

## 6.12 BIOLOGICAL RESOURCES

### 6.12.1 INTRODUCTION

This section addresses biological resources that could be affected by implementation of the project. The information presented is based on multiple field surveys and research of existing documentation.

Reconnaissance-level biological surveys of the project site were conducted by EDAW biologists on March 10, 17, October 30, 2005, and June 2006. The purpose of the EDAW field surveys was to characterize the existing biological resources and to evaluate the potential for sensitive biological resources to occur on the project site. A jurisdictional wetland delineation of the project site, conducted by Foothill Associates, is based on 2004, 2005, and 2006 field surveys.

The research conducted for this section included review of environmental documents that discuss biological resources in the region, including the USFWS Draft Recovery Plan for the Giant Garter Snake (USFWS 1999), the *Natomas Basin Habitat Conservation Plan* (NBHCP) (City of Sacramento 2003), Natomas Basin Conservancy (NBC) Annual Monitoring Reports for Swainson's Hawk and the Giant Garter Snake as conducted for the NBHCP (NBC 2003; USGS 2004; Jones and Stokes 2005), the California Natural Diversity Database (CNDDDB 2005), the Sacramento County Code, and the City of Sacramento Municipal Code.

### 6.12.2 EXISTING SETTING

The majority of the project site has been in agricultural use for at least the last 20 years. A horse race track, training facility, and an irrigated polo field were present in the northern portion of the site from approximately 1980 to the early 2000s (Foothill Associates 2006). The horse training facility has since been demolished and only the dirt racetrack remains. Other buildings that were located near the training facility, including agricultural outbuildings and greenhouses, have also been demolished and removed.

Surrounding land uses include agricultural land uses to the north and southwest, new residential development in the North Natomas community to the east and south, and the recently approved Metro Air Park development currently under construction to the west. The Metro Air Park development consists of existing and proposed commercial, hotel, and recreational (i.e., golf course) land uses. The North Natomas Community Plan area is located adjacent to the eastern and southern boundaries of the project site across SR 70/99 and I-5, respectively.

#### HABITAT TYPES

The habitat types described below and shown in Exhibit 6.12-1 reflect conditions documented by EDAW biologists during the 2005 growing season.

#### UPLAND HABITATS

In 2005, approximately 380 acres on the project site were planted with wheat and approximately 115 acres were left idle. The remainder of the upland habitat is categorized as disturbed annual grassland, consisting of formerly developed or otherwise disturbed areas located primarily in the northern portion of the project site. These areas are characterized by herbaceous plant species typically associated with nonnative annual grasslands, interspersed with patches of bare ground where ground disturbance associated with prior land uses remains present. Plant species associated with disturbed annual grassland on the project site include soft brome (*Bromus hordeaceus*), wild oat (*Avena* sp.), mouse-tail grass (*Vulpia myuros*), medusahead (*Taeniatherum caput-medusae*), long-beaked filaree (*Erodium botrys*), woodland geranium (*Geranium molle*), chick weed (*Stellaria media*), milk thistle (*Silybum marianum*), star thistle (*Centaurea solstitialis*), barley (*Hordeum murinum* ssp. *leporinum*), clover (*Trifolium* sp.), shepherd's purse (*Capsella bursa-pastoris*), tarplant (*Holocarpha virgata*), and Fitch's tarweed (*Centromadia fitchii*) (Foothill Associates 2005).



Source: EDAW 2006

**Project Site Habitat Map**

**Exhibit 6.12-1**

## **WETLAND AND OTHER WATERS OF THE UNITED STATES**

Wetlands and other waters of the United States on the project site identified by Foothill Associates (2006) include seasonal wetlands, farmed wetlands, seasonal marsh, ditch/canal, and excavated ponds. These habitats are not natural, but rather, have resulted from land use and hydrological changes associated with agricultural conversion and prior development on the project site. A total of 14.15 acres of waters of the United States were delineated by Foothill Associates in 2006 (Appendix O). This included 10.77 acres of wetlands and other waters of the United States subject to the jurisdiction of the U.S. Army Corps of Engineers (USACE), and 3.38 acres of non-jurisdictional wetlands. The delineation has not been verified by USACE.

In addition to the jurisdictional areas described above, a total of 11.80 acres of wetlands were determined by Foothill Associates (2006) to be non-jurisdictional. Non-jurisdictional wetlands included 9.33 acres of irrigation and drainage ditches, and 1.47 acres of isolated wetlands. In addition, Foothill reviewed an additional 8.56 acres of features at the request of the USACE. (See Exhibit 6.12-2.) Foothill determined that these features are not wetlands because, while they support some hydrophytic vegetation, wetland hydrology is absent; therefore, do not satisfy the USACE three-parameter test.

### **Seasonal Wetlands**

A total of 0.29 acre of seasonal wetlands was delineated in the northern-central portion of the site. Seasonal wetlands are defined by a hydrologic regime characterized by saturation rather than inundation (Foothill Associates 2006). Seasonal wetlands were identified on the site as topographic depressions with a hydrologic regime characterized by saturation and capable of supporting hydrophytic plant species and hydric soils. Plant species in seasonal wetlands are adapted to withstand short periods of saturation or saturated soil conditions but will not withstand prolonged periods of inundation. The seasonal wetlands on the site support wetland soils, vegetation, and hydrology; however, they were determined by Foothill Associates (2006) to be isolated features exempt from USACE jurisdiction because they do not connect to waters of the United States.

### **Farmed Wetlands**

A total of 10.96 acres of farmed wetlands have been delineated by Foothill Associates. Similar to seasonal wetlands, farmed wetlands are defined by a hydrologic regime characterized by saturation rather than inundation and support wetland soils, vegetation, and hydrology (Foothill Associates 2006). Farmed wetlands are located in the northern and western portions of the site. Foothill Associates determined that 9.43 acres of farmed wetlands on the project site were under USACE jurisdiction. The remaining 1.53 acres of farmed wetlands was determined to be non-jurisdictional (Foothill Associates 2006).

### **Seasonal Marsh**

Foothill Associates delineated 1.65 acres of seasonal marsh on the project site. Seasonal marshes are wetlands that are seasonally inundated or saturated, but inundation/saturation persists through the majority of the warm season. The persistence of inundation/saturation into the warm season permits the growth of primarily perennial herbaceous plant species capable of withstanding extended periods of inundation or saturated soil conditions. Foothill Associates determined that 1.34 acres of seasonal marsh on the project is under USACE jurisdiction.

### **Ditch/Canal**

A total of 12.71 acres of ditch/canal have been delineated on the site by Foothill Associates (2006). A total of 3.38 acres of ditch/canal habitat was identified as jurisdictional by Foothill Associates. The remainder of the ditch/canal habitat was identified as non-jurisdictional. Ditch/canal habitat identified as non-jurisdictional included roadside ditches and ditches that are no longer used to convey irrigation water to interior portions of the project site because agricultural use is currently limited to dry-farmed wheat.

Most of the ditches/canals on the project site were constructed as part of a complex system of canals and ditches designed to maximize water conveyance and storage developed by The Natomas Mutual Water District (NMWD) and RD 1000. NMWD is responsible for maintaining the water delivery ditches/canals, while the RD 1000 maintains ditches/canals for agricultural drainage and flood control. There are also ditches on the site that are maintained by the landowner. Water pumped through the irrigation ditches from a lift station located north of the site provided irrigation water to support rice farming until 2004, when rice production ceased.

Lone Tree Canal, which is located along the western border of the site (Exhibit 6.12-1 and Exhibit 6.12-3), was the major canal identified by Foothill Associates (2006) as a jurisdictional water of the United States. Lone Tree Canal is physically connected to the Western Drainage canal, a tributary to the Sacramento River, via a series of culverts. Water in Lone Tree Canal flows southward into a cement culvert along the southwestern border of the site and passes under I-5 before reaching the Western Drainage Canal. The banks of Lone Tree Canal are approximately 6 feet deep; the width of the canal varies from 10 to 25 feet (Exhibit 6.12-2). During March 2005 and June 2006 surveys, EDAW biologists estimated that water in Lone Tree Canal exceeded 12 inches deep in some locations, although at other times, including a field observation in July, biologists observed the canal to have less than 12 inches in some locations. The source of water in Lone Tree Canal in June 2006 appeared to be irrigation run-off coming from fields located north of the project site.

Vegetation in Lone Tree Canal and ditches on the project site include patches of freshwater marsh, but the site is generally devoid of trees and shrubs. Vegetation on the ditch banks mostly consists of a mixture of nonnative grasses and leafy nonnative weedy vegetation such as woodland geranium, milk thistle, and mustard (*Brassica* sp.). The channel bottoms support varying densities of nonnative grasses and freshwater marsh habitat dominated by patches of cattails (*Typha latifolia*). A few isolated willow trees (*Salix* sp.) are present along the agricultural ditch located along the southern border of the site. The lack of well-developed riparian and freshwater marsh vegetation associated with the ditches on the project site is indicative of prior vegetation management activity to facilitate conveyance of agricultural water.

## Excavated Pond

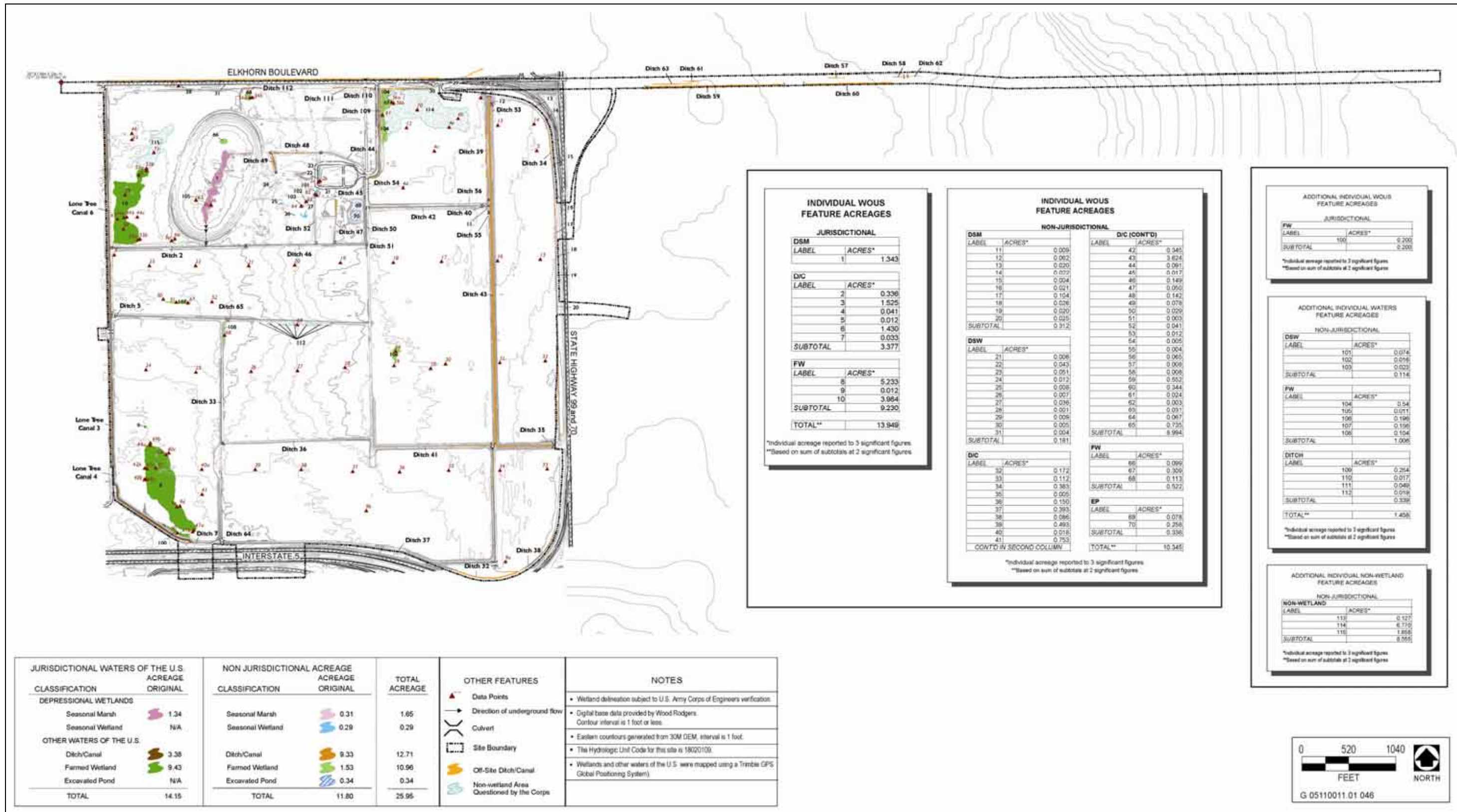
There are two small, isolated excavated ponds in the north-central portion of the site, totaling 0.34 acre. The ponds on the site are excavated in upland; they are not the result of an impoundment of a natural drainageway or tributaries to or from any waterways. The hydrology of the ponds appears to be supplied by seasonal precipitation and, potentially, seasonal groundwater fluctuations. The excavated ponds are surrounded by a 5-foot tall berm covered with disturbed grassland vegetation. Vegetation along the edges of the ponds is dominated by cattails. During March 2005 surveys, floating aquatic vegetation covered shallow water in both ponds.

## WILDLIFE

Prior to European settlement, the Sacramento River floodplain, which includes the Natomas Basin, supported a wide diversity and large numbers of wildlife species associated with its riparian habitats, permanent and seasonal wetlands, and oak woodlands and savannas. Much of this habitat was lost after levees were built to prevent flooding on the Sacramento and American Rivers. The subsequent conversion of natural habitat to agricultural uses reduced the abundance of many native wildlife species. However, remnant native habitat patches and created habitat associated with the drainage and agricultural supply ditches in the Basin have allowed the majority of native wildlife species to persist.

The combination of vegetation types on the project site provide nesting, feeding, and movement habitat for a wide diversity of species commonly found on agricultural land in the Natomas Basin. Cattails and dense weedy vegetation along the ditches provide potential nesting habitat for red-winged blackbird (*Agelaius phoeniceus*) and other common birds with similar habitat requirements. The disturbed grasslands provide potential nesting habitat for common grassland birds such as western meadowlark (*Sturnella neglecta*). The wheat fields and grasslands





**INDIVIDUAL WOUS FEATURE ACREAGES**

**JURISDICTIONAL**

DSM LABEL	ACRES*
1	1.343

DIC LABEL	ACRES*
2	0.336
3	1.525
4	0.041
5	0.012
6	1.430
7	0.033
<b>SUBTOTAL</b>	<b>3.377</b>

FW LABEL	ACRES*
8	5.233
9	0.012
10	3.984
<b>SUBTOTAL</b>	<b>9.230</b>

TOTAL**	
	<b>13.948</b>

\*Individual acreage reported to 3 significant figures.  
\*\*Based on sum of subtotals at 2 significant figures.

**INDIVIDUAL WOUS FEATURE ACREAGES**

**NON-JURISDICTIONAL**

DSM LABEL	ACRES*
11	0.008
12	0.002
13	0.020
14	0.032
15	0.004
16	0.021
17	0.104
18	0.026
19	0.020
20	0.035
<b>SUBTOTAL</b>	<b>0.312</b>

DSW LABEL	ACRES*
21	0.006
22	0.043
23	0.051
24	0.012
25	0.006
26	0.007
27	0.036
28	0.001
29	0.008
30	0.005
31	0.004
<b>SUBTOTAL</b>	<b>0.181</b>

DIC LABEL	ACRES*
32	0.172
33	0.112
34	0.383
35	0.005
36	0.150
37	0.393
38	0.086
39	0.493
40	0.016
41	0.753
<b>SUBTOTAL</b>	<b>2.558</b>

DIC (CONT'D) LABEL	ACRES*
42	0.340
43	3.824
44	0.061
45	0.017
46	0.149
47	0.050
48	0.142
49	0.078
50	0.029
51	0.003
52	0.041
53	0.012
54	0.005
55	0.004
56	0.065
57	0.006
58	0.008
59	0.008
60	0.344
61	0.024
62	0.003
63	0.031
64	0.067
65	0.735
<b>SUBTOTAL</b>	<b>8.994</b>

FW LABEL	ACRES*
66	0.099
67	0.309
68	0.113
<b>SUBTOTAL</b>	<b>0.522</b>

EP LABEL	ACRES*
69	0.078
70	0.258
<b>SUBTOTAL</b>	<b>0.336</b>

TOTAL**	
	<b>10.348</b>

\*Individual acreage reported to 3 significant figures.  
\*\*Based on sum of subtotals at 2 significant figures.

**ADDITIONAL INDIVIDUAL WOUS FEATURE ACREAGES**

**JURISDICTIONAL**

FW LABEL	ACRES*
100	0.200
<b>SUBTOTAL</b>	<b>0.200</b>

\*Individual acreage reported to 3 significant figures.  
\*\*Based on sum of subtotals at 2 significant figures.

**ADDITIONAL INDIVIDUAL WOUS FEATURE ACREAGES**

**NON-JURISDICTIONAL**

DSW LABEL	ACRES*
101	0.014
102	0.016
103	0.003
<b>SUBTOTAL</b>	<b>0.114</b>

FW LABEL	ACRES*
104	0.54
105	0.011
106	0.196
107	0.156
108	0.104
<b>SUBTOTAL</b>	<b>1.006</b>

DITCH LABEL	ACRES*
109	0.264
110	0.017
111	0.046
112	0.019
<b>SUBTOTAL</b>	<b>0.336</b>

TOTAL**	
	<b>1.458</b>

\*Individual acreage reported to 3 significant figures.  
\*\*Based on sum of subtotals at 2 significant figures.

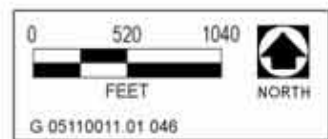
**ADDITIONAL INDIVIDUAL NON-WETLAND FEATURE ACREAGES**

**NON-WETLAND**

LABEL	ACRES*
113	0.127
114	6.710
115	1.856
<b>SUBTOTAL</b>	<b>8.693</b>

\*Individual acreage reported to 3 significant figures.  
\*\*Based on sum of subtotals at 2 significant figures.

JURISDICTIONAL WATERS OF THE U.S. ACREAGE		NON JURISDICTIONAL ACREAGE		TOTAL ACREAGE	OTHER FEATURES	NOTES
CLASSIFICATION	ORIGINAL	CLASSIFICATION	ORIGINAL			
<b>DEPRESSIONAL WETLANDS</b>						
Seasonal Marsh	1.34	Seasonal Marsh	0.31	1.65	<ul style="list-style-type: none"> <li>▲ Data Points</li> <li>→ Direction of underground flow</li> <li>— Culvert</li> <li>□ Site Boundary</li> <li>○ Off-Site Ditch/Canal</li> <li>○ Non-wetland Area Questioned by the Corps</li> </ul>	<ul style="list-style-type: none"> <li>Wetland delineation subject to U.S. Army Corps of Engineers verification.</li> <li>Digital base data provided by Wood Rodgers. Contour interval is 1 foot or less.</li> <li>Eastern contours generated from 30M DEM, interval is 1 foot.</li> <li>Title Hydrologic Unit Code for this site is 18020109.</li> <li>Wetlands and other waters of the U.S. were mapped using a Trimble GPS (Global Positioning System).</li> </ul>
Seasonal Wetland	N/A	Seasonal Wetland	0.29	0.29		
<b>OTHER WATERS OF THE U.S.</b>						
Ditch/Canal	3.38	Ditch/Canal	9.33	12.71		
Farmed Wetland	9.43	Farmed Wetland	1.53	10.96		
Excavated Pond	N/A	Excavated Pond	0.34	0.34		
<b>TOTAL</b>	<b>14.15</b>	<b>TOTAL</b>	<b>11.80</b>	<b>25.95</b>		



Source: Foothill Associates 2006

**Wetland Delineation Map**

**Exhibit 6.12-2**



Lone Tree Canal — Looking southeast across southern portion of the project site, March 10, 2005 (EDAW 2005)



Lone Tree Canal — Location described above, June 30, 2006 (EDAW 2006)

## Representative Photographs

## Exhibit 6.12-3



provide foraging habitat for raptors such as white-tailed kite (*Elanus leucurus*), northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), and Swainson's hawk (*Buteo swainsoni*). The Swainson's hawk is state listed as a threatened species. During the winter, the crop fields provide potential foraging habitat for migratory waterfowl, raptors, and passerines.

The diversity of fish, reptiles, amphibians, and mammals on the project site is relatively low compared to avian diversity. Lone Tree Canal and ditches that support permanent or intermittent aquatic habitat provide potential habitat for common and adaptable species such as mosquitofish (*Gambusia affinis*), bullfrog (*Rana catesbeiana*), and Pacific tree frog (*Hylla regilla*). These areas also provide potential habitat for the giant garter snake (*Thamnophis gigas*), which is federally and state listed as a threatened species. Mammals expected on the project site include raccoon (*Procyon lotor*), coyote (*Canis latrans*), and California vole (*Microtus californicus*).

## **REGULATORY SETTING**

Many sensitive biological resources in California are protected and/or regulated by federal and state laws and policies. Prior to implementation, it would be necessary for the proposed project to be in compliance with these regulations. As discussed below, the project site is located within the boundaries of the Natomas Basin Habitat Conservation Plan (NBHCP), which provides protections for a number of species, including giant garter snake and Swainson's hawk. Habitat associated with these species is also found on the Greenbriar site. Although Greenbriar is located within the NBHCP boundaries, it is outside of the area within the HCP that is covered under the Incidental Take Permits (ITP) issued for development within the Natomas Basin (see discussion of ITPs below). Consequently and as further explained below, the project applicant is proposing to seek an ITP specific to the Greenbriar project, and this will require the preparation of an HCP or an amendment to the NBHCP.

### **Federal Endangered Species Act**

Pursuant to the federal Endangered Species Act (ESA), USFWS has regulatory authority over federally listed species. Under the ESA, a permit to "take" a listed species is required for any federal action that may harm an individual of that species. Take is defined under Section 9 of ESA as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." Under federal regulation, take is further defined to include habitat modification or degradation where it would be expected to result in death or injury to listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Giant garter snake, a federally listed threatened species, is known to occur at the site and the project has the potential to affect the species.

The USACE will consult with the USFWS regarding the giant garter snake during the Section 404 permitting process of this project. Issuance of a 404 permit under the Clean Water Act (CWA) is a federal action triggering the requirements of Section 7 of the ESA. Section 7 requires all federal agencies to consult with the USFWS to insure that actions are not likely to "jeopardize the continued existence" of any listed species or "result in the destruction or adverse modification" of designated critical habitat. If issuance of a 404 permit for this project is found not likely to jeopardize the continued existence of the giant garter snake, the USFWS will issue a no-jeopardy biological opinion including any reasonable and prudent measures necessary to minimize impacts to the species and any terms and conditions for implementing these measures. The biological opinion will be accompanied by an incidental take statement authorizing take of the species incident to an otherwise lawful activity.

In addition, the project applicant has committed to seeking coverage under Section 10(a) of the ESA for incidental take of giant garter snake. Take of other listed species known to occur in the Natomas Basin is not anticipated. Section 10(a) of the ESA allows USFWS to permit the incidental take of listed species if such take is accompanied by a habitat conservation plan (HCP) that includes components to minimize and mitigate impacts associated with the take. The permit is known as an incidental take permit, or ITP.

## California Endangered Species Act

There is potential for the project to adversely affect two state-listed threatened species, Swainson's hawk and giant garter snake. Pursuant to the California Endangered Species Act (CESA), take is prohibited without a permit. A take of a species, under CESA, is defined as an activity that would directly or indirectly kill an individual of a species. The CESA definition of take does not include "harm" or "harass" as is included in the federal act. As a result, the threshold for a take under CESA is generally considered higher than under ESA (i.e., habitat modification is not necessarily considered take under CESA). No take of Swainson's hawk is expected. As will be described later in this analysis, there is the potential for take of giant garter snake.

Upon receiving authorization to take giant garter snake under the federal ESA, the project applicant plans to seek take authorization from the California Department of Fish & Game (DFG) under Section 2080.1 of the CESA. When an ITP is issued under the federal ESA for the giant garter snake, which is both federally listed and state-listed, no further state authorization is required for take. However, the project applicant must receive concurrence from DFG that the federal permit issued is consistent with CESA.

Written notice and a copy of the federal permit must be provided to the director of DFG. The director will determine then whether federal permit is consistent with the requirements of the CESA. Under Section 2081, CESA requires: (1) that take is incidental to an otherwise lawful activity; (2) that the impacts of the authorized take have been minimized and fully mitigated, (3) that the permit is consistent with regulations adopted pursuant to Sections 2112 and 2114 of the CESA Recovery Strategy Pilot Program, and (4) that the applicant has ensured adequate funding to implement minimization and mitigation measures and monitor these measures for compliance and effectiveness.

## Natomas Basin Habitat Conservation Plan

The project site and Off-site Conservation Lands are within the Plan Area for the Natomas Basin Habitat Conservation Plan (NBHCP), a regional conservation plan for minimizing and mitigating impacts to multiple species from urbanization in the Natomas Basin. USFWS has approved the NBHCP and has issued Incidental Take Permits (ITPs) to the City and Sutter County for take of federally listed species to result from urban development in the Natomas Basin. Sacramento County is not a permittee under the NBHCP, and the NBHCP does not cover urban development for unincorporated portions of Sacramento County, although the NBHCP does provide for land acquisition in these unincorporated areas on a willing-seller basis for conservation purposes. The NBHCP currently authorizes take associated with 17,500 acres of urban development in southern Sutter County and within the City and Sacramento County (i.e., 1,983 acres of the MAP area).

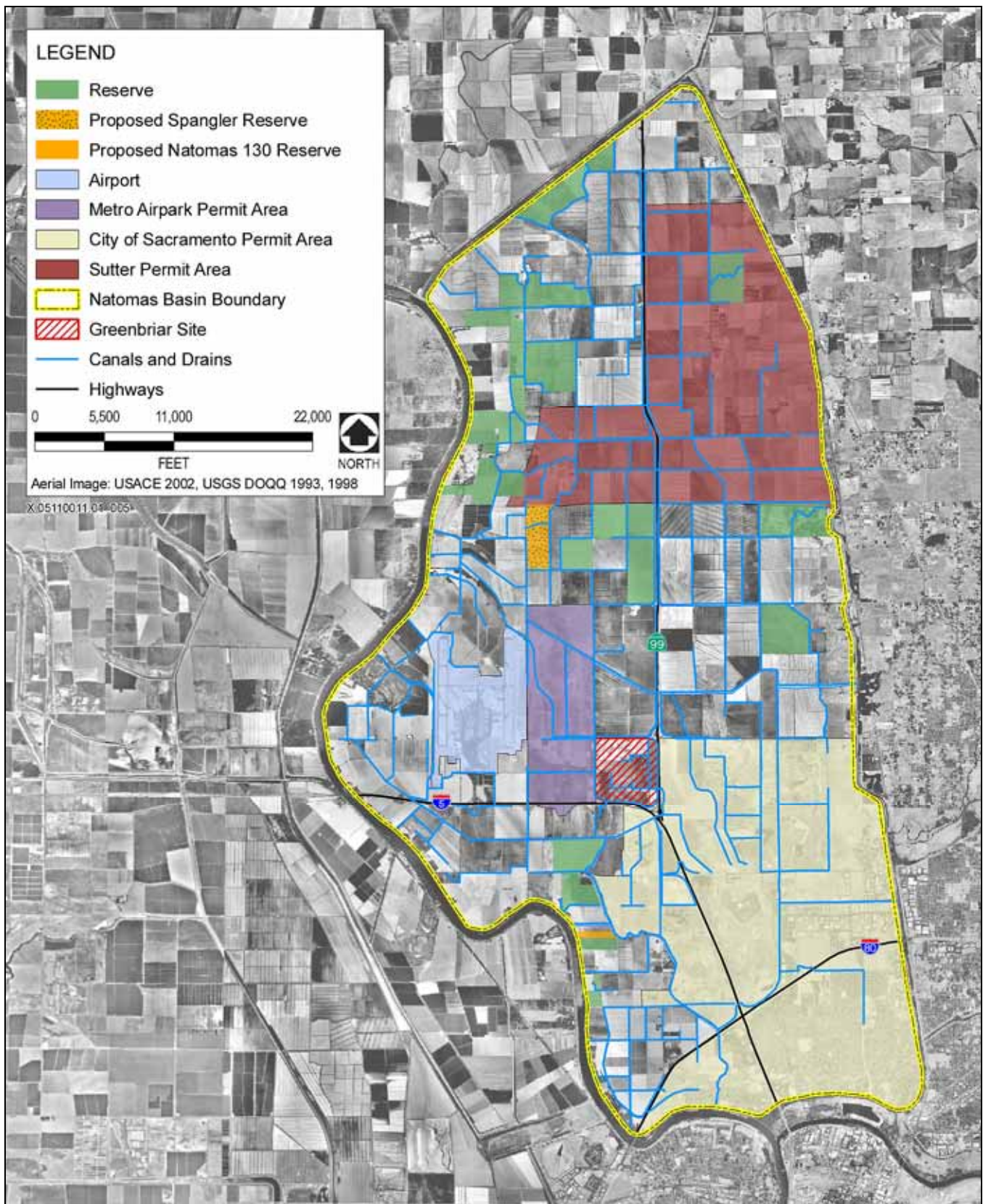
The project site is currently within an unincorporated portion of Sacramento County. Although the project site is within the boundaries of the NBHCP, urban development on this site is not covered under an incidental take permit (ITP) issued in conformance with the NBHCP. Even if the project is approved and annexed to the City, it would not be covered by the NBHCP and the City's ITP. The Biological Opinion for the NBHCP specifies that because the NBHCP's Operating Conservation Plan (OCP) is based upon the City limiting total development to 8,050 acres within the City's Permit Area, approval by the City of future urban development beyond the 8,050 acres or outside of its Permit Area would constitute a significant departure from the NBHCP's OCP and would trigger a reevaluation of the NBHCP, a new effects analysis, potential amendments and/or revisions to the NBHCP and ITPs, a separate conservation strategy and the need to obtain a new ITP by the Permittee for that additional development, and/or possible suspension or revocation of the City's ITP in the event the City were to violate such limitations without having completed the required reevaluation, amendments or revisions, or obtained a new permit (USFWS 2003).

This EIR includes an analysis of the 22 special-status species covered under the NBHCP as well as analysis of effects on the NBHCP that could result from implementation of the proposed project. The following NBHCP goals and objectives are considered relevant to the proposed project.



- ▶ Overall Goal 1. Establish and manage in perpetuity a biologically sound and interconnected habitat reserve system that mitigates impacts on Covered Species resulting from Covered Activities and provides habitat for existing, and new viable populations of Covered Species. (NBHCP page I-15)
- ▶ Overall Goal 3. Preserve open space and habitat that may also benefit local, non-listed and transitory wildlife species not identified within the NBHCP. (NBHCP page I-16)
- ▶ Overall Goal 4. Ensure that direct impacts of Authorized Development upon Covered Species are avoided or minimized to the maximum extent practicable. (NBHCP, page I-16)
- ▶ Overall Objective 1. Minimize conflicts between wildlife and human activities, including conflicts resulting from airplane traffic, roads and automobile traffic, predation by domestic pets, and harassment by people. (NBHCP, page I-16)
- ▶ Overall Objective 3. Ensure connectivity between TNBC reserves to minimize habitat fragmentation and species isolation. Connections between reserves will generally take the form of common property boundaries between reserves, waterways (primarily irrigation and drainage channels) passing between reserves, and/or an interlinking network of water supply channels or canals. (NBHCP, page I-16)
- ▶ Wetland Species/Habitat Goal/Objective 1. Acquire, enhance and create a mosaic of wetland habitats with adjacent uplands and connecting corridors to provide breeding, wintering, foraging, and cover areas for wetland species in the Plan Area. (NBHCP, page I-17)
- ▶ Wetland Species/Habitat Goal/Objective 2. Provide habitat to maintain, attract and sustain viable populations of the Covered Species. The habitat areas should be configured to encompass natural species migration areas, minimize species isolation, and prevent future habitat fragmentation. (NBHCP, page I-17)
- ▶ Upland Species/Habitat Goal/Objective 1. Acquire, enhance and create a mosaic of upland habitat types for breeding, foraging, and cover for species dependent on upland habitats. (NBHCP, page I-17)
- ▶ Upland Species/Habitat Goal/Objective 2. Ensure reserve land connectivity with travel corridors for upland-dependent species. The habitat areas should encompass grasslands, agricultural croplands, riparian habitats, and shelter and nesting habitat areas (fence rows, clusters of shrubs and small trees), as well as wetland areas to provide a year-round source of water for upland species. The upland areas should be configured to enhance natural species migration, minimize species isolation, and prevent future habitat fragmentation. (NBHCP, page I-17)

The project site is bordered by the City of Sacramento permit area on the east and by the area permitted for development under the Metro Air Park Habitat Conservation Plan (MAP HCP) to the west. As part of the Metro Air Park HCP (see discussion below), a 25-foot buffer was included on the Metro Air Park site along the west side of Lone Tree Canal, and provisions were included to assure that sufficient water to support habitat requirements for giant garter snake would be provided in the canal. Exhibit 6.12-4 depicts the locations of reserves that have, to date, been established as part of the NBHCP. As shown, reserves are located both north and south of the Greenbriar site. Although reserves are present north and south of the Greenbriar project site, the NBHCP makes no special provisions for long-term connectivity between reserves. The NBHCP does, however, generally describe the importance of maintaining habitat connectivity for giant garter snake. Greenbriar appears to be assumed as a site that will support rice farming, (rice was grown on the site at the time the NBHCP was adopted, but was discontinued in 2004) (see Figure 11 in the NBHCP), but there are no specific provisions related to land use on the Greenbriar project site in the NBHCP.



Source: EDAW 2006

**Location of Greenbriar Project in Natomas Basin**

**Exhibit 6.12-4**

## ***Analysis of Effects on the Natomas Basin Habitat Conservation Plan***

To assess the potential for the project to conflict with the provisions of the NBHCP, EDAW conducted an evaluation of the effects of the Greenbriar project on each species covered by the Natomas Basin Habitat Conservation Plan (NBHCP), and on attainment of the NBHCP's goals and objectives (Appendix P). The following attributes were selected by EDAW to measure if the project would substantially affect covered species or attainment of NBHCP goals and objectives:

- ▶ construction-related effects on survival and reproduction,
- ▶ zones with human-wildlife conflicts (i.e., areas adjacent to developed lands and roads),
- ▶ acreage of habitat in Natomas Basin,
- ▶ quality of habitat in the Natomas Basin,
- ▶ connectivity of habitat in Natomas Basin,
- ▶ connectivity of existing TNBC reserves,
- ▶ habitat value of existing TNBC reserves,
- ▶ water availability at TNBC reserves, and
- ▶ opportunities to establish additional TNBC reserves.

For each of these attributes, alterations resulting from the project were analyzed. The assessment of effects on covered species and NBHCP goals and objectives was subsequently based on the results of these analyses. The methodologies used were based on EDAW's interpretations of effects on covered species and NBHCP goals and objectives. The analyses of effects on covered species were also based on available information on the distribution of these species in the Natomas Basin and on their ecology. These analyses and interpretations were produced by a team of EDAW biologists as an extension of the preparation of DEIR.

## **Metro Air Park Habitat Conservation Plan**

The MAP HCP plan area, which covers 1,892 acres adjacent to the western edge of the project site (plus additional acreage for off-site infrastructure for a total of 1,983 acres according to the NBHCP), specifies Lone Tree as a critical transit corridor for giant garter snake, and requires a 25-foot buffer along the west side of Lone Tree Canal. In addition to the buffer, the MAP HCP includes provisions for maintaining water in the canal under specific conditions, and defines "Changed Circumstances" that pertain to this issue. A Changed Circumstance is generally defined as any number of instances that result in water levels dropping below an average of 12 inches in any segment of the canal for more than 48 hours between April and October. If a Changed Circumstance were to occur, the HCP requires MAP to prepare a report that: explains the effects of the Changed Circumstance and identifies and implements alternative means for maintaining water in the canal "...such that the basic habitat requirements of the protected species are being met." The report would be required to address funding, including the levying of assessments on MAP property owners. During field surveys conducted by EDAW biologists, Lone Tree Canal has at times been observed to have sufficient water, and at other times has been observed to have limited amounts of surface water (i.e., less than 12 inches), although there are no longer term observations (48 hour observations) with respect to whether Changed Circumstance conditions have occurred (water levels dropping below an average of 12 inches in any segment of the canal for more than 48 hours between April and October).

## **Sacramento County Policies and Ordinances**

Chapter 16.130 of Title 16 of the Sacramento County Code addresses the reduction in Swainson's hawk foraging habitat within the urban services boundary of the City of Sacramento. A mitigation fee is required for development projects within an established mitigation fee boundary. The project site lies outside of the mitigation fee boundary and the urban services boundary. In addition, if the project is approved, it would no longer be within the unincorporated lands of Sacramento County. For these reasons, the County's Swainson's hawk ordinance would not apply to the proposed project.

Chapter 19.12 of Title 19 of the Sacramento County Code addresses the protection of native oak trees within Sacramento County. The County tree preservation ordinance outlines specific boundaries within the county where native oak trees are to be protected. The proposed project lies outside the boundaries of the tree preservation ordinance.

### **Sacramento City Code**

Chapter 12.56 of Title 12 of the Sacramento City Code addresses the general protection of trees within the City boundaries. The project lies outside the City tree preservation ordinance boundary; therefore, the City tree ordinance would not apply to the proposed project.

### **Jurisdictional Waters of the United States (Including Wetlands)**

Waters of the United States are defined as waters where use, degradation, or destruction could affect interstate or foreign commerce, tributaries to any of these waters, and wetlands that meet any of these criteria or that are somehow connected to any of these waters or their tributaries. Most wetland habitats meet the definition of waters of the United States. USACE defines wetlands as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” Waters of the United States are subject to Section 404 of the CWA. Section 404 establishes a requirement to obtain a permit prior to any activity that involves any discharge or fill material in waters of the United States. A jurisdictional wetland delineation has been completed for the project (Foothill Associates 2006), but has not been verified by USACE.

### **Porter-Cologne Water Quality Control Act**

Under the Porter-Cologne Water Quality Control Act, “waters of the state” fall under the jurisdiction of RWQCB. Under the act, RWQCB must prepare and periodically update water quality control basin plans. Each basin plan sets forth water quality standards for surface water and groundwater, as well as actions to control non-point and point sources of pollution to achieve and maintain these standards. Projects that affect wetlands or waters must meet waste discharge requirements of the RWQCB, which may be issued in addition to a water quality certification under Section 401 of the CWA.

### **Section 1602 of the Fish and Game Code**

Rivers, streams, or lakes in California are subject to regulation by DFG, pursuant to Section 1602 of the California Fish and Game Code. Activities regulated by DFG include diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake. Section 1602 states that it is unlawful for any person to substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by DFG, or use any material from the streambed, without first notifying DFG of such activity. DFG defines a stream as a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish or other aquatic life. Areas that support permanent or intermittent aquatic habitat on the project site may be subject to Section 1602 of the California Fish and Game Code.

### **Section 3503-3503.5 of the Fish and Game Code**

Section 3503 of the Fish and Game Code states that it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird. Section 3503.5 of the Fish and Game Code specifically states that it is unlawful to take, possess, or destroy any raptors (e.g., hawks, owls, eagles, and falcons), including their nests or eggs.



## SENSITIVE HABITATS

Sensitive habitat types include those that are of special concern to DFG, or that are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, and/or Section 404 of CWA.

## SPECIAL-STATUS PLANT AND WILDLIFE SPECIES

Special-status species include plants and animals in the following categories:

- ▶ species listed or proposed for listing as threatened or endangered under ESA or CESA;
- ▶ species considered as candidates for list as threatened or endangered under ESA or CESA;
- ▶ species identified by DFG as California Species of Special Concern;
- ▶ animals fully protected in California under the California Fish and Game Code;
- ▶ plants on CNPS List 1B (plants considered by CNPS to be rare, threatened, or endangered in California and elsewhere) or List 2 (plants considered rare, threatened, or endangered in California but more common elsewhere).

### Special-status Plants

A total of seven special-status plant species have been documented in the vicinity of the project site (Table 6.12-1). The project site includes potential habitat for two of these species: Sanford's arrowhead (*Sagittaria sanfordii*) and Delta tulle pea (*Lathyrus jepsonii jepsonii*). More information on these two plants is provided below.

#### ***Sanford's Arrowhead***

Sanford's arrowhead is a rhizomatous emergent herb in the water plantain family (*Alismataceae*). This CNPS List 1B species (plants considered rare, threatened, or endangered in California and elsewhere) blooms from May to October. Suitable habitats include marshes and swamps, vegetated drainage ditches, and other shallow freshwater habitats. This species has not been documented on the project site but the freshwater marsh habitat within the ditch/canal network and wetlands on the project site provides potentially suitable habitat.

#### ***Delta Tulle Pea***

Delta tulle pea is a perennial herbaceous member of the bean family (*Fabaceae*). This CNPS List 1B species occurs in both freshwater and brackish marshes and swamps. Delta tulle pea produces attractive pink to purple flowers from May to September. Delta tulle pea has not been identified on the project site but the freshwater marsh habitat within the ditch/canal network and wetlands on the project site provides potentially suitable habitat.

### Sensitive Wildlife

A total of 21 special-status wildlife species have been documented in the vicinity of the project site (Table 6.12-2). Potential habitat exists on-site for six of these species: Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), burrowing owl (*Athene cunicularia*), loggerhead shrike (*Lanius ludovicianus*), giant garter snake (*Thamnophis gigas*), and northwestern pond turtle (*Emys marmorata marmorata*). More information on Swainson's hawk, burrowing owl, loggerhead shrike, and northwestern pond turtle is provided below. White-tailed kite and tricolored blackbird are not discussed further because the project site is not expected to provide suitable nesting, or otherwise, important habitat for either species.

<b>Table 6.12-1 Special-status Plant Species Known to Occur in the Project Vicinity</b>			
<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Potential for Occurrence On-site</b>
Sanford's Arrowhead	<i>Sagittaria sanfordii</i>	CNPS: 1B NBHCP: covered	Could occur. This herbaceous perennial plant occurs in marshes and swamps. Potential habitat exists in Lone Tree Canal.
Sacramento Orcutt Grass	<i>Orcuttia viscida</i>	Fed: Endangered CA: Endangered CNPS: 1B NBHCP: covered	Not expected to occur. This annual plant occurs in vernal pools. No suitable habitat is present on-site.
Slender Orcutt Grass	<i>Orcuttia tenuis</i>	Fed: Threatened CA: Endangered CNPS: 1B NBHCP: covered	Not expected to occur. This annual plant occurs in vernal pools. No suitable habitat is present on-site.
Legenere	<i>Legenere limosa</i>	CNPS: 1B NBHCP: covered	Not expected to occur. This annual plant occurs in vernal pools. No suitable habitat is present on-site.
Colusa Grass	<i>Neostapfia colusana</i>	Fed: Threatened CA: Endangered CNPS: 1B NBHCP: covered	Not expected to occur. This annual plant occurs in vernal pools. No suitable habitat is present on-site.
Bogg's Lake Hedge-hyssop	<i>Gratiola heterosepala</i>	CA: Endangered CNPS: 1B NBHCP: covered	Not expected to occur. This annual plant occurs in vernal pools and along the margins of lakes. No suitable habitat is present on-site.
Delta Tule Pea	<i>Lathyrus jepsonii jepsonii</i>	CNPS: 1B NBHCP: covered	Could occur. This herbaceous perennial plant occurs in freshwater and brackish marsh habitats. Potential habitat exists in Lone Tree Canal.

<b>Table 6.12-2 Special-status Wildlife Species Known to Occur in the Project Vicinity</b>			
<b>Common Name</b>	<b>Scientific Name</b>	<b>Status</b>	<b>Potential for Occurrence On-Site</b>
<b>Birds</b>			
Swainson's Hawk	<i>Buteo swainsoni</i>	CA: Threatened NBHCP: covered	Expected to occur. Suitable foraging habitat present on-site. Two active nests documented within 1 mile of the project site in 2004 (Natomas Basin Conservancy 2004).
White-tailed Kite	<i>Elanus leucurus</i>	CA: Fully Protected NBHCP: not covered	Expected to occur. Suitable foraging habitat is present on-site. Not expected to nest on-site because no suitable nesting trees are present.
Tricolored Blackbird	<i>Agelaius tricolor</i>	CA: Species of Special Concern NBHCP: covered	Not expected to nest on-site. No suitable nesting habitat present on-site and no active nesting sites in the project vicinity.
Aleutian Canada Goose	<i>Branta canadensis leucopareia</i>	NBHCP: covered	Not expected to occur. No recent records from the project vicinity.

**Table 6.12-2  
Special-status Wildlife Species Known to Occur in the Project Vicinity**

Common Name	Scientific Name	Status	Potential for Occurrence On-Site
White-faced Ibis	<i>Plegadis chihi</i>	CA: Species of Special Concern NBHCP: covered	Not expected to occur. This species is typically associated with flooded agricultural fields and, large freshwater marshes.
American Peregrine Falcon	<i>Falco peregrinus anatum</i>	CA: Endangered and fully protected NBHCP: covered	Not expected to occur. Marginal foraging habitat present. No suitable nesting habitat present on-site.
Greater Sandhill Crane	<i>Grus canadensis tabida</i>	CA: Threatened and Fully Protected NBHCP: covered	Not expected to occur. No recent records from the project vicinity.
Burrowing Owl	<i>Athene cunicularia</i>	CA: Species of Special Concern NBHCP: covered	Known to occur. Observed in March and September 2005. Field edges, culverts, and upland areas that are not frequently cultivated represent potential nesting and foraging habitat.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	CA: Species of Special Concern NBHCP: covered	Known to occur. Suitable foraging habitat and marginal nesting habitat is present on-site.
Bank Swallow	<i>Riparia riparia</i>	CA: Threatened NBHCP: covered	Not expected to occur. No suitable nesting habitat is present on-site.
<b>Reptiles</b>			
Giant Garter Snake	<i>Thamnophis gigas</i>	Fed: Threatened CA: Threatened NBHCP: covered	Expected to occur. Previously documented in Lone Tree Canal.
Northwestern Pond Turtle	<i>Emys marmorata marmorata</i>	CA: Species of Special Concern NBHCP: covered	Potential to occur. Lone Tree Canal provides marginal habitat.
<b>Amphibians</b>			
California Tiger Salamander	<i>Ambystoma californiense</i>	Fed: Threatened CA: Species of Special Concern NBHCP: covered	Not expected to occur. No vernal pools or other potential breeding habitat present on-site.
Western Spadefoot	<i>Spea hammondi</i>	CA: Species of Special Concern NBHCP: covered	Not expected to occur. No vernal pools or other potential breeding habitat present on-site.
<b>Fish</b>			
Sacramento Splittail	<i>Pogonichthys macrolepidotus</i>	Fed: Threatened CA: Species of Special Concern	Not expected to occur. No suitable habitat is present.

**Table 6.12-2  
Special-status Wildlife Species Known to Occur in the Project Vicinity**

Common Name	Scientific Name	Status	Potential for Occurrence On-Site
<b>Invertebrates</b>			
Valley Elderberry Longhorn Beetle	<i>Desmocerus californicus dimorphus</i>	Fed: Threatened NBHCP: covered	Not expected to occur. Requires elderberry shrubs for all life stages. No suitable habitat is present.
Longhorn Fairy Shrimp	<i>Branchinecta longiantenna</i>	Fed: Endangered NBHCP: covered	Not expected to occur. This invertebrate occurs in vernal pools. No suitable habitat is present on-site.
Vernal Pool Tadpole Shrimp	<i>Lepidurus packardi</i>	Fed: Endangered NBHCP: covered	Not expected to occur. This invertebrate occurs in vernal pools. No suitable habitat is present on-site.
Midvalley Fairy Shrimp	<i>Branchinecta mesovallensis</i>	NBHCP: covered	Not expected to occur. This invertebrate occurs in vernal pools. No suitable habitat is present on-site.
Vernal Pool Fairy Shrimp	<i>Branchinecta lynchi</i>	Fed: Threatened NBHCP: covered	Not expected to occur. This invertebrate occurs in vernal pools. No suitable habitat is present on-site.
Conservancy Fairy Shrimp	<i>Branchinecta conservation</i>	Fed: Endangered NBHCP: covered	Not expected to occur. This invertebrate occurs in vernal pools. No suitable habitat is present on-site.

### **Giant Garter Snake**

The giant garter snake is federally and state listed as threatened and is a primary covered species under the NBHCP. This species formerly ranged throughout the wetlands of California’s Central Valley, from Buena Vista Lake near Bakersfield in Kern County north to the vicinity of Chico in Glenn and Butte Counties (Hansen and Brode 1980). They appear to have been extirpated from the San Joaquin Valley south of Mendota in Fresno County (Hansen and Brode 1980, USFWS 1999) and have suffered serious declines in other parts of their former range. The primary cause of decline, aquatic habitat loss or degradation caused by agricultural development, has been compounded by the loss of upland refugia and bankside vegetation cover (Thelander 1994).

Several regional habitat conservation planning efforts are underway that allow for development, while setting aside, enhancing, and protecting habitat for the giant garter snake. The adopted NBHCP proposes to protect, manage, and monitor large tracts of rice fields currently occupied by the giant garter snake in the Natomas Basin and to create managed rice habitat where none exists. The strategy of the Draft Giant Garter Snake Recovery Plan, released by the USFWS in 1999, involves a set of recovery tasks. Recovery tasks emphasized in the plan are (1) habitat protection, (2) public participation, outreach, and education, (3) habitat management and restoration, (4) surveying and monitoring, and (5) research. Protection of giant garter snake habitat on private lands in the Southern American Basin, which specifically includes the Natomas area, was identified as a top priority in the recovery plan.

This aquatic snake inhabits agricultural wetlands and other waterways, such as irrigation and drainage canals, rice fields, marshes, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley (USFWS 1999). Rice fields and their adjacent irrigation and drainage canals serve an important role as aquatic habitat for giant garter snake. The elements and cycle of the rice field ecosystem coincides fairly closely with the biological needs of the giant garter snake. During the summer, giant garter snakes use the flooded rice fields as long as their prey is present in sufficient densities. During the late summer, rice fields provide important nursery areas for newborn giant garter snakes. In late summer/fall, water is drained from the rice fields and giant garter snake prey items become concentrated in the remaining pockets of standing water, which allows the snakes to gorge prior to their period of winter inactivity (USFWS 1999). It appears that the majority of giant garter snakes



move back into the canals and ditches as the rice fields are drained, although a few may over-winter in the fallow fields where they hibernate within burrows in the small berms separating the rice checks (Hansen 1998).

Managed marsh can also provide important habitat for giant garter snake. In contrast to rice, managed marsh provides habitat year-round, and habitat elements (such as dense cover, basking sites, and refugia) to meet all of the giant garter snakes daily and seasonal needs. In the Natomas Basin, managed marshes have been designed to provide habitat elements throughout the marsh, as opposed to the limited availability of the same elements in rice fields, which contributes to giant garter snake use occurring primarily around the perimeter of rice fields.

The USFWS has previously considered 200 feet as the width of upland vegetation needed to provide adequate habitat along the borders of aquatic habitat for giant garter snake (USFWS 1997). However, the width of uplands used by giant garter snake varies considerably. Many summer basking and refuge areas used by this snake are immediately adjacent to canals and other aquatic habitats, and may even be located in the upper canal banks (Eric Hansen, pers. comm., 2005). Giant garter snakes have also been found hibernating as far as 820 feet (250 meters) from water, however, and any land within this distance may be important for snake survival in some cases (Hansen 1988).

As of 2005, the CNDDDB lists 170 giant garter snake occurrences considered extant in California. Of these, 42 of the occurrences are from the Natomas Basin. This species has been documented in Lone Tree Canal, which serves as the western boundary of the project site. Sampling conducted during 1998 and 1999 detected at least five giant garter snakes on the project site in Lone Tree Canal, contributing to a projected density of the canal of eight giant garter snakes per linear kilometer (Wylie et al. 2000). Continued presence of giant garter snakes was confirmed in Lone Tree Canal, north of Elkhorn Boulevard, in the vicinity of the Central Main Canal in 2003 and 2004 (Jones and Stokes 2005). Additionally, there is one observation of an adult giant garter snake from 1986 and another from 1987 in Lone Tree Canal (CNDDDB 2005). Because giant garter snakes are known from the immediate vicinity, it is assumed that they are present or potentially present within suitable habitat on-site.

Currently, Lone Tree Canal provides habitat and a movement corridor for giant garter snakes. Although habitat degradation has impaired the function of Lone Tree Canal as a corridor, it is the primary remaining corridor for movement of giant garter snakes between the southern and central portions of the Natomas Basin (C. Aubry, pers. comm., 2005; E. Hansen, pers. comm., 2005). Loss of this corridor could isolate the southern portion of the Natomas Basin, dividing the current giant garter snake population into two smaller populations, which would substantially reduce the likelihood of giant garter snake persisting in the Basin.

The project site was evaluated in 2005 to determine potential value as giant garter snake habitat (Berryman Ecological 2005). Suitable giant garter snake habitat is characterized by all of the features necessary to support permanent populations of the species, including: (1) sufficient water during their active season to supply cover and food, such as small fish and amphibians; (2) emergent, herbaceous aquatic vegetation accompanied by vegetated banks to provide basking and foraging habitat; (3) bankside burrows, holes, and crevices to provide habitat for short-term refuge (refugia); and (4) high ground or upland habitat above the annual high-water mark to provide cover and refugia from floodwaters during the dormant winter season (Hansen 1988, Hansen and Brode 1980). The primary factor in determining suitability was the presence/absence of sufficient water during the species' active season. Features that lacked standing or slow moving water late in season but possessed aquatic vegetation indicative of prolonged inundation, were considered to provide marginal habitat for giant garter snake. Marginal habitat provides aquatic habitat for only a portion of the snake's active season. Those features that lacked water or emergent, aquatic vegetation were considered unsuitable for giant garter snake.

On the project site, Lone Tree Canal, sections of three ditches draining into Lone Tree Canal, and a section of the large ditch immediately south of Elkhorn Boulevard were observed to have standing water late in the giant garter snake active season (early September 2005). These ditches also had emergent vegetation such as cattails and tules. The banks of these ditches were vegetated with grasses and herbs with sufficient open areas for basking. Small mammal burrows and cracks in the soil along the banks on Lone Tree Canal provide potential summer refuge for

giant garter snake. The features determined to provide marginal, seasonal habitat for the giant garter snake supported aquatic habitat during a portion of the giant garter snake active season, and supported emergent wetland vegetation, but were dry in early September 2005). It appears that due to the lack of irrigation water flowing onto the site during the summer that ditches in the interior portion of the project site do not support surface water beyond late spring/early summer now that rice farming has ceased. EDAW biologists noted that these ditches were dry in June 2006. The Natomas Central Mutual Water District has indicated that no water from their ditches is being delivered to the site for irrigation purposes (Fisher, pers. comm., 2005). However, water passes through the project site via Lone Tree Canal.

A total of 89.36 acres of giant garter snake habitat were identified on the project site and off-site improvement areas during the 2005 habitat evaluation (Berryman Ecological 2005). Suitable giant garter habitat delineated in 2005 included 6.28 acres of aquatic habitat and 83.08 acres of upland habitat that is located within 200 feet of aquatic habitat. Of the 6.28 acres of aquatic habitat present, approximately 3.5 acres consisted of suitable aquatic habitat available to the snake throughout the active season, and 2.78 acres consisted of marginally suitable aquatic habitat available to the snake for only a portion of the active season. The remaining areas mapped as seasonal wetlands on the project site have saturated soils during the winter, but do not hold standing water during the snake's active season. Two small, isolated ponds supporting seasonal wetlands on the property were considered too small and isolated to provide suitable aquatic habitat for the giant garter snake. Additionally, a roadside ditch along Elkhorn Boulevard east of SR 70/99 and upland habitat within 200-feet of aquatic giant garter snake habitat were also identified in improvement areas.

### ***Swainson's Hawk***

Swainson's hawk is state listed as threatened and is a primary covered species under the NBHCP. Historically, Swainson's hawks nested throughout lowland California. As many as 17,000 Swainson's hawk pairs may have nested in California at one time (DFG 1994). Currently, there are 700-1,000 breeding pairs in California, of which 600-900 are in the Central Valley (Estep 2003). The overall Swainson's hawk population is considered to be declining (DFG 1994), although individuals in the Central Valley appear to have adapted relatively well to certain agricultural patterns in areas where suitable nesting habitat remains (Estep 2003).

Swainson's hawks typically occur in California only during the breeding season (March through September) and winter in Mexico and South America, although a small number of individuals have been wintering in the San Francisco Bay-Delta for several years (City of Sacramento et al. 2003). The Central Valley population migrates only as far south as Central Mexico. Swainson's hawks begin to arrive in the Central Valley in March. Nesting territories are usually established by April, with incubation and rearing of young occurring through June (Estep 2003).

Swainson's hawk is most commonly found in grasslands, low shrublands, and agricultural habitats that include large trees for nesting. Nests occur in riparian woodlands, roadside trees, trees along field borders, and isolated trees. Stringers of remnant riparian forest along drainages contain the majority of known nests in the Central Valley (England et al. 1997; Estep 1984; Schlorff and Bloom 1984). Nesting pairs frequently return to the same nest site for multiple years and decades.

Prey abundance and accessibility are the most important features determining the suitability of Swainson's hawk foraging habitat. In addition, agricultural operations (e.g., mowing, flood irrigation) have a substantial influence on the accessibility of prey and thus create important foraging opportunities for Swainson's hawk. Crops which are tall and dense enough to preclude the capture of prey do not provide suitable habitat except around field margins, but preys in these habitats are accessible during and soon after harvest. Swainson's hawks feed primarily on small rodents, but also consume insects and birds.

Although the most important foraging habitat for Swainson's hawks lies within a one-mile radius of each nest (City of Sacramento et al. 2003), Swainson's hawks have been recorded foraging up to 18.6 miles from nest sites

(Estep 1989). Any habitat within the foraging distance may provide food at some time in the breeding season that is necessary for reproductive success. In a dynamic agricultural environment such as the Natomas Basin, the area required for Swainson's hawk foraging habitat depends on time of season, crop cycle, crop type, and discing/harvesting schedule, as these factors affect the abundance and availability of prey (City of Sacramento et al. 2003).

The most recent survey published by the Natomas Basin Conservancy (2004) mapped 89 nest sites in or adjacent to the Natomas Basin in 2004, of which 59 were active. Most nests sites are located in the western portion of the Natomas Basin along the Sacramento River where large trees are available. However, nesting and foraging occurs throughout the Basin, depending on the availability of suitable nest trees in proximity to upland foraging areas (Estep 2003).

The 2004 Natomas Basin Conservancy's report identified a total of 5 nests located within one mile of the Greenbriar site, two of which were active (Natomas Basin Conservancy 2004). There are no records of Swainson's hawk nesting on the project site, and no suitable nesting sites were present during 2005 surveys. Potentially suitable foraging habitat for Swainson's hawk occurs on the project site. No Swainson's hawks were observed on-site during a March 2005 survey.

In 2005, most of the project site provided potential foraging habitat for Swainson's hawk. The 115 acres of idle cropland on the project site is considered moderate-quality foraging habitat. Wheat fields and disturbed areas on the project site are considered low-quality foraging habitat for this species.

### ***Burrowing Owl***

Burrowing owl is a DFG species of special concern and is covered under the NBHCP. Burrowing owls and their nests are protected under Section 3503.5 of the California Fish and Game Code.

Burrowing owls typically inhabit grasslands and other open habitats with low-lying vegetation. Burrowing owls are also known to nest and forage in idle agricultural fields, ruderal fields and the edges of cultivated fields, although these areas provide lower quality habitat than native grasslands. Burrow availability is an essential component of suitable habitat. Burrowing owls are capable of digging their own burrows in areas with soft soil, but they generally prefer to adopt those excavated by other animals, typically ground squirrels. In areas where burrows are scarce, they can use pipes, culverts, debris piles, and other artificial features.

No systematic surveys have been conducted to determine burrowing owl distribution across the Natomas Basin. The CNDDDB (2005) includes seven occurrences for burrowing owl from the Natomas Basin of which six are considered extent. During a March 2005 survey, a burrowing owl was flushed from a culvert in a north-south drainage ditch in the southwestern portion of the site. A burrowing owl was observed in the same general area in September 2005.

### ***Loggerhead Shrike***

Loggerhead shrikes are most commonly found in grasslands, agricultural lands, open shrublands, and open woodlands. Land cover types designated as shrike habitat in the NBHCP include alfalfa, grassland, non-rice crops, oak groves, orchard, pasture, ponds and seasonally wet areas, riparian, ruderal, rural residential, tree groves and canals. Special habitat features that improve shrike abundance, survival and reproductive success are hunting perches, low nesting trees and shrubs, thorny vegetation and/or barbed wire on which to impale their prey. Shrikes select a variety of prey including insects, reptiles, mammals and birds.

The Natomas Basin Conservancy lists 82 shrike occurrences throughout the Basin, and suitable nesting and foraging habitat is common throughout the area. A loggerhead shrike was observed on the project site during March and October 2005 surveys.

## **Northwestern Pond Turtle**

Northwestern pond turtle is a DFG species of special concern and is covered under the NBHCP.

Northwestern pond turtles are generally associated with permanent or near-permanent aquatic habitats, such as lakes, ponds, streams, freshwater marshes, and agricultural ditches. They require still or slow-moving water with instream emergent woody debris, rocks, or similar features for basking sites. Pond turtles are highly aquatic but can venture far from water for egg-laying. Nests are typically located on unshaded upland slopes in dry substrates with clay or silt soils (Jennings and Hayes 1994). Pond turtles can over-winter in upland sites.

Ditches, ponds, and marshes throughout the Natomas Basin provide potential habitat for northwestern pond turtle. Potential breeding habitat, however, is very limited by the predominance of agriculture and development but could occur along ditches and margins of other aquatic habitat.

Limited information is available on the status and distribution of the northwestern pond turtle in the Natomas Basin. Surveys conducted in 2004 for the Natomas Basin Conservancy documented six northwestern pond turtle occurrences in the Natomas Basin (Natomas Basin Conservancy 2004). Two of these occurrences were from locations just over one mile from the project site.

### **6.12.3 IMPACTS AND MITIGATION MEASURES**

#### **METHOD OF ANALYSIS**

The analysis in this section is based on the field surveys and research as previously discussed. EDAW also prepared an evaluation of the potential effects of the proposed project on the future condition of the Natomas Basin, and how those changes would affect species covered by the NBHCP and attainment of the NBHCP's goals and objectives. Relevant information from this analysis has been incorporated into the discussion below. The analysis is presented in its entirety in Appendix P.

Present and past agricultural use of the site was considered when evaluating project impacts, and determining appropriate mitigation, because of the important ramification related to wildlife use. In the Natomas Basin, crop types are directly related to habitat suitability for many wildlife species, including two listed species, giant garter snake and Swainson's hawk.

Section 15125 of the CEQA Guidelines specifies that EIRs describe the existing conditions on a site at the time the notice of preparation (NOP) is prepared, and states that these conditions would *normally* constitute the baseline for purposes of determining project impacts. The evaluation of the potential effects of the proposed project on the future condition of the Natomas Basin in Appendix P is required to assess the effects of the project on the NBHCP; thus, the effects analysis is based on development of the site as it was mapped for the NBHCP in 2001. The NOP was published in 2005. Crop selection on the project site has changed since 2001, and could change again. The discontinuation of rice farming occurred in 2004 and is particularly noteworthy because the value of the project site for giant garter snake was significantly diminished by this cessation.

To comply with CEQA requirements and to assure that the proposed project does not compromise the effectiveness of the NBHCP, which is based on 2001 site conditions, the impact analysis in this section evaluates conditions documented in 2005 when the NOP was released, and provides mitigation designed to reduce impacts to less than significant under both 2001 (for NBHCP compliance purposes) and 2005 conditions (for CEQA purposes).

#### **THRESHOLDS OF SIGNIFICANCE**

These thresholds have been prepared based on review of the applicable parts of Appendix G and Section 15065 of the State CEQA Guidelines. The proposed project would have a significant impact on biological resources if it would:



- ▶ Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by DFG or USFWS.
- ▶ Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional, plans, policies, or regulations or by DFG or USFWS.
- ▶ Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the CWA (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- ▶ Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- ▶ Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- ▶ Conflict with the provisions of an adopted Habitat Conservation Plan; Natural Community Conservation Plan; or other approved local, regional, or state habitat conservation plan.
- ▶ Substantially reduce the habitat of a fish or wildlife species; cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; or substantially reduce the number or restrict the range of an endangered, rare or threatened species.

**IMPACT  
6.12-1**

*Effects to Giant Garter Snake. Implementation of the proposed project would result in impacts to 58.75 acres of potential giant garter snake habitat. This impact would include the permanent loss of 55.56 acres of potential giant garter snake habitat and temporary impacts to 3.31 acres of potential giant garter snake habitat. Direct and indirect impacts could include loss of individuals, effects on connectivity, displacement of snakes currently occupying the site, effects related to increased contaminants, predation by domestic and feral animals, effects related to human encroachment, and road mortality. These impacts would result in **significant** adverse effects to giant garter snake.*

**Habitat Loss**

Implementation of the proposed project would result in permanent and temporary impacts to 58.75 acres of potential upland and aquatic giant garter snake habitat. A total of 55.56 acres of permanent impacts would include the loss of 2.99 acres of potential aquatic habitat and 52.57 acres of potential upland habitat located within 200 feet of potential aquatic habitat. Permanent habitat loss would include filling irrigation ditches and marsh habitat, and grading potential upland habitat prior to construction. The 3.31 acres of temporary impacts would include the temporary loss of 0.31 acres of potential aquatic habitat and 3.0 acres of potential upland habitat. Temporary impacts would include installation of water and sewer lines, which would be restored to pre-project conditions following impacts. This acreage does not include on-site construction of Meister Way from the Metro Air Park boundary to SR 70/99, or the on-site widening of Elkhorn Boulevard, because impacts resulting from this road construction are covered under the MAP HCP and would occur in connection with the approved Metro Air Park Project, which is under construction and independent of the proposed project.

**Effects on Habitat Connectivity**

The proposed project could fragment giant garter snake habitat and reduce habitat connectivity and genetic exchange between giant garter snake subpopulations inhabiting lands to the south, in

the southwest zone of the Natomas Basin, and those inhabiting lands to the north, in the northwest zone. I-5 already constrains movement between the northwest and southwest zones, and therefore development adjacent to I-5 would not reduce connectivity except at locations where snakes are able to pass under the freeway via culverts. Following construction of Metro Air Park, the only pathway for snakes to cross I-5 in this area will be by way of a culvert through which Lone Tree Canal passes under the I-5, which would not be affected by development of the project site.

Currently, Lone Tree Canal provides habitat and a movement corridor for giant garter snake, but this habitat has been degraded in the past few years because of inconsistent flows of water in the canal during the active season (Hansen, pers. comm., 2005). Also, in recent years, flows in the canal have not been optimal for giant garter snake. The other canals within and along the southern and eastern borders of the Greenbriar site also have recently provided (or still provide) some habitat for giant garter snake, and they may also serve as a movement corridor. Although habitat degradation has impaired the function of Lone Tree Canal as a corridor, it is the primary remaining corridor for movement of giant garter snakes between the southern and central portions of the Natomas Basin (Aubry, pers. comm., 2005; Hansen, pers. comm. 2005). Loss of this corridor could isolate the southern portion of the Natomas Basin, dividing the current giant garter snake population into two smaller populations, which would substantially reduce the likelihood of giant garter snakes persisting in the Natomas Basin.

The effects on giant garter snake habitat connectivity were evaluated by EDAW as part of an analysis of effects of the Greenbriar project on the Natomas Basin Habitat Conservation Plan (Appendix P). That evaluation included the following assumptions relevant to connectivity of giant garter snake habitat:

- ▶ Giant garter snakes currently use Lone Tree Canal at the Greenbriar site and are likely to continue to do so under the future condition resulting from the NBHCP;
- ▶ Occasionally snakes cross through the culverts under Interstate 5;
- ▶ The frequency of crossings under Interstate 5 is affected by the level of snake use in the adjacent sections of Lone Tree Canal;
- ▶ The level of snake use is affected by the habitat features provided by Lone Tree Canal and immediately adjacent land (i.e., movement along the canal is not independent of habitat availability and condition along the canal); and
- ▶ Mitigation for other projects affecting Lone Tree Canal south of Interstate 5 and north of Elkhorn Road would sustain giant garter snake habitat along those segments of Lone Tree Canal.

In the absence of effective mitigation to maintain or improve connectivity, the Greenbriar project could substantially affect the use of Lone Tree Canal (and of the entire Greenbriar site) by giant garter snakes. Significant impacts on giant garter snake connectivity that could result from implementation of the proposed project could include:

- ▶ Elimination of canals and natural vegetation within the Greenbriar site;
- ▶ Creation of additional road crossings of Lone Tree Canal at Meister Way and Street 3;
- ▶ Construction of residential development within 200 feet of Lone Tree Canal; and

- ▶ Reduction of the acreage draining into Lone Tree Canal, which could reduce the amount of surface water flow in the canal. However, this condition would be pertinent to rice farming or other irrigated activities, which has not occurred since 2004. Under current conditions (dry farming), these conditions would not occur.

In the absence of mitigation, these impacts could reduce giant garter snake habitat connectivity, and affect giant garter snake use of Lone Tree Canal, by:

- ▶ eliminating or degrading habitat;
- ▶ creating additional obstacles to giant garter snake movement;
- ▶ increasing predation; and
- ▶ increasing human activities that disrupt giant garter snake activities (e.g., basking, foraging) and as a result harm snakes, reduce snake use, or cause snakes to avoid this segment of Lone Tree Canal.

Development of agricultural land at the Greenbriar site would directly eliminate habitat that provides prey, cover, basking sites, and refugia. Additional obstacles, increased predation, and increased human activities all could degrade the quality of remaining habitat, increase mortality and reduce snake use of this segment of Lone Tree Canal.

In order to offset the effects resulting from these changes and to retain giant garter snake habitats and the movement corridor along Lone Tree Canal, the project would have to:

- ▶ minimize effects on giant garter snake movement at the crossings of Meister Road and Street 3,
- ▶ maintain vegetation and conditions along the canal and in adjacent uplands to meet requirements for giant garter snake use and movement, and
- ▶ reduce the effects of human disturbance, mortality from vehicle collisions, and predation by the cats, dogs, and wildlife associated with developed land uses.

Thus, measures would need to include:

- ▶ restrictions on adjacent land uses to allow only those compatible with provision of snake habitat,
- ▶ barriers to human and animal use of the site,
- ▶ design of the Meister Road and Street 3 crossings to minimize effects on snake movement (e.g., maximize cross-sectional area and visibility under the road crossings),
- ▶ barriers preventing giant garter snake access to developed areas and visually screening developed areas
- ▶ funding for site maintenance and management of habitat along the canal and on adjacent land, and
- ▶ assurance that adequate depth of surface water would be provided to the canal in perpetuity to provide for the habitat requirements of the giant garter snake (this is a legal obligation of the Metro Air Park HCP and would not be expected to be a requirement of Greenbriar).

### ***Displacement and Loss of Individuals***

Giant garter snakes could be displaced as a result of development activities and could encounter intraspecific and interspecific competition in the new areas they inhabit. They could experience low survivorship in new, unfamiliar areas where they experience less hunting success and are more susceptible to predation. Giant garter snake habitat on the project is relatively isolated by major roadways and existing development from other habitat that could support this species. Displaced snakes that may attempt to reach suitable off-site habitat via Lone Tree Canal after construction begins would need to either navigate culverts crossing at I-5 or Elkhorn Boulevard. Overland attempts by snakes to escape to the south or east would be blocked or constrained by I-5 and SR 70/99, while snakes crossing the site to the north would risk mortality from increased traffic on Elkhorn Boulevard. During project construction, giant garter snakes could be killed or injured by vehicle strikes on roads, crushing beneath heavy construction equipment, or entombment in their winter retreats (Wylie and Casazza 2000).

### ***Contaminants***

The proposed development could affect adjacent giant garter snake habitat through urban run-off and introduction of sediment, pesticides, herbicides, petroleum products, heavy metals, polynuclear aromatic hydrocarbons, and other organic nutrients into waterways (USFWS 2003). The City of Sacramento, however, has received a permit under the National Pollutant Discharge Elimination System (NPDES) for stormwater discharge from the Central Valley Regional Water Quality Control Board (RWQCB), and this requires the City to implement the best pollution control technology available prior to discharge of drainage water. The Central Valley RWQCB also requires participation in the statewide NPDES permit for construction activities. Under this permit, the City requires adherence to its erosion control standards and practices during project construction activities. Further, and more importantly, stormwater runoff from a portion of the site currently drains to Lone Tree Canal; following project development Lone Tree Canal would no longer convey any runoff from the site (see Section 6.10, "Hydrology, Drainage, and Water Quality," of this DEIR). Therefore, no direct or indirect impacts to giant garter snakes resulting from urban run-off would be expected.

### ***Domestic and Feral Animals***

Domestic and feral cats could be introduced into the giant garter snake habitat adjacent to developed areas as a result of the proposed development. Residential development close to areas inhabited by snakes can lead to increased predation by cats. While studies have demonstrated the predatory influences of domestic dogs and cats on wildlife (Van't Woudt 1990), its impact on giant garter snake populations has not been determined (CH2M Hill 2003). However, giant garter snake mortality resulting from predation by domestic and feral animals inhabiting developed portions of the project site could occur.

### ***Human Encroachment***

Noise and other disturbances from developed areas could disrupt the activities of giant garter snakes occupying adjacent habitat, and the number of human interactions with snakes could increase as a result of increased human population numbers from the proposed project. Human activity and noise may disrupt breeding and foraging activity, as animals leave an area to escape human presence. Such responses are often associated with physiological adjustments, and the energetic costs of active responses to human disturbance may result in diminished survivability or reproductive output (Gabrielson and Smith 1995). Off-road vehicles, foot, horse and bicycle traffic lead to trampling of vegetation and soil compaction that can hinder plant germination

(Carlson and Godfrey 1989), which could reduce vegetative cover for the giant garter snake along the banks of ditches and canals.

Giant garter snakes could experience increased mortality from motor vehicle activity associated with urbanization. Snakes could be killed on new roads constructed as part of the proposed project or on existing roads because of the increased traffic that would result due to increased human population.

The potential effects to giant garter snakes and their habitat from project implementation are considered *significant*.

#### Mitigation Measure 6.12-1: (City of Sacramento and LAFCo)

- a. To mitigate impacts to giant garter snake, the project applicant shall prepare an HCP, pursuant to Section 10(a) of ESA, and shall obtain appropriate authorization for incidental take of giant garter snake from USFWS and DFG. (DFG would issue permits through Section 2081 of the Fish and Game Code.) The HCP shall include a comprehensive giant garter snake conservation strategy, developed through consultation with USFWS and DFG. This strategy shall be consistent with the goals of the regional basin-wide conservation program described in the NBHCP, and shall advance the NBHCP's regional conservation strategy. This conservation strategy shall be designed to include avoidance, minimization and compensation measures that are adequate to assure that the proposed project shall not compromise the effectiveness of the NBHCP.
- b. The conservation strategy shall include habitat preservation and restoration consistent with the NBHCP's strategy of establishing an interconnected reserve system composed of marshlands, uplands, and rice fields in the Natomas Basin. Key elements of the giant garter snake conservation shall include on-site/off-site habitat preservation, restoration, and creation, and on-site avoidance and minimization measures. The conservation strategy that would ultimately be implemented as mitigation would be developed through consultation with DFG and USFWS as part of the permitting process. Refinements may occur through the USFWS/DFG consultation process, to the extent that the NBHCP regional conservation strategy is advanced.

#### **1. Habitat Creation, Preservation, and Management in the Lone Tree Canal Linear Open Space/ Buffer Area**

- a. To ensure that the project does not diminish habitat connectivity for giant garter snake between the southwest and northwest zones identified in the NBHCP, approximately 30.6 acres along Lone Tree Canal shall be protected and managed as giant garter snake habitat. This on-site habitat preservation shall protect an approximately 250-foot wide corridor of giant garter snake habitat that includes the canal and approximately 200 feet of adjacent uplands. Uplands within the linear open space/buffer area shall be managed as perennial grassland as described below. Additional aquatic habitat for giant garter snake shall be created along the east bank of Lone Tree Canal by construction and maintenance of a 2.7 acre tule bench. The habitat shall be managed in perpetuity as high-quality habitat for giant garter snake. Compliance and biological effectiveness monitoring shall be performed and annual monitoring reports prepared within six months of completion of monitoring for any given year. This monitoring, reporting, and adaptive management shall be performed as described in Section IV of the NBHCP.
- b. To ensure that the project does not diminish giant garter snake movement along Lone Tree Canal, all new road crossings of Lone Tree Canal shall be designed to minimize obstacles to giant garter snake movement. The use of culverts under new road crossings on Lone Tree Canal shall be prohibited unless it can be demonstrated that the culverts will not diminish the potential for giant garter snake movement through the section of Lone Tree Canal protected by the setback fence and conservation easement.



- c. Upland giant garter snake habitat within the Lone Tree Canal linear open space/buffer area shall be created and managed to provide cover, basking areas, and refugia during the winter dormant period. Hibernaculae would be constructed at regular intervals by embedding concrete or coarse rock in the bank or in a berm along the Lone Tree Canal corridor to provide additional winter refugia. Upland habitat with the linear open space/buffer areas shall be converted to native perennial grassland and managed, in perpetuity, as perennial grassland habitat.
- d. Aquatic habitat shall be maintained throughout the giant garter snake active season in Lone Tree Canal, in perpetuity. This is the legal responsibility and obligation of Metro Air Park property owners (MAP). The MAP HCP includes provisions for maintaining water in the canal such that the basic habitat requirements of the giant garter snake are met. The MAP HCP also provides a road map, through “Changed Circumstances”, to address procedures to follow if water is not being maintained in the canal to meet these requirements. As described in the MAP HCP, the MAP is legally obligated to assure these requirements are met, and financial and procedural mechanisms are included in the MAP HCP to enforce this. It is, therefore, assumed that MAP will provide water to Lone Tree Canal, as required by the MAP HCP and ITP, in perpetuity. It is also assumed that USFWS will use all reasonable means available to it, to enforce this MAP HCP requirement. If water is not provided to Lone Tree Canal by the MAP to meet the habitat requirements of giant garter snake, as required by the MAP HCP, and USFWS exhausts its enforcement responsibilities, the project applicant shall assume the responsibility of providing suitable giant garter snake aquatic habitat throughout the section of Lone Tree Canal protected by the fence and conservation easement. However, as stated herein, the project applicant shall only assume this responsibility if it has been sufficiently demonstrated to the City that USFWS has exhausted all reasonable means to compel MAP to comply with the relevant conditions of the MAP ITP. Specific requirements related to ensuring suitable aquatic habitat in Lone Tree Canal is present, in perpetuity, throughout the giant garter snake active season shall be developed through consultation with DFG and USFWS, and included in the new or amended HCP for Greenbriar, and may include mechanisms, such as installation of a well, to assure water is provided in the canal to meet habitat requirements.
- e. A barrier shall be installed between the giant garter snake habitat linear open space/buffer area and the adjacent Greenbriar development to ensure that giant garter snakes do not enter the development area, and to prohibit humans and pets from entering the giant garter snake habitat. The design of this barrier shall be subject to USFWS and CDFG review and approval. The entire length of the barrier, which shall be bordered by yards rather than roadways, shall be maintained on the preserve side by a nonprofit land trust to ensure that vegetation or debris does not accumulate near the barrier and provide opportunities for wildlife and pets to climb over the barrier. On the development side, Covenants, Codes and Restrictions (CCRs) shall prohibit accumulation of vegetation or debris adjacent to the barrier. Chain link fencing shall be placed at both ends of the corridor, with locked gates permitting entry only by RD 1000 and NMWD for channel maintenance, and by the preserve manager for habitat monitoring and maintenance purposes.
- f. Specific requirements associated with the barrier shall be developed through consultation with USFWS and DFG, and may include the following and/or other specifications that DFG and USFWS consider to be equally or more effective:
  - ▶ Adequate height and below-ground depth to prevent snakes or burrowing mammals from providing a through-route for snakes by establishing burrows from one side to the other crossing;
  - ▶ Constructed using extruded concrete or block construction extending a minimum of 36-inches above ground level;

- ▶ Maintenance to repair the barrier and to prevent the establishment of vegetation or collection of debris that could provide snakes with a climbing surface allowing them to breach the barrier;
  - ▶ A cap or lip extending at least two-inches beyond the barrier's vertical edge to prevent snakes from gaining access along the barrier's top edge; and
  - ▶ Signage to discourage humans and their pets from entering the area.
- g. The Lone Tree Canal linear open space/buffer area shall be protected in perpetuity under a conservation easement and managed to sustain the value of this area for giant garter snake habitat connectivity. Compliance and biological effectiveness monitoring shall be performed and annual monitoring reports prepared. This monitoring, reporting, and adaptive management shall be performed as described in Section IV of the NBHCP or following procedures developed in formal consultation with USFWS and DFG and contained in an ESA Incidental Take Permit for the Greenbriar project.

## **2. Off-site Habitat Preservation, Restoration, and Creation**

- a. The project applicant shall preserve, restore, and manage giant garter snake habitat at two off-site locations identified as having high regional conservation value, and contributing to an interconnected regional reserve system as envisioned in the NBHCP. Off-site habitat preservation, restoration, and creation shall be implemented on the Sacramento County portion of the Spangler property ("Spangler Site") and the Natomas 130 parcel ("Natomas 130 Site") to ensure that implementation of the proposed project would result in no net loss of overall giant garter snake habitat value. The habitat shall be managed in perpetuity as high-quality habitat for giant garter snake. Compliance and biological effectiveness monitoring shall be performed and annual monitoring reports prepared. This monitoring, reporting, and adaptive management shall be performed as described in Section IV of the NBHCP.

The Spangler Site is located in northern Sacramento County along the Sutter County line, northeast of the Sacramento Airport and west of SR 70/99 (Exhibit 6.12-4). This site is currently in irrigated rice. It is surrounded by agriculture (primarily rice) on all sides. Existing water channels provide potential habitat connectivity for giant garter snake between the Spangler Site and Lone Tree Canal. A minimum of 190 acres of managed marsh, including 55.2 acres of upland habitat, shall be created and preserved for giant garter snake on the Spangler Site. The 55.2 acres of upland habitat shall also serve as mitigation for impacts to Swainson's hawk described under Impact 6.12-2. To further reduce impacts to Swainson's hawk, a minimum 45.4 acres of high-quality Swainson's hawk foraging habitat (e.g., alfalfa) shall be created and managed on the Spangler Site, as further discussed below.

The North Natomas 130 Site is adjacent to the Natomas Basin Conservancy's Cummings preserve to the south, Fisherman's Lake to the east, rice land to the north, and the Sacramento River to the west. Because it is surrounded by compatible land uses and habitat expected to persist in the future, this site has long-term conservation value. The Natomas 130 Site provides potential habitat connectivity for giant garter snake to existing preserves and Lone Tree Canal via a series of water drainage and delivery channels. A minimum of 14.2 acres of managed marsh, including 4.3 acres of upland habitat, shall be created and preserved for giant garter snake on the North Natomas 130 Site. The 4.3 acres of upland habitat shall also serve as mitigation for impacts to Swainson's hawk described under Impact 6.12-2. To further reduce impacts to Swainson's hawk, 14.2 acres of high-quality foraging habitat shall be managed to provide Swainson's hawk foraging habitat on the North Natomas 130 Site. Habitat created and preserved on the North Natomas 130 Site shall also include 1.9 acres of riparian, which could provide potential nesting sites for Swainson's hawk.

- b. The off-site conservation lands shall be restored with giant garter snake habitat consisting of a mosaic of habitat types with variations in topography and an abundance of edges within and between habitat types. The managed marsh shall consist of seasonal marsh with shallow and deep water configurations,

permanent marsh, and upland habitats in the form of buffers, islands, and other high-ground habitats scattered throughout the marsh's wetland component. A significant portion of the upland component shall be above winter flood levels to protect giant garter snakes in their winter retreats. Vegetation shall be natural marsh vegetation such as cattails, spike rush, tule clumps, and thimbleberry, placed to maximize protected resting and basking sites and escape cover for the snakes.

### **3. On-site Avoidance and Minimization Measures**

The measures described below shall be incorporated into the giant garter snake conservation strategy to avoid and minimize take of giant garter snakes during construction activities, including construction of managed marsh habitat:

- a. All grading activity within giant garter snake habitat (aquatic habitat and uplands within 200 feet of aquatic habitat) shall be restricted to a period between May 1 and October 1. Because this is during the snakes' active stage, it would allow snakes to actively move away from danger and thereby reduce chances of snake mortality. Additionally, this restriction is timed to avoid grading during the snakes' breeding, dispersal, fall foraging and over-wintering periods, when they are most vulnerable to disturbance. If grading cannot be scheduled between May 1 and October 1, the Applicant shall contact the USFWS to determine whether additional measures are necessary to avoid and/or minimize take of giant garter snake. Grading shall only occur during the period between October 2 and April 30 upon written USFWS approval.
- b. A qualified biologist with experience identifying giant garter snakes shall survey the construction area for giant garter snakes no more than 24 hours prior to the start of construction activities. If construction activities stop on the project site for a period of two weeks or more, a new giant garter snake survey shall be completed no more than 24 hours prior to the re-start of construction activities.
- c. Between April 15 and September 30, all irrigation ditches, canals, or other aquatic habitat within the construction area shall be completely dewatered, with no ponded water remaining, for at least 15 consecutive days prior to the excavation or filling in of the dewatered habitat. The purpose of dewatering the aquatic habitat prior to filling is to compel giant garter snakes to leave the area on their own. A qualified biological monitor shall ensure that dewatered habitat does not continue to support giant garter snake prey, which could attract snakes into the area. Netting and salvage of prey may be necessary if a site cannot be completely dewatered.
- d. Construction activity shall be avoided within the approximately 250-foot Lone Tree Canal linear open space/buffer area, except for the purpose of habitat restoration activities carried out under the direction of a qualified biological monitor with experience identifying giant garter snakes. To minimize habitat disturbance during construction of the urban development, the approximate 250-foot wide corridor shall be bordered on the outer edge with exclusionary fencing that shall prevent giant garter snakes from entering the construction area, but shall allow any giant garter snakes within the construction area, that may have otherwise been trapped, to cross into the canal corridor. Movement of heavy equipment associated with construction of the urban development shall be restricted to the construction area outside the corridor, except for approved restoration activity within the corridor.
- e. Clearing and grading shall be confined to the minimum area necessary to facilitate construction activities as determined by a qualified biologist. Habitat that will be avoided shall be cordoned off, clearly flagged, and designated as an "Environmentally Sensitive Area" by a qualified biologist. An exclusion fence shall be erected between the development area and the Lone Tree Canal linear open space/buffer area prior to and during construction to prevent giant garter snake entry into the construction zone. The fence shall be erected prior to the onset of the dormant season preceding construction when giant garter snakes are less likely to occupy upland retreats on the project site. The interior or project side of the

exclusion fence shall be routinely monitored for giant garter snakes stranded by the fence. Snakes encountered should be relocated to the nearest suitable habitat off-site by a qualified biologist.

- f. All construction personnel shall receive worker environmental awareness training from a USFWS-approved biologist prior to commencing any construction-related activities on the project site. This training shall instruct workers on how to identify the giant garter snake and its habitat, and what to do if a giant garter snake is encountered during construction activities.
- g. A USFWS-approved biological monitor shall be present during grading activities within 200 feet of aquatic giant garter snake habitat to ensure that construction activities do not encroach into unauthorized areas. If a live giant garter snake is found during construction activities, the biological monitor shall immediately notify USFWS. The biological monitor shall have the authority to stop construction in the vicinity of the snake. The snake shall be monitored and given a chance to leave the area on its own. If the snake does not show signs of leaving, then the biological monitor shall slowly move toward the snake to flush it toward adjacent habitat away from the construction area. Potential escape routes for giant garter snakes shall be determined in advance of construction. If the garter snake does not leave on its own within 1 working day, the biological monitor shall consult with the USFWS to determine necessary additional measures. Any giant garter snake mortality shall also be reported by the biological monitor within 1 working day to USFWS. Any project-related activity that results in giant garter snake mortality shall cease so that this activity can be modified to the extent practicable to avoid future mortality.
- h. Upon completion of construction activities, construction debris shall be completely removed from the site. If this material is situated near existing giant garter snake aquatic habitat, it shall be inspected by a qualified biologist prior to removal to assure that giant garter snakes are not using it for hibernaculae or temporary refuge.
- i. No plastic, monofilament, jute, or similar erosion control matting that could entangle snakes shall be placed on a project site when working within 200 feet of snake aquatic or rice habitat. Possible substitutions include coconut coir matting, tactified hydroseeding compounds, or other material approved by DFG and USFWS.

### Significance After Mitigation

Implementation of Mitigation Measure 6.12-1 would reduce impacts to giant garter snake and its habitat to a ***less-than-significant*** level. With mitigation incorporated, the project would not adversely affect the giant garter snake. The proposed mitigation would include preservation and creation of 234.8 acres of giant garter snake habitat. On-site mitigation would include creation, protection, and management of 27.9 acres of suitable uplands and 2.7 acres of suitable aquatic habitat, within a 250-foot wide linear open space/buffer along Lone Tree Canal. In addition, permanent and temporary impacts to 58.75 acres of giant garter snake habitat on-site would be offset by the increased habitat quality resulting from the creation and preservation of 144.7 acres of managed marsh and 59.5 acres of suitable upland habitat off-site. Habitat connectivity would not be diminished and could be enhanced along Lone Tree Canal through assuring adequate surface water is present in the canal and creation of a 2.7-acre tule bench along the west bank of the canal. In addition, the on-site avoidance and minimization measures would minimize the potential for direct harm of individuals. Any take of giant garter snake would require prior approval by DFG and USFWS in compliance with CESA and ESA.

<b>IMPACT 6.12-2</b>
--------------------------

Effects to Swainson's Hawk. *Implementation of the proposed project would result in the permanent removal of approximately 546 acres of potential Swainson's hawk foraging habitat on-site and could disturb nesting in the vicinity of the project site. This impact would be **significant**.*

No Swainson's hawks have been observed or detected on-site, and no suitable nesting sites are present. However, in 2004, a total of 5 nests were located within one mile of the Greenbriar site, two of which were active (Natomas Basin Conservancy 2004). The project site includes an estimated 546 acres of potential Swainson's hawk foraging habitat that could be affected. In 2005, 115 acres of idle agricultural land on the project site was considered moderate-quality foraging habitat. The balance of the site, approximately 431 acres, was wheat fields, disturbed uplands, and seasonal wetlands, which are considered low-quality foraging habitat.

The project would substantially reduce the acreage of Swainson's hawk foraging habitat in the Natomas Basin. Although no focused surveys have been conducted to determine the importance of the project site as foraging habitat for Swainson's hawks nesting in the project vicinity, it is assumed that because the site was used for growing wheat in 2005, Swainson's hawk foraging is limited to field edges with the exception of during, and soon after, harvesting. Therefore, the project site is not likely to provide important foraging habitat during much of the Swainson's hawk nesting period. Based on 2005 site conditions and the absence of any active nests on the project site, it is not expected that loss of this foraging habitat alone would result in lower reproduction success at any of the active Swainson's hawk nesting sites in the Natomas Basin. However, the cumulative loss of Swainson's hawk foraging habitat in the basin could result in fewer Swainson's hawks nesting pairs in the future. Although no Swainson's hawk nests are known within one-half mile of the project site, should a nest become active near the site prior to development, construction activities associated with the project could result in the disturbance of nesting pairs in trees near the project site, potentially resulting in nest abandonment and mortality of chicks and eggs. This loss of foraging habitat and potential impacts to nesting Swainson's hawks in the project vicinity would be *significant*.

#### Mitigation Measure 6.12-2: (City of Sacramento and LAFCo)

- a. The project applicant shall implement Mitigation Measure 6.12-1. The project shall include a conservation strategy which shall be designed to include avoidance, minimization and compensation measures that are adequate to assure that the proposed project shall not compromise the effectiveness of the NBHCP. Implementation of this mitigation measure would require preservation of 27.9 acres of on-site managed grassland within the Lone Tree Canal linear open space/buffer area, which would provide low-quality Swainson's hawk foraging habitat, and would require off-site habitat at several locations. Off-site mitigation for impacts to Swainson's hawk foraging habitat on the Spangler Site would include creation and management of 55.2 acres of upland habitat that would provide moderate-quality foraging habitat, and creation and management of 45.4 acres of high-quality foraging habitat. Off-site mitigation on the North Natomas 130 Site would include creation and preservation of 4.3 acres of moderate-quality foraging habitat and 14.2 acres of high-quality foraging habitat. Off-site mitigation at the North Natomas 130 site also includes creation and preservation of 1.9 acres of riparian habitat that could provide potential nesting sites for Swainson's hawks.

In addition to creation and management of foraging habitat provided by Mitigation Measure 6.12-1, the project applicant shall acquire a minimum of 49 acres of land enhanced and managed to provide high-quality foraging habitat so that the cumulative value of on-site and off-site habitat is of equal or greater value to Swainson's hawk than that lost through project development. Swainson's hawk habitat acquired off-site shall either be located within 1 mile of the Swainson's hawk zone or an existing TNBC reserve, or, with USFWS and DFG concurrence, within two miles of more than one active Swainson's hawk nests.

Thus, in total, 27.9 acres of low-quality, 59.5 acres of moderate-quality, 108.6 acres (including the additional 49 acres referenced above) of high-quality, and 1.9 acres of potential nesting habitat would be provided as mitigation for the loss of approximately 546 acres of low- and moderate-quality foraging habitat.



The totals described above represent the acreage, of the quality described, likely to mitigate the loss of habitat value associated with the proposed project. This represents potential acreage within a range that could be used to mitigate loss of habitat value. Acquired and preserved acreage could range up to a replacement of 1:1 (or higher) ratio, if needed to replace lost habitat value. Alternatively, a lesser acreage that is enhanced and managed as high-quality foraging habitat (e.g., alfalfa) for Swainson's hawk in perpetuity, as proposed herein, would be acceptable provided that USFWS and DFG concur that, with the replacement habitat, the project would provide equal or greater value to the species than would the foraging habitat present at the project site. Compliance and biological effectiveness monitoring shall be performed and annual monitoring reports shall be prepared. This monitoring, reporting, and adaptive management shall be performed as described in Section IV of the NBHCP.

- b. In addition, the following avoidance and minimization measures shall be implemented:
1. Pre-construction surveys shall be conducted for Swainson's hawk and other raptors no more than 14 days and no less than 7 days prior to the beginning of any construction activity between March 15 and August 15. The survey area shall include all potential nesting sites located within ½ mile of the project and mitigation-sites
  2. Should nesting be discovered within the survey area, a qualified biologist shall notify DFG and no new disturbance shall occur within ½ mile of the nest until the nest is no longer active or appropriate avoidance measures are approved by DFG to ensure that the nest is adequately protected. Potential mitigation measures may include visual screening and timing restrictions for construction activity. Monitoring (funded by the project applicant) of active nests by a DFG-approved raptor biologist shall be required to determine if project construction is disturbing Swainson's hawks at the nest site. Exact implementation of this measure shall be based on specific information at the project site.

### Significance After Mitigation

Implementation of Mitigation Measure 6.12-2 would reduce impacts to Swainson's hawk and its habitat to a less-than-significant level, because the combination of on-site habitat creation and preservation, and off-site habitat acquisition and preservation would provide greater or equal habitat value to the species. As proposed, an estimated 115 acres of moderate-quality and 431 acres of low-quality foraging habitat would be removed by the project. With mitigation incorporated, the project would provide 27.9 acres of on-site low-quality foraging habitat for Swainson's hawk. Off-site mitigation would include creation and preservation of a minimum of 59.5 acres of moderate-quality, and 108.6 acres of high-quality, foraging habitat. This replacement of overall higher quality acreage would be expected to provide as rich a food source and other attributes such that overall habitat value is replaced. In addition, the effect of construction-related activities on Swainson's hawks that could nest in the project vicinity would be reduced to a less-than-significant level through implementation of avoidance and minimization measures. With the implementation of these measures, this impact would be reduced to a **less-than-significant** level because adequate replacement habitat would be provided for Swainson's hawk that could forage on the project site.

#### IMPACT 6.12-3

**Loss and Degradation of Wetlands and Waters of the United States.** *Implementation of the proposed project would result in fill of jurisdictional waters of the United States, including wetlands subject to USACE jurisdiction under the federal Clean Water Act, and the potential loss and degradation of isolated wetland habitats protected under state regulations. Placement of fill in these waters would require a Section 404 permit from USACE and compliance with Porter-Cologne and Section 401 of the Clean Water Act, and Section 1600 of the California Fish and Game Code. This impact would be **significant**.*

Foothill Associates identified 25.95 acres of wetlands on the project site (Foothill Associates 2006) and determined that 14.15 acres met the USACE jurisdictional definition of waters of the

United jurisdictional. An additional 8.56 acres of features were reviewed at the request of the USACE. These areas were determined by Foothill to be uplands based on an absence of wetland hydrology and therefore would not be subject to USACE jurisdiction. The delineation prepared by Foothill has not been verified by USACE; therefore, these figures are subject to change. If the USACE reaches different conclusions regarding the 11.80 acres of isolated wetlands and 8.56 upland acres presumed non-jurisdictional then it could exercise jurisdiction over up to 34.51 acres on the project site.

Implementation of the proposed project likely would result in the loss of 14.15 acres of jurisdictional wetlands, including 9.43 acres of farmed wetlands, 1.34 acres of seasonal marsh, and 3.38 acres of ditch/canal. In addition, the project could result in the fill of up to 11.80 acres of isolated wetlands that are presumed non-jurisdictional. While isolated wetlands are not subject to USACE jurisdiction, they are considered sensitive because they can provide potential habitat for special-status species and important ecological values and functions.

Though the non-jurisdictional isolated wetlands on the project site have no particular ecological value for species covered by the state and federal ESAs, they perform functions for water quality and stormwater detention. Prior to conversion to wheat, the functions and values of these features were indistinguishable from the former rice fields. Because they are now isolated within the wheat fields, they have marginal value and provide minimal habitat value for protected species or special-status plants. Isolated wetlands on the site may be considered to be waters of the State subject to the jurisdiction of the Central Valley Regional Water Quality Control Board (RWQCB) under the State's Porter Cologne Act.

While a loss of wetlands would occur, wetlands associated with Lone Tree Canal would be protected as part of the giant garter snake habitat conservation area described under Mitigation Measure 6.12-1. The managed marsh habitat provided for the giant garter snake will compensate for this loss and contribute to improved water quality.

Potentially significant secondary (indirect) effects of the proposed project on wetlands resulting from increased urbanization and population include reduction in water quality caused by urban runoff, erosion, and siltation; intrusion of humans and domestic animals into the Lone Tree Canal linear open space/buffer area and off-site wetlands; and introduction of invasive plant species that could result in habitat degradation. This would be a *significant* impact.

#### Mitigation Measure 6.12-3: (City of Sacramento and LAFCo)

- a. The project applicant shall implement Mitigation Measure 6.12-1 to avoid impacts to waters of the United States and wetlands associated with Lone Tree Canal.
- b. Prior to project approval, the project applicant shall obtain a verified wetland delineation from USACE. Based on the results of the verified delineation, the project applicant shall commit to replace, restore, or enhance on a "no net loss" basis, in accordance with USACE and the Central Valley RWQCB, as appropriate for each agency's jurisdiction, the acreage of all waters of the United States and wetland habitats, including isolated wetlands that would be removed with implementation of the project. Wetland restoration, enhancement, and/or replacement shall be at a location and by methods acceptable to the USACE, DFG, and Central Valley RWQCB, as determined during the Section 404, Section 1600, and Section 401 permitting processes.
- c. In conjunction with preparation and implementation of the giant garter snake mitigation described under Mitigation Measure 6.12-1, the project applicant shall prepare and submit a habitat mitigation and monitoring plan to USACE for the creation of jurisdictional waters at a mitigation ratio no less than 1:1 acres of created water of the United States, including wetlands, to each acre filled. The mitigation plans shall

demonstrate how the USACE criteria for jurisdictional waters will be met through implementation. Wetland mitigation achieved through implementation of Mitigation Measure 6.12-1 can satisfy this mitigation measure if conducted in such a way that it meets both habitat function and the USACE criteria for creation of waters of the United States. The wetland creation section of the habitat mitigation and monitoring plan shall include the following:

- ▶ target areas for creation,
  - ▶ a complete biological assessment of the existing resources on the target areas,
  - ▶ specific creation and restoration plans for each target area,
  - ▶ performance standards for success that will illustrate that the compensation ratios are met, and
  - ▶ a monitoring plan including schedule and annual report format.
- d. The project applicant shall secure the following permits and regulatory approvals, as necessary, and implement all permit conditions before implementation of any construction activities associated with the proposed project:
1. Authorization for the fill of jurisdictional waters of the United States shall be secured prior to placing any fill in jurisdictional wetlands from the USACE through the CWA Section 404 permitting process. Timing for compliance with the specific conditions of the 404 permit shall be per conditions specified by the USACE as part of permit issuance. It is expected that the project would require an individual permit because wetland impacts would total more than 0.5 acre. In its final stage and once approved by the USACE, this mitigation plan is expected to detail proposed wetland restoration, enhancement, and/or replacement activities that would ensure no net loss of jurisdictional wetlands function and values in the project vicinity. As required by Section 404, approval and implementation of the wetland mitigation and monitoring plan shall ensure no net loss of jurisdictional waters of the United States, including jurisdictional wetlands. Mitigation for impacts to isolated wetlands shall be included in the same mitigation plan. All mitigation requirements identified through this process shall be implemented before construction begins in any areas containing wetland features.
  2. Prior to construction in any areas containing wetland features, the project applicant shall obtain water quality certification pursuant to Section 401 of the Clean Water Act for the project. Any measures required as part of the issuance of water quality certification shall be implemented.
  3. The project applicant shall obtain a Streambed Alteration Agreement under Section 1600 et seq. of the California Fish & Game Code for impacts to Waters of the State as defined under Section 1602 of the California Fish & Game Code.
  4. The project applicant shall file a report of waste discharge with the Central Valley RWQCB for activities affecting waters of the state. For other mitigation measures aimed at maintaining water quality, including obtaining National Pollutant Discharge Elimination System (NPDES) permits, see Mitigation Measure 6.10-1 in “Hydrology, Drainage and Water Quality.”

### Significance After Mitigation

With the implementation of these measures, impacts on waters of the United States, including wetlands, would be *less than significant* because no net loss of jurisdictional wetlands would occur, and compliance with state and federal statutes protecting wetland would be achieved.

<b>IMPACT 6.12-4</b>
--------------------------

**Disturbance or Removal of Special-status Plant Species.** *Implementation of the proposed project could result in the disturbance or loss of Delta tule pea and Sanford's arrowhead. Delta tule-pea and Sanford's arrowhead could be present in the freshwater marsh habitat within the wetland habitats on the project site. The potential loss of a special-status plant population would be considered a **potentially significant** impact.*

No special-status plant occurrences have been reported on the project site; however, the potential for their occurrence on the project site cannot be dismissed because protocol-level surveys have not been conducted and suitable habitat is present. Implementation of the project could result in the loss or disturbance of freshwater marsh habitat that could support special-status plant species. Disturbance or removal of Delta tule pea or Sanford's arrowhead plants would be considered a potentially significant impact.

#### Mitigation Measure 6.12-4: (City of Sacramento and LAFCo)

- a. Before the initiation of any ground-disturbing or vegetation-clearing activities, the project applicant shall retain a qualified botanist to conduct focused surveys in the project area for Delta tule pea and Sanford's arrowhead. The botanist shall conduct surveys for these special-status plant species at the appropriate time of year when the target species would be in flower, and therefore, clearly identifiable Surveys shall be conducted following the approved DFG protocol for surveying for special-status plant species.
- b. If no special-status plants are found during focused surveys, the botanist shall document the findings in a letter report to USFWS, DFG, and CNPS and no further mitigation shall be required.
- c. If special-status plant populations are found, the project applicant shall consult with the DFG to determine the appropriate mitigation measures for any population that may be affected by the project. Mitigation measures may include creation of off-site populations on project mitigation sites, through seed collection or transplanting, preserving and enhancing existing populations, or restoring or creating suitable habitat in sufficient quantities to compensate for the impact.

#### Significance After Mitigation

Implementation of the above mitigation measures would require focused surveys for special-status plants, and implementing measures to avoid and minimize any special-status plant populations identified on the project site, and would reduce impacts to special-status plant to a *less-than-significant* level.

<b>IMPACT 6.12-5</b>
--------------------------

**Modifications to Burrowing Owl Habitat.** *Implementation of the proposed project could result in the loss of burrowing owl habitat or active burrows. This would be a potentially significant impact.*

An individual burrowing owl was observed on the project site during both March and September 2005 surveys. Burrowing owls and their nests are protected under Section 3503.5 of California Fish and Game Code. The proposed project could result in the removal or disturbance of a potentially active owl burrow or active nest site. Therefore, the project would result in a potentially significant impact to burrowing owl.

#### Mitigation Measure 6.12-5: (City of Sacramento and LAFCo)

- a. No more than 30 days and no less than 14 day prior to project site grading, a qualified biologist shall conduct focused surveys for burrowing owls in areas of suitable habitat on and within 300 feet of the project site. Surveys shall be conducted in accordance with DFG protocol (DFG 1995).
- b. If no occupied burrows are found in the survey area, a letter report documenting survey methods and findings shall be submitted to DFG, and no further mitigation is necessary.
- c. If occupied burrows are found in the survey area, impacts shall be avoided by establishing a buffer of 165 feet during the non-breeding season (September 1 through January 31) or 300 feet during the breeding season (February 1 through August 31). The size of the buffer area may be adjusted if a qualified biologist and DFG determine it would not be likely to have adverse effects. No project activity shall commence within

the buffer area until a qualified biologist confirms that the burrow is no longer occupied. If the burrow is occupied by a nesting pair, a minimum of 6.5 acres of foraging habitat contiguous to the burrow shall be preserved until the breeding season is over.

- d. If impacts to occupied burrows are unavoidable, on-site passive relocation techniques may be used if approved by DFG to encourage owls to move to alternative burrows outside of the impact area. However, no occupied burrows shall be disturbed during the nesting season unless a qualified biologist verifies through non-invasive methods that the burrow is no longer occupied. Foraging habitat for relocated pairs shall be provided in accordance with guidelines provided by DFG (1995). DFG guidelines recommend a minimum of 6.5 acres of foraging habitat per pair or unpaired resident bird, be acquired and permanently protected.
- e. If relocation of the owls is approved for the site by DFG, the developer shall hire a qualified biologist to prepare a plan for relocating the owls to a suitable site. The relocation plan must include: (a) the location of the nest and owls proposed for relocation; (b) the location of the proposed relocation-site; (c) the number of owls involved and the time of year when the relocation is proposed to take place; (d) the name and credentials of the biologist who will be retained to supervise the relocation; (e) the proposed method of capture and transport for the owls to the new site; (f) a description of the site preparations at the relocation-site (e.g., enhancement of existing burrows, creation of artificial burrows, one-time or long-term vegetation control, etc.); and (g) a description of efforts and funding support proposed to monitor the relocation. Relocation options may include passive relocation to another area of the site not subject to disturbance through one way doors on burrow openings, or construction of artificial burrows in accordance DFG guidelines.
- f. The project applicant shall implement Mitigation Measure 6.12-2 to mitigate for the loss of burrowing owl foraging habitat.

### Significance After Mitigation

Implementation of the above mitigation measures would avoid impacts to nesting burrowing owls and compensate for the loss of foraging habitat. Therefore, impacts on burrowing owl would be reduced to a *less-than-significant* level.

<b>IMPACT 6.12-6</b>
--------------------------

**Effects to Northwestern Pond Turtle.** *Uplands and aquatic habitat on the project site suitable for giant garter snake is also considered potential habitat for northwestern pond turtle. Therefore, 55.56 acres of potential upland and aquatic habitat for western pond turtle would be permanently lost, 3.31 acres of upland and aquatic northwestern pond turtle habitat would be temporarily affected. The value of all northwestern pond turtle habitat on the project site is considered low because of insufficient water and the lack of emergent marsh vegetation in the excavated channels on the project site. However, Lone Tree canal and other areas that have the potential to support surface water of sufficient depths provide suitable habitat for this species. This impact would be **potentially significant**.*

The project area functions as a potential feeding, breeding, and rearing habitat, as well as a movement corridor for northwestern pond turtle. Although no western pond turtles have been observed or detected on-site, documented sightings of the western pond turtle within 5 miles of the site and the conditions present on-site indicate that Lone Tree Canal and hydrologically connected areas that support surface water of sufficient depths could be used by pond turtles during most life stages.

Following project development, western pond turtles could continue to use the site as a movement corridor between higher quality habitats to the north and south of the site. However, turtles traveling through the Lone Tree Canal or inhabiting other canals and wetlands downstream from the proposed development could be adversely affected by residential development through increased predation, disturbance and degradation of aquatic habitat.



Because the project could disturb areas that could potentially support and/or provide habitat for northwestern pond turtle, this impact would be *potentially significant*.

Mitigation Measure 6.12-6: (City of Sacramento and LAFCo)

- a. The project applicant shall implement Mitigation Measure 6.12-1.
- b. Construction personnel shall participate in a worker environmental awareness program. Under this program, workers shall be informed about the potential presence of western pond turtles in the construction area, and shall be provided guidance on appropriate steps to take if a pond turtle is encountered during project construction.
- c. Within 24 hours prior to commencement of construction activities, the site shall be inspected for turtles by a qualified biologist. The construction area shall be re-inspected whenever a lapse in construction activity of two weeks or greater has occurred.
- d. If a turtle is encountered on the project site, any construction activity that could result in harm of the turtle shall immediately cease and shall not resume until the monitoring biologist has determined that the turtle has moved away from the construction-site on their own volition or a qualified biologist has moved the turtle to a safe location.

Significance After Mitigation

Implementation of Mitigation Measure 6.12-6 would fully compensate for the loss of northwestern pond turtle habitat by provide on-site and off-site habitat that is of equal or greater value to the species, and by minimize the potential for harm that could result from construction activities, therefore, this impact would be reduced to a *less-than-significant* level.

**IMPACT  
6.12-7**

*Local Tree Protection Ordinance. The project would not result in the loss of any protected trees; therefore, no impact would occur.*

There are no trees on the project site that qualify for protection under the County or City tree preservation ordinances. In addition, the project site is located outside the boundaries covered by these ordinances. Therefore, *no impact* to protected trees would occur.

No mitigation measures are required.

**IMPACT  
6.12-8**

*Potential Loss of Loggerhead Shrike Nests. Shrubs and weedy vegetation on the project site provide potential nesting habitat for the loggerhead shrike. This species has been observed on the project site. The loss of an active loggerhead shrike nest would be a potentially significant impact.*

Loggerhead shrike, a California Species of Special Concern, is a relatively common species in the Natomas Basin. This species typically nests in dense shrubs and trees. The preferred nesting habitat for this species is not present on the project site, but small trees and shrubs, and tall weedy areas are considered marginal potential nesting habitat. Loggerhead shrikes have been observed on the project site, but no nests have been found. The potential loss of an active loggerhead shrike nest would be considered a *potentially significant* impact.

## Mitigation Measure 6.12-8: (City of Sacramento and LAFCo)

If initiation of site grading is proposed during the loggerhead shrike nesting season (March 1 to July 31), a qualified biologist shall conduct a focused surveys for loggerhead shrikes in areas of suitable habitat on and within 300 feet of the project site. The survey shall be conducted no more than 30 days and no less than 14 days prior to the start of grading. If surveys identify an active loggerhead shrike nest in the survey area, the applicant shall install brightly colored construction fencing that establishes a boundary 100 feet from the active nest. No disturbance associated with the proposed project shall occur within the 100-foot fenced area during the nesting season of March 1 through July 31 or until a qualified biologist has determine that the young have fledged or that the nest is no longer occupied prior to disturbance of the nest site.

### Significance After Mitigation

Implementation of Mitigation Measure 6.12-8 would ensure that any active loggerhead shrike nests on the project site would be adequately protected; therefore this impact would be reduced to a *less-than-significant* level.

IMPACT 6.12-9
------------------

**Potential to Conflict with the Natomas Basin Habitat Conservation Plan.** *The project with the proposed mitigation for impacts to giant garter snake and Swainson's hawk (Mitigation Measures 6.12-1 and 6.12-2) would not reduce the viability of populations of covered species using the Natomas Basin and would not reduce the effectiveness of the conservation strategy of the NBHCP. It also would have only minimal effects on the likelihood of attaining any of the goals and objectives of the NBHCP, and for most of these goals and objectives the overall effect would be neutral or beneficial. Therefore, with proposed mitigation, this impact would be less than significant.*

For each of the goals and objectives on the NBHCP, for the population viability of covered species, and the conservation strategy of the NBHCP, attributes by which the project could affect the goal, objective, covered species, or conservation strategy were evaluated by EDAW (Appendix P). For goals and objectives, these attributes included effects on zones with human-wildlife conflicts (i.e., areas adjacent to developed lands and roads), habitat acreage, habitat connectivity, habitat value, water availability at and connectivity of existing TNBC reserves, opportunities to establish additional TNBC reserves, and construction-related effects on survival and reproduction. For covered species, mechanisms included construction-related effects, effects on human-wildlife conflicts, and effects on the quantity and quality of habitat.

The project includes development of approximately 546 acres (total project site less open space corridor along Lone Tree Canal). Mitigation proposed as part of mitigation measure 6.12-1 for impacts to giant garter snake would preserve and enhance approximately 30.6 acres along Lone Tree Canal, and would preserve and enhance 265.8 acres of habitat at off-site reserves. In the analysis of effects on the NBHCP (Appendix P), it was assumed that to mitigate impacts to Swainson's hawk foraging habitat under Impact 6.12-2, at least an additional 49 acres of land should be preserved and managed to provide high quality Swainson's hawk foraging habitat. (This analysis used a minimum value to avoid overestimating benefits of this mitigation for other covered species.) Therefore, the project, with the proposed mitigation, would preserve 345 acres of habitat for giant garter snake and Swainson's hawk. Most of this preserved habitat would be created or enhanced as part of the project, and all of it would be managed in perpetuity for its habitat values. The project also includes avoidance and minimization measures, both to avoid and minimize construction-related effects and to avoid and minimize effects on the potential for giant garter snake use of Lone Tree Canal.

The project and proposed mitigation would cause both adverse and beneficial effects on covered species and the TNBC reserve system. The project's beneficial effects would result from the proposed reserves and include increased habitat quality resulting from the creation, enhancement, preservation, and management of habitat, increased connectivity of existing TNBC reserves and of habitats, and increased opportunities to establish additional TNBC reserves. The project's adverse effects would include a reduction in the acreage of upland and wetland habitats in the Natomas Basin, reduced Swainson's hawk foraging habitat within a mile of an existing TNBC reserve, fragmented upland habitats in the vicinity of the Greenbriar site, degraded habitat quality on and potential conflicts with continued agricultural use of adjacent lands to the north of the site, and possibly reduced connectivity along Lone Tree Canal (despite preserving and enhancing a corridor of habitat along the canal).

The proposed mitigation would reduce the project's adverse effects by implementing additional measures to ensure that connectivity along Lone Tree Canal would be retained, and preserving and enhancing foraging habitat within a mile of existing TNBC reserve(s) (or within 1 mile of the Swainson's hawk zone along the Sacramento River). This mitigation also would create additional beneficial effects because the preserved and enhanced foraging habitat would not only mitigate effects on TNBC reserves, but also could increase connectivity of habitat and of TNBC reserves in accordance with the NBHCP's fundamental goal for the establishment and management of a biologically sound and interconnected habitat reserve system. Similarly, by ensuring that connectivity along Lone Tree Canal would be maintained in the long-term, the project (with proposed mitigation) would conserve a portion of an important corridor connecting reserves and habitats of the southern and central Natomas Basin. (The connectivity of upland habitats, however, would still be reduced at the project site.)

Because the project would develop land located outside of the NBHCP's permit areas for urban development, it could cause different types and magnitudes of effects from those caused by a comparable project inside of the areas permitted for development by the NBHCP; thus, the project's avoidance and minimization measures, and its mitigation, could be consistent with the measures and mitigation required by the NBHCP and yet the project could still reduce the likelihood of persistence in the Natomas Basin of populations of covered species, compromise the effectiveness of the conservation strategy of the NBHCP, or otherwise detrimentally affect attainment of the NBHCP's goals and objectives.

Therefore, the project's effects on the NBHCP were not based solely on the project's consistency with the avoidance, minimization, and mitigation measures of the NBHCP, but rather were based primarily on the sum of anticipated effects on the viability of populations of covered species using the Natomas Basin, on the effectiveness of the NBHCP's conservation strategy, and on attainment of the goals and objectives of the NBHCP. Each of these potential effects is summarized in the following sections.

To evaluate the proposed project's effects on the NBHCP, the effects analysis used the 2001 land cover data that represents baseline conditions of the NBHCP. Consequently, the habitat acreages in the following text are based on 2001 conditions. (In evaluating potential effects on the effectiveness of the NBHCP, 2005 conditions were also considered.)

### ***Effect on Population Viability of Covered Species***

The project would not affect five of the 15 animal species covered by the NBHCP: California tiger salamander, western spadefoot toad, vernal pool fairy shrimp, vernal pool tadpole shrimp, and midvalley fairy shrimp. None of these vernal pool-associated species are known to occur in

the vicinity of the project site or proposed reserve sites, nor does suitable habitat occur in the vicinity of these sites.

The project is also unlikely to affect valley elderberry longhorn beetle (VELB) because VELB is not known to occur in the vicinity of the Greenbriar or proposed reserve sites, and riparian habitat that might contain elderberry bushes is only present at and in the vicinity of the proposed Natomas 130 reserve.

The project would cause a variety of beneficial and adverse effects on populations of nine species covered by the NBHCP. For these species, the overall effect on population viability is summarized below.

Three of these species are birds that do not nest in the Natomas Basin but forage in the Basin in winter or during migration: Aleutian Canada goose, white-faced ibis, and bank swallow. Based on 2001 land cover, the project (with proposed mitigation) would decrease the acreage of foraging habitat available for these species in the Natomas Basin by 1–3% and would preserve and enhance 0–2% of the foraging habitat in the Basin. Because the size of these populations is not limited by the availability of foraging habitat in winter, or during migration, and the project would not substantially alter the availability of such foraging habitat, the project's effect on foraging habitat would not be expected to alter the viability of these populations. The project would also increase the acreage of nesting habitat for white-faced ibis, and this could increase the likelihood of white-faced ibis establishing a nesting colony in the Natomas Basin; while not discounted, this effect was not considered likely.

The project would cause both adverse and beneficial effects on burrowing owl and loggerhead shrike populations in the Natomas Basin, but effects due to the project would be insufficient to alter the viability of these populations. Though the project would preserve approximately 345 and 141 acres of shrike and owl habitat, respectively, these beneficial effects might not fully offset the project's adverse effects on these species. Adverse effects would include a net loss of 141 acres for the shrike, and for both species a loss of occupied habitat, habitat fragmentation, and potential increased mortality and habitat degradation adjacent to the project site. However, the project's effects would be small relative to the quantity of habitat that would remain in the Natomas Basin (for example, the project would eliminate 1% of shrike habitat), and the Natomas Basin represents only a small portion of the habitat for and population of these species in the Central Valley; thus, the project is unlikely to measurably reduce the viability of the loggerhead shrike and burrowing owl populations using the Natomas Basin.

The project (with the mitigation proposed by the City) could cause a small adverse effect on tricolored blackbird use of the Natomas Basin, but in either case this effect is unlikely to alter the viability of the tricolored blackbird population using the Natomas Basin. The Greenbriar project would increase the quantity of nesting habitat in the Natomas Basin (by 201 acres or about 9%), but would decrease the quantity of foraging habitat (by 598 acres or about 3%). This loss of foraging habitat would be partially (but not fully) offset by the preservation and enhancement of 135 acres of foraging habitat (at the mitigation sites described above). Although currently, nesting habitat is more limited than foraging habitat in the Natomas Basin, under the future condition more nesting habitat would exist, and thus the additional nesting habitat that would be provided by the project may not affect the tricolored blackbird population more than the loss of foraging habitat that would also result. However, because the project would only cause a small beneficial or adverse effect on tricolored blackbird use of the Natomas Basin, and because the Natomas Basin accounts for only a small portion of the habitat and population of

tricolored blackbird in the Central Valley, the project is unlikely to alter the viability of the tricolored blackbird population using the Natomas Basin.

The project (with the proposed mitigation) would result in both adverse and beneficial effects on the Swainson's hawk population nesting and foraging in the Natomas Basin, but these effects would be insufficient to alter the population's viability. Adverse effects would include a reduction in the total acreage of foraging habitat under the future condition (by 222 acres or 2%), fragmentation, and possibly degradation of habitat near the project site, and a reduction in habitat available to hawks nesting at reserves near the project site. Beneficial effects would include an overall increase in the acreage of high quality habitat, and preserved and enhanced habitat within a mile of TNBC reserves, and potential enhancement to the connectivity of foraging habitat adjacent to the mitigation-site(s) required by mitigation measure 6.12-2. Overall, the project would have a neutral or beneficial effect, but the effect would be too small to alter the viability of the population using the Natomas Basin. This interpretation is based on the USFWS interpretation of effects on Swainson's hawk due to the NBHCP (USFWS 2003). Based on the methods used by CH2M Hill (2003) to evaluate availability of foraging habitat during the nesting period, the enhancement of habitat at the proposed reserves and mitigation-sites would increase the availability of foraging habitat during April–August to a level greater than the 2001 baseline of the NBHCP. Based on an alternative analysis developed by EDAW, during April–June, the increase in foraging habitat values at the proposed reserve and mitigation sites would be greater than the 2001 habitat values lost by development at the Greenbriar site; during July–August, foraging values would not be fully offset, but foraging habitat values would be higher within the Natomas Basin as a whole at this time because of the harvesting of crops. Thus, based on these analyses, the project would not be expected to reduce the number of hawks nesting in the Natomas Basin or their reproductive success.

The project would cause both adverse and beneficial effects on the populations of giant garter snake and northwestern pond turtle that use canals, wetlands, and rice in the Natomas Basin. Overall, the project would not adversely affect these populations. Beneficial effects would include creating, enhancing, and preserving habitat at the reserve sites, enhancing and preserving a 250-foot wide corridor along a portion of Lone Tree Canal, and contributing to the enhanced connectivity of habitat and existing TNBC reserves adjacent to or near the proposed reserves. Adverse effects would include a reduction in the total acreage of habitat by 204 acres (based on 2001 land cover), possible degradation of habitat near the project site and reduced connectivity along Lone Tree Canal due to increased human disturbance and predation (which would result from narrowing the corridor of land along Lone Tree Canal, and placing residential development adjacent to the canal). The mitigation recommended for the project (Mitigation Measures 6.12-1) would reduce these adverse effects and ensure that connectivity of giant garter snake habitat was conserved along Lone Tree Canal at the Greenbriar site. For example, to minimize risks to connectivity due to human disturbance and predation, the recommended mitigation would require the construction of fencing and barriers.

The loss of habitat acreage would be offset by the increased habitat quality resulting from the preservation of habitat and conversion of rice to marsh. The project (with the recommended mitigation) would conserve connectivity and habitat for giant garter snake along the affected section of Lone Tree Canal, which is an important waterway connecting the southern and central Natomas Basin, and proposed reserves would contribute to connectivity of habitats and reserves in the southern and central Basin.

Of the seven plant species covered by the NBHCP, the project would not affect the five vernal pool-associated species because these species are not known to occur in the vicinity of the project site or proposed reserve sites, nor is suitable habitat present at or near these sites. These plant

species are: Boggs Lake hedge-hyssop, Sacramento Orcutt grass, slender Orcutt grass, Colusa grass and legener. The other two covered plant species (delta tule pea and Sanford's arrowhead) are not known to occur at the project site or the proposed reserve sites, but suitable habitat for these species does occur at or near some of these sites, which have not been surveyed for these species. Overall, the project would increase the acreage of suitable habitat for these species (i.e., marsh and canal habitats) in the Natomas Basin. Nonetheless, because these species are not known to occur in the Natomas Basin, the project probably would not alter the viability of any of their populations.

### ***Effect on the Conservation Strategy of the NBHCP***

The project with the proposed mitigation would not reduce the effectiveness of the NBHCP's conservation strategy. In Section IV.C.1 (pages IV 5-15), the NBHCP describes the basis of the key components of the NBHCP's conservation strategy and how these components provide effective mitigation for 17,500 acres of urban development. These components are:

- a. basis for 0.5 to 1 mitigation ratio (Section IV.C.1.a),
- b. preparation of site specific management plans (Section IV.C.1.b),
- c. buffers within the reserve lands (Section IV.C.1.c),
- d. connectivity (Section IV.C.1.d),
- e. foraging habitat (Section IV.C.1.e), and
- f. 2,500-acre/400-acre minimum habitat block size requirements (Section IV.C.1.f).

In describing the basis for the 0.5:1 mitigation ratio, the NBHCP states that the ratio mitigates the impacts of the incidental take authorized under the NBHCP because much of the land to be developed does not provide habitat or only provides marginal habitat, and because the TNBC-managed reserves would provide habitat of higher quality than the eliminated habitat, and the land outside the permit area but within the basin would not be developed. Because the project would not alter the habitat value of land authorized for development under the NBHCP, and would not adversely affect the habitat value of TNBC reserves established under the NBHCP, the project would not affect the basis for the 0.5:1 mitigation ratio of the NBHCP.

The 0.5:1 mitigation ratio of the NBHCP is also related to the habitat values provided by other lands in the Natomas Basin (outside of reserves established through the NBHCP). The project (with the proposed mitigation) would not cause a net loss in the habitat values provided by these lands for giant garter snake and Swainson's hawk in the Natomas Basin. The project maintains these habitat values through avoidance, minimization, and mitigation measures to conserve habitat values along Lone Tree Canal, the creation and enhancement of higher quality habitat at mitigation sites, and preservation and management in perpetuity to sustain that higher quality habitat.

The project is not adjacent to existing TNBC reserves, and thus would not alter the effectiveness of the buffers within these reserve lands. Also, because under the future condition of the Natomas Basin resulting from the NBHCP, the Greenbriar site would be bordered by urban development, highways or major roads on all sides, development of the project site would only cause very limited effects on the effectiveness of buffers within future reserves, even if reserves were established on adjacent land to the north or southwest (i.e., adjacent land that would not be developed under the future condition of the Natomas Basin).

The development and reserves resulting from the Greenbriar project would, however, need to be considered in the development of site-specific management plans for existing and future reserves in their vicinity. Although the loss of raptor habitat at the Greenbriar site would be mitigated; there would still be less foraging habitat in the vicinity of some preserves as a result of the



project, which could alter site-specific plans. Also, the proposed reserves would provide additional options for management and future acquisitions that could alter the management plans of nearby TNBC reserves.

Overall, the project (with proposed mitigation) would not reduce connectivity of reserves or habitats within the Natomas Basin. The proposed reserve and mitigation-sites would probably improve connectivity of habitats and TNBC reserves, and potential adverse effects on Lone Tree Canal would be minimized by measures included in the project design and additional measures in the proposed mitigation. A comprehensive set of measures would be implemented to both reduce the project's effects on and to enhance the habitat in a 250-foot wide linear open space/buffer along the Lone Tree Canal which would provide garter snake habitat connectivity. These measures would prevent the project from reducing the connectivity of canal habitats and TNBC reserves, and also would prevent the project from subdividing the Basin's giant garter snake population into two smaller, and thus less viable, populations.

With the proposed mitigation, the project would not reduce the availability of foraging habitat for the Swainson's hawk in the Natomas Basin. Although the project would result in a net reduction of 253 acres of upland land cover providing habitat for covered species, it would enhance or create, preserve, and manage 135 acres of upland habitats (plus 60 acres of upland components in created marshes). As a result, the upland habitats that would result from the project would provide foraging resources during the months of April–August (when Swainson's hawks are nesting in the Basin) comparable to the habitats that would be eliminated by the project — based on the method CH2M Hill used to analyze effects of the NBHCP, the acreage of available foraging habitat would be increased by the project; based on EDAW's analysis, during April–June, the increase of habitat values resulting from enhancement would be greater than values lost at the Greenbriar site, but not during July–August. Although the EDAW analysis indicates that the loss of values would not be fully offset during July–August, foraging resources increase in the Natomas Basin during those months due to the harvest of crops, and thus Swainson's hawk is unlikely to be affected. (Both the mitigation and eliminated habitat would be within a mile of nesting habitat that is currently occupied.) By maintaining foraging resources, the project would not compromise the NBHCP Operating Conservation Program, and thus actions such as those listed on pages IV-13 and IV-14 of the NBHCP would not be necessary.

Overall, the project would beneficially affect the establishment of large blocks of preserved habitat. With the proposed mitigation, it would create, enhance, preserve, and manage at least 345 acres of additional habitat, most of which is adjacent to or near existing TNBC reserves. The project would adversely affect the preservation of large blocks of habitat by developing existing habitat at the project site. However, under the future condition of the Natomas Basin, this land would be surrounded by major roads and urban development, and the project would conserve the most ecologically important portion of the site, which is the corridor of land along Lone Tree Canal.

### ***Effect on Attainment of NBHCP Goals and Objectives***

For many of the same reasons that viability of populations and the effectiveness of the NBHCP's conservation strategy would not be reduced, the project would not reduce the likelihood of attaining the goals and objectives of the NBHCP. The overall effect resulting from the project (with the proposed mitigation) is summarized below for each goal or objective that could be affected.

**Overall Goal 1.** *Establish and manage in perpetuity a biologically sound and interconnected habitat reserve system that mitigates impacts on Covered Species resulting from Covered Activities and provides habitat for existing, and new viable populations of Covered Species. (NBHCP p. I-15)*

The project (with mitigation) would have an overall beneficial effect on the establishment and management of reserves for the NBHCP. Because the acreage of land in the Natomas Basin that is potentially available and suitable for preservation substantially exceeds the 8,750 acres that will be preserved by the NBHCP, the project would not preclude the preservation of sufficient land to attain the NBHCP's goals and objectives. It would provide reserve lands adjacent to or near existing reserves, increasing the connectivity of habitats and the resources available to covered species using reserves established by the NBHCP; in addition, it would conserve a portion of an important corridor of canal habitat along Lone Tree Canal. The project also would increase opportunities to establish new reserves, particularly to create larger reserves by preserving additional land adjacent to existing TNBC and project's proposed reserves.

Although the project would cause a net reduction in the acreage of land cover types providing upland and wetland habitats, the preservation and enhancement of habitat by the project would adequately mitigate for its effects on upland and wetland habitats of covered species. Based on 2001 land cover mapping, the project (with the proposed mitigation) would eliminate 388 acres of rice and 16 acres of canal habitats, but would increase the acreage of marsh by 201 acres, creating a net loss of 204 acres of these land cover types. An acre of marsh, however, provides a greater quantity and variety of habitat than does an acre of rice, for several reasons. These reasons include:

- ▶ Giant garter snakes primarily use the margins of rice fields, whereas they use the full extent of managed marshes. These marshes are designed to provide open water, foraging habitat, dense cover, basking sites, and refugia in close proximity throughout the marsh. (For example, an acre of managed marsh provides several times the edge habitat than does a rice field.)
- ▶ Marshes provide habitat throughout the active period of the snake. Rice fields do not provide habitat during early and mid-spring, and are typically drained before the end of the snake's active period. Thus, for a portion of their active period, giant garter snakes must rely entirely on non-rice habitats. In the Natomas Basin, these habitats are canals and managed marsh. In contrast, managed marshes provide habitat year-round.
- ▶ Rice is fallowed periodically, and thus does not provide habitat in all years; in contrast, a managed marsh does provide habitat in all years.

Thus, the additional habitat provided by the created marsh largely offsets the habitat lost in the rice and canal land cover types. In addition, the project would preserve, and manage for its habitat values, the 201 acres of created marsh (i.e., about 1 acre for each acre lost), ensuring the long-term existence of this habitat.

Similarly, the project would cause a net reduction of 253 acres of upland land cover providing habitat for covered species, but would enhance, or create and preserve, at least 135 acres of upland habitats (plus 60 acres of upland components in created marshes). For most covered species associated with upland habitats, the additional habitat quality resulting from this creation, enhancement, and preservation would offset the project's reduction of the acreage of upland habitats in the Natomas Basin. For example, the creation and enhancement of upland habitats that would result from the project would provide foraging resources during the months of April–August, when Swainson's hawks are nesting in the Basin, comparable to the habitats that would be eliminated by the project.

As previously described, the potential effects (both adverse and beneficial) that would result from implementing this project (with proposed mitigation) would be unlikely to alter the population viability of any of the covered species.

**Overall Goal 3.** *Preserve open space and habitat that may also benefit local, non-listed and transitory wildlife species not identified within the NBHCP. (NBHCP page I-16)*

As described under Overall Goal 1 above, the project would have an overall beneficial effect on the TNBC reserve system. Furthermore, the project (with proposed mitigation) would slightly increase the ratio of habitat preserved to habitat developed in the Natomas Basin by setting aside land at a ratio (0.63:1), which exceeds the 0.5:1 ratio required for development authorized by the NBHCP, and would include more extensive creation, enhancement, and management of habitat. For these reasons, the project (with the proposed mitigation) would have an overall beneficial effect on the attainment of this goal.

**Overall Goal 4.** *Ensure that direct impacts of Authorized Development upon Covered Species are avoided or minimized to the maximum extent practicable. (NBHCP, page I-16)*

With the City-proposed mitigation, the project would not adversely affect attainment of this goal because it would implement a comprehensive set of measures to avoid and minimize effects on covered species to the maximum extent practicable. The potential direct effects of the project are comparable to the potential direct effects of the development authorized by the NBHCP. Thus, the proposed mitigation would include all of the applicable avoidance and minimization measures that were included in the NBHCP to avoid and minimize construction-related effects, and several more stringent minimization measures to reduce construction-related effects. The project also avoids a 30.6 acre area along the Lone Tree Canal and includes a set of measures to avoid, minimize, and mitigate effects on this corridor of canal habitat. The Greenbriar project also would not alter the effectiveness of any NBHCP conservation measures for avoiding and minimizing the effects of development authorized by the NBHCP.

**Overall Objective 1.** *Minimize conflicts between wildlife and human activities, including conflicts resulting from airplane traffic, roads and automobile traffic, predation by domestic pets, and harassment by people. (NBHCP, page I-16).*

With the proposed mitigation, the project would not adversely affect attainment of this objective because it would implement a comprehensive set of measures that would minimize human-wildlife conflicts. These measures include all of the applicable measures that were included in the NBHCP to avoid and minimize construction-related effects and to reduce human-wildlife conflicts, plus additional measures (e.g., fencing and barriers) to reduce human-wildlife conflicts along Lone Tree Canal. The Greenbriar project also would not alter the effectiveness of any NBHCP conservation measures for minimizing human-wildlife conflicts resulting from development authorized by the NBHCP.

**Overall Objective 3.** *Ensure connectivity between TNBC reserves to minimize habitat fragmentation and species isolation. Connections between reserves will generally take the form of common property boundaries between reserves, waterways (primarily irrigation and drainage channels) passing between reserves, and/or an interlinking network of water supply channels or canals. (NBHCP, page I-16)*

The project would cause beneficial and adverse effects on the attainment of this objective through most of these mechanisms; its overall effect, however, would not be adverse. The main beneficial effects would be increased connectivity of habitats and TNBC reserves due to preservation, creation and enhancement of habitat at the project's proposed reserves, two of which are adjacent to or near (i.e., within a half mile of) existing TNBC reserves. Adverse effects would include reducing the foraging habitat within a mile of a TNBC reserve, fragmenting and reducing the connectivity of upland habitats adjacent to the project site, and possibly reducing the

connectivity of wetland habitats and TNBC reserves because of effects on Lone Tree Canal (despite preserving a corridor along the canal). The proposed mitigation would reduce these adverse effects by incorporating additional measures to ensure that connectivity along Lone Tree Canal is sustained, and to preserve and enhance foraging habitat within a mile of existing TNBC reserve(s) (or of the Swainson's hawk zone along the Sacramento River). (The connectivity of upland habitats, however, would still be reduced at the project site.) Thus, the project would cause only small effects on the attainment of this objective, and most of these effects would be beneficial.

**Wetland Species/Habitat Goal/Objective 1.** *Acquire, enhance and create a mosaic of wetland habitats with adjacent uplands and connecting corridors to provide breeding, wintering, foraging, and cover areas for wetland species in the Plan Area. (NBHCP, page I-17)*

For wetland land cover (i.e., rice, canal and ponds and seasonally wet areas), the net reduction in acreage resulting from the development of the project site would be offset by an increase in the habitat quality of rice, canal, and marsh habitats at the project's proposed reserves. Based on 2001 land cover mapping, the project site would eliminate 388 acres of rice and 16 acres of canal habitats, but would increase the acreage of marsh by 201 acres, creating a net loss of 204 acres of these wetland land cover types and of the habitats they provide. An acre of marsh, however, provides a greater quantity and variety of habitat than does an acre of rice, and thus the additional habitat provided by the created marsh largely offsets the habitat lost in the rice and canal land cover types (as described under Overall Goal 1 above). In addition, the project would preserve, and manage for its habitat values, the 201 acres of created marsh (i.e., about 1 acre for each acre lost), ensuring the long-term persistence of this habitat.

The project would not have an overall adverse effect connectivity of wetland habitats. This overall effect on connectivity of wetland habitats is described under Overall Objective 1 above.

**Wetland Species/Habitat Goal/Objective 2.** *Provide habitat to maintain, attract and sustain viable populations of the Covered Species. The habitat areas should be configured to encompass natural species migration areas, minimize species isolation, and prevent future habitat fragmentation. (NBHCP, page I-17)*

The project would create, enhance, preserve, and manage habitat to offset its adverse effects and that would sustain populations of the covered species, and thus it would not alter the population viability of any of the covered species. The habitat enhanced and preserved by the project and the project's effects on the TNBC reserve system are described under Overall Goal 1 above. The project's effect on the viability of each covered species is described under *Effects on Covered Species* above.

**Upland Species/Habitat Goal/Objective 1.** *Acquire, enhance and create a mosaic of upland habitat types for breeding, foraging, and cover for species dependent on upland habitats. (NBHCP, page I-17)*

Overall, the project would not adversely and could beneficially affect this goal/objective. Because the acreage of upland habitat in the Natomas Basin that is potentially available and suitable for preservation is substantially more than the acreage of upland habitat that would be preserved and enhanced by the NBHCP, and the project would affect only a small percentage of this land, the project would not preclude the preservation of sufficient land to attain the NBHCP's goals and objectives. The project would, however, increase opportunities to establish new or larger reserves, which would aid the attainment of this goal/objective.

**Upland Species/Habitat Goal/Objective 2.** *Ensure reserve land connectivity with travel corridors for upland-dependent species. The habitat areas should encompass grasslands, agricultural croplands, riparian habitats, and shelter and nesting habitat areas (fence rows, clusters of shrubs and small trees), as well as wetland areas to provide a year-round source of water for upland species. The upland areas should be configured to enhance natural species migration, minimize species isolation, and prevent future habitat fragmentation. (NBHCP, page I-17)*

A moderate level of uncertainty exists regarding the overall effect of the proposed project on this goal/objective. The proposed changes at the project site would have an uncertain effect on the movement and dispersal of upland species; also there is some uncertainty regarding the project's contributions to connectivity elsewhere in the Basin because the location of the mitigation-site(s) for Swainson's hawk that would account for part of the upland habitat preserved has not been determined. However, because the project would cause adverse and beneficial effects that are similar in nature and magnitude, and would affect only a small portion of the Basin's land area, the project would have only a small overall effect on the attainment of this goal/objective, whether it was beneficial or adverse.

Implementation of the project with Mitigation Measures 6.12-1, 6.12-2, 6.12-4, 6.12-5, 6.12-6, and 6.12-8 would resolve any potential inconsistencies between the NBHCP and the proposed project, therefore this impact would be *less than significant*. No additional mitigation is required.