avenue alongside the upper basin). This corresponds to a total of 78 tons of carbon sequestered over the 20 year period, continuing past the 50-year project lifetime. Sequestration increases over time as trees mature and add more biomass in each year. This physical benefit is not quantified because at this stage of design it is uncertain whether and how many trees will be removed to make room for the basin. This would result in negative sequestration benefits until the growth of the new trees overtakes the projected growth of the old trees. The overall effect is expected to be positive and substantial over time, but is not quantified here at this stage of analysis.

References for Energy and Greenhouse Gases:

Automotive Fleet. 2012. Analysts Find First Half of 2012 Sets MPG Record for Automotive Fuel Efficiency. July 26. Accessed 1/25/2013 at http://www.automotive-fleet.com/channel/fuel-management/news/story/2012/07/analysts-find-first-half-of-2012-sets-mpg-record-for-automotive-fuel-efficiency.aspx?prestitial=1.

Environ International Corporation (Environ). 2011a. CalEEMod California Emissions Estimator Model User's Guide Version 2011.1. Prepared for South Coast Air Quality Management District. February. Downloaded 1/25/2013 at http://www.caleemod.com/

Environ International Corporation (Environ). 2011b. CalEEMod California Emissions Estimator Model Appendix D Default Data Tables. Prepared for South Coast Air Quality Management District. February. Downloaded 1/25/2013 at http://www.caleemod.com/.

National Highway Traffic Safety Administration (NHTSA). Undated. NHTSA and EPA Set Standards to Improve Fuel Economy and Reduce Greenhouse Gases for Passenger Cars and Light Trucks for Model Years 2017 and Beyond. Accessed 1/30/2013 at http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/CAFE_2017-25_Fact_Sheet.pdf.

Philip Groth, Rawllings Miller, Nikhil Nadkarni, Marybeth Rily, and Lilly Shoup. 2008. Quantifying the Greenhouse Gas Benefits of Urban Parks. ICF International. Prepared for the Trust for Public Land. August. Accessed 1/25/2013 at http://cloud.tpl.org/pubs/benefits_greenhouse_gases_and_parks_whitepaper.pdf.

2. SUMMARY OF PHYSICAL BENEFITS

The project will have the following physical benefits described in this section:

- Protection from flooding of 181 structures in a 100-year event and 207 structures in a 200-year event.
- Provision of 35 acre-feet of flood storage.
- An unquantified small, positive increase in water supply.
- An unquantified benefit in water quality downstream of the site and in the on-site pond.
- Provision of an additional 1 acre of wildlife habitat and enhancement of existing habitats on the site.
- An additional 4.7 acres of park area, including a new playing field and habitat area with interpretive features.
- An estimated 1,360 mile annual reduction in vehicle miles travelled by local users whose recreational needs can be met by the park expansion without driving to another park. Fuel savings and greenhouse gas emission reductions result from this reduction in VMT.
- Unquantified greenhouse gas sequestration benefits due to enlarging the urban forest.

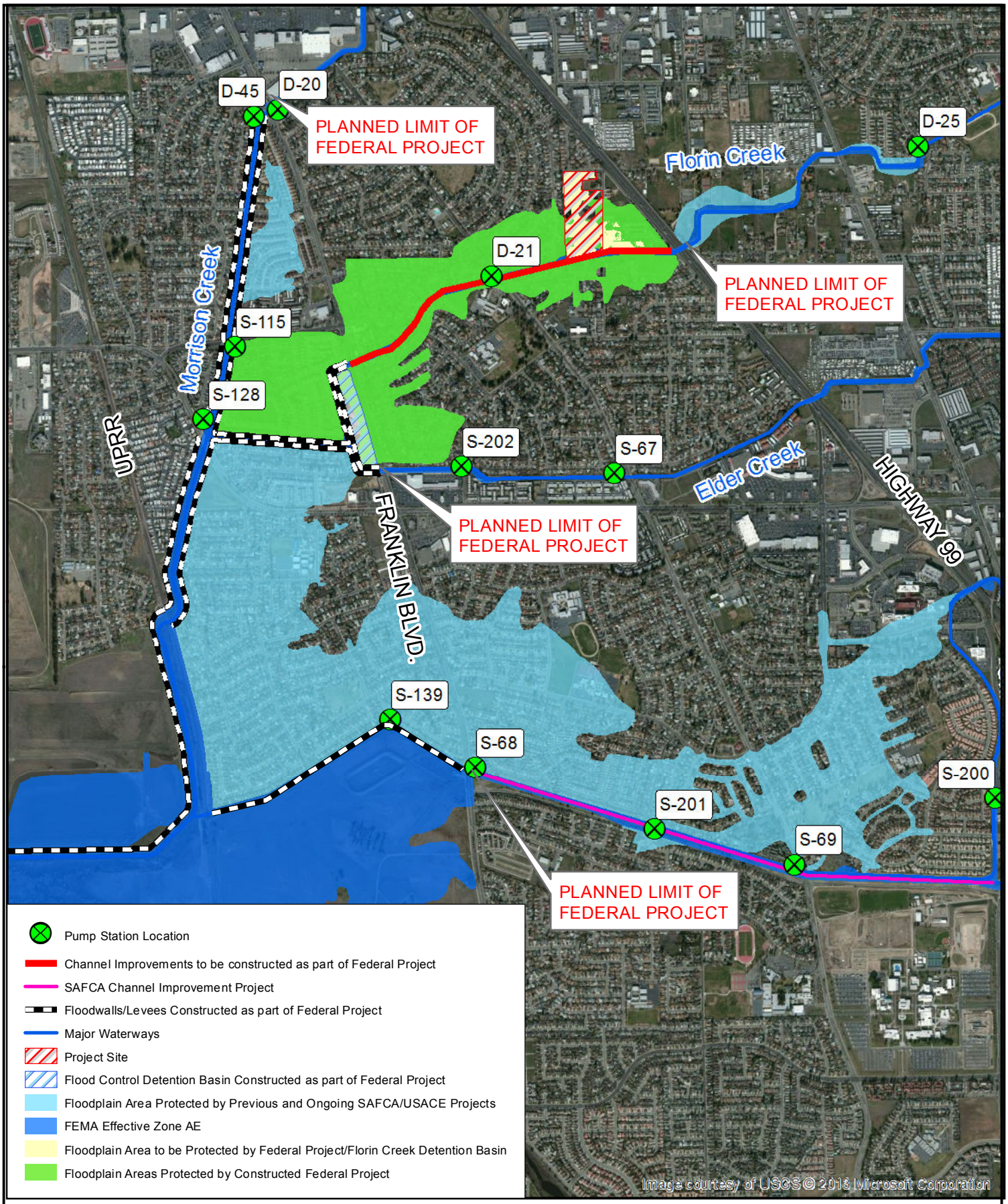


FIGURE 1
SAFCA
FLORIN CREEK MULTI-USE BASIN
SACRAMENTO, CALIFORNIA
JANUARY 2013

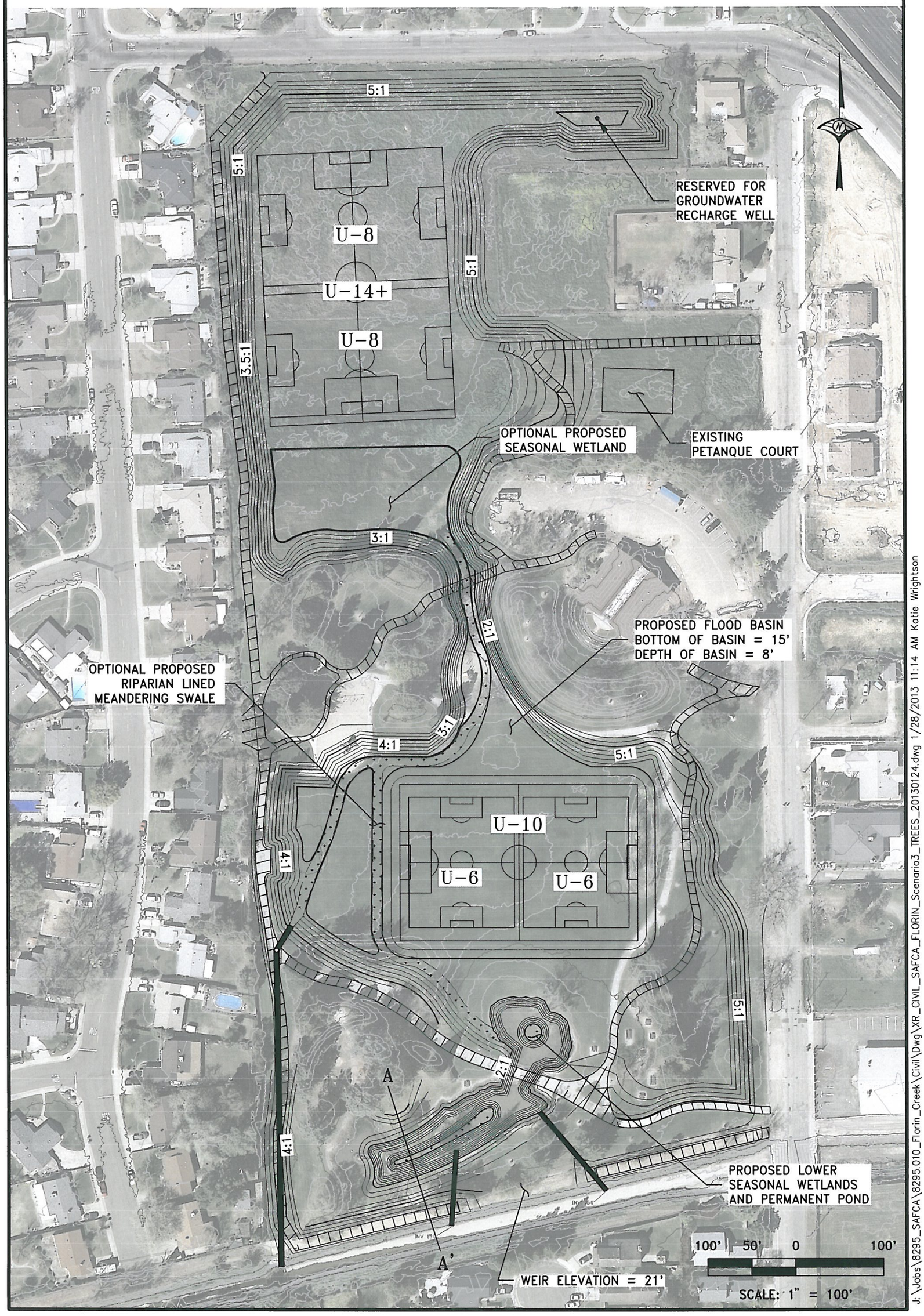
0 1,000 2,000
FEET

NORTH

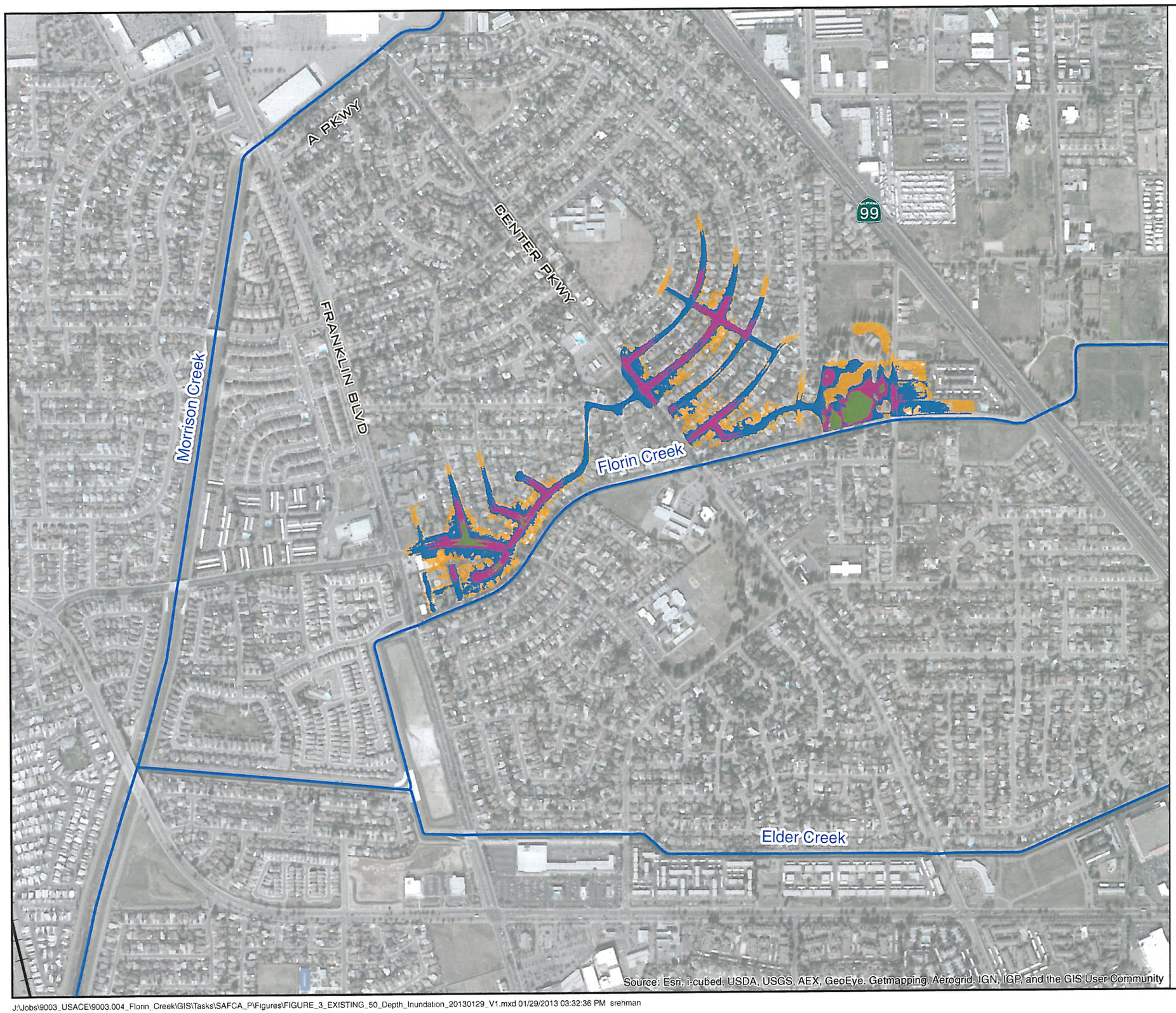
WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

FIGURE 2

FLORIN CREEK PARK DETENTION BASIN AND SOCCER FIELD PRELIMINARY LAYOUT



J:\Jobs\8295_SAFCA\8295.010_Florin_Creek\Civil\Dwg\XR_CIVIL_SAFCA_FLORIN_Scenario3_TREES_20130124.dwg 1/28/2013 11:14 AM Katie Wrightson



SAFCA
FLORIN CREEK 50-YEAR INUNDATION MAP
WITHOUT FLORIN CREEK MULTI-USE BASIN
SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

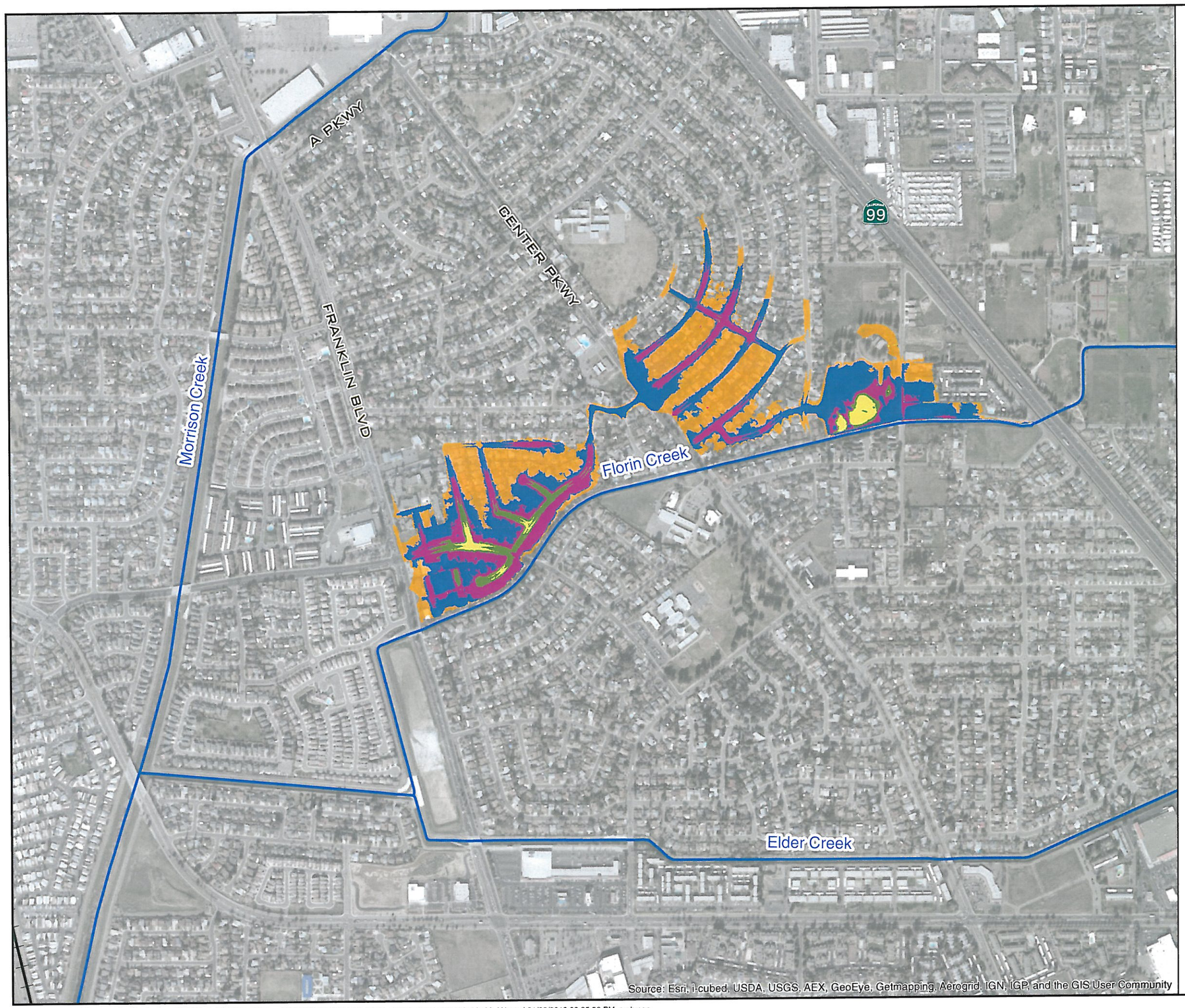
Railroad
Study Stream Limits

Inundation Depths

2-ft
1-ft
0-ft
-0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

FIGURE 3



SAFCA
FLORIN CREEK 100-YEAR INUNDATION MAP
WITHOUT FLORIN CREEK MULTI-USE BASIN
SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

Railroad
Study Stream Limits

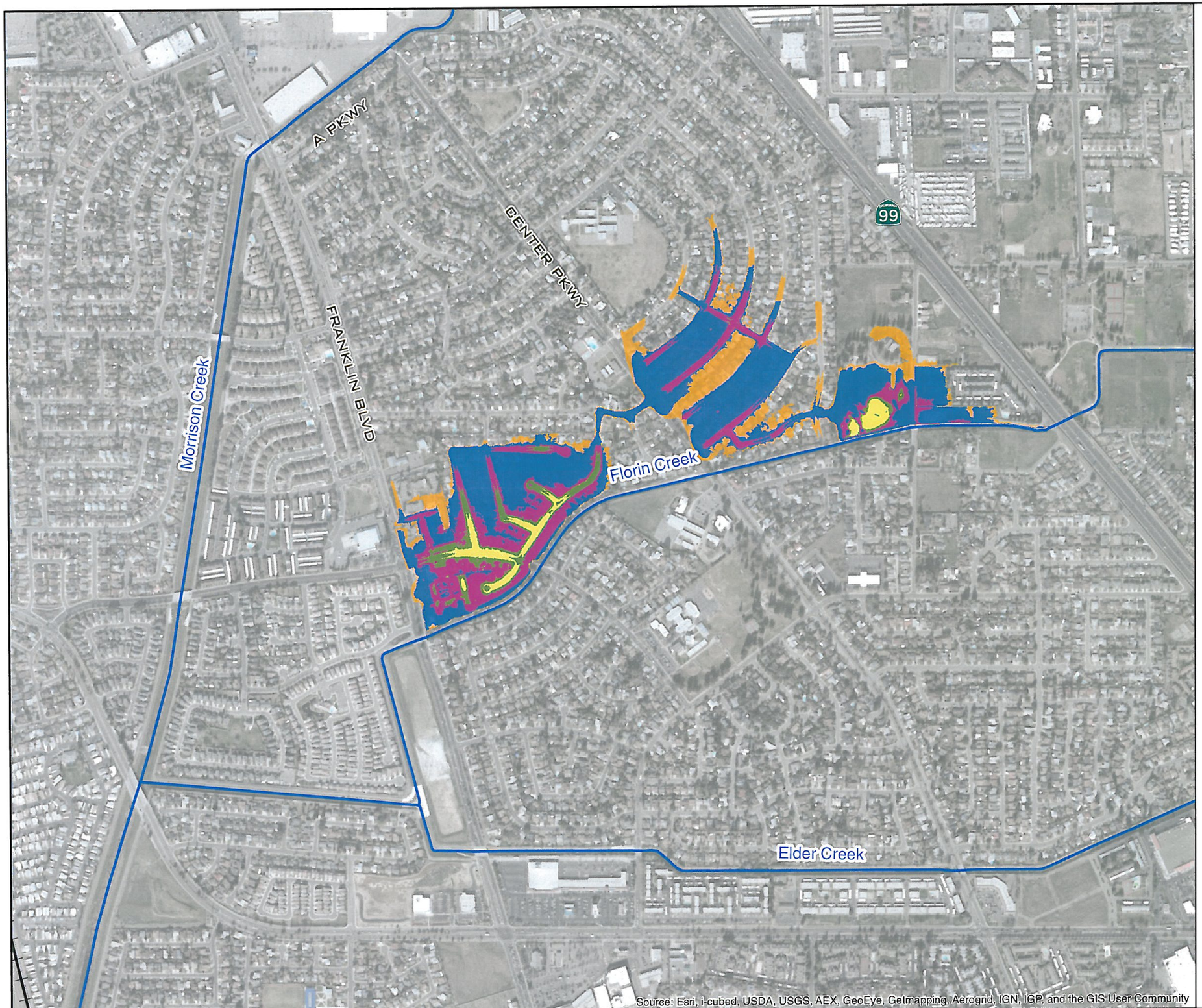
Inundation Depths

- 3-ft
- 2-ft
- 1-ft
- 0-ft
- -0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

FIGURE 4

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_4_EXISTING_100_Depth_Inundation_20130129_V1.mxd 01/29/2013 03:35:56 PM srehman



SAFCA
FLORIN CREEK 200-YEAR INUNDATION MAP
WITHOUT FLORIN CREEK MULTI-USE BASIN
SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

Railroad
Study Stream Limits

Inundation Depths

- 3-ft
- 2-ft
- 1-ft
- 0-ft
- -0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
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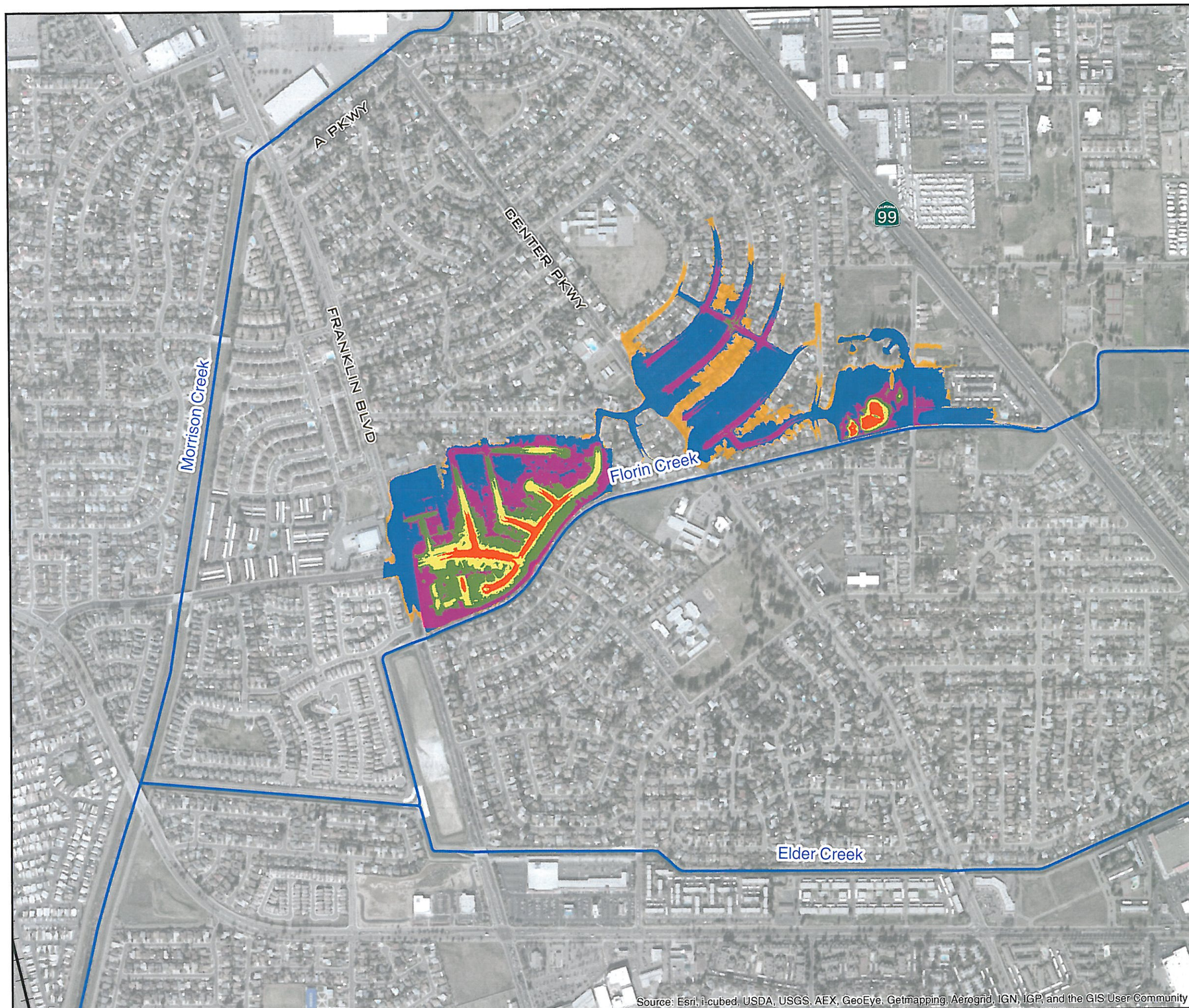
Sacramento, CA 95816 Fax: 916.341.7767

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_5_EXISTING_200_Depth_Inundation_20130129_V1.mxd 01/29/2013 03:38:08 PM srehman

FIGURE 5



SAFCA
FLORIN CREEK 500-YEAR INUNDATION MAP
WITHOUT FLORIN CREEK MULTI-USE BASIN
SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

Railroad
Study Stream Limits

Inundation Depths

- 4-ft
- 3-ft
- 2-ft
- 1-ft
- 0-ft
- -0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

FIGURE 6

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_6_EXISTING_500_Depth_Inundation_20130129_V1.mxd 01/29/2013 03:40:22 PM srehman

SAFCA

FLORIN CREEK 50-YEAR INUNDATION MAP
WITH FLORIN CREEK MULTI-USE BASIN

SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

Railroad
Study Stream Limits

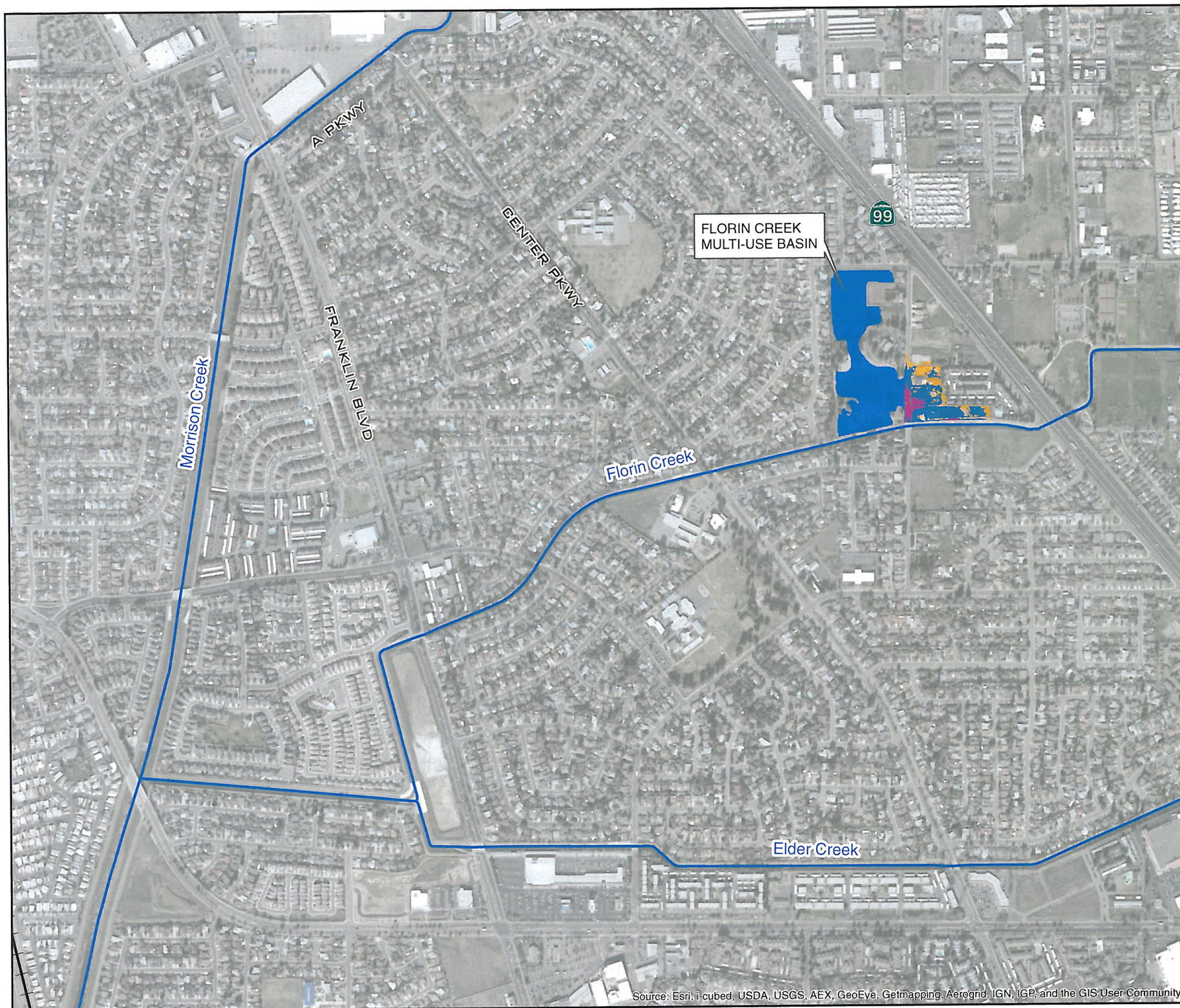
Inundation Depths

0-ft
-0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

FIGURE 7

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_7_PROPOSED_50_Depth_Inundation_20130129_V1.mxd 01/29/2013 04:04:46 PM srehman



SAFCA

FLORIN CREEK 100-YEAR INUNDATION MAP
WITH FLORIN CREEK MULTI-USE BASIN

SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

Railroad
Study Stream Limits

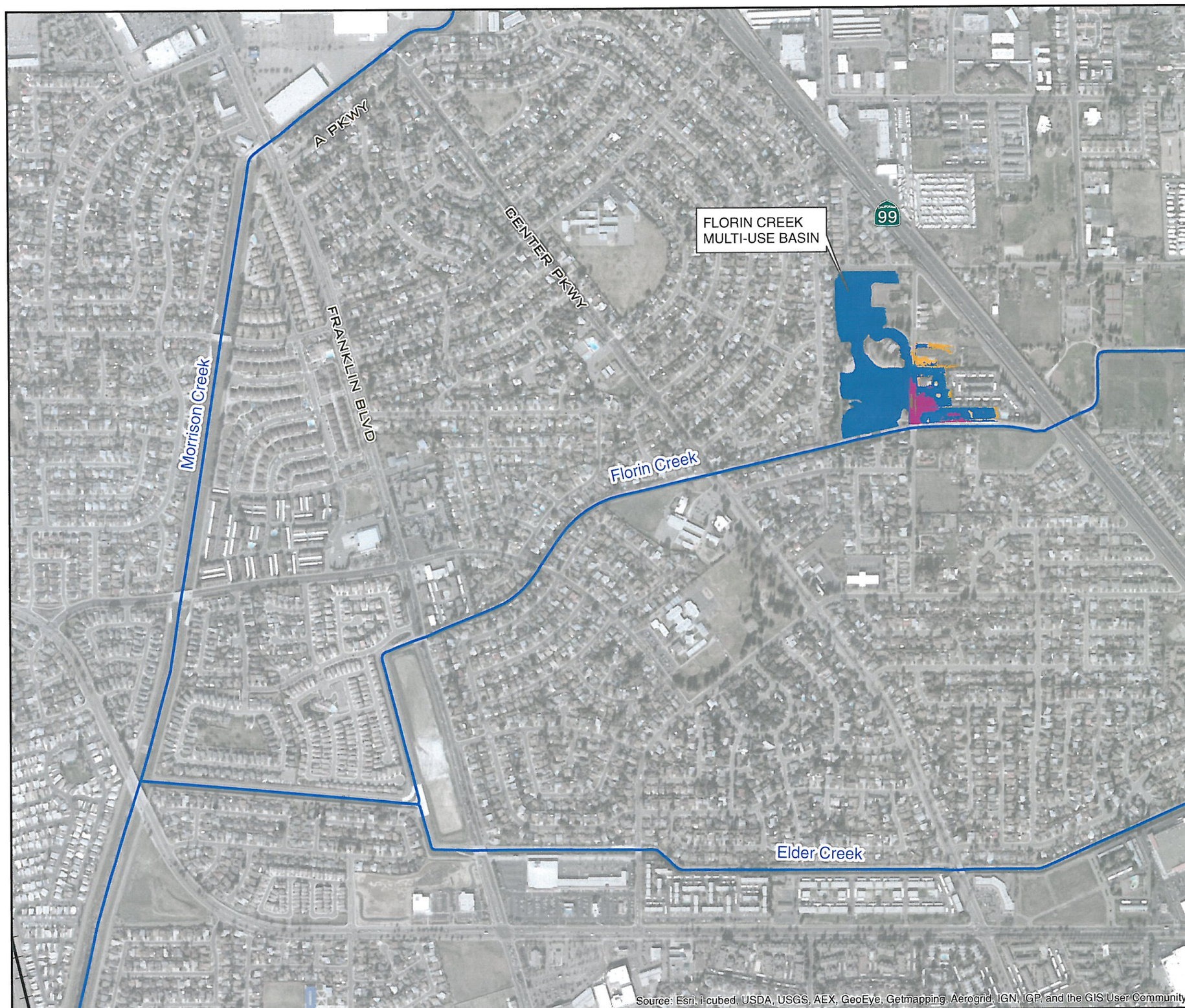
Inundation Depths

2-ft
1-ft
0-ft
-0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

FIGURE 8

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_8_PROPOSED_100_Depth_Inundation_20130129_V1.mxd 01/29/2013 04:01:48 PM srehman



SAFCA
FLORIN CREEK 200-YEAR INUNDATION MAP
WITH FLORIN CREEK MULTI-USE BASIN
SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

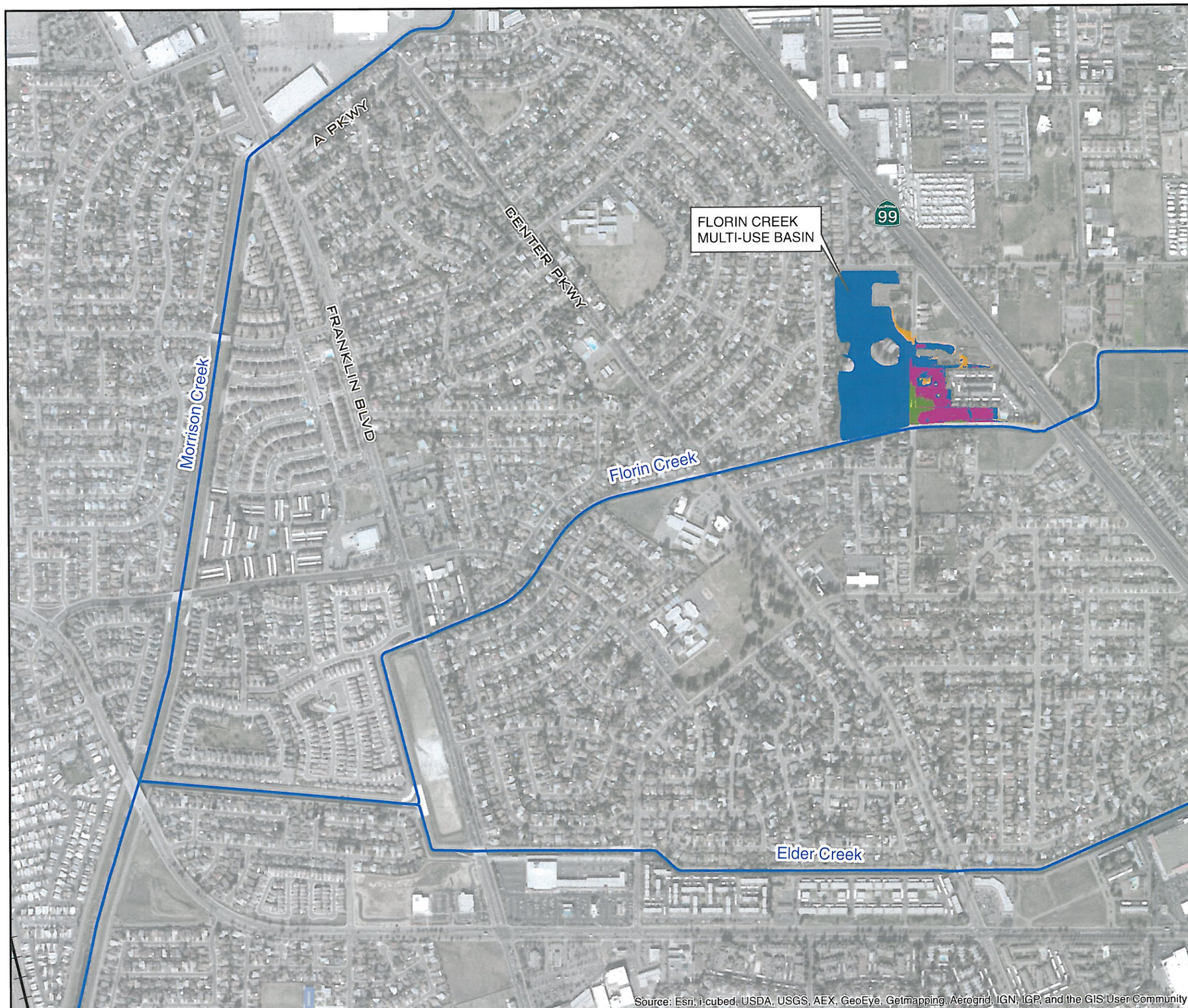
Railroad
Study Stream Limits

Inundation Depths

2-ft
1-ft
0-ft
-0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

FIGURE 9



SAFCA
FLORIN CREEK 500-YEAR INUNDATION MAP
WITH FLORIN CREEK MULTI-USE BASIN
SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

Railroad
Study Stream Limits

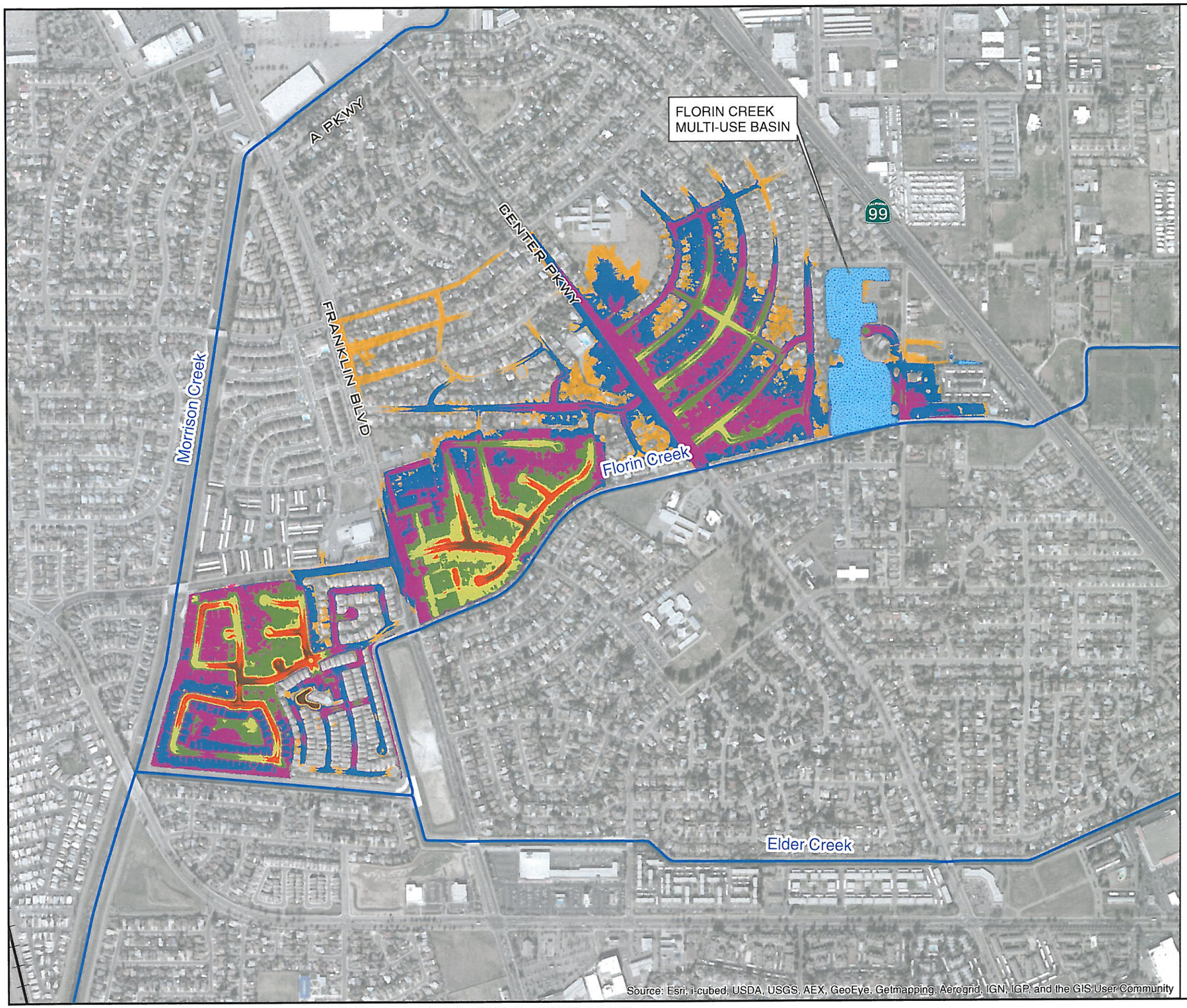
Inundation Depths

- 3-ft
- 2-ft
- 1-ft
- 0-ft
- -0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_10_PROPOSED_500_Depth_Inundation_20130129_V1.mxd 01/29/2013 04:10:15 PM srehman

FIGURE 10



SAFCA
FLORIN CREEK 1000-YEAR
INUNDATION MAP WITH FLORIN CREEK
MULTI-USE BASIN
SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

Railroad
Study Stream Limits

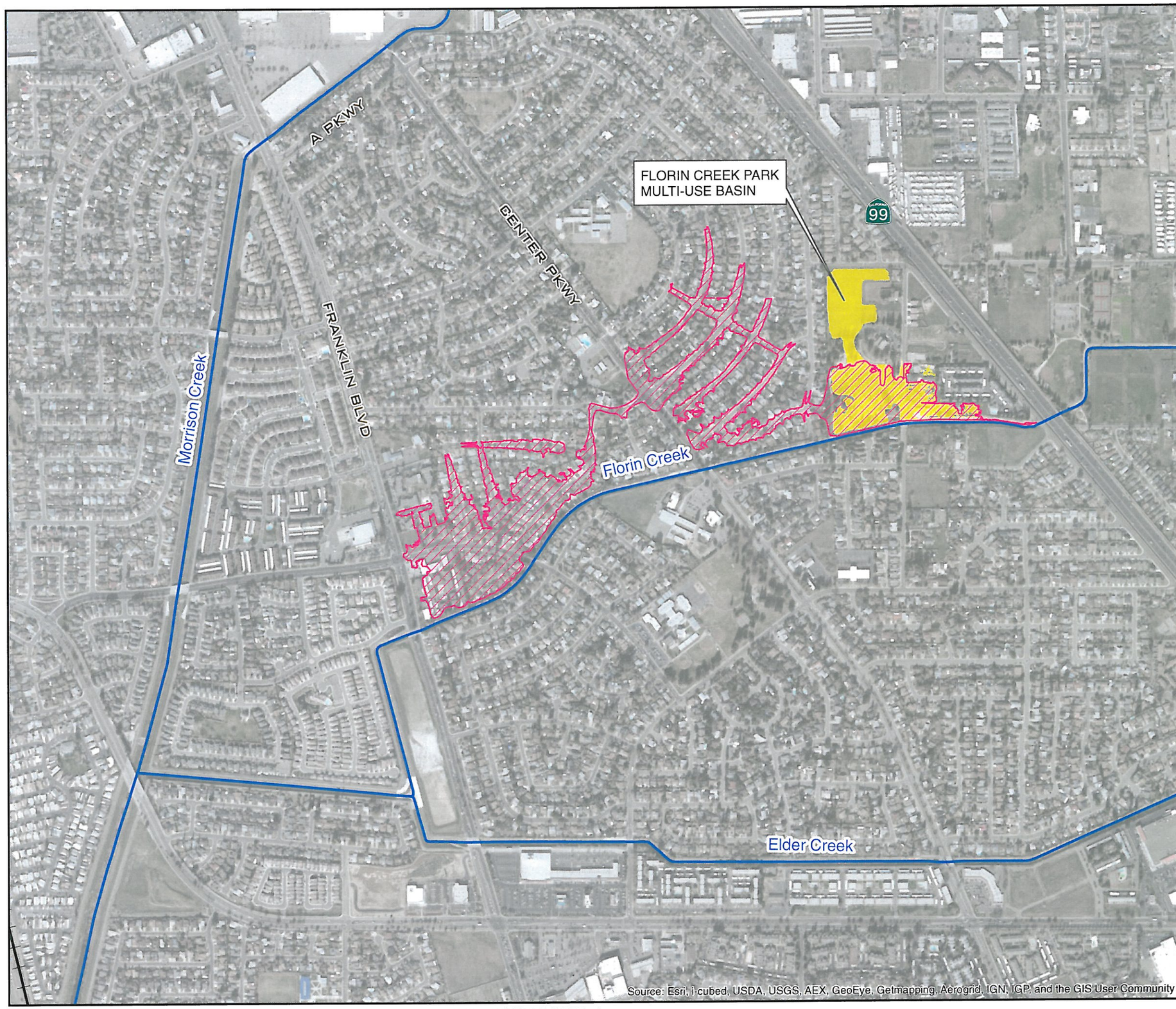
Inundation Depths

- 5-ft
- 4-ft
- 3-ft
- 2-ft
- 1-ft
- 0-ft
- -0.5-ft

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_11_PROPOSED_1000_Depth_Inundation_20130129_V1.mxd 01/29/2013 04:11:18 PM srehman

FIGURE 11



SAFCA
FLORIN CREEK 100-YEAR FLOODPLAIN
FEDERAL PROJECT IMPROVEMENTS
WITH AND WITHOUT THE FLORIN CREEK
MULTI-USE BASIN
SACRAMENTO, CA
JANUARY 2013

NORTH

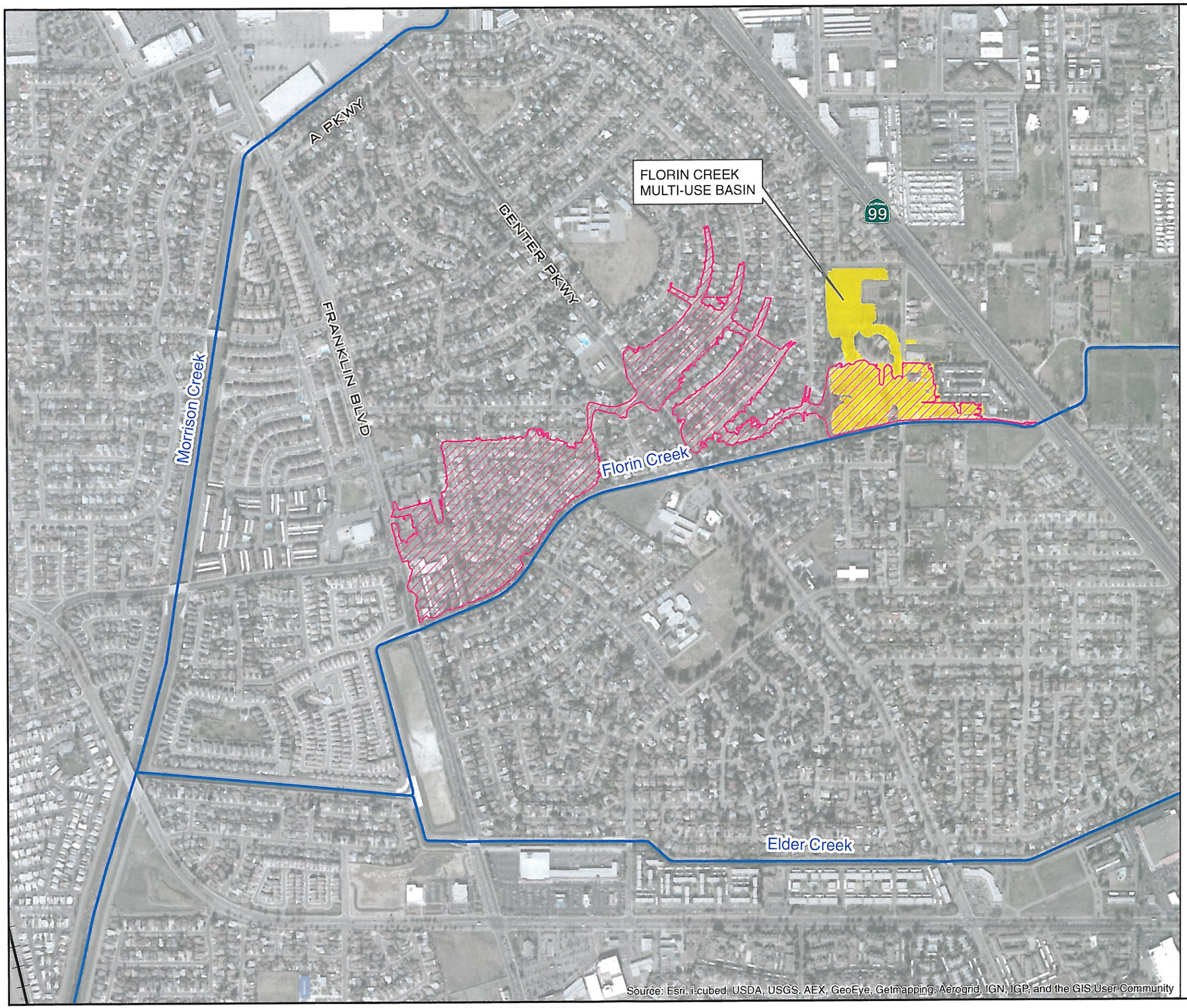
0 500 1,000
FEET

Railroad
Stream
Federal Project - Without Basin
Federal Project - With Basin

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_12_100_Yr_FP_Comparison_20130129_V1.mxd 01/29/2013 04:12:59 PM srehman

FIGURE 12



SAFCA

FLORIN CREEK 200-YEAR FLOODPLAIN
FEDERAL PROJECT IMPROVEMENTS
WITH AND WITHOUT THE FLORIN CREEK
MULTI-USE BASIN

SACRAMENTO, CA
JANUARY 2013

NORTH

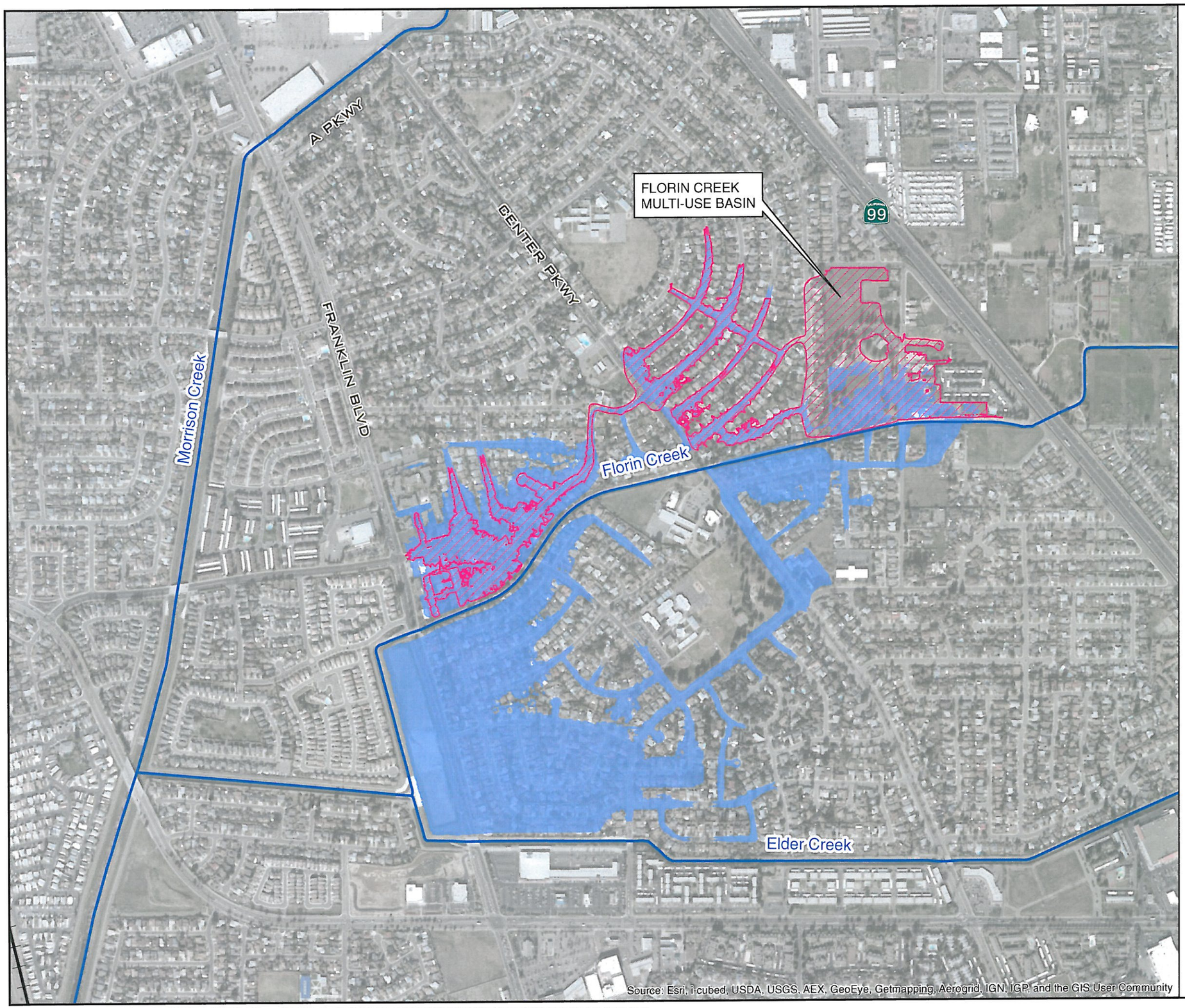
0 500 1,000
FEET

Railroad
Study Stream Limits
Federal Project - Without Basin
Federal Project - With Basin

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_13_200_Yr_FP_Comparison_20130129_V1.mxd 01/29/2013 04:13:59 PM srehman

FIGURE 13



SAFCA

REDUCTION OF FEMA EFFECTIVE FIRM 100-YEAR FLOODPLAIN BY CONSTRUCTION OF THE FLORIN CREEK MULTI-USE BASIN

SACRAMENTO, CA
JANUARY 2013

NORTH

0 500 1,000
FEET

- Railroad
- Study Stream Limits
- No Federal Project - With Basin
- LOMR Floodplain - Submitted 9/12

WOOD RODGERS
DEVELOPING INNOVATIVE DESIGN SOLUTIONS
3301 C Street, Bldg. 100-B Tel: 916.341.7760
Sacramento, CA 95816 Fax: 916.341.7767

J:\Jobs\9003_USACE\9003.004_Florin_Creek\GIS\Tasks\SAFCA_P\Figures\FIGURE_14_BASIN_LOMRfp_COMPARISON_20130125_V1.mxd 01/29/2013 04:14:51 PM srehman

FIGURE 14

TABLE C1
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
50-YR STORM EVENT W/O PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	69	EA	$6,640	$458,160
1.1b	0' Flood Depth	56	EA	$11,122	$622,832
1.1c	1' Flood Depth	44	EA	$19,339	$850,916
1.1d	2' Flood Depth	0	EA	$26,643	$0
1.1e	3' Flood Depth	0	EA	$33,283	$0
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	1	EA	$5,146	$5,146
1.2b	0' Flood Depth	0	EA	$7,719	$0
1.2c	1' Flood Depth	0	EA	$12,616	$0
1.2d	2' Flood Depth	0	EA	$17,347	$0
1.2e	3' Flood Depth	0	EA	$21,829	$0
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	4	Building	$10,540	$42,160
1.3b	0' Flood Depth	7	Building	$15,810	$110,670
1.3c	1' Flood Depth	0	Building	$25,840	$0
1.3d	2' Flood Depth	0	Building	$35,530	$0
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	4	EA	$21,770	$87,080
1.4c	1' Flood Depth	0	EA	$67,580	$0
1.4d	2' Flood Depth	0	EA	$93,891	$0
1.4e	3' Flood Depth	0	EA	$97,094	$0
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	57	EA	$2,200	$125,372
2.1b	0' Flood Depth	62	EA	$3,362	$208,413
2.1c	1' Flood Depth	0	EA	$5,520	$0
2.1d	2' Flood Depth	0	EA	$7,429	$0
2.1e	3' Flood Depth	0	EA	$9,130	$0
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	1	EA	$1,245	$1,245
2.2b	0' Flood Depth	0	EA	$2,075	$0
2.2c	1' Flood Depth	0	EA	$3,611	$0
2.2d	2' Flood Depth	0	EA	$5,063	$0
2.2e	3' Flood Depth	0	EA	$6,433	$0
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	3	Building	$2,550	$7,650
2.3b	0' Flood Depth	1	Building	$4,250	$4,250
2.3c	1' Flood Depth	0	Building	$7,395	$0
2.3d	2' Flood Depth	0	Building	$10,370	$0
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	1	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	0	EA	$155,500	$0
2.4e	3' Flood Depth	0	EA	$155,500	$0
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	1	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	0	EA	$155,500	$0
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	1	EA	$0	$0
2.6b	0' Flood Depth	0	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	70	EA	$0	$0
3.1b	0' Flood Depth	56	EA	$0	$0
3.1c	1' Flood Depth	84	EA	$3,379	$283,836
3.1d	2' Flood Depth	11	EA	$6,278	$69,053
3.1e	3' Flood Depth	0	EA	$8,820	$0
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$2,877,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.

3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.

4) The structure content value was assumed to be approximately 50% of the structure value.

5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

6)

The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.

7)

Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C2
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
100-YR STORM EVENT W/O PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	69	EA	$6,640	$458,160
1.1b	0' Flood Depth	56	EA	$11,122	$622,832
1.1c	1' Flood Depth	44	EA	$19,339	$850,916
1.1d	2' Flood Depth	0	EA	$26,643	$0
1.1e	3' Flood Depth	0	EA	$33,283	$0
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	1	EA	$5,146	$5,146
1.2b	0' Flood Depth	0	EA	$7,719	$0
1.2c	1' Flood Depth	0	EA	$12,616	$0
1.2d	2' Flood Depth	0	EA	$17,347	$0
1.2e	3' Flood Depth	0	EA	$21,829	$0
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	4	Building	$10,540	$42,160
1.3b	0' Flood Depth	7	Building	$15,810	$110,670
1.3c	1' Flood Depth	0	Building	$25,840	$0
1.3d	2' Flood Depth	0	Building	$35,530	$0
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	4	EA	$21,770	$87,080
1.4c	1' Flood Depth	0	EA	$67,580	$0
1.4d	2' Flood Depth	0	EA	$93,891	$0
1.4e	3' Flood Depth	0	EA	$97,094	$0
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	69	EA	$2,200	$151,766
2.1b	0' Flood Depth	56	EA	$3,362	$188,244
2.1c	1' Flood Depth	44	EA	$5,520	$242,858
2.1d	2' Flood Depth	0	EA	$7,429	$0
2.1e	3' Flood Depth	0	EA	$9,130	$0
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	1	EA	$1,245	$1,245
2.2b	0' Flood Depth	0	EA	$2,075	$0
2.2c	1' Flood Depth	0	EA	$3,611	$0
2.2d	2' Flood Depth	0	EA	$5,063	$0
2.2e	3' Flood Depth	0	EA	$6,433	$0
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	4	Building	$2,550	$10,200
2.3b	0' Flood Depth	7	Building	$4,250	$29,750
2.3c	1' Flood Depth	0	Building	$7,395	$0
2.3d	2' Flood Depth	0	Building	$10,370	$0
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	2	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	0	EA	$155,500	$0
2.4e	3' Flood Depth	0	EA	$155,500	$0
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	1	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	0	EA	$155,500	$0
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	1	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	70	EA	$0	$0
3.1b	0' Flood Depth	56	EA	$0	$0
3.1c	1' Flood Depth	84	EA	$3,379	$283,836
3.1d	2' Flood Depth	11	EA	$6,278	$69,053
3.1e	3' Flood Depth	0	EA	$8,820	$0
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$3,154,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.
3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.
4) The structure content value was assumed to be approximately 50% of the structure value.
5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.
6) The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.
7) Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C3
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
200-YR STORM EVENT W/O PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	63	EA	$6,640	$418,320
1.1b	0' Flood Depth	68	EA	$11,122	$756,296
1.1c	1' Flood Depth	46	EA	$19,339	$889,594
1.1d	2' Flood Depth	15	EA	$26,643	$399,645
1.1e	3' Flood Depth	0	EA	$33,283	$0
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	0	EA	$5,146	$0
1.2b	0' Flood Depth	1	EA	$7,719	$7,719
1.2c	1' Flood Depth	0	EA	$12,616	$0
1.2d	2' Flood Depth	0	EA	$17,347	$0
1.2e	3' Flood Depth	0	EA	$21,829	$0
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	2	Building	$10,540	$21,080
1.3b	0' Flood Depth	8	Building	$15,810	$126,480
1.3c	1' Flood Depth	4	Building	$25,840	$103,360
1.3d	2' Flood Depth	0	Building	$35,530	$0
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	1	EA	$21,770	$21,770
1.4c	1' Flood Depth	3	EA	$67,580	$202,741
1.4d	2' Flood Depth	0	EA	$93,891	$0
1.4e	3' Flood Depth	0	EA	$97,094	$0
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	63	EA	$2,200	$138,569
2.1b	0' Flood Depth	68	EA	$3,362	$228,582
2.1c	1' Flood Depth	46	EA	$5,520	$253,897
2.1d	2' Flood Depth	15	EA	$7,429	$111,428
2.1e	3' Flood Depth	0	EA	$9,130	$0
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	0	EA	$1,245	$0
2.2b	0' Flood Depth	1	EA	$2,075	$2,075
2.2c	1' Flood Depth	0	EA	$3,611	$0
2.2d	2' Flood Depth	0	EA	$5,063	$0
2.2e	3' Flood Depth	0	EA	$6,433	$0
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	2	Building	$2,550	$5,100
2.3b	0' Flood Depth	8	Building	$4,250	$34,000
2.3c	1' Flood Depth	4	Building	$7,395	$29,580
2.3d	2' Flood Depth	0	Building	$10,370	$0
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	2	EA	$124,136	$248,271
2.4d	2' Flood Depth	0	EA	$155,500	$0
2.4e	3' Flood Depth	0	EA	$155,500	$0
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	1	EA	$135,798	$135,798
2.5d	2' Flood Depth	0	EA	$155,500	$0
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	1	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	80	EA	$0	$0
3.1b	0' Flood Depth	81	EA	$0	$0
3.1c	1' Flood Depth	100	EA	$3,379	$336,211
3.1d	2' Flood Depth	55	EA	$6,278	$342,124
3.1e	3' Flood Depth	0	EA	$8,820	$0
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$4,813,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.

3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.

4) The structure content value was assumed to be approximately 50% of the structure value.

5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

6) The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.

7) Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C4
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
500-YR STORM EVENT W/O PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	43	EA	$6,640	$285,520
1.1b	0' Flood Depth	53	EA	$11,122	$589,466
1.1c	1' Flood Depth	46	EA	$19,339	$889,594
1.1d	2' Flood Depth	48	EA	$26,643	$1,278,864
1.1e	3' Flood Depth	15	EA	$33,283	$499,245
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	0	EA	$5,146	$0
1.2b	0' Flood Depth	0	EA	$7,719	$0
1.2c	1' Flood Depth	1	EA	$12,616	$12,616
1.2d	2' Flood Depth	0	EA	$17,347	$0
1.2e	3' Flood Depth	0	EA	$21,829	$0
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	0	Building	$10,540	$0
1.3b	0' Flood Depth	8	Building	$15,810	$126,480
1.3c	1' Flood Depth	7	Building	$25,840	$180,880
1.3d	2' Flood Depth	5	Building	$35,530	$177,650
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	1	EA	$21,770	$21,770
1.4c	1' Flood Depth	0	EA	$67,580	$0
1.4d	2' Flood Depth	3	EA	$93,891	$281,673
1.4e	3' Flood Depth	0	EA	$97,094	$0
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	43	EA	$2,200	$94,579
2.1b	0' Flood Depth	53	EA	$3,362	$178,160
2.1c	1' Flood Depth	46	EA	$5,520	$253,897
2.1d	2' Flood Depth	48	EA	$7,429	$356,568
2.1e	3' Flood Depth	15	EA	$9,130	$136,950
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	0	EA	$1,245	$0
2.2b	0' Flood Depth	0	EA	$2,075	$0
2.2c	1' Flood Depth	1	EA	$3,611	$3,611
2.2d	2' Flood Depth	0	EA	$5,063	$0
2.2e	3' Flood Depth	0	EA	$6,433	$0
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	0	Building	$2,550	$0
2.3b	0' Flood Depth	8	Building	$4,250	$34,000
2.3c	1' Flood Depth	7	Building	$7,395	$51,765
2.3d	2' Flood Depth	5	Building	$10,370	$51,850
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	2	EA	$155,500	$311,000
2.4e	3' Flood Depth	0	EA	$155,500	$0
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	1	EA	$155,500	$155,500
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	1	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	43	EA	$0	$0
3.1b	0' Flood Depth	87	EA	$0	$0
3.1c	1' Flood Depth	63	EA	$3,379	$211,188
3.1d	2' Flood Depth	94	EA	$6,278	$590,085
3.1e	3' Flood Depth	56	EA	$8,820	$489,482
3.1f	4' Flood Depth	6	EA	$11,021	$66,123
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$7,329,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.

3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.

4) The structure content value was assumed to be approximately 50% of the structure value.

5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

6) The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.

7) Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C5
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
1000-YR STORM EVENT W/O PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	57	EA	$6,640	$378,480
1.1b	0' Flood Depth	123	EA	$11,122	$1,368,006
1.1c	1' Flood Depth	149	EA	$19,339	$2,881,511
1.1d	2' Flood Depth	100	EA	$26,643	$2,664,300
1.1e	3' Flood Depth	45	EA	$33,283	$1,497,735
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	9	EA	$5,146	$46,314
1.2b	0' Flood Depth	81	EA	$7,719	$625,239
1.2c	1' Flood Depth	21	EA	$12,616	$264,936
1.2d	2' Flood Depth	9	EA	$17,347	$156,123
1.2e	3' Flood Depth	1	EA	$21,829	$21,829
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	0	Building	$10,540	$0
1.3b	0' Flood Depth	4	Building	$15,810	$63,240
1.3c	1' Flood Depth	9	Building	$25,840	$232,560
1.3d	2' Flood Depth	7	Building	$35,530	$248,710
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	2	EA	$21,770	$43,540
1.4c	1' Flood Depth	0	EA	$67,580	$0
1.4d	2' Flood Depth	2	EA	$93,891	$187,782
1.4e	3' Flood Depth	1	EA	$97,094	$97,094
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	57	EA	$2,200	$125,372
2.1b	0' Flood Depth	123	EA	$3,362	$413,465
2.1c	1' Flood Depth	149	EA	$5,520	$822,406
2.1d	2' Flood Depth	100	EA	$7,429	$742,850
2.1e	3' Flood Depth	45	EA	$9,130	$410,850
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	9	EA	$1,245	$11,205
2.2b	0' Flood Depth	81	EA	$2,075	$168,075
2.2c	1' Flood Depth	21	EA	$3,611	$75,821
2.2d	2' Flood Depth	9	EA	$5,063	$45,567
2.2e	3' Flood Depth	1	EA	$6,433	$6,433
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	0	Building	$2,550	$0
2.3b	0' Flood Depth	4	Building	$4,250	$17,000
2.3c	1' Flood Depth	9	Building	$7,395	$66,555
2.3d	2' Flood Depth	7	Building	$10,370	$72,590
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	1	EA	$155,500	$155,500
2.4e	3' Flood Depth	1	EA	$155,500	$155,500
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	1	EA	$155,500	$155,500
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	2	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	66	EA	$0	$0
3.1b	0' Flood Depth	204	EA	$0	$0
3.1c	1' Flood Depth	204	EA	$3,379	$687,627
3.1d	2' Flood Depth	138	EA	$6,278	$863,156
3.1e	3' Flood Depth	110	EA	$8,820	$965,735
3.1f	4' Flood Depth	15	EA	$11,021	$159,797
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$16,899,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.

3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.

4) The structure content value was assumed to be approximately 50% of the structure value.

5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

6) The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.

7) Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C6
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
50-YR STORM EVENT WITH PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	0	EA	$6,640	$0
1.1b	0' Flood Depth	0	EA	$11,122	$0
1.1c	1' Flood Depth	0	EA	$19,339	$0
1.1d	2' Flood Depth	0	EA	$26,643	$0
1.1e	3' Flood Depth	0	EA	$33,283	$0
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	0	EA	$5,146	$0
1.2b	0' Flood Depth	0	EA	$7,719	$0
1.2c	1' Flood Depth	0	EA	$12,616	$0
1.2d	2' Flood Depth	0	EA	$17,347	$0
1.2e	3' Flood Depth	0	EA	$21,829	$0
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	0	Building	$10,540	$0
1.3b	0' Flood Depth	0	Building	$15,810	$0
1.3c	1' Flood Depth	0	Building	$25,840	$0
1.3d	2' Flood Depth	0	Building	$35,530	$0
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	0	EA	$21,770	$0
1.4c	1' Flood Depth	0	EA	$67,580	$0
1.4d	2' Flood Depth	0	EA	$93,891	$0
1.4e	3' Flood Depth	0	EA	$97,094	$0
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	0	EA	$2,200	$0
2.1b	0' Flood Depth	0	EA	$3,362	$0
2.1c	1' Flood Depth	0	EA	$5,520	$0
2.1d	2' Flood Depth	0	EA	$7,429	$0
2.1e	3' Flood Depth	0	EA	$9,130	$0
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	0	EA	$1,245	$0
2.2b	0' Flood Depth	0	EA	$2,075	$0
2.2c	1' Flood Depth	0	EA	$3,611	$0
2.2d	2' Flood Depth	0	EA	$5,063	$0
2.2e	3' Flood Depth	0	EA	$6,433	$0
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	0	Building	$2,550	$0
2.3b	0' Flood Depth	0	Building	$4,250	$0
2.3c	1' Flood Depth	0	Building	$7,395	$0
2.3d	2' Flood Depth	0	Building	$10,370	$0
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	0	EA	$155,500	$0
2.4e	3' Flood Depth	0	EA	$155,500	$0
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	0	EA	$155,500	$0
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	0	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	0	EA	$0	$0
3.1b	0' Flood Depth	0	EA	$0	$0
3.1c	1' Flood Depth	0	EA	$3,379	$0
3.1d	2' Flood Depth	0	EA	$6,278	$0
3.1e	3' Flood Depth	0	EA	$8,820	$0
		ESTIMATED TOTAL (FLOOD DAMAGE COSTS)			***$0***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.

3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.

4) The structure content value was assumed to be approximately 50% of the structure value.

5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

6) The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.

7) Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C7
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
100-YR STORM EVENT WITH PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	2	EA	$6,640	$13,280
1.1b	0' Flood Depth	1	EA	$11,122	$11,122
1.1c	1' Flood Depth	0	EA	$19,339	$0
1.1d	2' Flood Depth	0	EA	$26,643	$0
1.1e	3' Flood Depth	0	EA	$33,283	$0
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	0	EA	$5,146	$0
1.2b	0' Flood Depth	0	EA	$7,719	$0
1.2c	1' Flood Depth	0	EA	$12,616	$0
1.2d	2' Flood Depth	0	EA	$17,347	$0
1.2e	3' Flood Depth	0	EA	$21,829	$0
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	0	Building	$10,540	$0
1.3b	0' Flood Depth	0	Building	$15,810	$0
1.3c	1' Flood Depth	0	Building	$25,840	$0
1.3d	2' Flood Depth	0	Building	$35,530	$0
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	1	EA	$21,770	$21,770
1.4c	1' Flood Depth	0	EA	$67,580	$0
1.4d	2' Flood Depth	0	EA	$93,891	$0
1.4e	3' Flood Depth	0	EA	$97,094	$0
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	2	EA	$2,200	$4,399
2.1b	0' Flood Depth	1	EA	$3,362	$3,362
2.1c	1' Flood Depth	0	EA	$5,520	$0
2.1d	2' Flood Depth	0	EA	$7,429	$0
2.1e	3' Flood Depth	0	EA	$9,130	$0
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	0	EA	$1,245	$0
2.2b	0' Flood Depth	0	EA	$2,075	$0
2.2c	1' Flood Depth	0	EA	$3,611	$0
2.2d	2' Flood Depth	0	EA	$5,063	$0
2.2e	3' Flood Depth	0	EA	$6,433	$0
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	0	Building	$2,550	$0
2.3b	0' Flood Depth	0	Building	$4,250	$0
2.3c	1' Flood Depth	0	Building	$7,395	$0
2.3d	2' Flood Depth	0	Building	$10,370	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	0	EA	$155,500	$0
2.4e	3' Flood Depth	0	EA	$155,500	$0
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	0	EA	$155,500	$0
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	1	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	2	EA	$0	$0
3.1b	0' Flood Depth	1	EA	$0	$0
3.1c	1' Flood Depth	0	EA	$3,379	$0
3.1d	2' Flood Depth	0	EA	$6,278	$0
3.1e	3' Flood Depth	0	EA	$8,820	$0
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$54,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.
3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.
4) The structure content value was assumed to be approximately 50% of the structure value.
5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

TABLE C8
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
200-YR STORM EVENT WITH PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	0	EA	$6,640	$0
1.1b	0' Flood Depth	3	EA	$11,122	$33,366
1.1c	1' Flood Depth	0	EA	$19,339	$0
1.1d	2' Flood Depth	0	EA	$26,643	$0
1.1e	3' Flood Depth	0	EA	$33,283	$0
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	0	EA	$5,146	$0
1.2b	0' Flood Depth	0	EA	$7,719	$0
1.2c	1' Flood Depth	0	EA	$12,616	$0
1.2d	2' Flood Depth	0	EA	$17,347	$0
1.2e	3' Flood Depth	0	EA	$21,829	$0
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	0	Building	$10,540	$0
1.3b	0' Flood Depth	0	Building	$15,810	$0
1.3c	1' Flood Depth	0	Building	$25,840	$0
1.3d	2' Flood Depth	0	Building	$35,530	$0
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	1	EA	$21,770	$21,770
1.4c	1' Flood Depth	0	EA	$67,580	$0
1.4d	2' Flood Depth	0	EA	$93,891	$0
1.4e	3' Flood Depth	0	EA	$97,094	$0
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	0	EA	$2,200	$0
2.1b	0' Flood Depth	3	EA	$3,362	$10,085
2.1c	1' Flood Depth	0	EA	$5,520	$0
2.1d	2' Flood Depth	0	EA	$7,429	$0
2.1e	3' Flood Depth	0	EA	$9,130	$0
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	0	EA	$1,245	$0
2.2b	0' Flood Depth	0	EA	$2,075	$0
2.2c	1' Flood Depth	0	EA	$3,611	$0
2.2d	2' Flood Depth	0	EA	$5,063	$0
2.2e	3' Flood Depth	0	EA	$6,433	$0
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	0	Building	$2,550	$0
2.3b	0' Flood Depth	0	Building	$4,250	$0
2.3c	1' Flood Depth	0	Building	$7,395	$0
2.3d	2' Flood Depth	0	Building	$10,370	$0
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	0	EA	$155,500	$0
2.4e	3' Flood Depth	0	EA	$155,500	$0
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	0	EA	$155,500	$0
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	1	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	0	EA	$0	$0
3.1b	0' Flood Depth	3	EA	$0	$0
3.1c	1' Flood Depth	0	EA	$3,379	$0
3.1d	2' Flood Depth	0	EA	$6,278	$0
3.1e	3' Flood Depth	0	EA	$8,820	$0
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$66,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.

3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.

4) The structure content value was assumed to be approximately 50% of the structure value.

5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

6) The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.

7) Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C9
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
500-YR STORM EVENT WITH PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	1	EA	$6,640	$6,640
1.1b	0' Flood Depth	1	EA	$11,122	$11,122
1.1c	1' Flood Depth	3	EA	$19,339	$58,017
1.1d	2' Flood Depth	0	EA	$26,643	$0
1.1e	3' Flood Depth	0	EA	$33,283	$0
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	0	EA	$5,146	$0
1.2b	0' Flood Depth	0	EA	$7,719	$0
1.2c	1' Flood Depth	0	EA	$12,616	$0
1.2d	2' Flood Depth	0	EA	$17,347	$0
1.2e	3' Flood Depth	0	EA	$21,829	$0
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	0	Building	$10,540	$0
1.3b	0' Flood Depth	0	Building	$15,810	$0
1.3c	1' Flood Depth	0	Building	$25,840	$0
1.3d	2' Flood Depth	0	Building	$35,530	$0
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	0	EA	$21,770	$0
1.4c	1' Flood Depth	1	EA	$67,580	$67,580
1.4d	2' Flood Depth	0	EA	$93,891	$0
1.4e	3' Flood Depth	0	EA	$97,094	$0
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	1	EA	$2,200	$2,200
2.1b	0' Flood Depth	1	EA	$3,362	$3,362
2.1c	1' Flood Depth	3	EA	$5,520	$16,559
2.1d	2' Flood Depth	0	EA	$7,429	$0
2.1e	3' Flood Depth	0	EA	$9,130	$0
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	0	EA	$1,245	$0
2.2b	0' Flood Depth	0	EA	$2,075	$0
2.2c	1' Flood Depth	0	EA	$3,611	$0
2.2d	2' Flood Depth	0	EA	$5,063	$0
2.2e	3' Flood Depth	0	EA	$6,433	$0
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	0	Building	$2,550	$0
2.3b	0' Flood Depth	0	Building	$4,250	$0
2.3c	1' Flood Depth	0	Building	$7,395	$0
2.3d	2' Flood Depth	0	Building	$10,370	$0
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	0	EA	$155,500	$0
2.4e	3' Flood Depth	0	EA	$155,500	$0
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	0	EA	$155,500	$0
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	0	EA	$0	$0
2.6c	1' Flood Depth	1	EA	$114,059	$114,059
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	1	EA	$0	$0
3.1b	0' Flood Depth	1	EA	$0	$0
3.1c	1' Flood Depth	3	EA	$3,379	$10,137
3.1d	2' Flood Depth	0	EA	$6,278	$0
3.1e	3' Flood Depth	0	EA	$8,820	$0
3.1f	4' Flood Depth	0	EA	$11,021	$0
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$290,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.

3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.

4) The structure content value was assumed to be approximately 50% of the structure value.

5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

6) The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.

7) Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C10
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
OPINION OF PROBABLE PROJECT COSTS - FLOOD DAMAGE COSTS
1000-YR STORM EVENT WITH PROPOSED BASIN

Item No.	Item	Quantity	Unit	Unit Price	Cost
1	**Structure Impact**				
1.1	1-Story Single Family Residential Structure				
1.1a	-0.5' Flood Depth	57	EA	$6,640	$378,480
1.1b	0' Flood Depth	123	EA	$11,122	$1,368,006
1.1c	1' Flood Depth	149	EA	$19,339	$2,881,511
1.1d	2' Flood Depth	100	EA	$26,643	$2,664,300
1.1e	3' Flood Depth	45	EA	$33,283	$1,497,735
1.2	2-Story Single Famliy Residential Structure				
1.2a	-0.5' Flood Depth	9	EA	$5,146	$46,314
1.2b	0' Flood Depth	81	EA	$7,719	$625,239
1.2c	1' Flood Depth	21	EA	$12,616	$264,936
1.2d	2' Flood Depth	9	EA	$17,347	$156,123
1.2e	3' Flood Depth	1	EA	$21,829	$21,829
1.3	2-Story Multi-Family Structure				
1.3a	-0.5' Flood Depth	0	Building	$10,540	$0
1.3b	0' Flood Depth	4	Building	$15,810	$63,240
1.3c	1' Flood Depth	9	Building	$25,840	$232,560
1.3d	2' Flood Depth	7	Building	$35,530	$248,710
1.3e	3' Flood Depth	0	Building	$44,710	$0
1.4	Non-Residential Structure				
1.4a	-0.5' Flood Depth	0	EA	$10,885	$0
1.4b	0' Flood Depth	2	EA	$21,770	$43,540
1.4c	1' Flood Depth	0	EA	$67,580	$0
1.4d	2' Flood Depth	2	EA	$93,891	$187,782
1.4e	3' Flood Depth	1	EA	$97,094	$97,094
2	**Structure Content Impact**				
2.1	1-Story Single Family Residential Structure				
2.1a	-0.5' Flood Depth	57	EA	$2,200	$125,372
2.1b	0' Flood Depth	123	EA	$3,362	$413,465
2.1c	1' Flood Depth	149	EA	$5,520	$822,406
2.1d	2' Flood Depth	100	EA	$7,429	$742,850
2.1e	3' Flood Depth	45	EA	$9,130	$410,850
2.2	2-Story Single Famliy Residential Structure				
2.2a	-0.5' Flood Depth	9	EA	$1,245	$11,205
2.2b	0' Flood Depth	81	EA	$2,075	$168,075
2.2c	1' Flood Depth	21	EA	$3,611	$75,821
2.2d	2' Flood Depth	9	EA	$5,063	$45,567
2.2e	3' Flood Depth	1	EA	$6,433	$6,433
2.3	2-Story Multi-Family Structure				
2.3a	-0.5' Flood Depth	0	Building	$2,550	$0
2.3b	0' Flood Depth	4	Building	$4,250	$17,000
2.3c	1' Flood Depth	9	Building	$7,395	$66,555
2.3d	2' Flood Depth	7	Building	$10,370	$72,590
2.3e	3' Flood Depth	0	Building	$13,175	$0
2.4	1-Story Commercial Retail				
2.4a	-0.5' Flood Depth	0	EA	$0	$0
2.4b	0' Flood Depth	0	EA	$0	$0

Item No.	Item	Quantity	Unit	Unit Price	Cost
2.4c	1' Flood Depth	0	EA	$124,136	$0
2.4d	2' Flood Depth	1	EA	$155,500	$155,500
2.4e	3' Flood Depth	1	EA	$155,500	$155,500
2.5	1-Story Commercial Grocery Store				
2.5a	-0.5' Flood Depth	0	EA	$0	$0
2.5b	0' Flood Depth	0	EA	$0	$0
2.5c	1' Flood Depth	0	EA	$135,798	$0
2.5d	2' Flood Depth	1	EA	$155,500	$155,500
2.5e	3' Flood Depth	0	EA	$155,500	$0
2.6	1-Story Public Church				
2.6a	-0.5' Flood Depth	0	EA	$0	$0
2.6b	0' Flood Depth	2	EA	$0	$0
2.6c	1' Flood Depth	0	EA	$114,059	$0
2.6d	2' Flood Depth	0	EA	$153,665	$0
2.6e	3' Flood Depth	0	EA	$153,665	$0
3	**Automobile Impact Impact**				
3.1	Automobiles				
3.1a	-0.5' Flood Depth	66	EA	$0	$0
3.1b	0' Flood Depth	204	EA	$0	$0
3.1c	1' Flood Depth	204	EA	$3,379	$687,627
3.1d	2' Flood Depth	138	EA	$6,278	$863,156
3.1e	3' Flood Depth	110	EA	$8,820	$965,735
3.1f	4' Flood Depth	15	EA	$11,021	$159,797
				ESTIMATED TOTAL (FLOOD DAMAGE COSTS)	***$16,899,000***

NOTES:

1) The structure value of the single family residences is calculated by taking the assessed structure value from the Sacramento County Assessor for recently sold residents as listed on www.zillow.com. The following residences were use to determine the structure value: 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy. The estimated structure value is $83,000.

2) The value of the multi-family structures is determined by taking the appraised structure value of the multi-family complexes from the Sacramento County Assessor and dividing it by the total number of structures in the multi-family complexes. The estimate structure value is $170,000.

3) The value of the commercial structures is determined by taking the appraised structure value of the commercial sites from the Sacramento County Assessor and dividing it by the total number of commercial structures. The estimate structure value is $311,000.

4) The structure content value was assumed to be approximately 50% of the structure value.

5) All automobiles within the flood damaged area are assumed to be used. The average price of a used automobile was determined from the article located at the following web address: http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html. It is assumed that there is an equal mix of cars and trucks within the area. The prices contained in the referenced article for a car and truck were averaged to determine the average automobile price, which is equal to $15,500.

6) The total number of automobiles possible within the area is calculated assuming an average of 2 automobiles per single family residence plus the number of impacted parking stalls within the multi-family complexes. No automobiles were assumed to be in the commercial site parking lots. The number of automobiles impacted by the flood is assumed to be 50% of the total number of automobiles possible assuming approximately half of the automobiles will be removed from the area with a flood warning time of less than 6 hours.

7) Dewatering is not anticipated to be required within the flooded area after the flood event. Debris and sediment removal is not anticipated to be significant within the flooded area. Therefore, no cost is assumed to be incurred by the County of Sacramento or City of Sacramento for cleanup of the roadways after the flood event beyond normally budgeted roadway cleaning costs. Costs for cleanup of private parcels is included in the structure impact costs.

TABLE C ASSUMPTIONS - DEPTH-% DAMAGE CURVES
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT

SFR1
Single Family Res 1-Story

Stage	Structure	Content
-0.5	8.0%	5.3%
0	13.4%	8.1%
1	23.3%	13.3%
2	32.1%	17.9%
3	40.1%	22.0%

SFR2
Single Family Res 2-Story

Stage	Structure	Content
-0.5	6.2%	3.0%
0	9.3%	5.0%
1	15.2%	8.7%
2	20.9%	12.2%
3	26.3%	15.5%

MFR2
Mutli-Family Res 2-Story

Stage	Structure	Content
-0.5	6.2%	3.0%
0	9.3%	5.0%
1	15.2%	8.7%
2	20.9%	12.2%
3	26.3%	15.5%

C-1
Non-Res 1-story

Stage	Structure
-0.5	3.5%
0	7.0%
1	21.73%
2	30.19%
3	31.22%

C-RET1
Comm Retail 1-Story

Stage	Content
-0.5	0.0%
0	0.0%
1	79.83%
2	100.0%
3	100.0%

C-GROC1
Comm Grocery Store 1-Story

Stage	Content
-0.5	0.0%
0	0.0%
1	87.33%
2	100.0%
3	100.0%

AUTO
Automobiles

Stage	Structure	Content
-0.5	0.0%	0.0%
0	0.0%	0.0%
1	21.8%	0.0%
2	40.5%	0.0%
3	56.9%	0.0%
4	71.1%	0.0%

P-CH1
Public Church 1-Story

Stage	Content
-0.5	0.0%
0	0.0%
1	73.35%
2	98.82%
3	98.82%

TABLE C ASSUMPTIONS
SACRAMENTO AREA FLOOD CONTROL AGENCY
FLORIN CREEK PARK MULTI-USE BASIN PROJECT
PROJECT UNIT COSTS (PRELIMINARY)

No.	ITEM	UNIT VALUE	UNIT	NOTE
	General			
	Alternatives (1 or 2)	FLOOD DAMAGE COSTS		
	Escalation @ 2.5% for 3-years	7.5%	%	
	Land Contingency	20.0%	%	
	Relocation Contingency	20.0%	%	
	Mitigation Contingency	20.0%	%	
	Roads Contingency	20.0%	%	
	Levee Contingency	20.0%	%	
	Planning, Engineering, and Design Contingency	0.0%	%	
	Construction Management Contingency	0.0%	%	
	Mobilization and Demobilization	5.0%	LS	
	Traffic Control (Rural)	1.0%	LS	
	Traffic Control (Urban)	3.0%	LS	
	Construction Contingency	20.0%	%	
1	**Structure Impact**			
1.1	1-Story Single Family Residential Structure	$83,000.00		Average of recently sold residents from Zillow, 1/18/13; 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy
1.1a	-0.5' Flood Depth	$6,640.00	EA	Depth-Damage curves: Single and Multi Family Structure - Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures, USACE, October 10, 2003.
1.1b	0' Flood Depth	$11,122.00	EA	
1.1c	1' Flood Depth	$19,339.00	EA	
1.1d	2' Flood Depth	$26,643.00	EA	
1.1e	3' Flood Depth	$33,283.00	EA	
1.2	2-Story Single Famliy Residential Structure	$83,000.00		Average of recently sold residents from Zillow, 1/18/13; 7562 Circle Pkwy, 4931 J Pkwy, 4812 J Pkwy, 4954 I Pkwy, 7624 East Pkwy, 7709 South Pkwy, 7512 Center Pkwy, 7549 Rubens Pkwy, 4525 Brookfield Dr, 4824 L Pkwy
1.2a	-0.5' Flood Depth	$5,146.00	EA	Depth-Damage curves: Single and Multi Family Structure -

No.	ITEM	UNIT VALUE	UNIT	NOTE
1.2b	0' Flood Depth	$7,719.00	EA	Depth-Damage curves: Single and Multi Family Structure - Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures, USACE, October 10, 2003.
1.2c	1' Flood Depth	$12,616.00	EA	
1.2d	2' Flood Depth	$17,347.00	EA	
1.2e	3' Flood Depth	$21,829.00	EA	
1.3	2-Story Multi-Family Structure	$170,000.00		Assessed structure cost taken from Sacramento County Assessor for each site impacted by flood divided by the total number of buildings on each site.
1.3a	-0.5' Flood Depth	$10,540.00	Building	Depth-Damage curves: Single and Multi Family Structure - Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures, USACE, October 10, 2003.
1.3b	0' Flood Depth	$15,810.00	Building	
1.3c	1' Flood Depth	$25,840.00	Building	
1.3d	2' Flood Depth	$35,530.00	Building	
1.3e	3' Flood Depth	$44,710.00	Building	
1.4	Non-Residential Structure	$311,000.00		Average structure cost taken from Sacramento County Assessor for structures impacted by flood.
1.4a	-0.5' Flood Depth	$10,885.00	EA	Depth-Damage curves: Non-Residential Structures - Depth Damage Relationships in Support of Morganza to the Gulf, Louisiana Feasibility Study, USACE New Orleans District, dated May 1997.
1.4b	0' Flood Depth	$21,770.00	EA	
1.4c	1' Flood Depth	$67,580.30	EA	
1.4d	2' Flood Depth	$93,890.90	EA	
1.4e	3' Flood Depth	$97,094.20	EA	
2	**Structure Content Impact**			
2.1	1-Story Single Family Residential Structure	$41,500.00		Assume content value is equal to half the structure value.
2.1a	-0.5' Flood Depth	$2,199.50	EA	Depth-Damage curves: Single and Multi Family Content - Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures, USACE, October 10, 2003.
2.1b	0' Flood Depth	$3,361.50	EA	
2.1c	1' Flood Depth	$5,519.50	EA	
2.1d	2' Flood Depth	$7,428.50	EA	
2.1e	3' Flood Depth	$9,130.00	EA	
2.2	2-Story Single Famliy Residential Structure	$41,500.00		Assume content value is equal to half the structure value.
2.2a	-0.5' Flood Depth	$1,245.00	EA	Depth-Damage curves: Single and Multi Family Content - Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures, USACE, October 10, 2003.
2.2b	0' Flood Depth	$2,075.00	EA	
2.2c	1' Flood Depth	$3,610.50	EA	
2.2d	2' Flood Depth	$5,063.00	EA	
2.2e	3' Flood Depth	$6,432.50	EA	
2.3	2-Story Multi-Family Structure	$85,000.00		Assume content value is equal to half the structure value.

No.	ITEM	UNIT VALUE	UNIT	NOTE
2.3a	-0.5' Flood Depth	$2,550.00	Building	Depth-Damage curves: Single and Multi Family Content - Economic Guidance Memorandum (EGM) 04-01, Generic Depth-Damage Relationships for Residential Structures, USACE, October 10, 2003.
2.3b	0' Flood Depth	$4,250.00	Building	
2.3c	1' Flood Depth	$7,395.00	Building	
2.3d	2' Flood Depth	$10,370.00	Building	
2.3e	3' Flood Depth	$13,175.00	Building	
2.4	1-Story Commercial Retail	$155,500.00		Assume content value is equal to half the structure value.
2.4a	-0.5' Flood Depth	$0.00	EA	Depth-Damage curves: Non-residential Content - taken from the SAFCA report titled "Post-Authorization Change Report, American River Watershed, Common Features Project, Natoma Basin, Sacramento and Sutter Counties, California" dated July 2010.
2.4b	0' Flood Depth	$0.00	EA	
2.4c	1' Flood Depth	$124,135.65	EA	
2.4d	2' Flood Depth	$155,500.00	EA	
2.4e	3' Flood Depth	$155,500.00	EA	
2.5	1-Story Commercial Grocery Store	$155,500.00		Assume content value is equal to half the structure value.
2.5a	-0.5' Flood Depth	$0.00	EA	Depth-Damage curves: Non-residential Content - taken from the SAFCA report titled "Post-Authorization Change Report, American River Watershed, Common Features Project, Natoma Basin, Sacramento and Sutter Counties, California" dated July 2010.
2.5b	0' Flood Depth	$0.00	EA	
2.5c	1' Flood Depth	$135,798.15	EA	
2.5d	2' Flood Depth	$155,500.00	EA	
2.5e	3' Flood Depth	$155,500.00	EA	
2.6	1-Story Public Church	$155,500.00		Assume content value is equal to half the structure value.
2.6a	-0.5' Flood Depth	$0.00	EA	Depth-Damage curves: Non-residential Content - taken from the SAFCA report titled "Post-Authorization Change Report, American River Watershed, Common Features Project, Natoma Basin, Sacramento and Sutter Counties, California" dated July 2010.
2.6b	0' Flood Depth	$0.00	EA	
2.6c	1' Flood Depth	$114,059.25	EA	
2.6d	2' Flood Depth	$153,665.10	EA	
2.6e	3' Flood Depth	$153,665.10	EA	
3	**Automobile Impact Impact**			
3.1	Automobiles	$15,500.00	EA	http://online.wsj.com/article/SB10001424052970204136404577205383041923996.html
3.1a	-0.5' Flood Depth	$0.00	EA	
3.1b	0' Flood Depth	$0.00	EA	
3.1c	1' Flood Depth	$3,379.00	EA	
3.1d	2' Flood Depth	$6,277.50	EA	Depth-Damage curves: Automobiles - Economic Guidance Memorandum (EGM) 09-04, Generic Depth-Damage Relationships for Vehicles, USACE, June 22, 2009.
3.1e	3' Flood Depth	$8,819.50	EA	
3.1f	4' Flood Depth	$11,020.50	EA	