Kelley Dietrich 12-3/03

57-58
2pcs

FIELD SHEET FOR RECORDING SOIL CHARACTERISTICS

No. Pit 14

Soil Series 142 Gienelon Sandy Loam 30-75% phase

Location 15004[illegible] chiquita Cyn. near cyn East of test plots on dissected Saddle

Geographical Landscape Ridgetop Saddle

Elevation ______ Slope 22 Aspect SW Erosion ______

Groundwater ______ Drainage ______ Saline/Sodic Class ______

Parent Rock/Material Sandstone

Climate: ______ MAP ______ MAT ______ MAST ______ MSST ______ MWST ______

Natural Cover Coastal/moist forest/ [illegible] ________ Soil Region ______ Profile Group ______

Higher Categories ______

Competing Soil Series ______

Associated Soil Series ______

PROFILE SKETCH	BDY	COLOR	TEXTURE	STRUCTURE	CONSISTENCE Dry	CONSISTENCE Moist	CONSISTENCE Wet	REACTION	MISC: Roots, Pores, Clay films, Etc.
	½-0		Duff, leaves, grass, seed						
	0-2 clear	10YR4/2-D 10YR3/2-W	sandy loam	platy weak comp.	X			—	com fine to coarse roots; com fine to coarse pores
	2-10 grad	10YR5/2-D 10YR4/3-W	loamy sand	blocky angular	X			—	com large burrows (krotovina); com fine to coarse roots/pores (krotovina just above regolith (C horizon))
	10-14 grad	10YR 6/3-D 10YR 5/3-W	coarse sandstone; NA	regolith; NA	X				weathering sandstone regolith; Sandstone regolith w/ OM in fracture zones; com roots w/in fracture zones; few pores; Carb acc on fracture faces
	14-50	10YR6/2-D 10YR 4/2-W	coarse sandstone regolith NA	NA	X				weathered sandstone; Carbacc on fract faces; acc. gravel & stone lines roots along fract faces

Natural Land Division ______

Soil Rating (Storie index) ______ Soil Grade ______

Land Use Capability Unit ______

Present Use fallow / dry land farm

Suitability: Irrigated Crops ______ Range ______

Nonirrigated Crops ______ Timber ______

Soil Management ______

Remarks thin soil over sandstone regolith, few cobbles and gravels

Soil Pit 13 Cieneba Sandy Loam 30 to 75% Slopes

Soil Pit 14 Cieneba Sandy Loam 30 to 75% Slopes

O. Willet
M. Tredeliehube
12/3/03

35-36
2 pics

FIELD SHEET FOR RECORDING SOIL CHARACTERISTICS

No. Pit 15

Soil Series 135 Capistrano Sandy Loam 2-9% Phase

Location 115°4'14"R2- 34°19'22" Chiquito Cyn main Cyn North of Pit 13 by Culvert above recreational plots

Geographical Landscape Alluvial fan

Elevation ____ Slope 4% Aspect S Erosion ____

Groundwater ____ Drainage ____ Saline/Sodic Class ____

Parent Rock/Material Alluvial / Alluvial materials

Climate: ____ MAP ____ MAT ____ MAST ____ MSST ____ MWST ____

Natural Cover Annual grass / mustard / Everlast / Ragwort Soil Region ____ Profile Group ____

Higher Categories ____

Competing Soil Series ____

Associated Soil Series ____

PROFILE SKETCH	BDY	COLOR	TEXTURE	STRUCTURE	CONSISTENCE Dry	CONSISTENCE Moist	CONSISTENCE Wet	REACTION	MISC. Roots, Pores, Clay films, Etc.
	2-0		duff leaves seeds, stems		X				
	0-3 abrupt	10YR 4/2-D 10YR 2/2-W	Sandy loam	platy comp	X				com fine to coarse roots pores
	3-12 Clear wavy	10YR 3/2-D 10YR 2/2-W	Sandy clay loam	weak platy slightly comp.		slight			occ sm gravel occ cobbles (10-20") com fine roots esp ped faces occ sm gravels + cobbles com fine to coarse pores
	12-21 grad	10YR 3/2-W	Sandy clay	weak blky subang		X			com coarse to fine pores roots along ped faces com fine roots
	21-35 grad	10YR 4/3-W	Sandy clay	weak blky subang		X			com gravels + cobbles few fine roots com fine to coarse pores
	35-60	10YR 4/3-W	clayey sand	Massive		X			com cobbles + sm gravels few fine roots com fine to coarse pores

Natural Land Division ____

Soil Rating (Stone Index) ____ Soil Grade ____

Land Use Capability Unit ____

Present Use fallow / open dry land farm

Suitability Irrigated Crops ____ Range ____

Nonirrigated Crops ____ Timber ____

Soil Management ____

Remarks dirt plow pan / hard pan vehicular access here

Soil Pit 10 Capistrano Sandy Loam 2 to 9% Slopes

Soil Pit 15 Capistrano Sandy Loam 2 to 9% Slopes

Kelley Riedel - Ichirke

12

39-40 pics

FIELD SHEET FOR RECORDING SOIL CHARACTERISTICS

No. Pit 16

12/3/07 Soil Series 135 Capistrano Sandy loam 2-9% Phase

Location 11SMH1105 3718494 Chiquita Cyn Main cyn new test pits East

Geographical Landscape Interfan junction

Elevation ____ Slope 2% Aspect SE Erosion ____

Groundwater ____ Drainage ____ Saline/Sodic Class ____

Parent Rock/Material Colluvial / alluvial materials

Climate: Mediterranean MAP ____ MAT ____ MAST ____ MSST ____ MWST ____

Natural Cover Range/woodland/mixed .... Soil Region ____ Profile Group ____

Higher Categories ____

Competing Soil Series ____

Associated Soil Series ____

PROFILE SKETCH	BDY	COLOR	TEXTURE	STRUCTURE	CONSISTENCE Dry	CONSISTENCE Moist	CONSISTENCE Wet	REACTION	MISC: Roots, Pores, Clay films, Etc.
	LD		Duff		X				
	0-6 clear wavy	10YR 4/2-D 10YR 2/2 W	Sandy Clay loam	weak platy/ slight comp	X				few fine to coarse roots; occ sm gravels; com fine to coarse pores
	6-13 gscl	10YR 3/2 D 10YR 2/2 W	Sandy clay	weak blky subang		slight			com fine to coarse roots; roots along ped faces & in peds; com fine to coarse pores
	13-35 gscl	10YR 2/2 W	Sandy clay	weak blky subang		X			com fine to coarse roots; com fine to coarse pores; occ sm gravels; finely dis carbonate flecks; vert cracks throughout
	35-51 gscl	10YR 3/2 W	Sandy clay	massive		X			finely dis carbonates; few fine to coarse pores; com coarse roots; esp ped faces
	51-65	10YR 3/3 W	Sandy clay	massive		X			com gravels; sm cobbles (to 3"); few roots along ped faces; few fine to coarse pores

Natural Land Division ____

Soil Rating (Storie index) ____ Soil Grade ____

Land Use Capability Unit ____

Present Use fallow / dry land ag

Suitability: Irrigated Crops ____ Range ____

Nonirrigated Crops ____ Timber ____

Soil Management ____

Remarks dist plow pan / hoof pan

Kelley Jed 12/3/03

FIELD SHEET FOR RECORDING SOIL CHARACTERISTICS

No. 17

Soil Series [illegible] Sandy loam 9-15 Phase

Location [illegible] Counties

Geographical Landscape [illegible]

Elevation ____ Slope 15-30% Aspect SE Erosion

Groundwater ____ Drainage ____ Saline/Sodic Class

Parent Rock/Material [illegible]

Climate: [illegible] MAP ____ MAT ____ MAST ____ MSST ____ MWST ____

Natural Cover [illegible] Soil Region ____ Profile Group

Higher Categories

Competing Soil Series

Associated Soil Series

PROFILE SKETCH	BDY	COLOR	TEXTURE	STRUCTURE	CONSISTENCE Dry	CONSISTENCE Moist	CONSISTENCE Wet	REACTION	MISC: Roots, Pores, Clay films, Etc.
	0-0		Duff						
	0-7 clear	10YR 3/2 dry 10YR 3/2 moist	Sandy clay loam	weak platy	X				[illegible]
	7-34 gradual	10YR 3/2 dry 10YR 3/2 moist	Sandy clay loam	weak medium [illegible]		X slightly			[illegible]
	34-48 gradual	10YR 3/3 moist	Sandy clay	weak medium [illegible]		X			[illegible]
	48-68	10YR 3/4 moist	Sandy clay	[illegible]		X			[illegible]

Natural Land Division

Soil Rating (Storie Index) Soil Grade

Land Use Capability Unit

Present Use fallow / Dry land

Suitability: Irrigated Crops Range

Nonirrigated Crops Timber

Soil Management

Remarks Working completed [illegible]

Soil Pit 16 Capistrano Sandy Loam 2 to 9% Slopes

Soil Pit 17 Capistrano Sandy Loam 9 to 15%

APPENDIX IV

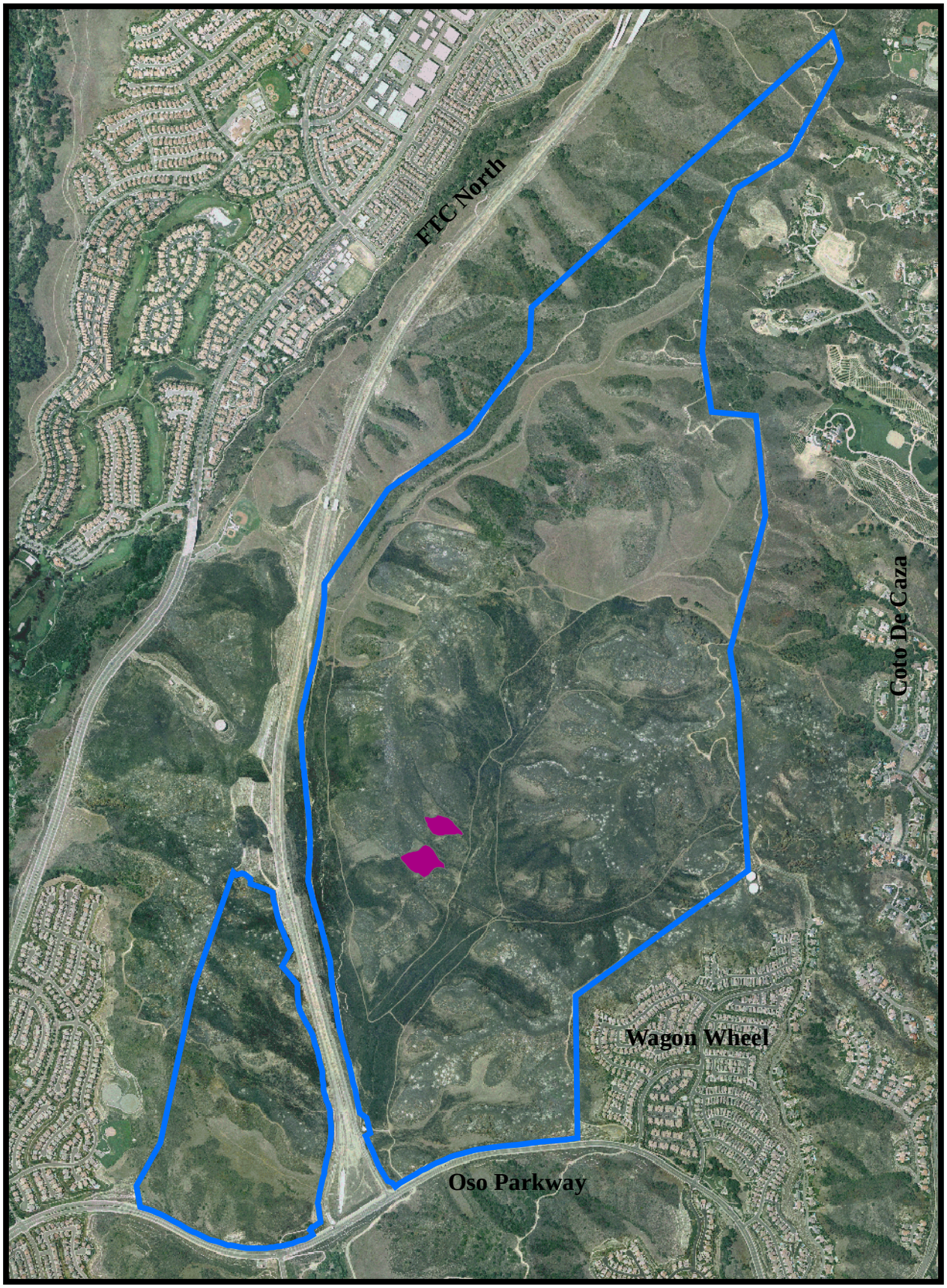
THREAD-LEAVED BRODIAEA (*BRODIAEA FILIFOLIA*) TRANSPLANTATION

The Upper Chiquita Canyon Conservation Area contains appropriate soils for relocation of thread-leaved brodiaea, and currently provides physical and biological features, which are essential for the conservation of this species, and include:

- vegetation types (native needlegrass grasslands and coastal sage scrub), pollinator assemblages and insect floral visitors, and faunal components that provide pollen and seed dispersal for new seedling establishment;
- clay soil areas that promote growth and maintenance of individuals and belowground corm populations, including soil-landform-vegetation associations suitable for sexual (seed) and asexual (cormlet) production, and long-term maintenance of seed banks;
- intervening habitat corridors suitable to facilitate gene flow and connectivity to other known occurrences of brodiaea in Orange County;
- self-sustaining functions associated with diverse native habitat areas that provide basic requirements for growth and reproduction of the species, such as water, light, nutrients, and minerals, and

Appropriate areas at the Conservation Area contain clay and clay loam substrates that currently support identified vegetation types, and additional lands designated for restoration of native grassland communities, and native pollinator assemblages essential to the conservation of the species (See map of Brodiaea Relocation sites). The Conservation Area lands are not used for recreational activities and are specifically identified and managed as preserved open space. Implementation of the Upper Chiquita Canyon Conservation Area RMP and Draft Restoration Program would implement policies and actions that would minimize disturbance to the soil surface, including fuel management activities and management practices that prohibit discing, permanently exclude grazing livestock, would control invasive plant species that could out compete native species for important resources, and would restore exotic annual grasslands to native forb and needlegrass grassland communities that are essential to the conservation of thread-leaved brodiaea.

In addition, the geographic location of the Conservation Area would also provide gene flow to proposed Criticial Habitats designated by U.S. Fish and Wildlife Service (2004) at Canada Gobernadora/Chiquita Ridgeline subunit, Forster Ranch subunit, Casper's Regional Park subunit, and the Arroyo Trabuco subunit.



Chiquita Canyon Conservation Area
***Brodiaea filifolia* Relocation Areas**

Conservation Boundary

0 1,000 2,000 4,000 Feet

Brodiaea filifolia

HYBRID FUNCTIONAL ASSESSMENT

FOR AREAS WITHIN THE JURISDICTION OF

THE UNITED STATES ARMY CORPS OF ENGINEERS
PURSUANT TO SECTION 404 OF THE CLEAN WATER ACT

AND

THE CALIFORNIA DEPARTMENT OF FISH AND GAME
PURSUANT TO SECTION 1600 OF THE
CALIFORNIA DEPARTMENT OF FISH AND GAME CODE

SOUTH ORANGE COUNTY TRANSPORATION
INFRASTRUCTURE IMPROVEMENT PROJECT
ORANGE COUNTY, CALIFORNIA

August 8, 2007

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OBJECTIVE OF FUNCTIONAL ASSESSMENT

The purpose of this functional assessment is to characterize and evaluate the functions of riparian habitats associated with the South Orange County Transportation Infrastructure Improvement Project (SOCTIIP). Specifically, this functional assessment provides for the ability to compare pre- and post-project aquatic functions relative to the requirements of the U.S. Army Corps of Engineers (Corps) Section 404 Regulatory Program.

U.S. Army Corps of Engineers Section 404 Regulatory Program

Pursuant to Section 404 of the Clean Water Act, the Corps regulates the discharge of fill material into waters of the U.S. and evaluates the impacts of the placement of proposed fill into such waters. Where the discharge of fill material into jurisdictional waters is permitted by the Corps, mitigation to ensure no-net-loss of wetlands and aquatic functions is required. The Corps emphasizes the value of providing mitigation that maximizes the functions of the compensatory mitigation. The evaluation of functions associated with compensatory mitigation sites relies on a function-based assessment tool such as the Corps' HGM Methodology.[1] Such an approach is set forth in a Regulatory Guidance Letter (RGL) published by the Corps on December 24, 2002[2] and in a Special Public Notice published by the Los Angeles District on January 27, 2003.[3] In both documents, the Corps encouraged the utilization of functional assessments for evaluating impacts to aquatic resources and determining appropriate mitigation ratios. On page 2 of the December 24, 2002 RGL, the Corps notes:

> *The Corps has traditionally used acres as a standard measure for determining impacts and required mitigation for wetlands and other aquatic resources, primarily because useful functional assessment methods were not available. However, Districts are encouraged to increase their reliance on functional assessment methods.*

This Hybrid Functional Assessment (HFA) method was developed by combining components of three established functional assessment methods adapted for use at the project site.[4]

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[1] Smith, R.D., Ammann, A., Bartoldus, C., and Brinson, M.M. 1995. "An approach for assessing wetland functions using hydrogeomorphic classification, reference wetlands, and functional indices," Technical Report WRP-DE-9, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.
Brinson, M.M., Hauer, F.R., Lee, L.C., Nutter, W.L., Rheinhardt, R.D., and Whigham, D. 1995. "A guidebook for application of hydrogeomorphic assessments to riverine wetlands," Technical Report WRP-DE-11, U.S. Army Engineer Waterways Experiment Station, Vicksburg, MS.

[2] U.S. Army Corps of Engineers. 2002. *Regulatory Guidance Letter No. 02-2: Guidance on Compensatory Mitigation Projects for Aquatic Resource Impacts Under the Corps Regulatory Program Pursuant to Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899.* December 24, 2002, 16pp.

[3] U.S. Army Corps of Engineers, Los Angeles District. 2003. *Special Public Notice: Mitigation and Monitoring Requirements*. January 27, 2003, 41pp.

[4] The concept of combining different functional assessment methodologies has been previously approved by the Corps. Specifically, URS developed a draft *Hybrid Functional Assessment of Wetland ad Riparian Habitats for the Newhall Ranch Habitat Management Plan* in June 2004. The URS HFA was subsequently used by Glenn Lukos Associates to evaluate impacts associated with the Newhall Ranch Riverpark project in Santa Clarita as well as to

A total of 21 different metrics were evaluated to determine riparian functions. These metrics are indicators of wetland or riparian function and were evaluated quantitatively in this assessment. All metrics were scaled with values, or metric scores, between 0 (degraded condition) and 1 (optimal condition) and were used to calculate the HFA scores. This HFA first describes the individual metrics that were incorporated into this HFA. The HFA then, using these metrics, provides a quantitative assessment of the riparian resources within the subject study area in the existing condition or pre-project condition. For the purposes of this analysis, the study area was extended 300 feet beyond the impact limits in order to incorporate potential indirect impacts from project implementation. Functions for all reaches falling within the impact limits were considered to be lost in the post-project condition. Functions for reaches falling outside of the impact limits but within 300 feet were evaluated for potential reduction in function. The sum of this reduction of function is considered an indirect loss of function. .

The metrics evaluated describe three categories of function based on the Corps' Hydrogeomorphic Approach (HGM): hydrologic functions, physical process functions (e.g., biogeochemical functions), and biological functions related to habitat. In addition to functions described under the Corps' HGM approach, functions from the California Rapid Assessment Method (CRAM) and Landscape Level Functional Assessment (LLFA) were incorporated, as categorized in each function heading. In summary, four metrics that describe buffer functions, seven metrics related to hydrological functions, three metrics that describe biogeochemical functions, and eight metrics associated with habitat functions were evaluated. These metrics were derived from the three accepted functional assessment methods that were used in developing the HFA and include the following:

Peer Review Draft Guidebook to Hydrogeomorphic Functional Assessment of Riverine Waters/Wetlands in the Santa Margarita Watershed. (Santa Margarita River HGM = SMR HGM) This HGM guidebook was developed for use in Southern California, and the reference domain is located in San Diego County.

Draft California Rapid Assessment Method for Wetlands. (CRAM) This method is currently being developed for use by California Department of Fish and Game (CDFG).

Assessment of Riparian Ecosystem Integrity: San Jacinto and Upper Santa Margarita River Watersheds, Riverside County, California. (Landscape Level Functional Assessment = LLFA) This method was developed for use in Special Area Management Plan (SAMP) projects that are ongoing in Orange and Riverside Counties.

Acronyms in this document (e.g., CRAM) refer to the source methodology from which the metric is based. For most metrics, modification was necessary from the original text.

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develop a mitigation program for the Newhall Ranch Santa Clarita Riverpark project. The Corps and CDFG issued authorizations for this project, in part based on the HFA and associated mitigation program developed using the

METRICS EVALUATED

RIVERINE

The function of riverine systems were evaluated for hydrologic function, biogeochemical function and habitat function using 21 metrics including: percentage of assessment area with buffer, average width of buffer, buffer condition, land use/land cover, water source, hydroperiod, floodplain connection, altered hydraulic conveyance, surface water persistence, flood prone area, sediment regime, topographic complexity, substrate condition, vertical biotic structure, interspersion and zonation, ratio of native to non-native, canopy, age distribution, riparian vegetation condition, riparian corridor continuity and invasive plant species.

DEPRESSIONAL WETLANDS

The function of depressional wetland systems were evaluated for hydrologic function, biogeochemical function and habitat function using 9 metrics including: average width of buffer, buffer condition, water source, hydroperiod, surface water persistence, land use/land cover, substrate condition, ratio of native to non-native, and wetland vegetation condition.

Calculating Functional Capacity

The reaches were scored from 0.00 to 1.00 for each metric based on the condition of the reach. The Functional Capacity Score was then calculated by summing the scores of the individual metrics for each reach. Functional Capacity Units were then calculated by multiplying the Functional Capacity Score of an aquatic reach by the surface area in acres of that reach.

Calculating Loss of Functional Capacity

Quantifying the potential direct impact of the proposed project on aquatic resource function was accomplished by overlaying the Proposed Project grading footprint Geographic Information System (GIS) theme on the Aquatic resource theme. The function of aquatic resources falling within the grading limits was assumed to be entirely lost.

Quantifying the potential indirect impact of the Proposed Project on aquatic resource function was accomplished by simulating the changes that could be expected to occur in each aquatic reach as a result of the construction of the corridor. The sum of the differences between baseline assessment metric scores and metric scores resulting from the simulation represented the change (i.e., loss) in Functional Capacity Score for the aquatic reach being evaluated. The surface area of the reach expected to exhibit decreased function was multiplied by the change in Functional Capacity Score. As described above, indirect impacts were assumed to extend approximately 300 feet from the disturbance limits. This assumption was based upon the most extensive metric assessment area as defined by URS.

I. METRICS EVALUATED FOR RIVERINE SYSTEMS

I. BUFFER

A. PERCENTAGE OF ASSESSMENT AREA WITH BUFFER [CRAM]

Definition: The buffer is the upland area extending at least 10 meters (m) horizontally from the immediate edge of the Assessment Area that is in a natural or semi-natural state and currently not dedicated to anthropogenic uses. The buffer can include adjacent wetlands of the same or different class, stream channels, open water, or other aquatic habitats. For the riverine wetland class, the upstream and downstream reaches should be scored as part of the buffer. The height to which the buffer extends above or below the wetland is not considered as part of a horizontal buffer.

Intensive land uses are not buffers (e.g., plowed, agricultural cropland; paved areas; some dirt roads; housing developments, unfenced pastures; landscaped parks; etc.). Mowed areas are considered buffers, but deep-ripped agricultural fields are not considered buffers.

The assessment of this attribute is the same across all wetland classes. Assessment should be conducted first in the office with aerial photographs, then verified in the field.

Table 1.

Metric	Score
< 75 - 100%	1.0
50 - 75%	0.75
25 - 50%	0.50
< 25%	0.10
None	0.0

B. AVERAGE WIDTH OF BUFFER [CRAM]

Definition: Buffer width is measured in meters of distance away from the wetland along lines-of-sight that are perpendicular to the wetland boundary.

Step 1: Divide the perimeter of the Assessment Area into four sections

Step 2: Estimate the width of the buffer in each of the four sections; maximum value of 100 meters per side.

Step 3: Average the four estimated widths

The assessment of this attribute is the same across all wetland classes. It should be initiated in the office and verified in the field.

Table 2.

Metric	Score
> 100 m	1.0
60 - 100 m	0.75
30 - 60 m	0.50
<30 m	0.10
None	0.0

C. BUFFER CONDITION [CRAM] / ADJACENT AREA TO CORPS/CDFG JURISDICTION

Definition: Buffer condition is assessed according to its vegetative cover, substrate condition, and based on indicators of disturbance. These conditions are assessed only for the portion of the wetland border that has already been identified or defined as buffer. For two sides with different buffers, score each side and average score. The value closest to the average would then be chosen.

Table 3.

Metric	Score
Area is characterized by natural, undisturbed upland with native vegetation and lack of invasive plants, lack of substrate disturbance, and lack of trash)	1.0
Buffer appears to have been moderately disturbed and may be characterized by presence of invasive plants, etc, minor to moderate amounts of trash or debris visible); abandoned field; shrubland or Buffer recently burned, but recoverable; or dirt road crossing; or mowed, non-native ruderal	0.75
Disced ruderal; dry-land farming; active agriculture	0.50
Dirt road, not recoverable; residential; pastureland; landscaped park	0.25
Buffer is highly disturbed, barren ground visible with highly compacted soils, moderate to high amounts of trash and other large debris); urban or industrial	0.10
No buffer present.	0.0

D. LAND USE/LAND COVER (LULC) [LLFA]

Four sub-indicators were used to measure the LULC indicator. Each of the sub-indices were measured as the percent of the drainage basin of a riparian reach with LULC types having the potential to increase the nutrient, pesticide, hydrocarbon, or sediment loading in downstream surface waters. The reference standard condition was defined as <5% of the watershed and surrounding landscape area with LULC types with the potential to increase nutrient, pesticide, hydrocarbon, or sediment loading in surface waters downstream. This metric was assessed at the tributary scale (e.g., Potrero Canyon sub-watershed), and refers to areas adjacent to and upstream from a particular reach. For tributaries, all LULC within the sub-basin that drains into a particular reach was considered. For the Santa Clara River (SCR) reaches, all LULC within 300 meters was considered.

Example stressors include active oil production platforms, septic tanks, unpaved roads, etc. Indicator scores were assigned based on the range of indicator values in the table below.

Table 4.

Metric	Score
<5% of watershed/landscape with LULC types that increase N/P/H/S	1.0
>5 and <15% of watershed/landscape with LULC types that increase N/P/H/S; or recently burned open space	0.75
>15 and <30% of watershed/landscape with LULC types that increase N/P/H/S	0.50
>30 and <50% of watershed/landscape with LULC types that N/P/H/S	0.25
>50% of watershed/landscape with LULC types that increase N/P/H/S	0.10

II. HYDROLOGY

A. WATER SOURCE [CRAM]

Definition: Source of water describes the primary origin of water input to the wetland and the degree to which water input has been affected or is controlled by anthropogenic activities or land use changes. This metric is assessed at the reach scale, and is influenced by upstream activities. Example stressors are septic tanks, culverts, riprap, etc.

Table 5.

Metric	Score
Water source derived from precipitation, groundwater and/or natural overland or tributary flow from catchment. No indications of artificial water sources.	1.0
Source of water is primarily natural; however, may receive occasional or small amounts of inflow from anthropogenic sources, such as urban runoff, seepage, agriculture or POTW discharge. Natural flow regime.	0.75
Source of water is primarily anthropogenic, and receives inflow from anthropogenic sources, such as urban runoff, seepage, agriculture or POTW discharge. Non-natural flow regime.	0.50
Primarily supported by direct irrigation, pumped water, artificially impounded water, or other artificial hydrology; may be perennialized flow; channel incision present.	0.25
No natural or non-natural flows occur at the present time.	0.0

B. HYDROPERIOD [CRAM]

Definition: Hydroperiod is the seasonal and (in some wetlands) daily pattern of water level fluctuation. Hydroperiod defines regular changes in the duration, frequency, timing, and extent or depth of inundation or saturation in a wetland.

Office and Field Indicators: This metric evaluates changes in the hydroperiod of a wetland and the degree to which these changes affect the structure and composition of the wetland plant community. Field indicators focus on evaluating changes to the plant community. Office

indicators focus on evaluating the physical properties such as slope, flow augmentation or diversion, upstream impoundments, etc.

It is assumed that changes either peak flow or baseflow can affect riverine wetland form and function. However, changes in peak flow will have a more profound effect because of changes to channel slope, hydraulic radius, and width to depth ratio. Decreases in base flow, especially during the dry season, can influence the availability of water for wildlife.

This metric is assessed initially in the office using the site imaging, and then scores are confirmed or adjusted based on the field indicators. Hydroperiod should be evaluated in the office by reviewing maps or aerials of the surrounding watershed for evidence of diversions, flow augmentations, or upstream constrictions. Dams and other upstream impoundments should be considered an alteration if they control more than 25% drainage area upstream of the assessment area or if they are close enough to the assessment area to substantially affect the magnitude or timing of inflows. Diversions should be considered an alteration if they routinely reduce either baseflow or stormflow to the assessment area by more than 15%. Constrictions of the active channel within 1 km (upstream) of the Assessment Area should be considered as hydrologic alterations. The preliminary office assessment is scored using the following:

Table 6.

Metric	Score
Subject to natural peak flows and baseflow.	1.0
Peak flow relatively natural, but baseflows altered either by augmentation or reduction; or Reach has recently burned, but is recoverable- temporary peak flows are anticipated.	0.75
Peak flows altered by upstream activities (augmentation or reduction), but baseflows are relatively natural.	0.50
Assessment area is subject to alteration of both peak flow and baseflow. Recoverable.	0.25
Assessment area is subject to alteration of both peak flow and baseflow. Not recoverable.	0.10

C. FLOODPLAIN CONNECTION [CRAM]

Definition: Floodplain connection describes the relationship between riverine wetlands and the adjacent floodplain that influences the ability of water to flow into or out of the wetland or to inundate adjacent uplands during high water periods.

Field Indicators: Scoring of this metric is based solely on field indicators. No office work is required.

Indicators for floodplain connection in riverine, estuarine, and lagoon wetlands are based on evidence of overbank flow, such as wrack, debris, fine sediment deposits, and evidence of ponding on benches adjacent to the stream or tidal channel. The extent and vigor of adjacent riparian or hydric vegetation can also provide an indicator for this attribute. Finally, structural conditions, such as depth, presence of levees, and condition of the bank can be used to score this attribute.

Table 7.

Metric	Score
Adjacent to an unrestricted floodplain that is comprised of natural or open space lands or agricultural lands	1.0
On most years, storm flows or storm surges can escape the active channel or tidal channels and access adjacent benches, riparian areas, or the marsh plain. However, unnatural levees, berms or adjacent land uses restricts the extent of overbank inundation; or naturally confined channel	0.75
Moderate channel constriction, incision or bank armoring precludes water from accessing adjacent benches, riparian areas or marsh plain, except in very high flows; however, access is still possible; or Agricultural constraint; or adjacent road	0.50
All overbank flow beyond the bankfull channel is contained within a defined conveyance or channel and cannot access adjacent riparian areas, benches or marsh plain	0.25
Channel is channelized and contains concrete or rip-rap slopes/bottom.	0.0

D. ALTERED HYDRAULIC CONVEYANCE – [LLFA]

This indicator was measured as the percent of the main stem channel through the riparian reach with altered hydraulic conveyance. At the riparian reach and riparian reach tributary scale, aerial photography and field observations were used to estimate the value of the metric. This metric was assessed within a particular reach, and assesses the extent of linear modification of the channel. Stressors within a reach may include road crossings, rip-rap, etc.

The reference condition was defined as <5% of the main stem channel in the riparian reach, or major tributaries to the riparian reach, with altered hydraulic conveyance. Indicator scores were assigned based on the range of indicator values in the table below.

Table 8.

Metric	Score
<5% of riparian reach main stem with AHC	1.0
>5 and <15% of riparian reach main stem with AHC	0.75
>15 and <30% of riparian reach main stem with AHC	0.50
>30 and <50% of riparian reach main stem with AHC	0.25
>50% of riparian reach main stem with AHC	0.1

E. SURFACE WATER PERSISTENCE / RECHARGE [SMR HGM]

Table 9.

Measurement	Score
Evidence of surface water ponding/storage on floodplain for greater than one day (intermittent). Substrate porosity is such that runoff persists; floodplain has complex microtopographic relief; or perennially flowing/ saturated; or adjacent wetlands	1.0
Evidence of surface water ponding/storage on floodplain for greater than one day (intermittent). Floodplain has simple microtopographic relief. (Non-wetland floodplain)	0.75
Evidence of surface water ponding/storage for less than one day (ephemeral).	0.50
Assessment area provides no features for ponding/storing water. Variable is recoverable and sustainable through natural processes.	0.25
Assessment area provides no features for ponding/storing water. Variable is not recoverable and sustainable through natural processes under current conditions.	0.0

F. FLOOD PRONE AREA [SMR HGM]

This metric assesses the extent to which flood flows are impeded. Slope (non-riverine) wetlands would not be subject to the width requirements.

Table 10.

Measurement	Score
Floodprone area not modified by cultural processes. FPA > 2.0x bankfull width.	1.0
Floodprone area confined by artificial structure(s) or culturally accelerated channel incision is minimal; FPA > 2.0x bankfull width; disturbance affects one side of drainage; or naturally v-shaped channels for small drainages	0.75
Floodprone area is artificially confined or culturally accelerated channel incision is present; FPA > 1.5x bankfull width; disturbance affects one side of drainage	0.50
Floodprone area is artificially confined or culturally accelerated channel incision is present; FPA < 1.5x bankfull width; disturbance affects both sides of drainage; variable is recoverable through natural processes under current conditions.	0.25
Floodprone area is artificially confined or culturally accelerated channel incision is present; FPA < 1.5x bankfull width; disturbance affects both sides of drainage Variable is not recoverable through natural processes under current conditions.	0.10
Floodprone area is completely modified by concrete and/or rip-rap; disturbance affects both sides of drainage; variable is not recoverable through natural processes under current conditions.	0.0

III. STRUCTURE – ABIOTIC

A. SEDIMENT REGIME – [LLFA]

This indicator was assigned a score by matching field observations to the descriptions in the table below. The reference condition was defined as exhibiting a sediment regime in equilibrium with respect to supply, erosion, and deposition processes, and not affected by cultural alteration.

Table A-11.

Metric: Description of Conditions	Score
Movement of sediment in the channel is in equilibrium in terms of supply, erosion, and deposition processes that reflect the culturally unaltered condition. On higher-order streams there are alternating point bars; bank erosion occurs, but is stabilized and moderated by vegetation; and channel width, form, and floodplain area is consistent through the reach. In low-order streams with bedrock control, some of these indicators may not be apparent, but overall bank and hillslope erosion is moderated by vegetation, and there are no apparent culturally induced catastrophic failures.	1.0
Movement of sediment in the channel is in equilibrium with the current hydrologic regime, as opposed to a culturally unaltered condition, and exhibits an overall balance in terms of erosion and deposition processes. On higher-order streams there are alternating point bars; bank erosion occurs, but is stabilized and moderated by vegetation; and channel width, form, and floodplain area are consistent through the reach. In low-order streams with bedrock control, some of these indicators may not be apparent, but overall bank and hillslope erosion is moderated by vegetation, and no culturally induced catastrophic failures are apparent; OR recent fires has temporarily altered (or are expected to alter) sediment regime; less than 15-percent of the watershed exhibits altered hydraulic conveyance where no significant sediment storage or recruitment occurs	0.75
Sediment disequilibrium is minor and localized within the reach. This includes small, localized areas of bank protection, slumping, or encroachment on the floodplain and channel. This condition class also includes previously disrupted reaches on a recovery trajectory, such as deeply entrenched streams where downcutting has been arrested by structural grade control, and there is sufficient room for lateral channel migration and establishment of a functional floodplain within the incised channel; less than30-percent of the watershed exhibits altered hydraulic conveyance where no significant sediment storage or recruitment occurs	0.50
Sediment erosion and deposition out of equilibrium. Water inflow is sediment rich or poor, or accelerated bank erosion exists. Channel not actively incising, but extensive disequilibrium is evident. Typical indicators include extensive bank slumping (erosion events that exceed any moderating influence of native vegetation), active gullies feeding into the reach from adjacent hillslopes, shoaling of sediments rather than deposition in sorted lateral and mid-channel bars. Apparently stable channels should be placed in this category if there is evidence of regular mechanical disruption, such as bulldozing of the channel bottom and clearing of riparian vegetation to improve flood conveyance; less than 50-percent of the watershed exhibits altered hydraulic conveyance where no significant sediment storage or recruitment occurs	0.25
Sediment dynamics within most of the reach are seriously disrupted. It also includes reaches that are either actively incising or functioning as sediment traps (e.g., sediment basins). This also includes reaches that have been subject to recent changes likely to induce severe disequilibrium, such as extensive floodplain filling, change in slope, channel straightening, or other changes that are likely to cause channel downcutting during future high-flow events ; greater than 50-percent of the watershed exhibits altered hydraulic conveyance where no significant sediment storage or recruitment occurs	0.10

B. TOPOGRAPHIC COMPLEXITY [CRAM]

Definition: Topographic complexity is the presence or absence of a variety of elevation or depth zones within a wetland that provide niches for fauna, surfaces for growth of a variety of plant species, areas that modify flow/hydrology, and zones that promote biogeochemical processes. This metric is different than abiotic patch richness in that it evaluates the relative abundance or distribution of physical zones within the assessment area, whereas abiotic patch richness addresses solely the number of different habitat types.

Field Indicators: The typical indicators are usually habitat elements or habit features within a wetland class. Care must be taken to distinguish indicators of topographic complexity or habitat features within a wetland from different kinds of wetlands.

Topographic complexity in higher order riverine wetlands can be evaluated by counting the number of features that affect elevation or influence the path of water flow along a transect cross the assessment area. Trampling, filling, burying or other alteration of topographic features will indicate a reduced condition. Lower order riverine wetlands have inherently less topographic complexity (hence less categories) and will have more subtle indicators of topographic complexity, such as large rocks, middens, or accumulations of woody debris. In higher gradient streams, plunge pool sequences may be present.

Table A-12.

Metric	Score
Assessment area is dominated by a complex arrangement of micro and macro topographic features, such as meanders, bars, benches, secondary channels, backwaters, roots, pits, and ponds. Higher gradient systems may contain plunge-pool sequences.	1.0
Some macrotopographic features present, such as secondary channels; however, the complexity and interspersion of such features has been reduced by substrate alteration, flooding, grazing, trampling, or placement of fill material; or naturally v-shaped channel is small drainage.	0.75
Assessment area consists of a single channel without macrotopographic features such as benches or secondary channels; however, the channel has microtopographic features such as bars, braiding, and presence of woody debris.	0.50
Assessment area consists of a single channel without macrotopographic features such as benches or secondary channels; however, the channel has microtopographic features such as bars, braiding, and presence of woody debris. Features may be the result of anthropogenic disturbance.	0.25
Assessment area consists of a uniform, straight channel with no substantive topographic features.	0.10

C. SUBSTRATE CONDITION [CRAM]

Definition: Substrate Condition describes the presence of intact (unaltered) soil that is subject to regular saturation or inundation and exhibits an accumulation of organic matter or coarse litter. Coarse litter consists of the fallen stems, leaves, and other small parts of plants that accumulate on the wetland surface and that can be taxonomically identified.

Field Indicators:

Substrate condition in riverine wetlands is evaluated by observing evidence of redoximorphic features, ponding, or organic matter accumulation on the surface or within the top 30 cm of substrate. Special attention should be paid to pits, ponds, or backwaters as well as portion of the floodplain that is within the Assessment Area. Evidence may include leaf litter accumulation, coarse woody debris, dried algal mats, algal coating on sand grains in the channel bed, or organic streaking in the soil horizon. Excessive sediment deposition, filling, downcutting, trampling, or compaction may reduce substrate condition.

Table 13.

Metric	Score
Soils in the assessment area or adjacent to the active channel are relatively intact, show evidence of surficial organic matter accumulation, fallen trees, branches, and twigs or other course woody debris, decayed leaf litter, and fine detrital organic matter. Redoximorphic features may be visible within 30 cm of	1.0

the surface; organic or clay layers may be present within the soil column (top 30cm).	
Channel and adjacent benches are dominated by unconsolidated sand or other poorly formed native soils and/or bedrock outcrops. Substrate may exhibit moderate embeddedness or compaction; lack of organic layers in column; cattle may have had minor to moderate effects on sandy substrates.	0.75
Soils may exhibit some evidence of sparse organic litter or coarse woody debris. However, the assessment areas is mainly characterized by disturbed conditions, such as substantial filling, compaction, tilling, grazing, or similar activity, but appear recoverable with minimal intervention	0.50
Soils are extremely compacted, dominated by imported fill or other predominantly upland (non-native) soils or have been deeply ripped, disced, or drained	0.25
Channel is lined with concrete or rip-rap.	0.0

IV. STRUCTURE - BIOTIC

A. VERTICAL BIOTIC STRUCTURE

Definition: The vertical component of biotic structure consists of the distribution of vegetation among categories of height above the wetland substrate or with depth below the water surface.

Field Indicators: Vertical structure must be assessed in the field. The vertical component of biotic structure is commonly recognized as the overall number and spatial extent of the expected number of typical plant height classes. For some wetlands (e.g., forested riverine and lacustrine wetlands), the height classes are often arranged as overlapping layers or plant strata. In other wetlands, the plant height classes are represented by dispersed and non-overlapping plant patches. Standing live and dead vegetation is considered in the assessment. The length of prostrate stems or shoots, and the horizontal extent of canopies is not considered. Only the vertical aspect of structure is considered in this metric. Use the rules given in the table below to estimate the number of height classes for the assessment area, and the draft scores given below to determine the amount of the Assessment Area that has these height classes.

Table 14a. Rules for Determining Vegetation Height Classes for Each Wetland System

Wetland System	Height Class		
	Tall	Medium	Short
Riverine/Alluvial Scrub	> 3 m	1-3 m	< 1
Depressional, Slope and Seep	>1 (e.g. saplings)	0.3 – 1 m (e.g. Scripus)	< 0.3 m (e.g., Distichlis)

Use the draft scores given below to determine the amount of the Assessment Area that has these height classes.

Table A-14b.

Metric	Score
Most of the Assessment Area supports 3 height classes of vegetation; T/S/H; may also include vines	1.0
About half of the Assessment Area supports 3 vegetative strata and/or most is covered by at least 2 height classes.	0.75
Between one quarter and half of the assessment areas supports 3 vegetative height classes and/or at least half of the site support 2 height classes.	0.50
Less than one quarter of the AA support 3 height classes or < ½ supports 2 height classes or less OR 0-1 height class is present only.	0.25

B. INTERSPERSION AND ZONATION

Definition: Horizontal biotic structure is commonly recognized as plant zonation and its interspersion. Interspersion is essentially a measure of the amount of edge between plant zones.

Field Indicators: The distribution and abundance of horizontal plant zones plus their interspersion are combined into a single indicator. The zones are usually apparent as different plant patches that signify different elevations or distances away from the usual high water contour of a wetland, such as the shoreline of a lake, bank of a channel, or the transition from the wetland to the adjacent upland. For large wetlands, the prominent zonation is evident in aerial photographs of scale 1:24,000 or smaller. For small wetlands, the zonation is only apparent in the field. The zones may be discontinuous and they can vary in number within a wetland. Plant zones often consist of more than one plant species, but some zones may be mono-specific. In most cases, one plant species dominates each zone.

The following table should be used to score wetlands in these classes:

Table A-15.

Metric	Score
Riparian canopy	1.0
Undisturbed chaparral/coastal sage scrub occurring along drainage greater than 75%	0.75
2 or more plant zones are apparent along about one quarter to half of the main active channel or shoreline.	0.50
2 or more plant zones are apparent along less than one quarter.; OR sparse shrubs in confined/ incised channel.	0.25
Unvegetated channel.	0.10

C. RATIO N:NN [SMR HGM]

This metric is based on data collected in 10 m X 50 m plots assessed within reaches. The 50/20 Rule (Environmental Laboratory 1987) was utilized to determine dominant vegetation.

Table A-16.

Measurement	Score
75 – 100% of the plant species are native and no stratum is dominated by non-native species.	1.0
50 - < 75% of species are native and/or up to 50% of the strata present are dominated by non-native species.	0.75
25 - < 50% of species are native and/or up to 50% of the strata present are dominated by non-native species.	0.50
10 – < 25 %of species are native and/or up to 50% of the strata present are dominated by non-native species.	0.25
0 - < 10 % of species are native and/or up to 100% of the strata present are dominated by non-native species.	0.10
No vegetation present. Variable is not recoverable and sustainable through natural processes under current conditions.	0.0

D. CANOPY [SMR HGM]

For SCR reaches, percent cover was averaged among the total number of plots.

Table A-17.

Measurement	Score
Percent cover of tree layer is > or = 50%	1.0
Percent cover of tree layer is 25% - <50%	0.75
Percent cover of tree layer is < 25%; OR Seep/Slope H layer 100%	0.50
If no trees, percent cover of shrub layer is >50%	0.25
If no trees, percent cover of shrub layer is <25%	0.10
No vegetation present. Variable is not recoverable and sustainable through natural processes under current conditions.	0.0

E. AGE DISTRIBUTION [SMR HGM]

This metric assesses the extent of recruitment at a site. Trees were not required for slope (non-riverine) wetlands, and thus the presence of saplings and seedlings would be the high score. This metric applies to wetland indicator species only (e.g., *Salix* sp., *Baccharis* sp., *Populus* sp., *Platanus* sp., etc.). In some cases, *Quercus* sp. may also be included if in multiple layers.

Table A-18.

Measurement	Score
Assessment area supports trees, saplings, and seedlings.	1.0
Assessment area supports trees, mature shrubs, saplings or seedlings.	0.75
Assessment area has no trees but does support saplings and/or seedlings; OR S/H for same indicator species.	0.50
Assessment area supports trees/shrubs but no saplings or seedlings are present; Seep/Slope with H layer 100% but no saplings or seedlings.	0.25
Assessment area does not support trees/shrubs, saplings, or seedlings. Variable is recoverable and sustainable through natural processes under current conditions.	0.10
Assessment area does not support trees/shrubs, saplings, or seedlings. Variable is not recoverable and sustainable through natural processes under current conditions.	0.0

F. RIPARIAN VEGETATION CONDITION – [LLFA]

Under culturally unaltered conditions, a complex interaction of many factors such as the size of the watershed, discharge, channel geometry, substrate type, and slope determine the size of the area that typically supports riparian vegetation. In general, as stream orders increase, the width of the bankfull channel increases, and the size of the area supporting riparian vegetation increases. Floodprone area represents a scaled metric that can be applied consistently in different stream orders throughout a watershed. Floodprone area was determined in the field by projecting the elevation corresponding to two times the maximum depth of the bankfull channel until it intersected the surface of the adjacent floodplain/terrace on both sides of the main stem channel.

This indicator was assigned a score by observing the condition of vegetation along the riparian reach and matching these field observations to the descriptions in Table A-21. In inaccessible reaches, field observations were supplemented with aerial photography and riparian vegetation community maps developed by URS (2003b). The reference standard condition was defined as vegetation represents reference condition with no chronic disturbance or recovered from historical disturbance.

Table A-19.

Description of Conditions	Score
Vegetation represents reference condition with no chronic disturbance or recovered from historical disturbance. Presence of areas disturbed through natural processes (i.e., fire and flood) okay.	1.0
Native vegetation recovering with minor chronic disturbance (i.e., grazing). Presence of areas disturbed through natural processes (i.e., fire and flood) okay. Invasive, exotic species may be present.	0.75
Native vegetation common and widespread with moderate grazing pressure. Presence of areas disturbed through natural processes (i.e., fire and flood) okay. Invasive, exotic species may be present.	0.50
Native vegetation localized with heavy grazing pressure. Presence of areas disturbed through natural processes (i.e., fire and flood) okay.	0.25
Native vegetation absent, area hardened (i.e., paved, urban, etc.) or graded. Restoration impractical and unlikely for economic or political reasons.	0.0

G. RIPARIAN CORRIDOR CONTINUITY [LLFA]

This indicator was measured at the riparian reach scale as the percent of floodprone area along the main stem channel of the riparian reach occupied by native and non-native vegetation communities with adequate height and structure to allow faunal movement. For example, annual grassland with no shrub or tree component was considered to represent a corridor gap. The difference between this indicator and Area of Native Riparian Vegetation was that for the RCC indicator, the vegetation corridor could be composed of native or non-native riparian species, whereas for the NRV indicator, only native riparian vegetation communities were considered. The reference condition was defined as <5% of the floodplain of the main stem channel of the riparian reach occupied with riparian vegetation communities. Indicator scores were assigned based on the range of indicator values in the table below.

Table A-20. Range of Indicator Values for Scaling the Riparian Corridor Continuity Indicators

Indicator Value Range	Score
<5% of riparian reach with gaps/breaks in vegetation due to cultural alteration	1.0
>5 and <15% of riparian reach with gaps/breaks in vegetation due to cultural alteration	0.75
>15 and <30% of riparian reach with gaps/breaks in vegetation due to cultural alteration	0.50
>30 and <50% of riparian reach with gaps/breaks in vegetation due to cultural alteration	0.25
>50% of riparian reach with gaps/breaks in vegetation due to cultural alteration	0.10

H. INVASIVE, EXOTIC PLANT SPECIES - [LLFA]

Plants would be required to be on the Cal-IPC list of invasive species (List A1, A2, B). Percent cover measurements are based on plot data within a given reach. Average cover for each included species was determined per T-S-H layer(s), and then summed to give the total cover per given plot. This indicator was assigned an index by matching field observations to the description of condition in Table A-23. The reference standard condition was defined as exotic plant species absent or rare composing ≤5% total vegetation.

Table A-21. Description of Condition and Index for Invasive Plant Species Indicator

Description of Condition	Index
Invasive plant species absent or rare composing ≤5% total vegetation	1.0
Invasive plant species present but localized and composing >5 and ≤20% of vegetation	0.75
Invasive plant species common and composing >20 and ≤50% of vegetation	0.50
Invasive plant species widespread and composing >50 and ≤75% of vegetation	0.25
Invasive plant species dominant and composing >75% of vegetation; recoverable	0.10
Invasive plant species dominant and composing >75% of vegetation; not recoverable.	0.0
*If invasive plant species are dominant outside of plots but within reach, score may be reduced by one level.	-x

XI. METRICS EVALUATED FOR ISOLATED SLOPE WETLAND, SEASONAL PONDS AND STOCK PONDS

The HFA developed by URS and cited in footnote 4 above, addressed Riverine Wetlands as well as Depressional, Lacustrine, and Slope/Seep Wetlands. Seasonal pools and ponds were not specifically addressed and only four metrics, Hydroperiod, Topographic Complexity, Substrate Condition, and Vertical Biotic Structure, were included as metrics in the URS HFA, with no distinction between Depressional, Lacustrine, and the Slope/Seep Wetlands. As such, modification of the approach to more accurately address slope wetlands, seasonal ponds and perennial ponds associated with the proposed project was necessary. Therefore, where applicable for this HFA, the methods for assessing each metric have included modification to address the hydrologic, biogeochemical, and habitat functions associated with slope wetland, seasonal pools and perennial ponds as set forth below (with the corresponding HFA function italicized in parenthesis):

Hydrology

- Surface Water Storage in Pool (*Hydroperiod* and *Surface Water Persistence*)
- Subsurface Water Exchange (*Not Applicable*)[5]
- Surface Water Conveyance (*Source*)

Biogeochemical *(Generally addressed under Land Use/Land Cover and Substrate Condition)*

- Element Cycling
- Element Removal

Habitat Support

- Maintains Characteristic Vegetation (*Ratio Native to Non-Native* and *Wetland Vegetation Condition*)
- Maintains Characteristic Aquatic Invertebrates
- Maintains Amphibian and Avian Populations
- Maintains Populations of Special-Status Plants (*Special Status Plants*)
- Maintains Habitat Interspersion and Connectivity (*Buffer Width and Condition*)

Each of these functions is addressed in or described by the metrics as set forth below.

[5] Exclusion of "Subsurface Water Exchange" is due to the nature of the soils in the study area. Specifically, the clays throughout much of the study area are classed as vertisols, which typically exhibit an epiaquic moisture regime meaning that they rapidly seal at the surface, precluding saturation below the upper few inches of the soil surface which in turn limits that potential for subsurface exchange between or among pools.

I. BUFFER-RELATED FUNCTIONS

A. AVERAGE WIDTH OF BUFFER

Definition: Buffer width is measured around the perimeter of the slope wetland, seasonal pool or stock pond.

This metric should be initially assessed using GIS and verified in the field as needed.

Table 22 - Average Width of Buffer

Metric	Score
300 feet or greater	1.0
90 to 300 feet	0.75
45 to 90 feet	0.25
10 to 45 feet	0.10
Less than 10 feet	0.0

B. BUFFER CONDITION [CRAM] / AREA ADJACENT TO AQUATIC FEATURE

Definition: Buffer condition is assessed according to vegetative cover, substrate condition, and indicators of disturbance. These conditions are assessed only for areas adjacent to the seasonal pool or stock identified or defined as buffer. Where more than one buffer condition occurs adjacent to the pool OR SEEP, the score was calculated proportionally based on the buffer conditions with score closest to the Metric Value chosen.

Table 23 – Buffer Condition

Metric	Score
Area is characterized by natural, undisturbed upland with native vegetation and lack of invasive plants, lack of substrate disturbance, and lack of trash)	1.0
Buffer appears to have been moderately disturbed and may be characterized by presence of invasive plants, etc, minor to moderate amounts of trash or debris visible); abandoned field; shrubland or Buffer recently burned, but recoverable; or dirt road crossing; or mowed, non-native ruderal	0.75
Disced ruderal; dry-land farming; active agriculture	0.50
Dirt road, not recoverable; residential; pastureland; landscaped park	0.25
Buffer is highly disturbed, barren ground visible with highly compacted soils, moderate to high amounts of trash and other large debris); urban or industrial	0.10
No buffer present.	0.0

II. HYDROLOGIC FUNCTIONS

A. WATER SOURCE [CRAM]

For slope wetlands, seasonal pools or stock ponds, each feature and its associated watershed is considered individually. For purposes of this HFA, the necessary watershed to support a pool was generally assumed to total seven times the pool area (basin area included in the calculation). For example, a basin that covers one acre would require a watershed of seven acres or six additional acres including the one acre of basin area.

Table 24 – Water Source

Metric	Score
Watershed intact and water source derived from direct precipitation and/or natural overland or tributary flow from immediate watershed. No indications of artificial water sources, including dry-weather flows.	1.0
Watershed intact; however source of water is primarily natural; however, may receive occasional or small amounts of inflow from anthropogenic sources, such as urban runoff, agricultural discharge.	0.75
Watershed reduced by 25-50 percent. Water source derived from direct precipitation with occasional input from urban or agricultural sources during rainy season. No dry-weather nuisance flows.	0.50
Regardless of watershed size, source of water is primarily anthropogenic, and receives inflow from anthropogenic sources, such as urban runoff or agriculture. Non-natural flow regime including storm runoff.	0.10

B. HYDROPERIOD [CRAM] - RIVERINE AND FLOODPLAIN

Hydroperiod for slope wetlands and depressional wetlands were evaluated based on a review of surrounding land uses and evidence of any diversions or augmentations of flow to the vernal pool. To the extent available, historic aerial photographs and direct observations of ponding were used to inform the scores. Some of the features being evalauted may only pond a few times each decade; however, this is their "natural" hydroperiod. While many of the pools associated with the floodplain have been subject to direct hydrological observations or historic aerial photographic analysis, the plant community of each basin remains the best tool for assessing this function.

Table 25 – Hydroperiod

Metric	Score
Subject to natural hydroperiod; the "natural flow regime."	1.0
Hydroperiod minimally altered; however alteration has little to no effect on plant community as evidenced by a lack of indicators.	0.75
Hydroperiod moderately altered such that it affects the plant community.	0.50
Hydroperiod severely altered such that plant community is substantially modified. Variable is recoverable.	0.25
Hydroperiod severely altered such that plant community is substantially modified. Variable is not recoverable.	0.10

C. SURFACE WATER PERSISTENCE [SMR HGM]

For slope wetlands, seasonal pools or stock ponds this indicator measures persistence of surface water at each feature. This indicator was measured using a combination of aerial photographs specifically obtained for the site during the 2004/2005 storm season in conjunction with direct observations of ponded water/surface water persistence and/or by the predominance of wetland vegetation.

Table 26– Surface Water Persistence

Measurement	Score
Evidence of surface water ponding/storage within vernal pools for very long duration (greater than 30 days) during average rainfall years. Substrate porosity is such that precipitation and local runoff persists; depressional feature supports a predominance of hydrophytes.	1.0
Evidence of surface water ponding/storage within vernal pools for long duration (greater than 7 days) during average rainfall years. Substrate porosity is such that precipitation and local runoff persists; depressional feature supports a predominance of hydrophytes.	0.75
Evidence of surface water ponding/storage for less than seven days during normal rainfall years (ephemeral).	0.50
Assessment area provides no features for ponding/storing water. Variable is recoverable and sustainable through natural processes.	0.25
Assessment area provides no features for ponding/storing water. Variable is not recoverable and sustainable through natural processes under current conditions.	0.0

III. BIOGEOCHEMICAL FUNCTIONS

A. LAND USE/LAND COVER (LULC) [LLFA]

As applied to slope wetlands, seasonal pools and stock ponds, this metric refers to areas adjacent to and upstream/upgradient from the seep, pool or pond within the 100-year floodplain.

Example stressors include dryland and agriculture fields with varying degrees of fertilization and pesticide control. Indicator scores were assigned based on the range of indicator values in the table below.

Table 27 – Land Use/Land Cover

Metric	Score
<5% of watershed/landscape with LULC types that increase N/P/F	1.0
>5 and <25% of watershed/landscape with LULC types that increase N/P/F	0.75
>25 and <50% of watershed/landscape with LULC types that increase N/P/F	0.50
>50 and <75% of watershed/landscape with LULC types that N/P/F	0.25
>75% of watershed/landscape with LULC types that increase N/P/F/H/S	0.10

B. SUBSTRATE CONDITION [CRAM]

Definition: Substrate Condition describes the presence of intact (unaltered) soil that is subject to regular saturation or inundation and exhibits an accumulation of organic matter or coarse litter. Coarse litter consists of the fallen stems, leaves, and other small parts of plants that accumulate on the wetland surface.

Substrate condition in slope wetlands, seasonal pools or stock ponds were typically evaluated by observing evidence of redoximorphic features, ponding, or organic matter accumulation on the surface or within the top 30 cm of substrate. Evidence may include dried algal mats, soil cracking, or salt accumulation. Excessive discing, fertilization, agricultural activities, trampling, or compaction from off road vehicle use generally reduce substrate condition.

Table 28 – Substrate Condition

Metric	Score
Soils in the assessment area are relatively intact, show no evidence of past agricultural or grazing activities including discing, irrigation, dry-land farming or fertilization of any sort. Redoximorphic features may be visible within 30 cm of the surface.	1.0
Soils in the assessment area are relatively intact with some evidence of past dry-land agriculture, grazing or occasional discing. Evidence of recent fertilization is lacking.	0.75
Soils in the assessment area subject to regular discing and dryland farming with no permanent irrigation for crops such as alfalfa or turfgrass. Fertilization has been light or sporadic.	0.50
Soils in the assessment area are subject to intensive agriculture including fertilization, irrigation, and intensive crop production such as alfalfa, turfgrass etc.	0.25

IV. HABITAT FUNCTIONS

A. RATIO N:NN [SMR HGM]

This metric is based on vegetation data collected during the jurisdictional delineation. The 50/20 Rule (Environmental Laboratory 1987) was utilized to determine dominant vegetation. In addition, based on field observations, relative cover of non-native species such as sharp-leave timothy or curly dock was evaluated and considered for purposes of scoring this metric.

Table 29 – Ratio N:NN

Measurement	Score
75 – 100% of the plant species are native based on predominance and less than 10% of relative cover consists of non-native species.	1.0
50 - < 75% of species are native based on predominance and less than 25% of relative cover consists of non-native species.	0.75
25 - < 50% of species are native based on predominance and less than 50% of relative cover consists of non-native species.	0.50
10 – < 25 %of species are native based on predominance and 50-75% of relative cover consists of non-native species.	0.25
0 - < 10 % of species are native based on predominance and greater than 75%.	0.10
No native vegetation present.	0.0

B. WETLAND VEGETATION CONDITION – [LLFA]

This indicator was assigned a score by observing the condition of vegetation in the assessment area and matching these field observations to the descriptions in Table 6-9. The reference standard condition is defined as expcted vegetation condition with no measurable disturbance.

Table 30 - Wetland Vegetation Condition

Description of Conditions	Score
Vegetation represents reference condition with no measurable disturbance or recovered from historical disturbance.	1.0
Native vegetation recovering with minor disturbance (i.e., grazing). Ongoing disturbance from agriculture or other ground-disturbing practices absent.	0.75
Native vegetation common and widespread with moderate grazing pressure or agricultural practices. Non-native species common. Invasive, exotic species may be present.	0.50
Native vegetation localized with conversion to agricultural uses including fertilization. Non-native species predominate. Invasive, exotic species may be present.	0.25
Native vegetation absent, variable not recoverable.	0.0

ASSUMPTIONS FOR PRE- AND POST-PROJECT SCORES

I. PRE- AND POST-PROJECT CONDITIONS

A total of 39 drainage systems, defined as 42 separate riparian reaches, occur within the footprint of the SOCTIIP A7C-FEM-M proposed project alternative. In addition to those drainages directly impacted by the proposed project, seven drainage systems occur within the indirect impact zone within 300 linear feet of the direct impact boundary. The functionality of these 46 drainage systems varies widely across the sixteen-mile extent of the proposed project footprint. Drainage scores ranged from 10.40 to 20.00 out of 21. In addition to these drainage systems, six depressional wetlands, including five vernal marshes and one vernal pool, will be impacted by the proposed project. Two of the vernal marshes are only impacted indirectly, while the other four depressional wetlands are impacted directly by the proposed project.

The majority of the proposed project will occur within undeveloped areas primarily existing as grazing lands or natural open space. Although many of the on-site drainage features and depressional wetlands are subjected to anthropogenic disturbances in the form of upstream residential developments, agriculture, and mining, the drainages exhibit medium to high functionality compared to the reference condition.

Impacts to the post-project functionality of the on-site drainage features and depressional wetlands occur largely as a result of a loss in acreage. Much of the surrounding land will continue to exist as open space in the post-project condition. In addition, many of the drainage features that traverse the project footprint will be culverted to allow for connectivity of flows on both sides of the toll road corridor. Only one drainage, Drainage 7-11, a small ephemeral drainage course that empties onto Ortega Highway from the south, will be completely impacted resulting in a score of 0.00 in the post-project condition. Four depressional wetlands, VM-18, VM-19, VM-20, and VP-3, will be completely impacted resulting in a score of 0.00 in the post-project condition. As project mitigation will occur off-site to the north (Upper Chiquita Canyon Mitigation Area) and west (Tesoro High School Mitigation Area) of the project site, the mitigation areas were scored separately.

II. FUNCTIONAL UNIT AND JURISDICTION SUMMARY

Functional units (FUs) are quantified by multiplication of the drainage score (*x* out of 21 total points) and the total jurisdictional acreage of the defined assessment area. In the post project condition, excluding off-site mitigation, the proposed project results in the loss of 455.81 FUs. Of this loss in functionality, 364.70 FUs will be lost as a result of direct impacts, and 91.10 FUs will be lost as a result of indirect impacts. The direct and indirect loss in on-site functional units will be mitigated through restoration, creation, and enhancement of 4.66 acres of southern willow woodland; creation of 3.06 acres of mulefat scrub; creation and substantial restoration of 7.31 acres of wet meadow; creation and restoration of 0.88 acres of oak/elderberry woodland; restoration and creation of 4.90 acres of coastal sage scrub/native perennial grassland ecotone; and restoration of 182 acres of native perennial grassland; and restoration of 13 acres of sycamore and oak riparian woodland. This mitigation will result in a functional gain of 514.67 FUs, thereby ensuring a net increase in functionality in the post-project condition.

I. BUFFER

A. PERCENTAGE OF ASSESSMENT AREA WITH BUFFER [CRAM]

The vast majority (74.4%) of drainage features exhibit an undisturbed/undeveloped 10-meter buffer, as required for the maximum score of 1.00 in the pre-project condition. Those drainages that scored less than 1.00 in the pre-project condition were adjacent to existing agricultural cropland, grazing areas, and access roads. Most of the drainage features perpendicularly traverse the project site, and as such, functional capacity in the post-project condition was predominantly lost as a function of the loss of total acreage. Those drainage features that run parallel to the corridor for a portion of the assessment area, such as Canada Chiquita, FE/7-2, 7-3, and San Juan

Creek, lost buffer functionality as a result of the proposed project. This metric was evaluated in the field and verified in the office using aerial photography and vegetation maps.

B. AVERAGE WIDTH OF BUFFER [CRAM]

In the pre-project condition, on average, the drainage features exhibit a buffer width between 60 and 100 meters. Only two drainages in the pre-project condition, Canada Chiquita and FE/7-1 adjacent to Tesoro High School, exhibited an average buffer of less than thirty feet. As with the 10-meter buffer metric, those drainages that occur parallel to the corridor lost buffer width in the post-project condition. All other drainages lost functionality as a result of a loss in total acreage. This metric was evaluated in the field and verified in the office using aerial photography and vegetation maps.

C. BUFFER CONDITION [CRAM] / ADJACENT AREA TO CORPS/CDFG JURISDICITON

The 100-meter buffer used in the "Average Width of Buffer" metric was analyzed to determine buffer condition. Most drainages received a score of 0.75 in the pre-project condition primarily as a result of the presence of invasive species and adjacent non-native ruderal vegetation. Drainages FE/7-21, FE/7-22, and FE/7-23 received a score of 0.50 as a result of their proximity to active agriculture and dry-land farming. As with the previously mentioned buffer functions, those drainages running parallel to the proposed project corridor, specifically 7-3 and FE/7-3, were subject to lowered buffer conditions in the post-project condition. This metric was evaluated in the field and verified in the office using aerial photography and vegetation maps.

D. LAND USE / LAND COVER (LULC) [LLFA]

In the pre-project condition, functionality of drainages was reduced by land use activities in the watershed including residential development (FE-1, FE/7-7, FE/7-10, FE/7-11, FE/7-12, FE/7-24, FE/7-25, FE/7-San Onofre Creek), gravel mining (7-13, FE/7-3, FE/7-4, FE/7-6), and agriculture (FE/7-2, FE-1, FE/7-21, FE/7-22, and FE/7-23). In the post-project condition, consideration was given to a potential increase in pesticide, hydrocarbon and/or sediment loading from the proposed corridor roadways. As such, drainages downstream of the corridor received lower scores. This metric was evaluated in the field and verified in the office using aerial photography.

II. HYDROLOGY

A. WATER SOURCE [CRAM]

Upstream stressors that can reduce aquatic functions include, but are not limited to culverts, riprap, dry-weather discharge, and flows generated by hardscape associated with upstream development. In the pre-project condition, the water source for most on-site drainages is primarily natural, however these drainages may receive occasional or small amounts of inflow from anthropogenic sources, such as urban/storm runoff from development within the cities of Coto de Caza and San Clemente, thereby resulting in scores of 0.75. A small minority of the drainages received water primarily from anthropogenic sources including gravel mining (7-13, FE/7-3), the Talega development in San Clemente (FE/7-11), the Pacific Golf and Country Club (FE/7-12), and southeastern portions of the City of San Clemente (FE/7-21, FE/7-22, FE/7-23). Post-project scores were only affected by the loss of functional acreage. The presence of post-project culverts was not enough in and of itself to negatively impact the water source from primarily natural to primarily anthropogenic when considering the overall watershed and upstream activities. This metric was evaluated in the field and verified in the office using aerial photography.

B. HYDROPERIOD [CRAM]

In the pre-project condition, most of the on-site drainages are subject to natural peak flows and base flows, resulting in scores of 1.00. There are no diversions, upstream impoundments, or reductions in flow associated with the proposed project. There are, however, augmentations to the natural flow regime via gravel mining operations (7-13, FE/7-3, FE/7-4, FE/7-6, FE/7-7), residential development (FE/7-10, FE/7-11, FE/7-21, FE/7-22, FE/7-23, FE/7-24, FE/7-25), and golf courses (FE/7-12). In many of these cases, both peak flows and base flows are subject to alteration. In the post-project condition, culverted crossings will affect the physical properties, such as slope and width to depth ratios, and, in turn, plant communities associated with the on-site drainages. As such, the post-project hydroperiod functionality will be subject to significant negative impacts. This metric was evaluated in the field and verified in the office using aerial photography and project engineering data.

C. FLOODPLAIN CONNECTION [CRAM]

With only a few exceptions, on-site drainages exhibit a naturally confined channel with access to an adjacent floodplain, thereby earning a score of 0.75. A few drainages (FE/C/7-1, 7-11, 7-13, FE/7-3, FE/7-23) exhibit adjacent road restrictions to the floodplain and received scores of 0.50 or less, while several drainage systems (San Juan Creek, FE/7-4, FE/7-7, FE/7-10, FE/7-11, FE/7-12, FE/7-21, FE/7-22, FE/7-24, San Mateo Creek) were adjacent to unrestricted floodplains

comprised of natural or open space, thereby earning a score of 1.00. Since the project is a linear transportation corridor and most on-site drainages perpendicularly traverse the project footprint, post-project reductions in functionality were primarily a result of the loss in total acreage. This metric was evaluated in the field and verified in the office using aerial photography.

D. ALTERED HYDRAULIC CONVEYANCE [LLFA]

Example stressors for altered hydraulic conveyance include, but are not limited to, road crossings, culverts, and rip-rap. In the pre-project condition, all of the on-site drainage features scored a 0.75 or above for this metric, indicating that less than fifteen percent of the riparian reach main stem is subjected to altered hydraulic conveyance. In the post-project condition, for those drainages that are not completely impacted or impeded by the proposed project, the hydraulic conveyance is altered by either bridge crossings with bank stabilization or culverted crossings. A total of 35 culverts affecting 17 drainage systems will be installed within the proposed project footprint. As a result of the corridor road crossings and culverts, the altered hydraulic conveyance scores exhibit the largest gap between pre- and post-project scores for any of the twenty-two metrics in this assessment. This metric was evaluated in the field and verified in the office using aerial photography.

E. SURFACE WATER PERSISTENCE / RECHARGE [SMR HGM]

Scores for surface water persistence varied depending on whether the drainage is perennial, intermittent or ephemeral. The vast majority (80%) of the on-site drainage features were ephemeral drainages earning a score of 0.50. A few drainages (FE/7-2, FE-2B, FE/7-4, FE/7-7, FE/7-11) exhibited signs of intermittent surface water ponding or storage including the presence of hydrophytic vegetation and, thereby, earned a score of 0.75. Post-project surface water persistence and recharge functions were not substantially affected outside of the project impact footprint, and, therefore, the reduction in functional units was a result of the loss in total acreage. This metric was evaluated in the field.

F. FLOOD PRONE AREA [SMR HGM]

This metric assesses the extent to which flood flows are impeded. The majority of the on-site drainages exhibit naturally v-shaped channels and scored 0.75. In the post-project condition, only those drainages (e.g. 7-3) that run parallel with the corridor will experience a reduction in flood prone area function as a result of the project footprint. All other drainage features are subject to a loss in functionality as a result of the loss in total acreage. This metric was evaluated in the field and verified in the office using aerial photography.

III. STRUCTURE - ABIOTIC

A. SEDIMENT REGIME [LLFA]

In the pre-project condition, all of the drainages exhibit equilibrium with respect to a culturally altered sediment regime, except for drainage FE/7-7. In the post-project condition, those drainages modified by culverts will result in no significant storage or recruitment of sediment and, therefore, received a score of 0.10. This metric was evaluated in the field.

B. TOPOGRAPHIC COMPLEXITY [CRAM]

As the vast majority of on-site drainage features are ephemeral, lower order drainages exhibiting a naturally v-shaped channel, most of these features received a score of 0.75. Several features (FE/7-1, 7-3, San Juan Creek, 7-13, FE/7-3, San Mateo Creek, and San Onofre Creek) exhibited a more complex micro- and macro-topographic landscape including meanders, bars, benches, and secondary channels, and, as such, these features received a score of 1.0. In the post-project condition, reductions in total functionality were exclusively a result of loss in total acreage.

C. SUBSTRATE CONDITION [CRAM]

A wide variety of substrate conditions occur within on-site drainage features in the pre-project condition. Many drainages are negatively impacted by disturbed conditions including non-native grasses and grazing, but all of the drainages scored a 0.50 or above in the pre-project condition. In the post-project condition, reductions in total functionality were exclusively a result of loss in total acreage.

IV. STRUCTURE - BIOTIC

A. VERTICAL BIOTIC STRUCTURE

Vertical structure was assessed in the field. The plant height classes are represented by dispersed and non-overlapping plant patches. Standing live and dead vegetation is considered in the assessment. The length of prostrate stems or shoots, and the horizontal extent of canopies is not considered. Only the vertical aspect of structure is considered in this metric. Pre-project drainage scores ranged from 0.25 to1.00 for this metric, as some drainages supported more height classes than others. Post-project reductions in vertical biotic structure functions were a result of loss in total acreage and proportionate losses in height classes, specifically the tree layer, as a result of project impacts.

B. INTERSPERSION AND ZONATION

Interspersion and zonation is measured as the distribution and abundance of horizontal plant zones. Drainages with riparian canopy scored the maximum of 1.0. No drainages scored less than 0.50 in the pre-project condition suggesting that two or more plant zones are apparent along at least one quarter of the active channel. In the post-project condition, reductions in total functionality were exclusively a result of loss in total acreage.

C. RATIO N : NN [SMR HGM]

This metric is based on vegetation data collected during the jurisdictional delineation. The 50/20 Rule (Environmental Laboratory 1987) was utilized to determine dominant vegetation. While the majority of the riparian reaches exhibit between 50 and 75% areal cover of native species, three assessment areas exhibited a predominance (>50%) of non-native vegetation. In the post-project condition, reductions in total functionality were exclusively a result of loss in total acreage. This metric was assessed in the field at the time of the vegetation mapping and jurisdictional delineation.

D. CANOPY [SMR HGM]

Canopy is a measure of the percent cover of tree layer. The drainages varied from having a tree layer greater than 50% to having no trees but a greater than 50% shrub layer in the pre-project condition. A minor negative impact is anticipated in the post-project condition as a result of proportional changes in the canopy as a result of project impacts. However, reductions in total functionality were primarily a result of loss in total acreage.

E. AGE DISTRIBUTION [SMR HGM]

Age Distribution assesses the extent of recruitment within the drainages. The age distribution varies widely across the drainages, but, in general, those areas that support trees also support saplings. Those assessment areas without tree cover generally support herb and shrub layers. Post-project reductions in age distribution were a result of direct loss in total acreage and proportionate losses in age classes, specifically the tree layer, as a result of project impacts. This metric was assessed in the field at the time of the vegetation mapping and jurisdictional delineation.

F. RIPARIAN VEGETATION CONDITION [LLFA]

Throughout the site, most of the drainages consist of primarily native vegetation with minor chronic disturbance by grazing, thereby earning a score of 0.75. Many drainages, which otherwise exhibited a lack of disturbance and a predominance of native vegetation, were prevented from earning a score of 1.00 by the presence of exotic or invasive species including tree tobacco (*Nicotiana glauca*), black mustard (*Brassica nigra*), pampas grass (*Cortaderia selloana*), rabbitsfoot grass (*Polypogon monspeliensis*), cardoon (*Cynara cardunculus*), and Italian thistle (*Carduus pycnocephalus*). In the post-project condition, reductions in functional units will result from a loss in total acreage. This metric was evaluated in the field.

G. RIPARIAN CORRIDOR CONTINUITY [LLFA]

In the post-project condition, fourteen riparian reach assessment areas exhibited a reach with less than five percent of the total area exhibiting gaps or breaks in vegetation as a result of cultural alteration, thereby earning a score of 1.00. A wide range in levels of cultural alteration is apparent across the project site. Much of the cultural alteration in the pre-project condition is a result of road crossings and agricultural activities. In the post-project condition, losses in functionality are primarily a result of losses in total acreage. Reductions in scores for this metric in the post-project condition were dependent on the proportion of gaps in vegetation within the project footprint and whether the drainage feature exists on both sides of the corridor. This metric was evaluated in the field and verified in the office using aerial photography.

H. INVASIVE, EXOTIC PLANT SPECIES [LLFA]

In the pre-project condition, several drainage features support invasive exotic species listed by Cal-IPC including the following: tree tobacco (*Nicotiana glauca*), black mustard (*Brassica nigra*), pampas grass (*Cortaderia selloana*), prickly lettuce (*Lactuca serriola*), tocalote (*Centaurea miletensis*), salt cedar (*Tamarix ramosissima*), ripgut brome (*Bromus diandrus*), wild oats (*Avena fatua*), bristly ox-tongue (*Picris echioides*), iceplant (*Carpobrotus* sp.), rabbitsfoot grass (*Polypogon monspeliensis*), cardoon (*Cynara cardunculus*), and Italian thistle (*Carduus pycnocephalus*). This metric was assessed in the field at the time of the vegetation mapping and jurisdictional delineation.

RESULTS

Table 31 summarizes the loss of functional capacity expected to occur with implementation of the proposed SOCTIIP project. Table 32 summarizes the functional capacity expected to be created through the proposed mitigation program.

Table 31: Post-Project Loss of Functional Capacity

Watershed	Direct Loss of Functional Capacity*	Indirect Loss of Functional Capacity*	Total Watershed Loss of functional Capacity
San Juan	195.6	48.2	243.8
San Mateo	169.1	42.9	212.01
Sum	**364.7**	**91.1**	**455.81**

Table 32: Gains in Functional Capacity as a Result of Mitigation

Feature	Post-Mitigation Score (21 Possible)	Acres	Acres* Points
UPPER CHIQUITA CANYON - Enhancement	5.25	3.00	15.75
UPPER CHIQUITA CANYON Creation	19.75	13.00	256.75
TESORO (NORTH)	15.70	3.97	62.33
Tesoro South - Enhancement	3.15	0.79	2.49
TESORO (SOUTH) Creation	17.35	11.13	193.11
CHIQUITA WOODS	20.50	0.5	10.25
EDB 2	15.55	1.0	15.55
GRAND TOTAL	97.25	33.40	556.24

Conclusions

Implementation of the proposed project will result in a loss of 455.81 functional units. The loss of function is largely a result of the loss in total acreage. In addition to the loss in acreage, stressors in the post-project condition primarily include the installation of 35 culverts within the project footprint. However, these culverts are essential to retaining a semblance of the existing flow patterns and connectivity across the project footprint. Without the installation of culverts additional downstream functions would have been lost. On-site loss of function will be mitigated through habitat establishment and restoration in four mitigation areas as outlined in the

Final Habitat Mitigation and Monitoring Plan. The proposed mitigation will result in a gain of 556.24 functional units, thereby ensuring a net gain in functionality in the post-project condition.

SOCTIIP Functional Assessment
Direct Impact

		Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals		
	Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points (22)	Acres	Acres* Points
SAN JUAN CREEK WATERSHED	Canada Chiquita	0.50	0.10	0.50	0.10	0.75	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.75	1.00	1.00	0.75	1.00	0.75	0.50	0.50	0.75	14	0.00	0.00
	FE/C/7-Wetland 1	0.50	0.25	0.50	0.10	0.75	0.75	0.25	0.50	1.00	0.25	0.75	0.50	1.00	0.75	0.50	1.00	0.50	0.50	0.75	0.50	1.00	13	0.00	0.0
	FE/C/7-1	0.50	0.10	0.75	0.75	0.75	0.75	0.50	1.00	0.50	0.75	0.75	0.75	0.50	1.00	0.50	0.75	1.00	0.75	0.50	0.25	1.00	14	0.42	5.9
	FE/C/7-2	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.25	0.10	0.75	1.00	1.00	16	0.00	0.00
	FE/C/7-4	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.25	0.10	0.75	1.00	1.00	16	0.00	0.00
	FE/7-1	0.10	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	1.00	0.50	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	18	0.51	9.1
	FE/7-2	1.00	0.50	1.00	0.50	1.00	1.00	0.75	1.00	0.75	0.75	0.75	0.75	0.50	0.50	0.75	1.00	0.75	0.10	0.75	1.00	1.00	16	0.21	3.4
	FE-1	0.75	0.50	0.75	0.50	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.50	1.00	0.75	1.00	1.00	1.00	0.75	1.00	1.00	17	0.69	11.6
	FE-2A	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.50	0.50	1.00	0.50	0.75	0.50	1.00	1.00	17	0.01	0.2
	FE-2B	1.00	1.00	1.00	1.00	0.75	1.00	0.75	1.00	0.75	0.75	0.75	0.75	1.00	0.50	0.75	0.75	0.50	0.10	0.75	1.00	1.00	17	0.06	1.0
	7-2	1.00	0.50	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	1.00	0.75	1.00	0.50	0.10	0.75	1.00	1.00	16	0.03	0.5
	7-3(A)	0.50	0.50	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	1.00	0.75	0.75	0.25	0.10	0.75	0.25	1.00	15	2.00	29.7
	7-3(B)	0.75	0.50	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.75	0.75	1.00	0.75	1.00	1.00	0.75	0.75	0.75	0.75	0.25	1.00	17	2.00	34.5
	7-4	0.50	0.10	0.50	0.25	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.50	1.00	0.75	1.00	0.75	0.75	0.75	0.75	15	0.00	0.00
	7-5	0.75	0.50	0.75	0.50	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75	17	0.09	1.55
	7-6	1.00	0.50	0.75	0.75	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75	18	0.14	2.49
	SAN JUAN CREEK	1.00	0.75	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75	0.75	0.75	19	0.30	5.8
	7-10	1.00	0.75	0.75	1.00	1.00	1.00	0.50	1.00	0.50	0.50	0.75	0.75	0.75	1.00	0.75	0.75	0.75	0.50	0.75	0.75	1.00	17	0.17	2.8
	7-11	1.00	0.75	0.75	1.00	1.00	1.00	0.50	0.75	0.50	0.75	0.75	0.75	0.75	0.25	0.50	0.75	1.00	0.10	0.75	0.50	1.00	15	0.03	0.5
	7-12	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	0.25	0.50	0.50	1.00	0.10	0.75	1.00	1.00	16	0.51	8.2
	7-13(A)	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	0.25	0.75	1.00	1.00	0.50	0.50	1.00	1.00	0.10	0.75	0.75	1.00	17	1.16	19.6
	7-13(B)	0.50	0.75	0.75	0.10	0.50	0.25	0.50	1.00	0.50	0.75	0.75	0.75	0.50	0.50	0.50	0.50	0.10	0.10	0.50	0.25	1.00	11	1.75	19.3
	FE/7-3(A)	0.75	0.50	0.75	0.10	0.50	0.25	0.50	0.75	0.50	0.75	0.75	0.75	0.50	0.75	0.50	1.00	0.75	1.00	0.50	0.10	1.00	13	1.55	20.1
	FE/7-3(B)	1.00	0.75	1.00	0.25	0.50	0.25	0.75	1.00	0.50	0.75	0.75	1.00	0.75	0.75	0.50	0.75	0.75	1.00	0.75	0.25	1.00	15	0.39	5.8
	FE/7-4	1.00	1.00	1.00	0.10	0.75	0.25	1.00	1.00	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	1.00	0.75	1.00	1.00	17	0.82	13.6
	SAN JUAN CREEK WATERSHED SUBTOTALS																						381	12.84	195.55

SOCTIIP Functional Assessment
Direct Impact

		Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals		
	Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points (22)	Acres	Acres* Points
San Mateo Creek Watershed	FE/7-6	1.00	1.00	1.00	0.25	0.75	0.50	0.75	1.00	0.50	0.50	0.75	0.75	1.00	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	**17**	**0.84**	**14.5**
	FE/7-7	1.00	1.00	1.00	0.75	0.75	0.50	1.00	1.00	0.75	0.75	0.50	0.75	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	**18**	**2.06**	**37.1**
	FE/7-8	1.00	1.00	1.00	1.00	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	**19**	**2.42**	**46.0**
	FE/7-9	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	1.00	**19**	**0.10**	**1.9**
	FE/7-10	1.00	0.75	0.75	0.50	0.75	0.10	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.75	0.50	0.75	1.00	0.75	0.75	0.10	1.00	**15**	**0.21**	**3.1**
	FE/7-11	1.00	0.50	0.75	0.10	0.50	0.10	1.00	0.75	0.75	0.75	0.75	0.75	0.50	0.25	0.50	0.75	0.25	1.00	0.75	0.10	0.75	**13**	**0.77**	**9.7**
	FE/7-12	1.00	1.00	0.75	0.10	0.50	0.10	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.25	0.75	0.50	0.25	0.10	0.75	0.25	0.75	**12**	**0.35**	**4.3**
	FE/7-13	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.25	0.10	0.75	1.00	0.75	**16**	**0.65**	**10.14**
	FE/7-14	1.00	1.00	0.75	0.50	0.75	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	0.25	0.75	0.75	0.25	0.50	0.75	0.10	0.75	**14**	**0.20**	**2.8**
	FE/7-15	1.00	1.00	1.00	0.75	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.25	0.75	1.00	1.00	0.10	0.75	0.75	1.00	**16**	**0.12**	**2.0**
	FE/7-16	1.00	1.00	0.75	0.75	0.75	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	0.75	0.75	1.00	1.00	0.25	0.75	0.75	0.75	**16**	**0.09**	**1.5**
	FE/7-17	1.00	1.00	0.75	0.75	1.00	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	0.50	0.75	1.00	0.25	0.25	0.75	0.50	1.00	**16**	**0.12**	**1.9**
	FE/7-18	1.00	1.00	0.75	0.75	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.75	0.75	1.00	0.50	0.75	0.75	0.10	0.75	**16**	**1.14**	**18.4**
	FE/7-19	1.00	1.00	0.75	0.75	1.00	1.00	0.75	0.75	0.50	0.75	0.75	0.75	0.75	0.25	0.75	1.00	0.50	0.10	0.75	0.10	1.00	**15**	**0.01**	**0.1**
	FE/7-20	1.00	1.00	0.75	0.75	1.00	1.00	0.75	0.75	0.50	0.75	0.75	0.75	0.75	0.50	0.75	1.00	0.50	0.10	0.75	0.10	1.00	**15**	**0.01**	**0.2**
	FE/7-21	0.75	0.50	0.50	0.25	0.50	0.50	1.00	0.75	0.50	0.75	0.75	0.75	0.75	0.50	0.75	0.75	0.75	0.50	0.75	0.10	1.00	**13**	**0.48**	**6.4**
	FE/7-22	0.75	0.50	0.50	0.25	0.50	0.10	1.00	0.75	0.50	0.75	0.75	0.75	0.75	0.50	1.00	0.75	0.50	0.10	0.75	0.10	0.75	**12**	**0.33**	**4.1**
	FE/7-23	1.00	0.75	0.50	0.25	0.50	0.10	0.25	0.10	0.50	0.75	0.75	0.75	0.50	0.25	0.75	0.75	0.25	0.10	0.50	0.10	1.00	**10**	**0.00**	**0.0**
	FE/7-24	1.00	0.75	0.75	0.25	0.75	0.10	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.50	0.75	0.75	0.25	0.10	0.50	0.75	1.00	**13**	**0.03**	**0.4**
	FE/7-25	1.00	0.75	1.00	0.25	0.75	0.10	0.75	1.00	0.50	0.75	0.75	0.75	0.50	0.50	0.75	0.75	0.25	0.10	0.75	1.00	1.00	**14**	**0.03**	**0.4**
	FE/7-SAN MATEO CREEK	1.00	0.75	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	**20**	**0.01**	**0.2**
	FE/7 SAN MATEO MARSH	1.00	0.75	0.75	0.75	0.75	1.00	0.75	0.75	1.00	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**19**	**0.00**	**0.00**
	FE/7 SAN MATEO MARSH EAST OF I-5	0.75	0.75	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**19**	**0.21**	**4.04**
	FE/7-SAN ONOFRE CREEK	0.75	0.75	0.75	0.25	0.75	0.50	0.75	0.75	1.00	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.75	1.00	**17**	**0.01**	**0.2**
	SAN MATEO CREEK WATERSHED SUBTOTALS																						**376**	**10.19**	**169.11**
	GRAND TOTAL																						**757**	**23.03**	**364.66**

SOCTIIP Functional Assessment
Indirect Impact

		Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals		
	Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points Lost	Acres	Acres* Points
SAN JUAN CREEK WATERSHED	Canada Chiquita	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0**	**0.24**	**0**
	FE/C/7-Wetland 1	-0.40	-0.15	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.80**	**5.26**	**4.21**
	FE/C/7-1	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	-0.50	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	**1.50**	**0.30**	**0.45**
	FE/C/7-2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**	**0.00**
	FE/C/7-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**	**0.00**
	FE/7-1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	-1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.50**	**2.79**	**4.19**
	FE/7-2	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	-0.75	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	**1.50**	**0.17**	**0.26**
	FE-1	0.00	0.00	0.00	-0.25	0.00	-0.25	0.00	-0.75	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.50**	**0.44**	**0.66**
	FE-2A	0.00	0.00	0.00	-0.90	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.15**	**0.12**	**0.14**
	FE-2B	0.00	0.00	0.00	-0.90	0.00	-0.25	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.40**	**0.03**	**0.04**
	7-2	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.25**	**0.03**	**0.01**
	7-3(A)	-0.25	-0.25	-0.65	-0.90	0.00	0.00	-0.25	-0.90	0.00	-0.25	-0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.15	0.00	**4.10**	**0.99**	**4.06**
	7-3(B)	-0.25	0.00	-0.25	-0.90	0.00	0.00	-0.50	-0.90	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**3.05**	**0.99**	**3.02**
	7-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.10**	**0.00**
	7-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.21**	**0.00**
	7-6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.22**	**0.00**
	SAN JUAN CREEK	0.00	0.00	-0.25	0.00	0.00	-0.25	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.75**	**27.30**	**20.48**
	7-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.04**	**0.00**
	7-11	-1.00	0.00	0.00	-0.25	0.00	0.00	0.00	-0.75	0.00	0.00	-0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.75**	**0.00**	**0.00**
	7-12	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	-0.75	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.75	0.00	**2.00**	**1.07**	**2.14**
	7-13(A)	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	-0.75	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.50	0.00	**1.75**	**1.96**	**3.43**
	7-13(B)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.75**	**1.31**	**0.98**
	FE/7-3(A)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.25**	**2.11**	**0.53**
	FE/7-3(B)	-0.90	-0.65	-0.90	-0.15	0.00	0.00	0.00	-1.00	0.00	-0.65	-0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**5.00**	**0.53**	**2.64**
	FE/7-4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.75	0.00	**1.25**	**0.76**	**0.95**
	SAN JUAN CREEK WATERSHED SUBTOTALS																						**31.25**	**46.73**	**48.17**

SOCTIIP Functional Assessment
Indirect Impact

		Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals		
	Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points Lost	Acres	Acres* Points
San Mateo Creek Watershed	FE/7-6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.90	0.00	**1.65**	**1.26**	**2.1**
	FE/7-7	0.00	0.00	-0.25	-0.25	0.00	0.00	0.00	-0.75	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.50	0.00	**1.75**	**1.72**	**3.0**
	FE/7-8	0.00	0.00	0.00	0.00	0.00	-0.25	0.00	-0.90	0.00	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.65**	**0.04**	**0.1**
	FE/7-9	0.00	0.00	0.00	0.00	0.00	-0.25	0.00	-0.90	0.00	0.00	-0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.80**	**0.03**	**0.1**
	FE/7-10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.63**	**0.0**
	FE/7-11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.65**	**0.56**	**0.4**
	FE/7-12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.90	0.00	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.15	0.00	**1.55**	**1.59**	**2.5**
	FE/7-13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.01**	**0.0**
	FE/7-14	0.00	0.00	0.00	-0.25	0.00	-0.25	0.00	-0.90	0.00	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.90**	**0.15**	**0.3**
	FE/7-15	0.00	0.00	0.00	-0.25	0.00	-0.25	0.00	-0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.40**	**0.49**	**0.7**
	FE/7-16	0.00	0.00	0.00	-0.25	0.00	-0.90	0.00	-0.90	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.30**	**0.09**	**0.2**
	FE/7-17	0.00	0.00	0.00	-0.25	0.00	-0.90	0.00	-0.90	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.30**	**0.08**	**0.2**
	FE/7-18	0.00	0.00	0.00	-0.25	0.00	-0.90	0.00	-0.90	0.00	0.00	-0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**2.70**	**0.24**	**0.6**
	FE/7-19	0.00	0.00	0.00	-0.25	0.00	-0.90	0.00	-0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.80**	**0.01**	**0.0**
	FE/7-20	0.00	0.00	0.00	-0.25	0.00	-0.90	0.00	-0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.80**	**0.01**	**0.0**
	FE/7-21	0.00	0.00	0.00	-0.25	0.00	-0.40	0.00	-0.50	0.00	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.40**	**0.70**	**1.0**
	FE/7-22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	0.50	0.00	0.00	0.25	0.00	0.00	0.00	0.00	**0.25**	**0.58**	**0.1**
	FE/7-23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.01**	**0.0**
	FE/7-24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.90**	**0.01**	**0.0**
	FE/7-25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-0.90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.90**	**0.02**	**0.0**
	FE/7-SAN MATEO CREEK	-0.25	0.00	-0.25	-0.25	0.00	0.00	-0.25	-0.25	0.00	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**1.50**	**20.26**	**30.4**
	FE/7 SAN MATEO MARSH	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**16.02**	**0.0**
	FE/7 SAN MATEO MARSH EAST OF I-5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**8.36**	**0.0**
	FE/7-SAN ONOFRE CREEK	0.00	-0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.50**	**2.48**	**1.2**
	SAN MATEO CREEK WATERSHED SUBTOTALS																						**28.70**	**55.35**	**42.87**
	GRAND TOTAL																						**59.95**	**102.08**	**91.04**

SOCTIIP Functional Assessment
Pre-Project

		Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals		
	Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points (22)	Acres	Acres* Points
	Canada Chiquita	0.50	0.10	0.50	0.10	0.75	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.75	1.00	1.00	0.75	1.00	0.75	0.50	0.50	0.75	**14.20**	**0.00**	**0.00**
	FE/C/7-Wetland 1	0.50	0.25	0.50	0.10	0.75	0.75	0.25	0.50	1.00	0.25	0.75	0.50	1.00	0.75	0.50	1.00	0.50	0.50	0.75	0.50	1.00	**12.60**		**0.00**
	FE/C/7-1	0.50	0.10	0.75	0.75	0.75	0.75	0.50	1.00	0.50	0.75	0.75	0.75	0.50	1.00	0.50	0.75	1.00	0.75	0.50	0.25	1.00	**14.10**	**0.00**	**0.00**
	FE/C/7-2	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.25	0.10	0.75	1.00	1.00	**16.35**	**0.00**	**0.00**
	FE/C/7-4	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.25	0.10	0.75	1.00	1.00	**16.35**	**0.00**	**0.00**
	FE/7-1	0.10	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	1.00	0.50	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	**17.85**	**0.00**	**0.00**
	FE/7-2	1.00	0.50	1.00	0.50	1.00	1.00	0.75	1.00	0.75	0.75	0.75	0.75	0.50	0.50	0.75	1.00	0.75	0.10	0.75	1.00	1.00	**16.10**	**0.00**	**0.00**
	FE-1	0.75	0.50	0.75	0.50	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.50	1.00	0.75	1.00	1.00	1.00	0.75	1.00	1.00	**16.75**	**0.00**	**0.00**
	FE-2A	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.50	0.50	1.00	0.50	0.75	0.50	1.00	1.00	**17.00**	**0.00**	**0.00**
	FE-2B	1.00	1.00	1.00	1.00	0.75	1.00	0.75	1.00	0.75	0.75	0.75	0.75	1.00	0.50	0.75	0.75	0.50	0.10	0.75	1.00	1.00	**16.85**	**0.00**	**0.00**
	7-2	1.00	0.50	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	1.00	0.75	1.00	0.50	0.10	0.75	1.00	1.00	**16.35**	**0.00**	**0.00**
	7-3(A)	0.50	0.50	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	1.00	0.75	0.75	0.25	0.10	0.75	0.25	1.00	**14.85**	**0.00**	**0.00**
	7-3(B)	0.75	0.50	1.00	1.00	1.00	1.00	1.00	1.00	0.50	0.75	0.75	1.00	0.75	1.00	1.00	0.75	0.75	0.75	0.75	0.25	1.00	**17.25**	**0.00**	**0.00**
	7-4	0.50	0.10	0.50	0.25	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.50	1.00	0.75	1.00	0.75	0.75	0.75	0.75	**14.60**	**0.00**	**0.00**
	7-5	0.75	0.50	0.75	0.50	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75	**17.25**	**0.00**	**0.00**
	7-6	1.00	0.50	0.75	0.75	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75	**17.75**	**0.00**	**0.00**
	SAN JUAN CREEK	1.00	0.75	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75	0.75	0.75	**19.25**	**0.00**	**0.00**
	7-10	1.00	0.75	0.75	1.00	1.00	1.00	0.50	1.00	0.50	0.50	0.75	0.75	0.75	1.00	0.75	0.75	0.75	0.50	0.75	0.75	1.00	**16.50**	**0.00**	**0.00**
	7-11	1.00	0.75	0.75	1.00	1.00	1.00	0.50	0.75	0.50	0.75	0.75	0.75	0.75	0.25	0.50	0.75	1.00	0.10	0.75	0.50	1.00	**15.10**	**0.00**	**0.00**
	7-12	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	0.25	0.50	0.50	1.00	0.10	0.75	1.00	1.00	**16.10**	**0.00**	**0.00**
	7-13(A)	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	0.25	0.75	1.00	1.00	0.50	0.50	1.00	1.00	0.10	0.75	0.75	1.00	**16.85**	**0.00**	**0.00**
	7-13(B)	0.50	0.75	0.75	0.10	0.50	0.25	0.50	1.00	0.50	0.75	0.75	0.75	0.50	0.50	0.50	0.50	0.10	0.10	0.50	0.25	1.00	**11.05**	**0.00**	**0.00**
	FE/7-3(A)	0.75	0.50	0.75	0.10	0.50	0.25	0.50	0.75	0.50	0.75	0.75	0.75	0.50	0.75	0.50	1.00	0.75	1.00	0.50	0.10	1.00	**12.95**	**0.00**	**0.00**
	FE/7-3(B)	1.00	0.75	1.00	0.25	0.50	0.25	0.75	1.00	0.50	0.75	0.75	1.00	0.75	0.75	0.50	0.75	0.75	1.00	0.75	0.25	1.00	**15.00**	**0.00**	**0.00**
	FE/7-4	1.00	1.00	1.00	0.10	0.75	0.25	1.00	1.00	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	1.00	0.75	1.00	1.00	**16.60**	**0.00**	**0.00**
	SAN JUAN CREEK WATERSHED SUBTOTALS	**19.60**	**16.20**	**19.75**	**16.90**	**20.25**	**20.50**	**17.00**	**23.00**	**13.75**	**16.50**	**18.50**	**19.00**	**18.00**	**17.50**	**17.25**	**20.25**	**17.10**	**13.00**	**17.00**	**17.35**	**23.00**	**381.40**	**0.00**	**0.00**
	FE/7-6	1.00	1.00	1.00	0.25	0.75	0.50	0.75	1.00	0.50	0.50	0.75	0.75	1.00	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	**17.25**	**0.00**	**0.00**
	FE/7-7	1.00	1.00	1.00	0.75	0.75	0.50	1.00	1.00	0.75	0.75	0.50	0.75	0.75	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	**18.00**	**0.00**	**0.00**
	FE/7-8	1.00	1.00	1.00	1.00	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	**19.00**	**0.00**	**0.00**
	FE/7-9	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	1.00	**19.00**	**0.00**	**0.00**
	FE/7-10	1.00	0.75	0.75	0.50	0.75	0.10	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.75	0.50	0.75	1.00	0.75	0.75	0.10	1.00	**14.70**	**0.00**	**0.00**
	FE/7-11	1.00	0.50	0.75	0.10	0.50	0.10	1.00	0.75	0.75	0.75	0.75	0.75	0.50	0.25	0.50	0.75	0.25	1.00	0.75	0.10	0.75	**12.55**	**0.00**	**0.00**
	FE/7-12	1.00	1.00	0.75	0.10	0.50	0.10	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.25	0.75	0.50	0.25	0.10	0.75	0.25	0.75	**12.30**	**0.00**	**0.00**
	FE/7-13	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.25	0.10	0.75	1.00	0.75	**15.60**	**0.00**	**0.00**
	FE/7-14	1.00	1.00	0.75	0.50	0.75	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	0.25	0.75	0.75	0.25	0.50	0.75	0.10	0.75	**14.10**	**0.00**	**0.00**
	FE/7-15	1.00	1.00	1.00	0.75	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.25	0.75	1.00	1.00	0.10	0.75	0.75	1.00	**16.35**	**0.00**	**0.00**
	FE/7-16	1.00	1.00	0.75	0.75	0.75	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	0.75	0.75	1.00	1.00	0.25	0.75	0.75	0.75	**16.25**	**0.00**	**0.00**
	FE/7-17	1.00	1.00	0.75	0.75	1.00	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	0.50	0.75	1.00	0.25	0.25	0.75	0.50	1.00	**15.50**	**0.00**	**0.00**
	FE/7-18	1.00	1.00	0.75	0.75	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.75	0.75	1.00	0.50	0.75	0.75	0.10	0.75	**16.10**	**0.00**	**0.00**

SOCTIIP Functional Assessment
Pre-Project

		Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals		
	Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points (22)	Acres	Acres* Points
	FE/7-19	1.00	1.00	0.75	0.75	1.00	1.00	0.75	0.75	0.50	0.75	0.75	0.75	0.75	0.25	0.75	1.00	0.50	0.10	0.75	0.10	1.00	**14.95**	**0.00**	**0.00**
	FE/7-20	1.00	1.00	0.75	0.75	1.00	1.00	0.75	0.75	0.50	0.75	0.75	0.75	0.75	0.50	0.75	1.00	0.50	0.10	0.75	0.10	1.00	**15.20**	**0.00**	**0.00**
	FE/7-21	0.75	0.50	0.50	0.25	0.50	0.50	1.00	0.75	0.50	0.75	0.75	0.75	0.75	0.50	0.75	0.75	0.75	0.50	0.75	0.10	1.00	**13.35**	**0.00**	**0.00**
	FE/7-22	0.75	0.50	0.50	0.25	0.50	0.10	1.00	0.75	0.50	0.75	0.75	0.75	0.75	0.50	1.00	0.75	0.50	0.10	0.75	0.10	0.75	**12.30**	**0.00**	**0.00**
	FE/7-23	1.00	0.75	0.50	0.25	0.50	0.10	0.25	0.10	0.50	0.75	0.75	0.75	0.50	0.25	0.75	0.75	0.25	0.10	0.50	0.10	1.00	**10.40**	**0.02**	**0.2**
	FE/7-24	1.00	0.75	0.75	0.25	0.75	0.10	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.50	0.75	0.75	0.25	0.10	0.50	0.75	1.00	**13.45**	**0.00**	**0.00**
	FE/7-25	1.00	0.75	1.00	0.25	0.75	0.10	0.75	1.00	0.50	0.75	0.75	0.75	0.50	0.50	0.75	0.75	0.25	0.10	0.75	1.00	1.00	**13.95**	**0.00**	**0.00**
	FE/7-SAN MATEO CREEK	1.00	0.75	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	**20.00**	**0.00**	**0.00**
	FE/7 SAN MATEO MARSH	1.00	0.75	0.75	0.75	0.75	1.00	0.75	0.75	1.00	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**19.00**	**0.00**	**0.00**
	FE/7 SAN MATEO MARSH EAST OF I-5	0.75	0.75	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**19.25**	**0.00**	**0.00**
	FE/7-SAN ONOFRE CREEK	0.75	0.75	0.75	0.25	0.75	0.50	0.75	0.75	1.00	0.50	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	0.75	1.00	**17.00**	**0.00**	**0.00**
	SAN MATEO CREEK WATERSHED SUBTOTALS	**23.00**	**20.50**	**18.75**	**13.70**	**18.25**	**15.70**	**19.75**	**21.35**	**14.50**	**17.25**	**17.75**	**19.00**	**18.25**	**15.25**	**19.25**	**20.75**	**15.75**	**12.90**	**18.00**	**13.65**	**22.25**	**375.55**	**0.00**	**0.00**
	GRAND TOTAL	**42.60**	**36.70**	**38.50**	**30.60**	**38.50**	**36.20**	**36.75**	**44.35**	**28.25**	**33.75**	**36.25**	**38.00**	**36.25**	**32.75**	**36.50**	**41.00**	**32.85**	**25.90**	**35.00**	**31.00**	**45.25**	**756.95**	**0.00**	**0.00**

SOCTIIP Functional Assessment
Post-Project

	Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals			
Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points (21)	Acres	Acres* Points	Normalized Score
Canada Chiquita	0.50	0.10	0.50	0.10	0.75	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.75	1.00	1.00	0.75	1.00	0.75	0.50	0.50	0.75	14.20			
FE/C/7-Wetland 1	0.50	0.25	0.50	0.10	0.75	0.75	0.25	0.50	1.00	0.25	0.75	0.50	1.00	0.75	0.50	1.00	0.50	0.50	0.75	0.50	1.00	12.60			
FE/C/7-1	0.50	0.10	0.75	0.50	0.75	0.75	0.50	0.50	0.50	0.75	0.75	0.75	0.50	0.50	0.50		0.75		0.50	0.25		**10.10**	**0.31**	**3.1**	**0.48**
FE/C/7-2	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.25	0.10	0.75	1.00	1.00	**16.35**	**0.00**	**0.00**	**0.78**
FE/C/7-4	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.25	0.10	0.75	1.00	1.00	**16.35**	**0.00**	**0.00**	**0.78**
FE/7-1	0.10	1.00	0.75	1.00	1.00	1.00	0.75	0.50	0.50	0.75	0.75	1.00	0.50	1.00	1.00		1.00		0.75	1.00		**14.35**	**2.76**	**39.6**	**0.68**
FE/7-2	0.75	0.50	1.00	0.50	1.00	1.00	0.75	0.25	0.75	0.75	0.50	0.75	0.50	0.50	0.75		0.50		0.75	1.00		**12.50**	**0.36**	**4.5**	**0.60**
FE-1	0.75	0.50	0.75	0.25	0.75	0.75	0.75	0.25	0.50	0.75	0.50	0.75	0.50	1.00	0.75		1.00		0.75	1.00		**12.25**	**1.07**	**13.1**	**0.58**
FE-2A	1.00	1.00	1.00	0.10	1.00	1.00	0.75	0.75	0.50	0.75	0.75	0.75	0.75	0.50	0.50		0.50		0.50	1.00		**13.10**	**1.47**	**19.3**	**0.62**
FE-2B	1.00	1.00	1.00	0.10	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	1.00	0.50	0.75		0.50		0.75	1.00		**13.60**	**0.06**	**0.8**	**0.65**
7-2	1.00	0.50	0.75	0.75	1.00	1.00	0.75	1.00	0.50	0.50	0.75	0.75	0.75	1.00	0.75		0.50		0.75	1.00		**14.00**	**0.03**	**0.4**	**0.67**
7-3(A)	0.25	0.25	0.10	0.10	1.00	1.00	0.50	0.10	0.50	0.50	0.25	0.75	0.75	1.00	0.75		0.25		0.75	0.10		**8.90**	**2.02**	**18.0**	**0.42**
7-3(B)	0.50	0.50	0.75	0.10	1.00	1.00	0.50	0.10	0.50	0.50	0.75	1.00	0.75	1.00	1.00		0.75		0.75	0.25		**11.70**	**0.02**	**0.2**	**0.56**
7-4	0.50	0.10	0.50	0.25	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.50	1.00	0.75	1.00	0.75	0.75	0.75	0.75	**14.60**	**0.00**	**0.00**	**0.70**
7-5	0.75	0.50	0.75	0.50	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75	**17.25**	**0.00**	**0.00**	**0.82**
7-6	1.00	0.50	0.75	0.75	0.75	1.00	0.75	1.00	0.50	0.75	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.75	**17.75**	**0.00**	**0.00**	**0.85**
SAN JUAN CREEK	1.00	0.75	0.75	1.00	0.75	0.75	0.75	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.75		0.75	0.75		**15.75**	**69.76**	**1098.7**	**0.75**
7-10	1.00	0.75	0.75	1.00	1.00	1.00	0.50	1.00	0.50	0.50	0.75	0.75	0.75	1.00	0.75		0.75		0.75	0.75		**14.25**	**0.11**	**1.6**	**0.68**
7-11	0.00	0.75	0.75	0.75	1.00	1.00	0.50	0.00	0.50	0.75	0.00	0.75	0.75	0.25	0.50		1.00		0.75	0.50		**10.50**	**0.00**	**0.0**	**0.50**
7-12	1.00	1.00	1.00	0.75	1.00	1.00	0.75	0.25	0.50	0.50	0.50	0.75	0.75	0.25	0.50		1.00		0.75	0.25		**12.50**	**1.43**	**17.9**	**0.60**
7-13(A)	1.00	1.00	1.00	0.75	1.00	1.00	0.75	0.25	0.50	0.25	0.50	1.00	1.00	0.50	0.50		1.00		0.75	0.25		**13.00**	**2.51**	**32.6**	**0.62**
7-13(B)	0.50	0.75	0.75	0.10	0.50	0.25	0.50	0.25	0.50	0.75	0.75	0.75	0.50	0.50	0.50		0.10		0.50	0.25		**8.70**	**5.84**	**50.8**	**0.41**
FE/7-3(A)	0.75	0.50	0.75	0.10	0.50	0.25	0.50	0.50	0.50	0.75	0.75	0.75	0.50	0.75	0.50		0.75		0.50	0.10		**9.70**	**8.94**	**86.7**	**0.46**
FE/7-3(B)	0.10	0.10	0.10	0.10	0.50	0.25	0.75	0.00	0.50	0.10	0.00	1.00	0.75	0.75	0.50		0.75		0.75	0.25		**7.25**	**0.10**	**0.7**	**0.35**
FE/7-4	1.00	1.00	1.00	0.10	0.75	0.25	1.00	0.50	0.75	0.75	0.75	0.75	0.75	0.75	0.75		0.75		0.75	0.25		**12.60**	**1.65**	**20.8**	**0.60**
SAN JUAN CREEK WATERSHED SUBTOTAL	**15.85**	**14.20**	**16.60**	**11.45**	**19.00**	**19.25**	**14.25**	**12.95**	**12.50**	**14.50**	**14.75**	**17.25**	**16.50**	**15.50**	**16.00**	**5.25**	**15.10**	**3.45**	**15.50**	**14.70**	**5.25**	**289.80**	**96.69**	**1387.37**	**13.20**
FE/7-6	1.00	1.00	1.00	0.25	0.75	0.50	0.75	0.25	0.50	0.50	0.75	0.75	1.00	1.00	1.00		1.00		0.75	0.10		**12.85**	**1.33**	**17.1**	**0.61**
FE/7-7	1.00	1.00	0.75	0.50	0.75	0.50	1.00	0.25	0.75	0.75	0.50	0.75	0.75	1.00	1.00		1.00		0.75	0.50		**13.50**	**9.49**	**128.1**	**0.64**
FE/7-8	1.00	1.00	1.00	1.00	0.75	0.75	0.75	0.10	0.50	0.75	0.25	0.75	1.00	1.00	1.00		1.00		0.75	1.00		**14.35**	**0.49**	**7.0**	**0.68**
FE/7-8B	1.00	1.00	1.00	1.00	1.00	0.75	0.75	0.10	0.50	0.75	0.10	0.75	1.00	1.00	0.75		1.00		0.75	1.00		**14.20**	**0.08**	**1.1**	**0.68**
FE/7-10	1.00	0.75	0.75	0.50	0.75	0.10	1.00	1.00	0.50	0.75	0.75	0.75	0.50	0.75	0.50		1.00		0.75	0.10		**12.20**	**2.69**	**32.8**	**0.58**
FE/7-11	1.00	0.50	0.75	0.10	0.50	0.10	1.00	0.10	0.75	0.75	0.75	0.75	0.50	0.25	0.50		0.25		0.75	0.10		**9.40**	**0.58**	**5.5**	**0.45**
FE/7-12	1.00	1.00	0.75	0.10	0.50	0.10	1.00	0.10	0.50	0.75	0.25	0.75	0.50	0.25	0.75		0.25		0.75	0.10		**9.40**	**2.06**	**19.4**	**0.45**
FE/7-13	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	0.75	0.75	0.75	0.75	0.50	0.50	0.75	0.25	0.10	0.75	1.00	0.75	**15.60**	**0.00**	**0.00**	**0.74**
FE/7-14	1.00	1.00	0.75	0.25	0.75	0.75	0.75	0.10	0.50	0.50	0.25	0.75	0.75	0.25	0.75		0.25		0.75	0.10		**10.20**	**0.18**	**1.8**	**0.49**
FE/7-15	1.00	1.00	1.00	0.50	0.75	0.75	0.75	0.10	0.50	0.75	0.75	0.75	0.75	0.25	0.75		1.00		0.75	0.75		**12.85**	**0.77**	**9.9**	**0.61**
FE/7-16	1.00	1.00	0.75	0.50	0.75	0.10	0.75	0.10	0.50	0.50	0.50	0.75	0.75	0.75	0.75		1.00		0.75	0.75		**11.95**	**0.14**	**1.7**	**0.57**
FE/7-17	1.00	1.00	0.75	0.50	1.00	0.10	0.75	0.10	0.50	0.50	0.50	0.75	0.75	0.50	0.75		0.25		0.75	0.50		**10.95**	**0.09**	**1.0**	**0.52**
FE/7-18	1.00	1.00	0.75	0.50	1.00	0.10	0.75	0.10	0.50	0.75	0.10	0.75	0.75	0.75	0.75		0.50		0.75	0.10		**10.90**	**0.58**	**6.3**	**0.52**
FE/7-19	1.00	1.00	0.75	0.50	1.00	0.10	0.75	0.10	0.50	0.75	0.75	0.75	0.75	0.25	0.75		0.50		0.75	0.10		**11.05**	**0.02**	**0.2**	**0.53**
FE/7-20	1.00	1.00	0.75	0.50	1.00	0.10	0.75	0.10	0.50	0.75	0.75	0.75	0.75	0.50	0.75		0.50		0.75	0.10		**11.30**	**0.02**	**0.2**	**0.54**
FE/7-21	0.75	0.50	0.50	0.50	0.50	0.10	1.00	0.25	0.50	0.75	0.50	0.75	0.75	0.50	0.75		0.75		0.75	0.10		**10.20**	**1.20**	**12.2**	**0.49**
FE/7-22	0.75	0.50	0.50	0.25	0.50	0.10	1.00	0.25	0.50	0.75	0.75	0.75	0.75	1.00	1.00		0.75		0.75	0.10		**10.95**	**1.05**	**11.5**	**0.52**

SOCTIIP Functional Assessment
Post-Project

	Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals			
Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points (21)	Acres	Acres* Points	Normalized Score
FE/7-23	1.00	0.75	0.50	0.25	0.50	0.10	0.25	0.10	0.50	0.75	0.75	0.75	0.50	0.25	0.75		0.25		0.50	0.10		**8.55**	**0.02**	**0.2**	**0.41**
FE/7-24	1.00	0.75	0.75	0.25	0.75	0.10	1.00	0.10	0.50	0.75	0.75	0.75	0.50	0.50	0.75		0.25		0.50	0.75		**10.70**	**0.01**	**0.1**	**0.51**
FE/7-25	1.00	0.75	1.00	0.25	0.75	0.10	0.75	0.10	0.50	0.75	0.75	0.75	0.50	0.50	0.75		0.25		0.75	1.00		**11.20**	**0.02**	**0.2**	**0.53**
FE/7-SAN MATEO CREEK	0.75	0.75	0.75	0.75	0.75	1.00	0.75	0.75	1.00	0.75	0.75	1.00	1.00	1.00	1.00		1.00		0.75	1.00		**15.50**	**47.70**	**739.4**	**0.74**
FE/7 SAN MATEO MARSH	1.00	0.75	0.75	0.75	0.75	1.00	0.75	0.75	1.00	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**19.00**	**0.00**	**0.00**	**0.90**
FE/7 SAN MATEO MARSH EAST OF I-5	0.75	0.75	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**19.25**	**0.00**	**0.00**	**0.92**
FE/7-SAN ONOFRE CREEK	0.75	0.25	0.75	0.25	0.75	0.50	0.75	0.75	1.00	0.50	0.75	1.00	1.00	1.00	1.00		1.00		0.75	0.75		**13.50**	**5.29**	**71.4**	**0.64**
SAN MATEO CREEK WATERSHED SUBTOTAL	**39.70**	**35.30**	**35.95**	**23.35**	**38.50**	**29.55**	**35.50**	**21.10**	**28.25**	**32.35**	**29.70**	**38.00**	**36.25**	**32.75**	**36.50**	**8.00**	**32.60**	**5.55**	**35.00**	**27.30**	**8.00**	**609.20**	**172.25**	**2476.05**	**28.41**
GRAND TOTAL	**55.55**	**49.50**	**52.55**	**34.80**	**57.50**	**48.80**	**49.75**	**34.05**	**40.75**	**46.85**	**44.45**	**55.25**	**52.75**	**48.25**	**52.50**	**13.25**	**47.70**	**9.00**	**50.50**	**42.00**	**13.25**	**899.00**	**268.94**	**3863.42**	**41.61**

SOCTIIP FUNCTIONAL ASSESSMENT
Pre-Project - Depressional Wetlands

	Buffer Functions		Hydrologic Functions			Biogeochemical Functions		Habitat Functions		Totals			
Feature	Buffer Width	Buffer Condition	Source	Hydro period	Surface Water Persistence	LULC	Substrate	Native	Wetland Vegetation Condition	Total Points (9)	Acres	Acres* Points	Normalized Score
FE/7-VM16	1.00	0.75	0.75	1.00	1.00	1.00	1.00	1.00	0.25	7.75	0.05	**0.39**	**0.86**
FE/7-VM17	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.75	0.25	7.75	0.05	**0.39**	**0.86**
FE/7-VM18	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.50	0.25	7.50	0.04	**0.30**	**0.83**
FE/7-VM19	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.50	0.25	7.50	0.06	**0.45**	**0.83**
FE/7-VM20	0.75	0.50	0.75	1.00	0.75	0.25	1.00	1.00	1.00	7.00	0.05	**0.35**	**0.78**
FE/7 VP3	0.75	0.50	0.75	1.00	1.00	0.25	1.00	1.00	1.00	7.25	0.18	**1.31**	**0.81**
SUM										44.75	0.43	**3.18**	

SOCTIIP FUNCTIONAL ASSESSMENT
Post-Project Direct Impacts - Depressional Wetlands

	Buffer Functions		Hydrologic Functions			Biogeochemical Functions		Habitat Functions		Totals		
Feature	Buffer Width	Buffer Condition	Source	Hydro period	Surface Water Persistence	LULC	Substrate	Native	Wetland Vegetation Condition	Total Points (9)	Acres	Acres* Points
FE/7-VM18	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.50	0.25	**7.50**	**0.04**	**0.30**
FE/7-VM19	1.00	0.75	1.00	1.00	1.00	1.00	1.00	0.50	0.25	**7.50**	**0.06**	**0.45**
FE/7-VM20	0.75	0.50	0.75	1.00	0.75	0.25	1.00	1.00	1.00	**7.00**	**0.05**	**0.35**
FE/7 VP3	0.75	0.50	0.75	1.00	1.00	0.25	1.00	1.00	1.00	**7.25**	**0.18**	**1.31**
									Total	**29.25**	**0.33**	**2.41**

SOCTIIP FUNCTIONAL ASSESSMENT
Post-Project Indirect Impacts - Depressional Wetlands

	Buffer Functions		Hydrologic Functions			Biogeochemical Functions		Habitat Functions		Totals		
Feature	Buffer Width	Buffer Condition	Source	Hydro period	Surface Water Persistence	LULC	Substrate	Native	Wetland Vegetation Condition	Total Points (9)	Acres	Acres* Points
FE/7-VM16	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.25**	**0.05**	**0.01**
FE/7-VM17	-0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	**0.25**	**0.05**	**0.01**
									Total	**0.50**	**0.10**	**0.03**

SOCTIIP FUNCTIONAL ASSESSMENT
Pre-Project - Mitigation Areas

	Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals		
Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points (21)	Acres	Acres* Points
UPPER CHIQUITA CANYON	1.00	1.00	0.75	1.00	1.00	1.00	0.75	1.00	0.50	1.00	1.00	0.50	0.50	0.25	0.50	0.50	0.50	0.25	0.50	0.50	0.50	**14.50**	**0.00**	**0.00**
TESORO (NORTH)	0.50	0.25	0.50	0.10	0.75	0.75	0.25	0.50	1.00	0.25	0.75	0.50	1.00	0.75	0.50	1.00	0.50	0.50	0.75	0.50	1.00	**12.60**	**0.00**	**0.00**
TESORO (SOUTH)	0.50	0.10	0.50	0.10	0.75	0.75	1.00	0.75	0.75	0.50	0.75	0.75	0.75	1.00	1.00	0.75	1.00	0.75	0.50	0.50	0.75	**14.20**	**0.00**	**0.00**
GRAND TOTAL	**2.00**	**1.35**	**1.75**	**1.20**	**2.50**	**2.50**	**2.00**	**2.25**	**2.25**	**1.75**	**2.50**	**1.75**	**2.25**	**2.00**	**2.00**	**2.25**	**2.00**	**1.50**	**1.75**	**1.50**	**2.25**	**41.30**	**0.00**	**0.00**

SOCTIIP FUNCTIONAL ASSESSMENT
Increase in Function - Mitigation Areas

	Buffer Functions				Hydrologic Functions						Biogeochemical Functions			Habitat Functions								Totals		
Feature	Percent Buffer	Buffer Width	Buffer Condition	LULC	Source	Hydro period	Floodplain Connection	Altered Hydraulic Conveyance	Surface Water Persistence	Flood prone Area	Sediment Regime	Topographic Complexity	Substrate	Vertical Structure	Zonation	Native	Canopy	Age	Riparian Condition	Riparian Corridor	Invasive Plants	Total Points (21)	Acres	Acres* Points
UPPER CHIQUITA CANYON (Enhancement)	0.00	0.00	0.25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.50	0.75	0.50	0.50	0.50	0.75	0.50	0.50	0.50	**5.25**	**3.00**	**15.75**
UPPER CHIQUITA CANYON	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	0.50	1.00	1.00	0.50	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**19.75**	**13.00**	**256.75**
TESORO (NORTH)	1.00	0.10	1.00	0.10	0.75	0.75	0.25	0.50	1.00	0.25	0.75	0.50	1.00	1.00	1.00	1.00	0.75	1.00	1.00	1.00	1.00	**15.70**	**3.97**	**62.33**
Tesoro South - Enhancement	0.00	0.00	0.50	0.65	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.25	0.00	0.25	0.50	0.50	0.25	**3.15**	**0.79**	**2.49**
TESORO (SOUTH) Creation	0.50	0.10	1.00	0.75	0.75	0.75	1.00	0.75	0.75	0.50	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**17.35**	**11.13**	**193.11**
EDB 1	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	1.00	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	**20.50**	**0.50**	**10.25**
EDB 2	0.10	0.10	0.25	0.10	0.50	0.50	1.00	1.00	0.75	1.00	0.75	0.75	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.75	1.00	**15.55**	**1.00**	**15.55**
GRAND TOTAL	**3.50**	**2.20**	**4.50**	**3.50**	**3.50**	**3.50**	**3.00**	**3.25**	**3.00**	**2.75**	**3.50**	**2.50**	**4.25**	**4.00**	**4.00**	**4.25**	**3.75**	**4.25**	**4.50**	**4.50**	**4.25**	**76.45**	**33.39**	**556.22**

	Watershed	Direct Loss of Fus*	Indirect Loss of Fus*	Watershed Loss (FUs)
San Juan Creek Watershed	San Juan	195.6	48.2	243.8
San Mateo Creek Watershed	San Mateo	169.1	42.9	212.01
Project Totals	**0**	**364.7**	**91.1**	**455.81**

* Includes Seasonal Pools