APPENDIX J

Biological Assessment (Wilfred and Stony Point Sites)

Biological Assessment

Proposed Gaming Facility

Sonoma County, California

Prepared for:
FEDERATED INDIANS OF THE GRATON RANCHERIA
P.O. Box 14428
Santa Rosa, CA 95402

Prepared by:
HUFFMAN-BROADWAY GROUP, INC.
Environmental Consultants
828 Mission Avenue
San Rafael, CA 94901
TEL: (415) 925-2000 FAX: (415) 925-2006
Contact: Terry Huffman, Ph.D.

HBG

December 2006

Volume 1 of 2

Table of Contents

© 2006 Huffman-Broadway Group, Inc.

© 2006 Huffman-Broadway Group, Inc.

LIST OF ATTACHMENTS

ATTACHMENT 1. Figures

© 2006 Huffman-Broadway Group, Inc.

ATTACHMENT 2. Tables

© 2006 Huffman-Broadway Group, Inc.

This report should be cited as: Huffman-Broadway Group, Inc. 2006. *Biological Assessment, Proposed Gaming Facility, Sonoma County, California*. December 2006. San Rafael, California. Prepared for Federated Indians of the Graton Rancheria. 66 pp. plus attachments.

© 2006 Huffman-Broadway Group, Inc.

Executive Summary

Introduction

This biological assessment describes ecological resources present within a 432.7-acre overall study area located west of Rohnert Park, Sonoma County, California, and evaluates biological impacts associated with ten alternatives for development of a gaming facility. Mitigation measures are also recommended depending on the alternative. A defined acreage within the project boundary sufficient to accommodate the proposed facilities is expected to become sovereign land of the Federated Indians of the Graton Rancheria.

The 432.7 acre study area consists of three separate parcels that have been evaluated separately: a 360-acre area and a 4.7 acre parcel nearby that have been studied primarily by Huffman-Broadway Group, Inc (HBG) and its consultants, and an 68-acre property that has been studied by separate consultants working for the landowner (Redwood Equities, L.P.).

The 360-acre property is located west of Highway 101 and is bordered by Wilfred Avenue on the north, Stony Point Road on the west, Rohnert Park Expressway on the south, and residential/commercial development and farmland on the east (Figures 1 and 2). The Urban Growth Boundary of the City of Rohnert Park runs along the eastern border of the site. The Laguna de Santa Rosa Flood Control Channel flows east-west just south of the Rohnert Park Expressway, and the Bellevue–Wilfred Channel bifurcates the site before flowing into the Laguna de Santa Rosa channel. Much of the site is currently used as farmland.

The 68-acre area is bounded roughly by Langer Avenue on the west, Wilfred Avenue on the north, a new unnamed street on the east, and Business park Drive on the south. This area is also shown separately on Figures 1 and 2. Labath Avenue runs north-south through the middle of the site. The property is an unrecorded section of the Llano de Santa Rosa and Cotati land grants. Based on historical aerial photographs, the site has been used as intensive agriculture for at least 47 years. The two small lots at the end of Labath Avenue have been graded and used for residential and other activities. A residence and other structures were recently removed from the eastern lot. Although agriculture was the dominant industry for many years, areas to the south and east are being developed as commercial and business parks. This area is within the Urban Growth Boundary of the Rohnert Park.

An additional 4.7 acre area, located west of Business Park Drive and northwest of the terminus of Park Court, is also shown in Figures 1 and 2. This area is adjacent to the southwest corner of the 68-acre site.

Each of the three areas has been evaluated separately in this biological assessment report. The report has been primarily based on surveys by HBG and its consultants within the 360-acre and 4.7-acre areas, and on a previous developed data base prepared by other consultants for Redwood Equities L.P. for the 68-acre portion of the project site. The biological assessment includes surveys for actual and potential presence of species designated under federal law as rare, threatened, or endangered that may occur onsite or in the project vicinity and for designated "critical habitat" under federal law. The report also includes determinations of land that may

© 2006 Huffman-Broadway Group, Inc.

qualify as "wetlands" under federal law. The biological assessment also characterizes the environmental effects of the proposed project alternatives and identifies potential mitigation measures that could be implemented to avoid or ameliorate impacts to special status species and habitats. It is expected that the areas examined will become tribal trust land. As such, they will not be subject to State or local laws and regulations. However, we also examined the implications of such improvements under State law (e.g., state-listed species).

Methodology

Our analysis included the following:

- Review of pertinent literature on habitat characteristics of the site, species of plants and animals expected to utilize the site;
- Field surveys of the site by HBG biologists commencing in August 2003 for the 360-acre site and field surveys by separate consultants working for Redwood Equities, LP for the 68-acre site;
- Review of the California Natural Diversity Data Base (CNDDB) to determine if populations of endangered, threatened, or rare species have occurred historically or currently occur on the site or in the project vicinity; and
- Wetlands delineation utilizing criteria of the U.S. Army Corps of Engineers. The results of the wetland delineation are available in separate reports and are summarized herein.

Proposed Project Alternatives

Ten alternative scenarios for development of the gaming facility have been developed. Two of these alternatives (Alternatives A1 and A2), are proposed within an area that is expected to be taken into trust to become sovereign lands of the Federated Indians of the Graton Rancheria and that include the 68 acre and 4.7 acre sites and the Williamson Act lands in the southern 180 acres of the 360-acre site, for a total of approximately 252 acres. In this report, this area is referred to collectively as the Wilfred site. The remaining eight alternatives are proposed within the 360 acre area, in this report referred to as the Stony Point site.

Five separate sites within the 432.7-acre study area are proposed for development of the facility, which would include a casino, multiple restaurants and bars, a 1,500 seat showroom, banquet rooms, and a 300-room hotel. Each of these five alternatives has two options for treatment of wastewater flows, yielding a total of ten alternatives. One strategy for wastewater treatment assumes that the Project will be able to dispose of effluent to the Laguna de Santa Rosa during the wet season via the Bellevue-Wilfred Channel; the second effluent disposal strategy assumes that effluent can only be disposed of on spray fields during the dry season, and stored in seasonal storage reservoirs during the wet season for future irrigation on the spray field at agronomic rates. Therefore, the preferred methods for effluent disposal would include seasonal surface water discharge off-site, maximizing on-site recycled water use, and the use of seasonal storage ponds and spray fields.

According to the report by HydroScience Engineers, Inc., the alternatives would be structured as follows: during the winter, effluent from the on-site Wastewater Treatment Plant would be used

© 2006 Huffman-Broadway Group, Inc.

on-site for recycled water uses, discharged on-site to a ditch tributary to the Bellevue-Wilfred Channel, stored in on-site seasonal storage ponds, and used to irrigate the spray fields at agronomic rates. The spray fields would be irrigated by pumping effluent out of the seasonal storage pond(s). Effluent stored in the seasonal storage pond would be discharged to the on-site ditch tributary to the Bellevue-Wildfred Channel in accordance with flow limitation requirements. During the summer months, effluent from the on-site WWTP would be used on-site for recycled water uses, and used to irrigate spray fields. Effluent that could not be used for either purpose would be stored in the seasonal storage ponds.

Under the preferred Alternative A, the facility would be developed on the Wilfred site. The facility would be developed on the 68-acre portion of the site with a portion of the southern 180 acres used as spray fields. Alternative A1 (Wet Season Discharge) and Alternative A2 (Wet Season Storage) differ in the respect that the 180 acre area is used for spray field purposes. Alternatives A1 and A2 are shown in Figures 8 and 9, respectively. Alternative A1 provides a 78-acre spray field area with 250 foot setbacks from all existing wetlands. Alternative A2 provides a 111.4 acre spray field with a 50 foot wetland setback. In either variant of Alternative A, the Wilfred site is expected to be taken into trust to become sovereign lands of the Federated Indians of the Graton Rancheria. This area includes the 68 acre and 4.7 acre sites and the Williamson Act lands in the southern 180 acres of the 360-acre site, for a total of approximately 252 acres.

The preferred project alternative is expected to have a development footprint on about 68.42 acres for Alternative A1 and nearly 83.89 acres for Alternative A2. Wetland creation/restoration and habitat preservation is proposed on remaining portions of the site (approximately 184.5 acres for Alternative A1 and 169 acres for Alternative A2). These undeveloped portions of the site would be used in varying degrees as spray fields and would be set aside as a project open space preserve, protected by a conservation easement to ensure the area remains as open space in perpetuity.

Four additional alternatives are proposed for the 360-acre Stony Point site (Alternatives B, C, D and E), with each of these alternatives having two options for treatment of wastewater flows as described above for Alternative A. Alternatives B, D and E propose that development occur in the northwest corner of the site (near Wilfred Avenue and Stony Point Road and west of the Bellevue–Wilfred Channel). Alternative C proposes development in the northeast corner of the site (near Wilfred Avenue and Whistler Avenue and east of the Bellevue–Wilfred Channel). The Wet Season Discharge and Wet Season Storage options for Alternative B are shown in Figures 10 (Alternative B1) and 11 (Alternative B2). Similar options are shown in Figures 12 and 13 for Alternative C, Figures 14 and 15 for Alternative D and Figures 16 and 17 for Alternative E.

In general, the project development alternatives for the Stony Point site are expected to include development on approximately between 77 and 120 acres with wetland creation/restoration and habitat preservation on remaining portions of the 360- acre site. The development footprint for those alternatives developed on the 360-acre Stony Point site (Wet Season Discharge option) would be approximately 82.81 acres for Alternatives B1, 78.69 acres for Alternative D1 and 77.11 acres for Alternative E1, and as much as 100.73 acres for Alternative C1. The Wet Season Storage options would have somewhat greater development footprints due to the construction of

© 2006 Huffman-Broadway Group, Inc

storage facilities, and would be 99.40 acres for Alternative B2, 91.19 acres for Alternative D2, and 83.12 acres for Alternative E2, with up to as much as 121.69 acres for Alternative C2. The undeveloped portions of the site (approximately 260 to 280 acres) would be set aside as a project open space preserve, protected by a conservation easement to ensure the area remains as open space in perpetuity. The alternatives for the 360-acre Stony Point site also assume that the 68-acre and 4.7 acre sites are not purchased by the applicant and included within the project proposal.

Ecological Constraints

Overall ecological constraints within the property were identified. Included in the constraints are:

- Potential habitat for federally-listed threatened California tiger salamander (CTS). Included are breeding, refugial and dispersal habitats and potential breeding habitat.

- Documentation of the presence of the federally-listed endangered Sonoma sunshine in the western portion of the site, and of previously-documented locations of Burke's goldfields in the same area.

- Wetlands and waters of the U.S. subject to jurisdiction of the Corps. Wetlands subject to Corps jurisdiction present on the site total 64.22 acres, and include 61.77 acres on the 360-acre site, 2.09 acres on the 68-acre site, and 0.30 acres on the 4.7-acre site.

Impacts and Mitigation Measures

Vegetation and Wetlands

The grading footprint for the preferred project developed on the Wilfred site would total 68.42 acres for Alternative A1 and 83.89 acres for Alternative A2. Alternative A1 would impact 66.34 acres of cultivated fields, 1.60 acres of seasonal pools and wet areas and 0.48 acres of drainages. With a slightly larger development footprint due to construction of storage facilities, Alternative A2 would impact 77.10 acres of cultivated fields, 4.41 acres of California annual grassland, as well as 1.60 acres of seasonal pools and wet areas and 0.77 acres of drainages.

The grading footprint for the Wet Season Discharge alternatives developed on the 360-acre Stony Point site would be as follows: 82.55 acres for Alternative B1, 95.18 acres for Alternative C1, 78.56 acres for Alternative D1 and 77.11 acres for Alternative E1. With added impact for construction of storage facilities, the graded footprints for the Wet Season Storage alternatives are somewhat larger: 99.17 acres for Alternative B2, 110.3 acres for Alternative C2, 91.10 acres for Alternative D2 and 83.12 acres for Alternative E2.

Wetlands and waters of the U.S. subject to Corps jurisdiction will be filled to accommodate the proposed development under each of the development alternatives. For development at the Wilfred site, impacts to areas subject to Corps jurisdiction would total 2.08 acres for Alternative A- Wet Season Discharge and 2.37 acres for Alternative A- Wet Season Storage, out of the 18.44 acres of wetlands that exist within the 252-acre site. For those alternatives proposed on the 360-acre Stony Point site, impacts to wetlands or waters of the U.S. would be considerably greater,

© 2006 Huffman-Broadway Group, Inc.

totaling between 20.41 acres for Alternative E- Wet Season Discharge (Alternative E1) and up to 27.16 acres for Alternative B- Wet Season Storage (Alternative B2). Each development alternative would result in consequent loss of the wetland function provided by these areas unless mitigated.

Wetland mitigation at a ratio of 1.5 acres of wetland created for each acre of wetland impacted is proposed as part of the project (wetland mitigation ratio of 1.5:1). The recommended seasonal wetland mitigation would replace wetland acreage and associated functions and would increase the wetland inventory in the project area and the region. For the Alternatives A at the Wilfred site, wetland mitigation requirements are minimal (3.12 acres for Alternative A1 and 3.55 acres for Alternative A2), and mitigation wetlands could be created within an on-site open space preserve subject to a conservation easement. Alternatively, the area could be protected by a memorandum of understanding between the Corps and the Tribe and a tribal ordinance protecting the preserve lands into perpetuity for conservation purposes.

For the alternatives proposed on the 360-acre Stony Point site the wetland mitigation requirements are substantial (between 30.62 acres for Alternative E1 and 40.74 acres for Alternative B2), and it was determined that wetland mitigation for these alternatives could not be accomplished on-site without complicating use of portions of the area for spray fields.

Special Status Species

Special Status Plants

The implementation of either Alternative A1 or A2 at the Wilfred site would have no affect on the recently-discovered population of Sonoma sunshine, nor would either of these alternatives have any affect on the area of historical occurrence of Sonoma sunshine and Burke's goldfields mapped in the CNDDB. Likewise, either option for Alternative C, which proposes development of the gaming facility at the northeast corner of the 360-acre Stony Point site, and Alternative E, with a project footprint that avoids the rare plant area, would not directly affect the area where the plants have been found. These known locations of populations of rare plants at the west end of the 360-acre Stony Point site could be incorporated into open space areas that might be configured at the west end of the site under either of the preferred development alternatives (Alternative A1 or A2) or under development Alternatives C1, C2, E1 and E2. Development under either option for Alternative B or D would directly impact acreage of seasonal wetlands that are known to have historically supported two of the four listed plant species, and is currently known to support Sonoma sunshine. Development pursuant to Alternatives B1 and B2 would directly impact 1.38 acres of this rare plant area and development pursuant to Alternatives D1 and D2 would directly impact 0.77 acres of this area.

Alternatives A1 and A2 would impact 1.60 acres of seasonal wetlands that provide potentially suitable habitat for the listed plant species of the Santa Rosa Plain. For the remaining alternatives, in addition to the need to compensate for substantial losses of seasonal wetlands that provide suitable habitat for the listed plant species (anywhere from 19.69 acres for Alternative E1 to 26.43 acres for Alternative B2), development under either option for Alternative B or D would need to compensate for the direct impacts to potentially occupied habitat.

© 2006 Huffman-Broadway Group, Inc.

Mitigation in the form of preservation and restoration/creation of seasonal wetlands as required by U.S. Fish and Wildlife Service's Programmatic guidelines is recommended for direct development impact to current or historic locations of two plant species known to occur at the site (Sonoma sunshine and Burke's goldfields) and any seasonal wetlands at the site that would be considered suitable habitat for any of the four species covered by the Programmatic Consultation. The Santa Rosa Plain Conservation Strategy acknowledges that a revised Programmatic Consultation for the listed plants is forthcoming, but this has not been released as of this date, so mitigation requirements for the various alternatives are addressed herein pursuant to the existing Programmatic guidelines. Mitigation beyond that included in the wetland mitigation plan developed as part of the Corps permit process would not be needed for mitigation of impacts to the listed plant species resulting from development under any of the project alternatives.

California Tiger Salamander

California tiger salamanders retreat to appropriate upland refugial sites after breeding, sometimes at distances greater than a mile from breeding ponds. All locations within the project area (both the Wilfred site and the Stony Point site) that are not within the 100-year floodplain would be considered aestivation habitat for the CTS. Grading to support the gaming facility or establishment of spray fields within these areas would constitute impacts to aestivation habitat for the California tiger salamander. As such, impacts to aestivation habitat would occur for each of the ten alternatives to varying degrees.

In addition to elimination of aestivation habitat, additional impacts to the CTS that would occur within the area of development include the potential for direct impacts to salamanders by earth moving activities, infrastructure improvements, building construction, landscaping and other construction. Other impacts resulting from construction could occur such as disruption of surface movement, disruption or complete loss of reproduction, harassment from increased human activity, and permanent and temporary loss of shelter. Additional impacts to these nocturnal creatures could occur from night lighting during construction that can disrupt movement patterns.

The acreage that would be considered impacted from the standpoint of CTS aestivation habitat through development of the project footprint for each of the development alternatives is calculated herein. As areas within the floodplain are not considered CTS habitat, development within floodplain area is not included within the impacts acreage. However, all areas outside of the floodplain are calculated as part of the CTS impacts if proposed for either grading or establishment of spray fields.

Mitigation requirements for the various alternatives are also calculated herein. The USFWS and CDFG released May 16. 2006 interim guidance on mitigation of impacts to CTS associated with development on the Santa Rosa Plain. This interim guidance provides mitigation guidelines that are to apply to project that may result in take of the CTS prior to approval of an Implementation Plan for the Conservation Strategy. The interim guidance requires mitigation at a ratio of 3:1 for projects that are within 500 feet of a breeding site; 2:1 for projects that are greater than 500 feet and within 2200 feet of a known breeding site, and projects beyond 2200 feet from a known breeding site but within 500 feet of an adult occurrence; and 1:1 for projects that are greater than

© 2006 Huffman-Broadway Group, Inc.

2200 feet and within 1.3 miles of a known breeding site. As most, and in some cases all, of the open space area is within the 100-year floodplain for the various alternatives, little to no opportunity exists for setting aside CTS habitat within the onsite open space preserve. All mitigation would be accomplished offsite and would consist of purchase of CTS credits from an approved mitigation bank or purchase of farm land providing suitable habitat for CTS (actually where CTS are known to occur) and placing the area under conservation easement. The area would be placed within a conservation easement and subject to terms of a long-term management program aimed at CTS conservation and funding agreements.

For the preferred Alternative A, the USFWS has indicated that they would consider an amendment to an existing BO for the Northwest Specific Plan area as the means to obtain the requisite "take" authorization from the agency related to the CTS. It is unclear at this time what would be the required mitigation ratio, but it is believed to be either 0.5:1 as required in the previous BO, or 1:1 as required by the USFWS/CDFG interim guidance. The mitigation requirements for Alternatives A1 and A2 are calculated herein for scenarios including mitigation at a 0.5:1 ratio as required for the 68-acres under the previous BO and a 1:1 ratio as required by the interim agency guidance. Mitigation requirements would range from 34.26 acres for Alternative A1 with mitigation according to the prior BO, to as much as 82.17 acres for Alternative A2 with mitigation according to the interim agency guidance. Mitigation for the level of impact to the CTS would be developed as part of a Section 7 consultation that would be initiated by the Corps as part of its process for completing a federal permit for filling onsite wetlands.

It is likely that California tiger salamander occurs on the 360-acre Stony Point site and that impacts to CTS are likely to occur from development of either Alternative B1, B2, C1, C2. D1, D2, E1 or E2. The level of impact to CTS habitat for each alternative and mitigation requirements based on the May 16, 2006 USFWS/CDFG interim guidance are calculated herein. The impact to CTS habitat ranges from 48.36 acres for Alternative E1 to as much as 100.43 acres for Alternative B2, with mitigation requirements based on the interim guidance ranging from 106.76 acres of mitigation for Alternative E1 to as much as 167.46 acres of mitigation for Alternative B2.. Mitigation for this level of impact to the CTS would be developed as part of a Section 7 consultation that would be initiated by the Corps as part of its process for completing a federal permit for filling onsite wetlands.

Open space preserves of between about 169 and 185 acres for the preferred alternatives (Alternative A1 or A2) or 260 to 280 acres for alternatives involving development on the 360-acre site are proposed. These open space preserves would be managed to conserve ecological resources in those areas and to provide any necessary mitigation for possible impacts to sensitive species resulting from development of the site. Development within the site would require mitigation for impacts to regulated wetlands, impacts to populations of listed plant species or their habitats, and impacts to habitat suitable to support the federally-listed threatened California tiger salamander. Management of the open space preserve will ensure maintenance of breeding, refugial and dispersal habitats for California tiger salamander; and preservation of populations of special status plants.

© 2006 Huffman-Broadway Group, Inc.

1.0 Introduction

On behalf of our client, Station Casinos, Inc., The Huffman-Broadway Group, Inc. (HBG) has conducted a biological assessment for a proposed gaming facility in Rohnert Park, Sonoma County, California. The purpose of the biological assessment is to characterize the presence and distribution of sensitive species and important ecological features within a 432.7-acre overall study area, evaluate biological impacts associated with five alternatives for development of a gaming facility and recommend appropriate mitigation measures.

The 432.7 acre study area consists of three separate parcels that have been evaluated separately: a 360-acre area and a 4.7 acre parcel nearby that have been studied primarily by The Huffman-Broadway Group, Inc (HBG) and its consultants and an 68-acre property that has been studied by separate consultants working for the landowner (Redwood Equities, L.P.).

The 360-acre property is located west of Highway 101 and is bordered by Wilfred Avenue on the north, Stony Point Road on the west, Rohnert Park Expressway on the south, and residential/commercial development and farmland on the east (Figures 1 and 2). The Urban Growth Boundary of the City of Rohnert Park runs along the eastern border of the site. The Laguna de Santa Rosa Flood Control Channel flows east-west just south of the Rohnert Park Expressway, and the Bellevue–Wilfred Channel bifurcates the site before flowing into the Laguna de Santa Rosa channel. Much of the site is currently used as farmland.

The 68-acre area is bounded roughly by Langer Avenue on the west, Wilfred Avenue on the north, a new unnamed street on the east, and Business Park Drive on the south. This area is also shown separately on Figures 1 and 2. Labath Avenue runs north-south through the middle of the site. The property is an unrecorded section of the Llano de Santa Rosa and Cotati land grants. Based on historical aerial photographs, the site has been used as intensive agriculture for at least 47 years. The two small lots at the end of Labath Avenue have been graded and used for residential and other activities. A residence and other structures were recently removed from the eastern lot. Although agriculture was the dominant industry for many years, areas to the south and east are being developed as commercial and business parks. This area is within the Urban Growth Boundary of the Rohnert Park.

An additional 4.7 acre area, located west of Business Park Drive and northwest of the terminus of Park Court, is also shown in Figures 1 and 2. This area is adjacent to the southwest corner of the 68-acre site.

Each of the three areas has been evaluated separately in this biological assessment report. The report has been primarily based on surveys by HBG and its consultants within the 360-acre and 4.7-acre areas, and on a previous developed data base prepared by other consultants for Redwood Equities L.P. for the 68-acre portion of the project site. This assessment describes biological resources present on the property, including the results of surveys for actual and potential presence of species designated under federal or California law as rare, threatened, or endangered that may occur onsite or in the project vicinity and for designated "critical habitat" under federal

© 2006 Huffman-Broadway Group, Inc.

law. This biological assessment also defines the presence of land that may qualify as "wetlands" under federal or state law.[1] The biological assessment also characterizes the environmental effects of the proposed project and identifies potential mitigation measures that could be implemented to avoid or ameliorate impacts to special status species and habitats.

Because a defined acreage within the project boundary sufficient to accommodate the proposed facilities is expected to become sovereign land of the Federated Indians of the Graton Rancheria and tribal trust land, it will not be subject to state or local laws and regulations. However, we have examined the impacts to state species on these lands. Although state jurisdiction does not apply to trust land, the potential presence of state protected species was noted during biological surveys, and potential impacts to state species are identified.

The analysis for this Biological Assessment included the following:

- Review of pertinent literature on habitat characteristics of the site, species of plants and animals expected to utilize the site;
- Field surveys of the site by HBG biologists commencing in August 2003 for the 360-acre Stony Point site and field surveys by separate consultants working for Redwood Equities, LP for the 68-acre portion of the Wilfred site;
- Review of the California Natural Diversity Data Base (CNDDB) to determine if populations of endangered, threatened, or rare species have occurred historically or currently occur on the site or in the project vicinity; and
- Wetlands delineation utilizing criteria of the U.S. Army Corps of Engineers. The results of the wetland delineation are available in separate reports and are summarized herein.

The discussion contained in this report is based, in part, on these surveys and reviews.

The location of the project site is shown in Figure 1. Figure 2 is an aerial photograph of the site. The proposed project is the development of a gaming facility and ancillary facilities within the project area. A portion of the project acreage is expected to become sovereign lands of the Federated Indians of the Graton Rancheria, with such acreage depending on the alternative chosen.

Ten alternative scenarios for development of the gaming facility have been developed. Two of these alternatives (Alternatives A1 and A2), are proposed within an area that is expected to be taken into trust to become sovereign lands of the Federated Indians of the Graton Rancheria and that include the 68 acre and 4.7 acre sites and the Williamson Act lands in the southern 180 acres of the 360-acre site, for a total of approximately 252 acres. In this report, this area is referred to collectively as the Wilfred site. The remaining eight alternatives are proposed within the 360 acre area, in this report referred to as the Stony Point site.

[1] It is expected that the areas examined will become tribal trust land. As such, they will not be subject to state or local laws and regulations. However, because the project may require certain road improvements outside the trust lands, we also examined the implications of such improvements under state law (e.g., state-listed species).

© 2006 Huffman-Broadway Group, Inc.

Five separate alternative locations are proposed for development of the facility, which would include a casino, multiple restaurants and bars, a 1,500 seat showroom, banquet rooms, and a 300-room hotel. Each of these five alternatives has two options for treatment of wastewater flows, yielding a total of ten alternatives. One strategy for wastewater treatment assumes that the Project will be able to dispose of effluent to the Laguna de Santa Rosa during the wet season via the Bellevue-Wilfred Channel; the second effluent disposal strategy assumes that effluent can only be disposed of on spray fields during the dry season, and stored in seasonal storage reservoirs during the wet season for future irrigation on the spray field at agronomic rates. Therefore, the preferred methods for effluent disposal would include seasonal surface water discharge off-site, maximizing on-site recycled water use, and the use of seasonal storage ponds and spray fields.

According to the report by HydroScience Engineers, Inc., the alternatives would be structured as follows: during the winter, effluent from the on-site Wastewater Treatment Plant would be used on-site for recycled water uses, discharged on-site to a ditch tributary to the Bellevue-Wilfred Channel, stored in on-site seasonal storage ponds, and used to irrigate the spray fields at agronomic rates. The spray fields would be irrigated by pumping effluent out of the seasonal storage pond(s). Effluent stored in the seasonal storage pond would be discharged to the on-site ditch tributary to the Bellevue-Wilfred Channel in accordance with flow limitation requirements. During the summer months, effluent from the on-site WWTP would be used on-site for recycled water uses, and used to irrigate spray fields. Effluent that could not be used for either purpose would be stored in the seasonal storage ponds.

Under the preferred Alternative A, the facility would be developed on the 68-acre portion of the site with a portion of the southern 180 acres of the 360-acre site used as spray fields. Alternative A1 (Wet Season Discharge) and Alternative A2 (Wet Season Storage) differ in the respect that the 180 acre area is used for spray field purposes. Alternatives A1 and A2 are shown in Figures 8 and 9, respectively. Alternative A1 provides a 78-acre spray field area with 250 foot setbacks from all existing wetlands. Alternative A2 provides a 111.4 acre spray field with a 50 foot wetland setback. In either variant of Alternative A, the Wilfred site is expected to be taken into trust to become sovereign lands of the Federated Indians of the Graton Rancheria. This area includes the 68 acre and 4.7 acre sites and the Williamson Act lands in the southern 180 acres of the 360-acre site, for a total of approximately 252 acres.

The preferred project alternative is expected to have a development footprint on about 68.42 acres for Alternative A1 and nearly 83.89 acres for Alternative A2. Wetland creation/restoration and habitat preservation is proposed on remaining portions of the site (approximately 184.5 acres for Alternative A1 and 169 acres for Alternative A2). These undeveloped portions of the site would be used in varying degrees as spray fields and would be set aside as a project open space preserve, protected by a conservation easement to ensure the area remains as open space in perpetuity.

Four additional alternatives are proposed for the 360-acre Stony Point site (Alternatives B, C, D and E), with each of these alternatives having two options for treatment of wastewater flows as described above for Alternative A. Alternatives B, D and E propose that development occur in the northwest corner of the site (near Wilfred Avenue and Stony Point Road and west of the

© 2006 Huffman-Broadway Group, Inc.

Bellevue–Wilfred Channel). Alternative C proposes development in the northeast corner of the site (near Wilfred Avenue and Whistler Avenue and east of the Bellevue–Wilfred Channel). The Wet Season Discharge and Wet Season Storage options for Alternative B are shown in Figures 10 (Alternative B1) and 11 (Alternative B2). Similar options are shown in Figures 12 and 13 for Alternative C, Figures 14 and 15 for Alternative D and Figures 16 and 17 for Alternative E.

In general, the project development alternatives for the Stony Point site are expected to include development on approximately between 77 and 120 acres with wetland creation/restoration and habitat preservation on remaining portions of the 360- acre site. The undeveloped portions of the site (approximately 260 to 280 acres) would be set aside as a project open space preserve, protected by a conservation easement to ensure the area remains as open space in perpetuity. The alternatives for the 360-acre Stony Point site also assume that the 68-acre and 4.7 acre sites within the Wilfred site are not purchased by the applicant and included within the project proposal.

© 2006 Huffman-Broadway Group, Inc.

2.0 Existing Setting

2.1 General Setting

2.1.1 Site Description

The 432.7 acre overall study area consists of three separate parcels that have been evaluated separately: a 360-acre area and a 4.7 acre parcel nearby that have been studied primarily by The Huffman-Broadway Group, Inc (HBG) and its consultants and a 68-acre property that forms a portion of the 80-acre Northwest Specific Plan parcel studied by separate consultants working for the landowner (Redwood Equities, L.P.).

The 360-acre area (Stony Point site) is an agricultural parcel on the western boundary of Rohnert Park, Sonoma County, California (Figures 1 and 2). It is bounded on the north by Wilfred Avenue, by Stony Point Road on the west and Whistler Avenue on the east. Stony Point Road forms the western boundary of the site. The southern boundary is approximated by Rohnert Park Expressway and the Laguna de Santa Rosa Flood Control Channel. The eastern boundary of the site is partially defined by Labath Channel (Rohnert Park city limits). A southward extension of north-south-trending Langer Avenue, east of Whistler Avenue, is the easternmost extent of the property; an east-west trending property boundary connects the Whistler and Langner avenue portions of the eastern boundary.

The site is bifurcated by the Bellevue–Wilfred Channel, also identified on area maps as the North Branch of the Laguna de Santa Rosa. This manmade flood control channel was constructed some time between 1953 and 1965, based on a review of historical aerial photographs taken in those years. Remnants of a stream that historically flowed north-south across the site are visible in aerial photographs about 500 feet west of the Bellevue–Wilfred Channel. Remnants of another historical streambed are evident in the northeastern portion of the site. The study area consists of a relatively flat topography, with elevations above sea level ranging from 81 feet in the southwest to 88 feet in the northwest.

The 68-acre portion of the Wilfred site is bounded roughly by Langer Avenue on the west, Wilfred Avenue on the north, a new unnamed street on the east, and Business Park Drive on the south. This area is also shown separately on Figures 1 and 2. Labath Avenue runs north-south through the middle of the site. The property is an unrecorded section of the Llano de Santa Rosa and Cotati land grants. Based on historical aerial photographs, the site has been used as intensive agriculture for at least 47 years. The two small lots at the end of Labath Avenue have been graded and used for residential and other activities. A residence and other structures were recently removed from the eastern lot. Although agriculture was the dominant industry for many years, areas to the south and east are being developed as commercial and business parks. This area is within the Urban Growth Boundary of the Rohnert Park.

An additional 4.7 acre portion of the Wilfred site, located west of Business Park Drive and northwest of the terminus of Park Court, is also shown in Figures 1 and 2. This area is adjacent to the southwest corner of the 68-acre site.

© 2006 Huffman-Broadway Group, Inc.

2.1.2 Historical Site Uses

Review of the historical aerial photos shows that land uses since at least 1953 are agricultural. Structures likely related to agriculture are visible in the northwest, southwest, and northeastern portions of the project area in all aerial photos reviewed. Structures are still present in the northwest portion of the site.

2.1.3 Surrounding Properties

Land uses north, south, and west of the project area have been and continue to be primarily rural and agricultural. A dairy is adjacent southwest of the site at the intersection of Stony Point Road and Rohnert Park Expressway. To the southeast, on the east side of the Labath Channel, is the Rancho Verde Mobile Home Park. A commercial/industrial park constructed in the 1980s is present north of the mobile home park. The mobile home park site is situated on the northwest end of the former Cotati Naval Outer Landing Field, a World War II era satellite airfield for Alameda Naval Air Station; the field was declared surplus property in the 1950s and used for drag racing prior to its current development.

2.1.4 Geology

The project area is in the Cotati Valley, which is characterized by stream-deposited sediments on floodplains, alluvial deposits, and basins.

2.1.5 Soils

A soil map of the property is shown in Figure 3. Soil on most of the site is Clear Lake clay, 0 to 2 percent slopes. These soils are clays that formed under poorly drained conditions on plains and flat basin areas. The surface layer is typically dark gray acidic to slightly acidic clay to a depth of about 40 inches. Permeability and runoff are slow. West of the former streambed (i.e., the west quarter of the site) are Wright loam wet soils with 0 to 2 percent slopes. These poorly to moderately drained loams have a clay subsoil; the typical surface layer is a light brownish-gray medium acid loam about 7 inches thick. Permeability and runoff are very slow, and drainage is somewhat poor.

2.1.6 Surface Water and Shallow Groundwater

The project area is in the southern portion of the Santa Rosa Plain Groundwater Basin. The Basin is bordered by the Sonoma Mountains to the east and Coast Ranges hills to the west and south. Surface water enters the basin by way of streams originating in the hills and discharges to the Laguna de Santa Rosa, a "swampy intermittent stream that flows northward along the western edge of the basin" (Dyatt & Batia, 2000). The Laguna de Santa Rosa is a tributary of the Russian River that has historically served as a 7,000-acre storm retention basin during periods of flooding in the Russian River.[2] It is characterized as the "largest freshwater wetland complex in coastal Northern California."[3] The Bellevue–Wilfred Channel drains into the Laguna de Santa Rosa Flood Control Channel south of the site.

[2] U.S. Army Corps of Engineers, San Francisco District. 2003. www.spn.usace.army.mil/projects/lagunasantarosa.html.

[3] Laguna de Santa Rosa Foundation. 2003. www.lagunadesantarosa.org.

© 2006 Huffman-Broadway Group, Inc.

Data from the USGS indicate that groundwater was historically encountered 5 to 20 feet below ground surface and generally flowed toward the northwest (Dyatt & Batia, 2000). Review of the USGS Cotati 7.5-minute quadrangle map shows the general area is flat and at an elevation of about 90 feet mean sea level, the lowest elevation in the groundwater basin. On the basis of the local topography, it is likely that groundwater onsite flows toward the Bellevue–Wilfred Channel and/or the Laguna de Santa Rosa Flood Control Channel to the south. However, the hydraulic gradient is probably relatively flat, based on the topography, and the clay soils likely inhibit groundwater velocity.

Much of the site is within the 100-year flood zone; portions are within the 500-year flood zone.

2.2 Vegetation Communities

2.2.1 68-Acre Parcel

Vegetation communities on the 68-acre parcel were mapped by Stromberg (2002) and the following description is taken from that report. The Stromberg report, which covered the 80-acre Northwest Specific Plan area, is included as Attachment 4B.

Upland habitat on the study area is essentially a ruderal annual grassland. The annual grassland includes species typically found in grazed annual grassland habitat in the region as well as in grasslands that have been subject to past and/or recent agricultural use. The vegetation is dominated by annual introduced grasses and forbs. Common to locally abundant species include ryegrass (*Lolium multiflorum*), the most ubiquitous species in the grassland habitat, canary grass (*Phalaris paradoxa*), Harding grass (*Phalaris aquatica*), ripgut brome (*Bromus rigidus*), bristly oxtongue (*Picris echioides*), vetch (*Vicia sativa* and *V. cracca*), wild and slender oats (*Avena fatua, A. barbata*), hare barley (*Hordeum murinum*), six-weeks fescue (*Vulpia bromoides*), common groundsel (*Senecio vulgaris*), a variety of clovers (*Trifolium hirtum, T. subterraneum, T. dubium, T. variegatum*), plantain (*Plantago lanceolata*) and bur clover (*Medicago polymorpha*).

Areas supporting hydrophytic vegetation occur throughout the parcel. The western portion of the parcel at 4475 Dowdell Avenue supports vegetation of the type found in shallowly inundated seasonal wetlands, with depressional areas that are inundated supporting an association of coyote thistle (*Eryngium aristulatum*), ryegrass, California semaphore grass (*Pleuropogon californicus*), and popcorn flower (*Plagiobothrys stipitatus*). The subdominant species in these depressions includes species of rush (e.g., *Juncus phaeocephalus, Juncus tenuis*), Douglas meadowfoam (*Limnanthes douglasii*), meadow barley (*Hordeum brachyantherum*), little rattlesnake grass (*Briza minor*), annual bluegrass (*Poa annua*), six-weeks fescue, curly dock (*Rumex crispus*), Mediterranean barley (*Hordeum marinum* ssp *gussoneanum*), California buttercup (*Ranunculus californicus*) and prickly lettuce (*Lactuca serriola*). Most of the seasonal wetland habitat on the L-shaped parcel that fronts onto Millbrae Avenue is dominated by ryegrass and meadow barley, but the depressional areas support spike rush (*Eleocharis macrostachya*), speedwell (*Veronica peregrina*), Hall's montia (*Montia Fontana*), all of which are obligate wetland species, and brown-headed rush.

© 2006 Huffman-Broadway Group, Inc.

The parcel northwest of the intersection of Langer and Wilfred Avenues supports vegetation which shows a compositional variation in both dominant and subdominant species but the dominant species are almost universally a combination of rushes (*Juncus* spp.), coyote thistle (*Eryngium aristulatum*), soap plant (*Chlorogalum pomeridianum*), yampah (*Perideridia kelloggii*), and white brodiaea (*Brodiaea hyacinthina*). Non-wetland species cover, which is limited to a very small percentage and to small areas, is contributed by cutleaf-geranium (*Geranium dissectum*), vetches and cichory (*Cichorium intybus*).

The rear portions of the three parcels just south of Wilfred Avenue (fronting onto Labath and Dowdell Avenues) support seasonal wetlands that are very shallowly inundated. Many vernal pool species occur here, including fringed downingia (*Downingia concolor*), popcorn flower (*Plagiobothrys bracteatus*), Douglas meadowfoam, mousetail (*Myosurus minimus*), American pillwort (*Pilularia americana*), flowering quillwort (*Lilaea scilloides*), quillwort (*Isoetes,* species not identified), coyote thistle, and smooth goldfields (*Lasthenia glaberrima*).

The field south of Wilfred Avenue and west of Labath Avenue is cropped annually and the vegetation reflects the continuous past disturbance. The vegetation is dominated by ryegrass and species of mustard (*Brassica nigra, Brassica rapa,* etc.). In shallow depressions, a host of obligate wetland species, many of them native vernal pool species, occur as subdominants along with the much taller ryegrass. These species include California semaphore grass, miniature buttercup (*Ranunculus pusillus*), spiny-fruited buttercup (*Ranunculus muricatus*), fringed downingia, American pillwort, quillwort, speedwell, water starwort (*Callitriche marginata*), Douglas meadowfoam, and Bloomer's buttercup (*Ranunculus orthorhynchus*), as well as two additional species well-adapted to disturbance – toad rush (*Juncus bufonius*) and hyssop loosestrife (*Lythrum hyssopifolium*).

The other large field, between Labath and Dowdell Avenues at the southern end of the surveyed area also supports wetlands that appear to be remnants of native wetlands common in the area on Clear Lake clay soils or to have been formed as a result of agricultural activities. As a whole, the field is not as wet as the area directly west between Labath and Langer Avenues but many depressional areas support a combination of the following species: fringed downingia, quillwort, flowering quillwort, water starwort, American pillwort, pennyroyal (*Mentha pulegium*), spike rush, California semaphore grass, miniature buttercup, and coyote thistle. The areas subject to shorter periods of inundation support brown-headed rush, annual bluegrass, yampah, Mediterranean barley, and curly dock.

2.2.2 360-Acre Parcel

EcoSystems West botanist Roy Buck conducted field surveys of the site during September, October, and November 2003; April, May and June of 2004; and March, April, May and June of 2005. All sites were surveyed in detail on foot. All vascular plant species encountered that were identifiable at the time the survey were identified to species or infraspecific taxon, using keys and descriptions in Abrams (1923, 1944, 1951); Abrams and Ferris (1960); Munz and Keck (1973); Hickman (1993); and Best *et al.* (1996). Many plant species, including special-status species, with potential to occur on the site would not have been identifiable during fall 2003 surveys, and many plant species occurring on the site could not be positively identified. The

© 2006 Huffman-Broadway Group, Inc.

timing of thorough botanical surveys conducted during the spring 2004 and 2005 season were appropriate for identification of all target special status species.

All habitat types occurring on the site were characterized and data were recorded on physiognomy, dominant and characteristic species, topographic position, slope, aspect, substrate conditions, hydrologic regime, and evident disturbance for each habitat type. In classifying the habitat types on the site, EcoSystems West consulted the generalized plant community classification schemes of Holland (1986); Sawyer and Keeler-Wolf (1995); and CDFG (2002). Final classification and characterization of the habitat types of the study area was based on field observations.

EcoSystems West botanists recognize only two habitat types on the Rohnert Park site that are predominantly "natural" in the sense that they are not primarily associated with heavy, ongoing or repeated human disturbance: (1) California annual grassland and (2) seasonal pools and seasonal wet areas. Both of these habitat types have clearly been greatly affected by a long history of disturbance. EcoSystems West recognizes five additional habitat types that are more or less artificial, in the sense that they have resulted primarily from human occupation and alteration of the site and intensive, repeated or ongoing disturbance: flood control channel (canal), drainage ditches, irrigated pasture, cultivated fields, and disturbed/ruderal.

Each habitat type is described below. Lists of plant species identified during onsite field surveys conducted in 2003, 2004 and 2005 are included in Attachment 2, Table 1. EcoSystems West Consulting Group observed a total of 158 species of vascular plants in the Rohnert Park site study area. Of these, 62 species are native to the site, and 93 species are non-native. For three species, it is not known or could not be determined whether these species are native or non-native. The extent and distribution of vegetation types on the property are shown on Figure 4.

California Annual Grassland

This habitat type is recognized as the California annual grassland alliance by CDFG (2003b) and as the California annual grassland series by Sawyer and Keeler-Wolf (1995). It corresponds to the non-native grassland habitat type of Holland (1986).

Two sizable areas of California annual grassland habitat occur on the site. One area of California annual grassland occupies the southwestern portion of the site, west of the Bellevue–Wilfred Channel; the second, smaller area is in the northeastern portion of the site, east of the canal and east of the southern extension of Whistler Avenue. These two areas of California annual grassland differ considerably in physiognomy and general appearance, mainly due to a difference in recent grazing history, and perhaps also to differences in soil characteristics. The grassland in both areas is quite ruderal in character, and has apparently been heavily impacted by past heavy grazing and possibly other types of disturbance. The species composition of both areas suggests that the soils of both areas are somewhat underdrained.

In addition to these two areas, small areas of California annual grassland also occupy the small portions of the site located south of Rohnert Park Expressway on either side of the Bellevue–Wilfred Channel.

© 2006 Huffman-Broadway Group, Inc.

The California annual grassland in both areas is largely comprised of non-native, primarily annual grasses and associated weedy non-native herb species. The most abundant and widespread dominant grass is Italian rye grass (*Lolium multiflorum*, sometimes biennial). Other characteristic non-native grasses include soft chess (*Bromus hordeaceus*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), six-weeks fescue (*Vulpia bromoides*), ripgut grass (*Bromus diandrus*), and slender wild oat (*Avena barbata*). The native perennial grass meadow barley (*Hordeum brachyantherum*) is also locally abundant in this grassland. Another native perennial grass, California oatgrass (*Danthonia californica*) also occurs in these grasslands, but is less abundant. The native moisture-loving grass California semaphore grass (*Pleuropogon californicus*) occurs locally in low-lying places. Native herbs are few; the only native herb abundant in both grassland areas is hayfield tarplant (*Hemizonia congesta* ssp. *congesta*). Other, less abundant native species include blue-eyed grass (*Sisyrinchium bellum*), California buttercup (*Ranunculus californicus*), and common fiddleneck (*Amsinckia menziesii* var. *intermedia*). Characteristic non-native herb species include bindweed (*Convolvulus arvensis*), narrow-leaved vetch (*Vicia sativa* ssp. *nigra*), bristly ox-tongue (*Picris echioides*), curly dock (*Rumex crispus*), prickly lettuce (*Lactuca serriola*), wild radish (*Raphanus sativus*), and bur-clover (*Medicago polymorpha*).

The southwestern area of California annual grassland occupies an area of gently undulating microtopography. This area has been moderately heavily grazed. The cover of grasses and herbs is generally dense and sometimes approaches 100 percent, but is mostly low, with little accumulation of thatch. Meadow barley and the native herb dwarf brodiaea (*Brodiaea terrestris* ssp. *terrestris*) are relatively abundant in this grassland. Several large herb species are conspicuous especially in the southern third of this area; these include hayfield tarplant and the native (but often ruderal) species spiny clotbur (*Xanthium spinosum*) and the non-native species bristly ox-tongue, purple star thistle (*Centaurea calcitrapa*), and late-flowering goosefoot (*Chenopodium strictum* var. *glaucophyllum*). Large herbs are uncommon in the northern two-thirds of the area, except for scattered patches of hayfield tarplant and occasional plants of bristly ox-tongue and purple star thistle. Fiddle dock (*Rumex pulcher*) is also a widespread non-native herb in this area. A few small, shallow depressions capable of holding moisture occur in the grassland in this area; these often contain California semaphore grass and cocklebur (*Xanthium strumarium*), a native (although sometimes ruderal) species characteristic of seasonal pools and seasonal wet areas (see below).

The area occupied by the northeastern area of California annual grassland is essentially level, and may have been leveled at some time in the past. It does not appear to have been grazed recently, and the grass and herb cover is mostly 1-2 feet tall and very dense, with a considerable accumulation of thatch. The large perennial non-native grass Harding grass (*Phalaris aquatica*), is widespread, occurring in more or less dense patches. Hayfield tarplant is relatively abundant and widespread in this area, and the native perennial herb Kellogg's yampah (*Perideridia kelloggii*) is locally abundant in patches. Other characteristic native herbs include panicled willow-herb (*Epilobium brachycarpum*) and white brodiaea (*Triteleia hyacinthina*). The moisture-loving native herbs brown-headed rush (*Juncus phaeocephalus*) and Jepson's coyote-thistle (*Eryngium aristulatum* var. *aristulatum*) occur locally, and probably indicate underdrained conditions. Characteristic non-native herb species include bristly ox-tongue, prickly lettuce, curly dock, and bindweed. Two large trees of red willow (*Salix laevigata*) are located near the

© 2006 Huffman-Broadway Group, Inc.

northwest corner of this area; one smaller red willow and several small individuals of introduced tree species occur elsewhere in the area.

The small area of California annual grassland south of Rohnert Park Expressway and west of Bellevue-Wilfred Channel is similar to the grassland across Rohnert Park Expressway to the north, although it is not as heavily grazed. One large valley oak (*Quercus lobata*) is located near the intersection of Rohnert Park Expressway and Stony Point Road. East of the canal, the California annual grassland south of Rohnert Park Expressway has not been recently grazed. It is densely vegetated and is largely dominated by tall Harding grass along with much lower annual grasses. The native rhizomatous perennial grass creeping wild rye is also locally abundant. Bristly ox-tongue, curly dock, and prickly lettuce are abundant associated species.

Seasonal Pools and Seasonal Wet Areas

Two portions of the site, the southwestern portion west of the Bellevue-Wilfred Channel and irrigated pastures in the north-central portion (east of the barn), contain depressions of varying sizes that have ponded water during the rainy season, retain moisture relatively late in the season, and become dry by late spring or early summer. The species composition of the vegetation in these depressions is diverse and varies considerably from pool to pool, but consists largely of moisture-loving native and some non-native species. The vegetation of these features is not adequately treated in generalized vegetation classification schemes. Although their species composition does not entirely conform to that of classic vernal pools, these pools have affinities, to varying degrees, to the northern claypan vernal pool habitat type of Holland (1986) and CDFG (2003).

These depressions vary considerably in size, depth, and length of inundation by standing water. Some contained standing water on 21 November 2003, and some did not. Most of the larger pools contained at least some standing water along with saturated soil in early April 2004; all pools were dry by 8 May 2004, a year with below-normal spring precipitation, and above-normal spring temperatures.

The seasonal pools in the southwestern area are discussed below separately from the seasonal pools in the irrigated pastures, which have been affected by increased water availability due to irrigation.

Seasonal pools in southwestern area. These pools may be further subdivided into two nearly-connected pools in the northwestern portion of the area and three more pools to the southeast, just west of the Bellevue-Wilfred Channel.

The more northerly of the northwestern pools is indicated by CNDDB records as a site of historic occurrence of two special-status plant species, Sonoma sunshine (*Blennosperma bakeri*) and Burke's goldfields (*Lasthenia burkei*). This pool straddles the boundary, marked by a fence, between the irrigated pasture in the northwestern portion of the site and the uncultivated southwestern portion. The northern portion of this pool has been converted to irrigated pasture, and its present vegetation does not resemble native vegetation. The southern portion is mostly densely vegetated, primarily with native species. These include California semaphore grass, Jepson's coyote-thistle, pale spike-rush (*Eleocharis macrostachya*), brown-headed rush, smooth

© 2006 Huffman-Broadway Group, Inc.

lasthenia (*Lasthenia glaberrima*), and the CNPS List 4 species (Tibor 2001; CNPS 2003) Lobb's aquatic buttercup (*Ranunculus lobbii*). Cocklebur is locally dominant in a swale that is a southern extension of this depression, but this species is largely absent from the remainder of the depression. This pool also contains the vernal pool species Douglas' pogogyne (*Pogogyne douglasii*), a species not found elsewhere on the site, and a small amount of maroon-spotted downingia (*Downingia concolor* var. *concolor*), another characteristic vernal pool species. Non-native species occurring in this pool include waxy manna grass (*Glyceria declinata*), pennyroyal (*Mentha pulegium*), annual beard grass (*Polypogon monspeliensis*), curly dock, and bindweed. We did not observe either Sonoma sunshine or Burke's goldfields in this pool.

The more southerly of the northwestern pools is large but somewhat shallower than the northerly pool. It is largely dominated by California semaphore grass, with considerable pennyroyal, curly dock, and, locally, waxy manna grass.

The three pools west of the Bellevue-Wilfred Channel in the southeastern portion of this area are all quite deep and contained considerable standing water on 1 April 2004, although all were dry by 8 May. These pools all have zones dominated by California semaphore grass around their margins, with more sparsely vegetated areas in the deeper, central portions. Cocklebur is abundant throughout and dominant in the more sparsely vegetated central areas. Other native species occurring in these pools include flowering quillwort (*Lilaea scilloides*), Lobb's aquatic buttercup (in all three pools), and small amounts of coast allocarya (*Plagiobothrys undulatus*) and maroon-spotted downingia.

Seasonal pools in irrigated pastures. All of these pools are located in the northeastern and southeastern irrigated pastures. These pools are altered by periodic inflows of water from irrigation during dry periods in the late spring and summer. In 2004, all of these pools were dry on 8 May, but some had standing water on 16 June, although there was no rainfall during the intervening period. These pools have also been substantially impacted by grazing and trampling.

Native species commonly occurring in these pools include the native species California semaphore grass, tall cyperus (*Cyperus eragrostis*), water manna grass (*Glyceria occidentalis*), and water foxtail (*Alopecurus geniculatus*, possibly non-native), and the non-native species curly dock, waxy manna grass, strawberry clover (*Trifolium fragiferum*), bristly ox-tongue, and, around the margins, Italian rye grass. Two other non-native grasses, barnyard grass (*Echinochloa crus-galli*) and small barnyard grass (*Echinochloa colona*), are abundant in a few pools and depressions (generally not the same ones), but absent from the remainder. The two largest pools in this portion of the site, both located within the southeastern irrigated pasture, contain additional native species such as cocklebur, pale willow-weed (*Polygonum lapathifolium*), and western yellow-cress (*Rorippa curvisiliqua*). One rather deep, possibly artificially created pool in the northwestern portion of the northeastern irrigated pasture is unusual in that the bed is largely dominated by the non-native species yellow water-weed (*Ludwigia peploides* ssp. *montevidensis*).

Flood Control Channel

This habitat type designation is used for the Bellevue-Wilfred Channel and its margins. Also included in this habitat type are the canal banks above the water line and the nearly level, highly

© 2006 Huffman-Broadway Group, Inc.

disturbed areas bordering the canal on both sides (separated by fences from adjacent areas). This habitat type is essentially entirely artificial, although the channel and margins are largely dominated by native species. The Bellevue-Wilfred Channel is actually not considered part of the project site, but the channel bisects the 360-acre parcel.

The canal apparently contains a considerable volume of gently flowing water at a relatively constant level year round. The channel is largely vegetated with more or less dense, emergent yellow water-weed, with occasional areas of open water. The margins of the channel and the edge of the bank are mostly densely vegetated with tall herbs. The large emergent monocot broad-leaved cattail (*Typha latifolia*) is widespread in dense clumps along the margins of the channel; a non-native emergent monocot, tuberous bulrush (*Scirpus tuberosus* [= *S. glaucus*]), is sometimes intermixed. Other characteristic species occurring partly in and partly out of the water at the edge of the channel include the native species tall cyperus, water smartweed (*Polygonum punctatum*), and willow-herb (*Epilobium ciliatum* ssp. *ciliatum*) and the non-native species white sweet-clover (*Melilotus alba*) and curly dock.

Widely scattered small trees of the native species arroyo willow (*Salix lasiolepis*), shining willow (*Salix lucida* ssp. *lasiandra*), Oregon ash (*Fraxinus latifolia*), valley oak, and box elder (*Acer negundo* ssp. *californicum*) and the non-native species northern California black walnut (*Juglans californica* var. *hindsii*, native to northern California but not indigenous to the vicinity of this site) and cherry or plum (*Prunus* sp.) occur on the banks; the two willow species also sometimes grow in water near the margins of the channel. Herbaceous vegetation on the banks is mostly non-native; characteristic species include bristly ox-tongue, fuller's teasel (*Dipsacus fullonum*), Harding grass, fennel (*Foeniculum vulgare*), and annual grasses. One native (although often weedy) species, panicled willow-herb, is also locally moderately abundant on the banks. The nearly level areas bordering the canal have been heavily disturbed by grading and vehicle traffic and are sparsely to moderately vegetated, mostly with weedy species such as bristly ox-tongue, Queen Anne's lace (*Daucus carota*), fennel, chicory (*Cichorium intybus*), and annual grasses.

Drainage Ditches

Two drainage ditches on the site are distinct enough in their vegetation composition to be recognized as a distinct habitat type. The larger of these ditches extends south across the site from Wilfred Avenue south, east of the barn, and empties into the Bellevue–Wilfred Channel near the northeast corner of the area of non-native grassland west of the canal. This ditch may follow a natural drainageway and may be only partially channelized. For much of its length this ditch is narrow and deeply incised, with steep banks approximately 6 feet high. Tall cyperus typically dominates the bottom of the more or less densely vegetated channel and the lowermost portions of the banks, with the native species common water-plantain (*Alisma plantago-aquatica*) an abundant associate. Spearscale (*Atriplex triangularis*), also a native species, is sporadic on the lowermost portions of the banks; this species is an indicator of alkaline or somewhat saline soil conditions. The native rhizomatous perennial grass creeping wild rye (*Leymus triticoides*) occurs in a few localized patches on the banks; otherwise, the characteristic species on the banks are mostly non-native, including bristly ox-tongue, fuller's teasel, and fennel.

© 2006 Huffman-Broadway Group, Inc.

The lowermost portion of this drainage ditch, where it traverses non-native grassland, is different in character and species composition from the remainder. In this area, the ditch is somewhat broader, with lower, more gently sloping banks. The channel is densely vegetated, with tall cyperus and spearscale the dominant species. Cocklebur and pennyroyal are abundant associates, and spiny clotbur is scattered but less abundant. The east-facing bank in this area is dominated by hayfield tarplant, while bristly ox-tongue and annual grasses are abundant on the west-facing bank.

The second, smaller drainage ditch drains from east to west and separates two cultivated fields east of the canal. This ditch is sharply incised, with steep banks. Characteristic species along the channel include the native species spearscale, cocklebur and willow dock (*Rumex salicifolius* var. *transitorius*) and the non-native species pennyroyal and curly dock. Bristly ox-tongue and annual grasses are abundant on the banks of this ditch; fuller's teasel, willow dock, curly dock, and the large non-native herb poison-hemlock (*Conium maculatum*) are more local.

Irrigated Pasture

Four irrigated pastures, separated by fences and by the barn and the disturbed area adjacent to it on the east and south sides, occupy much of the northern portion of the site west of the Bellevue–Wilfred Channel. The microtopography in these pastures is level to slightly undulating. Because these pastures are periodically irrigated during the dry season, they remain green year round. The vegetation of these pastures is diverse in species composition and is generally dense and lush; the cover is generally 100 percent or nearly so (the cover is sparser in the southern portion of the southeastern-most pasture, perhaps indicating that this area receives less irrigation than the remaining irrigated pasture areas). These pastures are relatively heavily grazed and periodically mowed.

The vegetation in these pastures is comprised of a variety of grasses and herbs, many of them non-native but some native. Many of the characteristic species frequently are prominent components of California annual grassland habitats, but some are moisture-loving species that are probably more or less dependent on irrigation to survive in these pastures. The most abundant grass is English rye grass (*Lolium perenne*), probably originally planted. Other characteristic species in these pastures, all non-native, include strawberry clover, rose clover (*Trifolium hirtum*), white clover (*Trifolium repens*) (these clover species often dominate sizable areas), bristly ox-tongue, curly dock, field mustard (*Brassica rapa*), prickly sow-thistle (*Sonchus asper*), cheeseweed (*Malva parviflora*), common dandelion (*Taraxacum officinale*), and orchard grass (*Dactylis glomerata*). Several additional species often occur in slightly low-lying areas in the pastures; these include the native species tall cyperus and marsh bristle grass (*Setaria gracilis*) and the non-native species barnyard grass and small barnyard grass.

Cultivated Fields

Fields that are cultivated for hay occupy most of the site east of the Bellevue–Wilfred Channel. These fields are annually plowed, disked, and planted with grasses. At the time of the surveys these fields were vegetated primarily with planted grasses and scattered individuals of weedy species.

© 2006 Huffman-Broadway Group, Inc.

One large, irregularly shaped area within the southeastern-most field is lower-lying than the remainder and appears quite distinct on an aerial photo of the site. After plowing and disking (which occurred sometime between the 6 October and 21 November site visits), this site appears similar to the remainder of the cultivated areas. Before plowing and disking, a number of moisture-loving species not occurring elsewhere in the cultivated fields, such as the native annual smooth spike-primrose (*Epilobium pygmaeum* [= *Boisduvalia glabella*]), were present in this area.

The fields are bordered by narrow strips of uncultivated land, often including shallow ditches whose vegetation is generally not distinct from the remainder of the uncultivated area (one exception is treated under the drainage ditches habitat type, above). These uncultivated areas are vegetated primarily with weedy species, including annual grasses, bristly ox-tongue, fuller's teasel, Harding grass, poison-hemlock, curly dock, and bindweed.

Disturbed/Ruderal

Small areas of ruderal habitat (too small to be mapped separately) occur throughout the site, and most of the vegetation of the site is somewhat ruderal in character. However, there is one large (8.0 acres) discrete disturbed/ruderal habitat type surrounding the barn and west of the large north-south ditch (Figure 4). This area has been greatly altered by heavy grazing and trampling by cattle, and possibly by other types of intensive disturbance. The southern portion is largely unvegetated except for scattered individuals of weedy species. Hayfield tarplant is abundant in the northern portion, occurring with scattered individuals of spiny clotbur. Cheeseweed is also abundant locally in this area.

2.2.3 4.7 Acre Parcel

The 4.7-acre parcel has been graded in the past and is vegetated with primarily non-native weedy species of vegetation, similar to the disturbed grasslands of the 360-acre parcel.

2.3 Animal Populations

The discussion on wildlife species is based on a review of available literature, information from the CNDDB and observations and qualitative surveys of habitats conducted by HBG biologists in the fall of 2003 and again in May of 2004. Gary Deghi and Michele Lege of HBG conducted wildlife surveys at the 360-acre site between August and November of 2003, and Gary Deghi revisited the site to conduct spring surveys in May of 2004. General wildlife observations recorded on the 360-acre site would be expected to be representative of the entirety of the project study area. In addition, field evaluations have been conducted for both the 360-acre and 83-acre site for one special status species of amphibian, the federally listed threatened California tiger salamander. The results of the species-specific site assessments and surveys are summarized in Section 2.5, "Special Status Species," and the various reports prepared are included in the Attachments.

A list of wildlife species observed onsite or expected to utilize the site was developed through habitat reconnaissance, field observation, and literature sources. Supplemental information was obtained from the literature, particularly for wildlife taxa not observed during the surveys. A complete listing of the references from which information was compiled on the flora and fauna inhabiting the region is contained in the References (Section 6.0). Attachment 2, Table 2, is a

© 2006 Huffman-Broadway Group, Inc.

species list based on these reconnaissance level observations for reptiles, amphibians, birds and mammals over the entire project area and species expected to occur on the project site. The table lists, by scientific and common names, wildlife species documented as existing onsite or expected to occur on the project site, and provides the scientific names of all species mentioned in the text of this section.

Wildlife species observed in the project area during the field reviews conducted between August and November 2003 and in May 2004 are common to abundant in the region and would be expected in the combination of grassland and wetland habitats present at the site. Virtually all avian species are protected under the federal Migratory Bird Treaty Act.

Raptors observed onsite during late summer and fall include Turkey Vulture, Barn Owl, American Kestrel, Merlin, Red-tailed Hawk, Red-shouldered Hawk, and White-tailed Kite. In addition, a Burrowing Owl was observed on the site in January 2004. Avian species observed in aquatic habitats, such as the Bellevue-Wilfred Channel which bifurcates the site, include Pied-billed Grebe, Great Blue Heron, Great Egret, Snowy Egret, Mallard, Wilson's Snipe, Virginia Rail, Sora, Marsh Wren and Lincoln's Sparrow. Additional avian species documented in the project area during late summer and fall surveys included Anna's Hummingbird, Acorn Woodpecker, European Starling, Mourning Dove, Black Phoebe, Say's Phoebe, Ruby-crowned Kinglet, Northern Mockingbird, Loggerhead Shrike, American Pipit, Common Raven, American Crow, Yellow-rumped Warbler, Western Meadowlark, Brown-headed Cowbird, Brewer's and Red-winged Blackbirds, White-crowned, Golden-crowned, Savannah, and Song Sparrows, American Goldfinch, Purple Finch and House Finch.

During spring surveys, raptors observed foraging over the site included Turkey Vulture, American Kestrel, Red-tailed Hawk, Red-shouldered Hawk and White-tailed Kite. No behaviors or other evidence of nesting was observed by any of these species, however. Avian species observed in the grasslands and agricultural habitats of the site during spring surveys included the following species which would all be expected to nest at the site or in the general vicinity of the site: Canada Goose, Mallard, California Quail, Ring-necked Pheasant, Killdeer, Rock Pigeon, Mourning Dove, Northern Flicker, Black Phoebe, Tree Swallow, Cliff Swallow, Barn Swallow, American Crow, Northern Mockingbird, European Starling, Song Sparrow, Savannah Sparrow, Grasshopper Sparrow, Western Meadowlark, Red-winged Blackbird, Brewer's Blackbird, Brown-headed Cowbird, House Finch, American Goldfinch and House Sparrow. Shorebirds observed in the area included Western Sandpiper and American Avocet. Also observed in the fields was a Cattle Egret, a species that is common throughout much of North America but is somewhat scarce in Sonoma County. Birds observed within the Bellevue –Wilfred Channel during the spring surveys included Pied-billed Grebe, Great Blue Heron, Great Egret, Snowy Egret, Black-crowned Night-Heron, Canada Goose (with young), Mallard and Virginia Rail. Cliff Swallows were observed nesting under the bridges over the channel along both Wilfred Avenue and Rohnert Park Expressway.

Mammals documented at the site included Botta's pocket gopher, California ground squirrel, black-tailed jackrabbit, striped skunk and red fox. A probable red fox den was found in the southwest portion of the site during the spring surveys. Amphibians and reptiles documented at

© 2006 Huffman-Broadway Group, Inc.

the site included northwestern pond turtle (Bellevue-Wilfred Channel), Pacific tree frog and western fence lizard.

2.4 Wetlands Delineation

The 1987 *Corps Wetlands Delineation Manual* (1987 Manual) was used to determine the extent of wetlands at the study site. Pursuant to the 1987 Manual, key criteria for determining the presence of wetlands are: (a) the presence of inundated or saturated soil conditions resulting from permanent or periodic inundation by groundwater or surface water; and (b) a prevalence of vegetation typically adapted for life in saturated soil conditions (i.e., hydrophytic vegetation). Explicit in the definition is the consideration of three environmental parameters: hydrology, soil, and vegetation. Positive wetland indicators of all three parameters are normally present in wetlands. The combined use of indicators of all three parameters enhances the technical accuracy, consistency, and credibility of wetland determinations. For this reason, each of the parameters is required to be present according to the 1987 Manual.

Aquatic habitats other than wetlands which are considered to be waters of the United States also were identified as part of this study. Their landward extent was defined following the definitions provided in Corps' regulations (33 CFR § 28.4(a)(b) and (c)):

(a) *Territorial Seas.* The limit of jurisdiction in the territorial seas is measured from the baseline in a seaward direction a distance of three nautical miles.

(b) *Tidal Waters of the United States.* The landward limits of jurisdiction in tidal waters:
  (1) Extends to the high tide line, or
  (2) When adjacent non-tidal waters of the United States are present, the jurisdiction extends to the limits identified in (c) below.

(c) *Non-Tidal Waters of the United States.* The limits of jurisdiction in non-tidal waters:
  (1) In the absence of adjacent wetlands, the jurisdiction extends to the ordinary high water mark, or
  (2) When adjacent wetlands are present, the jurisdiction extends beyond the ordinary high water mark to the limit of the adjacent wetlands.
  (3) When the water of the United States consists only of wetlands, the jurisdiction extends to the limit of the wetlands.

2.4.1 68-Acre Parcel

North Fork Associates delineated waters of the United States at the 80-acre Northwest Specific Plan parcel in 2003 (North Fork Associates, 2003). This delineation encompasses the 68-acre area parcel included in the proposed study area. The North Fork Associates report is included as Attachment 4A. The Corps verified the delineation map in 2004. Verified waters of the United States occurring on the 80-acre site totaled 2.38 acres and included 1.84 acres of seasonal wetland, 0.02 acres of wetland swale and 0.52 acres of intermittent drainage. Jurisdictional wetlands on the 68-acre property included as part of the study site for the proposed project total 2.09 acres and include 1.61 acres of seasonal wetlands and 0.48 acres of wetlands in drainage ditches. These wetlands are highly disturbed by agricultural activities, however, they do support some native wetland species. These areas are relatively shallow depressions that are inundated

© 2006 Huffman-Broadway Group, Inc.

or saturated during the winter and early spring months. Although they support vernal pool species they were not considered vernal pools by the Corps. Other waters consist of intermittent drainages that are entirely roadside ditches. None of the mapped features are natural stream channels.

2.4.2 360-Acre Parcel

Between August 2003 and April 2004, HBG conducted onsite evaluations of the geographic extent of wetlands and other "waters of the United States" potentially subject to U.S. Army Corps of Engineers' (Corps) jurisdiction. Existing land forms, vegetation, hydrology, and soil conditions were studied to identify areas that would likely contain wetland and aquatic habitats. These areas were classified using the U.S. Fish and Wildlife Service's "Classification System for Wetland and Deepwater Habitats" (Cowardin *et al.* 1979). The landward extent or boundary of these areas was further defined using the methodology currently in use by the Corps, published Corps regulatory guidance letters, and San Francisco District regulatory policy.

An aerial photograph of the site taken by Air Photo USA in October 2002 was obtained from GIS Express. The digital orthophoto was brought into GIS software and CAD contour data were overlaid on the aerial photo. Detailed field investigations were conducted between August 2003 and April 2004 to delineate the limits of Corps jurisdiction. A backpack-held, Trimble global positioning system (GPS) unit was used to map the wetland boundaries. Once field data collection was completed, the GPS data of the wetland boundaries were overlaid on the topographic map of the project site and the acreages within the wetland polygons were calculated. Representative sites were selected for detailed analysis of wetland indicators using a transect-based sampling approach. Site selection was based on an examination of sites that would likely pond, flood, or saturate based on their geographic position, soil permeability, and drainage characteristics in relationship to well-drained upland sites (as determined by NRCS soils data).

The letter from the Corps dated January 26, 2005 verifying the wetland boundaries on the 360-acre site is included as Attachment 3B. The verification includes a map of jurisdictional resources on the project site. The wetlands identified serve the functions of flood flow alteration, groundwater recharge, sediment stabilization, sediment/toxicant retention, nutrient removal/ transformation, production export, and wildlife habitat.

Areas subject to the Corps' jurisdiction at the project site include seasonal palustrine emergent wetlands and manmade stormwater drainage and flood control ditches. Field verification with the Corps took place in the field on July 27 and August 23 through 25, 2004. A letter verifying the wetland delineation was received from the Corps dated February 26, 2005. The locations of these areas, totaling 61.77 acres, are shown in Figure 5, and include 60.31 acres of seasonal pools and seasonal wet areas and 1.46 acres of drainage ditches. Additional wetlands are present in flood control channels passing through or adjacent to the site (i.e., Bellevue-Wilfred Channel, Laguna de Santa Rosa), although these are not considered part of the project site.

On behalf of the Federated Indians of Graton Rancheria, The Huffman-Broadway Group, Inc. (HBG) conducted an investigation of the geographic extent of possible wetland areas or other types of waters on the 4.7-acre parcel located adjacent to the 360-acre parcel. By letter to the

© 2006 Huffman-Broadway Group, Inc.

Corps dated September 12, 2005, HBG requested verification of wetlands at the 4.7 acre parcel and the inclusion of the additional 4.7-acre parcel with the original 360-acre delineation. The wetland delineation HBG conducted on the additional 4.7-acre parcel adds 0.299-acre of wetlands potentially subject to Jurisdiction under Section 404 of the Clean Water Act to the wetlands delineated within the 360-acre parcel. Wetlands on the 4.7-acre parcel have not been verified by the Corps as of this writing.

2.5 Special Status Species

Rare, endangered, or threatened species as well as species that are proposed for listing or candidates for listing are afforded various levels of protection under the federal Endangered Species Act of 1973 (16 USC § 1531 *et seq.* and rules there under, i.e., 50 CFR § 17.11 and 17.12), the California Native Plant Protection Act of 1977 (California Fish & Game (CFG) Code § 1900 *et seq.*), and the California Endangered Species Act of 1970 (CFG Code § 2050 *et seq.* and rules there under, i.e., Title 14, California Code of Regulations (CCR) Sections 670.2 and 670.51). The California Environmental Quality Act (CEQA) (January 1984) requires that the California Department of Fish and Game (CDFG) be consulted during the CEQA review process as to the impact of proposed projects on endangered and threatened species, and regulations provide additional protection for unlisted species that meet the "rare" or "endangered" criteria.

The CDFG maintains records for the distribution and known occurrences of sensitive species and habitats in the California Natural Diversity Database (CNDDB). Sensitive species include those species listed by the federal and state governments as endangered, threatened, or rare or candidate species for these lists. The CNDDB also included species that are included within the U.S. Fish and Wildlife Services (USFWS) category of "species of special concern." This is an informal term that refers to those species which the USFWS believes might be declining or in need of concentrated conservation actions to prevent decline. These species receive no legal protection under the federal Endangered Species Act. The CNDDB also includes state species of special concern designated by the CDFG because declining population levels, limited ranges, and/or continuing threats have made them vulnerable to extinction. The goal of designating species as "species of special concern" is to halt or reverse their decline by calling attention to their plight and address the issues of concern early enough to secure their long term viability. Not all "species of special concern" have declined equally; some species may be just starting to decline, while others may have already reached the point where they meet the criteria for listing as a "Threatened" or "Endangered" species under the state and/or federal Endangered Species Acts, but are not listed. CDFG would consider these species during its environmental review of any proposed activities on non-trust lands.

The CNDDB is organized into map areas based on 7.5 minute topographic maps produced by the U.S. Geological Survey. All known occurrences of sensitive species and important natural communities are mapped onto the quadrangle map. The database gives further detailed information on each occurrence, including specific location of the individual, population, or habitat (if possible) and the presumed current state of the population or habitat. The project site is located on the Cotati 7.5-minute quadrangle; the relevant adjacent quads are the Santa Rosa, Two Rock and Sebastopol quadrangles. A search of the CNDDB records of occurrence for special status animals and plants and natural communities within these quadrangles indicated that several special status species or natural communities are known to occur on the project site itself

© 2006 Huffman-Broadway Group, Inc.

and/or in areas where potential road improvements on non-trust lands may be necessary. However, even the absence of a special animal, plant, or natural community from the report does not necessarily mean they are absent from the area in question, but only that no occurrence data have been entered for that species or natural community in the CNDDB inventory. The occurrence of special status plant and animal species in the vicinity of the project area may be an indication that they also could occur in the project area. Therefore, occurrences of special status species throughout the quadrangles mentioned above were noted in considering the potential presence of these species on the project site.

Attachment 2, Table 3, presents a list of special status animals that have been reported in the project vicinity (i.e., Cotati, Santa Rosa, Two Rock and Sebastopol 7.5-minute quadrangle maps). A target list of special status plants with potential to occur in the vicinity of the study area is presented in Table 4. Each species is discussed below.

2.5.1 Special Status Plant Species

A list of special status plants having the potential to occur on the site was developed from the CNDDB (2003), the USFWS Endangered Species Office, the California Native Plant Society (CNPS), and field knowledge of staff of HBG and EcoSystems West Consulting Group. A complete list of special status plant species potentially occurring in the vicinity of the project area is included in Attachment 2, Table 4.

Special-status species include species listed as Threatened or Endangered under provisions of the federal Endangered Species Act (ESA) of 1973 (16 USC 1531 *et seq.*, as amended) (U.S. Fish and Wildlife Service [USFWS] 2004a, b) and species listed as Rare, Threatened, or Endangered by the State of California under provisions of the 1984 California Endangered Species Act (CESA) and the 1977 Native Plant Protection Act (NPPA) (California Department of Fish and Game [CDFG] 2004). Species formally proposed for federal listing by the U.S. Fish and Wildlife Service (taxa for which a proposed rule has been published in the Federal Register; USFWS 2004c) are afforded limited legal protection under ESA. The Natural Heritage Division of CDFG administers the state rare species program and maintains the list of designated Endangered, Threatened, and Rare species.

Other special-status species are those on List 1A (Plants Presumed Extinct in California), List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere), or List 2 (Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere) of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Tibor 2001; CNPS 2003). These species are subject to state regulatory authority under the California Environmental Quality Act (CEQA) Guidelines. Also considered as special-status species are those included on List 3 (Plants about Which We Need More Information—A Review List) and List 4 (Plants of Limited Distribution—A Watch List) of the CNPS *Inventory*. These species are considered to be of lower sensitivity, and generally do not fall under specific state or federal regulatory authority. Specific mitigation considerations are generally not required for species in these categories.

Wetlands on the project site could potentially support any of four federally-listed endangered plant species found in such habitats on the Santa Rosa Plain: Sonoma sunshine (*Blennosperma*

© 2006 Huffman-Broadway Group, Inc.

bakeri), Burke's goldfields (*Lasthenia burkei*), Sebastopol meadowfoam (*Limnanthes vinculans*) and many-flowered navarretia (*Naverretia leucocephala* ssp. *plieantha*). These species are addressed by the U.S. Fish and Wildlife Service in a "Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects that May Affect Four Endangered Plant Species on the Santa Rosa Plain (File number 22342N)," which addresses mitigation requirements for these species as part of section 7 consultations conducted as part of the Corps permitting process. In general, the USFWS requires mitigation for the acreage of seasonal wetlands constituting habitat for the four federally-listed endangered plants. Mitigation requirements are less if surveys have been conducted with negative results (1:1 preservation ratio based on acreage), than if presence is assumed or demonstrated through surveys (2:1 preservation ratio).

The Habitat Quality Evaluation manual (CH2MHill 1998) has a list of vegetation, topographic, and hydrologic conditions that determine suitable habitat for the four listed species that occur on the Santa Rosa Plain. These include: (1) areas that support the species (2) areas where weedy grasses contribute less than 90 percent of the cover; (3) wetland areas occur in swales or depressions that are inundated for seven or more consecutive days.

Systematic surveys for rare plants have been conducted on the 360-acre site and the 68-acre site. The results are discussed below. No surveys have been conducted on the recently-added 4.7-acre site, however, as this site has been graded and very little native vegetation remains, the existence of rare plants is considered remote.

2.5.1.1 68-Acre Parcel

A summary report on special status plant species at the 80-acre Northwest Specific Plan parcel was prepared by North Fork Associates in 2004 (see the full report in Attachment 4C). During preparation of this summary, several reports covering the Santa Rosa Plain in general and the Rohnert Park Northwest Specific Plan site in particular were reviewed including Patterson (1994), CH2MHill (1998), U.S. Fish and Wildlife Service (1998), Stromberg (2001), and Stromberg (2002). The 80-acre NW Specific Plan area was surveyed for special status plant species over a four year period by several investigators. Dr. Larry Stromberg performed the first surveys in 2001 and subsequent surveys in 2002. North Fork Associates botanists Jeff Glazner and Barry Anderson surveyed the site in 2003 and 2004. Survey dates include March 15, March 21, April 2, April 13, and April 27, 2001 (Stromberg); March 12, March 25, March 29, April 8, and April 24, 2002 (Stromberg); April 11, May 7, July 24, 2003 (North Fork Associates); and April 13, 2004 (North Fork Associates). No special status plants were observed during any of the surveys conducted between 2001 and 2004.

The USFWS issued a Biological Opinion (BO) on August 5, 2005 (see Attachment 4G) that concludes a Section 7 consultation conducted as part of the Corps application process for a project proposed at the 80-acre site that included a variety of commercial, residential and light industrial uses. The BO recognizes that the site is within the range for the Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfields, and that the site supports potential habitat for these three endangered plant species. Although protocol surveys have been conducted for these species with a negative result, the USFWS indicates that the seasonal wetlands at the

© 2006 Huffman-Broadway Group, Inc.

site may include seeds of the listed plants, and that the negative survey results do not rule out the possibility that the species may occur on site.

360-Acre Parcel

EcoSystems West botanists conducted a focused survey of literature and special-status species data bases in order to identify special-status plant species with potential to occur in the Rohnert Park Project study area (Stony Point site). Sources reviewed include CNDDB occurrence records for the Cotati, Two Rock, Santa Rosa, and Sebastopol USGS 7.5-minute quadrangles; county occurrence records and USGS quadrangle occurrence records in the CNPS *Inventory* (Tibor 2001; CNPS 2003) for the Cotati quadrangle and the eight quadrangles surrounding it; and standard floras (Abrams 1923, 1944, 1951; Abrams and Ferris 1960; Munz and Keck 1973; Hickman 1993; Best *et al.* 1996). Sources consulted for up-to-date agency status information include USFWS (2005a, b, c) for federally listed species including Proposed and Candidate species and CDFG (2005) for State of California listed species. Based on information from the above sources, a target list of special-status plants with potential to occur in the vicinity of the study area was developed (Table 4).

Scientific nomenclature follows Hickman (1993); Tibor (2001); and CNPS (2003). Common names follow Abrams (1923, 1944, 1951); Abrams and Ferris (1960); Hickman (1993), and the U.S. Department of Agriculture (USDA) PLANTS database (USDA 2002), except for special-status species, which follow Tibor (2001) and CNPS (2003).

CNDDB records indicate that two federal and state-listed Endangered species, Sonoma sunshine (Baker's stickyseed) (*Blennosperma bakeri*) and Burke's goldfields (*Lasthenia burkei*) historically occurred on the 360 acre site.

Botanical surveys of the Stony Point site were conducted by Roy Buck of EcoSystems West Consulting Group during the fall of 2003 and spring and summer of 2004 and 2005. Results of the 2003 and 2004 surveys were incorporated into this Biological Assessment report; results of the 2005 rare plant survey are included in a separate report included as Attachment 3A, and are summarized herein. Fall surveys were conducted on September 10, October 6 and 8, and November 21, 2003 to assess potential habitat and search for flowering special status plant species. EcoSystems West conducted spring and early summer field surveys on 1 and 8 April, 8 May, and 16 June 2004. During these 2004 surveys, the survey effort was concentrated on areas not intensively cultivated or entirely ruderal in character, particularly grasslands and seasonal pools. During the 2005 field season, EcoSystems West botanist Roy Buck conducted field surveys on the Stony Point site on 20 March, 5 April, 17 April, 16 May, and 25 June. These surveys were concentrated on the seasonal pools identified on the site in 2003 and 2004, since these were the only habitats on the site with high potential to support special-status species. Each seasonal pool on the site was visited at least once in March, April, May, and June. The timing of the survey was appropriate for identification of all of the special-status species with potential to occur on the site, including Sonoma sunshine, Burke's goldfields, Sebastopol meadowfoam, and many-flowered navarretia.

During the 2005 surveys, EcoSystems West observed a small population of Sonoma sunshine on the Stony Point site, within the mapped historic area of occurrence of the species. They did not

© 2006 Huffman-Broadway Group, Inc.

observe this species on the site during surveys in 2004. EcoSystems West did not observe Burke's goldfields, a federal and state-listed Endangered species (USFWS 1991, 2005a; CDFG 2005) on the site in either 2004 or 2005. CNDDB records indicate that Burke's goldfields historically occurred on the site, in approximately the same location as Sonoma sunshine. The CNDDB indicates that it is believed that Burke's goldfields was extirpated from the site sometime prior to 1994, although the cause if its extirpation is not known.

EcoSystems West Consulting Group botanists did not observe any federal or state-listed plant species, or species falling under the regulatory authority of CEQA, on the Stony Point site during the fall 2003 and spring 2004 surveys. They did observe one naturally occurring special-status species, Lobb's aquatic buttercup (*Ranunculus lobbii*) at four localities on the site in 2004; this species is listed on List 4 of the CNPS *Inventory* (Tibor 2001; CNPS 2003). The 2005 surveys revealed the presence of additional colonies of Lobb's aquatic buttercup at the site. The 2005 plant survey report by EcoSystems West Consulting Group is included in Attachment 3A.

One species occurring on the site, northern California black walnut, is a special-status species where it is native. This species is on List 1B (Plants Rare and Endangered in California and Elsewhere) of the CNPS *Inventory* (Tibor 2001; CNPS 2003). However, although this species is widely naturalized in northern California, it is known to be native at only a few sites, and is not thought to be native to Sonoma County (Hickman 1993, Best et.al., 1996, Tibor 2001, CNPS 2003). Given the relatively small size of the black walnut trees on the Rohnert Park site and their occurrence in an entirely artificial habitat (canal banks), it is certain that this species is naturalized and not native on the site.

Sonoma sunshine, Burke's goldfields, and Lobb's aquatic buttercup are discussed in more detail below.

Sonoma sunshine (*Blennosperma bakeri*) and Burke's goldfields (*Lasthenia burkei*). These two species are discussed together because they apparently historically occurred at the same location on the Stony Point site and because they have similar regulatory status. Sonoma sunshine (also known as Baker's stickyseed) and Burke's goldfields are both listed as Endangered by the U.S. Fish and Wildlife Service under the federal Endangered Species Act (USFWS 1991, 2004a) and by the state of California (CDFG 2004). Both species are also on List 1B of the CNPS *Inventory* (Tibor 2001; CNPS 2003). Both species are small annuals in the sunflower family. Both have flower heads with yellow disk and ray flowers. Sonoma sunshine has linear, 1-3-lobed upper leaves and the stigmas of the ray flowers are dark red; these characters separate this species from the widespread common stickyseed (*Blennosperma nanum* var. *nanum*), with the upper leaves mostly 3-15-lobed and the ray stigmas yellow. Burke's goldfields has linear, entire or pinnately lobed leaves. The achenes (fruits) are less than 1.5 mm long and the pappus consists of 1 long awn and many short scales; these characters separate this species from related species.

Both species are relatively narrowly distributed, and both are most abundant and widespread in the Cotati Valley, within which the study area is located (USFWS 1991, 1998; Best et. al. 1996). Sonoma sunshine occurs only in Sonoma County, in the Cotati Valley and in the Sonoma Valley to the southeast. Of 23 CNDDB occurrence records, 18 are in the Cotati Valley and five are in

© 2006 Huffman-Broadway Group, Inc.

the Sonoma Valley. In Sonoma County, except for a single occurrence north of Healdsburg, Burke's goldfields is known only from the Cotati Valley, where 24 of 27 CNDDB occurrence records are located. There are also two known occurrences in Lake County and one known occurrence (the type locality, where the species may be extirpated) in Mendocino County. At least three Sonoma County occurrences of Sonoma sunshine and four Sonoma County occurrences of Burke's goldfields are extirpated.

Both species grow in vernal pools and wet grasslands (USFWS 1991, 1998; Tibor 2001; CNPS 2003). In Sonoma County, both are found in similar loam, clay loam, and clay soils in nearly level to slightly sloping locations.

The historic occurrences of these species on the site are CNDDB Occurrence No. 20 of Sonoma sunshine and CNDDB Occurrence No. 29 of Burke's goldfields. The two occurrences are mapped by CNDDB as coinciding exactly. The portions of these occurrences in the study area are east of Stony Point Road along the site boundary, in an area now encompassing both the extreme southwest corner of the current irrigated pasture area and the extreme northwest corner of the uncultivated area to the south, containing seasonal pool and California annual grassland habitat. These areas are separated by a fence. Both occurrences are mapped as continuing west of Stony Point Road, outside the study area. Approximately half of each mapped occurrence area is within the study area.

According to the CNDDB records, Sonoma sunshine was first observed on the site in 1987 (approximately 100 plants), and it is unknown when Burke's goldfields was first observed on the site. The CNDDB records also indicate that Burke's goldfields was extirpated on the site by 1994, while Sonoma sunshine was extirpated by 1994 only west of Stony Point Road (i.e., outside the study area) but was still extant in 1994 east of the road, within the study area.

In 2005, EcoSystems West observed Sonoma sunshine in the seasonal pool located near the western site boundary that straddles the fence line between irrigated pasture to the north and uncultivated land to the south. The species was observed only in the southern half of this pool. The northern half of this pool, north of the fence, has been completely altered by conversion to irrigated pasture, and no longer provides suitable habitat for Sonoma sunshine. In 2005 the botanists observed a small, concentrated colony of 5-10 plants of Sonoma sunshine in the south-central portion of this pool, more or less opposite the eastern side of a southward extension of the pool, and approximately 3-5 additional plants, somewhat more scattered, approximately 60-65 feet to the southeast. Associated species include the native species California semaphore grass (*Pleuropogon californicus*), smooth lasthenia (*Lasthenia glaberrima*), and Jepson's coyote-thistle (*Eryngium aristulatum* var. *aristulatum*) and the non-native species pennyroyal (*Mentha pulegium*). The pool in which Sonoma sunshine was observed more or less coincides with the eastern portion of the mapped area of CNDDB Occurrence No. 20 of the species.

The Ecosystems West botanist had surveyed this same pool on April 1, 2004, and Sonoma sunshine was not found at the site. On that date, there was virtually no standing water in the pool, although the soil was wet in the lowest portions of the pool bed. A comparison of dates indicates that 2004 was a very different season than 2005 in terms of when the pool dried up.

© 2006 Huffman-Broadway Group, Inc.

It was also noticed during the April 17, 2005 visit to the site that cattle were then grazing in the pasture area within which this pool occurs. Cattle were not present during an earlier field visit on March 20, 2005. Some damage to the Sonoma sunshine plants from cattle trampling was evident during the April 17 field study.

Burke's goldfields have not been observed during flowering period surveys conducted in 2004 and 2005.

Lobb's aquatic buttercup (*Ranunculus lobbii*). Lobb's aquatic buttercup is listed on List 4 (Plants of Limited Distribution—A Watch List) of the CNPS *Inventory* (Tibor 2001; CNPS 2003). It does not fall under any specific state or federal regulatory authority. It is an often much-branched annual white-flowered buttercup that germinates underwater and grows in standing water or on drying mud. It has floating leaves and submersed leaves with drastically different morphology: the floating leaves are broad with three broad lobes, while the submersed leaves are finely divided into many threadlike segments. The submersed leaves have, however, only 2 or 3 primary divisions, a character separating this species from a similar, more widespread form of water buttercup (*Ranunculus aquatilus* var. *hispidulus*) with 3 to 6 primary divisions (other varieties of *R. aquatilus* have floating leaves similar to the submersed leaves). Lobb's aquatic buttercup flowers also only produce 2-6 ovaries and fruits, compared to 15 or more for *Ranunculus aquatilus* var. *hispidulus*.

In California, Lobb's aquatic buttercup occurs in coastal and near-coastal counties from Santa Clara County to Mendocino County (Munz and Keck 1973; Hickman 1993; Best et. al. 1996; Tibor 2001; CNPS 2003). Outside the state, it occurs northward to British Columbia. It grows in vernal pools and other places where water ponds seasonally in grassland, woodland, and forest habitats.

On the Stony Point site, the 2004 surveys revealed that Lobb's aquatic buttercup occurs in the same pool found to be occupied by Sonoma sunshine in 2005, and in the three seasonal pools in the southeast portion of the uncultivated area west of the Bellevue-Wilfred Channel. In the northern pool, it was growing only in the portion of the pool south of the fence that still supports predominantly native vegetation. There were probably more than 100 plants in 2004, scattered throughout the deeper parts of the pool bed. In the three southern pools, the species was largely growing in standing water in early April 2004. It was most concentrated in the more or less linear southeastern pool and in the small northeastern pool, and was present, but less concentrated, in the large, more or less C-shaped western pool. In 2005, EcoSystems West observed this species in these same four seasonal pools and also in two smaller, less well-defined seasonal pools in the northeastern portion of the uncultivated area west of the Bellevue-Wilfred Channel, several hundred feet east of the pool in which Sonoma sunshine occurs.

2.5.2 Special Status Animal Species

Animal species noted in the CNDDB as occurring in the Cotati, Santa Rosa, Two Rock and Sebastopol 7.5-minute quadrangle map areas, or that are known to occur in the general vicinity based on the knowledge of HBG biologists, are discussed below.

© 2006 Huffman-Broadway Group, Inc.

California Freshwater Shrimp

California freshwater shrimp (*Syncaris pacifica*) is both federal- and state-listed endangered. The species, endemic to Marin, Napa, and Sonoma Counties, is found in low elevation, low gradient streams with gravel or sandy bottoms, and where riparian cover is moderate to heavy. The species prefers the shallow pools removed from the main stream flow. Habitat preferences in winter include undercut banks with exposed roots that the animals can cling to during high flows. During the summer low flow periods, the species clings to submerged portions of overhanging tree and tree shrub branches. Blucher Creek, west of the site, contains high densities of this species.

The Bellevue–Wilfred Channel was subject to a habitat evaluation by Richard Arnold, Ph.D., of Entomological Consulting Services, Ltd., on January 13, 2004. Although the channel experiences perennial water flow, the smooth and contoured sides of the channel lack undercut banks, and the bottom of the channel is mud rather than gravel or sand. Other than a few scattered willow trees, the banks are largely devoid of vegetation. Portions of the channel support cattails and other emergent vegetation. Therefore, the channel does not provide suitable habitat for California freshwater shrimp.

Steelhead Trout

Central California populations of steelhead trout (*Oncorhynchus mykiss*) were federally listed as threatened in August 1997. Steelhead have been divided into ESUs, all of which were listed as threatened under the Federal Endangered Species Act in August 1997. Steelhead in the Central Coast ESU occur from the Russian River south to Soquel Creek and to, but not including, the Pajaro River, and including San Francisco and San Pablo Bays. Steelhead require well-oxygenated streams with riffles and loose, silt-free gravel substrate for spawning.

Juvenile steelhead require a period of residency in a stream before migrating downstream to the ocean. The length of freshwater residency may vary from one to three years or more depending on the living conditions in the stream. The major downstream migration of juvenile steelhead occurs during the period from February through June, depending on the water year and pattern of winter-spring runoff. Fish habitat is physically reduced to a minimum during the low-flow period of July through October. In the Russian River and its tributaries, adult steelhead begin their upstream migration during the first heavy rains of November and December and continue their upstream migration into March and April. Salmonid smolts migrate downstream to the Russian River and the Pacific Ocean during the winter and spring with fish movements tapering off in the middle of May.

The presence of steelhead in the Laguna de Santa Rosa has been reported in a Biological Assessment for the Russian River (Entrix 2004). The National Marine Fisheries Service (NOAA Fisheries) reports that steelhead migrate through the Laguna de Santa Rosa as they move into Santa Rosa and Mark West Creeks, which join the Laguna de Santa Rosa downstream from the project area and the Wilfred-Bellevue Channel. NOAA Fisheries also reports juvenile steelhead in Copeland Creek, a tributary of the Laguna de Santa Rosa upstream of the Wilfred-Bellevue Channel (Jones 2000).

© 2006 Huffman-Broadway Group, Inc.

California Tiger Salamander

Background

The Sonoma County distinct population segment of the California tiger salamander (*Ambystoma californiense*) was listed as endangered on July 22, 2002. On August 4, 2004 the California tiger salamander was listed as a threatened species throughout its range, at which time the Sonoma County population was also downgraded to threatened status. On August 19, 2005, a U.S. District Court vacated the Service's downlisting of the Sonoma and Santa Barbara populations, and these populations are currently federally-listed as endangered.

The species is also a California species of special concern. California tiger salamander (CTS) occurs in central California from the central Sacramento Valley to the central San Joaquin Valley and surrounding foothills of both the Coast Range and the Sierra Nevada. The species also has been recorded in the San Francisco Bay area, the Monterey Bay area, and valleys and foothills in San Luis Obispo and Santa Barbara Counties. The actual occurrence of the species within this range is restricted to locations where breeding ponds are surrounded by suitable upland habitat. Adult California tiger salamanders inhabit grassland, savanna, or deciduous oak woodland habitats which contain natural ponds, vernal pools, intermittent streams, or stock ponds. They usually are not found unless there is this combination of ponded water for breeding and surrounding upland, with a predominant ground cover of grazed or ungrazed grassland. The major threat to the CTS is the loss of breeding pools and ponds and the conversion of upland habitat for agriculture and urban development.

Based on the "Proposed Rule for Designation of Critical Habitat for the California Tiger Salamander in Sonoma County" (published in the Federal Register on August 2, 2005), the project site is within what was proposed as a designated critical habitat area. Recently, the U.S. Fish and Wildlife Service has decided against designating critical habitat for CTS in Sonoma County, and has instead implemented the Santa Rosa Plain Conservation Strategy for purposes of managing populations of CTS in Sonoma County.

The Santa Rosa Plan Conservation Strategy seeks to create a long-term program to mitigate potential adverse effects on listed species due to future development of the Santa Rosa Plain. The strategy was developed over a period of a year and a half by the Santa Rosa Plain Conservation Strategy Team, made up of representatives of government agencies and interested parties. The purpose of the Conservation Strategy is (i) to establish a long-term conservation program sufficient to mitigate potential adverse effects of future development on the Santa Rosa Plain and to conserve and contribute to the recovery of the listed species and the conservation of their sensitive habitat; (ii) to accomplish this in a fashion that protects stakeholders' land use interests, and (iii) to support issuance of an authorization for incidental take of CTS and listed plants that may occur in the course of carrying out a broad range of activities on the Plain.

The Conservation Strategy is intended to provide the biological basis for a permitting process for development projects in the Santa Rosa Plain that introduces consistency, timeliness and certainty for permitted activities. The Conservation Strategy establishes interim and long-term mitigation requirements and designates conservation areas where mitigation will occur. The Conservation Strategy acknowledges that projects proposed within 1.3 miles of a known CTS breeding site are likely to have impacts to CTS breeding or upland habitat.

© 2006 Huffman-Broadway Group, Inc.

The Santa Rosa Plain Conservation Strategy was finalized on December 1, 2005. While the implementation process has yet to be completed, the Conservation Strategy continues to provide guidelines for CTS mitigation for individual projects. The USFWS and CDFG released May 16. 2006 interim guidance on mitigation of impacts to CTS associated with development on the Santa Rosa Plain. This interim guidance provides mitigation guidelines that are to apply to project that may result in take of the CTS prior to approval of an Implementation Plan for the Conservation Strategy. The interim guidance requires mitigation at a ratio of 3:1 for projects that are within 500 feet of a breeding site; 2:1 for projects that are greater than 500 feet and within 2200 feet of a known breeding site, and projects beyond 2200 feet from a known breeding site but within 500 feet of an adult occurrence; and 1:1 for projects that are greater than 2200 feet and within 1.3 miles of a known breeding site.

The interim guidance acknowledges that protocol surveys may be appropriate at some locations within 1.3 miles of known breeding sites. Surveys would utilize the October 2003 *Interim Guidance on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander.* The survey protocol for the species requires two years of intensive study during the rainy season involving the use of drift fences and pitfall traps and visual inspection for CTS eggs or larvae through netting, seining or trapping.

Autecology

The following summary of the autecology of California tiger salamander was prepared by Wildlife Research Associates. California tiger salamanders spend most of the year underground in the burrows of California ground squirrels (*Spermophilus beecheyi*) and pocket gophers, feeding on insects (Loredo, *et al.* 1996; Stebbins 1985). Upland terrestrial habitat for Ambystomids is usually within 300 meters (984 feet) of aquatic breeding sites, but movements have been reported as far away as 800 meters (2,246 feet) (Trenham 2001, Madison and Farrand 1998). Following heavy winter rains (normally December-March) adults emerge briefly to lay their eggs in ponds, preferring vernal pools, alkali sinks or cattle troughs that have muddy bottoms or contain some algal growth in the water for hiding in, but are devoid of fish. Although no studies have been conducted on the water quality requirements, it has been noted that turbid water may be preferred (reduces predation), and water quality can prevent the transformation into the adult stage.

Adult salamanders are nocturnal and emerge for only a few weeks per year from their underground retreats. During the short breeding season, salamanders can be observed moving to temporary rain pools, ponds, and lakes nocturnally. Eggs are usually laid singly or may be in small clusters attached to vegetation in shallower water (Stebbins 1985). Larvae transform after a growth period of about 4 months (Dunn 1940) and may reach up to 3 inches before metamorphosing (Stebbins 1985). Larvae live in ponds until early or mid-summer, when they metamorphose into adults and emigrate from the pond during a summer storm (Loredo, *et al.* 1996, Loredo and Van Vuren 1996; Holland, *et al.* 1990). This species can live up to 10 years and does not reach sexual maturity until 3 or 4years of age (Trenham, *et al.* 2000).

Breeding habitat is considered suitable if water is present at a minimum of 12 inches for a minimum period of 4 months. Terrestrial habitat is considered suitable if small mammals are

© 2006 Huffman-Broadway Group, Inc.

present and the site has not been disturbed from previous activities, such as road construction or other ground disturbing activities, such as grading or excavation.

HBG has conducted specific coordination with Cay Goude and Chris Nagano of the U.S. Fish and Wildlife Service (personal communication August 30, 2006) to ascertain whether the USFWS would consider any areas located in the 100-year floodplain within the project area as suitable habitat for CTS. As part of these discussions, the USFWS has indicated that any areas located within the 100-year flood plain are not considered CTS habitat

Previously Reported Locations

According to the CNDBB, the CTS is present at a number of locations north, south, and west of the project area, including one population that possibly extends onto the northwest corner of the 360-acre site (see Figure 8). The closest reported CTS occurrence is at the corner of Stony Point Road and Wilfred Avenue, within 150 feet from the edge of the 360-acre Stony Point site. There are a total of 9 reported occurrences within 1.5 miles of the proposed project site (see Table 5). Known locations for CTS in or near the study area are shown in Figure 8, where radii of approximately 1.5 and 3 miles from the site's center are indicated with gray circles.

Sites designated with numbers only are from the CNDDB, while those designated "TT" are sites located during previous seasons by Wildlife Research Associates (WRA). In 2001, WRA surveyed the area north of the project site for egg sacs, the locations of which are depicted as TT01/1. In 2002, WRA surveyed the area north of the project site for larvae, locations of which are depicted as TT02/1.

Habitat Suitability of the Project Area

68-Acre Site

Surveys for California tiger salamander were performed for the 80-acre Northwest Specific Plan portion of the Wilfred site at the request of the Property owner, Redwood Equities L.P., by H.T. Harvey & Associates. These surveys, conducted according to either the recommendations issued by the California Department of Fish and Game (1997) or the U.S. Fish and Wildlife Service/CDFG joint survey protocol (2002), were largely negative for the presence of CTS on the Project site. The results of these surveys were reported to both agencies. The U.S. Fish and Wildlife Service and the Property owner have had extensive discussions regarding results of the surveys and the potential impact of the Project to CTS and CTS habitat. The USFWS has concluded that in its current condition the 80-acre site does not contain CTS breeding habitat but contains some dispersal and foraging habitat for CTS.

H.T. Harvey & Associates conducted CTS field studies for 2 years. The survey during the first year determined that CTS were not present (see full report in Attachment 4D). An assessment of breeding habitat for the species was also conducted (Attachment 4E). A second year was conducted, and at the end of the sampling period one CTS female was found (see technical report in Attachment 4F). To the property owner and its consultants the circumstances of the CTS find indicated a strong possibility that the CTS was planted by an unknown party or parties trying to prevent the site from being developed. The USFWS has taken the position that the circumstances indicate that possibility, but there is still the potential that the CTS found is a natural occurrence. The developer requested additional surveys in subsequent years to disprove

© 2006 Huffman-Broadway Group, Inc.

the finding, however, the USFWS declined to allow the developer to conduct additional surveys due to the potential harm to the species.

The USFWS issued a Biological Opinion (BO) on August 5, 2005 (see Attachment 4G) that concludes a Section 7 consultation conducted as part of the Corps application process for a project proposed at the 80-acre site that included a variety of commercial, residential and light industrial uses. The BO requires mitigation for CTS aestivation habitat at a ratio of 0.5:1 (CTS mitigation to CTS habitat loss) due to the degraded nature of the potential CTS habitat at the site. For the project evaluated in the BO, this would require the purchase of approximately 41.5 acres of existing CTS habitat from a mitigation bank or the purchase of farm land that is existing CTS habitat, then placing the habitat within a conservation easement with a third party non-profit conservation management group in order to manage and protect the property in perpetuity. The BO indicates that the mitigation strategy would offset impacts to CTS and its habitat, and the Biological Opinion indicates that the project is not likely to jeopardize the continued existence of the CTS.

360-Acre Site

Wildlife Research Associates conducted a Site Assessment of the 360-acre Stony Point site for the California tiger salamander (see report in Attachment 3D). A Site Assessment is required by the USFWS to assess CTS status onsite and in the vicinity of a proposed study area. The study methods and report of this Site Assessment conform to the guidelines outlined in the *Changes and Clarifications to the U.S. Fish and Wildlife Service's Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma District Population Segment of the California Tiger Salamander* (USFWS 2002).

The area within the western section provides highly suitable upland habitat for aestivating adult CTS in the form of gopher burrows. Highly suitable aquatic habitat for larvae occurs in the drainage ditches within the study area. This characterization is based on personal observation of drainage ditches on Primrose Avenue, where both egg sacs and larvae were observed.

Irrigated pasturelands on the site provide the highest potential for CTS occurrence, based on the relatively high number of gopher burrows within the pasturelands, the low height (8–10 inches) of the grass and the presence of several drainage ditches through the pasturelands. Gopher burrows, the primary upland refugia for CTS in Sonoma County, were observed within the sections of the pasturelands that were drier.

Approximately 2,613 linear feet of drainage ditch occur within the site, excluding drainages along Stony Point Road (western boundary) and Wilfred Avenue (northern boundary). This drainage is ~ 2–3 feet in depth from top of bank, with a water depth potentially of 1–2 feet, a depth sufficient for supporting metamorphosing larvae during the 20 weeks required for metamorphosing.

The silage and hay agricultural fields located within the eastern parcel could potentially support aestivating adult CTS, because gopher burrows occur in the non-tilled area of the fields, providing refugia for the gophers until the crops began to grow. The tilling depth appeared less

© 2006 Huffman-Broadway Group, Inc.

than 6 inches; shallow enough not to damage deeper gopher burrows in which CTS may potentially be aestivating.

The tributary to the Laguna de Santa Rosa channel (Bellevue-Wilfred Channel) may retain water for a sufficient duration to provide suitable breeding habitat for CTS. However, the presence of water primrose (*Ludwigia peploides*) in the channel, as identified by EcoSystems West botanist, reduces the channel's potential as suitable breeding habitat.

Suitable habitat for CTS occurs west, north, east and south of the project site. Movement corridors for CTS between this site other sites to the north are of high value, since Wilfred Avenue is not as busy with traffic as other roads nearby. Stony Point Road may be considered a barrier to movement for CTS moving east-west, based on research conducted in Europe with common toad (*Bufo bufo*), in which 50% mortality occurred on roads with 24–40 cars per hour (USFWS 2001).

Aquatic larval surveys of the site were performed by Wildlife Research Associates during March and April 2004 (see survey report in Attachment 3E). These surveys were conducted without consultation with the USFWS, and therefore do not meet conditions for determining presence or absence under the specifications outlined in the *Interim Guidance on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (USFWS 2003). Dip netting for larval CTS was conducted on March 26 and April 27, 2004. Larval surveys of the site were negative for the presence of CTS. The study concluded that no suitable breeding habitat for CTS was present during the 2003 - 2004 winter, but that suitable breeding habitat could be present during periods of heavy rainfall (such as an El Niño event).

California Red-legged Frog

The California red-legged frog (*Rana aurora draytonii*) is a federally listed threatened species and California species of special concern. The historical range of the California red-legged frog extended from the vicinity of Point Reyes National Seashore in Marin County southward to northwestern Baja California, Mexico, and inland to approximately Redding in Shasta County (61 Federal Register 25813). The geographic range of the frog has declined by 70 percent relative to its historical range.

California red-legged frogs have been observed in a number of aquatic and terrestrial habitats, including marshes, streams, lakes, reservoirs, ponds and other permanent, or near permanent, sources of water. Although they occur in ephemeral streams or ponds, California red-legged frogs are expected to thrive in permanent deep-water pools with dense stands of overhanging willows (*Salix* spp.) and emergent vegetation. However, they have been observed in a variety of aquatic environments, including stock ponds and artificial pools with little to no vegetation. California red-legged frogs usually are observed near water, but can move long distances over land between water sources during the rainy season.

A Phase 1 Habitat Assessment for California red-legged frog was conducted at the Stony Point site by species expert Dr. Mark Jennings of Rana Resources on August 4, 2006. Dr. Jennings technical report of findings is included in Attachment 3F. The area examined in his assessment

© 2006 Huffman-Broadway Group, Inc.

was south of Wilfred Avenue, north of the Rohnert Park Expressway, and west of Redwood Drive. Aquatic habitats in the Bellevue-Wilfred Channel and the Laguna De Santa Rosa just south of the Rohnert Park Expressway were investigated. Major aquatic habitats were found to be channelized for flood control with the result of creating extensive warm water habitats that abound with introduced species, including dozens of juvenile bullfrogs (*Rana catesbeiana*), as well as hundreds of western mosquitofish (*Gambusia affinis*) and Louisiana red swamp crayfish (*Procambarus clarkii*). Smaller tributary stream channels were mostly dry at the time of the study and contained no ranid frogs, probably because of continual predation by raccoons in the shallow water habitats.

Based Dr. Jenning's observations and familiarity with the area since 2000, he concluded that the site contains no suitable habitat for California red-legged frog. Historically, California red-legged frogs were common on the Santa Rosa Plain. However, with channelization of major streams in the area since the 1960s and the introduction of many aquatic predatory species (especially bullfrogs), red-legged frogs have disappeared from the Rohnert Park area. Dr. Jennings concluded that California red-legged frogs do not inhabit the study area, and there is no chance for them to recolonize the site from adjacent drainages in the foothills to the east of the Plain.

Foothill Yellow-legged Frog

The foothill yellow-legged frog (*Rana boylii*) is a designated species of special concern on both state and federal lists. This amphibian requires partly-shaded, shallow streams and riffles with rocky substrate in a variety of habitats. The frogs need at least some cobble-sized substrate for egg-laying. Larvae require at least 15 weeks to attain metamorphosis. This species has occurred within Copeland Creek located approximately 3 miles east of Rohnert Park. The Bellevue–Wilfred Channel does not provide suitable substrate to support this amphibian, which is not likely to occur at the project site.

Northwestern Pond Turtle

The northwestern pond turtle (*Clemmys marmorata marmorata*) is both a federal and state species of special concern. It occupies ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. The western pond turtle is associated with permanent or nearly permanent water in a wide variety of habitat types. Individuals normally are associated with permanent ponds, lakes, streams, irrigation ditches or permanent pools along intermittent streams. They rely on suitable upland areas of scrub and woodlands for aestival refugia. The species currently is known to occur broadly throughout the state. Sufficient freshwater wetlands that could support the turtles are present onsite in the Bellevue–Wilfred Channel, and in other locations within the Laguna de Santa Rosa. Northwestern pond turtle was observed in the Bellevue-Wilfred Channel by an HBG biologist on the morning of May 7, 2004.

Northern Harrier

The Northern Harrier (*Circus cyaneus*), a state species of special concern with respect to nesting habitat, is found throughout lowland California. Northern Harriers mostly nest in emergent wetlands, or along rivers and lakes, but may nest in grasslands. Its nests are found on the ground in shrubby vegetation, usually at the edge of marshes. The CNDDB does not include any records of nesting by the species in the project vicinity. Appropriate nesting habitat for this species is

© 2006 Huffman-Broadway Group, Inc

not present on the project site due to the lack of appropriate vegetation. Foraging on the site by the species is likely.

White-tailed Kite

White-tailed Kite (*Elanus caeruleus*) is a California fully protected species. The White-tailed Kite is a common to uncommon, year long resident in coastal and valley lowlands, but rarely is found away from agricultural areas. It prefers open grassland and agricultural areas and inhabits herbaceous and open stages of most habitats, mostly in cismontane California. The species has extended its range and increased its numbers in recent decades. Appropriate nesting habitat is not present onsite, although the species likely forages on or near the site, especially during winter. Individuals were observed on the site by HBG in the fall of 2003 and spring of 2004.

Sharp-shinned Hawk

Sharp-shinned Hawk (*Accipiter striatus*) is a California species of special concern with respect to nesting habitat. These raptors are found throughout California in winter and are permanent residents in mountainous regions in the northwest and Sierra Nevada (except at high elevations). The species breeds in ponderosa pine, black oak, riparian deciduous and mixed conifer forests of the northern half of state. Many habitats are used by this raptor in winter. Appropriate nesting habitat is not present onsite, although the species likely forages on or near the site, especially during winter.

Cooper's Hawk

Coopers Hawk (*Accipiter cooperii*) is a California species of special concern with respect to nesting habitat. The species nests primarily in riparian forests dominated by deciduous species, but also nests in densely canopied forests from digger pine-oak woodland to ponderosa pine. Although specializing on small to medium sized birds, Cooper's Hawks also prey on a substantial number of small mammals. They typically hunt from a perch in a tree and are associated with wooded or scrub habitat or with grasslands bordered by woody habitat. In the winter, their habitat requirements are broader than in the breeding season. Cooper's Hawks forage in open woodlands. Appropriate nesting habitat is not present onsite, although the species likely forages on or near the site, especially during winter.

Ferruginous Hawk

The Ferruginous Hawk (*Buteo regalis*) is a federal species of concern and a California species of special concern. As a wintering species, Ferruginous Hawks forage almost entirely over open grasslands. Ferruginous Hawks require tall trees or telephone poles in which to roost and use as lookouts for prey. Suitable wintering foraging habitat occurs in the non-native grassland on the site. No Ferruginous Hawks were observed foraging over the site by HBG during 2003 surveys. Limited use of the site as winter foraging habitat by these hawks may occur.

Golden Eagle

The Golden Eagle (*Aquila chrysaetos*) is a California species of special concern. The species has no federal status under the Endangered Species Act. However, the Golden Eagle is protected under the federal Bald and Golden Eagle Protection Act of 1940 (16 USC § 668) and the Migratory Bird Treaty Act (16 USC § 703 *et seq.*) (See 50 CFR §§ 10.13 and 23.23) and is a California fully protected species. Golden Eagles typically frequent rolling foothills, mountain

© 2006 Huffman-Broadway Group, Inc.

areas, sage-juniper flats and desert. Suitable foraging habitat occurs in the non-native grassland on the site. Use of the site as foraging habitat may occur in both winter and summer.

Merlin

Merlin (*Falco columbarius*) is a California species of special concern with respect to wintering habitat. This falcon breeds in Canada in open woods or wooded prairies and winters in small numbers in a variety of California habitats, including grasslands, savannahs, and wetlands. Merlins forage along the margins of wooden habitat, including riparian strips, and woodland, chaparral, and savanna borders to grasslands. They feed mostly on small birds, although they are known to take aerial insects such as dragonflies and occasionally small mammals. A small number of individuals may pass through the site, with incidental use of the site as a winter foraging habitat. The species was observed foraging at the site by HBG in the fall of 2003.

Burrowing Owl

Burrowing Owl (*Athene cunicularia*) is both a federal and state species of special concern. Burrowing owls are small terrestrial owls commonly found in open grassland topography ranging from western Canada to portions of South America. Burrowing Owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation (Zarn 1974). In California, burrowing owls most commonly inhabit ground squirrel burrows (Thomsen 1971), but they also may use manmade structures, such as concrete culverts; concrete, asphalt, or wood debris piles; or openings beneath concrete or asphalt pavement. Burrowing Owls exhibit high site fidelity, reusing burrows year after year (Rich 1984, Feeney 1992). Burrowing Owls may use a site for breeding, wintering, foraging, and/or migration stopovers during migration. Occupancy of suitable burrowing owl habitat can be verified at a site by an observation of at least one burrowing owl, or, alternatively, its molted feathers, cast pellets, prey remains, eggshell fragments, or excrement at or near a burrow entrance.

The California Department of Fish and Game has adopted survey protocol and mitigation guidelines as described in an October 17, 1995, Staff Report (CDFG 1995). These guidelines were based on a draft Survey Protocol and Mitigation Guidelines developed by the Burrowing Owl Consortium to meet the need for uniform standards when surveying burrowing owl populations and evaluating impacts from development projects. The California Burrowing Owl Consortium was made up of a group of biologists in the San Francisco Bay Area interested in burrowing owl conservation. The guidelines adopted by CDFG provide information on the conduct of burrowing owl surveys. If possible, the nesting season survey should be conducted during the peak of the breeding season, between April 15 and July 15. Winter surveys should be conducted between December 1 and January 31, during the period when wintering owls are most likely to be present. The guidelines indicate that it is preferable that surveys be conducted from 2 hours before sunset to one hour after or from one hour before to two hours after sunrise.

The CDFG guidelines assume that a site is occupied if at least one Burrowing Owl has been observed occupying a burrow there within the last 3 years. CDFG states that the following should be considered impacts to the species: (1) disturbance within 50 meters (approximately 160 feet) which may result in harassment of owls at occupied burrows; (2) destruction of natural and artificial burrows (culverts, concrete slabs and debris piles that provide shelter to Burrowing Owls); and (3) destruction and/or degradation of foraging habitat adjacent (within 100 meters) of

© 2006 Huffman-Broadway Group, Inc.

an occupied burrow(s). Mitigation measures, if necessary, are intended to "avoid and minimize impacts to burrowing owls at a project site and preserve habitat that will support viable owl populations." The guidelines stipulate that "mitigation actions should be carried out from September 1 to January 31 which is prior to the nesting season."

Although California ground squirrel burrows have limited distribution on the site, habitat for Burrowing Owl is present. A burrowing owl was observed on the site by HBG in January 2004. Nesting surveys for Burrowing Owl were conducted over the entire site on May 6 and 7, 2004. These surveys documented that Burrowing Owls do not nest anywhere on the site.

Western Yellow-billed Cuckoo

The Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) is state-listed endangered. This avian species nests in riparian forest, typically along the broad, lower flood-bottoms of larger river systems. Preferred nesting habitats are riparian corridors of willow mixed with cottonwoods, and an understory of blackberry, nettles or wild grape. The Western Yellow-billed Cuckoo historically (1911) nested in a riparian area within the Laguna de Santa Rosa, approximately 5 miles southeast of Sebastopol. Riparian habitat suitable to support nesting by this species is not present at the project site.

California Horned Lark

The California Horned Lark (*Eremophila alpestris actia)* is a California species of special concern. California Horned Lark is a common to abundant resident in open, level or rolling short-grass prairies, plains, and meadows. Grasslands and open habitat with low, sparse vegetation and surface irregularities, such as rocks, litter, and clods of soil, which provide cover, are preferred habitat for the California Horned Lark. Suitable foraging and nesting habitat for this species occurs in the grasslands on the project site, however, the species has not been observed on repeated wildlife surveys of the site.

Loggerhead Shrike

Loggerhead Shrike (*Lanius ludovicianus*) is a state species of special concern. Loggerhead Shrikes are resident and winter visitors in lowlands and foothills throughout California, and are rare along the coast in winter north to Mendocino County. Preferred habitat includes open areas such as desert, grasslands, and savannah. Loggerhead Shrikes nest in thickly foliaged trees or tall shrubs, and forage in open habitats which contain trees, fence posts, utility poles, and other perches. Loggerhead Shrikes are usually solitary birds. They feed on insects, reptiles, and small mammals, which they frequently impale on thorns and barbed wire after capturing. Suitable habitat for Loggerhead Shrike occurs in the grassland habitats of the project site, and the species was observed by HBG in the fall of 2003. Surveys conducted in the spring of 2004 did not detect the presence of Loggerhead Shrike during the nesting season.

Tri-colored Blackbird

Tri-colored Blackbird (*Agelaius tricolor*) nesting colonies are protected as both a federal and state species of special concern. Tri-colored Blackbirds breed near freshwater, usually in emergent wetlands with tall, dense cattails or in thickets of willow, blackberry, or wild rose. Nesting colonies prefer heavy growth of cattails and tules. Tri-colored Blackbirds use grasslands

© 2006 Huffman-Broadway Group, Inc.

and agricultural lands for foraging. No nesting colonies occur at the site, however, winter foraging by individuals of this species at the site is possible.

Yellow Warbler

The Yellow Warbler *(Dendroica petechia brewsteri)* is a California species of special concern with respect to nesting habitat. The species breeds in deciduous riparian woodlands, and is widespread during migration. The onsite riparian corridors are not of sufficient extent to support breeding Yellow Warbler; however, the species is expected in the area during migration, especially in fall.

2.6 Ecological Constraints

Ecological constraints within the project area include:

- Potential habitat for federally listed threatened California tiger salamander. Included are breeding, refugial and dispersal habitats, and potential breeding habitat.

- Previously documented locations of rare plant populations (Sonoma sunshine and Burke's goldfields) in the western portion of the 360-acre Stony Point site, and a population of Sonoma sunshine documented in the same area during the spring of 2005.

- Wetlands and waters of the U.S. subject to jurisdiction of the Corps. Wetlands subject to Corps jurisdiction present in the project area total 64.16 acres, and include 61.77 acres on the 360-acre site, 2.09 acres on the 68 acre site, and 0.30 acres on the 4.7-acre site.

© 2006 Huffman-Broadway Group, Inc.

3.0 Regulations and Permit Requirements

Portions of the project on trust lands will not be subject to state or local requirements. Any activities on non-trust lands will be subject to applicable state and local laws and regulations. A discussion of potentially applicable federal, state and local statutory/regulatory requirements follows.

3.1 U.S. Army Corps of Engineers

Section 404 of the Clean Water Act regulates the discharge of dredged or fill material to wetlands and other waters of the United States. The U.S. Army Corps of Engineers (Corps) and the U.S. Environmental Protection Agency (EPA) are responsible for implementing this program. Section 404(a) authorizes the Corps to issue permits, after notice and opportunity for comment, for discharges of dredged or fill material into waters of United States. Section 404(b) requires that the Corps issue permits in compliance with EPA guidelines, which are known as the Section 404(b)(1) guidelines. Specifically, the Section 404(b)(1) guidelines require that the Corps only authorize the "least environmentally damaging practicable alternative" (LEDPA) and include all practicable measures to avoid and minimize impacts to the aquatic ecosystem. The guidelines also prohibit discharges that would cause significant degradation of the aquatic environment or violate state water quality standards.

EPA and Corps regulations define wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (40 CFR § 230.3(t); 33 CFR § 328.3(b)).

On the basis of the investigations of the project site, HBG has determined that the site contains 50.4 acres of wetlands. Accordingly, the proposed project will likely require a Section 404 permit from the Corps. Following the U.S. Supreme Court decision in *Solid Waste Agency of Northern Cook County v. United States Army Corps of Engineers, No. 99-1178 (2001),* some isolated wetlands may be excluded from the Corps' Section 404 jurisdiction because they are (1) non-tidal, (2) non-navigable, (3) not hydrologically connected to navigable waters or adjacent to such waters, and (4) not subject to foreign or interstate commerce. Wetlands on the project site were reviewed to determine whether they may, as isolated wetlands, be beyond the Corps' jurisdiction as isolated wetlands. It was determined that wetlands on the property do not qualify for exclusion from Corps jurisdiction based on the *Solid Waste Agency of Northern Cook County* decision.

3.2 U.S. Environmental Protection Agency

Although the Corps is the principal permitting authority under Clean Water Act Section 404, EPA has review and potential veto authority over proposed Corps permits. EPA comments on project compliance with the 404(b)(1) guidelines during the public notice process and may elevate Corps permit decisions if they do not comply with the guidelines. Section 404(c) authorizes the EPA to veto a Corps decision to issue a permit of that discharge that "will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishing areas." EPA

© 2006 Huffman-Broadway Group, Inc.

would also be the agency in charge of any required 401 Water Quality Certification review on trust lands.

3.3 U.S. Fish & Wildlife Service

The USFWS is responsible for implementing the federal Endangered Species Act (ESA) as applied to species under the Service's jurisdiction. The purpose of the ESA is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved" (16 USC § 1531). The ESA establishes an official listing process for plants and animals considered to be in danger of extinction; requires development of specific plans of action for the recovery of listed species; and generally prohibits activities that harm or kill listed species (16 USC §§ 1532, 1538).

The ESA also establishes procedural and substantive requirements for federal agencies when their actions may affect listed species or adversely affect designated critical habitat. When this is the case, federal action agencies must consult with the USFWS or the National Marine Fisheries Service (NMFS or NOAA Fisheries Service) or both to insure that their actions do not jeopardize the continued existence of listed species or adversely modify critical habitat (16 USC § 1536). Therefore, the ESA consultation requirement is triggered when the property contains a federally listed threatened or endangered species or designated critical habitat that may be affected by a federal permit decision. In the event that listed species or designated critical habitat are involved and a Corps permit is required for impacts to jurisdictional waters, the Corps must initiate consultation with USFWS (or National Marine Fisheries Service [NMFS)] pursuant to Section 7 of the ESA (16 USC § 1536; 40 CFR Part 402). If "formal consultation" is required, USFWS or NMFS will issue a biological opinion stating whether the permit action is likely to jeopardize the continued existence of the listed species, recommend reasonable and prudent measures (RPMs) to minimize the impact of take on listed species and identify terms and conditions to effect the RPMs, establishing terms and conditions under which the project may proceed, and authorizing incidental take of the species. If NMFS or USFWS determine that the action would jeopardize the continued existence of a listed species, they would then identify reasonable and prudent alternatives that must be implemented to avoid such a result. In the case of species proposed for listing, a "conference" must be completed if the action is likely to jeopardize the continued existence of a listed species.

The USFWS also has responsibility for project review of federal actions under the Fish and Wildlife Coordination Act. This statute requires that all federal agencies consult with USFWS, NMFS, and the state's wildlife agency (i.e., CDFG) for activities that affect, control, or modify streams and other water bodies. Under the authority of the Fish and Wildlife Coordination Act, USFWS, NMFS, and CDFG review applications for permits issued under Section 404 and provide comments to the Corps about potential environmental impacts.

The USFWS also has enforcement authority under the Migratory Bird Treat Act (MBTA) of 1918. The MBTA protects virtually all migratory birds. Under this federal statute it is unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). "Take" under the MBTA is defined as "to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or any attempt to carry out these activities." A take does not include

© 2006 Huffman-Broadway Group, Inc.

habitat destruction or alteration, as long as there is not a direct taking of birds, nests, eggs, or parts thereof.

To avoid violation of the take provisions of the ESA or MBTA generally requires that project-related disturbance at active nesting sites be reduced or eliminated during the nesting cycle. Disturbance that kills eggs or young or causes abandonment and death of eggs or young may be considered "take" and is potentially punishable by fines and/or imprisonment.

3.4 California Department of Fish & Game

Any activities conducted in areas not on tribal trust land would be under the jurisdiction of the California Department of Fish and Game (in addition to the relevant federal agencies). CDFG regulates activities that use materials from any streambeds; or divert, obstruct, or change the natural flow or bed of any river, stream or lake under Fish and Game Code Sections 1601 – 1603.

Sections 1601–1603 allow CDFG to review any proposed construction and to propose reasonable modifications for the protection of a fish or game resource that might be substantially adversely affected by such construction. CDFG enters into a Streambed Alteration Agreement with a project applicant and may propose conditions on the agreement to prevent adverse impacts to fish and wildlife resources and ensure no net loss of wetlands. If mutual agreement between the CDFG and the affected agency is not reached, resolution on the agreement is reached through an arbitration procedure to be completed prior to construction of the proposed project.

In 1984, the State enacted the California Endangered Species Act (CESA) (Fish and Game Code § 2050 *et seq.*). CESA is very similar to the federal ESA. The basic policy of CESA is to conserve and enhance endangered species and their habitats. CESA generally prohibits the "take" of species listed as threatened or endangered (CFG Code § 2080). CEQA also directs all State lead agencies (as defined under CEQA) to consult in writing with the CDFG to determine the impacts of a project on the continued existence of any endangered or threatened species pursuant to Section 2090 of the CFG Code. However, Section 2090 has been repealed. Because CESA more narrowly defines "take" CDFG considerations pursuant to CESA are typically limited to those actions that would result in the direct take of a listed species. If a proposed project would result in "take" of a State-listed species, an incidental take permit pursuant to section 2081 or authorization under Section 2080.1 of the Fish and Game Code is necessary. State and federal incidental take permits are issued on a discretionary basis and are typically authorized if the impacts of take can be minimized and the proposed impacts would not jeopardize the continued existence of the listed species. In addition to its authority under CESA, CDFG has the authority to protect avian species under Sections 3505, 3503.5, and 3800 of the California Department of Fish and Game Code, which prohibits the take, possession, or destruction of birds, their nests or eggs, including raptor species.

As described above, under authority of the federal Fish and Wildlife Coordination Act, CDFG may review applications for permits issued under Section 404 and provide comments to the Corps regarding environmental impacts. In addition, Fish and Game Code Section 5650a gives CDFG jurisdiction over the input of any deleterious substances, such as silt, into the waters of the State of California, resulting from construction activities.

© 2006 Huffman-Broadway Group, Inc.

3.5 North Coast Regional Water Quality Control Board

Section 401 of the Clean Water Act requires that applicants for federal permits that may result in a discharge into navigable water to obtain a certification from the state agency with jurisdiction over such navigable waters that such discharge will comply with applicable state water quality standards. Corps Section 404 permits may not be issued until the Section 401 certification is either granted, or waived by the Regional Water Quality Control Board.

Any activities conducted in areas not on tribal trust land would be under the jurisdiction of the North Coast Regional Water Quality Control Board which is located in Santa Rosa, California. The Regional Board also regulates discharges of dredged or fill material to wetlands (including isolated wetlands) pursuant to the Porter-Cologne Act. Portions of the project on tribal trust lands will be reviewed by EPA for compliance with water quality standards.

In 1972, the Clean Water Act was amended so as to prohibit the discharge of pollutants to waters of the United States from any point source unless the discharge is authorized by and in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. The 1987 CWA amendments established a framework for regulating municipal, industrial, and construction-related storm water discharges under the NPDES Program. On November 16, 1990, the EPA published final regulations that establish storm water permit application requirements for specified categories of industries. The regulations provide that discharges of storm water from construction projects that encompass five or more acres of soil disturbance are effectively prohibited unless the discharge is in compliance with an NPDES Permit. The California State Water Resource Control Board has developed a general construction stormwater permit to implement this requirement. The permit requires submittal of a Notice of Intent to comply, fees, and the implementation of a Storm Water Pollution Prevention Plan. The proposed project would likely be required to comply with this state requirement for any activities conducted on non-trust land, and would be required to comply with federal NPDES regulations through the EPA on trust land.

© 2006 Huffman-Broadway Group, Inc.

4.0 Impacts

4.1 Standards of Significance

The project would be considered to have a significant impact (as defined by CEQA Appendix G) on biological resources if it would:

a) 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 the California Department of Fish and Game (on non-trust land) or U.S. Fish and Wildlife Service.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game (on non-trust land) or US Fish and Wildlife Service.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

d) 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.

e) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan (on non-trust land).

4.2 Project Description

Ten alternative scenarios for development of the gaming facility have been developed. Two of these alternatives (Alternatives A1 and A2), are proposed within an area that is expected to be taken into trust to become sovereign lands of the Federated Indians of the Graton Rancheria and that include the 68 acre and 4.7 acre sites and the Williamson Act lands in the southern 180 acres of the 360-acre site, for a total of approximately 252 acres. In this report, this area is referred to collectively as the Wilfred site. The remaining eight alternatives are proposed within the 360 acre area, in this report referred to as the Stony Point site.

Five separate alternatives are proposed for development of the facility, which would include a casino, multiple restaurants and bars, a 1,500 seat showroom, banquet rooms, and a 300-room hotel. Each of these five alternatives have two options for treatment of wastewater flows, yielding a total of ten alternatives. One strategy for wastewater treatment assumes that the Project will be able to dispose of effluent to the Laguna de Santa Rosa during the wet season via the Bellevue-Wilfred Channel; the second effluent disposal strategy assumes that effluent can only be disposed of on spray fields during the dry season, and stored in seasonal storage reservoirs during the wet season for future irrigation on

© 2006 Huffman-Broadway Group, Inc.

the spray field at agronomic rates. Therefore, the preferred methods for effluent disposal would include seasonal surface water discharge off-site, maximizing on-site recycled water use, and the use of seasonal storage ponds and spray fields.

According to the report by HydroScience Engineers, Inc., the alternatives would be structured as follows: during the winter, effluent from the on-site Wastewater Treatment Plant would be used on-site for recycled water uses, discharged on-site to a ditch tributary to the Bellevue-Wilfred Channel, stored in on-site seasonal storage ponds, and used to irrigate the spray fields at agronomic rates. The spray fields would be irrigated by pumping effluent out of the seasonal storage pond(s). Effluent stored in the seasonal storage pond would be discharged to the on-site ditch tributary to the Bellevue-Wilfred Channel in accordance with flow limitation requirements. During the summer months, effluent from the on-site WWTP would be used on-site for recycled water uses, and used to irrigate spray fields. Effluent that could not be used for either purpose would be stored in the seasonal storage ponds.

Under the preferred Alternative A, the facility would be developed on the Wilfred site (68-acre portion of the site with a portion of the southern 180 acres used as spray fields. Alternative A1 (Wet Season Discharge) and Alternative A2 (Wet Season Storage) differ in the respect that the 180 acre area is used for spray field purposes. Alternatives A1 and A2 are shown in Figures 8 and 9, respectively. Alternative A1 provides a 78-acre spray field area with 250 foot setbacks from all existing wetlands. Alternative A2 provides a 111.4 acre spray field with a 50 foot wetland setback. In either variant of Alternative A, the Wilfred site is expected to be taken into trust to become sovereign lands of the Federated Indians of the Graton Rancheria. This area includes the 68 acre and 4.7 acre parcels and the Williamson Act lands in the southern 180 acres, for a total of approximately 252 acres.

The preferred project alternative is expected to have a development footprint on about 68.42 acres for Alternative A1 and nearly 83.89 acres for Alternative A2. Wetland creation/restoration and habitat preservation is proposed on remaining portions of the site (approximately 185 acres for Alternative A1 and 169 acres for Alternative A2). These undeveloped portions of the site would be used in varying degrees as spray fields and would be set aside as a project open space preserve, protected by a conservation easement to ensure the area remains as open space in perpetuity.

Four additional alternatives are proposed for the 360-acre Stony Point site (Alternatives B, C, D and E), with each of these alternatives having two options for treatment of wastewater flows as described above for Alternative A. Alternatives B, D and E propose that development occur in the northwest corner of the site (near Wilfred Avenue and Stony Point Road and west of the Bellevue–Wilfred Channel). Alternative C proposes development in the northeast corner of the site (near Wilfred Avenue and Whistler Avenue and east of the Bellevue–Wilfred Channel). The Wet Season Discharge and Wet Season Storage options for Alternative B are shown in Figures 10 (Alternative B1) and 11 (Alternative B2). Similar options are shown in Figures 12 and 13 for Alternative C, Figures 14 and 15 for Alternative D and Figures 16 and 17 for Alternative E.

In general, the project development alternatives for the Stony Point site are expected to include development on approximately between 77 and 120 acres with wetland creation/restoration and habitat preservation on remaining portions of the 360- acre site. The development footprint for those

© 2006 Huffman-Broadway Group, Inc.

alternatives developed on the 360-acre Stony Point site (Wet Season Discharge option) would be approximately 82.81 acres for Alternatives B1, 78.69 acres for Alternative D1 and 77.11 acres for Alternative E1, and as much as 100.73 acres for Alternative C1. The Wet Season Storage options would have somewhat greater development footprints due to the construction of storage facilities, and would be 99.40 acres for Alternative B2, 91.19 acres for Alternative D2, and 83.12 acres for Alternative E2, with up to as much as 121.69 acres for Alternative C2. The undeveloped portions of the site (approximately 260 to 280 acres) would be set aside as a project open space preserve, protected by a conservation easement to ensure the area remains as open space in perpetuity. The alternatives for the 360-acre Stony Point site also assume that the 68-acre and 4.7 acre parcel within the Wilfred site are not purchased by the applicant and included within the project proposal.

4.3 Impacts to Plant Communities and Wetlands

Impacts to biological resources will result from vegetation removal due to the conversion of upland areas composed of annual grassland, and primarily cultivated fields, and due to the filling of wetland areas to accommodate the proposed development. The acreage of each of the vegetation communities found on the property, and impacts resulting from implementation of each of the proposed development alternatives, is shown in Table A. Figures 18, 19, 20, 21, 22, 23, 24, 25, 26 and 27 show the development footprints for Alternatives A1, A2, B1, B2, C1, C2, D1, D2, E1 and E2, respectively, overlying a map of the vegetation communities found on the project site. The graded development footprint extends beyond the extent of facilities shown on the figures by as much as 100 feet in many locations to allow for impacts associated with construction equipment access and other construction-related activities. Even with this extension of the impact footprint, the calculated impact to vegetation for some of the alternatives is less than the acreage of the overall development footprint as discussed above, as some areas internal to the layout of site uses would not need to be graded a could retain vegetation, even wetlands.

The grading footprint for the preferred project developed on the Wilfred site would total 68.42 acres for Alternative A1 and 83.89 acres for Alternative A2. Alternative A1 would impact 66.34 acres of cultivated fields, 1.60 acres of seasonal pools and wet areas and 0.48 acres of drainages. With a slightly larger development footprint due to construction of storage facilities, Alternative A2 would impact 77.10 acres of cultivated fields, 4.41 acres of California annual grassland, as well as 1.60 acres of seasonal pools and wet areas and 0.77 acres of drainages.

The grading footprint for the Wet Season Discharge alternatives developed on the 360-acre Stony Point site would be as follows: 82.55 acres for Alternative B1, 95.18 acres for Alternative C1, 78.56 acres for Alternative D1 and 77.11 acres for Alternative E1. With added impact for construction of storage facilities, the graded footprints for the Wet Season Storage alternatives are somewhat larger: 99.17 acres for Alternative B2, 110.3 acres for Alternative C2, 91.10 acres for Alternative D2 and 83.12 acres for Alternative E2.

Spraying of reclaimed wastewater is proposed within the 180-acre parcel under either Alternative A1 or A2, within the area east of the Bellevue–Wilfred channel. Spraying of treated wastewater at agricultural rates during the dry season will not result in runoff into wetland areas. Spraying of treated wastewater has been conducted in this area in the past. Under Alternative A1, no spraying would

© 2006 Huffman-Broadway Group, Inc.

occur within 250 feet of any wetland in this area, resulting in an area of 78 acres of spray fields. Under Alternative A2, 111.4 acres of spray fields would be laid out such that a 50-foot buffer would be provided from any wetland located in this area. Given past irrigation practices, topography, and provision of wetland setbacks as proposed, spray irrigation at the volumes proposed are not sufficient to materially affect wetland habitats.

© 2006 Huffman-Broadway Group, Inc.

TABLE A. IMPACTS TO VEGETATION COMMUNITIES

Habitat Type[1]	Existing Acreage (acres)	Alternative A1 Impacted Acreage (acres)	Alternative A2 Impacted Acreage (acres)	Alternative B1 Impacted Acreage (acres)	Alternative B2 Impacted Acreage (acres)	Alternative C1 Impacted Acreage (acres)	Alternative C2 Impacted Acreage (acres)	Alternative D1 Impacted Acreage (acres)	Alternative D2 Impacted Acreage (acres)	Alternative E1 Impacted Acreage (acres)	Alternative E2 Impacted Acreage (acres)
California Annual Grassland	44.5	0.00	4.41	0.00	0.02	1.65	1.29	0.00	0.00	0.00	0 00
Seasonal Pools and Seasonal Wetlands	61.9	1.60	1.60	21.14	26.43	21.79	25.70	19.77	21.91	19.69	20.96
Drainage Ditches	1.69	0.48	0.77	0.73	0.73	0.49	0.49	0.73	0.76	0.72	0.73
Irrigated Pasture	50.2	0.00	0.00	48.22	48.22	0.00	14.17	47.31	47.31	47.50	47 50
Cultivated Fields	268 9	66 34	77.10	4.80	16.11	70.91	67.99	3.09	13.46	1.56	6 29
Disturbed/ Ruderal	8.0	0.00	0.00	7.66	7.66	0.34	0.66	7.66	7.66	7 64	7.64
TOTAL	**435.2**	**68.42**	**83.88**	**82.55**	**99.17**	**95.18**	**110.30**	**78.56**	**91.10**	**77.11**	**83.12**

© 2006 Huffman-Broadway Group, Inc.

Wetlands and waters of the U.S. subject to Corps jurisdiction will be filled to accommodate the proposed development under each of the development alternatives. For development at the Wilfred site, impacts to areas subject to Corps jurisdiction would total 2.08 acres for Alternative A- Wet Season Discharge and 2.37 acres for Alternative A- Wet Season Storage, out of the 18.44 acres of wetlands that exist within the 252-acre site. For those alternatives proposed on the 360-acre Stony Point site, impacts to wetlands or waters of the U.S. would be considerably greater, totaling between 20.41 acres for Alternative E- Wet Season Discharge (Alternative E1) and up to 27.16 acres for Alternative B- Wet Season Storage (Alternative B2) (see Table B). Each development alternative would result in consequent loss of the wetland function provided by these areas unless mitigated.

Wetland mitigation at a ratio of 1.5 acres of wetland created for each acre of wetland impacted is proposed as part of the project (wetland mitigation ratio of 1.5:1). The wetland impacts and associated wetland mitigation requirements (1.5:1 ratio) are summarized below in Table B for each of the ten development alternatives. Figures 28, 29, 30, 31, 32, 33, 34, 35, 36 and 37 show the development footprints for Alternatives A1, A2, B1, B2, C1, C2, D1, D2, E1 and E2, respectively, together with the locations of wetland impacts.

The recommended seasonal wetland mitigation would replace wetland acreage and associated functions and would increase the wetland inventory in the project area and the region. For the Alternatives A at the Wilfred site, wetland mitigation requirements are minimal (3.12 acres for Alternative A1 and 3.55 acres for Alternative A2), and Figures 28 and 29 show where mitigation wetlands could be created within an on-site open space preserve subject to a conservation easement. Alternatively, the area could be protected by a memorandum of understanding between the Corps and the Tribe and a tribal ordinance protecting the preserve lands into perpetuity for conservation purposes.

For the alternatives proposed on the 360-acre Stony Point site, the wetland mitigation requirements are substantial (between 30.62 acres for Alternative E1 and 40.74 acres for Alternative B2), and it was determined that wetland mitigation for these alternatives could not be accomplished on-site without complicating use of portions of the area for spray fields. It was also recognized that creation of such acreages of wetland mitigation could require excavation in areas considered suitable aestivation habitat for the CTS.

© 2006 Huffman-Broadway Group, Inc.

TABLE B. IMPACTS TO JURISDICTIONAL WETLANDS AND ASSOCIATED MITIGATION REQUIREMENTS

Development Alternative	Impacts to Corps Jurisdictional Wetlands (acres)	Proposed Wetland Mitigation (1.5:1 ratio) (acres)
Alternative A1	2.08	3.12
Alternative A2	2.37	3.55
Alternative B1	21.87	32.80
Alternative B2	27.16	40.74
Alternative C1	22.28	33.42
Alternative C2	26.19	39.29
Alternative D1	20.50	30.75
Alternative D2	22.67	34.00
Alternative E1	20.41	30.62
Alternative E2	21.69	32.53

Impacts to the annual grassland, irrigated pasture, cultivated fields, and ruderal areas are not considered significant due to the prevalence of these habitat types in the region, except to the extent they are considered potential habitat for California tiger salamander (see discussion below).

Project landscaping is expected to introduce exotic, non-native vegetation, some of which may not exist in the area.

4.4 Impacts to Animal Populations

Loss of vegetation and associated habitats associated with any of the possible development alternatives discussed above will displace existing wildlife. Some bird roosting, nesting, and foraging areas will be eliminated. Reptiles, amphibians, and small mammals that utilize these areas will be displaced to remaining undisturbed areas. Given the relatively high ratio of open space to developed land under the various development scenarios, impacts to most species should be minor.

Nesting bird species protected by the federal Migratory Bird Treaty Act that could be impacted during project construction. The removal of trees and shrubs during the February 1 to August 1 breeding season could result in mortality of nesting avian species if they are present.

Nightime lighting associated with the proposed facility, including parking lot lighting, can have a a potentially significant impact on migrating and local bird populations. Increased lighting has been shown to increase collisions of birds and structures, as well as causing a disorientation effect on species.

© 2006 Huffman-Broadway Group, Inc.

Animal species that have adapted to living in close association with human disturbance can be expected to increase after construction of the proposed project. These species include mammals such as raccoon, California ground squirrel, deer mouse, and house mouse, and birds such as Rock Pigeon, Mourning Dove, Western Scrub-jay, American Robin, European Starling, House Sparrow, Brewer's Blackbird, Brown-headed Cowbird, House Finch, and California Towhee.

Placement of fill material and other ground-disturbing activities could promote erosion and allow elevated levels of sediment to wash into nearby stream courses. Surface water runoff could continue offsite and consequent siltation and sedimentation may impact fish and wildlife species utilizing these areas. However, many areas are of flat topography and development in these areas would not be likely to result in erosion and sediment in runoff. Proper construction techniques and Best Management Practices (BMPs) are expected to minimize adverse effects associated with these activities. Some terrestrial wildlife may be impacted during construction activities. In terms of common species, any loss that occurs would not be considered significant. Special status species are discussed below.

Indirect impacts to animal populations in wetlands and other aquatic habitats could result from the proposed project. These include elevated contaminants in stormwater runoff and/or disturbances to wildlife from vehicles, pets, etc. Standard techniques to control contaminants in stormwater such as oil and grease traps will be employed to mitigate water quality concerns.

4.5 Special Status Species

Special status species present in the project area and possibly in the area of potential roadway improvements include species with designations under both federal and state law. Mitigation measures are required for federally protected species on both tribal lands and within other areas evaluated that are not tribal-owned. Impacts to state-designated species of special concern that occur on trust land, do not require mitigation. Therefore no mitigation measures are proposed for impacts to these species on trust land.

4.5.1 Special Status Plant Species

Special status plant species have been found to occur, either currently or historically, on the 360-acre portion of the project site. The species include two of the four botanical species covered in the "Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects that May Affect Four Endangered Plant Species on the Santa Rosa Plain" and the Santa Rosa Plain Conservation Strategy. The two species found within the 360-acre site are the Sonoma sunshine and Burke's goldfields. These two species are documented in the CNDDB as historically occurring in the western portion of the 360-acre site near Stony Point Road, and a small population of Sonoma sunshine consisting of up to as many of 15 plants was found within the area of historical occurrence during surveys conducted in the spring of 2005.

The implementation of either Alternative A1 or A2 would have no affect on the recently-discovered population of Sonoma sunshine, nor would either of these alternatives have any affect on the area of historical occurrence of Sonoma sunshine and Burke's goldfields mapped in the CNDDB. Likewise, either option for Alternative C, which proposes development of the gaming facility at the northeast corner of the 360-acre Stony Point site, and Alternative E, with a

© 2006 Huffman-Broadway Group, Inc.

project footprint that avoids the rare plant area, would not directly affect the area where the plants have been found. The known locations of populations of rare plants at the west end of the 360-acre Stony Point site could be incorporated into open space areas that might be configured at the west end of the site under either of the preferred development alternatives (Alternative A1 or A2) or under development Alternatives C1, C2, E1 and E2.

According to the USFWS programmatic guidelines, mitigation would be required for direct development impact to current or historic locations of these two plant species, or to any wetlands at the site that would be considered suitable habitat for any of the four species covered by the Programmatic Consultation. These mitigation requirements are summarized in Table C below.

The Santa Rosa Plain Conservation Strategy acknowledges that a revised Programmatic Consultation for the listed plants is forthcoming, but this has not been released as of this date, so mitigation requirements for the various alternatives are addressed herein pursuant to the existing Programmatic guidelines. For this project, as all portions of the project area have been surveyed for rare plants (mostly with negative results) and undeveloped portions of the project area would be preserved in open space areas of greater than 50 acres protected by conservation easements, it is assumed that creation of seasonal wetlands at a 1:1 ratio would be required, and preservation at a 1:1 ratio would be necessary except for impacts in areas where plants are known to occur (which would require 2:1 preservation).

Even though occupied habitat would be avoided by development under Alternatives A, C or E, impacts to potentially suitable seasonal wetland habitat for the species would be still be associated with either option for Alternative A, and to a much greater extent for either option for Alternative C or E, requiring mitigation according to the USFWS Programmatic Guidelines as described below (see Tables C and D).

Based on areas of the historic occurrence of Burke's goldfields and Sonoma sunshine as mapped within the CNDBB, either option for Alternatives B or D would encroach into the mapped area by the amount shown in Table D. Implementation of either of these alternatives would have potential direct impacts on the population of Sonoma sunshine of up to 15 plants discovered by Ecosystems West botanists near Stony Point Road in 2005. In addition, these alternatives are associated with impacts to seasonal wetlands that potentially provide suitable habitat for the four listed species. The potential impact to seasonal wetland habitat suitable to support the listed species would require mitigation according to the Programmatic guidelines as described below (see Tables C and D).

© 2006 Huffman-Broadway Group, Inc.

Table C. MITIGATION RATIOS FOR IMPACTS TO LISTED PLANT SPECIES ON THE SANTA ROSA PLAIN IN ACCORDANCE WITH THE JULY 17, 1998 USFWS PROGRAMMATIC CONSULTATION [1]

Impacts to:	Preservation- In a Bank or Comparable[2]	Restoration/ Construction[4]- In a Bank or Comparable[2]	Preservation- In Other High-Quality Sites[3]	Restoration/ Construciton[4]- In Other High-Quality Sites[3]
Effects to seasonal wetlands where surveys have been conducted and no listed plants have been observed	1:1	1.5:1 or 1:1	2:1	1.5:1 or 1:1
Effects to seasonal wetlands where listed plants have been observed, or are assumed to be present	2:1	1.5:1 or 1:1	3:1	1.5:1 or 1:1

[1]The mitigation plan must contain a preservation component and a restoration or construction component.

[2]A mitigation site will be considered comparable in value to a bank if it is high-quality habitat that either: (i) is adjacent to a Service-approved mitigation bank or other large block of preserved habitat; or (ii) consist of all or part of at least 50 contiguous acres which will be preserved for biological values in perpetuity.

[3]All preservation land must consist of high-quality habitat unless otherwise approved by the USFWS.

[4]Mitigation will require restoration/construction at a 1.5:1 ratio for concurrent mitigation, or a 1:1 ratio if the restoration/construction has demonstrated successful hydrological conditions for at least 1 year.

Alternatives A1 and A2 would impact 1.60 acres of seasonal wetlands (see Table A) that provide potentially suitable habitat for the listed plant species of the Santa Rosa Plain. As the wetlands that would be impacted by either of these alternatives have been surveyed and none of the species were found, a mitigation plan to mitigate for the species habitat would need to include the preservation of 1.60 acres of seasonal wetlands (1:1 ratio) and restoration or creation of 1.60 acres of seasonal wetlands (also at a 1:1 ratio). The creation goals would be satisfied through implementation of the mitigation plan recommended in Section 5.1 to compensate for the wetland losses associated with these alternatives, and the preservation goals would be satisfied through wetland preservation within an on-site open space protected by conservation easement as shown in Table E (see Section 4.5.2). The preservation and creation amounts are in excess of what would be required according to the Programmatic guidelines for mitigation of impacts to habitat for the listed plant species for the preferred Alternative A.

These mitigation ratios recommended by the Programmatic guidelines applied to impacts to seasonal wetland associated with the alternatives for the 360-acre Stony Point site are also

© 2006 Huffman-Broadway Group, Inc.

detailed in Table C. In addition to the need to compensate for substantial losses of seasonal wetlands (anywhere from 19.69 acres for Alternative E1 to 26.43 acres for Alternative B2), development under either option for Alternative B or D would directly impact acreage of seasonal wetlands that are known to have historically supported two of the four listed plant species, and is currently known to support Sonoma sunshine. Development pursuant to Alternatives B1 and B2 would directly impact 1.38 acres of this rare plant area and development pursuant to Alternatives D1 and D2 would directly impact 0.77 acres of this area. Mitigation for rare plant impacts according to the Programmatic consultation would require preservation at a 2:1 ratio for direct impacts to acreage of known occurrence and 1:1 on the remaining impacted acreage, and seasonal wetland creation at a 1:1 ratio based on the acreage of seasonal wetland impacts for each alternative. The mitigation requirements for each of the eight additional alternatives according to the Programmatic guidelines are shown in the Table D. The amount of wetland preservation and creation proposed in the applicant's wetland mitigation plan are in excess of what would be required according to the Programmatic consultation related to the listed plant species.

Table D. MITIGATION REQUIREMENTS FOR IMPACTS TO LISTED PLANT SPECIES OF THE SANTA ROSA PLAIN FOR EACH ALTERNATIVE

Alternative	A1 (acres)	A2 (acres)	B1 (acres)	B2 (acres)	C1 (acres)	C2 (acres)	D1 (acres)	D2 (acres)	E1 (acres)	E2 (acres)
Preservation acreage	1.60	1.60	22.52	27.81	21.79	25.70	20.54	22.68	19.69	20.96
Creation acreage	1.60	1.60	21.14	26.43	21.79	25.70	19.77	21.91	19.69	20.96

Impacts to Lobb's aquatic buttercup, found on the 360-acre Stony Point site in the same general area as the Sonoma sunshine, could occur with development Alternatives B or D. Although impacts to this List 4 species would not be considered significant, the mitigation program that would be implemented related to conservation of the listed plant species of the Santa Rosa Plain would benefit this species as well.

4.5.2 Special Status Animal Species

A review of habitat requirements of sensitive species documented by the CNDDB as occurring in the Cotati, Santa Rosa, Two Rock and Sebastopol 7.5-minute quadrangles, and sensitive species known to occur in the general vicinity, was conducted by HBG biologists. California tiger salamander likely occurs onsite. Other species of special concern are present or possible as described below.

California Tiger Salamander

California tiger salamanders retreat to appropriate upland refugial sites after breeding, sometimes at distances greater than a mile from breeding ponds. All locations within the project area (both the Wilfred site and the Stony Point site) that are not within the 100-year floodplain would be considered aestivation habitat for the CTS. Grading to support the gaming facility or

© 2006 Huffman-Broadway Group, Inc.

establishment of spray fields within these areas would constitute impacts to aestivation habitat for the California tiger salamander. As such, impacts to aestivation habitat would occur for each of the ten alternatives to varying degrees.

In addition to elimination of aestivation habitat, additional impacts to the CTS that would occur within the area of development include the potential for direct impacts to salamanders by earth moving activities, infrastructure improvements, building construction, landscaping and other construction. Other impacts resulting from construction could occur such as disruption of surface movement, disruption or complete loss of reproduction, harassment from increased human activity, and permanent and temporary loss of shelter. Additional impacts to these nocturnal creatures could occur from night lighting during construction that can disrupt movement patterns.

The USFWS also considers that habitat areas used as spray fields would be altered such that CTS can not utilize such areas effectively. There is a general consensus among experts that spraying of reclaimed water changes vegetation structure and comprises use of habitat for the CTS. According to herpetologist and species expert Dr. Mark Jennings, spraying of wastewater encourages the growth of unwanted species like Harding grass (*Phalaris* sp.). Harding grass grows in clumps that not only form a physical barrier to movement of CTS across the landscape, but alter populations of rodents (e.g. voles) such that rodent burrows, and thus CTS aestivation sites, are reduced. Mowing and grazing are not effective management techniques for addressing these concerns, as these activities do not address the long-term formation of rhizomes that affect movement of ground dwelling animals and formation of burrows by small mammals. All areas within the alternatives proposed as spray fields within locations outside of the floodplain and thus constituting aestivation habitat for CTS, are counted within the impact acreage in this analysis.

Table E shows the acreage that would be considered impacted from the standpoint of CTS aestivation habitat through development of the project footprint for each of the development alternatives. As areas within the floodplain are not considered CTS habitat, development within floodplain area is not included within the impacts acreage. However, all areas outside of the floodplain are calculated as part of the CTS impacts in Table E if proposed for either grading or establishment of spray fields. The May 16, 2006 USFWS/CDFG interim guidance related to mitigation of CTS in the Santa Rosa Plain requires mitigation at a ratio of 3:1 for projects that are within 500 feet of a breeding site; 2:1 for projects that are greater than 500 feet and within 2200 feet of a known breeding site, and projects beyond 2200 feet from a known breeding site but within 500 feet of an adult occurrence; and 1:1 for projects that are greater than 2200 feet and within 1.3 miles of a known breeding site. The CTS mitigation requirement for each alternative is also shown in Table E.

Table E also shows the ungraded area that would be available to incorporate into an on-site open space preserve that would be protected by conservation easement, and also shows the amount of wetland preservation within the open space area for each alternative. As most, and in some cases all, of the open space area is within the 100-year floodplain for the various alternatives, little to no opportunity exists for setting aside CTS habitat within the onsite open space preserve. Therefore, CTS mitigation would be accomplished offsite.

© 2006 Huffman-Broadway Group, Inc.

TABLE E. California Tiger Salamander (CTS) Impacts and Mitigation Requirements

Alternative	Approximate Acreage of Relevant Project Site (acres)	Impacts of Development to CTS Habitat (acres) (graded footprint and spray fields)	Required CTS Mitigation		Approximate Ungraded On-Site Open Space Preserve (acres)(little to no CTS habitat)	Portion of Open Space to be used as Spray Fields (acres)	Wetland Preservation in on Site Open Space Preserve (acres)
			Previous BO for Wilfred Site	May 16, 2006 Agency Guidance			
A1	252	68.42	34.26	68.42	185	78.0	16.36
A2	252	82.17	48.17	82.17	169	111.4	16.07
B1	360	83.97		151.00	277	78.0	39.75
B2	360	100.43		167.46	261	111.4	34.46
C1	360	86.90		152.25	259	78.0	38.19
C2	360	98.30		162.59	238	111.4	31.70
D1	360	66.92		133.91	281	57.0	41.11
D2	360	99.77		166.65	269	101.0	38.94
E1	360	48.36		106.76	283	19.0	41.36
E2	360	55.03		113.42	277	37.0	40.08

Development Alternatives for the Wilfred Site

Development under Alternative A1 would result in impacts to 68.42 acres of CTS aestivation habitat and development under Alternative A2 would result in impacts to 82.17 acres of CTS aestivation habitat. Under these alternatives nearly the entire graded footprint is proposed in areas outside of the 100-year floodplain in areas considered CTS habitat and all areas of spray fields are proposed in areas that are within the floodplain in areas not considered CTS habitat. Analysis of Alternatives A1 and A2 by HBG reveals that all areas of CTS habitat impact are between 2200 feet and 1.3 miles from the nearest known breeding location. All impacted areas in these alternatives would therefore require mitigation at a ratio of 1:1 according to the May 16, 2006 agency guidance.

Development impacts on aestivation habitat for the CTS within the 68-acre portion of this site contained within the Northwest Specific Plan have been previously evaluated in a Section 7 Biological Opinion for a different project. The USFWS issued a Biological Opinion on August 5, 2005 related to a Section 7 consultation conducted as part of the Corps permit application process for a mixed use project (commercial, residential and light industrial) proposed by Redwood Equities, L.P. This approved BO for the mixed use project requires mitigation for CTS aestivation habitat at a ratio of 0.5:1. For the project evaluated in the BO, this would require the purchase of approximately 41.5 acres of existing CTS habitat from a mitigation bank or the purchase of farm land that is existing CTS habitat, then placing the habitat within a conservation easement with a third party non-profit conservation management group in order to manage and protect the property in perpetuity.

© 2006 Huffman-Broadway Group, Inc.

The pre-existing BO is valid for a commercial project at the site and has not expired as it is in response to a request made by the Corps of Engineers for Section 7 consultation for an existing on-going permit application. The BO issued for the site, albeit for a different commercial land use, required mitigation of CTS habitat at a ratio of 0.5:1. In August 30, 2006 discussions with the USFWS (personal communication with Cay Goude and Chris Nagano), HBG ascertained that the USFWS would consider an amendment to the existing BO as the means to obtain the requisite "take" authorization from the agency related to the CTS. It is unclear at this time what would be the required mitigation ratio, but it is believed to be either 0.5:1 as required in the previous BO, or 1:1 as required by the USFWS/CDFG interim guidance.

Table E evaluates the mitigation requirements for Alternatives A1 and A2 for scenarios including mitigation requirements at a 0.5:1 as required for the 68-acres under the previous BO and a 1:1 ratio as required by the interim agency guidance. Mitigation requirements would range from 34.26 acres for Alternative A1 with mitigation according to the prior BO, to as much as 82.17 acres for Alternative A2 with mitigation according to the interim agency guidance. None of the mitigation would be accomplished onsite as most of the area available for open space dedication is within the 100-year floodplain and not considered suitable CTS habitat. All mitigation would be accomplished offsite and would consist of purchase of CTS credits from an approved mitigation bank or purchase of farm land providing suitable habitat for CTS (actually where CTS are known to occur) and placing the area under conservation easement. The area would be placed within a conservation easement and subject to terms of a long-term management program aimed at CTS conservation and funding agreements.

As required by the Santa Rosa Plain Conservation Strategy, biological monitors would be present during construction of the project and during excavation associated with wetland creation to remove any CTS encountered from the work area and relocate them to suitable habitat approved by the USFWS.

Development Alternatives for the Stony Point site

It is likely that California tiger salamander occurs on the 360-acre Stony Point site and that impacts to CTS are likely to occur from development of either Alternative B1, B2, C1, C2, D1, D2, E1 or E2. Calculations of impacts to CTS habitat and mitigation requirements based on the May 16, 2006 USFWS/CDFG interim guidance are shown in Table E. The impact to CTS habitat ranges from 48.36 acres for Alternative E1 to as much as 100.43 acres for Alternative B2, with mitigation requirements based on the interim guidance ranging from 106.76 acres of mitigation for Alternative E1 to as much as 167.46 acres of mitigation for Alternative B2.. Mitigation for this level of impact to the CTS would be required and developed as part of a Section 7 consultation that would be initiated by the Corps as part of its process for completing a federal permit for filling onsite wetlands. None of the mitigation would be accomplished onsite as most of the area available for open space dedication is within the 100-year floodplain and not considered suitable CTS habitat. All mitigation would be accomplished offsite and would consist of purchase of CTS credits from an approved mitigation bank or purchase of farm land providing suitable habitat for CTS (actually where CTS are known to occur) and placing the area under conservation easement.

© 2006 Huffman-Broadway Group, Inc.

As breeding habitats are located in the vicinity of the Stony Point site, relocation of any larvae from suitable habitat within the development site and exclusion of adults and juveniles from aestivation sites within the development site or wetland mitigation areas would occur for a 2-3 year period. In this way, the young would be relocated to the new breeding habitats approved by the USFWS and would then disperse into new aestivation areas. As required by the Santa Rosa Plain Conservation Strategy, biological monitors would be present during construction of the project and during excavation associated with wetland creation to remove any CTS encountered from the work area and relocate them to suitable habitat approved by the USFWS.

Steelhead Trout

In general wastewater discharges into streams can affect steelhead through higher creek temperatures, eutrophication and possible feminization of fish from endocrines in the wastewater. Wastewater discharges into the Laguna de Santa Rosa, known to harbor steelhead on their upstream and downstream migrations, would likely only be allowed during the winter months when flows in the Russian River are highest. In a ten-year study of the Russian River drainage by the City of Santa Rosa (City of Santa Rosa 2003) and in subsequent environmental impact reports prepared by the City (City of Santa Rosa 2003 and 2004) it was stated that discharges of tertiarily treated wastewater into the Laguna de Santa Rosa in the winter months do not significantly impact populations of salmonid fish. Impacts to steelhead would be considered insignificant due to discharge requirements of EPA and the negligible loading of effluent resulting from the project. Nevertheless, the applicant will work with the Corps and NOAA Fisheries to verify this finding within the context of an anticipated Section 7 consultation for this project.

Avian Species of Special Concern

The State of California designates several raptor species with a potential to occur on the site as species of special concern based on the presence of nesting habitat. These species include Burrowing Owl (also a species of federal concern), Northern Harrier, White-tailed Kite, Sharp-shinned Hawk, Cooper's Hawk and Golden Eagle. Winter use of the site by these species is possible, however, in all cases, with the exception of Burrowing Owl, appropriate nesting habitat appears not to be present. A Burrowing Owl was observed at the site in January 2004; spring surveys (scheduled for May 2004) would reveal whether the species nests in the project area. Three raptors that could occur are designated as state species of special concern based on presence of wintering habitat (Ferruginous Hawk, Golden Eagle, and Merlin). Ferruginous Hawk is also a federal species of special concern. These species are wide-ranging species often wintering over a broad area, and incidental use of the site by these species primarily in winter is certainly possible. The site, however, provides no unique features that would highlight the importance of the site as a wintering location for any of these species.

Two other avian species of special concern are possible on the site: California Horned Lark (state species of special concern) and Loggerhead Shrike (a species of both federal and state special concern). Neither species was found to be present on the site during the nesting season, and it appears that these species do not nest at the site. However, as potentially suitable nesting habitat is present, preconstruction surveys should be conducted of the development area to determine if nesting is occurring. If nests of either species are found, it would be prudent to devise a construction plan that would allow successful nesting.

© 2006 Huffman-Broadway Group, Inc.

Spring 2004 surveys documented the presence of northwestern pond turtle within the Bellevue-Wilfred Channel, which is not considered part of the project site. Any plan for development of the site would include this channel within the proposed project open space, therefore, impacts to the northwestern pond turtle would not occur.

4.6 Permit Requirements

The project will likely require authorization from the Army Corps of Engineers under Section 404 of the Clean Water Act. The project also will likely require Section 401 water quality certification from EPA on trust lands. Mitigation of wetlands will be required to obtain Corps and EPA approval. A Section 7 consultation with USFWS pertaining to potential impacts to the federally-listed endangered California tiger salamander and listed plant species of the Santa Rosa Plain will be required. To the extent that the proposed project may adversely affect fish species managed under a Fishery Management Plan of the Pacific Fishery Management Council or "Essential Fish Habitat," consultation would also be required with NOAA Fisheries.

Coordination and permit authorization (a Streambed Alteration Agreement) from the CDFG would only be required under Section 1602 of the California Fish and Game Code for any work that may take place on non-trust lands within the onsite drainages. An NPDES permit will be required from the EPA for stormwater discharges on trust land.

© 2006 Huffman-Broadway Group, Inc.

5.0 Mitigation Measures

Impacts to special biological resources are usually mitigated by preserving, creating, restoring, or enhancing similar resources within the project area at specifications determined through negotiations with state and federal resource agencies having jurisdiction over those resources. Although such consultations have not taken place as of this writing, the following section presents suggested conceptual mitigation measures which subsequently will be refined as agency coordination proceeds. Although not specifically required under Section 7 consultation, mitigation is recommended below for species proposed for federal listing and for federal species of special concern, in the event that these species later become listed. Mitigation for state species of special concern would apply only to non-trust land.

To minimize biological impacts on the project site, the following mitigation measures are recommended:

5.1 Wetlands

- For impacts to wetlands or other waters of the United States, authorization from the Corps will be required. Appropriate wetland mitigation will be required by the Corps to compensate for onsite wetland impacts to wetlands under federal jurisdiction. The developer will need to apply for a permit from the Corps and for the Section 401 water quality certification from EPA. Any activities within waters of the state on non-trust lands would require the Corps permit, 401 water quality certification from the North Coast Regional Water Quality Control Board and possibly a Streambed Alteration Agreement from CDFG.

- A wetland mitigation plan to mitigate impacts to jurisdictional wetlands will be required as part of the Corps permit process. For the preferred Alternative A, wetland mitigation could be accomplished through creation/restoration of seasonal wetlands within an onsite open space preserve protected by conservation easement or a memorandum of understanding between the Corps and the Tribe and a tribal ordinance protecting the preserve lands into perpetuity for conservation purposes. Alternatively, off-site wetland mitigation could be accomplished pursuant to the requirements of the Santa Rosa Plain Conservation Strategy. The wetland creation/restoration will provide an increase in the inventory of seasonal wetlands for the area. The scale of seasonal wetland restoration (proposed 1.5:1 ratio) will be sufficient to satisfy the ratio of replacement acreage to impacted acreage required by regulatory agencies based on the wetland functions and values present on the project site. A detailed mitigation plan will be designed that will include monitoring and reporting requirements, responsibilities, performance success criteria, reporting procedures and contingency requirements.

- For Alternatives B, C, D and E, which have substantial wetland impacts, the applicant should consider alternative site layouts involving minimization of wetland impacts. Wetland mitigation should be accomplished off-site pursuant to requirements of the Santa Rosa Plain Conservation Strategy

© 2006 Huffman-Broadway Group, Inc.

5.2 Animal Species

- If feasible, construction work should take place outside of the February 1 to August 1 breeding window for nesting birds. If construction is to be conducted during the breeding season, a qualified biologist should conduct a pre-construction breeding bird survey in areas of suitable habitat within 30 days prior to the onset of construction activity. If bird nests are found, appropriate buffer zones should be established around all active nests to protect nesting adults and their young from construction disturbance. Size of buffer zones should be determined in consultation with wildlife agency staff based on site conditions and species involved.

- To mitigate the potential impacts associated with night lighting at the facility, the operator of the facility should turn off as many exterior lights as possible during the peak bird migration hours of midnight to dawn to reduce potential building collisions with migrating birds and should install downcast lights with top and side shields to reduce upward and sideways illumination to prevent spillover of excess lighting into habitat areas.

5.3 Sensitive Species

- The applicant will develop a management plan for the proposed open space preserves subject to a conservation easement. The plan should be developed to conserve ecological resources in that area and to provide necessary mitigation for impacts to sensitive species resulting from development. The plan should address management activities to ensure maintenance of breeding refugial, and dispersal habitats for California tiger salamander, and should provide a grazing regimen that could allow reestablishment of populations of Sonoma sunshine and Burke's goldfields.

- For Alternatives A1 and A2 on the 68-acre site, as part of the process of amending the prior Biological Opinion issued for the site on a separate project, the applicant should work with the USFWS to determine the applicability of the previously agreed upon CTS mitigation ratio of 0.5:1 for development of the site.

- For any of the alternatives, the applicant shall work with the Corps to initiate a Section 7 consultation with the USFWS related to potential impacts to the CTS and the listed plant species of the Santa Rosa Plain. Mitigation of impacts to listed plant species of the Santa Rosa Plain will be accomplished according to requirements of the Programmatic Consultation and can be accomplished onsite. All CTS mitigation would be accomplished offsite and would consist of purchase of CTS credits from an approved mitigation bank or purchase of farm land providing suitable habitat for CTS (actually where CTS are known to occur) and placing the area under conservation easement. Mitigation would need to be provided as stated in Table E. For development at the Wilfred site CTS mitigation requirements would range from 68.42 acres to 82.17 acres for Alternatives A1 and A2, respectively, and for development at the Stony Point site would range between 106.76 acres for Alternative E1 and 167.46 acres for Alternative B2. Lesser mitigation ratios may be applicable to the preferred Alternatives A based on the mitigation requirements of a previously-issued BO for a commercial project at the 68-acre site.

© 2006 Huffman-Broadway Group, Inc.

- The applicant should implement the general mitigation guidelines advanced by the Santa Rosa Plain Conservation Strategy.

    - Prior to construction, fencing will be installed to exclude CTS from entering the project site. Fences with ramps may be required to allow any CTS onsite to move into an adjacent habitat offsite. In these instances translocation may occur and would be determined on a case-by-case basis.
    - A USFWS approved biological monitor will be on site each day during wetland restoration and construction, and during initial site grading of development sites where CTS have been found.
    - The biological monitor will conduct a training session for all construction workers before work is started on the project.
    - Before the start of work each morning, the biological monitor will check for animals under any equipment such as vehicles and stored pipes. The biological monitor will check all excavated steep-walled holes or trenches greater than one foot deep for any CTS. CTS will be removed by the biological monitor and translocated as necessary.
    - An erosion and sediment control plan will be implemented to prevent impacts of wetland restoration and construction on habitat outside the work areas.
    - Access routes and number and size of staging and work areas will be limited to the minimum necessary to achieve the project goals. Routes and boundaries of the roadwork will be clearly marked prior to initiating construction/grading.
    - All foods and food-related trash items will be enclosed in sealed trash containers at the end of each day, and removed completely from the site once every three days.
    - No pets will be allowed anywhere in the project site during construction.
    - A speed limit of 15 mph on dirt roads will be maintained.
    - All equipment will be maintained such that there will be no leaks of automotive fluids such as gasoline, oils, or solvents.
    - Hazardous materials such as fuels, oils, solvents, etc., will be stored in sealable containers in a designated location that is at least 200 feet from aquatic habitats. All fueling and maintenance of vehicles and other equipment and staging areas will occur at least 200 feet from any aquatic habitat.
    - Grading and clearing will typically be conducted between April 15 and October 15, of any given year, depending on the level of rainfall and/or site conditions.
    - Project areas temporarily disturbed by construction activities will be re-vegetated with native plants approved by USFWS/CDFG.

© 2006 Huffman-Broadway Group, Inc.

- The applicant should work with the Corps and NOAA Fisheries within the context of a Section 7 consultation to verify a finding of no adverse effect from the wastewater discharges on populations of steelhead in the Laguna de Santa Rosa.

A preconstruction survey for Burrowing Owl should be conducted to ensure impacts to Burrowing Owls, if present in the construction area, do not occur during the nesting season. Preconstruction surveys should be conducted within 30 days of initiation of construction activity. The presence of Burrowing Owl nests would require mitigation to ensure all individuals remain out of harms way.

- A preconstruction survey for California Horned Lark and Loggerhead Shrike should be conducted to ensure that impacts to either species do not occur during the nesting season. Preconstruction surveys should be conducted within 30 days of initiation of construction activity.

5.4 Construction

- During construction, vegetation should only be cleared from the permitted construction footprint and necessary laydown and assembly areas. Areas cleared of vegetation, pavement, or other substrates should be stabilized as quickly as possible and best management practices (erosion fencing, straw and other material applied to soils) to prevent erosion and runoff.

5.5 Landscaping

- Where appropriate, vegetation removed as a result of project activities should be replaced with native species which are of value to local wildlife. Native plants have significant cultural value, are generally more valuable as wildlife food sources and require less irrigation, fertilizers, and pesticides than exotic species.

© 2006 Huffman-Broadway Group, Inc.

6.0 References

Abrams, L. 1923. *Illustrated flora of the Pacific states, Vol. I.* Stanford University Press, Stanford, CA. 538 pp.

Abrams, L. 1944. *Illustrated flora of the Pacific states, Vol. II.* Stanford University Press, Stanford, CA. 635 pp.

Abrams, L. 1951. *Illustrated flora of the Pacific states, Vol. III.* Stanford University Press, Stanford, CA. 866 pp.

Abrams, L, and R.S. Ferris. 1960. *Illustrated flora of the Pacific states, Vol. IV.* Stanford University Press, Stanford, CA. 732 pp.

Best, C., J. T. Howell, W. Knight, I. Knight, and M. Wells. 1996. *A flora of Sonoma Co*unty. California Native Plant Society, Sacramento, CA. 347 pp.

Burt, William H. and R. P. Grossenheider. 1976. *A Field Guide to the Mammals of America North of Mexico.* Peterson Field Guides. Houghton Mifflin Company, Boston.

California Department of Fish and Game. 2005. State and federally listed Endangered, Threatened, and Rare plants of California. http://www.dfg.ca.gov/whdab/pdfs/ TEPlants.pdf (January 2004).

California Department of Fish and Game. 2003. List of California terrestrial natural communities recognized by the Natural Diversity Data Base. http://www.dfg.ca.gov/whdab/natcomlist.pdf (September 2003).

California Department of Fish and Game. 2003. Natural Heritage Division, Natural Diversity Data Base for Cotati, Santa Rosa, Two Rock and Sebastopol Point 7.5 Minute USGS Quadrangle Map, August, 2003.

California Department of Fish and Game. 1995. *Staff Report on Burrowing Owl Mitigation.*

California Native Plant Society. 2001. *Inventory of Rare and Endangered Plants of California,* Sixth Edition, convening editor, David P. Tibor.

California Native Plant Society. 2003. California Native Plant Society's electronic inventory of rare and endangered vascular plants of California. Computer program. Version 1.5.1.

CH2MHill. 1998. Final Training Manual to Evaluate Habitat Quality of Vernal Pool Ecosystem Sites in Santa Rosa Plain. Report prepared for the U.S. Army Corps of Engineers, December 1998.

© 2005 The Huffman-Broadway Group, Inc.

Cowardin, Lewis M., Virginia Carter, Francis C. Golet and Edward T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States,* for Office of Biological Services, Fish and Wildlife Service, U.S. Department of the Interior.

Dedrick, K. 1993. San Francisco Bay tidal marshland acreages: recent and historic values. In O.T. Magoon (ed.): *Proceedings of the Sixth Symposium on Coastal and Ocean Management (Coastal Zone '89).* Charleston, South Carolina, July 11-14, 1989. Publ. By Am. Society of Civil Eng.

Dunn, E. M. 1940. The Races of Ambystoma tigrinum. *Copeia*: 1940, No. 3, 154-162.

Dyatt and Batia. 2000. *Rohnert Park General Plan, Revised Draft Environmental Report.* State Clearinghouse Number 99062114. Prepared for the City of Rohnert Park Department of Planning and Community Development. May.

Entrix. 2004. Russian River Draft Biological Assessment. U.S. Army Corps of Engineers and Sonoma County Water Agency. January 16, 2004.

Feeney, L. 1992. Site Fidelity in Burrowing Owls. Unpublished paper present to Raptor Annual Meeting, November 1992. Seattle, Washington.

H.T. Harvey & Associates. 2003a. Northwest Specific Plan Area Redwood Equities Investments Property, Rohnert Park, California Tiger Salamander 2002/2003 Survey Report. April 25, 2003, revised May 8, 2003. Includes a two-page supplement.

H.T. Harvey & Associates. 2003b. Northwest Specific Plan Area Redwood Equities Investments Property, Rohnert Park, Supplemental Information on Ponding and Potential California Tiger Salamander Breeding. August 12, 2003.

H.T. Harvey & Associates. 2004. Northwest Specific Plan Area Redwood Equities Investments Property, Rohnert Park, California Tiger Salamander 2003/2004 Survey Report. May 18, 2004.

Heady, H. F., T. C. Foin, M. M. Hektner, D. W. Taylor, M. G. Barbour, and W. J. Barry. 1977. Coastal prairie and northern coastal scrub. Pp. 515-533 in M. G. Barbour and J. Major, (eds.), *Terrestrial vegetation of California.* John Wiley and Sons, New York, NY.

Hickman, James C., editor. 1993. *The Jepson Manual - Higher Plants of California,* University of California Press, Berkeley.

Holland, D. C., M. P. Hayes and E. McMillan. 1990. Late summer movement and mass mortality in the California tiger salamander (*Ambystoma californiense*). *Southwestern Naturalist*: 35:217-220.

© 2005 The Huffman-Broadway Group, Inc

Holland, R. F. 1986. Preliminary descriptions of the terrestrial natural communities of California. State of California, The Resources Agency, Department of Fish and Game, Sacramento, California.

HydroScience Engineers, Inc. 2006. Graton Rancheria Hotel and Casino Project Water and Wastewater Feasibility Study. Prepared for the Station Casinos. February 2006.

Jones W. 2000. National Marine Fisheries Service Anadramous Fish Distributions: California Coastal Salmon and Steelhead Current Stream Habitat Distribution Table. January 2000 draft table.

Loredo, I., and D. VanVuren. 1996. Reproductive Ecology of a Population of the California Tiger salamander. *Copeia:* 1996(4), pp. 895-901.

Loredo, I., D. VanVuren and M. Morrison. 1996. Habitat Use and Migration Behavior of the California Tiger salamander. *Journal of Herpetology,* Vol. 30(2):282-285.

Mayer, E. Kenneth and William F. Laudenslayer, Jr., (Eds.). 1988. *A Guide to Wildlife Habitats of California.*

Munz, Philip A. and David D. Keck 1973. *A California Flora and Supplement.* University of California Press.

National Geographic Society. 2002. *Field Guide to North American Birds.* Fourth Edition. National Geographic Society. Washington, D.C.

North Fork Associates. 2003. Wetland Delineation for the 80-acre Rohnert Park NW Specific Plan Area. Prepared for Blackman Consulting. June 9, 2003.

North Fork Associates. 2004. Special Status Plant Report, Rohnert Park NW Specific Plan Area. Prepared for Blackman Consulting. September 2004.

North Fork Associates. 2004. Biological Resource Assessment for the 80-acre Rohnert Park NW Specific Plan Area. Prepared for Blackman Consulting.

Patterson, C.A. 1994. Seasonal Wetland Baseline Report for the Santa Rosa Plain, Sonoma County. Report prepared for the California Department of Fish and Game, June 30, 1994.

Peterson, Roger Tory. 1969. *Field Guide to Western Birds.* Houghton Mifflin Company, Boston, Massachusetts.

Reed, P.B., Jr. 1988. *National List of Plant Species That Occur in Wetlands: National Summary.* U.S. Fish and Wildlife Service, Washington, D.C. Biol. Rpt. 88(24). 244pp.

Reed, Porter B. 1988. National List of Plant Species that Occur in Wetlands: California (Region O).

© 2006 Huffman-Broadway Group, Inc.

Rich, T. 1984. Monitoring Burrowing Owl Populations: Implications of Burrow Re-use. *Wildlife Society Bulletin* 12:178-180.

Rubtzoff, P. 1961. Notes on fresh-water marsh and aquatic plants in California – II. Leafl. West. Bot. 9: 165-174.

Santa Rosa, City of. 2003. Incremental Recycled Water Program Draft EIR. May 16, 2003.

Santa Rosa, City of. 2004. Incremental Recycled Water Program, Recycled Water Master Plan. February 2004.

Sawyer, J. O., and T. Keeler-Wolf. 1995. *A Manual of California Vegetation.* In cooperation with The Nature Conservancy and the California Department of Fish and Game. California Native Plant Society. Sacramento, California.

Stebbins, R.C. 1985. *Western Reptiles and Amphibians.* Peterson Field Guides. Houghton Mifflin Co., Boston.

Stromberg, L.P. 2001. Results of 2001 Survey for Special-Status Plant Species, Northwest Specific Plan Area, Rohnert Park, California. Prepared for Blackman Consulting.

Stromberg, L.P. 2002. Results of 2002 Survey for Special-Status Plant Species, Northwest Specific Plan Area, Rohnert Park, California. Report prepared for Blackman Consulting, May 28, 2002.

Thomsen, L. 1971. Behavior and Ecology of Burrowing Owls on the Oakland Municipal Airport. *Condor:* 73:177-192.

Tibor, D. P. (ed.). 2001. *Inventory of rare and endangered vascular plants of California.* California Native Plant Society Special Publication No. 1 [6th edition]. California Native Plant Society, Sacramento, CA.

Trenham, P. 2001. Terrestrial Habitat Use by Adult California Tiger salamanders. *J. of Herpetology,* Vol. 35(2):343-346.

Trenham, P., H. B. Shaffer, W. D. Koenig, and M. R. Stromberg. 2000. Life History and Demographic Variation in the California Tiger salamander (*Ambystoma californiense*). *Copeia:* (2):365-377.

U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetland Delineation Manual,* Technical Report Y-87-1. Prepared by the Environmental Laboratory, Department of the Army, Waterways Experiment Station, Vicksburg, Miss.

© 2006 Huffman-Broadway Group, Inc.

U.S. Department of Agriculture, Natural Resources Conservation Service. 2002. The PLANTS database, Version 3.5 (http://plants.usda.gov). National Plant Data Center, Baton Rouge, LA.

U.S. Department of Agriculture, Soil Conservation Service. 1991. *Hydric Soils of the United States.*

U.S. Department of Agriculture, Soil Conservation Service. 1972. *Soil Survey, Sonoma County, California.* May.

U.S. Fish and Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Determination of Endangered status for three plants, *Blennosperma bakeri* (Sonoma sunshine or Baker's stickyseed), *Lasthenia burkei* (Burke's goldfields), and *Limnanthes vinculans* (Sebastopol meadowfoam). Federal Register 56(231):61173-61182.

U.S. Fish and Wildlife Service. 1998. Programmatic formal consultation for U.S. Army Corps of Engineers 404 permitted projects that may affect four endangered plant species on the Santa Rosa Plain, California. Unpublished document. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office. July 17, 1998.

U.S. Fish and Wildlife Service. 2002. Changes and Clarifications to the U.S. Fish and Wildlife Service's Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma District Population Segment of the California Tiger salamander. Sacramento Field Office. November 22.

U.S. Fish and Wildlife Service. 2003. Interim Guidelines on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander. Sacramento Field Office. October 22, 2003.

U.S. Fish & Wildlife Service. 2004a. Threatened and Endangered Species System (TESS). U.S. listed flowering plant species report by taxonomic group. http://ecos.fws.gov/ tess_public/TESSWebpageVipListed?code=F&listings=0#Q (21 July 2004)

U.S. Fish & Wildlife Service. 2004b. Threatened and Endangered Species System (TESS). U.S. listed nonflowering plant species report by taxonomic group. http://ecos.fws.gov/ tess_public/TESSWebpageVipListed?code=N&listings=0#R (21 July 2004)

U.S. Fish & Wildlife Service. 2004c. Threatened and Endangered Species System (TESS). Proposed and Candidate Species. http://ecos.fws.gov/ tess_public/ TESSWebpageNonlisted?listings=0&type=both (21 July 2004)

U.S. Fish and Wildlife Service. 2005. Final Santa Rosa Plain Conservation Strategy. December 1, 2005.

Zarn, M. 1974. Burrowing Owl, *Speotyto cunicularia hypugaea.* Report II. Habitat Management Series for Unique or Endangered Species. U.S. Bur. Land Manage. Denver,

© 2006 Huffman-Broadway Group, Inc.

CO.

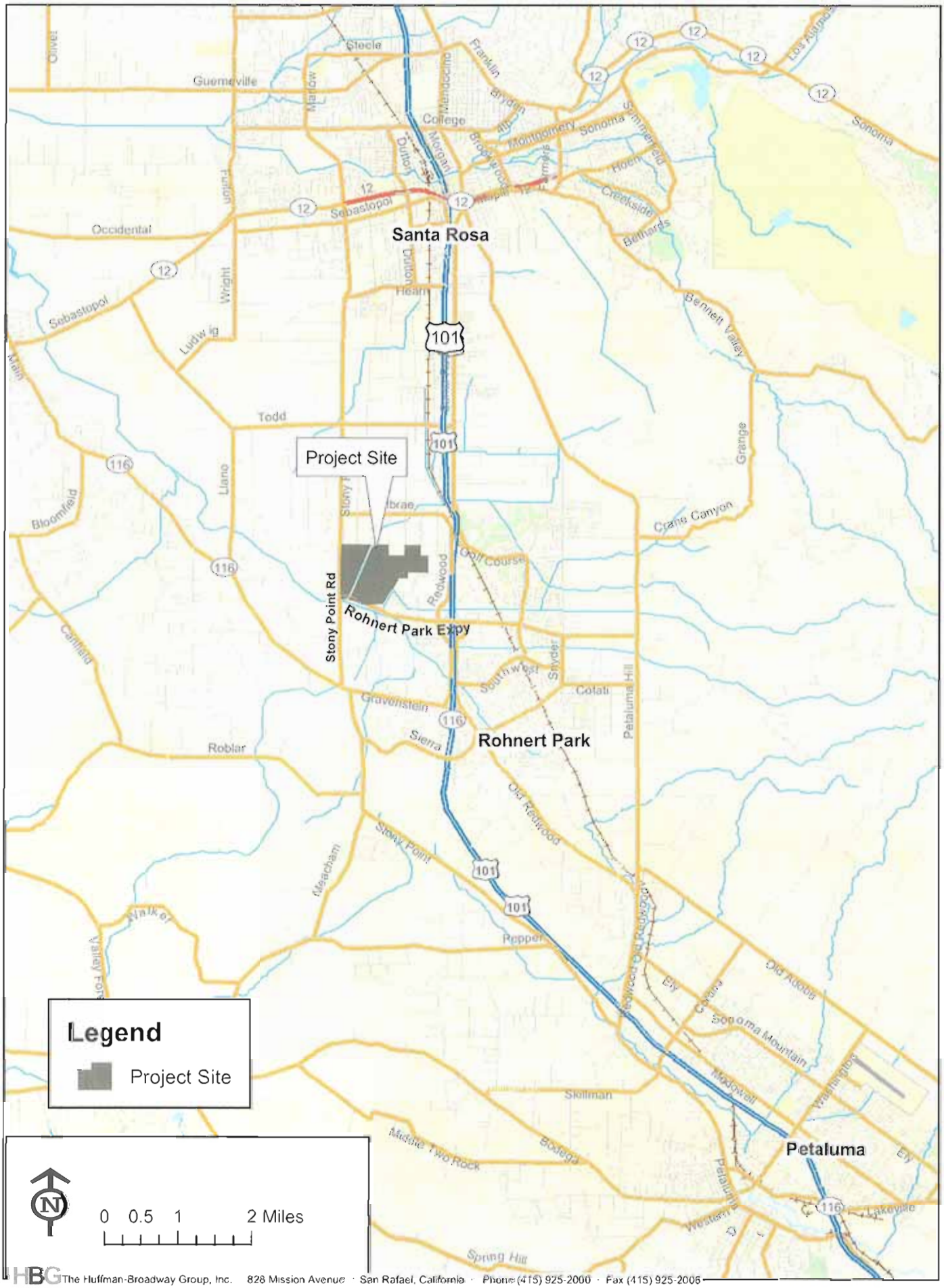
Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1088. California's Wildlife, Volume I. Amphibians and Reptiles. State of California, the Resources Agency, Department of Fish and Game, Sacramento, California.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1990a. California's Wildlife, Volume II: Birds. State of California, the Resources Agency, Department of Fish and Game, Sacramento, California.

Zeiner, D.C., W.F. Laudenslayer, Jr., K.E. Mayer, and M. White. 1990b. California's Wildlife, Volume III: Mammals. State of California, the Resources Agency, Department of Fish and Game, Sacramento, California.

© 2006 Huffman-Broadway Group, Inc.

ATTACHMENT 1. Figures



IHBG The Huffman-Broadway Group, Inc. 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 1. Location of the Project Site

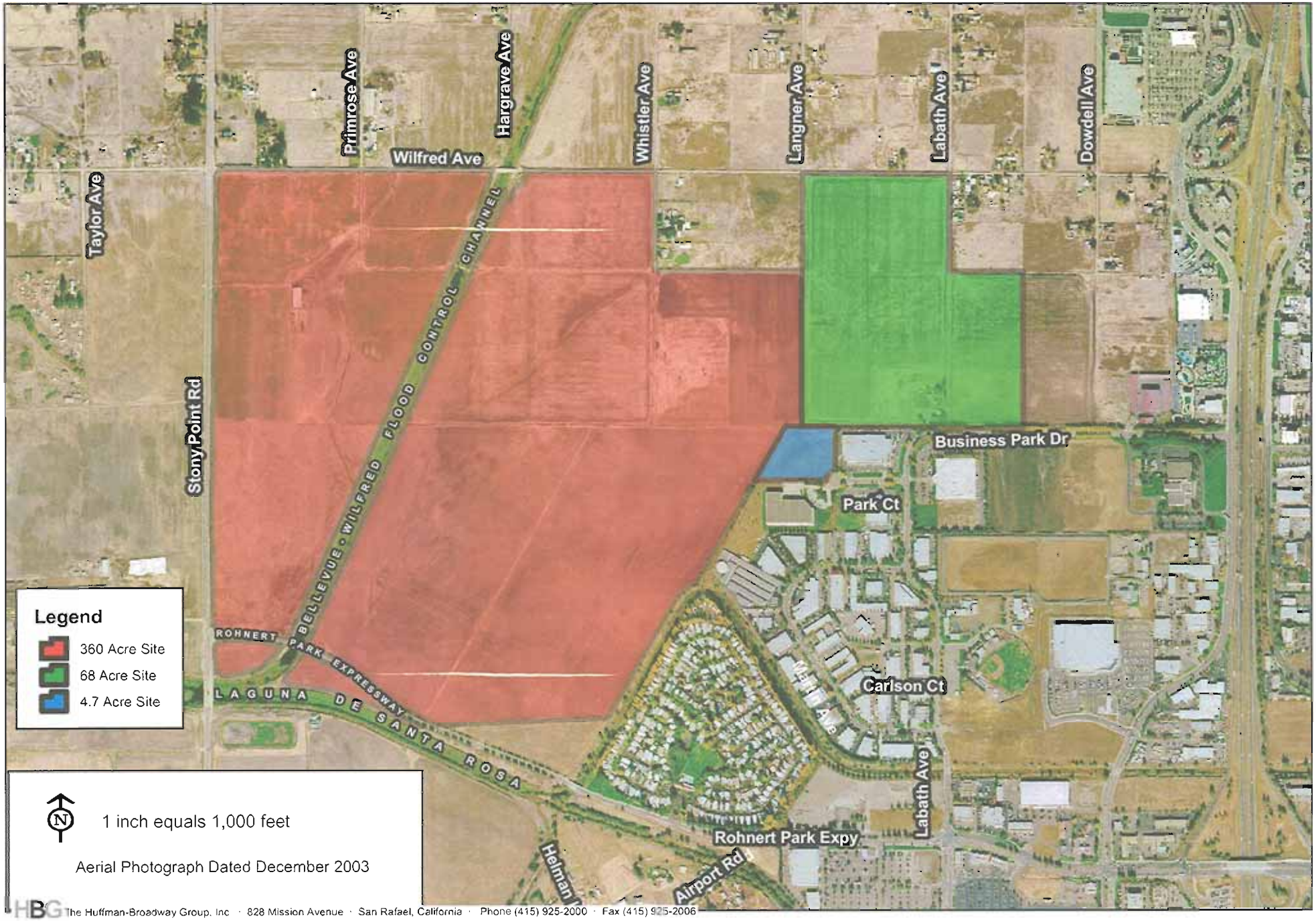


Figure 2. Aerial Photograph of the Project Site

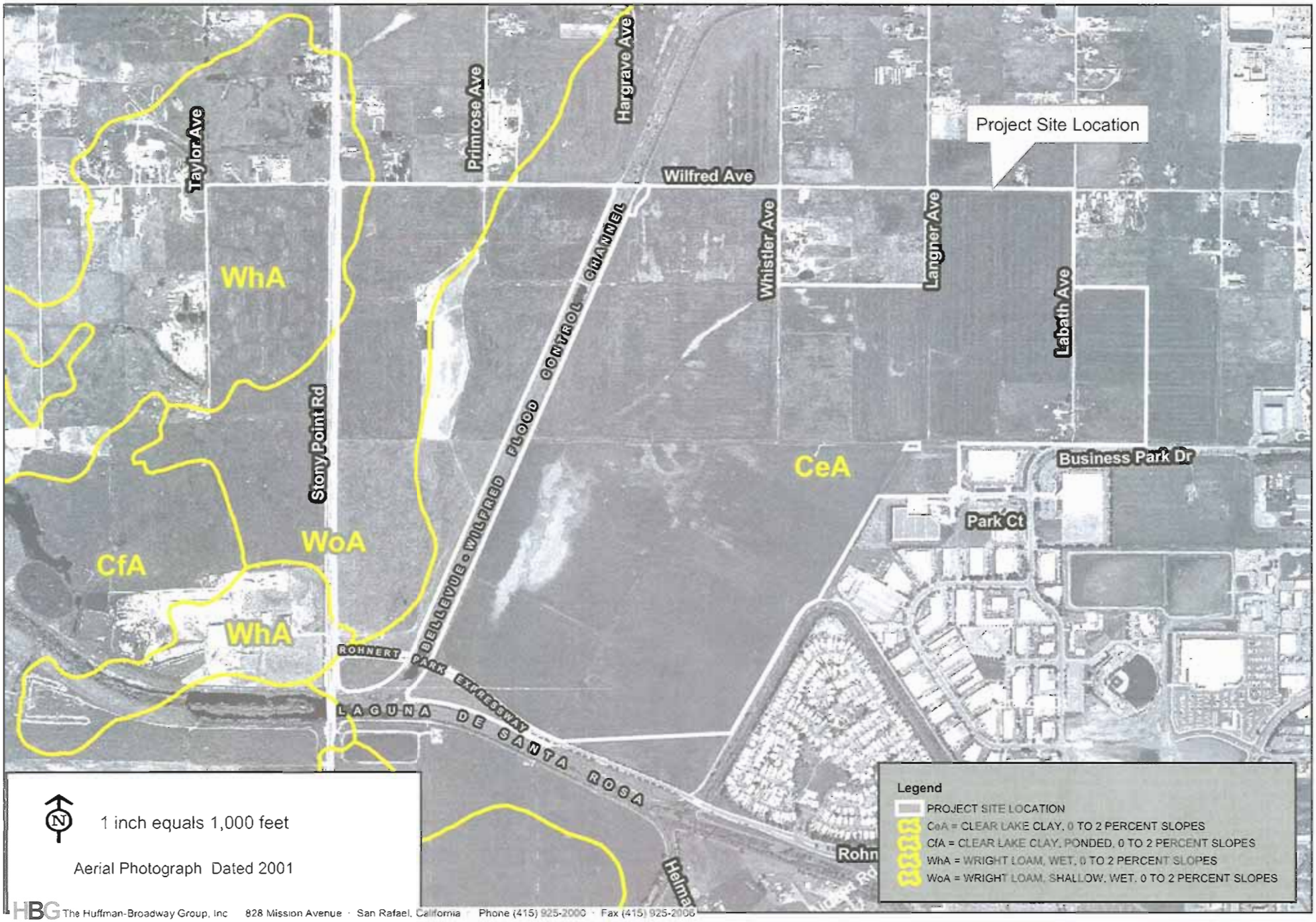


Figure 3. Soil Map of Project Site

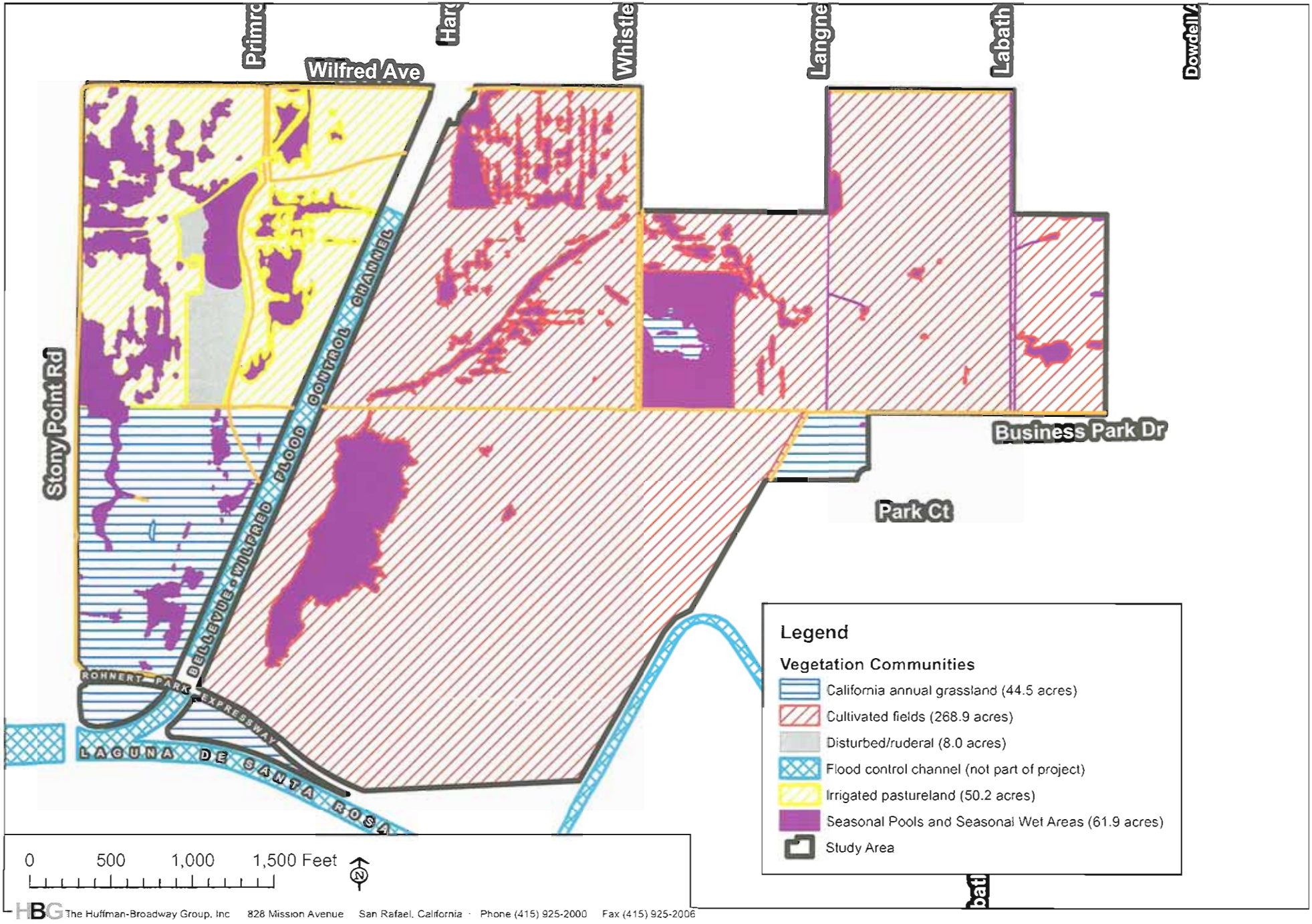


Figure 4. Extent and Distribution of Vegetation Communities at the Project Site

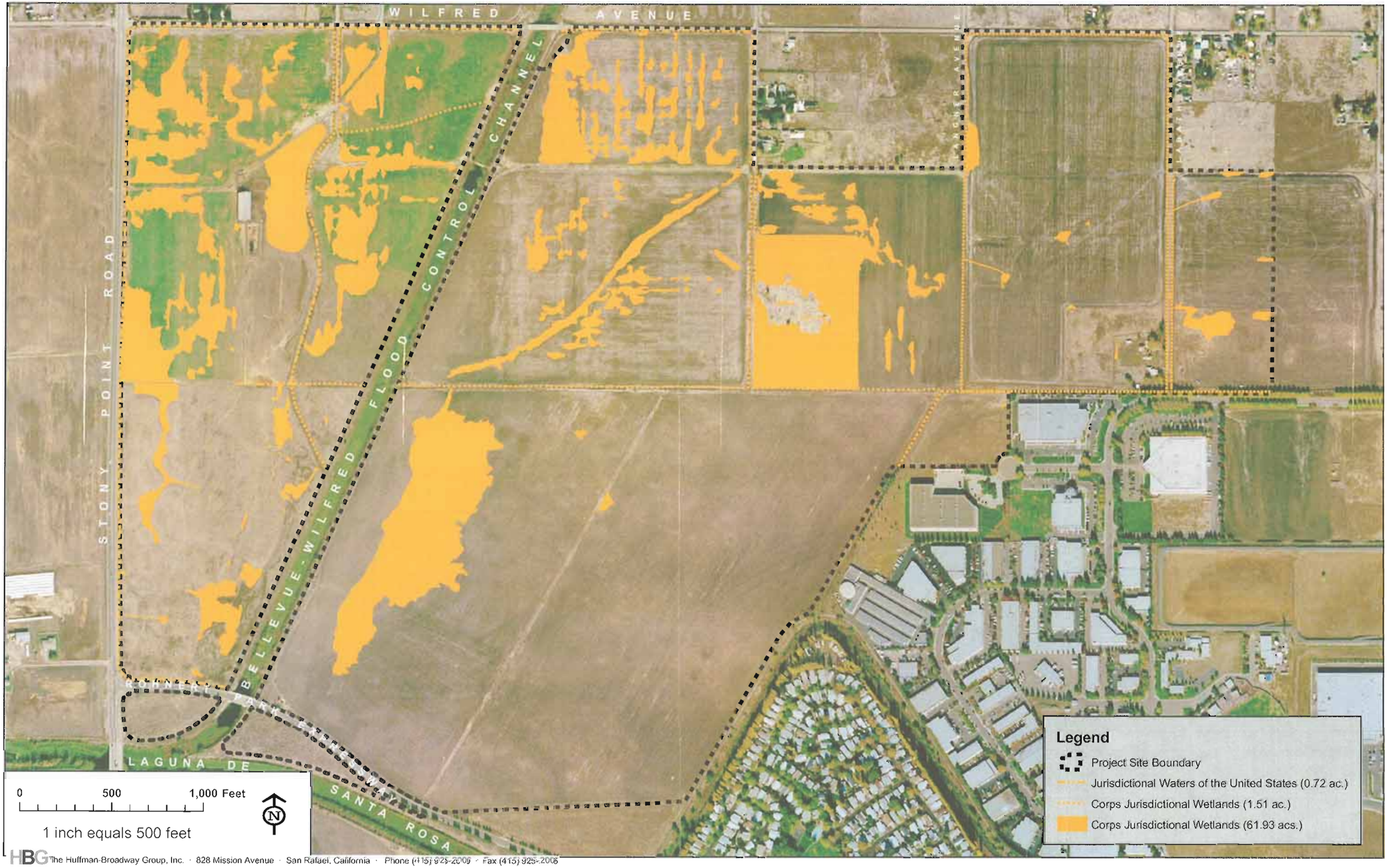


Figure 5. Wetlands and Other Waters of the U.S. Subject to Corps Jurisdiction

Figure 6. Location of Special Status Plant Populations in the Project Area

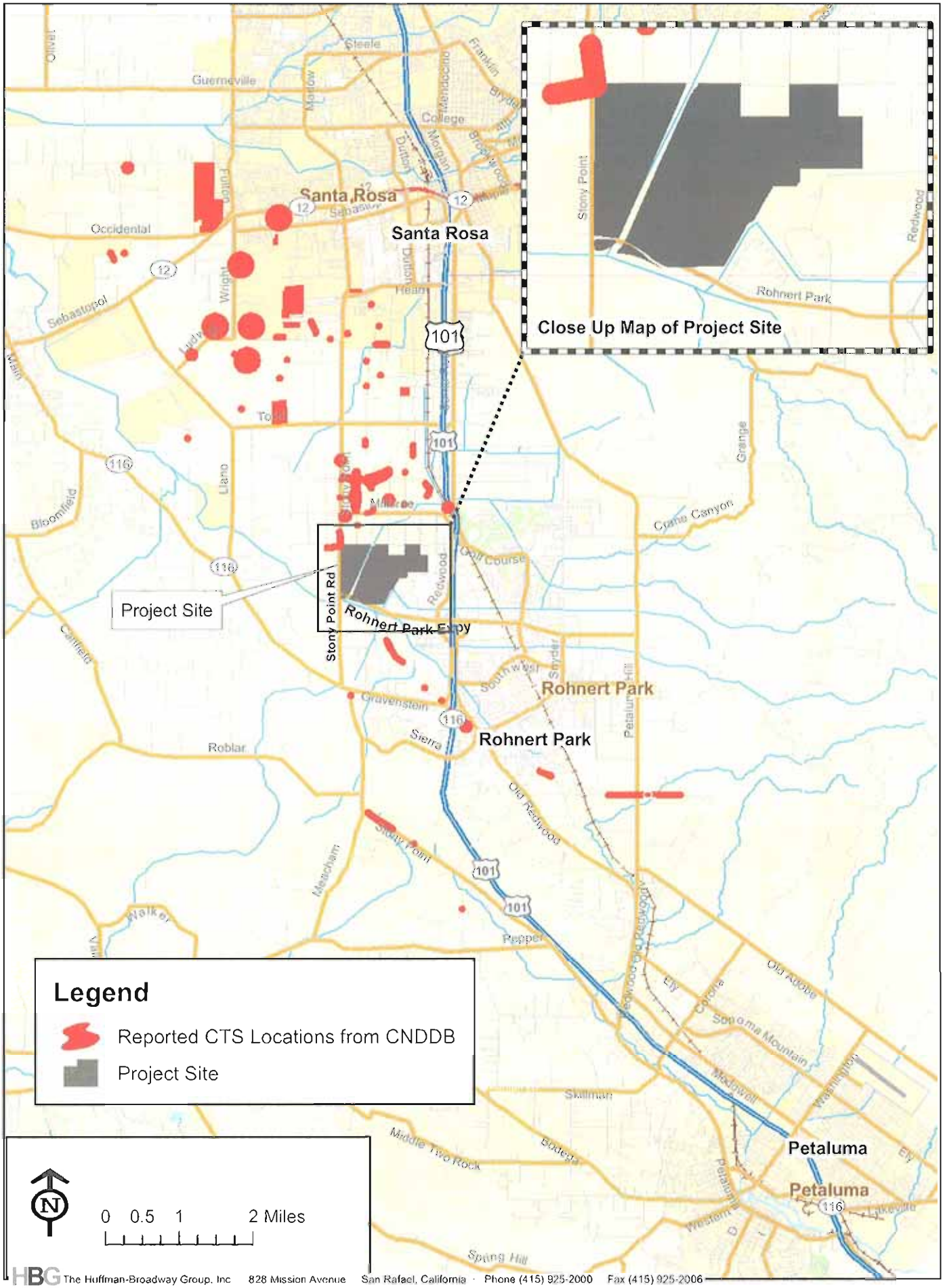
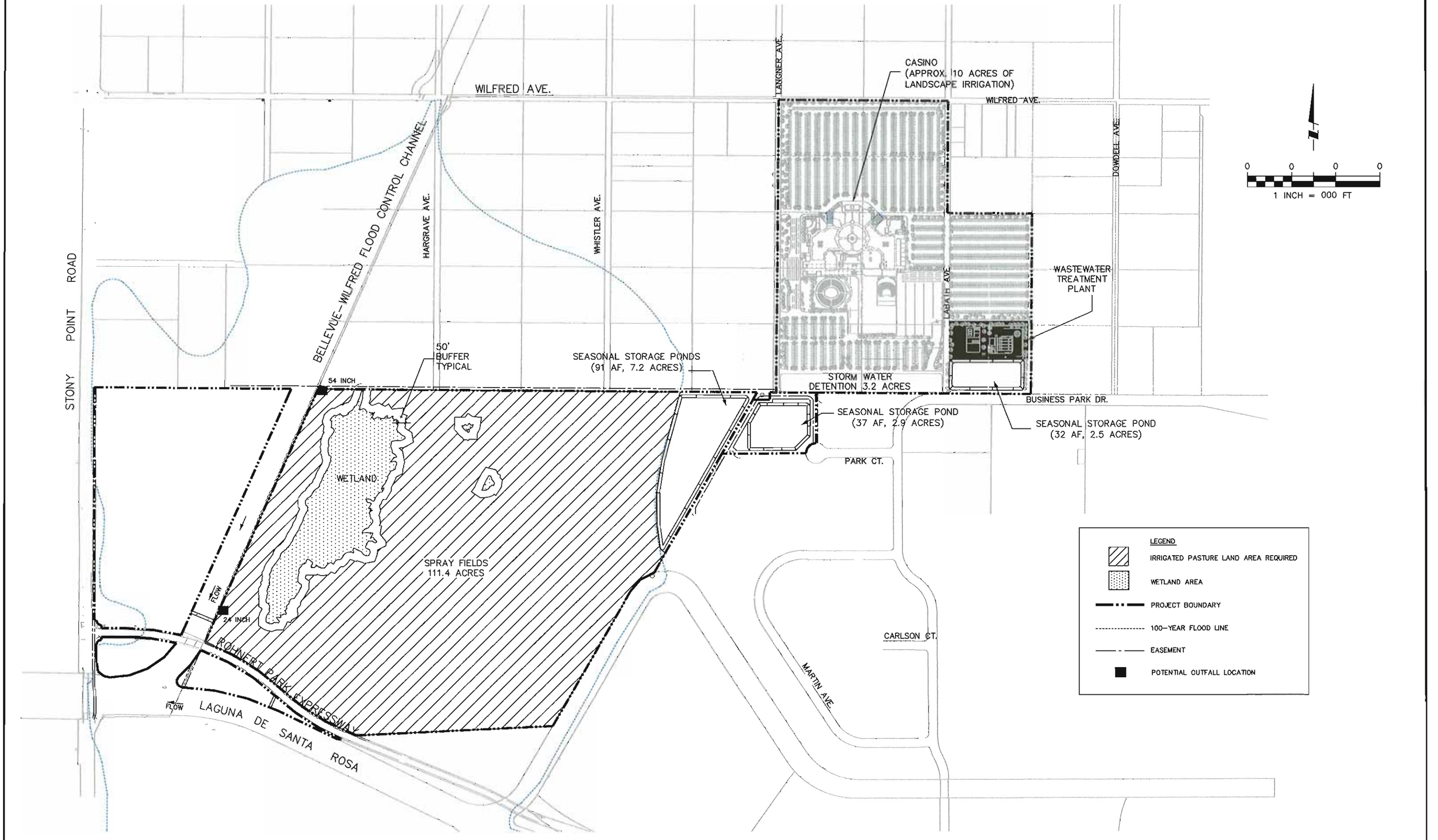


Figure 7. Reported Locations of California Tiger Salamander from the CNDDB

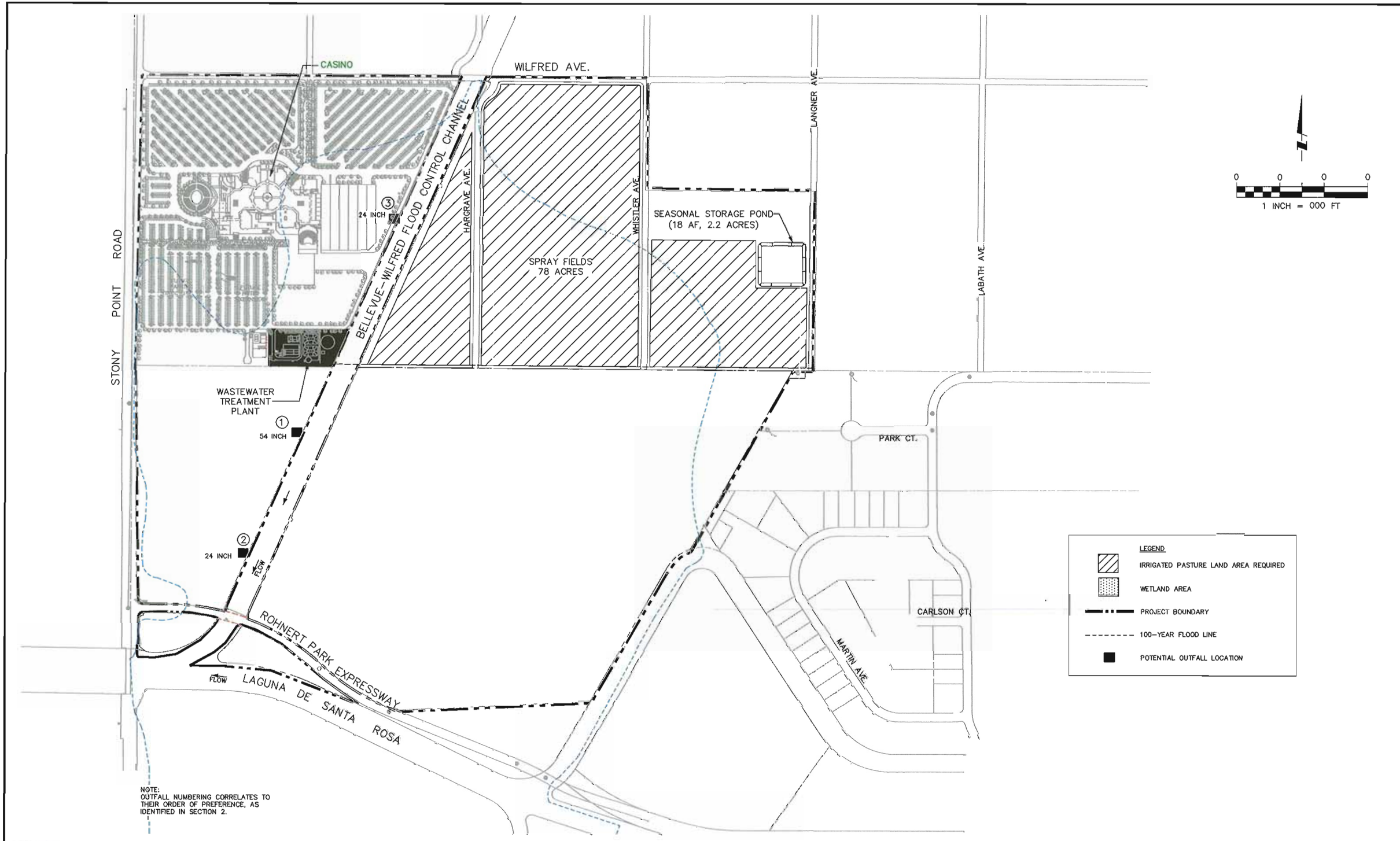
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 8. Project Development Plan for Alternative A - Wet Season Discharge (Alternative A1)



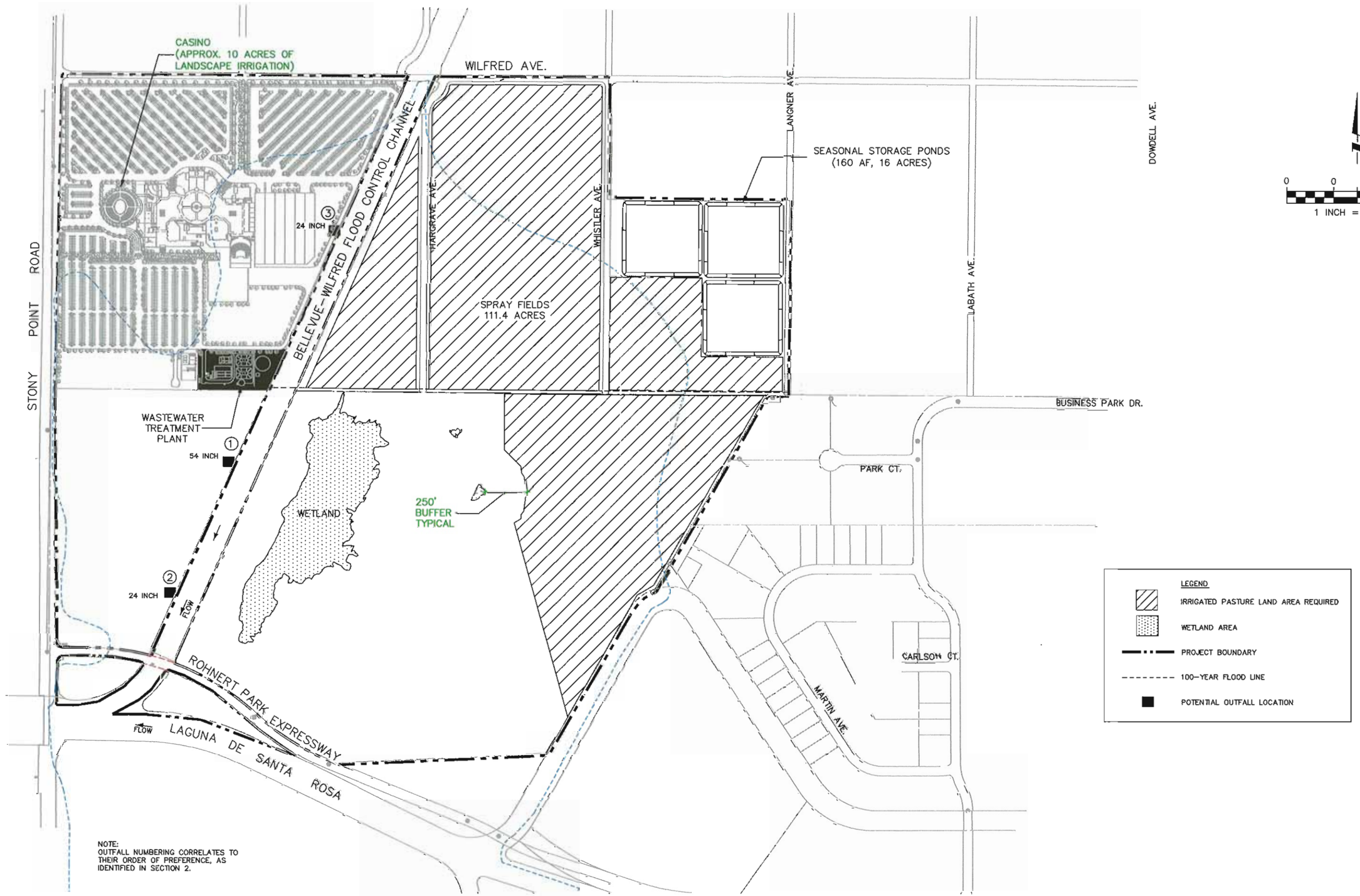
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 9. Project Development Plan for Alternative A - Wet Season Storage (Alternative A2)



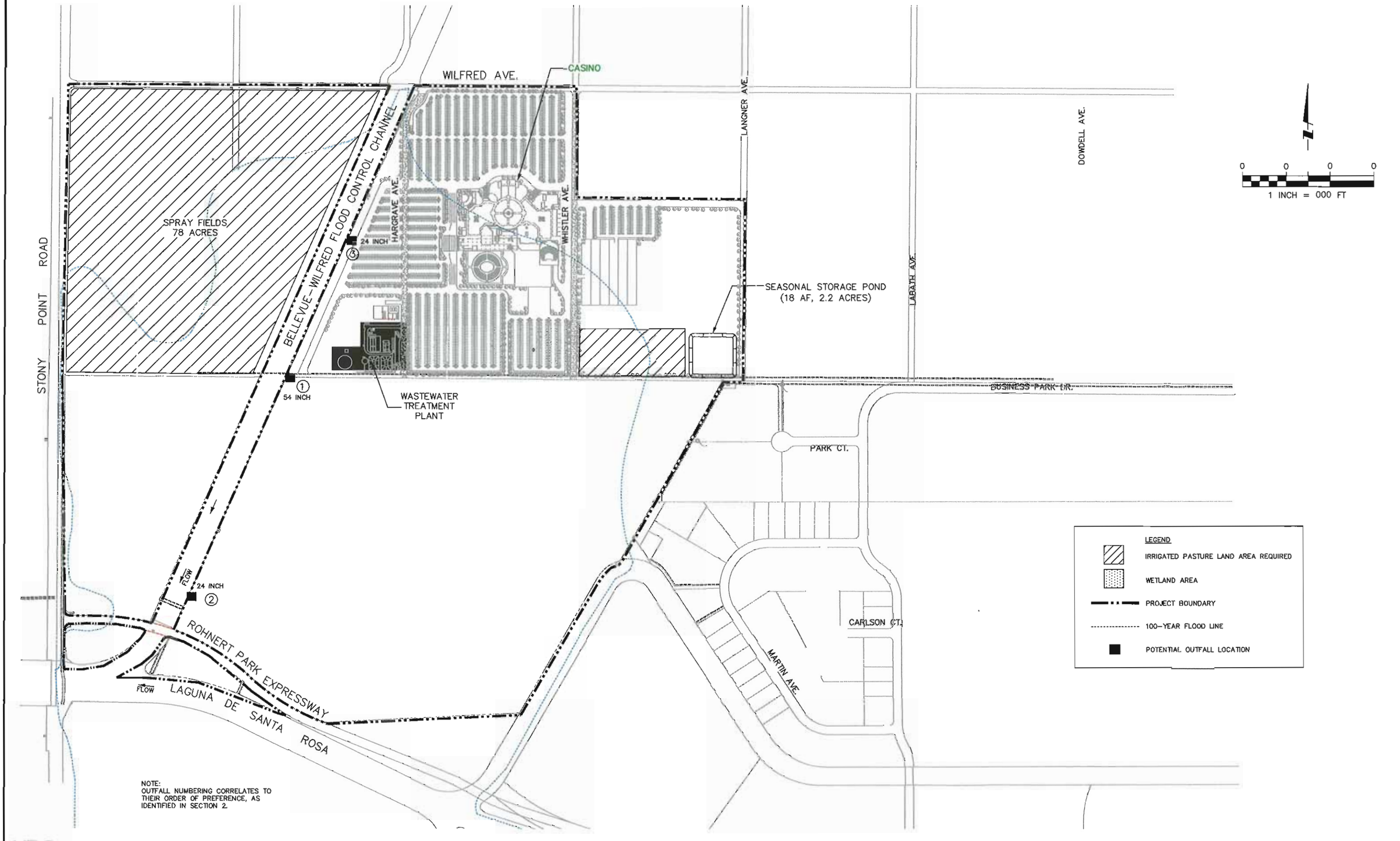
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 10. Project Development Plan for Alternative B - Wet Season Discharge (Alternative B1)



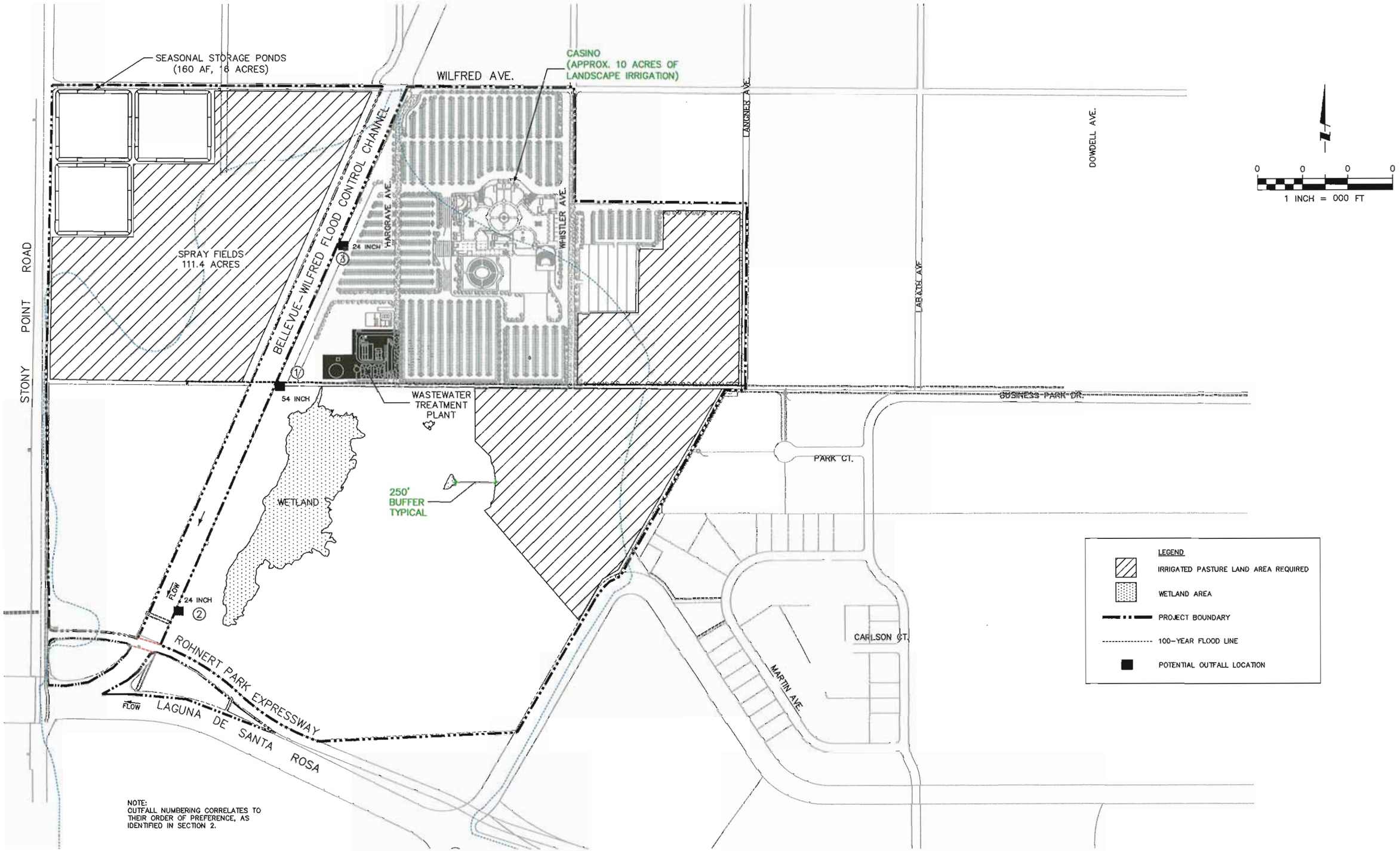
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 11. Project Development Plan for Alternative B - Wet Season Storage (Alternative B2)



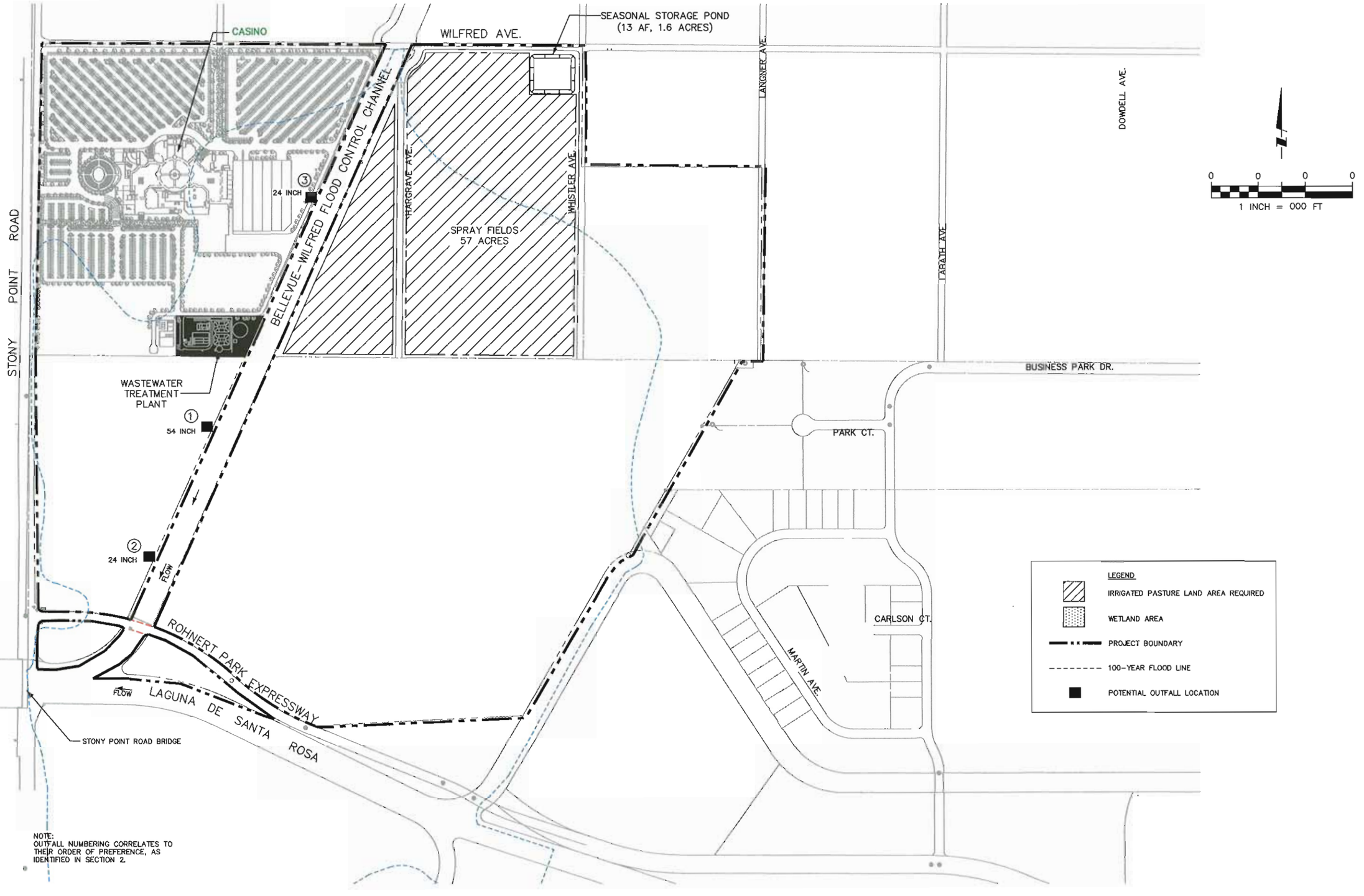
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 12. Project Development Plan for Alternative C - Wet Season Discharge (Alternative C1)



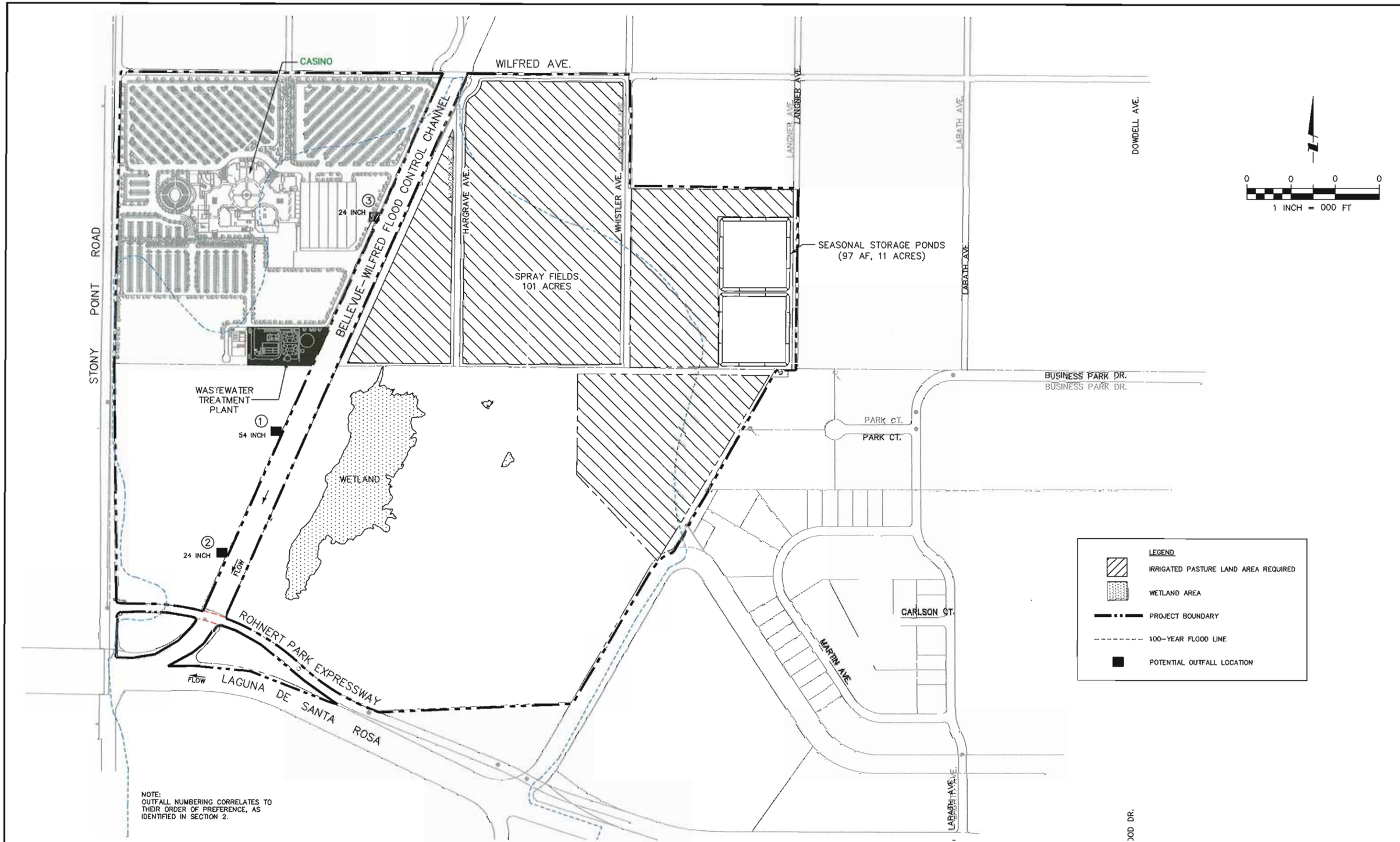
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 13. Project Development Plan for Alternative C - Wet Season Storage (Alternative C2)



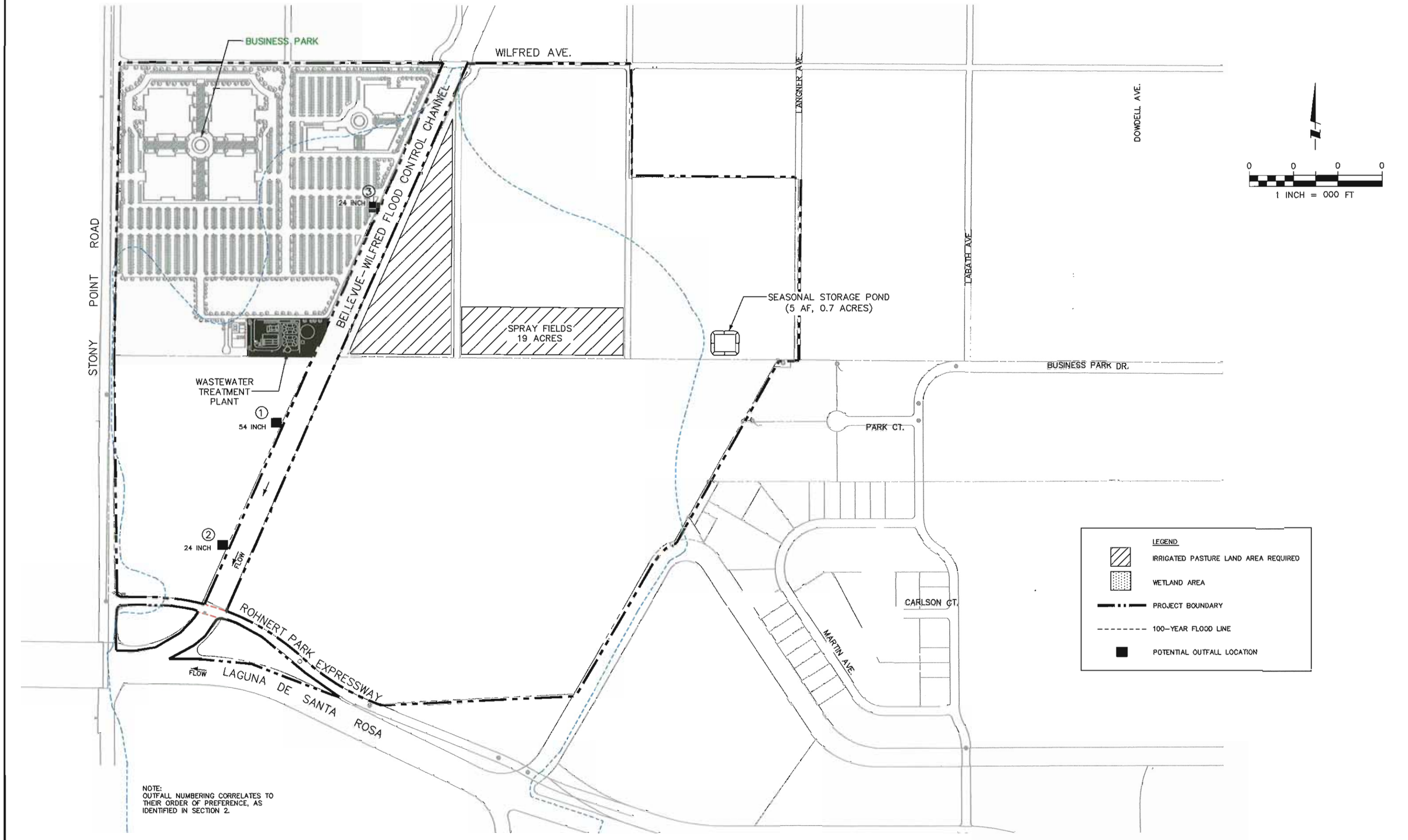
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 14. Project Development Plan for Alternative D - Wet Season Discharge (Alternative D1)



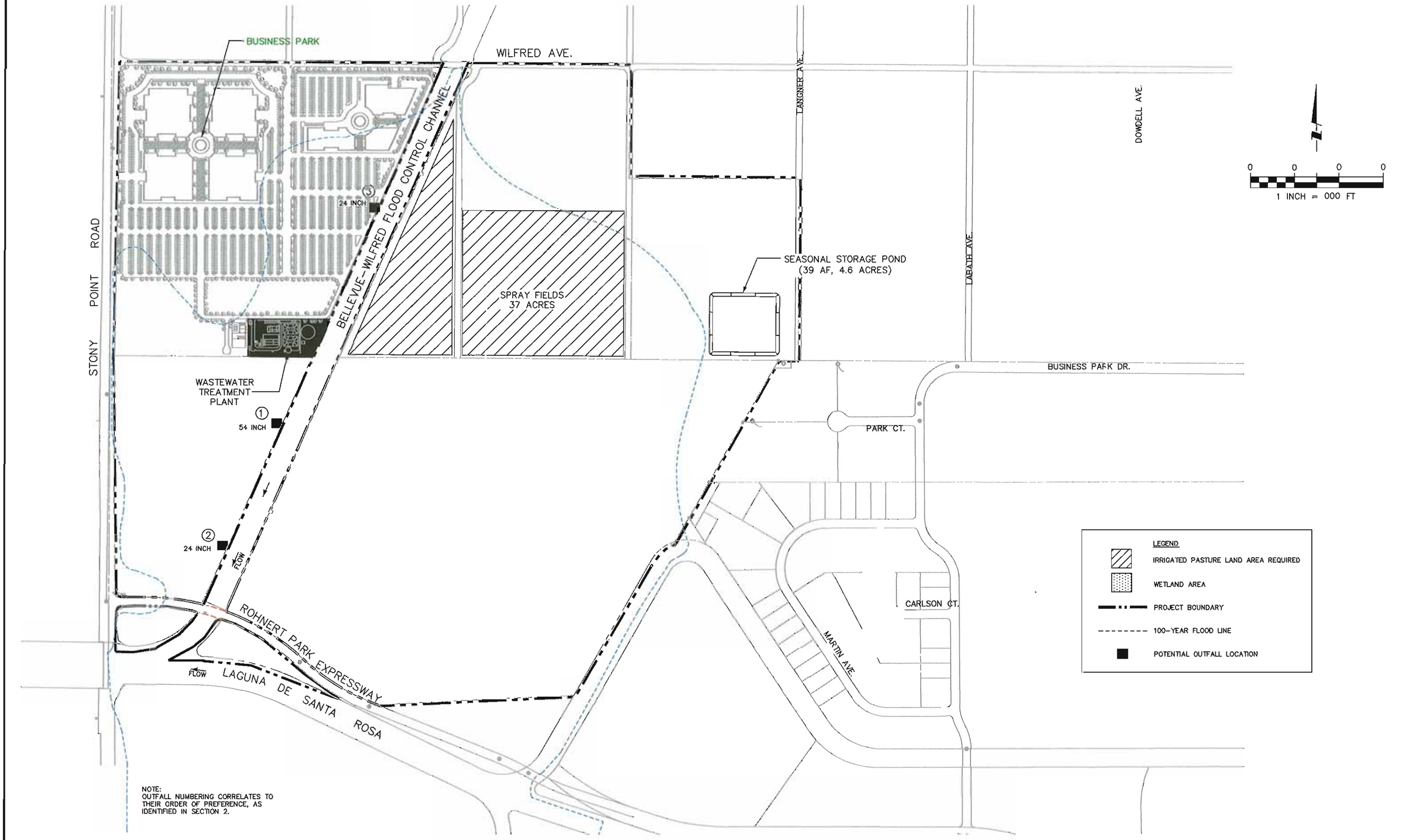
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 15. Project Development Plan for Alternative D - Wet Season Storage (Alternative D2)



HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 16. Project Development Plan for Alternative E - Wet Season Discharge (Alternative E1)



HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 17. Project Development Plan for Alternative E - Wet Season Storage (Alternative E2)

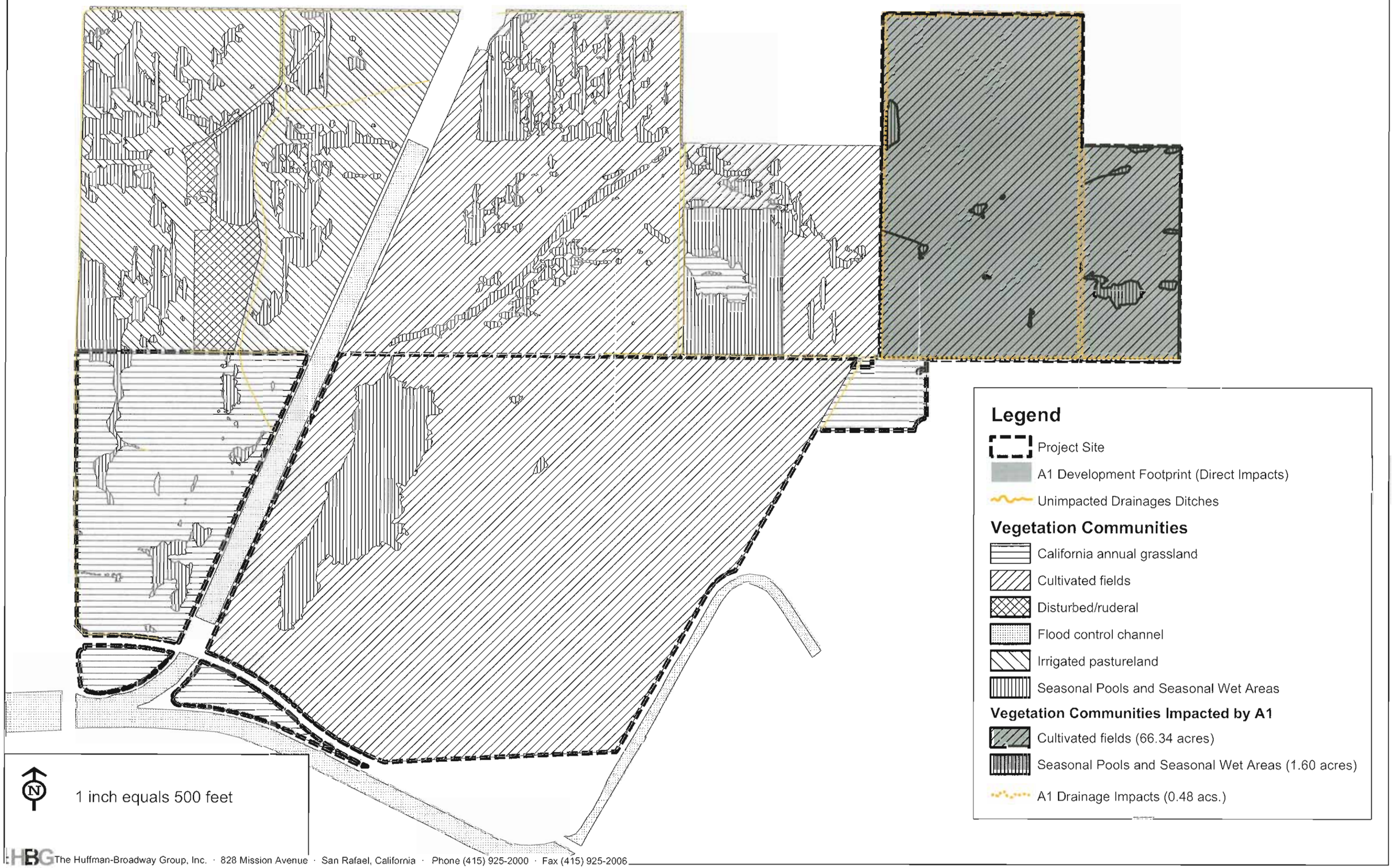


Figure 18. Impacts to Vegetation Communities, Alternative A1

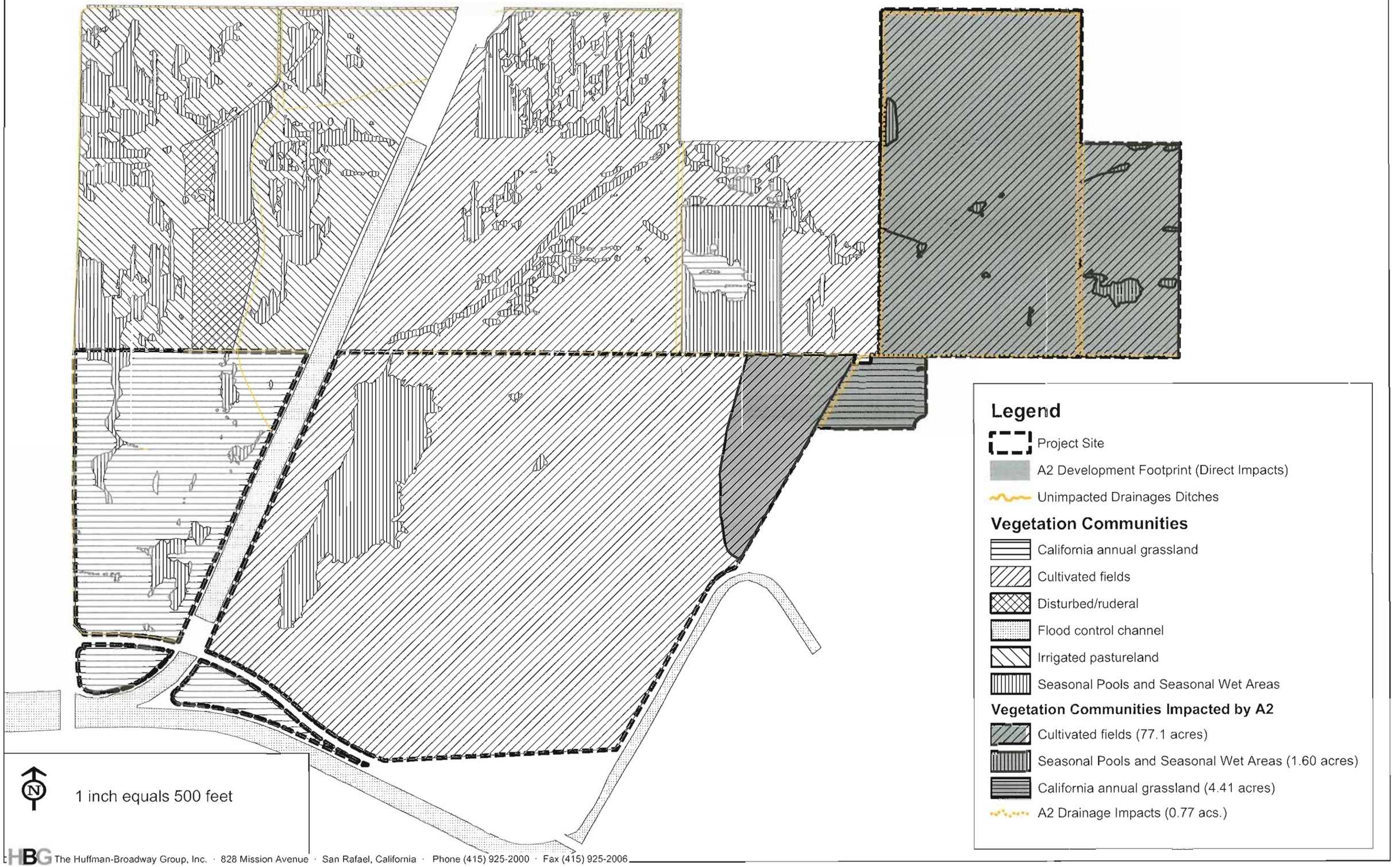


Figure 19. Impacts to Vegetation Communities, Alternative A2

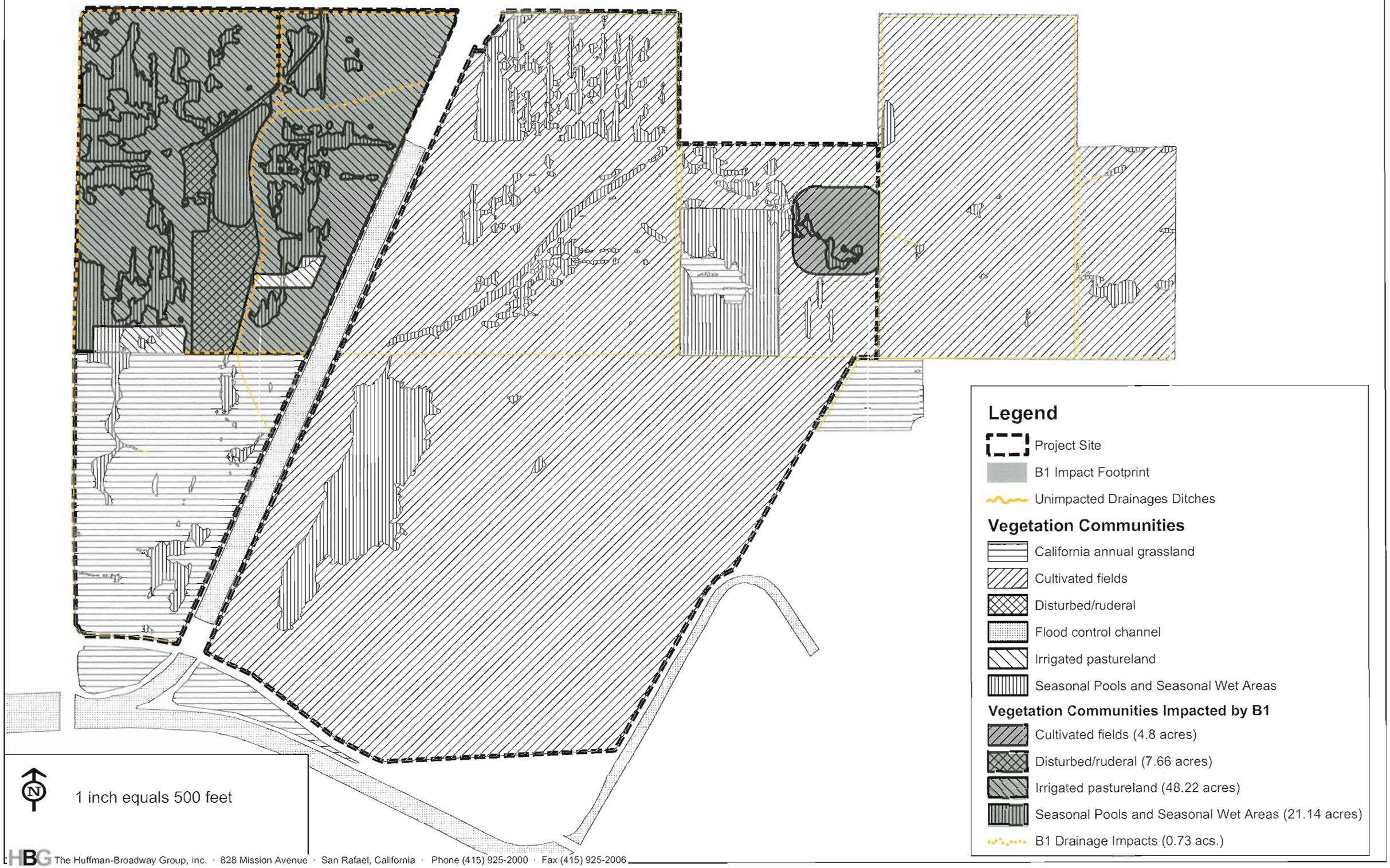


Figure 20. Impacts to Vegetation Communities, Alternative B1

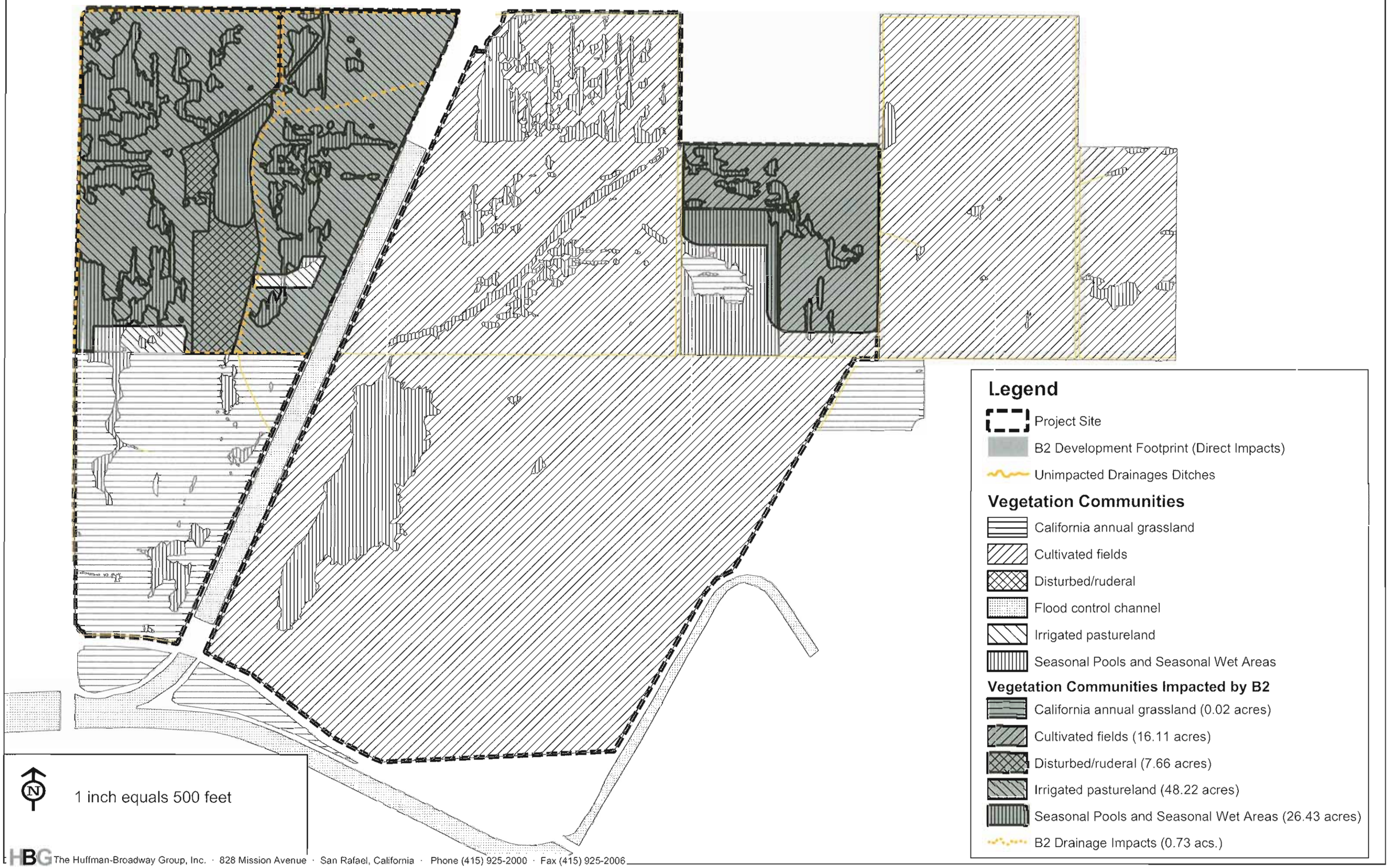


Figure 21. Impacts to Vegetation Communities, Alternative B2

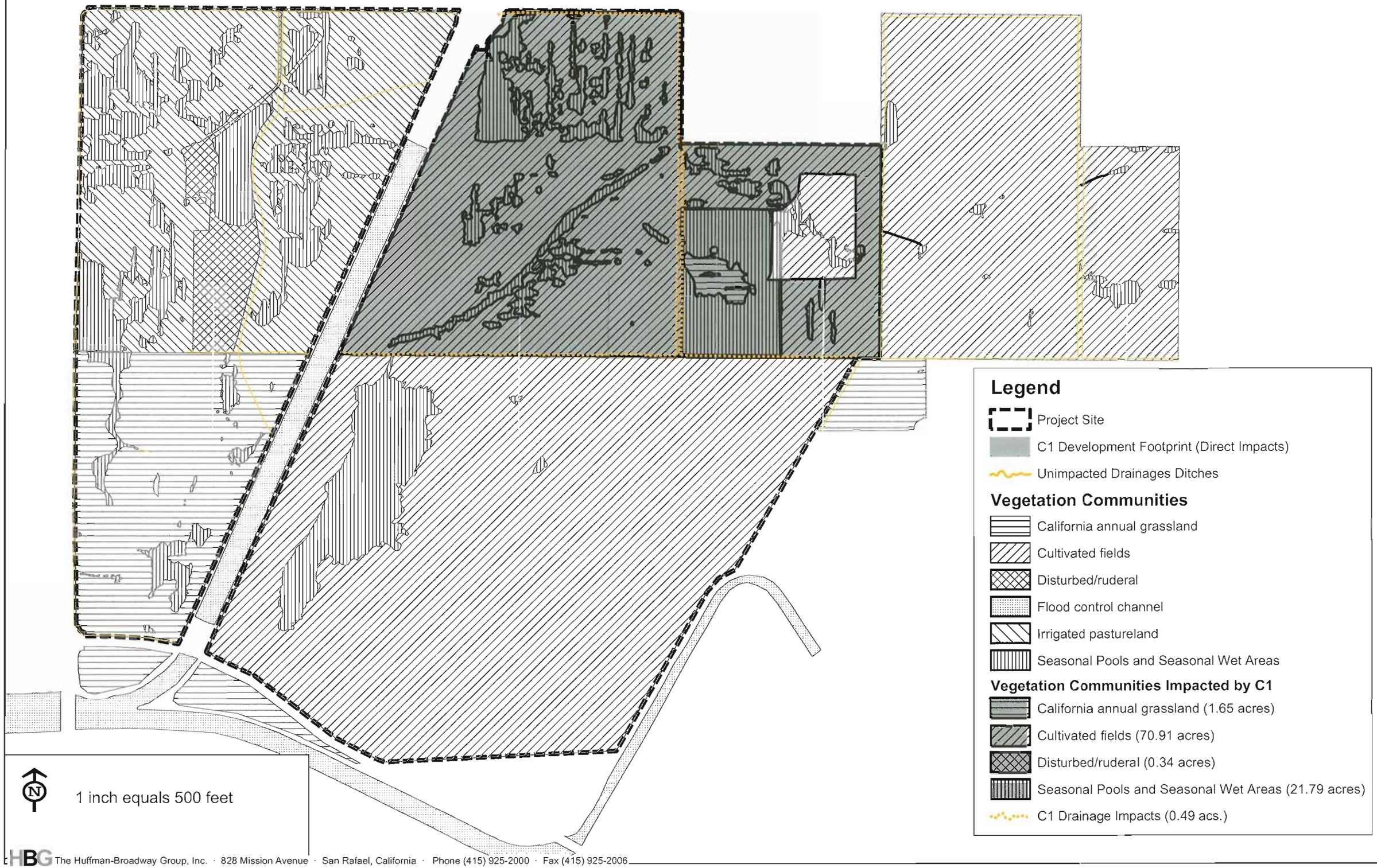


Figure 22. Impacts to Vegetation Communities, Alternative C1

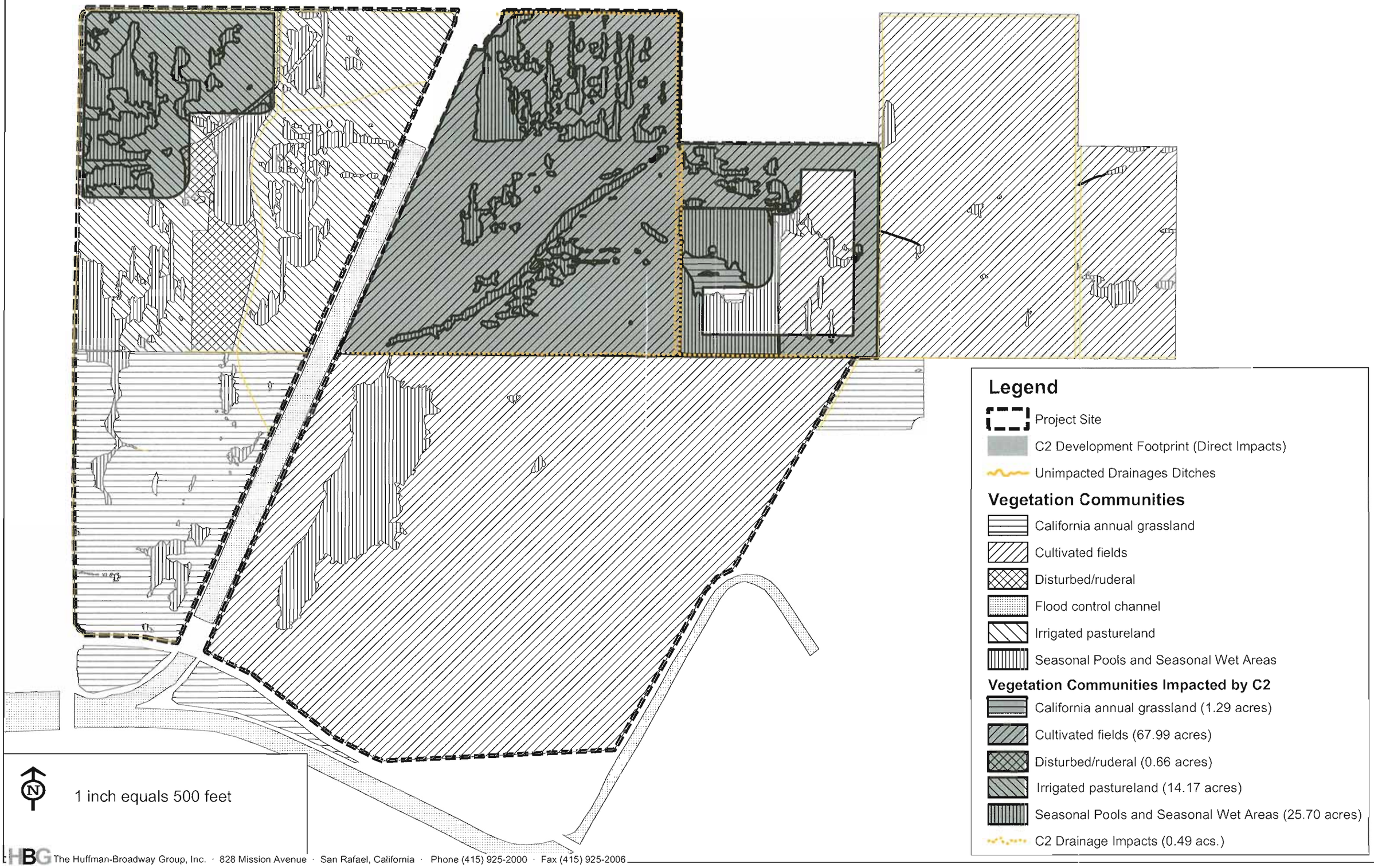


Figure 23. Impacts to Vegetation Communities, Alternative C2

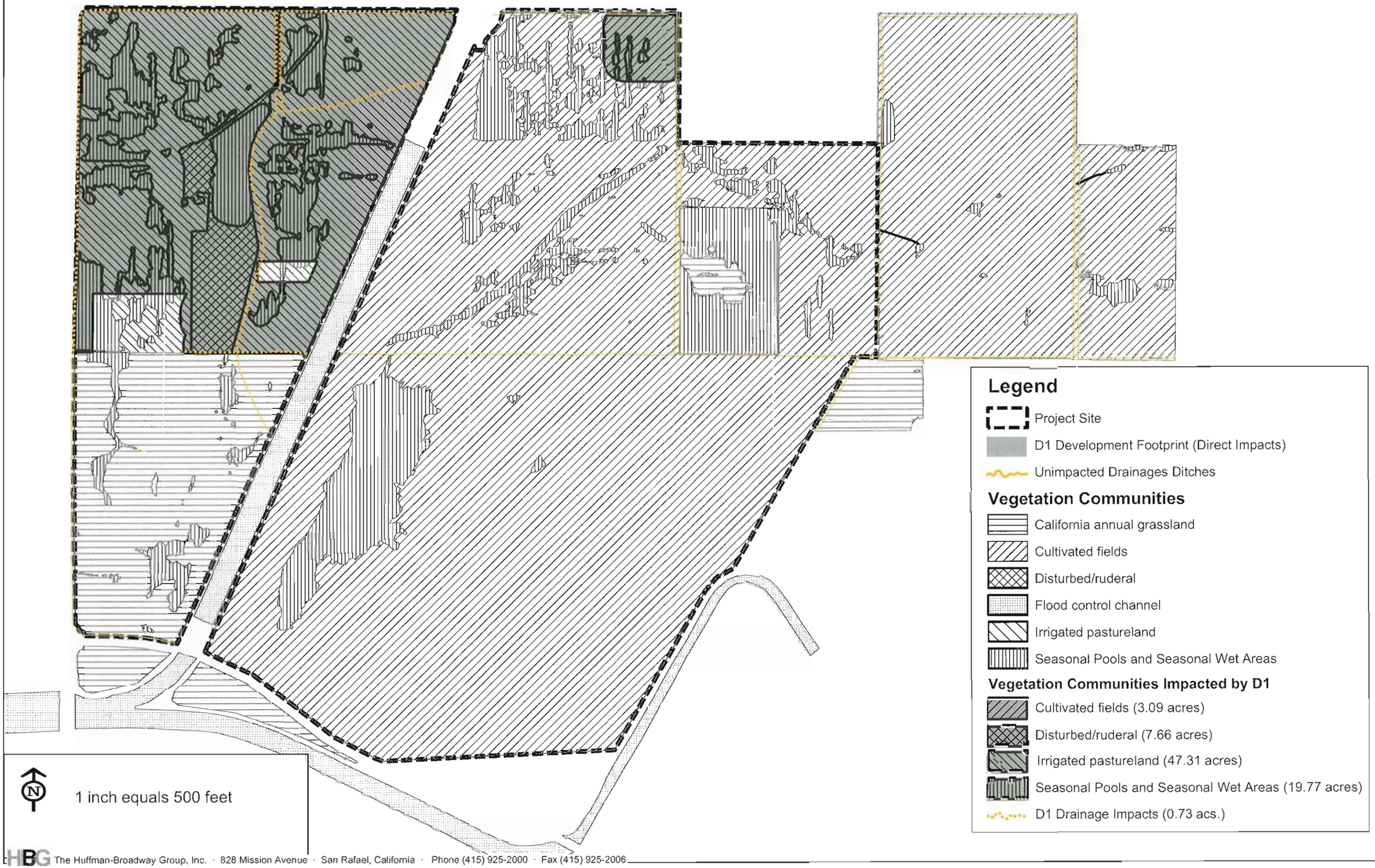


Figure 24. Impacts to Vegetation Communities, Alternative D1

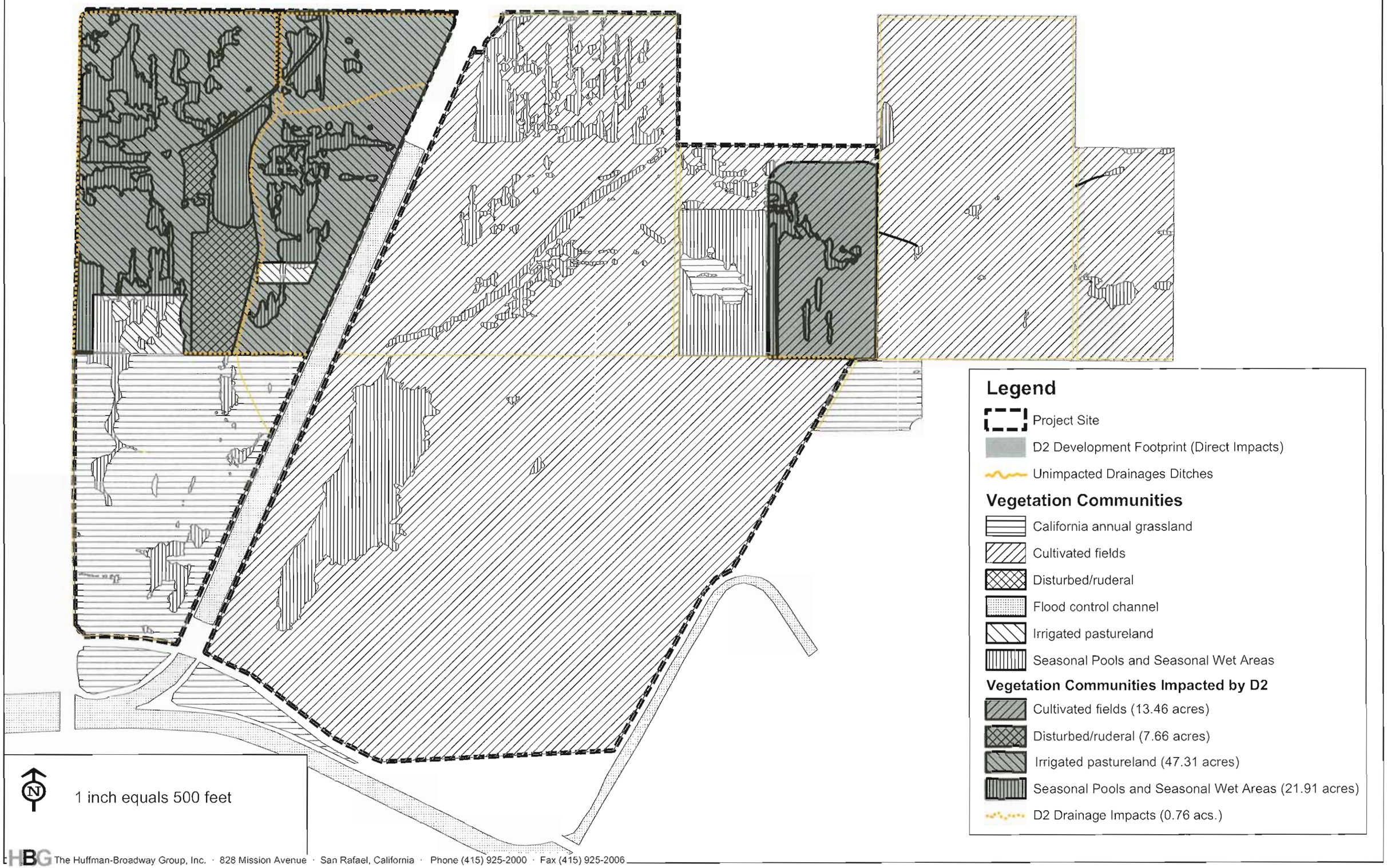


Figure 25. Impacts to Vegetation Communities, Alternative D2

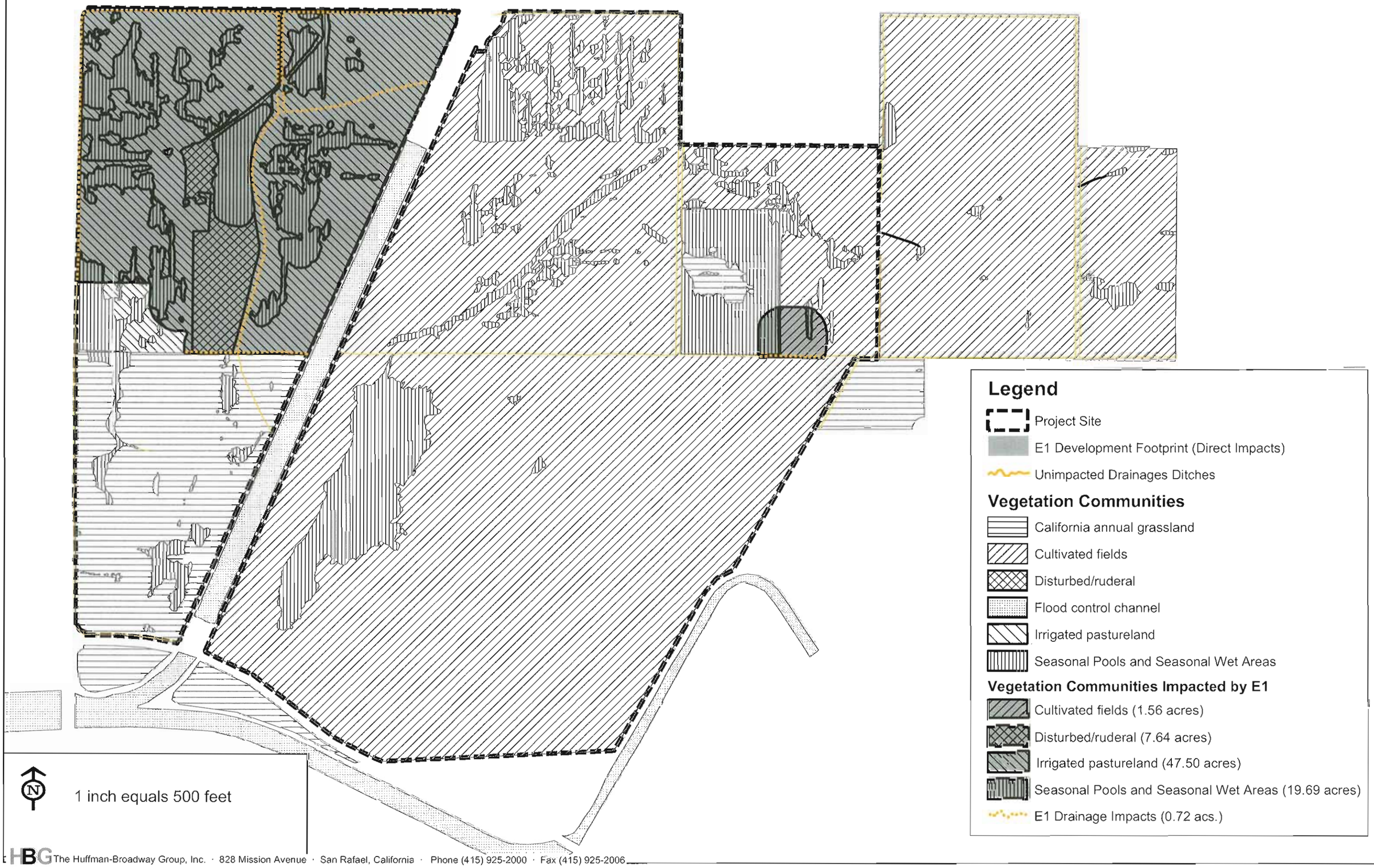


Figure 26. Impacts to Vegetation Communities, Alternative E1

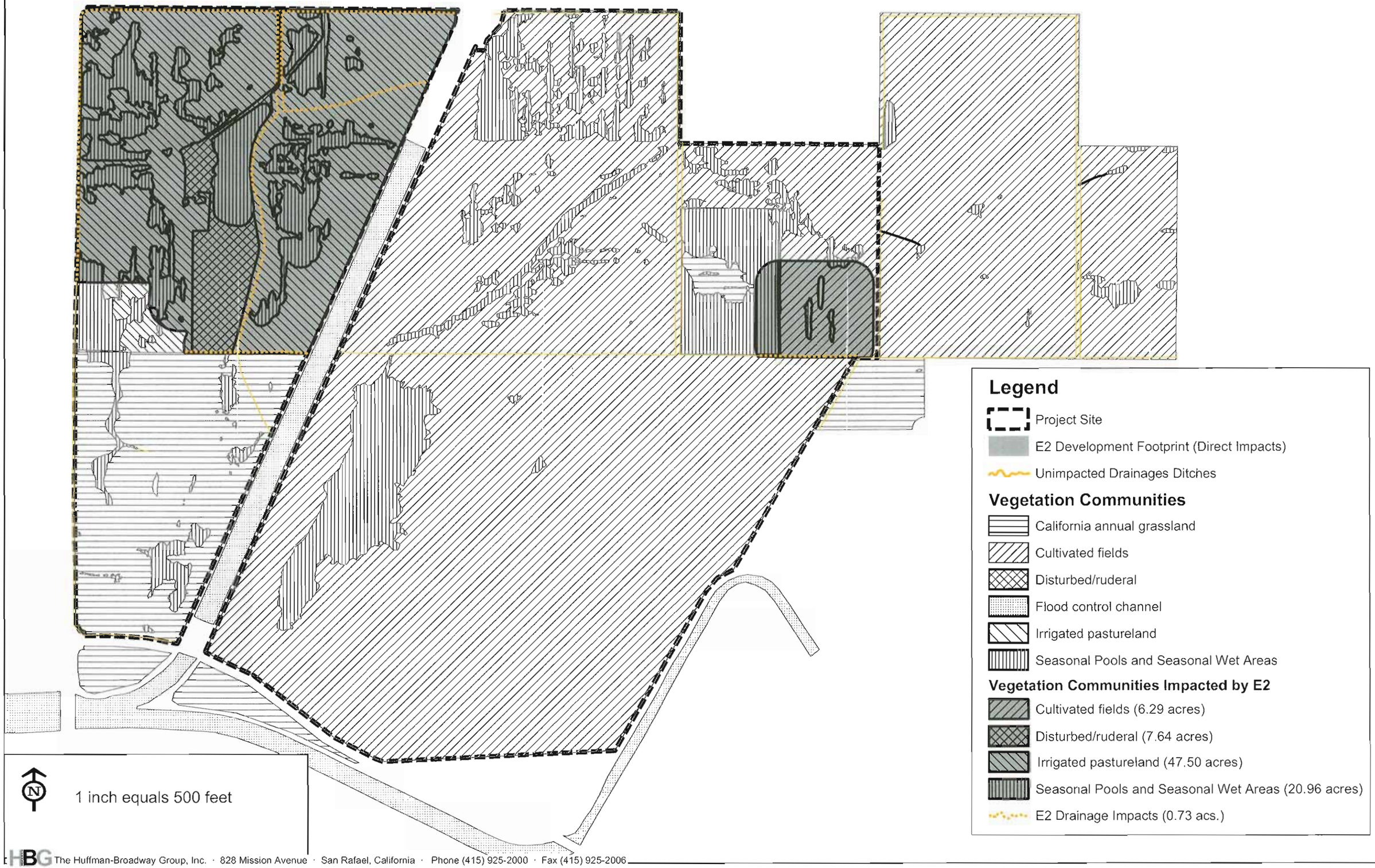
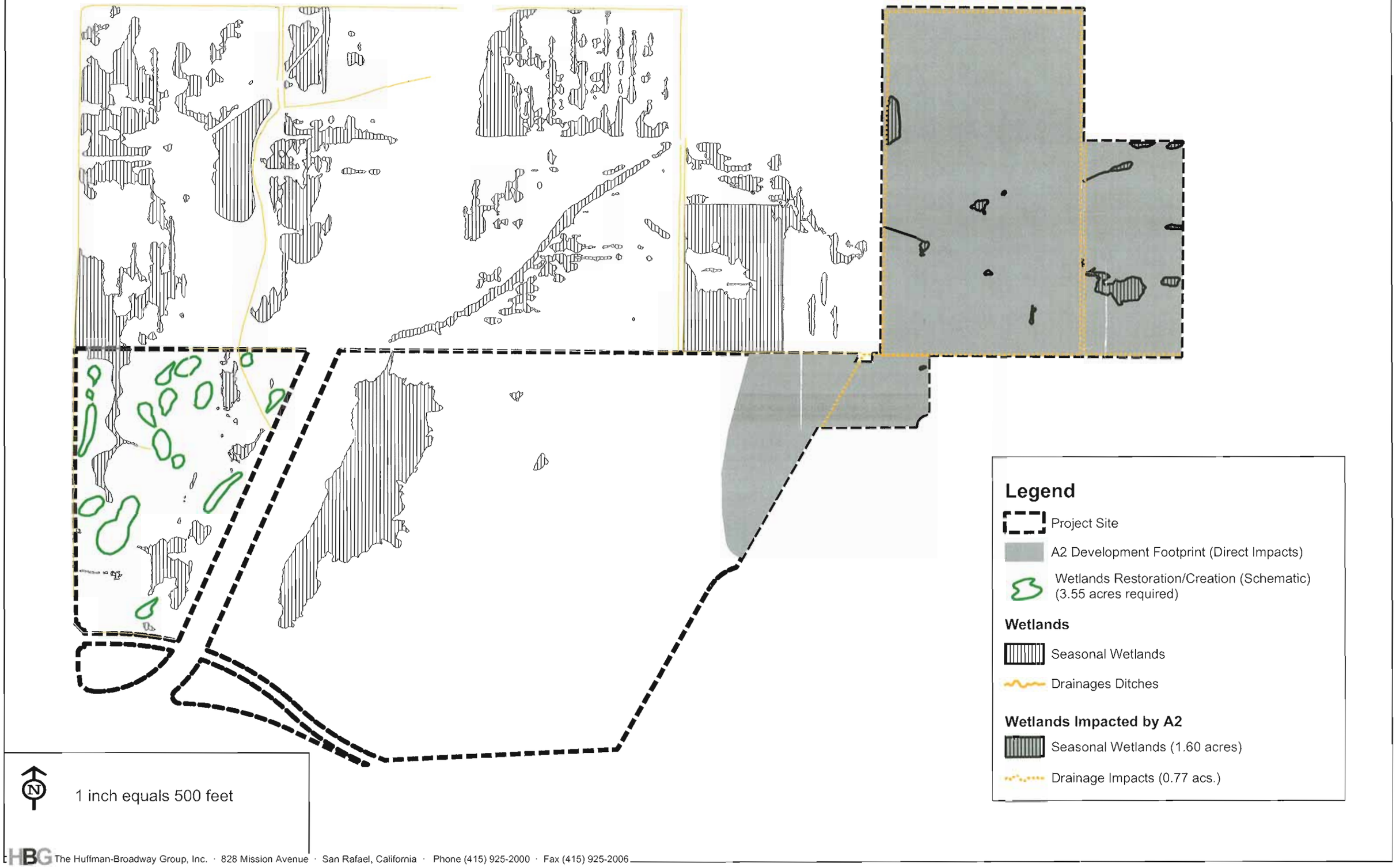


Figure 27. Impacts to Vegetation Communities, Alternative E2

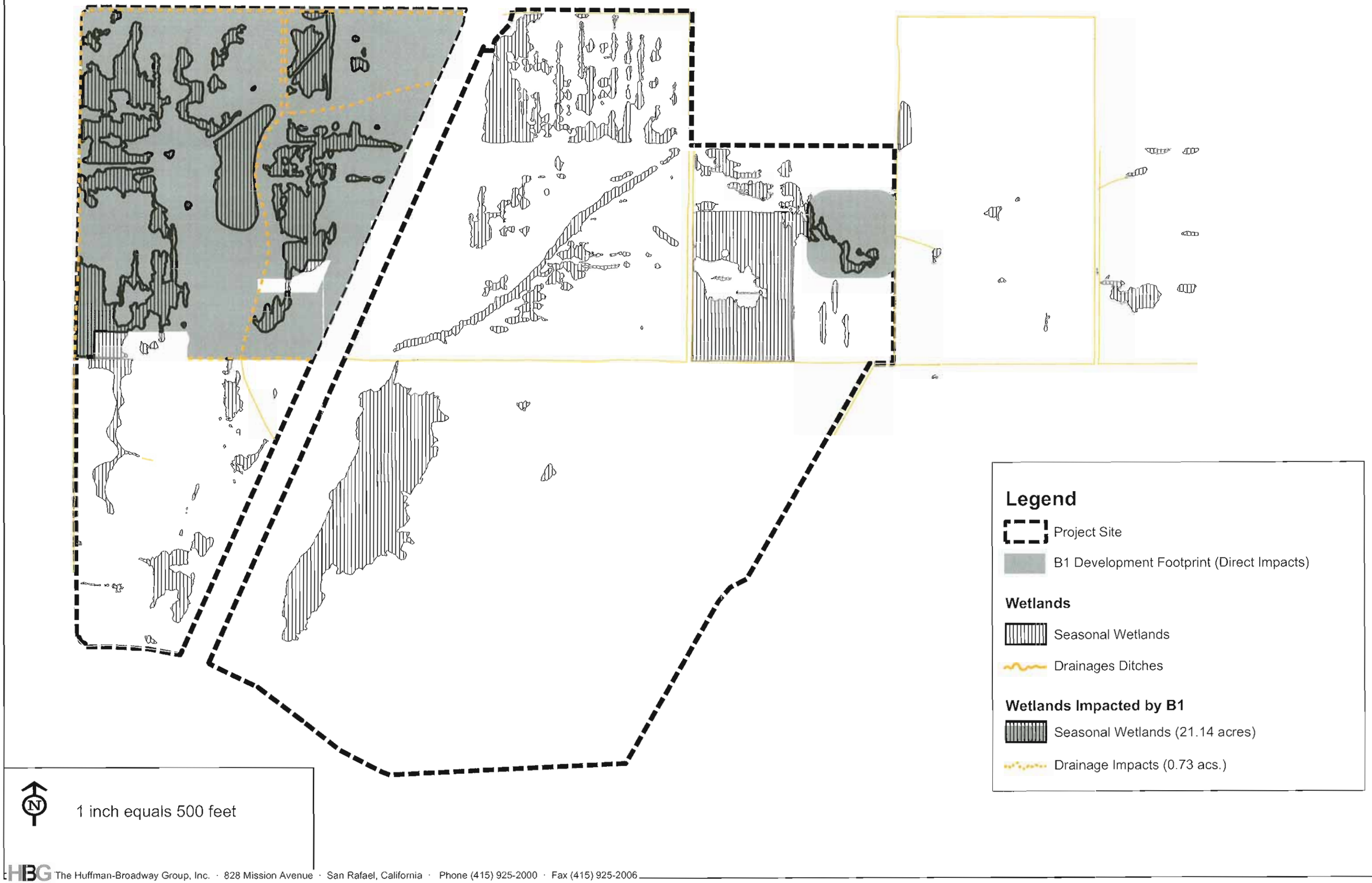
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 28. Wetland Impacts and Mitigation Requirements, Alternative A1



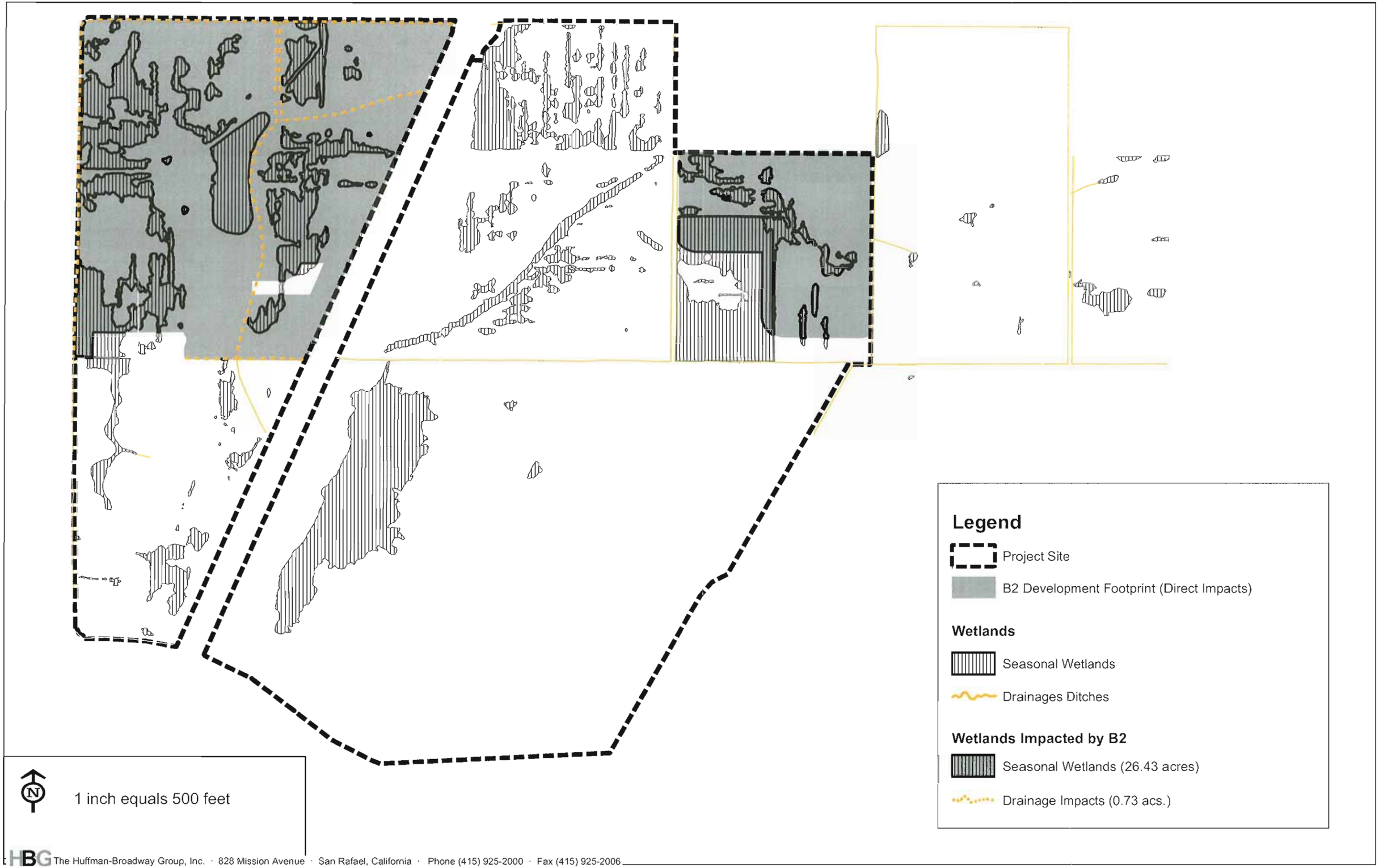
HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 29. Wetland Impacts and Mitigation Requirements, Alternative A2



HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 30. Wetland Impacts, Alternative B1



HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 31. Wetland Impacts, Alternative B2

HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

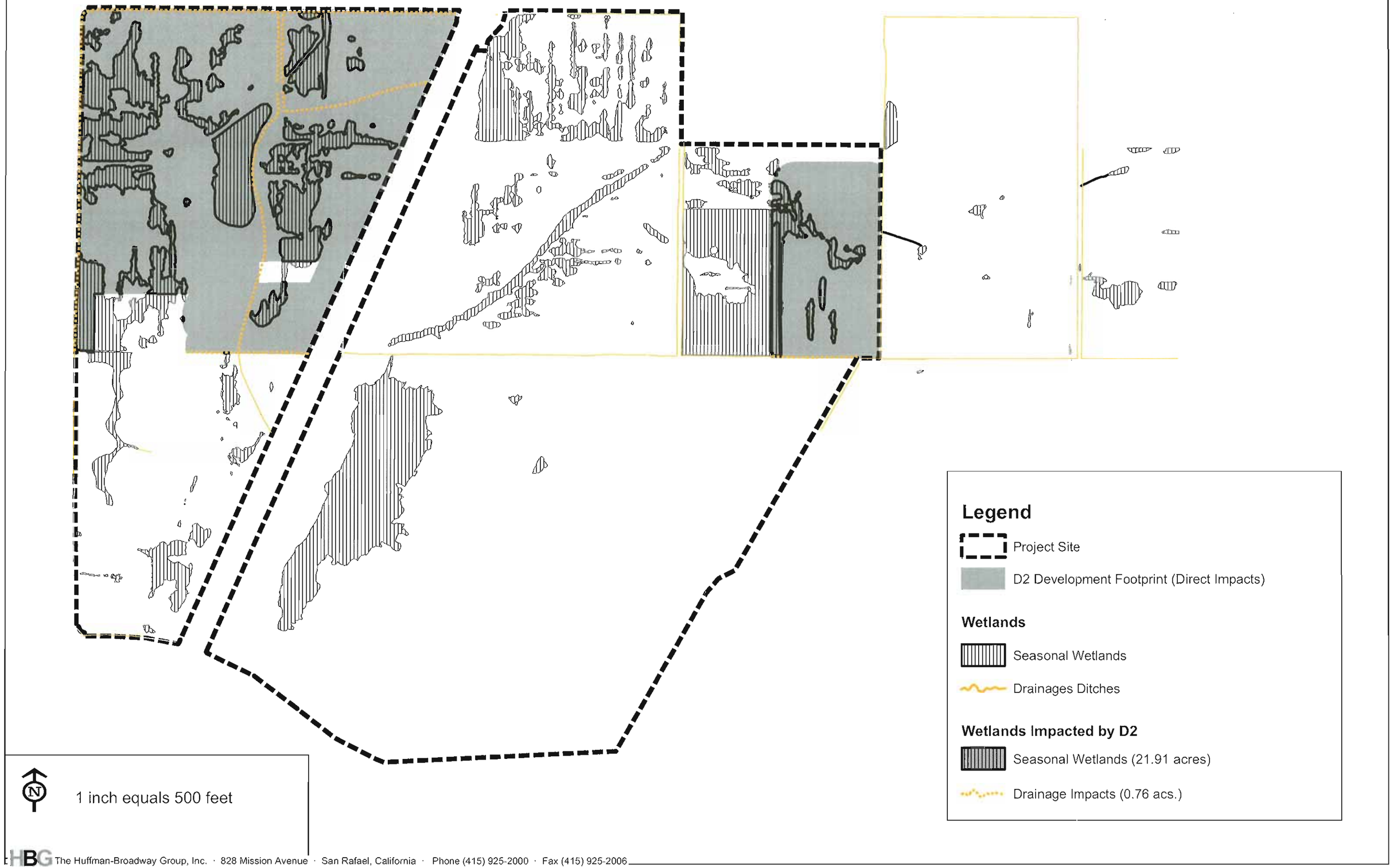
Figure 32. Wetland Impacts, Alternative C1

HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 33. Wetland Impacts, Alternative C2

HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 34. Wetland Impacts, Alternative D1



HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

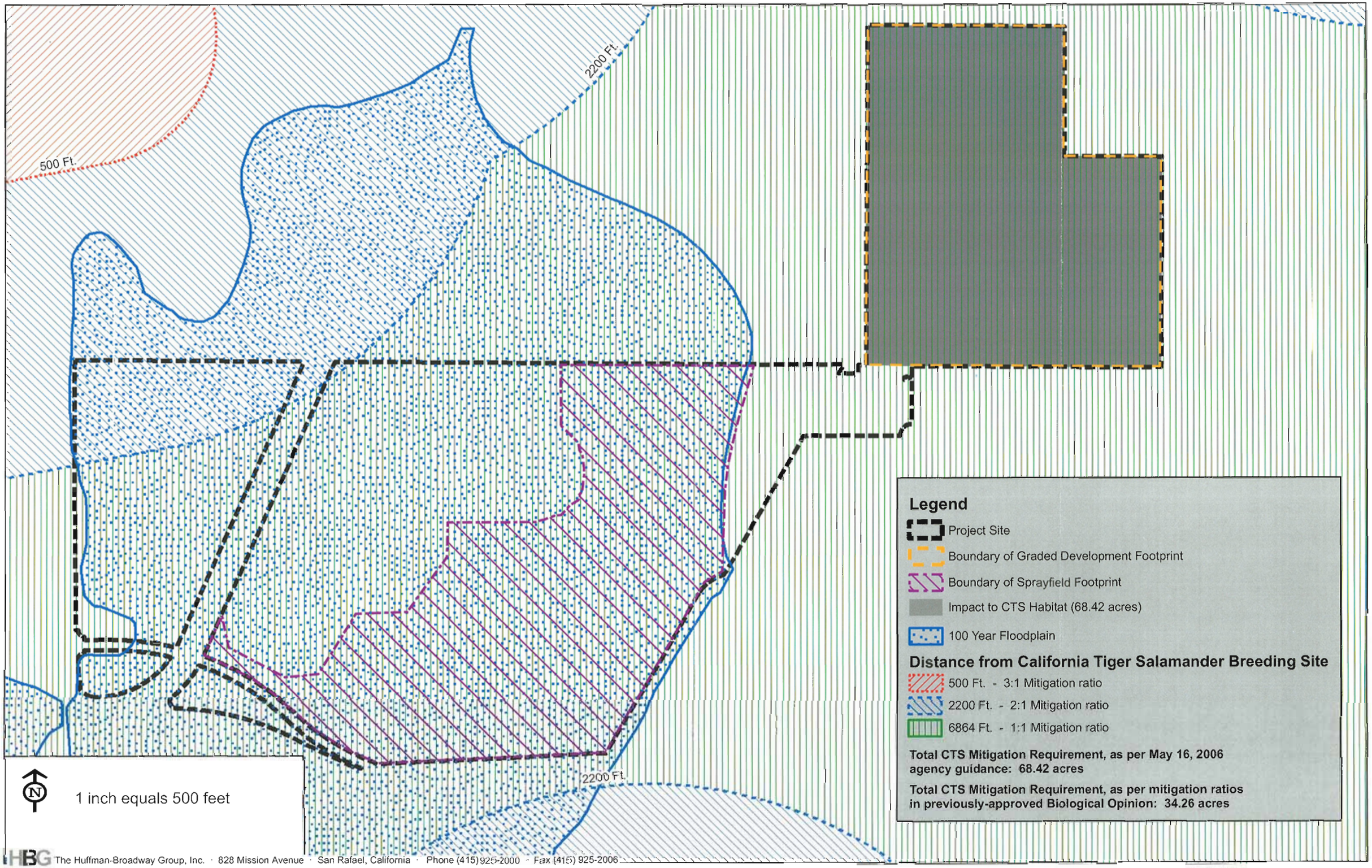
Figure 35. Wetland Impacts, Alternative D2

HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 36. Wetland Impacts, Alternative E1

HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 37. Wetland Impacts, Alternative E2



HBG The Huffman-Broadway Group, Inc. · 828 Mission Avenue · San Rafael, California · Phone (415) 925-2000 · Fax (415) 925-2006

Figure 38. Mitigation for Impacts to CTS Aestivation Habitat, Alternative A1

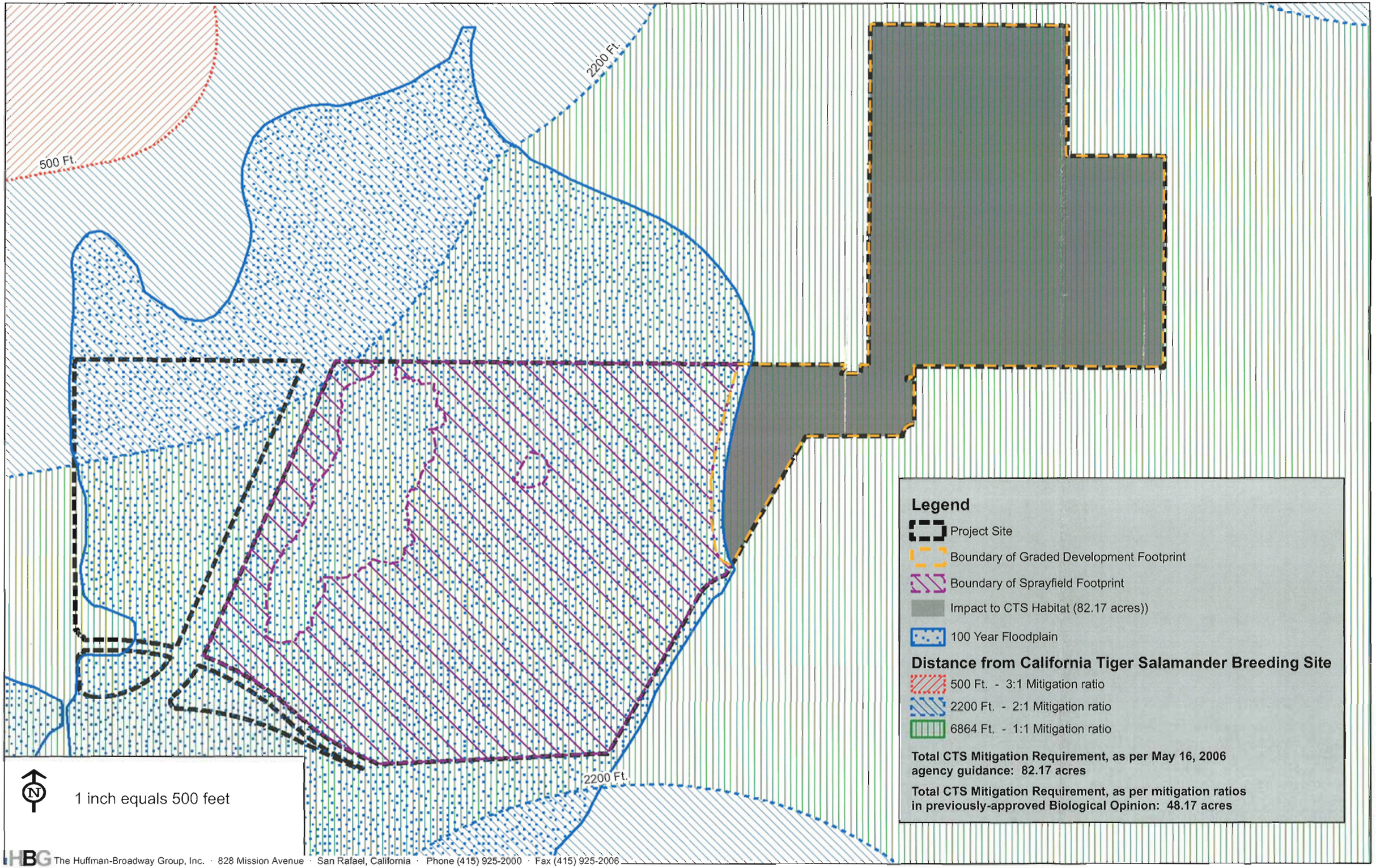


Figure 39. Mitigation for Impacts to CTS Aestivation Habitat, Alternative A2

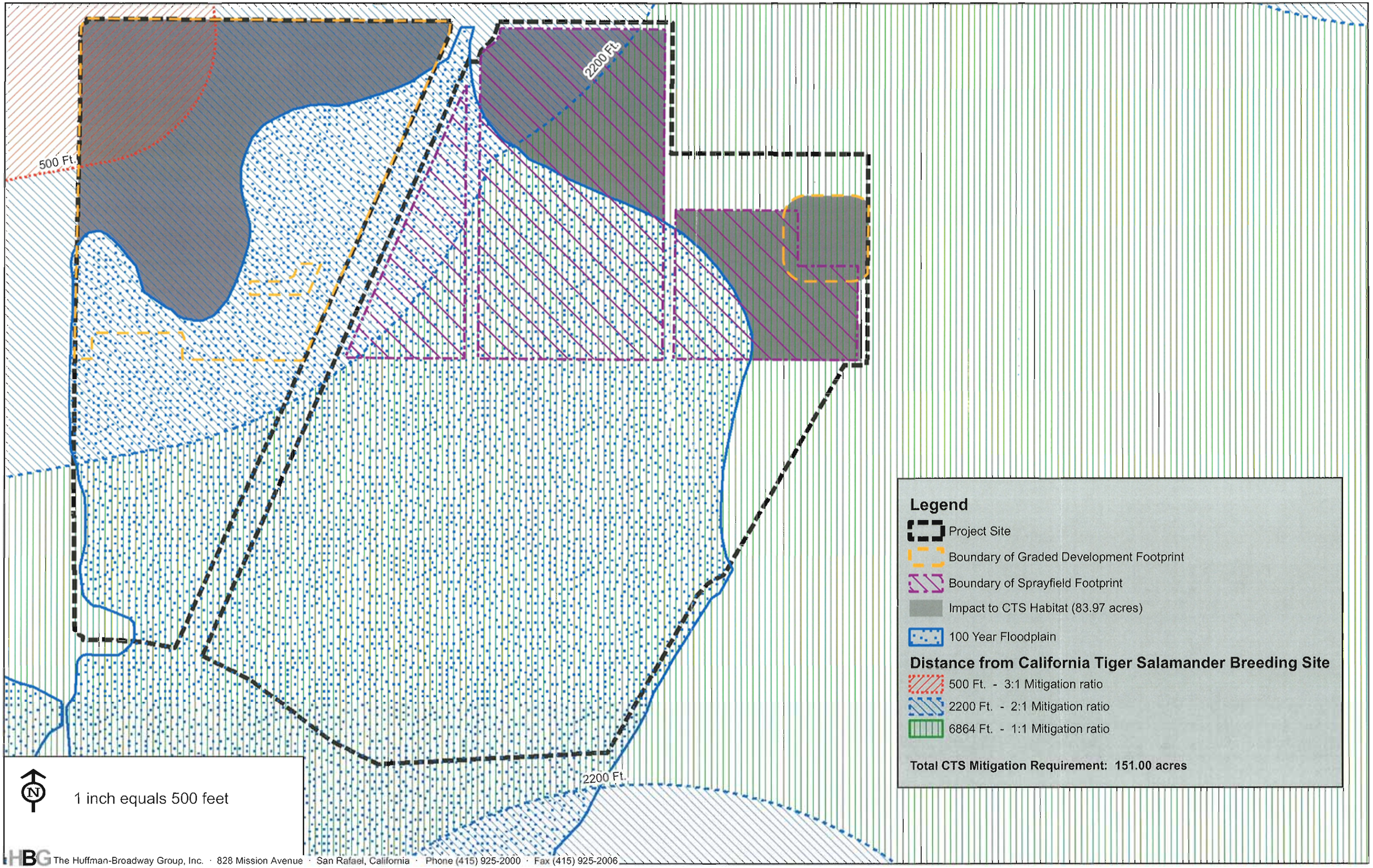


Figure 40. Mitigation for Impacts to CTS Aestivation Habitat, Alternative B1

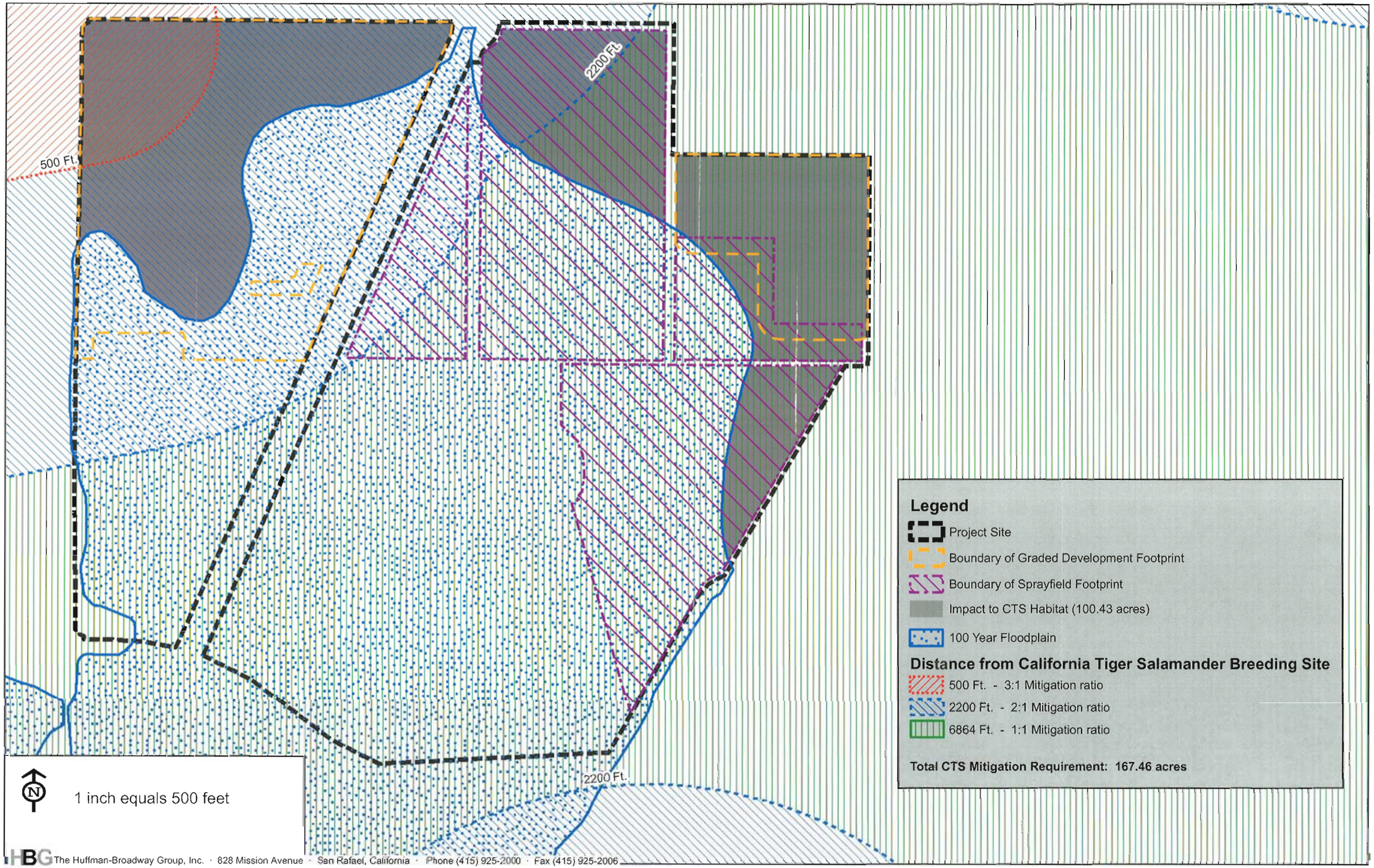


Figure 41. Mitigation for Impacts to CTS Aestivation Habitat, Alternative B2

Figure 42. Mitigation for Impacts to CTS Aestivation Habitat, Alternative C1

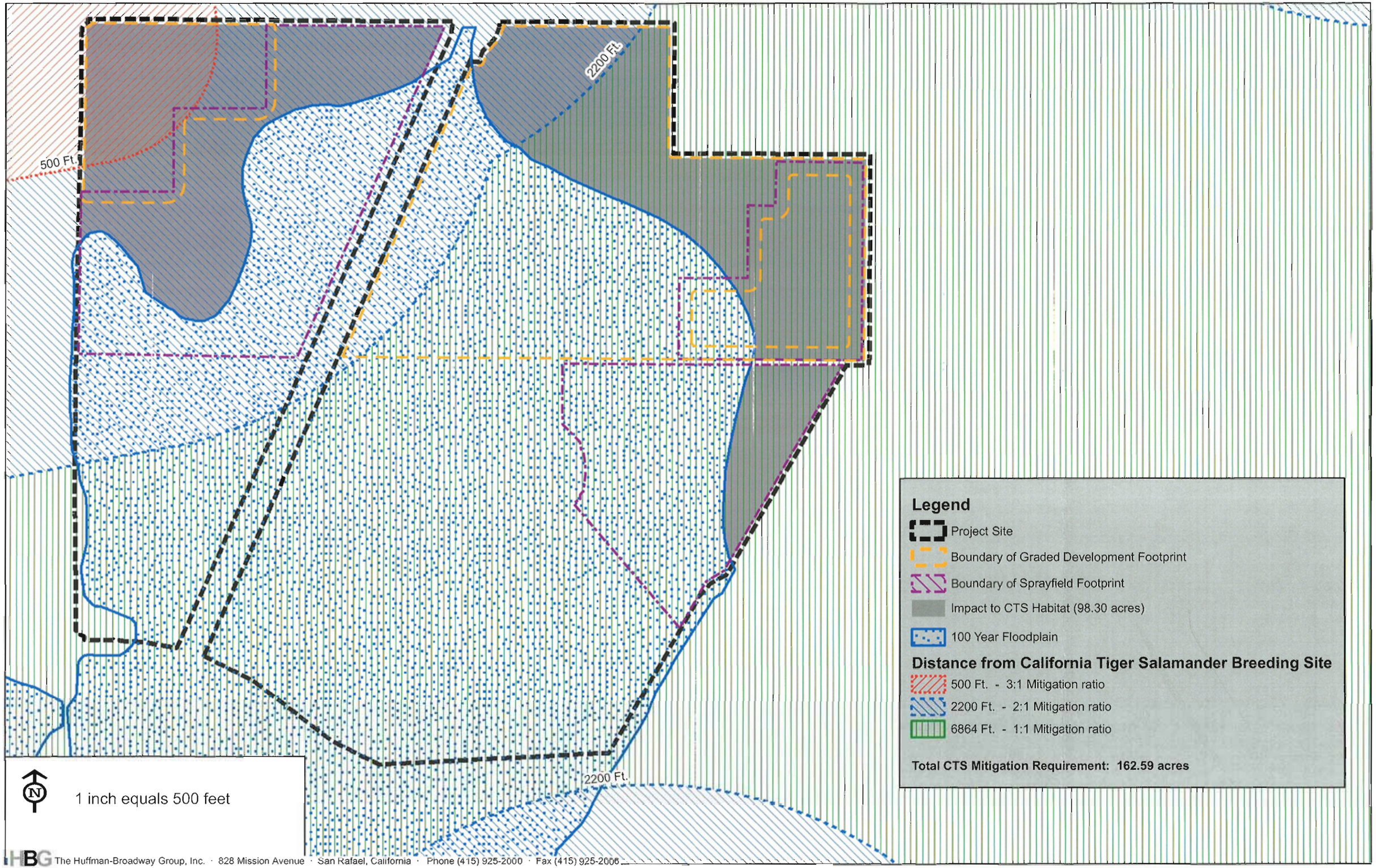


Figure 43. Mitigation for Impacts to CTS Aestivation Habitat, Alternative C2

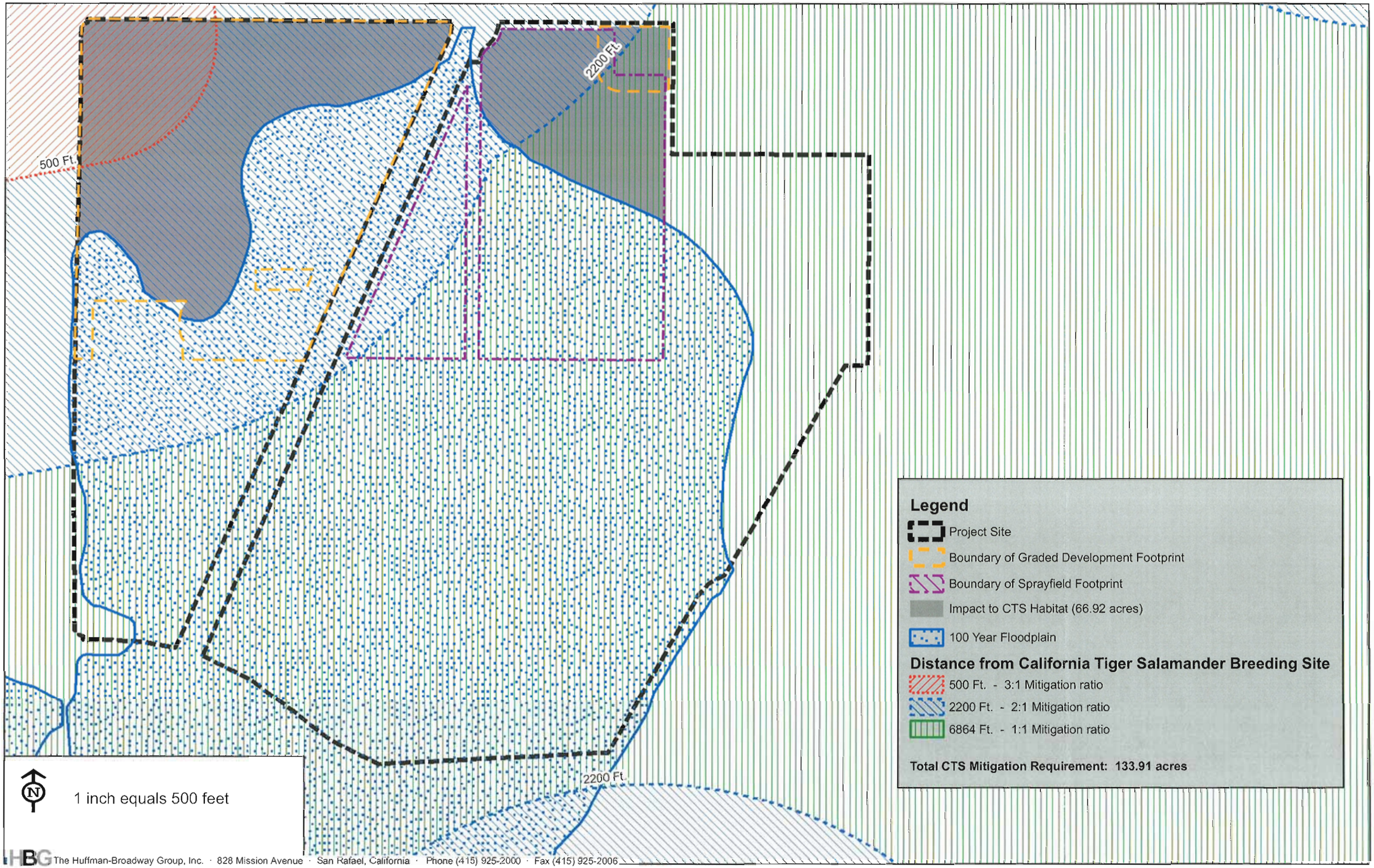


Figure 44. Mitigation for Impacts to CTS Aestivation Habitat, Alternative D1

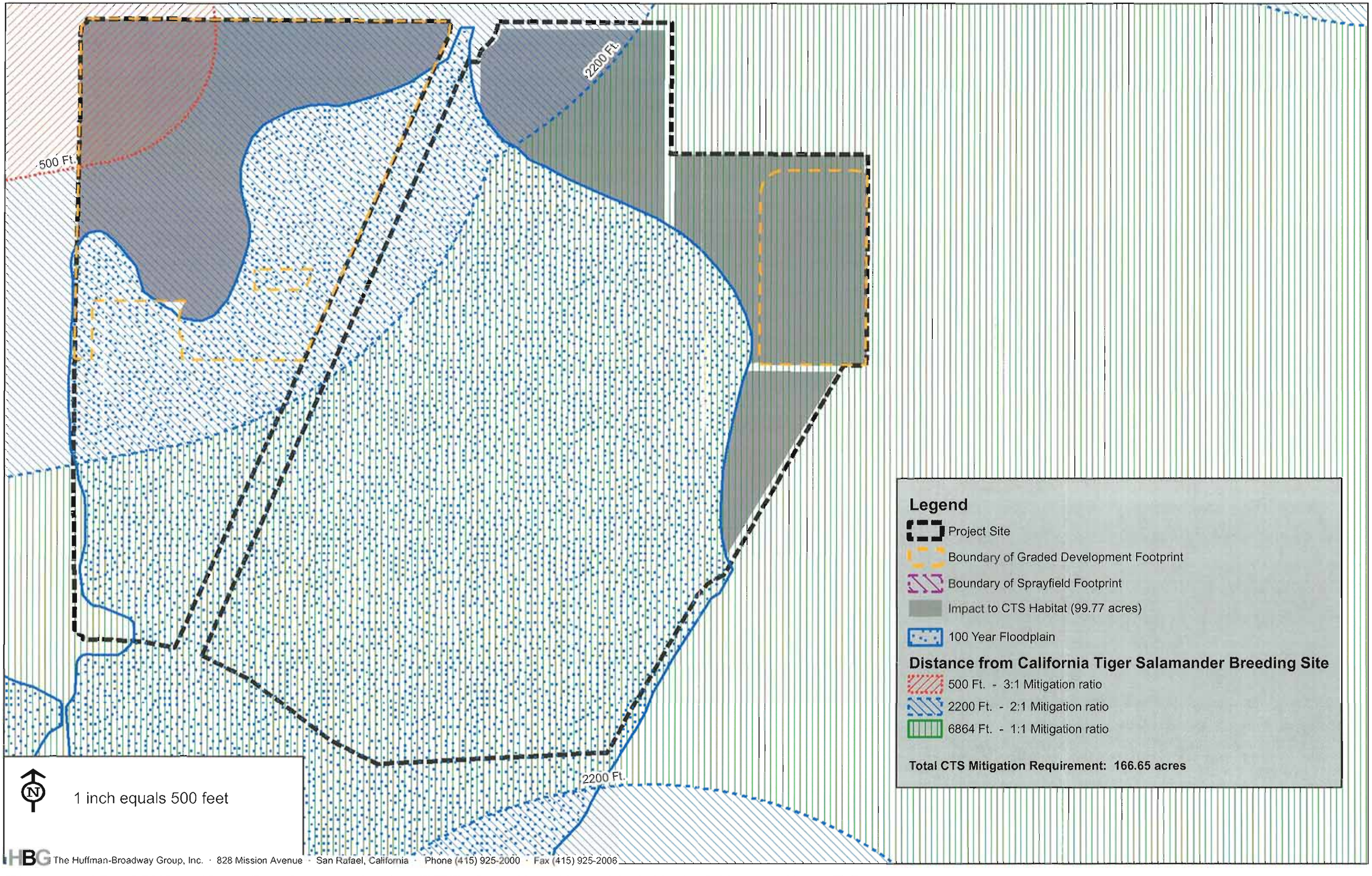


Figure 45. Mitigation for Impacts to CTS Aestivation Habitat, Alternative D2

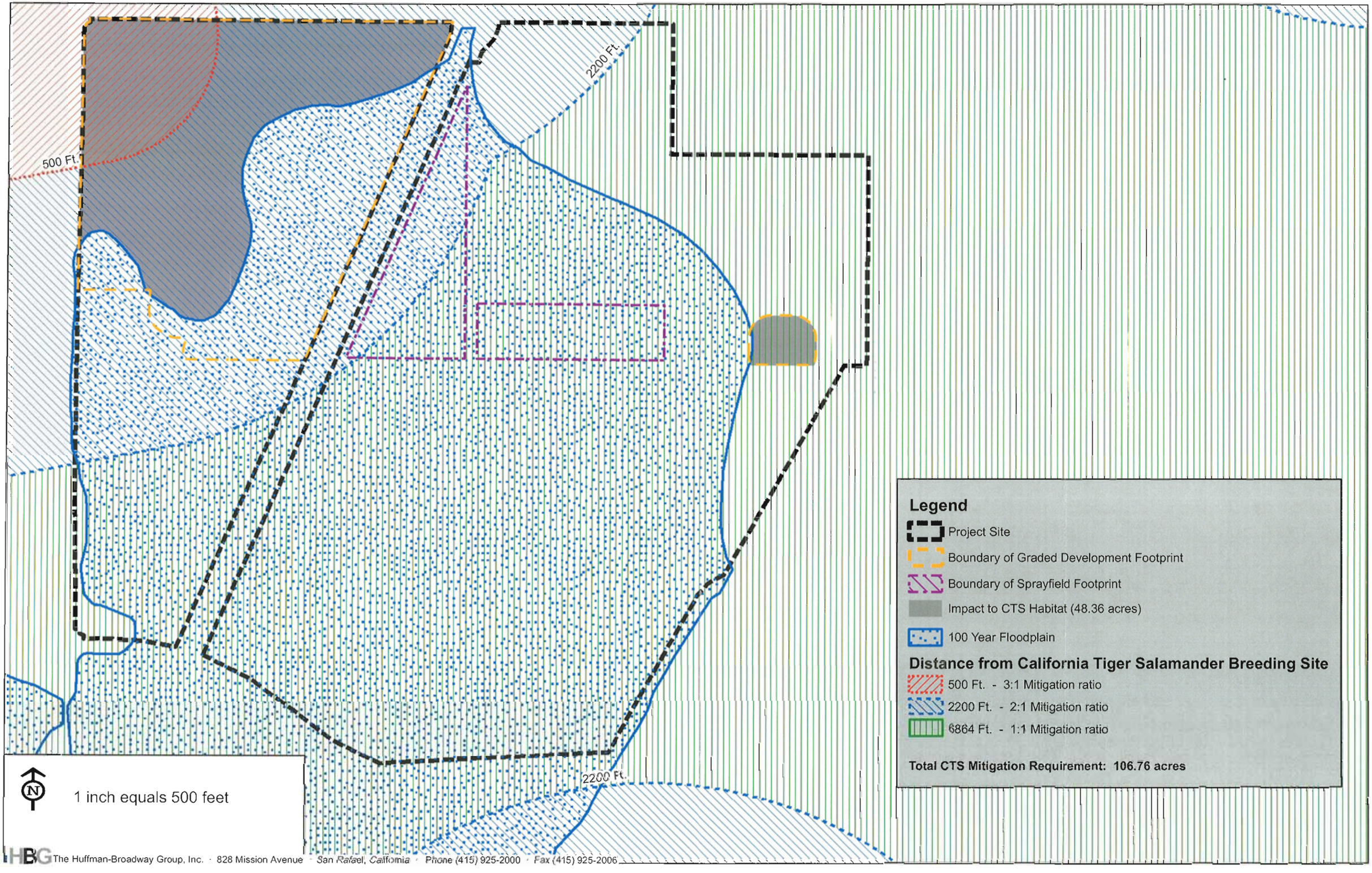


Figure 46. Mitigation for Impacts to CTS Aestivation Habitat, Alternative E1

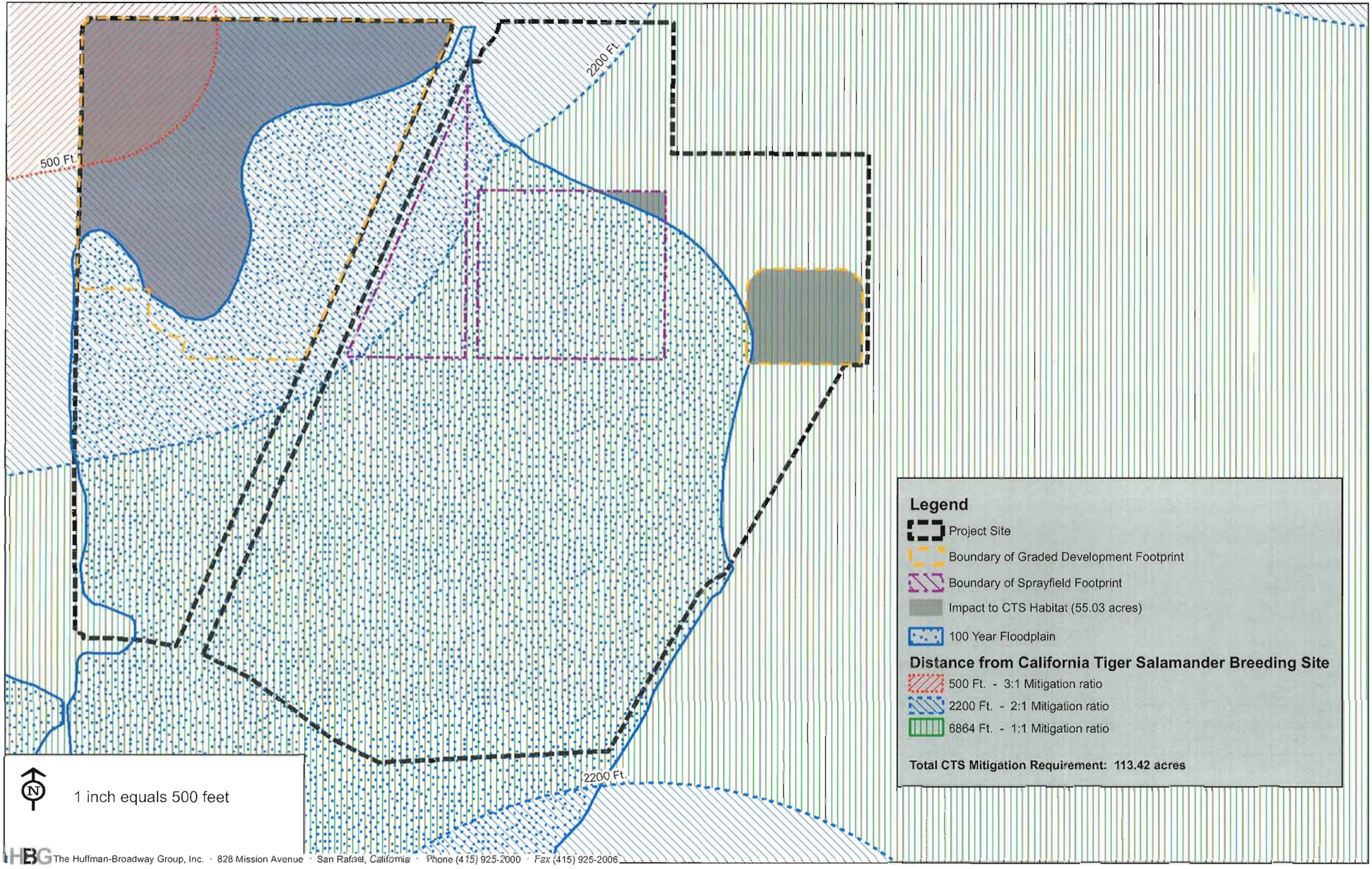


Figure 47. Mitigation for Impacts to CTS Aestivation Habitat, Alternative E2

ATTACHMENT 2. Tables

TABLE 1. Vascular Plant Species Observed in the Rohnert Park Site Study Area, Sonoma County, California

FLOWERING PLANTS (ANGIOSPERMAE - DICOTYLEDONEAE)

ACERACEAE
- Acer negundo ssp. californicum

AMARANTHACEAE
- *Amaranthus hybridus

APIACEAE
- *Conium maculatum
- *Daucus carota
- Eryngium aristulatum var. aristulatum
- Eryngium armatum
- *Foeniculum vulgare
- Perideridia kelloggii
- *Torilis arvensis

ASTERACEAE
- Artemisia douglasiana
- Blennosperma bakeri
- *Calendula arvensis
- *Carduus pycnocephalus
- *Carthamus lanatus
- *Centaurea calcitrapa
- *Centaurea solstitialis
- *Chamomilla suaveolens
- *Cichorium intybus
- *Cirsium vulgare
- *Cotula coronopifolia
- Euthamia occidentalis
- Hemizonia congesta ssp. congesta
- *Hypocharis radicata
- *Lactuca saligna
- *Lactuca serriola
- *Leontodon taraxacoides ssp. taraxacoides
- *Picris echioides
- *Senecio vulgaris
- *Silybum marianum
- *Sonchus asper
- *Sonchus oleraceus
- *Taraxacum officinale
- *Tragopogon porrifolius
- Xanthium spinosum
- Xanthium strumarium

BORAGINACEAE
- Amsinckia menziesii var. intermedia
- Plagiobothrys undulatus

BRASSICACEAE
- *Brassica rapa
- *Capsella bursa-pastoris
- Cardamine oligosperma
- *Coronopus didymus
- *Lepidium latifolium
- Lepidium nitidum
- *Lepidium pinnatifidum
- *Raphanus sativus
- Rorippa curvisiliqua

CAMPANULACEAE
- Downingia concolor var. concolor

CARYOPHYLLACEAE
- *Cerastium glomeratum
- *Spergula arvensis
- *Stellaria media

CHENOPODIACEAE
- Atriplex triangularis
- Chenopodium berlandieri
- *Chenopodium strictum var. glaucophyllum

CONVOLVULACEAE
- *Convolvulus arvensis

CUSCUTACEAE
- Cuscuta californica var. californica

DIPSACACEAE
- *Dipsacus fullonum

TABLE 1. Vascular Plant Species Observed in the Rohnert Park Site Study Area, Sonoma County, California

EUPHORBIACEAE
- (*?)Chamaesyce cf. polycarpa
- Eremocarpus setigerus

FABACEAE
- *Genista monspessulana
- *Lathyrus hirsutus
- *Lotus corniculatus
- *Medicago polymorpha
- *Melilotus alba
- Trifolium depauperatum var. truncatum
- *Trifolium fragiferum
- *Trifolium hirtum
- *Trifolium pratense
- *Trifolium repens
- *Trifolium subterraneum
- *Vicia sativa ssp. nigra
- *Vicia sativa ssp. sativa

FAGACEAE
- Quercus lobata

GERANIACEAE
- *Erodium moschatum
- *Geranium dissectum

JUGLANDACEAE
- *Juglans californica var. hindsii
- *Juglans regia

LAMIACEAE
- *Mentha pulegium
- Pogogyne douglasii

LINACEAE
- *Linum bienne

LYTHRACEAE
- *Lythrum hyssopifolium

MALVACEAE
- *Malva parviflora

OLEACEAE
- Fraxinus latifolia

ONAGRACEAE
- Camissonia ovata
- Epilobium brachycarpum
- Epilobium ciliatum ssp. ciliatum
- Epilobium pygmaeum (= Boisduvalia glabella)
- *Ludwigia peploides ssp. montevidensis

PLANTAGINACEAE
- *Plantago lanceolata
- *Plantago major

POLYGONACEAE
- *Polygonum arenastrum
- Polygonum hydropiperoides
- Polygonum lapathifolium
- *Polygonum prolificum
- Polygonum punctatum
- *Rumex crispus
- *Rumex pulcher
- Rumex salicifolius var. transitorius

PORTULACEAE
- Claytonia perfoliata
- *Portulaca oleracea

RANUNCULACEAE
- Ranunculus californicus
- Ranunculus lobbii
- *Ranunculus muricatus
- Ranunculus cf. orthorhynchus

ROSACEAE
- *Prunus sp.
- *Rubus discolor

SALICACEAE
- Populus fremontii
- Salix laevigata
- Salix lasiolepis
- Salix lucida ssp. lasiandra

TABLE 1. Vascular Plant Species Observed in the Rohnert Park Site Study Area, Sonoma County, California

FLOWERING PLANTS (ANGIOSPERMAE - MONOCOTYLEDONEAE)

ALISMATACEAE
- Alisma plantago-aquatica

CYPERACEAE
- Carex globosa
- Cyperus eragrostis
- Eleocharis macrostachya
- *Scirpus tuberosus

IRIDACEAE
- Sisyrinchium bellum

JUNCACEAE
- Juncus patens
- Juncus phaeocephalus
- Juncus tenuis

JUNCAGINACEAE
- Lilaea scilloides

LILIACEAE
- (*?)Allium sp.
- Brodiaea terrestris ssp. terrestris
- Chlorogalum pomeridianum
- Triteleia hyacinthina

POACEAE
- (*?)Alopecurus geniculatus
- *Avena barbata
- *Avena fatua
- *Briza minor
- *Bromus catharticus
- *Bromus diandrus
- *Bromus hordeaceus
- *Bromus secalinus
- *Crypsis schoenoides
- *Dactylis glomerata
- Danthonia californica
- *Digitaria sanguinalis
- Distichlis spicata
- *Echinochloa colona
- *Echinochloa crus-galli
- *Festuca arundinacea
- *Glyceria declinata
- Glyceria occidentalis
- *Holcus lanatus
- Hordeum brachyantherum
- *Hordeum marinum ssp. gussoneanum
- *Hordeum murinum ssp. leporinum
- Leymus triticoides
- *Lolium multiflorum
- *Lolium perenne
- *Panicum dichotomiflorum
- *Phalaris aquatica
- Pleuropogon californicus
- *Poa annua
- *Polypogon monspeliensis
- Setaria gracilis
- *Vulpia bromoides

TYPHACEAE
- Typha domingensis
- Typha latifolia

*Species introduced or naturalized in the study area.

TABLE 2. Animal Species Observed On The Project Site Or Expected To Utilize The Project Site

MAMMALS

Virginia Opossum	*Didelphis virginiana*
Broad-footed Mole	*Scapanus latimanus*
Yuma Myotis	*Myotis yumanensis*
California Myotis	*Myotis californicus*
Western Pipistrelle	*Pipistrellus hesperus*
Big Brown Bat	*Eptesicus fuscus*
Red Bat	*Lasiurus borealis*
Pallid Bat	*Antrozous pallidus*
Brazilian Free-tailed Bat	*Tadarida brasiliensis*
Black-tailed Hare	*Lepus californicus*
Brush Rabbit	*Sylvilagus bachmani*
California Ground Squirrel	*Spermophilus beecheyi*
Botta's Pocket Gopher	*Thomomys bottae*
California Kangaroo Rat	*Dipodomys californicus*
Western Harvest Mouse	*Reithrodontomys megalotis*
Deer Mouse	*Peromyscus maniculatus*
California Vole	*Microtus californicus*
Norway Rat	*Rattus norvegicus*
House Mouse	*Mus musculus*
Coyote	*Canis latrans*
Gray Fox	*Urocyon cinereoargenteus*
Raccoon	*Procyon lotor*
Long-tailed Weasel	*Mustela frenata*
Striped Skunk	*Mephitis mephitis*
Bobcat	*Felis rufus*
Mule Deer	*Odocoileus hemionus*

REPTILES AND AMPHIBIANS

California Tiger Salamander	*Ambystoma californiense*
California Slender Salamander	*Batrachoseps attenuatus*
Western Toad	*Bufo boreas*
Pacific Treefrog	*Hyla regilla*
Bullfrog	*Rana catesbeiana*
Western Fence Lizard	*Sceloporus occidentalis*
Coast Horned Lizard	*Phrynosoma coronatum*
Western Skink	*Eumeces skiltonianus*
Southern Alligator Lizard	*Gerrhonotus multicarinatus*
Ringneck Snake	*Diadophis punctatus*
Sharp-tailed Snake	*Contia tenuis*
Racer	*Coluber constrictor*
Coachwhip	*Masticophis flagellum*
Gopher Snake	*Pituophis melanoleucus*
Common Kingsnake	*Lampropeltis getulus*

TABLE 2. Animal species observed on the project site or expected to utilize the project site

Common Garter Snake	*Thamnophis sirtalis*
Western Terrestrial Garter Snake	*Thamnophis elegans*
Night Snake	*Hypsiglena torquata*
Western Rattlesnake	*Crotalis viridus*
BIRDS	
Pied-billed Grebe	*Podilymbus podceaps*
Eared Grebe	*Podiceps nigricollis*
American White Pelican	*Pelecanus erythrorhynchos*
Double-crested Cormorant	*Phalacrocorax auritus*
Great Blue Heron	*Ardea herodias*
Green Heron	*Butorides virescens*
Black-crowned Night Heron	*Nycticorax nycticorax*
Great Egret	*Casmerodius albus*
Snowy Egret	*Egretta thula*
Canada Goose	*Branta canadensis*
Green-Winged Teal	*Anas crecca*
Mallard	*Anas platyrhyncos*
Northern Pintail	*Anas acuta*
Cinnamon Teal	*Anas cyanoptera*
Northern Shoveler	*Anas clyeata*
Gadwall	*Anas strepera*
American Wigeon	*Anas americana*
Canvasback	*Aythya valisineria*
Ring-necked Duck	*Aythya collaris*
Bufflehead	*Bucephala albeola*
Ruddy Duck	*Oxyura jamaicensis*
Turkey Vulture	*Cathartes aura*
Osprey	*Pandion haliaetus*
White-tailed Kite	*Elanus caeruleus*
Northern Harrier	*Circus cyaneus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperi*
Red-shouldered Hawk	*Buteo lineatus*
Red-tailed Hawk	*Buteo jamaicensis*
Golden Eagle	*Aquila chrysaetos*
American Kestrel	*Falco sparverius*
Merlin	*Falco columbarius*
Ring-necked Pheasant	*Phasianus colchicus*
California Quail	*Callipepla californica*
Virginia Rail	*Rallus limicola*
Sora	*Porzana carolina*
Common Moorhen	*Gallinula chloropus*
American Coot	*Fulica Americana*
Black-bellied Plover	*Pluvialis squatarola*
Killdeer	*Charadrius vociferous*

TABLE 2. Animal species observed on the project site or expected to utilize the project site

Semipalmated Plover	*Charadrius semipalmatus*
American Avocet	*Recurvirostra americana*
Greater Yellowlegs	*Tringa melanoleuca*
Willet	*Catoptrophorus semipalmatus*
Spotted Sandpiper	*Actitus macularia*
Whimbrel	*Numenius phaeopus*
Long-billed Curlew	*Numenius americanus*
Marbled Godwit	*Limosa fedoa*
Least Sandpiper	*Calidris minutilla*
Western Sandpiper	*Calidris mauri*
Dunlin	*Calidris alpina*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Wilson's Snipe	*Gallinago delicata*
Mew Gull	*Larus Canus*
Ring-billed Gull	*Larus delawarensis*
California Gull	*Larus californicus*
Herring Gull	*Larus argentatus*
Forster's Tern	*Sterna forsteri*
Caspian Tern	*Sterna caspia*
Rock Dove	*Columba livia*
Mourning Dove	*Zenaida macroura*
Band-tailed Pigeon	*Columba fasciata*
Barn Owl	*Tyto alba*
Great Horned Owl	*Bubo virginianus*
White-throated Swift	*Aeronautes saxatalis*
Vaux's Swift	*Chaetura vauxi*
Anna's Hummingbird	*Calypte annas*
Allen's Hummingbird	*Selasphorus sasin*
Belted Kingfisher	*Ceryle alcyon*
Red-breasted Sapsucker	*Sphyrapicus ruber*
Northern Flicker	*Colaptes auratus*
Acorn Woodpecker	*Melanerpes formicivorus*
Nuttall's Woodpecker	*Picoides nuttallii*
Hairy Woodpecker	*Picoides villosus*
Downy Woodpecker	*Dendrocopos pubescens*
Black Phoebe	*Sayornis nigricans*
Say's Phoebe	*Sayornis saya*
Olive-sided Flycatcher	*Contopus borealus*
Western Wood-pewee	*Contopus sordidulis*
Pacific-slope Flycatcher	*Empidonax difficilis*
Ash-throated Flycatcher	*Myiarchus cinerascens*
Western Kingbird	*Tyrannus verticalis*
California Horned Lark	*Eremophila alpestris actica*
Barn Swallow	*Hirundo rustica*
Cliff Swallow	*Petrochelidon pyrrhonota*
Tree Swallow	*Tachicineta bicolor*

TABLE 2. Animal species observed on the project site or expected to utilize the project site

Violet-green swallow	*Tachycineta thalassina*
Northern Rough-winged Swallow	*Stelgidopteryx serripennis*
Western Scrub-jay	*Aphelocoma californica*
Common Raven	*Corvus corax*
American Crow	*Corvus brachyrhynchos*
Oak Titmouse	*Baeolophus inornatus*
Common Bushtit	*Psaltriparus minimus*
White-breasted Nuthatch	*Sitta carolinensis*
Bewick's Wren	*Thryomanes bewickii*
House Wren	*Troglodytes aedon*
Winter Wren	*Troglodytes troglodytes*
Marsh Wren	*Cistothorus palustris*
American Robin	*Turdus migratorius*
Hermit Thrush	*Hylocichla guttata*
Swainson's Thrush	*Catharus ustulatus*
Western Bluebird	*Sialia mexicana*
Blue-gray Gnatcatcher	*Polioptila caerula*
Ruby-crowned Kinglet	*Regulus calendula*
Northern Mockingbird	*Mimus polyglottos*
American Pipit	*Anthus rubescens*
Cedar Waxwing	*Bombycilla cedrorum*
Loggerhead Shrike	*Lanius ludovicianus*
European Starling	*Sturnus vulgaris*
Hutton's Vireo	*Vireo huttoni*
Orange-crowned Warbler	*Vermivora celata*
Nashville Warbler	*Vermivora ruficapilla*
Yellow Warbler	*Dendroica petechia*
Yellow-rumped Warbler	*Dendroica coronata*
Townsend's Warbler	*Dendroica townsendi*
Black-throated Gray Warbler	*Dendroica nigrescens*
Common Yellowthroat	*Geothlypis trichas*
Wilson's Warbler	*Wilsonia pusilla*
Western Tanager	*Piranga ludoviciana*
Black-headed Grosbeak	*Pheucticus melanocephalus*
Lazuli Bunting	*Passerina amoena*
Spotted Towhee	*Pipilo maculatus*
California Towhee	*Pipilo crissalis*
Chipping Sparrow	*Spizella passerina*
Savannah Sparrow	*Passerculus sandwichensis*
Lark Sparrow	*Chondestes grammacus*
White-crowned Sparrow	*Zonotrichia leucophrys*
Golden-crowned Sparrow	*Zonotrichia atricapilla*
Fox Sparrow	*Passerella iliaca*
Song Sparrow	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
Dark-eyed Junco	*Junco hyemalis*

TABLE 2. Animal species observed on the project site or expected to utilize the project site

Western Meadowlark	*Sturnella neglecta*
Red-winged Blackbird	*Agelaius phoeniceus*
Brewer's Blackbird	*Euphagus cyanocephalus*
Brown-headed Cowbird	*Molothrus ater*
Bullock's Oriole	*Icterus bullockii*
Purple Finch	*Carpodacus purpureus*
House Finch	*Carpodacus mexicanus*
Pine Siskin	*Carduelis pinus*
American Goldfinch	*Spinus tristis*
Lesser Goldfinch	*Spinus psaltria*
House Sparrow	*Passer domesticus*

Stebbins (1985)
National Geographic Society (2002)
Peterson (1969)
Burt and Grossenheider (1976)
Mayer and Laudenslayer (1988)
Zeiner, et al. (1990)

TABLE 3. Special status animal species that have been reported in the Cotati, Santa Rosa, Two Rock and Sebastopol USGS quadrangle maps (7.5 minute quadrangle)

SPECIES	STATUS FED/STATE/CNPS[2]	HABITAT	OCCURRENCE ON THE PROJECT SITE
ANIMALS			
California Freshwater Shrimp *(Syncaris pacifica)*	FE/CE	Found in low elevation, low gradient streams where riparian cover is moderate to heavy.	Not likely. Suitable habitat not present on site. Known to occur west of Sebastopol.
Steelhead – Central CA Coast ESU *(Oncorhynchus mykiss)*	FT/--	Well-oxygenated streams with riffles; loose, silt-free gravel substrate.	Likely. Species is known to occur in the Laguna de Santa Rosa. Consultation with NOAA Fisheries is required.
California Tiger Salamander *(Ambystoma californiense)*	FT/CSC	Found in annual grasslands and grassy understory of valley-foothill hardwood habitats in central and northern California. Needs underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water source for breeding.	Likely. Species occurs in vicinity of site and site is within designated critical habitat. Suitable habitat present at site. Mitigation in the form of establishment of open space preserves and replacement of aestivation habitat at required mitigation ratios is proposed.
California Red-legged Frog *(Rana aurora draytonii)*	FT/CSC	Mostly found in lowlands and foothills in/near permanent sources of deep water but will disperse far during and after rain. Prefers shorelines with extensive vegetation. Requires 11-20 weeks of permanent water for larval development and requires access to aestivation habitat.	Not likely. Nearest population located near the Sonoma County Central Landfill southwest of Cotati. According to results of a protocol Phase 1 Habitat Assessment, suitable habitat is not present at the site.
Foothill Yellow-legged Frog *(Rana boylii)*	- /CSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying.	Not likely. Known from Copeland Creek and Crane Creek. Suitable habitat not present on site. The adjacent Bellevue-Wilfred Channel does not provide suitable substrate to support the species.

TABLE 3. Special status animal species that have been reported in the Cotati, Santa Rosa, Two Rock and Sebastopol USGS quadrangle maps (7.5 minute quadrangle)

SPECIES	STATUS FED/STATE/CNPS[2]	HABITAT	OCCURRENCE ON THE PROJECT SITE
Northwestern Pond Turtle (*Clemmys marmorata marmorata*)	FSC/CSC	Associated with permanent or nearly permanent water in a wide variety of habitats. Requires basking sites. Nests found up to 0.5 miles from water.	Not likely. Suitable habitat is not present on site. However, suitable habitat is present in the Bellevue-Wilfred Channel, adjacent to the site, and the species was observed there in May 2004.
Northern Harrier (*Circus cyaneus*) [nesting]	-/CSC	Coastal salt marsh and freshwater marsh; nests and forages in grasslands; nests on ground in shrubby vegetation, usually at marsh edge.	Nesting unlikely. Appropriate nesting habitat not present on site. Species likely forages on or near the site, especially in winter.
White-tailed Kite (*Elanus caeruleus*) [nesting]	-/CFP	Open grassland and agricultural areas throughout Central California.	Nesting unlikely. Appropriate nesting habitat not present on site. Species likely forages on or near the site, especially in winter. Observed at the site in September 2003 and May 2004.
Sharp-shinned Hawk (*Accipiter striatus*) [nesting]	-/CSC	Breeds in ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats. Prefers, but not restricted to, riparian habitats. North facing slopes, with plucking perches are critical requirements. All habitats except alpine, open prairie, and bare desert used in winter.	Nesting unlikely. Appropriate nesting habitat not present on site. Species likely forages on or near the site, especially in winter.
Cooper's Hawk (*Accipiter cooperii*) [nesting]	-/CSC	Nests primarily in deciduous riparian forests; forages in open woodlands.	Nesting unlikely. Appropriate nesting habitat not present on site. Species likely forages on or near the site, especially in winter.
Ferruginous Hawk (*Bueto regalis*) [wintering]	FSC/CSC	Inhabits open country. Winters in small number along California coast and inland valleys.	Wintering possible. The site likely receives sporadic use by the species in winter.

TABLE 3. Special status animal species that have been reported in the Cotati, Santa Rosa, Two Rock and Sebastopol USGS quadrangle maps (7.5 minute quadrangle)

SPECIES	STATUS FED/STATE/CNPS[2]	HABITAT	OCCURRENCE ON THE PROJECT SITE
Golden Eagle (*Aquila chrysaetos*) [nesting and wintering]	-/CSC	Typically frequents rolling foothills, mountain areas, sage-juniper flats and desert.	Wintering possible. The site likely receives sporadic use by the species in winter.
Burrowing Owl (*Athene cunicularia*)	FSC/CSC	Found in open dry annual or perennial grasslands, deserts and scrublands characterized by low growing vegetation. This species is a subterranean nester, dependent upon the burrows of burrowing mammals, most notably the California Ground Squirrel.	Possible. Burrowing owls were not observed during nesting surveys conducted during the spring of 2004. An individual observed in January 2004 is believed to have been a transient. Appropriate habitat is limited at the site.
Merlin (*Falco columbarius*) [wintering]	-/CSC	Breeds in Canada, winters in a variety of California habitats, including grasslands, savannahs, wetlands, etc.	Wintering possible. The species may sporadically utilize the site as a winter foraging habitat.
Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)	- /CE	Nests in riparian forests along the broad, lower flood-bottoms of larger river systems. Requires willows, cottonwoods with lower story of blackberry, nettles or wild grape.	Not likely. Suitable habitat not present at site, though site is within an area of general occurrence noted in the CNDDB.
California Horned Lark (*Eremophila alpestris actia*)	-/CSC	Resident in a variety of open habitats, including grasslands, less common in mountain regions.	Likely. Use of the site by this species is possible, although the species has not been observed in many surveys conducted at the site.
Loggerhead Shrike (*Lanius ludovicianus*)	FSC/CSC	Habitat includes open areas such as desert, grasslands and savannah. Nests in thickly foliaged trees or tall shrubs. Forages in open habitats, which contain trees, fence posts, utility poles, and other perches.	Present. Use of the site by this species has been documented. Species was observed in fall 2003, but not during nesting season surveys in May 2004.
Yellow Warbler (*Dendroica petechia*) [nesting]	-/CSC	Breeds in deciduous riparian woodlands, widespread during fall mitigation.	Nesting unlikely. No breeding habitat onsite, migrants expected on site, especially in fall.

TABLE 3. Special status animal species that have been reported in the Cotati, Santa Rosa, Two Rock and Sebastopol USGS quadrangle maps (7.5 minute quadrangle)

SPECIES	STATUS FED/STATE/CNPS[2]	HABITAT	OCCURRENCE ON THE PROJECT SITE
Tri-colored Blackbird (*Agelaius tricolor*) [nesting colony]	FSC/CSC	Breeds near freshwater, usually in tall emergent vegetation. Requires open water with protected nesting substrate. Colonies prefer heavy growth of cattails and tules. Uses grasslands and agricultural lands for foraging.	Nesting unlikely. Appropriate nesting habitat not present on site. Nesting colony documented east of Rohnert Park.

1. Source: California Natural Diversity Data Base, Natural Heritage Division, California Department of Fish and Game for the Cotati, Santa Rosa, Two Rock and Sebastopol 7.5-Minute Quadrangle Map, information dated January 2005.

2. Status Codes:

FE	Federally Endangered
FT	Federally Threatened
FPE	Federally Proposed Endangered
FPT	Federally Proposed Threatened
FSC	Federal Species of Concern (most are former C2 Candidates and some former C1)
CE	California Endangered
CT	California Threatened
CR	California Rare
CFP	California Fully Protected
CSC	California Species of Special Concern

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Allium peninsulare var. *franciscanum* Franciscan onion	None	None	2-2-3 List 1B	Cismontane woodland, valley and foothill grassland in clay soils, often on serpentine	SCL, SMT, SON	May-June
Alopecurus aequalis var. *sonomensis* Sonoma alopecurus	Endangered	None	3-3-3 List 1B	Freshwater marshes and swamps, riparian scrub	MRN, SON	May-July
Amorpha californica var. *napensis* Napa false indigo	None	None	2-2-3 List 1B	Broadleafed upland forest, chaparral, cismontane woodland	MNT, MRN, NAP, SON	April-July
Amsinckia lunaris bent-flowered fiddleneck	None	None	2-2-3 List 1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland	ALA, CCA, COL, LAK, MRN, NAP, SCR, SHA?, SIS?, SMT, SON	March-June
Arctostaphylos canescens ssp. *sonomensis* Sonoma manzanita	None	None	2-2-3 List 1B	Chaparral, lower montane coniferous forest	HUM, LAK, MEN, SON, TEH	January-April
Arctostaphylos densiflora Vine Hill manzanita	None	Endangered	3-3-3 List 1B	Chaparral on acid marine sand	SON	February-April
Arctostaphylos stanfordiana ssp. *decumbens* Rincon manzanita	None	None	3-3-3 List 1B	Chaparral, cismontane woodland	SON	February-April
Astragalus breweri Brewer's milk-vetch	None	None	1-2-3 List 4	Chaparral, cismontane woodland, meadows, valley and foothill grassland, often serpentinite or volcanic soil	COL, LAK, MEN, MRN, NAP, SON, YOL	April-June

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Astragalus rattanii var. *rattanii* Rattan's milk-vetch	None	None	1-1-3 List 4	Gravelly streambanks, chaparral, cismontane woodland, lower montane coniferous forest	COL, GLE, HUM, LAK, MEN, SON, TEH, TRI	April-July
Astragalus tener var. *tener* alkali milk-vetch	None	None	3-2-3 List 1B	Alkaline or adobe clay soil, playas, valley and foothill grassland, vernal pools	ALA, CCA*, MER, MNT*, NAP, SBT*, SCL*, SFO*, SJQ*, SOL, SON*, STA*, YOL	March-June
Balsamorhiza macrolepis var. *macrolepis* big-scale balsamroot	None	None	2-2-3 List 1B	Cismontane woodland, valley and foothill grassland, chaparral, sometimes serpentinite.	ALA, BUT, COL, LAK, MPA, NAP, PLA, SCL, SOL, SON, TEH	March-June
Blennosperma bakeri Sonoma sunshine	Endangered	Endangered	2-3-3 List 1B	Vernal pools, mesic valley and foothill grassland	SON	March-May
Brodiaea californica var. *leptandra* narrow-anthered California brodieaea	None	None	2-2-3 List 1B	Broadleafed upland forest, chaparral, lower montane coniferous forest	LAK, NAP, SON	May-July
Calamagrostis bolanderi Bolander's reed grass	None	None	2-2-3 List 1B	Bogs and fens, closed-cone coniferous forest, coastal scrub, meadows	HUM, MEN, SON	May-August
Calamagrostis crassiglumis Thurber's reed grass	None	None	3-3-1 List 2	Freshwater marshes and swamps, moist places in coastal scrub	DNT, HUM?, MEN, MRN, SON, Washington, other states	May-July

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Calandrinia breweri Brewer's calandrinia	None	None	1-2-2 List 4	Chaparral, coastal scrub in sandy or loamy soil, often on burns or disturbed sites	CCA, LAX, MEN, MNT, MPA, MRN, NAP, SBA, SBD, SCL, SCR, SCZ, SDG, SLO, SMT, SON, SRO, VEN, Baja Calif.	March-June
Campanula californica swamp harebell	None	None	2-2-3 List 1B	Moist places; bogs and fens, closed-cone coniferous forest, coastal prairie, meadows, freshwater marshes and swamps, north coast coniferous forest	MEN, MRN, SCR*, SON	June-October
Carex albida white sedge	Endangered	Endangered	3-3-3 List 1B	Bogs and fens, freshwater marshes and swamps	SON	May-July
Carex buxbaumii Buxbaum's sedge	None	None	1-2-1 List 4	Bogs and fens, mesic meadows, marshes and swamps	GLE, HUM, INY, MRN, PLU, SHA, SIS, SON, TEH, TUL, TUO; widespread outside Calif.	March-August
Castilleja uliginosa Pitkin Marsh Indian paintbrush	None	Endangered	-- List 1A	Freshwater marshes and swamps	SON*	June-July
Ceanothus confusus Rincon Ridge ceanothus	None	None	3-3-3 List 1B	Volcanic or serpentine soils, closed-cone coniferous forest, chaparral, cismontane woodland	LAK, MEN, NAP, SON	February-April
Ceanothus divergens Calistoga ceanothus	None	None	3-2-3 List 1B	Rocky serpentine or volcanic soils, chaparral	LAK, NAP, SON	February-March
Ceanothus foliosus var. *vineatus* Vine Hill ceanothus	None	None	3-3-3 List 1B	Chaparral	MEN*, SON	March-May

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Ceanothus sonomensis Sonoma ceanothus	None	None	3-2-3 List 1B	Sandy volcanic or serpentine soils, chaparral	NAP, SON	February-April
Chorizanthe valida Sonoma spineflower	Endangered	Endangered	3-3-3 List 1B	Sandy soil, coastal prairie	MRN, SON*	June-August
Clarkia imbricata Vine Hill clarkia	Endangered	Endangered	3-3-3 List 1B	Acidic sandy loam soil, chaparral, valley and foothill grassland	SON	June-August
Cordylanthus maritimus ssp. *palustris* Point Reyes bird's-beak	None	None	2-2-2 List 1B	Coastal salt marshes	ALA*, HUM, MRN, SCL*, SMT*, SON, Oregon	June-October
Cordylanthus mollis ssp. *mollis* soft bird's-beak	Endangered	Rare	3-2-3 List 1B	Coastal salt marshes	CCA, MRN*, NAP, SAC*, SOL, SON*	July-November
Cypripedium californicum California lady's-slipper	None	None	1-2-2 List 4	Bogs and fens, seeps and streambanks in lower montane coniferous forest	BUT, DNT, HUM, MEN, MRN*, PLU, SHA, SIS, SON, TRI, Oregon	April-August
Delphinium bakeri Baker's larkspur	Endangered	Rare	3-3-3 List 1B	Coastal scrub	MRN, SON*	March-May
Delphinium luteum yellow larkspur	Endangered	Rare	3-3-3 List 1B	Rocky soil, chaparral, coastal prairie, coastal scrub	MRN, SON	March-May
Downingia pusilla dwarf downingia	None	None	1-2-1 List 2	Vernal pools, mesic valley and foothill grassland	MER, MPA, NAP, PLA, SAC, SOL, SON, STA, TEH, YUB, South America	March-May

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Eleocharis parvula small spikerush	None	None	1-1-1 List 4	Coastal salt marshes, other wet, generally saline habitats	BUT, CCA, GLE, HUM, NAP, ORA, SIS, SLO, SON, VEN, Oregon, Washington, etc.	June-September
Elymus californicus California bottlebrush grass	None	None	1-1-3 List 4	Cismontane woodland, north coast coniferous forest, broadleafed upland forest, riparian woodland	MNT?, MRN, SCR, SMT, SON	May-November
Erigeron biolettii streamside daisy	None	None	?-?-3 List 3	Rocky, mesic areas in broadleafed upland forest, cismontane woodland, north coast coniferous forest	HUM, MEN, MRN, NAP, SOL, SON	June-September
Eriogonum luteolum var. *caninum* Tiburon buckwheat	None	None	?-2-3 List 3	Serpentinite soil, chaparral, coastal prairie, valley and foothill grassland	ALA, COL, LAK, MRN, NAP, SCL, SMT, SON*	June-September
Erysimum franciscanum San Francisco wallflower	None	None	1-2-3 List 4	Chaparral, coastal dunes, coastal scrub, valley and foothill grassland, often serpentinite or granitic substrate	MRN, SCL, SCR, SFO, SMT, SON	March-June
Fritillaria liliacea fragrant fritillary	None	None	1-2-3 List 1B	Heavy clay soil, cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland	ALA, CCA, MNT, MRN, SBT, SCL, SFO, SMT, SOL, SON	February-April
Helianthella castanea Diablo helianthella	None	None	2-2-3 List 1B	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland.	ALA, CCA, MRN*, SFO*, SMT	April-June

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Hemizonia congesta ssp. *leucocephala* hayfield tarplant	None	None	?-?-3 List 3	Coastal scrub, valley and foothill grassland	MEN, MRN, SON	April-October
Horkelia tenuiloba thin-lobed horkelia	None	None	2-2-3 List 1B	Moist places in sandy soil, broadleafed upland forest, chaparral	MEN, MRN, SON	May-July
Lasthenia burkei Burke's goldfields	Endangered	Endangered	3-3-3 List 1B	Vernal pools, moist meadows	LAK, MEN, SON	April -June
Lasthenia macrantha ssp. *bakeri* Baker's goldfields	None	None	2-2-3 List 1B	Closed-cone coniferous forest (openings), coastal scrub	MEN, MRN, SON*	April-October
Layia septentrionalis Colusa layia	None	None	2-2-3 List 1B	Sandy soil, chaparral, cismontane woodland, valley and foothill grassland	COL, GLE, LAK, MEN, NAP, SON, SUT, TEH, YOL	April-May
Legenere limosa legenere	None	None	2-3-3 List 1B	Vernal pools	LAK, NAP, PLA, SAC, SHA, SMT, SOL, SON*, STA*, TEH, YUB	April-June
Lessingia hololeuca woolly-headed lessingia	None	None	?-?-3 List 3	Clay or serpentinite soil, broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland	ALA, MNT, MRN, NAP, SCL, SMT, SOL, SON, YOL	June-October
Lilium pardalinum ssp. *pitkinense* Pitkin marsh lily	Endangered	Endangered	3-3-3 List 1B	Freshwater marshes and swamps, moist places in cismontane woodland, meadows	SON	June-July

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Lilium rubescens redwood lily	None	None	1-2-3 List 4	Broadleafed upland forest, chaparral, lower montane coniferous forest, upper montane coniferous forest	DNT, HUM, LAK, MEN, NAP, SCR*, SHA, SIS, SON, TRI	June-August
Limnanthes vinculans Sebastopol meadowfoam	Endangered	Endangered	2-3-3 List 1B	Vernal pools, vernally moist sites in meadows, valley and foothill grassland	NAP?, SON	April-May
Linanthus acicularis bristly linanthus	None	None	1-2-3 List 4	Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland	ALA, BUT, CCA [?], FRE, HUM, LAK, MEN, MRN, NAP, SMT, SON	April-July
Linanthus grandiflorus large-flower linanthus	None	None	1-2-3 List 4	Coastal scrub, coastal bluff scrub, closed-cone coniferous forest, cismontane woodland, coastal dunes, coastal prairie, valley and foothill grassland, usually in sandy soil	ALA, KRN, MAD, MER, MNT, MRN, SBA*, SCL, SCR, SFO, SLO, SMT, SON	April-August
Linanthus jepsonii Jepson's linanthus	None	None	2-2-3 List 1B	Chaparral, cismontane woodland, open to partially shaded grassy slopes, on volcanics or periphery of serpentine substrates	LAK, NAP, SON	April-May
Micropus amphibolus Mt. Diablo cottonweed	None	None	?-2-3 List 3	Rocky areas in broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland, coastal scrub	ALA, CCA, COL, LAK, MNT, MRN, NAP, SBA, SCL, SCR, SOL, SON	March-May

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Microseris paludosa marsh microseris	None	None	2-2-3 List 1B	Moist places in closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland	MEN, MNT, MRN, SCR, SFO*, SLO, SMT*, SON	April-June
Monardella undulata curly-leaved monardella	None	None	1-2-3 List 4	Sandy soil, maritime chaparral, coastal dunes, coastal prairie, coastal scrub, ponderosa pine sandhills, closed-cone coniferous forest	MNT, MRN, SBA, SCR, SFO, SLO, SMT, SON	May-September
Navarretia cotulifolia cotula navarretia	None	None	1-2-3 List 4	Adobe soil, chaparral, cismontane woodland, valley and foothill grassland	ALA, BUT, CCA, COL, GLE, LAK, MEN, MRN, NAP, SBT, SCL, SIS?, SOL, SON, SUT, YOL	May-June
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	None	None	2-3-3 List 1B	Moist areas, adobe or alkaline soils; cismontane woodland, meadows and seeps, vernal pools, valley and foothill grassland, lower montane coniferous forest	COL, LAK, MEN, MRN, NAP, SOL, SON, TEH	May-July
Navarretia leucocephala ssp. *plieantha* many-flowered navarretia	Endangered	Endangered	3-2-3 List 1B	Volcanic ash flow vernal pools	LAK, SON	May-June
Perideridia gairdneri ssp. *gairdneri* Gairdner's yampah	None	None	1-2-3 List 4	Moist sites in coastal prairie, broadleafed upland forest, chaparral, valley and foothill grassland, vernal pools	CCA, KRN, LAX*, MEN, MNT, MRN, NAP, ORA*, SBT, SCL, SCR, SDG*, SLO, SMT(*?), SOL, SON	June-October

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Piperia candida white-flowered rein orchid	None	None	1-1-1 List 4	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest	DNT, HUM, MEN, SCR, SIS, SMT, SON, TRI, Oregon, Washington, etc.	May-September
Pityopus californicus California pinefoot	None	None	1-2-1 List 4	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest, upper montane coniferous forest	DNT, FRE, HUM, MEN, MPA, MRN(*?), NAP, SIS, SON, TUL, Oregon, Washington	May-August
Plagiobothrys mollis var. *vestitus* Petaluma popcorn-flower	None	None	-- List 1A	Valley and foothill grassland; coastal salt marshes (?)	SON*	June-July
Pleuropogon hooverianus north coast semaphore grass	None	Rare	3-3-3 List 1B	Vernal pools, freshwater marshes and swamps, moist places in broadleafed upland forest, meadows, north coast coniferous forest	MEN, MRN, SON	May-August
Potentilla hickmanii Hickman's cinquefoil	Endangered	Endangered	3-3-3 List 1B	Freshwater marshes and swamps, vernally moist meadows, moist places in coastal bluff scrub, closed-cone coniferous forest	MNT, SMT, SON*	April-August
Ranunculus lobbii Lobb's aquatic buttercup	None	None	1-2-3 List 4	Vernal pools; seasonally wet sites in cismontane woodland, north coast coniferous forest, valley and foothill grassland	ALA, CCA, MEN, MRN, NAP, SCL, SOL, SON, Oregon, other states	February-May
Rhynchospora alba white beaked-rush	None	None	2-2-1 List 2	Bogs and fens, meadows, freshwater marshes and swamps	DNT?, INY?, LAS, MEN, MPA?, NEV?, PLU, SON, TRI, Oregon, other states	July-August

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Rhynchospora californica California beaked-rush	None	None	3-3-3 List 1B	Bogs and fens, marshes and swamps, lower montane coniferous forest, meadows and seeps	BUT, MPA, MRN, SON	May-July
Rhynchospora capitellata brownish beaked-rush	None	None	2-2-1 List 2	Marshes and swamps, moist places in meadows, lower montane coniferous forest, upper montane coniferous forest	BUT, MPA, NEV, PLU, SHA, SON(*?), TEH, TRI, Oregon, other states	July-August
Rhynchospora globularis var. *globularis* round-headed beaked-rush	None	None	3-3-1 List 2	Freshwater marshes and swamps	SON, widespread outside California	July-August
Ribes victoris Victor's gooseberry	None	None	1-1-3 List 4	Broadleafed upland forest, chaparral	MEN, MRN, NAP, SOL, SON	March-April
Sidalcea calycosa ssp. *rhizomata* Point Reyes checkerbloom	None	None	2-2-3 List 1B	Freshwater marsh (and salt marsh?) near coast	MEN, MRN, SON	April to September
Sidalcea oregana ssp. valida Kenwood Marsh checkerbloom	Endangered	Endangered	3-3-3 List 1B	Freshwater marshes and swamps	DNT, HUM	June-September
Stellaria littoralis beach starwort	None	None	1-2-3 List 4	Moist places; bogs and fens, coastal bluff scrub, coastal dunes, coastal scrub, marshes and swamps	HUM, MEN*, MRN, SFO, SON	March to July
Trifolium amoenum showy Indian clover	Endangered	None	3-3-3 List 1B	Coastal bluff scrub, valley and foothill grassland (sometimes serpentinite)	ALA*, MRN, NAP*, SCL*, SOL*, SON(*?)	April-June

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

Species Common Name[1]	USFWS Listing[2]	State Status[3]	CNPS Status[4]	Habitat Type[5]	Distribution by County[6]	Flowering Period
Trifolium buckwestiorum Santa Cruz clover	None	None	3-3-3 List 1B	Coastal prairie; margins of broadleafed upland forest, cismontane woodland	MNT, SCL, SCR, SMT, SON	April-October
Trifolium depauperatum var. *hydrophilum* saline clover	None	None	3-2-3 List 1B	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools	ALA, COL?, MNT, NAP, SBT, SCL, SLO, SMT, SOL, SON	April-June
Triteleia lugens dark-mouthed triteleia	None	None	1-1-3 List 4	Broadleafed upland forest, chaparral, lower montane coniferous forest	LAK, MNT, NAP, SBT, SOL, SON	April-June
Veratrum fimbriatum fringed false-hellebore	None	None	1-1-3 List 4	Moist places, bogs and fens, coastal scrub, meadows, north coast coniferous forest	MEN, SON	July-September
Viburnum ellipticum oval-leaved viburnum	None	None	2-1-1 List 2	Chaparral, cismontane woodland, lower montane coniferous forest	CCA, FRE, ELD, GLE, HUM, MEN, NAP, SHA, SON, Oregon, Washington	May-June
Zigadenus micranthus var. *fontanus* marsh zigadenus	None	None	1-2-3 List 4	Vernally moist places in chaparral, cismontane woodland, lower montane coniferous forest, meadows, marshes and swamps, often serpentinite	LAK, MEN, MNT, MRN, NAP, SBT, SCR, SLO, SMT, SON	April-July

[1]Nomenclature follows Hickman (1993), Tibor (2001), and California Native Plant Society (2003).
[2]U.S. Fish and Wildlife Service (2004a, b, c).
[3]Section 1904, California Fish and Game Code (California Department of Fish and Game 2004).
[4]Tibor (2001) and California Native Plant Society (2003).
Top line: CNPS R-E-D (Rarity-Endangerment-Distribution) code. Rarity: 1=Rare, but found in sufficient numbers and distributed widely enough that the potential for extinction is low at this time; 2=Occurrence confined to several populations or to one extended population; 3=Occurrence limited to one or a few

TABLE 4. Status, distribution and habitat of special-status plants with potential to occur in the vicinity of the Rohnert Park site, Sonoma County, California

highly restricted populations, or present in such small numbers that it is seldom reported. Endangerment: 1=Not endangered; 2=Endangered in a portion of its range; 3=Endangered throughout its range. Distribution: 1=More or less widespread outside California; 2=Rare outside California; 3=Endemic to California. Bottom Line: CNPS List. List 1B: Rare, Threatened, or Endangered in California and elsewhere. List 2: Rare, Threatened, or Endangered in California, more common elsewhere. List 3: Plants about which more information is needed. List 4: Plants of limited distribution: a watch list.

[5]Munz and Keck (1973), Hickman (1993), Best et. al. 1996, Tibor (2001), California Native Plant Society (2003), and unpublished information.

[6]Tibor (2001), California Native Plant Society (2003), and unpublished information; counties abbreviated by a three-letter code (below); occurrence in other states or areas as indicated.

ALA: Alameda
BUT: Butte
CCA: Contra Costa
COL: Colusa
DNT: Del Norte
FRE: Fresno
GLE: Glenn
HUM: Humboldt
INY: Inyo
KRN: Kern
LAK: Lake
LAS: Lassen
LAX: Los Angeles
MAD: Madera
MEN: Mendocino
MER: Merced
MNT: Monterey
MPA: Mariposa
MRN: Marin
NAP: Napa
NEV: Nevada
ORA: Orange
PLA: Placer
PLU: Plumas
RIV: Riverside
SAC: Sacramento
SBA: Santa Barbara
SBD: San Bernardino
SBT: San Benito
SCL: Santa Clara
SCR: Santa Cruz
SCT: Santa Catalina Island (LAX Co.)
SCZ: Santa Cruz Island (SBA Co.)
SDG: San Diego
SFO: San Francisco
SHA: Shasta
SIS: Siskiyou
SJQ: San Joaquin
SLO: San Luis Obispo
SMT: San Mateo
SOL: Solano
SON: Sonoma
SRO: Santa Rosa Island (SBA Co.)
STA: Stanislaus
SUT: Sutter
TEH: Tehama
TRI: Trinity
TUL: Tulare
TUO: Tuolumne
VEN: Ventura
YOL: Yolo
YUB: Yuba

Biological Assessment

Proposed Gaming Facility

Sonoma County, California

Prepared for:
FEDERATED INDIANS OF THE GRATON RANCHERIA
P.O. Box 14428
Santa Rosa, CA 95402

Prepared by:
HUFFMAN-BROADWAY GROUP, INC.
Environmental Consultants
828 Mission Avenue
San Rafael, CA 94901
TEL: (415) 925-2000 FAX: (415) 925-2006
Contact: Terry Huffman, Ph.D.

December 2006

Volume 2 of 2

ATTACHMENT 3.

TECHNICAL REPORTS RELATED TO 360-ACRE PARCEL

ATTACHMENT 3A.

2005 Supplemental Botanical Surveys of the Rohnert Park Site, Sonoma County, California. Prepared by Ecosystems West Consulting Group, Inc. October 2005.

2005 Supplemental Botanical Survey of the Rohnert Park Site, Sonoma County, California

DRAFT

Prepared for:

The Huffman-Broadway Group, Inc.
700 Larkspur Landing Circle, Suite 100
Larkspur, California 94939

Prepared by:

EcoSystems West Consulting Group
819 ½ Pacific Avenue, Suite 4
Santa Cruz, California 95060
(831) 429-6730

October 5, 2005

TABLE OF CONTENTS

INTRODUCTION

This report presents the results of a supplemental botanical survey conducted by EcoSystems West Consulting Group (EcoSystems West) in 2005 on portions of a site located just west of the city of Rohnert Park in Sonoma County, California. This site is herein referred to as the "Rohnert Park site". EcoSystems West began conducting botanical surveys on this site in the fall of 2003; the methodology and results of the fall 2003 surveys were reported in EcoSystems West (2003). We conducted in-depth botanical surveys on the site during the main spring and summer growing season in 2004; the methodology and results of this survey were reported in EcoSystems West (2004). The 2005 surveys reported in this document were conducted in order to provide a second full year of surveys spanning the full growing season, as recommended by the U.S. Fish and Wildlife Service (USFWS) (USFWS 1998: Appendix A) for sites located on the Santa Rosa Plain that could support one or more of four federally listed plant species: Sonoma sunshine (*Blennosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), Sebastopol meadowfoam (*Limnanthes vinculans*), and many-flowered navarretia (*Navarretia leucocephala* ssp. *plieantha*).

The Rohnert Park site study area encompasses approximately 360 acres, and is located in unincorporated Sonoma County just west of the city limits of Rohnert Park, east of Stony Point Road mostly between Rohnert Park Expressway and Wilfred Avenue. The site is on the Cotati 7.5' USGS quadrangle map. Stony Point Road forms the western boundary of the site. The channelized Laguna de Santa Rosa forms the western half of the southern boundary (thus, a small portion of the site is south of Rohnert Park Expressway), with the eastern half of the southern boundary formed by an east-west line crossing Rohnert Park Expressway. Wilfred Avenue, Whistler Avenue, and an un-named dirt road paralleling Wilfred Avenue form the northern boundary.

The Rohnert Park site study area is located on the broad floor of the Santa Rosa Plain (sometimes called the Cotati Valley). The site is characterized by level to very gently rolling topography, with local relief mostly less than three feet. Much of the site east of the Bellevue-Wilfred Channel and in the northern portion of the site west of the channel may have been artificially leveled at some time in the past. The Bellevue-Wilfred Channel is somewhat incised below the level of most of the site.

The site contains two habitat types that are predominantly "natural" in the sense that they are not primarily associated with heavy, ongoing or repeated human disturbance: California annual grassland and seasonal pools (EcoSystems West 2004). Five additional habitat types on the site are more or less artificial, in the sense that they have resulted primarily from human occupation and alteration of the site and intensive, repeated or ongoing disturbance: canal, drainage ditches, irrigated pasture, cultivated fields, and disturbed/ruderal. The canal habitat type refers to the Bellevue-Wilfred Channel. Most of the site east of the Bellevue-Wilfred Channel, except for one uncultivated area of California annual grassland, is occupied by fields that are intensively cultivated for hay. The northern portion of the site west of the Bellevue-Wilfred Channel is comprised of four irrigated pastures, a large barn and associated corrals, and a disturbed/ruderal area that is heavily disturbed by cattle grazing and trampling. The southwestern portion of the

site, west of the Bellevue-Wilfred Channel, is gently rolling and is mostly occupied by California annual grassland. A number of seasonal pools of varying sizes are located within this grassland. Additional seasonal pools are located the northeastern and southeastern irrigated pastures in the northern portion of the site west of the Bellevue-Wilfred Channel.

According to California Natural Diversity Data Base (CNDDB) occurrence records, two of the four federally listed plant species, Sonoma sunshine (CNDDB Occurrence No. 20) and Burke's goldfields (CNDDB Occurrence No. 29), were previously known to occur in one of the seasonal pools on the site. This pool is located near the western site boundary in the west-central portion of the site. At present, this pool straddles the fence that separates irrigated pasture to the north from the un-irrigated grassland to the south. The CNDDB records indicate that both species historically occurred both east of Stony Point Road, within the Rohnert Park study area, as well as outside the study area west of Stony Point Road. The CNDDB record for Burke's goldfields indicates that this species was extirpated from the site by 1994.

METHODS

As described in EcoSystems West (2003, 2004), EcoSystems West botanists conducted a focused survey of literature and special-status species data bases in order to identify special-status plant species with potential to occur in the Rohnert Park site study area. Sources reviewed include CNDDB occurrence records for the Cotati, Santa Rosa, Two Rock, and Sebastopol USGS 7.5' quadrangles; county occurrence records and USGS quadrangle occurrence records in the CNPS *Inventory* (Tibor 2001; CNPS 2005) for the Cotati quadrangle and the eight quadrangles surrounding it; and standard floras (Abrams 1923, 1944, 1951; Abrams and Ferris 1960; Munz and Keck 1973; Hickman 1993; Best et. al. 1996).

Sources consulted for up-to-date agency status information include USFWS (2005a, b, c) for federally listed species (including Proposed and Candidate species) and California Department of Fish and Game (CDFG) (2005) for State of California listed species. Other special-status species are those on List 1A (Plants Presumed Extinct in California), List 1B (Plants Rare, Threatened, or Endangered in California and Elsewhere), or List 2 (Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere) of the California Native Plant Society's (CNPS) *Inventory of Rare and Endangered Vascular Plants of California* (Tibor 2001; CNPS 2003). These species are subject to state regulatory authority under the California Environmental Quality Act (CEQA) Guidelines. Also considered as special-status species are those included on List 3 (Plants About Which We Need More Information—A Review List) and List 4 (Plants of Limited Distribution—A Watch List) of the CNPS *Inventory*. These species are considered to be of lower sensitivity, and generally do not fall under specific state or federal regulatory authority. Specific mitigation considerations are generally not required for species in these categories.

Based on information from the above sources, we developed a target list of special-status plants with potential to occur in the vicinity of the study area (Table 1 in EcoSystems West [2004]).

Scientific nomenclature for plants in this report follows Hickman (1993); Tibor (2001); and CNPS (2003). Common names follow Abrams (1923, 1944, 1951); Abrams and Ferris (1960); Hickman (1993); and the U.S. Department of Agriculture (USDA) PLANTS database (USDA 2002), except for special-status species, which follow Tibor (2001) and CNPS (2003).

During the 2005 field season, EcoSystems West botanist Roy Buck conducted field surveys on the Rohnert Park site on 20 March, 5 April, 17 April, 16 May, and 25 June. These surveys were concentrated on the seasonal pools identified on the site in 2003 and 2004, since these were the only habitats on the site with high potential to support special-status species. Each seasonal pool on the site was visited at least once in March, April, May, and June. We identified all vascular plant species encountered that were identifiable at the times the survey was conducted to species or infraspecific taxon, using keys and descriptions in Abrams (1923, 1944, 1951); Abrams and Ferris (1960); Munz and Keck (1973); Hickman (1993); and Best et. al. (1996). The timing of the survey was appropriate for identification of all of the special-status species with potential to occur on the site, including Sonoma sunshine, Burke's goldfields, Sebastopol meadowfoam, and many-flowered navarretia.

RESULTS

Floristic Inventory

During 2003 and 2004 surveys, we observed a total of 146 species of vascular plants in the Rohnert Park site study area. Of these, 56 species are native to the site, and 87 species are non-native. For three species, it is not known or could not be determined whether these species are native or non-native. In 2005, we observed an additional six native and six non-native species on the site, for a total of 158 species of vascular plants observed on the site during three years of surveys: 62 native species, 93 non-native species, and three species whose nativity is not known. A list of vascular plant species identified on the site during 2003, 2004, and 2005 surveys is presented in Appendix A.

Special-Status Plants

During the 2005 surveys, we observed a small population of Sonoma sunshine on the Rohnert Park site, within the mapped historic area of occurrence of the species. We did not observe this species on the site during surveys in 2004. We also observed additional colonies of Lobb's aquatic buttercup (*Ranunculus lobbii*), a species observed in four localities in 2004, on the site in 2005.

We did not observe Burke's goldfields, a federal and state-listed Endangered species (USFWS 1991, 2005a; CDFG 2005) on the site in either 2004 or 2005. CNDDB records indicate that this species historically occurred on the site, in approximately the same

location as Sonoma sunshine. The CNDDB indicates that it is believed that Burke's goldfields was extirpated from the site sometime prior to 1994, although the cause if its extirpation is not known.

Sonoma sunshine and Lobb's aquatic buttercup are discussed in more detail below.

Sonoma sunshine (Baker's stickyseed) (*Blennosperma bakeri*). Sonoma sunshine is listed as Endangered by the U.S. Fish and Wildlife Service under the federal Endangered Species Act (USFWS 1991, 2005a) and by the state of California (CDFG 2005). It is also on List 1B of the CNPS *Inventory* (Tibor 2001; CNPS 2005). It is a small annual in the sunflower family, with flower heads with yellow disk and ray flowers. It has linear, 1-3-lobed upper leaves and the stigmas of the ray flowers are dark red; these characters separate this species from the widespread common stickyseed (*Blennosperma nanum* var. *nanum*), with the upper leaves mostly 3-15-lobed and the ray stigmas yellow.

Sonoma sunshine occurs only in Sonoma County. It is most abundant and widespread in the Cotati Valley, within which the study area is located; it also occurs in the Sonoma Valley to the southeast (USFWS 1991, 1998; Best et. al. 1996). Of 23 CNDDB occurrence records, 18 are in the Cotati Valley and five are in the Sonoma Valley. It grows in vernal pools and wet grasslands (USFWS 1991, 1998; Best et. al. 1996; Tibor 2001; CNPS 2005).

In 2005, we observed Sonoma sunshine in the seasonal pool located near the western site boundary that straddles the fence line between irrigated pasture to the north and uncultivated land to the south. We observed the species only in the southern half of this pool. The northern half of this pool, north of the fence, has been completely altered by conversion to irrigated pasture, and no longer provides suitable habitat for Sonoma sunshine. In 2005 we observed a small, concentrated colony of 5-10 plants of Sonoma sunshine in the south-central portion of this pool, more or less opposite the eastern side of a southward extension of the pool, and approximately 3-5 additional plants, somewhat more scattered, approximately 60-65 feet to the southeast. Associated species include the native species California semaphore grass (*Pleuropogon californicus*), smooth lasthenia (*Lasthenia glaberrima*), and Jepson's coyote-thistle (*Eryngium aristulatum* var. *aristulatum*) and the non-native species pennyroyal (*Mentha pulegium*).

The pool in which we observed Sonoma sunshine more or less coincides with the eastern portion of the mapped area of CNDDB Occurrence No. 20 of the species. The mapped historic extent of this occurrence extends westward, across Stony Point Road outside the present study area. The mapped area of occurrence within the study area also encompasses some adjacent grassland; however, the only suitable habitat for the species within the historic mapped area is this pool and a hydrologically connected pool to the south. The CNDDB record indicates that approximately 100 plants of Sonoma sunshine were observed on the site in 1987, with no indication of how many plants were located east of Stony Point Road. It is not known whether or not the species was observed on this site between 1987 and 2005.

We did not observe Sonoma sunshine at this location in 2004 (EcoSystems West 2004). It is possible that conditions in 2004 were not suitable for the species to germinate, or to survive to flowering. The 2004 and 2005 seasons were very different in terms of the timing of the drying of the pool. On 1 April 2004, when we observed Lobb's aquatic buttercup but not Sonoma sunshine in this pool, most of the pool bed was saturated, but there was no standing water. By 8 May 2004, this pool was completely dry. In 2005, there was considerable standing water in this pool when we first observed Sonoma sunshine on 5 April 2005, and standing water remained on 17 April. The pool bed was still largely saturated on 16 May, and standing water remained in the deepest parts. The relatively early drying of the pool in 2004, or some other ecological factors, could have prevented Sonoma sunshine from surviving to flowering in 2004. Alternatively, grazing and trampling by cattle could have removed flower heads of Sonoma sunshine relatively early in 2004, rendering the species essentially un-observable. Cattle were present on the site on 1 April 2004. In 2005, no grazing had occurred by 5 April. Cattle were grazing the site on 17 April, and, while Sonoma sunshine plants were still observable on that date, damage from cattle trampling was evident. Heavy impacts from grazing and trampling were evident on 16 May, when we could no longer find the Sonoma sunshine plants.

Lobb's aquatic buttercup (*Ranunculus lobbii*). Lobb's aquatic buttercup is listed on List 4 (Plants of Limited Distribution—A Watch List) of the CNPS *Inventory* (Tibor 2001; CNPS 2003). It does not fall under any specific state or federal regulatory authority. It is an often much-branched annual white-flowered buttercup that germinates underwater and grows in standing water or on drying mud. It has floating leaves and submersed leaves with drastically different morphology: the floating leaves are broad with three broad lobes, while the submersed leaves are finely divided into many threadlike segments. The submersed leaves have, however, only 2 or 3 primary divisions, a character separating this species from a similar, more widespread form of water buttercup (*Ranunculus aquatilus* var. *hispidulus*) with 3 to 6 primary divisions (other varieties of *R. aquatilus* have floating leaves similar to the submersed leaves). Lobb's aquatic buttercup flowers also only produce 2-6 ovaries and fruits, compared to 15 or more for *Ranunculus aquatilus* var. *hispidulus*.

In California, Lobb's aquatic buttercup occurs in coastal and near-coastal counties from Santa Clara County to Mendocino County (Munz and Keck 1973; Hickman 1993; Best et. al. 1996; Tibor 2001; CNPS 2005). Outside the state, it occurs northward to British Columbia. It grows in vernal pools and other places where water ponds seasonally in grassland, woodland, and forest habitats.

In 2004, we observed Lobb's aquatic buttercup in the same pool in which Sonoma sunshine occurs and in three seasonal pools in the southeast portion of the uncultivated area (EcoSystems West 2004). In 2005, we observed this species in these same four seasonal pools and also in two smaller, less well-defined seasonal pools in the northeastern portion of the uncultivated area west of the Bellevue-Wilfred Channel, several hundred feet east of the pool in which Sonoma sunshine occurs.

LITERATURE CITED

Abrams, L. 1923. Illustrated flora of the Pacific states, Vol. I. Stanford University Press, Stanford, CA. 538 pp.

_____. 1944. Illustrated flora of the Pacific states, Vol. II. Stanford University Press, Stanford, CA. 635 pp.

_____. 1951. Illustrated flora of the Pacific states, Vol. III. Stanford University Press, Stanford, CA. 866 pp.

_____ and R.S. Ferris. 1960. Illustrated flora of the Pacific states, Vol. IV. Stanford University Press, Stanford, CA. 732 pp.

California Department of Fish and Game. 2005. State and federally listed Endangered, Threatened, and Rare plants of California. http://www.dfg.ca.gov/whdab/pdfs/TEPlants.pdf (July 2005).

California Native Plant Society. 2005. California Native Plant Society inventory of rare and endangered plants. Online edition. Version 6-05c, 9 July 2005. http://cnps.web.aplus.net/cgi-bin/inv/inventory.cgi.

Best, C., J. T. Howell, W. Knight, I. Knight, and M. Wells. 1996. A flora of Sonoma County. California Native Plant Society, Sacramento, CA. 347 pp.

EcoSystems West Consulting Group. 2003. Preliminary botanical baseline study of the Rohnert Park Site, Sonoma County, California. Unpublished consultant's report, Santa Cruz, CA. December 1, 2003.

_____. 2004. Botanical baseline study of the Rohnert Park Site, Sonoma County, California. Unpublished consultant's report, Santa Cruz, CA. July 19, 2004.

Hickman, J. C. (ed.). 1993. The Jepson manual: higher plants of California. University of California Press, Berkeley, CA.

Munz, P. A. and D. D. Keck. 1973. A California flora and supplement. University of California Press, Berkeley, CA.

Tibor, D. P. (ed.). 2001. Inventory of rare and endangered vascular plants of California. California Native Plant Society Special Publication No. 1 [6th edition]. California Native Plant Society, Sacramento, CA.

U.S. Fish and Wildlife Service. 1991. Endangered and Threatened Wildlife and Plants; Determination of Endangered status for three plants, *Blennosperma bakeri* (Sonoma sunshine or Baker's stickyseed), *Lasthenia burkei* (Burke's goldfields), and *Limnanthes vinculans* (Sebastopol meadowfoam). Federal Register 56(231): 61173- 61182.

_____. 1998. Programmatic formal consultation for U.S. Army Corps of Engineers 404 permitted projects that may affect four endangered plant species on the Santa Rosa Plain, California. Unpublished document. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office. July 17, 1998.

_____. 2005a. Threatened and Endangered Species System (TESS). U.S. listed flowering plant species report by taxonomic group. http://ecos.fws.gov/tess_public/servlet/gov.doi.tess_public.servlets.VipListed?code=F&listings=0.

_____. 2005b. Threatened and Endangered Species System (TESS). U.S. listed nonflowering plant species report by taxonomic group. http://ecos.fws.gov/tess_public/servlet/gov.doi.tess_public.servlets.VipListed?code=N&listings=0.

_____. 2005c. Threatened and Endangered Species System (TESS). Proposed and Candidate Species. http://ecos.fws.gov/tess_public/servlet/gov.doi.tess_public.servlets.NonlistedSpecies?listings=0&type=both.

APPENDIX A

Vascular Plant Species Observed in the Rohnert Park Site Study Area, Sonoma County, California

FLOWERING PLANTS (ANGIOSPERMAE - DICOTYLEDONEAE)

ACERACEAE
- Acer negundo ssp. californicum

AMARANTHACEAE
- *Amaranthus hybridus

APIACEAE
- *Conium maculatum
- *Daucus carota
- Eryngium aristulatum var. aristulatum
- Eryngium armatum
- *Foeniculum vulgare
- Perideridia kelloggii
- *Torilis arvensis

ASTERACEAE
- Artemisia douglasiana
- Blennosperma bakeri
- *Calendula arvensis
- *Carduus pycnocephalus
- *Carthamus lanatus
- *Centaurea calcitrapa
- *Centaurea solstitialis
- *Chamomilla suaveolens
- *Cichorium intybus
- *Cirsium vulgare
- *Cotula coronopifolia
- Euthamia occidentalis
- Hemizonia congesta ssp. congesta
- *Hypocharis radicata
- *Lactuca saligna
- *Lactuca serriola
- *Leontodon taraxacoides ssp. taraxacoides
- *Picris echioides
- *Senecio vulgaris
- *Silybum marianum
- *Sonchus asper
- *Sonchus oleraceus
- *Taraxacum officinale
- *Tragopogon porrifolius
- Xanthium spinosum
- Xanthium strumarium

BORAGINACEAE
- Amsinckia menziesii var. intermedia
- Plagiobothrys undulatus

BRASSICACEAE
- *Brassica rapa
- *Capsella bursa-pastoris
- Cardamine oligosperma
- *Coronopus didymus
- *Lepidium latifolium
- Lepidium nitidum
- *Lepidium pinnatifidum
- *Raphanus sativus
- Rorippa curvisiliqua

CAMPANULACEAE
- Downingia concolor var. concolor

CARYOPHYLLACEAE
- *Cerastium glomeratum
- *Spergula arvensis
- *Stellaria media

CHENOPODIACEAE
- Atriplex triangularis
- Chenopodium berlandieri
- *Chenopodium strictum var. glaucophyllum

CONVOLVULACEAE
- *Convolvulus arvensis

CUSCUTACEAE
- Cuscuta californica var. californica

DIPSACACEAE
- *Dipsacus fullonum

EUPHORBIACEAE
- (*?)Chamaesyce cf. polycarpa
- Eremocarpus setigerus

FABACEAE
- *Genista monspessulana
- *Lathyrus hirsutus
- *Lotus corniculatus
- *Medicago polymorpha
- *Melilotus alba
- Trifolium depauperatum var. truncatum
- *Trifolium fragiferum
- *Trifolium hirtum
- *Trifolium pratense
- *Trifolium repens
- *Trifolium subterraneum
- *Vicia sativa ssp. nigra
- *Vicia sativa ssp. sativa

FAGACEAE
- Quercus lobata

GERANIACEAE
- *Erodium moschatum
- *Geranium dissectum

JUGLANDACEAE
- *Juglans californica var. hindsii
- *Juglans regia

LAMIACEAE
- *Mentha pulegium
- Pogogyne douglasii

LINACEAE
- *Linum bienne

LYTHRACEAE
- *Lythrum hyssopifolium

MALVACEAE
- *Malva parviflora

OLEACEAE
- Fraxinus latifolia

ONAGRACEAE
- Camissonia ovata
- Epilobium brachycarpum
- Epilobium ciliatum ssp. ciliatum
- Epilobium pygmaeum (= Boisduvalia glabella)
- *Ludwigia peploides ssp. montevidensis

PLANTAGINACEAE
- *Plantago lanceolata
- *Plantago major

POLYGONACEAE
- *Polygonum arenastrum
- Polygonum hydropiperoides
- Polygonum lapathifolium
- *Polygonum prolificum
- Polygonum punctatum
- *Rumex crispus
- *Rumex pulcher
- Rumex salicifolius var. transitorius

PORTULACEAE
- Claytonia perfoliata
- *Portulaca oleracea

RANUNCULACEAE
- Ranunculus californicus
- Ranunculus lobbii
- *Ranunculus muricatus
- Ranunculus cf. orthorhynchus

ROSACEAE
- *Prunus sp.
- *Rubus discolor

SALICACEAE
- Populus fremontii
- Salix laevigata
- Salix lasiolepis
- Salix lucida ssp. lasiandra

FLOWERING PLANTS (ANGIOSPERMAE - MONOCOTYLEDONEAE)

ALISMATACEAE
- Alisma plantago-aquatica

CYPERACEAE
- Carex globosa
- Cyperus eragrostis
- Eleocharis macrostachya
- *Scirpus tuberosus

IRIDACEAE
- Sisyrinchium bellum

JUNCACEAE
- Juncus patens
- Juncus phaeocephalus
- Juncus tenuis

JUNCAGINACEAE
- Lilaea scilloides

LILIACEAE
- (*?)Allium sp.
- Brodiaea terrestris ssp. terrestris
- Chlorogalum pomeridianum
- Triteleia hyacinthina

POACEAE
- (*?)Alopecurus geniculatus
- *Avena barbata
- *Avena fatua
- *Briza minor
- *Bromus catharticus
- *Bromus diandrus
- *Bromus hordeaceus
- *Bromus secalinus
- *Crypsis schoenoides
- *Dactylis glomerata
- Danthonia californica
- *Digitaria sanguinalis
- Distichlis spicata
- *Echinochloa colona
- *Echinochloa crus-galli
- *Festuca arundinacea
- *Glyceria declinata
- Glyceria occidentalis
- *Holcus lanatus
- Hordeum brachyantherum
- *Hordeum marinum ssp. gussoneanum
- *Hordeum murinum ssp. leporinum
- Leymus triticoides
- *Lolium multiflorum
- *Lolium perenne
- *Panicum dichotomiflorum
- *Phalaris aquatica
- Pleuropogon californicus
- *Poa annua
- *Polypogon monspeliensis
- Setaria gracilis
- *Vulpia bromoides

TYPHACEAE
- Typha domingensis
- Typha latifolia

*Species introduced or naturalized in the study area.

ATTACHMENT 3B.

Corps of Engineers Verification of the Wetland Delineation for the 360-acre Site
Dated January 26, 2005

DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
333 MARKET STREET
SAN FRANCISCO, CALIFORNIA 94105-2197

JAN 26 2005

Regulatory Branch

Subject: File Number 28745N

Greg Sarris
Federated Indians of Graton Rancheria
P.O. Box 14428
Santa Rosa, California 95402

Dear Mr. Sarris:

On behalf of the Federated Indians of Graton Rancheria the Huffman and Broadway Group Inc. submitted a letter dated April 23, 2004, requesting confirmation of the extent of Corps of Engineers jurisdiction on a 360-acre parcel adjacent to the corner of Wilfred Avenue and Stony Point Road in the town of Rohnert Park, Sonoma County, California (LAT: 38-21-34.7094, LONG: 122-44-05.5696).

Enclosed is a map showing the extent and location of Corps of Engineers jurisdiction on September 9, 2004. We have based this jurisdictional delineation on the current conditions of the site. A change in those conditions may also change the extent of our jurisdiction. This jurisdictional delineation will expire in three years from the date of this letter. However, if there has been a change in circumstances that affects the extent of Corps jurisdiction, a revision may be done before that date.

You are advised that the Corps has established an Administrative Appeal Process, as described in 33 C.F.R. Part 331 (65 Fed. Reg. 16,486; Mar. 28, 2000), and outlined in the enclosed flowchart and "Notification of Administrative Appeal Options, Process, and Request for Appeal" form (NAO-RFA). If you do not intend to accept the approved jurisdictional determination, you may elect to provide new information to the District Engineer for reconsideration or submit a completed NAO-RFA form to the Division Engineer to initiate the appeal process. You will relinquish all rights to appeal, unless the Corps receives new information or a completed NAO-RFA form within sixty (60) days of the date of the NAO-RFA.

If you have any questions, please call Robert Perrera of our Regulatory Branch at telephone 415-977-8454. All correspondence should reference the file number at the head of this letter.

Sincerely,

Jane M. Hicks

Jane M. Hicks
Chief, North Section

Enclosure

Copy Furnished (w/ JD map):

Terry Huffman
Huffman-Broadway Group, Inc., Larkspur, CA

Christine Nagle
National Indian Gaming Commission, Washington D.C.

John Warren
Redwood Equities Investment, LLC, Santa Rosa, CA

Stanley John Poncia, Santa Rosa, CA

Whistler Avenue Associates Inc., Santa Rosa, CA

Location of Areas Subject to Corps Section 404 Clean Water Act Jurisdiction, Proposed Gaming Site, Federated Indians of Graton Rancheria, Sonoma County, California

ATTACHMENT 3C.

Request for Revised Jurisdictional Verification, Corps File No. 28745N, Proposed Gaming Facility, Federated Indians of the Graton Rancheria. September 12, 2005. The Huffman-Broadway Group, Inc.

The Huffman-Broadway Group, Inc. *Environmental Regulatory Consultants*
828 Mission Avenue, San Rafael, California 9490139, USA • (415) 925-2000 • Fax (415) 925-2006
Sender's e-mail: thuffman@h-bgroup.com

September 12, 2005

Mr. Philip Shannin
Regulatory Branch
U.S. Army Corps of Engineers
Regulatory Branch, San Francisco District
333 Market Street, 8th Floor
San Francisco, CA 94105

Subject: Request for Revised Jurisdictional Delineation Verification, Corps File No. 28745N, Proposed Gaming Facility, Federated Indians of Graton Rancheria, Sonoma County, California.

Dear Mr. Shannin:

On behalf of the Federated Indians of Graton Rancheria, The Huffman-Broadway Group, Inc. (HBG) conducted an investigation of the geographic extent of possible wetland areas or other types of waters on an approximately 4.7-acre parcel located adjacent to the ±360-acre parcel that is Federated Indians of Graton Rancheria general project location of their proposed gaming facility, (Attachment 1; Lat: 38-21-34.7092, Lon: 122-44-05.5696). The proposed project has been revised to include the additional 4.7-acre parcel with the original ±360-acre delineation submitted by our firm.

On January 26, 2005 the Corps issued a letter verifying the extent and location of wetlands subject to Corps jurisdiction on the ±360-acre site. On August 2005 HBG walked the entire ±360-acre parcel to verify the extent and location of wetlands as shown on the Corps verified wetlands delineation map dated September 9, 2004. Additionally, HBG completed a detailed delineation of the 4.7-acre parcel adjacent to and contiguous with the ±360-acre parcel (refer to Attachments 1 and 2). The investigation was conducted in accordance with Code of Federal Regulations (CFR) definitions of jurisdictional waters, the Corps' 1987 wetland delineation manual, and supporting guidance documents.

Attachment 3 provides two copies of the revised jurisdictional delineation map, entitled "*Location of Areas Subject to Corps Clean Water Act Section 404 Jurisdiction, Proposed Gaming Site, Federated Indians of Graton Rancheria, Sonoma County, California,*" dated September 12. 2005, which is our technical evaluation of the subject property potentially under Corps Jurisdiction under Section 404 of the Clean Water Act. Attachment 4 provides wetland data sheets for the additional 4.7-acre parcel. The extent and location of Corps jurisdictional wetlands on the ±360-acre parcel was verified and no changes are requested. However, the

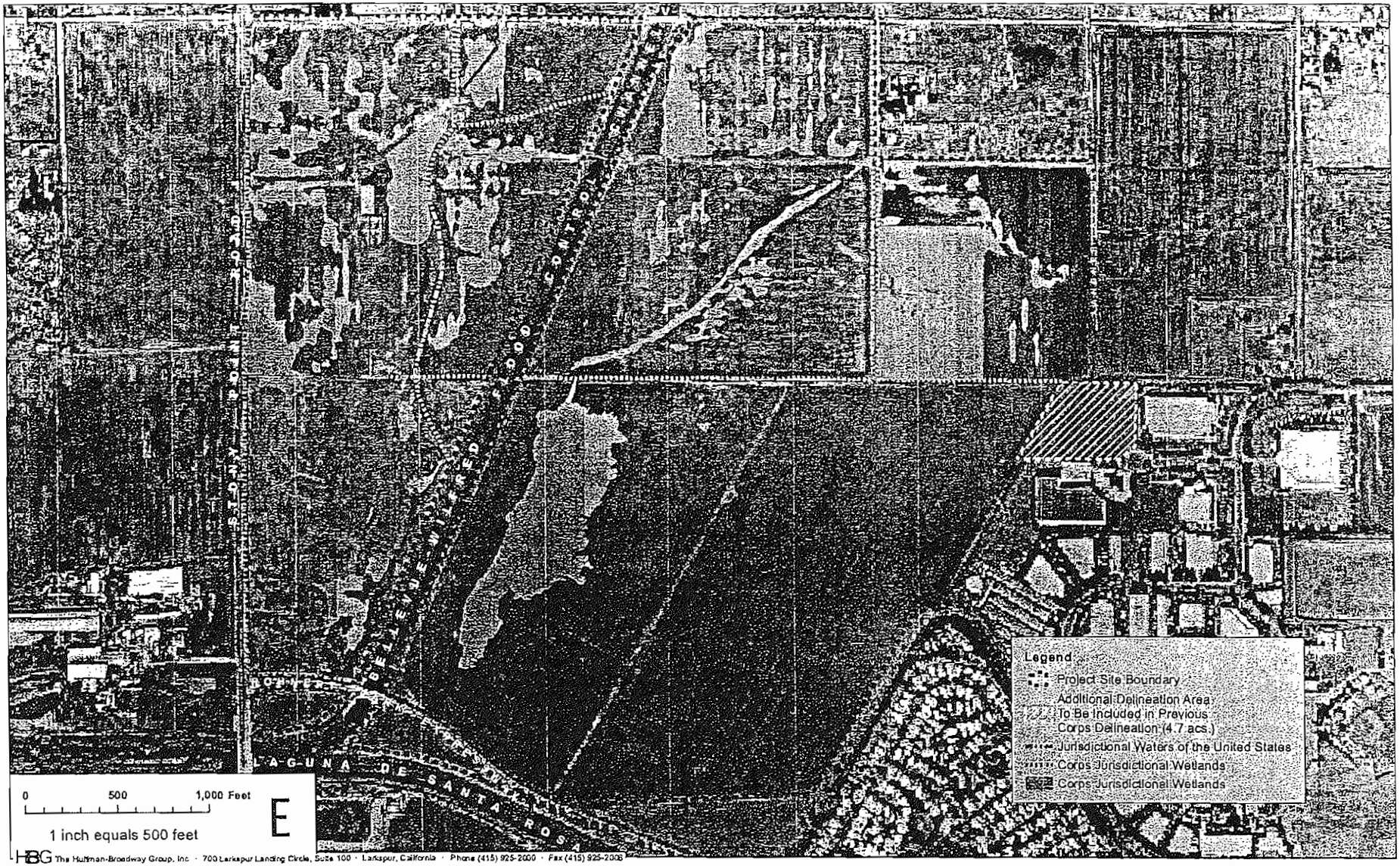
wetland delineation HBG conducted on the additional 4.7-acre parcel adds 0.299-acre of wetlands potentially subject to Jurisdiction under Section 404 of the Clean Water Act.

On behalf of the Federated Indians of Graton Rancheria, HBG is requesting a wetland verification of waters potentially subject to Corps jurisdiction. Please call me at 415-925-2000 if you have any questions and to schedule an on-site meeting at your earliest convenience.

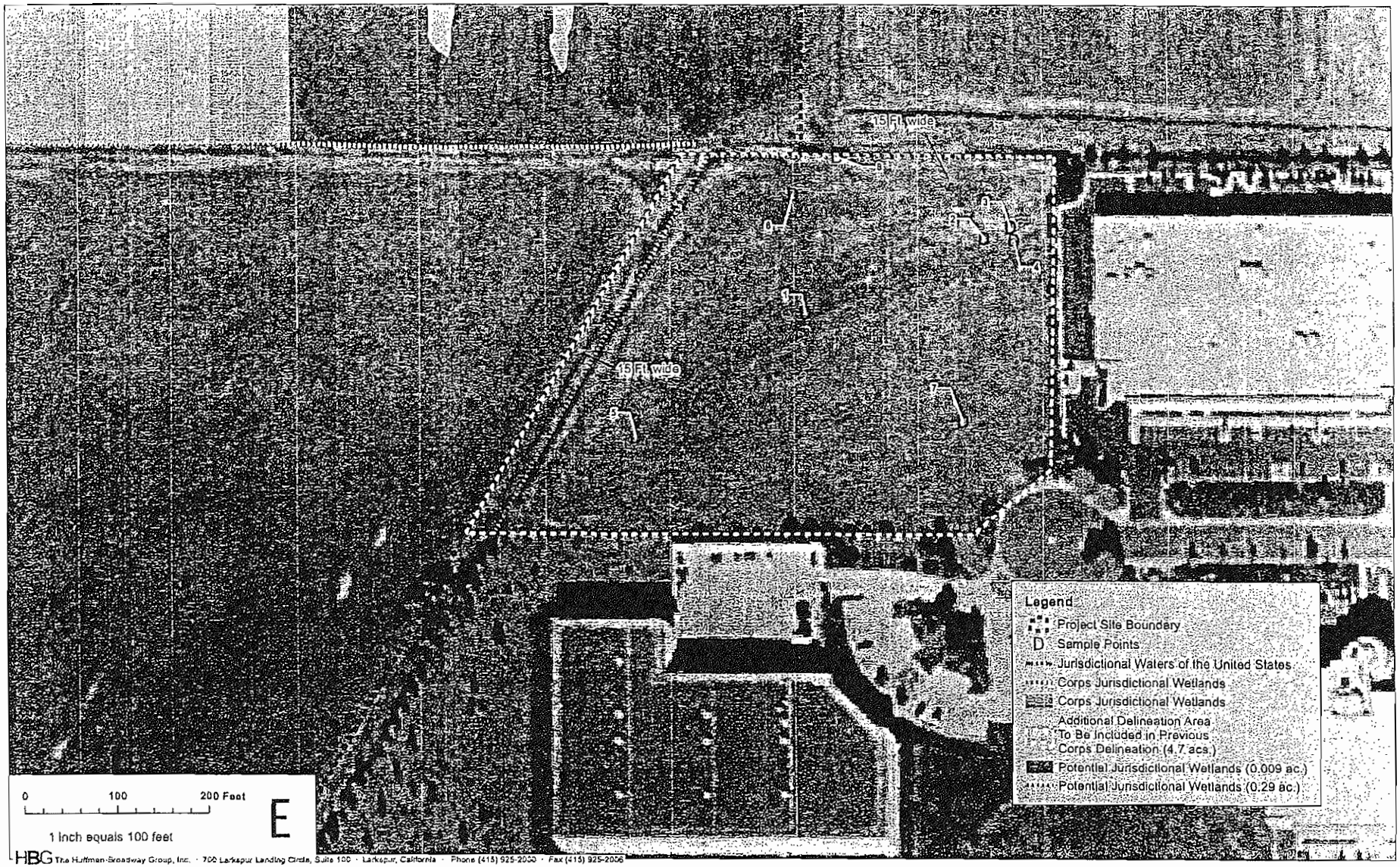
Sincerely,

Terry Huffman, PhD
Wetlands Regulatory Scientist

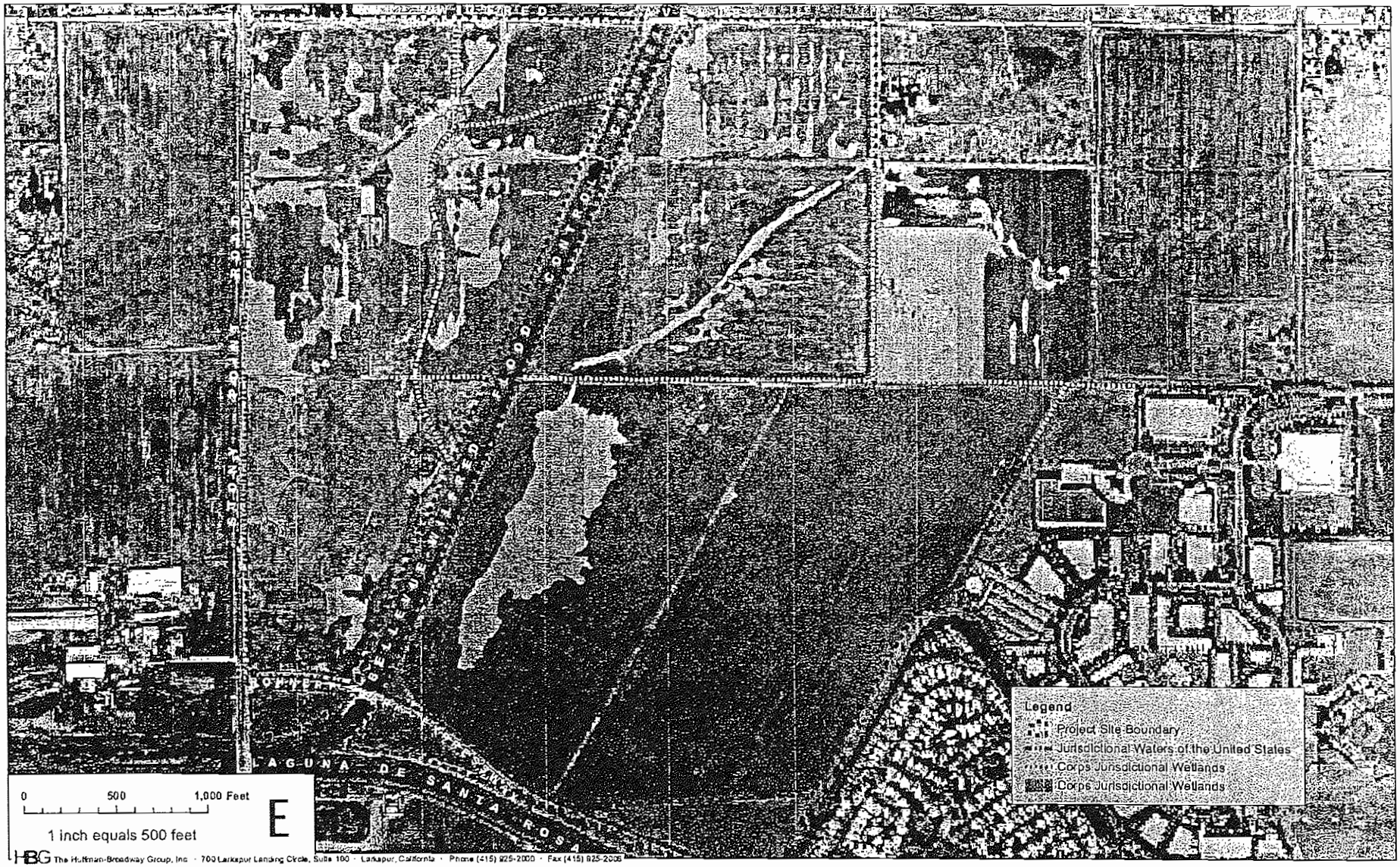
Attachments



Attachment 1. Location of Corps Verified Jurisdictional Determination in Relationship to 4.7 Acre Area, Proposed Casino Facility, Federated Indians of Graton Rancheria, Rohnert Park, CA



Attachment 2. Location of Areas Potentially Subject to Corps Clean Water Act, Section 404 Jurisdiction, Proposed Casino Facility, Federated Indians of Graton Rancheria, Rohnert Park, CA



Attachment 3. Location of Areas Subject to Corps Clean Water Act Section 404 Jurisdiction, Proposed Gaming Site, Federated Indians of Graton Rancheria, Sonoma County, California, dated September 12, 2005.

ATTACHMENT 3D.

Draft California Tiger Salamander Site Assessment, Rohnert Park, California.
Prepared by Wildlife Research Associates, November 2003.

DRAFT

DRAFT

CALIFORNIA TIGER SALAMANDER SITE ASSESSMENT

ROHNERT PARK, CALIFORNIA

NOVEMBER 18, 2003

Prepared for:

The Huffman-Broadway Group, Inc
700 Larkspur Landing Circle, Ste. 100
Larkspur, CA 94939
415-925-2000

Prepared by:

Ecosystems West Environmental Group
819 1/2 Pacific Avenue, Ste 4,
Santa Cruz, CA 95060
831-429-6730

And

Wildlife Research Associates
1010 Lakeville Street, Suite 3A
Petaluma, CA 94952
707-763-6492

eww-6273

ROHNERT PARK SITE ASSESSMENT
TABLE OF CONTENTS

TABLES

APPENDIX A

SUMMARY

The Huffman-Broadway Group, Inc contracted with Ecosystems West and Wildlife Research Associates to conduct a California tiger salamander (*Ambystoma californiense*) Site Assessment for a 360-acre site, located adjacent to Stony Point Road and Wilfred Avenue, west of the City of Rohnert Park, in unincorporated Sonoma County, California.

This Site Assessment presents the findings of a habitat evaluation as outlined in the *Changes and Clarifications to the U.S. Fish and Wildlife Service's Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma District Population Segment of the California Tiger Salamander* (USFWS 2002). It also includes a review of scientific literature and previous reports detailing studies conducted in the area, and the California Department of Fish and Game's (CDFG) Natural Diversity Data Base (CNDDB) for reported occurrences of the California tiger salamander.

Vegetation present within the study area is characteristic of species present in agricultural areas within the eastern Santa Rosa Plateau, and is dominated by highly disturbed grassland, ruderal vegetation, and seasonal wetlands.

Suitable breeding and terrestrial habitat occurs within the western portion of the proposed site. The closest reported sighting of California tiger salamander occurs 150 feet away from the study site, on Wilfred Avenue, at the northwestern portion of the property.

INTRODUCTION

Wildlife Research Associates conducted a Site Assessment for the federally-listed Endangered Sonoma population of California tiger salamander (*Ambystoma californiense,* hereafter CTS) within 360 acres of undeveloped lands in the central portion of the range of the CTS (USFWS 2002). A Site Assessment is required by the U.S. Fish and Wildlife Service (USFWS) to assess CTS status on site and in the vicinity of a proposed study area. The study methods and report of this Site Assessment conform to the guidelines outlined in the *Changes and Clarifications to the U.S. Fish and Wildlife Service's Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma District Population Segment of the California Tiger Salamander* (USFWS 2002) and presents the results of our investigation. Identified in this report are terrestrial and breeding sites or other aquatic features that may provide habitat for CTS both on site and within 1.24 miles.

METHODS

Background research was conducted prior to the initiation of field surveys. The California Natural Diversity Database (CNDDB 2003), operated by the Department of Fish and Game, was reviewed for the U.S. Geological Service Santa Rosa, Cotati, Two Rock and Sebastopol 7.5-minute topographic quadrangles for reported occurrences of CTS within 3 miles of the study area, or the closest reported sighting, in order to determine a pattern of dispersal in the area. Other sources of information regarding CTS locations include previously reported locations from the U.C Berkeley Museum of Vertebrate Zoology and the California Academy of Sciences.

Trish Tatarian conducted two field reconnaissance visits, on September 30 and October 2, 2003, which entailed walking and driving meandering transects over the entire parcel. For purposes of this report, the **study area** includes all lands within the 360-acre parcel. Aerial photograph analysis was conducted of appropriate ponds and water bodies that could provide potential breeding habitat. Habitats within 1.24 miles were evaluated for their potential to provide connectivity between sites, which could enable CTS to move onto the site.

For this report, upland habitat suitability was based on the presence of small mammal burrows, primarily those created by Botta's pocket gophers (*Thomomys bottae*), or other suitable aestivation holes, such as soil cracks, and grass height. Aquatic habitat suitability was based on the presence of depressions, including drainage ditches, and their depths.

SITE DESCRIPTION

The site investigated is located within the outer North Coast region of California east of the Laguna de Santa Rosa in central Sonoma County (Sawyer and Keeler–Wolf 1995). Known as the Santa Rosa Plains, the area is characterized by a Mediterranean climate, with dry summers and temperatures as high as 100° Fahrenheit, and wet winters, with an average rainfall of 29.9 inches and temperatures as low as 25° F (Best, et al. 1996).

The site is located within an unsectioned area of the southern portion of the Cotati USGS 7.5-minute topographic quadrangle, within Township 6N and Range 8W (Appendix A, Figure 1). The north arm of the Laguna de Santa Rosa flood control channel occurs within the central portion of the site and flows from northeast to southwest. The 360-acre parcel can be broken into two sections, one located north (180 acres), and another to the south (180 acres) of the central fence line that spans the north arm of the Laguna de Santa Rosa flood control channel. Irrigated pastures occur in the northwestern-quarter of the site, non-irrigated pastures occur in the southwestern quarter, and silage and hay production occurs in the northeastern and southeastern quadrants. The proposed study site, located in the western area, contains irrigated and non-irrigated pastures that are grazed by cattle.

The proposed study site consists of relatively flat topography, with elevations above sea level ranging between 81 feet in the southwest to 88 feet in the northwest. The north arm of the Laguna de Santa Rosa ranges in depth between 4 feet and 6 feet to top of bank. A single linear drainage, beginning from Wilfred Avenue, flows south into the north arm of the Laguna de Santa Rosa. Several other wetland areas, such as seasonal swales, occur within the study site, and these may or may not provide suitable breeding habitat.

Two soils series - Clear Lake and Wright - occur within the project area. Clear Lake clay is a poorly drained soil that occurs on basins and flood plains (USDA 1972). This soil has a slow permeability and runoff rate, with a high shrink-swell potential and lies typically within 3-5 feet of the water table. Occurring on 0-2% slopes ranging in elevation between 20-300 feet, this soil extends from 5 miles south of Santa Rosa and east of Petaluma to north of the San Francisco Bay tidelands (USDA 1972). Clear Lake clay is underlain by alluvium from basic and sedimentary rock and has formed under poorly drained conditions. Clear Lake series is classified in the order of vertisols, soils that are clay that crack, shrink and swell in all seasons creating deep cracks in dry periods.

Wright shallow wet loam occurs on the central Santa Rosa plain and south of the Town of Sonoma and consists of loam topsoil to 10-20 inches in depth, underlain by clay (USDA 1972). Occurring on 0-2% slopes ranging in elevation between 20-300 feet, this soil has a high shrink-swell potential. The Wright series is classified in the alfisols order - soils that have been formed mostly under trees - and are light colored. This soil occurs mainly on the central area of the Santa Rosa Plain between 70-300 feet in elevation (USDA 1972). These soils are underlain by valley plain alluvium of mixed origin including volcanic and marine sediment.

The site currently supports approximately 37 acres of irrigated pasture, and 48 acres of non-irrigated pasture west of the Laguna de Santa Rosa. The majority of plant species observed within the pasturelands are ruderal in nature, with both native and non-native species present, including lotus (*Lotus corniculatus*), California poppy (*Eschscholzia californica*), black mustard (*Brassica nigra*), field mustard (*Brassica rapa*), prickly lettuce (*Lactuca serriola*), willow lettuce (*Lactuca saligna*), bull thistle (*Cirsium vulgare*), yellow star thistle (*Centaurea solstitialis*) and purple star-thistle (*Centaurea calcitrapa*), chickory (*Cichorium intybus*), cocklebur (*Xanthium strumarium*), wild radish (*Raphanus sativus*), white sweetclover (*Melilotus alba*), and cheeseweed (*Malva parviflora*) (Ecosystems West 2003). Grasses present on site include Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), meadow barley (*Hordeum brachyantherum*), perennial ryegrass (*Lolium perenne*), brome grasses (*Bromus catharticus, B. diandrus, B. hordeaceus, B. secalinus*), orchard grass (*Dactylis glomerata*), Harding grass (*Phalaris aquatica*), slender wild oats (*Avena barbata*), and wild oats (*Avena fatua*), among others (Ecosystems West 2003). Within and on the banks of the drainages and seasonal wetlands native and non-native species were observed, such as Himalayan blackberry (*Rubus discolor*), prickly ox-tongue (*Picris echioides*), curly dock (*Rumex crispus*), rabbitsfoot grass (*Polypogon monspeliensis*), salt grass (*Distichlis spicata*), wart cress (*Coronopus didymus*), leymus (*Leymus triticoides*), English plantain (*Plantago lanceolata*), common plantain (*Plantago major*) (Ecosystems West 2003).

Wildlife habitats within the study area are characteristic of rural areas in this portion of the Santa Rosa plains, dominated by non-native grassland, and ruderal vegetation. Wildlife species observed on site include Botta's pocket gopher (*Thomomys bottae*), and black-tailed jackrabbit (*Lepus californicus*).

The majority of parcels in the area are currently used for farming activities, either with cattle grazing, horse pastures, or hay production.

California Tiger Salamander Autecology

California tiger salamanders spend most of the year underground in the burrows of California ground squirrels (*Spermophilus beecheyi*) and pocket gophers, feeding on insects (Loredo, et al. 1996; Stebbins 1985). Upland terrestrial habitat for Ambystomids is usually within 300 meters (984 feet) of aquatic breeding sites, but movements have been reported as far away as 800 meters (2,246 feet) (Trenham 2001, Madison and Farrand 1998). Following heavy winter rains (normally December-March) adults emerge briefly to lay their eggs in ponds, preferring vernal pools, alkali sinks or cattle troughs that have muddy bottoms or contain some algal growth in the water for hiding in, but are devoid of fish. Although no studies have been conducted on the water quality requirements, it has been noted that turbid water may be preferred (reduces predation), and water quality can prevent the transformation into the adult stage.

Adult salamanders are nocturnal and emerge for only a few weeks per year from their underground retreats. During the short breeding season, salamanders can be observed moving to temporary rain pools, ponds, and lakes nocturnally. Eggs are usually laid singly or may be in small clusters attached to vegetation in shallower water (Stebbins 1985). Larvae transform after a growth period of about four months (Dunn 1940) and may reach up to three inches before metamorphosing (Stebbins 1985). Larvae live in ponds until early or mid-summer, when they metamorphose into adults and emigrate from the pond during a summer storm (Loredo, et al. 1996, Loredo and Van Vuren 1996; Holland, et al. 1990). This species can live up to 10 years and does not reach sexual maturity until three or four years of age (Trenham, et al. 2000).

Breeding habitat is considered suitable if water is present at a minimum of 12 inches for a minimum period of 4 months. Terrestrial habitat is considered suitable if small mammals are present and the site has not been disturbed from previous activities, such as road construction or other ground disturbing activities, such as grading or excavation.

HABITAT ASSESSMENT

Habitats Within the Study Area

The study area, located west of the north arm of the Laguna de Santa Rosa flood control channel, contains irrigated pastures and non-irrigated pastures that are cattle grazed.

Irrigated pasturelands on the site provide the highest potential for CTS occurrence, based on the relatively high number of gopher burrows within the pasturelands, the low height (8-10 inches) of the grass and the presence of several drainage ditches through the pasturelands. Gopher burrows, the primary upland refugia for CTS in Sonoma County, were observed within the sections of the pasturelands that were drier. A burrow count was not conducted for this report, because, in general, gopher burrow systems consist of a main tunnel, generally 4 to 18 inches below the soil surface, and a variable number of lateral burrows extending from the main tunnel (UC Davis 2003). A burrow system may be linear-to-highly branched, may contain up to 200 yards of tunnels, and may have a hundred or more mounds. However, there is no correlation between the number of mounds observed above ground and the length of tunnels underground. Except during the breeding season (spring), only one gopher occupies one burrow system. Gopher densities are dependent on soil type and forage, and typically range between 7 to 20 individuals per acre, with maximum densities of 62 per acre (Case and Jasch 1994). The large amount of subterranean systems typically created by gophers provides a greater potential for CTS to occur.

Approximately 2,613 linear feet of drainage ditch occur within the site, excluding drainages along Stony Point Road (western boundary) and Wilfred Avenue (northern boundary) (Figure A2). This drainage is ~ 2-3 feet in depth from top of bank, with a water depth potentially of 1-2 feet, a depth sufficient for supporting metamorphosing larvae during the 20 weeks required for metamorphosing.

The silage and hay agricultural fields located within the eastern parcel could potentially support aestivating adult CTS, because gopher burrows occur in the non-tilled area of the fields, providing refugia for the gophers until the crops began to grow. The tilling depth appeared less than 6 inches; shallow enough not to damage deeper gopher burrows in which CTS may potentially be aestivating.

The tributary to the Laguna de Santa Rosa channel may retain water for a sufficient duration to provide suitable breeding habitat for CTS (Figure A3). However, the presence of water primrose (*Ludwigia peploides*) in the channel, as identified by Ecosystems West botanist, reduces the potential as suitable breeding habitat.

Habitats Within 1.24 Miles of the Study Area

The study area is located in the southern portion of the Santa Rosa Plateau, south of the urbanized area of Santa Rosa and west of the urbanized area of Rohnert Park. Suitable habitat for CTS occurs west, north, east and south of the project site.

Movement Corridors

Wildlife movement includes migration (*i.e.*, usually one way per season), inter-population movement (*i.e.*, long-term genetic flow) and small travel pathways (*i.e.*, daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow between populations.

These linkages between habitat types can extend for miles between primary habitat areas and occur on a large scale throughout California. Habitat linkages facilitate movement between populations located in discrete areas and populations located within larger habitat areas. The mosaic of habitats found within a large-scale landscape results in wildlife populations that consist of discrete sub-populations comprising a large single population, often referred to as a meta-population. Even where patches of pristine habitat are fragmented, such as occurs with coastal scrub, the movement between wildlife populations is facilitated through habitat linkages, migration corridors and movement corridors. Depending on the condition of the corridor, genetic flow between populations may be high in frequency, thus allowing high genetic diversity within the population, or may be low in frequency. Potentially low frequency genetic flow may lead to complete isolation and, if pressures are strong, potential extinction (McCullough 1996; Whittaker 1998).

Movement corridors for CTS between this site other sites to the north are of high value, since Wilfred Avenue is not as busy with traffic as other roads nearby. Stony Point Road may be considered a barrier to movement for CTS moving east-west, based on research conducted in Europe with common toad (*Bufo bufo*), in which 50% mortality occurred on roads with 24-40 cars per hour (USFWS 2001).

REPORTED OCCURRENCES

The closest reported CTS occurrence is at the corner of Stony Point Road and Wilfred Avenue, within 150 feet from the edge of the study area. There were a total of 9 reported occurrences within 1.5 miles of the study site. Please refer to Table 1 for a listing of these occurrences. Known locations for CTS in or near the study area are shown in and Figure 1, where radii of approximately 1.5 and 3 miles from the site's center are indicated with gray circles.

Sites designated with numbers only represent occurrences from the California Natural Diversity Database, while those designated "TT" are sites Trish Tatarian personally located during previous seasons. In 2001, she surveyed the area north of the study site for egg sacs, the locations of which are depicted as TT01/1. In 2002, she surveyed the area north of the study site for larvae, locations of which are depicted as

TT02/1. Although these are recorded in the CNDDB, these exact locations are presented according to her field notes.

Table 1.
Data on Known Breeding Localities of CTS Near the Study Area.

CTS I.D.	Location	UTM Coordinates (10 S)	Size of Habitat (feet)
TT 01/1	Whistler Avenue East side	N4247768 E0523695	98 ft x 4 ft 6-10 in. deep
TT 01/2	Whistler Avenue West side	N4247733 E0523621	196 ft x 5 ft 8-12 in. deep
TT 01/3	Whistler Avenue (west) South of Scenic	N4247215 E0523672	~70 ft x 4 ft 10 inches deep
TT 01/4	Whistler Avenue (east) South of Scenic	N4247160 E0523634	~ 90 ft x 4 ft 6 in. deep
TT 02/1	Primrose Avenue East side	N4248408 E0523125	30m x 1.25m 6-10 in. deep
TT 02/2	Primrose Avenue East side	N4248308 E0523121	60m x 1.5m 8-12 in. deep
TT 02/3	Stony Point Road West side	N4248015 E0522564	30m x 2m 6-10 in deep
TT 02/4	Stony Point Road West side	N4246411 E0522588	5m x 1m 6 in deep
TT 02/5	Stony Point Road East side	N4247157 E0522582	5m x 1m 6-8 in deep
TT 02/6	Primrose Avenue East side	N4246548 E0522961	3.5m x 1m 8 in deep
TT 02/7	Millbrae Avenue, E of Stony Point Road	N4246861 E0523279	97m x 1.25m 10-12 in deep
TT 02/8	Millbrae Avenue, E of Stony Point Road	N4246846 E0523212	55 m X 20cm 4-10 in deep
TT 02/9	Taylor Avenue, W of Stony Point Road	N4246027 E0522297	60m x 1m 12 in deep
TT 03/1	Ghilloti Avenue, south	N4248344 E0524195	1,968 ft x 10 ft 4-8 in deep
TT 03/2	Old Stony Point Road, and Hearn Avenue	N4251709 E0522844	225ft x 6 ft 6-10 in deep
231	Stony Point Road, S of HWY 116	N4242700 E522959	CNDDB
328	Scenic Avenue Preserve, SW corner of Scenic Avenue and SPRR tracks	N4247169 E524630	CNDDB

CTS I.D.	Location	UTM Coordinates (10 S)	Size of Habitat (feet)
395	Helman Lane, between Stony Point Road and HWY 101	N4244187 E523653	CNDDB
521	NW intersection of Hwy 101 and HWY 116	N4242560 E524949	CNDDB
576	Stony Point Road, 0.5 mi S of Todd Road	N4247788 E522682	CNDDB
577	Millbrae Avenue, 0.1 mi W of Primrose Avenue	N4246568 E522798	CNDDB
579	Junction of Wilfred and Stony Point Road	N4245936 E522704	CNDDB
590	N of Todd Road, ~0.6 mi E of Llano Road	N4248648 E521124	CNDDB
649	Primrose Ave, 0.5 mi S of Bellevue Rd,	N4249416 E523232	CNDDB

Of the 11 specimens represented on the internet site (www.mip.berkeley.edu/mvz/) of the museum of Vertebrate Zoology at the University of Berkeley (2003), a total of 6 occurrences of CTS have been reported in this portion of the county, and have been incorporated into the CNDDB.

Conversations with other herpetologists working in the region resulted in one additional location of CTS in proximity to the study area, located west of Stony Point Road and south of the irrigated fields of the City of Santa Rosa, on the dairy farm adjacent to the Laguna de Santa Rosa (Jennings, pers. comm.)

CONCLUSION

The area within the western section provides highly suitable upland habitat for aestivating adult CTS in the form of gopher burrows. Highly suitable aquatic habitat for larvae occurs in the drainage ditches within the study area. This characterization is based on personal observation of drainage ditches on Primrose Avenue, where both egg sacs and larvae were observed. Although the drainages had a maximum depth of 12 inches, it is unclear whether the larvae moved to greater depths after hatching, and if they survived the 20 weeks required.

The remaining 315 acres is currently protected under the Williamson Act, also known as the California Land Conservation Act, a land protection program in which agricultural lands are restricted in use as agriculture and open space uses for the term of a minimum of 10 years. It is unclear whether a conversion from agricultural lands to open space as mitigation for CTS would be accepted by the agencies under the Act.

Mitigation land ratios of 3:1, or 3 acres mitigated for every acre lost, have typically been required by the USFWS for the Sonoma County population of CTS (Tatarian, personal observation). Mitigation ratios typically do not differ for aestivation sites compared to aquatic sites. The potential for suitable on-site mitigation habitat within the 360 acres site is high, particularly within the southwestern quadrant. As with all mitigation, the USFWS makes the final determination on a case-by-case basis.

Opportunities for on-site mitigation include conversion of 315-acres of agricultural lands to pasture lands and creation of breeding habitat within the pasturelands prior to development. The pasturelands would provide aestivation habitat in the form of gopher burrows that are expected to move into the area after regular hay production has ceased. Ponds would be created and become established for 1 year prior to relocation of larvae from drainage ditches within the western portion. Relocation of larvae would occur

for a 2-3 year period. In this way, the young would be relocated to the new on-site breeding habitat and would then disperse into new aestivation areas. The number of adults lost could be estimated from the relocation effort of the larvae. Relocation of adults is infeasible, as adults will try to make their way back to their known breeding habitat even though it has been removed (Jennings, pers comm.).

Opportunities for off-site relocation are minimal. Although several new mitigation banks for CTS are pending (Wilcox, pers. comm.), none have been approved to date and may not be approved in the near future. It may be acceptable to put into escrow a sum of money, based on the ratio determined by the USFWS, for a future mitigation bank or regional Habitat Conservation Plan and will be determined by USFWS.

REFERENCES

BEST, C., J. HOWELL, W. KNIGHT, I. KNIGHT AND M. WELLS. 1996. A FLORA OF SONOMA COUNTY. CALIFORNIA NATIVE PLANT SOCIETY. SACRAMENTO, CALIFORNIA.

CALIFORNIA NATURAL DIVERSITY DATA BASE (CNDDB). 2003. SANTA ROSA, SEBASTOPOL, TWO ROCK AND COTATI 7.5-MINUTE TOPOGRAPHIC QUADRANGLES.

CASE, R. AND B JASCH. 1994. POCKET GOPHERS: DAMAGE PREVENTION AND CONTROL METHODS. IN PREVENTION AND CONTROL OF WILDLIFE DAMAGE. EDS S. HYGNSTROM, R. TIMM AND G. LARSON. UNIVERSITY OF NEBRASKA COOPERATIVE EXTENSION, UNITED STATES DEPARTMENT OF AGRICULTURAL AND GREAT PLAINS AGRICULTURAL COUNCIL.

COOK, D. AND P. NORTHEN. 2001. DRAFT STATUS OF THE CALIFORNIA TIGER SALAMANDER IN SONOMA COUNTY. UNPUBLISHED TECHNICAL REPORT PRESENTED TO CALIFORNIA DEPARTMENT OF FISH AND GAME. MAY 13.

DUNN, E. M. 1940. THE RACES OF AMBYSTOMA TIGRINUM. COPEIA 1940, NO. 3, 154-162.

ECOSYSTEMS WEST CONSULTING GROUP. 2003. VASCULAR PLANT SPECIES OBSERVED IN THE ROHNERT PARK SITE STUDY AREA, SONOMA COUNTY, CALIFORNIA. PREPARED FOR HUFFMAN-BROADWAY GROUP. OCTOBER.

HOLLAND, D. C., M. P. HAYES AND E. MCMILLAN. 1990. LATE SUMMER MOVEMENT AND MASS MORTALITY IN THE CALIFORNIA TIGER SALAMANDER (AMBYSTOMA CALIFORNIENSE). SOUTHWESTERN NATURALIST 35:217-220.

LOREDO, I., AND D. VAN VUREN. 1996. REPRODUCTIVE ECOLOGY OF A POPULATION OF THE CALIFORNIA TIGER SALAMANDER. COPEIA, 1996(4), PP. 895-901.

LOREDO, I., D. VAN VUREN AND M. MORRISON. 1996. HABITAT USE AND MIGRATION BEHAVIOR OF THE CALIFORNIA TIGER SALAMANDER. JOURNAL OF HERPETOLOGY VOL. 30 (2): 282-285.

MCCULLOUGH, D. 1996. METAPOPULATIONS AND WILDLIFE CONSERVATION. ISLAND PRESS. 429PP.

POWELL, J.A., AND C.L. HOGUE. 1979. CALIFORNIA INSECTS. UNIVERSITY OF CALIFORNIA PRESS, BERKELEY. 388 PP.

SAWYER, J.O. AND T. KEELER-WOLF. 1995. A MANUAL OF CALIFORNIA VEGETATION. CALIFORNIA NATIVE PLANT SOCIETY, SACRAMENTO. 471 PP.

SHAFFER, H.B., R.N. FISHER, AND S.E. STANLEY. 1993. STATUS REPORT: THE CALIFORNIA TIGER SALAMANDER (AMBYSTOMA CALIFORNIENSE). A FINAL REPORT TO THE CALIFORNIA DEPARTMENT OF FISH AND GAME INLAND FISHERIES DIVISION. RANCHO CORDOVA, CALIFORNIA. UNDER CONTRACTS FG 9422 AND FG 1383.

STEBBINS, R. 1985. A FIELD GUIDE TO WESTERN REPTILES AND AMPHIBIANS. 2ND ED., HOUGHTON MIFFLIN, BOSTON.

STEBBINS, R. 1989. A REPORT: CALIFORNIA TIGER SALAMANDER. LETTER PREPARED IN RESPONSE TO CDFG LISTING PACKAGE. 16PP.

TRENHAM, P. 2001. TERRESTRIAL HABITAT USE BY ADULT CALIFORNIA TIGER SALAMANDERS. J. OF HERPETOLOGY VOL. 35 (2): 343-346.

TRENHAM, P., H. B. SHAFFER, W. D. KOENIG, AND M.R. STROMBERG. 2000. LIFE HISTORY AND DEMOGRAPHIC VARIATION IN THE CALIFORNIA TIGER SALAMANDER (AMBYSTOMA CALIFORNIENSE). COPEIA (2): 365-377.

MADISON, D. AND L. FARRAND. 1998. HABITAT USE DURING BREEDING AND EMIGRATION IN RADIO-IMPLANTED TIGER SALAMANDERS, AMBYSTOMA TIGRINUM. COPEIA 2: 402-410.

WILDLIFE RESEARCH ASSOCIATES. 2001. RESULTS OF CALIFORNIA TIGER SALAMANDER EGG SAC SURVEYS – ROHNERT PARK. UNPUBLISHED TECHNICAL REPORT PREPARED FOR D. COOK.

UNIVERSITY OF CALIFORNIA DAVIS. 2003. POCKET GOPHERS: BIOLOGY DAMAGE AND CONTROL. WEBSITE AT WFCB.UCDAVIS.EDU/WWW/FACULTY/DESLEY.GOPHER.HTM.

U.S. DEPARTMENT OF THE INTERIOR (USDA). 1972. SOIL SURVEY, SONOMA COUNTY, CALIFORNIA. TECHNICAL REPORT PREPARED BY FOREST SERVICE AND SOIL CONSERVATION SERVICE IN COOPERATION WITH UNIVERSITY OF CALIFORNIA AGRICULTURAL EXPERIMENTATION STATION. MAY.

U.S. FISH AND WILDLIFE SERVICE (USFWS). 2002. CHANGES AND CLARIFICATIONS TO THE U.S. FISH AND WILDLIFE SERVICE'S DRAFT STANDARD PROTOCOLS FOR SITE ASSESSMENT AND FIELD SURVEYS FOR DETERMINING PRESENCE OR ABSENCE OF THE SONOMA DISTRICT POPULATION SEGMENT OF THE CALIFORNIA TIGER SALAMANDER. SACRAMENTO FIELD OFFICE. NOVEMBER 22.

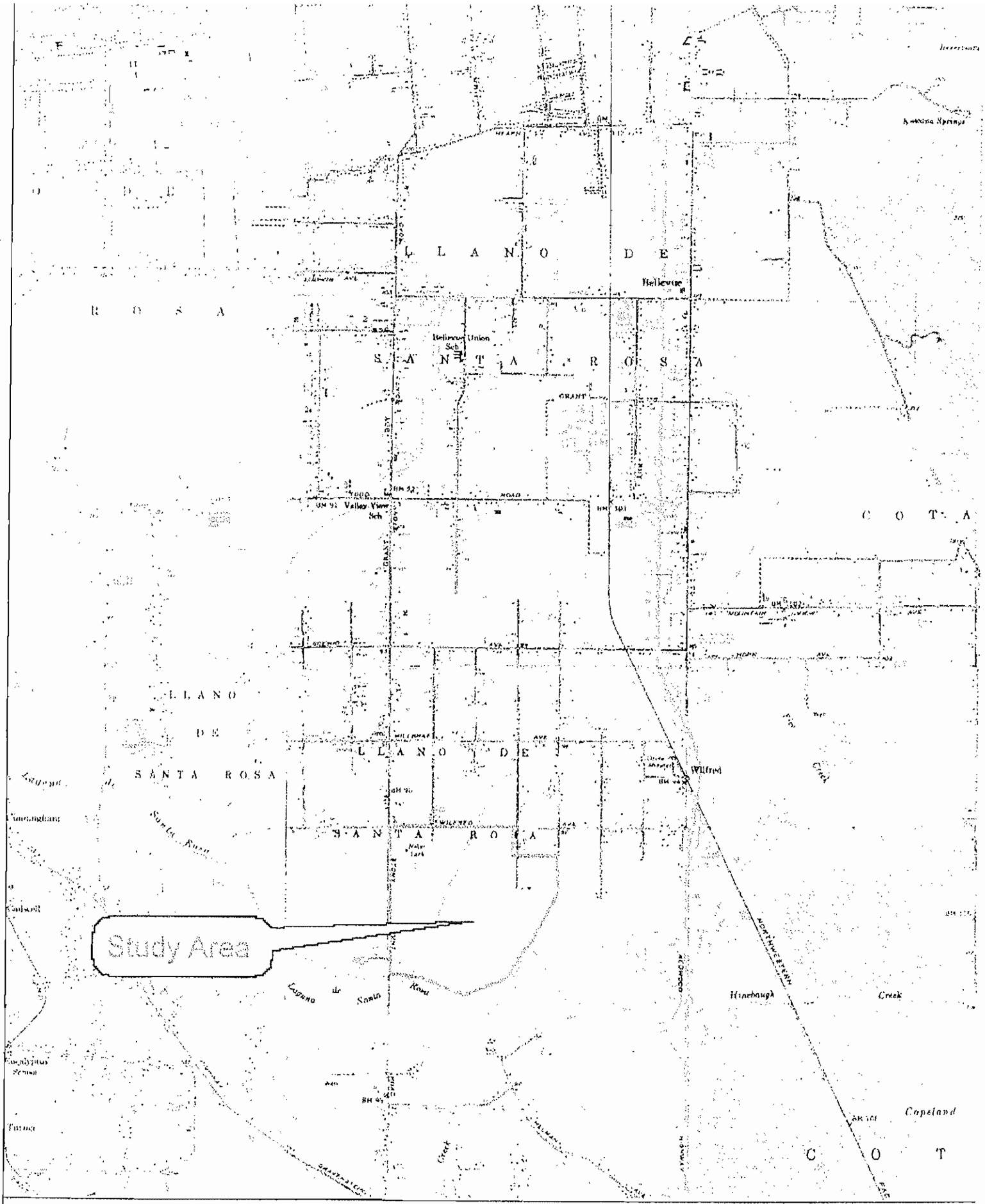
U.S. FISH AND WILDLIFE SERVICE (USFWS). 2001. ENDANGERED AND THREATENED WILDLIFE AND PLANTS: FINAL DETERMINATIONS OF CRITICAL HABITAT FOR THE CALIFORNIA RED-LEGGED FROG: FINAL RULE. FEDERAL REGISTER VOL. 66, NO. 49. MARCH 13.

WHITTAKER, R. 1998. ISLAND BIOGEOGRAPHY: ECOLOGY, EVOLUTION AND CONSERVATION. OXFORD UNIVERSITY PRESS. 285PP.

PERSONAL COMMUNICATION

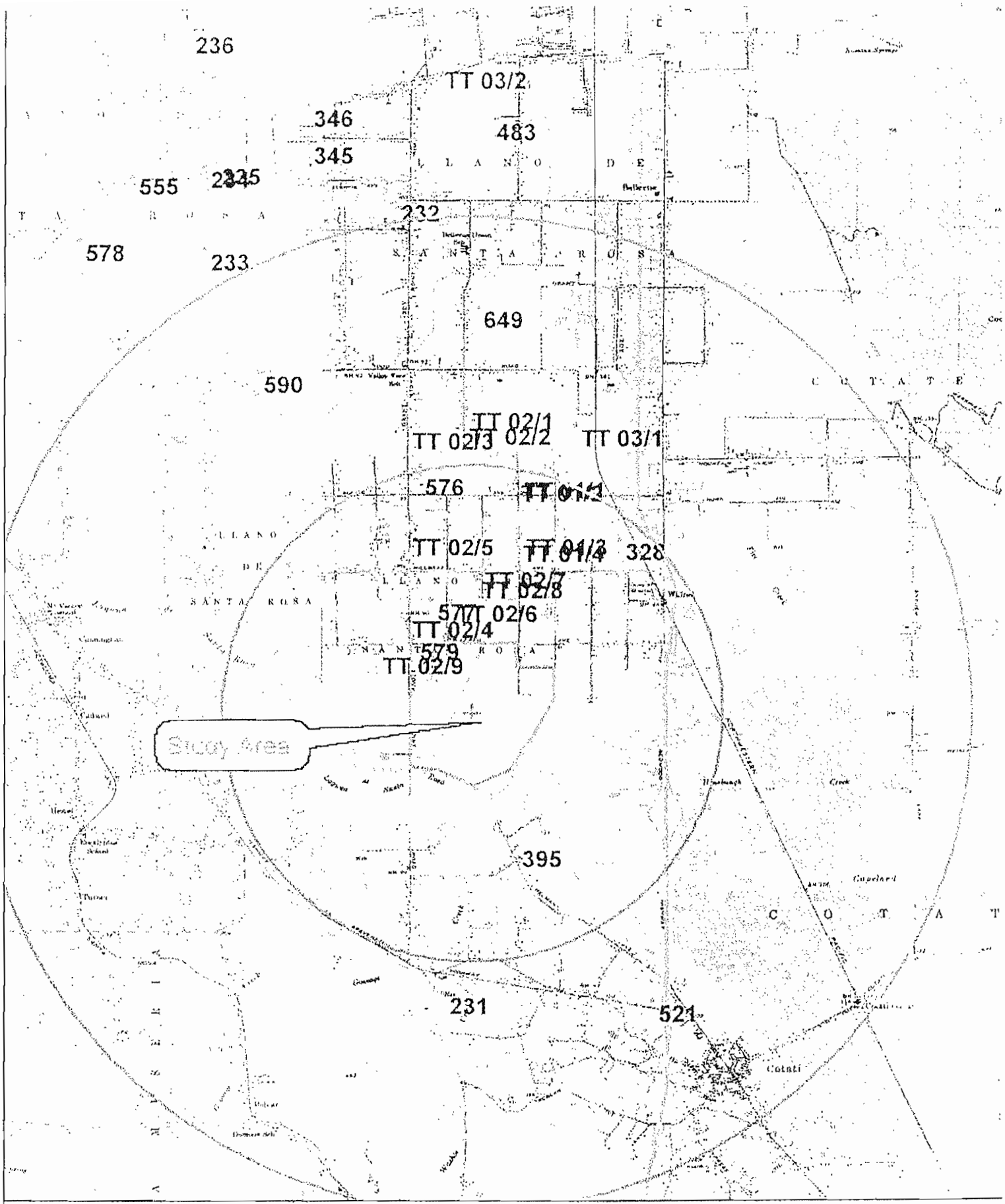
JENNINGS, M. 2003. HERPETOLOGIST, RANA RESOURCES. PERSONAL COMMUNICATION WITH TRISH TATARIAN. OCTOBER 27.

WILCOX, C. 2003. BIOLOGIST, CALIFORNIA DEPARTMENT OF FISH AND GAME. PERSONAL COMMUNICATION WITH TRISH TATARIAN. JUNE.



Name: COTATI
Date: 11/18/2003
Scale: 1 inch equals 3333 feet

Location: 038° 22' 47.38" N 122° 43' 49.91" W
Caption: Figure 1. Site Location



Name: COTATI
Date: 11/18/2003
Scale: 1 inch equals 4000 feet

Location: 038° 22' 01.81" N 122° 43' 47.5" W
Caption: Figure 8. CTS CNDDB Reported Locations

Copyright (C) 2002, Maptech, Inc.

Figure A2. Drainage from Wilfred Avenue.

Figure A3. Tributary to Laguna de Santa Rosa.

Figure A4. Central drainage on project site.

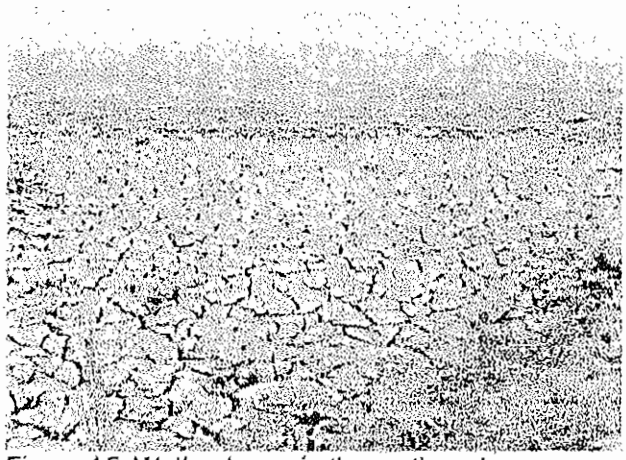


Figure A5. Wetland area in the northwest area.

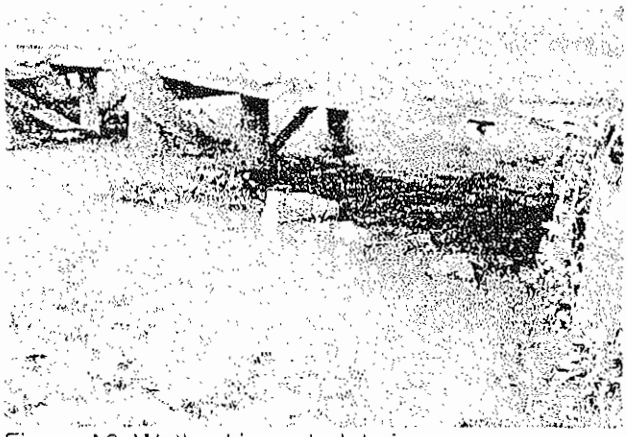


Figure A6. Wetland in central drainage.

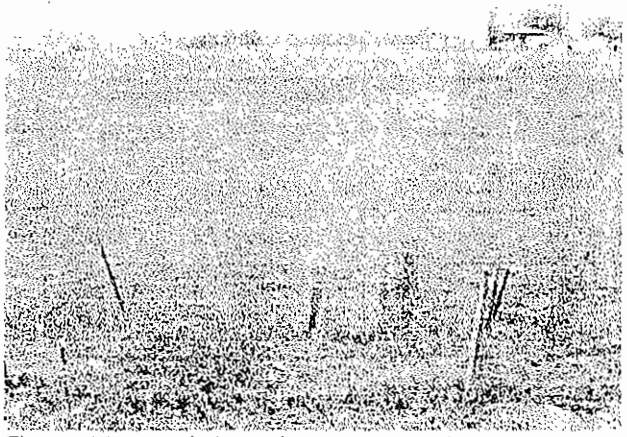


Figure A7. Non-irrigated pasture, southwest area.

ATTACHMENT 3E.

California Tiger Salamander Aquatic Survey – Rohnert Park, California.
Prepared by Wildlife Research Associates, June 2004.

Wildlife Research Associates

Trish and Greg Tatarian
1119 Burbank Avenue
Santa Rosa, CA 95407
Ph: 707.544.6273 Fax: 707.544.6317
http://home.pacbell.net/tatarian/index.html
tatarian@pacbell.net

June 11, 2004

Mr. Gary Deghi
The Huffman-Broadway Group, Inc
700 Larkspur Landing Circle, Ste 100
Larkspur, CA 94939
Phone 415-925-2000
Fax 415-925-2006

RE: California Tiger Salamander Aquatic Surveys – Rohnert Park, CA

Dear Gary,

This letter report details the results of our non-protocol level aquatic surveys for the Sonoma County population of California tiger salamander (*Ambystoma californiense*) (CTS), a federally listed Endangered species, within the western portion of Rohnert Park. These surveys were conducted without consultation with the U.S. Fish and Wildlife Service (USFWS), and as a result, they do not meet the conditions for determining presence or absence under the specifications outlined in the U.S. Fish and Wildlife Service (USFWS) *Interim Guidance on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (USFWS 2003).

Methods
I conducted surveys of the 270-acre site on March 26, and April 27, 2004. No May survey was conducted. Weather conditions on those days were overcast and sunny, respectively. Approximately 0.81 inches of rain fell on March 25 and the site was not surveyed before the rain; therefore, it is unclear what the true hydrology of the site is. Prior to that rainfall, temperatures were in the upper 80's between March 16 and 20, 2004.

Results
Fifteen different water bodies were surveyed in 2004, which are described in Table 1 along with their water depths during each survey. See Figures 1 through 20 for photographs of the ponds. The majority of the water bodies were dry by the time of the second survey.

No California tiger salamander larvae were observed in any of the pools or ditches surveyed. Several aquatic vertebrates were observed in the areas surveyed, including Pacific treefrog (*Pseudacris* (*Hyla*) *regilla*), threespine stickleback (*Gasterosteus aculeatus*), and mosquitofish (*Gambusia affinis*). No other amphibians were observed on site. Invertebrates observed in the pools include crayfish (native (*Pacifastacus leniusculus*) and non-native (*Procambarus clarkii*)), backswimmers (Family *Notonectidae*), predacious diving beetles (Family *Dytiscidae*) and aquatic snails. Please refer to Table 2 for a description of the species observed at each water body.

Table 1. Water Bodies Surveyed and Water Depths

Site	Location	Water Depths (inches) 3/26/04	4/26/04
	East of Bellevue-Wilfred Channel		
1	Large water body in southwestern portion	4-10 in	dry
2	Drainage ditch along fence line	2-8 in	dry
3	Connector between drainage ditch and wetland #1	2-8 in	dry
4	Seasonal wetland north of drainage ditch	2-6 in	dry
5	Seasonal wetland south of Wilfred Avenue	2-6 in	dry
	West of Bellevue-Wilfred Channel		dry
6	Seasonal wetland along fence line near bridge	6 in	dry
7	Seasonal wetlands underneath bridge	6 in	dry
8	Drainage ditches on either side of access road	4 in	dry
9	Drainage ditch south of bridge along east side of pasture	6-10 in	dry
10	Seasonal wetland east of pasture drainage ditch	6-10 in	dry
11	Seasonal wetland south of #10	6-10 in	dry
12	Drainage ditch along east side of pasture	6-8 in	dry
13	Swale along southern east-west fence	6-8 in	dry
14	Western seasonal wetland between Stony Point Road and Bellevue-Wilfred Channel	8-12 in	dry
15	Eastern seasonal wetland between Stony Point Road and Bellevue-Wilfred Channel	8-12 in	dry

Table 2: Water Bodies Surveyed and Species Observed

Site	Location	Species Observed
	East of Bellevue-Wilfred Channel	
1	Large water body in southwestern portion	No invertebrates, no amphibians, *Gasterosteus aculeatus,*
2	Drainage ditch along fenceline from the Laguna	*Gasterosteus aculeatus, Gambusia affinis, Pacifastacus leniusculus, Procambarus clarkii* No amphibians
3	Connector between drainage ditch and wetland #1	*Pseudacris regilla, Gasterosteus aculeatus, Pacifastacus leniusculus*
4	Seasonal wetland north of drainage ditch	No invertebrates, no amphibians
5	Seasonal wetland south of Wilfred Avenue	No invertebrates, no amphibians
	West of Bellevue-Wilfred Channel	
6	Seasonal wetland along fenceline near bridge	*Hyla regilla, Notonectidae, Dytiscidae*
7	Seasonal wetlands underneath bridge	*Gasterosteus aculeatus, Pacifastacus leniusculus, Procambarus clarkia, Dytiscidae,* snails
8	Drainage ditches on either side of access road	*Gasterosteus aculeatus,* snails
9	Drainage ditch south of bridge along east side of pasture	*Gasterosteus aculeatus,* snails
10	Seasonal wetland east of pasture drainage ditch	*Pseudacris regilla, Notonectidae*
11	Seasonal wetland south of #10	*Pseudacris regilla, Notonectidae*
12	Drainage ditch along east side of pasture	*Pseudacris regilla, Gasterosteus aculeatus, Gambusia affinis, Procambarus clarkia,* snails
13	Swale along southern east-west fence	*Pseudacris regilla, Gasterosteus aculeatus, Gambusia affinis,*
14	Western seasonal wetland between Stony Point Road and Bellevue-Wilfred Channel	*Pseudacris regilla, Notonectidae, Dytiscidae*
15	Eastern seasonal wetland between Stony Point Road and Bellevue-Wilfred Channel	*Pseudacris regilla, Notonectidae, Dytiscidae*

Other species observed on the site include avocets (*Recurvirostra americana*)(12), western sandpipers (*Calidris mauri*)(30), mallards (*Anas platyrhynchos*)(4), Canada geese (*Branta canadensis*)(4), killdeer (*Charadrius vociferus*)(6), common snipe (*Gallinago gallinago*)(20), and white-tailed kite (*Elanus leucurus*)(1).

Discussion

In March, many shorebirds and waterfowl were observed feeding in and around the wetlands on the eastern side of the Bellevue-Wilfred Channel. No amphibians or invertebrates were observed in these wetlands, although they were observed in seasonal wetlands with more vegetation. Predation by birds may explain the lack of presence of invertebrates and vertebrates at this large wetland.

Several other predators were observed within the wetlands, including stickleback and crayfish. One stickleback was observed in the large wetland (Area #1), and it was hidden in the deepest portion of the wetland. Stickleback and crayfish more than likely access this wetland from the channel via the culvert to the drainage ditch along the fenceline (Area #2) and then swim upstream through Area #3 to the wetland.

No amphibians were reported along the drainage ditches adjacent to the dairy farm. This lack of presence may be a result of runoff of manure from the dairy into the drainage ditches during the winter season. Thick algae and evidence of manure was observed in the drainage ditches and is most likely due to the runoff from the adjacent cattle pens. In areas with a high water table, such as the study area, manure runoff from the upland areas into the waterways may cause eutrophication of the waters. In addition to the eutrofication observed, sticklebacks were also found in the drainage ditches as well, having entered the site from the channel.

Pacific tree frogs were present in the seasonal wetlands, which were isolated from the channel and supported more vegetative cover. Thus predation from sticklebacks and birds were reduced.

Although these surveys were not conducted to according to the *Interim Guidance on Conducting Site Assessments and Field Surveys for Determining Presence or a Negative Finding of the California Tiger Salamander* (USFWS 2003), no suitable breeding habitat for CTS was observed on-site this year, based on the water depth of the wetlands and drainage ditches. During periods of heavy rains, such as an El Niño event, the isolated seasonal wetlands may provide suitable breeding habitat for CTS.

Once again, thank you for the opportunity to provide biological consulting services for you. If you have any questions please call.

Sincerely,

Trish

Trish Tatarian

References

U.S. FISH AND WILDLIFE SERVICE (USFWS) 2003. INTERIM GUIDANCE ON CONDUCTING SITE ASSESSMENTS AND FIELD SURVEYS FOR DETERMINING PRESENCE OR A NEGATIVE FINDING OF THE CALIFORNIA TIGER SALAMANDER. SACRAMENTO FIELD OFFICE. OCTOBER 22.

Fig. 1. Area #1 March survey

Fig. 2. Area #1 April survey

Fig. 3. Area #2, March

Fig. 4. Area #2, April

Fig. 5. Area #3, March

Fig. 6. Area #3, April

Fig. 7. Area #4, March

Fig. 8. Area #4, April

Fig. 9. Area #5, March

Fig. 10. Area #5, April

Fig. 11. Area #6, March

Fig. 12. Area #6, April

Fig. 13. Area #7, March

Fig. 15. Area #7, April

Fig. 16. Area #8, March

Fig. 17. Area #13, March

Fig. 18. Area #13, April

Fig. 19. Area # 14, March

Fig. 20. Area # 14, April

Fig. 19. Area # 15, March

Fig. 20. Area # 15, April

ATTACHMENT 3F.

Phase 1 Habitat Assessment for California Red-legged Frog
Prepared by Rana Resources. October 14, 2006.

RANA RESOURCES
P.O. Box 2185
Davis, CA 95617-2185
(530) 753-2727
RanaResources@aol.com

#12,219
October 14, 2006

Mr. Gary Deghi
Huffman and Associates, Inc.
828 Mission Avenue
San Rafael, CA 94901-3209

Dear Gary:

Per your request, I examined the Proposed Gaming Facility site in Rohnert Park during the day on 04 August 2006 to assess the location for California red-legged frog (*Rana draytonii*) habitat. The area examined was south of Wilfred Avenue, north of the Rohnert Park Expressway, and west of Redwood Drive. I especially looked at the aquatic habitats in the North Branch Laguna De Santa Rosa (and tributaries), as well as the Laguna De Santa Rosa just south of the Rohnert Park Expressway. Overall, I found the major aquatic habitats to be channelized for flood control with the result of creating extensive warm water habitats that abound with introduced species, including dozens of juvenile bullfrogs (*Rana catesbeiana*), as well as hundreds of western mosquitofish (*Gambusia affinis*) and Louisiana red swamp crayfish (*Procambarus clarkii*). Native adult Pacific treefrogs (*Hyla regilla*) were also present. The smaller tributary stream channels are mostly dry now, although I did note a few channels with water that were well-shaded by willow (*Salix* sp.) trees. These isolated spots contained no ranid frogs—probably because of continual raccoon (*Procyon lotor*) predation in the shallow water habitats.

Based on these observations and my extensive familiarity with the area since 2000, the site contains no suitable habitat for California red-legged frogs and this species is no longer found here. Historically, California red-legged frogs were common on the Santa Rosa Plain. However, with subsequent channalizations of major streams in the area since the 1960s and the introduction of many aquatic predatory species (especially bullfrogs), red-legged frogs have disappeared from the Rohnert Park area and there is no chance for them to recolonize the site from adjacent drainages in the foothills to the east of the Plain.

Thanks for allowing me to be involved with this project. Please let me know if you have any questions on the above.

Sincerely,

Mark R. Jennings
President and
Herpetologist/Fisheries Biologist

ATTACHMENT 4.

TECHNICAL REPORTS RELATED TO 68-ACRE PARCEL

ATTACHMENT 4A.

Wetland Delineation for the 80-acre Rohnert Park NW Specific Plan Area.
Prepared by North Fork Associates. June 9, 2003.

WETLAND DELINEATION
FOR THE
± 80-ACRE ROHNERT PARK NW SPECIFIC PLAN AREA

Sonoma County, California

Prepared for:

Mr. Ken Blackman
1224 St. Helen Avenue
Santa Rosa, California 95404
(707) 526-2782

Prepared by:

north fork associates
110 Maple Street, Suite 100, Auburn, California 95603
(530) 887-8500

June 9, 2003

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICIES

WETLAND DELINEATION
FOR THE
± 80-ACRE ROHNERT PARK NW SPECIFIC PLAN AREA

INTRODUCTION

At the request of Blackman Consulting, North Fork Associates delineated an approximately 80-acre site in Rohnert Park, Sonoma County, California. The property is bounded roughly by Langer Avenue on the west, Wilfred on the north, Dowdell on the east, and Business Park Drive on the south. Labath Avenue runs north-south through the middle of the site. It is an unrecorded section of the Llano de Santa Rosa and Cotate land grants in Township 6 north and Range 8 west on the Cotati 7 ½ minute USGS quadrangle (Figure 1). Approximate GPS coordinates for the corner of Wilfred and Labath are 38.36333° north and 122.72118° west.

The majority of the property has been used for small grain crops for at least 47 years that we could determine from old aerial photographs. The two small lots at the end of Labath have been graded. A residence and other structures were recently removed from the eastern lot. Although agriculture was the dominant industry for many years, areas to the south and east are being developed as commercial and business parks. Figure 2 shows the site in 1956 and Figure 3 is a 2003 aerial photo.

METHODOLOGY

The project site was visited several times. An initial inspection was made on March 12, 2003 by North Fork Associates biologists Jeff Glazner and Barry Anderson. The site was delineated on April 11 and May 7, 2003 by Jeff Glazner and Barry Anderson according to the 1987 *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987). We established a number of data points at which vegetation, soil, and hydrology information was recorded, and the data sheets are in Appendix A. A Trimble GeoXT with sub-meter accuracy was used to locate all data points and wetland edges.

Several aerial photographs were reviewed before conducting the delineation. Photo dates are: 6/12/56, 1/19/76, 7/17/89, and 6/4/96. We had the site flown on May 10, 2003 and that aerial is the basemap for the delineation map located in Appendix B. The aerial basemap is not fully rectified, and the wetlands do not match the aerial signatures exactly. However, because the data were recorded with a GPS, the locations and dimensions of waters of the United States are accurate.

This site was particularly difficult to delineate, in part because long-term cultural practices have obscured the topography. In addition, plants that would normally be found only in wetlands have been spread around and are able to grow on the heavy clay soil that remains near saturation for long periods. We focused the delineation on shallow depressions that were obvious on historical aerial photographs and were apparent on the 2003 aerial. Areas mapped as seasonal wetlands were dominated by or had a high percentage of OBL and FACW species.

RESULTS

Vegetation

The 80 acres between Business Park Drive and Wilfred Avenue consists almost entirely of hay fields, and ryegrass (*Lolium* sp.) is the dominant species. In very shallow depressions, or areas of wetter soil, native vernal pool species are present in varying amounts (Figure 4). These include popcorn flower (*Plagiobothrys stipitatus*), meadowfoam (*Limnanthes douglasii*), downingia (*Downingia concolor*), water starwort (*Callitriche marginata*), and semaphore grass (*Pleuropogon*

californicus). Semaphore grass, which is usually a good wetland indicator, has been spread across the site by cultural practices, and it seems to do well on the heavy clay soils despite the absence of long-term inundation. *Lythrum hyssopifolium* is also present at many locations in the hay fields.

Hydrology

At the time of the April delineation, no obvious signs of hydrology were present, except for some standing water around data point 1. Because the soil lacked clear redoximorphic features, there were no other clear indicators of hydrology except for the presence of OBL and strong FACW species. Rain in late April and early May, caused inundation in a few depressions that were not inundated during the initial delineation.

The site is generally flat with a slope of less than one percent to the southwest. The 1956 aerial shows two channels crossing the property diagonally that drain to a low point near the southwest corner. When there were created is not known. Over the years, channels have been dug from the low point to a ditch along the western edge of the property (Figure 5a). This ditch carries water south to the ditch along Business Park Drive (Figure 5b), which turns south and connects to Hinebaugh Creek (now a flood control channel). Roadside ditches along Labath and Wilfred were also created before 1956 and these, too, appear to deliver water ultimately to Hinebaugh Creek.

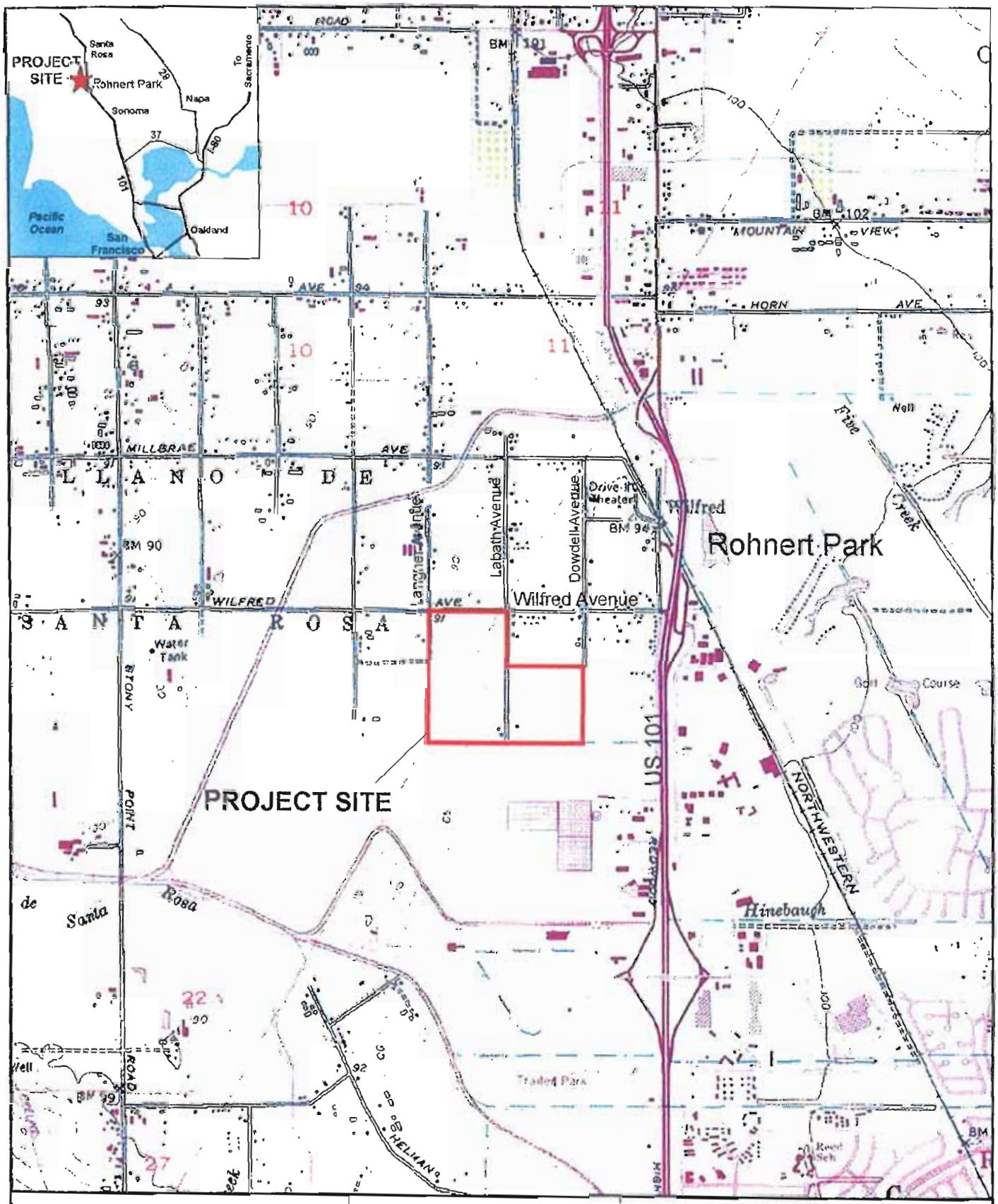
Soils

Only one soil unit is mapped for the project site, Clear Lake clays, which are fine, smectitic, thermic Xeric Endoaquents. These are Entisols having an aquic moisture regime and very little profile development. Clear Lake soils are dark gray (N 3/0) to nearly black (Figure 5c). Drainage is generally poor, and permeability is slow to very slow. The water table may be very near the surface during the winter rainy season. Some Clear Lake soils have faint redoximorphic features in the upper 13 inches. Mottled colors and iron and manganese concretions may also be present. Weak redoximorphic features were noted at a few points, but were not observed at most. Mottles and other strong indicators of hydrology were not found in any of the soil pits examined.

WATERS OF THE UNITED STATES

We could not determine what types of wetland were present on the site historically. The earliest photograph we could obtain (the 1956 aerial) clearly depicts agricultural activities. Whether the site had vernal pools is not known, but the 1956 aerial shows some indication of a swale system on the site. Vernal pools are a special type of seasonal wetland occurring in shallow depressions that are inundated during the winter and spring and dry by summer. Although the shallow depressions on the property function somewhat like vernal pools, they are the result of cultural practices and support some species (such as *Rumex crispus*) that are associated with other types of seasonal wetlands.

Several of the ditches dug to drain the property also support wetland species. These have been mapped as wetland swales, although they could have been mapped as seasonal wetlands as well. Table 1 is a summary of waters of the United States.



north fork associates

N
W E
S

0 2000
Approximate scale in feet

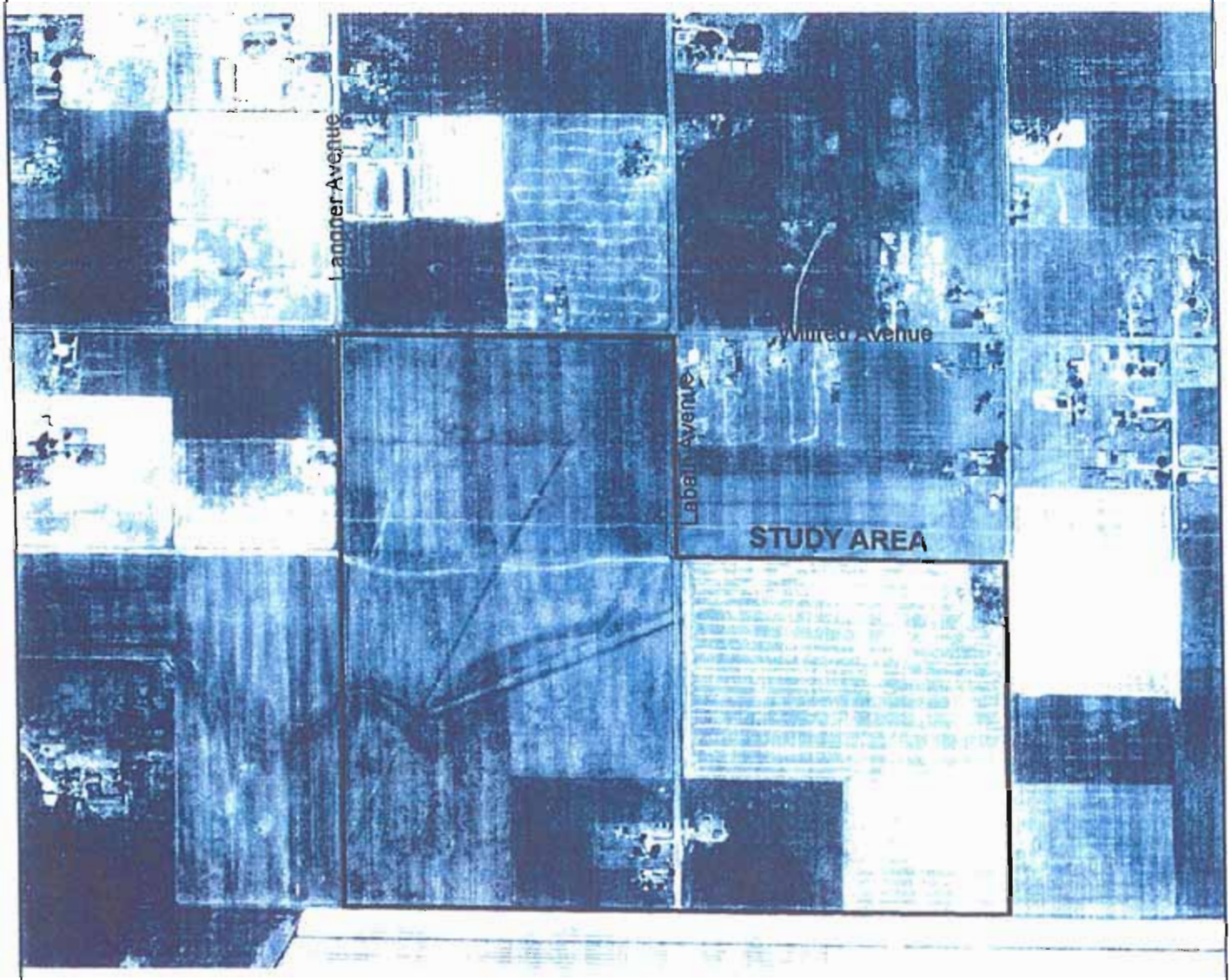
Basemaps: Cotati and Santa Rosa, CA USGS 7.5 minute topographic quadrangle

Figure 1

SITE AND VICINITY MAP

Rohnert Park NW Specific Plan

Rohnert Park, Sonoma County, CA



north fork associates

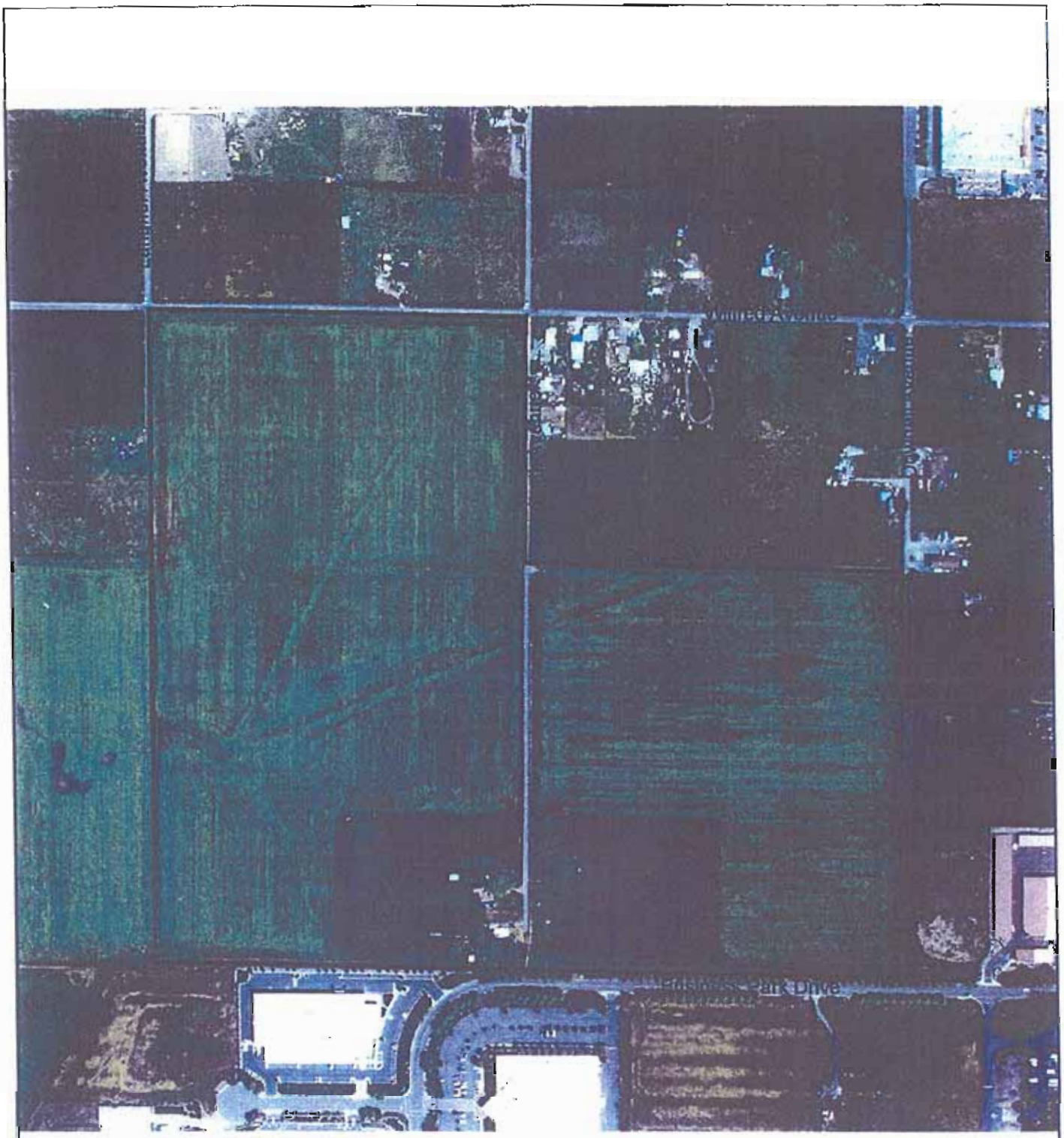
N
W E
S
Not to Scale

Photo Date: 1956, provided by Ken Blackman

Figure 2

1956 AERIAL PHOTO
Rohnert Park NW Specific Plan

Rohnert Park, Sonoma County, CA



north fork

N
W E
S
Not to Scale

Photo Date: May 10, 2003 by Geoimagery

Figure 3

2003 AERIAL PHOTO
Rohnert Park NW Specific Plan

Rohnert Park, Sonoma County, CA

Figure 4a. Seasonal wetland near data point 9

Figure 4b. Seasonal wetland

Figure 4c. Seasonal wetland

north fork associates	Photos taken April 11, 2003	Figure 4 **SITE PHOTOS** *Rohnert Park NW Specific Plan* Rohnert Park, Sonoma County, CA

Figure 5a. Ditch along western property line

Figure 5b. Ditch in the southwest corner

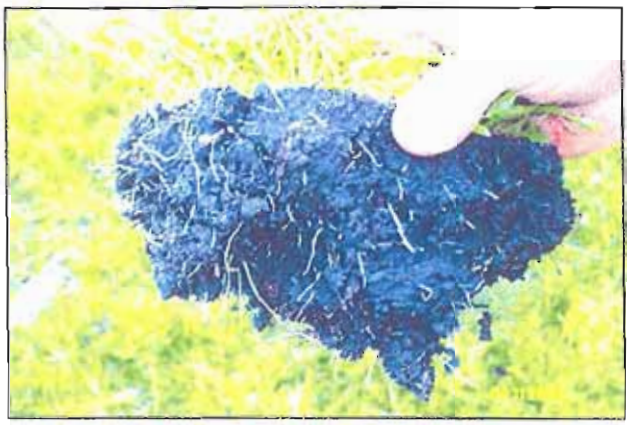


Figure 5c. Upper soil profile

Figure 5d. Old drainage channel

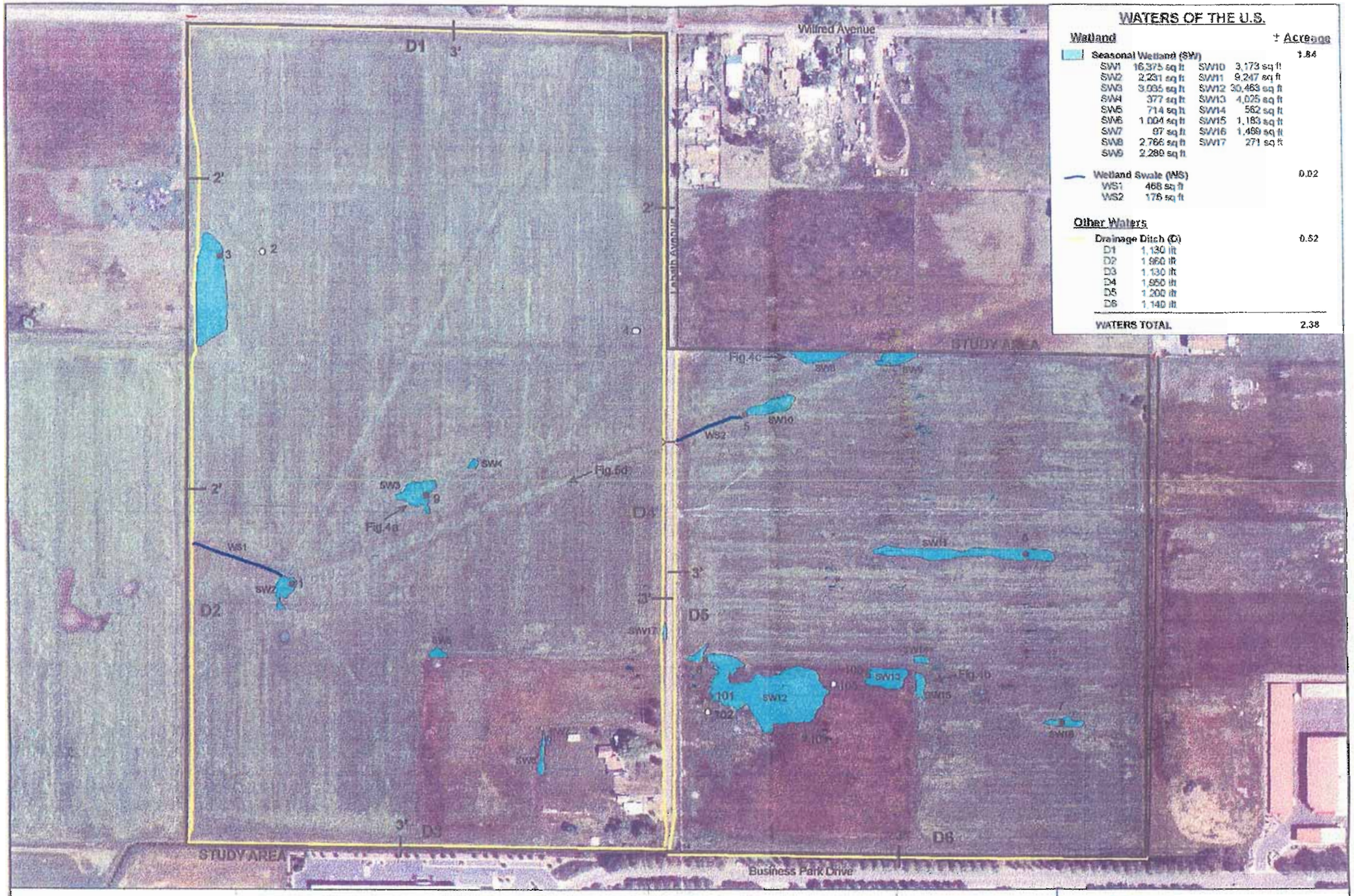
north fork associates

Photos taken April 11, 2003

Figure 5

SITE PHOTOS
Rohnert Park NW Specific Plan

Rohnert Park, Sonoma County, CA



WATERS OF THE U.S.

Wetland				± Acreage
Seasonal Wetland (SW)				1.84
SW1	16,375 sq ft	SW10	3,173 sq ft	
SW2	2,231 sq ft	SW11	9,247 sq ft	
SW3	3,095 sq ft	SW12	30,463 sq ft	
SW4	377 sq ft	SW13	4,025 sq ft	
SW5	714 sq ft	SW14	562 sq ft	
SW6	1,004 sq ft	SW15	1,183 sq ft	
SW7	97 sq ft	SW16	1,469 sq ft	
SW8	2,766 sq ft	SW17	271 sq ft	
SW9	2,289 sq ft			
Wetland Swale (WS)				0.02
WS1	468 sq ft			
WS2	176 sq ft			
Other Waters				
Drainage Ditch (D)				0.52
D1	1,130 lft			
D2	1,960 lft			
D3	1,130 lft			
D4	1,950 lft			
D5	1,200 lft			
D6	1,140 lft			
WATERS TOTAL				2.38

Project Notes

- Gross Study Area: ±83 acres
- Property lines are approximate
- Photo Date: May 10, 2003 by Geomagery
  Field Delineation conducted using GPS October 2002, January, March, and May 2003 by Jeff Glazner and Barry Anderson
- Partially verified by the US Army Corps of Engineers, July 24, 2003
- This map subject to verification by the Corps of Engineers

Data Points

- 01 ● Three Parameter Data Point - Wetland
- 02 ○ Three Parameter Data Point - Upland
- Culvert
- Offsite Drainage Ditch

N W E S

0 200

WETLAND DELINEATION MAP

Rohnert Park NW Specific Plan Area

Rohnert Park, Sonoma County, California

August 20, 2003

Table 1

Waters of the United States

Type	Acreage
Seasonal wetland	1.10
Wetland swale	0.02
Total Waters of the U.S.	**1.12**

DISCUSSION

Agricultural activities on the site have been continuous since at least 1956, more than 47 years. It is likely that some agricultural activity predates World War II. The long-term disturbance and the presence of heavy clay soil and relatively flat topography have spread the native wetland seedbank across the site. Most OBL species are confined to shallow depressions where water stands. However, some species, such as *Lythrum* and *Pleuropogon* are able to grow on the wet clay soils at numerous locations. *Lythrum* was not used as an indicator, but areas dominated by *Pleuropogon* or by other OBL species were mapped as seasonal wetlands.

Except in heavily graded areas (around the small residential lots), soils were dark and lacked redoximorphic characteristics, even in areas that clearly had long-term inundation or saturation. In addition, obvious indicators of hydrology were absent over much of the area. Consequently, the determination about whether a point was an upland point or a wetland point was somewhat subjective. Wetlands occur where uneven cultural practices have created shallow depressions that hold water long enough to support OBL and FACW species, and these are the areas shown on the delineation map in Appendix B.

Channels have been created to drain water from the wettest portions of the site. These are shown on the delineation map as wetland. Water that eventually reaches the western end of the property is drained by channels that connect to roadside ditches on Business Park Drive and Wilfred Avenue. Drainage ditches also occur on both sides of Labath and drain to the ditch on Business Park Drive. All ditches shown on the delineation map are maintained periodically to promote winter flows and to prevent flooding. None were mapped as jurisdictional waters.

Two linear features are apparent on the 2003 aerial and appear on old aerials as well, particularly the 1956 photo. These appear to be old drainage channels that have since been filled. Although they are obvious on the 2003 aerial, they are difficult to find on the ground except that ryegrass growing on this feature west of Labath is substantially more robust than the surrounding plants (Figure 5d). Because these lacked clear wetland indicators, they were not mapped as waters of the United States.

APPENDIX A

Three Parameter Data Sheets

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances? ☐ Atypical Situation? ☑ Problem Area?

Data Point: 1
Date: 11-Apr-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon (Dominants have greater than 20% cover)	Habit	%Cover	Status
Downingia concolor concolor	A	30	OBL
Lythrum hyssopifolium	A, B	30	FACW
Epilobium densiflorum	A	30	OBL
Crypsis schoenoides	A		OBL
Pilularia americana	P		OBL
Callitriche marginata	A		OBL

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 100

Species Remarks: Wetland. Dominants are strong wetland indicators.

Hydrology Check those that apply

☐ Recorded Data?
☐ Steam, Lake, or Tide Gauge?
☐ Aerial Photograph?
☑ No Recorded Data

Field Observations:
Depth of Surface Water:
Depth to Free Water:
Depth to Saturated Soil:

Primary Indicators
☐ Inundated?
☐ Saturated in Upper 12 Inches?
☐ Water Marks?
☐ Drift Lines?
☑ Sediment Deposits?
☐ Drainage Patterns?

Secondary Indicators
☐ Oxidized Root Channels?
☐ Water-stained Leaves?
☐ Local Soil Survey Data?
☐ FAC Neutral Test?
☐ Other?

Hydrology Remarks: Wetland. Point is in a depression with sediment deposits.

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:
Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.
A	12	N 3/0		None	Heavy clay

Hydric Soil Indicators: Check those that apply

☐ Histosol?
☐ Histic Epipedon?
☐ Sulfide Odor?
☐ Aquic Moisture Regime?
☐ Reducing Conditions?
☑ Gleyed or Low Chroma?
☐ Concretions?
☐ High OM in Sandy Soils?
☐ OM Streaks in Sandy Soils?
☑ On Local Hydric Soils List?
☑ On National Hydric Soils List?
☐ Other?

Soil Remarks: Wetland. Very dark chroma.

Determination Check those that apply

☑ Wetland Vegetation? ☑ Wetland Hydrology? ☑ Wetland Soils?
☑ Is the Sampling Point a Wetland?

Remarks: Wetland. Fairly deep depression in the field.

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances?
☐ Atypical Situation?
☑ Problem Area?

Data Point: 2
Date: 11-Apr-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon (Dominants have greater than 20% cover)	Habit	%Cover	Status
Phalaris paradoxa	A	60	-
Lolium multiflorum	A	40	FAC*
Briza minor	A		FACW-
Vicia sativa	A		FACU
Lupinus bicolor	A		-
Picris echioides	A, B		FAC

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 50

Species Remarks: Wetland. Marginal. Subdominants suggest upland conditions.

Hydrology Check those that apply

☐ Recorded Data?
- ☐ Steam, Lake, or Tide Gauge?
- ☐ Aerial Photograph?

☑ No Recorded Data

Field Observations:
- Depth of Surface Water:
- Depth to Free Water:
- Depth to Saturated Soil:

Primary Indicators
- ☐ Inundated?
- ☐ Saturated in Upper 12 Inches?
- ☐ Water Marks?
- ☐ Drift Lines?
- ☐ Sediment Deposits?
- ☐ Drainage Patterns?

Secondary Indicators
- ☐ Oxidized Root Channels?
- ☐ Water-stained Leaves?
- ☐ Local Soil Survey Data?
- ☐ FAC Neutral Test?
- ☐ Other?

Hydrology Remarks: Upland. No hydrology indicators.

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:

Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.
A	12	N 3/0		None	Clay

Hydric Soil Indicators: Check those that apply
- ☐ Histosol?
- ☐ Histic Epipedon?
- ☐ Sulfide Odor?
- ☐ Aquic Moisture Regime?
- ☐ Reducing Conditions?
- ☑ Gleyed or Low Chroma?
- ☐ Concretions?
- ☐ High OM in Sandy Soils?
- ☐ OM Streaks in Sandy Soils?
- ☑ On Local Hydric Soils List?
- ☑ On National Hydric Soils List?
- ☐ Other?

Soil Remarks: Wetland. Dark chroma.

Determination Check those that apply

☑ Wetland Vegetation? ☐ Wetland Hydrology? ☑ Wetland Soils?

☐ Is the Sampling Point a Wetland?

Remarks: Upland. No indicators of hydrology present.

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances? ☐ Atypical Situation? ☑ Problem Area?

Data Point: 3
Date: 11-Apr-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon (Dominants have greater than 20% cover)	Habit	%Cover	Status
Pleuropogon californicus	A	60	OBL
Lolium multiflorum	A	30	FAC*
Veronica peregrina xalapensis	A		OBL
Epilobium densiflorum	A		OBL
Lythrum hyssopifolium	A, B		FACW
Juncus bufonius	A		FACW+
Phalaris paradoxa	A		-

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 100

Species Remarks: Wetland.

Hydrology Check those that apply

☐ Recorded Data?
- ☐ Steam, Lake, or Tide Gauge?
- ☐ Aerial Photograph?

☑ No Recorded Data

Field Observations:
- Depth of Surface Water:
- Depth to Free Water:
- Depth to Saturated Soil:

Primary Indicators:
- ☐ Inundated?
- ☐ Saturated in Upper 12 Inches?
- ☐ Water Marks?
- ☐ Drift Lines?
- ☑ Sediment Deposits?
- ☐ Drainage Patterns?

Secondary Indicators:
- ☐ Oxidized Root Channels?
- ☐ Water-stained Leaves?
- ☐ Local Soil Survey Data?
- ☐ FAC Neutral Test?
- ☐ Other?

Hydrology Remarks: Wetland. Shallow depression along drainage ditch.

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:

Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.
A	10	N 3/0		None.	Clay

Hydric Soil Indicators: Check those that apply

- ☐ Histosol?
- ☐ Histic Epipedon?
- ☐ Sulfide Odor?
- ☐ Aquic Moisture Regime?
- ☐ Reducing Conditions?
- ☑ Gleyed or Low Chroma?
- ☐ Concretions?
- ☐ High OM in Sandy Soils?
- ☐ OM Streaks in Sandy Soils?
- ☑ On Local Hydric Soils List?
- ☑ On National Hydric Soils List?
- ☐ Other?

Soil Remarks: Wetland. Dark chroma.

Determination Check those that apply

☑ Wetland Vegetation? ☑ Wetland Hydrology? ☑ Wetland Soils?

☑ Is the Sampling Point a Wetland?

Remarks: Wetland. Shallow depression.

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances? ☐ Atypical Situation? ☑ Problem Area?

Data Point: 4
Date: 11-Apr-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon (Dominants have greater than 20% cover)	Habit	%Cover	Status
Picris echioides	A, B	30	FAC
Phalaris paradoxa	A	30	-
Lolium multiflorum	A	30	FAC*
Lythrum hyssopifolium	A, B		FACW
Brassica rapa	A		-
Veronica peregrina xalapensis	A		OBL
Geranium dissectum	A		-

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 66

Species Remarks: Wetland. Mixed vegetation.

Hydrology Check those that apply

☐ Recorded Data?
- ☐ Steam, Lake, or Tide Gauge?
- ☐ Aerial Photograph?

☑ No Recorded Data

Field Observations:
- Depth of Surface Water:
- Depth to Free Water:
- Depth to Saturated Soil:

Primary Indicators
- ☐ Inundated?
- ☐ Saturated in Upper 12 Inches?
- ☐ Water Marks?
- ☐ Drift Lines?
- ☐ Sediment Deposits?
- ☐ Drainage Patterns?

Secondary Indicators
- ☐ Oxidized Root Channels?
- ☐ Water-stained Leaves?
- ☐ Local Soil Survey Data?
- ☐ FAC Neutral Test?
- ☐ Other?

Hydrology Remarks: Upland. No hydrology indicators present.

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:

Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.
A	12	N 3/0		None	Clay

Hydric Soil Indicators: Check those that apply
- ☐ Histosol?
- ☐ Histic Epipedon?
- ☐ Sulfide Odor?
- ☐ Aquic Moisture Regime?
- ☐ Reducing Conditions?
- ☑ Gleyed or Low Chroma?
- ☐ Concretions?
- ☐ High OM in Sandy Soils?
- ☐ OM Streaks in Sandy Soils?
- ☑ On Local Hydric Soils List?
- ☑ On National Hydric Soils List?
- ☐ Other?

Soil Remarks: Wetland. Low chroma.

Determination Check those that apply

☑ Wetland Vegetation? ☐ Wetland Hydrology? ☑ Wetland Soils?

☐ Is the Sampling Point a Wetland?

Remarks: Upland. No hydrology indicators. Mixed vegetation.

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances? ☐ Atypical Situation? ☑ Problem Area?

Data Point: 5
Date: 11-Apr-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon — Dominants have greater than 20% cover	Habit	%Cover	Status
Epilobium densiflorum	A	70	OBL
Bareground _		20	-
Downingia concolor concolor	A		OBL
Pilularia americana	P		OBL
Callitriche marginata	A		OBL
Rumex crispus	P		FACW-
Lilaea scilloides	A		OBL
Pleuropogon californicus	A		OBL

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 100

Species Remarks: Wetland. Strong indicators present.

Hydrology Check those that apply

☐ Recorded Data?
- ☐ Steam, Lake, or Tide Gauge?
- ☐ Aerial Photograph?

☑ No Recorded Data

Field Observations:
Depth of Surface Water:
Depth to Free Water:
Depth to Saturated Soil:

Primary Indicators
- ☐ Inundated?
- ☐ Saturated in Upper 12 Inches?
- ☐ Water Marks?
- ☐ Drift Lines?
- ☑ Sediment Deposits?
- ☐ Drainage Patterns?

Secondary Indicators
- ☐ Oxidized Root Channels?
- ☐ Water-stained Leaves?
- ☐ Local Soil Survey Data?
- ☐ FAC Neutral Test?
- ☐ Other?

Hydrology Remarks: Wetland. Soil very wet with sediment deposits. Depression in field.

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:

Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.
A	10	N 3/0		None	Clay

Hydric Soil Indicators: Check those that apply
- ☐ Histosol?
- ☐ Histic Epipedon?
- ☐ Sulfide Odor?
- ☐ Aquic Moisture Regime?
- ☐ Reducing Conditions?
- ☑ Gleyed or Low Chroma?
- ☐ Concretions?
- ☐ High OM in Sandy Soils?
- ☐ OM Streaks in Sandy Soils?
- ☑ On Local Hydric Soils List?
- ☑ On National Hydric Soils List?
- ☐ Other?

Soil Remarks: Wetland.

Determination Check those that apply

☑ Wetland Vegetation? ☑ Wetland Hydrology? ☑ Wetland Soils?
☑ Is the Sampling Point a Wetland?

Remarks: Wetland. Strong veg in a clear depression.

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances? ☐ Atypical Situation? ☑ Problem Area?

Data Point: 6
Date: 11-Apr-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon (Dominants have greater than 20% cover)	Habit	%Cover	Status
Lolium multiflorum	A	75	FAC*
Pleuropogon californicus	A	20	OBL
Callitriche marginata	A		OBL
Ranunculus muricatus	A, B		FACW+
Limnanthes douglasii douglasii	A		OBL
Epilobium densiflorum	A		OBL
Downingia concolor concolor	A		OBL

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 100

Species Remarks: Wetland. Strong indicators.

Hydrology Check those that apply

☐ Recorded Data?
- ☐ Steam, Lake, or Tide Gauge?
- ☐ Aerial Photograph?

☑ No Recorded Data

Field Observations:
Depth of Surface Water:
Depth to Free Water:
Depth to Saturated Soil:

Primary Indicators
- ☐ Inundated?
- ☐ Saturated in Upper 12 Inches?
- ☐ Water Marks?
- ☐ Drift Lines?
- ☑ Sediment Deposits?
- ☐ Drainage Patterns?

Secondary Indicators
- ☐ Oxidized Root Channels?
- ☐ Water-stained Leaves?
- ☐ Local Soil Survey Data?
- ☐ FAC Neutral Test?
- ☐ Other?

Hydrology Remarks: Wetland. Very wet soil in a depression.

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:

Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.
A	8	N 3/0		None	Clay

Hydric Soil Indicators: Check those that apply
- ☐ Histosol?
- ☐ Histic Epipedon?
- ☐ Sulfide Odor?
- ☐ Aquic Moisture Regime?
- ☐ Reducing Conditions?
- ☑ Gleyed or Low Chroma?
- ☐ Concretions?
- ☐ High OM in Sandy Soils?
- ☐ OM Streaks in Sandy Soils?
- ☑ On Local Hydric Soils List?
- ☑ On National Hydric Soils List?
- ☐ Other?

Soil Remarks: Wetland.

Determination Check those that apply

☑ Wetland Vegetation? ☑ Wetland Hydrology? ☑ Wetland Soils?
☑ Is the Sampling Point a Wetland?

Remarks: Wetland. Strong veg indicators in depresson.

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances? ☐ Atypical Situation? ☑ Problem Area?

Data Point: 7
Date: 11-Apr-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon (Dominants have greater than 20% cover)	Habit	%Cover	Status
Lolium multiflorum	A	50	FAC*
Pleuropogon californicus	A	40	OBL
Callitriche marginata	A		OBL
Downingia concolor concolor	A		OBL
Lythrum hyssopifolium	A, B		FACW
Mentha pulegium	P		OBL

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 100

Species Remarks: Wetland. Subdominants are strong indicators.

Hydrology Check those that apply

☐ Recorded Data?
- ☐ Steam, Lake, or Tide Gauge?
- ☐ Aerial Photograph?

☑ No Recorded Data

Field Observations:
- Depth of Surface Water:
- Depth to Free Water:
- Depth to Saturated Soil:

Primary Indicators
- ☐ Inundated?
- ☐ Saturated in Upper 12 Inches?
- ☐ Water Marks?
- ☐ Drift Lines?
- ☑ Sediment Deposits?
- ☐ Drainage Patterns?

Secondary Indicators
- ☐ Oxidized Root Channels?
- ☐ Water-stained Leaves?
- ☐ Local Soil Survey Data?
- ☐ FAC Neutral Test?
- ☐ Other?

Hydrology Remarks: Wetland. Very wet soil in a depression.

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:

Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.
A	8	N 3/0		None.	Clay

Hydric Soil Indicators: Check those that apply
- ☐ Histosol?
- ☐ Histic Epipedon?
- ☐ Sulfide Odor?
- ☐ Aquic Moisture Regime?
- ☐ Reducing Conditions?
- ☑ Gleyed or Low Chroma?
- ☐ Concretions?
- ☐ High OM in Sandy Soils?
- ☐ OM Streaks in Sandy Soils?
- ☑ On Local Hydric Soils List?
- ☑ On National Hydric Soils List?
- ☐ Other?

Soil Remarks: Wetland.

Determination Check those that apply

☑ Wetland Vegetation? ☑ Wetland Hydrology? ☑ Wetland Soils?
☑ Is the Sampling Point a Wetland?

Remarks: Wetland. Strong veg in a depression.

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances?
☐ Atypical Situation?
☑ Problem Area?

Data Point: 8
Date: 07-May-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon (Dominants have greater than 20% cover)	Habit	%Cover	Status
Pleuropogon californicus	A	90	OBL
Bareground		10	-

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 100

Species Remarks: Wetland.

Hydrology Check those that apply

☐ Recorded Data?
- ☐ Steam, Lake, or Tide Gauge?
- ☐ Aerial Photograph?

☑ No Recorded Data

Field Observations:
- Depth of Surface Water: 2
- Depth to Free Water:
- Depth to Saturated Soil:

Primary Indicators:
- ☑ Inundated?
- ☐ Saturated in Upper 12 Inches?
- ☐ Water Marks?
- ☐ Drift Lines?
- ☐ Sediment Deposits?
- ☐ Drainage Patterns?

Secondary Indicators:
- ☐ Oxidized Root Channels?
- ☐ Water-stained Leaves?
- ☐ Local Soil Survey Data?
- ☐ FAC Neutral Test?
- ☐ Other?

Hydrology Remarks: Wetland. Portions are inundated.

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:

Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.

Hydric Soil Indicators: Check those that apply
- ☐ Histosol?
- ☐ Histic Epipedon?
- ☐ Sulfide Odor?
- ☑ Aquic Moisture Regime?
- ☐ Reducing Conditions?
- ☑ Gleyed or Low Chroma?
- ☐ Concretions?
- ☐ High OM in Sandy Soils?
- ☐ OM Streaks in Sandy Soils?
- ☑ On Local Hydric Soils List?
- ☑ On National Hydric Soils List?
- ☐ Other?

Soil Remarks: Wetland. Portions are inundated.

Determination Check those that apply

☑ Wetland Vegetation? ☑ Wetland Hydrology? ☑ Wetland Soils?
☑ Is the Sampling Point a Wetland?

Remarks: Wetland. Depression with Pleuropogon.

North Fork Associates Routine Wetland Determination (1987 Corps Manual)

Project Name: Rohnert Park NW
Project Location: NW Specific Plan Area
Applicant/Owner:
Surveyor/s: Jeff Glazner, Barrett Anderson

☑ Normal Circumstances? ☐ Atypical Situation? ☑ Problem Area?

Data Point: 9
Date: 07-May-03
County: Sonoma
State: California

Remarks: Area has been disked and seeded.

Vegetation

Taxon (Dominants have greater than 20% cover)	Habit	%Cover	Status
Epilobium densiflorum	A	50	OBL
Downingia concolor concolor	A	50	OBL
Pleuropogon californicus	A		OBL

Stratum: A=Annual; B=Biennial; P=Herbaceous Perennial; S=Shrub; T=Tree

of Species OBL, FACW, or FAC: 100

Species Remarks: Wetland. Strong veg indicators.

Hydrology Check those that apply

☐ Recorded Data?
- ☐ Steam, Lake, or Tide Gauge?
- ☐ Aerial Photograph?

☑ No Recorded Data

Field Observations:
- Depth of Surface Water: 4
- Depth to Free Water:
- Depth to Saturated Soil:

Primary Indicators
- ☑ Inundated?
- ☐ Saturated in Upper 12 Inches?
- ☐ Water Marks?
- ☐ Drift Lines?
- ☐ Sediment Deposits?
- ☐ Drainage Patterns?

Secondary Indicators
- ☐ Oxidized Root Channels?
- ☐ Water-stained Leaves?
- ☐ Local Soil Survey Data?
- ☐ FAC Neutral Test?
- ☐ Other?

Hydrology Remarks: Inundated

Soils

Map Name: Clear Lake clay, ponded.
Subgroup: Fine, smectitic, thermic Xeric Endoaquert
Inclusions:

Drainage Class:
Confirm Map Type? ☐

Horiz.	Depth	Matrix Color	Mottle Color	Mottle Abundance, Size	Texture, Concretions, Etc.

Hydric Soil Indicators: Check those that apply
- ☐ Histosol?
- ☐ Histic Epipedon?
- ☐ Sulfide Odor?
- ☑ Aquic Moisture Regime?
- ☐ Reducing Conditions?
- ☑ Gleyed or Low Chroma?
- ☐ Concretions?
- ☐ High OM in Sandy Soils?
- ☐ OM Streaks in Sandy Soils?
- ☑ On Local Hydric Soils List?
- ☑ On National Hydric Soils List?
- ☐ Other?

Soil Remarks: Wetland. Portions are inundated.

Determination Check those that apply

☑ Wetland Vegetation? ☑ Wetland Hydrology? ☑ Wetland Soils?
☑ Is the Sampling Point a Wetland?

Remarks: Wetland. Inundated depression.

APPENDIX B

Wetland Delineation Map

ATTACHMENT 4B.

Results of 2002 Survey for Special-status Plant Species,
Northwest Specific Plan Area, Rohnert Park, California.
Prepared by Laurence P. Stromberg. May 28, 2002.

Laurence P. Stromberg, Ph. D.
Wetlands Consultant
59 Jewell Street, San Rafael, CA 94901
Tel. & Fax: (415) 721-0700

RESULTS OF 2002 SURVEY FOR SPECIAL-STATUS PLANT SPECIES, NORTHWEST SPECIFIC PLAN AREA, ROHNERT PARK, CALIFORNIA

Submitted to:

Mr. Ken Blackman
Blaćkman Consulting
1224 St. Helena Avenue
Santa Rosa, CA 95404

Prepared by:

Laurence P. Stromberg, Ph.D.
Wetlands Consultant
59 Jewell Street
San Rafael, CA 94901
(415) 721-0700

May 28, 2002

RESULTS OF 2002 SURVEY FOR SPECIAL-STATUS PLANT SPECIES, NORTHWEST SPECIFIC PLAN AREA, ROHNERT PARK, CALIFORNIA

1.0. INTRODUCTION

1.1. STUDY AREA LOCATION AND CURRENT USE

The study area in which this second-year special-status plant survey was conducted is an area near Rohnert Park, California (Figure 1). The area abuts the Sphere of Influence of Rohnert Park, is within the Proposed Sphere of Influence, is part of the Northwest Specific Plan Area, and is bounded by Millbrae Avenue on the north, Dowdell Avenue on the east, Langer Avenue on the west, and Business Park Drive on the South (Figure 2). Wilfred and Labath Avenues traverse the center of the study area, west to east and north to south, respectively. The surveyed area comprises seven parcels north of Wilfred Avenue and six parcels south of Wilfred Avenue. The specific parcels included in the 2002 survey are shown in Figure 3. Two large parcels, A.P. No. 045-073-01, between Langer and Labath Avenues, and A.P. No. 045-074-09 between Labath and Dowdell Avenues, form most of the study area.

The surveyed area includes rural residential land and many parcels that are intensively and extensively used agricultural land. Houses, garages, work sheds, barns, and other outbuildings are present on the rural residential parcels. Three of the parcels included in the 2002 survey were not surveyed in 2001. These parcels are hatched in Figure 3.

1.2. PHYSICAL SITE CONDITIONS

The study area is part of a broad basin which slopes very gradually to the west. The percent slopes is less than one percent. The soils on the property are mapped by the Soil Conservation Service (U.S. Soil Conservation Service 1978) as being Clear Lake clay loam (0 - 2 percent slopes). The Clear Lake clay soils are Typic Pelloxererts, soils associated with the alluvial fan on which the study area occurs. They are characterized by heavy clay content throughout the profile, with a thickness of up to five feet. The clay is underlain by lighter clay loam but acts as a water-restricting horizon, capable of perching water and causing it to accumulate in the surface soils and above ground in depressional terrain. Applying the criteria developed by the National Technical Committee for Hydric Soils, to the soils in Sonoma County, the NRCS field office in Santa Rosa (Soil Conservation Service 1992) developed a draft list of hydric soils. Clear Lake clay is listed as a hydric soil. Actual presence of hydric conditions must, however, be determined in the field.

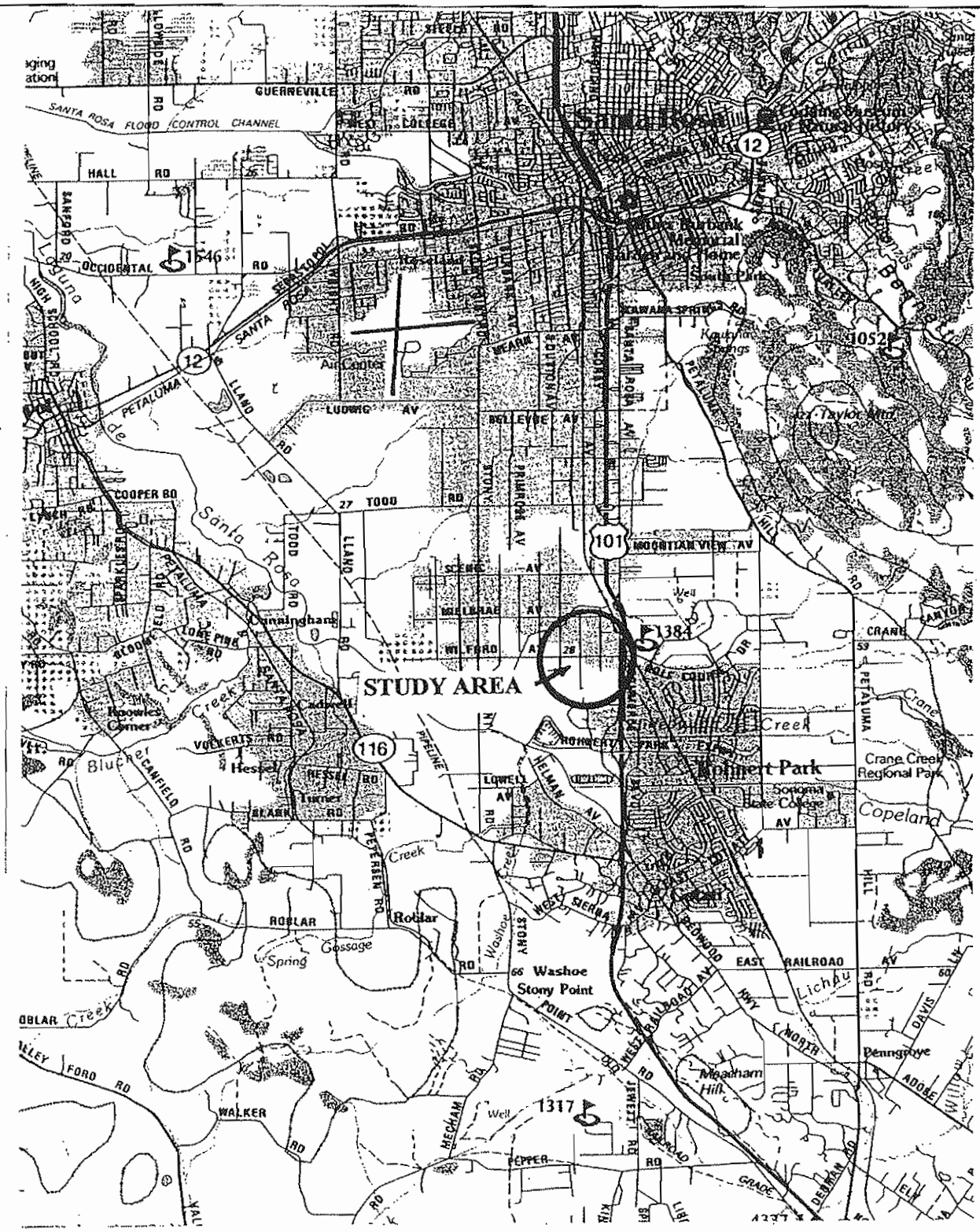


FIGURE 1

Survey requested by: Mr. Ken Blackman Blackman Consulting 1224 St. Helena Avenue Santa Rosa, CA 95404 Site: Northwest Rohnert Park Specific Plan Area, Rohnert Park, California	Nominal Scale 1:75,000	Regional Location Map

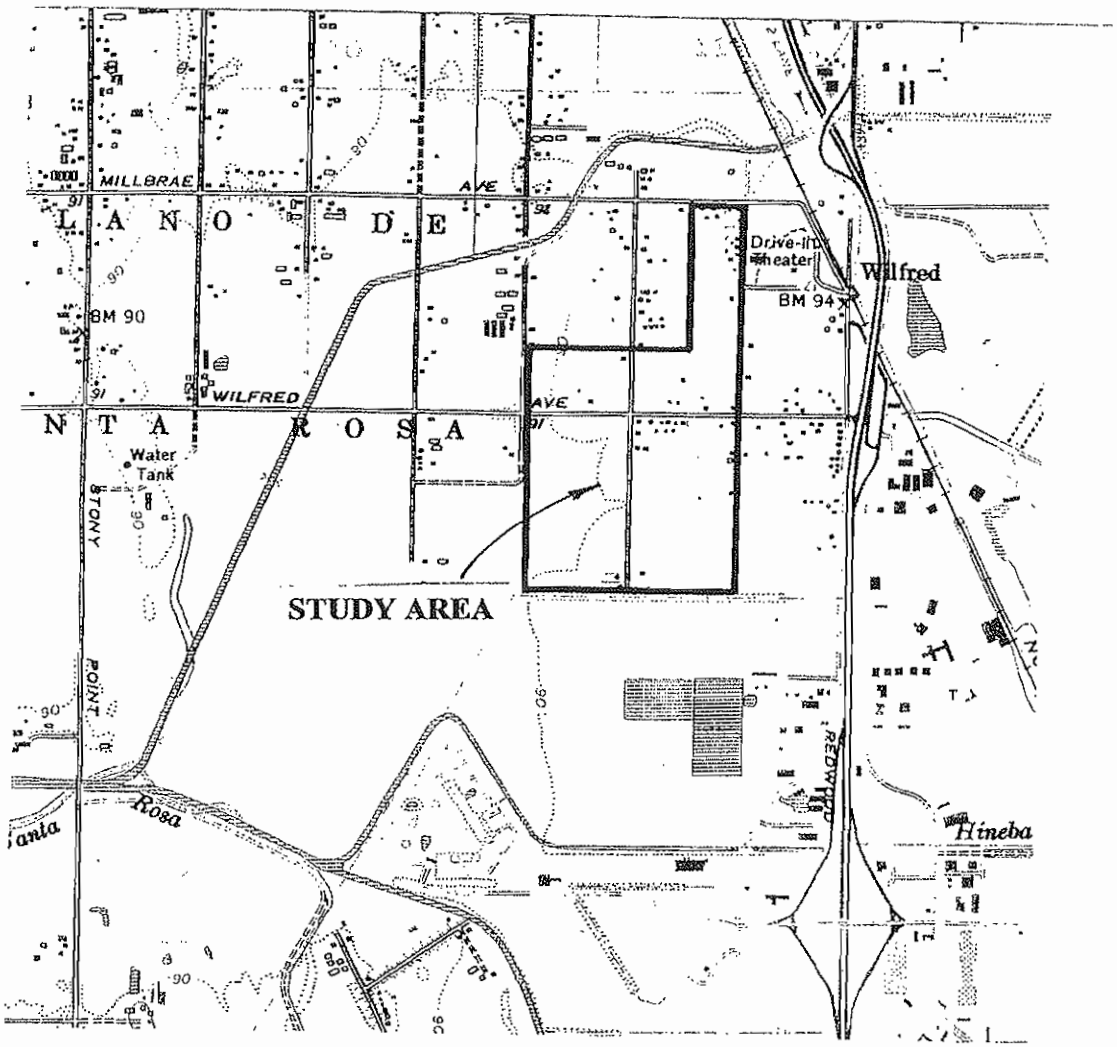


FIGURE 2

Survey requested by: Mr. Ken Blackman Blackman Consulting 1224 St. Helena Avenue Santa Rosa, CA 95404 Site: Northwest Rohnert Park Specific Plan Area, Rohnert Park, California	Nominal Scale 1:24,000	Project Site Location (Area Encompassing all Parcels Surveyed in 2001 or 2002)

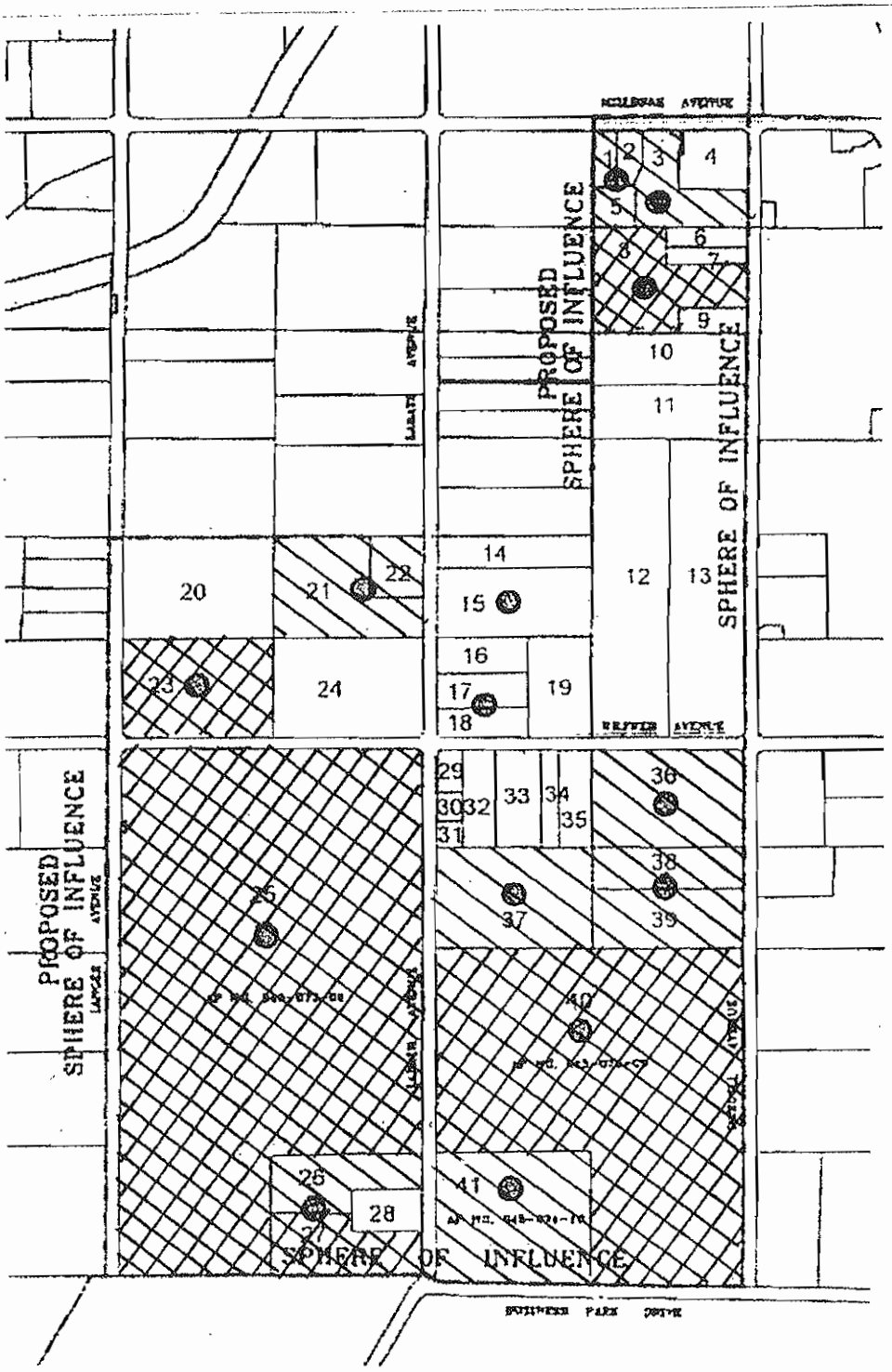


FIGURE 3

Survey requested by: Mr. Ken Blackman Blackman Consulting 1224 St. Helena Avenue Santa Rosa, CA 95404 Site: Northwest Rohnert Park Specific Plan Area, Rohnert Park, California	Approximate Scale 1:4,800	Parcels Surveyed as Part of the 2001 and 2002 Surveys (Parcels Surveyed in 2001 are Hatched SW-NE; Parcels Surveyed in 2002 are Hatched NW-SE; Parcels Surveyed in 2001-02 are Cross-hatched)

2.0. METHODS

Target species were those listed in the draft Santa Rosa Plain Vernal Pool Ecosystem Preservation Plan prepared for the Santa Rosa Plain Vernal Pool Task Force (CH2M Hill 1996) and identified in California Natural Diversity Data Base records. Target species include those whose range includes the region and, by virtue of their known occurrence in the vicinity, were considered to have the potential to occur on the site given their habitat requirements and the types of habitat present. These species are listed in the table in Appendix A. The first-year survey for special-status plant species was conducted in 2001 on all but three of the parcels (Stromberg 2001) and the results were negative.

The second-year field survey was conducted by thoroughly inspecting all areas that were dominated by or supported an abundance of plant species with wetland indicator status and conducting a transect survey of the entire area on March 12, March 25, March 28, April 8, and April 24, 2002. A 200-scale (1:2,400) blueline aerial photograph was used to guide the survey. Given the rainfall and progress of spring temperatures, the survey was conducted within the "window" during which virtually all target species were either in flower or would be readily identifiable to species.

Douglas' meadowfoam and Sebastopol meadowfoam, one of the species listed as endangered by the federal government, are known to occur together on the Santa Rosa Plain and several colonies of Sebastopol meadowfoam occur in the area northwest of the study area. Because the two species are not readily distinguishable from even short distances in heavy vegetation, the survey included a check of the number of leaflets and the shape of the leaves on a large proportion of the plants wherever meadowfoam was observed to ensure correct identification.

The survey methods used were consistent with the guidelines established by the California Department of Fish and Game for assessing the effects of proposed developments on rare and endangered plants and plant communities. Distributional information for the three species listed as endangered by the federal government -- Sonoma sunshine (*Blennosperma bakeri*), Sebastopol meadowfoam (*Limnanthes vinculans*), and Burke's goldfields (*Lasthenia burkei)* -- was obtained from Appendix B to the Vernal Pool Ecosystem Preservation Plan (CH2M Hill 1996).

Information on distributional and habitat requirements of the upland species was obtained from flora (Mason 1975, Munz and Keck 1968), other reports and surveys conducted for special-status species on the Santa Rosa Plain, surveys conducted on properties in the vicinity of the study area (Stromberg 1996a, 1996b, 1997a, 1997b, 1997c, 1998, 1999, 2000a, 2000b, 2001) and the California Native Plant Society's list of rare and endangered plant species in the state (Skinner and Pavlik 1994). A Rarefind Data Base Search from the California Natural Diversity Data Base was also used as support documentation for target species and known sites for special-status species. The search, dated March 3, 2001, was conducted for multiple projects on the Santa Rosa Plain and covered the Santa Rosa, Cotati, Healdsburg, Two Rock, and Sebastopol 7.5-minute topographic quadrangles. The expiration date for the search is January 8, 2002. The City of Rohnert Park General Plan (2000) also shows the locations of special-status plants in and in the vicinity of Rohnert Park.

3.0. SURVEY RESULTS

3.1. VEGETATION TYPE DESCRIPTIONS

The objective of this report is to present the results of the second-year survey conducted for special-status plant species on the property and to describe the wetland habitat present. A list of the species observed on the property during both years of survey is provided in Appendix B.

3.1.1. Areas Supporting Wetland Vegetation

The objective of this survey was not to map or delineate wetlands in the study area. Because a pre-jurisdictional determination was outside the scope of work, no attempt was made to collect the data necessary on the soil and subsurface hydrologic (soil saturation) parameters to document the presence and/or extent of wetlands using procedures specified in the Corps of Engineer's manual for delineating wetlands (Environmental Laboratory 1987). Consequently, descriptions of areas as supporting wetland vegetation are based solely on the identification of plant species with wetland indicator status (Reed 1988) as assigned by the U. S. Fish and Wildlife Service, and the presence of depressional terrain and/or primary or secondary observations of wetland hydrologic function such as water-matted mulch and algal crusts.

Areas supporting hydrophytic vegetation occur throughout the study area. The rural residential parcels support two types of wetlands, those which have been disturbed in a variety of manners but are not currently grazed, and those that are grazed. The western portion of the parcel at 4475 Dowdell Avenue – an example of the former type – supports vegetation of the type found in shallowly inundated seasonal wetlands, with depressional areas that are inundated supporting an association of coyote thistle (*Eryngium aristulatum*), ryegrass (*Lolium multiflorum*), California semaphore grass (*Pleuropogon californicus*), and popcorn flower (*Plagiobothrys stipitatus*). The subdominant species in these depressions includes brown-headed rush (*Juncus phaeocephalus*) and other species of rush (*Juncus tenuis*), Douglas meadowfoam (*Limnanthes douglasii*), meadow barley (*Hordeum brachyantherum*), little rattlesnake grass (*Briza minor*), annual bluegrass (*Poa annua*), six-weeks fescue (*Vulpia bromoides*), curly dock (*Rumex crispus*), and several FAC species, among them the ubiquitous ryegrass (*Lolium multiflorum*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), California buttercup (*Ranunculus californicus*), and prickly lettuce (*Lactuca serriola*). Most of the seasonal wetland habitat on the L-shaped parcel that fronts onto Millbrae Avenue is dominated by ryegrass and meadow barley, but the depressional areas support spike rush (*Eleocharis macrostachya*), speedwell (*Veronica peregrina*), Hall's montia (*Montia fontana*), all of which are obligate wetland species, and brown-headed rush.

The parcel northwest of the intersection of Langer and Wilfred Avenues supports vegetation which shows a compositional variation in both dominant and subdominant species but the dominant species are almost universally a combination of rushes (*Juncus* spp.), coyote thistle (*Eryngium aristulatum*), soap plant (*Chlorogalum pomeridianum*), yampah (*Perideridia kelloggii*), and white brodiaea

(*Brodiaea hyacinthina*). Non-wetland species cover, which is limited to a very small percentage and to small areas, is contributed by cutleaf-geranium (*Geranium dissectum*), vetches (*Vicia sativa* and *V. cracca*), and cichory (*Cichorium intybus*).

The rear portions of the three parcels just south of Wilfred Avenue (fronting onto Labath and Dowdell Avenues) support seasonal wetlands that are very shallowly inundated. Fill appears to have been placed in some of them as evidence by concrete, rock, gravel, and asphalt. Nevertheless, many vernal pool species occur in the wetlands, including fringed downingia (*Downingia concolor*), popcorn flower (*Plagiobothrys bracteatus*), Douglas meadowfoam (*Limnanthes douglasii*), mousetail (*Myosurus minimus*), American pillwort (*Pilularia americana*), flowering quillwort (*Lilaea scilloides*), quillwort (*Isoetes*, species not identified), coyote thistle, and smooth goldfields (*Lasthenia glaberrima*). Although they do not, of necessity, indicate the presence of physically intact vernal pools, all of these species indicate ponding and very wet conditions.

The field south of Wilfred Avenue and west of Labath Avenue is cropped annually and the vegetation reflects the continuous past disturbance. The vegetation is dominated by ryegrass. The species of mustard (*Brassica nigra*, *Brassica rapa*, etc.) that were subdominant in 2001 were virtually absent in the spring of 2002; in 2002, the drier or slightly higher ground supported both species of mustard but this year, they may have been eliminated by the heavy rains in December and early January (over 200 percent of normal) and this spring these same areas were dominated by ryegrass. In shallow depressions, a host of obligate wetland species, many of them native vernal pool species, occur as subdominants and, as the seasonal progresses, a true "understory" beneath the much taller ryegrass. These species include California semaphore grass, miniature buttercup (*Ranunculus pusillus*), spiny-fruited buttercup (*Ranunculus muricatus*), fringed downingia, American pillwort, quillwort, speedwell, water starwort (*Callitriche marginata*), Douglas meadowfoam, and Bloomer's buttercup (*Ranunculus orthorhynchus*). These species are virtually the only species present in the major swale system but they all also common and locally abundant throughout the understory of the taller ryegrass along with speedwell, and two additional species that are wetland species but should be recognized as being well-adapted to disturbance -- toad rush, hyssop loosestrife.

The other large field, between Labath and Dowdell Avenues at the southern end of the surveyed area also supports a large number of wetlands that appear to be remnants of native wetlands common in the area on Clear Lake clay soils or to have been formed as a result of agricultural activities. As a whole, the field is not as wet as the directly west between Labath and Langer Avenues but many depressional areas supports a combination of the following species: fringed downingia, quillwort, flowering quillwort, water starwort, American pillwort, pennyroyal (*Mentha pulegium*), spike rush, California semaphore grass, miniature buttercup, and coyote thistle. The areas subject to shorter periods of inundation support brown-headed rush, annual bluegrass, yampah, Mediterranean barley, and curly dock.

The total cover in the areas supporting wetland vegetation ranged from 50 to 100 percent. Several of the species characteristic of vernal pools on the Santa Rosa Plain (listed in Table 3-1 of the Vernal

Pool Ecosystem Preservation Plan) occur in them and their total cover exceeds 10 percent at many places where the depth of inundation is likely to exceed two inches.

3.1.2. Annual Grassland

Upland habitat on the study area is essentially a ruderal annual grassland. The annual grassland many of the rural residential parcels along Millbrae, Dowdell, and Labath Avenues appears not to have been disced recently but many of the parcels include pasture that is currently being grazed by cattle and/or horses. Piles of dirt, debris, junk, and old pipe, equipment, and machinery are also scattered in parts of the parcels. The annual grassland includes species typically found in grazed annual grassland habitat in the region as well as in grasslands that have been subject to past and/or recent agricultural use. The vegetation is dominated by annual introduced grasses and forbs. Common to locally abundant species include ryegrass, the most ubiquitous species in the grassland habitat, canary grass (*Phalaris paradoxa*), Harding grass *(Phalaris aquatica*), ripgut brome (*Bromus rigidus),* bristly oxtongue (*Picris echioides),* and vetch (*Vicia sativa* and *V. cracca*), wild and slender oats (*Avena fatua, A. barbata*), hare barley (*Hordeum murinum*), six-weeks fescue, common groundsel (*Senecio vulgaris*), a variety of clovers (*Trifolium hirtum, T. subterraneum, T. dubium, T. variegatum*), plantain *(Plantago lanceolata),* and bur clover (*Medicago polymorpha*).

3.2. SPECIAL-STATUS PLANT SPECIES

3.2.1. Potential Habitat

The presence of "potential habitat" for the federally listed plant species on the Santa Rosa Plain is one of the elements in the habitat evaluation process. Potential habitat is defined by the combination of vegetation, topographic, and hydrologic conditions.

3.2.1.1. Vegetation conditions. Potential habitat for the plant species listed as federally endangered is characterized as:

1. areas supporting vernal pool indicator species, i.e., those plant species listed in Table 3-1 of the Vernal Pool Ecosystem Preservation Plan (CH2M Hill 1996), with a 10 percent relative cover, or

2. areas not dominated by weedy grasses, i.e., areas in which perennial plant species not listed in Table 3-1 and/or exotic grasses such as *Hordeum marinum* ssp. *gussoneanum*, *Lolium perenne*, *Bromus hordaceus*, etc. contribute less than 90 percent of the relative vegetation cover.

These criteria are not to be applied to the entire wetland area, since only a small portion may be suitable habitat. If any square meter area meets the above criteria (such as in the deepest portions of shallow ponds or in deeper parts of swales), this area and the entire wetland would be considered to possess suitable habitat for any of the listed plant species.

3.2.1.2. Topographic and hydrologic conditions. One or more of the following topographic or hydrologic conditions must exist in conjunction with the vegetation criteria for a wetland to be considered potential habitat:

1. the wetland area has not been entirely filled such that the wetland no longer floods or ponds (i.e., as a result of leveling) and the original topography no longer exists;

2. the wetland has an outlet barrier (is a pool) or occurs in depressional terrain (i.e., is a swale or drainage feature);

3. the wetland contains surface (standing or flowing) water during the rainy season in a normal rainfall year for seven days or more;

The following conditions indicate that a particular wetland is not potential habitat. The site does not meet the vegetation criteria *and*:

4. the wetland occurs on sloping ground (not the slopes of a swale or pond) and is not a swale or swale-related drainage feature, such that no ponding or flooding occurs;

5. the wetland is irrigated, and contains standing water of natural or artificial origin, and the soils are saturated for more than 60 days between June 1 and October 1.

Potential habitat for the listed plant species does occur in several of the wetlands in the study area. Plant species listed in Table 3-1 of the Vernal Pool Ecosystem Preservation Plan contribute more than 10 percent relative cover in areas of at least one square meter in many areas due to meadow barley, coyote thistle, flowering quillwort, and California semaphore grass. The cover requirement is satisfied in well over half of the entire parcel northeast of the Wilfred Avenue-Langer Avenue intersection where native wetland species are abundant.

3.2.2. Survey Results

Potential habitat, albeit of low quality, for the three federally listed plant species is present in some of the areas supporting wetland vegetation. Several of the depressional areas supporting wetland vegetation are characterized by an outlet barrier, and they contained surface (standing or flowing) water during the rainy season for seven days or more. Native plant species found growing in association with the listed species occur in many of these depressional areas, but none of the federally listed plant species listed in the table in Appendix A were observed on the study area on any of the 10 visits conducted as part of the first- or second-year surveys. *The 2002 survey constitutes the first-year survey for the three parcels shown as hatched in Figure 3 and an additional survey will be necessary during the spring of 2003. Because virtually no natural upland or wetland habitat is present in parcels 1 and 2, the survey would be necessary for solely parcel 3.*

All plant species observed during the survey of the property are listed in Appendix B.

4.0. REFERENCES CITED

CH2M Hill. 1996. Santa Rosa vernal pool ecosystem preservation plan. Submitted to the Santa Rosa Vernal Pool Task Force.

City of Rohnert Park. 2000. City of Rohnert Park General Plan. Prepared by Byett & Bhatia, Urban and Regional Planners. Adopted July 2000.

Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Technical Report 87-Y-1. U. S. Army Engineer Waterways Experiment Station. Vicksburg, Mississippi. 100p. and appendices.

Mason, H. L. 1975. A flora of the marshes of California. University of California Press. Los Angeles.

Munz, P. A. and D. Keck. 1968. A California flora. University of California Press. Berkeley.

Reed, P. B., Jr. 1988. National list of plant species that occur in wetlands: California (Region O). U. S. Fish and Wildlife Service Biol. Rep. 88(26.10). 135p.

Skinner, M. W. and B. M. Pavlik. 1994. Inventory of rare and endangered vascular plants of California. California Native Plant Society Special Publication No. 1. Fifth edition.

Stromberg, L. P., Wetlands Consultant. 1995. Results of survey for special-status plant species, Vast Oak West, Sonoma County, California. Report prepared for Mr. Craig Harrington, Quaker Hill Development Company.

Stromberg, L. P., Wetlands Consultant. 1996a. Results of survey for special-status plant species, Vast Oak West, Sonoma County, California. Report prepared for Mr. Craig Harrington, Quaker Hill Development Company.

Stromberg, L. P., Wetlands Consultant. 1996b. Results of survey for special-status plant species, Selvage properties, Sonoma County, California. Report prepared for Mr. Van Norden Logan.

Stromberg, L. P., Wetlands Consultant. 1997a. Results of survey for special-status plant species, Vast Oak West, Sonoma County, California. Report prepared for Mr. Craig Harrington, Quaker Hill Development Company.

Stromberg, L. P., Wetlands Consultant. 1997b. Results of survey for special-status plant species, Baker property, Santa Rosa, California. 11p + appendices. Submitted to Mr. Grosvenor Bolles.

Stromberg, L. P., Wetlands Consultant. 1997c. Results of survey for special-status plant species,

Young property, Santa Rosa, California. 11p + appendices. Submitted to Mr. Grosvenor Bolles.

Stromberg, L. P., Wetlands Consultant. 1998. Results of survey for special-status plant species, Vast Oak West, Sonoma County, California. Report prepared for Mr. Craig Harrington, Quaker Hill Development Company.

Stromberg, L. P., Wetlands Consultant. 1999. Results of survey for special-status plant species, Vast Oak West, Sonoma County, California. Report prepared for Mr. Craig Harrington, Quaker Hill Development Company.

Stromberg, L. P., Wetlands Consultant. 2000a. Results of survey for special-status plant species, Vast Oak West, Sonoma County, California. Report prepared for Mr. Craig Harrington, Quaker Hill Development Company.

Stromberg, L. P., Wetlands Consultant. 2000b. Results of 1999-2000 surveys for special-status plant species, Carr property, Sonoma County, California. Report prepared for Mr. Chris Peterson, Rivendale Homes.

Stromberg, L. P., Wetlands Consultant. 2001. Results of 2001 survey for special-status plant species, Northwest Specific Plan Area, Rohnert Park, California. Report prepared for Mr. Ken Blackman, Blackman Consulting.

U. S. D. A. Forest Service and Soil Conservation Service and the University of California Agricultural Experiment Station. 1972. Soil survey of Sonoma County. 188p. + maps.

Results of 2002 Special-status Plant Survey,
Northwest Specific Plan Area,
Rohnert Park, California

Appendix A. Special-status Plant Species with the Potential to Occur in the Northwest Specific Plan Area, Rohnert Park, Santa Rosa, California

Scientific Name Common Name	Status	Habitat Affinities	Blooming Period	Notes
Alopecurus aequalis var. *sonomensis* Sonoma alopecurus	USFWS: E CDFG: - CNPS: 1B	Marshes, swamps, and scrub.	Feb-Apr.	No suitable habitat occurs on the site. The species was not found.
Amsinckia lunaris Bent-flowered fiddleneck	USFWS: - CDFG: - CNPS: 4	Annual grassland.	Mar-Jun.	Ruderal annual grassland habitat on-site is marginally suitable but the species was not observed.
Astragalus breweri Brewer's milk-vetch	USFWS: - CDFG: - CNPS: 4	Annual grassland; chaparral and woodland.	Apr-May.	The ruderal annual grassland habitat on-site is marginally suitable but the species was not observed.
Blennosperma bakeri Baker's blennosperma	USFWS: E CDFG: E CNPS: 1B	Vernal pool and vernal swales.	Mar-Apr.	Suitable habitat occurs in the deeper depressions in the south part of the study area. Species not observed.
Downingia pusilla Dwarf downingia	USFWS: - CDFG: - CNPS: 2	Vernal pools.	Mar-Apr.	Suitable habitat is present in the deeper depressional areas but the species was not observed on-site.
Fritillaria liliacea Fragrant fritillary	USFWS: FSC CDFG: - CNPS: 1B	Coastal scrub, valley grassland near the coast on ultramafic clay soils.	Feb-Apr.	Suitable habitat not present on-site and species not observed.
Fritillaria purdyi Purdy's fritillary	USFWS: - CDFG: - CNPS: 4	Chaparral and valley grassland. Dry sites, on serpentine soils.	Mar-Jun.	Habitat not found on-site and species not observed.
Lasthenia burkei Burke's goldfields	USFWS: E CDFG: E CNPS: 1B	Vernal pools and swales.	Apr-Jun.	Suitable habitat occurs in the depressions. Study area may be outside the species range. Speciesnot observed.
Limnanthes vinculans Sebastopol meadowfoam	USFWS: E CDFG: E CNPS: 1B	Vernal pools and swales.	Apr-Jun.	Occurs in nearby wetlands to the northwest. Suitable habitat occurs in the deep depressions. Not observed.
Navarretia leucocephala ssp. *pleiantha* Many-flowered gilia	USFWS: E CDFG: E CNPS: 1B	Vernal pools and swales.	May-Jun.	Marginally suitable wetland habitat is present. Species not observed.
Perideridia gairdneri ssp. *gairdneri* Gairdner's yampah	USFWS: FSC CDFG: - CNPS: 4	Vernal pools, seasonal wetland habitats.	Jun-Jul.	Suitable soils present but conditions not suitable over much of the study area because of agricultural disturbance. The species was not observed.
Pogogyne douglasii var. *parviflora* Small-flowered mesamint	USFWS: - CDFG: - CNPS: 3	Vernal pools, seasonal wetland habitats, including swales.	May-Jul.	Marginally suitable habitat is present in the deeper depressional areas but the species was not observed.
Ranunculus lobbii Lobb's buttercup	USFWS: - CDFG: - CNPS: 4	Vernal pools and swales.	Feb-Apr.	Marginally suitable habitat is present in the deeper depressional areas but the species was not observed on-site.
Trifolium amoenum Showy Indian clover	USFWS: E CDFG: - CNPS: 1B	Annual grassland.	Apr-Jun.	The annual grasslands onsite are disturbed and do provide suitable habitat. Species not observed

Sources: California Department of Fish and Game, Natural Diversity Database, Special Plants List, April, 2000; Skinner and Pavlik, 1994.
Status Codes: Federal Status Codes: FE – Federally-listed, endangered; FT – Federally-listed, threatened; FC – Federal candidate for listing as threatened or endangered; FSC- Federal species of concern. These species were formerly known as "Category 2 Candidates". The United States Fish and Wildlife Service (FWS) does not have enough scientific information to support a listing proposal for these species. As of February 28, 1996, the FWS no longer maintains a list of species of "Category 2 Candidates". The Service is concerned about these species and continues to gather information about them.
State Status Codes: CE - State-listed, endangered; CT - State-listed, threatened; CSC - State species of special concern; CR - State designated as rare.
CNPS Status Codes: 1A - Plants presumed extinct in California; 1B - Plants rare, threatened, or endangered in California and elsewhere; 2 - Plants rare, threatened, or endangered in California, but more common elsewhere; 3 - Plants about which we need more information-a review list; 4 - Plants of limited distribution-a watch list.

APPENDIX B.
PLANT SPECIES OBSERVED DURING THE 2001-02 SPECIAL-STATUS PLANT SURVEY CONDUCTED ON THE NORTHWEST SPECIFIC PLAN AREA, ROHNERT PARK, CALIFORNIA

FAMILY *Scientific Name*	Common Name
DIVISION PTEROPHYTA	
MARSILEACEAE	
Pilularia americana	American pillwort
DIVISION ANTHOPHYTA	
DICOTYLEDONAE	
APIACEAE	
Daucus carota	Queen Anne's lace
Conium maculatum	Poison hemlock
Eryngium aristulatum	Coyote thistle
Foeniculum vulgare	Fennel
Perideridia kelloggii	Kellogg's yampah
Sanicula bipinnatifida	Purple sanicle
Scandix pectin-veneris	Shepherd's needle
ASTERACEAE	
Achillea millefolium	Yarrow
Achyrachaena mollis	Blow-wives
Baccharis pilularis var. *consanguinea*	Coyote brush
Carduus pycnocephalus	Italian thistle
Centaurea solstitialis	Yellow star thistle
Chamomilla suaveolens	Pineapple weed
Cichorium intybus	Chicory
Cirsium arvense	Bull thistle
Cirsium vulgare	Common thistle
Hyperevax caulescens	Evax
Anthemis cotula	Mayweed
Hypochaeris glabra	Smooth cat's ear
Hypochaeris radicata	Rough cat's ear
Lactuca serriola	Prickly lettuce
Picris echioides	Bristly ox-tongue
Senecio vulgaris	Common groundsel

APPENDIX B (CONT'D.).
PLANT SPECIES OBSERVED DURING THE 2001-02 SPECIAL-STATUS PLANT SURVEY CONDUCTED ON THE NORTHWEST SPECIFIC PLAN AREA, ROHNERT PARK, CALIFORNIA

FAMILY *Scientific Name*	Common Name
Sonchus asper	Sow thistle
Silybum marianum	Milk thistle
Taraxacum officinale	Dandelion
Tragopogon porrifolius	Salsify
BORAGINACEAE	
Amsinckia intermedia	Fiddleneck
Plagiobothrys bracteatus	Popcorn flower
Plagiobothrys stipitatus	Popcorn flower
BRASSICACEAE	
Brassica nigra	Black mustard
Brassica rapa [B. campestris]	Field mustard
Capsella bursa-pastoris	Shepard's purse
Cardamine integrifolia	Toothwort
Lepidium nitidum	Peppergrass
Raphanus sativus	Radish
Sisymbrium irio	London rocket
CARYOPHYLLACEAE	
Cerastium viscosum	Mouse-ear chickweed
Spergularia sp.	Sand spurrey
Stellaria media	Chickweed
CONVOLVULACEAE	
Convolvulus arvensis	Bindweed
EUPHORBIACEAE	
Eremocarpus setigerus	Turkey mullein
FABACEAE	
Acacia melanoxylon	Blackwood acacia
Lotus corniculatus	Bird's foot trefoil
Lotus purshianus	Trefoil (Spanish clover)
Lupinus bicolor	Lupine

APPENDIX B (CONT'D.).
PLANT SPECIES OBSERVED DURING THE 2001-02 SPECIAL-STATUS PLANT SURVEY CONDUCTED ON THE NORTHWEST SPECIFIC PLAN AREA, ROHNERT PARK, CALIFORNIA

FAMILY *Scientific Name*	Common Name
Lupinus nanus	Lupine
Medicago polymorpha	California bur clover
Trifolium dubium	Shamrock
Trifolium hybridum	Alsike clover
Trifolium pratense	Red clover
Trifolium repens	Clover
Trifolium subterraneum	Subterranean clover
Trifolium variegatum	Clover
Trifolium wormskoldii	Clover
Vicia sativa ssp. *sativa*	Common vetch
Vicia cracca	Vetch
GERANIACEAE	
Erodium botrys	Broadleaf filaree
Erodium cicutarium	Red-stemmed filaree
Geranium dissectum	Cranesbill
Geranium molle	Cranesbill
LIMNANTHACEAE	
Limnanthes douglasii	Douglas meadowfoam
LYTHRACEAE	
Lythrum hyssopifolium	Loosestrife
MALVACEAE	
Malva nicaeensis	Bull mallow
ONAGRACEAE	
Epilobium sp.	Fireweed
PLANTAGINACEAE	
Plantago erecta	California plantain
Plantago lanceolata	English plantain

APPENDIX B (CONT'D.).
PLANT SPECIES OBSERVED DURING THE 2001-02 SPECIAL-STATUS PLANT SURVEY CONDUCTED ON THE NORTHWEST SPECIFIC PLAN AREA, ROHNERT PARK, CALIFORNIA

FAMILY *Scientific Name*	Common Name
POLYGONACEAE	
Polygonum arenastrum	Knotweed
Rumex acetosella	Sheep sorrel
Rumex crispus	Curly dock
Rumex pulcher	Fiddle dock
Rumex salicifolius	Willow dock
PORTULACACEAE	
Calandrinia ciliata	Red maids
Montia fontana	Hall's montia
Montia perfoliata	Miner's lettuce
PRIMULACEAE	
Anagallis arvensis	Scarlet pimpernel
RANUNCULACEAE	
Myosurus minimus	Mousetail
Ranunculus californicus	Buttercup
Ranunculus muricatus	Spiny buttercup
Ranunculus orthorhynchus	Bloomer's buttercup
Ranunculus pusillus	Miniature buttercup
ROSACEAE	
Rubus discolor	Himalaya blackberry
SCROPHULARIACEAE	
Castilleja rubicundula	Cream sacs
Parentucellia viscosum	Parentucellia
Triphysaria eriantha	Butter and eggs
Veronica peregrina ssp. *xalapensis*	Purslane speedwell
VERBENACEAE	
Phyla nodiflora	Garden lippia

APPENDIX B (CONT'D.).
PLANT SPECIES OBSERVED DURING THE 2001-02 SPECIAL-STATUS PLANT SURVEY CONDUCTED ON THE NORTHWEST SPECIFIC PLAN AREA, ROHNERT PARK, CALIFORNIA

FAMILY *Scientific Name*	Common Name
MONOCOTYLEDONAE	
CYPERACEAE	
Cyperus eragrostis	Tall flat sedge
Eleocharis macrostachya	Spike rush
JUNCACEAE	
Juncus bufonius	Toad rush
Juncus mexicanus	Rush
Juncus phaeocephalus	Brown-headed rush
Juncus tenuis	Slender rush
JUNCAGINACEAE	
Lilaea scilloides	Flowering quillwort
IRIDACEAE	
Sisyrinchium bellum	Blue-eyed grass
LILIACEAE	
Brodiaea hyacinthina	White brodiaea
Brodiaea elegans	Brodiaea
Brodiaea terrestris	Dwarf brodiaea
Chlorogalum pomeridianum	Soap plant
POACEAE	
Aira caryophyllea	European hairgrass
Avena barbata	Slender wild oat
Avena fatua	Wild oat
Briza minor	Little rattlesnake grass
Bromus carinatus var. *carinatus*	California brome
Bromus diandrus	Ripgut grass

APPENDIX B (CONT'D.).
PLANT SPECIES OBSERVED DURING THE 2001-02 SPECIAL-STATUS PLANT SURVEY CONDUCTED ON THE NORTHWEST SPECIFIC PLAN AREA, ROHNERT PARK, CALIFORNIA

FAMILY *Scientific Name*	Common Name
Bromus hordaceus	Brome
Cynodon dactylon	Bermuda grass
Danthonia californica	California oat grass
Festuca arundinacea	Fescue grass
Hordeum brachyantherum ssp. *brachyantherum*	Meadow barley
Hordeum marinum ssp. *gussoneanum [H. hystrix]*	Mediterranean barley
Hordeum murinum ssp. *leporinum*	Barley
Lolium multiflorum	Italian ryegrass
Phalaris aquatica [*P. tuberosa*]	Harding grass
Phalaris paradoxa	Canary grass
Pleuropogon californicus	Semaphore grass
Poa annua	Annual bluegrass
Taeniatherum asperum	Medusa grass
Triticum aestivum	Wheat
Vulpia bromoides	Six-weeks fescue
Vulpia myuros var. *myuros*	Annual fescue

STUDY AREA

STUDY AREA

Study Area
Location

Study Area

Location

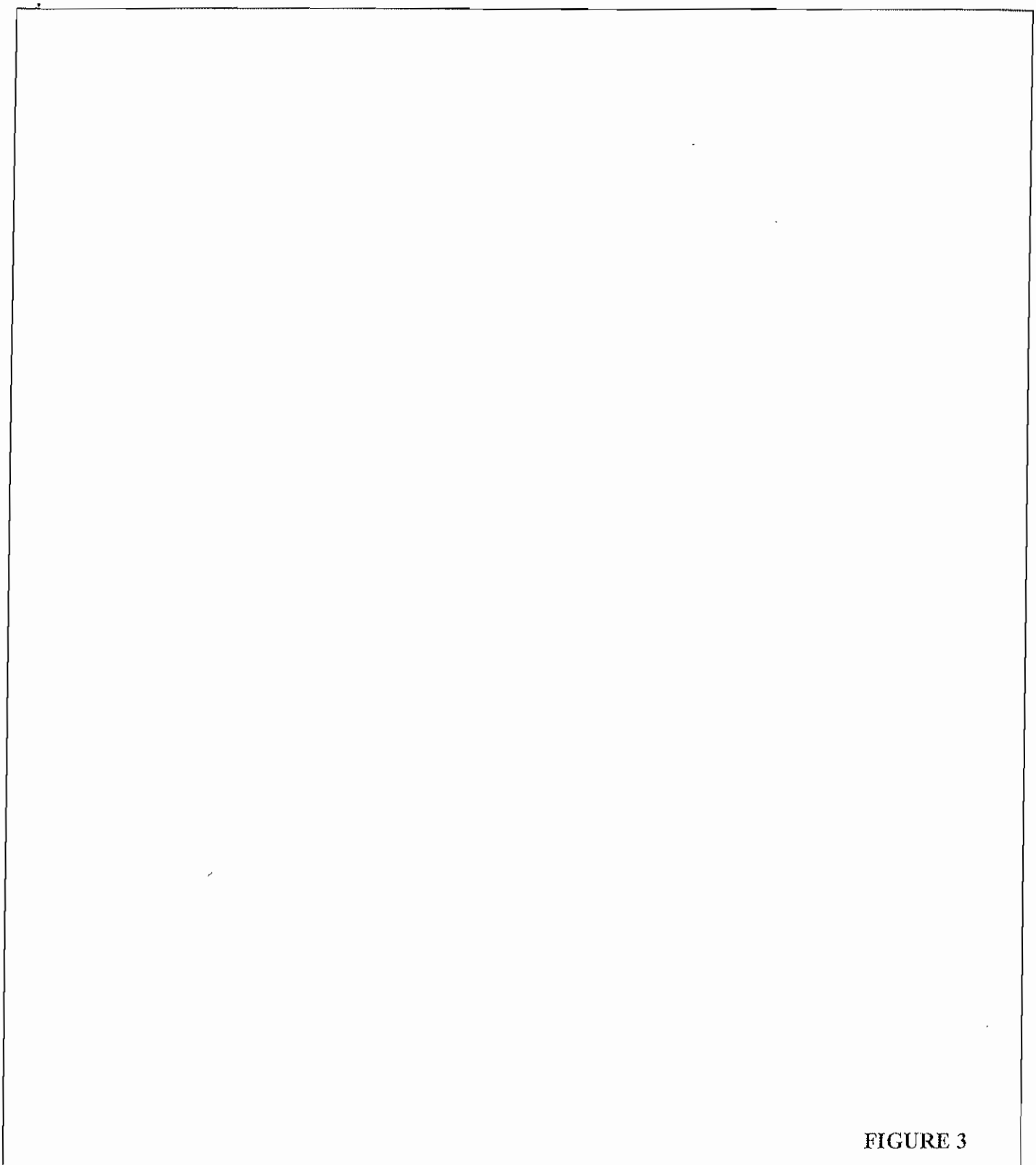


FIGURE 3

Survey requested by: Mr. Ken Blackman Blackman Consulting 1224 St. Helena Avenue Santa Rosa, CA 95404 Site: Northwest Rohnert Park Specific Plan Area, Rohnert Park, California	Approximate Scale 1:4,800	Parcels Surveyed as Part of the 2001 and 2002 Surveys (Parcels not Surveyed in 2001 are Hatched)

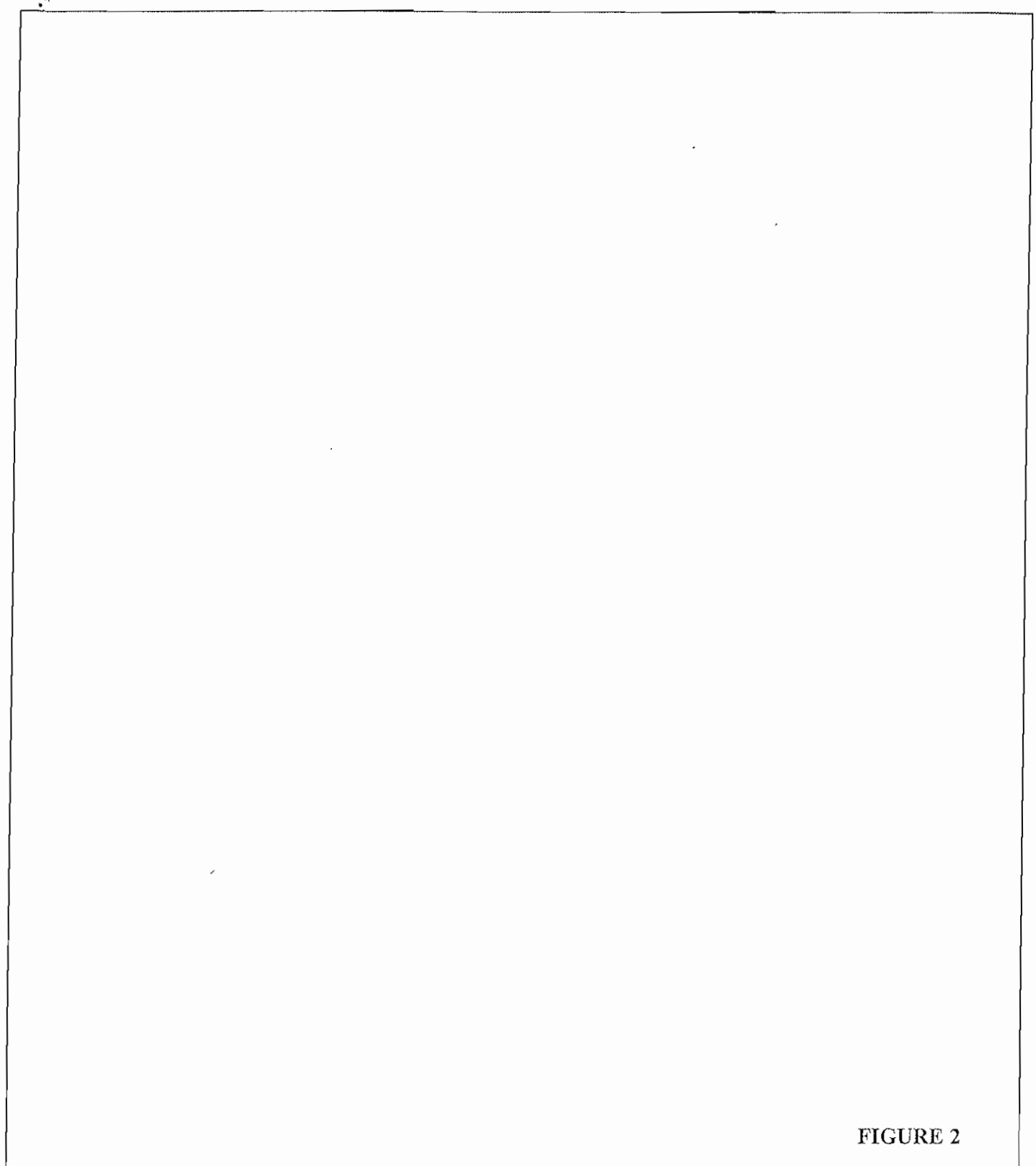


FIGURE 2

Survey requested by: Mr. Ken Blackman Blackman Consulting 1224 St. Helena Avenue Santa Rosa, CA 95404 Site: Northwest Rohnert Park Specific Plan Area, Rohnert Park, California	Nominal Scale 1:24,000	Project Site Location

ATTACHMENT 4C.

Special Status Plant Report, Rohnert Park NW Specific Plan Area,
Rohnert Park, Sonoma County, California.
Prepared by North Fork Associates. 2004.

SPECIAL STATUS PLANT REPORT
ROHNERT PARK NW SPECIFIC PLAN AREA

ROHNERT PARK, SONOMA COUNTY CALIFORNIA

Prepared for:

Mr. Ken Blackman
1224 St. Helen Avenue
Santa Rosa, California 95404
(707) 526-2782

Prepared by:

north fork associates
110 Maple Street, Suite 100, Auburn, California 95603
(530) 887-8500

DATE

TABLE OF CONTENTS

FIGURES

APPENDICES

INTRODUCTION

North Fork Associates delineated waters of the United States and conducted botanical surveys an approximately 80-acre site in Rohnert Park, Sonoma County, California in 2003 and 2004. The property is bounded roughly by Langer Avenue on the west, Wilfred on the north, Dowdell on the east, and Business Park Drive on the south. Labath Avenue runs north-south through the middle of the site. It is an unrecorded section of the Llano de Santa Rosa and Cotate land grants in Township 6 north and Range 8 west on the Cotati 7 ½ minute USGS quadrangle (Figure 1). Approximate GPS coordinates for the corner of Wilfred and Labath are 38.36333° north and 122.72118° west.

SETTING

The majority of the property has been used for small grain crops for at least 47 years that we could determine from old aerial photographs. The two small lots at the end of Labath have been graded. A residence and other structures were recently removed from the eastern lot. Some residential structures remain on the western lot. Although agriculture was the dominant activity for many years, areas to the south and east are being converted to commercial and business park development. Figure 2 shows the site in 1956 and Figure 3 is a 2003 aerial photo.

METHODS

Literature Surveys

Several reports covering the Santa Rosa Plain in general and the Rohnert Park NW Specific Plan site in particular were reviewed before and during the preparation of this report. These included Patterson (1994), CH2MHill (1998), Harlow (1998), Stromberg (2001), and Stromberg (2002).

The latest version of the California Natural Diversity Data Base (RareFind 3.0.3) was queried for locations of special status species in the Santa Rosa Plain. The query covered the Santa Rosa, Cotati, Healdsburg, Two Rock, and Sebastopol 7 ½ minute USGS quadrangles. The results of the query are located in Appendix A, and includes 40 plant species. The current City of Rohnert Park General Plan (2000) was reviewed for special status species and other issues.

Species names in this report follow *The Jepson Manual* (Hickman 1993) as updated by the Jepson Interchange, an online database maintained by the University and Jepson Herbaria of the University of California.

Field Surveys

The 80-acre NW Specific Plan area was surveyed for special status plant species over a four year period by several investigators. Dr. Larry Stromberg performed the first surveys in 2001 and subsequent surveys in 2002. North Fork Associates botanists Jeff Glazner and Barry Anderson surveyed the site in 2003 and 2004. Survey dates include March 15, March 21, April 2, April 13, and April 27, 2001 (Stromberg); March 12, March 25, March 29, April 8, and April 24, 2002 (Stromberg); April 11, May 7, July 24, 2003 (North Fork Associates); and April 13, 2004 (North Fork Associates).

Surveys by all investigators were conducted floristically according to the guidelines for rare plant surveys established by the California Native Plant Society and the California Department

of Fish and Game. Floristic surveys require that the surveyor conduct the surveys during the times when special status plants can be identified, typically during the blooming periods. During floristic surveys, the surveyor identifies each plant species observed to the extent necessary to determine whether it is a special status species. The purpose of floristic surveys is to ensure that unexpected special status species (those not specifically mentioned in the Natural Diversity Data Base) are not overlooked because the surveyor was focused on a small suite of species. However, because wetlands in the Santa Rosa Plain support an array of special status plants, these areas were given more attention. Plants that could not be identified in the field were brought to the office and identified using standard botanical references. Two lists of species observed during both the Stromberg and North Fork Associates surveys is located in Appendix B. One list is organized alphabetically by common name, the second list is organized by family and genus.

POTENTIALLY-OCCURRING SPECIAL STATUS PLANT SPECIES

Potential Habitat

Page 4-12 of the Habitat Quality Evaluation manual (CH2MHill 1998) has a list of vegetation, topographic, and hydrologic conditions that determine suitable habitat for the four listed species that occur on the Santa Rosa Plain. These include(1) areas that support the species given in Table 4-1; (2) areas where weedy grasses contribute less than 90 percent of the cover; (3) wetland areas occur in swales or depressions that are inundated for seven or more consecutive days. These areas were examined with special care for special status species.

Potential Species

Suitable habitat for many of the 40 species in Appendix A does not occur on the NW Specific Plan site. Many are chaparral, woodland, or forest species, habitat that do not exist on the property studied. These species were excluded from further consideration. Other species excluded are those found in bogs and marshes that require inundation or soil saturation well beyond that found on the site. Eleven species of the 40 had or currently have some potential to occur on parts of the site that provide suitable habitat. Table 1 is a list of those species and an assessment of their potential to occur.

RESULTS

Hydrology

The property is used for dryland agriculture and is not irrigated. All water reaching the site is from precipitation between October and May or June. Because it is nearly flat, attempts to drain water from it have been made over the years. Where possible, water is drained into ditches along Labath or into the ditch that separates the property from the adjacent property to the north. Direct evidence of hydrology was present on the site during the wetland delineation and vegetation surveys in 2003.

Soils

The only native soil on the site is Clear Lake clay. Clear Lake soils are very deep Xeric Endoaquerts derived from sandstone and shale. These soils are found on 0 to 2 percent slopes, are poorly drained, and have slow to very slow permeability. Consequently, swales and depressions are inundated for portions of the winter.

Vegetation

Two vegetation types occur on the site: hay and ruderal grassland. The vast majority of the property is used for the production of hay. The main species is Italian ryegrass, which often accounts for 90 to 100 percent of the vegetative cover. Additional species include field mustard, bindweed, miniature lupine, cut-leaf geranium, spiny-fruit buttercup, toad rush, and paradox canary-grass, although these were not generally common during the 2003 and 2004 field surveys.

Two small parcels on the western portion of the site were used for residential or agricultural buildings. The soil in these areas does not match the description of Clear Lake clay and was probably imported to raise the elevation of the property. These areas support a ruderal grassland dominated by species that tolerate periodic disturbance. Typical species include sweet fennel, coyote brush, Italian thistle, chicory, bull thistle, prickly lettuce, bristly ox-tongue, prickly sow-thistle, bindweed, bull mallow, common knotweed, ripgut grass, soft chess, Bermuda grass, foxtail barley, Harding grass, and medusa-head.

Embedded within the two main vegetation types are seasonal wetlands. These wetlands occur in swales and depressions, several of which appear to be the result, at least in part, of uneven agricultural practices. Some of the species present are native vernal pool species, but a number of weedy wetland species occur there as well. Typical species include swamp grass, annual semaphore grass, flowering quillwort, straight-beak buttercup, dense-flower spike-primrose, pennyroyal, downingia, winged water-starwort, stipitate popcornflower, and California coyote-thistle.

Special Status Plant Species

No special status plan species were observed during any of the surveys between 2001 and 2004.

1) No member of the genus *Balsamohriza* was observed. The long-term continuous disturbance almost certainly eliminates the possibility that this species could occur on the site.
2) No members of the genus *Blennosperma* were observed, although marginally suitable habitat for this species is present.
3) No members of the genus *Lasthenia* were observed, although some common species appear adapted to disturbance and might be expected to occur.
4) *Downingia pusilla* was not observed, but the common *Downingia concolor* was found in deeper depressions at several locations.
5) *Legenere limosa* was not observed.
6) No members of the genus *Trifolium* were observed, although one or more common species would have been expected.
7) No members of the genus *Fritillaria* were observed, and they are not to be expected on the site because of the long-term disturbance.
8) No special status members of the genus *Limnanthes* were observed. Although *Limnanthes douglasii* does occur on the site, it is not common there.
9) Only the common *Pleuropogon californicus* was observed.

10) No members of the genus *Navarretia* were observed.

REFERENCES

CH2MHill. 1998. Final Training Manual to Evaluate Habitat Quality of Vernal Pool Ecosystem Sites in Santa Rosa Plain. Report prepared for the U.S. Army Corps of Engineers, December 1998.

City of Rohnert Park. 2000. City of Rohnert Park General Plan. Prepared by Byett & Bhatia, Urban and Regional Planners.

Harlow, D.L. 1998. Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects that May Affect Four Endangered Plant Species on the Santa Rosa Plain, California (File Number 22342N). Letter to Calvin Fong, July 17, 1998.

Hickman, J. (ed.). 1993. The Jepson Manual. UC Press.

Patterson, C.A. 1994. Seasonal Wetland Baseline Report for the Santa Rosa Plain, Sonoma County. Report prepared for the California Department of Fish and Game, June 30, 1994.

Stromberg, L.P. 2001. Results of 2001 Survey for Special-Status Plant Species, Northwest Specific Plan Area, Rohnert Park, California. Prepared for Blackman Consulting.

Stromberg, L.P. 2002. Results of 2002 Survey for Special-Status Plant Species, Northwest Specific Plan Area, Rohnert Park, California. Report prepared for Blackman Consulting, May 28, 2002.

APPENDIX A

Special Status Species Known to Occur in the Laguna de Santa Rosa Region

APPENDIX B

Plant Species Observed During Field Surveys on the NW Specific Plan Area

Appendix A

Special Status Species with the Potential to Occru on the Rohnert Park NW Site

Family Taxon Common Name	Status*		Flowering Period	Habitat	Probability on Project Site
Asteraceae					
Balsamorhiza macrolepis macrolepis Big-scale balsam-root	Fed: State: CNPS:	SSC - List 1B	March-June	Cismontane woodland; valley and foothill grassland; [sometimes serpentnite].	None. Habitat may have been present historically, but long-term agricultural disturbance precludes the possibility of this species.
Blennosperma bakeri Sonoma sunshine	Fed: State: CNPS:	FE CE List 1B	March-April	Valley and foothill grassland (mesic); vernal pools.	Possible. Deeper depressions provide marginal habitat, although long-term disturbance compromises the habitat.
Lasthenia burkei Burke's goldfields	Fed: State: CNPS:	FE CE List 1B	April-June	Meadows (mesic); vernal pools.	Possible. Deeper depressions provide marginal habitat, although long-term disturbance compromises the habitat. Most populations occur in the northern portion of the Plain.
Campanulaceae					
Downingia pusilla Dwarf downingia	Fed: State: CNPS:	- - List 2	March-May	Valley and foothill grassland (mesic); vernal pools.	Possible. Deeper depressions provide marginal habitat, although long-term disturbance compromises the habitat.
Legenere limosa Legenere	Fed: State: CNPS:	SSC - List 1B	April-June	Vernal pools.	Possible. Deeper depressions provide marginal habitat, although long-term disturbance compromises the habitat.
Fabaceae					
Trifolium amoenum Showy Indian clover	Fed: State: CNPS:	FE - List 1B	April-June	Valley and foothill grassland (sometimes serpentinite)	Unlikely. Habitat may have been present in the past, but long-term disturbance reduces the possibility.

Appendix A

Special Status Species with the Potential to Occru on the Rohnert Park NW Site

Family Taxon Common Name	Status*		Flowering Period	Habitat	Probability on Project Site
Liliaceae					
Fritillaria liliacea Fragrant fritillary	Fed: State: CNPS:	FSC - List 1B	February-April	Coastal prairie; coastal scrub; valley and foothill grassland; [often serpentinite].	None. Habitat may have been present historically, but long-term agricultural disturbance precludes the possibility of this species.
Limnanthaceae					
Limnanthes vinculans Sebastopol meadowfoam	Fed: State: CNPS:	FE CE List 1B	April-May	Meadows (mesic); vernal pools.	Possible. Deeper depressions provide marginal habitat, although long-term disturbance compromises the habitat. Known to occur in the vicinity.
Poaceae					
Pleuropogon hooverianus North coast semaphore grass	Fed: State: CNPS:	FSC CR List 1B	May-August	Broadleaved upland forest; measows; north coast coniferous forest; vernal pools; [mesic].	Unlikely. Suitable habitat for this species is probably not present.
Polemoniaceae					
Navarretia leucocephala bakeri Baker's navarretia	Fed: State: CNPS:	- - List 1B	May-July	Cismontane woodland; lower montane coniferous forest; meadows (mesic); valley and foothill grassland; vernal pools.	Possible. Deeper depressions provide marginal habitat, although long-term disturbance compromises the habitat.
Navarretia leucocephala plieantha Many-flowered navarretia	Fed: State: CNPS:	FE CE List 1B	May-June	Vernal pools (volcanic ash flow).	Unlikely. Suitable habitat for this species is probably not present.

Appendix A

Special Status Species with the Potential to Occru on the Rohnert Park NW Site

Family Taxon Common Name	Status*	Flowering Period	Habitat	Probability on Project Site

***Status**

Federal:
FE - Federal Endangered
FT - Federal Threatened
FPE - Federal Proposed Endangered
FPT - Federal Proposed Threatened
FC - Federal Candidate
SSC - Sacramento Species of Concern
SLC- Sacramento Species of Local Concern

State:
CE - California Endangered
CT - California Threatened
CR - California Rare
CC - California Candidate
CSC - California Species of Special Concern

CNPS (California Native Plant Society):
List 1A - Extinct
List 1B - Plants rare, threatened, or endangered in California and elsewhere
List 2 - Plants rare, threatened, or endangered in California, more common elsewhere
List 3 - Plants about which more information is needed, a review list
List 4 - Plants of limited distribution, a watch list

Appendix B

Plant Species Occurring in the Rohnert Park NW Specific Plan Area

Ferns and Allies

Marsileaceae

Pilularia americana	American pillwort

Angiosperms - Dicots

Apiaceae

Eryngium aristulatum aristulatum	California coyote-thistle
**Foeniculum vulgare*	Sweet fennel
Perideridia kelloggii	Kellogg's yampah

Asteraceae

Achyrachaena mollis	Blow-wives
Baccharis pilularis	Coyote brush
**Carduus pycnocephalus*	Italian thistle
**Centaurea solstitialis*	Yellow star-thistle
**Chamomilla suaveolens*	Pineapple-weed
**Cichorium intybus*	Chicory
**Cirsium vulgare*	Bull thistle
**Hypochaeris glabra*	Smooth cat's-ear
**Lactuca serriola*	Prickly lettuce
**Picris echioides*	Bristly ox-tongue
**Senecio vulgaris*	Common groundsel
**Sonchus asper asper*	Prickly sow-thistle
**Tragopogon porrifolius*	Salsify

Boraginaceae

Plagiobothrys stipitatus micranthus	Stipitate popcornflower

Brassicaceae

**Brassica rapa*	Field mustard
**Capsella bursa-pastoris*	Shepherd's purse
Lepidium nitidum nitidum	Peppergrass
**Raphanus sativus*	Wild radish

Callitrichaceae

Callitriche marginata	Winged water-starwort

Campanulaceae

Downingia concolor concolor	Downingia

Convolvulaceae

**Convolvulus arvensis*	Bindweed

Fabaceae

**Lotus corniculatus*	Birdfoot trefoil
Lotus purshianus purshianus	Spanish-clover
Lupinus bicolor	Miniature lupine

* Indicates a non-native species

**Medicago polymorpha*	California burclover
**Vicia sativa*	Common vetch

Geraniaceae

**Geranium dissectum*	Cut-leaf geranium

Lamiaceae

**Mentha pulegium*	Pennyroyal

Limnanthaceae

Limnanthes douglasii	Douglas meadowfoam

Lythraceae

**Lythrum hyssopifolium*	Hyssop loosestrife

Malvaceae

**Malva nicaeensis*	Bull mallow

Onagraceae

Epilobium densiflorum	Dense-flower spike-primrose

Plantaginaceae

**Plantago lanceolata*	English plantain

Polygonaceae

**Polygonum arenastrum*	Common knotweed
**Rumex crispus*	Curly dock

Primulaceae

**Anagalis arvensis*	Scarlet pimpernel

Ranunculaceae

Myosurus minimus	Tiny mouse-tail
**Ranunculus muricatus*	Spiny-fruit buttercup
Ranunculus orthorhynchus bloomeri	Straight-beak buttercup

Scrophulariaceae

**Veronica peregrina xalapensis*	Purslane speedwell

Angiosperms -Monocots

Cyperaceae

Cyperus eragrostis	Tall flatsedge

Juncaceae

Juncus bufonius	Toad rush

Juncaginaceae

Lilaea scilloides	Flowering quillwort

Poaceae

**Avena sp.*	Oat
**Briza minor*	Small quaking grass
**Bromus diandrus*	Ripgut grass
**Bromus hordeaceus*	Soft chess
**Crypsis schoenoides*	Swamp grass
**Cynodon dactylon*	Bermuda grass
Hordeum brachyantherum	Meadow barley
**Hordeum marinum gussoneanum*	Mediterranean barley

* Indicates a non-native species

**Hordeum murinum leporinum*	Foxtail barley
**Lolium multiflorum*	Italian ryegrass
**Phalaris aquatica*	Harding grass
**Phalaris paradoxa*	Paradox canary-grass
Pleuropogon californicus	Annual semaphore grass
**Taeniatherum caput-medusae*	Medusa-head
**Vulpia bromoides*	Six-weeks brome grass

* Indicates a non-native species

Appendix B

Common Name	Taxon
American pillwort	*Pilularia americana*
Annual semaphore grass	*Pleuropogon californicus*
Bermuda grass	*Cynodon dactylon*
Bindweed	*Convolvulus arvensis*
Birdfoot trefoil	*Lotus corniculatus*
Blow-wives	*Achyrachaena mollis*
Bristly ox-tongue	*Picris echioides*
Bull mallow	*Malva nicaeensis*
Bull thistle	*Cirsium vulgare*
California burclover	*Medicago polymorpha*
California coyote-thistle	*Eryngium aristulatum aristulatum*
Chicory	*Cichorium intybus*
Common groundsel	*Senecio vulgaris*
Common knotweed	*Polygonum arenastrum*
Common vetch	*Vicia sativa*
Coyote brush	*Baccharis pilularis*
Curly dock	*Rumex crispus*
Cut-leaf geranium	*Geranium dissectum*
Dense-flower spike-primrose	*Epilobium densiflorum*
Douglas meadowfoam	*Limnanthes douglasii*
Downingia	*Downingia concolor concolor*
English plantain	*Plantago lanceolata*
Field mustard	*Brassica rapa*
Flowering quillwort	*Lilaea scilloides*
Foxtail barley	*Hordeum murinum leporinum*
Harding grass	*Phalaris aquatica*
Hyssop loosestrife	*Lythrum hyssopifolium*
Italian ryegrass	*Lolium multiflorum*
Italian thistle	*Carduus pycnocephalus*
Kellogg's yampah	*Perideridia kelloggii*
Meadow barley	*Hordeum brachyantherum*
Mediterranean barley	*Hordeum marinum gussoneanum*
Medusa-head	*Taeniatherum caput-medusae*
Miniature lupine	*Lupinus bicolor*
Oat	*Avena sp.*
Paradox canary-grass	*Phalaris paradoxa*
Pennyroyal	*Mentha pulegium*
Peppergrass	*Lepidium nitidum nitidum*

Common Name	Taxon
Pineapple-weed	*Chamomilla suaveolens*
Prickly lettuce	*Lactuca serriola*
Prickly sow-thistle	*Sonchus asper asper*
Purslane speedwell	*Veronica peregrina xalapensis*
Ripgut grass	*Bromus diandrus*
Salsify	*Tragopogon porrifolius*
Scarlet pimpernel	*Anagalis arvensis*
Shepherd's purse	*Capsella bursa-pastoris*
Six-weeks brome grass	*Vulpia bromoides*
Small quaking grass	*Briza minor*
Smooth cat's-ear	*Hypochaeris glabra*
Soft chess	*Bromus hordeaceus*
Spanish-clover	*Lotus purshianus purshianus*
Spiny-fruit buttercup	*Ranunculus muricatus*
Stipitate popcornflower	*Plagiobothrys stipitatus micranthus*
Straight-beak buttercup	*Ranunculus orthorhynchus bloomeri*
Swamp grass	*Crypsis schoenoides*
Sweet fennel	*Foeniculum vulgare*
Tall flatsedge	*Cyperus eragrostis*
Tiny mouse-tail	*Myosurus minimus*
Toad rush	*Juncus bufonius*
Wild radish	*Raphanus sativus*
Winged water-starwort	*Callitriche marginata*
Yellow star-thistle	*Centaurea solstitialis*

ATTACHMENT 4D.

Northwest Specific Plan Area, Redwood Equities Investments Property, Rohnert Park, California Tiger Salamander 2002/2003 Survey Report.
Prepared by H.T. Harvey & Associates. April 25, 2003.

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
CALIFORNIA TIGER SALAMANDER
2002/2003 SURVEY REPORT

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

DRAFT

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
CALIFORNIA TIGER SALAMANDER
2002/2003 SURVEY REPORT

Prepared by

H. T. HARVEY & ASSOCIATES

Scott Terrill, Ph.D., Principle
Julie Klingmann, M.S., Project Manager
Jeffery A. Wilkinson, Ph.D., Staff Herpetologist

Prepared for:

Kenneth R. Blackman
Blackman Consulting
1224 St. Helena Avenue
Santa Rosa, CA 95404

April 25, 2003

Project 2041-01

TABLE OF CONTENTS

FIGURES:

PHOTOS:

INTRODUCTION

The project site is within the Northwest Specific Plan Area in the City of Rohnert Park, California. This property is located west of Highway 101 bordered by Wilfred Avenue to the north, Business Park Drive to the south, Langer Avenue to the west and Dowdell Avenue to the east, within the City of Rohnert Park, County of Sonoma (Figure 1). The site is bisected by Labath Avenue, with a larger section west of Labath Avenue and a smaller section east of Labath Avenue. Photographs of the site are in Appendix A

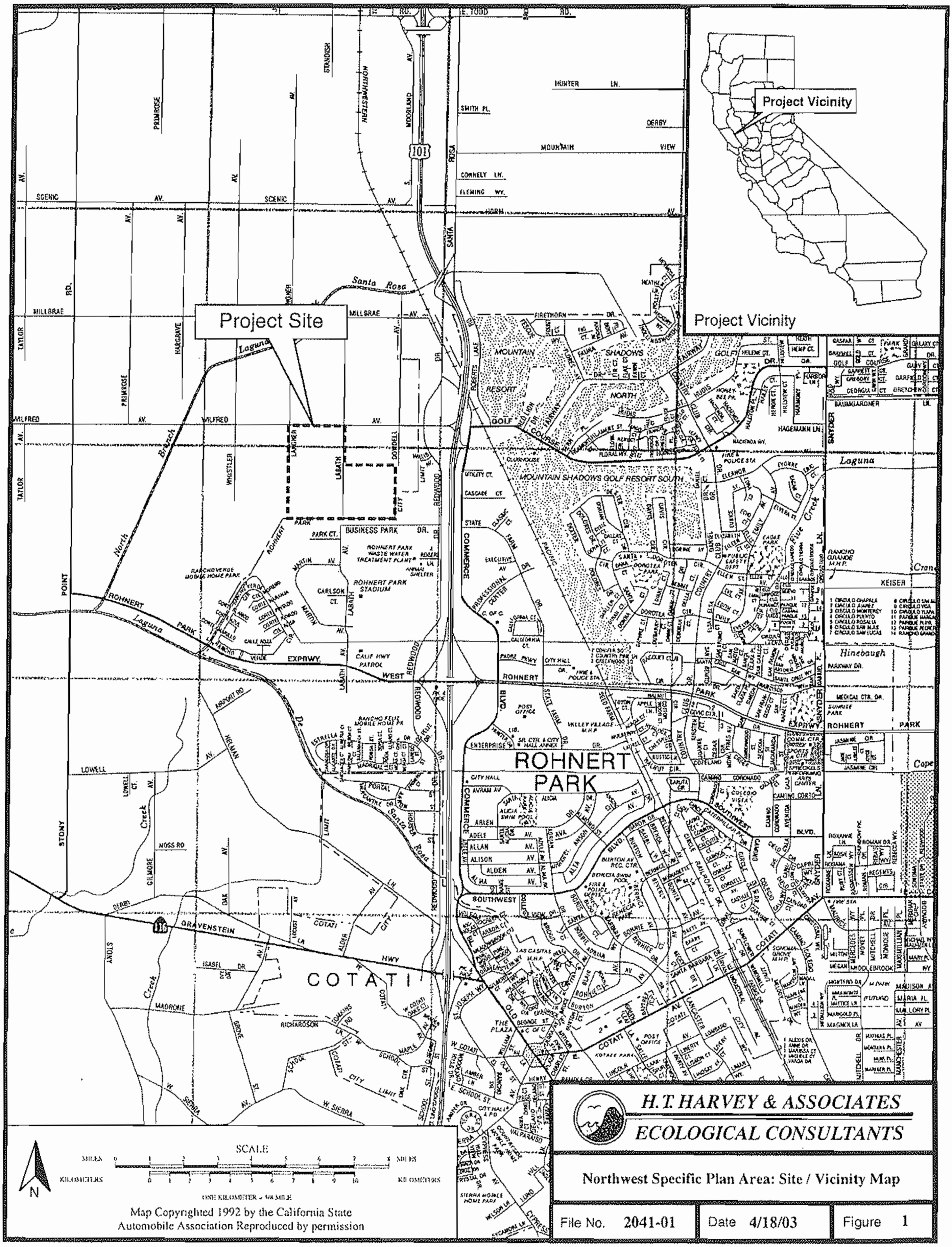
The site consists of relatively flat ground reported to have been disked annually for at least the past 21 years. At present, an area of potential ponding exists on the southwestern part of the larger section, with swales extending from this pond to the east and northeast across this section. It is likely that this ponding is the result of winter and spring rains and is typically dry by summer. In addition, this seasonally ponded area has been disked annually along with the remainder of the site.

The site is bordered to the east and south by development. There is a drainage channel between the site and Business Park Drive to the south. To the north and west, the site is bordered by open space with a low concentration of housing. Some portions of this open space appear to be used for agriculture while other portions are grassland for cattle. In particular, parcels immediately bordering to the north and east, and to the west of the northwestern portion of the site appear to be potential aestivation habitat for California tiger salamanders.

RESULTS FROM PREVIOUS SURVEYS

During a site assessment on 11 October 2001, H. T. Harvey & Associates determined that the ponded area and swales may provide breeding habitat for California tiger salamanders *(Ambystoma californiense)* because of temporary ponding during winter and spring, (optimal breeding conditions for the species). However, due to the extensive disking, the site lacked aestivation habitat for adult salamanders (ground squirrel and/or gopher burrows, and cracks in the ground). The site assessment recommended that the ponded area on site be inspected during the winter and/or spring to determine whether or not it is used for breeding by California tiger salamanders. However, the property owner requested more complete protocol-level surveys, including both winter aestivation and spring breeding surveys.

Five nocturnal surveys were conducted on 13 December 2001, 7 and 16 February, and 5 and 22 March 2002. These surveys were conducted according to recommendations issued by the California Department of Fish and Game (1997). These surveys consisted of walking the entire site, but concentrating searches on ponded areas located on the western portion of the site and the immediately associated upland habitat. The surveys involved looking along the ground, under debris, and into cracks and rodent burrows. A hand-held flashlight and headlamp were used during the surveys.



Northwest Specific Plan Area: Site / Vicinity Map

File No. 2041-01 | Date 4/18/03 | Figure 1

Two protocol aquatic larval surveys were conducted on 20, and 25 April 2002. These surveys consisted of sampling the ponded areas using a dip net and then, where appropriate, using a two-pole seine.

No California tiger salamanders were observed during any of the above surveys. However, tadpoles of the Pacific treefrog (*Hyla regilla*) and an unidentified species of tadpole shrimp were observed in the ponded areas on the western portion of the site (H. T. Harvey & Associates 2002).

LISTING OF THE SONOMA COUNTY POPULATION OF THE CALIFORNIA TIGER SALAMANDER

The U.S. Fish and Wildlife Service (USFWS) listed the Sonoma County population of the California tiger salamander as an endangered species on an emergency basis on 22 July 2002. Due to this listing, the USFWS was to prepare new survey protocols that would supersede survey protocols used for this species prior to listing. This protocol, the *Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma County Distinct Population Segment of the California Tiger Salamander,* was issued in draft form on 8 November 2002. The USFWS directed all survey efforts within the listed California tiger salamander population area to follow this draft protocol.

METHODS

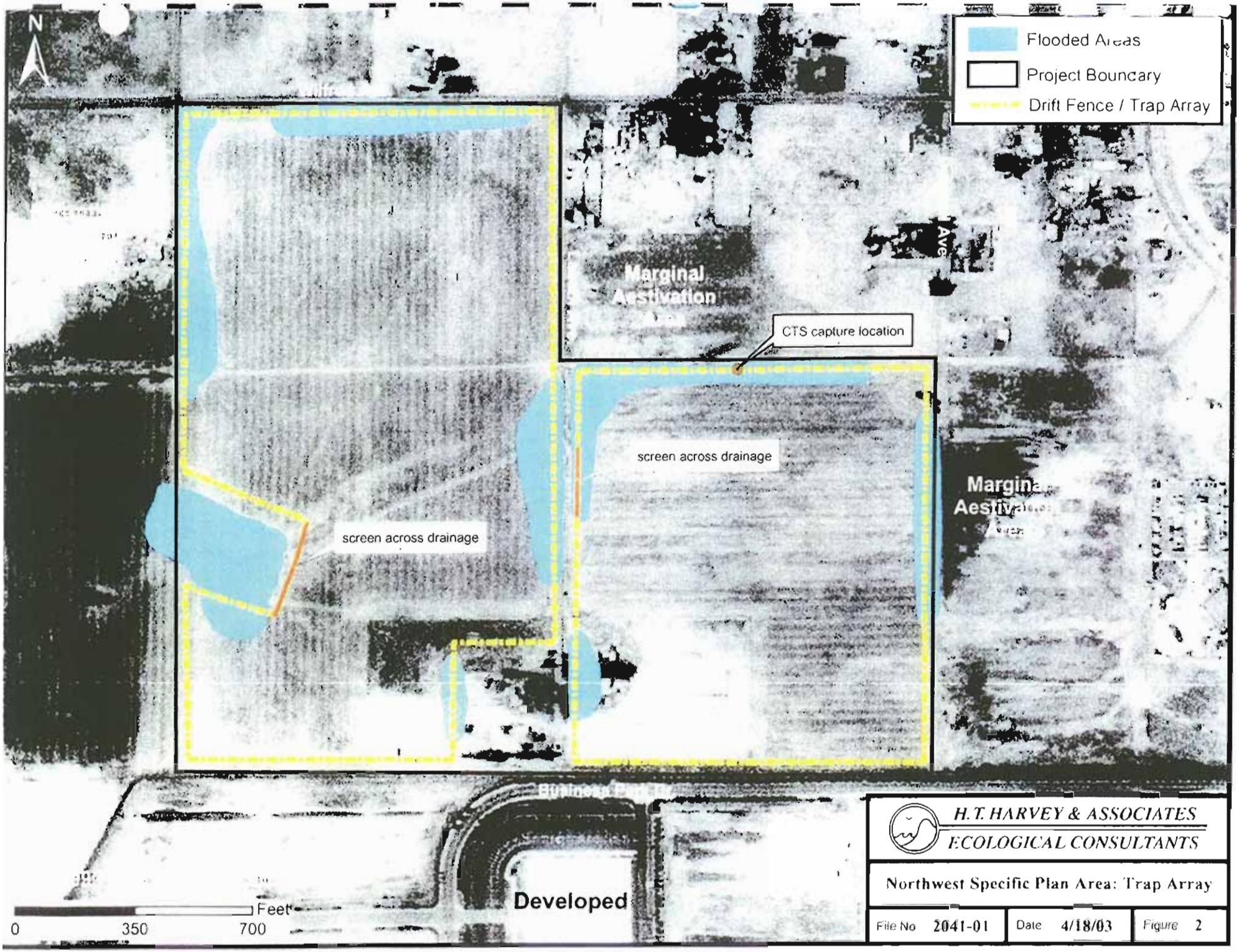
In order to determine presence or absence of California tiger salamanders on the site in accordance with the USFWS protocol, a second year of more intensive surveys was initiated in November of 2002. Due to a delay in issuance of the survey protocol from the USFWS and in receiving approval for this specific site, the trap array called for in the new protocol could not be installed prior to the first rain event. Therefore, on direction from the USFWS, three nocturnal surveys were conducted during the first rain event of the season on 7-9 November 2002. These surveys were conducted in similar fashion to the previous year's surveys mentioned above (i.e., following the CDFG protocol).

After receiving site-specific approval and the USFWS draft protocol mentioned above, a drift fence trap array was constructed around the entire property. This trap array remains in place pending a decision by the USFWS whether trapping should continue for a subsequent season. The drift fence consists of 2-foot wide silt fence buried at least 6 inches in the soil and anchored with staples attached to wooden stakes. The fence was installed in order to completely surround both the larger section and the smaller section of the property, but does not include Labath Avenue and the residence on the southeastern corner of the western section (Figure 2). In addition, the drift fence does not surround the ponded area on the western side of the larger section because the ponded area extends west offsite onto the adjoining property.

Gaps in the drift fence, approximately every 20 feet, contain buried pit fall traps totaling 304 traps. Each pit fall trap consists of a 5-gallon plastic bucket that was buried face up so the upper lip of the trap is an inch or two above the surface of the soil and is in contact with each side of the adjacent drift fence. Each bucket has several 1/4-inch drainage holes drilled in the bottom, and is installed so that there is a slight rise to the outer lip of the bucket. This normally prevents water from flowing into the buckets from surrounding runoff. All buckets have covers over them to protect captured salamanders from the elements. Each cover is composed of the lid of the bucket with two 10-inch long 2 by 4 boards attached by screws approximately four inches from the edge of the lid to elevate the lid four inches above the ground. Two pieces of aluminum flashing, 4 inches by 4 inches, were attached by a screw to the side of the stakes adjacent to the bucket so that they would extend inward on each side of the bucket to the 2 x 4 boards when the lid is elevated over the bucket. This arrangement eliminates any gap between the stake and the bucket that a salamander might use to enter the site without falling into the bucket.

Each bucket also contains a sponge, moistened regularly during trapping operations, which was pre-cleaned by soaking overnight and thoroughly washed in clean water before use. In addition, each bucket contains a "ladder" of jute twine connected to the cover that trails to the bottom of the bucket to provide for escape by rodents that may enter the traps.

When not in use, the traps were securely closed by rotating the flashing up, turning the lid over, and sealing it to the lip of the bucket. On the day of an expected rain event the bucket lids were removed, the flashing was rotated down and inward, and the lids were turned over and elevated above each bucket. The trap array was inspected for salamanders each morning during a rain event, the morning after a rain event and the morning following that, by a permitted surveyor, at



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area: Trap Array

File No	2041-01	Date	4/18/03	Figure	2

which time the bucket lids were placed onto the traps as described above until the next rain event. The trap line was run during rain events from the date of approval through March 31. Rain events, as defined by the USFWS, were any precipitation predicted at 70% or greater or an event where 0.25 inches of rain had fallen prior to nightfall (Dave Wooten, pers com 2002).

During intense rain events early in the trapping season, several areas on site were flooded to the extent that many of the buckets were completely inundated. These areas were the northern edge, northwestern corner, the southeastern corner, and the eastern edge of the larger section, and the southern edge of the ponded area on the larger section, the northwestern corner, western edge, eastern edge, and northern edge of the smaller section (Figure 2). Due to complete inundation of several buckets in these areas, screens were installed around the outside of the inundated buckets and attached to the adjacent stakes so that salamanders could not swim across the top of the submerged, open buckets onto the site. In addition, many of the buckets were from half to almost completely full of murky water due to the saturation of the surrounding soil. Therefore, these buckets were inspected by inserting a hand into the water to the bottom of the bucket and feeling for a salamander in the water.

The traps were inspected on the following days: 6-24, 26-31 December 2002, 2, 11, 12, 14, 15, 23, 24 January, 13, 15-17 February, 14-17, 23, 24 March 2003 (see raw data sheets in Appendix B).

The ponded areas on site were inspected for larvae on 13 February, 24 March, and 7 April 2003. The ponded areas were very shallow (less than 3 inches deep) on these dates; therefore inspections were visual only, with no dip-netting.

RESULTS

No California tiger salamanders were observed during any of the above surveys. No larvae or egg masses were detected in any ponded area whether in the onsite ponded area or in the ditches surrounding the site. Louisiana red-swamp crayfish (*Procambarus clarkii*), ornate shrews (*Sorex ornatus*), California voles (*Microtus californicus*), western harvest mice (*Reithrodontomys megalotis*), California red-sided garter snakes (*Thamnophis sirtalis infernalis*), southern alligator lizards (*Elgeria multicarinata*), California slender salamanders (*Batrachoceps attenuatus*) and tadpoles and adults of the Pacific treefrog (*Hyla regilla*) were observed in the traps. Trapping surveys were completed 31 March 2003 with the last visit being on 24 March. However, USFWS has requested the continuation of larval surveys of standing water in the ditches until June (Dave Wooten, pers com 2003).

On 7 April 2003, a final inspection of the traps was conducted to insure that no vertebrate was present in a trap before the lids were sealed for the season. During this inspection, a healthy, adult, gravid female California tiger salamander was found in trap number 293, midway along the northern edge of the smaller section (Figure 2). The trap was one that had been full of water throughout the trapping season and was still partially filled. Following instructions from USFWS (Dave Wooten, pers com 2003), this individual was removed from the trap, transported to the mitigation bank within the Southwest Santa Rosa Vernal Pool Preservation Area and released within a gopher burrow north of a swale approximately 150 meters north of Todd Road. The California tiger salamander was photographed prior to release (see below).

Photo 1: Female California tiger salamander found in trap 7 April 2003.

DISCUSSION

The circumstances under which the single California tiger salamander was detected in this survey were unusual. Surveys following the protocol were completed 24 March and the traps closed. When the USFWS determined that the trapping season was completed on 31 March, a final visit was scheduled to inspect and secure the traps for the season. On 7 April during this final inspection the single California tiger salamander was found.

Generally, California tiger salamanders do not actively migrate so late in the season; which provides the basis of the USFWS determination that the trapping season should end 31 March. The trap was full of water during the 24 March survey and was carefully inspected, however, it is possible the California tiger salamander escaped detection in the murky water.

The trapping of one individual of the California tiger salamander very late in the season suggests that this individual was not entering the site for breeding but instead may have been foraging at the time of capture. Potential aestivation habitat on adjoining property to the north had been identified as during the 2001 site assessment. Based on the location of the trap, it is possible that this individual entered the site from that area.

There is also the possibility that a third party placed the California tiger salamander in the trap sometime between 24 March and 7 April. These scenarios are discussed in detail in a letter from Robert Uram, Attorney with Sheppard, Mullin, Richter & Hampton LLP, to Dan Buford USFWS dated 10 April 2003 and will not be discussed further in this report.

PERSONAL COMMUNICATIONS

David Wooten. U.S. Fish and Wildlife Service. E-mail December 23, 2002.

David Wooten. U.S. Fish and Wildlife Service. Phone conversation April 7, 2003.

REFERENCES CITED

California Department of Fish and Game. 1997. Survey protocol for the California tiger salamander (Ambystoma californiense). California Department of Fish and Game, Inland Fisheries- Information Leaflet No. 44. 1-7.

H. T. Harvey & Associates. 2002. Northwest Specific Plan Rohnert Park California Tiger Salamander Surveys.

USFWS. 2002. Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma County Distinct Population Segment of the California Tiger Salamander. 8 November 2002.

APPENDIX A.
PHOTOGRAPHS OF THE SITE

PHOTOGRAPHS FROM THE CENTER OF THE SITE

Photo point at middle of both parcels, looking east.

Photo point at middle of both parcels, looking north.

Photo point at middle of both parcels, looking west.

Photo point at middle of both parcels, looking south.

PHOTOGRAPHS FROM THE CENTER OF THE LARGER (WESTERLY) AREA

Photo point at center of larger parcel, looking east.

Photo point at center of larger parcel, looking north.

Photo point at center of larger parcel, looking west.

Photo point at center of larger parcel, looking south.

PHOTOGRAPHS FROM THE CENTER OF THE SMALLER (EASTERLY) AREA

Photo point at center of smaller parcel, looking east.

Photo point at center of smaller parcel, looking north.

Photo point at center of smaller parcel, looking west.

Photo point at center of smaller parcel, looking south.

APPENDIX B.
DATA SHEETS

Sonoma Tiger Salamander Data Sheet

Date of Survey: 11/7/02 Survey Number for Month/Season: 1
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. W. Wilson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-10
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 23:15 (Begin) 24:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 11/9/02 Survey Number for Month/Season: 3
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / ~~No~~ Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 19:45 (Begin) 21:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/7/02 Survey Number for Month/Season: 5
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): S. Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Schmert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 7:30 (Begin) 11:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/9/02 Survey Number for Month/Season: 7
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): S. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2641-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:45 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/11/02 Survey Number for Month/Season: 9
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson Ceznak

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Schmidt Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:32 (Begin) 10:24 (End)

Air Temperature: 55°C
Water Temperature: _____
Cloud Cover (percent): 100%
Wind Speed (Beaufort scale): 0
Precipitation: 0
Moon Phase: _____
Visibility: 500m

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/13/02 Survey Number for Month/Season: 11
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): William Cerruti

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Roberts Ranch 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 (Begin) 10:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): ove 100%
Wind Speed (Beaufort scale): windy
Precipitation: 100%
Moon Phase: _____
Visibility: 1000m

Listed Species	Age Class	Number of Individuals

Additional Notes: Flooded burrows: 67, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107 108, 109, 110, 111-116, 117, 124, 125, 180, 180 (top), 181, 191, 199, 203-205, 211, 239, 250, 252-254

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/15/02 Survey Number for Month/Season: 13
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson, Cegowak

Was Sonoma tiger salamander found? Yes / ~~No~~ Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-101
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:15 (Begin) 10:30 (End)

Air Temperature: 55°
Water Temperature: —
Cloud Cover (percent): 100%
Wind Speed (Beaufort scale): slight
Precipitation: 0
Moon Phase: _____
Visibility: Imile

Listed Species	Age Class	Number of Individuals

Additional Notes: ~~bucket~~ 301 popped out (two holes), fence torn and low down 26, 44, 45, 235, 291; stakes fallen 29-30, 37-38, 83-84, 92-93, 253-254, 260-263, 268-269, 283-285, 290-292, 294-297.

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/17/02 Survey Number for Month/Season: 15
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): W. Ellison

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Robert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 (Begin) 11:00 (End)

Air Temperature: 55
Water Temperature: _____
Cloud Cover (percent): 50%
Wind Speed (Beaufort scale): breezy
Precipitation: 0
Moon Phase: _____
Visibility: Clear

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/19/02 Survey Number for Month/Season: 17
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): W J McCleary

Was Sonoma tiger salamander found? Yes / (No) Age Class: ____

Method of Capture: ____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 9:30 (Begin) 10:30 (End)

Air Temperature: 58C
Water Temperature: ____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): windy
Precipitation: 100
Moon Phase: ____
Visibility: 0.5 mi

Listed Species	Age Class	Number of Individuals

Additional Notes: inundated buckets no. 70, 93, 143, 301 need screen around outside. Inundated bucket no. 146 needs screen to be attached at bottom

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/21/02 Survey Number for Month/Season: 19
(I.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:15 (Begin) 10:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/23/02 Survey Number for Month/Season: 2 1
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 (Begin) 10:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/26/02 Survey Number for Month/Season: 23
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/28/02 Survey Number for Month/Season: 25
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson, Sisk

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:00 (End)

Air Temperature: 58
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): windy
Precipitation: 0
Moon Phase: _____
Visibility: 5 miles

Listed Species	Age Class	Number of Individuals

Additional Notes: screen fence at bucket 04 + 173 needs to be pushed into soil.

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/30/02 Survey Number for Month/Season: 27
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson - Johnston

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Elanent Park 7041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 _____
Begin End

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): breezy
Precipitation: drizzle
Moon Phase: _____
Visibility: 1 mile

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/2/03 Survey Number for Month/Season: 2 9
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson, Cezwak, Ryan

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Robert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 _____
Begin End

Air Temperature: 53
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): 1, 2 Lt breeze
Precipitation: 0
Moon Phase: _____
Visibility: 9

Listed Species	Age Class	Number of Individuals

Additional Notes: close traps

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/12/02 Survey Number for Month/Season: 3 (i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/15/03 Survey Number for Month/Season: 33
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 14:30 (Begin) 17:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/24/03 Survey Number for Month/Season: 35
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Calvert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 11:00 (End)

Air Temperature: 55
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): slight
Precipitation: 0
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes: Some buckets inundated without fencing.

Sonoma Tiger Salamander Data Sheet

Date of Survey: 2/15/03 Survey Number for Month/Season: 37
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes / No (circled) Age Class: ____

Method of Capture: ____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 12:16 (Begin) ____ (End)

Air Temperature: ____
Water Temperature: ____
Cloud Cover (percent): ____
Wind Speed (Beaufort scale): ____
Precipitation: ____
Moon Phase: ____
Visibility: ____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 2/17/03 Survey Number for Month/Season: 39
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 11:15 (Begin) 1:09 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/15/03 Survey Number for Month/Season: 4/
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 10:45 (Begin) 12:45 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/17/03 Survey Number for Month/Season: 43
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/24/03 Survey Number for Month/Season: 4/5
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): W. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 15:00 (Begin) 17:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

ATTACHMENT 4E.

Northwest Specific Plan Area, Redwood Equities Investments Property, Rohnert Park, Ponding and Potential California Tiger Salamander Breeding Assessment . Prepared by H.T. Harvey & Associates. July 14, 2003.

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
PONDING AND POTENTIAL
CALIFORNIA TIGER SALAMANDER
BREEDING ASSESSMENT

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

DRAFT

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
PONDING AND POTENTIAL
CALIFORNIA TIGER SALAMANDER
BREEDING ASSESSMENT

Prepared by

H. T. HARVEY & ASSOCIATES

Scott Terrill, Ph.D., Principle
Julie Klingmann, M.S., Project Manager
Jeffery A. Wilkinson, Ph.D., Staff Herpetologist
Brian J. Cleary, M.S., Wetland Specialist, Botanist

Prepared for:

Kenneth R. Blackman
Blackman Consulting
1224 St. Helena Avenue
Santa Rosa, CA 95404

July 14, 2003

Project 2041-01

3150 Almaden Expressway, Suite 145 • San Jose, CA 95118 • (408) 448-9450 • Fax: (408) 448-9454

TABLE OF CONTENTS

FIGURES:

APPENDIX:

INTRODUCTION

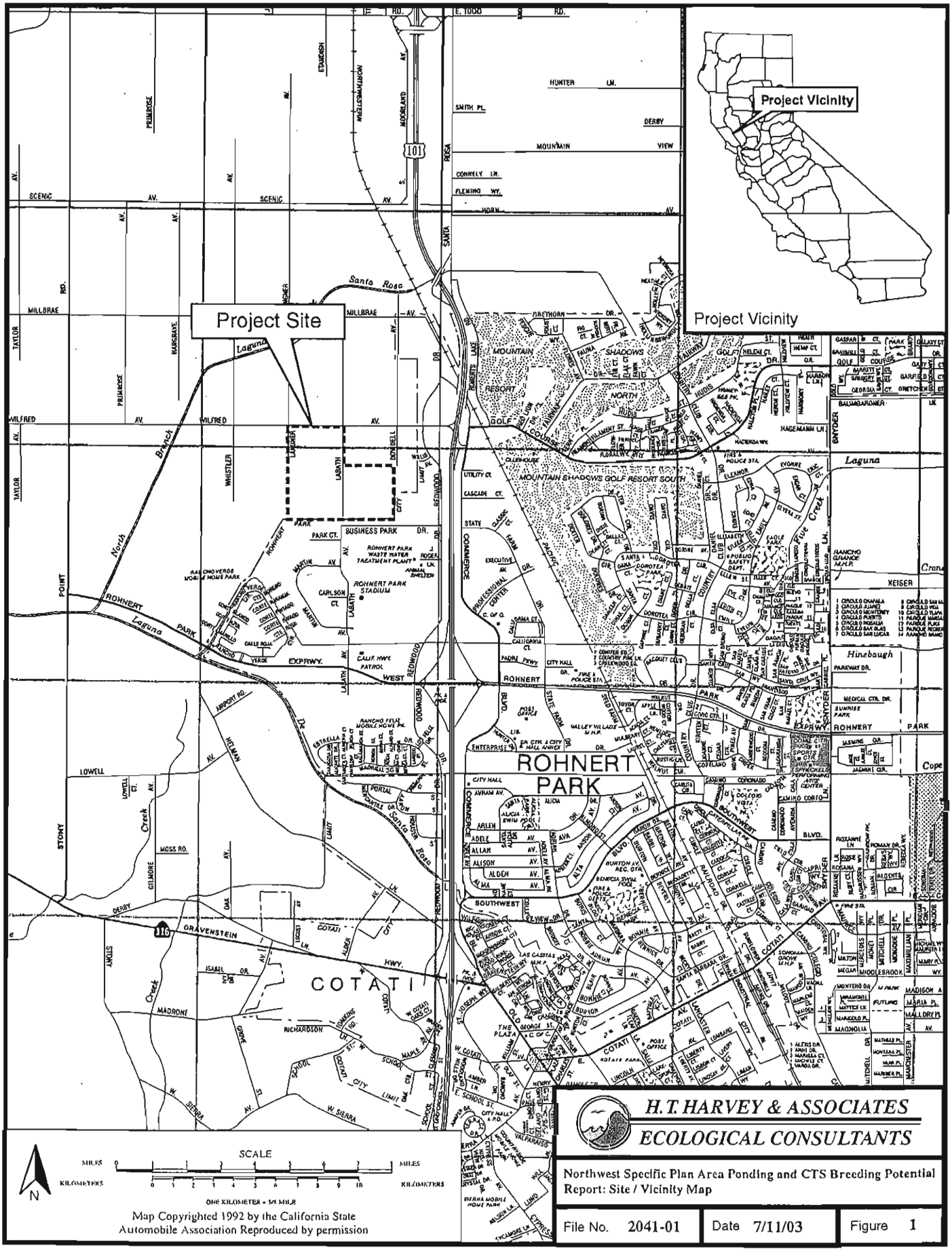
This report has been prepared to document an assessment of ponding related to potential breeding habitat for the California tiger salamander (*Ambystoma californiense*). The assessment included the Northwest Specific Plan Area Redwood Equities Investments Rohnert Park property and the area contained within a one-mile radius of the property. This study includes an attempt to identify any aquatic habitats within the study area that may comprise current or historic breeding habitat for the California tiger salamander (CTS).

PROJECT AREA DESCRIPTION

The property is located west of Highway 101 within the City of Rohnert Park, Sonoma County California (Figure 1). The site is bordered by Wilfred Avenue to the north, Business Park Drive to the south, Langer Avenue to the west, and Dowdell Avenue to the east. The property has been farmed for several decades and is currently planted with forage grasses. The property study area is located on the Cotati U.S.G.S. Quadrangle Map, in section 22 of the quadrangle Range 10 West, Township 8 North.

The topography of the property is level and at an elevation of approximately 90 feet National Geodetic Vertical Datum (NGVD). Regionally, the property study area is situated within the relatively flat Llano De Santa Rosa Valley that extends northwest by southeast and includes the towns of Wilfred, Cotati and Penngrove. The Sonoma Mountains border the east side of the valley and the Outer Coast Range borders the west side. The valley is drained primarily by Laguna De Santa Rosa Creek that flows north into the Russian River.

The entire property is underlain by the Clear Lake clay soil series, 0-2 percent slopes. The Clear Lake Series consist of clays that formed under poorly drained conditions. These soils are underlain by alluvium from basic and sedimentary rock (Soil Conservation Service; SCS 1972). The Clear Lake clay soils, 0-2 percent slopes are listed as a hydric soil for Sonoma County (SCS 1972).



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: Site / Vicinity Map

File No. 2041-01	Date 7/11/03	Figure 1

PONDING ASSESSMENT

MATERIALS AND METHODS

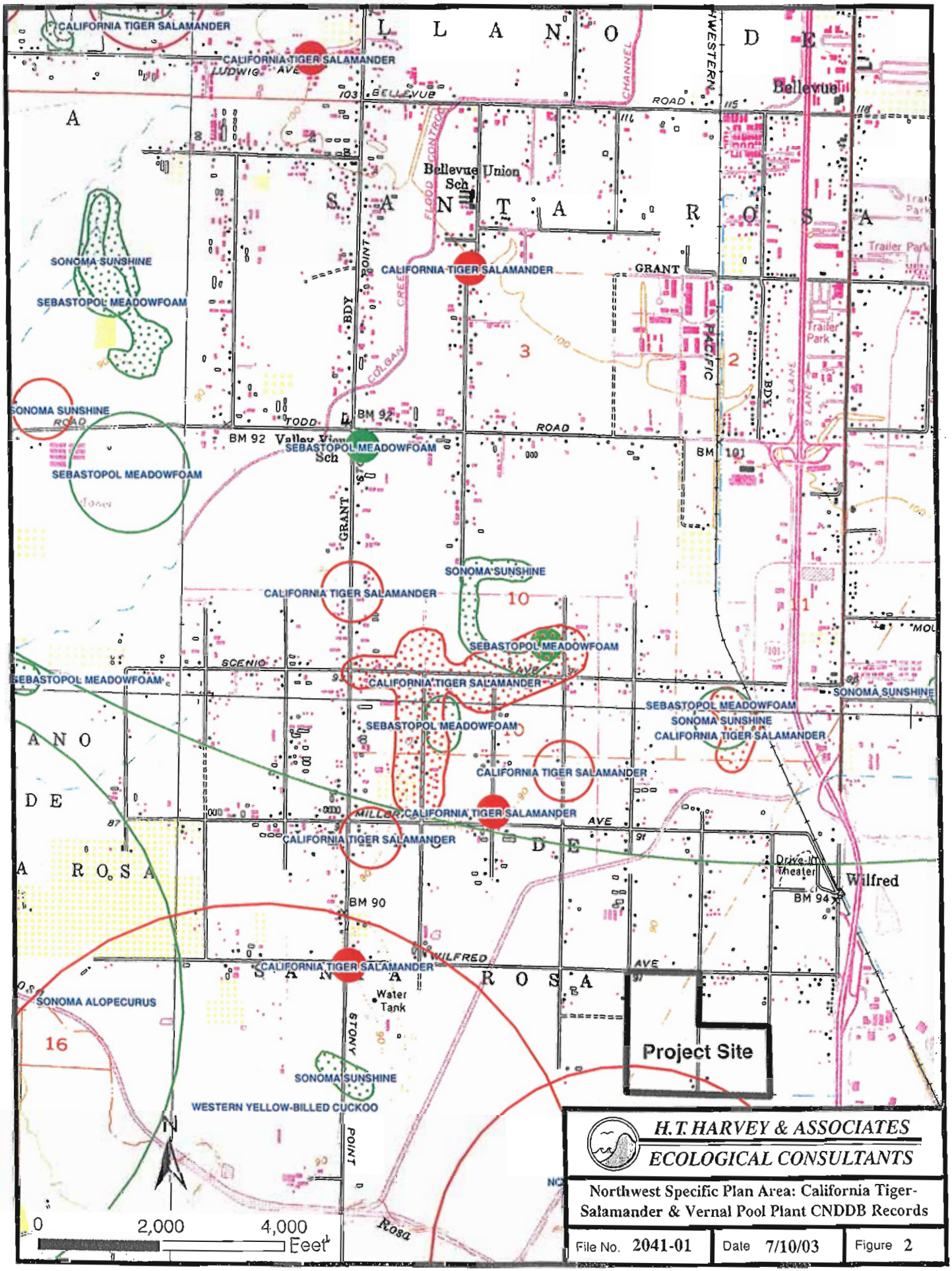
To assist in the assessment of current and historic ponding on the property and within the study area, H. T. Harvey & Associates compiled existing information, including historic aerial photographs obtained from the U. S. Geological Survey (USGS) and Hammon, Jenson, Wallen & Associates, Inc. In addition, pertinent maps such as the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map, a California Natural Diversity Database (CNDDB 2003; Figure 2) map and a Pond Distribution Map of Sonoma County produced by LSA was reviewed. Following this, a single reconnaissance-level site visit of the property and surrounding study area was conducted by H. T. Harvey & Associates wetlands biologist Brian Cleary, in an attempt to identify locations of potential existing and historic ponds including vernal pools, that may have served as breeding habitat for CTS.

H. T. Harvey & Associates examined a total of eight black and white aerial photographs of the study area. A single 1993 digital ortho quarter quadrangle (DOQQ) photograph was obtained from the USGS. In addition, seven black and white contact-print aerial photographs were purchased from Pacific Aerial Surveys at Hammon, Jenson, Wallen & Associates, Inc. The aerial photographs spanned a time period of five decades between 1956 and 2000. Each photograph was studied with a hand lens to identify and document evidence of historic ponding, vernal pools, vernal swales and other drainage channels such as creeks and ditches. These photographs, attached in Appendix A, include:

- Photograph 1. June 12, 1956 (Pacific Aerial Surveys, Photo AV 222 03 09)
- Photograph 2. April 4, 1966 (Pacific Aerial Surveys, Photo AV 710 01 08)
- Photograph 3. October 2, 1975 (Pacific Aerial Surveys, Photo AV 1215 02 07)
- Photograph 4. May 3, 1980 (Pacific Aerial Surveys, Photo CIR SON 18 27)
- Photograph 5. April 19, 1986 (Pacific Aerial Surveys, Photo AV 2860 03 16)
- Photograph 6. August 9, 1995 (Pacific Aerial Surveys, Photo AV 4890 09 15)
- Photograph 7. June 15, 2000 (Pacific Aerial Surveys, Photo AV 6540 15 21)

The U.S. Fish and Wildlife Service (USFWS) has classified wetland resources within the study area under the National Wetland Inventory (NWI) system. Although the NWI does not identify any wetland areas on the property, a flood-control drainage channel within the study area that bisects Wilfred Road approximately one-half mile west of the site is classified as Palustrine, Emergent, Saturated/Semipermanent/Seasonal (PEMY). In addition, the majority of Laguna De Santa Rosa Creek located to the southwest is classified as PEMY. Hinebaugh Creek, located approximately ½ mile south of the property is classified as Riverine, Intermittent, Streambed, Saturated/Semipermanent/Seasonal (R4SBY).

The CNDDB map was examined to identify locations of potential CTS breeding habitats such as vernal pools and documented occurrences of CTS within the study area. This map was generated at a scale of 1 inch: 2000 feet. Numerous occurrences of CTS are documented within the study area less than one mile northwest of the property along Primrose Avenue and Scenic Drive.



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area: California Tiger-Salamander & Vernal Pool Plant CNDDB Records

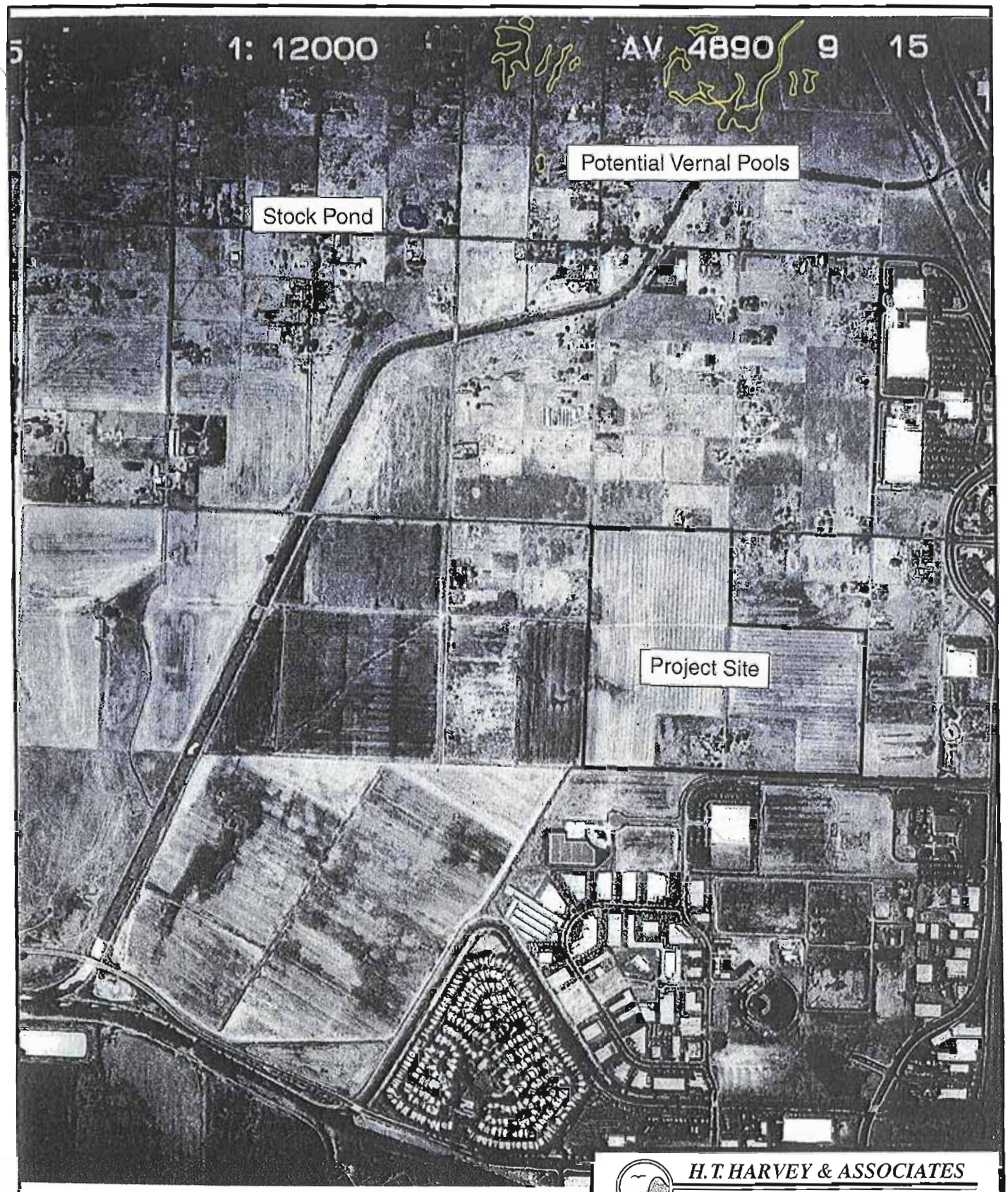
File No. 2041-01	Date 7/10/03	Figure 2

Occurrences of two vernal pool endemic special-status plant species, Sonoma sunshine (*Blennosperma bakeri*) and Sebastopol meadowfoam (*Limnanthes vinculans*), are also documented in this area by the CNDDB. The occurrences of CTS and these plants are based on the presence of historic vernal pools that occupied some of this area prior to rural, urban development.

RESULTS AND DISCUSSION

Onsite Ponding. The area of ponding that currently occurs in some years in the southwest portion of the property south of Langer Avenue was assessed through interpretation of aerial photos between 1956 and 2000. This pond appears to have formerley been a part of a small, natural, drainage channel that historically conveyed water west into an unnamed, intermittent creek located approximately three-quarters of a mile west of the property. The 1956 aerial photograph documents that water moved from the property westward and ultimately drained into the creek. Water in this creek then drained into Laguna Santa Rosa Creek located approximately one mile south of the property. The photographs show that sometime between 1956 and 1966, the existing flood-control channel was installed to replace the intermittent creek. The 1966 photograph documents that the alignment of the existing flood control channel is in approximately the same location as the historic creek. Upon construction of the new flood-control channel, water from the pond on site that previously drained into the intermittent creek was forced to collect in a low-lying area three-quarters of a mile west of the property. It appears that this water has never drained directly into the existing channel. Photographic interpretation of the remaining photographs up to the present time suggest that some amount of water continues to pond in this area adjacent to the east side of the channel approximately three-quarters of a mile west of the property during the winter months. These photographs document that the ponded area on the property was historically not a vernal pool, but part of a small tributary to the intermittent creek that once drained into Laguna Santa Rosa Creek.

Surrounding Area. Interpretation of the more recent aerial photographs also revealed that numerous potential vernal pools still persist in the rural urban developed landscape north of the property within the one-mile study area (Figure 3). All of these potential vernal pools are located on private property; therefore site access to confirm their presence during the reconnaissance-level survey was not possible. It is likely that some of these pools now exist as smaller "remnant" vernal pools particularly along Primrose Avenue and Scenic Drive less than one mile northwest of the property. Additional vernal pools that also include occurrences of CTS are located approximately one to two miles northwest of the property along Todd Avenue and Bellevue Avenue. Further, a single large stock pond was identified on private property located at the northwest corner of the intersection of Millbrae Avenue and Whistler Road within the study area (Figure 3). These interpretations are consistent with a *Preliminary Pond Distribution in Sonoma County* map produced by LSA on 8 May 2002 that shows natural, short and moderate ponds and recent further CTS records occurring north and west of the aforementioned flood control channel. No natural ponds or CTS observations are present until one approaches the area south of Rohnert Park and west of Cotati along Highway 116.



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: Potential Vernal Pools and Stock Pond within Project Study Area

File No. 2041-01	Date 7/11/03	Figure 3

The reconnaissance-level survey within the study area was conducted during the month of July when vernal pools are typically dry and difficult to identify. Consequently, it was not possible to document any specific vernal pools within the study area that may serve as local breeding ponds for CTS. In addition, substantial rural urban development during the past 25 years has significantly impacted the flora that inhabits these pools making indicator plants increasingly difficult to identify even during the late winter and early spring blooming period. As a result, no clear and distinguishing vernal pool features were identified within the study area including those areas along Primrose Avenue and Scenic Drive where occurrences of CTS have been reported. Although, due to the low-lying elevational topography of the Llano De Santa Rosa Valley, ponding occurs in many ditches, swales and depressions throughout the study area.

No vernal pools, remnant vernal pools or endemic vernal pool plant species were identified on the property during the reconnaissance-level survey. Although several water-loving plant species including hyssop loosestrife (*Lythrum hyssopifolium*), swamp grass (*Crypsis schoenoides*), water smartweed (*Polygonum amphibium* var. *emersum*) and pointed rush (*Juncus oxymeris*) were identified on the property where ponding can occur during the winter months and in the numerous drainage ditches that surround the property. This ponding is associated with high water tables for the area, and annual rainfall that accumulates on poorly drained, heavy clay soils within the relatively level topography of the property.

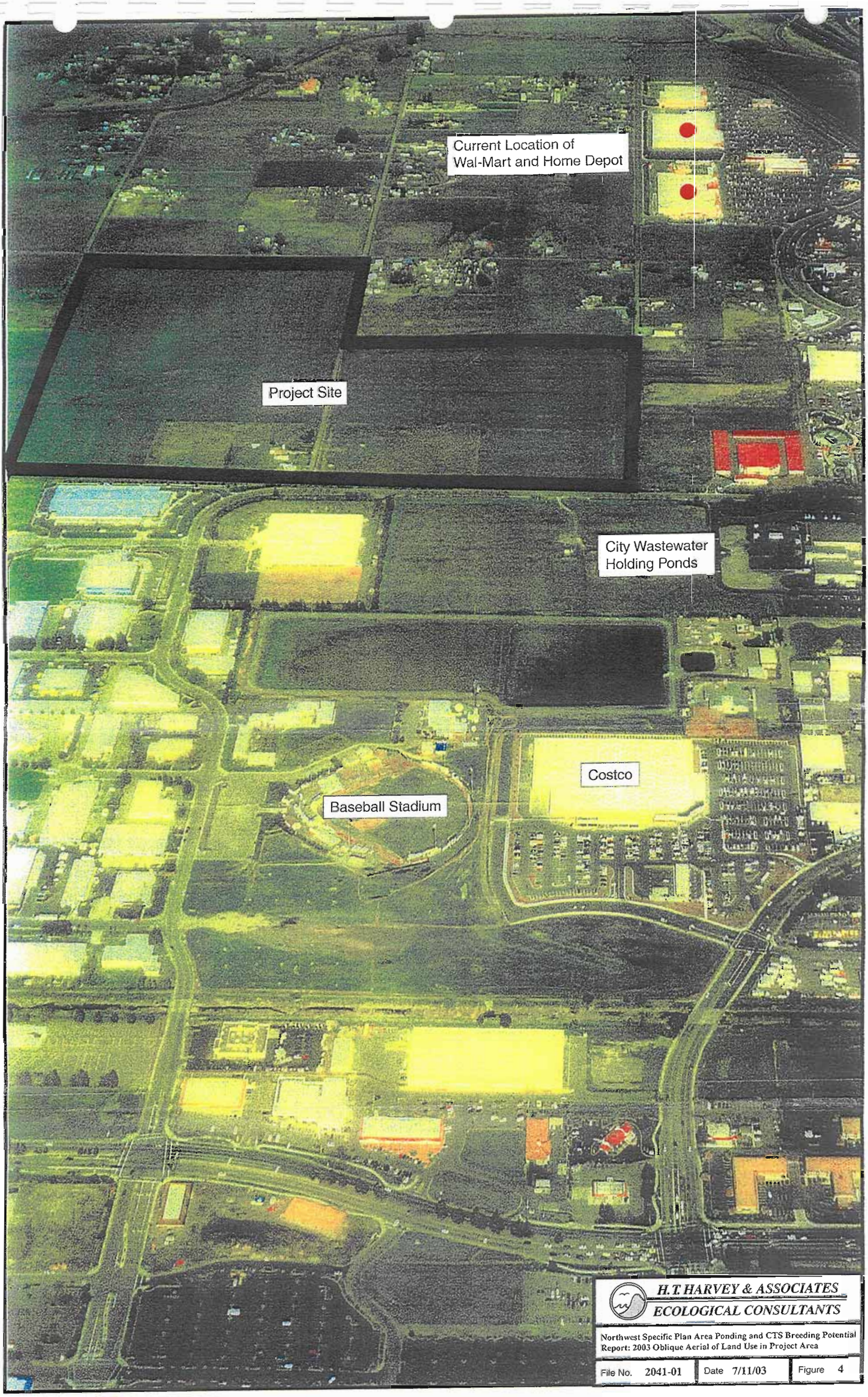
LAND USE HISTORY

Blackman Consulting provided three aerials of the Northwest Specific Plan Area indicating land-use history of the site. The following descriptions of land use depicted by each aerial were provided.

The first, (Figure 4) is a recent oblique-angle, color aerial taken in 2003. This map shows the area immediately south of the Northwest Specific Plan. The wastewater holding ponds of the City of Rohnert Park are clearly shown as is the baseball stadium area and COSTCO, located immediately east of the baseball stadium. Wal-mart and Home Depot are also shown. This map shows the extensive urban development south of the Northwest Specific Plan.

The second aerial (Figure 5) is an older, black-and-white, aerial map taken in 1989. This aerial clearly shows the agricultural use of the property site. This aerial photo was taken before either Wal-mart or Home Depo located adjacent to U.S 101, north of the Northwest Specific Plan Area.

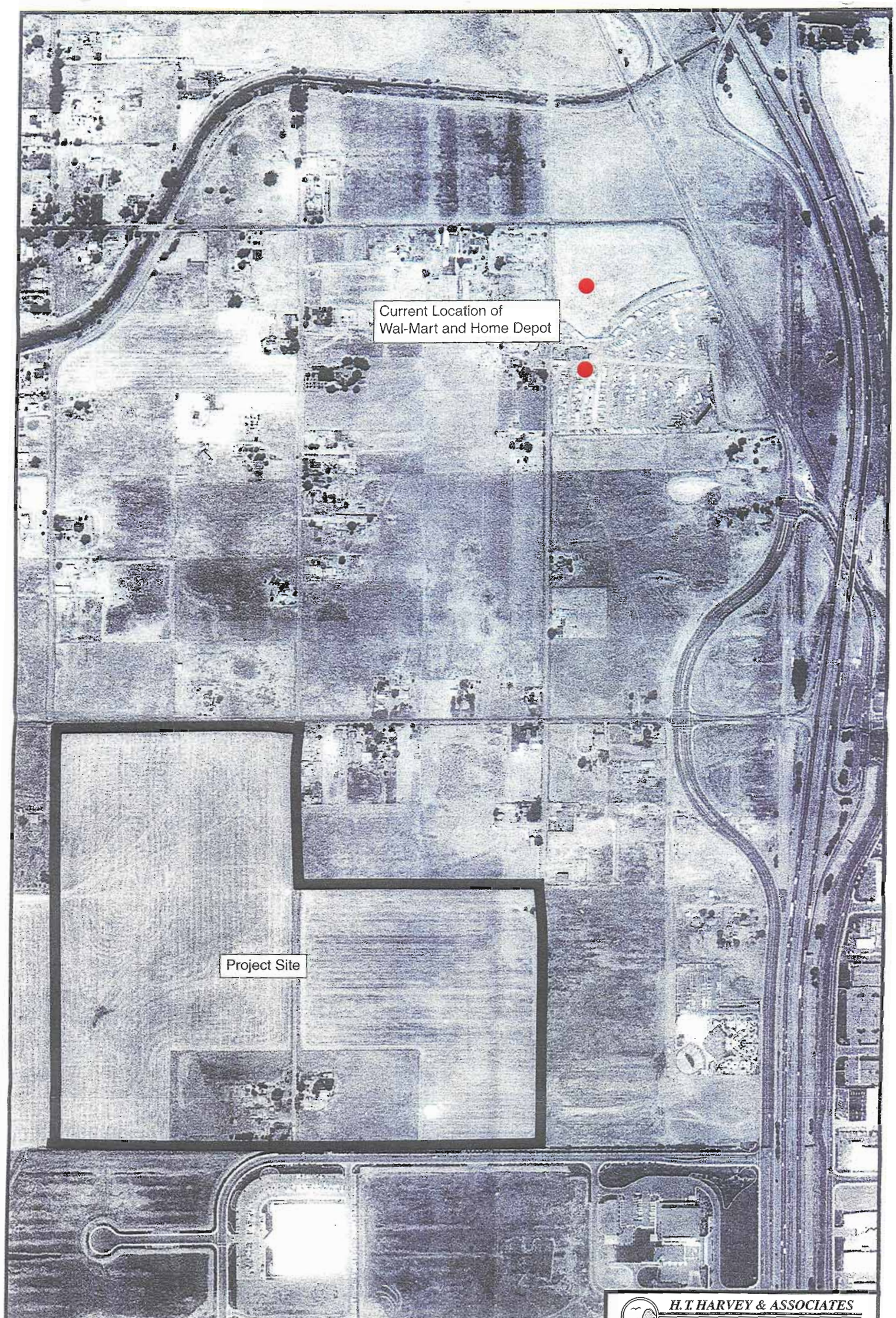
The third aerial (Figure 6) is an yet older color aerial map taken in 1976 that shows the continued agricultural use of the property. This aerial pre-dates all of the light industrial use south of the Northwest Specific Plan Area and shows agricultural use in most of the surrounding area. Grass seed and hay was the principle crops in this area for a number of years.



H.T HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: 2003 Oblique Aerial of Land Use in Project Area

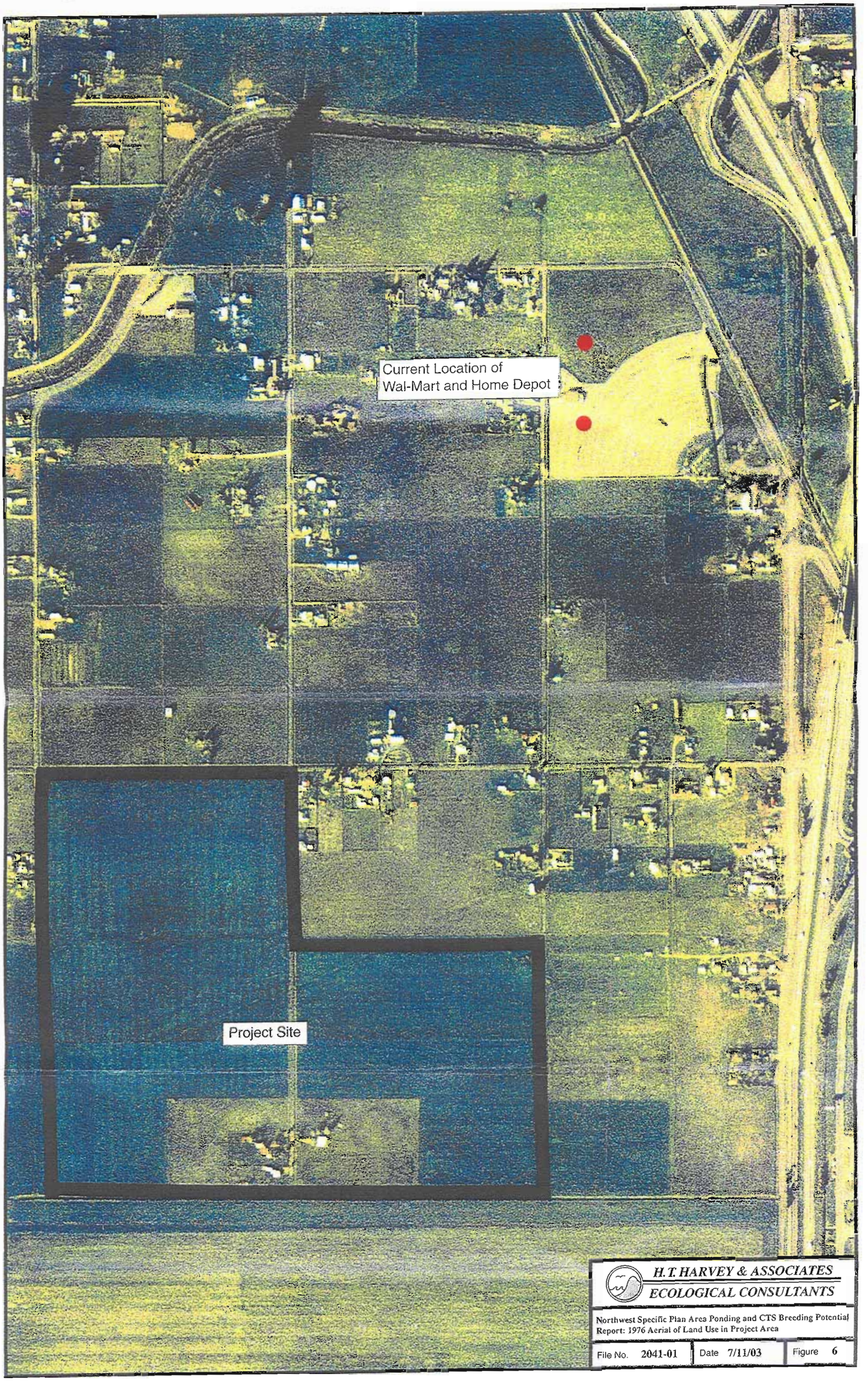
File No. 2041-01	Date 7/11/03	Figure 4



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: 1989 Aerial of Land Use in Project Area

File No. 2041-01	Date 7/11/03	Figure 5



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: 1976 Aerial of Land Use in Project Area

File No. 2041-01	Date 7/11/03	Figure 6

ASSESSMENT OF CALIFORNIA TIGER SALAMANDER BREEDING POTENTIAL IN SURROUNDING AREA

Based on the results of this study, previous surveys of the property (H. T. Harvey & Associates 2003), and results of other surveys in the area over the past year (personal communications with Rana Resources, Caltrans, David Cook), it is likely that some of the remnant vernal pools and small ponds located within the study area north and northwest of the project site continue to function as breeding habitat for CTS including, for example, a vernal swale located southwest of the intersection of Scenic Avenue and the Southern Pacific Rail Road tracks and ponds between Scenic Avenue and Millbrae Avenue (Figure 2). In addition, based on recent sightings of CTS on reaods, such as Wilfred Avenue (Figure 2), it is likely that some of the drainage ditches that line the majority of roads within this area may function as marginal breeding habitat for CTS due to the general regional loss of natural breeding habitat due to development.

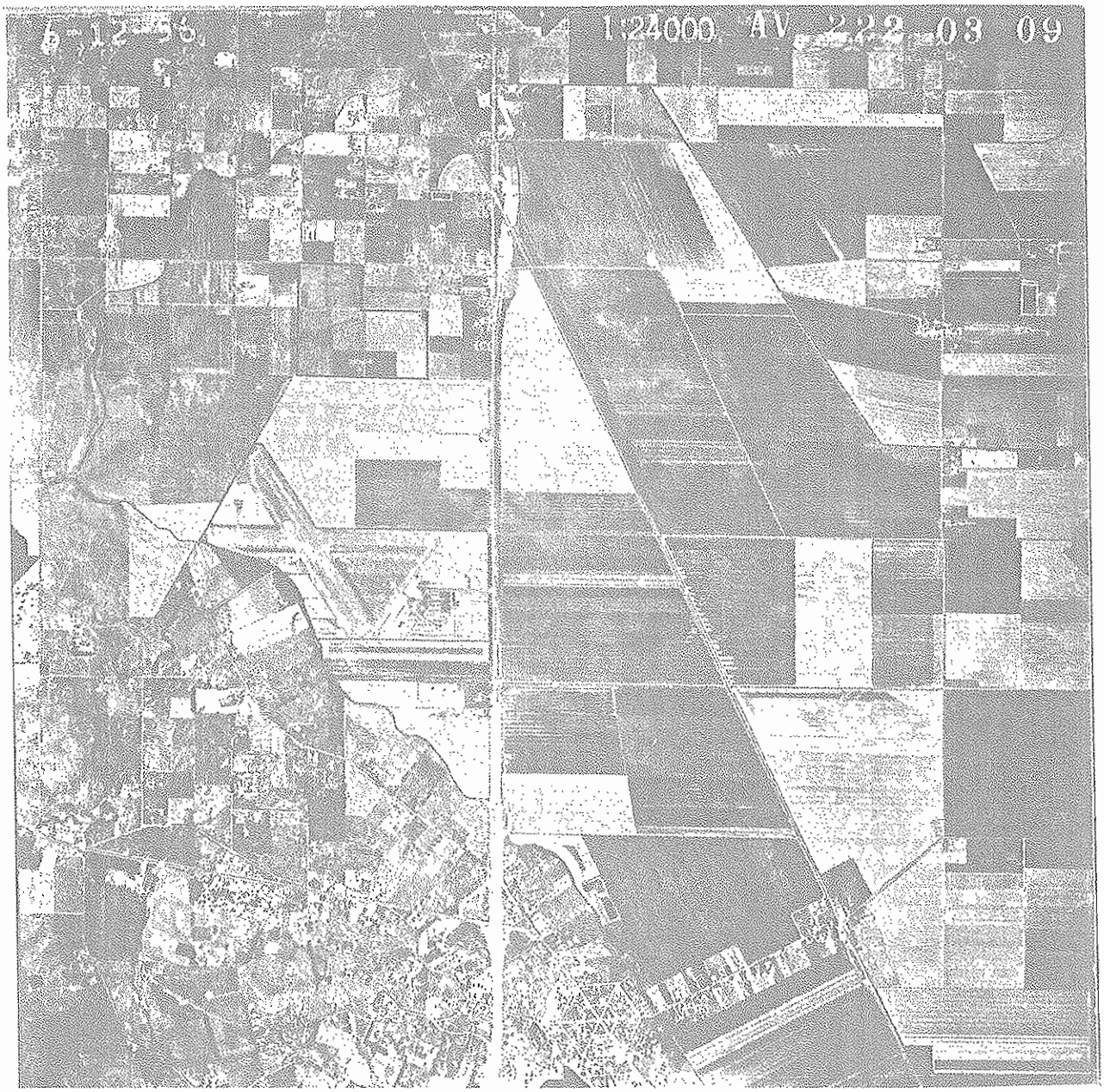
LITERATURE CITED

CNDDB. California Natural Diversity Data Base. 2003. Rarefind. California Department of Fish and Game.

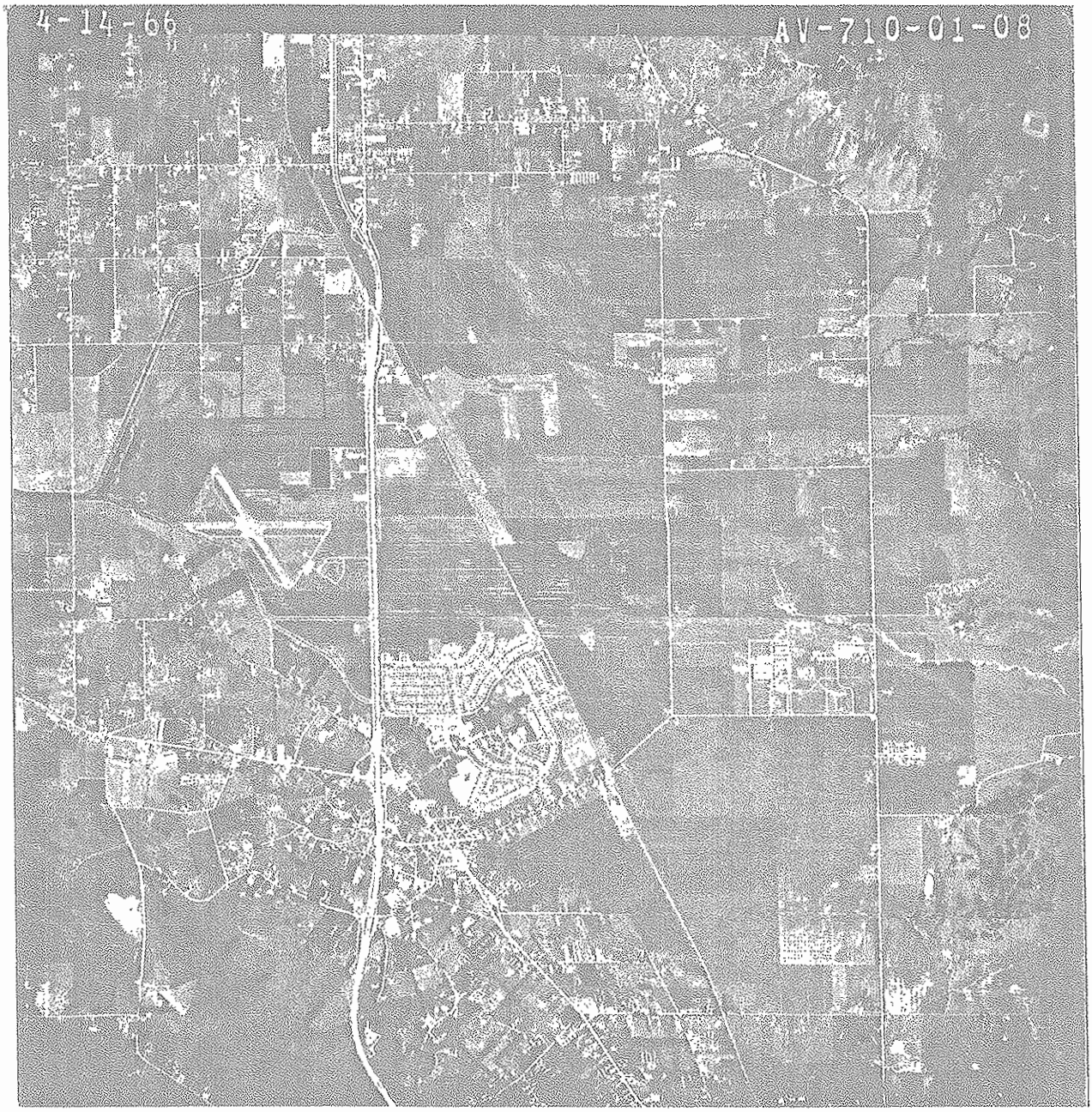
H. T. Harvey & Associates. 2003. Northwest Specific Plan Area Redwood Equities Investments Property Rohnert Park California Tiger Salamander 2002/2003 Survey Report.

Soil Conservation Service. 1972. Soil Survey of Sonoma County, California. USDA.

APPENDIX A:
PHOTOGRAPHS OF THE SITE



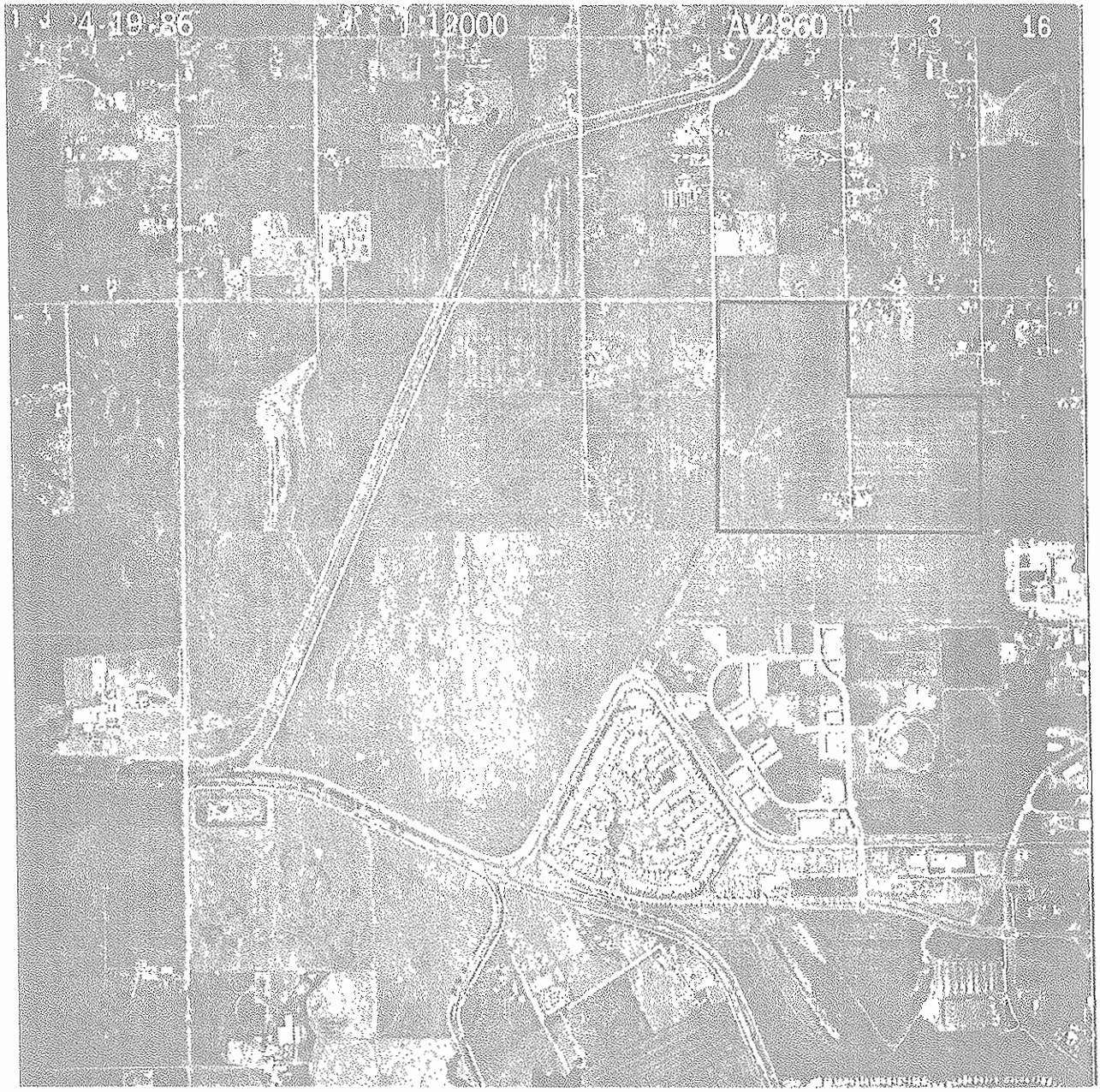
Photograph 1. June 12, 1956 (Pacific Aerial Surveys, Photo AV 222 03 09)



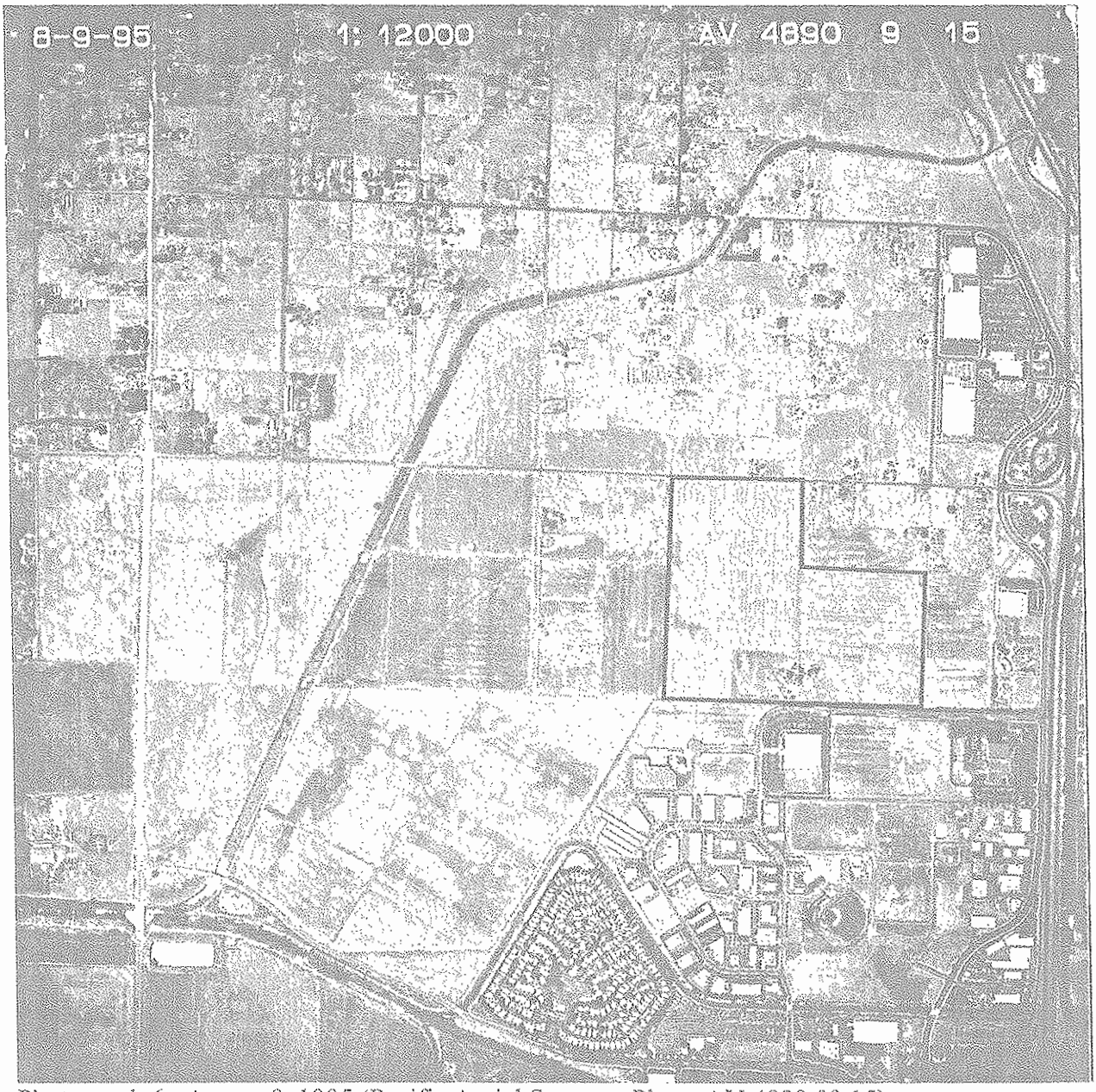
Photograph 2. April 4, 1966 (Pacific Aerial Surveys, Photo AV 710 01 08)

Photograph 3. October 2, 1975 (Pacific Aerial Surveys, Photo AV 1215 02 07)

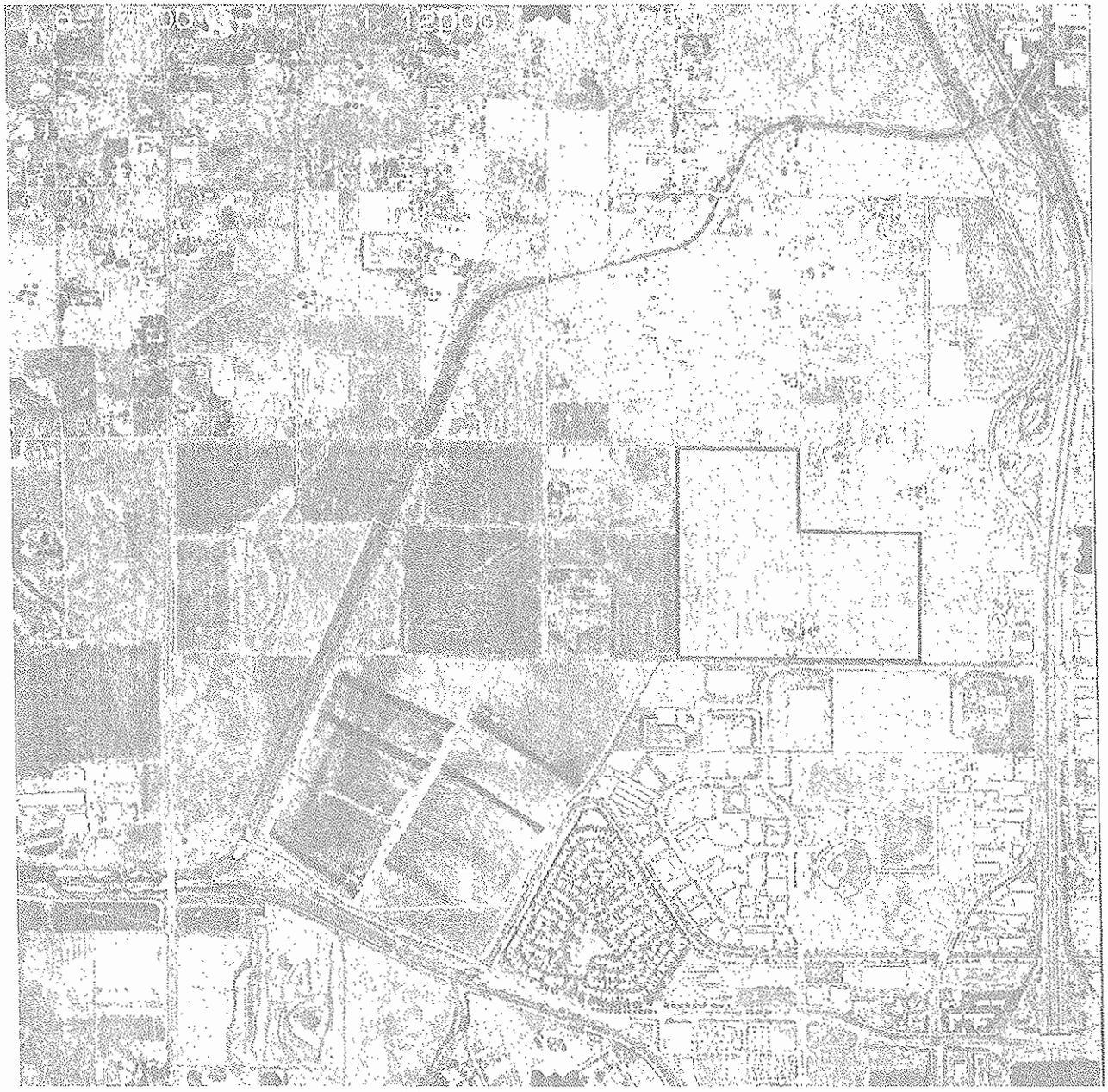
Photograph 4. May 3, 1980 (Pacific Aerial Surveys, Photo CIR SON 18 27)



Photograph 5. April 19, 1986 (Pacific Aerial Surveys, Photo AV 2860 03 16)



Photograph 6. August 9, 1995 (Pacific Aerial Surveys, Photo AV 4890 09 15)



Photograph 7. June 15, 2000 (Pacific Aerial Surveys, Photo AV 6540 15 21)

ATTACHMENT 4F.

Northwest Specific Plan Area, Redwood Equities Investments Property, Rohnert Park, California Tiger Salamander 2003/2004 Survey Report. Prepared by H.T. Harvey & Associates. May 18, 2004.

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
CALIFORNIA TIGER SALAMANDER
2003/2004 SURVEY REPORT

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
CALIFORNIA TIGER SALAMANDER
2003/2004 SURVEY REPORT

Prepared by

H. T. HARVEY & ASSOCIATES

Scott Terrill, Ph.D., Principle
Julie Klingmann, M.S., Project Manager
Jeffery A. Wilkinson, Ph.D., Staff Herpetologist

Prepared for:

Kenneth R. Blackman
Blackman Consulting
1224 St. Helena Avenue
Santa Rosa, CA 95404

18 May 2004

Project 2041-01

TABLE OF CONTENTS

FIGURES:

APPENDICES:

INTRODUCTION

The project site is within the Northwest Specific Plan Area in the City of Rohnert Park, California. This property is located west of Highway 101 bordered by Wilfred Avenue to the north, Business Park Drive to the south, Langer Avenue to the west and Dowdell Avenue to the east, within the City of Rohnert Park, County of Sonoma (Figure 1). The site is bisected by Labath Avenue, with a larger section west of Labath Avenue and a smaller section east of Labath Avenue. Photographs of the site are in Appendix A.

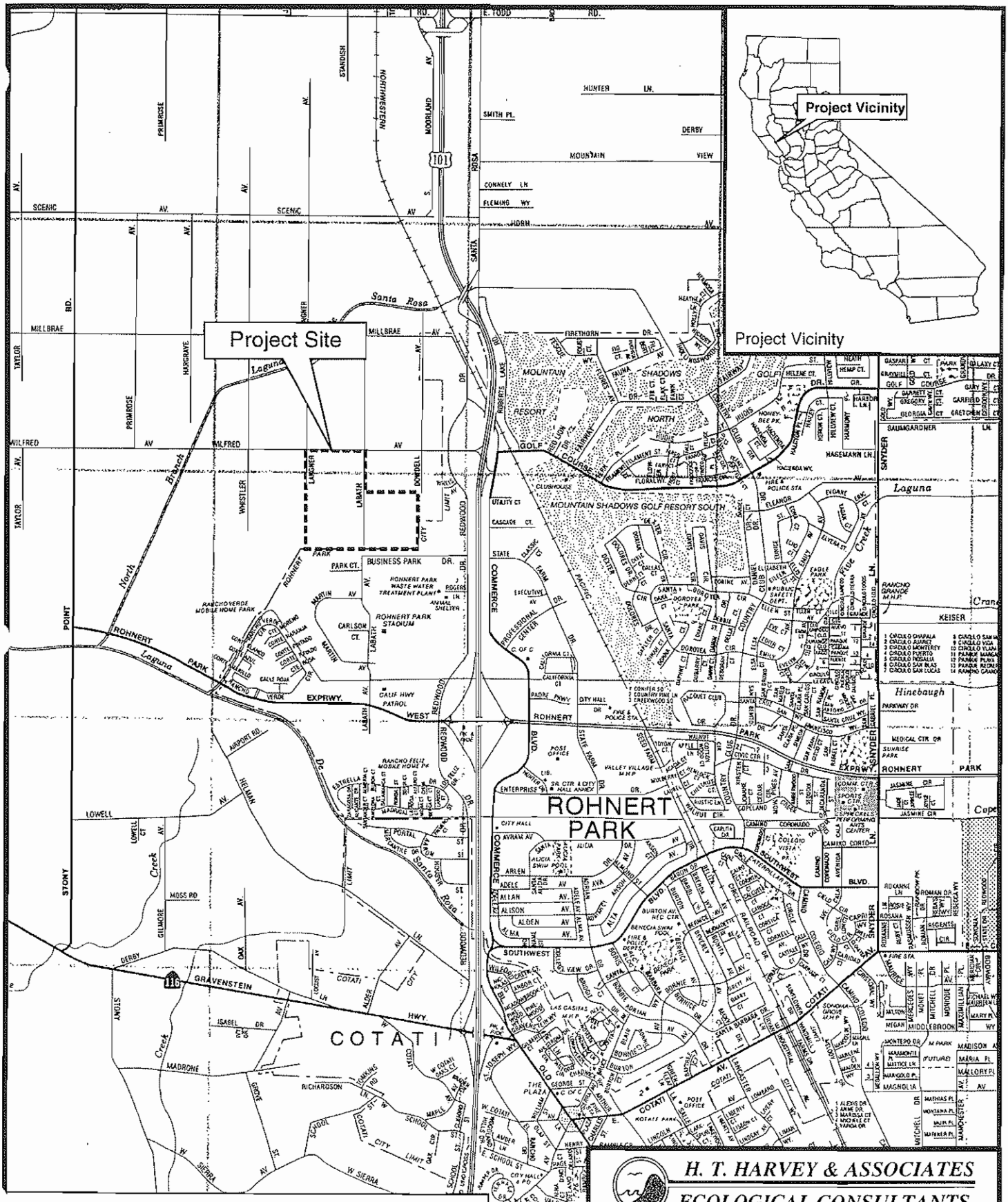
The site consists of relatively flat ground reported to have been disked annually for over 40 years. At present, an area of potential ponding exists on the southwestern part of the larger section, with swales extending from this pond to the east and northeast across this section. It is likely that this ponding is the result of winter and spring rains and is typically dry by summer. In addition, this seasonally ponded area has been disked annually along with the remainder of the site.

The site is bordered to the east and south by development. There is a drainage channel between the site and Business Park Drive to the south. To the north and west, the site is bordered by open space with a low concentration of housing. Some portions of this open space appear to be used for agriculture while other portions are grassland for cattle. In particular, parcels immediately bordering to the north and east, and to the west of the northwestern portion of the site appear to be potential aestivation habitat for California tiger salamanders, if the species is present in the area.

RESULTS FROM PREVIOUS SURVEYS

During a Site Assessment on 11 October 2001, H. T. Harvey & Associates determined that the ponded area and swales may provide breeding habitat for California tiger salamanders *(Ambystoma californiense)* because of temporary ponding during winter and spring. However, due to the extensive disking, the site lacked aestivation habitat for adult salamanders (ground squirrel and/or gopher burrows, and cracks in the ground). The site assessment recommended that the ponded area on site be inspected during the winter and/or spring to determine whether or not it is used for breeding by California tiger salamanders. However, the property owner requested more complete protocol-level surveys, including both winter aestivation and spring breeding surveys.

Five nocturnal surveys were conducted on 13 December 2001, 7 and 16 February, and 5 and 22 March 2002. These surveys were conducted according to recommendations issued by the California Department of Fish and Game (1997). These surveys consisted of walking the entire site, but concentrating searches on ponded areas located on the western portion of the site and the immediately associated upland habitat. The surveys involved looking along the ground, under debris, and into cracks and rodent burrows. A hand-held flashlight and headlamp were used during the surveys.



SCALE:
MILES 0 1 2 3 4 5 6 7 8 MILES
KILOMETERS 0 1 2 3 4 5 6 7 8 9 10 KILOMETERS
ONE KILOMETER = .56 MILE

Map Copyrighted 1992 by the California State Automobile Association Reproduced by permission

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area 2004 CTS Survey Report: Site / Vicinity Map

File No. 2041-01	Date 4/30/04	Figure 1

Two California Department of Fish and Game protocol-level aquatic larval surveys were conducted on 20, and 25 April 2002. These surveys consisted of sampling the ponded areas using a dip net and then, where appropriate, using a two-pole seine.

This survey effort would have been the first of two annually conducted surveys. No California tiger salamanders were observed during any of the above surveys. However, tadpoles of the Pacific treefrog (*Hyla regilla*) and an unidentified species of tadpole shrimp were observed in the ponded areas on the western portion of the site (H. T. Harvey & Associates 2002).

On 22 July 2002, the U.S. Fish and Wildlife Service (USFWS) listed the Sonoma County population of the California tiger salamander as an endangered species on an emergency basis.. Following this listing, the USFWS prepared a new survey protocol that would supersede survey protocols used for this species prior to listing. This protocol, the *Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma County Distinct Population Segment of the California Tiger Salamander,* was issued in draft form on 8 November 2002. The USFWS directed all survey efforts within the listed California tiger salamander population area to follow this draft protocol.

In order to determine presence or absence of California tiger salamanders on the site in accordance with the then new USFWS protocol, a second year of the more intensive pitfall trap array surveys was initiated in November of 2002 (H. T. Harvey & Associates 2003a). No California tiger salamanders were observed during any of these surveys. No larvae or egg masses were detected in any ponded area whether in the onsite ponded area or in the ditches surrounding the site. On 7 April 2003, during a final inspection of the traps after the protocol period, a healthy, adult, female California tiger salamander was found in a trap midway along the northern edge of the smaller section (H. T. Harvey & Associates 2003a).

The trapping of one individual of the California tiger salamander very late in the season suggests an anomaly and could represent a late-foraging remnant individual of an earlier population, or the possibility that a third party placed the California tiger salamander in the trap as discussed in H. T. Harvey & Associates reports (H. T. Harvey & Associates 2003a, 2003b.). Due to the anomaly of the observation of this single, late-season, California tiger salamander, isolated from breeding populations, a second year of pitfall trap array surveys was requested by the property owner. The goal of this survey was to ascertain if the observation represented an anomaly or if the observation of more individuals would suggest that a population of California tiger salamanders occurs at or near this site.

METHODS

Surveys were conducted during the 2003/2004 California tiger salamander season in accordance with the updated survey protocol (*Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the Californian Tiger Salamander*, issued jointly by the USFWS and the California Department of Fish and Game on 22 October, 2003). As described in the protocol, a Trapping Proposal was submitted to the USFWS 6 October 2003 (H. T. Harvey & Associates 2003c). Trapping in a year subsequent to the discovery of an individual in a trap was approved by Dan Buford of the USFWS prior to the initiation of the trapping season. A drift fence trap array was constructed around the entire property (Figure 2). The drift fence consisted of 2-foot wide silt fence buried at least 6 inches in the soil and anchored with staples attached to wooden stakes. The fence was installed in order to completely surround both the larger section and the smaller section of the property, but did not include Labath Avenue and the residence on the southeastern corner of the western section (Figure 2).

Gaps in the drift fence, approximately every 20 feet, contained buried pit-fall traps totaling 300 traps. Each pitfall trap consisted of a 5-gallon plastic bucket that was buried face up so the upper lip of the trap would be an inch or two above the surface of the soil and would be in contact with each side of the adjacent drift fence. Each bucket had several 1/4-inch drainage holes drilled in the bottom, and was installed so that there was a slight rise to the outer lip of the bucket. This configuration normally prevents water from surrounding runoff from flowing into the buckets. All buckets had covers over them to protect captured salamanders from the elements. Each cover was composed of the lid of the bucket with two 10-inch long 2 by 4 boards attached by screws approximately four inches from the edge of the lid to elevate the lid four inches above the ground. Two pieces of aluminum flashing, 4 inches by 4 inches, were attached by a screw to the side of the stakes adjacent to the bucket so that they would extend inward on each side of the bucket to the 2 x 4 boards when the lid is elevated over the bucket. This arrangement eliminates any gap between the stake and the bucket that a salamander might use to enter the site without falling into the bucket.

Each bucket also contained a sponge, moistened regularly during trapping operations, that was pre-cleaned by soaking overnight and thoroughly washed in clean water before use. In addition, each bucket contained a "ladder" of jute twine connected to the cover that trails to the bottom of the bucket to provide for escape by rodents that may enter the traps.

Most of the buckets on this site fill with water from the highly saturated soil in this area during the rainy season so there was some potential for an animal to escape detection using the standard method of inserting ones hand to feel for a salamander submerged in the usually opaque water. To ensure detection of any California tiger salamander in a trap, a false bottom that fit snuggly against the bucket wall was placed in the bucket. This false bottom was constructed by cutting away the bottom two to three inches of a 5-gallon plastic bucket, attaching a wooden dowel as a handle to the center and drilling several 1/4-inch drainage holes into the bottom (Figure 3).

When the bucket filled with water and it became difficult to see to the bottom of the bucket, this false bottom was pulled out, acting like a strainer, and inspected. This method insured that no salamander escaped detection.

When not in use, the traps were securely closed by rotating the flashing up, turning the lid over, and sealing it to the lip of the bucket. On the day of an expected rain event the bucket lids were removed, the flashing was rotated down and inward, and the lids were turned over and elevated above each bucket. The trap array was inspected for salamanders each morning during a rain event, to a minimum of 24 hours after the end of the rain event, by a permitted surveyor, at which time the bucket lids were placed onto the traps as described above until the next rain event. The trap line was run during rain events from the date of approval through March 15. Rain events, as defined by the USFWS, are any rain during the day or a prediction of 70% chance of rain at 2 PM by the National Weather Service.

During intense rain events early in the trapping season, several areas on site were flooded to the extent that many of the buckets were completely inundated. These areas were the northern edge, northwestern corner, the southeastern corner, and the eastern edge of the larger section, the northwestern corner, western edge, eastern edge, and northern edge of the smaller section (Figure 2). Due to complete inundation of several buckets in these areas, screens were installed around the outside of the inundated buckets and attached to the adjacent stakes so that salamanders could not swim across the top of the submerged, open buckets onto the site.

The traps were inspected 77 times on the following dates: 8-10, 13-16, 29-30 November, 1-8, 10-15, 22-31 December 2003, 1-11, 14-16, 27-29 January, 1-9, 13-28 February, 1, 2, and 15 March 2004.

The ponded areas on site and ditches surrounding the site were inspected for larvae on each site visit and on 3 March and 22 April 2004. Subsequently, all water on the site had dried.

RESULTS AND DISCUSSION

No California tiger salamanders were observed during any of the above surveys. Louisiana red-swamp crayfish (*Procambarus clarkii*), ornate shrews (*Sorex ornatus*), California voles (*Microtus californicus*), western harvest mice (*Reithrodontomys megalotis*), California red-sided garter snakes (*Thamnophis sirtalis infernalis*), southern alligator lizards (*Elgeria multicarinata*), western fence lizards (*Sceloporus occidentalis*), California slender salamanders (*Batrachoceps attenuatus*) and tadpoles and adults of the Pacific treefrog were found in the traps. Trapping surveys were completed 15 March 2004 with a final inspection of the traps to insure that no vertebrate was present in a trap before the trap array was dismantled and removed from the site.

No larvae or egg masses were detected in any ponded area whether in the onsite ponded area or in the ditches surrounding the site. During the 3 March 2004 survey, these ponded areas included the ditch along the south side of Wilfred Avenue, the ditches on either side of Labath Avenue, ditches along the northern and eastern fringes of the smaller section, and ditches along the western fringe and southeast corner of the larger section. During the 22 April 2004 survey, the water had receded to just an area under the culvert between the two sections at Labath Avenue. Animals detected during the larval surveys included three-spine sticklebacks (*Gasterosteus aculeatus*), mosquitofish (*Gambusia* sp.), crayfish, and various aquatic insects.

California tiger salamanders were not detected on the site during the 2003/2004 survey. This result, in conjunction with the results of previous surveys in 2001/2002 and 2002/2003, indicates that a population of California tiger salamanders is not present at the site. Lack of breeding in any of the standing water on or adjacent to the project site is evident with three years of negative egg and larval surveys. The circumstances under which the single California tiger salamander was detected in the 2002/2003 survey were considered unusual and it does not indicate the presence of a population actively utilizing the site for breeding or aestivating.

REFERENCES CITED

California Department of Fish and Game. 1997. Survey protocol for the California tiger salamander (*Ambystoma californiense*). California Department of Fish and Game, Inland Fisheries- Information Leaflet No. 44. 1-7.

H. T. Harvey & Associates. 2002. Northwest Specific Plan Rohnert Park California Tiger Salamander Surveys.

H. T. Harvey & Associates. 2003a. Northwest Specific Plan Area Redwood Equities Investments Property Rohnert Park California Tiger Salamander 2003/2004 Survey Report.

H. T. Harvey & Associates. 2003b. Northwest Specific Plan Area Redwood Equities Investments Property Rohnert Park Supplemental Information On Ponding And Potential California Tiger Salamander Breeding.

H. T. Harvey & Associates. 2003c. Letter dated 6 October to Don Hankins, USFWS. Subject: Northwest Specific Plan Area Proposal for California Tiger Salamander Presence/Absence Site-specific Protocol Approval Request (PN-2041-01).

[USFWS] U.S. Fish and Wildlife Service. 2002. Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma County Distinct Population Segment of the California Tiger Salamander. 8 November 2002.

[USFWS]. U.S. Fish and Wildlife Service. 2003. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the Californian Tiger Salamander, October 22, 2003.

APPENDIX A:
Photographs of the Site

PHOTOGRAPHS FROM THE CENTER OF THE SITE

Photo point at middle of both parcels, looking east.

Photo point at middle of both parcels, looking north.

Photo point at middle of both parcels, looking west.

Photo point at middle of both parcels, looking south.

PHOTOGRAPHS FROM THE CENTER OF THE LARGER (WESTERLY) AREA

Photo point at center of larger parcel, looking east.

Photo point at center of larger parcel, looking north.

Photo point at center of larger parcel, looking west.

Photo point at center of larger parcel, looking south.

PHOTOGRAPHS FROM THE CENTER OF THE SMALLER (EASTERLY) AREA

Photo point at center of smaller parcel, looking east.

Photo point at center of smaller parcel, looking north.

Photo point at center of smaller parcel, looking west.

Photo point at center of smaller parcel, looking south.

APPENDIX B.
DATA SHEETS

Sonoma Tiger Salamander Data Sheet

Date of Survey: 11/7/02 Survey Number for Month/Season: 1
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-10
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 23:15 (Begin) 24:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 11/8/02 Survey Number for Month/Season: 2
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): S. Wilkinson, G. Bolen

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): 2041-01 Rohnert Park
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 22:45 (Begin) 23:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 11/9/02 Survey Number for Month/Season: 3
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / ~~No~~ Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-1-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 19:45 (Begin) 21:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/6/02 Survey Number for Month/Season: 4/
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): 2041-01 Rohnert Park
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 7:30 (Begin) 19:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/7/02 Survey Number for Month/Season: 5
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): S. Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 7:30 (Begin) 11:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/8/02 Survey Number for Month/Season: 6
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 (Begin) 10:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/9/02 Survey Number for Month/Season: 7
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Robert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:45 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/10/02 Survey Number for Month/Season: 8
(i.e., how many times has this site been surveyed this month/season).

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Robert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:45 (Begin) 11:45 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/11/02 Survey Number for Month/Season: 9
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson Cezniak

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:32 (Begin) 10:24 (End)

Air Temperature: 55°C
Water Temperature: _____
Cloud Cover (percent): 100%
Wind Speed (Beaufort scale): 0
Precipitation: 0
Moon Phase: _____
Visibility: 500m

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/12/02 Survey Number for Month/Season: 10
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson, Cezniak

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 7041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:15 (Begin) 11:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): 100%
Wind Speed (Beaufort scale): slight breeze
Precipitation: 0
Moon Phase: _____
Visibility: 10 ft.

Listed Species	Age Class	Number of Individuals

Additional Notes: Buckets 75, 81, 99, 100, 180, 301, 302

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/13/02 Survey Number for Month/Season: 11
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): William Ceznik

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Roland Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 (Begin) 10:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): over 100%
Wind Speed (Beaufort scale): windy
Precipitation: 100%
Moon Phase: _____
Visibility: 1000m

Listed Species	Age Class	Number of Individuals

Additional Notes: Flooded burrows: 67, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111–116, 117, 124, 125, 180, 180 (top), 181, 191, 199, 203–205, 211, 239, 250, 252–254

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/14/07 Survey Number for Month/Season: 12
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson, Cerniak

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Roberts Ranch 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:38 (End)

Air Temperature: 55°
Water Temperature: _____
Cloud Cover (percent): 100%
Wind Speed (Beaufort scale): Fast
Precipitation: off + on
Moon Phase: _____
Visibility: Fair

Listed Species	Age Class	Number of Individuals

Additional Notes: Buckets not flooded 140, 195, 212, 214-222, 225, 227, 228, 231, 242, 243
Buckets submerged or flooded to top 23-25, 27, 28, 31, 32, 37, 40, 54, 65, 71, 93, 141-147, 160, 173, 180, 199, 211, 263-270, 273, 274, 278, 281, 282, 286, 287, 291, 292, 296-300
Fence repair by 280, between 294, 295, by 50

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/15/02

Survey Number for Month/Season: 13
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson, Leenwak

Was Sonoma tiger salamander found? Yes / No (circled: No) Age Class: ______

Method of Capture: ______

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:15 (Begin) 10:30 (End)

Air Temperature: 55°
Water Temperature: –
Cloud Cover (percent): 100%
Wind Speed (Beaufort scale): <1-3 kt
Precipitation: 0
Moon Phase: ______
Visibility: 1 mile

Listed Species	Age Class	Number of Individuals

Additional Notes: bucket 301 popped out (no holes), fence torn and low down 26, 44, 45, 235, 291; stakes falling 29-30, 37-38, 83-84, 92-93, 253-254, 260-263, 268-269, 283-285, 290-292, 294-297.

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/16/02 Survey Number for Month/Season: 14
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson Cezwak

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Roberts Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 16:30 (End)

Air Temperature: 55°
Water Temperature: _____
Cloud Cover (percent): 50%
Wind Speed (Beaufort scale): _____
Precipitation: 0
Moon Phase: _____
Visibility: 1 mile

Listed Species	Age Class	Number of Individuals

Additional Notes: Broken stick 34-35, 69-70, 165-166,
Fence separating from stake 83-85
Fence sagging 27-30, 49-50, mesh - 90, 134-135,
253-254, 260-261
Fence down 173-174
raging rapids - 199, 211
fence torn - 249

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/17/02 Survey Number for Month/Season: 15

(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): W. Ikenson

Was Sonoma tiger salamander found? Yes / No (circled) Age Class:

Method of Capture:

Project Name and Parcel Number (or UTM Coordinates)
(APN): Robert Park 204(-01

(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 (Begin) 11:00 (End)

Air Temperature: 58°
Water Temperature:
Cloud Cover (percent): 50%
Wind Speed (Beaufort scale): breezy
Precipitation: 0
Moon Phase:
Visibility: [illegible]

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/18/02 Survey Number for Month/Season: 1-6
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): WHitman

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 9:00 (Begin) 11:00 (End)

Air Temperature: 56°
Water Temperature: _____
Cloud Cover (percent): 20%
Wind Speed (Beaufort scale): breezy
Precipitation: _____
Moon Phase: _____
Visibility: Fair

Listed Species	Age Class	Number of Individuals

Additional Notes: Crew out repairing fence and placing screen around inundated buckets

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/19/02 Survey Number for Month/Season: 17
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkerson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Robert Park
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 9:30 (Begin) 10:30 (End)

Air Temperature: 50°
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): windy
Precipitation: loc
Moon Phase: _____
Visibility: 0.5 mi

Listed Species	Age Class	Number of Individuals

Additional Notes: inundated buckets no. 70, 93, 143, 301 need screen around outside. Inundated bucket no. 146 needs screen to be attached at bottom

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/2012 Survey Number for Month/Season: 18
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Peterson, Ryan

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Robert Rust 20 Pool
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 9:08 (Begin) 10:09 (End)

Air Temperature: 50°C
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): windy
Precipitation: off + on
Moon Phase: _____
Visibility: 1 mile

Listed Species	Age Class	Number of Individuals

Additional Notes: buckets inundated need screening
31, 96, 97, 145, 160, 173, 174, 211, 269, 270, 284
section of [illegible] to be replaced by screening

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/21/02 Survey Number for Month/Season: 19
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:15 (Begin) 10:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/22/02 Survey Number for Month/Season: 20
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 7:45 (Begin) 9:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/23/02 Survey Number for Month/Season: 2 / (i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-1-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 (Begin) 10:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/24/02 Survey Number for Month/Season: 22
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): D. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 (Begin) 10:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes: gap in fence at #199 and between 291, 292

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/26/02 Survey Number for Month/Season: 23
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/27/02 Survey Number for Month/Season: 24
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): S. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:15 (Begin) 10:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/28/02 Survey Number for Month/Season: 25
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson, Sisk

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Roland Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:00 (End)

Air Temperature: 58
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): windy
Precipitation: 0
Moon Phase: _____
Visibility: 5 miles

Listed Species	Age Class	Number of Individuals

Additional Notes: screen fence at bucket 04 + 173 needs to be pushed into soil.

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/29/02 Survey Number for Month/Season: 26
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Whitman, Johnston

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:00 _____
Begin End

Air Temperature: 56
Water Temperature: _____
Cloud Cover (percent): 0
Wind Speed (Beaufort scale): 0
Precipitation: _____
Moon Phase: _____
Visibility: 0

Listed Species	Age Class	Number of Individuals

Additional Notes: Some down at bucket 44 and between 296 - 297. Several inundated buckets

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/30/02 Survey Number for Month/Season: 27
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): [illegible] Johnston

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 7041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 _____
Begin End

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): breezy
Precipitation: drizzle
Moon Phase: _____
Visibility: 1 mile

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 12/31/02

Survey Number for Month/Season: 28
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): D. Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 9:45 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): 50
Wind Speed (Beaufort scale): 0
Precipitation: 0
Moon Phase: _____
Visibility: OK

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/2/03 Survey Number for Month/Season: 29
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson, Cezwak, Ryan

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Robert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 _____
Begin End

Air Temperature: 53
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): slight breeze
Precipitation: 0
Moon Phase: _____
Visibility: 9

Listed Species	Age Class	Number of Individuals

Additional Notes: close traps

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/11/03 Survey Number for Month/Season: 30
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Sue Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 9:30 (Begin) 11:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/12/02 Survey Number for Month/Season: 3 (i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/14/03 Survey Number for Month/Season: 32
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J. Wilkinson

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:15 (Begin) 10:30 (End)

Air Temperature: 55
Water Temperature: _____
Cloud Cover (percent): 90
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/15/03 Survey Number for Month/Season: 33
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): S. Wilkinson

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 14:30 (Begin) 17:15 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/23/03 Survey Number for Month/Season: 34
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 9:30 am (Begin) 12:00 pm (End)

Air Temperature: 60°
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): 0
Precipitation: 0
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes: checked for egg masses. Several buckets inundated need screen, informed client.

Sonoma Tiger Salamander Data Sheet

Date of Survey: 1/24/03 Survey Number for Month/Season: 35
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): J Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Colvert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 11:00 (End)

Air Temperature: 55
Water Temperature: _____
Cloud Cover (percent): 100
Wind Speed (Beaufort scale): slight
Precipitation: 0
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes: Some buckets inundated without fencing.

Sonoma Tiger Salamander Data Sheet

Date of Survey: 2/13/03 Survey Number for Month/Season: 36
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): W. Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2011-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 3:15 (Begin) 4:55 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes: Screen between #3 + 4 not attached to fence

Sonoma Tiger Salamander Data Sheet

Date of Survey: 2/15/03 Survey Number for Month/Season: 37
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): U. Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 12:16 _____
Begin End

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 2/16/03 Survey Number for Month/Season: 38
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-10
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 12:00 (Begin) 1:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 2/17/03 Survey Number for Month/Season: 39
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 11:15 (Begin) 1:09 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/14/03 Survey Number for Month/Season: 1:40
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 9:30 (Begin) 11:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/15/03 Survey Number for Month/Season: 4/
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 10:45 (Begin) 12:45 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/16/03 Survey Number for Month/Season: 42
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 10:15 (Begin) 11:45 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/17/03 Survey Number for Month/Season: 43
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Williamson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 8:30 (Begin) 10:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/23/03 Survey Number for Month/Season: 4/4
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): Wilkinson

Was Sonoma tiger salamander found? Yes / (No) Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 204-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 11:00 (Begin) 12:30 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 3/24/03

Survey Number for Month/Season: 4/5
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): W. Wilkinson

Was Sonoma tiger salamander found? Yes / No Age Class: _____

Method of Capture: _____

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 15:00 (Begin) 17:00 (End)

Air Temperature: _____
Water Temperature: _____
Cloud Cover (percent): _____
Wind Speed (Beaufort scale): _____
Precipitation: _____
Moon Phase: _____
Visibility: _____

Listed Species	Age Class	Number of Individuals

Additional Notes:

Sonoma Tiger Salamander Data Sheet

Date of Survey: 4/7/03 Survey Number for Month/Season: 4/6
(i.e., how many times has this site been surveyed this month/season)

First and Last Names of Surveyor(s): S. Wilkinson

Was Sonoma tiger salamander found? (Yes) / No Age Class: adult female

Method of Capture: pit fall trap

Project Name and Parcel Number (or UTM Coordinates)
(APN): Rohnert Park 2041-01
(Include Map and Photo of area surveyed; GIS data if available)

Time at beginning and end of survey (based on 24 hour clock): 9:15 (Begin) 11:00 (End)

Air Temperature:
Water Temperature:
Cloud Cover (percent):
Wind Speed (Beaufort scale):
Precipitation:
Moon Phase:
Visibility:

Listed Species	Age Class	Number of Individuals

Additional Notes: CTS found in trap 293, after contacting USFWS, CTS deposited in mitigation bank N of Todd Rd.

ATTACHMENT 4E.

Northwest Specific Plan Area, Redwood Equities Investments Property, Rohnert Park, Ponding and Potential California Tiger Salamander Breeding Assessment . Prepared by H.T. Harvey & Associates. July 14, 2003.

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
PONDING AND POTENTIAL
CALIFORNIA TIGER SALAMANDER
BREEDING ASSESSMENT

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

DRAFT

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
PONDING AND POTENTIAL
CALIFORNIA TIGER SALAMANDER
BREEDING ASSESSMENT

Prepared by

H. T. HARVEY & ASSOCIATES

Scott Terrill, Ph.D., Principle
Julie Klingmann, M.S., Project Manager
Jeffery A. Wilkinson, Ph.D., Staff Herpetologist
Brian J. Cleary, M.S., Wetland Specialist, Botanist

Prepared for:

Kenneth R. Blackman
Blackman Consulting
1224 St. Helena Avenue
Santa Rosa, CA 95404

July 14, 2003

Project 2041-01

3150 Almaden Expressway, Suite 145 • San Jose, CA 95118 • (408) 448-9450 • Fax: (408) 448-9454

TABLE OF CONTENTS

FIGURES:

APPENDIX:

INTRODUCTION

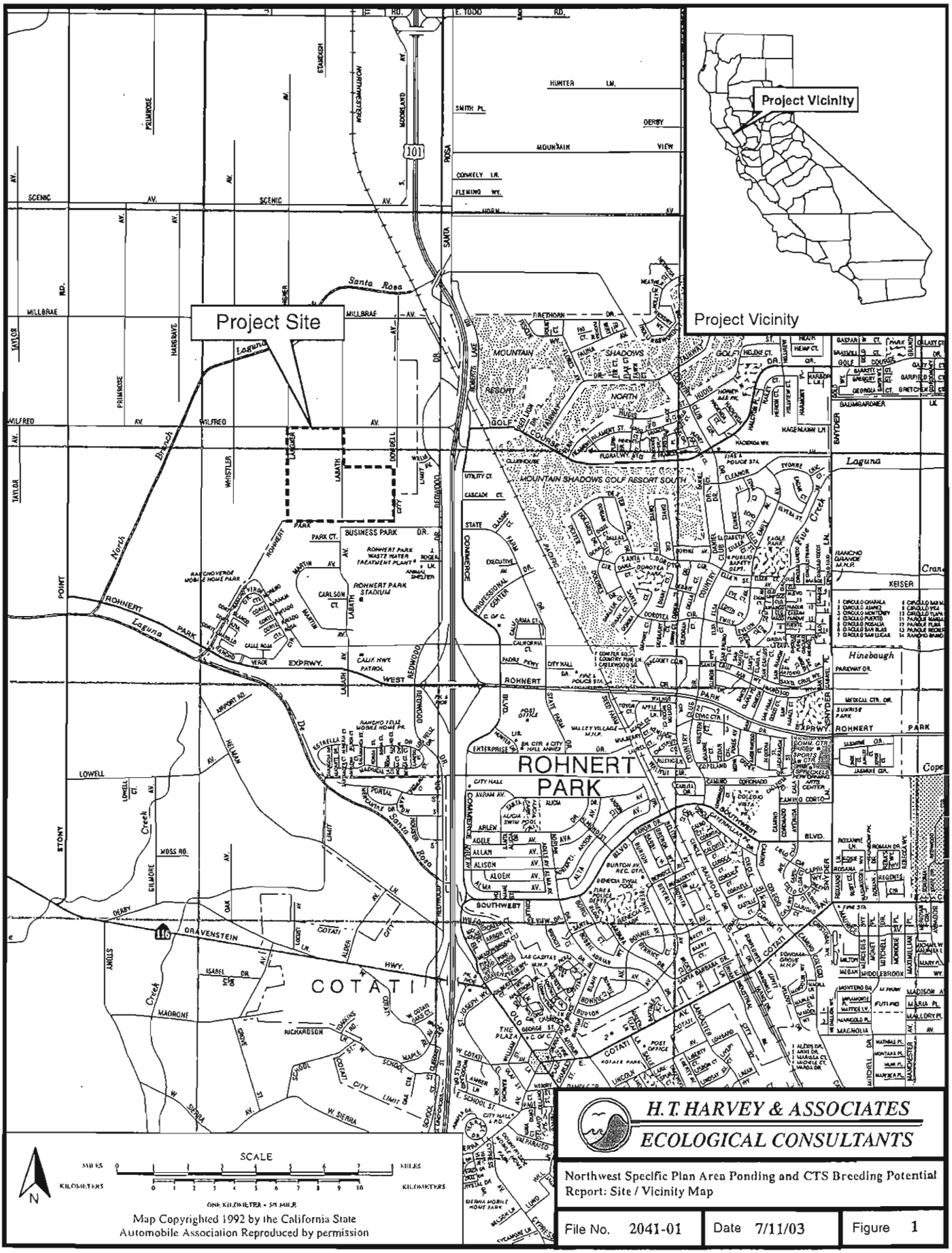
This report has been prepared to document an assessment of ponding related to potential breeding habitat for the California tiger salamander (*Ambystoma californiense*). The assessment included the Northwest Specific Plan Area Redwood Equities Investments Rohnert Park property and the area contained within a one-mile radius of the property. This study includes an attempt to identify any aquatic habitats within the study area that may comprise current or historic breeding habitat for the California tiger salamander (CTS).

PROJECT AREA DESCRIPTION

The property is located west of Highway 101 within the City of Rohnert Park, Sonoma County California (Figure 1). The site is bordered by Wilfred Avenue to the north, Business Park Drive to the south, Langer Avenue to the west, and Dowdell Avenue to the east. The property has been farmed for several decades and is currently planted with forage grasses. The property study area is located on the Cotati U.S.G.S. Quadrangle Map, in section 22 of the quadrangle Range 10 West, Township 8 North.

The topography of the property is level and at an elevation of approximately 90 feet National Geodetic Vertical Datum (NGVD). Regionally, the property study area is situated within the relatively flat Llano De Santa Rosa Valley that extends northwest by southeast and includes the towns of Wilfred, Cotati and Penngrove. The Sonoma Mountains border the east side of the valley and the Outer Coast Range borders the west side. The valley is drained primarily by Laguna De Santa Rosa Creek that flows north into the Russian River.

The entire property is underlain by the Clear Lake clay soil series, 0-2 percent slopes. The Clear Lake Series consist of clays that formed under poorly drained conditions. These soils are underlain by alluvium from basic and sedimentary rock (Soil Conservation Service; SCS 1972). The Clear Lake clay soils, 0-2 percent slopes are listed as a hydric soil for Sonoma County (SCS 1972).



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential Report: Site / Vicinity Map

File No. 2041-01	Date 7/11/03	Figure 1

PONDING ASSESSMENT

MATERIALS AND METHODS

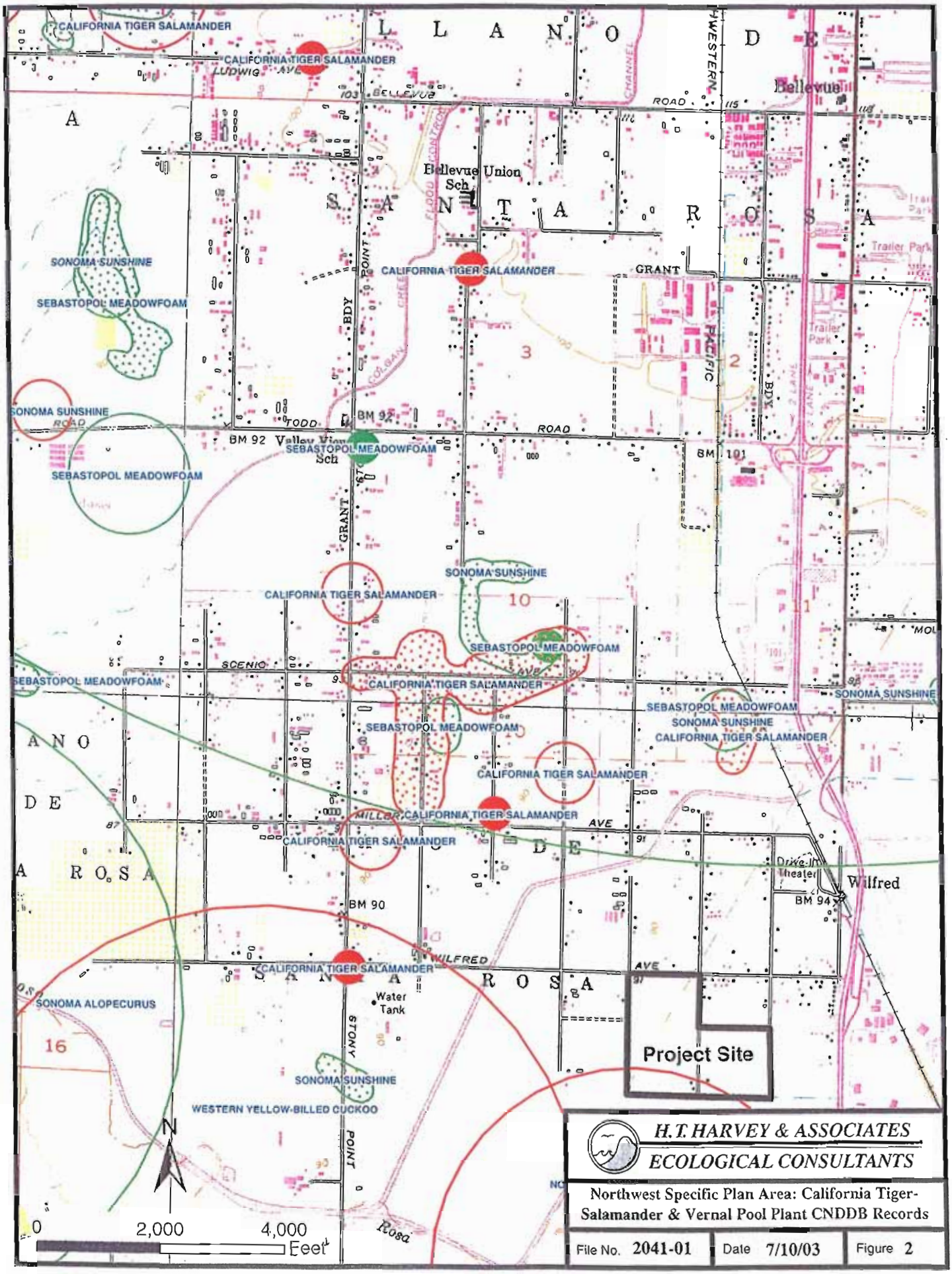
To assist in the assessment of current and historic ponding on the property and within the study area, H. T. Harvey & Associates compiled existing information, including historic aerial photographs obtained from the U. S. Geological Survey (USGS) and Hammon, Jenson, Wallen & Associates, Inc. In addition, pertinent maps such as the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) map, a California Natural Diversity Database (CNDDB 2003; Figure 2) map and a Pond Distribution Map of Sonoma County produced by LSA was reviewed. Following this, a single reconnaissance-level site visit of the property and surrounding study area was conducted by H. T. Harvey & Associates wetlands biologist Brian Cleary, in an attempt to identify locations of potential existing and historic ponds including vernal pools, that may have served as breeding habitat for CTS.

H. T. Harvey & Associates examined a total of eight black and white aerial photographs of the study area. A single 1993 digital ortho quarter quadrangle (DOQQ) photograph was obtained from the USGS. In addition, seven black and white contact-print aerial photographs were purchased from Pacific Aerial Surveys at Hammon, Jenson, Wallen & Associates, Inc. The aerial photographs spanned a time period of five decades between 1956 and 2000. Each photograph was studied with a hand lens to identify and document evidence of historic ponding, vernal pools, vernal swales and other drainage channels such as creeks and ditches. These photographs, attached in Appendix A, include:

- Photograph 1. June 12, 1956 (Pacific Aerial Surveys, Photo AV 222 03 09)
- Photograph 2. April 4, 1966 (Pacific Aerial Surveys, Photo AV 710 01 08)
- Photograph 3. October 2, 1975 (Pacific Aerial Surveys, Photo AV 1215 02 07)
- Photograph 4. May 3, 1980 (Pacific Aerial Surveys, Photo CIR SON 18 27)
- Photograph 5. April 19, 1986 (Pacific Aerial Surveys, Photo AV 2860 03 16)
- Photograph 6. August 9, 1995 (Pacific Aerial Surveys, Photo AV 4890 09 15)
- Photograph 7. June 15, 2000 (Pacific Aerial Surveys, Photo AV 6540 15 21)

The U.S. Fish and Wildlife Service (USFWS) has classified wetland resources within the study area under the National Wetland Inventory (NWI) system. Although the NWI does not identify any wetland areas on the property, a flood-control drainage channel within the study area that bisects Wilfred Road approximately one-half mile west of the site is classified as Palustrine, Emergent, Saturated/Semipermanent/Seasonal (PEMY). In addition, the majority of Laguna De Santa Rosa Creek located to the southwest is classified as PEMY. Hinebaugh Creek, located approximately ½ mile south of the property is classified as Riverine, Intermittent, Streambed, Saturated/Semipermanent/Seasonal (R4SBY).

The CNDDB map was examined to identify locations of potential CTS breeding habitats such as vernal pools and documented occurrences of CTS within the study area. This map was generated at a scale of 1 inch: 2000 feet. Numerous occurrences of CTS are documented within the study area less than one mile northwest of the property along Primrose Avenue and Scenic Drive.



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area: California Tiger-Salamander & Vernal Pool Plant CNDDB Records

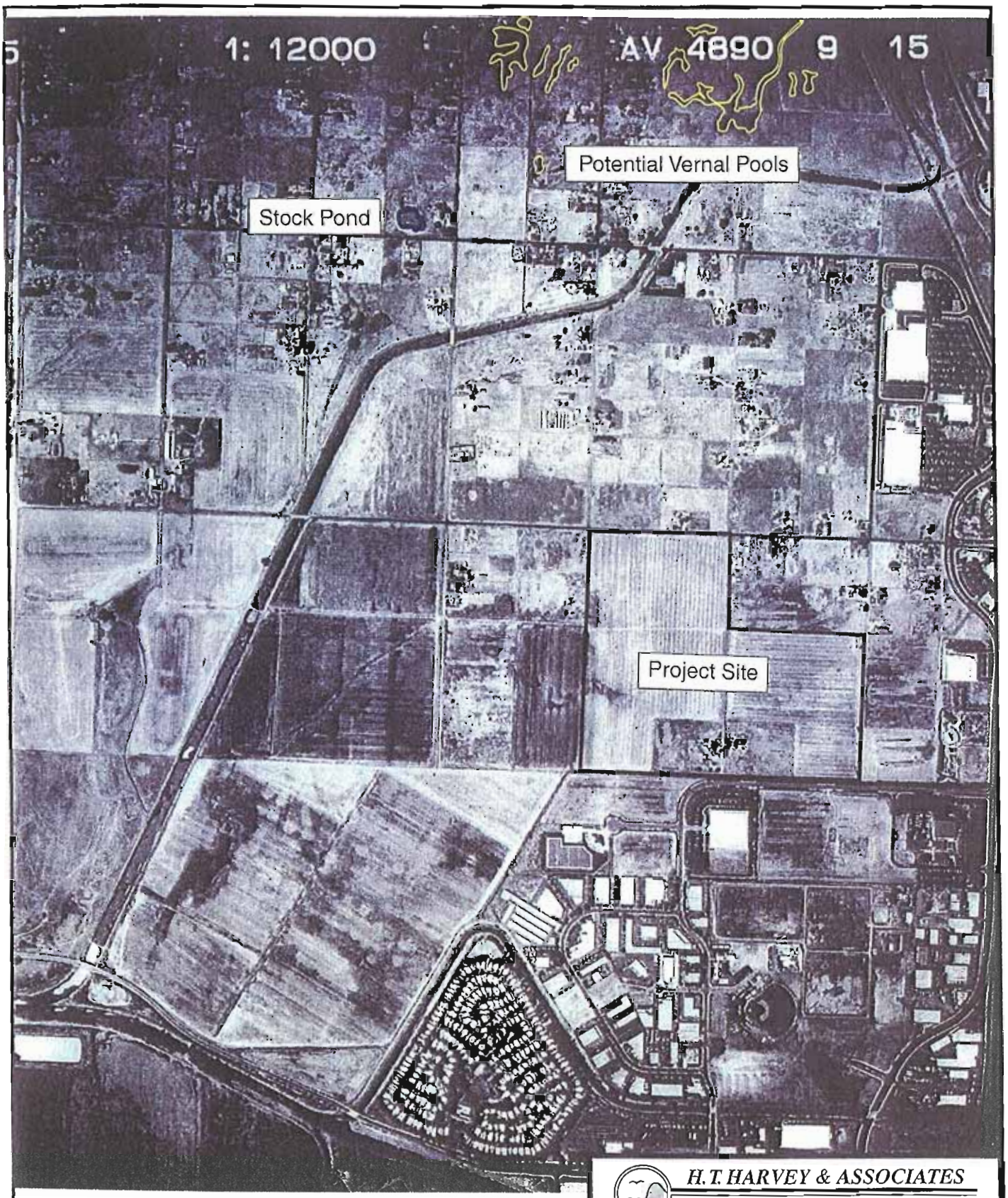
File No. 2041-01	Date 7/10/03	Figure 2

Occurrences of two vernal pool endemic special-status plant species, Sonoma sunshine (*Blennosperma bakeri*) and Sebastopol meadowfoam (*Limnanthes vinculans*), are also documented in this area by the CNDDB. The occurrences of CTS and these plants are based on the presence of historic vernal pools that occupied some of this area prior to rural, urban development.

RESULTS AND DISCUSSION

Onsite Ponding. The area of ponding that currently occurs in some years in the southwest portion of the property south of Langer Avenue was assessed through interpretation of aerial photos between 1956 and 2000. This pond appears to have formerley been a part of a small, natural, drainage channel that historically conveyed water west into an unnamed, intermittent creek located approximately three-quarters of a mile west of the property. The 1956 aerial photograph documents that water moved from the property westward and ultimately drained into the creek. Water in this creek then drained into Laguna Santa Rosa Creek located approximately one mile south of the property. The photographs show that sometime between 1956 and 1966, the existing flood-control channel was installed to replace the intermittent creek. The 1966 photograph documents that the alignment of the existing flood control channel is in approximately the same location as the historic creek. Upon construction of the new flood-control channel, water from the pond on site that previously drained into the intermittent creek was forced to collect in a low-lying area three-quarters of a mile west of the property. It appears that this water has never drained directly into the existing channel. Photographic interpretation of the remaining photographs up to the present time suggest that some amount of water continues to pond in this area adjacent to the east side of the channel approximately three-quarters of a mile west of the property during the winter months. These photographs document that the ponded area on the property was historically not a vernal pool, but part of a small tributary to the intermittent creek that once drained into Laguna Santa Rosa Creek.

Surrounding Area. Interpretation of the more recent aerial photographs also revealed that numerous potential vernal pools still persist in the rural urban developed landscape north of the property within the one-mile study area (Figure 3). All of these potential vernal pools are located on private property; therefore site access to confirm their presence during the reconnaissance-level survey was not possible. It is likely that some of these pools now exist as smaller "remnant" vernal pools particularly along Primrose Avenue and Scenic Drive less than one mile northwest of the property. Additional vernal pools that also include occurrences of CTS are located approximately one to two miles northwest of the property along Todd Avenue and Bellevue Avenue. Further, a single large stock pond was identified on private property located at the northwest corner of the intersection of Millbrae Avenue and Whistler Road within the study area (Figure 3). These interpretations are consistent with a *Preliminary Pond Distribution in Sonoma County* map produced by LSA on 8 May 2002 that shows natural, short and moderate ponds and recent further CTS records occurring north and west of the aforementioned flood control channel. No natural ponds or CTS observations are present until one approaches the area south of Rohnert Park and west of Cotati along Highway 116.



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: Potential Vernal Pools and Stock Pond within Project Study Area

File No. 2041-01	Date 7/11/03	Figure 3

The reconnaissance-level survey within the study area was conducted during the month of July when vernal pools are typically dry and difficult to identify. Consequently, it was not possible to document any specific vernal pools within the study area that may serve as local breeding ponds for CTS. In addition, substantial rural urban development during the past 25 years has significantly impacted the flora that inhabits these pools making indicator plants increasingly difficult to identify even during the late winter and early spring blooming period. As a result, no clear and distinguishing vernal pool features were identified within the study area including those areas along Primrose Avenue and Scenic Drive where occurrences of CTS have been reported. Although, due to the low-lying elevational topography of the Llano De Santa Rosa Valley, ponding occurs in many ditches, swales and depressions throughout the study area.

No vernal pools, remnant vernal pools or endemic vernal pool plant species were identified on the property during the reconnaissance-level survey. Although several water-loving plant species including hyssop loosestrife (*Lythrum hyssopifolium*), swamp grass (*Crypsis schoenoides*), water smartweed (*Polygonum amphibium* var. *emersum*) and pointed rush (*Juncus oxymeris*) were identified on the property where ponding can occur during the winter months and in the numerous drainage ditches that surround the property. This ponding is associated with high water tables for the area, and annual rainfall that accumulates on poorly drained, heavy clay soils within the relatively level topography of the property.

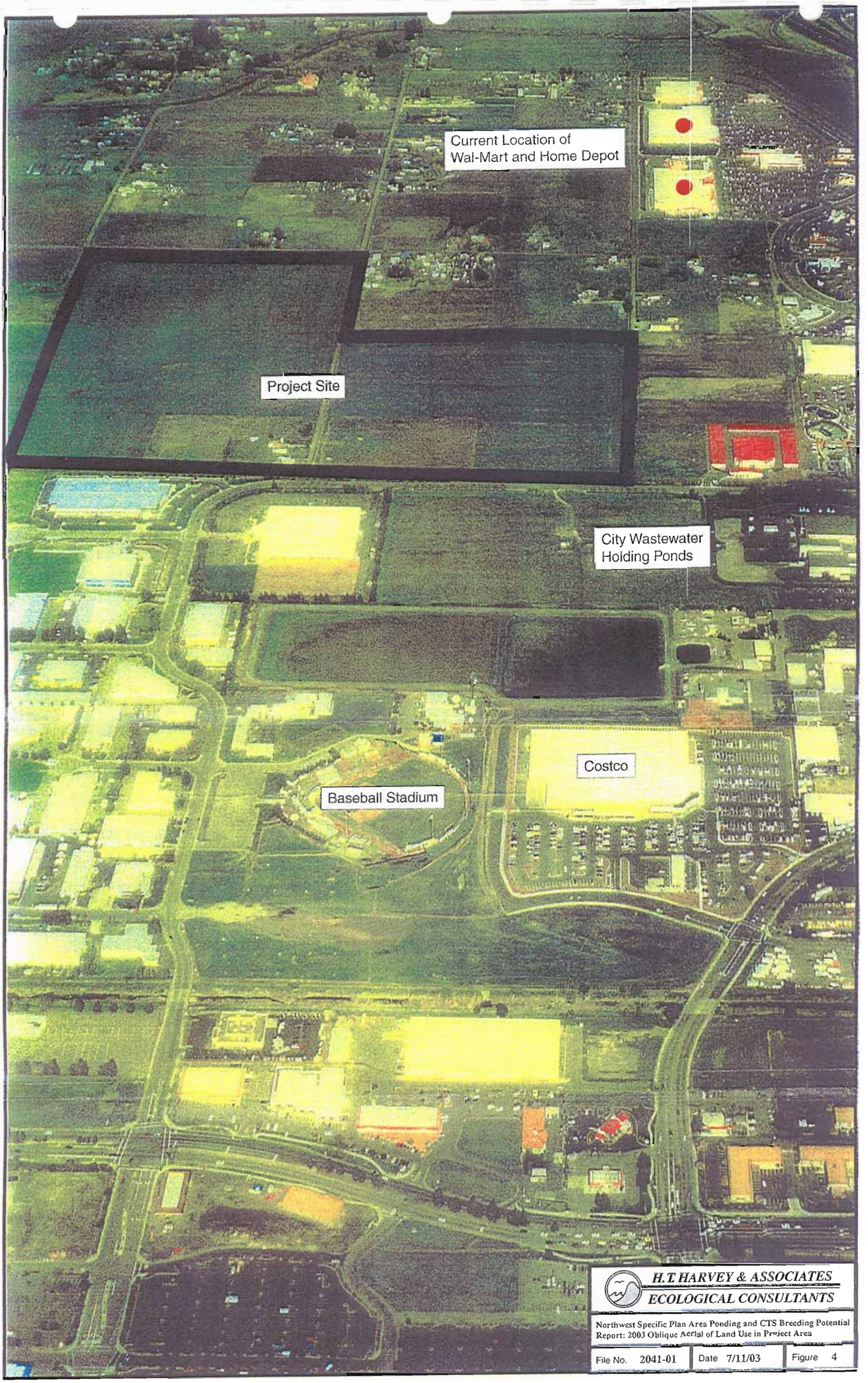
LAND USE HISTORY

Blackman Consulting provided three aerials of the Northwest Specific Plan Area indicating land-use history of the site. The following descriptions of land use depicted by each aerial were provided.

The first, (Figure 4) is a recent oblique-angle, color aerial taken in 2003. This map shows the area immediately south of the Northwest Specific Plan. The wastewater holding ponds of the City of Rohnert Park are clearly shown as is the baseball stadium area and COSTCO, located immediately east of the baseball stadium. Wal-mart and Home Depot are also shown. This map shows the extensive urban development south of the Northwest Specific Plan.

The second aerial (Figure 5) is an older, black-and-white, aerial map taken in 1989. This aerial clearly shows the agricultural use of the property site. This aerial photo was taken before either Wal-mart or Home Depo located adjacent to U.S 101, north of the Northwest Specific Plan Area.

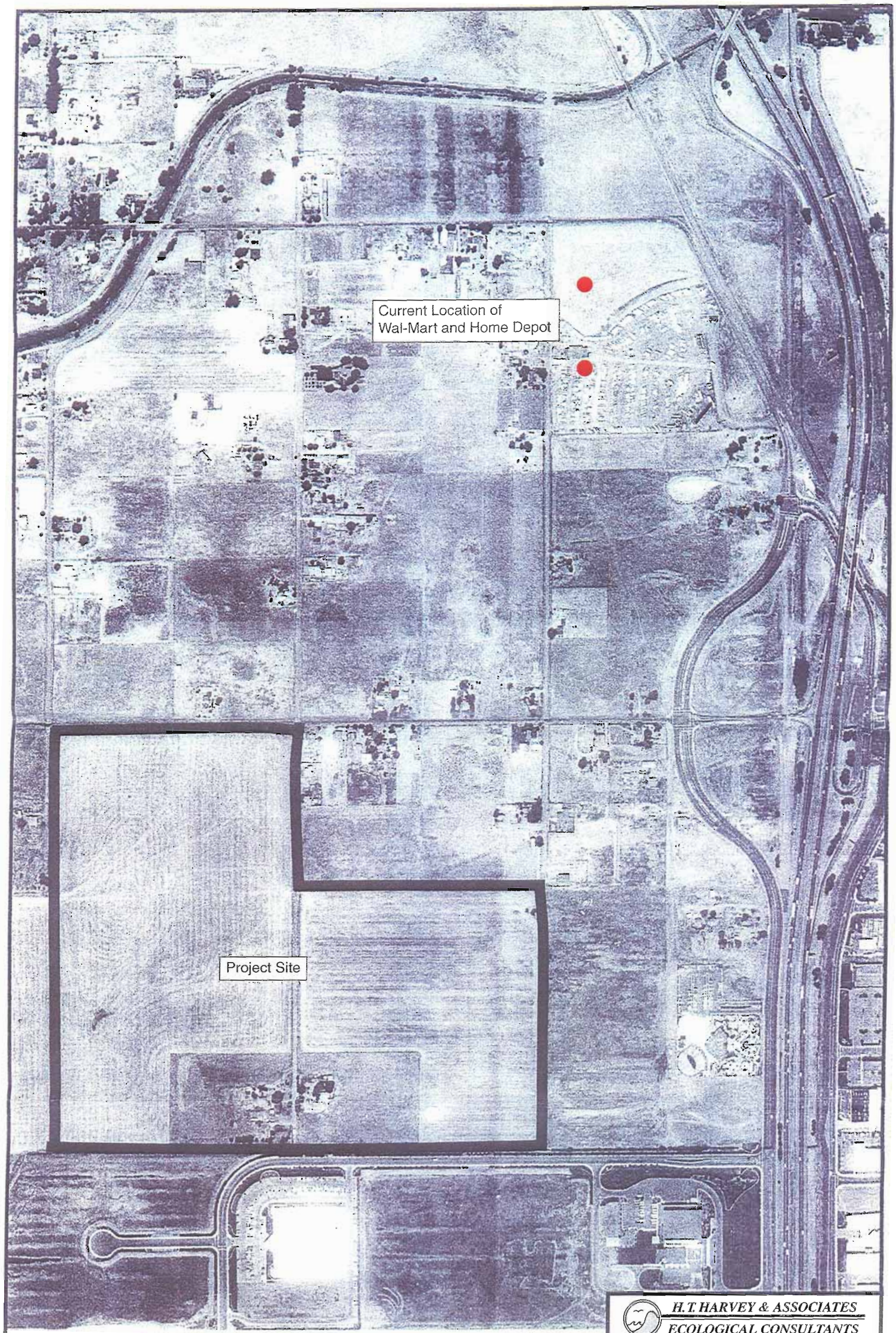
The third aerial (Figure 6) is an yet older color aerial map taken in 1976 that shows the continued agricultural use of the property. This aerial pre-dates all of the light industrial use south of the Northwest Specific Plan Area and shows agricultural use in most of the surrounding area. Grass seed and hay was the principle crops in this area for a number of years.



H.T HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: 2003 Oblique Aerial of Land Use in Project Area

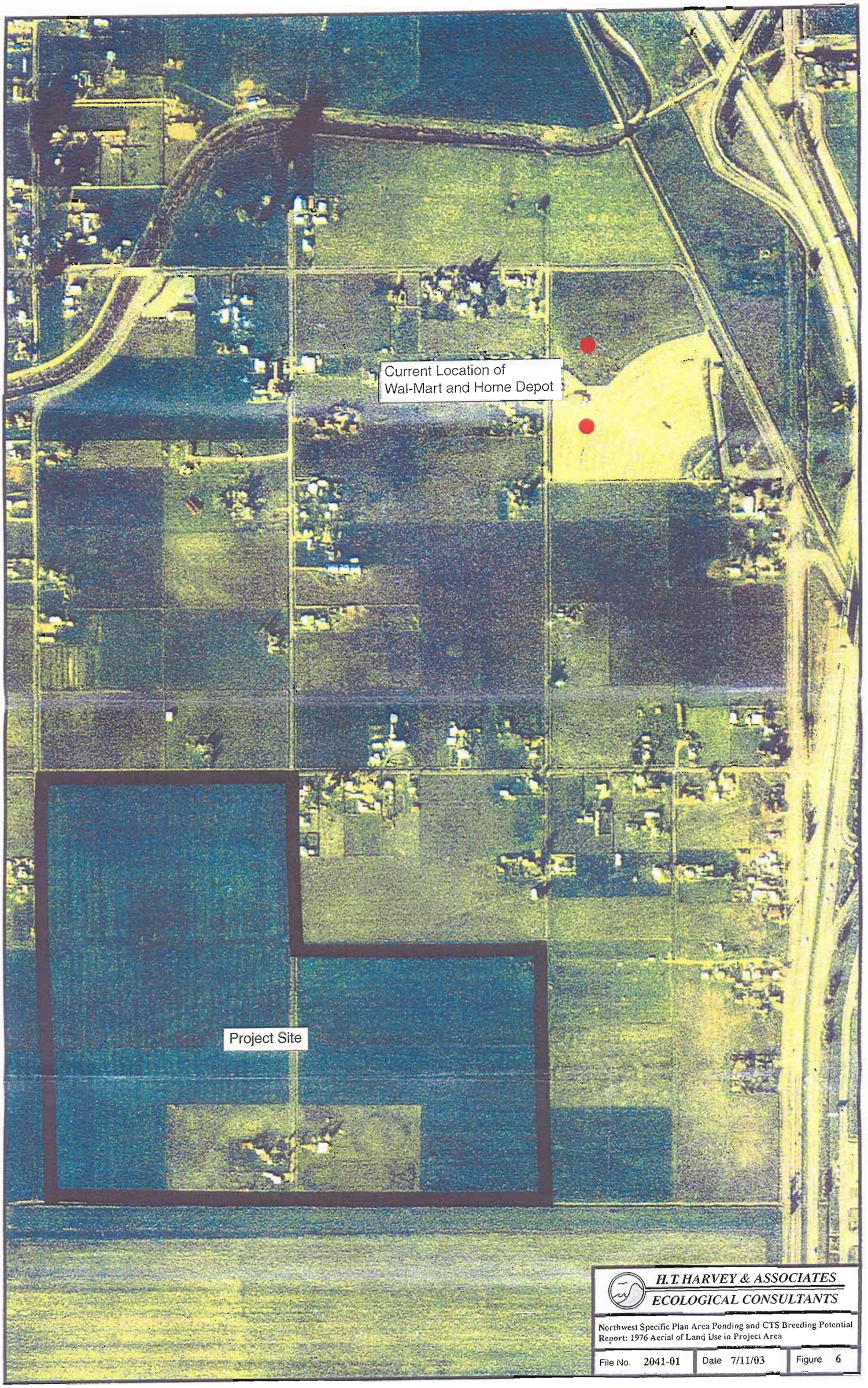
File No. 2041-01	Date 7/11/03	Figure 4



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: 1939 Aerial of Land Use in Project Area

File No. 2041-01	Date 7/11/03	Figure 5



H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area Ponding and CTS Breeding Potential
Report: 1976 Aerial of Land Use in Project Area

File No. 2041-01	Date 7/11/03	Figure 6

ASSESSMENT OF CALIFORNIA TIGER SALAMANDER BREEDING POTENTIAL IN SURROUNDING AREA

Based on the results of this study, previous surveys of the property (H. T. Harvey & Associates 2003), and results of other surveys in the area over the past year (personal communications with Rana Resources, Caltrans, David Cook), it is likely that some of the remnant vernal pools and small ponds located within the study area north and northwest of the project site continue to function as breeding habitat for CTS including, for example, a vernal swale located southwest of the intersection of Scenic Avenue and the Southern Pacific Rail Road tracks and ponds between Scenic Avenue and Millbrae Avenue (Figure 2). In addition, based on recent sightings of CTS on reaods, such as Wilfred Avenue (Figure 2), it is likely that some of the drainage ditches that line the majority of roads within this area may function as marginal breeding habitat for CTS due to the general regional loss of natural breeding habitat due to development.

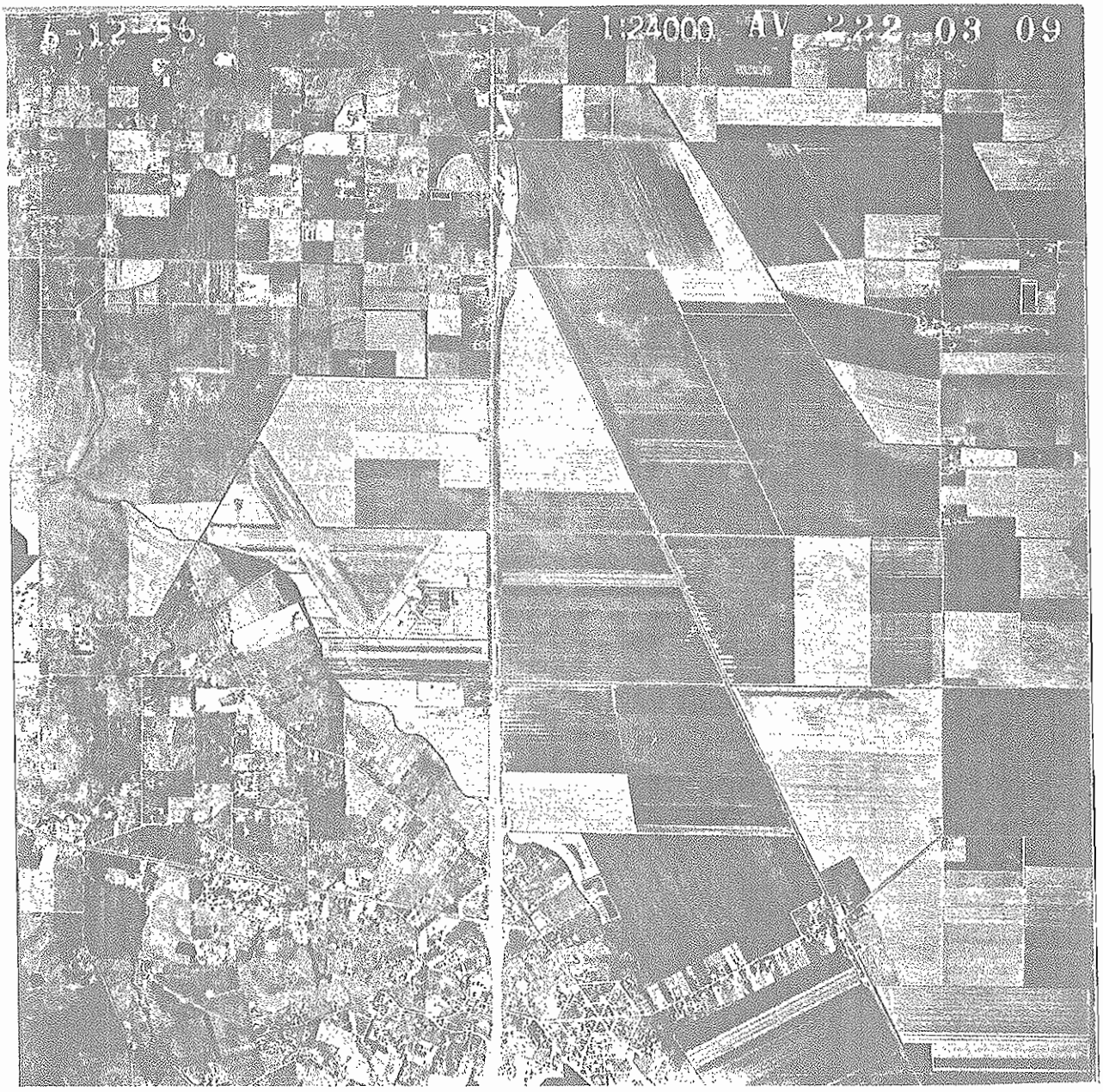
LITERATURE CITED

CNDDB. California Natural Diversity Data Base. 2003. Rarefind. California Department of Fish and Game.

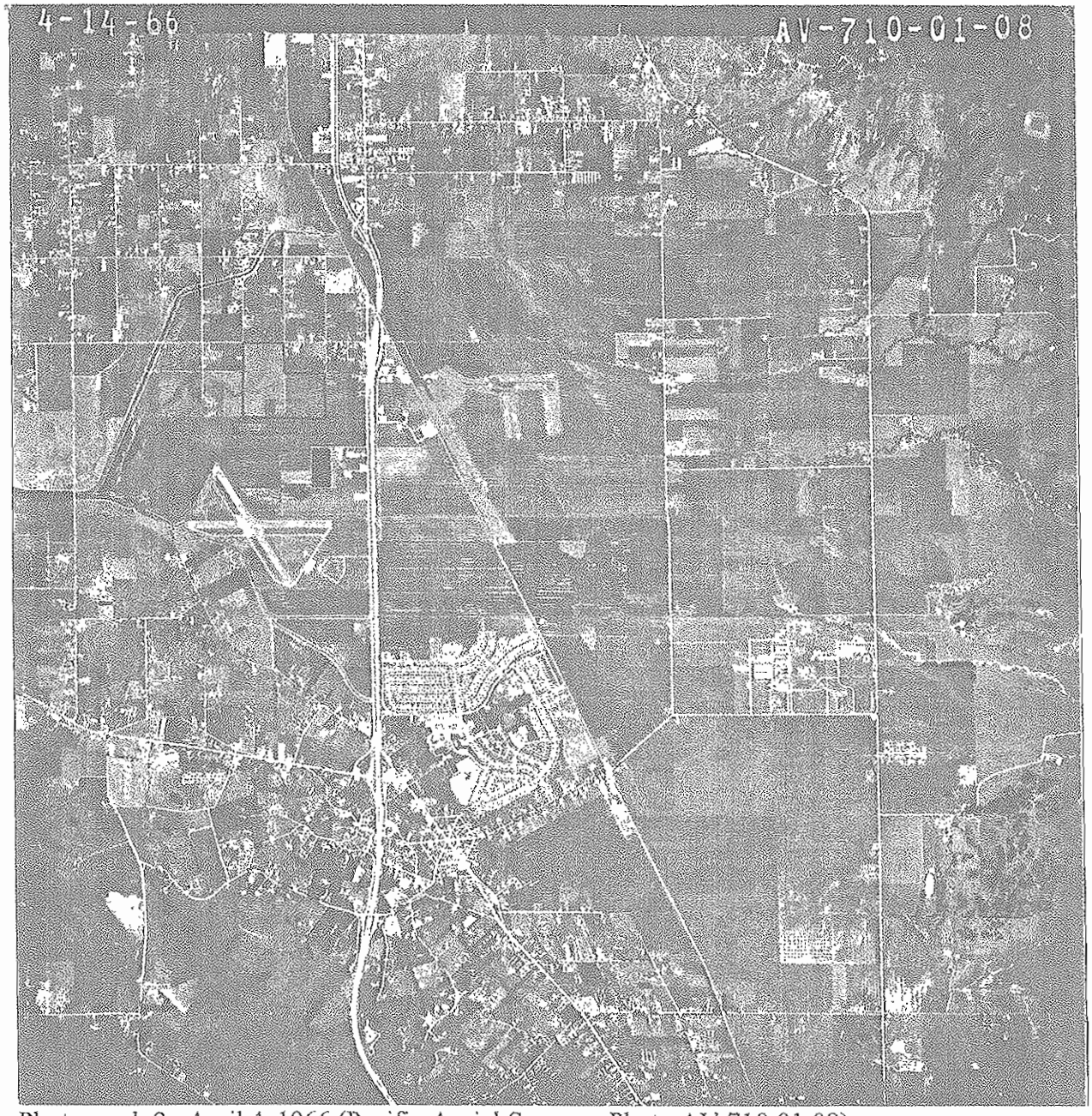
H. T. Harvey & Associates. 2003. Northwest Specific Plan Area Redwood Equities Investments Property Rohnert Park California Tiger Salamander 2002/2003 Survey Report.

Soil Conservation Service. 1972. Soil Survey of Sonoma County, California. USDA.

APPENDIX A:
PHOTOGRAPHS OF THE SITE



Photograph 1. June 12, 1956 (Pacific Aerial Surveys, Photo AV 222 03 09)

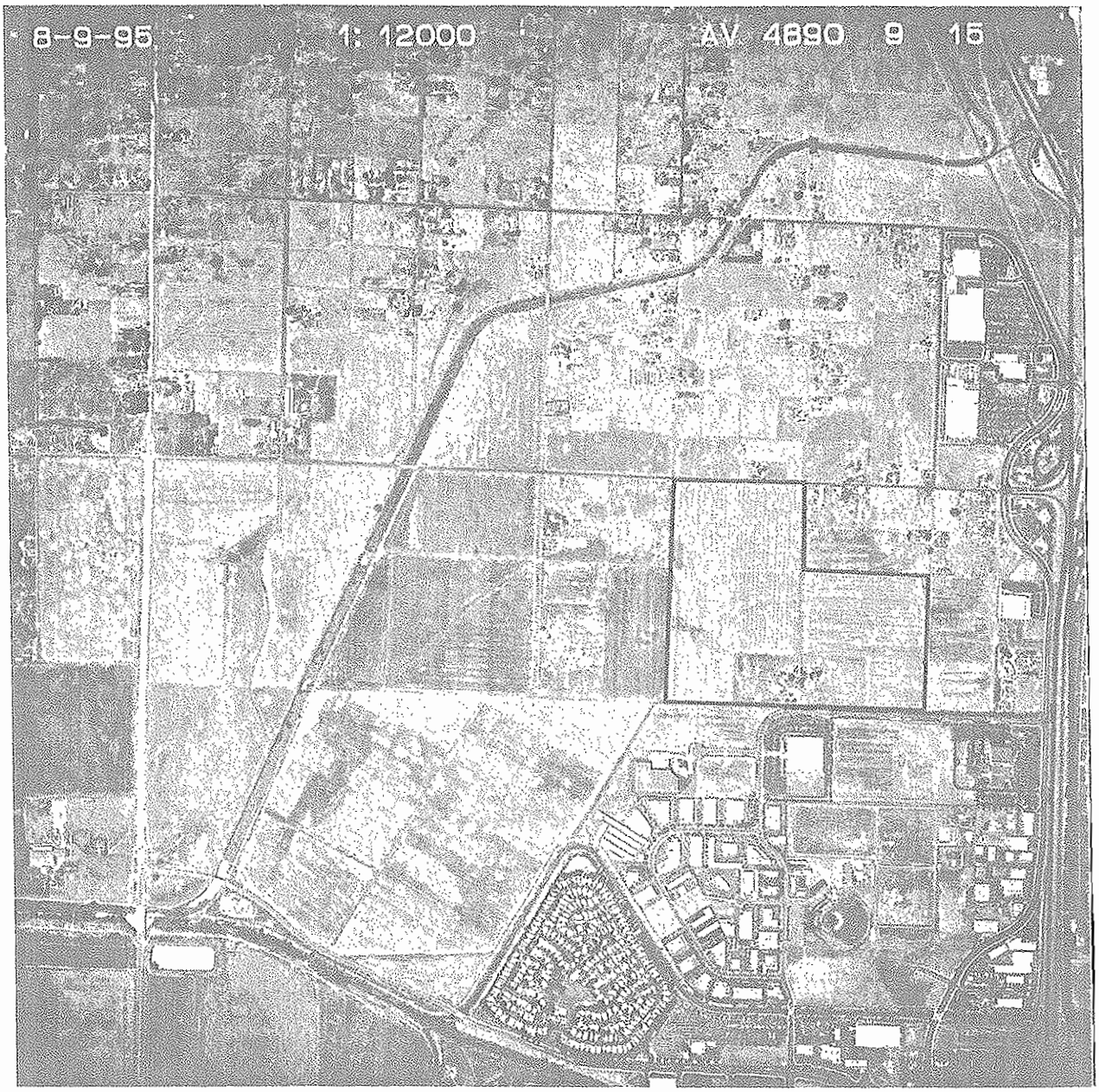


Photograph 2. April 4, 1966 (Pacific Aerial Surveys, Photo AV 710 01 08)

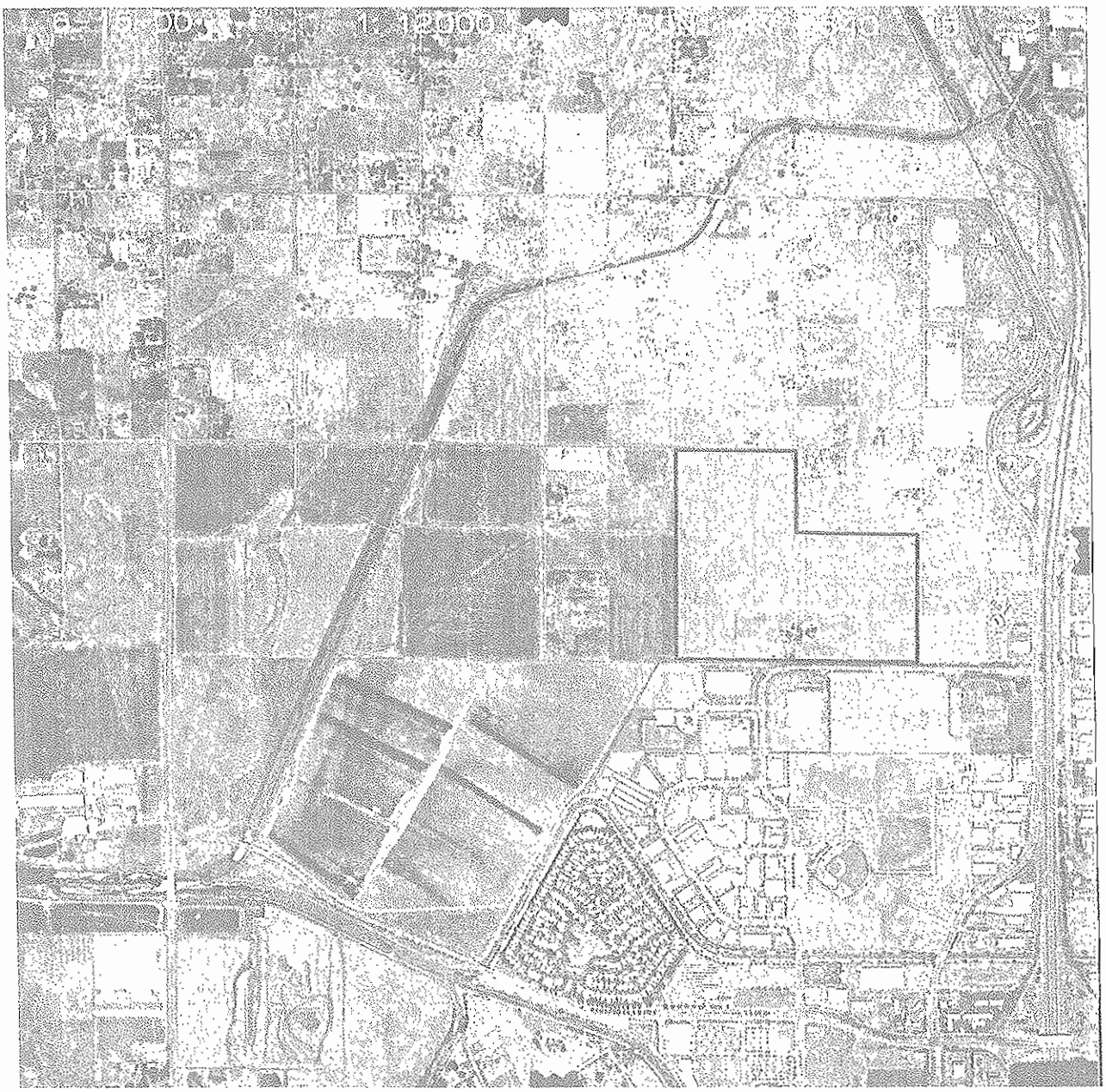
Photograph 3. October 2, 1975 (Pacific Aerial Surveys, Photo AV 1215 02 07)

Photograph 4. May 3, 1980 (Pacific Aerial Surveys, Photo CIR SON 18 27)

Photograph 5. April 19, 1986 (Pacific Aerial Surveys, Photo AV 2860 03 16)



Photograph 6. August 9, 1995 (Pacific Aerial Surveys, Photo AV 4890 09 15)



Photograph 7. June 15, 2000 (Pacific Aerial Surveys, Photo AV 6540 15 21)

ATTACHMENT 4F.

Northwest Specific Plan Area, Redwood Equities Investments Property, Rohnert Park, California Tiger Salamander 2003/2004 Survey Report. Prepared by H.T. Harvey & Associates. May 18, 2004.

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
CALIFORNIA TIGER SALAMANDER
2003/2004 SURVEY REPORT

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

NORTHWEST SPECIFIC PLAN AREA
REDWOOD EQUITIES INVESTMENTS PROPERTY
ROHNERT PARK
CALIFORNIA TIGER SALAMANDER
2003/2004 SURVEY REPORT

Prepared by

H. T. HARVEY & ASSOCIATES

Scott Terrill, Ph.D., Principle
Julie Klingmann, M.S., Project Manager
Jeffery A. Wilkinson, Ph.D., Staff Herpetologist

Prepared for:

Kenneth R. Blackman
Blackman Consulting
1224 St. Helena Avenue
Santa Rosa, CA 95404

18 May 2004

Project 2041-01

TABLE OF CONTENTS

FIGURES:

APPENDICES:

INTRODUCTION

The project site is within the Northwest Specific Plan Area in the City of Rohnert Park, California. This property is located west of Highway 101 bordered by Wilfred Avenue to the north, Business Park Drive to the south, Langer Avenue to the west and Dowdell Avenue to the east, within the City of Rohnert Park, County of Sonoma (Figure 1). The site is bisected by Labath Avenue, with a larger section west of Labath Avenue and a smaller section east of Labath Avenue. Photographs of the site are in Appendix A.

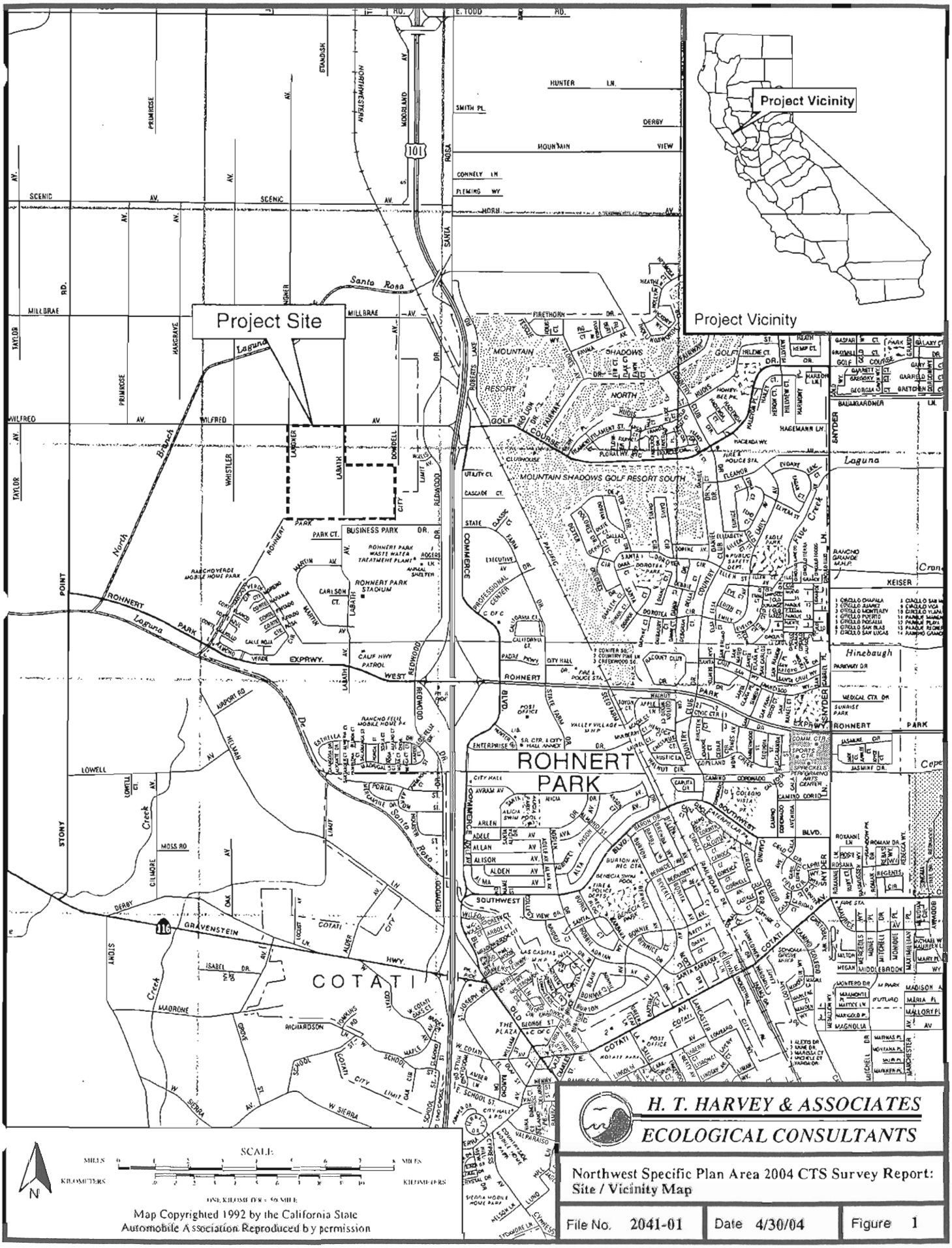
The site consists of relatively flat ground reported to have been disked annually for over 40 years. At present, an area of potential ponding exists on the southwestern part of the larger section, with swales extending from this pond to the east and northeast across this section. It is likely that this ponding is the result of winter and spring rains and is typically dry by summer. In addition, this seasonally ponded area has been disked annually along with the remainder of the site.

The site is bordered to the east and south by development. There is a drainage channel between the site and Business Park Drive to the south. To the north and west, the site is bordered by open space with a low concentration of housing. Some portions of this open space appear to be used for agriculture while other portions are grassland for cattle. In particular, parcels immediately bordering to the north and east, and to the west of the northwestern portion of the site appear to be potential aestivation habitat for California tiger salamanders, if the species is present in the area.

RESULTS FROM PREVIOUS SURVEYS

During a Site Assessment on 11 October 2001, H. T. Harvey & Associates determined that the ponded area and swales may provide breeding habitat for California tiger salamanders *(Ambystoma californiense)* because of temporary ponding during winter and spring. However, due to the extensive disking, the site lacked aestivation habitat for adult salamanders (ground squirrel and/or gopher burrows, and cracks in the ground). The site assessment recommended that the ponded area on site be inspected during the winter and/or spring to determine whether or not it is used for breeding by California tiger salamanders. However, the property owner requested more complete protocol-level surveys, including both winter aestivation and spring breeding surveys.

Five nocturnal surveys were conducted on 13 December 2001, 7 and 16 February, and 5 and 22 March 2002. These surveys were conducted according to recommendations issued by the California Department of Fish and Game (1997). These surveys consisted of walking the entire site, but concentrating searches on ponded areas located on the western portion of the site and the immediately associated upland habitat. The surveys involved looking along the ground, under debris, and into cracks and rodent burrows. A hand-held flashlight and headlamp were used during the surveys.



H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area 2004 CTS Survey Report:
Site / Vicinity Map

File No. 2041-01	Date 4/30/04	Figure 1

Two California Department of Fish and Game protocol-level aquatic larval surveys were conducted on 20, and 25 April 2002. These surveys consisted of sampling the ponded areas using a dip net and then, where appropriate, using a two-pole seine.

This survey effort would have been the first of two annually conducted surveys. No California tiger salamanders were observed during any of the above surveys. However, tadpoles of the Pacific treefrog (*Hyla regilla*) and an unidentified species of tadpole shrimp were observed in the ponded areas on the western portion of the site (H. T. Harvey & Associates 2002).

On 22 July 2002, the U.S. Fish and Wildlife Service (USFWS) listed the Sonoma County population of the California tiger salamander as an endangered species on an emergency basis.. Following this listing, the USFWS prepared a new survey protocol that would supersede survey protocols used for this species prior to listing. This protocol, the *Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma County Distinct Population Segment of the California Tiger Salamander,* was issued in draft form on 8 November 2002. The USFWS directed all survey efforts within the listed California tiger salamander population area to follow this draft protocol.

In order to determine presence or absence of California tiger salamanders on the site in accordance with the then new USFWS protocol, a second year of the more intensive pitfall trap array surveys was initiated in November of 2002 (H. T. Harvey & Associates 2003a). No California tiger salamanders were observed during any of these surveys. No larvae or egg masses were detected in any ponded area whether in the onsite ponded area or in the ditches surrounding the site. On 7 April 2003, during a final inspection of the traps after the protocol period, a healthy, adult, female California tiger salamander was found in a trap midway along the northern edge of the smaller section (H. T. Harvey & Associates 2003a).

The trapping of one individual of the California tiger salamander very late in the season suggests an anomaly and could represent a late-foraging remnant individual of an earlier population, or the possibility that a third party placed the California tiger salamander in the trap as discussed in H. T. Harvey & Associates reports (H. T. Harvey & Associates 2003a, 2003b.). Due to the anomaly of the observation of this single, late-season, California tiger salamander, isolated from breeding populations, a second year of pitfall trap array surveys was requested by the property owner. The goal of this survey was to ascertain if the observation represented an anomaly or if the observation of more individuals would suggest that a population of California tiger salamanders occurs at or near this site.

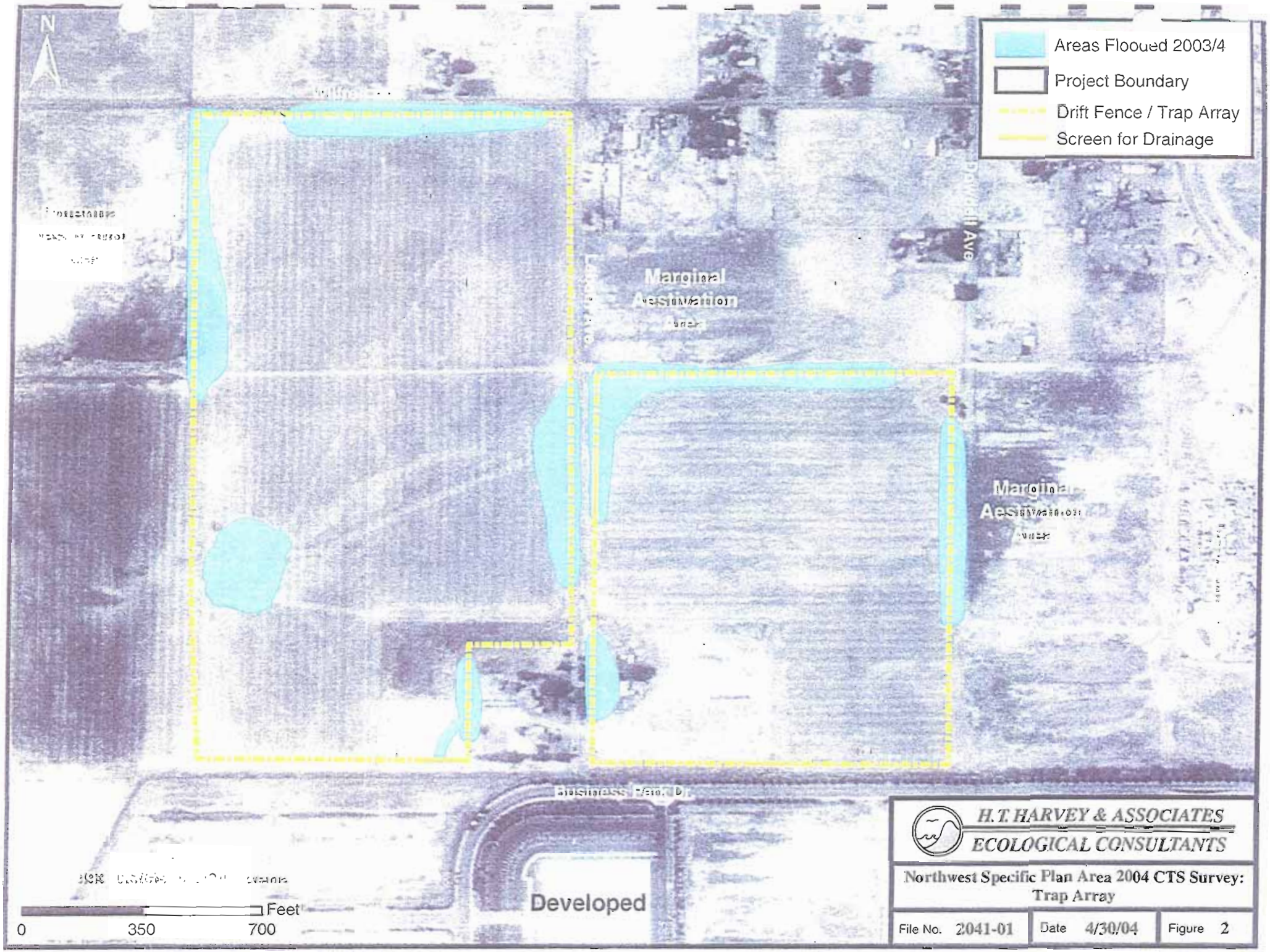
METHODS

Surveys were conducted during the 2003/2004 California tiger salamander season in accordance with the updated survey protocol (*Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the Californian Tiger Salamander*, issued jointly by the USFWS and the California Department of Fish and Game on 22 October, 2003). As described in the protocol, a Trapping Proposal was submitted to the USFWS 6 October 2003 (H. T. Harvey & Associates 2003c). Trapping in a year subsequent to the discovery of an individual in a trap was approved by Dan Buford of the USFWS prior to the initiation of the trapping season. A drift fence trap array was constructed around the entire property (Figure 2). The drift fence consisted of 2-foot wide silt fence buried at least 6 inches in the soil and anchored with staples attached to wooden stakes. The fence was installed in order to completely surround both the larger section and the smaller section of the property, but did not include Labath Avenue and the residence on the southeastern corner of the western section (Figure 2).

Gaps in the drift fence, approximately every 20 feet, contained buried pit-fall traps totaling 300 traps. Each pitfall trap consisted of a 5-gallon plastic bucket that was buried face up so the upper lip of the trap would be an inch or two above the surface of the soil and would be in contact with each side of the adjacent drift fence. Each bucket had several 1/4-inch drainage holes drilled in the bottom, and was installed so that there was a slight rise to the outer lip of the bucket. This configuration normally prevents water from surrounding runoff from flowing into the buckets. All buckets had covers over them to protect captured salamanders from the elements. Each cover was composed of the lid of the bucket with two 10-inch long 2 by 4 boards attached by screws approximately four inches from the edge of the lid to elevate the lid four inches above the ground. Two pieces of aluminum flashing, 4 inches by 4 inches, were attached by a screw to the side of the stakes adjacent to the bucket so that they would extend inward on each side of the bucket to the 2 x 4 boards when the lid is elevated over the bucket. This arrangement eliminates any gap between the stake and the bucket that a salamander might use to enter the site without falling into the bucket.

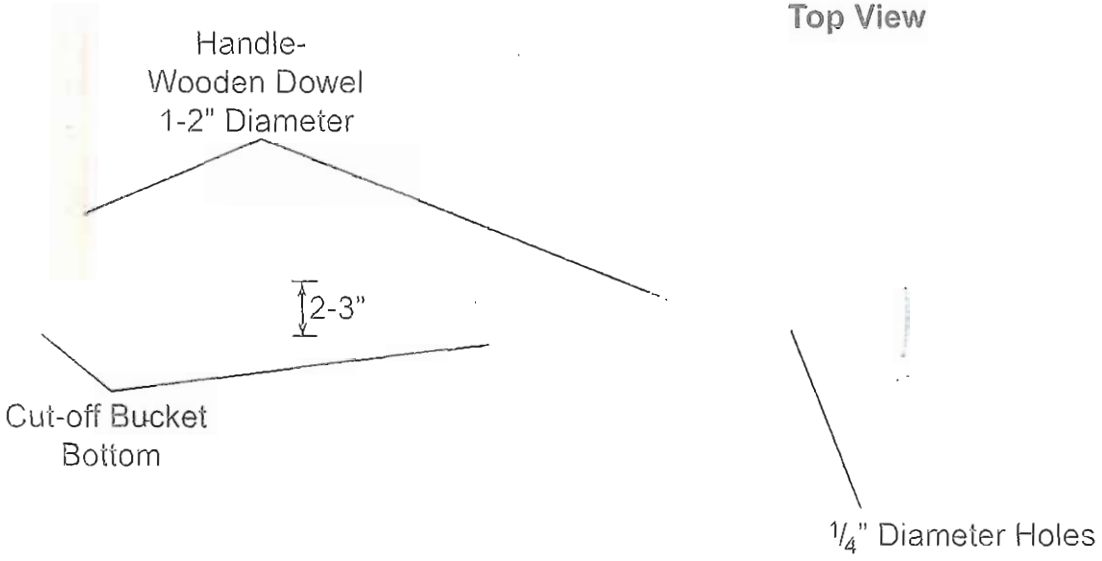
Each bucket also contained a sponge, moistened regularly during trapping operations, that was pre-cleaned by soaking overnight and thoroughly washed in clean water before use. In addition, each bucket contained a "ladder" of jute twine connected to the cover that trails to the bottom of the bucket to provide for escape by rodents that may enter the traps.

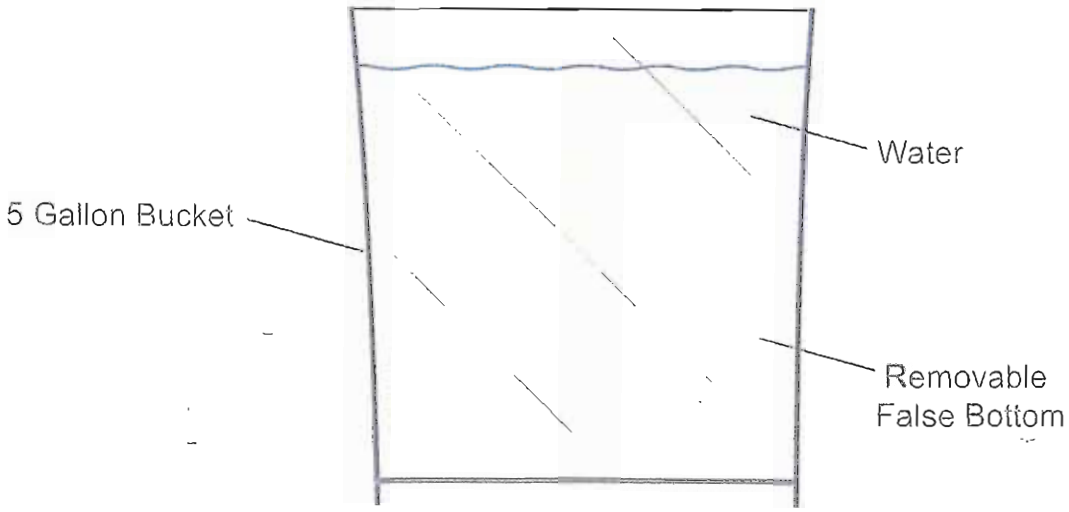
Most of the buckets on this site fill with water from the highly saturated soil in this area during the rainy season so there was some potential for an animal to escape detection using the standard method of inserting ones hand to feel for a salamander submerged in the usually opaque water. To ensure detection of any California tiger salamander in a trap, a false bottom that fit snuggly against the bucket wall was placed in the bucket. This false bottom was constructed by cutting away the bottom two to three inches of a 5-gallon plastic bucket, attaching a wooden dowel as a handle to the center and drilling several 1/4-inch drainage holes into the bottom (Figure 3).


N
Areas Flooded 2003/4
Project Boundary
Drift Fence / Trap Array
Screen for Drainage
Marginal
Developed
Feet
0
350
700
H.T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS
Northwest Specific Plan Area 2004 CTS Survey:
Trap Array
File No. 2041-01
Date 4/30/04
Figure 2

Side View

Top View





Side View Installed

H. T. HARVEY & ASSOCIATES
ECOLOGICAL CONSULTANTS

Northwest Specific Plan Area 2004 CTS Survey Report: Removable False Bottom in Trap

File No. 2041-04	Date 4/30/04	Figure 3

When the bucket filled with water and it became difficult to see to the bottom of the bucket, this false bottom was pulled out, acting like a strainer, and inspected. This method insured that no salamander escaped detection.

When not in use, the traps were securely closed by rotating the flashing up, turning the lid over, and sealing it to the lip of the bucket. On the day of an expected rain event the bucket lids were removed, the flashing was rotated down and inward, and the lids were turned over and elevated above each bucket. The trap array was inspected for salamanders each morning during a rain event, to a minimum of 24 hours after the end of the rain event, by a permitted surveyor, at which time the bucket lids were placed onto the traps as described above until the next rain event. The trap line was run during rain events from the date of approval through March 15. Rain events, as defined by the USFWS, are any rain during the day or a prediction of 70% chance of rain at 2 PM by the National Weather Service.

During intense rain events early in the trapping season, several areas on site were flooded to the extent that many of the buckets were completely inundated. These areas were the northern edge, northwestern corner, the southeastern corner, and the eastern edge of the larger section, the northwestern corner, western edge, eastern edge, and northern edge of the smaller section (Figure 2). Due to complete inundation of several buckets in these areas, screens were installed around the outside of the inundated buckets and attached to the adjacent stakes so that salamanders could not swim across the top of the submerged, open buckets onto the site.

The traps were inspected 77 times on the following dates: 8-10, 13-16, 29-30 November, 1-8, 10-15, 22-31 December 2003, 1-11, 14-16, 27-29 January, 1-9, 13-28 February, 1, 2, and 15 March 2004.

The ponded areas on site and ditches surrounding the site were inspected for larvae on each site visit and on 3 March and 22 April 2004. Subsequently, all water on the site had dried.

RESULTS AND DISCUSSION

No California tiger salamanders were observed during any of the above surveys. Louisiana red-swamp crayfish (*Procambarus clarkii*), ornate shrews (*Sorex ornatus*), California voles (*Microtus californicus*), western harvest mice (*Reithrodontomys megalotis*), California red-sided garter snakes (*Thamnophis sirtalis infernalis*), southern alligator lizards (*Elgeria multicarinata*), western fence lizards (*Sceloporus occidentalis*), California slender salamanders (*Batrachoceps attenuatus*) and tadpoles and adults of the Pacific treefrog were found in the traps. Trapping surveys were completed 15 March 2004 with a final inspection of the traps to insure that no vertebrate was present in a trap before the trap array was dismantled and removed from the site.

No larvae or egg masses were detected in any ponded area whether in the onsite ponded area or in the ditches surrounding the site. During the 3 March 2004 survey, these ponded areas included the ditch along the south side of Wilfred Avenue, the ditches on either side of Labath Avenue, ditches along the northern and eastern fringes of the smaller section, and ditches along the western fringe and southeast corner of the larger section. During the 22 April 2004 survey, the water had receded to just an area under the culvert between the two sections at Labath Avenue. Animals detected during the larval surveys included three-spine sticklebacks (*Gasterosteus aculeatus*), mosquitofish (*Gambusia* sp.), crayfish, and various aquatic insects.

California tiger salamanders were not detected on the site during the 2003/2004 survey. This result, in conjunction with the results of previous surveys in 2001/2002 and 2002/2003, indicates that a population of California tiger salamanders is not present at the site. Lack of breeding in any of the standing water on or adjacent to the project site is evident with three years of negative egg and larval surveys. The circumstances under which the single California tiger salamander was detected in the 2002/2003 survey were considered unusual and it does not indicate the presence of a population actively utilizing the site for breeding or aestivating.

REFERENCES CITED

California Department of Fish and Game. 1997. Survey protocol for the California tiger salamander (*Ambystoma californiense*). California Department of Fish and Game, Inland Fisheries- Information Leaflet No. 44. 1-7.

H. T. Harvey & Associates. 2002. Northwest Specific Plan Rohnert Park California Tiger Salamander Surveys.

H. T. Harvey & Associates. 2003a. Northwest Specific Plan Area Redwood Equities Investments Property Rohnert Park California Tiger Salamander 2003/2004 Survey Report.

H. T. Harvey & Associates. 2003b. Northwest Specific Plan Area Redwood Equities Investments Property Rohnert Park Supplemental Information On Ponding And Potential California Tiger Salamander Breeding.

H. T. Harvey & Associates. 2003c. Letter dated 6 October to Don Hankins, USFWS. Subject: Northwest Specific Plan Area Proposal for California Tiger Salamander Presence/Absence Site-specific Protocol Approval Request (PN-2041-01).

[USFWS] U.S. Fish and Wildlife Service. 2002. Draft Standard Protocols for Site Assessment and Field Surveys for Determining Presence or Absence of the Sonoma County Distinct Population Segment of the California Tiger Salamander. 8 November 2002.

[USFWS]. U.S. Fish and Wildlife Service. 2003. Interim Guidance on Site Assessment and Field Surveys for Determining Presence or a Negative Finding of the Californian Tiger Salamander, October 22, 2003.

APPENDIX A:
Photographs of the Site

PHOTOGRAPHS FROM THE CENTER OF THE SITE

Photo point at middle of both parcels, looking east.

Photo point at middle of both parcels, looking north.

Photo point at middle of both parcels, looking west.

Photo point at middle of both parcels, looking south.

PHOTOGRAPHS FROM THE CENTER OF THE LARGER (WESTERLY) AREA

Photo point at center of larger parcel, looking east.

Photo point at center of larger parcel, looking north.

Photo point at center of larger parcel, looking west.

Photo point at center of larger parcel, looking south.

PHOTOGRAPHS FROM THE CENTER OF THE SMALLER (EASTERLY) AREA

Photo point at center of smaller parcel, looking east.

Photo point at center of smaller parcel, looking north.

Photo point at center of smaller parcel, looking west.

Photo point at center of smaller parcel, looking south.

ATTACHMENT 4G.

Formal Consultation at the Proposed Redwood Equities Northwest Specific Plan site in Rohnert Park, Sonoma County, California U.S. Fish and Wildlife Service. August 5, 2005.

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
1-1-05-F-0211

AUG 0 5 2005

Ms. Jane M. Hicks
Regulatory Branch Chief, North Section
U.S. Army Corps of Engineers
San Francisco District
333 Market Street
San Francisco, California 94105-2197

Subject: Formal Consultation on the Proposed Redwood Equities Northwest Specific Plan site in Rohnert Park, Sonoma County, California

Dear Ms. Hicks:

This is in response to your January 28, 2005, request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Redwood Equities Northwest Specific Plan site in Rohnert Park, Sonoma County, California. Your request for formal consultation was received in our office on January 31, 2005. This document represents the Service's biological opinion on the effects of the action on the threatened California tiger salamander (*Ambystoma californiense*) (tiger salamander), the endangered plant species Sebastopol meadowfoam (*Limnanthes vinculans)*, Sonoma sunshine (*Blennosperma bakeri*) and Burke's goldfield (*Lasthenia burkei*) (Plants), and conference opinion on the effects of the action on the tiger salamander's proposed critical habitat, in accordance with section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 *et seq.*) (Act). Critical habitat has not been designated for the Plants in Sonoma County; therefore none will be destroyed or adversely modified by the proposed project.

The following sources of information were used to develop this biological opinion:

(1) *Biological Resource Assessment for the 80 Acre Rohnert Park Northwest Specific Plan Area* dated December, 2004; (2) Various emails from Robert Uram and the Service; and (3) other information available to the Service.

TAKE PRIDE IN AMERICA

CONSULTATION HISTORY

January 31, 2005: The Service received the U.S. Army Corps of Engineers' (Corps) letter dated January 28, 2005, requesting initiation of formal consultation for the proposed Redwood Equities Northwest Specific plan.

BIOLOGICAL OPINION

Description of Proposed Action

Redwood Equities, LP (Project Proponent) is proposing to develop an approximately 90-acre parcel (Project Site) bounded roughly by Langer Avenue on the west, Wilfred Avenue on the north, Dowdell Avenue on the east, and Business Park Drive on the south in the City of Rohnert Park in Sonoma County, California. Labath Avenue runs north-south through the middle of the site. Based on historical aerial photographs, the site has been used for intensive agriculture since at least 1960. Two small lots located at the south end of Labath Avenue have been graded and used for residential and other activities. A residence and other structures were recently removed from the southeastern portion of the Site. Areas to the south and east of the project site have been and are being developed as commercial and business parks.

The Project Proponent proposes to construct commercial, residential and light industrial uses on the project site. This includes approximately 40 acres of commercial use located on the eastern portion of the Site and high density residential uses along the west boundary of the project site. The remaining area being land on either side of Labath Avenue as it traverses the project site, is planned for either light industrial or residential use on the west side of Labath Avenue, and either light industrial or commercial on the east side of Labath Avenue. The project also contains a 2-acre park site at the southwest corner of the Wilfred/Langer Avenue intersection. The mix and location of planned development is subject to change.

To serve new development on the site, the Project Proponent will improve surface circulation systems through and around the project site. Dowdell Avenue along the east edge and Langer Avenue on the west edge will be improved to two lane elevated curb-and-gutter type connector streets. Labath Avenue through the center of the Site and Wilfred Avenue along the north edge will be widened to a four lane arterial and a four to six lane major arterial configuration, respectively.

Proposed Conservation Measures

Wetland Mitigation and Listed Plants. The Project Proponent proposes to compensate for impacts to jurisdictional wetland areas through purchase of credits at an approved wetland mitigation bank that contains one or more of the listed plants. The Project Proponent will purchase sufficient credits within the Bank to mitigate for impacts to seasonal wetlands at a 1:1

ratio, for a total of 1.92 acres of seasonal wetland mitigation. The credits will be provided to the Corps before work is commenced in waters of the United States.

Tiger Salamander Compensation. Redwood Equities proposes to offset effects to tiger salamander habitat through the preservation of 46.185 acres of potential tiger salamander habitat lands. Alternatively, the Project Proponent may preserve potential tiger salamander habitat in such other areas as previously approved by the Service and are deemed appropriate by the Service to serve as compensation for both tiger salamanders and listed plants. The Project Proponent will establish an endowment to provide for long term management of the preserved lands as tiger salamander habitat in perpetuity, pursuant to a long term management plan prepared by them and submitted to the Service for review and approval. Funding for monitoring of the habitat for the tiger salamander will be included in the long term management plan.

The Project Proponent, at its discretion, may either purchase fee title to such 46.185 acres of tiger salamander habitat and dedicating a perpetual conservation easements over those lands, or may purchase credits at a Service-approved tiger salamander conservation bank equal to 46.185 acres of tiger salamander habitat, or may place or cause to be placed a conservation easement assuring the perpetual conservation of 46.185 acres. Redwood Equities will identify tiger salamander habitat to be purchased at least 60 days in advance of work commenced on waters of the United States and the will provide the Service with proof and purchase of tiger salamander habitat before work is commenced in waters of the United States and will record a conservation easement and provide the endowment before the issuance of the first building permit, which will be reviewed and approved by the Service.

Action Area

The action area for the proposed Redwood Equities Northwest Specific Plan includes the 90-acre project development site and another Service-approved tiger salamander habitat land.

Status of the Species/Environmental Baseline

Tiger Salamander

The California tiger salamander was listed as threatened on August 4, 2004 (Service 2004a). This listing changed the status of the Santa Barbara and Sonoma county populations from endangered to threatened.

The tiger salamander is a large, stocky, terrestrial salamander with a broad, rounded snout. Adults may reach a total length of 8.2 inches (Petranka 1998). Tiger salamanders exhibit sexual dimorphism; males tend to be larger than females. The coloration of the tiger salamander is white or yellowish markings against black. As adults, California tiger salamanders tend to have the creamy yellow to white spotting on the sides with much less on the dorsal surface of the animal, whereas other tiger salamander species have brighter yellow spotting that is heaviest on the top of the animals.

Historically, the tiger salamander inhabited low elevation grassland and oak savanna plant communities of the Central Valley, and adjacent foothills, and the inner coast ranges in California (Jennings and Hayes 1994; Storer 1925; Shaffer *et al.* 1993). The species occurs from near sea level up to approximately 3,900 feet in the coast ranges and up to about 1600 feet in the Sierra Nevada foothills (Shaffer et al. 2004). Along the coast ranges, the species occurred from the Santa Rosa area of Sonoma County south to the vicinity of Buellton in Santa Barbara County. In the Central Valley and surrounding foothills, the species occurred from northern Yolo County southward to northwestern Kern County and northern Tulare County.

The tiger salamander has an obligate biphasic life cycle (Shaffer *et al.* 2004). Although the larvae salamanders develop in the vernal pools and ponds in which they were born, they are otherwise terrestrial salamanders that spend most of their postmetamorphic lives in widely dispersed underground retreats (Shaffer *et al.* 2004; Trenham *et al.* 2001). Subadult and adult tiger salamanders spend the dry summer and fall months of the year in the burrows of small mammals, such as California ground squirrels (*Spermophilus beecheyi*) and Botta's pocket gopher (*Thomomys bottae*) (Storer 1925; Loredo and Van Vuren 1996; Petranka 1998; Trenham 1998a). Camel crickets and other invertebrates within these burrows likely are prey for tiger salamanders, as well as protection from the sun and wind associated with the dry California climate that can cause desiccation (drying out) of amphibian skin. Although tiger salamanders are members of a family of "burrowing" salamanders, tiger salamanders are not known to create their own burrows in the wild, likely due to the hardness of soils in the California ecosystems in which they are found. Because they live underground in the burrows of mammals, they are rarely encountered by humans even where they are abundant. The burrows may be active or inactive, but because they collapse within approximately 18 months if not maintained, an active population of burrowing mammals is necessary to sustain sufficient underground refugia for the species (Loredo *et al.* 1996). Tiger salamanders also may utilize leaf litter or desiccation cracks in the soil.

Although the upland burrows inhabited by tiger salamanders have often been referred to as "aestivation" sites, which implies a state of inactivity, most evidence suggests that tiger salamanders remain active in their underground dwellings. A recent study has found that tiger salamanders move, feed, and remain active in their burrows (Van Hattem 2004). Because tiger salamanders arrive at breeding ponds in good condition and are heavier when entering a pond than when leaving, researchers have long inferred that the tiger salamanders are feeding while underground. Recent direct observations have confirmed this (Trenham 2001; van Hattem 2004). Thus, upland habitat is a more accurate description of the terrestrial areas used by tiger salamanders.

Once fall or winter rains begin, the salamanders emerge from the upland sites on rainy nights to feed and to migrate to the breeding ponds (Stebbins 1985, 1989; Shaffer *et al.* 1993). Adult salamanders mate in the breeding ponds, after which the females lay their eggs in the water (Twitty 1941; Shaffer *et al.* 1993; Petranka 1998). Historically, the tiger salamander utilized vernal pools, but the animals also currently breed in livestock stockponds. Females attach their

eggs singly, or in rare circumstances, in groups of two to four, to twigs, grass stems, vegetation, or debris (Storer 1925; Twitty 1941). In ponds with no or limited vegetation, they may be attached to objects, such as rocks and boards on the bottom (Jennings and Hayes 1994). After breeding, adults leave the pool and return to the small mammal burrows (Loredo *et al.* 1996; Trenham 1998a), although they may continue to come out nightly for approximately the next two weeks to feed (Shaffer *et al.* 1993). In drought years, the seasonal pools may not form and the adults can not breed (Barry and Shaffer 1994).

Tiger salamander eggs hatch in ten to 14 days with newly hatched salamanders (larvae) ranging from 0.45 to 0.56 inch in total length (Petranka 1998). The larvae are aquatic. They are yellowish gray in color and have broad fat heads, possess large, feathery external gills, and broad dorsal fins that extend well onto their back. The larvae feed on zooplankton, small crustaceans, and aquatic insects for about six weeks after hatching, after which they switch to larger prey (J. Anderson 1968). Larger larvae have been known to consume smaller tadpoles of Pacific treefrogs (*Pseudacris regilla*) and California red-legged frogs (J. Anderson 1968; P. Anderson 1968). The larvae are among the top aquatic predators in the seasonal pool ecosystems. They often rest on the bottom in shallow water, but also may be found at different layers in the water column in deeper water. The young salamanders are wary and when approached by potential predators, will dart into vegetation on the bottom of the pool (Storer 1925).

The larval stage of the tiger salamander usually last three to six months, as most seasonal ponds and pools dry up during the summer (Petranka 1998). Amphibian larvae must grow to a critical minimum body size before they can metamorphose (change into a different physical form) to the terrestrial stage (Wilbur and Collins 1973). Individuals collected near Stockton in the Central Valley during April varied from 1.88 to 2.32 inches in length (Storer 1925). Feaver (1971) found that larvae metamorphosed and left the breeding pools 60 to 94 days after the eggs had been laid, with larvae developing faster in smaller, more rapidly drying pools. The longer the ponding duration, the larger the larvae and metamorphosed juveniles are able to grow, and the more likely they are to survive and reproduce (Pechmann *et al.* 1989; Semlitsch *et al.* 1988; Morey 1998; Trenham 1998b). The larvae will perish if a site dries before metamorphosis is complete (P. Anderson 1968; Feaver 1971). Pechmann *et al.* (1988) found a strong positive correlation with ponding duration and total number of metamorphosing juveniles in five salamander species. In Madera County, Feaver (1971) found that only 11 of 30 pools sampled supported larval California tiger salamanders, and 5 of these dried before metamorphosis could occur. Therefore, out of the original 30 pools, only six (20 percent) provided suitable conditions for successful reproduction that year. Size at metamorphosis is positively correlated with stored body fat and survival of juvenile amphibians, and negatively correlated with age at first reproduction (Semlitsch *et al.* 1988; Scott 1994; Morey 1998). In the late spring or early summer, before the ponds dry completely, metamorphosed juveniles leave them and enter upland habitat. This emigration occurs in both wet and dry conditions (Loredo and Van Vuren 1996; Loredo *et al.* 1996). Unlike during their winter migration, the wet conditions that California tiger salamanders prefer do not generally occur during the months when their breeding ponds begin to dry. As a result, juveniles may be forced to leave their ponds on rainless nights. Under these conditions,

they may move only short distances to find temporary upland sites for the dry summer months, waiting until the next winter's rains to move further into suitable upland refugia. Once juvenile tiger salamanders leave their birth ponds for upland refugia, they typically do not return to ponds to breed for an average of 4 to 5 years. However, they remain active in the uplands, coming to the surface during rainfall events to disperse or forage (Trenham and Shaffer, unpublished manuscript).

Lifetime reproductive success for California and other tiger salamanders is low. Trenham et al.(2000) found the average female bred 1.4 times and produced 8.5 young that survived to metamorphosis per reproductive effort. This resulted in roughly 11 metamorphic offspring over the lifetime of a female. Two reasons for the low reproductive success are the preliminary data suggest that most individuals of the tiger salamanders require two years to become sexually mature, but some individuals may be slower to mature (Shaffer *et al.* 1993); and some animals do not breed until they are four to six years old. While individuals may survive for more than ten years, many breed only once, and in some populations, less than 5 percent of marked juveniles survive to become breeding adults (Trenham 1998b). With such low recruitment, isolated populations are susceptible to unusual, randomly occurring natural events as well as from human caused factors that reduce breeding success and individual survival. Factors that repeatedly lower breeding success in isolated pools can quickly extirpate a population.

Dispersal and migration movements made by tiger salamanders can be grouped into two main categories: (1) breeding migration; and (2) interpond dispersal. Breeding migration is the movement of salamanders to and from a pond from the surrounding upland habitat. After metamorphosis, juveniles move away from breeding ponds into the surrounding uplands, where they live continuously for several years. At a study in Monterey County, it was found that upon reaching sexual maturity, most individuals returned to their natal/ birth pond to breed, while 20 percent dispersed to other ponds (Trenham *et al.* 2001). Following breeding, adult tiger salamanders return to upland habitats, where they may live for one or more years before breeding again (Trenham *et al.* 2000).

Tiger salamanders are known to travel large distances from breeding ponds into upland habitats. Maximum distances moved are generally difficult to establish for any species, but tiger salamanders in Santa Barbara County have been recorded to disperse 1.3 miles from breeding ponds (Sweet 1998). Tiger salamanders are known to travel between breeding ponds; one study found that 20 to 25 percent of the individuals captured at one pond were recaptured later at ponds approximately 1,900 and 2,200 feet away (Trenham *et al.* 2001). In addition to traveling long distances during migration to or dispersal from ponds, tiger salamanders may reside in burrows that are far from ponds.

Although the observations above show that tiger salamanders can travel far, typically they stay closer to breeding ponds. Evidence suggests that juvenile tiger salamanders disperse further into upland habitats than adult tiger salamanders. A trapping study conducted in Solano County during winter of 2002/2003 found that juveniles used upland habitats further from breeding

ponds than adults (Trenham and Shaffer, unpublished manuscript). More juvenile salamanders were captured at distances of 328, 656, and 1,312 feet from a breeding pond than at 164 feet. Large numbers, approximately 20 percent of total captures, were found 1,312 feet from a breeding pond. Fitting a distribution curve to the data revealed that 95 percent of juvenile salamanders could be found within 2,099 feet of the pond, with the remaining 5 percent being found at even greater distances. Preliminary results from the 2003-04 trapping efforts detected juvenile tiger salamanders at even further distances, with a large proportion of the total salamanders caught at 2,297 feet from the breeding pond (Trenham *et al.*, unpublished data. During post-breeding emigration, radio-equipped adult tiger salamanders were tracked to burrows 62 to 813 feet from their breeding ponds (Trenham 2001). These reduced movements may be due to adult California tiger salamanders having depleted physical reserves post-breeding, or also due to the drier weather conditions that can occur during the period when adults leave the ponds.

In addition, rather than staying in a single burrow, most individuals used several successive burrows at increasing distances from the pond. Although the studies discussed above provide an approximation of the distances that tiger salamanders regularly move from their breeding ponds, upland habitat features will drive the details of movements in a particular landscape. Trenham (2001) found that radio-tracked adults favored grasslands with scattered large oaks, over more densely wooded areas. Based on radio-tracked adults, there is no indication that certain habitat types are favored as corridors for terrestrial movements (Trenham 2001). In addition, at two ponds completely encircled by drift fences and pitfall traps, captures of arriving adults and dispersing new metamorphs were distributed roughly evenly around the ponds. Thus, it appears that dispersal into the terrestrial habitat occurs randomly with respect to direction and habitat types.

Several species have either been documented to prey or likely prey upon the tiger salamanders including coyotes (*Canis latrans*), raccoons (*Procyon lotor*), opossums (*Didelphis virginiana*), egrets (*Egretta species*), great blue herons (*Ardea herodias*), crows (*Corvus brachyrhynchos*), ravens (*Corvus corax*), bullfrogs (*Rana catesbeiana*), mosquito fish (*Gambusia affinis*), and crayfish (*Procrambus* species).

The tiger salamanders are imperiled throughout its range by a variety of human activities (U.S. Fish and Wildlife Service 2004). Current factors associated with declining populations of the salamander include continued degradation and loss of habitat due to agriculture and urbanization, hybridization with non-native eastern tiger salamanders (*Ambystoma tigrinum*) (Fitzpatrick and Shaffer 2004; Riley *et al.* 2003), and introduced predators. Fragmentation of existing habitat and the continued colonization of existing habitat by non-native tiger salamanders (*Ambystoma tigrinum* and other species) may represent the most significant current threats to tiger salamanders, although populations are likely threatened by more than one factor. Isolation and fragmentation of habitats within many watersheds have precluded dispersal between sub-populations and jeopardized the viability of metapopulations (broadly defined as multiple subpopulations that occasionally exchange individuals through dispersal, and are capable of

colonizing or "rescuing" extinct habitat patches). Other threats are predation and competition from introduced exotic species; possible commercial overutilization; disease; various chemical contaminants; road-crossing mortality; and certain unrestrictive mosquito and rodent control operations. The various primary and secondary threats are not currently being offset by existing Federal, State, or local regulatory mechanisms. The tiger salamander also is vulnerable to chance environmental or demographic events, to which small populations are particularly vulnerable.

The Northwest Specific Plan site has been used for intensive agriculture for at least 47 years. The project site is mostly characterized by hay and ruderal grassland. The vast majority of the property is used for the productions of hay. Plants on the project site consist of non-native annual grasslands interspersed with several seasonal wetlands. Seasonal wetlands are embedded within the site and occur in swales and depressions. These depressions support some native vernal pool species. Approximately 1.92 acres of seasonal wetlands exist on the site. Surveys for the tiger salamander have been conducted on the Site for three seasons; one tiger salamander was found in a trap at the close of the 2002-2003 survey season. Although the wetlands were surveyed for tiger salamanders, they are not likely to provide suitable breeding habitat, mainly because they are too shallow and/or have a relatively short period of inundation. However, the project site contains suitable upland habitat and foraging habitat for tiger salamanders. This is because it contains non-native annual grasslands suitable for tiger salamanders and is about 0.55 miles (2904 feet) from a known tiger salamander occurrence northeast of the project site. Tiger salamanders inhabiting the area near this occurrence could disperse to the project site and use it for upland habitat.

California Tiger Salamander Proposed Critical Habitat in Sonoma County

Critical habitat for the California tiger salamander in Sonoma County was proposed on August 2, 2005, (U.S. Fish and Wildlife Service 2005). This proposed critical habitat encompasses approximately 74,223 acres in Sonoma County, California.

In determining which areas to designate as critical habitat, the Service considers those physical and biological features (primary constituent elements) that are essential to the conservation of the species, and that may require special management considerations and protection (50 CFR § 424.14). The Service lists the known primary constituent elements together with the proposed critical habitat description. Such physical and biological features include, but are not limited to, space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter; sites for breeding, reproduction, rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

The primary constituent elements for the tiger salamander include essential aquatic habitat, essential upland nonbreeding habitat with underground refugia, and dispersal habitat connecting occupied tiger salamander locations. The critical habitat that is proposed is designed to allow for

and increase in the size of the tiger salamander population in Sonoma County (U.S. Fish and Wildlife Service 2005).

Aquatic Habitat. The essential aquatic habitat described as the first PCE is essential for Sonoma population breeding and for providing space, food, and cover necessary to sustain early life history stages of larval and juvenile tiger salamanders. Breeding habitat consists of fresh water bodies, including natural and manmade ponds (e.g. stockponds), and vernal pools. To be considered essential, aquatic and breeding habitats must have the capability to hold water for a minimum of 12 weeks in the winter or spring in a year of average rainfall because this is the amount of time needed for larvae to grow into metamorphosed juveniles so they can become capable of surviving in upland habitats. During periods of drought or less-than-average rainfall, these sites may not hold water long enough for individuals to complete metamorphosis; however, these sites would still be considered essential because they constitute breeding habitat in years of average rainfall. Without its essential aquatic and breeding habitats, the Sonoma population would not survive, reproduce, and develop juveniles that could grow into adult individual salamanders that can complete their life cycles (U.S. Fish and Wildlife Service 2005).

Upland Habitat. Upland habitats containing underground refugia are essential for the survival of adult and juvenile salamanders that have recently undergone metamorphosis. Adult and juvenile tiger salamanders are primarily terrestrial. Adult tiger salamanders enter aquatic habitats only for relatively short periods of time to breed. For the majority of their life cycle, tiger salamanders depend for survival on upland habitats containing underground refugia in the form of small mammal burrows or other underground structures. Tiger salamanders cannot persist without upland underground refugia, which provide protection from the hot, dry weather typical of California in the nonbreeding season. Tiger salamanders also find food in these refugia and rely on them for protection from predators. The presence of small burrowing mammal populations is a key element for the survival of tiger salamanders as they construct burrows used by tiger salamanders. Without the continuing presence of small mammal burrows in upland habitats, tiger salamanders would not be able to survive (U.S. Fish and Wildlife Service 2005).

Dispersal habitat. Essential dispersal habitats are generally upland areas adjacent and accessible to aquatic habitats. Essential dispersal habitats provide connectivity among tiger salamander suitable aquatic and upland habitats. While tiger salamanders can bypass many obstacles, and do not require a particular type of habitat for dispersal, the habitats connecting essential aquatic and upland habitats need to be accessible (no physical or biological features that prevent access to adjacent areas) to function effectively. Agricultural lands such as row crops, orchards, vineyards, and pastures do not constitute barriers to the dispersal of tiger salamanders, however, a busy highway or interstate may constitute a barrier. The extent to which any feature is a barrier is a function of the specific geography of the area and its contribution to limiting salamander access to a greater or lesser extent. Dispersal habitats are essential for the conservation of the tiger salamander. Protecting the ability of tiger salamanders to move freely across the landscape in search of suitable aquatic and upland habitats is essential in maintaining gene flow and for recolonization of sites that may become temporarily extirpated. Lifetime

reproductive success for the tiger salamander and other tiger salamanders may be naturally low. Trenham *et al.* (2000) found the average female bred 1.4 times and produced 8.5 young that survived to metamorphosis per reproductive effort. This reproduction resulted in roughly 11 metamorphic offspring over the lifetime of a female. In part, this low reproductive success may be due to the extended time it takes for tiger salamanders to reach sexual maturity; most do not breed until 4 or 5 years of age. While individuals may survive for more than 10 years, it is possible that many breed only once. This presumed low breeding rate, combined with a hypothesized low survivorship of metamorphosed individuals indicates that reproductive output in most years may not be sufficient to maintain populations. Dispersal habitats help to preserve the population structure of the tiger salamander. The life history and ecology of the tiger salamander make it likely that this species has a metapopulation structure. A metapopulation is a set of breeding sites within an area, where typical migration from one local occurrence or breeding site to other areas containing suitable habitat is possible, but not routine. Movement between areas containing suitable upland and aquatic habitats (*i.e.*, dispersal) is restricted due to inhospitable conditions around and between areas of suitable habitats. Because many of the areas of suitable habitats may be small and support small numbers of salamanders, local extinction of these small units may be common. The persistence of a metapopulation depends on the combined dynamics of these local extinctions and the subsequent recolonization of these areas through dispersal (U. S. Fish and Wildlife Service 2005).

A local conservation strategy for the Sonoma County CTS was initiated due to concerns over how the listing of the CTS and its critical habitat designation may affect development and other local economic activities. Two teams were formed to develop and implement this strategy: the Santa Rosa Plain Conservation Strategy Team (Conservation Team) and the Implementation Committee. The Conservation Team includes representatives of the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency, the California Department of Fish and Game, County and Cities, the North Coast Regional Water Quality Control Board, local governmental agencies, the Laguna de Santa Rosa Foundation, the environmental community, and the private landowner community. The purpose of this team was to develop a Santa Rosa Plain Conservation Strategy (Conservation Strategy) for the Santa Rosa Plain that conserves and enhances enough habitat for the California tiger salamander in Sonoma County and listed plants to provide for long-term conservation, while considering the need for development pursuant to the general plans for the local jurisdictions. The Implementation Committee consists of representatives from the City of Santa Rosa, City of Cotati, City of Rohnert Park, County of Sonoma, the California Department of Fish and Game, and the U.S. Fish and Wildlife Service. The purpose of this team is to use the Conservation Strategy to develop an implementation approach that is compatible with local planning efforts.

The purpose of the Conservation Strategy is threefold: (1) To establish a long-term conservation program sufficient to mitigate potential adverse effects of future development on the Santa Rosa Plain, and to substantively contribute to the conservation of the listed species and their sensitive habitat; (2) to accomplish the preceding in a manner that protects stakeholders' land use interests;

and (3) to support issuance of an authorization for incidental take of CTS and provide coverage for listed plants that may occur in the course of carrying out project activities on the Plain.

The Conservation Strategy will: Be a coordinated mechanism for processing permits for projects that are in the potential range of listed species on the Plain; this process will provide consistency, timeliness, and certainty; Identify the basic biological requirements for the conservation of CTS and listed plants, geographic areas where preservation is recommended, criteria for selection of these conservation areas, and mitigation measures necessary to achieve the recommended conservation goals; Address the application of mitigation banks, the development of management plans for preserves, adaptive management, and ongoing monitoring needs. Further details on the Conservation Strategy can be found in the proposed critical habitat rule (U.S. Fish and Wildlife Service 2005).

The proposed Redwood Equities Northwest Specific Plan site is located in the critical habitat proposed by the Service (U.S. Fish and Wildlife Service 2005).

Burke's goldfields

Burke's goldfields were federally listed as endangered on December 2, 1991, (56 FR 61173). No critical habitat has been designated for this species. Burke's goldfields are an annual herb in the aster family (Asteraceae). Plants are typically less than 30 cm in height (Hickman 1993) and usually branched (California Native Plant Society (CNPS) 1977). Leaves are opposite, less than 5 cm in length, and pinnately lobed. Yellow, daisy-like inflorescences with separate involucre bracts (leaf-like structures beneath the flower head) appear from approximately April through June (Skinner and Pavlik 1994). Fruits are achenes (dry, one-seeded fruits) less than 1.5 mm in length. The fruits of Burke's goldfields can be distinguished from those of other goldfields by the presence of one long awn (bristle and numerous short scales) (Hickman 1993). Individual Burke's goldfields plants may exhibit some geographic variation in morphology (McCarten 1985 as cited in CH2M Hill 1995, Patterson *et al.* 1994). Patterson *et al.* (1994) report robust specimens from the southern Santa Rosa Plain near the Laguna de Santa Rosa and variation in the number of awns from a Lake County population. Burke's goldfields can be distinguished from smooth goldfields (*Lasthenia glaberrima*) because smooth goldfields have partly fused involucre bracts and a pappus (ring of scale-like or hair-like projections at the crown of an achene) of numerous narrowed scales. The linear leaves without lobes distinguish common goldfields (*Lasthenia californica*) from Burke's goldfields (Hickman 1993).

Burke's goldfields are endemic to the central California Coastal Range region and have been reported historically from Mendocino, Lake, and Sonoma counties (CNPS 1977, Patterson *et al.* 1994). The type locality of Burke's goldfields is the only known occurrence from Mendocino County and is possibly extirpated. Two California Natural Diversity Database (CNDDB) occurrences are recorded from Lake County, at Manning Flat and at a winery on Highway 29. Both Lake County occurrences are presumed extant. The remaining occurrences are from Sonoma County (CNDDB 1998). Within Sonoma County, one occurrence is known from north

of Healdsburg (Patterson *et al.* 1994). On the Santa Rosa Plain, Burke's goldfields are distributed primarily in the northwestern and central areas with two additional occurrences south of Highway 12 near the Laguna de Santa Rosa (CH2M Hill 1995). The core of the current range of Burke's goldfields is in the Santa Rosa Plain.

Burke's goldfields grow in vernal pools and swales below 500 meters (m) (Hickman 1993). At the Manning Flat occurrence in Lake County, Burke's goldfields are found in a series of claypan vernal pools on volcanic ash soils (56 FR 61173, CNDDB 1998). At this location, the species is associated with common goldfields and few-flowered navarretia (*Navarretia leucocephala pauciflora*) (CNDDB 1998). In Sonoma County, the vernal pools containing Burke's goldfields are on nearly level to slightly sloping loams, clay loams, and clays. A clay layer or hardpan approximately 0.6 to 0.9 m below the surface restricts downward movement of water (56 FR 61173). Huichica loam is the predominant soil series on which Burke's goldfields is found on the northern part of the Santa Rosa Plain (Patterson *et al.* 1994, CNDDB 1998). Huichica loam is a fine textured clay loam over buried dense clay and cemented layers (Patterson *et al.* 1994). More southerly Burke's goldfields sites likely occur on Wright loam or Clear Lake clay (Patterson *et al.* 1994, CNDDB 1998). Wright loam is a fine silty loam over buried dense clay and marine sediments. Clear Lake clay is hard dense clay from the surface to many feet thick (Patterson *et al.* 1994). Burke's goldfields sometimes occurs along with Sonoma sunshine and Sebastopol meadowfoam (*Limnanthes vinculans*). These three federally listed species are all associated with other plants that commonly grow in vernal pools on the Santa Rosa Plain, including Douglas' pogogyne (*Pogogyne douglasii spp. parviflora*), Lobb's aquatic buttercup (*Ranunculus lobbii*), smooth goldfields, California semaphore grass (*Pleuropogon californicus*), maroonspot downingia (*Downingia concolor*), and button-celery (*Eryngium sp.*) (CNDDB 1998).

The flowers of Burke's goldfields are self-incompatible (Ornduff 1966, Crawford and Ornduff 1989) and insect-pollinated. Seed banks are of particular importance to annual plant species which are subject to uncertain or variable environmental conditions (Cohen 1966, 1967; Parker *et al.* 1989; Templeton and Levin 1979). Burke's goldfields fit this criterion; it is an annual species living in California's highly variable Mediterranean climate.

No information exists with respect to the seed life of Burke's goldfields. Circumstantial evidence suggests that Burke's goldfields successfully germinated from seed in soil collected from a previously developed portion of the Westwind Business Park (Building F) when the soil was translocated and deposited in created seasonal wetlands (C. Wilcox, CDFG, 2000 *in litt.*). As annual species, it is expected that Burke's goldfields and Sonoma sunshine will respond to environmental stochastic events, such as changes in vegetative composition, climate, and disturbance, by partial germination of its seed bank. Baskin *et al.* (1998) indicate that species (annuals) adapted to "risky environments" produce persistent seed banks to offset years of low reproductive success and to ensure the species can persist at a site without immigration. These characteristics can be attributed to Burke's goldfields. Considering the adaptations of these plants to a variable Mediterranean climate it is likely the seed of Burke's goldfields can persist as dormant embryos for an undetermined number of years. Therefore, it is likely that populations of

these species may persist undetected for a period of years until conditions are favorable to allow germination. Although formal studies of seed viability have not been conducted for these species, it is reasonable to expect their seed banks may persist for extended periods without germination. Furthermore, it is not unlikely that the individual fruits of Burke's goldfields may be predisposed to variable germination requirements as a strategy for survival.

For species that develop long-lived seed banks, a census of plants growing above ground may not accurately reflect the total number of plants at the site (Rice 1989, Given 1994). Population sizes of California's vernal pool/swale annual plant species, including Burke's goldfields, may fluctuate substantially between very high numbers in some years to very small numbers, or even absence in other years because of varying environmental conditions. Therefore, total extirpation cannot be assumed when above-ground plants of these species are not observed at a site. Furthermore, declines in population size over a few years may not necessarily indicate that habitat is unsuitable (Given 1994), merely that environmental conditions within a vernal pool or swale have not favored seed germination.

Burke's goldfields is threatened with habitat loss, fragmentation, and degradation throughout all or part of its range by factors including urbanization, agricultural land use changes, alterations in hydrology, and erosion (CNPS 1977, 56 FR 61173, Patterson *et al.* 1994, CH2M Hill 1995, CNDDB 1998). The only known Mendocino County occurrence is presumably extirpated (CH2M Hill 1995). The Manning Flat occurrence, located on private land in Lake County, is the largest known occurrence of the species and is threatened by extensive gully erosion that is destroying the habitat (CH2M Hill 1995, CNDDB 1998). The second Lake County occurrence is on property owned by a winery. Recent reports suggest that some damage to this population has resulted from vineyard operations (R. Chan, University of California, Berkeley, 1998 *in litt.*). However, in the past the winery owners appeared willing to coordinate with the Service and the Corps to avoid and/or minimize further damage to the site (N. Haley, Corps, 1998 pers. comm.). On the Santa Rosa Plain, many Burke's goldfields locations have been extirpated due to urbanization and conversion of land to row crops. Formerly well-represented in the vicinity of Windsor, Burke's goldfields has now been nearly extirpated from the area (Patterson *et al.* 1994, CH2M Hill 1995).

Of the 48 known records of Burke's goldfields, 26 are presumed to remain extant, with a majority found on the Santa Rosa Plain. Four populations occur outside of the Santa Rosa Plain, of which only two populations, one in northern Healdsburg and one at the Ployes winery, are extant.

The project site is located within the range for the Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfields. The project site supports potential habitat for these three endangered plant species. U.S. Fish and Wildlife Service Protocol level surveys for listed wetland plant species have been conducted on the site for four seasons and have resulted in negative findings. Larry Stromberg performed these plant surveys in 2001 and 2002 and Northfork Associates performed surveys in 2003 and 2004. Although the project site has been surveyed in a manner

consistent with Service protocol and no listed plants have been found, the seasonal wetlands may still include seeds of listed plants and based on the Service's knowledge of the distribution of the listed plants, a negative survey for plants does not rule out the possibility that listed plants occur on site.

Sonoma sunshine

Sonoma sunshine was federally listed as endangered on December 2, 1991, (56 FR 61173). No critical habitat has been designated for this species. Sonoma sunshine is an annual plant in the aster family. Plants are less than 30 cm (11.8 in) tall with alternate, linear leaves (CNPS 1977, Hickman 1993). The lower leaves are entire, and the upper leaves have one to three lobes that are 1 to 3 cm (0.4 to 1.2 in) deep (Hickman 1993). The daisy-like flower heads of Sonoma sunshine are yellow. The ray flowers have dark red stigmas. The disk flowers have white stigmas and white pollen but are otherwise yellow. Achenes are 3 to 4 mm (0.1 to 0.15 in) long with small rounded or conic proturbences (papillate) and 4 to 6 strongly angled edges (CNPS 1997, Hickman 1993). Sonoma sunshine could be confused with common stickseed (*Blennosperma nanum*); however, Sonoma sunshine has longer and fewer lobes on the leaves and is more robust (CNPS 1977). The flowers of Sonoma sunshine are self-incompatible, meaning that they can set seed only when fertilized by pollen from a different plant.

Sonoma sunshine occurs only in Sonoma County. In the Cotati Valley, the species ranges from near the community of Fulton in the north to Scenic Avenue between Santa Rosa and Cotati in the south. Additionally, the species extends or extended from near Glen Ellen to near the junction of State Routes 116 and 121 in the Sonoma Valley. During 2001, two new natural populations were identified north and south of the City of Santa Rosa, increasing the number of previously identified CNDDB occurrences from 26 to 28. Of the 28 occurrences, 21 are presumed to be extant with a majority occurring on the Santa Rosa Plain and one occurring in Glen Ellen. In addition, Sonoma sunshine has been introduced to at least one site on Alton Lane during mitigation activities. Seven populations within or near the City of Santa Rosa have been extirpated.

Sonoma sunshine grows in vernal pools and wet grasslands below 100 m (330 ft) (Hickman 1993). In the Sonoma and Cotati valleys, Sonoma sunshine occurs in vernal pools on nearly level to slightly sloping loams, clay loams, and clays, as described for Burke's goldfields (56 FR 61173). The two concentrations of Sonoma sunshine on the Santa Rosa Plain occur on different soil types (Patterson *et al.* 1994). Sonoma sunshine likely grows on Huichica loam north of Highway 12 and on Wright loam and Clear Lake clay south of Highway 12 (Patterson *et al.* 1994, CNDDB 1998). These soil series are briefly described in the discussion of Burke's goldfields habitat above.

Sonoma sunshine is threatened with habitat loss, fragmentation, and degradation throughout all or part of its range by factors including urbanization, agricultural land use changes, and alterations in hydrology (Patterson *et al.* 1994, CH2M Hill 1995, CNDDB 1998). In the Sonoma Valley, two of five known occurrences have been extirpated. One was extirpated by habitat

destruction in 1986, and the area is now a vineyard. At the second site, most habitat was destroyed by grading for home sites in 1980; the remainder was converted to vineyard or overtaken by weeds (CNDDB 1998). Of the presumed extant Sonoma Valley occurrences, one locality has been largely developed. A small area was retained by CDFG when the development took place, but Sonoma sunshine has not been recorded from this area since the subdivision was developed (Service files). A second Sonoma Valley locale is currently pasture. A portion of the occurrence may have been disced, and the landowners of a second portion want to convert the locale to vineyard (C. Wilcox, 1998, pers. comm., Service files). The third Sonoma Valley occurrence is in Sonoma Valley Regional Park, which is not managed for conservation (CNDDB 1998). On the Santa Rosa Plain, one locale has probably been extirpated by completion of a subdivision and one locale by major land alterations on the locale (CNDDB 1998). Of the presumed extant locales, some support severely degraded habitat, are threatened by development, or have not supported confirmed populations of Sonoma sunshine in recent years (CH2M Hill 1995, CNDDB 1998).

The project site is located within the range for the Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfields. The project site supports potential habitat for these three endangered plant species. U.S. Fish and Wildlife Service Protocol level surveys for listed wetland plant species have been conducted on the site for four seasons and have resulted in negative findings. Larry Stromberg performed these plant surveys in 2001 and 2002 and Northfork Associates performed surveys in 2003 and 2004. Although the project site has been surveyed in a manner consistent with Service protocol and no listed plants have been found, the seasonal wetlands may still include seeds of listed plants and based on the Service's knowledge of the distribution of the listed plants, a negative survey for plants does not rule out the possibility that listed plants occur on site.

Sebastopol meadowfoam

Sebastopol meadowfoam is an annual herb with weak, somewhat fleshy, decumbent stems up to 30 centimeters (11.8 inches) long. The seedlings are unusual among *Limnanthes* species in that they have entire leaves. Leaves of mature plants are up to 10 centimeters (3.9 inches) long and have 3 to 5 leaflets that are narrow and unlobed with rounded tips. The leaves are borne on long petioles; petiole length, like stem length, appears to be promoted by submergence. Sebastopol meadowfoam has fragrant, white flowers that are borne in the leaf axils during April and May. The flowers are bell-shaped or dish-shaped, with petals 12 to 18 millimeters (0.47 to 0.71 inch) long. The sepals are shorter than the petals. The petals turn outward as the nutlets mature. The nutlets are dark brown, 3 to 4 millimeters (0.12 to 0.16 inch) long, and covered with knobby pinkish tubercles (Patterson *et al.* 1994).

Historically, Sebastopol meadowfoam was known from 40 occurrences in Sonoma County and 1 occurrence (occurrence #39) in Napa County, at the Napa River Ecological Reserve. In Sonoma County, all but two occurrences were found in the central and southern portions of the Santa Rosa Plain. Occurrence #20 occurred at Atascadero Creek Marsh west of Sebastopol, and the

second (#40) occurred in the vicinity of Knights Valley northeast of Windsor (California Department of Fish and Game 2001).

The current condition of numerous Sebastopol meadowfoam occurrences is unclear, because many have not been visited in over 5 years. The southern cluster of occurrences extends 5 kilometers (3 miles) from Stoney Point Road west to the Laguna de Santa Rosa, and is bounded by Occidental Road to the north and Cotati to the south. The central cluster stretches 1.5 miles on either side of Fulton Road extending northwards from Occidental Road to River Road. Patterson *et al.* (1994) estimated that the Santa Rosa Plain occurrences represent only 10 hydrologically separate populations of Sebastopol meadowfoam. At least one occurrence (#21) has been extirpated from the Santa Rosa Plain (California Department of Fish and Game 2002). Recent field surveys found that all three occurrences outside of the Santa Rosa Plain have probably been extirpated (California Department of Fish and Game 2002).

Sebastopol meadowfoam is an annual plant. The seeds germinate after the first significant rains in fall, although late initiation of rains may delay seed germination. Sebastopol meadowfoam plants grow slowly underwater during the winter, and growth rates increase as the pools dry. Repeated drying and filling of pools in the spring favors development of large plants with many branches and long stems. Sebastopol meadowfoam begins flowering as the pools dry, typically in March or April. The largest plants can produce 20 or more flowers. Flowering may continue as late as mid-June, although in most years the plants have set seed and died back by then (Patterson *et al.* 1994). Each plant can produce up to 100 nutlets (Patterson 1994).

Nutlets of Sebastopol meadowfoam likely remain dormant in the soil, as they do for other species of *Limnanthes* (Patterson 1994). One case presents strong circumstantial evidence for persistent, long-lived seed banks in this species. A site remote from other Sebastopol meadowfoam colonies was surveyed for several years and lacked flowering populations of Sebastopol meadowfoam while conditions were highly degraded by wallowing hogs (*Sus scrofa*). In the mid-1990's, 12 plants of Sebastopol meadowfoam emerged simultaneously in one area in the first year following removal of hogs. The population expanded rapidly to 60 plants the next year and was larger in subsequent years (Geoff Monk, personal communication). Long-distance dispersal is an improbable explanation for the simultaneous emergence of multiple plants at one location, so seed banks are implicated in this case as well. This example also indicates that lack of Sebastopol meadowfoam during periods of adverse conditions (drought, heavy disturbance, *etc.*) does not necessarily mean the population is extirpated.

This species grows in Northern Basalt Flow and Northern Hardpan vernal pools (Sawyer and Keeler-Wolf 1995), wet swales and meadows, on the banks of streams, and in artificial habitats such as ditches (California Department of Fish and Game 2002). The surrounding plant communities range from oak savanna, grassland, and marsh in Sonoma County to riparian woodland in Napa County (California Department of Fish and Game 2002). Sebastopol meadowfoam grows in both shallow and deep areas, but is most frequent in pools 25 to 51 centimeters (10 to 20 inches) deep (Patterson 1990, Patterson *et al.* 1994). The species is most

abundant in the margin habitat at the edge of vernal pools or swales (Pavlik *et al.* 2000, 2001). Most confirmed occurrences of Sebastopol meadowfoam on the Santa Rosa Plain grow on Wright loam or Clear Lake clay soils (Patterson *et al.* 1994, California Department of Fish and Game 2002). A few occurrences are on other soil types, including Pajaro clay loam, Cotati fine sandy loam, Haire clay loam (Patterson *et al.* 1994) and Blucher fine sandy loam (Wainwright 1984).

Like Burke's goldfields and Sonoma sunshine, Sebastopol meadowfoam has been and continues to be threatened by habitat loss, habitat degradation, and small population size (Table 1). Causes of habitat loss include agricultural conversion, urbanization, and road maintenance. Habitat degradation is caused by excessive grazing by livestock, alterations in hydrology, and competition from non-native species (in some cases, exacerbated by removal of grazing), off-highway vehicle use, and dumping (U.S. Fish and Wildlife Service 1991, Patterson *et al.* 1994, CH2M Hill 1995, California Department of Fish and Game 2002).

The project site is located within the range for the Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfields. The project site supports potential habitat for these three endangered plant species. U.S. Fish and Wildlife Service Protocol level surveys for listed wetland plant species have been conducted on the site for four seasons and have resulted in negative findings. Larry Stromberg performed these plant surveys in 2001 and 2002 and Northfork Associates performed surveys in 2003 and 2004. Although the project site has been surveyed in a manner consistent with Service protocol and no listed plants have been found, the seasonal wetlands may still include seeds of listed plants and based on the Service's knowledge of the distribution of the listed plants, a negative survey for plants does not rule out the possibility that listed plants occur on site.

Recovery Actions

A conservation strategy titled "Santa Rosa Plain Conservation Strategy" is being developed by a team of representatives from the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, California Department of Fish and Game, Sonoma County and local Cities, North Coast Regional Water Quality Control Board, local governmental agencies, the Laguna de Santa Rosa Foundation, environmental community, and the private landowner community (Conservation Team). The draft Santa Rosa Plain Conservation Strategy provides strategies to conserve and enhance enough habitat for the tiger salamander in Sonoma County and listed plants including the Sonoma sunshine (*Blemnosperma bakeri*), Burke's goldfields (*Lasthenia burkei*), Sebastopol meadowfoam (*Limnanthes vinculans*), and many-flowered navarretia (*Navarretia leucocephala ssp. plieantha*) to provide for long-term conservation and assist in the recovery of these species, while considering the need for development consistent with the general plans for the local jurisdictions. The draft Santa Rosa Plain Conservation Strategy is posted on the City of Santa Rosa's website.

Effects of the Proposed Action

California Tiger Salamander

The proposed project would result in the permanent loss of 90 acres of upland foraging habitat, including the loss of 1.92 of seasonal wetlands and wetland swale for tiger salamanders. The proposed project would likely also harm, harass, injure, or kill any individual tiger salamanders inhabiting the 90-acre project site. Tiger salamanders would be directly affected by earth moving activities, infrastructure improvements, building construction, landscaping, and other construction activities, which would completely eliminate 90 acres of upland habitat available to tiger salamanders on the project site. The project site would become unavailable to dispersing tiger salamanders in the area. Individual tiger salamanders on the project site could be crushed by construction activities that collapse their burrows or destroy soil desiccation cracks. Individual tiger salamanders disturbed by construction activities onsite could attempt overland movements in an attempt to find alternative habitat. These individuals could be harassed, injured and killed by pedestrians, vehicles, and urban adapted predators during overland movements at the project site, or during attempts to find more suitable habitats on adjacent lands. However, due to the high level of disturbance of the site from continuous farming activities, upland habitat values of the site for tiger salamander have been substantially diminished.

Construction related activities are likely to cause disruption of surface movement, disruption or complete loss of reproduction, harassment from increased human activity, and permanent and temporary loss of shelter. Because these animals are nocturnal, if construction is performed at night, associated lighting likely would increase all of the above effects. Wise and Buchanan (2002) reviewed the adverse effects that may result from night time illumination on salamander species. Artificial lighting used during night time construction may increase predation of the tiger salamanders, if it occurs during periods of fall, winter, or spring rains, because the amphibians will lose the cover of darkness for movement. Nocturnal foraging by salamander species may be affected by artificial lighting. Wise and Buchanan (2002) reported that in one species of salamander, individuals emerged from refugia to forage within one hour after light levels dropped to dramatically following sunset. During such foraging bouts, visual information was used for locating prey. Greater light levels delay emergence, resulting in less foraging time, but could have increased the ability of the salamanders to capture prey; however, they also could make the amphibians more vulnerable to predation. Many salamanders, such as the tiger salamander, are terrestrial as adults but migrate to ponds to breed and lay eggs. The orientation of some of these terrestrial species away from and toward these ponds is influenced by the spectral characteristics of light (Wise and Buchanan 2002). Artificial lights that emit unusual spectra may disrupt these migration patterns.

The tiger salamander would benefit from the preservation and management in perpetuity of 46.185 acres of suitable habitats at a Service-approved bank or other location. The protection of this habitat is considered to possess greater conservation value than isolated habitat patches that lack long-term management and protection.

Tiger Salamander Critical Habitat

This biological opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 CFR 402.02. Instead, we have relied upon the statute and the August 6, 2004, Ninth Circuit Court of Appeals decision in *Gifford Pinchot Task Force v. U.S. Fish and Wildlife Service* (No. 03-35279) to complete the following analysis with respect to critical habitat.

The proposed action is not expected to appreciably diminish the value of the proposed critical habitat for the tiger salamander, or prevent proposed critical habitat from sustaining its role in the conservation and recovery of the species. Construction of the project will permanently affect 90 acres of the tiger salamander proposed critical habitat in Sonoma County, which is approximately 0.12 percent of the proposed critical habitat for in the County. The fraction of a percent loss will not affect the functionality of the proposed unit. The acquisition of 46.185 acres will also be within the proposed tiger salamander critical habitat in Sonoma County, which represents 0.06 percent of the proposed critical habitat, and will be protected in perpetuity.

Sebastopol Meadowfoam, Sonoma Sunshine and Burke's Goldfield

Grading of the Northwest Specific Plan site and filling of the approximately 1.92 acres of wetlands will eliminate suitable habitat for Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfield. Although the project site has been surveyed in a manner consistent with Service protocol and no listed plants have been found, adverse effects to listed plants could still occur as a result of the proposed project. This is because the seasonal wetlands may still include seeds of listed plants and based on the Service's knowledge of the distribution of the listed plants, a negative survey for plants does not rule out the possibility that listed plants occur on site.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Cumulative effects to the tiger salamander include continuing and future conversion of suitable breeding, foraging, sheltering, and dispersal habitat resulting from urban development. Additional urbanization can result in road widening and increased traffic on roads that bisect breeding and aestivation sites, thereby increasing road-kill while reducing in size and further fragmenting remaining habitats.

Tiger salamanders probably are exposed to a variety of pesticides and other chemicals throughout their range. Tiger salamanders also could die from starvation by the loss of their prey base. Hydrocarbon and other contamination from oil production and road runoff; the application of

numerous chemicals for roadside maintenance; urban/suburban landscape maintenance; and rodent and vector control programs may all have negative effects on tiger salamander populations. In addition, tiger salamanders may be harmed through collection by local residents.

A commonly used method to control mosquitoes, used in Sonoma County (Marin/Sonoma Mosquito and Vector Control District, internet website 2002), is the application of methoprene, which increases the level of juvenile hormone in insect larvae and disrupts the molting process. Lawrenz (1984) found that methoprene (Altosid SR 10) retarded the development of selected crustacea that had the same molting hormones (*i.e.*, juvenile hormone) as insects, and anticipated that the same hormone may control metamorphosis in other arthropods. Because the success of many aquatic vertebrates relies on an abundance of invertebrates in temporary wetlands, any delay in insect growth could reduce the numbers and density of prey available (Lawrenz 1984).

The threats to Burke's goldfields, Sonoma sunshine, and Sebastopol meadowfoam described in the "Status of the Species" section above, such as unauthorized fill of wetlands, urbanization, increases in non-native species, and continued and expanded irrigation of pastures with recycled wastewater discharge, are likely to continue with concomitant adverse effects on these species resulting in additional habitat loss and degradation; increasingly isolated populations (exacerbating the disruption of gene flow patterns); and further reductions in the reproduction, numbers, and distribution of these species which will decrease their ability to respond to stochastic events.

Cumulative effects to Burke's goldfields, Sonoma sunshine, Sebastopol meadowfoam, and the tiger salamander could increase in the future if the current application of the Corps' regulatory authority under the Clean Water Act changes. On January 9, 2001, the United States Supreme Court issued an opinion regarding Solid Waste Agency of Northern Cook County, Petitioner v. United States Army Corps of Engineers, *et al.* (SWANCC) which addressed the Corps' regulatory authority over isolated wetlands. The Corps' San Francisco District generally has regulated wetlands on the Santa Rosa Plain which are hydrologically connected to the Laguna de Santa Rosa, a tributary of the Russian River. However, following the SWANCC decision, we understand that the Corps has determined that some seasonal wetlands on the Santa Rosa Plain are isolated from navigable waters. Reduced application of the Corps' regulatory authority, and subsequent lack of section 7 consultation with the Service, on such isolated wetlands could result in increased impacts to federally listed species in the Santa Rosa Plain from future State, Tribal, local or private actions.

Conclusion

After reviewing the current status of the tiger salamander and the three listed plant species (Sebastopol meadowfoam, Sonoma sunshine and Burke's goldfield), the environmental baseline for the actions areas, and the effects of the proposed action and the cumulative effects, it is the Service's biological opinion that the Redwood Equities Northwest Specific Plan site in Rohnert Park is not likely to jeopardize the continued existence of the tiger salamander, Sebastopol

meadowfoam, Sonoma sunshine, or Burke's goldfield. This determination is based on the fact that the project site only provides upland habitat for the tiger salamander and the three listed plants have not been observed flowering during past floral surveys. The loss of upland foraging, dispersal, and seasonal wetland habitat at the project site will be minimized by the purchase of 46.185 acres of tiger salamander at a Service-approved bank or other location which would have enhanced management opportunities. Proposed critical habitat for the tiger salamander will not be adversely modified as a result of the proposed project. Critical habitat has not been designated for the listed plants; therefore none will be adversely modified.

INCIDENTAL TAKE STATEMENT

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the Corps so they become binding conditions of project authorization for the exemption under 7(o)(2) to apply. The Corps has a continuing duty to regulate the activity that is covered by this incidental take statement. If the Corps (1) fails to adhere to the terms and conditions of the incidental take statement through enforceable terms, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of 7(o)(2) may lapse.

Sections 7(b)(4) and 7(o)(2) of the Act do not apply to listed plant species. However, protection of listed plants is provided to the extent that the Act requires a Federal permit for removal or reduction to possession of endangered and threatened plants from areas under Federal jurisdiction, or for any act that would remove, cut dig up, or damage or destroy any such species on any other area in knowing violation of any regulation of any State or in the course of any violation of a State criminal trespass law.

Amount or Extent of Take

The Service anticipates that incidental take of the tiger salamander will be difficult to detect or quantify for the following reasons: the activity patterns of tiger salamanders makes the finding of a dead specimen unlikely, losses may be masked by annual fluctuations in numbers, and the species occurs in habitat that makes it difficult to detect. Due to the difficulty in quantifying the number of tiger salamanders that will be taken as a result of the proposed action, the Service is quantifying take incidental to the project as the number of acres of habitat that will be affected as a result of the action. Therefore, the Service estimates that the proposed action will result in the permanent loss of 90 acres of habitat suitable for tiger salamander foraging, sheltering, and movements. Anticipated take is expected to be in the form of harm, harassment, injury, and mortality from habitat loss and modification, construction related disturbance, increased predation, reduced fitness, and by ongoing operation and use of the Redwood Equities Northwest Specific Plan site in Rohnert Park.

Effect of the Take

In the accompanying biological opinion, the Service determined that this level of anticipated take is not likely to result in jeopardy to the tiger salamander or result in adverse modification of the proposed critical habitat for the tiger salamander.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measure is necessary and appropriate to minimize the effect of take on the tiger salamander:

Minimize the potential for harm, harassment, injury and mortality to the tiger salamander.

Terms and Conditions

To be exempt from the prohibitions of section 9 of the Act, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measure described above. These terms and conditions are non-discretionary:

1. Implement the conservation measures, as described in the information from Redwood Equities and the Project Description of this biological opinion.

2. The Service will evaluate the suitability of the tiger salamander habitat by using the attached Preserve Evaluation Criteria. If the proposed site is "potential" tiger salamander habitat it must be suitable for occupancy for the tiger salamander in perpetuity as determined by the Service and DFG. If the tiger salamander habitat purchased is not adjacent to occupied tiger salamander habitat, suitability for occupancy may be accomplished by establishing a suitable breeding pond on-site. In addition, if one or more

listed plants are not present at the mitigation bank where the 1.92 acres of seasonal wetland mitigation credits are purchased, then listed plants shall be established on the preserve site and a restoration plan will be provided to the Service for review and approval. The seed source used for establishment of the plants will be subject to Service review and approval.

3. Redwood Equities will identify tiger salamander habitat to be purchased at least 60 days in advance of work commenced in water of the United States and will provide the Service with proof and purchase of tiger salamander habitat before work is commenced in waters of the United States.

4. Redwood Equities will record a conservation easement and shall submit the plan for long term management of the preserved lands and proof of the endowment to fund these activities in perpetuity to the Service before the issuance of the first building permit. The conservation easement and the endowment will be reviewed and approved by the Service prior to recordation.

5. The Corps shall ensure that Redwood Equities complies with the *Reporting Requirements* of this biological opinion.

Reporting Requirements

The Corps shall submit a post-construction compliance report to the Sacramento Fish and Wildlife Office within 60 calendar days of the completion of construction activity or within 60 days of any break in construction activity lasting more than 60 days. This report shall detail (i) dates that groundbreaking at the project started and the project was completed; (ii) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (iii) an explanation of the failure to meet much measures, if any; (iv) known project effects on the tiger salamander, if any; (v) occurrences of incidental take of any of this species; and (vi) other pertinent information.

The Service must be notified within 24 hours of the finding of any injured or dead tiger salamander, or any unanticipated damage to tiger salamander habitat associated with project construction. Notification must include the date, time, and precise location of the incident or of the finding of a dead or injured animal. In the case of a dead animal, the individual animal should be preserved, as appropriate, and held in a secure location until instructions are received from the Service regarding the disposition of the specimen or the Service takes custody of the specimen. The Service contact person is Chris Nagano, Deputy Assistant Supervisor, Endangered Species Division at 916 414-6600 and Scott Heard, Resident Agent-in-Charge of the Service's Division of Law Enforcement, at 916 414-6660.

Any contractor or employee who during routine operations and maintenance activities inadvertently kills or injures a State-listed wildlife species should immediately report the incident

to their representative. The California Department of Fish and Game contact is the State Dispatch at 916 445-0045.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations. We make the following conservation recommendations:

1. Encourage or require the use of appropriate California native species in re-vegetation and habitat enhancement efforts associated with projects authorized by the Corps.

2. Deny permits which result in further destruction of Burke's goldfields, Sonoma sunshine, Sebastopol meadowfoam, and the tiger salamander habitat, and preserve other onsite wetlands for pollinators and seed dispersers.

3. Facilitate educational programs geared toward the importance and conservation of seasonal wetlands.

4. Encourage seed banking in Center for Plant Conservation certified botanic gardens (provided the seed collection does not adversely affect the source populations).

5. Assist the Service in implementing recovery actions being developed for Burke's goldfields, Sonoma sunshine, Sebastopol meadowfoam, and the tiger salamander.

REINITIATION - CLOSING STATEMENT

This concludes formal consultation on the proposed Redwood Equities Northwest Specific Plan site in Rohnert Park. As provided in 50 CFR § 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be

affected by the action. In instances where the amount or extent of incidental take is exceeded, the Corps shall not issue authorizations under this biological opinion.

This concludes the conference opinion for proposed Redwood Equities Northwest Specific Plan site in Rohnert Park on the proposed critical habitat for the tiger salamander. You may ask the Service to confirm the conference opinion as a biological opinion issued through formal consultation if critical habitat is designated. This request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the conference opinion as the biological opinion on the project, and no further section 7 consultation will be necessary. At that time, the project will be reviewed to determine whether any adverse modification or destruction of the critical habitat has occurred. Modifications of the opinion may be appropriate.

If you have any questions regarding this biological opinion on the proposed Redwood Equities Northwest Specific Plan site in Rohnert Park, please contact Ryan Olah of the Sacramento Fish and Wildlife Office at (916) 414-6625.

Sincerely,

Cay C. Goude

Cay C. Goude
Acting Field Supervisor

cc:
Robert Uram, Sheppard, Mullin, Richter & Hampton LLC, San Francisco, California
Carl Wilcox, California Department of Fish and Game, Yountville, California
Mike Monroe, U.S. Environmental Protection, San Francisco, California
Andrew Jenson, Regional Water Quality Control Board, Santa Rosa, California

LITERATURE CITED

Anderson, J. D. 1968. Comparison of the food habits of *Ambystoma macrodactylum sigillatum*, *Ambystoma macrodactylum croceum*, and *Ambystoma tigrinum californiense*. Herpetologica 24(4): 273-284.

Anderson, P. R. 1968. The reproductive and developmental history of the California tiger salamander. Masters thesis, Department of Biology, Fresno State College, Fresno, California. 82pp.

Barry, S. J. and H. B. Shaffer. 1994. The status of the California tiger salamander (*Ambystoma californiense*) at Lagunita: 50-year update. Journal of Herpetology 28(2): 159-164.

Baskin, C.C. and J.M. Baskin. 1998. Seeds: Ecology, Biogeography, and Evolution of Dormancy and Germination. Academic Press, Ltd. London.

CH2M Hill. 1995. Final Santa Rosa Plain Vernal Pool Ecosystem Preservation Plan. Prepared for Santa Rosa Plain Vernal Pool Task Force. Oakland, California. June 30.

Cohen, D. 1966. Optimizing reproduction in a randomly varying environment. Journal of Theoretical Biology 12: 119-129.

Cohen, D. 1967. Optimizing reproduction in a randomly varying environment when a correlation may exist between the conditions at the time a choice has to be made and the subsequent outcome. Journal of Theoretical Biology 16: 1-14.

CNDDB. 1998. Natural Heritage Division. California Department of Fish and Game. State of California.

Crawford, D.J. and R. Ornduff. 1989. Enzyme electrophoresis and evolutionary relationships among three species of *Lasthenia* (Asteraceae: Heliantheae). American Journal of Botany 76: 289-296.

Feaver, P. E. 1971. Breeding pool selection and larval mortality of three California amphibians: *Ambystoma tigrinum californiense* Gray, *Hyla regilla* Baird and Girard and *Scaphiopus hammondi hammondi* Girard. Master's thesis, Department of Biology, Fresno State College, Fresno, California. 58pp.

Fitzpatrick, B. M. an H. B. Shaffer. 2004. Environmental-dependent admixture dynamics in a tiger salamander hybrid zone. Evolution 58(6): 1282-1293.

Given, D.R. 1994. Principles and Practice of Plant Conservation. Timber Press, Portland, OR.

Hickman, J.C. 1993. The Jepson Manual: Higher Plants of California. University of California Press, Berkeley.

Jennings, M.R. and M.P. Hayes. 1994. Amphibian and reptile species of special concern in California. Final report to California Dept. of Fish and Game. pp. 12-16, California tiger salamander.

Lawrenz, R.W. 1984. The response of invertebrates in temporary vernal wetlands to Altosid® SR-10 as used in mosquito abatement programs. Journal of the Minnesota Academy of Science 50:31-34.

Loredo, I., and D. Van Vuren. 1996. Reproductive ecology of a population of the California tiger salamander. Copeia 1996(4):895-901.

Loredo, I., D. Van Vuren and M. L. Morrison. 1996. Habitat use and migration behavior of the California tiger salamander. J. Herpetology 30(2): 282-285.

Marin/Sonoma Mosquito and Vector Control District. 2002. 3 pp. printed from http://www.msmosquito.com/mosconrt.html

McCarten, N.F. 1985. A survey of *Navarretia pauciflora* and *Navarretia plieantha* (Polemoniaceae): Two rare endemic plant species from the vernal pools of the California North Coast Ranges. Unpublished report. Endangered Plant Program. California Department of Fish and Game.

Morey, S. R. 1998. Pool duration influences age and body mass at metamorphosis in the western spadefoot toad: implications for vernal pool conservation. Pages 86-91 *in* Witham, C.W., E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (eds). Ecology, Conservation, and Management of Vernal Pool Ecosystems - Proceedings from a 1996 Conference. California Native Plant Society. Sacramento, California. 1998.

Pechmann, J. H. K., D. E. Scott, J. W. Gibbons, and R. D. Semlitsch. 1989. Influence of wetland hydroperiod on diversity and abundance of metamorphosing juvenile amphibians. Wetlands Ecology and Management 1(1):3-11.

Petranka, J.W. 1998. Salamanders of the United States and Canada. Smithsonian Institution Press. Selected pages maintained in file.

Riley, S.P.D., H.B. Shaffer, S.R. Voss, and B.M. Fitzpatrick. 2003. Hybridization between a rare, native tiger salamander (*Ambystoma californiense*) and its introduced congener. Biological Applications 13(5): 1263-1275.

Ornduff, Robert. A biosystematic survey of the Goldfield genus Lasthenia (Compositae: Helenieae). Berkeley, University of California Press, 1966. vi, 92p. illus., maps. 26 cm. Series title: University of California publications in botany; v. 40.

Patterson, C.A., B. Guggolz, and M. Waaland. 1994. Seasonal Wetland Baseline Report for the Santa Rosa Plain, Sonoma County. Prepared for A. Howald, California Department of Fish and Game. Yountville, California

Rice, K.J. 1989. Impacts of seed banks on grassland community structure and population dynamics. *In* M.A. Leck, V.T. Parker and R.L. Simpson, eds. Ecology of Soil Seed Banks. pp. 211-230. Academic Press, Inc.

Sawyer, J.O., and T. Keeler-Wolf. 1995. A manual of California vegetation. California Native Plant Society, Sacramento, California. 471 pp.

Scott, D. E. 1994. The effect of larval density on adult demographic traits in *Ambystoma opacum*. Ecology 75:1383-1396.

Semlitsch, R. D., D. E. Scott, and J. H. K. Pechmann. 1988. Time and size at metamorphosis related to adult fitness in *Ambystoma talpoideum*. Ecology 69: 184-192.

Shaffer, H.B., R.N. Fisher, and S.E. Stanley. 1993. Status report: The California tiger salamander (*Ambystoma californiense*). Final report for the California Department of Fish and Game. 33 pp.

Shaffer, H.B., G. B. Pauly, J.C. Oliver, and P.C. Trenham. 2004. The molecular phylogenitics of endangerment: cryptic variation and historic phylogeography of the California tiger salamander, *Ambystoma californiniense*. Molecular Ecology 13: 3033-3049.

Skinner, M.W., and B.M. Pavlik. 1994. California Native Plant Society inventory of rare and endangered plants of California. 5th edition. Special Publication No. 1. California Native Plant Society. Sacramento, California.

Stebbins, R. C. 1985. A field guide to western reptiles and amphibians. Houghton Mifflin Co. Boston, Massachusetts. Pp. 33-37.

Stebbins, R. C. 1989. Declaration of R. C. Stebbins in support of petition of writ of mandate. Sierra Club and Richard Pontuis v. Gilroy City Council, Shappell Industries *et al.* Santa Clara County Superior Court. March 16, 1989. 11 pp. plus exhibits.

Storer, T.I. 1925. A synopsis of the amphibia of California. University of California Press, Publications in Zoology 27. Selected pages maintained in file.

Templeton, A.R. and D.A. Levin. 1979. Evolutionary consequences of seed pools. American Naturalist 114: 232-249.

Trenham, P. 1998a. Radiotracking information. University of California, Davis, California.

_____1998b. Demography, migration, and metapopulation structure of pond breeding salamanders. Ph.D. dissertation. University of California, Davis, California.

Trenham, P.C., H.B. Shaffer, W.D. Koenig and M.R. Stromberg. 2000. Life history and demographic variation in the California tiger salamander (*Ambystoma californiense*). Copeia 2000(2): 365-377.

Trenham, P. C., W. D. Koenig, and H. B. Shaffer. 2001. Spatially autocorrelated demography and interpond dispersal in the salamander *Ambystoma californiense*, Ecology 82: 3519-3530.

Trenham, P. 2001. Terrestrial habitat use by adult California tiger salamanders. Journal of Herpetology 35(2): 343-346.

Trenham, P.C. and H.B. Shaffer. *In Press*. Amphibians upland habitat use and its consequences for population viability. Ecological Applications.

Twitty, V. C. 1941. Data on the life history of *Ambystoma tigrinum californiense* Gray. Copeia 1941 (1):1-4.

U.S. Fish and Wildlife Service. 1991. Determination of endangered status for three plants: Blemnosperma bakeri (Sonoma sunshine or Baker's stickyseed), Lasthenia burkei (Burke's goldfields), and Limnanthes vinculans (Sebastopol meadowfoam). 56 **Federal Register** 67113. 10pp.

_____2004. Endangered and threatened wildlife and plants; determination of threatened status for the California tiger salamander; and special rule exemption for existing routine ranching activities; final rule. **Federal Register** 69: 47212-47248.

_____2005. Endangered and threatened wildlife and plants; proposed designation of critical habitat for the California Tiger Salamander in Sonoma County; Proposed Rule. **Federal Register** 70:44301-44322.

Van Hattem, M. G. 2004. Underground ecology and natural history of the California tiger salamander. Master of Science thesis. San Jose State University, San Jose, California.

Wilbur, H. M. and J. P. Collins. 1973. Ecological aspects of amphibian metamorphosis. Science (n.s.), 182(4119): 1305-1314.

Wise, S. and B.W. Buchanan. 2002. The influence of artificial illumination on the nocturnal behavior and ecology of salamanders. Paper presented at the Urban Wildlands Group's Ecological Consequences of Artificial Night Lighting. February 23-24, 2002. University of California, Los Angeles, California.

Personal Communications

Haley, N. U.S. Army Corps of Engineers. Sacramento, California

Wilcox, C. 1998. California Department of Fish and Game, Yountville, California

In Litt. Citations

Chan, R. University of California, Berkeley. Berkeley, California

Wilcox, C. 2000. California Department of Fish and Game. Yountville, California

Preserve Evaluation Criteria (Taken from page 13 of the 8-3-05 draft of the Santa Rosa Plain Conservation Strategy)

Pursuant to the Conservation Strategy, parcels proposed for preservation must provide suitable habitat for the CTS and/or listed plants. This section describes the process for evaluating, and approving individual properties or parcels for preservation.

The preserve evaluation criteria will be used by DFG and FWS in guiding both mitigation and mitigation bank development. These criteria are to aid and help expedite the selection of preserves. It is important to understand that there are numerous other components that are required to address mitigation requirements, including management plans, long-term endowments, and other necessary requirements, all of which must be complete.

Preserve evaluation criteria assist in determining whether a particular property or parcel supports suitable habitat for CTS and/or Federally listed plants and will contribute to the preserve goals for a specific conservation area.

To be considered acceptable as a preserve, a proposed property or properties must meet all the following criteria:

(1) Be within the boundary of one of the Conservation Areas designated by the conservation strategy.

(2) a) Contain known, occupied CTS breeding, upland, or dispersal habitat and/or a known population or populations of Federally listed plants; or represent potential CTS or plant habitat. With respect to potential CTS or plant habitat the site must exhibit, in the judgment of the FWS and DFG, reasonable potential for habitat restoration or enhancement.

OR

b) Be approved by the FWS and DFG and function as a buffer separating an existing or likely future preserve site from nearby incompatible land uses (e.g. areas without CTS habitat), be a corridor or link from one preserve site to another or one conservation area to another, or be open space that provides other specific and recognizable conservation value for listed species.

(3) Be free of excessive land surface features such as roads, parking lots, other hardened surfaces, buildings or other structures, or extensive hardscape that cause a significant portion of the site to be unsuitable as CTS or plant habitat. Generally, for purposes of this criterion, no more than 15% of the land surface of any potential preserve site may include or be covered by such features unless it is to be restored as part of the preservation action.

(4) Not isolated from other nearby CTS habitats (preserve or non-preserve) by incompatible land uses (e.g., hardscape) or other significant barriers to CTS movement and dispersal, such as Highway 101.

(5) Not inhabited by fish and bullfrogs or other non-native predatory species, unless, in the judgment of FWS and DFG, such species can be effectively removed or eradicated.

(6) Not within the Laguna de Santa Rosa 100-year floodplain.

(7) Exhibit no history or evidence of the presence (storage or use) of hazardous materials on the surface of the site unless proof of removal or remediation can be provided.

Up to 20% of preserve acreage may occur outside the current conservation area boundaries if the parcel or parcels meet the following requirements:

(1) It meets the preserve evaluation criteria (except for criterion 1)

(2) It is within the potential range of the Sonoma County CTS

(3) If a listed plant is impacted, mitigation will occur within its range

(4) These additional lands would become a part of the conservation areas, and be monitored through the adaptive management process

Sites approved outside existing conservation areas must be either near a conservation area or of adequate size to be capable of maintaining a CTS population on its own or in conjunction with surrounding protected property, such as open space easements. This would be reviewed and tracked by the adaptive management team.

FWS and DFG may elect to waive one or more of the above criteria and/or requirements for any particular proposed parcel or parcels. The proposed preserve site may be deemed suitable by providing some specific unique conservation value not identified in the above list that contributes to the recovery of one or more listed species. FWS and DFG must provide justification for the waiver and provide a copy to the files of that agency.