APPENDIX A

MAPS, TABLES, AND CHARTS

- MAP: PROPOSED PROJECT
- MAP: HABITAT TYPES
- MAP: FAULT ZONES
- MAP: FEMA FLOOD ZONES

AERIAL PHOTO 06-04-01

LEGEND

PROPOSED IMMEDIATE PUBLIC USES AND FACILITIES

- IMPROVED VEHICLE ACCESS
- VEHICLE PARKING (30 SPACES TOTAL)
- RESTROOM BUILDING (2 STALLS)
- PICNIC SITE / SCENIC OVERLOOK
- ALL ACCESS TRAIL
- FOOT TRAIL
- SITE RESIDENCE
- HISTORIC MANAGEMENT ZONE (RURAL HISTORIC LANDSCAPE DISTRICT)

FUTURE USES AND FACILITIES

- FUTURE TRAIL CONNECTION
- POTENTIAL USE OF HISTORIC STRUCTURE
- POTENTIAL ADMINISTRATIVE FACILITY / USE AREA

0 200 500 1000 FEET

SCALE

DESIGNED
DRAWN
CHECKED

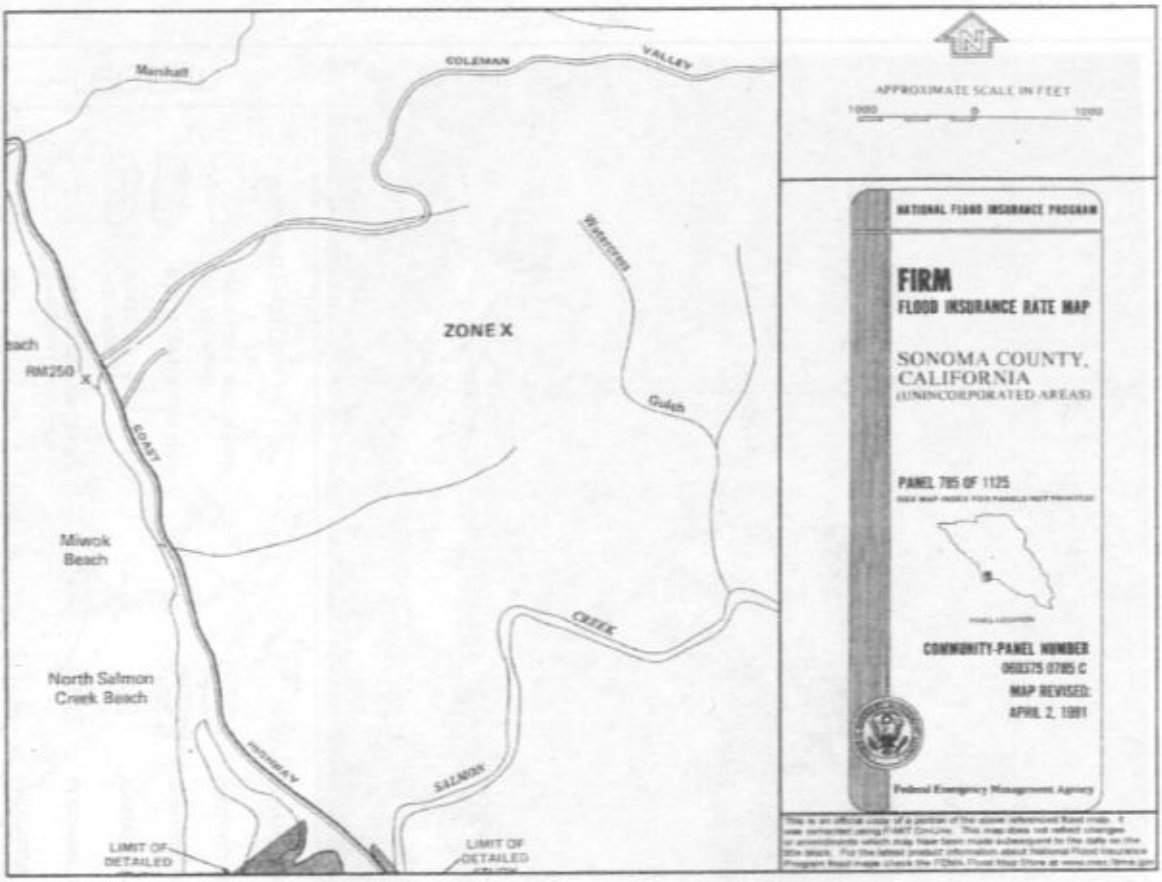
REVISIONS | DATE
ORIGINAL DRAWING | OCT. 2006
TRAIL WORKS ISSUED | MAR. 2008

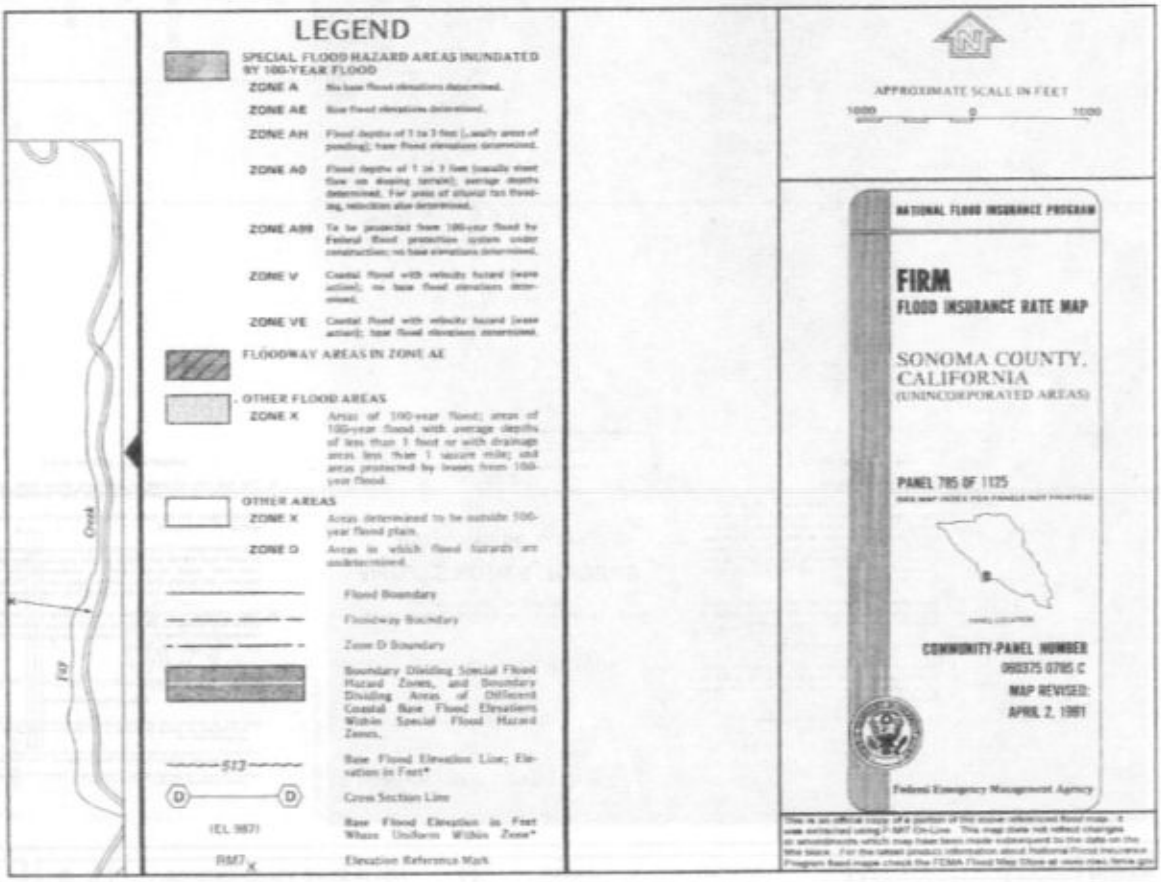
RESOURCES AGENCY OF CALIFORNIA
DEPARTMENT OF PARKS AND RECREATION
APPROVED: _____ DATE: _____

SONOMA COAST STATE BEACH
CARRINGTON RANCH
IMMEDIATE PUBLIC USE PLAN

DRAWING NO. 651-0156

SHEET NO. 6 OF 6


Marshall
COLEMAN
VALLEY
Watercress
Gulch
ZONE X
RM250
COAST
Miwok
Beach
CREEK
North Salmon
Creek Beach
HIGHWAY
SALMON
LIMIT OF
DETAILED
LIMIT OF
DETAILED
APPROXIMATE SCALE IN FEET
1000
0
1000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
SONOMA COUNTY,
CALIFORNIA
(UNINCORPORATED AREAS)
PANEL 785 OF 1125
COMMUNITY-PANEL NUMBER
060375 0785 C
MAP REVISED:
APRIL 2, 1991
Federal Emergency Management Agency


LEGEND
SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD
ZONE A
No base flood elevations determined.
ZONE AE
Base flood elevations determined.
ZONE AH
Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.
ZONE AO
Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE A99
To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.
ZONE V
Coastal flood with velocity hazard (wave action); no base flood elevations determined.
ZONE VE
Coastal flood with velocity hazard (wave action); base flood elevations determined.
FLOODWAY AREAS IN ZONE AE
OTHER FLOOD AREAS
ZONE X
Areas of 100-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.
OTHER AREAS
ZONE X
Areas determined to be outside 100-year flood plain.
ZONE D
Areas in which flood hazards are undetermined.
Flood Boundary
Floodway Boundary
Zone D Boundary
Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.
513
Base Flood Elevation Line; Elevation in Feet*
D
D
Cross Section Line
(EL 987)
Base Flood Elevation in Feet Where Uniform Within Zone*
RM7 X
Elevation Reference Mark
Fir
Creek
APPROXIMATE SCALE IN FEET
1000
0
1000
NATIONAL FLOOD INSURANCE PROGRAM
FIRM
FLOOD INSURANCE RATE MAP
SONOMA COUNTY,
CALIFORNIA
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PANEL 785 OF 1125
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APPENDIX B

SENSITIVE SPECIES LIST
CNDDB RECORD SEARCH

- PLANT LIST
- CNDDB RECORDS SEARCH RESULTS
- CNPS ONLINE INVENTORY SEARCH RESULTS

Table 1. Carrington Property Proposed Trail Alignment Species List

ANNUAL GRASSLAND HABITAT

Growth Form	Scientific Name	Common Name	Indicator	Wetland Plant?	Origin N= Native A= Alien
Fern	*Polypodium sp.*	POLYPODY	UPL	no	N
Forb (ann)	*Carduus pycnocephalus*	ITALIAN THISTLE	UPL	no	A
Forb (ann)	*Cerastium glomeratum*	MOUSE-EAR CHICKWEED	UPL	no	A
Forb (ann)	*Filago gallica*	HERBA IMPIA	UPL	no	A
Forb (ann)	*Lotus angustissimus*	SLENDER LOTUS	UPL	no	A
Forb (ann)	*Lotus humistratus*	BIRD'S FOOT LOTUS	UPL	no	A
Forb (ann)	*Lotus micranthus*	SMALL-FLOWERED LOTUS	UPL	no	N
Forb (ann)	*Lupinus bicolor*	MINIATURE LUPINE	UPL	no	N
Forb (ann)	*Plantago erecta*	DWARF PLANTAIN	UPL	no	N
Forb (ann)	*Silene gallica*	COMMON CATCHFLY	UPL	no	A
Forb (ann)	*Trifolium campestre*	HOP CLOVER	UPL	no	A
Forb (ann)	*Trifolium dubium*	LITTLE HOP CLOVER	UPL	no	A
Forb (ann)	*Trifolium subterraneum*	SUBTERRANEAN CLOVER	UPL	no	A
Forb (ann)	*Vicia sativa ssp. nigra*	NARROW-LEAVED VETCH	UPL	no	A
Forb (per)	*Calystegia purpurata ssp. purpurata*	PURPLE WESTERN MORNING-GLORY	UPL	no	N
Forb (per)	*Convolvulus arvensis*	BINDWEED	UPL	no	A
Forb (per)	*Hypochaeris radicata*	ROUGH CAT'S-EAR	UPL	no	A
Forb (per)	*Linum bienne*	PALE FLAX	UPL	no	A
Forb (per)	*Plantago lanceolata*	ENGLISH PLANTAIN	FACU	no	A
Forb (per)	*Rumex acetosella*	SHEEP SORREL	FACU	no	A
Grass (ann)	*Aira caryophyllea*	SILVER EUROPEAN HAIRGRASS	UPL	no	A
Grass (ann)	*Avena barbata*	SLENDER WILD OAT	UPL	no	A
Grass (ann)	*Briza maxima*	QUAKING GRASS	UPL	no	A
Grass (ann)	*Bromus diandrus*	RIPGUT GRASS	UPL	no	A
Grass (ann)	*Bromus hordeaceus*	SOFTCHESS	UPL	no	A
Grass (ann)	*Cynosurus echinatus*	HEDGEHOG DOGTAIL	UPL	no	A
Grass (ann)	*Hordeum murinum ssp. leporinum*	FOXTAIL BARLEY	FACU	no	A
Grass (ann)	*Vulpia bromoides*	SIX WEEKS BROME	UPL	no	A
Grass (per)	*Cynodon dactylon*	BERMUDA GRASS	FAC	yes	A
Grass (per)	*Lolium perenne*	PERENNIAL RYEGRASS	FACU	no	A
Grass (per)	*Nasella lepida*	FOOTHILL NEEDLE-GRASS	UPL	no	N
Grass (per)	*Nasella pulchra*	PURPLE NEEDLE-GRASS	UPL	no	N

PERENNIAL GRASSLAND HABITAT

Growth Form	Scientific Name	Common Name	Indicator	Wetland Plant?	Origin N= Native A= Alien
Fern	*Pteridium aquilinum var. pubescens*	BRACKEN FERN	FACU	no	N
Forb (ann)	*Erechtites sp.*	FIREWEED	NI	no	A
Forb (ann)	*Galium aparine*	GOOSE GRASS	FACU	no	N
Forb (ann)	*Lotus humistratus*	BIRD'S FOOT LOTUS	UPL	no	A
Forb (ann)	*Lupinus bicolor*	MINIATURE LUPINE	UPL	no	N
Forb (ann)	*Myosotis discolor*	CHANGING FORGET-ME-NOT	FACW	yes	A
Forb (ann)	*Sonchus oleraceus*	COMMON SOW-THISTLE	FACU	no	A
Forb (ann)	*Vicia sativa ssp. nigra*	NARROW-LEAVED VETCH	UPL	no	A
Forb (per)	*Acaena pinnatifida var. californica*	CALIFORNIA SHEEPBURR	UPL	no	N
Forb (per)	*Achillea millefolium*	YARROW	UPL	no	N
Forb (per)	*Agoseris apargioides var. apargioides*	COAST DANDELION	UPL	no	N
Forb (per)	*Aster chilensis*	CALIFORNIA ASTER	FAC	yes	N
Forb (per)	*Brodiaea terrestris ssp. terrestris*	DWARF BRODIAEA	UPL	no	N
Forb (per)	*Calystegia purpurata ssp. purpurata*	PURPLE WESTERN MORNING-GLORY	UPL	no	N
Forb (per)	*Camissonia ovata*	SUN CUP	UPL	no	N
Forb (per)	*Chlorogalum pomeridianum*	SOAP PLANT	UPL	no	N
Forb (per)	*Circium vulgare*	BULL THISTLE	FACU	no	A
Forb (per)	*Clarkia davyi*	DAVY'S CLARKIA	UPL	no	N
Forb (per)	*Hypochaeris radicata*	ROUGH CAT'S-EAR	UPL	no	A
Forb (per)	*Iris douglasiana*	DOUGLAS IRIS	UPL	no	N
Forb (per)	*Linum bienne*	PALE FLAX	UPL	no	A
Forb (per)	*Lotus corniculatus*	BIRDFOOT TREFOIL	FAC	yes	A
Forb (per)	*Plantago lanceolata*	ENGLISH PLANTAIN	FACU	no	A
Forb (per)	*Rumex acetosella*	SHEEP SORREL	FACU	no	A
Forb (per)	*Sanguisorba minor ssp. muricata*	GARDEN BURNET	UPL	no	A
Forb (per)	*Sisyrinchium bellum*	BLUE-EYED-GRASS	FAC	yes	N
Forb (per)	*Stachys ajugoides var. rigida*	RIGID HEDGE NETTLE	FACW	yes	N
Forb (per)	*Taraxacum officinale*	COMMON DANDELION	FACU	no	A
Forb (per)	*Trifolium repens*	WHITE CLOVER	FACU	no	A
Forb (per)	*Triteleia laxa*	ITHURIEL'S SPEAR	UPL	no	N
Forb (per)	*Vicia Americana var. americana*	AMERICAN VETCH	NI	no	N
Grass (ann)	*Briza minor*	LITTLE QUAKING GRASS	FACW	yes	A
Grass (ann)	*Bromus hordeaceus*	SOFTCHESS	UPL	no	A
Grass (ann)	*Cynosurus echinatus*	HEDGEHOG DOGTAIL	UPL	no	A
Grass (per)	*Bromus carinatus*	CALIFORNIA BROME	UPL	no	N

PERENNIAL GRASSLAND HABITAT CONT.

Growth Form	Scientific Name	Common Name	Indicator	Wetland Plant?	Origin N= Native A= Alien
Grass (per)	*Deschampsia cespitosa ssp. holciformis*	TUFTED HAIRGRASS	FACW	yes	N
Grass (per)	*Elymus glaucus*	BLUE WILDRYE	FACU	no	N
Grass (per)	*Festuca idahoensis*	IDAHO FESCUE	UPL	no	N
Grass (per)	*Holcus lanatus*	COMMON VELVET GRASS	FAC	yes	A
Grass (per)	*Hordeum brachyantherum ssp. brachyantherum*	MEADOW BARLEY	FACW	yes	N
Grass (per)	*Lolium perenne*	PERENNIAL RYEGRASS	FACU	no	A
Grass (per)	*Nasella lepida*	FOOTHILL NEEDLE-GRASS	UPL	no	N
Grass (per)	*Nasella pulchra*	PURPLE NEEDLE-GRASS	UPL	no	N
Shrub	*Baccharis pilularis*	COYOTE BRUSH	UPL	no	N
Shrub	*Rhamnus californica ssp. californica*	CALIFORNIA COFFEEBERRY	UPL	no	N
Shrub	*Rosa eglanteria*	SWEET-BRIER	UPL	no	A
Shrub	*Rubus ursinus*	CALIFORNIA BLACKBERRY	UPL	no	N
Subshrub	*Lupinus variicolor*	VARIED LUPINE	UPL	no	N

WET MEADOW HABITAT

Growth Form	Scientific Name	Common Name	Corps Type	Wetland Plant?	Origin N= Native A= Alien
Forb (ann)	*Anagallis arvensis*	SCARLET PIMPERNEL	FAC	yes	A
Forb (ann)	*Myosotis discolor*	CHANGING FORGET-ME-NOT	FACW	yes	A
Forb (ann)	*Trifolium variegatum*	VARIEGATED CLOVER	FACW	yes	N
Forb (ann)	*Vicia sativa ssp. nigra*	NARROW-LEAVED VETCH	UPL	no	A
Forb (ann)	*Vicia tetrasperma*	LENTIL VETCH	UPL	no	A
Forb (per)	*Anaphalis margaritacea*	PEARLY EVERLASTING	UPL	no	N
Forb (per)	*Camissonia ovata*	SUN CUP	UPL	no	N
Forb (per)	*Carex densa*	DENSE SEDGE	OBL	yes	N
Forb (per)	*Digitalis purpurea*	FOXGLOVE	UPL	no	A
Forb (per)	*Eriogonum latifolium*	COAST BUCKWHEAT	UPL	no	N
Forb (per)	*Eryngium armatum*	COYOTE THISTLE	FACW	yes	N
Forb (per)	*Iris douglasiana*	DOUGLAS IRIS	UPL	no	N
Forb (per)	*Juncus effusus*	COMMON RUSH	FACW	yes	N
Forb (per)	*Juncus patens*	SPREADING RUSH	FACW	yes	N
Forb (per)	*Lotus corniculatus*	BIRDFOOT TREFOIL	FAC	yes	A
Forb (per)	*Lotus pinnatus*	PINNATE-LEAVED LOTUS	FACW	yes	N
Forb (per)	*Luzula comosa*	HAIRY WOOD RUSH	NI	no	N
Forb (per)	*Plantago lanceolata*	ENGLISH PLANTAIN	FACU	no	A
Forb (per)	*Ranunculus californicus*	CALIFORNIA BUTTERCUP	FAC	yes	N
Forb (per)	*Romulea rosea var. australis*	ROSY SANDCROCUS	UPL	no	A
Forb (per)	*Rumex acetosella*	SHEEP SORREL	FACU	no	A
Forb (per)	*Sisyrinchium bellum*	BLUE-EYED-GRASS	FAC	yes	N
Forb (per)	*Stachys ajugoides var. rigida*	RIGID HEDGE NETTLE	FACW	yes	N
Forb (per)	*Viola adunca*	WESTERN DOG VIOLET	FAC	yes	N
Forb (per)	*Wyethia sp.*	MULES EARS	FAC	yes	N
Grass (ann)	*Briza minor*	LITTLE QUAKING GRASS	FACW	yes	A
Grass (ann)	*Polypogon monspeliensis*	ANNUAL BEARD GRASS	FACW	yes	A
Grass (per)	*Calamagrostis nutkaensis*	PACIFIC REED GRASS	FACW	yes	N
Grass (per)	*Danthonia californica var. californica*	CALIFORNIA OATGRASS	FACW	yes	N
Grass (per)	*Deschampsia cespitosa ssp. holciformis*	TUFTED HAIRGRASS	FACW	yes	N
Grass (per)	*Holcus lanatus*	COMMON VELVET GRASS	FAC	yes	A
Grass (per)	*Hordeum brachyantherum ssp. brachyantherum*	MEADOW BARLEY	FACW	yes	N
Shrub	*Rubus ursinus*	CALIFORNIA BLACKBERRY	UPL	no	N

FRESH EMERGENT WETLAND HABITAT

Growth Form	Scientific Name	Common Name	Corps Type	Wetland Plant?	Origin N= Native A= Alien
Fern	*Athyrium filix-femina var. cyclosporum*	LADY FERN	FAC	yes	N
Fern	*Polystichum munitum*	WESTERN SWORD FERN	UPL	no	N
Forb (ann)	*Juncus bufonius*	TOAD RUSH	OBL	yes	N
Forb (ann)	*Myosotis discolor*	CHANGING FORGET-ME-NOT	FACW	yes	A
Forb (ann)	*Ranunculus muricatus*	SPINY BUTTERCUP	FACW	yes	A
Forb (ann)	*Trifolium variegatum*	VARIEGATED CLOVER	FACW	yes	N
Forb (per)	*Allium triquetrum*	WHITE FLOWERED ONION	UPL	no	A
Forb (per)	*Carex densa*	DENSE SEDGE	OBL	yes	N
Forb (per)	*Cotula coronopifolia*	BRASS-BUTTONS	FACW	yes	A
Forb (per)	*Cyperus eragrostis*	FLATSEDGE	FACW	yes	N
Forb (per)	*Eleocharis sp.*	SPIKERUSH	OBL	yes	N
Forb (per)	*Equisetum sp.*	HORSETAIL	FAC	yes	N
Forb (per)	*Geranium potentilloides*	CINQUEFOIL GERANIUM	NI	no	A
Forb (per)	*Helenium puberulum*	SNEEZEWEED, ROSILLA	FACW	yes	N
Forb (per)	*Juncus effusus*	COMMON RUSH	FACW	yes	N
Forb (per)	*Juncus patens*	SPREADING RUSH	FACW	yes	N
Forb (per)	*Juncus phaeocephalus var. phaeocephalus*	BROWNHEAD RUSH	FACW	yes	N
Forb (per)	*Lotus corniculatus*	BIRDFOOT TREFOIL	FAC	yes	A
Forb (per)	*Mentha pulegium*	PENNYROYAL	OBL	yes	A
Forb (per)	*Mimulus guttatus*	SEEP MONKEY-FLOWER	OBL	yes	N
Forb (per)	*Mimulus moschatus*	MUSK MONKEYFLOWER	FACW	yes	N
Forb (per)	*Oenanthe sarmentosa*	WATER PARSLEY	OBL	yes	N
Forb (per)	*Oxalis albicans ssp. pilosa*	RADISH-ROOT WOODSORREL	UPL	no	N
Forb (per)	*Plantago submuda*	NAKED PLANTAIN	FACW	yes	N
Forb (per)	*Polygonum bistortoides*	MARSH BUCKWHEAT	FACW	yes	N
Forb (per)	*Potentilla anserina ssp. pacifica*	PACIFIC POTENTILLA, SILVERWEED	OBL	yes	N
Forb (per)	*Pseudostellaria jamesiana*	STICKY STARWORT	UPL	no	N
Forb (per)	*Ranunculus californicus*	CALIFORNIA BUTTERCUP	FAC	yes	N
Forb (per)	*Ranunculus occidentalis*	WESTERN BUTTERCUP	FACW	yes	N
Forb (per)	*Rumex conglomeratus*	CLUSTERED DOCK	FACW	yes	A
Forb (per)	*Rumex pulcher*	FIDDLE DOCK	FAC	yes	A
Forb (per)	*Solanum americanum*	COMMON NIGHTSHADE	FAC	yes	N
Forb (per)	*Stachys ajugoides var. rigida*	RIGID HEDGE NETTLE	FACW	yes	N
Forb (per)	*Urtica dioica ssp. holosericea*	STINGING NETTLE	FACW	yes	N
Forb (per)	*Veronica Americana*	AMERICAN BROOKLIME	OBL	yes	N

VALLEY FOOTHILL RIPARIAN

Growth Form	Scientific Name	Common Name	Corps Type	Wetland Plant?	Origin N= Native A= Alien
Fern	*Athyrium filix-femina var. cyclosporum*	LADY FERN	FAC	yes	N
Fern	*Pentagramma triangularis ssp. triangularis*	GOLDBACK FERN	UPL	no	N
Fern	*Polystichum munitum*	WESTERN SWORD FERN	UPL	no	N
Fern	*Woodwardia fimbriata*	GIANT CHAIN FERN	FACW	yes	N
Forb (ann)	*Lythrum hyssopifolium*	LOOSESTRIFE	OBL	yes	A
Forb (per)	*Conium maculatum*	POISON HEMLOCK	FACW	yes	A
Forb (per)	*Digitalis purpurea*	FOXGLOVE	UPL	no	A
Forb (per)	*Equisetum sp.*	HORSETAIL	FAC	yes	N
Forb (per)	*Foeniculum vulgare*	FENNEL	FACU	no	A
Forb (per)	*Galium trifidum var. pacificum*	SMALL BEDSTRAW	FACW	yes	N
Forb (per)	*Heracleum lanatum*	COW PARSNIP	FACU	no	N
Forb (per)	*Marah fabaceus*	CALIFORNIA MAN-ROOT	UPL	no	N
Forb (per)	*Oenanthe sarmentosa*	WATER PARSLEY	OBL	yes	N
Forb (per)	*Scrophularia californica*	CALIFORNIA FIGWORT	FACW	yes	N
Forb (per)	*Senecio mikanioides*	GERMAN IVY	UPL	no	A
Forb (per)	*Sidalcea malviflora ssp. malviflora*	CHECKER MALLOW	UPL	no	N
Forb (per)	*Stachys ajugoides var. rigida*	RIGID HEDGE NETTLE	FACW	yes	N
Forb (per)	*Stachys chamissonis*	COAST HEDGE NETTLE	OBL	yes	N
Forb (per)	*Urtica dioica ssp. holosericea*	STINGING NETTLE	FACW	yes	N
Shrub	*Ceanothus thyrsiflorus*	BLUE BLOSSOM	UPL	no	N
Shrub	*Lonicera involucrata var. ledebourii*	TWINBERRY	FAC	yes	N
Shrub	*Physocarpus capitatus*	NINEBARK	FAC	yes	N
Shrub	*Ribes sp.*	CURRANT, GOOSEBERRY	FAC	yes	N
Shrub	*Rubus discolor*	HIMALAYAN BLACKBERRY	UPL	no	A
Shrub	*Rubus parviflorus*	THIMBLEBERRY	FAC	yes	N
Shrub	*Rubus spectabilis*	SALMONBERRY	FAC	yes	N
Shrub	*Rubus ursinus*	CALIFORNIA BLACKBERRY	UPL	no	N
Shrub	*Sambucus racemosa var. racemosa*	RED ELDERBERRY	FACU	no	N
Tree	*Cupressus macrocarpa*	MONTEREY CYPRESS	UPL	no	A
Tree	*Salix lasiolepis*	ARROYO WILLOW	FACW	yes	N

CNDDB RECORDS SEARCH

Print table Show entire table in new window Export entire table to a text file

Results for BODEGA HEAD Quad (3812231) - 43 elements selected

Record	QUADNAME	ELMCODE	SCINAME	COMNAME	FEDSTATUS	CALSTATUS	CDFG	CNPSLIST
1	Bodega Head	AAABH01022	Rana aurora draytonii	California red-legged frog	Threatened	None	SC	
2	Bodega Head	ABNNB03031	Charadrius alexandrinus nivosus	western snowy plover	Threatened	None	SC	
3	Bodega Head	ABNSB10010	Athene cunicularia	burrowing owl	None	None	SC	
4	Bodega Head	AFCQN04010	Eucyclogobius newberryi	tidewater goby	Endangered	None	SC	
5	Bodega Head	AMACC01070	Myotis evotis	long-eared myotis	None	None		
6	Bodega Head	AMACC01090	Myotis thysanodes	fringed myotis	None	None		
7	Bodega Head	AMACC05030	Lasiurus cinereus	hoary bat	None	None		
8	Bodega Head	AMACC08010	Corynorhinus townsendii	Townsend's big-eared bat	None	None	SC	
9	Bodega Head	AMAJF04010	Taxidea taxus	American badger	None	None	SC	
10	Bodega Head	ARAAD02031	Actinemys marmorata marmorata	northwestern pond turtle	None	None	SC	
11	Bodega Head	CTT52110CA	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	None	None		
12	Bodega Head	CTT52200CA	Coastal Brackish Marsh	Coastal Brackish Marsh	None	None		
13	Bodega Head	CTT52410CA	Coastal and Valley Freshwater Marsh	Coastal and Valley Freshwater Marsh	None	None		
14	Bodega Head	ICMAL27010	Syncaris pacifica	California freshwater shrimp	Endangered	Endangered		
15	Bodega Head	IICOL67020	Lichnanthe ursina	bumblebee scarab beetle	None	None		
16	Bodega Head	ILEPJ6089	Speyeria zerene myrtleae	Myrtle's silverspot	Endangered	None		
17	Bodega Head	ILEPJ6089	Speyeria zerene myrtleae	Myrtle's silverspot	Endangered	None		
18	Bodega Head	ILEPP2010	Danaus plexippus	monarch butterfly	None	None		
19	Bodega Head	ILEPP2010	Danaus plexippus	monarch butterfly	None	None		
20	Bodega Head	IMGASJ7040	Tryonia imitator	mimic tryonia (=California brackishwater snail)	None	None		
21	Bodega Head	PDAST2E050	Cirsium andrewsii	Franciscan thistle	None	None		1B.2
22	Bodega Head	PDAST5L0C4	Lasthenia californica ssp. bakeri	Baker's goldfields	None	None		1B.2
23	Bodega Head	PDAST5L0C5	Lasthenia californica ssp. macrantha	perennial goldfields	None	None		1B.2
24	Bodega Head	PDCAM02060	Campanula californica	swamp harebell	None	None		1B.2
25	Bodega Head	PDCON040D2	Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	None	None		1B.2
26	Bodega Head	PDFAB0B012	Amorpha californica var. napensis	Napa false indigo	None	None		1B.2
27	Bodega Head	PDFAB2B3Y0	Lupinus tidestromii	Tidestrom's lupine	Endangered	Endangered		1B.1
28	Bodega Head	PDLAM180P7	Monardella villosa ssp. globosa	robust monardella	None	None		1B.2
29	Bodega Head	PDMAL110FL	Sidalcea malviflora ssp. purpurea	purple-stemmed checkerbloom	None	None		1B.2
30	Bodega Head	PDNYC010N2	Abronia umbellata ssp. breviflora	pink sand-verbena	None	None		1B.1
31	Bodega Head	PDPGN04081	Chorizanthe cuspidata var. cuspidata	San Francisco Bay spineflower	None	None		1B.2
32	Bodega Head	PDPGN04082	Chorizanthe cuspidata var. villosa	woolly-headed spineflower	None	None		1B.2
33	Bodega Head	PDPGN0L1C0	Polygonum marinense	Marin knotweed	None	None		3.1
34	Bodega Head	PDPLM040B3	Gilia capitata ssp. chamissonis	blue coast gilia	None	None		1B.1
35	Bodega Head	PDPLM040B9	Gilia capitata ssp. tomentosa	woolly-headed gilia	None	None		1B.1
36	Bodega Head	PDPLM04130	Gilia millefoliata	dark-eyed gilia	None	None		1B.2
37	Bodega Head	PDRAN0B0Z0	Delphinium luteum	golden larkspur	Endangered	Rare		1B.1
38	Bodega Head	PDROS0W0B0	Horkelia marinensis	Point Reyes horkelia	None	None		1B.2
39	Bodega Head	PDSCR0J0C3	Cordylanthus maritimus ssp. palustris	Point Reyes bird's-beak	None	None		1B.2
40	Bodega Head	PDTHY03010	Dirca occidentalis	western leatherwood	None	None		1B.2
41	Bodega Head	PMCYP032Y0	Carex comosa	bristly sedge	None	None		2.1
42	Bodega Head	PMLIL021R1	Allium peninsulare var. franciscanum	Franciscan onion	None	None		1B.2
43	Bodega Head	PMPOA04060	Agrostis blasdalei	Blasdale's bent grass	None	None		1B.2

Print table Show entire table in new window Export entire table to a text file

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+"Bodega Head (503D) 3812331" Search

Tip: +Lathyrus +"coastal dunes" returns only those Lathyrus in coastal dunes. Note the "+" and quotes.[all tips and help.][search history]

Hits 1 to 19 of 19

Requests that specify topo quads will return only Lists 1-3.

To save selected records for later study, click the ADD button.

ADD checked items to Plant Press | check all | check none

Selections will appear in a new window.

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		1	Allium peninsulare var. franciscanum	Franciscan onion	Liliaceae	List 1B.2
		1	Amorpha californica var. napensis	Napa false indigo	Fabaceae	List 1B.2
		1	Calystegia purpurata ssp. saxicola	coastal bluff morning-glory	Convolvulaceae	List 1B.2
		1	Carex comosa	bristly sedge	Cyperaceae	List 2.1
		1	Chorizanthe cuspidata var. villosa	woolly-headed spineflower	Polygonaceae	List 1B.2
		1	Cordylanthus maritimus ssp. palustris	Point Reyes bird's-beak	Scrophulariaceae	List 1B.2
		1	Delphinium luteum	yellow larkspur	Ranunculaceae	List 1B.1
		1	Dirca occidentalis	western leatherwood	Thymelaeaceae	List 1B.2
		1	Gilia capitata ssp. chamissonis	dune gilia	Polemoniaceae	List 1B.1
		1	Gilia millefoliata	dark-eyed gilia	Polemoniaceae	List 1B.2
		1	Horkelia marinensis	Point Reyes horkelia	Rosaceae	List 1B.2
		1	Lasthenia californica ssp. macrantha	perennial goldfields	Asteraceae	List 1B.2
		1	Lupinus tidestromii	Tidestrom's lupine	Fabaceae	List 1B.1
		1	Monardella villosa ssp. globosa	robust monardella	Lamiaceae	List 1B.2
		1	Polygonum marinense	Marin knotweed	Polygonaceae	List 3.1
		1	Sidalcea hickmanii ssp. viridis	Marin checkerbloom	Malvaceae	List 1B.3

	☐	1	**Sidalcea malviflora ssp. purpurea**	purple-stemmed checkerbloom	Malvaceae	List 1B.2
	☐	1	**Triquetrella californica**	coastal triquetrella	Pottiaceae	List 1B.2

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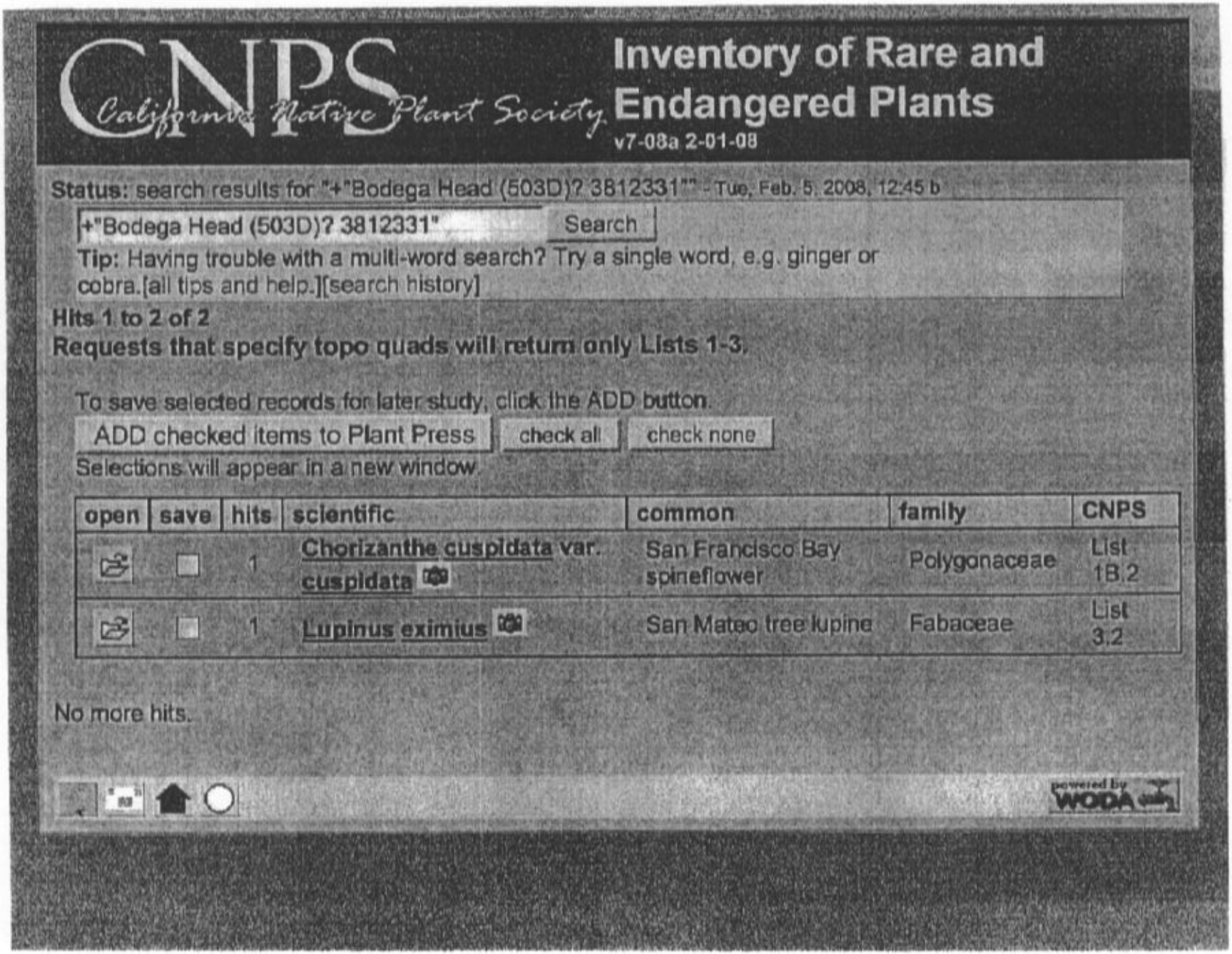
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+"Bodega Head (503D)? 3812331"
Search
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check none
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Chorizanthe cuspidata var. cuspidata
San Francisco Bay spineflower
Polygonaceae
List 1B.2
Lupinus eximius
San Mateo tree lupine
Fabaceae
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To save selected records for later study, click the ADD button.

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Selections will appear in a new window.

open	save	hits	scientific	common	family	CNPS
		1	Abronia umbellata ssp. breviflora	pink sand-verbena	Nyctaginaceae	List 1B.1
		1	Campanula californica	swamp harebell	Campanulaceae	List 1B.2
		1	Gilia capitata ssp. tomentosa	woolly-headed gilia	Polemoniaceae	List 1B.1
		1	Lasthenia californica ssp. bakeri	Baker's goldfields	Asteraceae	List 1B.2

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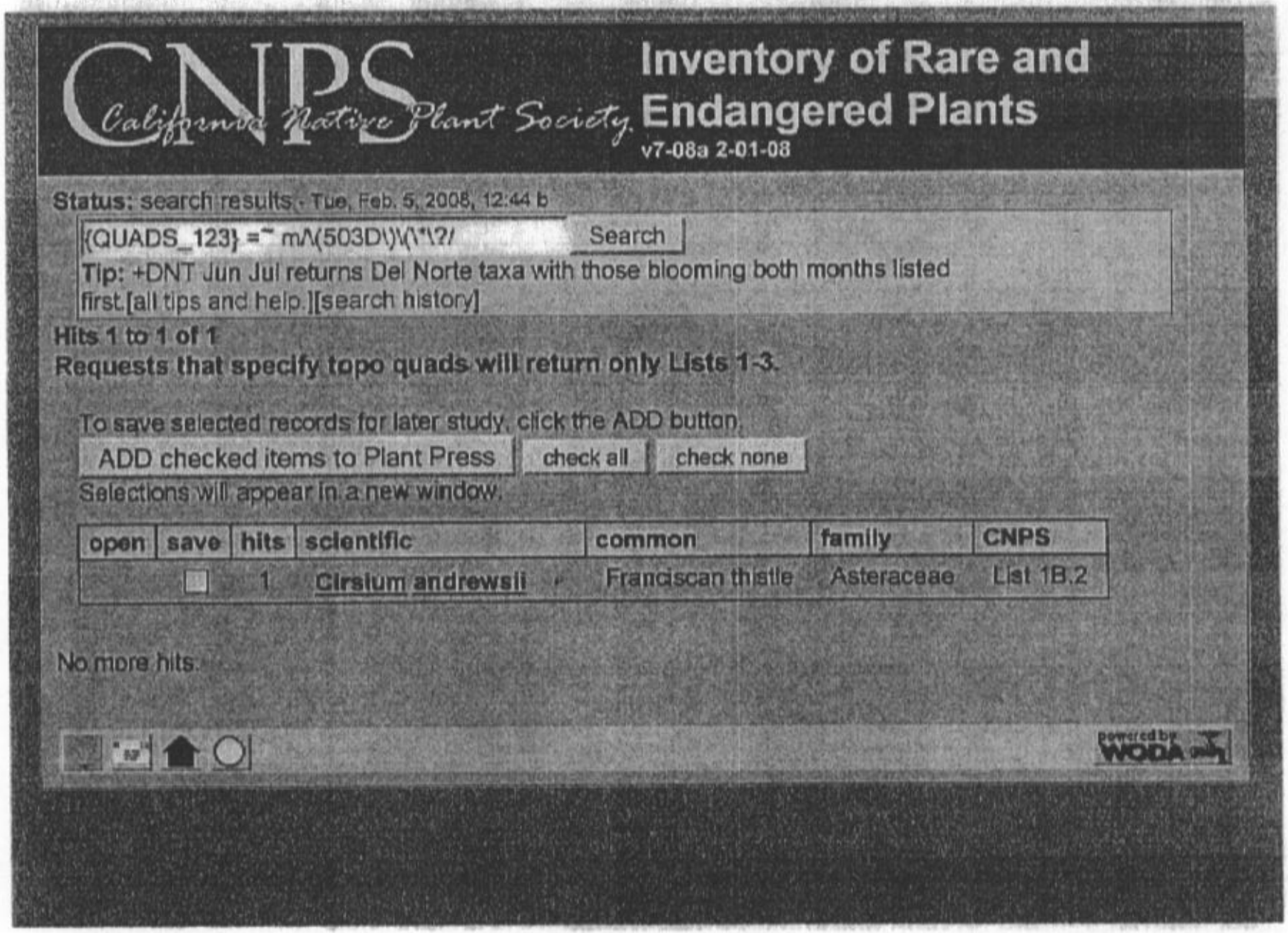
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Status: search results - Tue, Feb. 5, 2008, 12:44 b
{QUADS_123} =~ m/\(503D\)\(*\?/
Search
Tip: +DNT Jun Jul returns Del Norte taxa with those blooming both months listed first.[all tips and help.][search history]
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family
CNPS
1
Cirsium andrewsii
Franciscan thistle
Asteraceae
List 1B.2
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APPENDIX C

CARRINGTON RANCH IMMEDIATE PUBLIC USE FACILITIES PLAN (REVISED 2010)

ATTACHED AS A SEPARATE DOCUMENT

APPENDIX D

CARRINGTON RANCH TRAFFIC IMPACT STUDY

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Carrington Ranch Traffic Impact Study

for the

Sonoma County Agricultural Preservation
and Open Space District

August 26, 2009

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B Collision Rate Spreadsheet
C Left Turn Lane Warrant Calculation Sheets

Executive Summary

This report presents an analysis of the potential traffic impacts that would be associated with the proposed Carrington Ranch Park project in the County of Sonoma. The property is located approximately three miles north of the town of Bodega Bay on Coleman Valley Road, just east of State Route (SR) 1. The study area consisted of SR 1 and Coleman Valley Road in the vicinity of the project site, and their intersection. The traffic analysis was completed in accordance with criteria established by the County of Sonoma, and is consistent with standard traffic engineering techniques. Operating conditions were evaluated during both the weekday p.m. and weekend midday peak hours under Existing Conditions, Existing plus Project Conditions, Future Conditions, and Future plus Project Conditions.

Project Trip Generation

The proposed Carrington Ranch project is expected to generate 228 trips (114 vehicles in and 114 vehicles out) on an average weekday, including eight trips during the p.m. peak hour, and approximately 379 trips per day on weekends, with 11 of these occurring during the midday peak hour.

Operating Conditions

The study intersection is currently operating with little to no delay at LOS A overall during both the weekday p.m. peak hour and weekend midday peak hour, and would continue to do so upon adding project-generated traffic. Likewise, with the increase in traffic on SR 1 projected for the year 2035, the study intersection is expected to operate at LOS A overall during both peak periods evaluated without and with project traffic added.

A left-turn lane is not warranted on SR 1 at Coleman Valley Road.

Access and Circulation

Available sight distance from the project driveways on Coleman Valley Road is adequate. However, given the narrow and rural nature of Coleman Valley Road, combined with the fact that the project driveways are located on an incline section of roadway between horizontal curves under intermittent tree canopy coverage, vegetation removal, including two large trees adjacent to the project driveways, is recommended to improve sight lines for visitor traffic and pedestrians crossing between the project driveways.

To accommodate project traffic and facilitate emergency access, spot widening is recommended along the segment of Coleman Valley Road between SR 1 and the project driveways to achieve a consistent minimum width of 18 feet.

Parking

The proposed parking supply of 30 spaces is expected to accommodate typical daily parking demand, and is consistent with the project's planned maximum visitor capacity of approximately 100 persons at a time.

Study Parameters

Prelude

The purpose of a traffic impact study is to provide County staff and policy makers such as Planning Commissioners and Supervisors with data that they can use to make an informed decision regarding the potential traffic impacts of a proposed project, and any associated improvements that would be required in order to mitigate these impacts to a level of insignificance as defined by the County's General Plan or other guiding documents and policies. Traffic impacts are typically evaluated by determining the number of trips the new use would be expected to generate, distributing the new trips to the surrounding street system based on existing travel patterns or anticipated travel patterns specific to the proposed project, then analyzing the impact the new traffic would be expected to have on critical intersections included in the study.

Study Area and Periods

The study area includes the segments of State Route 1 (SR 1) and Coleman Valley Road in the vicinity of the proposed project, and their intersection. The study area is shown in Figure 1.

The weekday p.m. and weekend midday peak periods were chosen for evaluation. Traffic volumes on SR 1 in this portion of Sonoma County are typically at their highest on summer weekends because of tourist and recreation-related traffic.

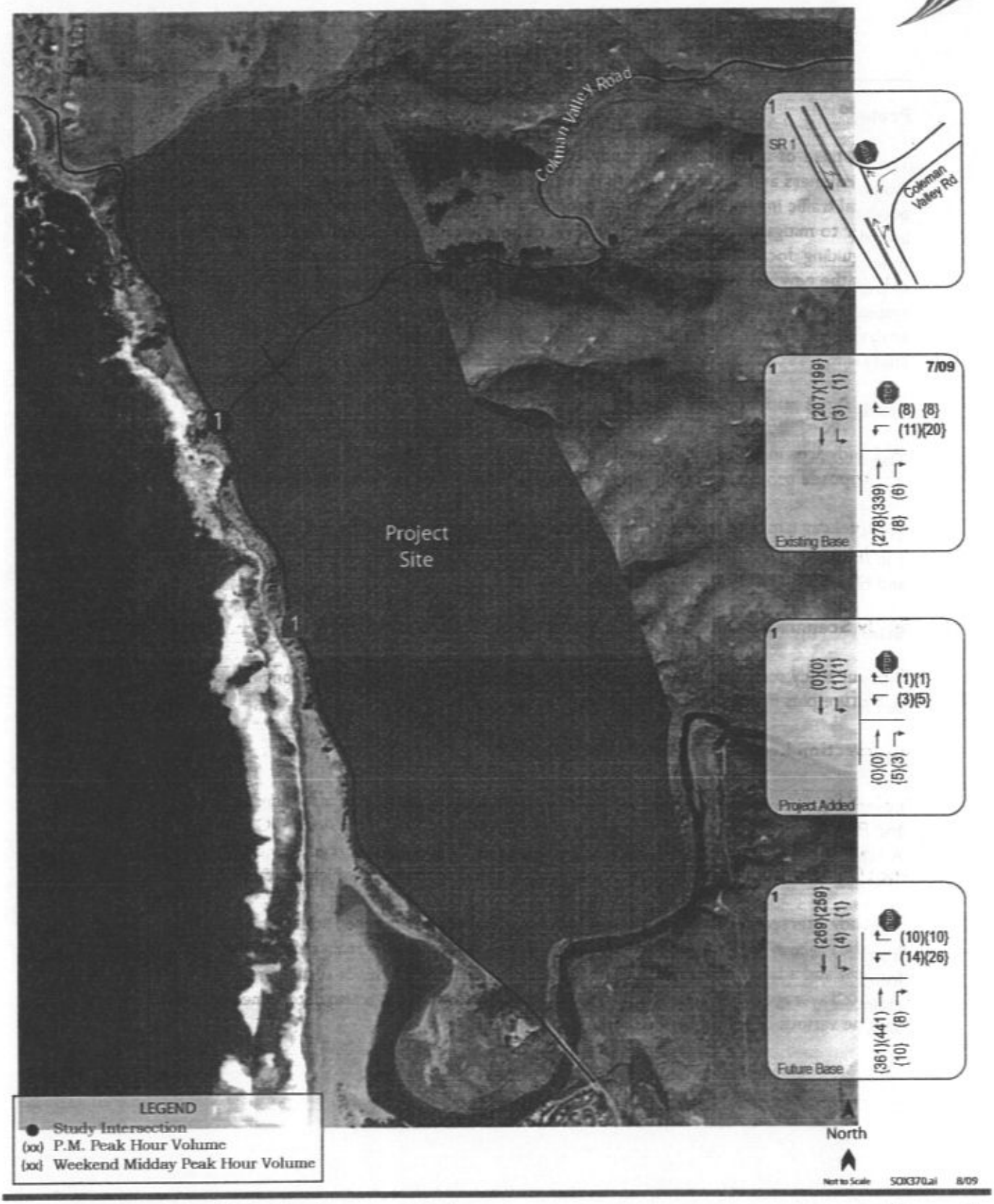
Study Scenarios

The four study scenarios include Existing Conditions, Existing plus Project Conditions, Future Conditions, and Future plus Project Conditions.

Intersection Level of Service Methodologies

Level of Service (LOS) is used to rank traffic operation on various types of facilities based on traffic volumes and roadway capacity using a series of letter designations ranging from A to F. Generally, Level of Service A represents free flow conditions and Level of Service F represents forced flow or breakdown conditions. The LOS designation is generally accompanied by a unit of measure which indicates a level of delay.

The study intersection was evaluated using the two-way stop-controlled intersection capacity methodology from the *Highway Capacity Manual*. The through movements on the main street are assumed to operate at free flow and a Level of Service A. The level of service for each minor turning movement is based on the estimated average delay. Average delay for the intersection overall is also determined. The delay associated with the various Levels of Service is shown in Table 1.



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Sonoma County Agriculture Preservation and Open Space District

Figure 1

Lane Configurations and Traffic Volumes

Table I
Two-Way Stop-Controlled Intersection Level of Service Criteria

LOS A	Delay of 0 to 10 seconds. Gaps in traffic are readily available for drivers exiting the minor street.
LOS B	Delay of 10 to 15 seconds. Gaps in traffic are somewhat less readily available than with LOS A, but no queuing occurs on the minor street.
LOS C	Delay of 15 to 25 seconds. Acceptable gaps in traffic are less frequent, and drivers may approach while another vehicle is already waiting to exit the side street.
LOS D	Delay of 25 to 35 seconds. There are fewer acceptable gaps in traffic, and drivers may enter a queue of one or two vehicles on the side street.
LOS E	Delay of 35 to 50 seconds. Few acceptable gaps in traffic are available, and longer queues may form on the side street.
LOS F	Delay of more than 50 seconds. Drivers may wait for long periods before there is an acceptable gap in traffic for exiting the side streets, creating long queues.

Reference: *Highway Capacity Manual 2000*, Transportation Research Board, 2000.

Traffic Operation Standards

The County's existing LOS standard does not specifically apply to intersections, so the following criteria developed by County staff were applied in this study.

The Level of Service standard for intersections is Level of Service (LOS) D. The project would have a significant traffic impact if the project's traffic would cause an intersection currently operating at an acceptable level of service (LOS D or better) to operate below the standard (LOS E or F). If the intersection currently operates or is projected to operate below the County standard (at LOS E or F), the project's impact is significant and cumulatively considerable if it causes the delay for any critical movement to increase by five seconds or more.

California Department of Transportation's (Caltrans) significance criteria was also looked at in this evaluation. In the *Guide for the Preparation of Traffic Impact Studies*, Caltrans indicates that they endeavor to maintain operation at the transition from LOS C to LOS D; however, where operation is already below LOS C, the existing measure of effectiveness should be maintained.

Existing Conditions

Description of Study Area

The study area consisted of the segments of SR 1 and Coleman Valley Road in the vicinity of the proposed project, and the intersection of SR 1/Coleman Valley Road. The locations of the study intersections as well as the project driveways and their lane geometries are shown in Figure 1.

State Route 1 (SR 1) is designated as a Rural Minor Arterial in the *Sonoma County General Plan 2020*. SR 1 is the primary local and regional route along the coast, providing north-south access between coastal communities, east-west routes, and adjacent counties. In the vicinity of the project, SR 1 has two 11-foot travel lanes and limited shoulders. Pullouts are provided periodically where topography permits. A 30-mph advisory speed sign is posted on SR 1 in the vicinity of the project.

Coleman Valley Road is designated as a Local Road in the General Plan. Coleman Valley Road is a narrow two-lane road that provides local access over the coastal hills between SR 1 and the community of Occidental. Coleman Valley Road has a 25-mph *prima facia* speed limit. Coleman Valley Road measures approximately 15-19 feet wide in the vicinity of the project site.

SR 1/Coleman Valley Road is a "tee" intersection with the westbound Coleman Valley Road approach stop-controlled.

Transit

Sonoma County Transit (SCT) Route 29 provides fixed route transit service to the Sonoma Coast on weekends in July and August with a loop route via the lower Russian River area, Santa Rosa, and Sebastopol.

Mendocino Transit Authority (MTA) Route 95 provides daily transit service along the Sonoma Coast between Point Arena and Santa Rosa, with one southbound trip in the morning and one northbound trip in the afternoon.

Both transit services accommodate wheelchairs and bicycles on their transit vehicles.

Bicycles

There are no designated bicycle facilities in the project study area. However, SR 1 is on the State's Pacific Coast Bike Route, and is designated as a proposed Class III bike route in the *Sonoma County Bikeways Plan*, 1997. Both Coleman Valley Road and SR 1 are popular recreational bike routes.

Pedestrians

No sidewalks or pedestrian facilities are provided along SR 1 or Coleman Valley Road in the study area.

Existing Conditions

The Existing Conditions scenario provides an evaluation based on actual current traffic volumes on a daily basis as well as during the weekday p.m. and weekend midday peak periods. Traffic counts for the study

roadways and intersection were obtained via machine counters between July 2 - 6, 2009, leading up to and over the 4th of July holiday weekend, and conservatively reflect peak summertime traffic conditions.

Based on these existing volumes, the study intersection is currently operating at LOS A overall during both study periods, with the minor approach from Coleman Valley Road onto SR 1 at LOS B during both peak periods. The Existing traffic volumes used for analysis are shown in Figure 1. A summary of the Level of Service calculations is contained in Table 2 and copies are provided in Appendix A.

Table 2
Summary of Existing Intersection Level of Service Calculations

Intersection *Approach*	Existing Conditions				Existing plus Project			
	Weekday PM Peak		Weekend Midday Peak		Weekday PM Peak		Weekend Midday Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 1/Coleman Valley Rd	0.4	A	0.6	A	0.5	A	0.8	A
Westbound Approach	*12.0*	*B*	*11.6*	*B*	*12.1*	*B*	*11.8*	*B*

Note: Delay is shown in average seconds per vehicle, LOS = Level of Service

Collision History

The collision history for the study area was reviewed to determine any trends or patterns that may indicate a safety issue. Collision rates were calculated based on records for 2003 through 2008 obtained from the California Highway Patrol and published in their State Wide Integrated Traffic Records System (SWITRS) reports. The calculated rates were compared to average collision rates for similar facilities statewide, as indicated in *2007 Collision Data on California State Highways*, Caltrans. Spreadsheets indicating the data used and rate derivation are provided in Appendix B.

For the five-year period reviewed, the one-mile segment of SR 1 studied (one-half mile to the north and south of Coleman Valley Road) was found to have 10 reported collisions resulting in a calculated collision rate of 0.60 collisions/million vehicle miles (c/mvm). The statewide average collision rate for a rural two-lane highway with a speed limit less than or equal to 50 mph is 1.34 c/mvm. Since the collision rate on this portion of SR 1 is less than half of the statewide average, it would appear that it is operating within acceptable safety standards. Further review of the individual collision records indicates that seven of the ten collisions were single-vehicle "overturned" incidents, two involved single vehicles hitting "fixed objects," and the last incident was a "head-on" collision. The collision types are consistent with the types of collisions expected on a rural two-lane highway with rolling topography.

One collision was recorded during the five-year study period at the intersection of SR 1/Coleman Valley Road, a single vehicle incident that occurred late at night and was attributed to driving under the influence. The associated collision rate for this intersection is 0.06 collisions per million vehicles entering (c/mve), which is significantly lower than the statewide average of 0.22 c/mve for this type of intersection.

No collisions were recorded on Coleman Valley Road in the vicinity of the project during the five-year review period. As a conservative measure, the length of the review period for this segment of Coleman Valley Road was extended to 10 years; still no collisions were recorded.

Future Conditions

Project Description

The Carrington Ranch is a 335-acre property located at the junction of SR 1 and Coleman Valley Road on the Sonoma Coast north of Bodega Bay adjacent to the Sonoma Coast State Park. Access to the property is provided via Coleman Valley Road. The Carrington Ranch includes open coastal prairie, rolling hills, the remaining elements of a historic dairy ranch, and spectacular views of the coastline and ocean. The *Immediate Public Use Facilities Plan for the Carrington Property*, California Department of Parks and Recreation Russian River District (2008), was prepared to guide development and facilitate low impact public use on the property, which will become part of the Sonoma Coast State Beach. The proposed project includes the stabilization of historic structures (no public use is proposed), installation of one mobile home pad for a caretaker residence, development of a two-stall restroom building, five picnic sites, and approximately three miles of hiking trail with interpretive displays. The planned maximum visitor capacity is approximately 100 people at one time. The site plan is shown in Figure 2.

The project includes the development of vehicle parking areas on both the north and south sides of Coleman Valley Road, with a combined total of 30 spaces for public access. The parking lots would be accessed via opposing driveways on Coleman Valley Road, located approximately 950 feet east of SR 1. No public parking is planned along the sides of Coleman Valley Road or SR 1.

As shown on the site plan, there are future coastal trail connections tentatively planned at the north and south ends of the project property. These connections are not part of the current proposal; so were therefore not evaluated in this study.

Project Trip Generation

The anticipated trip generation for the proposed project was estimated using standard rates published by the Institute of Transportation Engineers (ITE) in *Trip Generation*, 8th Edition, 2008. The trip generation potential of the project as planned was developed using the rates for "State Park" (ITE LU #413) and "Single Family Detached Housing" (ITE LU #210). The State Park land use rates are based on a wide variety of park facilities which include beaches, hiking trails, picnic facilities, and general open space, as well as more active use facilities such as boating or swimming facilities, ball fields, and camp sites. Trip generation rates for "Single Family Detached Housing" (ITE LU #210) were applied to the caretaker's residence.

It is important to note that while standard trip generation rates for "State Park" were applied for the Carrington Ranch project, these rates are considered to present a conservative analysis for several reasons. First, the project will remain as open space and provide opportunities for passive use only. The project does not include any of the active uses such as "boating, swimming, ball fields, and campsites" that are included in the sample facilities used to create the State Park trip generation rate. Second, the project will be incorporated into the larger existing Sonoma Coast State Beach. Given the number and variety of existing facilities that make up the Sonoma Coast State Beach, Carrington Ranch is in an area that is well served with minimal latent demand; thus the project will be one potential destination among the dozens of recreation opportunities that exist along the 17-mile stretch of coastline that makes up the Sonoma Coast State Beach. Finally, the parking at the project site will be limited to 30 spaces, which will help to limit the maximum number of visitors at any given time.

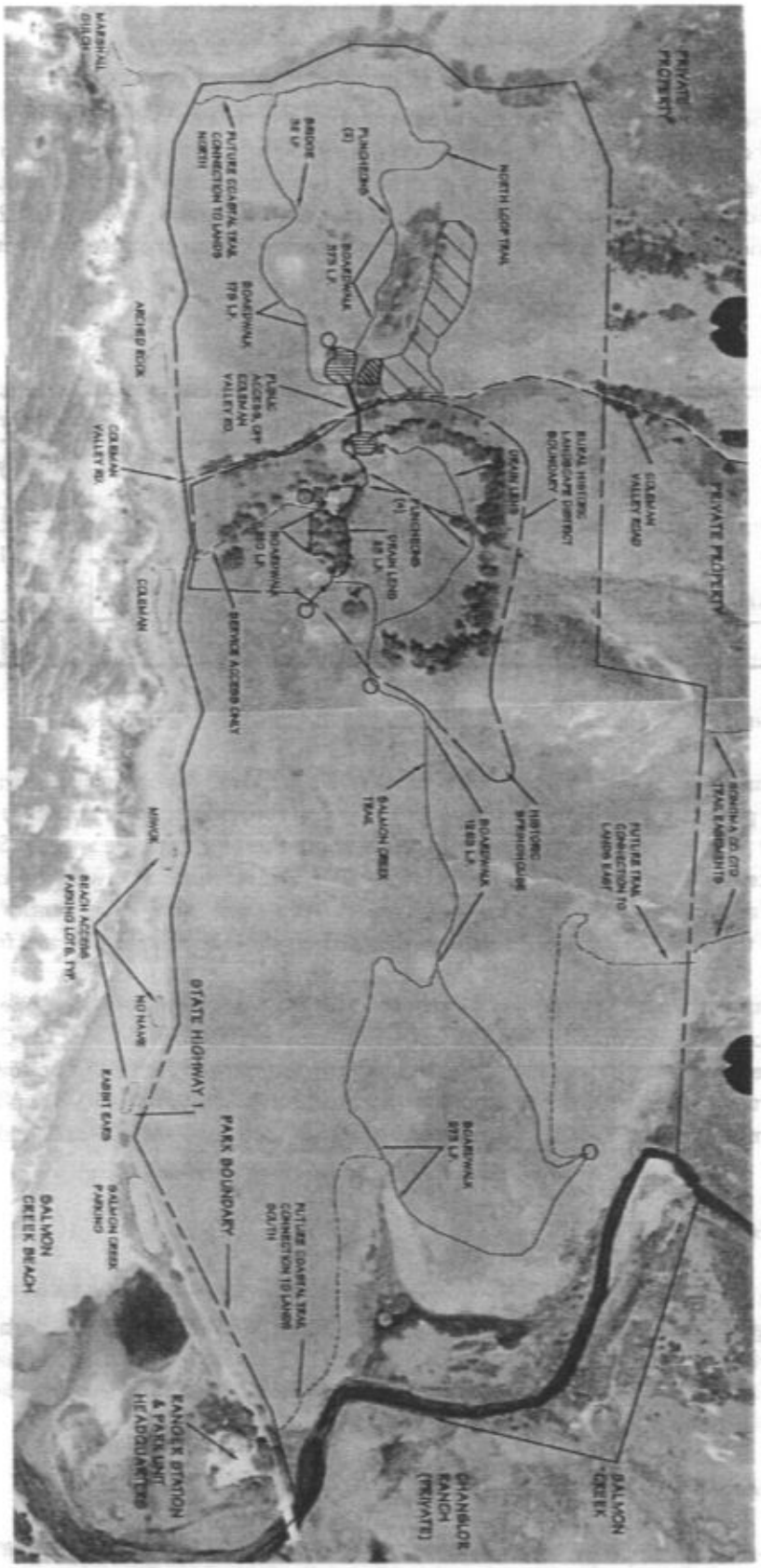

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Figure 2

Site Plan

Based on application of the standard rates, the proposed project is conservatively expected to generate an average of 228 trips per weekday, including eight trips during the p.m. peak hour, and 379 trips per day on weekends, including 11 trips during the midday peak hour. Note that a 'trip' is a one-direction movement which begins or ends at the proposed project. Thus, on an average weekday, an estimated 228 trips would consist of 114 round trips. The expected trip generation potential for the proposed project is indicated in Table 3.

Table 3
Trip Generation Summary

Land Use	Units	Weekday						Weekend					
		Daily		PM Peak Hour				Daily		Midday Peak Hour			
		Rate	Trips	Rate	Trips	In	Out	Rate	Trips	Rate	Trips	In	Out
State Park	335 acres	0.65	218	0.01	7	3	4	1.1	369	0.03	10	5	5
Single Family Housing	1	9.57	10	1.01	1	1	0	10.08	10	0.93	1	1	0
Net New Trips			**228**		**8**	**4**	**4**		**379**		**11**	**6**	**5**

Trip Distribution

Trip distribution assumptions were based upon existing traffic patterns, regional travel characteristics, and assumed origins of project users. Although Coleman Valley Road provides a viable option to access the site from the east, 100 percent of the project trips were distributed to and from the west to SR 1. This was done in order to test the maximum project impacts on SR 1, and because SR 1 would provide the most convenient access to the site for the majority of visitors. It was assumed that 15 percent of visitors would travel to and from the north on SR 1, with the remaining 85 percent would travel to and from the south.

While 100 percent of the project trips were distributed to SR 1 for the impact assessment, it is worth noting that some project patrons may chose to access the site to and from the east via Coleman Valley Road. It is estimated that up to10 percent of the daily trips could utilize Coleman Valley Road to reach the site. This would translate into a projected maximum of 22 to 23 daily weekday trips, and up to 38 weekend daily trips. The impact of these potential additional trips on Coleman Valley Road is expected to be negligible.

Existing plus Project Conditions

Upon the addition of project-related traffic to existing volumes the study intersection is expected to continue operating at LOS A overall during both the weekday p.m. and weekend midday peak hours. Average vehicle delay at the intersection would be expected to increase by less than one-half of a second. A summary of the Level of Service calculations is provided in Table 2 and copies are provided in Appendix A. Project turning movement volumes are shown in Figure 1.

Future Conditions

Future p.m. peak hour volume projections were obtained from the County of Sonoma Traffic Model. The County has developed a traffic model for use in evaluating the potential traffic impacts of build out of the

land uses described in the current General Plan together with new or improved streets. The model is an electronic simulation of streets and roads, called links, and sub areas of the County, called Traffic Analysis Zones (TAZ). The links representing the street system have values indicating capacity, travel speed, distance and lanes while TAZ's have values for various land use categories such as housing, commercial and industrial uses. The model uses an iterative process to assign trips originating in one zone to likely destination zones based upon home-to-work, shopping and work related trips. The accumulation of trips from each zone provides the anticipated traffic demand for each link in the system.

Using the traffic link volumes from the model for the year 2035, future weekend midday peak hour traffic volumes on SR 1 were estimated by developing a growth factor. A conservative factor of 1.3 percent was assumed based on the County's Traffic Model and a review of future turning movements on the surrounding roadway network. Figure 1 shows the projected weekday p.m. and weekend midday peak hour traffic volumes at the study intersection.

Under Future Conditions and without development of the proposed project, the study intersection is expected to operate at LOS A overall during both the weekday p.m. and weekend midday peak hours. A summary of the Future Level of Service calculations is provided in Table 4, and copies of the calculations are provided in Appendix A. Future turning movement volumes are shown in Figure 1.

Table 4
Summary of Future Intersection Level of Service Calculations

Intersection *Approach*	Future Conditions				Future plus Park			
	Weekday PM Peak		Weekend Midday Peak		Weekday PM Peak		Weekend Midday Peak	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. SR 1/Coleman Valley Rd	0.5	A	0.7	A	0.6	A	0.8	A
Westbound Approach	*13.2*	*B*	*12.8*	*B*	*13.4*	*B*	*13.0*	*B*

Note: Delay is shown in average seconds per vehicle, LOS = Level of Service

Future plus Project Conditions

As indicated in Table 4, with development of the Carrington Ranch Project, the study intersection is projected to continue operating at LOS A overall during both peak periods under year 2035 conditions.

Site Access Evaluation

The proposed Carrington Ranch project will include two parking areas located directly across from one another on either side of Coleman Valley Road. Access to the parking areas will be provided via existing unpaved driveways located approximately 950 feet east of SR 1.

Sight Distance

Sight distances at the project driveways as well as at the intersection of SR 1/Coleman Valley Road were

evaluated based on sight distance criteria contained in the Caltrans *Highway Design Manual*, 6th Edition. The *Highway Design Manual* indicates that public street corner sight distance requirements are not applicable for driveways, so private road standards were applied, with the minimum sight distance requirement based on stopping sight distance. Since the speed limit is not posted on Coleman Valley Road in the vicinity of the project, a speed of 25 miles per hour (mph) was assumed for this narrow section of roadway. A 25-mph private road intersection should have stopping sight distance of at least 150 feet.

The driveways intersect Coleman Valley Road on an inclined section of roadway between horizontal curves under intermittent tree canopy coverage. Sight distance from the northern project driveway exceeds 150 feet in both directions and measures approximately 330 feet to the east (uphill) and 400 feet to the west (downhill). While a large eucalyptus tree is located along the east side of the northern driveway, sight distance to the east remains adequate from both behind and in front of the tree trunk. Sight distance requirements are met at the northern driveway.

Sight distance from the southern project driveway measures approximately 150 feet to the east (uphill) and 175 feet to the west (downhill). While sight distance requirements from the southern project driveway are also met, the following actions are recommended in order to increase sight lines and improve safety conditions at the project driveways for visitors and pedestrians crossing Coleman Valley Road:

- Understory foliage east of the project driveway (uphill) on the south side of the roadway should be trimmed between two and eight feet off of the ground to provide clear sight lines. Additionally, a large cypress tree along the project fence line east of the driveway on the south side of the road inhibits sight distance. Removal of the tree would significantly increase sight distance from the southern project driveway. See Plates 1 and 2.

Plate 1: Trees east of driveways impact sight lines.

Plate 2: Trim vegetation to improve sight lines.

- Trim vegetation growing on the south side of Coleman Valley Road west of the project driveway to a distance of eight feet back from the edge of the road to increase sight lines to the west. See Plate 2.

- Install pedestrian warning signs (W76) in advance of the project driveways to advise approaching motorists to expect pedestrians crossing Coleman Valley Road between the two parking areas.

- Prohibit parking along the project frontage to ensure sight lines are maintained.

Site Access

Conditions on Coleman Valley Road were evaluated to determine its adequacy to accommodate project generated traffic. Coleman Valley Road is a narrow two-lane road that extends approximately 10 miles over the coastal hills between SR 1 and the community of Occidental. Coleman Valley Road is a very low volume road, but a popular scenic route for vehicles and a recreational route for bicyclists. The closest residence to the project site is located approximately 1.3 miles to the east. Between SR 1 and the project driveways, Coleman Valley Road has a cross section that measures between approximately 15 and19 feet wide. An AC berm is provided along a portion of the south side of the roadway segment. Field observations indicate that vehicles were able to pass side by side, even on the narrowest sections, without conflict. However, to accommodate project traffic and facilitate emergency access, spot widening is recommended along the segment of Coleman Valley Road between SR 1 and the project driveways to achieve a consistent minimum width of 18 feet. A (W1) sign, "Winding Narrow Road Next 8 Miles" supplemented by an "RV's and Trailers Not Recommended" plaque is posted at the base of Coleman Valley Road. The Park should consider including a similar message in any promotional literature prepared for the park to discourage use of Coleman Valley Road as a through route, especially for oversized vehicles and trailers. It is recommended that the County consider installing a bicycle warning sign (W 11-1), at the base of Coleman Valley Road to alert motorists of the likely presence of bicyclists on the roadway.

Driveway Access

To accommodate visitor traffic, emergency vehicles, and recreational vehicles that may stop for day use, it is recommended that both driveways be widened to 24 feet and paved to a depth of 50 feet from Coleman Valley Road to allow entering and exiting vehicles to pass side by side and safely maneuver on to and off of Coleman Valley Road.

Left-Turn Lane Channelization

The need for left-turn channelization on SR 1 at Coleman Valley Road 1 was evaluated based on criteria contained in the *Intersection Channelization Design Guide*, National Cooperative Highway Research Program (NCHRP) Report No. 279, Transportation Research Board, 1985, as well as a more recent update of the methodology developed by the Washington State Department of Transportation. The NCHRP report references a methodology developed by M. D. Harmelink that includes equations that can be applied to expected or actual traffic volumes in order to determine the need for a turn pocket based on safety issues.

Left-turn lane warrants were calculated for the southbound left-turn movement SR 1 onto Coleman Valley Road using volumes from all scenarios and time periods studied. A turn lane is not warranted under any of the conditions evaluated. As a sensitivity test, the warrant analysis was run under the Future plus Project weekday p.m. peak hour volumes, which are the highest experienced, with the volumes on SR 1 doubled, and a left turn pocket would still not be warranted, so one is not recommended. Copies of the left-turn lane warrant calculation sheets are provided in Appendix C.

Parking

The project site plan identifies two proposed parking areas, which would provide a total parking supply of 30 spaces. Pedestrians will need to cross Coleman Valley Road to get from the north lot to the restroom, picnic, and fully accessible trail facilities on the south side of the road. The north parking area would serve

as the principle parking area for the project and would accommodate 22 passenger vehicles. The north parking area has the potential to accommodate overflow parking that may be associated with special events or future expansion. The south parking area would accommodate eight vehicles and primarily serve visitors with mobility restrictions. The proposed parking supply is expected to be adequate to meet the park's typical daily demand, and is consistent with the planned maximum visitor capacity of approximately 100 persons at a time. In the event that visitors arrive and find the parking areas full, they would chose and/or be redirected to another one of the nearby facilities that make up the Sonoma Coast State Park.

It is recommended that short-term bicycle parking be in the southern parking area along with the visitor amenities to serve bicyclists visiting the site. Four to six "U" racks can accommodate eight to 12 bicycles within a foot print of approximately eight feet by 18 feet, or roughly the equivalent of one vehicle parking space.

Future Trail Connections

While future trail connections between the project and the adjacent Sonoma Coast State Beach are not part of the current proposal and have not been included in this analysis, the *Carrington Ranch Immediate Public Use Plan* includes conceptual trail alignments with proposed trail crossings of SR 1. The conceptual trail alignments show the crossings near the northwestern edge of the property in the vicinity of Marshall Gulch and at the southwestern edge of the property connecting to the Ranger Station/Park Headquarters. To ensure safety for trail users, it is recommended that an engineering analysis be prepared for future trail crossings to evaluate safety conditions and sight distance, and to design a package of crossing enhancements appropriate for the crossing locations.

Conclusions

- The study intersection of SR 1/Coleman Valley Road is currently operating acceptably during both peak periods evaluated, and is expected to continue doing so upon the addition of project traffic under all scenarios evaluated.
- The proposed project is expected to generate an average of 228 trips per weekday, including eight trips during the p.m. peak hour, and an average of 379 trips per day on weekends, including 11 trips during the midday peak hour.
- The study segments and study intersection have calculated collision rates that are significantly lower than average collision rates for similar facilities statewide.
- A left-turn lane is not warranted at the intersection of SR 1/Coleman Valley Road.
- Minimum sight distance requirements are met at the project driveways, however, several recommendations are provided to improve sight lines along Coleman Valley Road.
- The proposed parking supply of 30 spaces is expected to adequately accommodate the project's typical daily parking demand and is consistent with the planned maximum visitor capacity of approximately 100 persons at a time.

Recommendations

- Spot widening is recommended along the segment of Coleman Valley Road between SR 1 and the project driveways to achieve a consistent minimum width of 18 feet.
- To accommodate visitor traffic, including emergency and recreational vehicles, it is recommended that both driveways be widened to 24 feet and paved to a depth of 50 feet from Coleman Valley Road.
- Understory foliage east of the project driveway (uphill) on the south side of the roadway should be trimmed between two and eight feet off of the ground to provide clear sight lines.
- Removal of a large cypress tree along the south side of Coleman Valley Road to the east of the driveway would significantly increase sight distance from the southern project driveway.
- Vegetation growing on the south side of Coleman Valley Road west of the project driveway should be trimmed to a distance of eight feet back from the edge of the road to increase sight lines to the west.
- Pedestrian warning signs (W76) should be installed in both directions on Coleman Valley Road in advance of the project driveways to advise approaching motorists to expect pedestrians crossing between the two driveways.
- It is recommended that short-term bicycle parking be installed in the southern parking area along with the visitor amenities to serve bicyclists visiting the site.

- Park promotional literature should include a message discouraging the use of Coleman Valley Road as a through route, especially for oversized vehicles and trailers.

- It is recommended that the County consider installing a bicycle warning sign (W11-1), at the base of Coleman Valley Road to alert motorists of the likely presence of bicyclists on the roadway.

- When developing future trail crossings of SR 1, it is recommended that an engineering analysis be prepared to evaluate safety conditions and sight distance, and to design a package of crossing enhancements appropriate for the crossing locations.

- Install "No Parking" signs along Coleman Valley Road in the vicinity of the project entrance where necessary.

Study Participants and References

Study Participants

Principal-in-Charge:	Steve Weinberger, P.E., PTOE
Project Planner:	Josh Abrams
Graphics/Technician:	Deborah Dunn
Editing/Formatting:	Angela McCoy
Report Review:	Dalene J. Whitlock, P.E., PTOE

References

2007 Collision Data on California State Highways (road miles, travel, collisions, collision rates), California Department of Transportation, 2007

California Manual on Uniform Traffic Control Devices for Streets and Highways, California Department of Transportation, 2006

Guide for the Preparation of Traffic Impact Studies, California Department of Transportation, 2002

Highway Capacity Manual, Transportation Research Board, 2000

Highway Design Manual, 6th Edition, California Department of Transportation, 2006

Immediate Public Use Facilities Plan for the Carrington Property, California Department of Parks and Recreation Russian River District, 2008

Intersection Channelization Design Guide, National Cooperative Highway Research Program (NCHRP) Report No. 279, Transportation Research Board, 1985

Mendocino Transit Authority, http://www.4mta.org/schedule_maps.html

Sonoma County General Plan 2020, County of Sonoma, 2008

Sonoma County Transit, http://www.sctransit.com/routes.htm

Statewide Integrated Traffic Records System (SWITRS), California Highway Patrol, 2003-2007

Trip Generation, 8th Edition, Institute of Transportation Engineers, 2008

SOX370

Appendix A

Level of Service Calculations

PM Peak Hour - Existing Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 SR 1/Coleman Valley Rd

Average Delay (sec/veh): 0.4 Worst Case Level Of Service: B[12.0]

Street Name:	SR 1						Coleman Valley Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:	>> Count Date: 3 Jul 2009 << 4:00 - 5:00 pm											
Base Vol:	0	339	6	3	207	0	0	0	0	11	0	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	339	6	3	207	0	0	0	0	11	0	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	0	366	6	3	223	0	0	0	0	12	0	9
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	366	6	3	223	0	0	0	0	12	0	9
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	372	xxxx	xxxxx	xxxx	xxxx	xxxxx	599	599	369
Potent Cap.:	xxxx	xxxx	xxxxx	1197	xxxx	xxxxx	xxxx	xxxx	xxxxx	468	418	681
Move Cap.:	xxxx	xxxx	xxxxx	1197	xxxx	xxxxx	xxxx	xxxx	xxxxx	467	417	681
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.03	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	538	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.0	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.0		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 SR 1/Coleman Valley Rd

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[11.6]

Street Name:	SR 1						Coleman Valley Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module:	>> Count Date: 4 Jul 2009 << 12:00 - 1:00 pm											
Base Vol:	0	278	8	1	199	0	0	0	0	20	0	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	278	8	1	199	0	0	0	0	20	0	8
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	296	9	1	212	0	0	0	0	21	0	9
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	296	9	1	212	0	0	0	0	21	0	9
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	305	xxxx	xxxxx	xxxx	xxxx	xxxxx	515	515	301
Potent Cap.:	xxxx	xxxx	xxxxx	1267	xxxx	xxxxx	xxxx	xxxx	xxxxx	523	466	744
Move Cap.:	xxxx	xxxx	xxxxx	1267	xxxx	xxxxx	xxxx	xxxx	xxxxx	523	466	744
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.04	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	572	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.8	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.6	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			11.6		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Existing plus Project Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Trip Generation Report

Forecast for pm

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1		1.00	Park	2.00	2.00	2	2	4	50.0
	Zone 1 Subtotal					2	2	4	50.0
2		1.00	Park	2.00	2.00	2	2	4	50.0
	Zone 2 Subtotal					2	2	4	50.0
TOTAL						4	4	8	100.0

Weekend Midday Peak Hour - Existing plus Project Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Trip Generation Report

Forecast for md

Zone #	Subzone	Amount	Units	Rate In	Rate Out	Trips In	Trips Out	Total Trips	% Of Total
1		1.00	Park	3.00	3.00	3	3	6	50.0
	Zone 1 Subtotal					3	3	6	50.0
2		1.00	Park	3.00	3.00	3	3	6	50.0
	Zone 2 Subtotal					3	3	6	50.0
TOTAL						6	6	12	100.0

PM Peak Hour - Existing plus Project Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 1/Coleman Valley Rd

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[12.1]

Street Name:	SR 1						Coleman Valley Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0	0	0 1	0	1	0 0 0	0	0	0 0 0	0	0	1 0 0
Volume Module: >> Count Date: 3 Jul 2009 << 4:00 - 5:00 pm												
Base Vol:	0	339	6	3	207	0	0	0	0	11	0	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	339	6	3	207	0	0	0	0	11	0	8
Added Vol:	0	0	3	1	0	0	0	0	0	3	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	339	9	4	207	0	0	0	0	14	0	9
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
PHF Volume:	0	366	10	4	223	0	0	0	0	15	0	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	366	10	4	223	0	0	0	0	15	0	10
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	375	xxxx	xxxxx	xxxx	xxxx	xxxxx	602	602	371
Potent Cap.:	xxxx	xxxx	xxxxx	1194	xxxx	xxxxx	xxxx	xxxx	xxxxx	466	416	680
Move Cap.:	xxxx	xxxx	xxxxx	1194	xxxx	xxxxx	xxxx	xxxx	xxxxx	464	414	680
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.03	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	530	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.1	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.1	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.1		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Existing plus Project Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 1/Coleman Valley Rd

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: B[11.8]

Street Name:	SR 1						Coleman Valley Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0	0	0 1	0	1	0 0 0	0	0	0 0 0	0	0	1 0 0
Volume Module: >> Count Date: 4 Jul 2009 << 12:00 - 1:00 pm												
Base Vol:	0	278	8	1	199	0	0	0	0	20	0	8
Growth Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Initial Bse:	0	278	8	1	199	0	0	0	0	20	0	8
Added Vol:	0	0	5	1	0	0	0	0	0	5	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	278	13	2	199	0	0	0	0	25	0	9
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
PHF Volume:	0	296	14	2	212	0	0	0	0	27	0	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	296	14	2	212	0	0	0	0	27	0	10
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	310	xxxx	xxxxx	xxxx	xxxx	xxxxx	520	520	303
Potent Cap.:	xxxx	xxxx	xxxxx	1262	xxxx	xxxxx	xxxx	xxxx	xxxxx	520	464	741
Move Cap.:	xxxx	xxxx	xxxxx	1262	xxxx	xxxxx	xxxx	xxxx	xxxxx	519	463	741
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.05	0.00	0.01
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	564	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	7.9	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	11.8	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			11.8		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 SR 1/Coleman Valley Rd

Average Delay (sec/veh): 0.5 Worst Case Level Of Service: B[13.2]

Street Name:	SR 1						Coleman Valley Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1		0	0 1	0 0	0	0 0	0 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 3 Jul 2009 << 4:00 - 5:00 pm												
Base Vol:	0	339	6	3	207	0	0	0	0	11	0	8
Growth Adj:	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Initial Bse:	0	441	8	4	269	0	0	0	0	14	0	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	441	8	4	269	0	0	0	0	14	0	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	441	8	4	269	0	0	0	0	14	0	10
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	449	xxxx	xxxxx	xxxx	xxxx	xxxxx	722	722	445
Potent Cap.:	xxxx	xxxx	xxxxx	1123	xxxx	xxxxx	xxxx	xxxx	xxxxx	397	356	618
Move Cap.:	xxxx	xxxx	xxxxx	1123	xxxx	xxxxx	xxxx	xxxx	xxxxx	396	354	618
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.04	0.00	0.02
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	466	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.2	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			13.2		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

Weekend Midday Peak Hour - Future Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Level Of Service Computation Report
2000 HCM Unsignalized Method (Base Volume Alternative)

Intersection #1 SR 1/Coleman Valley Rd

Average Delay (sec/veh): 0.7 Worst Case Level Of Service: B[12.8]

Street Name:	SR 1						Coleman Valley Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	- T	- R	L	- T	- R	L	- T	- R	L	- T	- R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1		0	0 1	0 0	0	0 0	0 0	0	0 0	1! 0	0
Volume Module: >> Count Date: 4 Jul 2009 << 12:00 - 1:00 pm												
Base Vol:	0	278	8	1	199	0	0	0	0	20	0	8
Growth Adj:	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Initial Bse:	0	361	10	1	259	0	0	0	0	26	0	10
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	361	10	1	259	0	0	0	0	26	0	10
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	361	10	1	259	0	0	0	0	26	0	10
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	372	xxxx	xxxxx	xxxx	xxxx	xxxxx	628	628	367
Potent Cap.:	xxxx	xxxx	xxxxx	1198	xxxx	xxxxx	xxxx	xxxx	xxxxx	450	402	683
Move Cap.:	xxxx	xxxx	xxxxx	1198	xxxx	xxxxx	xxxx	xxxx	xxxxx	450	402	683
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.06	0.00	0.02
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT	LT -	LTR -	RT
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	498	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	12.8	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			12.8		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

PM Peak Hour - Future plus Project Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 1/Coleman Valley Rd

Average Delay (sec/veh): 0.6 Worst Case Level Of Service: B[13.4]

Street Name:	SR 1						Coleman Valley Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 3 Jul 2009 << 4:00 - 5:00 pm												
Base Vol:	0	339	6	3	207	0	0	0	0	11	0	8
Growth Adj:	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Initial Bse:	0	441	8	4	269	0	0	0	0	14	0	10
Added Vol:	0	0	3	1	0	0	0	0	0	3	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	441	11	5	269	0	0	0	0	17	0	11
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	441	11	5	269	0	0	0	0	17	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	441	11	5	269	0	0	0	0	17	0	11
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	452	xxxx	xxxxx	xxxx	xxxx	xxxxx	725	725	446
Potent Cap.:	xxxx	xxxx	xxxxx	1120	xxxx	xxxxx	xxxx	xxxx	xxxxx	395	354	616
Move Cap.:	xxxx	xxxx	xxxxx	1120	xxxx	xxxxx	xxxx	xxxx	xxxxx	394	352	616
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.04	0.00	0.02
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	460	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.2	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.4	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			13.4		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Weekend Midday Peak Hour - Future plus Project Conditions
Carrington Coast Ranch Traffic Study
County of Sonoma

Level Of Service Computation Report
2000 HCM Unsignalized Method (Future Volume Alternative)

Intersection #1 SR 1/Coleman Valley Rd

Average Delay (sec/veh): 0.8 Worst Case Level Of Service: B[13.0]

Street Name:	SR 1						Coleman Valley Rd					
Approach:	North Bound			South Bound			East Bound			West Bound		
Movement:	L	T	R	L	T	R	L	T	R	L	T	R
Control:	Uncontrolled			Uncontrolled			Stop Sign			Stop Sign		
Rights:	Include			Include			Include			Include		
Lanes:	0 0 0 1 0			0 1 0 0 0			0 0 0 0 0			0 0 1! 0 0		
Volume Module: >> Count Date: 4 Jul 2009 << 12:00 - 1:00 pm												
Base Vol:	0	278	8	1	199	0	0	0	0	20	0	8
Growth Adj:	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30	1.30
Initial Bse:	0	361	10	1	259	0	0	0	0	26	0	10
Added Vol:	0	0	5	1	0	0	0	0	0	5	0	1
PasserByVol:	0	0	0	0	0	0	0	0	0	0	0	0
Initial Fut:	0	361	15	2	259	0	0	0	0	31	0	11
User Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Adj:	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PHF Volume:	0	361	15	2	259	0	0	0	0	31	0	11
Reduct Vol:	0	0	0	0	0	0	0	0	0	0	0	0
FinalVolume:	0	361	15	2	259	0	0	0	0	31	0	11
Critical Gap Module:												
Critical Gp:	xxxxx	xxxx	xxxxx	4.1	xxxx	xxxxx	xxxxx	xxxx	xxxxx	6.4	6.5	6.2
FollowUpTim:	xxxxx	xxxx	xxxxx	2.2	xxxx	xxxxx	xxxxx	xxxx	xxxxx	3.5	4.0	3.3
Capacity Module:												
Cnflict Vol:	xxxx	xxxx	xxxxx	377	xxxx	xxxxx	xxxx	xxxx	xxxxx	632	632	369
Potent Cap.:	xxxx	xxxx	xxxxx	1193	xxxx	xxxxx	xxxx	xxxx	xxxxx	447	400	681
Move Cap.:	xxxx	xxxx	xxxxx	1193	xxxx	xxxxx	xxxx	xxxx	xxxxx	447	399	681
Volume/Cap:	xxxx	xxxx	xxxx	0.00	xxxx	xxxx	xxxx	xxxx	xxxx	0.07	0.00	0.02
Level Of Service Module:												
2Way95thQ:	xxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx
Control Del:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	xxxx	xxxxx
LOS by Move:	*	*	*	A	*	*	*	*	*	*	*	*
Movement:	LT - LTR - RT			LT - LTR - RT			LT - LTR - RT			LT - LTR - RT		
Shared Cap.:	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	xxxx	xxxxx	xxxx	492	xxxxx
SharedQueue:	xxxxx	xxxx	xxxxx	0.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	0.3	xxxxx
Shrd ConDel:	xxxxx	xxxx	xxxxx	8.0	xxxx	xxxxx	xxxxx	xxxx	xxxxx	xxxxx	13.0	xxxxx
Shared LOS:	*	*	*	A	*	*	*	*	*	*	B	*
ApproachDel:	xxxxxx			xxxxxx			xxxxxx			13.0		
ApproachLOS:	*			*			*			B		

Note: Queue reported is the number of cars per lane.

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Appendix B

Collision Rate Spreadsheet

INTERSECTION COLLISION CALCULATIONS

Carrington Ranch

Intersection # 1: SR 1 & Coleman Valley Road
Date of Count: Thursday, July 2, 2009

Number of Collisions: 1
Number of Injuries: 0
Number of Fatalities: 0
ADT: 8900
Start Date: January 1, 2003
End Date: December 31, 2008
Number of Years: 5

Intersection Type: TEE
Control Type: STOP & YIELD SIC
Area: RURAL

$$\text{collision rate} = \frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{NUMBER OF YEARS}}$$

$$\text{collision rate} = \frac{1 \times 1{,}000{,}000}{8{,}900 \times 365 \times 5}$$

	Collision Rate	Fatality Rate	Injury Rate
Study Intersection	**0.06 c/mve**	**0.0%**	**0.0%**
Statewide Average*	**0.22 c/mve**	**1.8%**	**42.6%**

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)
c/mve = collisions per million vehicles entering intersection
* *2007 Collision Data on California State Highways*, Caltrans

SEGMENT COLLISION CALCULATIONS

Carrington Ranch

Location: SR 1 (1/2-Mile North & South of Coleman Valley Rd

Date of Count: Monday, July 1, 2008
ADT: 9200

Number of Collisions: 10
Number of Injuries: 4
Number of Fatalities: 0
Start Date: January 1, 2003
End Date: December 31, 2008
Number of Years: 5

Highway Type: CONVENTIONAL 2 LANES OR LESS
Area: Rural
Design Speed: <=55
Terrain: ROLL

Segment Length: 1.0 miles
Direction: NORTH/SOUTH

$$\frac{\text{NUMBER OF COLLISIONS} \times 1 \text{ MILLION}}{\text{ADT} \times 365 \text{ DAYS PER YEAR} \times \text{SEGMENT LENGTH} \times \text{NUMBER OF YEARS}}$$

$$\frac{10 \times 1{,}000{,}000}{9{,}200 \times 365 \times 1 \times 5}$$

	Collision Rate		Fatality Rate	Injury Rate
Study Segment	**0.60**	**c/mvm**	**0.0%**	**40.0%**
Statewide Average*	**1.34**	**c/mvm**	**2.2%**	**46.0%**

ADT = average daily total vehicles entering intersection (adjusted for seasonal & weekday changes)
c/mvm = collisions per million vehicle miles
* *2007 Collision Data on California State Highways*, Caltrans

Appendix C

Left Turn Lane Warrant Calculation Sheets

LEFT TURN LANE WARRANT ANALYSIS

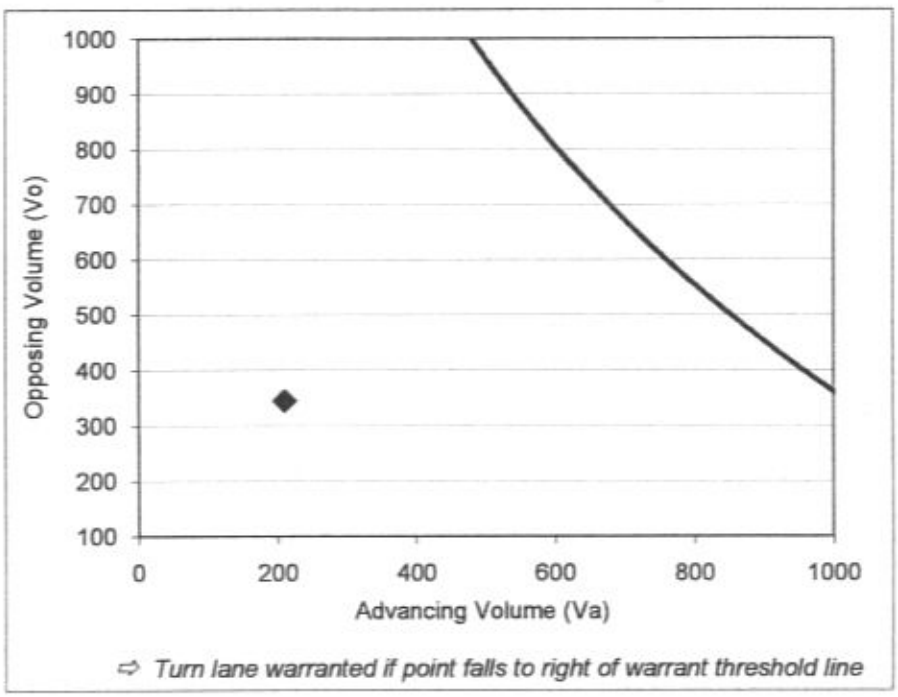
Study Intersection SR 1/Coleman Valley Rd

Study Scenario Existing (pm peak)
threshold

INPUT		
Advancing Volume	Va	210
Opposing Volume	Vo	345
Left Turn Volume	Vl	3
Speed	SP	45 MPH
Two-Lane Undivided Highway		

Percentage Left Turns	%lt	1.4 %
Advancing Volume Threshold	AV	1019

If AV<Va then warrant is met



Warrant Threshold for 1.4% left turns and speed of 45

◆ Study Intersection

Left Turn Lane Warranted	NO

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

LEFT TURN LANE WARRANT ANALYSIS

Study Intersection SR 1/Coleman Valley Rd

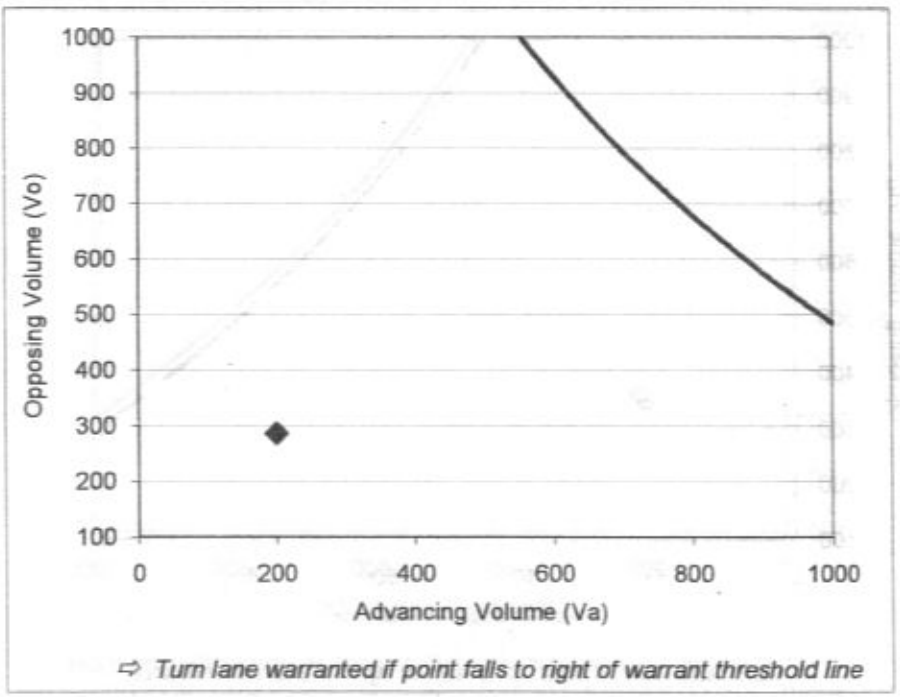
Study Scenario Existing (Weekend MD peak)

threshold

INPUT		
Advancing Volume	Va	200
Opposing Volume	Vo	286
Left Turn Volume	Vl	1
Speed	SP	45 MPH
Two-Lane Undivided Highway		

Percentage Left Turns	%lt	0.5 %
Advancing Volume Threshold	AV	1259

If AV<Va then warrant is met



Left Turn Lane Warranted	NO

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

LEFT TURN LANE WARRANT ANALYSIS

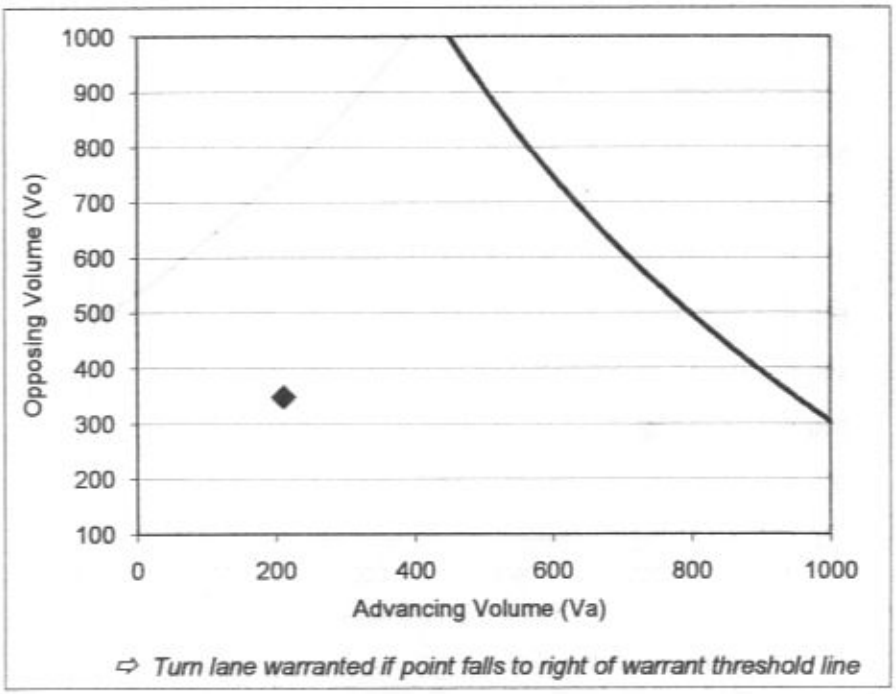
Study Intersection SR 1/Coleman Valley Rd

Study Scenario Existing plus Project (pm peak) *threshold*

INPUT		
Advancing Volume	Va	211
Opposing Volume	Vo	348
Left Turn Volume	Vl	4
Speed	SP	45 MPH
Two-Lane Undivided Highway		

Percentage Left Turns	%lt	1.9 %
Advancing Volume Threshold	AV	950

If AV<Va then warrant is met



Warrant Threshold for 1.9% left turns and speed of 45

◆ Study Intersection

Left Turn Lane Warranted	NO

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

LEFT TURN LANE WARRANT ANALYSIS

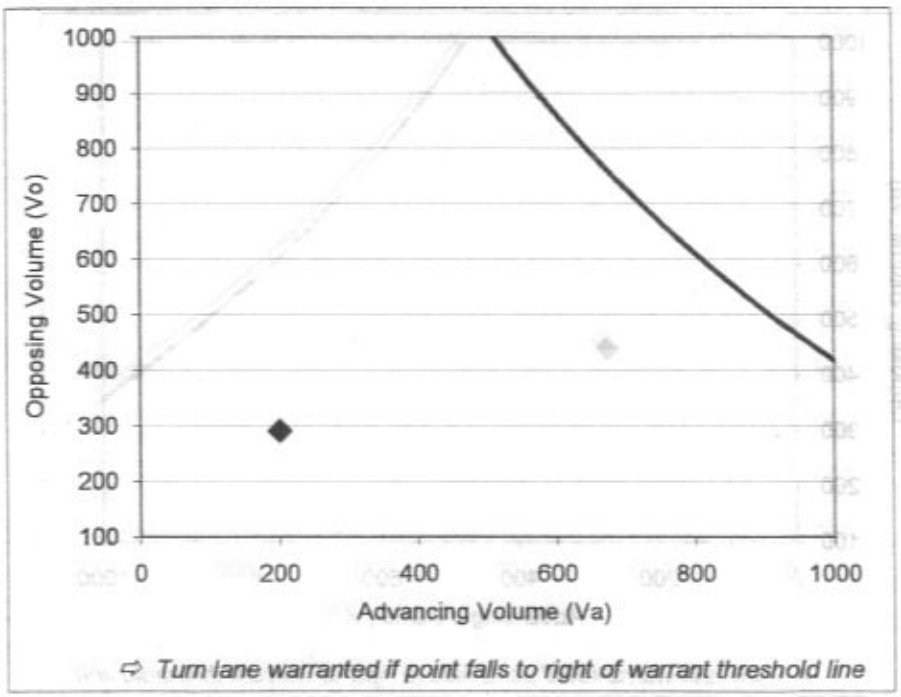
Study Intersection SR 1/Coleman Valley Rd

Study Scenario Existing plus Project (Weekend MD pe *threshold*

INPUT		
Advancing Volume	Va	201
Opposing Volume	Vo	291
Left Turn Volume	Vl	2
Speed	SP	45 MPH
Two-Lane Undivided Highway		

Percentage Left Turns	%lt	1.0 %
Advancing Volume Threshold	AV	1157

If AV<Va then warrant is met



Warrant Threshold for 1.0% left turns and speed of 45

◆ Study Intersection

Left Turn Lane Warranted	NO

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

LEFT TURN LANE WARRANT ANALYSIS

Study Intersection SR 1/Coleman Valley Rd

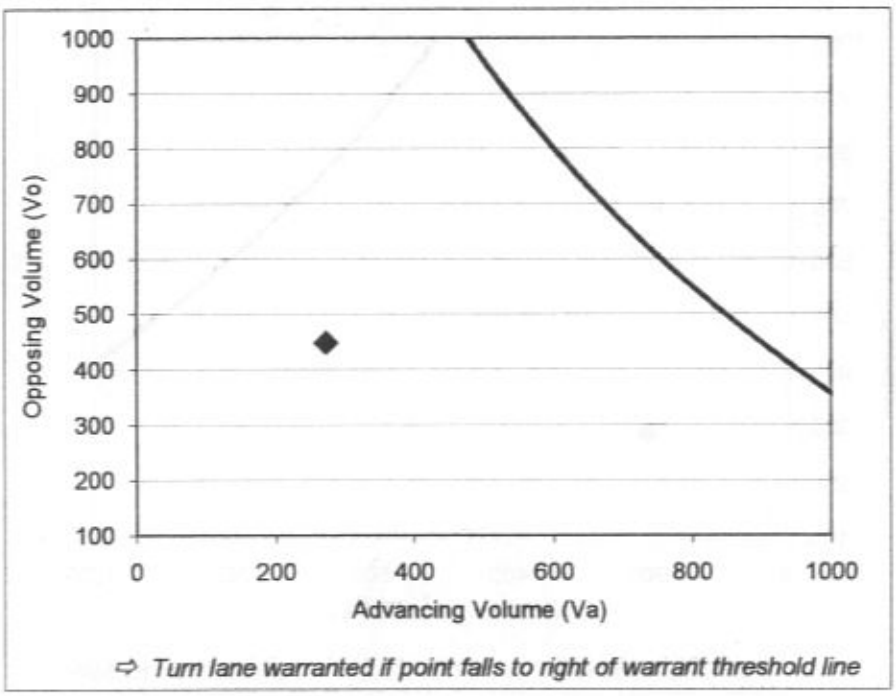
Study Scenario Future (pm peak)

threshold

INPUT			
Advancing Volume	Va	273	
Opposing Volume	Vo	449	
Left Turn Volume	Vl	4	
Speed	SP	45	MPH
Two-Lane Undivided Highway			

Percentage Left Turns	%lt	1.5	%
Advancing Volume Threshold	AV	899	

If AV<Va then warrant is met



Warrant Threshold for 1.5% left turns and speed of 45

◆ Study Intersection

Left Turn Lane Warranted	NO

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

LEFT TURN LANE
WARRANT ANALYSIS

Study Intersection SR 1/Coleman Valley Rd

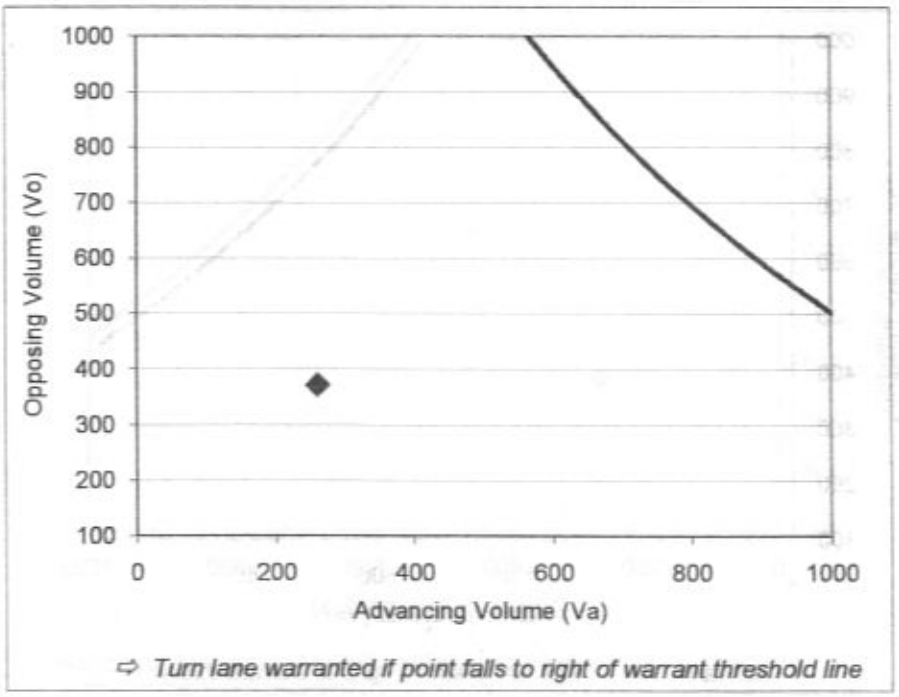
Study Scenario Future (Weekend MD peak)

threshold

INPUT		
Advancing Volume	Va	260
Opposing Volume	Vo	371
Left Turn Volume	Vl	1
Speed	SP	45 MPH
Two-Lane Undivided Highway		

Percentage Left Turns	%lt	0.4 %
Advancing Volume Threshold	AV	1163

If AV<Va then warrant is met



Left Turn Lane Warranted	NO

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

LEFT TURN LANE
WARRANT ANALYSIS

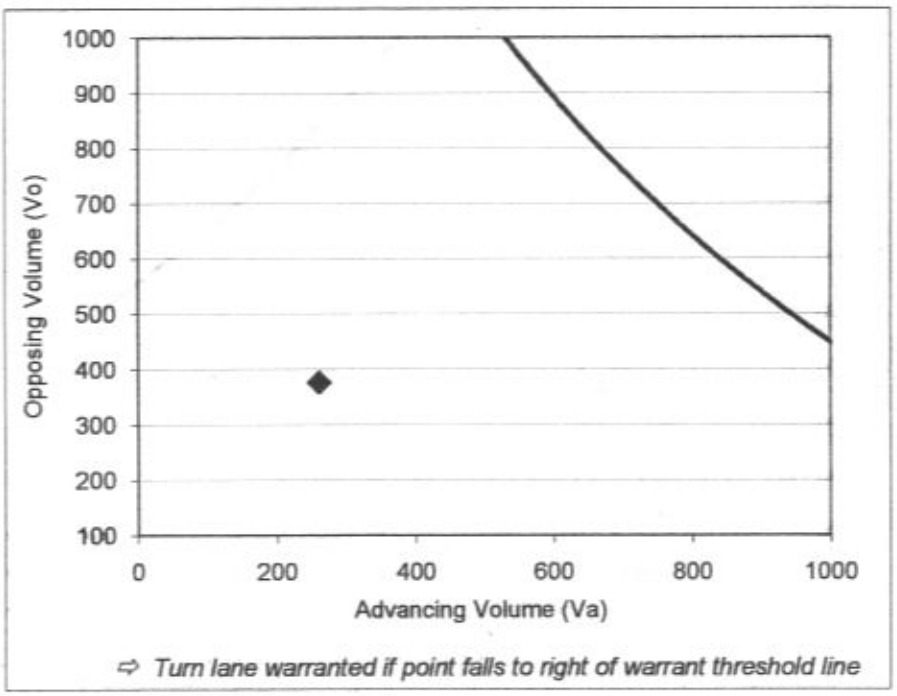
Study Intersection SR 1/Coleman Valley Rd

Study Scenario Future plus Project (Weekend MD pea *threshold*

INPUT		
Advancing Volume	Va	261
Opposing Volume	Vo	376
Left Turn Volume	Vl	2
Speed	SP	45 MPH
Two-Lane Undivided Highway		

Percentage Left Turns	%lt	0.8 %
Advancing Volume Threshold	AV	1088

If AV<Va then warrant is met



Warrant Threshold for 0.8% left turns and speed of 45

◆ Study Intersection

Left Turn Lane Warranted	NO

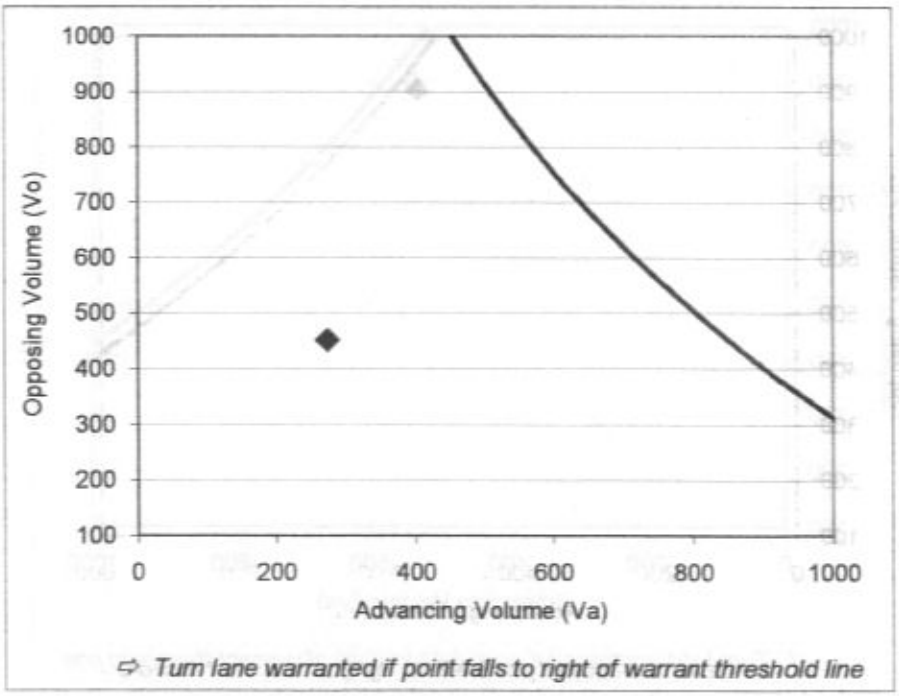
Methodology based on Washington State Transportation Center Research Report ***Method For Prioritizing Intersection Improvements***, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

LEFT TURN LANE WARRANT ANALYSIS

Study Intersection SR 1/Coleman Valley Rd

Study Scenario Future plus Project (pm peak)

		threshold	
INPUT			
Advancing Volume		Va	274
Opposing Volume		Vo	452
Left Turn Volume		Vl	5
Speed		SP	45 MPH
Two-Lane Undivided Highway			
Percentage Left Turns		%lt	1.8 %
Advancing Volume Threshold		AV	851
If AV<Va then warrant is met			



Warrant Threshold for 1.8% left turns and speed of 45

◆ Study Intersection

Left Turn Lane Warranted	NO

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Chakroborty in 1991.

LEFT TURN LANE
WARRANT ANALYSIS

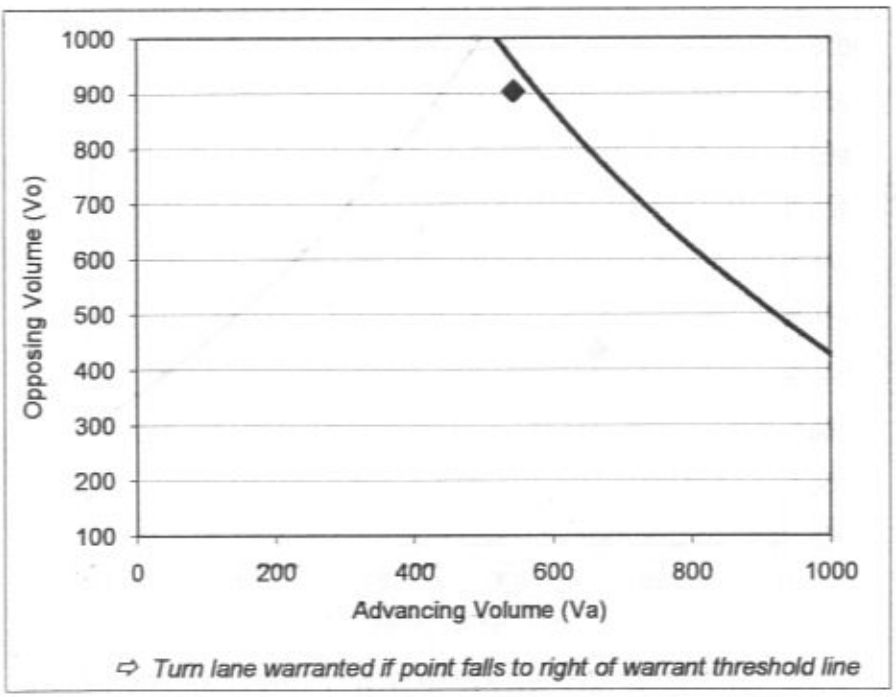
Study Intersection SR 1/Coleman Valley Rd

Study Scenario Sensitivity Test Future plus Project (p
threshold

INPUT		
Advancing Volume	Va	543
Opposing Volume	Vo	904
Left Turn Volume	Vl	5
Speed	SP	45 MPH
Two-Lane Undivided Highway		

Percentage Left Turns	%lt	0.9 %
Advancing Volume Threshold	AV	578

If AV<Va then warrant is met



Left Turn Lane Warranted	NO

Methodology based on Washington State Transportation Center Research Report *Method For Prioritizing Intersection Improvements*, January 1997. The left turn lane analysis is based on work conducted by M.D. Harmelink in 1967, and modified by Kikuchi and Cha

APPENDIX E

CARRINGTON RANCH SOIL SAMPLING REPORT

- REPORT
- ADDENDUM 1
- ADDENDUM 2

Advanced GeoEnvironmental, Inc.

19 October 2009
AGE-NC Project No. 09-1701

Ms. Marta Puente
Sonoma County Agricultural Preservation and Open Space District
747 Mendocino Avenue, Suite 100
Santa Rosa, California 95401

Subject: **Soil Sampling and Analysis Report**
CARRINGTON RANCH
California State Highway 1, Bodega Bay, California

Dear Ms. Marta Puente:

At your request, *Advanced* GeoEnvironmental, Inc. (AGE) has prepared the enclosed *Soil Sampling and Analysis Report* for the property located at APNs 101-040-005; -006; -007 and -008 on California State Highway 1, Bodega Bay (the Property). The initial scope of the work included the advancement of eight soil borings to 3 feet below surface grade (bsg), collection of 24 soil samples and analysis of eight soil samples. The final scope of work included the advancement of one additional soil boring to 3 feet bsg, collection of three soil samples and analysis of one soil sample. A technical report was prepared as requested by the California Department of Toxic Substance Control (DTSC) in their letter dated 17 October 2008. A copy of the report will be forwarded to Mr. Gary Shannon of the California Department of Parks and Recreation - Russian River/Mendocino District (CDPR - Russian River/Mendocino District).

If you have any questions or require further information, please contact our office at (800) 511-9300.

Sincerely,

***Advanced* GeoEnvironmental, Inc.**

Arthur E. Deicke Jr.
Project Scientist

cc: Mr.Gary Shannon, CDPR - Russian River/Mendocino District

122 Calistoga Road, #325, Santa Rosa, CA 95409
Telephone (707) 570-1418 • Fax (707) 570-1461

Soil Sampling and Analysis Report
CARRINGTON RANCH
California State Highway 1, Bodega Bay, California

19 October 2009
AGE-NC Project No. 09-1701

PREPARED FOR:

Ms. Marta Puente
SONOMA CO. AG PRESERVATION & OPEN SPACE DISTRICT

PREPARED BY:

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Soil Sampling and Analysis Report
CARRINGTON RANCH
California State Highway 1, Bodega Bay, California

19 October 2009
AGE-NC Project No. 09-1701

Advanced **GeoEnvironmental, Inc.**
837 Shaw Road, Stockton, California

PREPARED BY:

Arthur E. Deicke Jr.
Project Scientist

PROJECT MANAGER:

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Project Scientist

REVIEWED BY:

William R. Little
Senior Project Geologist
California Professional Geologist No. 7473

PROFESSIONAL GEOLOGIST
WILLIAM R. LITTLE
No. 7473
STATE OF CALIFORNIA

Soil Sampling and Analysis Report
CARRINGTON RANCH
California State Highway 1, Bodega Bay, California

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Appendix B - *Cal Tech Environmental Laboratories Analytical Reports - Soil*

Soil Sampling and Analysis Report
CARRINGTON RANCH
California State Highway 1, Bodega Bay, California

1.0. INTRODUCTION

At the request of Ms. Marta Puente of Sonoma County Agricultural Preservation and Open Space District (SCAPOSD), *Advanced* GeoEnvironmental, Inc. (AGE) has prepared the enclosed *Soil Sampling and Analysis Report* for the property located at APNs 101-040-005; -006; -007 and -008 on California State Highway 1, Bodega Bay, California (the Property) known as the Carrington Ranch. The location of the Property is illustrated on Figure 1 and a site plan is illustrated on Figure 2.

The Property is located on the Sonoma Coast north of Bodega Bay, adjacent and north of Salmon Creek, adjacent to the east side of California State Highway 1 and across from the Sonoma Coast State Park. According to SCAPOSD, the Property includes approximately 335 acres of open coastal prairie, rolling hills and remaining elements of a historic dairy ranch.

The purpose of this subsurface investigation was to determine if prior livestock operations in specific areas of the property including former material storage and animal treatment areas may have impacted the soil.

2.0. PROCEDURES

The field work was performed in accordance with industry standard procedures. Boring permits were not required by Sonoma County.

On 22 July 2009, AGE met California Department of Parks and Recreation (CDPR) personnel from the Russian River - Mendocino District at the Property prior to collecting soil samples. Each of the eight locations were directed by CDPR personnel. Additionally, AGE and CDPR personnel developed the identification for each sample location. Pictures of the red-flagged sampling points are included as Appendix A.

On 24 September 2009, AGE met CDPR at the Property to collect additional soil samples as requested by SCAPOSD.

2.1. SOIL BORING ADVANCEMENT AND SAMPLING

On 22 July 2009, eight soil borings were advanced and on 24 September 2009, one soil boring was advanced to a maximum depth of three feet below surface grade (bsg) to collect soil samples at one-foot, two-foot and three-foot intervals using a hand auger with an attached three-inch diameter cutting shoe.

Soil borings were designated and located on parcels APN 101-040-005 and -006 as follows:

- Soil boring Milk Barn West was advanced approximately 10 feet west of the west side of the historic dairy building located on parcel APN 101-040-006.
- Soil boring Milk Barn East was advanced approximately 10 feet east of the east side of the historic dairy building located on parcel APN 101-040-006.
- Soil boring Old Trailer Site was advanced within the general vicinity of the former location of the historic residential trailer on parcel APN 101-040-005.
- Soil boring Sheep Pen North was advanced approximately 20 feet west of the location of the historic sheep pen on parcel APN 101-040-005.
- Soil boring Sheep Pen South was advanced approximately 40 feet south of the location of the historic sheep pen on parcel APN 101-040-005.
- Soil boring Ranch House West was advanced approximately 60 feet west of the location of the historic residential building on parcel APN 101-040-006.
- Soil boring Ranch House East was advanced between the historic residential building and the garage on parcel APN 101-040-006.
- Soil boring Garage East was advanced approximately 10 feet east of the historic garage building on parcel APN 101-040-006.
- Soil boring Sheep Pen SE Corner was advanced in native material immediately adjacent to the southeast corner of the historic sheep pen on parcel APN 101-040-005.

Each soil boring was designation included an appended letter 'A', 'B' or 'C' for the depth of each sample at one, two and three feet bsg, respectively.

An AGE representative advanced each hand auger boring to one-foot bsg. The soil cuttings were removed and examined by an AGE staff scientist and hand-packed into a 3-inch or 6-inch stainless steel sleeve. These steps were repeated for the two-foot and three-foot samples. The collected soil samples were preserved by covering both ends of the stainless steel sleeve with Teflon sheets, capping and sealing with tape. Each preserved sample sleeve was labeled with the soil boring location, depth, time, date and sampler's initials and was stored in a chilled container under ice.

The soil was also visually classified with the Unified Soil Classification System (USCS).

2.2. LABORATORY ANALYSIS OF SOIL SAMPLES

The soil samples were transported under chain-of-custody procedures to Cal Tech Environmental Laboratories (CTEL), a California Department of Public Health (CDPH)-certified laboratory located in Paramount, California for analysis.

Each one-foot bsg (A) soil sample was analyzed for California Assessment Metals (CAM 17 metals) for potential residuals from possible historic pesticide usage and/or storage. The two-foot and three-foot bsg (B and C) samples were stored at CTEL placed on hold for six months from the date of sample collection for possible future analysis. Soil samples Milk Barn West A, Old Trailer Site A, Garage East A and Sheep Pen SE Corner A were also analyzed for organo-chlorines, organo-halides and organo-phosphates for possible historic pesticide usage and/or storage in the general area.

Specifically, each one-foot sample was analyzed for:

- Antimony, barium, beryllium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, vanadium and zinc in accordance with EPA Method 6010B;
- Arsenic and Thallium in accordance with EPA Method 6020B and
- Mercury in accordance with EPA Method 7471.

Additionally, samples Milk Barn West A, Old Trailer Site A, Garage East A and Sheep Pen SE Corner A were analyzed for:

- Organo-chlorines: 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; Aldrin; alpha-BHC; alpha-chlordane; beta-BHC; Chlordane; delta-BHC; Dieldrin; Endosulfan I; Endosulfan II; Endosulfan sulfate; Endrin; Endrin Aldehyde; Endrin Ketone; gamma-BHC; gamma-chlordane; Heptachlor; Methoxychlor and Toxaphene in accordance with EPA Method 8081;
- Organo-phosphates: Azinphos Methyl; Bolstar, Coumaphos; Demeton; Diazinon; Dichlorvos; Disuloton; Dursban; Ethoprop; Fensulfothion; Gardona; Malthion; Merphos; Methyl Parathion; Mevinphos; Naled; Phorate; Ronnel; Tokuthion and; Trichloranate in accordance with EPA Method 8141A and
- Organo-halides: 2,4,5-T; 2,4-DB; 2,4-D; Dalapon; Dicamba; Dichloroprop; Dinoseb; MCPA; MCPP; 4-nitrophenol; Pentachlorophenol; Silvex in accordance with EPA Method 8151A.

2.3. EQUIPMENT DECONTAMINATION AND BOREHOLE ABANDONMENT

The cutting shoe was cleaned prior to advancement in each probe boring location to avoid cross-contamination.

At the conclusion of soil boring activities, the boreholes were backfilled with the soil cuttings removed during sampling and compacted with hand tools to surface grade.

3.0. FINDINGS

Soil stratigraphy was determined from field data. The contaminant impact to soil was quantified from laboratory analytical data.

3.1. SURFACE CONDITIONS AND STRATIGRAPHY

The surface condition at each soil sample location was covered with dry brown natural occurring grasses.

Subsurface soils at sample locations Milk Barn West and East, Old Trailer Site and Sheep Pen North and South were generally dry, reddish and yellowish-brown silts (USCS: OH) with organic material from the surface to three feet bsg.

Subsurface soils at sample location Garage East were generally dry, reddish silts (USCS: OH) with organic material from the surface to 2 feet bsg and dry dark-brown clay at 3 feet bsg. A small deteriorated metal bracket was found in the soil at 2 feet bsg.

Subsurface soils at sample location Ranch House East were generally dry dark-brown silts (USCS: OH) with organic material from the surface to 2 feet and dry dark-brown clay (USCS: CL) at 3 feet bsg.

Subsurface soils at sample location Sheep Pen SE Corner A were generally dry medium-brown organic silt from the surface to 2 feet bsg and slightly moist tan clay mixed with organic silts. Red red mottling was observed at 2 feet bsg, while both red and black mottling was observed at 3 feet bsg.

No unusual staining or odors was observed at any of the sample locations. Ground water was not encountered during any boring activity.

3.2. ANALYTICAL RESULTS OF SOIL SAMPLES

Each of the one-foot soil samples were analyzed for CAM17 metals, while three of the one-foot samples were analyzed for organo-chlorines, organo-phosphates and organo-halides as described in Section 2.2.

3.2.1. Metals Analysis

A total of eight soil samples were analyzed for CAM17 metals. Concentrations of arsenic, barium, chromium, nickel, vanadium and zinc were reported in each of the soil samples analyzed. Copper was reported in four of the eight samples analyzed; while lead was reported in two of the eight samples analyzed.

Arsenic was reported in each soil sample collected and analyzed at concentrations ranging from 2.6 milligrams per kilogram (mg/kg) in sample Sheep Pen North A to 4.5 mg/kg in sample Milk Barn West A.

Barium was reported in each soil sample collected and analyzed at concentrations ranging from 160 mg/kg in sample Garage East A to 770 mg/kg in sample Milk Barn West A.

Chromium was reported in each soil sample collected and analyzed at concentration ranging from 56 mg/kg in sample Milk Barn East to 130 mg/kg in sample Garage East A.

Copper was reported in the soil samples Milk Barn West A, Milk Barn East A, Ranch House East A and Garage East A at concentrations ranging from 1.4 mg/kg (Milk Barn East A) to 440 mg/kg (Garage East A).

Lead was reported in the soil samples Ranch House East A and Garage East A at concentrations of 21 mg/kg and 85 mg/kg, respectively.

Nickel was reported in each soil sample collected and analyzed at concentrations ranging from 4.1 mg/kg in sample Sheep Pen North A to 65 mg/kg in sample Milk Barn West A.

Vanadium was reported in each soil sample collected and analyzed at concentrations ranging from 38 mg/kg in sample Sheep Pen North A to 73 mg/kg in sample Garage East A.

Zinc was reported in each soil sample collected and analyzed at concentrations ranging from 5.2 mg/kg in sample Ranch House West A to 160 mg/kg in sample Garage East A.

Beryllium, cadmium, cobalt, molybdenum, selenium, silver and thallium were not reported in any of the samples collected and analyzed.

3.2.2. Organo-chlorines, Organo-phosphates and Organo-halides Analysis

No organo-chlorines, organo-phosphates and organo-halides were not reported in soil samples Milk Barn West A, Old Trailer Site A, Garage East A and Sheep Pen SE Corner A.

The soil analytical results are summarized in Table 1 and 2. The laboratory reports (CTEL Project Nos. CT214-0907138 and CT214-0909181), quality assurance and quality control (QA/QC) report, and chain-of-custody forms are included in Appendix B.

4.0. DISCUSSION

Metals were analyzed due to potential, but unknown historical use and/or storage of pesticides and herbicides on the Property. According to the California Environmental Protection Agency and Oregon Department of Environmental Quality (see Section 8.0.), the CAM17 metals have been used as ingredients in pesticides.

It is commonly known that certain metals occur naturally in soil. However, according to the Kearney Foundation of Soil Science [Kearney Study (see Section 8.0.)] concentrations vary by locality and region. The Kearney Study produced geometric mean concentrations of 46 metals from 50 different soil series located throughout the state of California. The study did not include Sonoma County, but the geometric mean may still be used as a comparative tool to evaluate the concentrations of metals reported in the soil samples collected at the Property.

Additionally, the US EPA OSWER Directive [OSWER Directive (see Section 8.0.)] provides a screening and evaluation tool for naturally occurring metals in the Western and Eastern United States. The OSWER Directive provides a range of concentrations for most of the CAM17 metals and can also be used a comparative tool to evaluate the concentrations of metals reported in the soil samples collected at the Property.

For the metals (arsenic, barium, chromium, copper, lead, nickel, vanadium and zinc) detected in the soil samples collected at the Property, each concentration was within an order of magnitude or less of the Kearney Study geometric mean or within the range of concentrations of the OSWER Directive except for chromium (130 mg/kg: Garage East A), copper (440 mg/kg: Garage East A), lead (85 mg/kg: Garage East A), nickel (65 mg/kg: Milk Barn West A) and zinc (160 mg/kg: Garage East A).

5.0. CONCLUSIONS

Based upon the soil samples collected from the Property on 22 July 2009, AGE concludes:

- Organo-chlorines, -phosphates and -halides were not reported in the soil samples Milk Barn West A, Old Trailer Site A, Garage East A and Sheep Pen SE Corner A indicating there are no organo-chlorines, -phosphates and -halides pesticide residuals one-foot depth at those locations.
- The metals arsenic, barium, chromium, copper, lead, nickel, vanadium and zinc were reported at various concentrations at each sample location.
- The metals arsenic, barium, chromium, copper, lead, nickel, vanadium and zinc occur naturally in the soil California and the Western United States (Kearney Study and OSWER Directive). Concentrations for chromium, copper, lead and zinc for the Garage East A sample and nickel for the Milk Barn West A sample slightly exceeded the range for naturally occurring metals (OSWER Directive).

6.0. RECOMMENDATIONS

Based on the results of the environmental activities recounted in this report, AGE recommends that no further soil analysis or sampling is required at the Property.

7.0. LIMITATIONS

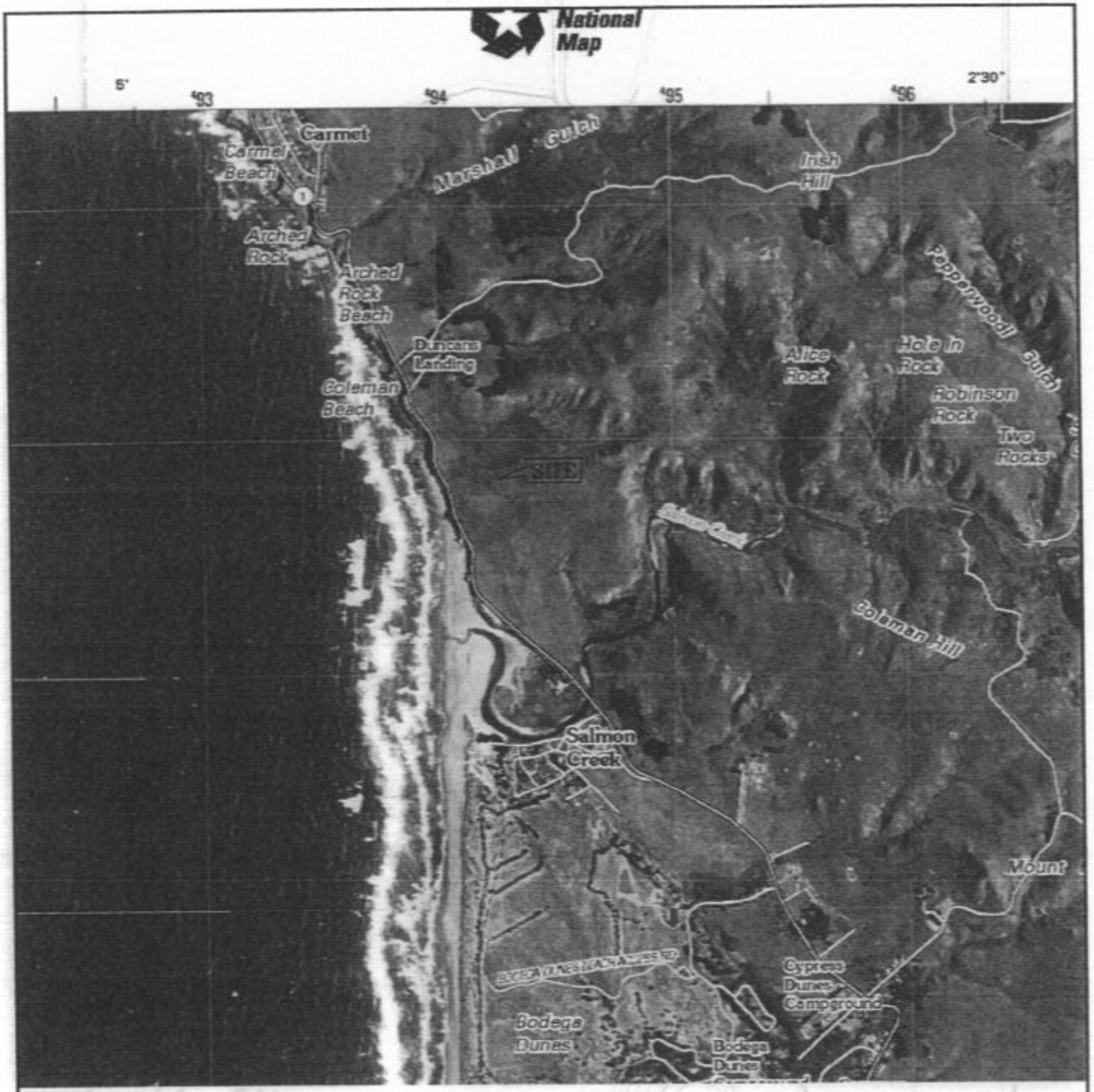
Our professional services were performed using that degree of care and skill ordinarily exercised by environmental consultants practicing in this or similar localities. The findings were based upon analytical results provided by an independent laboratory. Evaluation of the geologic/hydrogeologic conditions at the site for the purpose of this investigation was made from a limited number of available data points (soil samples) and subsurface conditions may vary away from these data points. No other warranty, expressed or implied, is made as to the professional interpretations, opinions, and recommendations contained in this report.

8.0. REFERENCES

The following references were utilized in the preparation of this report:

- *Background Concentrations of Trace and Major Elements in California Soils*, Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California, March 1996;
- *Interim Guidance for Sampling Agricultural Fields for School Sites (Second Revision)*, California Environmental Protection Agency, Department of Toxic Substance Control, 26 August 2002;
- *Guidance for Evaluating Residual Pesticides on Lands Formerly Used for Agricultural Production*, Oregon Department of Environmental Quality, Land Quality Division, Cleanup Program, January 2006;
- *Guidance for Developing Ecological Soil Screening Levels (Eco-SSLs), Review of Background Concentrations for Metals*, U.S. Environmental Protection Agency, Office of Solid Water Emergency Response (OSWER) Directive 92857-55, November 2003.

FIGURES



BODEGA HEAD QUADRANGLE, CALIFORNIA
7.5 MINUTE SERIES (U.S. GEOLOGICAL SURVEY)

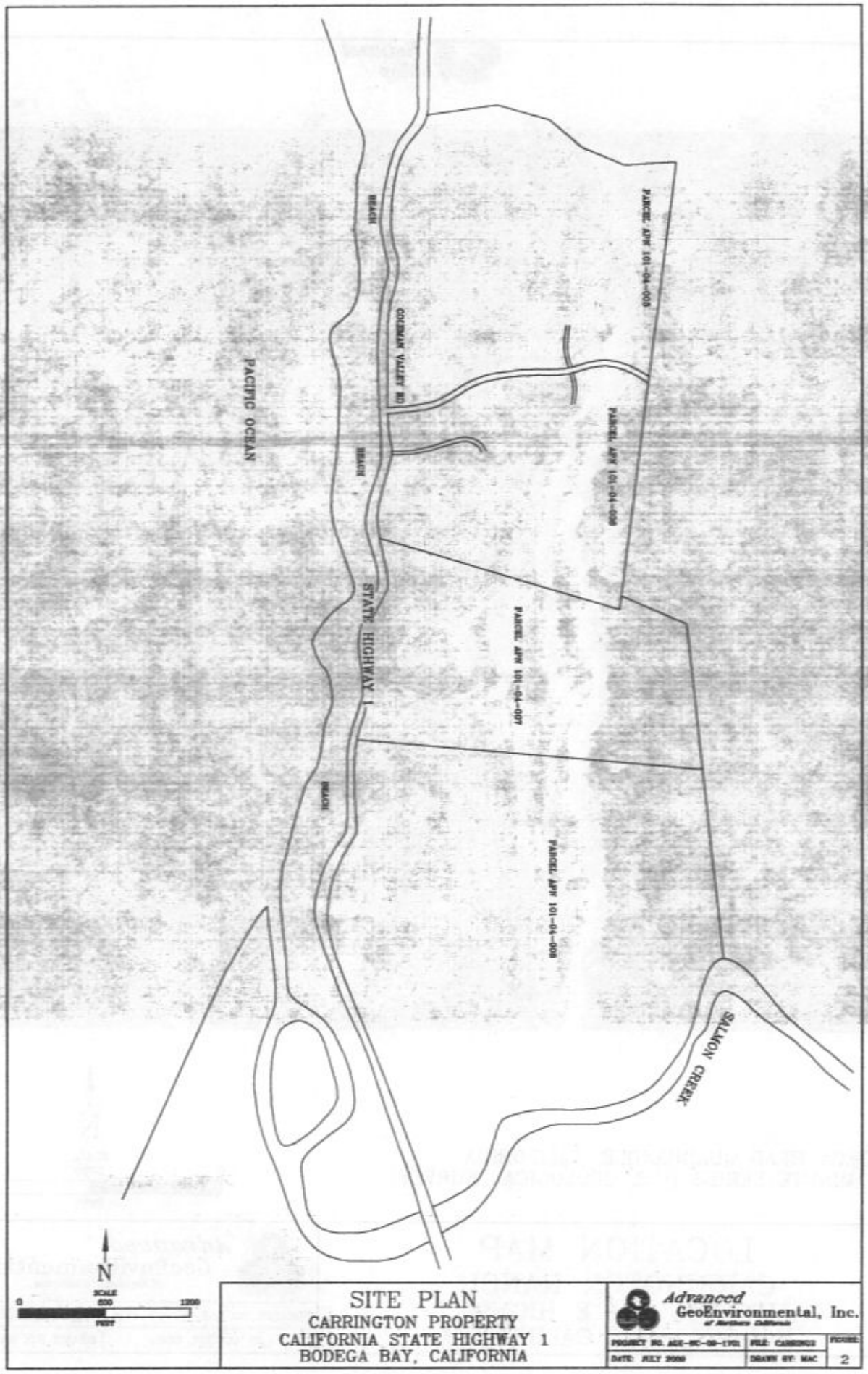
N

SCALE
0 2000 4000
FEET

LOCATION MAP
CARRINGTON RANCH
CALIFORNIA STATE HIGHWAY 1
BODEGA BAY, CALIFORNIA

Advanced GeoEnvironmental, Inc.
of Northern California

PROJECT NO. AGE-NC-09-1701	FILE: LOCATION	FIGURE:
DATE: 28 AUGUST, 2009	DRAWN BY: MAC	1

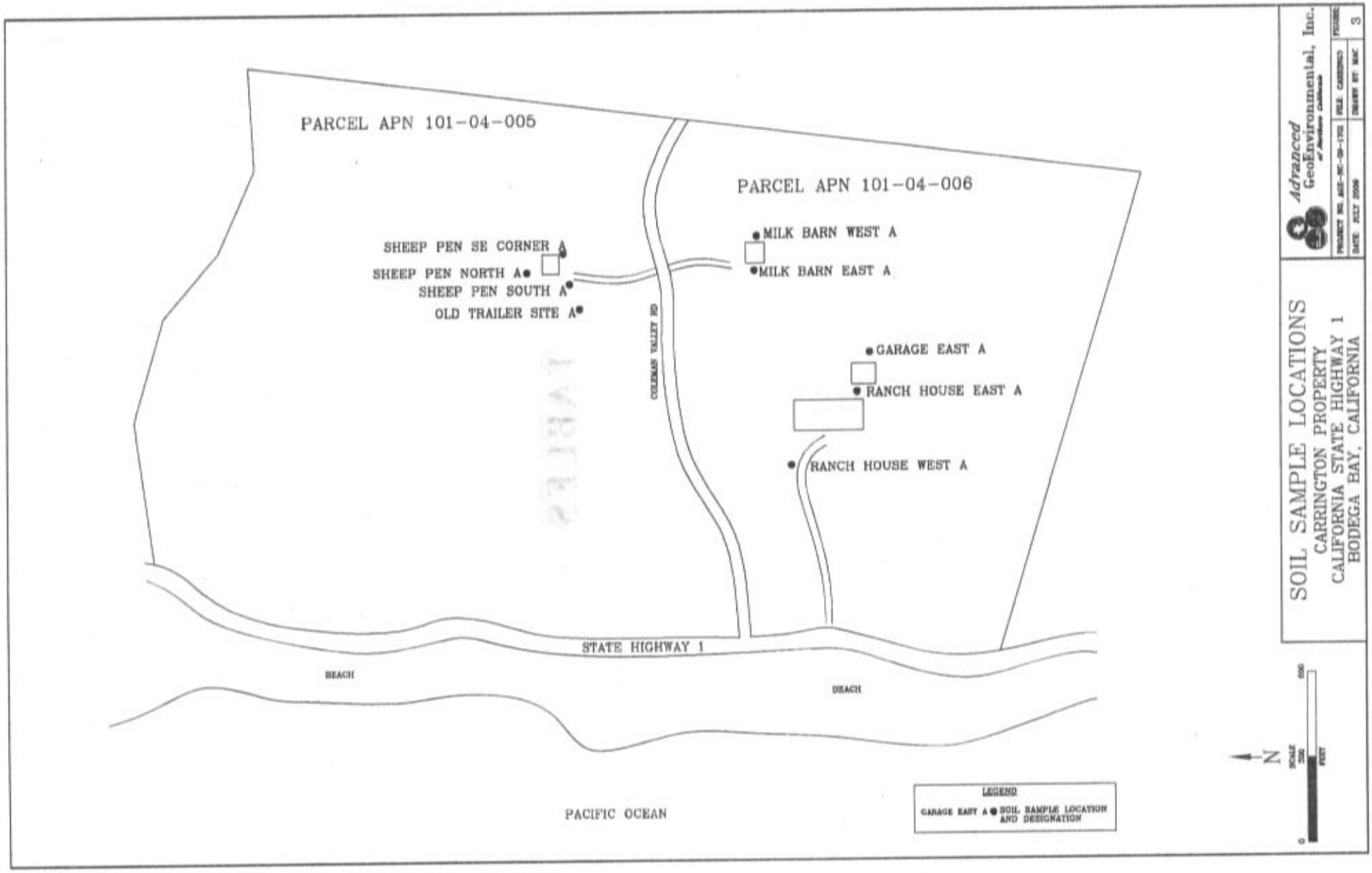


SITE PLAN

CARRINGTON PROPERTY
CALIFORNIA STATE HIGHWAY 1
BODEGA BAY, CALIFORNIA

Advanced GeoEnvironmental, Inc.
of Northern California

PROJECT NO. AGE-NC-08-170	FILE: CARRINGTON	FIGURE:
DATE: JULY 2008	DRAWN BY: MAC	2


PARCEL APN 101-04-005
PARCEL APN 101-04-006
SHEEP PEN SE CORNER A
SHEEP PEN NORTH A
SHEEP PEN SOUTH A
OLD TRAILER SITE A
COLEMAN VALLEY RD
MILK BARN WEST A
MILK BARN EAST A
GARAGE EAST A
RANCH HOUSE EAST A
RANCH HOUSE WEST A
STATE HIGHWAY 1
BEACH
BEACH
PACIFIC OCEAN
LEGEND
GARAGE EAST A SOIL SAMPLE LOCATION AND DESIGNATION
N
SCALE
FEET
Advanced GeoEnvironmental, Inc.
SOIL SAMPLE LOCATIONS
CARRINGTON PROPERTY
CALIFORNIA STATE HIGHWAY 1
BODEGA BAY, CALIFORNIA
FIGURE 3

TABLES

TABLE 1

ANALYTICAL RESULTS OF SOIL SAMPLES FOR METALS

Carrington Ranch

California State Highway 1, Bodega Bay, California

(mg/kg)

Sample ID	Date	Depth (ft bsg)	Location Description	6010B	6020B	6010B							7471	6010B				6020B	6010B	
				Sb	As	Ba	Be	Cd	Cr	Co	Cu	Pb	Hg	Mo	Ni	Se	Ag	Tl	V	Zn
Milk Barn West A	07-22-2009	1	APN 101-040-006; adjacent west of historic dairy barn	<1	**4.5**	**770**	<1	<1	**110**	<1	**3.8**	<1	<0.05	<1	**65**	<1	<1	<0.02	**66**	**27**
Milk Barn East A	07-22-2009	1	APN 101-040-006; adjacent east of historic dairy barn	<1	**3.8**	**240**	<1	<1	**56**	<1	**1.4**	<1	<0.05	<1	**26**	<1	<1	<0.02	**45**	**38**
Old Trailer Site A	07-22-2009	1	APN 101-040-005; near location of former residential trailer	<1	**3.0**	**290**	<1	<1	**71**	<1	<1	<1	<0.05	<1	**7.1**	<1	<1	<0.02	**39**	**11**
Sheep Pen South A	07-22-2009	1	APN 101-040-005; adjacent west and south of historic sheep pen	<1	**3.3**	**290**	<1	<1	**79**	<1	<1	<1	<0.05	<1	**8.4**	<1	<1	<0.02	**45**	**64**
Sheep Pen North A	07-22-2009	1	APN 101-040-005; adjacent west of historic sheep pen	<1	**2.6**	**300**	<1	<1	**72**	<1	<1	<1	<0.05	<1	**4.1**	<1	<1	<0.02	**38**	**44**
Ranch House West A	07-22-2009	1	APN 101-040-006; adjacent west of historic residential building	<1	**3.5**	**360**	<1	<1	**87**	<1	<1	<1	<0.05	<1	**4.7**	<1	<1	<0.02	**57**	**5.2**
Ranch House East A	07-22-2009	1	APN 101-040-006; adjacent east of historic residential building	<1	**3.9**	**350**	<1	<1	**100**	<1	**4.6**	**21**	<0.05	<1	**9.9**	<1	<1	<0.02	**59**	**56**
Garage East A	07-22-2009	1	APN 101-040-006; adjacent east of historic garage	<1	**4.0**	**160**	<1	<1	**130**	<1	**440**	**85**	<0.05	<1	**31**	<1	<1	<0.02	**73**	**160**
Kearney Study Geometric Mean Concentration for Soils in California				0.5	2.8	468	1.14	0.26	76	14.9	24	23.9	0.2	0.9	36	0.028	0.41	0.52	101	72
OSWER Range of Background Metals Concentrations for Western US				1 - 1.2	4 - 12	380 - 800	0.75 - 1.4	0.3 - 1	20 - 120	6 - 17	15 - 42	10 - 30			11 - 35	0.3 - 0.7	0.4 - 0.9		50 - 150	30 - 100

Notes: mg/kg: milligrams per kilogram

<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.

ft bsg: feet below surface grade OSWER: EPA Office of Solid Waste and Emergency Response

Sb: Antimony Be: Beryllium Co: Cobalt Hg: Mercury Se: Selenium V: Vanadium

As: Arsenic Cd: Cadmium Cu: Copper Mo: Molybdenum Ag: Silver Zn: Zinc

Ba: Barium Cr: Chromium Pb: Lead Ni: Nickel Tl: Thallium

TABLE 2

ANALYTICAL RESULTS OF SOIL SAMPLES FOR ORGANO-CHLORINES, ORGANO-HALIDES AND ORGANO-PHOSPHATES

Carrington Ranch

California State Highway 1, Bodega Bay, California

(ug/kg)

Sample ID	Date	Depth (ft bsg)	Location Description	EPA Method 8081	EPA Method 8141A	EPA Method 8151A
				Organo-chlorines	Organo-phospates	Organo-halides
Milk Barn West A	07-22-2009	1	APN 101-040-006; adjacent west of historic dairy barn	Not reported above laboratory minimum detection limits	Not reported above laboratory minimum detection limits	Not reported above laboratory minimum detection limits
Old Trailer Site A	07-22-2009	1	APN 101-040-005; near location of former residential trailer	Not reported above laboratory minimum detection limits	Not reported above laboratory minimum detection limits	Not reported above laboratory minimum detection limits
Garage East A	07-22-2009	1	APN 101-040-006; adjacent east of historic garage	Not reported above laboratory minimum detection limits	Not reported above laboratory minimum detection limits	Not reported above laboratory minimum detection limits
Sheep Pen SE Corner A	09-24-2009	1	APN 101-040-005; adjacent to the SE corner of the historic sheep pen	Not reported above laboratory minimum detection limits	Not reported above laboratory minimum detection limits	Not reported above laboratory minimum detection limits

Notes:

ug/kg: mircograms per kilogram

ft bsg: feet below surface grade

Organo-Chlorines: 4,4'-DDD; 4,4'-DDE; 4,4'-DDT; aldrin; alpha-BHC; alpha-chlordane; beta-BHC; Chlordane; delta-BHC; dieldrin; endosulfan I; endosulfan II; endosulfan sulfate; endrin; endrin aldehyde; endrin ketone; gamma-BHC; gamma-chlordane; heptachlor; methoxychlor; toxaphene

Organo-phosphates: azinphos methyl; bolstar, coumaphos; demeton; diazinon; dichlorvos; disuloton; dursban; ethoprop; fensulfothion; gardona; malthion; merphos; methyl parathion; mevinphos; naled; phorate; ronnel; tokuthion; trichloranate

Organo-halides: 2,4,5-T; 2,4-DB; 2,4-D; dalapon; dicamba; dichloroprop; dinoseb; MCPA; MCPP; 4-nitrophenol; pentachlorophenol; silvex

See CTEL Laboratory Report No. CT214-0907138 for laboratory minimum detection limits for each chemical.

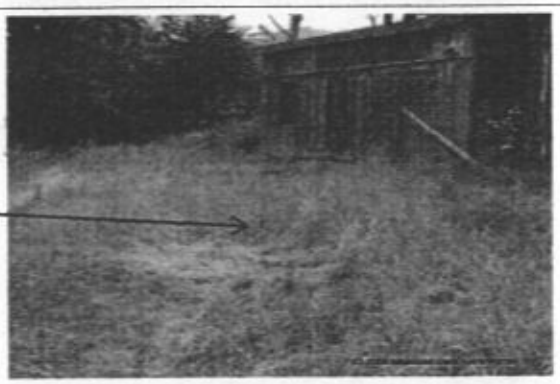
APPENDIX A

APEA

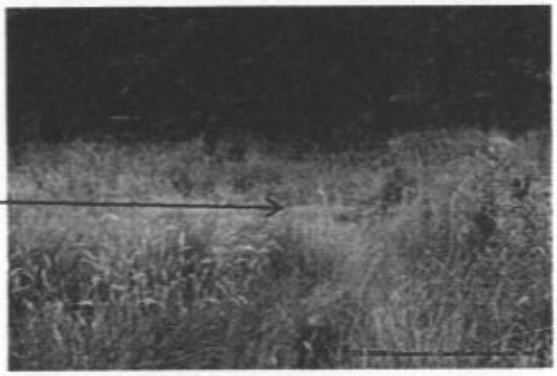
CARRINGTON RANCH

Garage East

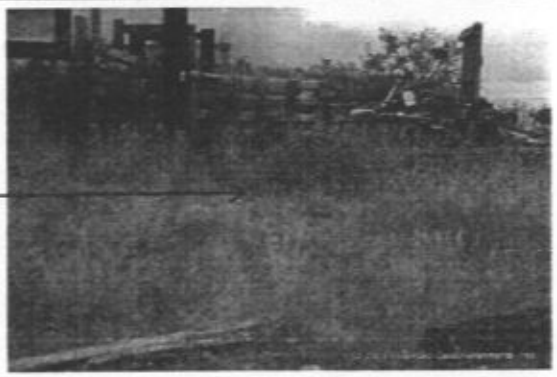
Ranch House East



Ranch House West



Milk Barn West



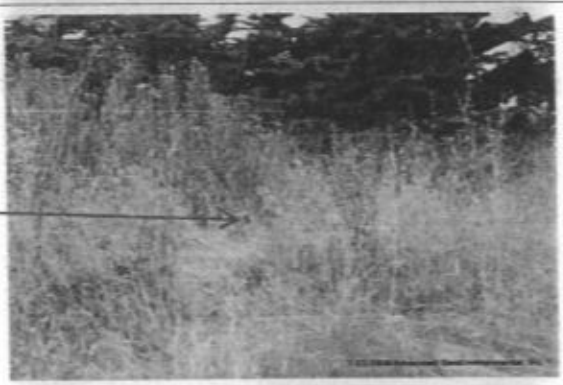
APPENDIX A

CARRINGTON RANCH

Milk Barn East

Old Trailer Site

Sheep Pen South



Sheep Pen North

APPENDIX B

CAL TECH Environmental Laboratories
6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

ANALYTICAL RESULTS*

CTEL Project No: CT214-0907138
Client Name: Advanced Geo Environmental, Inc.
837 Shaw Road
Stockton, CA 95215
Phone:(209) 467-1006
Fax: (209) 467-1118
Attention: Mr Arthur Deicke

Project ID: Global ID:
Project Name: Carrington Ranch

Date Sampled: 07/22/09 @ 09:35 am
Date Received: 07/23/09 @ 09:00 am
Date Analyzed 07/24/09
Matrix: Soil

Method: (8081, OCP by GC)

Laboratory ID:	0907-138-1	0907-138-7	0907-138-19	Method	Units:	Detection Limit
Client Sample ID:	Milk Barn West A	Old Trailer Site A	Garage East A			
Dilution	1	1	1			
4,4'-DDD	ND	ND	ND	EPA 8081A	ug/Kg	2.0
4,4'-DDE	ND	ND	ND	EPA 8081A	ug/Kg	2.0
4,4'-DDT	ND	ND	ND	EPA 8081A	ug/Kg	2.0
Aldrin	ND	ND	ND	EPA 8081A	ug/Kg	1.0
alpha-BHC	ND	ND	ND	EPA 8081A	ug/Kg	1.0
alpha-Chlordane	ND	ND	ND	EPA 8081A	ug/Kg	1.0
beta-BHC	ND	ND	ND	EPA 8081A	ug/Kg	1.0
Chlordane	ND	ND	ND	EPA 8081A	ug/Kg	8.5
delta-BHC	ND	ND	ND	EPA 8081A	ug/Kg	1.0
Dieldrin	ND	ND	ND	EPA 8081A	ug/Kg	2.0
Endosulfan I	ND	ND	ND	EPA 8081A	ug/Kg	1.0
Endosulfan II	ND	ND	ND	EPA 8081A	ug/Kg	2.0
Endosulfan sulfate	ND	ND	ND	EPA 8081A	ug/Kg	2.0
Endrin	ND	ND	ND	EPA 8081A	ug/Kg	2.0
Endrin aldehyde	ND	ND	ND	EPA 8081A	ug/Kg	2.0
Endrin ketone	ND	ND	ND	EPA 8081A	ug/Kg	2.0
gamma-BHC	ND	ND	ND	EPA 8081A	ug/Kg	1.0
gamma-Chlordane	ND	ND	ND	EPA 8081A	ug/Kg	1.0
Heptachlor	ND	ND	ND	EPA 8081A	ug/Kg	1.0
Heptachlore epoxide	ND	ND	ND	EPA 8081A	ug/Kg	1.0
Methoxychlor	ND	ND	ND	EPA 8081A	ug/Kg	8.5
Toxaphene	ND	ND	ND	EPA 8081A	ug/Kg	85

ND - Not Detected at the indicated Detection Limit

CTEL Project No: CT214-0907138
Client Name: Advanced Geo Environmental, Inc.
837 Shaw Road
Stockton, CA 95215
Phone:(209) 467-1006
Fax: (209) 467-1118
Attention: Mr. Arthur Deicke

Project ID: Global ID:
Project Name: Carrington Ranch

Date Sampled: 07/22/09 @ 09:35 am
Date Received: 07/23/09 @ 09:00 am
Date Analyzed 07/28/09
Matrix: Soil

Method: (8141A, OPP by GC)

Laboratory ID:	0907-138-1	0907-138-7	0907-138-19	**Method**	**Units:**	**Detection Limit**
Client Sample ID:	Milk Barn West A	Old Trailer Site A	Garage East A			
Dilution	1	1	1			
Azinphos Methyl	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Bolstar	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Coumaphos	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Demeton	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Diazinon	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Dichlorvos	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Disulfoton	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Dursban (Chlorpyrifos)	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Ethoprop	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Fensulfothion	ND	ND	ND	EPA 8141A	ug/Kg	10
Fenthion	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Gardona (Stirophos)	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Malathion	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Merphos	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Methyl Parathion	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Mevinphos	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Naled	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Phorate	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Ronnel	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Tokuthion	ND	ND	ND	EPA 8141A	ug/Kg	5.0
Trichloronate	ND	ND	ND	EPA 8141A	ug/Kg	5.0

ND – Not Detected at the indicated Detection Limit

Project No: CT214-0907138
Client Name: Advanced Geo Environmental, Inc.
837 Shaw Road
Stockton, CA 95215
Phone:(209) 467-1006
Fax: (209) 467-1118
Attention: Mr. Arthur Deicke

Project ID: Global ID:
Project Name: Carrington Ranch

Date Sampled: 07/22/09 @ 09:35 am
Date Received: 07/23/09 @ 09:00 am
Date Analyzed 07/28/09
Matrix: Soil

Method: (8151A, Herbicides by GC)

Laboratory ID:	0907-138-1	0907-138-7	0907-138-19	Method	Units:	Detection Limit
Client Sample ID:	Milk Barn West A	Old Trailer Site A	Garage East A			
Dilution	1	1	1			
2,4,5-T	ND	ND	ND	EPA 8151A	ug/Kg	1
2,4-DB	ND	ND	ND	EPA 8151A	ug/Kg	5
2,4-D	ND	ND	ND	EPA 8151A	ug/Kg	1
Dalapon	ND	ND	ND	EPA 8151A	ug/Kg	0.5
Dicamba	ND	ND	ND	EPA 8151A	ug/Kg	1
Dichloroprop	ND	ND	ND	EPA 8151A	ug/Kg	1
Dinoseb	ND	ND	ND	EPA 8151A	ug/Kg	1
MCPA	ND	ND	ND	EPA 8151A	ug/Kg	200
MCPP	ND	ND	ND	EPA 8151A	ug/Kg	150
4-Nitrophenol	ND	ND	ND	EPA 8151A	ug/Kg	5
Pentachlorophenol	ND	ND	ND	EPA 8151A	ug/Kg	1
Silvex	ND	ND	ND	EPA 8151A	ug/Kg	1

ND Not Detected at the indicated Detection Limit

Project No:	CT214-0907138
Client Name:	Advanced Geo Environmental, Inc.
	837 Shaw Road
	Stockton, CA 95215
Attention:	Mr. Arthur Deicke

Phone:(209) 467-1006
Fax: (209) 467-1118

Project ID:	Global ID:
Project Name:	Carrington Ranch
Date Sampled:	07/22/09 @ 09:35 am
Date Received:	07/23/09 @ 09:00 am
Date Analyzed	07/24/09 – 07/27/09

Matrix: Soil

Method: (6010B/7000, CAM 17-Title 22 Metals – SW-846)

Laboratory ID:	0907-138-1	0907-138-4	0907-138-7	**Method**	**Units**	**Detection Limit**
Client Sample ID:	Milk Barn West A	Milk Barn East A	Old Trailer Site A			
Title 22 Metals, Solid						
Antimony (Sb)	ND	ND	ND	SW846 6010B	mg/Kg	1
Arsenic (As)	4.5	3.8	3.0	SW846 6020B	mg/Kg	0.01
Barium (Ba)	770	240	290	SW846 6010B	mg/Kg	0.5
Beryllium (Be)	ND	ND	ND	SW846 6010B	mg/Kg	1
Cadmium (Cd)	ND	ND	ND	SW846 6010B	mg/Kg	1
Chromium (Cr)	110	56	71	SW846 6010B	mg/Kg	1
Cobalt (Co)	ND	ND	ND	SW846 6010B	mg/Kg	1
Copper (Cu)	3.8	1.4	ND	SW846 6010B	mg/Kg	1
Lead (Pb)	ND	ND	ND	SW846 6010B	mg/Kg	1
Mercury (Hg)	ND	ND	ND	SW846 7471	mg/Kg	0.05
Molybdenum (Mo)	ND	ND	ND	SW846 6010B	mg/Kg	1
Nickel (Ni)	65	26	7.1	SW846 6010B	mg/Kg	1
Selenium (Se)	ND	ND	ND	SW846 6010B	mg/Kg	1
Silver (Ag)	ND	ND	ND	SW846 6010B	mg/Kg	1
Thallium (Tl)	ND	ND	ND	SW846 6020B	mg/Kg	0.02
Vanadium (V)	66	45	39	SW846 6010B	mg/Kg	1
Zinc (Zn)	27	38	11	SW846 6010B	mg/Kg	1
Acid, Extraction	07/23/09	07/23/09	07/23/09	SW846 3050	Date	

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT214-0907138
Client Name: Advanced Geo Environmental, Inc.
837 Shaw Road
Stockton, CA 95215
Phone:(209) 467-1006
Fax: (209) 467-1118
Attention: Mr. Arthur Deicke

Project ID: Global ID:
Project Name: Carrington Ranch

Date Sampled: 07/22/09 @ 10:27 am
Date Received: 07/23/09 @ 09:00 am
Date Analyzed 07/24/09 – 07/27/09
Matrix: Soil
Method: (6010B/7000, CAM 17-Title 22 Metals – SW-846)

Laboratory ID: / **Client Sample ID:**	0907-138-10 Sheep Pen South A	0907-138-13 Sheep Pen North A	0907-138-16 Ranch House West A	**Method**	**Units**	**Detection Limit**
Title 22 Metals, Solid						
Antimony (Sb)	ND	ND	ND	SW846 6010B	mg/Kg	1
Arsenic (As)	3.3	2.6	3.5	SW846 6020B	mg/Kg	0.01
Barium (Ba)	290	300	360	SW846 6010B	mg/Kg	0.5
Beryllium (Be)	ND	ND	ND	SW846 6010B	mg/Kg	1
Cadmium (Cd)	ND	ND	ND	SW846 6010B	mg/Kg	1
Chromium (Cr)	79	72	87	SW846 6010B	mg/Kg	1
Cobalt (Co)	ND	ND	ND	SW846 6010B	mg/Kg	1
Copper (Cu)	ND	ND	ND	SW846 6010B	mg/Kg	1
Lead (Pb)	ND	ND	ND	SW846 6010B	mg/Kg	1
Mercury (Hg)	ND	ND	ND	SW846 7471	mg/Kg	0.05
Molybdenum (Mo)	ND	ND	ND	SW846 6010B	mg/Kg	1
Nickel (Ni)	8.4	4.1	4.7	SW846 6010B	mg/Kg	1
Selenium (Se)	ND	ND	ND	SW846 6010B	mg/Kg	1
Silver (Ag)	ND	ND	ND	SW846 6010B	mg/Kg	1
Thallium (Tl)	ND	ND	ND	SW846 6020B	mg/Kg	0.02
Vanadium (V)	45	38	57	SW846 6010B	mg/Kg	1
Zinc (Zn)	64	44	5.2	SW846 6010B	mg/Kg	1
Acid. Extraction	07/23/09	07/23/09	07/23/09	SW846 3050	Date	

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT214-0907138
Client Name: Advanced Geo Environmental, Inc.
837 Shaw Road
Stockton, CA 95215
Phone:(209) 467-1006
Fax: (209) 467-1118
Attention: Mr. Arthur Deicke

Project ID: Global ID:
Project Name: Carrington Ranch

Date Sampled: 07/22/09 @ 11:11 am
Matrix: Soil
Date Received: 07/23/09 @ 09:00 am
Date Analyzed 07/24/09 – 07/27/09
Method: (6010B/7000, CAM 17-Title 22 Metals – SW-846)

Laboratory ID:	0907-138-19	0907-138-22	**Method**	**Units**	**Detection Limit**
Client Sample ID:	Garage East A	Ranch House East A			
Title 22 Metals, Solid					
Antimony (Sb)	ND	ND	SW846 6010B	mg/Kg	1
Arsenic (As)	4.0	3.9	SW846 6020B	mg/Kg	0.01
Barium (Ba)	160	350	SW846 6010B	mg/Kg	0.5
Beryllium (Be)	ND	ND	SW846 6010B	mg/Kg	1
Cadmium (Cd)	ND	ND	SW846 6010B	mg/Kg	1
Chromium (Cr)	130	100	SW846 6010B	mg/Kg	1
Cobalt (Co)	ND	ND	SW846 6010B	mg/Kg	1
Copper (Cu)	440	4.6	SW846 6010B	mg/Kg	1
Lead (Pb)	85	21	SW846 6010B	mg/Kg	1
Mercury (Hg)	ND	ND	SW846 7471	mg/Kg	0.05
Molybdenum (Mo)	ND	ND	SW846 6010B	mg/Kg	1
Nickel (Ni)	31	9.9	SW846 6010B	mg/Kg	1
Selenium (Se)	ND	ND	SW846 6010B	mg/Kg	1
Silver (Ag)	ND	ND	SW846 6010B	mg/Kg	1
Thallium (Tl)	ND	ND	SW846 6020B	mg/Kg	0.02
Vanadium (V)	73	59	SW846 6010B	mg/Kg	1
Zinc (Zn)	160	56	SW846 6010B	mg/Kg	1
Acid, Extraction	07/23/09	07/23/09	SW846 3050	Date	

ND = Not Detected at the indicated Detection Limit

Greg Tejirian
Laboratory Director

*The results are base upon the sample received.

Cal Tech Environmental Laboratories, Inc. ELAP ID #: 2424

Advanced GeoEnvironmental, Inc.

www.advgeoenv.com

- ☐ 837 Shaw Road, Stockton, California 95215 • Phone (209) 467-1006 • Fax (209) 467-1118
- ☐ 381 Thor Place, Brea, California 92821 • Phone (714) 529-0200 • Fax (714) 529-0203
- ☒ 2318 Fourth Street, Santa Rosa, California 95404 • Phone (707) 570-1418 • Fax (707) 570-1461
- ☐ 395 Del Monte Center, #111, Monterey, California 93940 • Phone (800) 511-9300 • Fax (831) 394-5979
- ☐ _____

07-138

CHAIN OF CUSTODY RECORD

Date: 7-22-09 Page 1 of 3

Project Name: Carrington Ranch	Project Manager: Arthur Deidle
Client: SCAPOSD	Sampler (Initials & signature): AED
Invoice to: ☒ AGE ☐ Client	Lab Project No.:

Analysis Required

Sample ID/Location/Description	Date	Time	Matrix	Number	Notes	ARSENIC	COPPER	LEAD	SULFUR	ORGANOCHLORINE	ORGANOHALIDE	ORGANOPHOSPHATE			
Milk Barn West A	7-22-09	0935	S	1		X	X	X	X	X	X	X			
" " " B	7-22-09	0940	S	1	HOLD										
" " " C	7-22-09	0945	S	1	HOLD										
Milk Barn East A	7-22-09	0950	S	1		X	X	X	X						
" " " B	7-22-09	0953	S	1	HOLD										
" " " C	7-22-09	0958	S	1	HOLD										
Old Trailer Site A	7-22-09	1017	S	1		X	X	X	X	X	X	X			
" " " B	7-22-09	1019	S	1	HOLD										
" " " C	7-22-09	1022	S	1	HOLD										
Sheep Pen South A	7-22-09	1027	S	1		X	X	X	X						

Relinquished by:	Date: 7-22-09	Time: 1630	Laboratory: CAL TECH		
Courier: ONTRAC			Received by:	Date: 7/23/09	Time: 0900
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by	Date:	Time:	Received by:	Date:	Time:

Requested Turn Around Time (circle): 24 hours 48 hours 72 hours 5 days (standard) Other: _____

Matrix Codes: A = Air W = Water S = Solid

Special Instructions to lab: Contact PM with results to make decision on 'hold' samples

I hereby authorize the performance of the above indicated work.

Geotracker EDF to: ☐ geotracker@advgeoenv.com ☐ NO

Global ID: N/A

Advanced GeoEnvironmental, Inc. www.advgeoenv.com

☐ 837 Shaw Road, Stockton, California 95215 • Phone (209) 467-1006 • Fax (209) 467-1118
☐ 381 Thor Place, Brea, California 92821 • Phone (714) 529-0200 • Fax (714) 529-0203
☒ 2318 Fourth Street, Santa Rosa, California 95404 • Phone (707) 570-1418 • Fax (707) 570-1461
☐ 395 Del Monte Center, #111, Monterey, California 93940 • Phone (800) 511-9300 • Fax (831) 394-5979
☐ _____

07-138

CHAIN OF CUSTODY RECORD

Date: 7-22-09 Page 2 of 3

Project Name: Carrington Ranch	Project Manager: Arthur Deicke
Client: SCAPOSD	Sampler (initials & signature): AED
Invoice to: ☒ AGE ☐ Client	Lab Project No.:

Sample ID/Location/Description	Date	Time	Matrix	Number	Notes	Analysis Required: ARSENIC	COPPER	LEAD	SULFUR	ORGANOCHLORINE	ORGANOHALIDE	ORGANOPHOSPHATE			
Sheep Pen South B	7-22-09	1031	S	1	HOLD										
" " " C	7-22-09	1033	S	1	HOLD										
Sheep Pen North A	7-22-09	1039	S	1		X	X	X	X						
" " " B	7-22-09	1042	S	1	HOLD										
" " " C	7-22-09	1044	S	1	HOLD										
Ranch House West A	7-22-09	1100	S	1		X	X	X	X						
" " " B	7-22-09	1103	S	1	HOLD										
" " " C	7-22-09	1105	S	1	HOLD										
Garage East A	7-22-09	1111	S	1		X	X	X	X	X	X	X			
" " B	7-22-09	1114	S	1	HOLD										

Relinquished by:	Date: 7-22-09	Time: 1630	Laboratory: CAL TECH		
Courier: ONTRAC			Received by:	Date: 7/23/09	Time: 0900
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Requested Turn Around Time (circle): 24 hours 48 hours 72 hours 5 days (standard) Other: _____

Matrix Codes: A = Air W = Water S = Solid

Special Instructions to lab:

I hereby authorize the performance of the above indicated work.

Geotracker EDF to: ☐ geotracker@advgeoenv.com ☐ NO

Global ID: N/A

Advanced GeoEnvironmental, Inc. www.advgeoenv.com

☐ 837 Shaw Road, Stockton, California 95215 • Phone (209) 467-1006 • Fax (209) 467-1118
☐ 381 Thor Place, Brea, California 92821 • Phone (714) 529-0200 • Fax (714) 529-0203
☒ 2318 Fourth Street, Santa Rosa, California 95404 • Phone (707) 570-1418 • Fax (707) 570-1401
☐ 395 Del Monte Center, #111, Monterey, California 93940 • Phone (800) 511-9300 • Fax (831) 394-5979
☐ _____

07-138

CHAIN OF CUSTODY RECORD

Date: 7-22-09 Page 3 of 3

Project Name: Carrington Ranch	Project Manager: Arthur Deicke
Client: SCAPOSD	Sampler (initials & signature): AED
Invoice to: ☒ AGE ☐ Client	Lab Project No.:

Sample ID/Location/Description	Date	Time	Matrix	Number	Notes	Analysis Required: ARSENIC	COPPER	LEAD	SULFUR	ORGANOCHLORINE	ORGANO HALIDE	ORGANOPHOSPHATE			
Garage East C	7-22-09	1117	S	1	HOLD										
Ranch House East A	7-22-09	1122	S	1		X	X	X	X						
" " " B	7-22-09	1125	S	1	HOLD										
" " " C	7-22-09	1128	S	1	HOLD										

Relinquished by:	Date: 7-22-09	Time: 1630	Laboratory: CAL TECH		
Courier: ONTRAC			Received by:	Date: 7/23/09	Time: 0900
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Requested Turn Around Time (circle): 24 hours 48 hours 72 hours 5 days (standard) Other: _____

Matrix Codes: A = Air W = Water S = Solid

Special Instructions to lab:

I hereby authorize the performance of the above indicated work.

Geotracker EDF to: ☐ geotracker@advgeoenv.com ☐ NO

Global ID: N/A

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

ANALYTICAL RESULTS*

CTEL Project No: C1214-0909181
Client Name: Advanced Geo Environmental, Inc.
837 Shaw Road
Stockton, CA 95215
Phone:(209) 467-1006
Fax: (209) 467-1118
Attention: Mr. Arthur Deicke

Project ID: Global ID:
Project Name: Carrington Ranch

Date Sampled: 09/24/09 @ 09:48 am
Date Received: 09/25/09 @ 09:00 am
Date Analyzed 09/28/09
Matrix: Soil

Method: (8081, OCP by GC)

Laboratory ID:	0909-181-1	**Method**	**Units:**	**Detection Limit**
Client Sample ID:	Sheep Pen SE Corner A			
Dilution	1			
4,4'-DDD	ND	EPA 8081A	ug/Kg	2.0
4,4'-DDE	ND	EPA 8081A	ug/Kg	2.0
4,4'-DDT	ND	EPA 8081A	ug/Kg	2.0
Aldrin	ND	EPA 8081A	ug/Kg	1.0
alpha-BHC	ND	EPA 8081A	ug/Kg	1.0
alpha-Chlordane	ND	EPA 8081A	ug/Kg	1.0
beta-BHC	ND	EPA 8081A	ug/Kg	1.0
Chlordane	ND	EPA 8081A	ug/Kg	8.5
delta-BHC	ND	EPA 8081A	ug/Kg	1.0
Dieldrin	ND	EPA 8081A	ug/Kg	2.0
Endosulfan I	ND	EPA 8081A	ug/Kg	1.0
Endosulfan II	ND	EPA 8081A	ug/Kg	2.0
Endosulfan sulfate	ND	EPA 8081A	ug/Kg	2.0
Endrin	ND	EPA 8081A	ug/Kg	2.0
Endrin aldehyde	ND	EPA 8081A	ug/Kg	2.0
Endrin ketone	ND	EPA 8081A	ug/Kg	2.0
gamma-BHC	ND	EPA 8081A	ug/Kg	1.0
gamma-Chlordane	ND	EPA 8081A	ug/Kg	1.0
Heptachlor	ND	EPA 8081A	ug/Kg	1.0
Heptachlore epoxide	ND	EPA 8081A	ug/Kg	1.0
Methoxychlor	ND	EPA 8081A	ug/Kg	8.5
Toxaphene	ND	EPA 8081A	ug/Kg	85

ND = Not Detected at the indicated Detection Limit

CTEL Project No: CT214-0909181

Client Name: Advanced Geo Environmental, Inc.
837 Shaw Road
Stockton, CA 95215

Phone:(209) 467-1006
Fax: (209) 467-1118

Attention: Mr. Arthur Deicke

Project ID: Global ID:

Project Name: Carrington Ranch

Date Sampled: 09/24/09 @ 09:48 am
Date Received: 09/25/09 @ 09:00 am
Date Analyzed 09/30/09

Matrix: Soil

Method: (8141A, OPP by GC)

		Method	Units:	Detection Limit
Laboratory ID:	0909-181-1			
Client Sample ID:	Sheep Pen SE Corner A			
Dilution	1			
Azinphos Methyl	ND	EPA 8141A	ug/Kg	5.0
Bolstar	ND	EPA 8141A	ug/Kg	5.0
Coumaphos	ND	EPA 8141A	ug/Kg	5.0
Demeton	ND	EPA 8141A	ug/Kg	5.0
Diazinon	ND	EPA 8141A	ug/Kg	5.0
Dichlervos	ND	EPA 8141A	ug/Kg	5.0
Disulfoton	ND	EPA 8141A	ug/Kg	5.0
Dursban (Chlorpyrifos)	ND	EPA 8141A	ug/Kg	5.0
Ethoprop	ND	EPA 8141A	ug/Kg	5.0
Fensulfothion	ND	EPA 8141A	ug/Kg	10
Fenthion	ND	EPA 8141A	ug/Kg	5.0
Gardona (Stirophos)	ND	EPA 8141A	ug/Kg	5.0
Malathion	ND	EPA 8141A	ug/Kg	5.0
Merphos	ND	EPA 8141A	ug/Kg	5.0
Methyl Parathion	ND	EPA 8141A	ug/Kg	5.0
Mevinphos	ND	EPA 8141A	ug/Kg	5.0
Naled	ND	EPA 8141A	ug/Kg	5.0
Phorate	ND	EPA 8141A	ug/Kg	5.0
Ronnel	ND	EPA 8141A	ug/Kg	5.0
Tokuthion	ND	EPA 8141A	ug/Kg	5.0
Trichloronate	ND	EPA 8141A	ug/Kg	5.0

ND = Not Detected at the indicated Detection Limit

CTEL Project No:	CT214-0909181
Client Name:	Advanced Geo Environmental, Inc.
	837 Shaw Road
	Stockton, CA 95215
Attention:	Mr. Arthur Deicke

Phone:(209) 467-1006
Fax: (209) 467-1118

Project ID:	Global ID:
Project Name:	Carrington Ranch
Date Sampled:	09/24/09 @ 09:48 am
Date Received:	09/25/09 @ 09:00 am
Date Analyzed	09/30/09

Matrix: Soil

Method: (8151A, Herbicides by GC)

Laboratory ID:	0909-181-1	**Method**	**Units:**	**Detection Limit**
Client Sample ID:	Sheep Pen SE Corner A			
Dilution	1			
2,4,5-T	ND	EPA 8151A	ug/Kg	1
2,4-DB	ND	EPA 8151A	ug/Kg	5
2,4-D	ND	EPA 8151A	ug/Kg	1
Dalapon	ND	EPA 8151A	ug/Kg	0 5
Dicamba	ND	EPA 8151A	ug/Kg	1
Dichloroprop	ND	EPA 8151A	ug/Kg	1
Dinoseb	ND	EPA 8151A	ug/Kg	1
MCPA	ND	EPA 8151A	ug/Kg	200
MCPP	ND	EPA 8151A	ug/Kg	150
4-Nitrophenol	ND	EPA 8151A	ug/Kg	5
Pentachlorophenol	ND	EPA 8151A	ug/Kg	1
Silvex	ND	EPA 8151A	ug/Kg	1

ND = Not Detected at the indicated Detection Limit

Greg Tejirian
Laboratory Director

*The results are base upon the sample received.

Cal Tech Environmental Laboratories, Inc. ELAP ID #: 2424

Advanced GeoEnvironmental, Inc. www.advgeoenv.com

- [x] 837 Shaw Road, Stockton, California 95215 • Phone (209) 467-1006 • Fax (209) 467-1118
- [ ] 381 Thor Place, Brea, California 92821 • Phone (714) 529-0200 • Fax (714) 529-0203
- [ ] 2318 Fourth Street, Santa Rosa, California 95404 • Phone (707) 570-1418 • Fax (707) 570-1461
- [ ] 395 Del Monte Center, #111, Monterey, California 93940 • Phone (800) 511-9300 • Fax (831) 394-5979
- [ ] _____

09-191

CHAIN OF CUSTODY RECORD

Date: 9-24-09 Page 1 of 1

Project Name: Carrington Ranch	Project Manager: Arthur Deicke
Client: SCAPOSD	Sampler (Initials & signature): AED/
Invoice to: [x] AGE [ ] Client	Lab Project No.:

Sample ID/Location/Description	Date	Time	Matrix	Number	Notes	Analysis Required: ORGANO CHLORINE	ORGANOHALIDE	ORGANOPHOSPHATE
Sheep Pen SE Corner A	9-24-09	0948	S	1		X	X	X
Sheep Pen SE Corner B	9-24-09	0955	S	1	HOLD			
Sheep Pen SE Corner C	9-24-09	1002	S	1	HOLD			

Relinquished by:	Date: 9-24-09	Time: 1770	Laboratory: CAL TECH		
Courier: ONTRAC			Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by: R. Taylor	Date: 9-25-09	Time: 9:00

Requested Turn Around Time (circle): 24 hours 48 hours 72 hours 5 days (standard) Other: _____

Matrix Codes: A = Air W = Water S = Solid

Special Instructions to lab: Contact PM if detections on non-hold sample.

I hereby authorize the performance of the above indicated work.

Geotracker EDF to: [ ] geotracker@advgeoenv.com [ ] NO

Global ID:

Advanced
GeoEnvironmental, Inc.

11 November 2009
AGE-NC Project No. 09-1701

Ms. Marta Puente
Sonoma County Agricultural Preservation and Open Space District
747 Mendocino Avenue, Suite 100
Santa Rosa, California 95401

Subject: **Soil Sampling and Analysis Report - Addendum**
CARRINGTON RANCH
California State Highway 1, Bodega Bay, California

Dear Ms. Marta Puente:

At your request, *Advanced* GeoEnvironmental, Inc. (AGE) has prepared the enclosed *Soil Sampling and Analysis Report - Addendum* for the property located at APNs 101-040-005; -006; -007 and -008 on California State Highway 1, Bodega Bay (the Property). This addendum addresses specific concerns of the California Department of Parks and Recreation - Russian River/Mendocino District (CDPR - Russian River/Mendocino District).

DISCUSSION

In the AGE-prepared *Soil Sampling and Analysis Report* dated 19 October 2009 (the Report), AGE identified several samples with metal concentrations above the US EPA OSWER Directive ([OSWER Directive (see references)] screening and evaluation tool for naturally occurring metals in the Western and Eastern United States. The OSWER directive provides a range of concentrations for many metals and was used a comparative tool to evaluate the concentrations of metals reported in the soil samples collected at the Property. Concentrations for chromium, copper, lead and zinc for the Garage East A sample and nickel for the Milk Barn West A sample slightly exceeded the range for naturally occurring metals (OSWER Directive).

The CDPR - Russian River/Mendocino District (Mr. Shannon) made comments from their review of the report as follows:

- "It would be beneficial to know if these elevated metals area a problem, or if they may cause a problem when working with the subject soils."
- "Do these elevated levels require any kind of remediation?"

122 Calistoga Road, #325, Santa Rosa, CA 95409
Telephone (707) 570-1418 • Fax (707) 570-1461

- "Are there any kinds of precautions that need to be incorporated into best management practices or special conditions during construction activities?"

The California Regional Water Quality Control Board - San Francisco Bay Region published the *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater* in November 2007 (ESLs) and is a regional standard for screening potential contaminants in both soil and ground water.

Each metal of concern which exceeded the OSWER Directive guidance range (chromium, copper, lead, nickel and zinc) was compared to the ESLs (Table 3). The ESL screening tool used was Direct Exposure Soil Screening Levels Construction/Trench Worker Exposure Scenario (Table K-3 of the ESL document). None of the metal concentrations (chromium, copper, lead, nickel and zinc) exceeded the ESL for Construction/Trench Worker Exposure. However, the copper concentration of 440 milligrams per kilogram (mg/kg) reported in sample Garage East A does exceed the screening level for Terrestrial Ecological Impacts of 230 mg/kg. Terrestrial Ecological Impacts are non-human and apply to fauna and flora.

According to the ESL document, the Terrestrial Ecological Impact levels were derived from guidance developed by the Canadian Ontario Ministry of Environment and Energy. According to the ESL document, the Terrestrial Ecological Impact screening levels are not intended for use in areas where a significant risk to endangered or threatened species may exist or where there is a potentially significant threat to terrestrial ecological receptors that extends beyond the general boundary of a subject site. This could include site that are adjacent to wetlands, streams, rivers, lakes, ponds, marine shorelines, or site that otherwise contain or border on areas where protected or endangered species may be present. The need for a detailed risk assessment should be evaluated on a site-by-site basis for areas where significant ecological concerns may exist.

CONCLUSIONS

According to the ESLs, the elevated concentration of chromium, copper, lead and zinc reported in the soil sample collected at one foot below surface grade (bsg) near the garage building on APN: 101-040-006 (Garage East A) and nickel reported in the soil sample collected at one foot bsg near the 'milk barn' on APN 101-040-006 (Milk Barn West A) do not appear to present a problem for construction workers and does not need to be remediated for human concerns.

According to the ESLs, the elevated concentration of copper reported in the soil sample collected at one foot bsg near the garage building on APN: 101-040-006 (Garage East A) may pose a non-human (Terrestrial Ecological Impact) to flora and fauna on or near the Property.

RECOMMENDATIONS

Based on further review and comparison of the reported concentrations to the ESLs, the requirement for a detailed risk assessment for terrestrial (non-human) ecological impacts may need to be considered for copper impact in the area soil sample Garage East A of the garage building on parcel APN 101-04-006.

Additionally, the two lower soil samples collected at two and three feet bsg (Garage East B and Garage East C) should be analyzed for copper to determine if copper is reported at deeper depths.

LIMITATIONS

Our professional services were performed using that degree of care and skill ordinarily exercised by environmental consultants practicing in this or similar localities. The findings were based upon analytical results provided by an independent laboratory. Evaluation of the geologic/hydrogeologic conditions at the site for the purpose of this investigation was made from a limited number of available data points (soil samples) and subsurface conditions may vary away from these data points. No other warranty, expressed or implied, is made as to the professional interpretations, opinions, and recommendations contained in this report.

REFERENCES

The following references were utilized in the preparation of this report:

- *Background Concentrations of Trace and Major Elements in California Soils*, Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of California, March 1996;
- *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater*, California Regional Water Quality Control Board - San Francisco Bay Region, Interim Final - November 2007;
- *Guidance for Developing Ecological Soil Screening Levels (Eco-SSLs), Review of Background Concentrations for Metals*, U.S. Environmental Protection Agency, Office of Solid Water Emergency Response (OSWER) Directive 92857-55, November 2003.

If you have any questions or require further information, please contact our office at (800) 511-9300.

Sincerely,

***Advanced* GeoEnvironmental, Inc.**

Arthur E. Deicke Jr.
Project Scientist

William R. Little
Senior Project Geologist
California Professional Geologist No. 7473

Attachment (Table 3)

cc: Mr.Gary Shannon, CDPR - Russian River/Mendocino District

TABLE 3

COMPARISON OF SELECTED ANALYTICAL RESULTS TO ESLs

Carrington Ranch

California State Highway 1, Bodega Bay, California

(mg/kg)

Sample ID	Date	Depth (ft bsg)	Location Description	EPA Method 6010B				
				Cr	Cu	Pb	Ni	Zn
Milk Barn West A	07/22/2009	1	APN 101-040-006; adjacent west of historic dairy barn	**110**	3.8	<1	**65**	27
Garage East A	07/22/2009	1	APN 101-040-006; adjacent east of historic garage	**130**	**440***	**85**	31	**160**
California Regional Water Quality Control Board - San Francisco Bay Region ESLs for Commercial 'Construction Worker' Exposure for Soil				1,100,000	280,000	720	260	210,000
OSWER Range of Background Metals Concentrations for Western US				20 - 120	15 - 42	10 - 30	11 - 35	30 - 100

Notes: mg/kg: milligrams per kilogram

<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.

ft bsg: feet below surface grade

ESLs: Environmental Screening Levels

Cr: Chromium Ni: Nickel

Cu: Copper Zn: Zinc

Pb: Lead OSWER: EPA Office of Solid Waste and Emergency Response

Bold indicates concentration was above the OSWER maximum range of background metals in the Western US.

*: According to ESL, indicates Cu concentration could have concern for terrestial ecological impact.

Advanced
GeoEnvironmental, Inc.

04 January 2010
AGE-NC Project No. 09-1701

Ms. Marta Puente
Sonoma County Agricultural Preservation and Open Space District
747 Mendocino Avenue, Suite 100
Santa Rosa, California 95401

Subject: **Soil Sampling and Analysis Report - Addendum Two**
CARRINGTON RANCH
California State Highway 1, Bodega Bay, California

Dear Ms. Marta Puente:

At your request, *Advanced* GeoEnvironmental, Inc. (AGE) has prepared the enclosed *Soil Sampling and Analysis Report - Addendum Two* for the property located at APNs 101-040-005; -006; -007 and -008 on California State Highway 1, Bodega Bay (the Property). This second addendum provides the analytical results of additional soil samples.

INTRODUCTION

In the AGE-prepared *Soil Sampling and Analysis Report* dated 19 October 2009 (the Report), AGE identified several samples with metal concentrations above the US EPA OSWER Directive ([OSWER Directive (see references)] screening and evaluation tool for naturally occurring metals in the Western and Eastern United States. The OSWER directive provides a range of concentrations for many metals and was used a comparative tool to evaluate the concentrations of metals reported in the soil samples collected at the Property. Concentrations for chromium, copper, lead and zinc for the Garage East A sample and nickel for the Milk Barn West A sample slightly exceeded the range for naturally occurring metals (OSWER Directive).

The California Department of Parks and Recreation - Russian River/Mendocino District (CDPR - Russian River/Mendocino District) made comments as documented and addressed in the AGE-prepared *Soil Sampling and Analysis Report - Addendum* dated 11 November 2009 (Addendum).

AGE also made the recommendation in the Addendum that the 2-foot below surface grade (bsg) designated Garage East B and 3-foot bsg designated Garage East C soil samples collected from the Garage East sampling location be analyzed for copper concentrations. The Sonoma County

122 Calistoga Road, #325, Santa Rosa, CA 95409
Telephone (707) 570-1418 • Fax (707) 570-1461

Agricultural Preservation and Open Space District directed the Garage East B and Garage East C soil samples to be analyzed for copper. The soil samples collected on 22 July 2009 were retained by the laboratory and analyzed 24 November 2009 within the 6-month hold time for metal analysis.

RESULTS

Copper was reported in the Garage East B and Garage East C soil samples at concentrations of 313 milligrams per kilogram (mg/kg) and 561 mg/kg, respectively.

The soil analytical results are summarized in updated Table 3. The laboratory report (CTEL Project Nos. CT214-0907138B), quality assurance and quality control (QA/QC) report, and chain-of-custody forms are attached.

DISCUSSION

The California Regional Water Quality Control Board - San Francisco Bay Region published the *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater* in November 2007 (ESLs) and is a regional standard for screening potential contaminants in both soil and ground water.

The Garage East B and C copper samples which exceeded the OSWER Directive guidance range were compared to the ESLs (Table 3). The ESL screening tool used was Direct Exposure Soil Screening Levels Construction/Trench Worker Exposure Scenario (Table K-3 of the ESL document). Copper did not exceed the ESL for Construction/Trench Worker Exposure. However, the average copper concentration of 438 mg/kg reported for samples Garage East A through C exceeds the screening level for Terrestrial Ecological Impacts of 230 mg/kg. Terrestrial Ecological Impacts are non-human and apply to fauna and flora.

According to the ESL document, the Terrestrial Ecological Impact levels were derived from guidance developed by the Canadian Ontario Ministry of Environment and Energy. According to the ESL document, the Terrestrial Ecological Impact screening levels are not intended for use in areas where a significant risk to endangered or threatened species may exist or where there is a potentially significant threat to terrestrial ecological receptors that extends beyond the general boundary of a subject site. This could include site that are adjacent to wetlands, streams, rivers, lakes, ponds, marine shorelines, or site that otherwise contain or border on areas where protected or endangered species may be present. The need for a detailed risk assessment should be evaluated on a site-by-site basis for areas where significant ecological concerns may exist.

CONCLUSIONS

The concentrations of copper at the Garage East location were 440 mg/kg at 1-foot bsg, 313 mg/kg at 2-foot and 561 mg/kg at 3-foot with an average concentration of 438 mg/kg from one to three feet bsg. Copper concentrations increased at the 3-foot level from both the 1-foot and 2-foot levels.

According to the ESLs, the elevated concentration of copper reported in the soil samples collected from one to three feet near the garage building on APN: 101-040-006 (Garage East A through C) may pose a non-human (Terrestrial Ecological Impact) to flora and fauna on or near the Property.

RECOMMENDATIONS

Based on further review and comparison of the reported concentrations to the ESLs, the requirement for a detailed risk assessment for terrestrial (non-human) ecological impacts may need to be considered for copper impact in the area of soil samples Garage East A through C of the garage building on parcel APN 101-04-006.

To determine the full extent of copper concentrations in soil near the Garage East sample location, additional field and analytical laboratory work would be required.

LIMITATIONS

Our professional services were performed using that degree of care and skill ordinarily exercised by environmental consultants practicing in this or similar localities. The findings were based upon analytical results provided by an independent laboratory. Evaluation of the geologic/hydrogeologic conditions at the site for the purpose of this investigation was made from a limited number of available data points (soil samples) and subsurface conditions may vary away from these data points. No other warranty, expressed or implied, is made as to the professional interpretations, opinions, and recommendations contained in this report.

REFERENCES

The following references were utilized in the preparation of this report:

- *Background Concentrations of Trace and Major Elements in California Soils*, Kearney Foundation of Soil Science, Division of Agriculture and Natural Resources, University of

California, March 1996;

- *Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater,* California Regional Water Quality Control Board - San Francisco Bay Region, Interim Final - November 2007;
- *Guidance for Developing Ecological Soil Screening Levels (Eco-SSLs), Review of Background Concentrations for Metals*, U.S. Environmental Protection Agency, Office of Solid Water Emergency Response (OSWER) Directive 92857-55, November 2003.

If you have any questions or require further information, please contact our office at (800) 511-9300.

Sincerely,

***Advanced* GeoEnvironmental, Inc.**

Arthur E. Deicke Jr.
Project Scientist

William R. Little
Senior Project Geologist
California Professional Geologist No. 7473

Attachment (Table 3 and analytical laboratory report)

cc: Mr.Gary Shannon, CDPR - Russian River/Mendocino District

ATTACHMENT A

TABLE 3

COMPARISON OF SELECTED ANALYTICAL RESULTS TO ESLs
Carrington Ranch
California State Highway 1, Bodega Bay, California
(mg/kg)

Sample ID	Date	Depth (ft bsg)	Location Description	EPA Method 6010B				
				Cr	Cu	Pb	Ni	Zn
Milk Barn West A	07/22/2009	1	APN 101-040-006; adjacent west of historic dairy barn	**110**	3.8	<1	**65**	27
Garage East A	07/22/2009	1	APN 101-040-006; adjacent east of historic garage	**130**	**440***	**85**	31	**160**
Garage East B	07/22/2009	2	APN 101-040-006; adjacent east of historic garage	-	**313***	-	-	-
Garage East C	07/22/2009	3	APN 101-040-006; adjacent east of historic garage	-	**561***	-	-	-
California Regional Water Quality Control Board - San Francisco Bay Region ESLs for Commercial 'Construction Worker' Exposure for Soil				1,100,000	280,000	720	260	210,000
OSWER Range of Background Metals Concentrations for Western US				20 - 120	15 - 42	10 - 30	11 - 35	30 - 100

Notes: mg/kg: milligrams per kilogram
<: Indicates constituents were not detected at a concentration greater than the reporting limit shown.
ft bsg: feet below surface grade
ESLs: Environmental Screening Levels
Cr: Chromium Ni: Nickel
Cu: Copper Zn: Zinc
Pb: Lead OSWER: EPA Office of Solid Waste and Emergency Response
Bold indicates concentration was above the OSWER maximum range of background metals in the Western US.
*: According to ESL, indicates Cu concentration could have concern for terrestial ecological impact.

ATTACHMENT B

CAL TECH Environmental Laboratories

6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

ANALYTICAL RESULTS*

CTEL Project No: CT214-0907138B
Client Name: Advanced Geo Environmental, Inc.
837 Shaw Road
Stockton, CA 95215
Phone:(209) 467-1006
Fax: (209) 467-1118
Attention: Mr. Arthur Deicke

Project ID: Global ID:
Project Name: Carrington Ranch

Date Sampled: 07/22/09 @ 11:14 am **Matrix: Soil**
Date Received: 07/23/09 @ 09:00 am
Date Analyzed 11/24/09
Method: (6010B/7000, CAM 17-Title 22 Metals – SW-846)

Laboratory ID:	0907-138-21	0907-138-22	**Method**	**Units**	**Detection Limit**
Client Sample ID:	Garage East B	Garage East C			
Copper (Cu)	313	561	SW846 6010B	mg/Kg	1
Acid, Extraction	11/23/09	11/23/09	SW846 3050	Date	

ND = Not Detected at the indicated Detection Limit

Greg Tejirian
Laboratory Director

*The results are base upon the sample received.

Cal Tech Environmental Laboratories, Inc. ELAP ID #: 2424

CAL TECH Environmental Laboratories
6814 Rosecrans Avenue, Paramount, CA 90723-3146
Telephone: (562) 272-2700 Fax: (562) 272-2789

QA/QC Report

Method: 6010B

Matrix: SO

Date Analyzed: 11/24/2009

Units: mg/Kg

Perimeters	Method Blank	LCS	LCSD	Spike Added	LCS % Rec.	LCSD % Rec.	Limits	RPD %
Copper	0	0.95	0.944	1	95	94	60-140	1

LCS: Laboratory Control Standard
LCSD: Laboratory Control Standard Duplicate

RPD: Relative Percent Difference of MS and MSD

Advanced GeoEnvironmental, Inc.

www.advgeoenv.com

☐ 837 Shaw Road, Stockton, California 95215 • Phone (209) 467-1006 • Fax (209) 467-1118
☐ 381 Thor Place, Brea, California 92821 • Phone (714) 529-0200 • Fax (714) 529-0203
☒ 2318 Fourth Street, Santa Rosa, California 95404 • Phone (707) 570-1418 • Fax (707) 570-1461
☐ 395 Del Monte Center, #111, Monterey, California 93940 • Phone (800) 511-9300 • Fax (831) 394-5979
☐ _____

07-138

CHAIN OF CUSTODY RECORD

Date: 7-27-09 Page 1 of 3

Project Name	Carrington Ranch
Client	SC APOSD
Invoice to:	☒ AGE ☐ Client
Project Manager	Arthur Deidle
Sampler (initials & signature)	AED
Lab Project No.:	

Sample ID/Location/Description	Date	Time	Matrix	Number	Notes	Analysis Required: ARSENIC	COPPER	LEAD	SULFUR	ORGANOCHLORINE	ORGANOPHOSPHATE	ORGANONITROGEN			
Milk Barn West A	7-27-09	0935	S	1		X	X	X	X	X	X	X			
" " " B	7-27-09	0940	S	1	HOLD										
" " " C	7-27-09	0945	S	1	HOLD										
Milk Barn East A	7-27-09	0950	S	1		X	X	X	X						
" " " B	7-27-09	0953	S	1	HOLD										
" " " C	7-27-09	0958	S	1	HOLD										
Old Trailer Site A	7-27-09	1017	S	1		X	X	X	X	X	X	X			
" " " B	7-27-09	1019	S	1	HOLD										
" " " C	7-27-09	1022	S	1	HOLD										
Sheep Pen South A	7-27-09	1027	S	1		X	X	X	X						

Relinquished by:		Date: 7-27-09	Time: 1630	Laboratory: CAL TECH	
Courier: ONTRAC				Received by:	Date: 7/28/09 Time: 0900
Relinquished by:		Date:	Time:	Received by:	Date: Time:
Relinquished by:		Date:	Time:	Received by:	Date: Time:

Requested Turn Around Time (circle): 24 hours 48 hours 72 hours 5 days (standard) Other: _____

Matrix Codes: A = Air W = Water S = Solid

Special Instructions to lab:
Contact PM with results to make decisions on 'hold' samples

I hereby authorize the performance of the above indicated work.

Geotracker EDF to: ☐ geotracker@advgeoenv.com ☐ _____ Global ID: N/A

Advanced GeoEnvironmental, Inc.

www.advgeoenv.com

- ☐ 837 Shaw Road, Stockton, California 95215 • Phone (209) 467-1006 • Fax (209) 467-1118
- ☐ 381 Thor Place, Brea, California 92821 • Phone (714) 529-0200 • Fax (714) 529-0203
- ☒ 2318 Fourth Street, Santa Rosa, California 95404 • Phone (707) 570-1418 • Fax (707) 570-1461
- ☐ 395 Del Monte Center, #111, Monterey, California 93940 • Phone (800) 511-9300 • Fax (831) 394-5979
- ☐

07-138

CHAIN OF CUSTODY RECORD

Date: 7-27-09 Page 2 of 3

Project Name	Carrington Ranch
Client	SCAPOSD
Invoice to:	☒ AGE ☐ Client
Project Manager	Arthur Deicke
Sampler (initials & signature)	AED
Lab Project No.:	

Sample ID/Location/Description	Date	Time	Matrix	Number	Notes	Analysis Required: ARSENIC	COPPER	LEAD	SULFUR	OP&NCHLORINE	ORGANHALIDE	OP&NPHOSPHATE			
Sheep Pen South B	7-27-09	1031	S	1	HOLD										
" " " C	7-27-09	1033	S	1	HOLD										
Sheep Pen North A	7-27-09	1039	S	1		X	X	X	X						
" " " B	7-27-09	1042	S	1	HOLD										
" " " C	7-27-09	1044	S	1	HOLD										
Ranch House West A	7-27-09	1100	S	1		X	X	X	X						
" " " B	7-27-09	1103	S	1	HOLD										
" " " C	7-27-09	1105	S	1	HOLD										
Garage East A	7-27-09	1111	S	1		X	X	X	X	X	X	X			
" " B	7-27-09	1114	S	1	HOLD		X								

Relinquished by:		Date: 7-27-09	Time: 1630	Laboratory: CAL TECH	
Courier: ONTRAC				Received by:	Date: 7/28/09 Time: 0900
Relinquished by:		Date:	Time:	Received by:	Date: Time:
Relinquished by:		Date:	Time:	Received by:	Date: Time:

Requested Turn Around Time (circle): 24 hours 48 hours 72 hours 5 days (standard) Other: _____

Special Instructions to lab:

Geotracker EDF to: ☐ geotracker@advgeoenv.com ☐ NO

Global ID: N/A

Matrix Codes: A = Air W = Water S = Solid

I hereby authorize the performance of the above indicated work.

Arthur Deicke

Advanced GeoEnvironmental, Inc.

www.advgeoenv.com

☐ 837 Shaw Road, Stockton, California 95215 • Phone (209) 467-1006 • Fax (209) 467-1118
☐ 381 Thor Place, Brea, California 92821 • Phone (714) 529-0200 • Fax (714) 529-0203
☒ 2318 Fourth Street, Santa Rosa, California 95404 • Phone (707) 570-1418 • Fax (707) 570-1461
☐ 395 Del Monte Center, #111, Monterey, California 93940 • Phone (800) 511-9300 • Fax (831) 394-5979
☐ _____

07-138

CHAIN OF CUSTODY RECORD

Date: 7-27-09 Page 3 of 3

Project Name Carrington Ranch	**Project Manager** Arthur Deicke
Client SCAPOSD	**Sampler (initials & signature)** AED
Invoice to: ☒ AGE ☐ Client	**Lab Project No.:**

Sample ID/Location/Description	Date	Time	Matrix	Number	Notes	Analysis Required: ARSENIC	COPPER	LEAD	SULFUR	ORGANOCHLORINE	ORGANOHALIDE	ORGANOPHOSPHATE			
Garage East C	7-22-09	1117	S	1	HOLD		X								
Ranch House East A	7-22-09	1122	S	1		X	X	X	X						
" " " B	7-22-09	1125	S	1	HOLD										
" " " C	7-22-09	1128	S	1	HOLD										

Relinquished by:	Date: 7-27-09	Time: 1630	Laboratory: CAL TECH		
Courier: ONTRAC			Received by:	Date: 7/28/09	Time: 0900
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

Requested Turn Around Time (circle): 24 hours 48 hours 72 hours 5 days (standard) Other: _____

Matrix Codes: A = Air W = Water S = Solid

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Global ID: N/A