

Giant Garter Snake Habitat Evaluation Survey

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Introduction

Proposed Activity

The Sacramento Municipal Utility District (SMUD) proposes to develop a natural gas-fired generating facility south of the Rancho Seco Plant in Sacramento County, 25 miles southeast of the city of Sacramento. It will be a high-efficiency, combined cycle facility that will provide electricity to SMUD's Customers. As part of the Cosumnes Power Plant (CPP) project, a new 24-inch pipeline will be constructed from Carson Cogen Facility, approximately 20 miles northwest of the CPP. The natural gas supply line will be constructed using open-trench, jack and bore and horizontal directional drilling techniques. The construction corridor is estimated to be 65 feet wide in most areas, but will be reduced to 35 feet where limited by environmentally significant features.

Project Location

The CPP natural gas pipeline extension is approximately 26 miles in length (Figure 1). From the Carson Cogen Plant the route travels south along the west side of the Western Pacific Railroad to Elk Grove Blvd. At Elk Grove Blvd. the route turns to the east and runs adjacent to and on the south side of Elk Grove Blvd. until it intersects with Franklin Blvd. At the intersection of Franklin Blvd. and Elk Grove Blvd. the route turns to the south and runs on the east side of Franklin Blvd. The route continues along the east side of Franklin Blvd. until Franklin Blvd. intersects with the Western Pacific Railroad tracks. The route will continue along the east side of the railroad tracks until it intersects with Core Road. At Core Road, the route proceeds east to Ed Rau Road, and continues east adjacent to the existing electric transmission tower lines for the Rancho Seco Plant to a farm road located on the west side of a vineyard, between Carroll and Eschinger roads. The route turns south along the farm road to Eschinger Road, where it continues east to the point where Eschinger Road has a 90-degree turn to the north. From this point the route proceeds south on the unimproved farm road to the intersection with another unimproved farm road that runs primarily east-west, and then proceeds directly across a farm field to the proposed crossing of the Cosumnes River. At this point the corridor enters the Cosumnes River Preserve. The route continues across the farm field on the southeast side, to an unimproved maintenance road paralleling (on the north side) electric tower lines. This existing utility maintenance road is followed east, to the west side of the Union Pacific Railroad (UPRR) tracks. The route proceeds southeast and rejoins with the road south of Badger Creek and east of the UPRR. Once across the tracks, the route follows

the maintenance road southeast to Arno Road on the east side of Highway 99. From the east side of Highway 99 the route follows Arno Road and Valensin Road east to Colony Road. From the intersection of Valensin and Colony roads, the alignment continues east on Valensin Road to Alta Mesa Road and the unimproved extension of Laguna Road. The route follows Laguna Road to Twin Cities Road (State Route 104). At this point, Twin Cities Road is paralleled on the northwest by the spur line railroad tracks of the UPRR. The route continues east along highway 104 to Clay East Road. At Clay East Road, the route departs from the UPRR/Twin Cities Road alignment, and proceeds east on Clay East Road to the proposed CPP site.

Giant Garter Snake

Giant garter snakes (*Thamnophis gigas*) feed primarily on aquatic prey such as fish and amphibians. Brode (1988) and G. Hansen (1988) suggest that the giant garter snake specializes in ambushing small fish underwater, and Rossman *et al.* (1996) suggested the giant garter snake occupies a niche similar to some eastern water snakes (*Nerodia* spp.). They appear to take advantage of pools which trap and concentrate prey items. R. Hansen (1980) and Hansen and Brode (1993) observed giant garter snakes feeding on mosquitofish (*Gambusia affinis*) confined to small pools of water. The predominant food items of giant garter snakes are now introduced species such as carp (*Cyprinus carpio*), mosquito fish, and bull frogs (*Rana catesbeiana*) (U.S. Fish and Wildlife Service 1999).

The breeding season for the giant garter snake begins soon after emergence from overwintering sites and extends from March into May, and resumes briefly during September. Males immediately begin searching for mates after emerging. Females brood young internally, and typically give birth to live young from late July through early September. Brood size is variable, ranging from 10 to 46 young, with a mean of 23. At birth young average about 20.6 centimeters (8.1 inches) snout-vent length and weigh 3 to 5 grams (0.1 to 0.2 ounces). Young immediately scatter into dense cover and absorb their yolk sacs, after which they begin feeding on their own. Although growth rates are variable, young typically more than double in size by 1 year of age. Sexual maturity averages 3 years in males and 5 years for females (U.S. Fish and Wildlife Service 1999).

Methods

The following method/criteria used for evaluating the possible giant garter snake habitats associated with the linear features of this project was taken directly from the "Draft Recovery Plan for the Giant Garter Snake" (U.S. Fish and Wildlife Service. 1999). The giant garter snake inhabits agricultural wetlands and other waterways, such as irrigation and drainage canals, ricelands, marshes, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands in the Central Valley. Essential habitat components consist of: (1) adequate water during the snake's active season (early spring through mid-fall) to maintain dense populations of food organisms; (2) emergent, herbaceous wetland vegetation, such as cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.), for escape cover and foraging habitat during the active season; (3) upland habitat with grassy banks and openings in waterside vegetation for basking; and (4) higher elevation upland habitats for cover and refuge from flood waters during the snake's inactive season in the winter. Giant garter snakes are absent from larger rivers, and from wetlands with sand, gravel, or rock substrates. Riparian

woodlands do not typically provide suitable habitat because of excessive shade, lack of basking sites, and the absence of prey populations (U.S. Fish and Wildlife Service. 1999).

Data sheets were filled out and photographs taken for each potential giant garter snake habitat along the proposed gas pipeline alignment (Figure 2), data sheets are in Attachment B, photographs are in Attachment A. In some areas multiple photographs of the same site were taken and are distinguished by an A, B, or C.

Results

As a result of field meeting with Craig Aubrey and Kenneth Fuller of the USFWS on November 6, 2002, 23 GGS sites were identified along the proposed pipeline alignment. The aquatic component was determined to be 0.61 acres and the upland component was 40.89 acres for a combined total of 41.50 acres. A summary of the information contained in the data sheets is in Table 1.

Recommendations

The following Avoidance and Mitigation measure are required by the USFWS:

- Construction activity in GGS habitat should be conducted between May 1 and October 1. Other times would require a biologist on site, because GGS are occupying underground burrows or crevices and take is more likely to occur.
- Construction personnel should receive worker awareness training by a USFWS approved biologist. This training instructs workers to recognize GGS and its habitats.
- 24-hours prior to construction activities, the project area should be surveyed for GGS and any sightings noted. An USFWS-approved biologist should be on-site during clearing and grubbing of wetland vegetation. Clearing should be confined to the minimal area necessary to facilitate construction activities. Survey of the project area should be repeated if a lapse in construction activity of two weeks or greater has occurred.
- Movement of heavy equipment to and from the project site or between the borrow sites should be confined to existing roadways to minimize habitat disturbance.
- Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.
- Giant garter snakes encountered during construction activities should be allowed to move away from construction. Capture and relocation of trapped or injured individuals can only be attempted by personnel or individuals with current Service recovery permits.
- Report any incidental take to the USFWS immediately by telephone at (916) 979-2725 and by written letter to the Chief, Endangered Species Division, within one working day.

References:

- Brode, J. 1988. Natural history of the giant garter snake (*Thamnophis couchii gigas*). Pages 25-28, *In* Proceedings of the conference on California herpetology, H.F. DeListe, P.R. Brown, B. Kaufman, and B.M. McGurty (eds). Southwestern Herpetologists Society, Special Publication No. 4.
- Hansen, G.E. 1988. Review of the status of the giant garter snake (*Thamnophis couchii gigas*) and its supporting habitat during 1986-1987. Final report for California Department of Fish and Game, Contract C-2060. Unpublished.
- Hansen G.E., and J.M. Brode. 1980. Status of the giant garter snake, *Thamnophis couchii gigas* (Fitch). California Department of Fish and Game. Inland Fisheries Endangered Species Program Special Publication Report No. 80-5. 14pp.
- Hansen G.E., and J.M. Brode. 1993. Results of relocating canal habitat of the giant garter snake (*Thamnophis gigas*) during widening of State Route 99/70 in Sacramento and Sutter Counties, California. Final report for Caltrans Interagency Agreement 03E325 (FG7550) (FY 87/88-91-92). Unpublished. 36 pp.
- Rossman, D.A., N.B. Ford, and R.A. Seigel. 1996. The garter snakes: evolution and ecology. University of Oklahoma Press, Norman. 331 pp.
- U.S. Fish and Wildlife Service. 1999. Draft Recovery plan for the Giant Garter Snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, Oregon. Ix+ 192 pp.

TABLE 1
 Giant garter snake habitat suitability table
 (Survey Conducted on September 5, 2002)

GGs Site #	Prey species observed	Feature wet/dry at time of survey	Emergent herbaceous wetland vegetation present	Upland basking areas present	Higher elevation upland habitats for basking present	HDD or traditional open-cut trench construction method	Pipeline alignment adjacent to or going through or going under feature
1	Yes	Wet	Yes	Yes	Yes	Open-cut	Adjacent & through
2	Yes	Wet	Yes	Yes	Yes	N/A	Adjacent
3	No	Data	Yes				
4	No	Dry	Yes	Yes	Yes	N/A	Adjacent
5	No	Dry	Yes	Yes	Yes	Open-cut	Adjacent & through
6	Yes	Wet	Yes	Yes	Yes	Open-cut	Adjacent & through
7	Yes	Wet	Yes	Yes	Yes	Open-cut	Adjacent & through
8	Yes	Wet	Yes	Yes	Yes	Open-cut	Adjacent & through
9	Yes	Wet	Yes	Yes	Yes	Open-cut	Adjacent & through
10	Yes	Wet	Yes	Yes	Yes	Open-cut	Adjacent & through
11	Yes	Wet	Yes	Yes	Yes	N/A	Adjacent
12	Yes	Wet	Yes	Yes	Yes	?	Through
13	Yes	Wet	Yes	Yes	Yes	Open-cut	Through
14	Yes	Wet	Yes	Yes	Yes	Open-cut	Adjacent & through
15	Yes	Dry	Yes	Yes	Yes	N/A	Adjacent
16	Yes	Wet	Yes	Yes	Yes	HDD	Under
17	No	Dry	Yes	Yes	Yes	HDD	Under
18	Yes	Wet	Yes	Yes	Yes	N/A	Adjacent
19	Yes	Wet	Yes	Yes	Yes	N/A	Adjacent
20	Yes	Wet	Yes	Yes	Yes	Open-cut	Through
21	Yes	Wet	Yes	Yes	Yes	Open-cut	Through
22	Yes	Wet	Yes	Yes	Yes	HDD	Under
23	Yes	Wet	Yes	Yes	Yes	HDD	Under

ATTACHMENT A

Photographs



GGG Site #1 September 5, 2002



GGG Site #2 September 5, 2002



GGs# 3 October 3, 2002.



GGs Site #4A September 5, 2002



GGs Site #4B September 5, 2002



GGs Site #4C September 5, 2002



GGs Site #5A September 5, 2002



GGs Site #5B September 5, 2002



GGS Site #6A September 5, 2002



GGS Site #6B September 5, 2002



GGs Site #7A September 5, 2002



GGs Site #7B September 5, 2002



GGs Site #8A September 5, 2002



GGs Site #8B September 5, 2002



GGs Site #9A September 5, 2002



GGs Site #9B September 5, 2002



GGs Site #10A September 5, 2002



GGs Site #10B September 5, 2002



GGs Site #11A September 5, 2002



GGs Site #11B September 5, 2002



GGs Site #12 September 5, 2002



GGs Site #13 September 5, 2002



GGG Site #14A September 5, 2002



GGG Site #14B September 5, 2002



GGs Site #15A September 5, 2002



GGs Site #15B September 5, 2002



GGs Site #16A September 5, 2002



GGs Site #16B September 5, 2002



GGs Site #16C September 5, 2002



GGs Site #17A September 5, 2002



GGG Site #17B September 5, 2002



GGG Site #17C September 5, 2002



GGs Site #18 September 5, 2002



GGs Site #19 September 5, 2002



GGs Site #20 September 5, 2002



GGs Site #21 September 5, 2002



GGs Site #22A September 5, 2002



GGs Site #22B September 5, 2002

ATTACHMENT B

Data Sheets

Data Sheets

LOC-ID	Upland Acres	Aquatic Acres	Adjacent Land Uses and Other Significant Issues
GGs-1	0.24	0.02	Annual grassland, County Road to the south, County Regional Waste Water Treatment Plant (Bufferlands)
GGs-2	2.36	0.00	Stormwater runoff ditch and dirt road adjacent to upland habitat consisting of annual grassland
GGs-3	0.00	0.00	Horizontal Directional Drilling method to be used no impact anticipated
GGs-4	3.62	0.00	Area under residential development to the east, RXR tracks to the west, seasonally dry
GGs-5	0.51	0.03	Annual grassland to the east, seasonal wetland to the west, seasonally dry
GGs-6	0.65	0.02	Corn to the east, RXR tracks to the west, no open water observed
GGs-7	2.44	0.02	Corn to the east, RXR tracks to the west
GGs-8	0.72	0.04	Corn and alfalfa to the east, RXR tracks to the west
GGs-9	3.45	0.04	Alfalfa to the east, RXR tracks to the west, portion of area adjacent to County Road
GGs-10	3.13	0.02	Alfalfa to the north, adjacent to County road on south
GGs-11	5.15	0.00	Adjacent to corn, row crops, and junkyard to the north alfalfa and corn to the south
GGs-12	0.00	0.00	Horizontal Directional Drilling method to be used no impact anticipated
GGs-13	0.64	0.02	Alfalfa to the north and corn to the south
GGs-14	4.50	0.02	Pasture land and alfalfa to the north, corn to the south
GGs-14A	3.78	0.34	Irrigation ditch fed via well water, alfalfa to the west, vineyard to the east, seasonally dry
GGs-14B	5.66	0.04	Alfalfa to the south, County road and vineyard to the north
GGs-15	1.47	0.00	Adjacent to chip-seal road with corn and seasonal wetland to the northeast, vineyard to the southwest, seasonally dry
GGs-16	0.00	0.00	Horizontal Directional Drilling method to be used no impact anticipated
GGs-17	0.00	0.00	Horizontal Directional Drilling method to be used no impact anticipated
GGs-18	0.00	0.00	Horizontal Directional Drilling method to be used no impact anticipated
GGs-19	1.22	0.00	Vineyard and road to the north, adjacent ponds hold large catfish and hay to the south
GGs-20	0.34	0.01	Irrigated pasture to the north, hay and vineyard to the south
GGs-21	1.01	0.01	Hay to the west, hay and manmade pond to the east, seasonally dry
GGs-22	0.00	0.00	Horizontal Directional Drilling method to be used no impact anticipated
GGs-23	0.00	0.00	Horizontal Directional Drilling method to be used no impact anticipated
Total	40.89	0.61	
Combined Total		41.50	

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: CGS #1 -

Surveyor's Name and Affiliation: Rick Crave + Russell Haddleton / CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(+)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets) (ic)(%)	(+)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	(+)
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	()
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	()
13. Site receives polluted runoff.	()

Notes and Comments (attached additional pages if necessary):

1 Photo taken site has intermittent thick stands of #33 cattails, some open water. Water depth was 5-7" Ditch is located just North of Sims Road within County Regional Sanitation District (Bufferlands)

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

9-5-02

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: EGS #2

Surveyor's Name and Affiliation: Rick Crowe + Russell Muddleston
CH2M Hill

Factor Present (+)
or
Absent (-)

- 1. Still or slow--flowing water over a mud or silt-substrate. (+)
- 2. Flowing water over sand, gravel, rock, or cement substrate. (+)
- 3. Water available: (+) Northern portion cement lined
 - a) April through October only (irrigation). ()
 - b) All year. (+)
 - c) During winter only (runoff). 90 ()
- 4. Banks are sunny. ()
- 5. Banks are shaded by overstory vegetation (large trees, willow thickets) (10) (%)
- 6. Aquatic or emergent vegetation present. (+)
- 7. Terrestrial vegetation present:
 - a) On banks. (+)
 - b) In adjacent uplands. +
- 8. Subterranean retreats (broken concrete or animal burrows) present:
 - a) in banks. (+)
 - b) In adjacent uplands. (+)
- 9. Small fish present. (+)
- 10. Introduced gamefish are present. (+)
- 11. Amphibians present. (+)
- 12. Site is subject to severe seasonal flooding. (-)
- 13. Site receives polluted runoff. (+)

Notes and Comments (attached additional pages if necessary):
Photo taken 2/6 canal 12-15' wide, emergent veg present
small willow patch @ north end on east side of bank
water smartweed, ditch is adjacent to lg. detention basin
situated between housing to the east and warehouses to
the west.

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GG S#3

Surveyor's Name and Affiliation: EJ Koford/CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	REC (+) -
2. Flowing water over sand, gravel, rock, or cement substrate.	()
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(S)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(S)(%)
6. Aquatic or emergent vegetation present.	()
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	()
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(+)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(+)
13. Site receives polluted runoff.	(+)

Notes and Comments (attached additional pages if necessary):

1 photo, Franklin Area is presently being disturbed
for development of Franklin Meadows. Prg @ time
of survey

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

9-5-02

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: 665#4

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston / CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	()
c) During winter only (runoff). / <i>springs</i>	(+)
4. Banks are sunny.	(30)(%)
5. Banks are shaded by overstory vegetation (large trees, <u>willow thickets</u>)	(20)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	(+)
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(-)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(-)
12. Site is subject to severe seasonal flooding.	(+)
13. Site receives polluted runoff.	() possible

Notes and Comments (attached additional pages if necessary):

3 Site is Ag tailing pond, dry during time of survey
Photostaker. Observed SWMA @ this location
~~37+38+37~~ pond is located between road to the east and new housing development to the east. Tailing pond w/associated irrigation ditches all areas dry @ time of survey

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: GG5 #5

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston / CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+) -
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	()
c) During winter only (runoff).	(+)
4. Banks are sunny.	(+)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(+)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	(+)
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	()
10. Introduced gamefish are present.	()
11. Amphibians present.	()
12. Site is subject to severe seasonal flooding.	(+) possible during
13. Site receives polluted runoff.	(+) peak rain events.

Notes and Comments (attached additional pages if necessary):

Dense cattail, sedge, feature that appears to receive irrigation
and heavy rain run-off. Day 2 time of survey
2 Photos #40 & 41

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: CGS #6

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston / CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	(+)
b) All year.	(+)
c) During winter only (runoff).	(+)
4. Banks are sunny.	(+) (%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(+) (%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(-)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(+)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):

Very dense feature veg. w/ cattails, water smartweed, Dallis grass
ditch has 100% cover of veg. no open water.
 2 Photos # 43 + 44. Banks covered w/ blackberry, adjacent
to cornfield and ruderal land

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

9-5-2002

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: GGS #7

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston / CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(%) (%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	() (%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	()? adjacent to dairy

Notes and Comments (attached additional pages if necessary):

Site #7 + 8 appear to be hydrologically connected. Survey taken at both features. GGS #7 runs between 2 cornfields. 4 photos of #7 + 8 taken photo #46 + 47

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: GG5 # 8

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston/CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(S)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(S)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(+)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	()
13. Site receives polluted runoff.	()? dairy runoff

Notes and Comments (attached additional pages if necessary):
See ~~ante~~ notes on # 7, # 8 has willow + cotton weeds
along banks, emergent veg: cattails, willow, Rubus, topiary
water covered w/ timber (duck weed)
Photo # 48 + 49 Adjacent to farm access road

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: EGS # 9

Surveyor's Name and Affiliation: R. Crowe & R. Haddleston / CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(+)
3. Water available:	
a) April through October only (irrigation).	(+)
b) All year.	(+)
c) During winter only (runoff).	(-)
4. Banks are sunny.	(0) (%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(0) (%) <i>channel check of</i>
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):

Ag irrigation ditch adjacent to alfalfa & corn fields
2 Photos taken. Open water covered with duck weed
Photo #50 & 51. Adjacent to Farm access road.

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: GG S^{II} 10

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston/CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+) 4 1/2"
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(-)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(-)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	() covered in duck weed
10. Introduced gamefish are present.	(+)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(+)

Notes and Comments (attached additional pages if necessary):
Ag irrigation ditch dense cattails + willows, some
cottonwoods 2 photos taken
Photo # 52 + 53 Adjacent to County Road.

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: GG5 #11

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston/CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(75) %
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(25) %
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	(+)
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):
long sequence of hydrologically connected ditches, variety of
veg in canal; scirpus bank willow + cottonwood, 1 point
taken in long linear feature, 2 photos, 1/2 of feature
photo # 54 + 55 + 56 is adjacent to dirt road + junkyard + row crops

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: 12

Surveyor's Name and Affiliation: R. Crowe & R. Huddleston / CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(50) (%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(50) (%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(+)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	() possible
13. Site receives polluted runoff.	(+)

Notes and Comments (attached additional pages if necessary):

Site # 12 is a sand stream with some vegetation
along the banks.

Photo # ~~57~~ 57

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GGS # 13

Surveyor's Name and Affiliation: R. Crowe & R. Huddleston / CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(75)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(25)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):
Very dense cattail irrigation ditch, 1 photo taken
cottonwood & willow @ northern end.
#58

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GG5 # 14

Surveyor's Name and Affiliation: R. Crowe & R. Huddleston / CH2MHILL

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(70) (%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(30) (%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):

Dense cattail irrigation ditch, with cottonwoods, fig, prunes & willow. Photo 2 taken, ditch is adjacent to farm access road.
Photo # 59 & 60

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GG5 # 14A

Surveyor's Name and Affiliation: R. Crowe/EJ Koford/CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(-)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	(+)
b) All year.	(-)
c) During winter only (runoff).	(+)
4. Banks are sunny.	(S)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(S)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	(+)
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(-)
b) In adjacent uplands.	(-)
9. Small fish present.	(-)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(-)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

Banks heavily veg. w/water smartweed

Notes and Comments (attached additional pages if necessary):
This ag. ~~irrigation~~ irrigation ditch is fed by well water, and appears to only carry water during irrigation periods, vineyard to the east, alfalfa to the west.
Dry @ time of survey

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GG5 # 14B

Surveyor's Name and Affiliation: R. Crowe + E.J. Koford / CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(⊕)
2. Flowing water over sand, gravel, rock, or cement substrate.	(⊖)
3. Water available:	
a) April through October only (irrigation).	(⊕)
b) All year.	()
c) During winter only (runoff).	()
4. Banks are sunny.	(80)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(20)(%)
6. Aquatic or emergent vegetation present.	(⊕)
7. Terrestrial vegetation present:	
a) On banks.	(⊕)
b) In adjacent uplands.	(⊕)
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(⊕)
b) In adjacent uplands.	(⊖)
9. Small fish present.	()
10. Introduced gamefish are present.	()
11. Amphibians present.	()
12. Site is subject to severe seasonal flooding.	(⊖)
13. Site receives polluted runoff.	(⊖)

ditch is covered
in cattails + scribe
veg. too dense to
tell
veg. too dense to T

Notes and Comments (attached additional pages if necessary):

14B is an irrigation ditch adjacent to alfalfa field
to the south, county road and vineyard to the north.

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GG5 #15

Surveyor's Name and Affiliation: R. Crowe & R. Huddleston / CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	(+)
b) All year.	(-)
c) During winter only (runoff).	(+)
4. Banks are sunny.	(60%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(40%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(-)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

created to peak water when necessary

Notes and Comments (attached additional pages if necessary):
#15 is a created irrigation detention pond, dry at time of survey, Scirpus, smartweed, 2 photos
Photo #61 & 62

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GG5 #18 Badger Creek

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston / CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(±)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(-)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(+)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(+)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):

#18 has intermittent ponded areas at time of survey
smartweed, scirpus & photo taken

photo # 63, 64 + 65

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

9-5-2002

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GGS #17 Swale/slough

Surveyor's Name and Affiliation: R. Crowe & R Huddleston/CH2MH:1/1

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	()
c) During winter only (runoff).	(+)
4. Banks are sunny.	(10)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(50)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(-)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(+)
13. Site receives polluted runoff.	(--)

Notes and Comments (attached additional pages if necessary):

#17 is a swale/slough type feature with an access road bisecting it on the west side standing water on east side where HDD will take place it is dry.

3 Photos taken

Photo #66, 67, 68

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

9-5-2002

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: GG5 # 18 Willow Creek

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston/CH2M Hill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(0)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(10)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(?) maybe
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):

scirpus, rubus, smartweed, 1 photo taken

photo # 69

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

9-5-2002

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: GGS #19

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston / CH2MHILL

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	()
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(0)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(70)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(+)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):

#19 Flows through fish farm and is adjacent to large ponds, no trees. Ag ditch. 1 photo taken Cattfish farm with large cattfish in adjacent ponds
Photo #70

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

9-5-2002

Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/

Site Name: 665 #20

Surveyor's Name and Affiliation: R. Crowe/R. Huddleston/CH2MH:11

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(+)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(60)(%) 100 ^{cattails}
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(+)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):

~~665 #20~~ is on Ag ditch, w/dense cattails; photo taken
vineyard and hay to the south, irrigated pasture to the
north.

Photo # 71

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

9-5-2002

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GCS #21

Surveyor's Name and Affiliation: R. Crowe & R. Huddleston/CH2MHill

Factor	Present (+) or Absent (-)
1. Still or slow--flowing water over a mud or silt-substrate.	(+)
2. Flowing water over sand, gravel, rock, or cement substrate.	(-)
3. Water available:	
a) April through October only (irrigation).	()
b) All year.	(+)
c) During winter only (runoff).	()
4. Banks are sunny.	(+)(%)
5. Banks are shaded by overstory vegetation (large trees, willow thickets)	(+)(%)
6. Aquatic or emergent vegetation present.	(+)
7. Terrestrial vegetation present:	
a) On banks.	(+)
b) In adjacent uplands.	+
8. Subterranean retreats (broken concrete or animal burrows) present:	
a) in banks.	(+)
b) In adjacent uplands.	(+)
9. Small fish present.	(-)
10. Introduced gamefish are present.	(-)
11. Amphibians present.	(+)
12. Site is subject to severe seasonal flooding.	(-)
13. Site receives polluted runoff.	(-)

Notes and Comments (attached additional pages if necessary):

Irrigation ditch across street from lg manmade pond
Johnson grass, Nodk, sedge, 1 photo taken, 2-3" of water
present @ time of survey, dry on 10-23-02 during follow-up survey
Photo # 72

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GG5 # 22 Laguna Creek

Surveyor's Name and Affiliation: R. Crowe + R. Huddleston/CH2MHill

Factor Present (+)
or
Absent (-)

- 1. Still or slow--flowing water over a mud or silt-substrate.
- 2. Flowing water over sand, gravel, rock, or cement substrate. Both
- 3. Water available:
 - a) April through October only (irrigation). ()
 - b) All year.
 - c) During winter only (runoff). ()
- 4. Banks are sunny. (%)
- 5. Banks are shaded by overstory vegetation (large trees, willow thickets) (%)
- 6. Aquatic or emergent vegetation present.
- 7. Terrestrial vegetation present:
 - a) On banks.
 - b) In adjacent uplands. +
- 8. Subterranean retreats (broken concrete or animal burrows) present:
 - a) in banks.
 - b) In adjacent uplands.
- 9. Small fish present.
- 10. Introduced gamefish are present.
- 11. Amphibians present.
- 12. Site is subject to severe seasonal flooding.
- 13. Site receives polluted runoff.

Notes and Comments (attached additional pages if necessary):
#22 is a blue-line stream lined w/valley oaks
and willows 2 Photos taken
Photo # 73 & 74

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.

**Appendix D. con't. Giant Garter Snake (GIANT GARTER SNAKE)
Habitat Evaluation Form 1/**

Site Name: GG5 # 23

Surveyor's Name and Affiliation: R. Crowe + E J Koford

Factor	Present (+) or Absent (-)
--------	---------------------------------

- | | | |
|--|----------|-------------------------|
| 1. Still or slow--flowing water over a mud or silt-substrate. | (+) | |
| 2. Flowing water over sand, gravel, rock, or cement substrate. | (-) | tailing or
stockpond |
| 3. Water available: | | |
| a) April through October only (irrigation). | () | |
| b) All year. | (+) | |
| c) During winter only (runoff). | () | |
| 4. Banks are sunny. | (69) (%) | |
| 5. Banks are shaded by overstory vegetation (large trees, willow thickets) | (40) (%) | juncas + smartweed |
| 6. Aquatic or emergent vegetation present. | (+) | |
| 7. Terrestrial vegetation present: | | |
| a) On banks. | (+) | |
| b) In adjacent uplands. | (+) | |
| 8. Subterranean retreats (broken concrete or animal burrows) present: | | |
| a) in banks. | (+) | |
| b) In adjacent uplands. | (+) | |
| 9. Small fish present. | (+) | |
| 10. Introduced gamefish are present. | (-) | |
| 11. Amphibians present. | (+) | |
| 12. Site is subject to severe seasonal flooding. | (-) | |
| 13. Site receives polluted runoff. | (-) | |

Notes and Comments (attached additional pages if necessary):

#23 is a tailing or stock pond just up-slope of
Laguna Creek, irrigated pasture north, south + west
Laguna Creek to the east

1/ Complete this form for each site surveyed. If site has been recently disturbed (channel maintenance, bank repair), survey the nearest undisturbed similar site, preferably on the same water course.