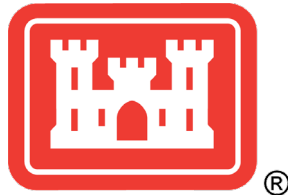


2025 ANNUAL REPORT
FORMER FORT ORD SITE 39 HABITAT RESTORATION
CONTRACT NO. W9123823D0009
TASK ORDER W9123824F0044

FORMER FORT ORD



Prepared for:

US Army Corps of Engineers
Sacramento District
1325 J Street
Sacramento, CA 95814-2922

Prepared by:



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2025 ANNUAL REPORT FORMER FORT ORD SITE 39 HABITAT RESTORATION

SUBMITTED TO:

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APPENDICES

Appendix A - Restoration Activities

Appendix B - Photo Log

Appendix C - Photo Points

ACRONYMS AND ABBREVIATIONS

2022 Annual Report	2022 Habitat Restoration Annual Report
Army	US Department of the Army
AMP	Adaptive Management Plan
BRAC	Base Realignment and Closure
Burleson	Burleson Consulting Inc., A Terracon Company
BMP	Best Management Practice
CDFA	California Department of Food and Agriculture
Kemron	Kemron Environmental Services, Inc.
Harris	Harris Environmental Group, Inc.
HA	Historic Area
HA 27A North	Northern polygons located at HA 27A
HA 27A South	Southern polygon located at HA 27A
HMP	Habitat Management Plan
HRP	Habitat Restoration Plan
lb	Pound
Monitoring Protocol	Protocol for Conducting Vegetation Monitoring in Compliance with the Installation-Wide Multispecies Habitat Management Plan at Former Fort Ord
NA	Not Applicable
NF	Native Forb (Annual Herbs/Forbs)
NNF	Non-Native Forb
NNP	Non-Native Perennial (Shrubs and Perennial Herbs/Forbs)
NP	Native Perennial
Propagation Protocol	Site 39 Plant Material Collection, Storage, and Propagation Protocols
PWS	Performance Work Statement
Site 39	Site 39 Inland Ranges
SSRP	Site Specific Restoration Plan
Terracon	Terracon Consultants, Inc.
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
UXO	Unexploded Ordnance
WGBA	Watkins Gate Burn Area
°F	Degrees Fahrenheit

SPECIES LIST AND CODES

Scientific Name	Common Name	Code	Category
<i>Acacia sp.</i>	acacia	AC	NNP
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon americanus var. americanus</i>	Spanish clover	ACAMA	NF
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Acmispon heermannii var. orbicularis</i>	Heermann's lotus	ACHEO	NP
<i>Acmispon parviflorus</i>	hill lotus	ACPA	NF
<i>Acmispon strigosus</i>	Bishop's lotus	ACST	NF
<i>Acmispon wrangelianus</i>	Chile lotus	ACWR	NF
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Agoseris apargioides</i>	coast dandelion	AGAP	NP
<i>Agoseris grandiflora</i>	large-flowered agoseris	AGGR	NP
<i>Agoseris heterophylla var. cryptopleura</i>	California annual agoseris	AGHEC	NF
<i>Agoseris sp.</i>	agoseris	AG	
<i>Agrostis avenacea</i>	Pacific bent grass	AGAV	NNP
<i>Agrostis exarata</i>	spike bent grass	AGEX	NP
<i>Agrostis hallii</i>	Hall's bent grass	AGHA	NP
<i>Agrostis pallens</i>	leafy bent grass	AGPA	NP
<i>Aira caryophyllea</i>	silver hair grass	AICA	NNF
<i>Amsinckia intermedia</i>	common fiddleneck	AMIN	NF
<i>Amsinckia spectabilis var. spectabilis</i>	Seaside fiddleneck	AMSPS	NF
<i>Anaphalis margaritacea</i>	pearly everlasting	ANMA	NP
<i>Aphanes occidentalis</i>	Western lady's mantle	APOC	NF
<i>Aphyllon sp.</i>	broomrape	AP	NP
<i>Arbutus menziesii</i>	Pacific madrone	ARME	NP
<i>Arctostaphylos hookeri*</i>	Hooker's manzanita	ARHO	NP
<i>Arctostaphylos montereyensis*</i>	Monterey manzanita	ARMO	NP
<i>Arctostaphylos pumila*</i>	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Artemisia californica</i>	California sagebrush	ARCA	NP
<i>Artemisia douglasiana</i>	mugwort	ARDO	NP
<i>Artemisia pycnocephala</i>	coastal sagewort	ARPY	NP
<i>Asteraceae sp.</i>	daisy species	AS	
<i>Atriplex semibaccata</i>	Australian saltbush	ATSE	NNP
<i>Avena barbata</i>	slender wild oat	AVBA	NNF
<i>Avena fatua</i>	wild oat	AVFA	NNF
<i>Avena sp.</i>	wild oat	AV	NNF
<i>Baccharis glutinosa</i>	salt marsh baccharis	BAGL	NP
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Baccharis salicifolia</i>	mule fat	BASA4	NP
<i>Bowlesia incana</i>	hoary bowlesia	BOIN3	NF

Scientific Name	Common Name	Code	Category
<i>Brassica nigra</i>	black mustard	BRNI	NNF
<i>Briza maxima</i>	rattlesnake grass	BRMA	NNF
<i>Briza minor</i>	small quaking grass	BRMI	NNF
<i>Brodiaea terrestris ssp. terrestris</i>	dwarf brodiaea	BRTET	NP
<i>Bromus carinatus</i>	California brome	BRCA	NF
<i>Bromus diandrus</i>	ripgut brome	BRDI	NNF
<i>Bromus hordeaceus</i>	soft chess	BRHO	NNF
<i>Bromus madritensis ssp. rubens</i>	foxtail chess	BRMAR	NNF
<i>Calandrinia breweri</i>	Brewer's redmaids	CABR3	NF
<i>Calandrinia menziesii</i>	red maids	CAME	NF
<i>Callitriche heterophylla</i>	water starwort	CAHE3	NP
<i>Calochortus albus</i>	white globe lily	CAAL	NP
<i>Calyptidium monandrum</i>	common pussypaws	CAMO	NF
<i>Camissonia contorta</i>	contorted primrose	CACO	NF
<i>Camissonia strigulosa</i>	sandysoil suncup	CAST20	NF
<i>Camissoniopsis cheiranthifolia</i>	beach evening primrose	CACH	NP
<i>Camissoniopsis micrantha</i>	small primrose	CAMI	NF
<i>Cardionema ramosissimum</i>	sand mat	CARA	NP
<i>Carduus pycnocephalus ssp. pycnocephalus</i>	Italian thistle	CAPYP	NNF
<i>Carex barbarae</i>	Santa Barbara sedge	CABA	NP
<i>Carex brevicaulis</i>	short stem sedge	CABR8	NP
<i>Carex globosa</i>	round-fruited sedge	CAGL	NP
<i>Carex praegracilis</i>	clustered field sedge	CAPR	NP
<i>Carex sp.</i>	sedge	CA	NP
<i>Carex tumulicola</i>	foothill sedge	CATU	NP
<i>Carpobrotus edulis</i>	hottentot fig/ice plant	CAED	NNP
<i>Castilleja affinis</i>	coast paint-brush	CAAF	NP
<i>Castilleja ambigua ssp. ambigua</i>	Johnny nip	CAAMA3	NF
<i>Castilleja attenuata</i>	narrow leaved owl's clover	CAAT	NF
<i>Castilleja densiflora</i>	owl's clover	CADE	NF
<i>Castilleja exserta ssp. exserta</i>	purple owl's-clover	CAEX	NF
<i>Castilleja foliolosa</i>	woolly indian paintbrush	CAFO2	NP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus*</i>	Monterey ceanothus	CERI	NP
<i>Ceanothus thrysiflorus</i>	blueblossom	CETH	NP
<i>Ceanothus thrysiflorus var. griseus</i>	Carmel ceanothus	CETHG	NP
<i>Centaurea melitensis</i>	totalote	CEME	NNF
<i>Cerastium glomeratum</i>	sticky mouse-ear chickweed	CEGL	NNF
<i>Chenopodium californicum</i>	California goosefoot	CHCA	NP
<i>Chlorogalum pomeridianum</i>	wavyleaf soap plant	CHPO	NP
<i>Chorizanthe diffusa</i>	diffuse spineflower	CHDI	NF
<i>Chorizanthe douglasii</i>	Douglas's spineflower	CHDO	NF

Scientific Name	Common Name	Code	Category
<i>Chorizanthe pungens</i> var. <i>pungens</i> *	Monterey spineflower	CHPUP	NF
<i>Cirsium occidentale</i>	cobwebby thistle	CIOC	NP
<i>Cirsium occidentale</i> var. <i>candidissimum</i>	snowy thistle	CIOCC	NP
<i>Cirsium</i> sp.	thistle	CI	
<i>Cirsium vulgare</i>	bull thistle	CIVU	NNP
<i>Cistus incanus</i>	rock-rose	CIIN	NNP
<i>Clarkia lewisii</i>	Lewis' clarkia	CLLE	NF
<i>Clarkia purpurea</i> ssp. <i>quadrivulnera</i>	winecup clarkia	CLPUQ	NF
<i>Clarkia</i> sp.	clarkia	CL	NF
<i>Clarkia unguiculata</i>	elegant clarkia	CLUN	NF
<i>Claytonia parviflora</i>	narrow leaved miner's lettuce	CLPA	NF
<i>Claytonia perfoliata</i>	miner's lettuce	CLPE	NF
<i>Clinopodium douglasii</i>	yerba buena	CLDO	NP
<i>Collinsia heterophylla</i> var. <i>heterophylla</i>	Chinese-houses	COHEH	NF
<i>Conicosia pugioniformis</i>	narrowleaf ice plant	COPU	NNP
<i>Conium maculatum</i>	poison hemlock	COMA	NNP
<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i> *	seaside bird's-beak	CORIL	NF
<i>Corethrogyne filaginifolia</i>	common sandaster	COFI	NP
<i>Cortaderia jubata</i>	jubata grass	COJU	NNP
<i>Crassula aquatica</i>	water pygmy-weed	CRAQ	NF
<i>Crassula connata</i>	pygmy-weed	CRCO	NF
<i>Crassula tillaea</i>	moss pygmy-weed	CRTI	NNF
<i>Crocanthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Croton californicus</i>	California croton	CRCA	NP
<i>Cryptantha clevelandii</i>	Cleveland's cryptantha	CRCL	NF
<i>Cryptantha intermedia</i>	common cryptantha	CRIN	NF
<i>Cryptantha intermedia</i> var. <i>intermedia</i>	common cryptantha	CRINI	NF
<i>Cryptantha micromeres</i>	minute-flowered cryptantha	CRMI	NF
<i>Cryptantha</i> sp.	cryptantha	CR	NF
<i>Cyperus eragrostis</i>	tall cyperus	CYER	NP
<i>Danthonia californica</i>	California oat grass	DACA	NP
<i>Daucus pusillus</i>	wild carrot	DAPU	NF
<i>Deinandra corymbosa</i>	coastal tarweed	DECO	NF
<i>Deschampsia danthonioides</i>	annual hairgrass	DEDA	NF
<i>Delphinium hutchinsoniae</i>	Hutchinson's larkspur	DEHU	NP
<i>Dichelostemma capitatum</i>	blue dicks	DICA	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Distichlis spicata</i>	salt grass	DISP	NP
<i>Dittrichia graveolens</i>	stinkwort	DIGR3	NNF
<i>Drymocallis glandulosa</i> var. <i>wrangelliana</i>	sticky cinquefoil	DRGLW	NP
<i>Dudleya farinosa</i>	bluff lettuce	DUFA	NP
<i>Elatine californica</i>	California waterwort	ELCA	NF

Scientific Name	Common Name	Code	Category
<i>Eleocharis acicularis</i>	needle spikerush	ELAC	NP
<i>Eleocharis macrostachya</i>	spike rush	ELMA	NP
<i>Elymus condensatus</i>	giant wild-rye	ELCO	NP
<i>Elymus glaucus</i>	blue wild-rye	ELGL	NP
<i>Elymus triticoides</i>	beardless wild rye	ELTR	NP
<i>Epilobium ciliatum</i>	fringed willowherb	EPCI	NF
<i>Eriastrum virgatum</i>	virgate eriastrum	ERVI	NF
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata</i> *	Eastwood's goldenbush	ERFA	NP
<i>Erigeron canadensis</i>	horseweed	ERCA	NF
<i>Eriodictyon californicum</i>	yerba santa	ERCA6	NP
<i>Eriogonum nudum</i>	naked buckwheat	ERNU	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Erodium botrys</i>	long-beaked filaree	ERBO	NNF
<i>Erodium cicutarium</i>	red-stemmed filaree	ERCI	NNF
<i>Erysimum ammophilum</i> *	coast wallflower	ERAM	NP
<i>Eschscholzia californica</i>	California poppy	ESCA	NF
<i>Eurybia radulina</i>	roughleaf aster	EURA	NP
<i>Euthamia occidentalis</i>	western goldenrod	EUOC	NP
<i>Festuca bromoides</i>	brome fescue	FEBR	NNF
<i>Festuca myuros</i>	rattail sixweeks grass	FEMY	NNF
<i>Festuca octoflora</i>	sixweeks grass	FEOC	NF
<i>Festuca perennis</i>	Italian rye grass	FEPE	NNF
<i>Frangula californica</i>	California coffeeberry	FRCA	NP
<i>Fritillaria affinis</i>	checker lily	FRAF2	NF
<i>Galium andrewsii</i>	phlox-leaved bedstraw	GAAN	NP
<i>Galium angustifolium</i>	narrowly leaved bedstraw	GAAN2	NP
<i>Galium aparine</i>	goose grass	GAAP	NF
<i>Galium californicum</i>	California bedstraw	GACA	NP
<i>Galium porrigens</i>	climbing bedstraw	GAPO	NF
<i>Galium porrigens var. porrigens</i>	climbing bedstraw	GAPOP	NP
<i>Gallium nuttallii</i>	climbing bedstraw	GANU	NP
<i>Gamochaeta ustulata</i>	purple cudweed	GAUS	NP
<i>Garrya elliptica</i>	coast silk tassel	GAEL	NP
<i>Gastridium phleoides</i>	nit grass	GAPH	NNF
<i>Genista monspessulana</i>	French broom	GEMO	NNP
<i>Geranium dissectum</i>	cut-leaved geranium	GEDI	NNF
<i>Gilia tenuiflora ssp. arenaria</i> *	sand gilia	GITEA	NF
<i>Githopsis specularioides</i>	common bluecup	GISP	NF
<i>Gnaphalium palustre</i>	lowland cudweed	GNPA	NF
<i>Heliotropium curassavicum var. oculatum</i>	seaside heliotrope	HECUO	NP
<i>Hesperocyparis macrocarpa</i>	Monterey cypress	HEMA22	NP

Scientific Name	Common Name	Code	Category
<i>Heteromeles arbutifolia</i>	toyon	HEAR	NP
<i>Heterotheca grandiflora</i>	telegraph weed	HEGR	NF
<i>Hordeum brachyantherum</i>	meadow barley	HOBR	NP
<i>Hordeum sp.</i>	sterile barley	HO	NNF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Horkelia cuneata var. cuneata</i>	wedge-leaved horkelia	HOCUC	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Iris douglasiana</i>	douglas iris	IRDO	NF
<i>Isocoma menziesii var. vernonioides</i>	Menzies' goldenbush	ISMEV	NP
<i>Isoetes howellii</i>	Howell's quillwort	ISHO	NF
<i>Juncus balticus ssp. ater</i>	baltic rush	JUBAA	NP
<i>Juncus bufonius</i>	toad rush	JUBU	NF
<i>Juncus bufonius var. bufonius</i>	common toad rush	JUBUB	NF
<i>Juncus bufonius var. congestus</i>	clustered toad rush	JUBUC2	NF
<i>Juncus bufonius var. occidentalis</i>	western toad rush	JUBUO	NP
<i>Juncus capitatus</i>	Dwarf rush	JUCA	NNF
<i>Juncus occidentalis</i>	western rush	JUOC	NP
<i>Juncus patens</i>	spreading rush	JUPA	NP
<i>Juncus phaeocephalus</i>	brown-headed rush	JUPH	NP
<i>Juncus sp.</i>	Rush	JU	
<i>Koeleria macrantha</i>	june grass	KOMA	NP
<i>Lastarriaea coriacea</i>	leather spineflower	LACO	NF
<i>Lasthenia glaberrima</i>	smooth goldfields	LAGL3	NF
<i>Lasthenia gracilis</i>	common goldfields	LAGR	NF
<i>Lathyrus angulatus</i>	angled pea vine	LAAN	NNP
<i>Layia platyglossa</i>	tidy-tips	LAPL	NF
<i>Lepechinia calycina</i>	pitcher sage	LECA	NP
<i>Lessingia pectinata</i>	common lessingia	LEPE	NF
<i>Logfia filaginoides</i>	California cottonrose	LOFI	NF
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Logfia sp.</i>	cottonrose	LO	
<i>Lomatium parvifolium</i>	coastal biscuitroot	LOPA	NP
<i>Lupinus arboreus</i>	yellow bush lupine	LUAR	NP
<i>Lupinus bicolor</i>	miniature lupine	LUBI	NF
<i>Lupinus chamissonis/albifrons</i>	silver bush lupine	LUCH/LUAL	NP
<i>Lupinus concinnus</i>	bajada lupine	LUCO	NF
<i>Lupinus nanus</i>	sky lupine	LUNA	NF
<i>Lupinus truncatus</i>	Nuttall's annual lupine	LUTR	NF
<i>Luzula comosa var. comosa</i>	Pacific wood rush	LUCOC	NP
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Lysimachia minima</i>	chaffweed	LYMI	NF

Scientific Name	Common Name	Code	Category
<i>Lysimachia monelli</i>	flaxleaf pimpernel	LYMO	NNP
<i>Lythrum hyssopifolia</i>	grass poly	LYHY	NNF
<i>Madia elegans</i>	common madia	MAEL	NF
<i>Madia exigua</i>	little tarweed	MAEX	NF
<i>Madia gracilis</i>	slender tarweed	MAGR	NF
<i>Madia sativa</i>	coast tarweed	MASA	NF
<i>Madia sp.</i>	tarweed	MA	NF
<i>Marah fabacea</i>	wild cucumber	MAFA	NP
<i>Matricaria discoidea</i>	pineapple weed	MADI6	NF
<i>Medicago polymorpha</i>	California burclover	MEPO	NNF
<i>Medicago sativa</i>	alfalfa	MESA	NNP
<i>Melica imperfecta</i>	coast range melic	MEIM	NP
<i>Melica sp.</i>	melic	ME	NP
<i>Melica torreyana</i>	Torrey's melic	METO	NP
<i>Melilotus albus</i>	white sweetclover	MEAL	NNF
<i>Melilotus indicus</i>	yellow sweetclover	MEIN	NNF
<i>Microseris paludosa</i>	Marsh microseris	MIPA	NP
<i>Minuartia californica</i>	sandwort	MICA	NF
<i>Monardella sinuata ssp. nigrescens</i>	curly-leaved monardella	MOSIN	NF
<i>Morella californica</i>	wax myrtle	MOCA6	NP
<i>Navarretia atractyloides</i>	Holly-leaf navarretia	NAAT	NF
<i>Navarretia hamata</i>	hooked navarretia	NAHA	NF
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Navarretia mellita</i>	skunk navarretia	NAME	NF
<i>Navarretia sp.</i>	navarretia	NA	NF
<i>Navarretia squarrosa</i>	skunkweed	NASQ	NF
<i>Nemophila menziesii</i>	baby blue eyes	NEME	NF
<i>Nuttallanthus texanus</i>	blue toadflax	NUTE	NF
<i>Orobanche californica ssp. californica</i>	broomrape	ORCAC	NP
<i>Pectocarya sp.</i>	combseed	PE	NF
<i>Pennisetum clandestinum</i>	Kikuyu grass	PECL	NNP
<i>Pentagramma triangularis</i>	gold back fern	PETR	NP
<i>Persicaria lapathifolia</i>	willow weed	PELA	NF
<i>Petrorhagia dubia</i>	hairypink	PEDU	NNF
<i>Petrorhagia prolifera</i>	pink grass	PEPR	NNF
<i>Phacelia douglasii</i>	Douglas phacelia	PHDO	NF
<i>Phacelia malvifolia</i>	stinging phacelia	PHMA	NF
<i>Phalaris lemmonii</i>	Lemmon's canarygrass	PHLE	NF
<i>Phalaris sp.</i>	canary grass	PH	
<i>Phalaris arundinacea</i>	reed canarygrass	PHAR	NP
<i>Pinus radiata</i>	Monterey pine	PIRA	NP
<i>Piperia michaelii</i>	Michael's rein orchid	PIMI6	NP

Scientific Name	Common Name	Code	Category
<i>Piperia sp.</i>	rein orchid	PI	NP
<i>Plagiobothrys chorisianus var. hickmanii</i>	Hickman's popcornflower	PLCHH	NF
<i>Plagiobothrys sp.</i>	popcorn flower	PL	NF
<i>Plantago coronopus</i>	cut-leaved plantain	PLCO	NNF
<i>Plantago erecta</i>	California plantain	PLER	NF
<i>Plantago lanceolata</i>	English plantain	PLLA	NNF
<i>Plantago major</i>	common plantain	PLMA	NNP
<i>Platystemon californicus</i>	cream cups	PLCA	NF
<i>Poa annua</i>	annual bluegrass	POAN	NNF
<i>Poa pratensis</i>	Kentucky bluegrass	POPR	NNP
<i>Poaceae sp.</i>	Unknown grass	PO	
<i>Polycarpon tetraphyllum var. tetraphyllum</i>	four-leaved allseed	POTET	NNF
<i>Polygala californica</i>	California milkwort	POCA	NP
<i>Polypogon monspeliensis</i>	rabbitsfoot grass	POMO	NNF
<i>Populus trichocarpa</i>	black cottonwood	POTR	NP
<i>Prunus sp.</i>	unknown cherry	PR	
<i>Primula clevelandii</i>	padre's shootingstar	PRCL	NF
<i>Pseudognaphalium beneolens</i>	fragrant everlasting	PSBE	NP
<i>Pseudognaphalium californicum</i>	California everlasting	PSCA	NP
<i>Pseudognaphalium luteoalbum</i>	weedy cudweed	PSLU	NNF
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Pseudognaphalium sp.</i>	cudweed	PS	
<i>Pseudognaphalium stramineum</i>	cotton-batting plant	PSST	NP
<i>Psilocarphus tenellus</i>	slender woolly-marbles	PSTE	NF
<i>Pteridium aquilinum var. pubescens</i>	western bracken fern	PTAQP	NP
<i>Pterostegia drymarioides</i>	woodland threadstem	PTDR	NF
<i>Quercus agrifolia</i>	coast live oak	QUAG	NP
<i>Ranunculus californicus var. californicus</i>	common buttercup	RACAC	NP
<i>Ribes malvaceum</i>	chaparral currant	RIMA	NP
<i>Ribes speciosum</i>	fuchsia-flowered gooseberry	RISP	NP
<i>Rubus ursinus</i>	California blackberry	RUUR	NP
<i>Rumex acetosella</i>	sheep sorrel	RUAC	NNP
<i>Rumex crassus</i>	willow leaved dock	RUCR4	NP
<i>Rumex crispus</i>	curly dock	RUCR	NNP
<i>Rumex salicifolius</i>	willow leaved dock	RUSA	NP
<i>Rumex sp.</i>	dock	RU	
<i>Sagina decumbens ssp. occidentalis</i>	Western pearlwort	SADEO	NF
<i>Salix laevigata</i>	red willow	SALA3	NP
<i>Salix lasiolepis</i>	arroyo willow	SALA6	NP
<i>Salix sp.</i>	willow	SA	NP
<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Sanicula crassicaulis</i>	Pacific sanicle	SACR	NP

Scientific Name	Common Name	Code	Category
<i>Sanicula laciniata</i>	coast sanicle	SALA7	NP
<i>Schismus barbatus</i>	old han schismus	SCBA	NNF
<i>Senecio glomeratus</i>	cutleaf burnweed	SEGL	NNF
<i>Senecio sylvaticus</i>	woodland groundsel	SESY	NNF
<i>Senecio vulgaris</i>	common groundsel	SEVU	NNF
<i>Silene gallica</i>	small-flower catchfly	SIGA	NNF
<i>Sisyrinchium bellum</i>	western blue-eyed grass	SIBE	NP
<i>Solanum umbelliferum</i>	blue witch	SOUM	NP
<i>Solidago velutina ssp. californica</i>	California goldenrod	SOVEC	NP
<i>Sonchus asper</i>	prickly sow thistle	SOAS	NNF
<i>Sonchus oleraceus</i>	common sow thistle	SOOL	NNF
<i>Sonchus sp.</i>	sow thistle	SO	NNF
<i>Spergula arvensis</i>	corn spurry	SPAR	NNF
<i>Spergularia rubra</i>	red sand-spurrey	SPRU	NNF
<i>Spergularia sp.</i>	sand-spurrey	SP	
<i>Spergularia villosa</i>	hairy sand-spurrey	SPVI	NNP
<i>Stachys ajugoides</i>	bugle hedge-nettle	STAJ	NP
<i>Stachys bullata</i>	wood mint	STBU	NP
<i>Stipa cernua</i>	nodding needle grass	STCE	NP
<i>Stipa pulchra</i>	purple needle grass	STPU	NP
<i>Stipa sp.</i>	needle grass	ST	NP
<i>Stylocline gnaphaloides</i>	everlasting neststraw	STGN	NF
<i>Symphoricarpos albus var. laevigatus</i>	common snowberry	SYALL	NP
<i>Taraxia ovata</i>	sun cup	TAOV	NP
<i>Thysanocarpus laciniatus</i>	narrow leaved fringe pod	THLA	NF
<i>Toxicodendron diversilobum</i>	poison oak	TODI	NP
<i>Toxicoscordion fremontii</i>	Fremont's deathcamas	TOFR	NP
<i>Tribolium obliterum</i>	Capetown grass	TROB	NNF
<i>Trifolium albopurpureum</i>	rancheria clover	TRAL	NF
<i>Trifolium angustifolium</i>	narrow-leaved clover	TRAN	NNF
<i>Trifolium campestre</i>	hop clover	TRCA	NNF
<i>Trifolium ciliolatum</i>	foothill clover	TRCI	NF
<i>Trifolium depauperatum var. truncatum</i>	truncate sack clover	TRDET	NF
<i>Trifolium dubium</i>	little hop clover	TRDU	NNF
<i>Trifolium gracilentum</i>	pinpoint clover	TRGR	NF
<i>Trifolium hirtum</i>	rose clover	TRHI	NNF
<i>Trifolium macraei</i>	Macrae's clover	TRMA	NF
<i>Trifolium microcephalum</i>	small-head clover	TRMI	NF
<i>Trifolium sp.</i>	clover	TR	
<i>Trifolium willdenovii</i>	tomcat clover	TRWI	NF
<i>Triglochin scilloides</i>	flowering-quillwort	TRSC	NF
<i>Triphysaria pusilla</i>	dwarf owl's clover	TRPU	NF

Scientific Name	Common Name	Code	Category
<i>Triteleia ixioides</i>	pretty face	TRIX	NP
<i>Triteleia sp.</i>	Triteleia	TRI	
<i>Uropappus lindleyi</i>	silver puffs	URLI	NF
<i>Verbena bracteata</i>	bracted verbena	VEBR	NP
<i>Verbena lasiostachys var. lasiostachys</i>	western vervain	VELAL	NP
<i>Vicia americana ssp. americana</i>	American vetch	VIAMA	NP
<i>Vicia benghalensis</i>	purple vetch	VIBE	NNF
<i>Vicia hassei</i>	slender vetch	VIHA	NF
<i>Vicia ludoviciana ssp. ludoviciana</i>	slender vetch	VILUL	NF
<i>Vicia sativa</i>	spring vetch	VISA	NNF
<i>Vicia sativa ssp. nigra</i>	narrow-leaved vetch	VISAN	NNF
<i>Vicia sativa ssp. sativa</i>	spring vetch	VISAS	NNF
<i>Vicia sp.</i>	vetch	VI	
<i>Xanthium strumarium</i>	rough cocklebur	XAST	NF
<i>Zeltnera davyi</i>	Davy's centaury	ZEDA	NF
	bare ground	BG	BG
	thatch	TH	TH

* HMP species

NP = Native Perennial (Shrubs and Perennial Herbs/Forbs)

NF = Native Forb (Annual Herbs/Forbs)

NNP = Non-Native Perennial

NNF = Non-Native Forb

1. INTRODUCTION

Harris Environmental Group was issued IDIQ Contract No. W9123823D0009 by the U.S. Army Corps of Engineers (USACE) to continue habitat restoration at Site 39 Remedial Action Areas at the former Fort Ord, Monterey, California, with teaming partner Terracon Consultants, Inc., collectively forming the Harris-Terracon team. This annual report summarizes habitat restoration activities completed from January 2025 through December 31, 2025, provides a progress summary for each Historic Area (HA), evaluates the likelihood that each HA will meet its success criteria by Monitoring Year 13, and presents conclusion statements for HAs that have reached their final year of monitoring.

1.1 Purpose

Former military ranges underwent soil remediation and subsequent habitat restoration in areas that ranged in size from 0.05 to 14 acres and were scattered around the perimeter of the Site 39 Inland Ranges area (Site 39) of former Fort Ord. Approximately 62 acres of soil remediation area needed restoration at HAs 18, 19, 22, 23, 26, 27, 27A, 28, 29, 33, 34, 36, 37, 38, 39/40, 43, 44, 48, and Austin Road Stockpile. Harris-Terracon's objective was to provide seed/plant material collection, propagation, planting, and minor erosion control repairs necessary to restore the area to the requirements of the *Site 39 Habitat Restoration Plan* (HRP) (Shaw, 2009b). The restoration areas contain primarily rare central maritime chaparral habitat with smaller inclusions of coastal sage scrub, oak woodland, grassland, and vernal pool habitats.

Burleson Consulting (Burleson) developed Site Specific Restoration Plans (SSRP) for HAs 18, 19, 22, 23, 26, 27, 27A, 28, 29, 33, 34, 36, 37, 38, 39/40, 43, 44, 48, and Austin Road Stockpile which provide detailed information (site conditions, baseline vegetation, targets, and collection/propagation requirements) for each HA (Burleson, 2013). In 2010, Burleson prepared the *Plant Material, Collection, Storage, and Propagation Protocols for Site Restoration at Site 39* (Propagation Protocol) (Burleson, 2010). These documents provide necessary information and guidance to conduct restoration activities at Site 39. This annual report details tasks involved with the execution of habitat restoration on Site 39 in 2025, a progress summary for each HA, and recommendations.

Work performed in 2025 consisted of:

- Storage of previously collected plant material
- Passive restoration activities (seed broadcast)
- Invasive species removal and mulch dispersal as part of Caretaker of Previous HA task
- Monitoring restoration sites to evaluate vegetative establishment
- HMP annual species monitoring
- Photo point documentation
- Erosion control activities

1.2 General Site Conditions

Site 39 is dominated by maritime chaparral; a regionally rare, fire-dependent plant community found within the coastal fog zone on sandy to rocky soils. Chaparral habitats are dominated by drought-deciduous or evergreen sclerophyllous shrubs. This unique species-rich plant community changes in species composition from the western edges of Site 39, which are frequently foggy and cool, to the eastern edges which are less foggy, warmer, and drier.

1.3 Site 39 Restoration Progress

Site Specific Restoration Plans were developed for 18 HAs and one stockpile area requiring habitat restoration for 61.71 acres. The 19 SSRPs prescribed passive restoration (seeding) for 61.71 acres and active restoration (planting) for 29.84 acres. Active restoration requires installation of approximately 52,000 plants. Figure 1-1 presents the status of restoration sites within Site 39.

Both active and passive restoration activities began in 2011. Since that time, approximately 61.26 acres have been seeded (passive restoration), and 68,732 plants have been installed (active restoration). Of the 19 restoration sites, 18 have received their full SSRP restoration prescriptions and are currently in the monitoring phase (see Figure 1-1). Austin Road Stockpile is the only site that is not yet complete and has not received any restoration to date. Additional passive restoration and caretaker activities are ongoing, while active restoration activities were completed as of February 3, 2023.

In 2025, 11 HAs were in a benchmark monitoring year (Year 5, 8, or 13). HA 44 was in Year 8 of monitoring, while HAs 18, 22, 23, 27, 27A, 29, 33, 36, 39/40, and 43 were in Year 13 of monitoring.

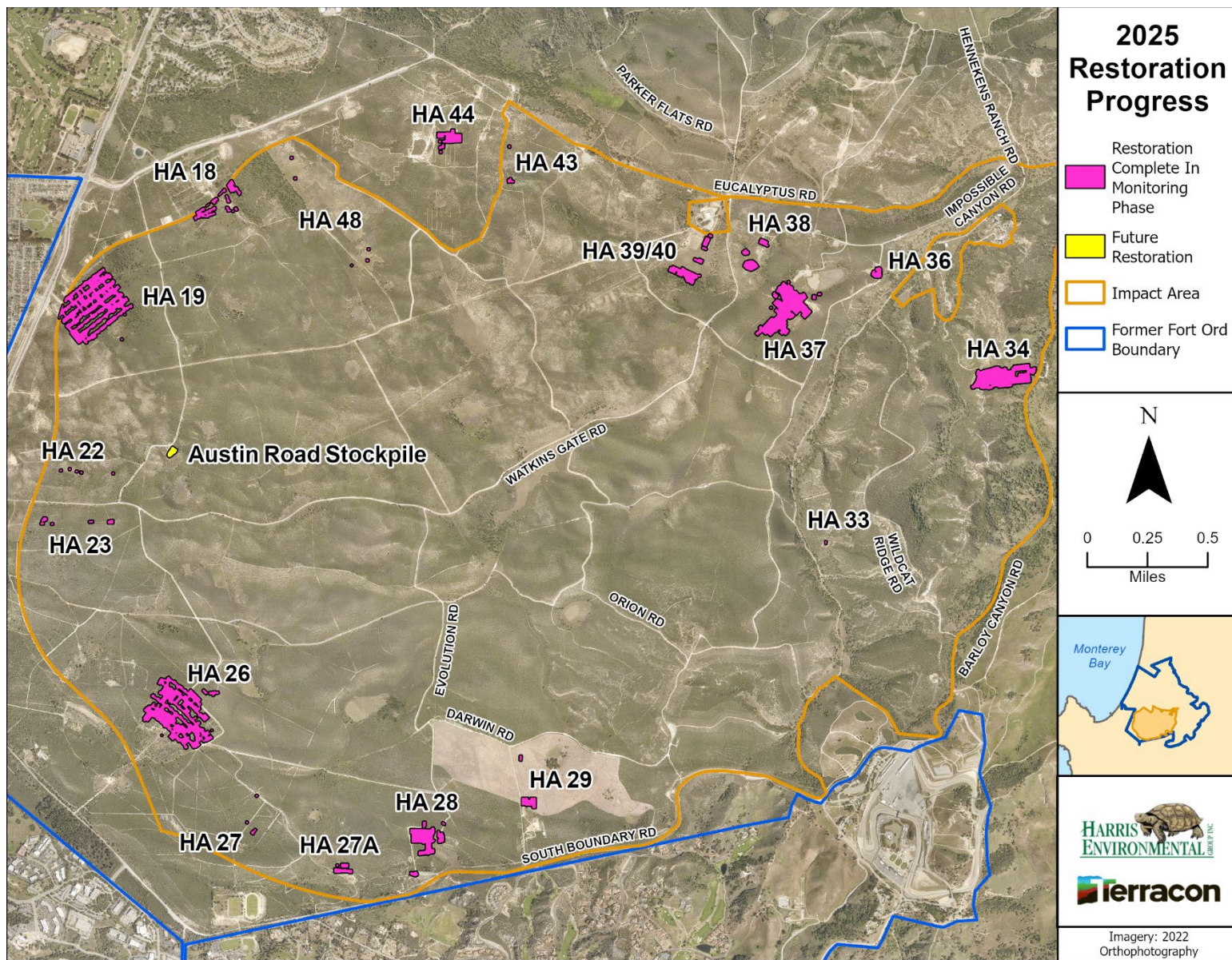


Figure 1-1. Restoration Progress Map

2. RESTORATION PROTOCOLS AND SITE-SPECIFIC RESTORATION PLANS

The protocols developed by Burleson detail the quantities and types of plant material to be collected, as well as the specific salvage techniques to be followed by field crews at former Fort Ord (Burleson, 2010; Burleson, 2013). There were no active restoration activities in 2025; however, these protocols have guided restoration efforts in past years and remain relevant for any future restoration prescriptions.

In accordance with the protocol (Burleson, 2010), field crews collect Habitat Management Plan (HMP) species within a 1-kilometer radius centered on each HA. Common species are collected within a 10-mile radius of each HA. Collected seeds are processed manually to remove residual hulls, stems, leaves, and chaff, as much as possible. Seed weight totals are entered into the plant inventory database after seed processing is completed.

The plant material collected is dried and processed at Terracon's native plant nursery in Carmel Valley. The plant material is stored in a cool, dry environment until ready to be broadcast. Labeling and tracking of all plant material follows the storage protocol (Burleson, 2010). The Harris-Terracon team maintains a spreadsheet database that is regularly updated so that plant and seed inventories are readily available. The database contains the following information:

- Scientific name and common name
- Container size (if applicable)
- Quantity (in nursery)
- Quantity (delivered)
- Seed/cutting origin
- Client
- Batch name and date sown
- Experimental treatments used during propagation (when applicable)

3. PRODUCTION SEED STORAGE

In 2025, Harris-Terracon continued to store native Fort Ord production seed for current and future broadcast activities. Production seed refers to native Fort Ord seed previously cultivated and harvested by contract growers S&S Seeds and Hedgerow Farms to support Fort Ord restoration efforts. The seed is stored in a facility that maintains a cool, dry, and dark environment, ideal for long-term seed viability. Table 3-1 provides an inventory of production seed as of December 31, 2025.

Table 3-1. Production Seed Inventory as of December 31, 2025

Scientific Name	Common Name	Inventory (lb)
<i>Elymus glaucus</i>	blue wildrye	35
<i>Stipa pulchra</i>	purple needlegrass	689
TOTAL		724

4. RESTORATION ACTIVITIES

The objective of restoration activities is to return areas impacted by remediation treatment to a natural landscape that resembles adjacent habitat in accordance with each SSRP. Restoration activities completed in 2025 included passive restoration at HAs with production seed broadcast, as well as production seed broadcast in areas of erosion repair. There were no active restoration activities completed in 2025.

4.1 Passive Restoration

Passive restoration activities generally occur annually during the wet season, between October and February. HAs 19, 26, 28, 34, 37, 38, and 44 received passive restoration during the 2025 calendar year. Table 4-1 shows seed broadcast acreage by HA, see Appendix A for seed broadcast maps and seed mix details in 2025.

Table 4-1. 2025 Seed Broadcast Acreage by HA

Month	HA 19	HA 26	HA 28	HA 34	HA 37	HA 38	HA 44	Total Acreage
January		0.07						0.07
February								0.00
March								0.00
April								0.00
May								0.00
June								0.00
July								0.00
August								0.00
September								0.00
October		0.35		0.20	0.20	0.10		0.85
November	1.00	0.33	0.25				0.10	1.68
December								0.00
Total	1.00	0.75	0.25	0.20	0.20	0.10	0.10	2.60

5. CARETAKING ACTIVITIES

Harris-Terracon completed several caretaking activities in 2025, including invasive species removal, herbicide spray, and mulch dispersal.

Invasive species removal occurred at HAs 18, 19, 34, 36, 37, and 39/40. Additional invasive species removal took place near HA 36 along Tongue Ridge Rd. Tree removal primarily targeted Monterey pine (*Pinus radiata*), with a few isolated Monterey cypress (*Hesperocyparis macrocarpa*) and golden wattle (*Acacia longifolia*).

Most trees up to ten inches in diameter at breast height (DBH) were felled using an electric chainsaw, and herbicide was applied to the cut stumps to prevent resprouting. Trees larger than ten inches DBH were girdled, a technique that involves removing a strip of bark around the trunk to interrupt the flow of nutrients and water, ultimately killing the tree. Herbicide was applied to the girdle scar to increase effectiveness. Small seedlings were removed by hand or with a shovel when feasible, with shovel work limited to the footprint of remediated areas where subsurface munitions removal had been completed.

Opportunistic hand-pulling efforts targeted weed species such as pampas grass (*Cortaderia sp.*), ice plant (*Carpobrotus sp.*), French broom (*Genista monspessulana*), and sparse occurrences of hairy rockrose (*Cistus incanus*). While some small individuals removed by hand were not documented with GPS, all trees requiring chainsaw removal and herbicide application were mapped. In most cases, no plant material was actually removed from the site, but was controlled and killed by means of felling, girdling, or hand pulling for smaller individuals. French broom and pampas grass individuals that contained any viable seed were bagged and disposed off site to prevent seed dispersal. This report uses “removed” to inclusively describe all methods of invasive species management.

All trees removed, particularly the Monterey pines, were encroaching on maritime chaparral habitat within or bordering open areas within the boundary of Site 39’s HAs. These trees can shade out open sandy areas where HMP annual species could germinate (Steers et al., 2013). Additionally, resin acids in pine needles can be allelopathic and inhibit the germination and growth of annual plants (Hisashi Kato-Noguchi et al., 2017). Safety protocols in line with OSHA chainsaw safety guidelines (OSHA, 2013) were implemented and all appropriate PPE, including wearing safety goggles, cut-resistant gloves, and chainsaw chaps, were donned. The tree removal process consisted of cutting a wedge on one side of the trunk, followed by a secondary cut on the opposite side to fell it. After felling a tree, Harris-Terracon biologists removed the remaining trunk by cutting as low to the ground as possible and applying a 20% glyphosate solution to the remaining stump.

Herbicide spray was mixed safely at the Monterey Terracon office and transported in the bed of the work vehicle within an enclosed spill free storage container. Mark It Blue® dye was added to the herbicide solution to easily trace the application. This dye dissipates with exposure to sunlight. In 2025, 151 fluid ounces of a 20% concentration of glyphosate solution was prepared. This solution was applied to cut tree stumps, as well as any other invasive species deemed too large for manual removal. Seed collection of native early successional species was conducted during the fall of 2025. All collected seed was incorporated into the erosion control seed mixes, which previously contained only grass seed, and was broadcast during passive restoration activities and erosion control repairs.

Table 5-1 shows the numbers of trees removed (by chainsaw) by HA and Figure 5-1 shows these HAs on a map. See Appendix B (photographs B-3 through B-8 & B-12 through B-20) for various Caretaker activities that occurred in 2025.

Seed collection of native early successional species was conducted during the fall of 2025. All collected seed was incorporated into the erosion control seed mixes, which previously contained only grass seed, and was broadcast during passive restoration activities and erosion control repairs.

Table 5-1. 2025 Caretaker Tree Removal by HA

HA	Individual Trees Removed
18	17
19	846
34	2
36*	310
37	2
39/40	8
Total	1,185

*Some trees removed nearby HA 36 along Tongue Ridge road with approval from ARMY BRAC and USACE.

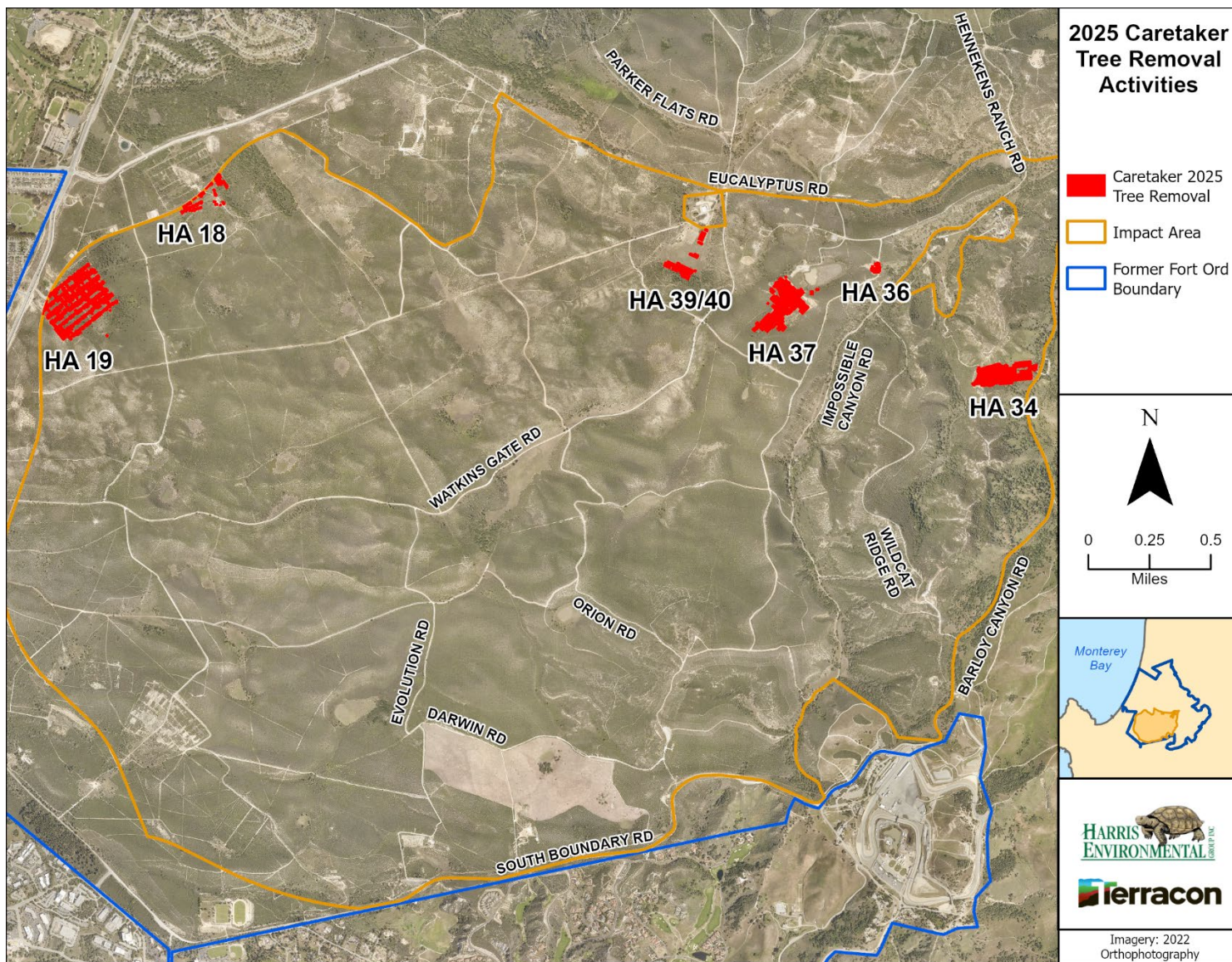


Figure 5-1. 2025 Caretaker Tree Removal Locations

6. MONITORING

Harris-Terracon conducted photo point documentation, HMP annual density, species richness, vegetative cover, and plant survivorship surveys at relevant HAs in 2025. Monitoring activities were guided by the HRP and the *Protocol for Conducting Vegetation Monitoring in Compliance with the Installation-Wide Multispecies Habitat Management Plan at Former Fort Ord* (Monitoring Protocol) (Shaw, 2009b; Burleson, 2009). Monitoring activities conducted in 2025 are summarized in Table 6-1 by HA. Section 6.1 describes monitoring methodology. Monitoring results for 2025 are presented in Section 8 on a site-by-site basis. Photographs B-9 through B-11 in Appendix B illustrate various monitoring tasks.

Table 6-1. 2025 Summary of Monitoring Activities by HA

HA	Photo Point	HMP Annual Density	Species Richness	Vegetative Cover	Plant Survivorship
18	●		●	●	
19	●				
22	●		●	●	
23	●		●	●	
26	●				
27	●		●	●	
27A	●		●	●	
28	●				
29	●		●	●	
33	●		●	●	
34	●				●
36	●		●	●	
37	●				
38	●	●			
39/40	●		●	●	
43	●		●	●	
44	●	●	●	●	
48	●				
Austin Rd. Stockpile	●				

Vegetative monitoring data, including species richness, vegetative cover, and HMP annual density, were compared to the success criteria associated with each objective outlined in the SSRPs (Burleson, 2013). Success criteria are summarized in Table 6-2.

Table 6-2. Success Criteria

Success Criterion	Category	Data Used for Comparison
Objective 1 – No. 1	Species richness	Meandering transect survey and 10-foot on either side of line-intercept transect
Objective 1 – No. 2	Native vegetation cover	Line-intercept transect percent cover
Objective 2 – No. 3	Non-native target weed cover	Line-intercept transect percent cover
Objective 3 – No. 4	HMP shrub cover	Line-intercept transect percent cover
Objective 3 – No. 4	HMP shrub cover by species	Line-intercept transect percent cover
Objective 3 – No. 4	HMP annual density	HMP annual plot density surveys and meandering transect survey to map discrete patches of HMP annuals outside of HMP annual restoration plots

6.1 Monitoring Methodology

6.1.1 Photo Points and Photo Documentation

Multiple permanent photo points were established at each restoration site to document progress. Photos were taken annually in the spring at every photo point and again in the fall at select photo points. Additionally, photo documentation of restoration activities occurred throughout the year. See Appendix B for a photo log of 2025 activities, Appendix C for photo point comparisons for all sites.

6.1.2 HMP Annual Density Surveys at Restoration Plots and Across the Historic Area

Plot density surveys for HMP annuals Monterey spineflower (*Chorizanthe pungens* var. *pungens*), sand gilia (*Gilia tenuiflora* ssp. *arenaria*), and seaside bird's beak (*Cordylanthus rigidus* ssp. *littoralis*) are performed at restoration sites in years 1, 2, 3, 4, 5, and 8 during peak bloom for each species according to the HRP (Shaw, 2009b). Any additional monitoring beyond the required years is conducted on a voluntary and opportunistic basis when required monitoring is already being conducted at the same HA. HMP annual density was obtained by counting every individual within an HMP annual restoration plot and calculating the number of plants per 100 square feet. Density classes were derived from the HRP (see Table 6-3).

Table 6-3. HMP Annual Density Classes

Density Class	Plants Counted per 100 Square Feet
Not Present	0
Low	1-50
Medium	51-100
High	101-500
Very High	>500

Discrete patches of HMP annuals within the HA but outside of HMP annual restoration plots were mapped during meandering transect surveys using ArcGIS Field Maps with a Juniper Systems Geode GNS3M receiver with sub-foot accuracy and RTK (real-time kinematic) corrections. Discrete patches were assigned a density class or population count dependent on feasibility. If the HMP annual occupied area was larger than one acre in size, density would be obtained by sub-sampling the population with circle plot surveys as described in the Monitoring Protocol (Burlison, 2009). In 2025, there were no HMP annuals that occupied an area larger than one acre in size and

therefore no circle plot surveys were conducted. HMP annual restoration plot and discrete patch densities were evaluated together to compare to the Objective 3 success criterion. For a given year, the combination of plots and discrete patches monitored that year were compared to baseline density requirements. The success criterion was met if plots and discrete patches combined indicated that the site maintained or exceeded baseline densities for each applicable HMP annual species. It was not necessary for HMP annuals to meet baseline density in all plots if discrete patches were present. At year 8, data for all monitoring years is evaluated together to determine whether the site met the success criterion.

The method used to measure HMP annual cover for Objective 3 was changed in 2017 from what was described in the SSRPs to a more appropriate evaluation method. Prior to 2017, the success criterion for monitoring HMP annuals required greater than or equal to 1% transect cover for Monterey spineflower, sand gilia, and/or seaside bird's beak. However, transects were designed to measure shrub and perennial plants with cover greater than 0.1 meters. HMP annual cover was underrepresented by transect surveys because patches of HMP annuals are often less than 0.1 meter across and have variable peak bloom times. In August 2017, the US Fish and Wildlife Service (USFWS) approved the abandonment of transect percent cover as a measure of HMP annual cover and the associated success criterion (USFWS, 2017). Instead of using transect surveys to assess HMP annuals, USFWS approved comparing HMP annual seeded plot densities and discrete patches to the success criterion as recommended in the 2016 Habitat Restoration Annual Report (Burlison, 2017).

6.1.3 Plant Survivorship Monitoring

Annual plant survivorship surveys were completed for three years after plant installation. A random sample of at least 10% of each shrub species were tagged and monitored annually. Survivorship monitoring events occurred in the fall at the end of the dry season when plant mortality rates were highest. During monitoring events, all tagged plants were counted as alive or dead to calculate survivorship percentages. All plants monitored were evergreens that should have live leaves year-round. Plants with live leaves were recorded as alive. Plants with no leaves or leaves that appeared dead were recorded as dead. Plant survivorship data are not compared to success criteria. Plant survivorship classifications are presented in Table 6-4.

Table 6-4. Plant Survivorship Classifications

Plant Survivorship	Percent Alive
High	80-100%
Moderate	50-79%
Low	≤49%

In reports preceding 2018, plants in poor condition or plants not found were considered dead. From 2018 onward, plant survivorship for all years was recalculated to consider plants in poor condition as alive, and plants not found were excluded from the percent alive calculation.

6.1.4 Vegetative Cover

Vegetative cover is monitored in years 1, 2, 3, 4, 5, 8, and 13 following restoration, typically from May to July. Prior to 2016, sites were visually assessed for cover. Beginning in 2016, cover of vegetation, thatch, and bare ground were measured using line-intercept transect surveys, as described in the Monitoring Protocol (Burlison, 2009). In 2016, HAs 22, 23, 27, 33, and 43 were surveyed using randomly placed quadrats to provide a preliminary idea of vegetative cover with a limited amount of effort. From 2017

onward, line-intercept transect surveys were completed for compatibility with SSRP objectives. Fifty-meter transects were placed randomly throughout each HA at a rate of one transect per acre; transects were not placed across roads or berms. For HAs that were less than 1 acre, shortened transects were placed diagonally through each plot. The corners of each plot were numbered 1-4, and the start point was determined using a random number generator. Quadrat sampling along transects was completed when annual herbaceous cover on the transect line was 10% or greater.

Vegetative cover was calculated to compare to the success criteria outlined in each SSRP. For all transects, the vegetative cover was calculated by summing the distance along the transect for each species and dividing by the length of the transect. Percent cover for all transects was then averaged to calculate average site cover by species, native shrubs and perennials, and other categories (Shaw, 2009b). To calculate the site average, the distance along transects was summed for each species and divided by the total transect length.

For each HA, native vegetative cover, non-native vegetative cover, total HMP shrub cover, and HMP shrub cover by species were evaluated against baseline objectives specified in the SSRPs. Results were compared to previous years to discern trends over time. Native vegetative cover was calculated by summing the percent cover of all species listed in Table 2 of the SSRPs for each site. The success criteria for native vegetative cover and HMP shrub cover were met if percent cover met or exceeded baseline percent cover (Objectives 1 and 3). For non-native vegetative cover, the success criterion was met if percent cover was less than the acceptable limit (Objective 2). In addition, the five species with the greatest percent cover for each HA were compared graphically across monitoring years.

At HAs 37, 38, 39/40, 44, and 48, silver bush lupine was identified as *Lupinus chamissonis* in Table 2 of the SSRPs. However, according to the Jepson Manual, Calflora, and *The Plants of Monterey County*, silver bush lupine is identified as *Lupinus albifrons* var. *albifrons* (Baldwin *et al.*, 2012; CalFlora, 2017; Matthews and Mitchell, 2015). Both species are present on Fort Ord and are difficult to identify unless flowers are present. Silver beach lupine (*Lupinus chamissonis*) can be differentiated from silver bush lupine (*Lupinus albifrons* var. *albifrons*) by the absence of hairs on the upper keel margin; silver bush lupine has hairs on the upper keel margin. For analysis of transect data and comparison to the success criteria, silver beach lupine and silver bush lupine data were combined, and the code LUCH/LUAL is used to represent both species.

6.1.5 Species Richness

A species list for each HA is developed by conducting meandering transects in years 1, 2, 3, 4, 5, 8, and 13 and by recording all species observed within 10 feet on either side of line-intercept transects, if applicable. Species richness was evaluated by comparing the quantities of native shrubs and perennials, native annual and herbaceous species, and non-native species observed to the quantities observed in previous years. The success criterion for species richness was met if all species listed in Table 3 of the SSRPs were present on site (Objective 1). In 2025 species richness monitoring was recorded at HAs 18, 22, 23, 27, 27A, 29, 33, 36, 39/40, 43, 44, Austin Road Stockpile, as these HAs were in benchmark monitoring years and received transect monitoring as well.

7. EROSION CONTROL ACTIVITIES

During the 2025 calendar year, Harris-Terracon conducted erosion control repairs at HAs 26, 28, 34, and 37. Production seed was broadcast in areas where erosion repairs occurred. Areas where HMP annual species were historically present outside of HMP restoration plots were avoided. Erosion control/production seed mix details can be found in Appendix A. Photographs B-12 through B-13 and B-17 through B-20 in Appendix B document erosion control field activities. The following work was performed in 2025:

HA 26:

- November 2025
 - Collapsed 150 linear feet of rills

HA 28:

- March 2025
 - Installed 100 linear feet of straw wattles
 - Collapsed 40 linear feet of rills

HA 34:

- September 2025
 - Installed 150 linear feet of straw wattles
- October 2025
 - Maintained 50 linear feet of water bars

HA 37:

- September 2025
 - Installed 150 linear feet of straw wattles
- October 2025
 - Collapsed 30 linear feet of rills
 - Installed 50 linear feet of straw wattles
- December 2025
 - Installed 100 square feet of coir fabric

8. RESTORATION SUMMARY AND MONITORING RESULTS BY HA

To understand restoration progress and discuss future efforts for each HA, it was important to compare the current status of each HA to its specific success criteria. This section is an overview of all restoration efforts through December 31, 2025: including monitoring results, comparison to the success criteria, and recommendations for each HA in a benchmark monitoring year.

8.1 HA 18

HA 18 was used by the US Department of the Army (Army) as a long-distance small-arms firing range that consisted of seven target lanes approximately 165 feet apart. Soil remediation was completed in 2010 and resulted in 2,750 cubic yards of lead-contaminated soil being excavated from 1.4 acres (Shaw, 2008). HA 18 rests within unprotected maritime chaparral with mean annual temperatures ranging between 56° and 58°F (Fahrenheit) and regular fog typical of maritime climates (USFS, 2007). HA 18 is relatively flat with northwest and west aspects. Adjacent vegetation in Watkins Gate Burned Area (WGBA) was masticated in 2013 to facilitate MEC cleanup, and the area was monitored for 8 years. All success criteria for WGBA were met with an exception of frequency of Monterey ceanothus on shaggy-bark manzanita dominated transects (Burleson, 2022)

HA 18 is located on the northwestern portion of Site 39, occurring within the sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for passive restoration at HA 18 consisted of hand broadcast of a non-irrigated seed mix and annual weed management. HA 18 is relatively flat with little potential for erosion.

Restoration and Adaptive Management Plan (AMP) activities at HA 18 occurred in 2011, 2012, 2019, 2020, and 2022; quantitative monitoring began in 2013. The HA was monitored for 15 years by photo documentation and site visits, seven years for HMP annual density in plots, and four years for HMP annual density across the HA, species richness, and vegetative cover (see Table 8-1). Figure 8-1 shows the passive restoration area, photo documentation locations, and transect monitoring locations. Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Success criteria for HA 18 are summarized in Table 8-2.

Table 8-1. Historic Summary of Restoration and Monitoring Activities at HA 18

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•							•	•		•			•
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Monterey Spineflower Plots			•	•	•	•	•	•		•					
HMP Annual Density across HA						•	•	•		•					
Species Richness						•	•	•		•					•
Vegetative Cover						•	•	•		•					•

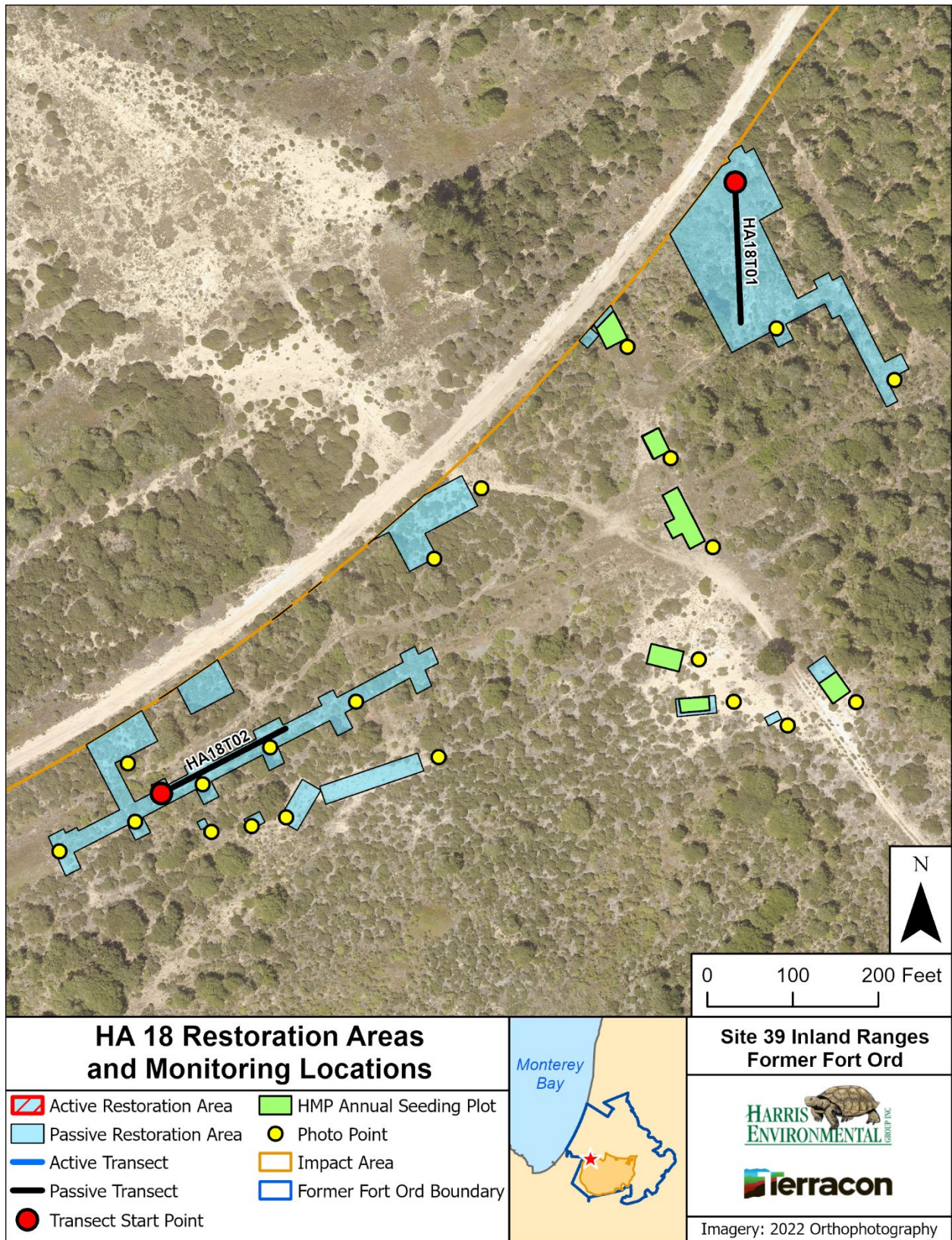


Figure 8-1. HA 18 Restoration Areas and Monitoring Locations Map

Table 8-2. Success Criteria and Acceptable Limits for Restoration of HA 18

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: chamise shaggy-bark manzanita California sage brush coyote brush Monterey ceanothus† dwarf ceanothus mock heather Eastwood’s goldenbush† golden yarrow peak rush-rose deerweed sticky monkeyflower coast live oak black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did not indicate non-native target weed species. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 2 (1-5% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Monterey ceanothus percent cover, as an average of transect data, must be equal to or greater than 4.
			Sandmat manzanita percent cover, as an average of transect data, must be present however, less than 1 percent is acceptable.
HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low	

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.1.1 Restoration and Adaptive Management Plan Activities

No restoration or Adaptive Management Plan (AMP) activities occurred at HA 18 in 2025. HA 18 received its SSRP passive restoration prescription in 2011–2012, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP seeding and planting recommendations were developed to address deficiencies relative to the species richness and HMP shrub cover by species criteria, as well as general restoration goals (Burluson, 2018; Burluson, 2021). AMP seeding was implemented in 2019 (Table 8-3), and AMP plantings were conducted in 2019, 2020, and 2022 (Table 8-4). In total, HA 18 received approximately 3 pounds of seed and 353 plants in addition to its original SSRP restoration prescription.

Table 8-3. Summary of Passive Restoration Activities for HA 18

Species	Pounds of Seed Broadcast				
	SSRP Target	2012 (Jan - SSRP)	2012 (Dec - SSRP)	2019 (AMP)	Total by Species
ACGL	2.800	1.000	1.440	-	2.440
ACMI	-	-	-	0.300	0.300
ADFA	1.400	0.500	0.770	-	1.270
ARPU*	1.400	1.100	1.000	-	2.100
ARTO	2.800	1.000	1.450	-	2.450
ARCA	1.400	0.500	0.730	-	1.230
BAPI	0.200	0.500	0.110	-	0.610
CERI*	1.400	0.500	0.780	-	1.280
CHPUP*	0.020	0.400	0.047	-	0.447
CRSC	1.400	0.500	0.770	-	1.270
DIAU	0.100	0.300	0.390	-	0.690
ELGL	12.600	-	12.650	0.800	13.450
ERER	0.400	0.200	0.230	-	0.430
ERFA*	0.100	0.072	0.070	-	0.142
ERCO	0.400	0.200	0.240	-	0.440
<i>Hordeum</i> sp.	12.600	-	12.700		12.700
HOCU	2.800	1.000	1.160	0.400	2.560
SAME	1.400	0.600	0.820	-	1.420
STCE	7.000	0.300	7.160	-	7.460
STPU	-	-	-	0.500	0.500
TOTAL	50.220	8.672	42.517	2.000	53.189

* HMP species

Table 8-4. Summary of Active Restoration Activities for HA 18

Species	Number of Individual Plants			Total by Species
	2019 (AMP)	2020 (AMP)	2022 (AMP)	
ADFA	40	-	-	40
ARPU*	-	84	-	84
CEDE	-	-	25	25
CERI	-	55	100	155
ERFA*	-	49	-	49
TOTAL	40	188	125	353

*HMP Species

8.1.2 Monitoring Results

HA 18 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover monitoring were completed (see Appendix C, page C-1).

8.1.2.1 Species Richness

Sixty-four species were observed at HA 18 in 2025. Of those, 34 were native shrubs or perennials, 16 were native annual herbaceous species, and 14 were non-native species (see Table 8-5). Species richness increased by 17 species since 2020. Native shrub and perennial species richness increased by five, native herbaceous species richness increased by nine, non-native species richness increased by three, and uncategorized species richness did not change.

Table 8-5. Species Observed on HA 18, 2025

Scientific Name	Common Name	Code	Category
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Acmispon strigosus</i>	Bishop's lotus	ACST	NF
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Arctostaphylos pumila</i> *	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Artemisia californica</i>	California sagebrush	ARCA	NP
<i>Avena barbata</i>	slender wild oat	AVBA	NNF
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Bromus carinatus</i>	California brome	BRCA	NF
<i>Bromus diandrus</i>	ripgut brome	BRDI	NNF
<i>Bromus madritensis ssp. rubens</i>	foxtail chess	BRMAR	NNF
<i>Cardionema ramosissimum</i>	sand mat	CARA	NP
<i>Carex sp.</i>	sedge	CA	NP
<i>Carpobrotus edulis</i>	hottentot fig/ice plant	CAED	NNP
<i>Castilleja densiflora</i>	owl's clover	CADE	NF
<i>Ceanothus rigidus</i> *	Monterey ceanothus	CERI	NP

<i>Centaurea melitensis</i>	totalote	CEME	NNF
<i>Chorizanthe pungens</i> var. <i>pungens</i> *	Monterey spineflower	CHPUP	NF
<i>Corethrogyne filaginifolia</i>	common sandaster	COFI	NP
<i>Cortaderia jubata</i>	jubata grass	COJU	NNP
<i>Crocanthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Dichelostemma capitatum</i>	blue dicks	DICA	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Drymocallis glandulosa</i> var. <i>wrangelliana</i>	sticky cinquefoil	DRGLW	NP
<i>Elymus glaucus</i>	blue wild-rye	ELGL	NP
<i>Eriastrum virgatum</i>	virgate eriastrum	ERVI	NF
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata</i> *	Eastwood's goldenbush	ERFA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Erodium botrys</i>	long-beaked filaree	ERBO	NNF
<i>Erodium cicutarium</i>	red-stemmed filaree	ERCI	NNF
<i>Festuca myuros</i>	rattail sixweeks grass	FEMY	NNF
<i>Festuca octoflora</i>	sixweeks grass	FEOC	NF
<i>Galium porrigens</i>	climbing bedstraw	GAPO	NF
<i>Gamochaeta ustulate</i>	purple cudweed	GAUS	NP
<i>Heterotheca grandiflora</i>	telegraph weed	HEGR	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Lupinus arboreus</i>	yellow bush lupine	LUAR	NP
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Madia exigua</i>	little tarweed	MAEX	NF
<i>Madia gracilis</i>	slender tarweed	MAGR	NF
<i>Madia sativa</i>	coast tarweed	MASA	NF
<i>Marah fabacean</i>	wild cucumber	MAFA	NP
<i>Navarretia hamata</i> ssp. <i>parviloba</i>	hooked navarretia	NAHAP	NF
<i>Nuttallanthus texanus</i>	blue toadflax	NUTE	NF
<i>Pentagramma triangularis</i>	gold back fern	PETR	NP
<i>Petrorhagia dubia</i>	hairypink	PEDU	NNF
<i>Pinus radiata</i>	Monterey pine	PIRA	NP
<i>Plantago coronopus</i>	cut-leaved plantain	PLCO	NNF
<i>Plantago erecta</i>	California plantain	PLER	NF
<i>Pseudognaphalium californicum</i>	California everlasting	PSCA	NP
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Pseudognaphalium stramineum</i>	cotton-batting plant	PSST	NP
<i>Quercus agrifolia</i>	coast live oak	QUAG	NP
<i>Rumex acetosella</i>	sheep sorrel	RUAC	NNP
<i>Salvia mellifera</i>	black sage	SAME	NP

<i>Sanicula crassicaulis</i>	Pacific sanicle	SACR	NP
<i>Stachys bullata</i>	wood mint	STBU	NP
<i>Stipa cernua</i>	nodding needle grass	STCE	NP
<i>Toxicodendron diversilobum</i>	poison oak	TODI	NP
<i>Trifolium microcephalum</i>	small-head clover	TRMI	NF
<i>Vicia hassei</i>	slender vetch	VIHA	NF

*HMP Species

8.1.2.2 Vegetative Cover

Harris-Terracon surveyed two 50-meter line-intercept transects at HA 18. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 62.93%. The mean vegetative cover by native shrubs and perennials was 10.3% greater in 2025 than in 2020. ARTO cover increased from 14.82% in 2020 to 33.71% in 2025, ARPU cover increased from 3.27% in 2020 to 8.06% in 2025. ACGL, an early successional species decreased in cover from 27.31% in 2020 to 14.47% in 2025. This transition is a pattern expected in maritime chaparral plant communities as species composition matures following disturbance. Figure 8-2 presents the percent cover of dominant species at HA 18 in 2016, 2017, 2020, and 2025. Figure 8-3 shows native vegetative cover compared to success criteria at HA 18. Figure 8-4 shows percent cover of HMP shrubs at HA 18 compared to success criteria.

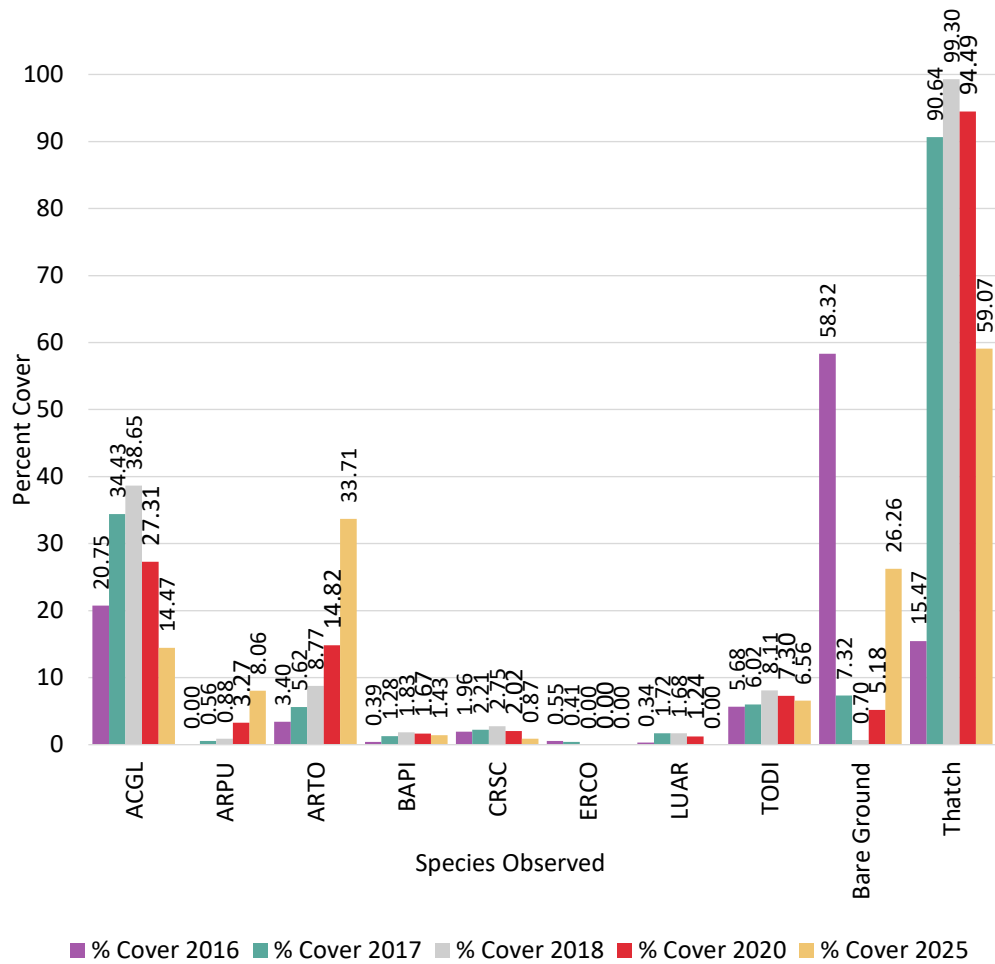


Figure 8-2. Percent cover of dominant species at HA 18

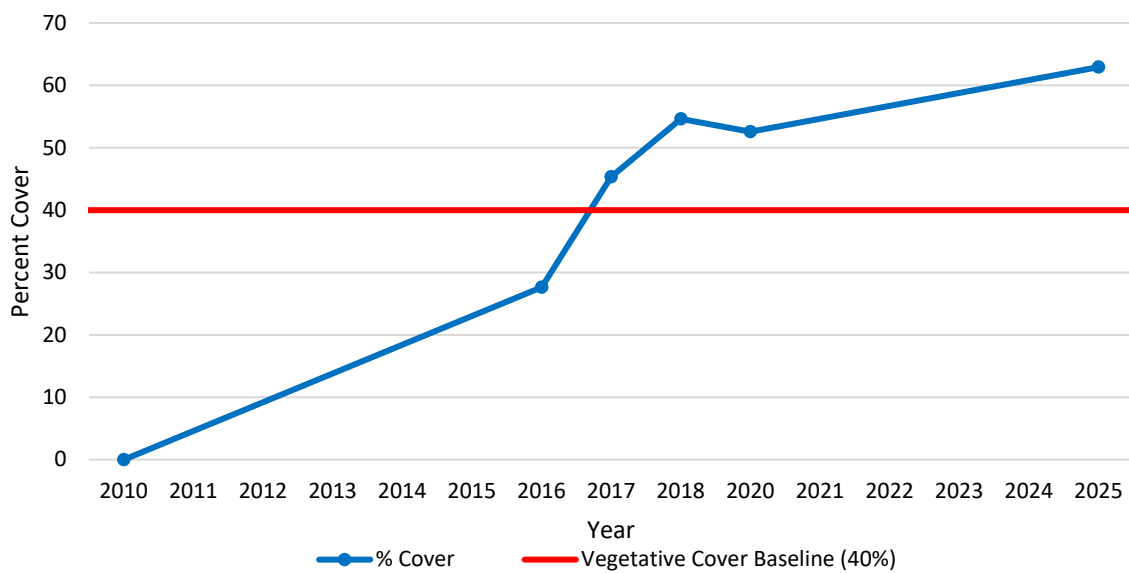


Figure 8-3. Native vegetative cover compared to success criteria at HA 18

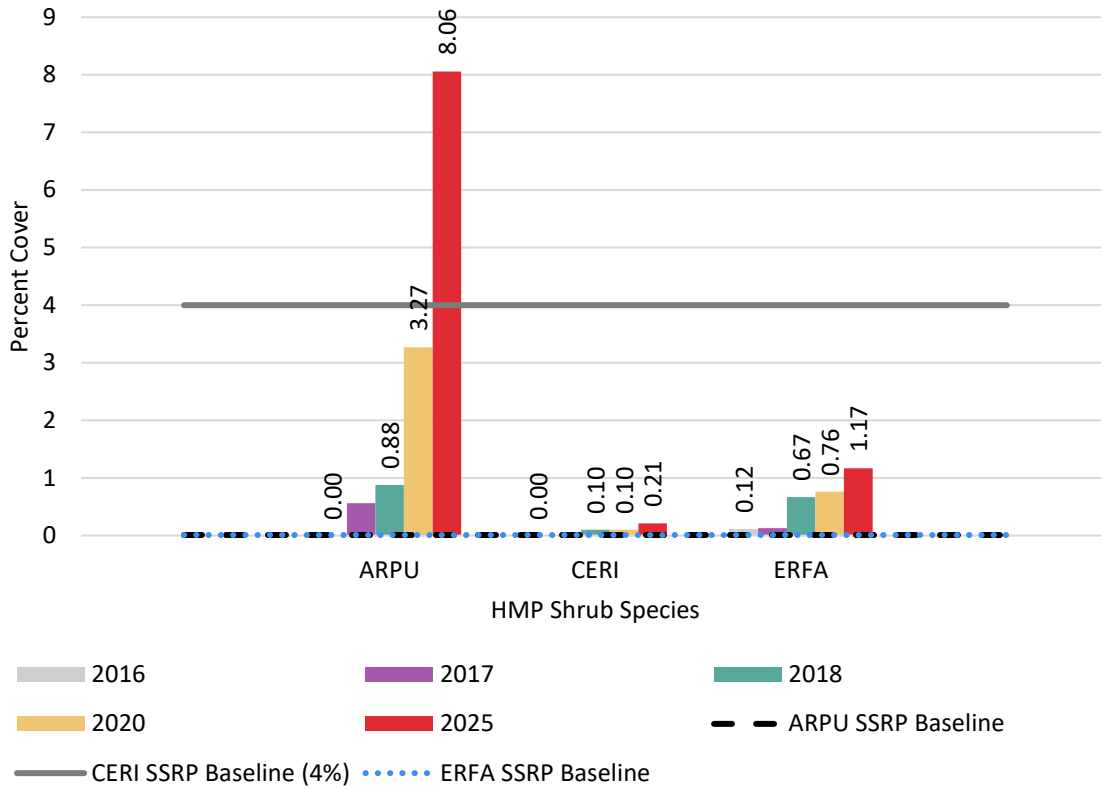


Figure 8-4. Percent cover of HMP shrubs at HA 18 compared to success criteria

8.1.3 Caretaker of Previous HA

Monterey pine removal and herbicide application of cut stumps occurred throughout HA 18 in 2025. Seventeen trees were removed in total, all of which were Monterey pines. Hand removal of small occurrences of ice plant also occurred during tree removal activities. Tree removal locations are shown in Figure 8-5. Photographs B-3 through B-8 and B-17 through B-20 in Appendix B show Caretaker activities that occurred in 2025.

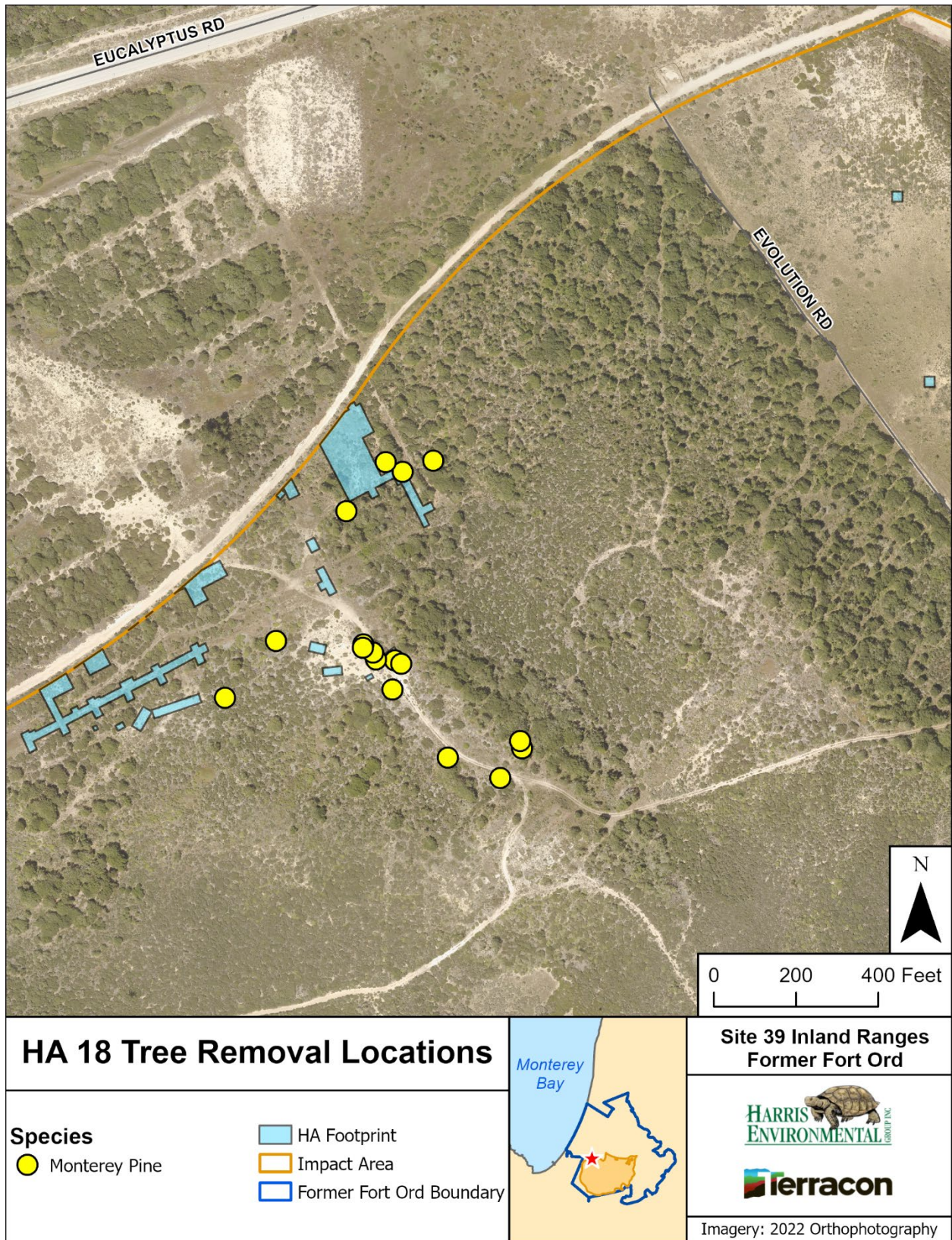


Figure 8-5. 2025 Tree Removal Locations at HA 18

8.1.4 Discussion and Conclusion

8.1.4.1 HA 18 Discussion

HA 18, a 1.4-acre site, was in Year 13 of monitoring in 2025 and met four of its six success criteria (see Table 8-6). Specifically, the site met the native vegetation cover, non-native target weed cover, HMP shrub cover criteria, and HMP annual density but did not meet the species richness or HMP shrub cover by species criteria.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. Both the species richness and HMP shrub cover by species criteria were identified as needing intervention. To address these deficiencies, AMP actions included broadcasting an additional 3 pounds of native seed and planting 353 target shrubs.

Overall, HA 18 exhibits strong native vegetation and HMP shrub cover, established HMP annuals, effective invasive species control, good species richness, and measurable progress toward HMP shrub by species targets, indicating that restoration actions have successfully promoted self-sustaining habitat conditions.

8.1.4.2 Species Richness Status

The species richness criterion was not met due to the absence of dwarf ceanothus. This criterion requires the presence of 14 specific native species. In Year 5, all required species were present except chamise, while dwarf ceanothus was present in very low numbers. Corrective measures to plant chamise in Year 6 successfully established chamise by Year 8, and it remains present as of Year 13. By Year 8, dwarf ceanothus was no longer present, and the planting of twenty-five individual dwarf ceanothus plants in Year 10 was unsuccessful, as the planted individuals did not survive. Year 13 monitoring confirmed that dwarf ceanothus remains absent at HA 18. It is important to note that dwarf ceanothus was not detected on any of the surrounding WGBA transects in baseline year nor in any of the follow up monitoring years (Burlison, 2022).

8.1.4.3 Native Vegetative Cover Status

The 40% native vegetative cover success criterion was achieved by Year 5, with 45% cover. Cover continued to increase to 53% in Year 8 and 63% by Year 13, demonstrating a sustained positive trajectory in native plant establishment and indicating that restoration treatments are effectively supporting overall vegetative growth. This positive trend is reflected at HA 18, where vegetation followed the classic transition from early succession to shrub dominance. Pioneer species such as deerweed initially dominated, reaching 21% cover in Year 4, 34% in Year 5, peaking at 39% in Year 6, then declining to 27% in Year 8 and 14% by Year 13. Over time, these species were replaced by shrubs like shaggy-bark manzanita, which increased from 3% in Year 4 to 6% in Year 5, 9% in Year 6, 15% in Year 8, and 34% by Year 13, ultimately becoming the dominant vegetation and forming a mature, stable plant community.

8.1.4.4 Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ combined cover for ice plant, French broom, and pampas) was met in all monitoring years. Cover was 1.5% in Year 5 and declined to 0.0% in Years 8 and 13, demonstrating sustained control of invasive species at HA 18.

8.1.4.5 HMP Shrub Cover Status

The HMP shrub cover class at HA 18 met the baseline cover class of 2 (1–5% absolute cover by HMP shrubs). Absolute cover by HMP shrub species increased from 0.7% in Year 5 to 4.1% in Year 8 and 9.4% in Year 13, demonstrating a consistent upward trend. As a result, HA 18 successfully met and exceeded this success criterion.

8.1.4.6 HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion for HA 18 was not met. This criterion requires CERI cover $\geq 4\%$, with the presence of ARPU and ERFA. In Year 5, CERI was not detected, while ARPU and ERFA were present at 0.56% and 0.13% cover, respectively. Corrective planting of all three HMP shrub species was implemented in Year 7. By Year 8, CERI achieved 0.10% cover, and ARPU and ERFA increased to 3.27% and 0.76% cover, respectively. Additional CERI plantings were conducted in Year 10. By Year 13, CERI cover increased to 0.21%, while ARPU and ERFA increased to 8.06% and 1.17% cover. Therefore, ARPU and ERFA met the criterion, but CERI did not. It is important to note that CERI was not detected on any of the surrounding WGBA transects in baseline year, and it was only detected in Year 8 (Burlison, 2022), suggesting that the species was spreading to the area through natural recruitment, but at a very slow pace.

8.1.4.7 HMP Annual Density Status

The HA 18 HMP annual density success criterion required that Monterey spineflower density remain within the baseline low-density class. In Year 8, the final year required for monitoring for HMP annuals, densities within HA 18 restoration plots met or exceeded the criterion for all plots. Additionally, Monterey spineflower was present outside the restoration plots, forming discrete patches that also met or exceeded the criterion, covering 0.25 acres of HA 18. Therefore, the HMP annual success criterion has been met (Burlison, 2021).

8.1.4.8 HA 18 Conclusion

HA 18 received its full SSRP passive restoration prescription in 2011–2012, followed by AMP seeding and planting from 2019 to 2022 to address deficiencies in species richness, HMP shrub cover, and HMP shrub cover by species along with ongoing weed management. With 63% native cover, effective invasive species control, and positive trends toward all restoration objectives, the site is on a clear trajectory toward pre-remediation baseline vegetation conditions, including exceeding the HMP shrub cover class criterion. Based on these results (Table 8-6), restoration at HA 18 is considered successfully implemented and ecologically self-sustaining.

Table 8-6. Status for Achieving Success Criteria at HA 18

Success Criterion	Category	Acceptable Limit	Year 5 (2017) Met	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	14 required species: ACGL, ADFA, ARCA, ARTO, BAPI, CERI, CEDE, CRSC, DIAU, ERER, ERFA, ERCO, QUAG, SAME	No	No	No	<p>Year 5: ADFA absent</p> <p>Year 8: CEDE absent</p> <p>Year 13: CEDE absent</p> <p>(ADFA planted in 2018/2019, CEDE planted in 2022/2023)*</p>
Objective 1 – No. 2	Native vegetation cover	≥ 40%	Yes	Yes	Yes	<p>Year 5: 45.34%</p> <p>Year 8: 52.59%</p> <p>Year 13: 62.93%</p>
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	<p>Year 5: 0.80%</p> <p>Year 8: 0.00%</p> <p>Year 13: 0.00%</p>
Objective 3 – No. 4	HMP shrub cover	Cover class 2: 1-5%	No	Yes	Yes	<p>Year 5: 0.69%</p> <p>Year 8: 4.13%</p> <p>Year 13: 9.44%</p>
Objective 3 – No. 4	HMP shrub cover by species	CERI ≥ 4%, ARPU = present ERFA = present	CERI = No ARPU = Yes ERFA = Yes	CERI = No ARPU = Yes ERFA = Yes	CERI = No ARPU = Yes ERFA = Yes	<p>Year 5: CERI 0.00% ARPU 0.56% ERFA 0.13%</p> <p>Year 8: CERI 0.10% ARPU 3.27% ERFA 0.76%</p> <p>Year 13: CERI 0.21% ARPU 8.06% ERFA 1.17%</p> <p>(CERI, ARPU, ERFA planted in 2019/2020. CERI planted in 2022/2023)*</p>
Objective 3 – No. 4	HMP annual density	Low density for CHPUP	Yes	Yes	NA	<p>Year 5: met</p> <p>Year 8: met</p> <p>(Year 13 monitoring not required)</p>

*Planted as part of Adaptive Management Plan

8.2 HA 19

HA 19 was used by the Army as a small-arms firing range. Soil remediation was completed in 2010 and resulted in the excavation of 23,000 cubic yards of lead-contaminated soil from approximately 14 acres (Shaw, 2008). HA 19 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 19 is relatively flat with a western aspect. Adjacent lands are high quality habitat with intact native vegetation that may promote natural recruitment within restoration areas.

HA 19 is located on the western portion of Site 39, occurring within the sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. The vegetative habitat at HA 19 prior to remediation was predominantly very high-quality maritime chaparral. The HA 19 SSRP includes a detailed list of the typical vegetation identified at the HA.

The SSRP restoration procedure for HA 19 included both passive and active restoration consisting of hand broadcast non-irrigated seed mix and installing container-grown plants. Areas within HA 19 which were less than 1.0 acre, or larger than 1.0 acre but less than 100 feet wide, were restored passively using broadcast seed. Areas larger than 1.0 acre and greater than 100 feet across received both active and passive restoration efforts.

Restoration and AMP activities at HA 19 occurred from 2012 to 2016, in 2019 and 2020, and from 2023 to 2025; quantitative monitoring began in 2013. The site was monitored for 14 years by photo documentation and site visits, eight years for HMP annual density in plots, six years for HMP annual density across the HA, four years for species richness, vegetative cover, and plant survivorship (see Table 8-7). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-6 shows the HA footprint, passive restoration area, active restoration area, and transect monitoring locations. The success criteria for HA 19 are summarized in Table 8-8.

Table 8-7. Historic Summary of Restoration and Monitoring Activities at HA 19

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
Restoration, Erosion Control, and Caretaking Activities	•	•	•	•	•			•	•			•	•	•	
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Monterey Spineflower Plots			•		•	•	•			•					
Sand Gilia Plots				•	•	•	•	•			•				
HMP Annual Density across HA					•	•	•	•		•	•				
Species Richness					•	•	•			•					•
Vegetative Cover					•	•	•			•					•
Plant Survivorship		•	•	•	•										

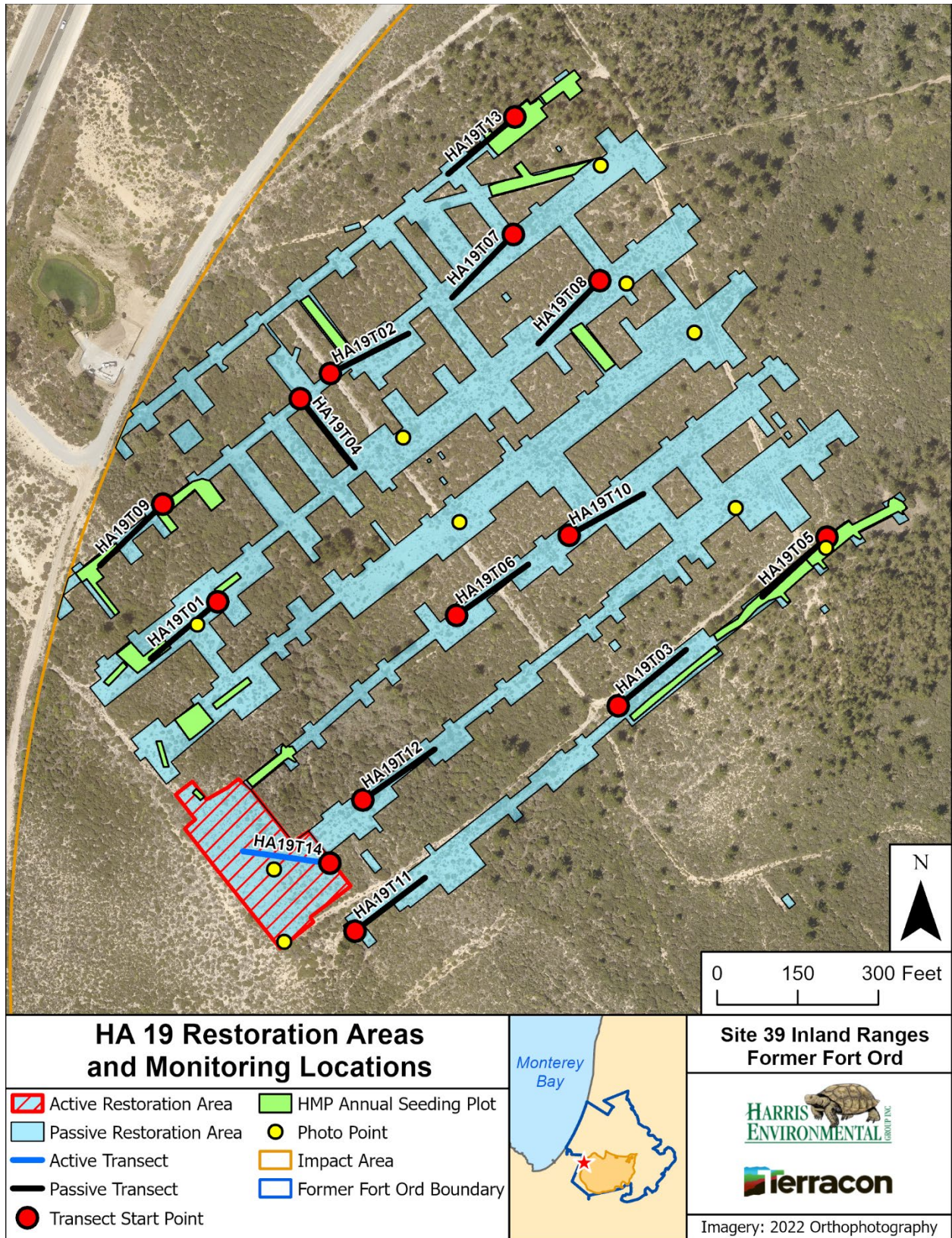


Figure 8-6. HA 19 Restoration Areas and Monitoring Locations Map

Table 8-8. Success Criteria and Acceptable Limits for Restoration of HA 18

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: chamise sandmat manzanita† shaggy-bark manzanita California sagebrush coyote brush Monterey ceanothus† mock heather Eastwood’s goldenbush† golden yarrow pitcher sage deerweed sticky monkeyflower coast live oak black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40% for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did not indicate non-native target weed species. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 3 (6-25% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 16.
			Monterey ceanothus percent cover, as an average of transect data, must be present however, less than 1 percent is acceptable.
HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low Sand gilia density class: Low	

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.2.1 Restoration and Adaptive Management Plan Activities

Harris-Terracon performed AMP broadcast seeding at HA 19 in 2025. Thirty pounds of native grass seed were applied to support overall native cover. See Table A-1 in Appendix A for details.

8.2.2 Monitoring Results

HA 19 was in year 12 of monitoring in 2025. Year 12 does not require quantitative monitoring; only site visits and photo documentation were completed (see Appendix C, page C-2).

8.2.3 Caretaker of Previous HA

Monterey pine removal and herbicide application of cut stumps occurred throughout HA 19 in 2025. Eight hundred and forty-six trees were removed in total, all of which were Monterey pines. Tree removal locations are shown in Figure 8-7. Photographs B-3 through B-8 and B-12 through B-20 in Appendix B show Caretaker activities that occurred in 2025.

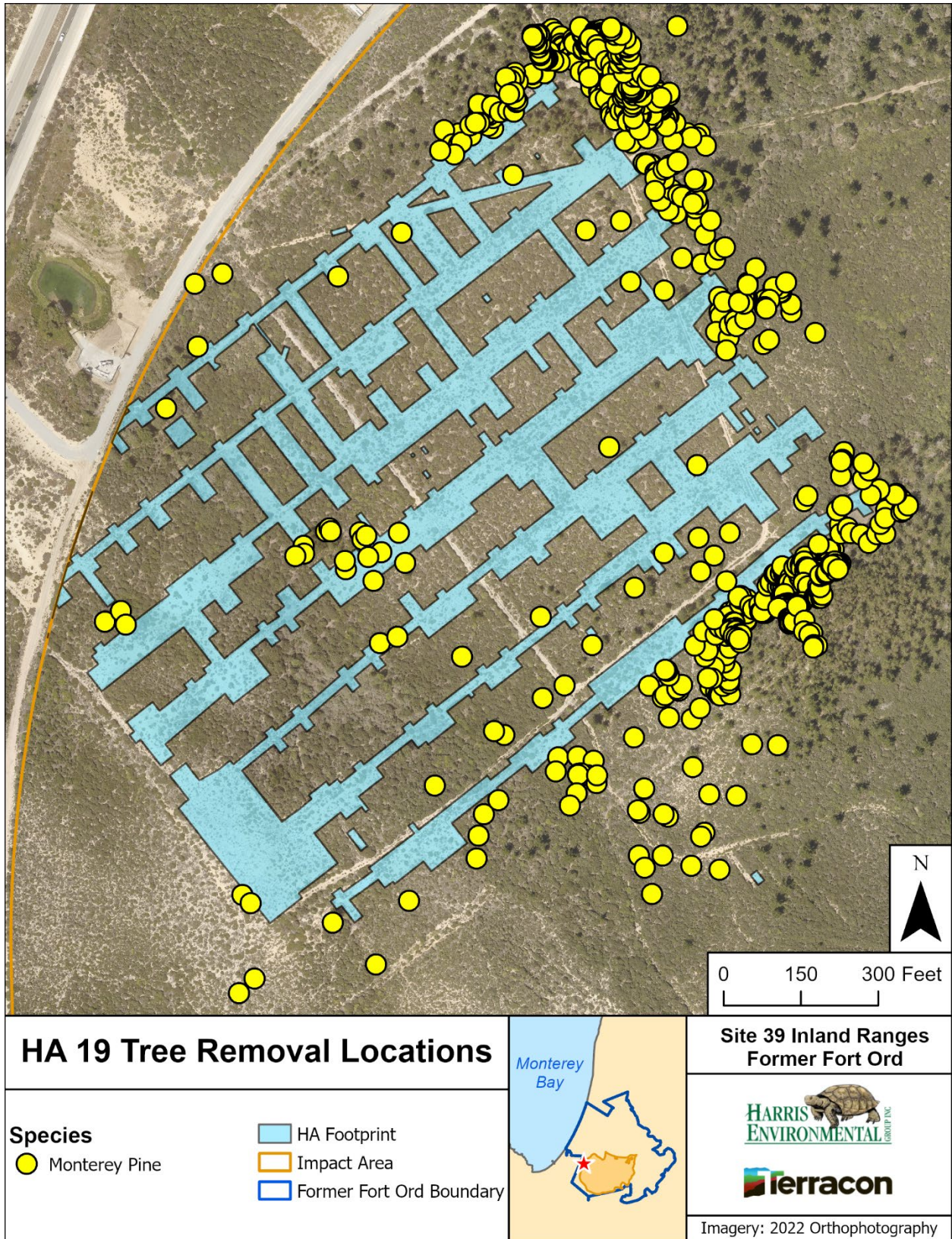


Figure 8-7. 2025 Tree Removal Locations at HA 19

8.2.4 Discussion

8.2.4.1 HA 19 Status

There are no updates to the HA 19 status discussion; see Table 8-9 for a summary of the most recent HA status and likelihood of achieving success criteria. An in-depth discussion of past trends and recommendations is available in the 2022 Annual Report (Burlison, 2023). The site will continue to be monitored by photo documentation, species richness meandering transects, and vegetative cover line-intercept transects in year 13, 2026 (see Table 8-7).

Table 8-9. Status for Achieving Success Criteria at HA 19

Success Criterion	Category	Acceptable Limit	Year 5 (2018) Met	Year 8 (2021) Met	Likelihood of Achieving Success by Year 13 (2026)	Results
Objective 1 – No. 1	Species richness	14 required species: ADFA, ARTO, ARCA, BAPI, CERI, ERER, ERFA, ERCO, LECA, ACGL, DIAU, QUAG, SAME	No	Yes	HIGH	Year 5: LECA absent Year 8: met (LECA planted in 2018/2019)*
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	HIGH	Year 5: 34.98% Year 8: 36.29%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	HIGH	Year 5: 0.00% Year 8: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	Yes	Yes	HIGH	Year 5: 10.91% Year 8: 18.86%
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 16% CERI present ERFA present	ARPU = No CERI = Yes ERFA = Yes	Yes	HIGH for ARPU HIGH for CERI HIGH for ERFA	Year 5: ARPU 10.59% CERI 0.08% ERFA 0.25% Year 8: ARPU 18.09% CERI 0.34% ERFA 0.43% (ARPU planted in 2019/2020)*
Objective 3 – No. 4	HMP annual density	Low density for CHUPUP and GITEA	Yes	Yes	NA	Year 5: met Year 8: met (Year 13 monitoring not required)

*Planted as part of Adaptive Management Plan

8.3 HA 22

HA 22 was used by the Army as a long-distance small-arms firing range with targets and no berm. Soil remediation was completed in 2010; 100 cubic yards of lead-contaminated soil were excavated from 0.05 acre (Shaw, 2008). HA 22 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 22 is relatively flat with northwest and west aspects. Adjacent lands were not developed and contain intact native vegetation that may promote natural recruitment within restoration areas. HA 22 is located within Watkins Gate Burn Area (WGBA) which was unintentionally burned during a prescribed burn performed in Ranges 43-48 in 2003. Small unburned portion of WGBA south of HA22 was masticated in 2013 to facilitate MEC cleanup, and the area was monitored for 8 years. All success criteria for WGBA unburned area were met with an exception of frequency of Monterey ceanothus on shaggy-bark manzanita dominated transects (Burlison, 2022).

HA 22 is located on the western portion of Site 39 within sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for passive restoration at HA 22 consisted of hand-broadcast non-irrigated seed and annual weed management activities. HA 22 is relatively flat with little potential for erosion.

Restoration and AMP activities at HA 22 occurred in 2011, 2012, 2019, and 2022; quantitative monitoring began in 2013. The site was monitored for 15 years by photo documentation and site visits, seven years for HMP annual density in plots, and five years for HMP annual density across the HA, species richness, and vegetative cover (see Table 8-10). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-8 shows the historic area footprint, passive restoration area and transect monitoring locations. Success criteria for HA 22 are summarized in Table 8-11.

Table 8-10. Historic Summary of Restoration and Monitoring Activities at HA 22

Activity	Monitoring Years														
	2011	2012	1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•							•			•			
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Monterey Spineflower Plots			•	•	•	•	•	•		•					
HMP Annual Density across HA						•	•	•		•					
Species Richness						•	•	•		•					•
Vegetative Cover						•†	•	•		•					•

† Vegetative cover was monitored using quadrats in 2016

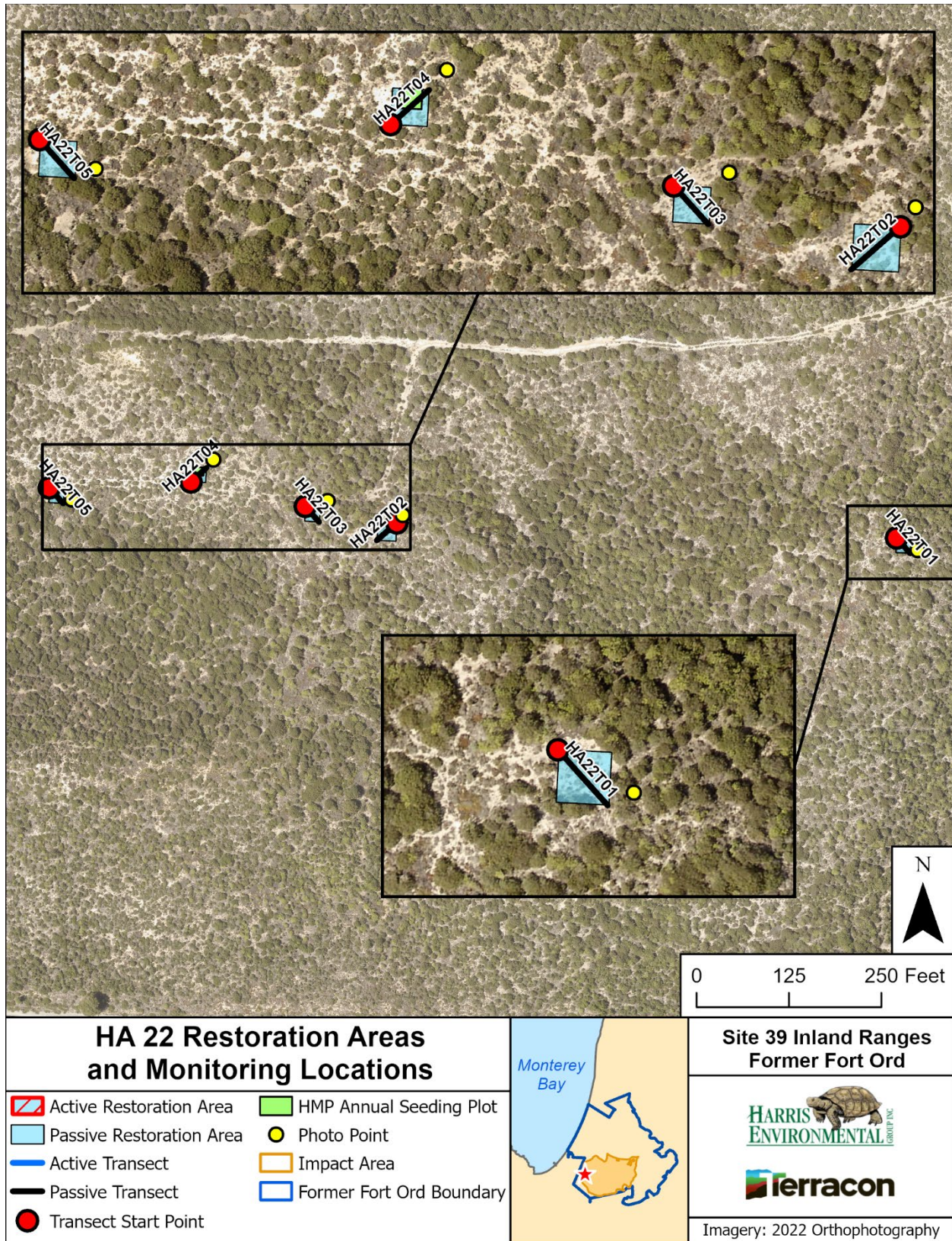


Figure 8-8. HA 22 Restoration Areas and Monitoring Locations Map

Table 8-11. Success Criteria and Acceptable Limits for Restoration of HA 22

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			chamise shaggy-bark manzanita sandmat manzanita† coyote brush Monterey ceanothus† dwarf ceanothus Monterey spineflower† mock heather Eastwood’s goldenbush† golden yarrow peak rush-rose deerweed sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did not indicate non-native target weed species. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 3 (6-25%)
			Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 20.
			Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 4. Eastwood’s goldenbush percent cover, as an average of transect data, must be equal or greater than 1.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.3.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 22 in 2025. HA 22 received its SSRP passive restoration prescription in 2011–2012, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP planting recommendations were developed to address deficiencies relative to the species richness, HMP shrub cover, and HMP shrub cover by species criteria, as well as general restoration goals (Burlleson, 2018; Burlleson, 2021). AMP plantings were conducted in 2019 and 2022. In addition to the original SSRP restoration prescription, HA 22 received an additional 225 targeted plants. See Table 8-13 for details on planted species and quantities.

Table 8-12. Summary of Passive Restoration Activities for HA 22

Species	Pounds of Seed Broadcast			
	SSRP Target	2011 (SSRP)	2012 (SSRP)	Total by Species
ACGL	0.100	0.051	0.059	0.110
ACMI	0.050	0.026	0.032	0.058
ADFA	0.050	0.028	0.032	0.060
ARPU*	0.050	0.027	0.040	0.067
ARTO	0.100	0.052	0.062	0.114
BAPI	0.008	-	0.006	0.006
CERI*	0.050	0.028	0.028	0.056
CHPUP*	0.001	0.011	0.005	0.016
CRCA	0.050	0.026	0.032	0.058
CRSC	0.050	0.028	0.029	0.057
DIAU	0.005	0.016	0.025	0.041
ERCO	0.015	0.011	0.012	0.023
ERER	0.013	0.009	0.014	0.023
ERFA*	0.001	-	0.002	0.002
HOCU	0.100	0.051	0.058	0.109
<i>Hordeum</i> sp.	0.450	-	0.239	0.239
SAME	0.050	0.037	0.032	0.069
STCE	0.100	0.051	0.060	0.111
TOTAL	1.243	0.452	0.767	1.219

* HMP species

Table 8-13. Summary of Active Restoration Activities for HA 22

Species	Number of Individual Plants		
	2019 (AMP)	2022 (AMP)	Total by Species
ARPU*	20	20	40
ARTO	10	-	10
BAPI	10	-	10
CEDE	20	-	20
CERI*	20	20	40
DIAU	8	-	8
ERCO	10	-	10
ERER	6	-	6
ERFA*	35	40	75
SAME	6	-	6
TOTAL	145	80	225

* HMP Species

8.3.2 Monitoring Results

HA 22 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover monitoring were completed (see Appendix C, page C-3).

8.3.2.1 Species Richness

Twenty-eight species were observed at HA 22 in 2025. Of those, 19 were native shrubs or perennials, six were native annual herbaceous species, and three were non-native species (see Table 8-14). Species richness decreased by seven species since 2020. Native shrub and perennial species richness did not change, native herbaceous species richness decreased by three, non-native species richness decreased by four, and uncategorized species richness did not change.

Table 8-14. Species Observed on HA 22, 2025

Scientific Name	Common Name	Code	Category
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Arctostaphylos pumila</i> *	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Artemisia pycnocephala</i>	coastal sagewort	ARPY	NP
<i>Bromus madritensis ssp. rubens</i>	foxtail chess	BRMAR	NNF
<i>Carpobrotus edulis</i>	hottentot fig/ice plant	CAED	NNP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus</i> *	Monterey ceanothus	CERI	NP
<i>Chorizanthe diffusa</i>	diffuse spineflower	CHDI	NF
<i>Chorizanthe pungens var. pungens</i> *	Monterey spineflower	CHPUP	NF
<i>Corethrogyne filaginifolia</i>	common sandaster	COFI	NP

<i>Crassula connata</i>	pygmy-weed	CRCO	NF
<i>Crocanthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Croton californicus</i>	California croton	CRCA	NP
<i>Cryptantha clevelandii</i>	Cleveland's cryptantha	CRCL	NF
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Dudleya farinosa</i>	bluff lettuce	DUFA	NP
<i>Eriastrum virgatum</i>	virgate eriastrum	ERVI	NF
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata*</i>	Eastwood's goldenbush	ERFA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Stipa cernua</i>	nodding needle grass	STCE	NP

*HMP Species

8.3.2.2 Vegetative Cover

Harris-Terracon surveyed five line-intercept transects ranging from seven to 11 meters in length at HA 22. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 48.12%. The mean vegetative cover by native shrubs and perennials was 4.47% lower in 2025 than in 2020. Figure 8-9 presents the percent cover of dominant species at HA 22 in 2017, 2018, 2020, and 2025. Figure 8-10 shows native vegetative cover compared to success criteria at HA 22. Figure 8-11 shows percent cover of HMP shrubs at HA 22 compared to success criteria.

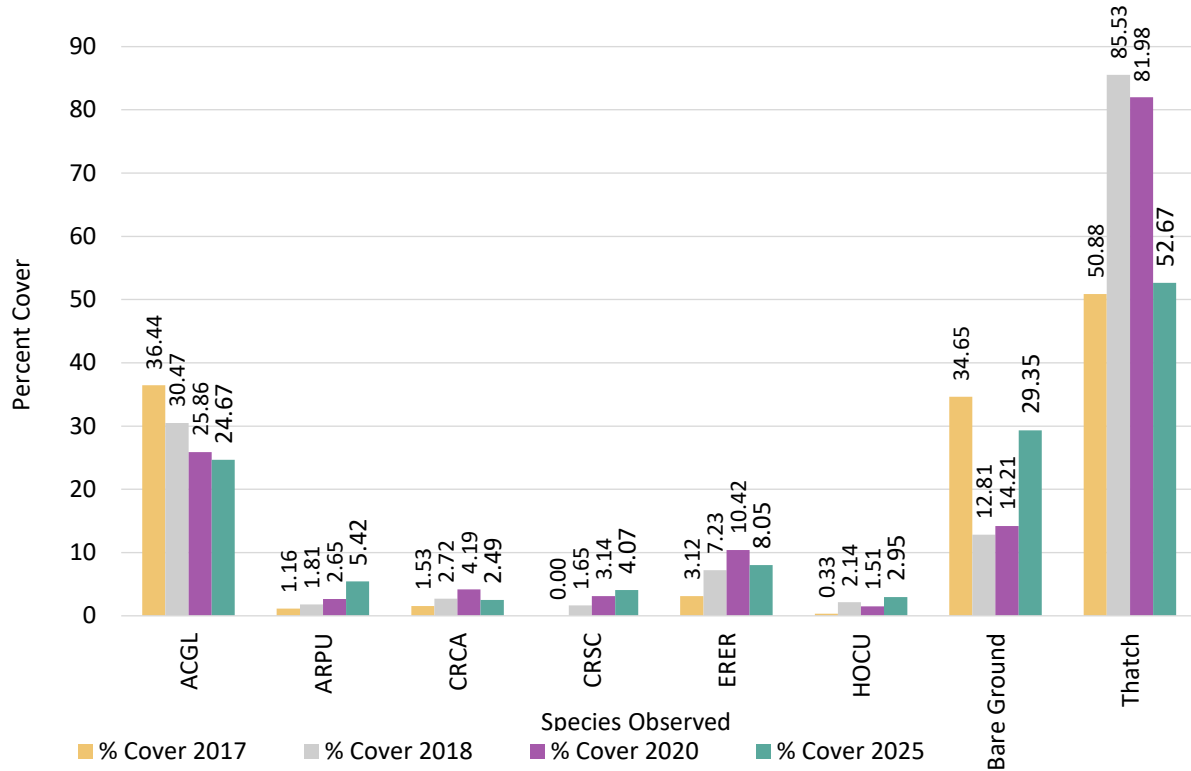


Figure 8-9. Percent cover of dominant species at HA 22

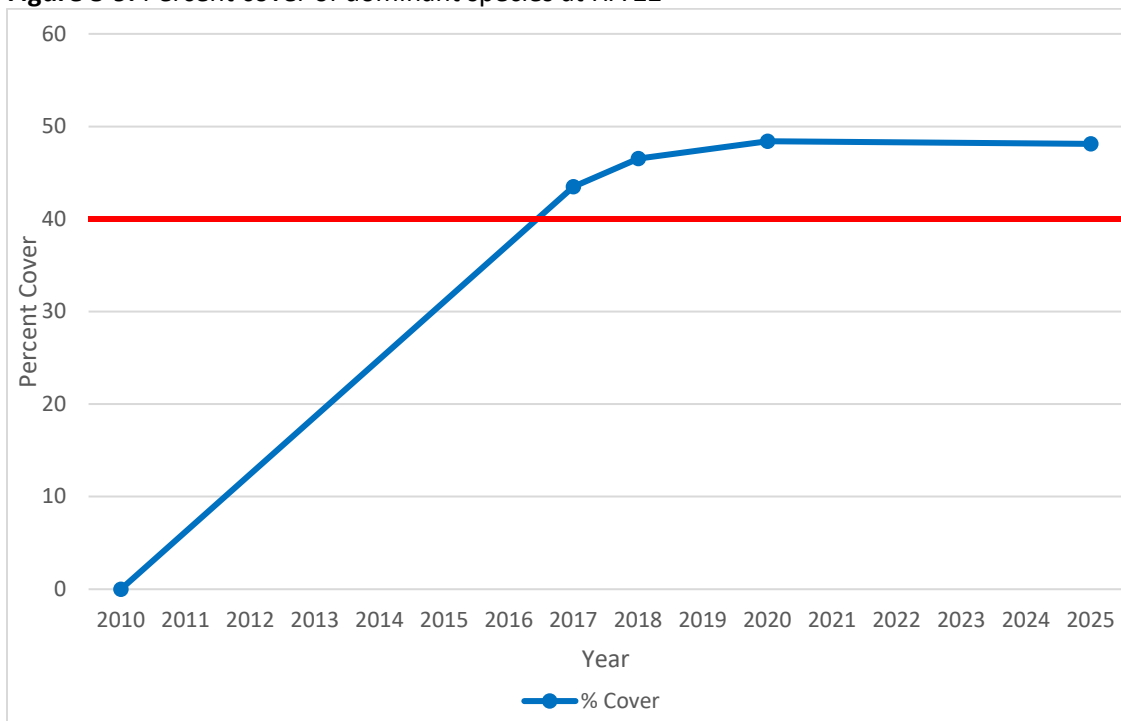


Figure 8-10. Native vegetative cover compared to success criteria at HA 22

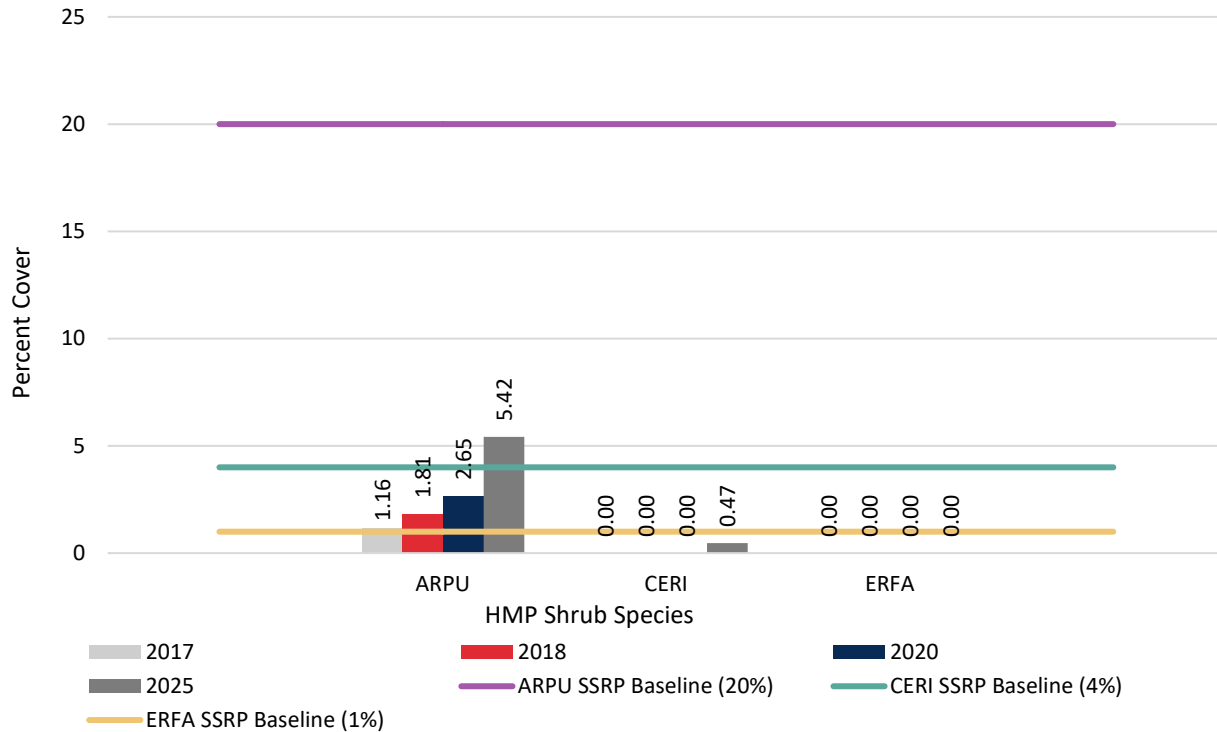


Figure 8-11. HMP shrub cover compared to success criteria at HA 22

8.3.3 Discussion and Conclusion

8.3.3.1 HA 22 Discussion

HA 22, 0.05-acre site, was in Year 13 of monitoring in 2025 and met three of six success criteria (see Table 8-15). Specifically, HA 22 met its native vegetation cover, non-native target weed cover, and HMP annual density. The site did not meet its species richness, HMP shrub cover, or HMP shrub cover by species criteria.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. The species richness, HMP shrub cover, and HMP shrub cover by species criteria were identified as needing intervention. To address these deficiencies, AMP actions included planting 225 target shrubs.

Overall, HA 22 exhibits strong native vegetation and HMP shrub cover, established HMP annuals, effective invasive species control, good species richness, and measurable progress toward HMP shrub by species targets, indicating that restoration actions have successfully promoted self-sustaining habitat conditions.

8.3.3.2 Species Richness Status

The species richness criterion was not met due to the absence of coyote brush. This criterion requires the presence of 14 specific native species. In Year 5, nine required species were present and five were absent. In Year 6, corrective planting of the five missing species was conducted. By Year 8, all 14 required species were present; however, by Year 13, coyote brush failed to establish and was again absent, as the 10 coyote brush plants installed in 2019 did not survive. An observation during 2025 monitoring noted that coyote brush was not observed anywhere in the surrounding landscape of HA 22,

which is somewhat surprising, as coyote brush is otherwise a very common shrub species on former Fort Ord.

8.3.3.3 Native Vegetative Cover Status

The 40% native vegetative cover success criterion was achieved by Year 5, with 43% cover. Native cover increased to 48% by Year 8 and remained at 48% through Year 13. The site is demonstrating steady growth of shrubs such as sandmat manzanita, reflecting a gradual shift toward a more shrub-dominated community, while some early successional species such as deerweed show a gradual decline. This trend indicates sustained native plant establishment and demonstrates that restoration treatments are effectively supporting overall vegetative growth.

8.3.3.4 Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. Target weeds were not detected in any monitoring year, demonstrating sustained control of invasive species at HA 22.

8.3.3.5 HMP Shrub Cover Status

The HMP shrub cover class at HA 22 did not meet the baseline cover class of 3 (6–25% absolute cover by HMP shrubs). In Year 5, absolute cover by HMP shrub species was 1.16%. AMP plantings of HMP shrubs were conducted in Year 7. By Year 8, HMP shrub cover had increased to 2.65%. Additional AMP plantings were conducted in Year 10, and by Year 13, HMP shrub cover reached 5.89%, demonstrating a consistent upward trend. HA 22 narrowly missed the success criterion, falling just 0.11% below the 6% threshold.

8.3.3.6 HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion at HA 22 was not met. This criterion requires ARPU cover $\geq 20\%$, CERI cover $\geq 4\%$, and ERFA cover $\geq 1\%$. In Year 5, ARPU cover was 1.16%, CERI cover was 0.0%, and ERFA cover was 0.0%. Corrective plantings for all three species were conducted in Year 7. By Year 8, ARPU cover increased to 2.65%, while CERI and ERFA remained at 0.0%. Additional corrective plantings for all three species were conducted in Year 10. In Year 13, ARPU cover increased to 5.42%, CERI was detected at 0.47%, and ERFA was not detected during transect surveys but was observed on site. While the site remains below the success criterion, measurable and observational progress was made toward the HMP shrub cover by species targets.

8.3.3.7 HMP Annual Density Status

The HA 22 HMP annual density success criterion required Monterey spineflower density to remain within the baseline low-density class was met. In Year 8, the final year of monitoring for HMP annuals, density within the HA 22 restoration plot exceeded the criterion. Additionally, Monterey spineflower was present outside the restoration plot, forming five discrete patches covering 0.05 acres of HA 22. Therefore, the HMP annual density success criterion has been met (Burleson, 2021).

8.3.3.8 HA 22 Conclusion

HA 22 received its full SSRP passive restoration prescription in 2011–2012, followed by AMP planting in 2019 and 2022 to address deficiencies in species richness, HMP shrub cover, and HMP shrub cover by species. With 48% native cover, effective invasive species control, and positive trends toward all restoration objectives, the site is on a clear trajectory toward pre-remediation baseline vegetation conditions. Based on these results (Table 8-15), restoration at HA 22 is considered successfully implemented and ecologically self-sustaining.

Table 8-15. Stats for Achieving Success Criteria at HA 22

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	14 required species: ADFA, ARTO, ARPU, BAPI, CERI, CEDE, CHPUP, ERER, ERFA, ERCO, CRSC, ACGL, DIAU, SAME	No	Yes	No	Year 5: 5 required species absent Year 8: met Year 13: BAPI absent (Planted absent species in 2018/2019)**
Objective 1 – No. 2	Native vegetation cover	≥ 40%	Yes	Yes	Yes	Year 5: 43.49% Year 8: 48.40% Year 13: 48.12%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	Year 5: 0.00% Year 8: 0.00% Year 13: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	No	No	No	Year 5: 1.16% Year 8: 2.65% Year 13: 5.89% (AMP planting in 2019 and 2022)
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 20% CERI ≥ 4% ERFA ≥ 1%	ARPU = No CERI = No ERFA = No	ARPU = No CERI = No ERFA = No	ARPU = No CERI = No ERFA = No	Year 5: ARPU 1.16%, CERI 0.00%, ERFA 0.00% Year 8: ARPU 2.65% CERI 0.00% ERFA 0.00% Year 13: ARPU 5.42% CERI 0.47% ERFA 0.00% (Planted ARPU, CERI, and ERFA in 2018/2019 and 2022/2023)**
Objective 3 – No. 4	HMP annual density	Low density for CHPUP	Yes	Yes	NA	Year 5: met Year 8: met (Year 13 monitoring not required)

**Planted as part of Adaptive Management Plan

8.4 HA 23

HA 23 was used by the Army as a small-arms firing range. Soil remediation was completed in 2010; 450 cubic yards of lead-contaminated soil were excavated from 0.3 acres (Shaw, 2008). HA 23 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 23 is relatively flat with a west aspect. Adjacent lands were not developed and contain intact native vegetation that may promote natural recruitment within restoration areas. HA 23 is located within Unit 3, which was masticated in 2012 and 2014 to facilitate MEC cleanup, and the unit was monitored for 8 years. All success criteria for Unit 3 were met with an exception of frequency of Monterey ceanothus on sandmat manzanita dominated transects in Unit 3 East (Burlerson, 2020; Burlerson, 2022).

HA 23 is located on the western portion of Site 39, occurring within sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for passive restoration at HA 23 consisted of hand broadcast non-irrigated seed and annual weed management activities. HA 23 is relatively flat with little potential for erosion.

Restoration and AMP activities at HA 23 occurred in 2011, 2012, 2019, 2020, and 2023; quantitative monitoring began in 2014. The HA was monitored for 15 years by photo documentation and site visits, six years for HMP annual density in plots, and four years for HMP annual density across the HA, species richness, and vegetative cover (see Table 8-16). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-12 shows the HA footprint, passive restoration area, and transect monitoring locations. Success criteria for HA 23 are summarized in Table 8-17.

Table 8-16. Historic Summary of Restoration and Monitoring Activities at HA 23

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•							•	•			•		
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Monterey Spineflower Plots			†	•	•	•	•	•		•					
HMP Annual Density across HA						•	•	•		•					
Species Richness						•	•	•		•					•
Vegetative Cover						•‡	•	•		•					•

† Monterey spineflower was not monitored in year 1 (2013) because of UXO presence and mastication activities

‡ Vegetative cover was monitored using quadrats in 2016

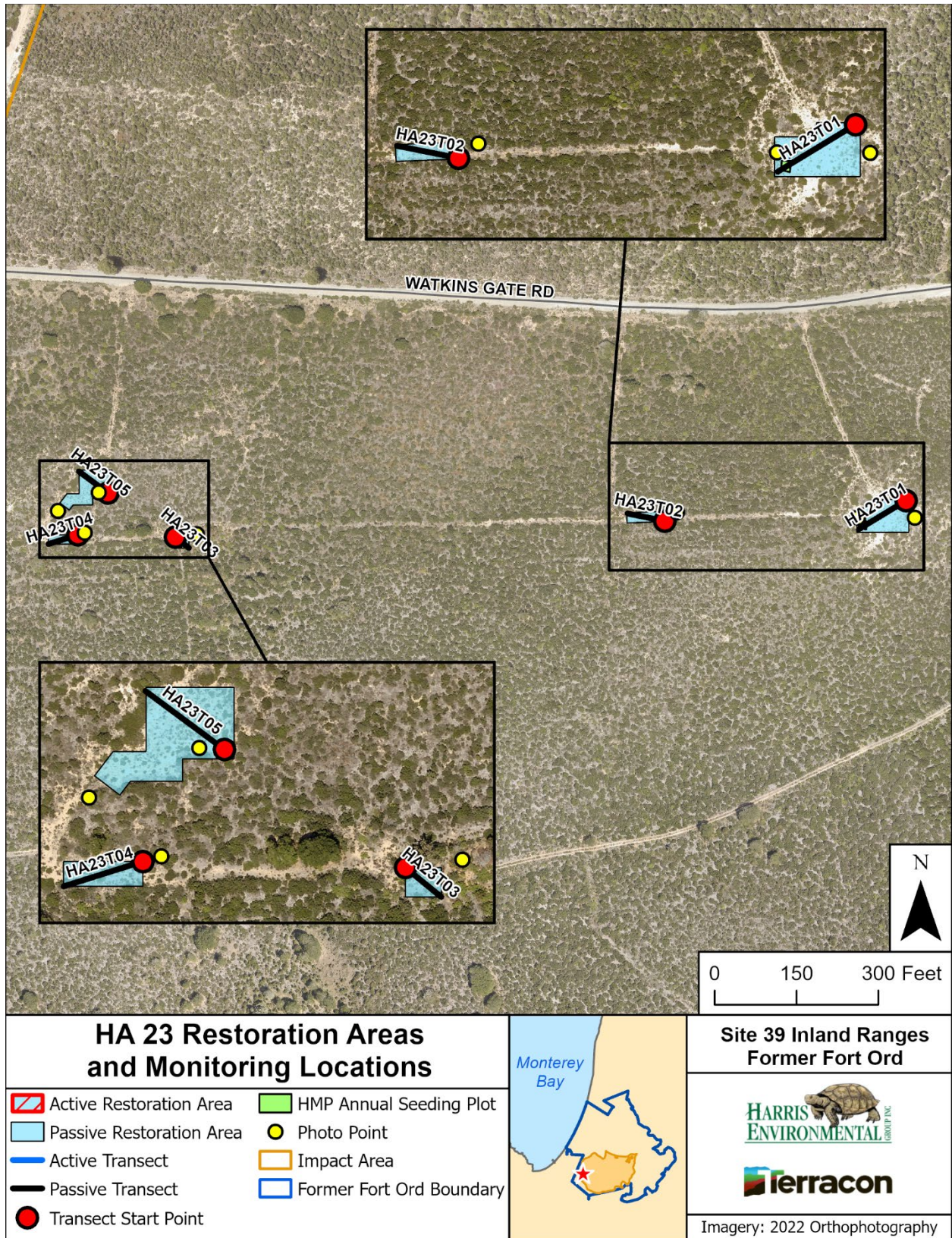


Figure 8-12. HA 23 Restoration Areas and Monitoring Locations Map

Table 8-17. Success Criteria and Acceptable Limits for Restoration of HA 23

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: chamise shaggy-bark manzanita sandmat manzanita† coyote brush Monterey ceanothus† dwarf ceanothus Monterey spineflower† mock heather Eastwood’s goldenbush† golden yarrow peak rush-rose deerweed sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did not indicate non-native target weed species. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 3 (6-25% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 20.
			Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 4.
HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low	

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.4.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 23 in 2025. HA 23 received its SSRP passive restoration prescription in 2011–2012, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP seeding and planting recommendations were developed to address deficiencies relative to native vegetation cover and HMP shrub cover by species (Burlison, 2018; Burlison, 2021). AMP seeding was implemented in 2019 and 2020 (Table 18), and AMP plantings were conducted in 2019 and 2023 (Table 19). In addition to the original SSRP restoration prescription, HA 23 received an additional 7.6 pounds of native grass and early successional species and 155 targeted shrub plants.

Table 8-18. Summary of Passive Restoration Activities for HA 23

Species	Pounds of Seed Broadcast					Total by Species
	SSRP Target	2011 (SSRP)	2012 (SSRP)	2019 (AMP)	2020 (AMP)	
ACGL	0.600	0.300	0.306	-	1.6	2.206
ACMI	0.300	0.200	0.159	0.300	1.600	2.259
ADFA	0.300	0.200	0.159	-	-	0.359
ARPU*	0.300	0.600	0.175	-	-	0.775
ARTO	0.600	0.300	0.326	-	-	0.626
BAPI	0.050	-	0.028	-	-	0.028
CERI*	0.300	0.088	0.248	-	-	0.336
CHPUP*	0.005	0.022	0.003	-	-	0.025
CRCA	0.080	0.200	0.158	-	-	0.358
CRSC	0.300	0.200	0.168	-	-	0.368
DIAU	0.030	0.088	0.105	-	-	0.193
ELGL	-	-	-	0.800	2.400	3.200
ERCO	0.090	0.490	0.058	-	-	0.548
ERER	0.080	0.420	0.044	-	-	0.464
ERFA*	0.050	0.028	0.026	-	-	0.054
HOCU	0.600	0.300	0.306	0.400	-	1.006
<i>Hordeum</i> sp.	2.700	-	1.370	-	-	1.370
SAME	0.300	0.200	0.162	-	-	0.362
STCE	0.600	0.300	0.315	-	-	0.615
STPU	-	-	-	0.500	-	0.500
TOTAL	7.285	3.936	4.116	2.000	5.600	15.652

* HMP species

Table 8-19. Summary of Active Restoration Activities for HA 23

Species	Number of Individual Plants		
	2019 (AMP)	2023 (AMP)	Total by Species
ARPU*	10	-	10
BAPI	6	-	6
CEDE	18	-	18
CERI*	20	20	40
ERCO	6	-	6
ERFA*	35	40	75
TOTAL	95	60	155

* HMP Species

8.4.2 Monitoring Results

HA 23 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover monitoring were completed (see Appendix C, page C-4).

8.4.2.1 Species Richness

Forty species were observed at HA 23 in 2025. Of those, 25 were native shrubs or perennials, seven were native annual herbaceous species, and eight were non-native species (see Table 8-20). Species richness decreased by one species since 2020. Native shrub and perennial species richness did not change, native herbaceous species richness decreased by two, non-native species richness increased by one, and uncategorized species richness did not change.

Table 8-20. Species Observed on HA 23, 2025

Scientific Name	Common Name	Code	Category
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Acmispon strigosus</i>	Bishop's lotus	ACST	NF
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Aira caryophylla</i>	silver hair grass	AICA	NNF
<i>Arctostaphylos pumila</i> *	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Bromus diandrus</i>	ripgut brome	BRDI	NNF
<i>Camissoniopsis micrantha</i>	small primrose	CAMI	NF
<i>Carex sp.</i>	sedge	CA	NP
<i>Carpobrotus edulis</i>	hottentot fig/ice plant	CAED	NNP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus</i> *	Monterey ceanothus	CERI	NP
<i>Chorizanthe diffusa</i>	diffuse spineflower	CHDI	NF
<i>Chorizanthe pungens var. pungens</i> *	Monterey spineflower	CHPUP	NF
<i>Cordylanthus rigidus ssp. littoralis</i> *	seaside bird's-beak	CORIL	NF

<i>Corethrogyne filaginifolia</i>	common sandaster	COFI	NP
<i>Crassula connata</i>	pygmy-weed	CRCO	NF
<i>Crocantemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Croton californicus</i>	California croton	CRCA	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata*</i>	Eastwood's goldenbush	ERFA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Festuca bromoides</i>	brome fescue	FEBR	NNF
<i>Gamochaeta ustulata</i>	purple cudweed	GAUS	NP
<i>Garrya elliptica</i>	coast silk tassel	GAEL	NP
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Lomatium parvifolium</i>	coastal biscuitroot	LOPA	NP
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Quercus agrifolia</i>	coast live oak	QUAG	NP
<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Silene gallica</i>	small-flower catchfly	SIGA	NNF
<i>Stipa cernua</i>	nodding needle grass	STCE	NP
<i>Toxicodendron diversilobum</i>	poison oak	TODI	NP

*HMP Species

8.4.2.2 Vegetative Cover

Harris-Terracon surveyed five line-intercept transects ranging from eight to 32 meters in length at HA 23. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 47.96%. The mean vegetative cover by native shrubs and perennials was 21.38% greater in 2025 than in 2020, largely due to an increase in sandmat manzanita which increased by 20.88% from 2020 to 2025. Figure 8-13 presents the percent cover of dominant species at HA 23 in 2017, 2018, 2020, and 2025. Figure 8-14 shows native vegetative cover compared to success criteria at HA 23. Figure 8-15 shows percent cover of HMP shrubs at HA 23 compared to success criteria.

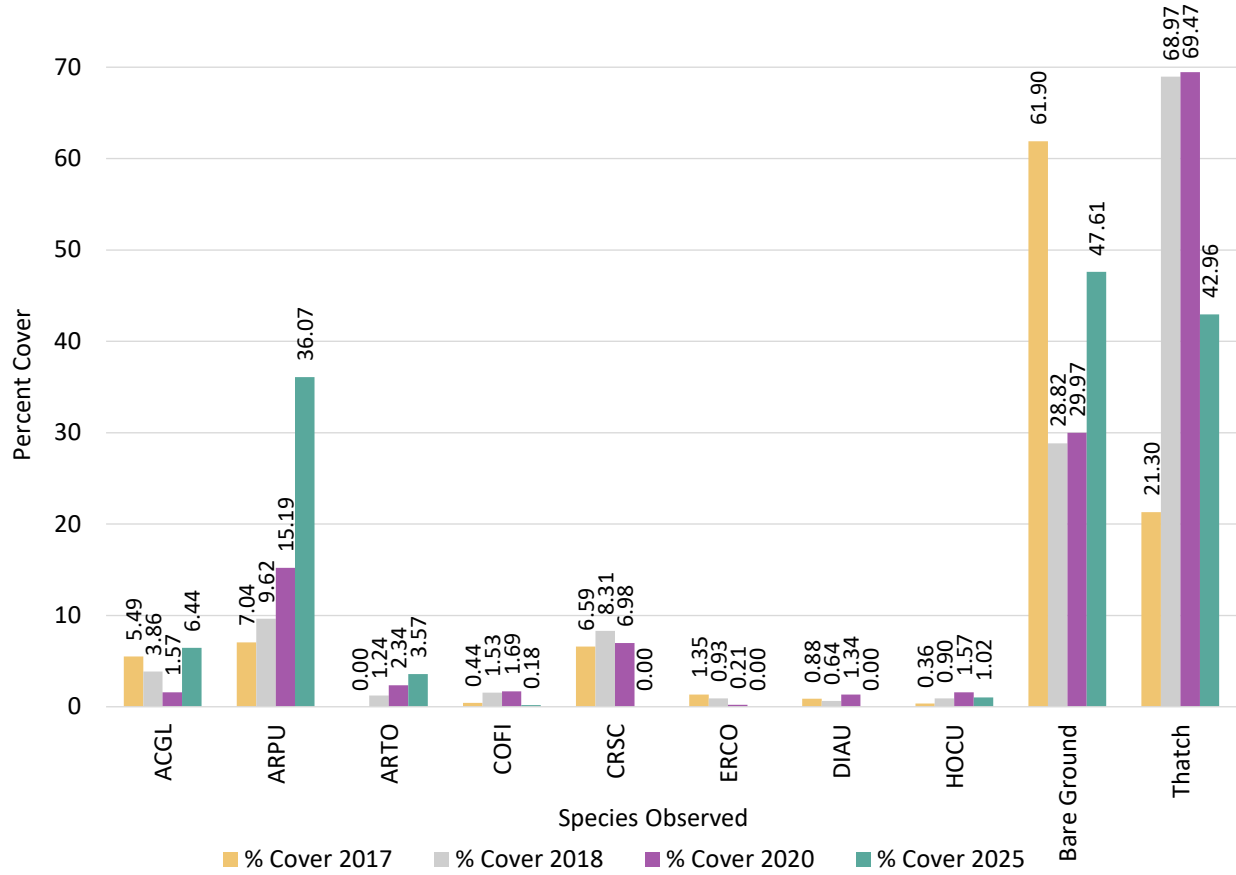


Figure 8-13. Percent cover of dominant species at HA 23

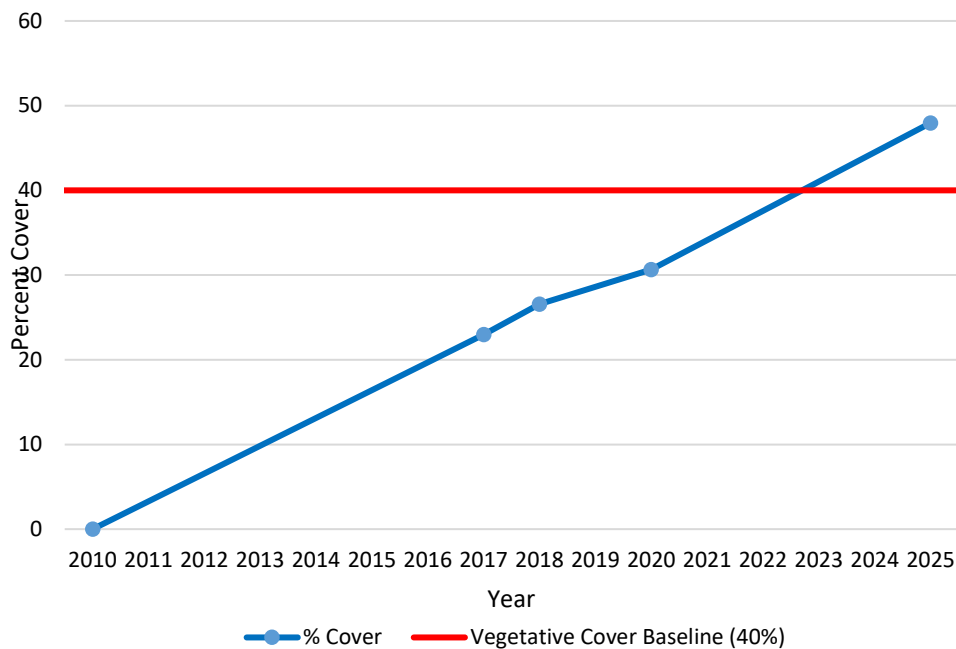


Figure 8-14. Native vegetative cover compared to success criteria at HA 23

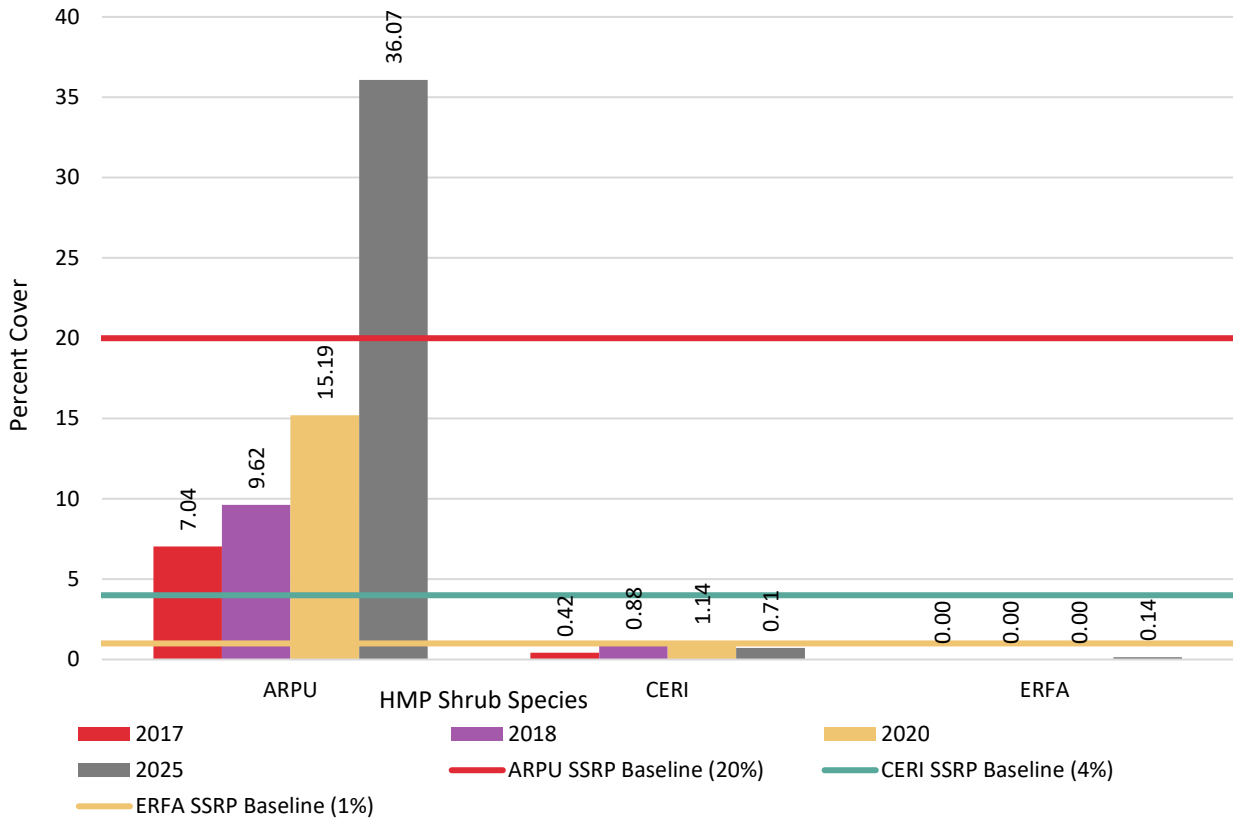


Figure 8-15. Percent cover of HMP shrubs at HA 23 compared to success criteria

8.4.3 Discussion and Conclusion

8.4.3.1 HA 23 Discussion

HA 23, a 0.3-acre site, was in Year 13 of monitoring in 2025 and met five of six success criteria (see Table 8-21). Specifically, HA 23 met its species richness, native vegetation cover, non-native target weed cover, HMP shrub cover criteria, and HMP annual density. The site did not meet its HMP shrub cover by species criterion.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. Both the native vegetation cover and HMP shrub cover by species criteria were identified as needing intervention. To address these deficiencies, AMP actions included the application of 7.6 pounds of native seed and the planting of 155 targeted shrub plants.

Overall, HA 23 exhibits strong native vegetation and species richness, exceeds the HMP shrub cover criterion, supports established HMP annuals, demonstrates effective invasive species control, and shows measurable progress toward HMP shrub by species targets, indicating that restoration actions have successfully promoted self-sustaining habitat conditions.

8.4.3.2 Species Richness Status

The species richness criterion for HA 23 requires the presence of 14 specific native species at the site. This criterion was met in all benchmark monitoring years: Years 5, 8, and 13.

8.4.3.3 Native Vegetative Cover Status

The 40% native vegetative cover success criterion was achieved by Year 13. Native cover was 23% in Year 5, increasing to 31% by Year 8 and 48% by Year 13, demonstrating a sustained positive trajectory in native plant establishment and indicating that restoration treatments are effectively supporting overall vegetative growth.

8.4.3.4 Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. Target weeds were not detected in any monitoring year, demonstrating sustained control of invasive species at HA 23.

8.4.3.5 HMP Shrub Cover Status

The HMP shrub cover class at HA 23 met the baseline cover class of 3 (6–25% absolute cover by HMP shrubs) in all monitoring years. Absolute cover by HMP shrub species was 7.46% in Year 5, increased to 16.34% by Year 8, and reached 36.93% by Year 13, primarily due to ARPU, demonstrating a consistent upward trend. As a result, HA 23 successfully met this success criterion.

8.4.3.6 HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion at HA 23 was not met. This criterion requires ARPU cover $\geq 20\%$, CERI cover $\geq 4\%$, and ERFA cover $\geq 1\%$. In Year 5, ARPU cover was 7.04%, CERI cover was 0.42%, and ERFA cover was 0.0%. AMP plantings for CERI and ERFA were conducted in Year 6. By Year 8, ARPU cover had increased to 15.19%, CERI to 1.14%, and ERFA remained at 0.0%. Additional AMP plantings of CERI and ERFA were conducted in Year 10. In Year 13, ARPU cover reached 36.07%, CERI decreased to 0.71%, and ERFA was detected at 0.14%. ARPU met its criterion, while CERI and ERFA did not; however, both species have shown measurable progress toward this criterion.

8.4.3.7 HMP Annual Density Status

The HA 23 HMP annual density success criterion required Monterey spineflower density to remain within the baseline low-density class. In Year 8, the final year of monitoring for HMP annuals, density within the HA 23 restoration plot met this criterion. Additionally, Monterey spineflower was present outside the restoration plot, forming a discrete patch covering 0.009 acres of HA 23. Therefore, the HMP annual density success criterion has been met (Burlison, 2021).

8.4.3.8 HA 23 Conclusion

HA 23 received its full SSRP passive restoration prescription in 2011–2012, followed by AMP seeding in 2019–2020 and AMP planting in 2019 and 2023 to address deficiencies in native vegetation cover and HMP shrub cover by species. With 48% native cover, strong species richness, effective invasive species control, exceeding the HMP shrub cover criterion, and nearly meeting the HMP shrub cover by species criterion, the site is on a clear trajectory toward pre-remediation baseline vegetation conditions. Based on these results (Table 8-21), restoration at HA 23 is considered successfully implemented and ecologically self-sustaining.

Table 8-21. Status for Achieving Success Criteria at HA 23

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	14 required species: ADFA, ARTO, ARPU, BAPI, CERI, CEDE, CHPUP, ERER, ERFA, ERCO, CRSC, ACGL, DIAU, SAME	Yes	Yes	Yes	Year 5: met Year 8: met Year 13: met
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	Yes	Year 5: 22.99% Year 8: 30.66% Year 13: 47.96%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	Year 5: 0.00% Year 8: 0.00% Year 13: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	Yes	Yes	Yes	Year 5: 7.46% Year 8: 16.34% Year 13: 36.93%
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 20% CERI ≥ 4% ERFA ≥ 1%	ARPU = No CERI = No ERFA = No	ARPU = No CERI = No ERFA = No	ARPU = Yes CERI = No ERFA = No	Year 5: ARPU 7.04% CERI 0.42% ERFA 0.00% Year 8: ARPU 15.19% CERI 1.14% ERFA 0.00% Year 13: ARPU: 36.07% CERI: 0.71% ERFA: 0.14% (CERI and ERFA planted in 2018/2019 and 2022/2023)*
Objective 3 – No. 4	HMP annual density	Low density for CHPUP	Yes	Yes	NA	Year 5: met Year 8: met (Year 13 monitoring not required)

*Planted as part of Adaptive Management Plan

8.5 HA 26

HA 26 was used by the Army as an intermittent machine gun range, a dry fire movement course, and later as a squad automatic weapon range. An estimated total of 22,400 cubic yards of soil was excavated over approximately 14 acres. Much of the site was dominated by invasive species. The excavation removed many areas of invasive species and possibly aided in the revegetation effort for this range (Mactec, 2008). HA 26 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 26 is relatively flat with a northeast aspect and contains low to medium quality habitat.

HA 26 is located on the western portion of Site 39, within the sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP restoration procedure for HA 26 included both passive and active restoration consisting of hand broadcast non-irrigated seed, annual weed management activities, container-grown plant installation, and irrigation.

In 2018, Burleson installed a 6,000-gallon capacity irrigation system to enhance the survivorship of installed plants at HA 26. Water was sourced from the OU2 Groundwater Treatment Plant (OU-2 GWTP) and Salas Brothers Water Trucking. From 2018 to 2022, approximately 296,000 gallons of water were supplied to the site to irrigate around 3,000 plants during the dry seasons. Following the final irrigation event in February 2022, the system was dismantled, except for the two 3,000-gallon water tanks, which remain on-site to support the Army's Fort Ord Prescribed Burn Program. For details on the irrigation system's impact on plant survivorship, see Appendix G of the 2022 Annual Habitat Restoration Report.

Restoration and AMP activities at HA 26 occurred from 2016 to 2024; quantitative monitoring began in 2016. The HA was monitored for 12 years by photo documentation and site visits; six years for HMP annual density in plots, HMP annual density across the HA, species richness, and plant survivorship; and five years for vegetative cover (see Table 8-22). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-16 shows the HA footprint, passive restoration area, and active restoration area. Success criteria for HA 26 are summarized in Table 8-23.

Table 8-22. Historic Summary of Restoration and Monitoring Activities at HA 26

Activity	Monitoring Years												
			1	2	3	4	5	6	7	8	9	10	13
	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2028
Restoration, Erosion Control, and Caretaking Activities			●	●	●	●	●	●	●	●	●	●	
Photo Points and Site Visit	●	●	●	●	●	●	●	●	●	●	●	●	●
Monterey Spineflower Plots			●	●	●	●	●			●			
HMP Annual Density across HA			●	●	●	●	●			●			
Species Richness			●	●	●	●	●			●			●
Vegetative Cover				●	●	●	●			●			●
Plant Survivorship					●	●	●	●	●	●			

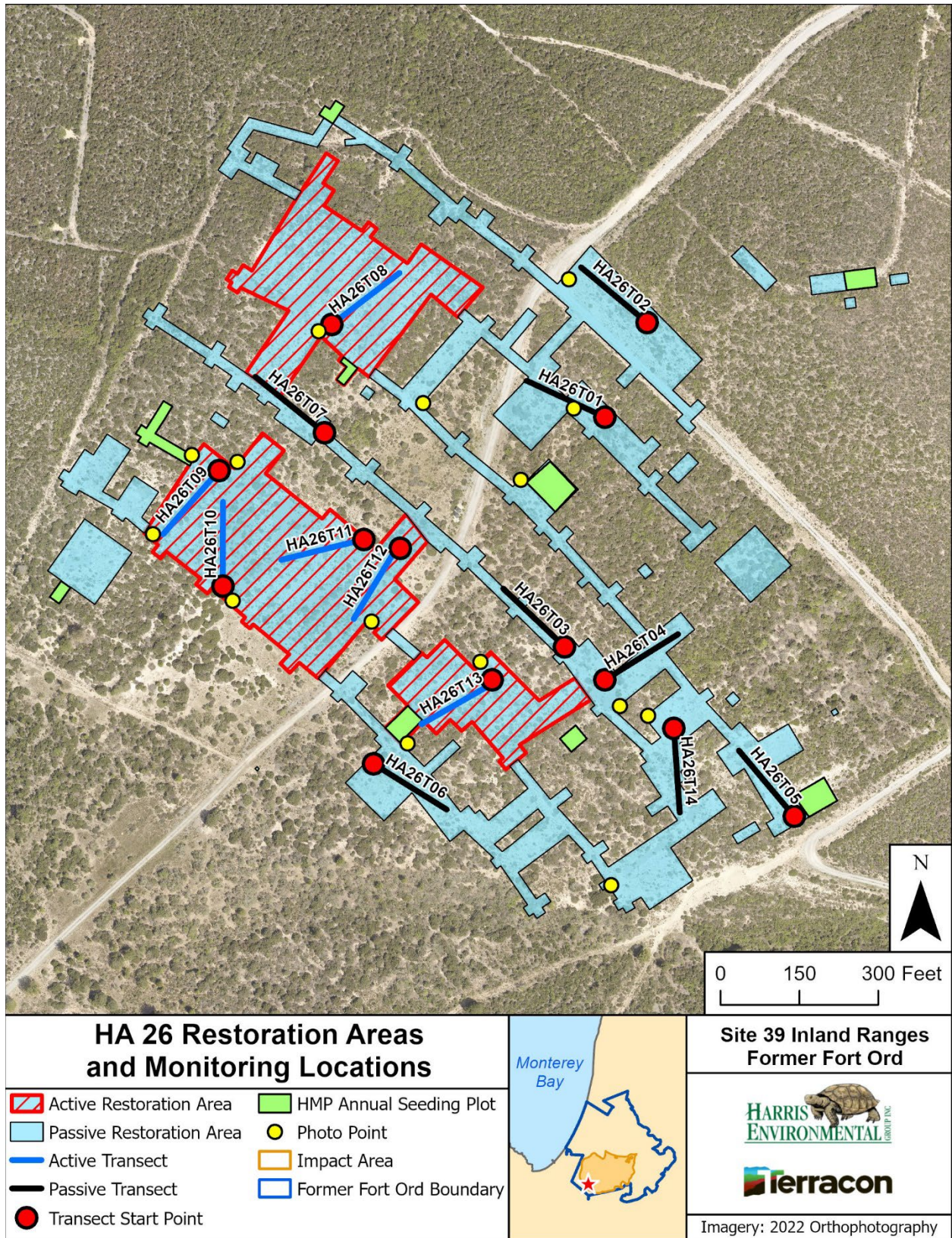


Figure 8-16. HA 26 Restoration Areas and Monitoring Locations Map

Table 8-23. Success Criteria and Acceptable Limits for Restoration of HA 26

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			chamise sandmat manzanita† shaggy-bark manzanita Monterey ceanothus† Eastwood’s goldenbush† sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 20 percent for native species‡	For the restoration area, percent cover monitoring data must meet or exceed 20 percent for native species listed as part of the plant palette in Table 2 of the SSRP‡.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did indicate presence of non-native target weed species jubata grass. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 3 (6-25% of absolute cover)
			Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 2.
			Monterey ceanothus percent cover, as an average of transect data, must be present however, less than 1 percent is acceptable. Eastwood’s goldenbush percent cover, as an average of transect data, must be present however, less than 1 percent is acceptable.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

‡ 20 percent cover of native species is the original success criterion due to the degraded conditions of the site prior to remediation – low quality habitat. However, the same restoration methods will be used and results will likely be similar to all restored areas.

8.5.1 Restoration and Adaptive Management Plan Activities

Harris-Terracon performed passive restoration at HA 26 in 2025. Passive restoration activities have occurred each year from 2016 to 2025. In 2025, 23.5 pounds of seed were broadcast, see Tables A-2 and A-3 in Appendix A for details.

No active restoration activities were conducted at HA 26 in 2025.

8.5.2 Monitoring Results

HA 26 was in year 10 of monitoring in 2025. Site visits and photo documentation were completed in 2025 at HA 26 (see Appendix C, page C-6).

8.5.3 Discussion

8.5.3.1 HA 26 Status

HA 26 was in year 10 of monitoring in 2025 and there are no updates to success criteria metrics. In 2020, year 5 of monitoring, the site met three of six success criteria (see Table 8-24). In 2023, year 8 of monitoring, the site met six of six success criteria.

Table 8-24. Status for Achieving Success Criteria at HA 26

Success Criterion	Category	Acceptable Limits	Year 5 (2020) Met	Year 8 (2023) Met	Likelihood of Achieving Success by Year 13 (2028)	Notes
Objective 1 – No. 1	Species richness	7 required species: ADFA, ARPU, ARTO, CERI, ERFA, DIAU, SAME	Yes	Yes	HIGH	Year 5: met Year 8: met
Objective 1 – No. 2	Native vegetation cover	≥ 20%	No	Yes	HIGH	Year 5: 17.88% Year 8: 32.84%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	HIGH	Year 5: 0.15% Year 8: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	No	Yes	HIGH	Year 5: 2.16% Year 8: 6.93%
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 2% CERI = present ERFA = present	ARPU = No CERI = Yes ERFA = Yes	Yes	HIGH for ARPU, CERI, and ERFA	Year 5: ARPU 1.54% CERI 0.56% ERFA 0.06% Year 8: ARPU 5.21% CERI 1.47% ERFA 0.25%
Objective 3 – No. 4	HMP annual density	Low density for CHPUP	Yes	Yes	NA	(Year 13 monitoring not required)

8.6 HA 27

HA 27 was used by the Army as a small-arms firing range. Soil remediation was completed in 2010; 100 cubic yards of lead-contaminated soil was excavated from 0.06 acre (Shaw, 2008). HA 27 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 27 is relatively flat and sits on exposed bedrock with surface water runoff in its western portion. Adjacent lands were not developed and contain intact native vegetation that may promote natural recruitment within restoration areas. HA 27 is located within Unit 1 which was masticated in 2013 and 2014 to facilitate MEC cleanup, and the unit was monitored for 8 years. All success criteria for Unit 1 were met with an exception of frequency of Monterey ceanothus on shaggy-bark manzanita dominated transects in Unit 1 East (Burleson, 2022) and the invasive species cover in Unit 1 West (Burleson, 2023).

HA 27 is located on the southern portion of Site 39, occurring within Aromas formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for passive restoration at HA 27 consisted of hand-broadcast non-irrigated seed and annual weed management activities.

Restoration and AMP activities at HA 27 occurred in 2011, 2012, 2019, 2020, 2022, 2023, and 2024; quantitative monitoring began in 2016. HA 27 was monitored for 15 years by photo documentation and site visits and four years for species richness and vegetative cover (see Table 8-25). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-17 shows the HA footprint, passive restoration area, and transect monitoring locations. Success criteria for HA 27 are summarized in Table 8-26.

Table 8-25. Historic Summary of Restoration and Monitoring Activities at HA 27

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•							•	•		•	•	•	
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Species Richness						•	•	•		•					•
Vegetative Cover						•†	•	•		•					•

† Vegetative cover was monitored using quadrats in 2016

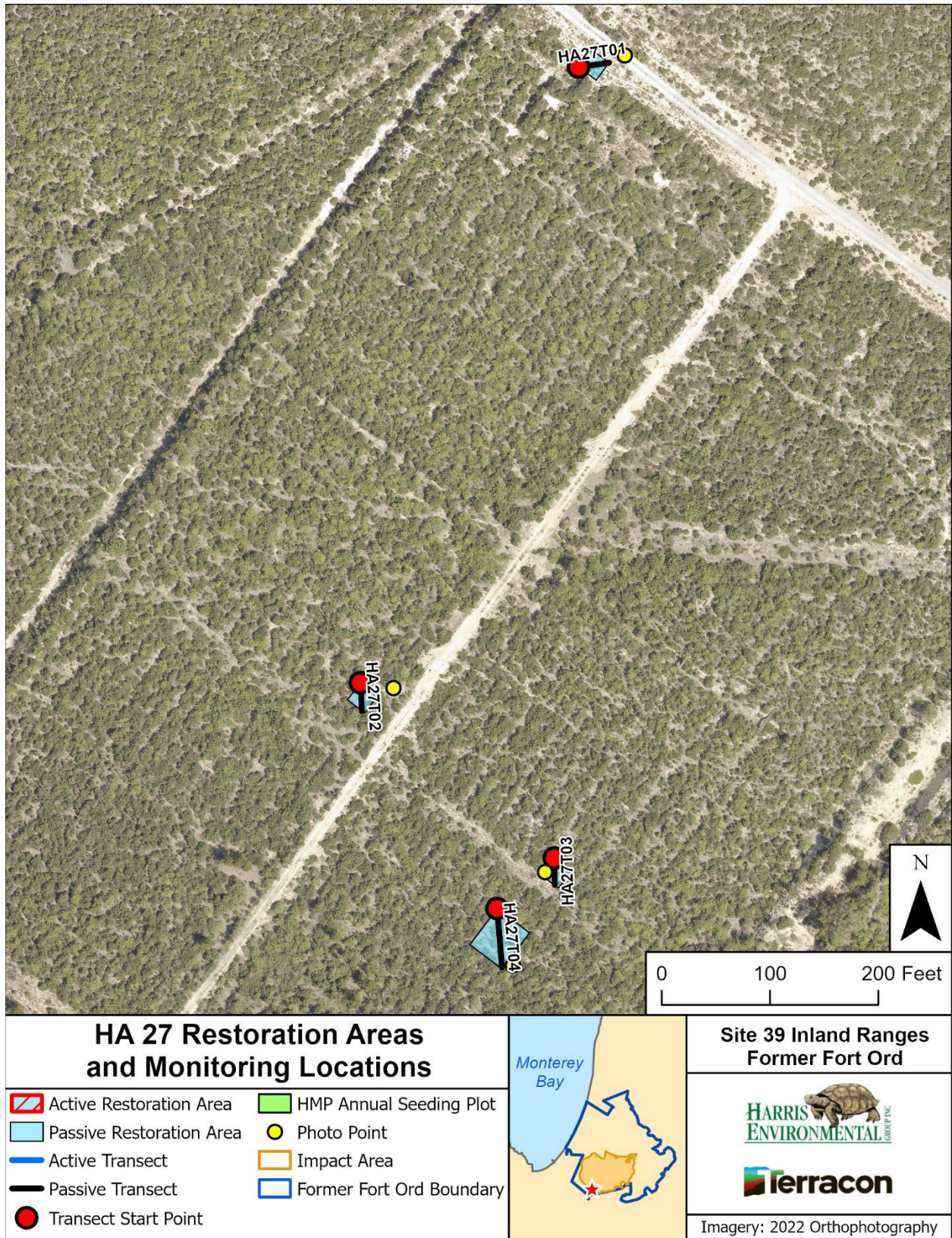


Figure 8-17. HA 27 Restoration Areas and Monitoring Locations Map

Table 8-26. Success Criteria and Acceptable Limits for Restoration of HA 27

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			Monterey manzanita† shaggy-bark manzanita sandmat manzanita† coyote brush Monterey ceanothus† golden yarrow peak rush-rose wedge-leaved horkelia deerweed sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicated the non-native target weed species jubata grass at 50 percent cover. Therefore, the non-native target weed may be present at less than or equal to 5 percent.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 4 (26-50% of absolute cover)
			Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 25.
			Monterey manzanita percent cover, as an average of transect data, must be equal or greater than 2.
			Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 1.
4	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Density class: Not applicable

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.6.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 27 in 2025. HA 27 received its SSRP passive restoration prescription in 2011–2012, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP seeding and planting recommendations were developed to address deficiencies relative to native vegetation cover, HMP shrub cover, and HMP shrub cover by species (Burluson, 2018; Burluson, 2021). AMP seeding was implemented in 2019, 2020, and 2024 (Table 8-27), and AMP plantings were conducted in 2019, 2022, and 2023 (Table 8-28). In addition to the original SSRP restoration prescription, HA 27 received an additional 2.7 pounds of native seed and 89 targeted plants.

Table 8-27. Summary of Passive Restoration Activities for HA 27

Species	Pounds of Seed Broadcast						Total by Species
	SSRP Target	2011 (SSRP)	2012 (SSRP)	2019 (AMP)	2020 (AMP)	2024 (AMP)	
ACGL	0.120	0.062	0.060	-	0.400	0.034	0.556
ACMI	-	-	-	0.150	0.400	0.00004	0.550
ADFA	-	-	-	-	-	0.007	0.007
ARCA	-	-	-	-	-	0.020	0.020
ARMO*	0.060	0.032	0.043	-	-	-	0.075
ARPU*	0.120	0.063	0.067	-	-	-	0.130
ARTO	0.120	0.062	0.067	-	-	-	0.129
BAPI	0.010	-	0.005	-	-	-	0.005
CERI*	0.060	-	0.063	-	-	-	0.063
CRSC	0.060	0.033	0.033	-	-	0.00005	0.066
ELGL	-	-	-	0.400	0.600	0.234	1.234
HOCU	0.120	0.062	0.060	0.200	-	0.010	0.332
<i>Hordeum sp.</i>	0.540	-	0.268	-	-	-	0.268
SAME	0.060	0.035	0.031	-	-	0.009	0.075
STPU	-	-	-	0.25	-	0.234	0.484
TOTAL	1.270	0.349	0.697	1.000	1.400	0.548	3.994

* HMP species

Table 8-28. Summary of Active Restoration Activities for HA 27

Species	Number of Individual Plants			Total by Species
	2019 (AMP)	2022 (AMP)	2023 (AMP)	
ARMO*	20	-	-	20
ARPU*	-	25	20	45
DIAU	14	-	-	14
ERCO	10	-	-	10
TOTAL	44	25	20	89

* HMP Species

8.6.2 Monitoring Results

HA 27 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover monitoring were completed (see Appendix C, page C-7 and C-8).

8.6.2.1 Species Richness

Twenty-nine species were observed at HA 27 in 2025. Of those, 16 were native shrubs or perennials, six were native annual herbaceous species, and six were non-native species (see Table 8-29). Species richness decreased by nine species since 2020. Native shrub and perennial species richness decreased by five, native herbaceous species richness decreased by two, non-native species richness decreased by two, and uncategorized species richness did not change.

Table 8-29. Species Observed on HA 27, 2025

Scientific Name	Common Name	Code	Category
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Arctostaphylos montereyensis*</i>	Monterey manzanita	ARMO	NP
<i>Arctostaphylos pumila*</i>	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Carex sp.</i>	sedge	CA	NP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus*</i>	Monterey ceanothus	CERI	NP
<i>Chorizanthe diffusa</i>	diffuse spineflower	CHDI	NF
<i>Corethrogyne filaginifolia</i>	common sandaster	COFI	NP
<i>Crassula connata</i>	pygmy-weed	CRCO	NF
<i>Crocanthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Festuca myuros</i>	rattail sixweeks grass	FEMY	NNF
<i>Festuca octoflora</i>	sixweeks grass	FEOC	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Lepechinia calycina</i>	pitcher sage	LECA	NP
<i>Logfia filaginoides</i>	California cottonrose	LOFI	NF
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Madia exigua</i>	little tarweed	MAEX	NF
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Pseudognaphalium luteoalbum</i>	weedy cudweed	PSLU	NNF
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Pseudognaphalium sp.</i>	cudweed	PS	0
<i>Rumex acetosella</i>	sheep sorrel	RUAC	NNP

*HMP Species

8.6.2.2 Vegetative Cover

Harris-Terracon surveyed five line-intercept transects ranging from eight to 17 meters in length at HA 27. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 59.90%. The mean vegetative cover by native shrubs and perennials was 25.43% greater in 2025 than in 2020. This increase in cover came mostly from a 17.53% increase in shaggy bark manzanita and a six percent increase in Monterey manzanita between 2020 and 2025. Figure 8-18 presents the percent cover of dominant species at HA 27 in 2017, 2018, 2020, and 2025. Figure 8-19 shows native vegetative cover compared to success criteria at HA 27. Figure 8-20 shows percent cover of HMP shrubs at HA 27 compared to success criteria.

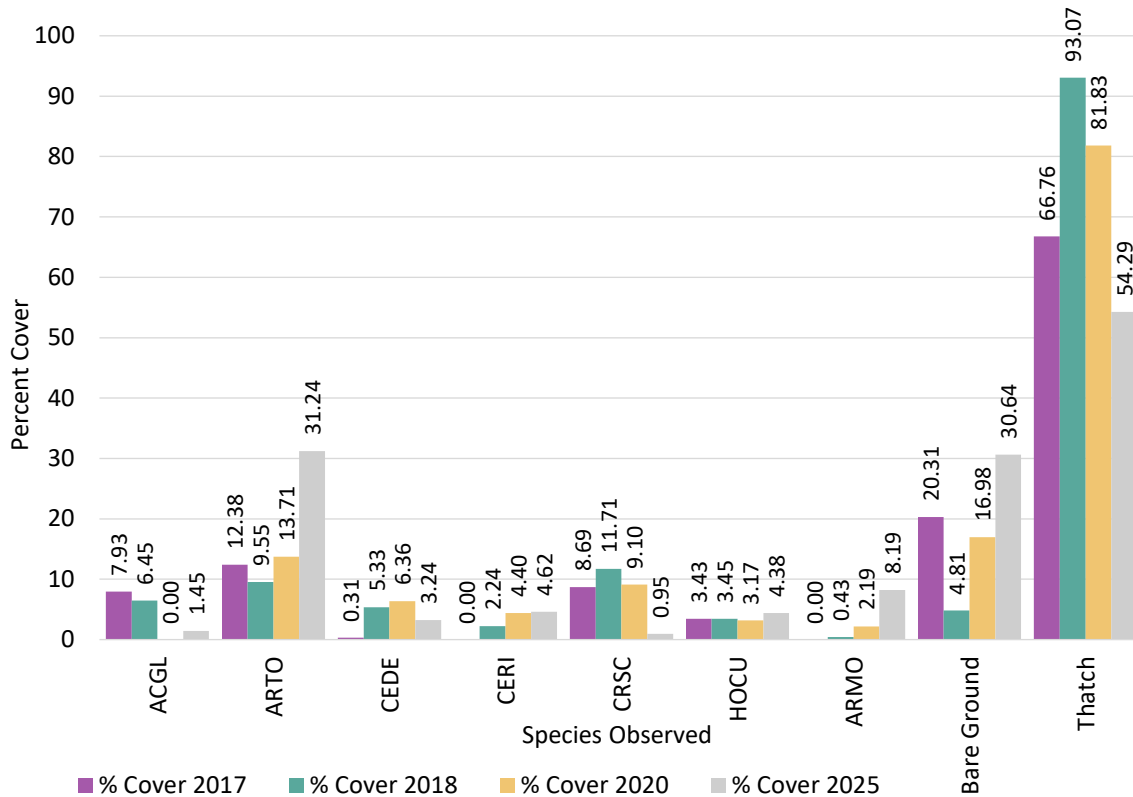


Figure 8-18. Percent cover of dominant species at HA 27

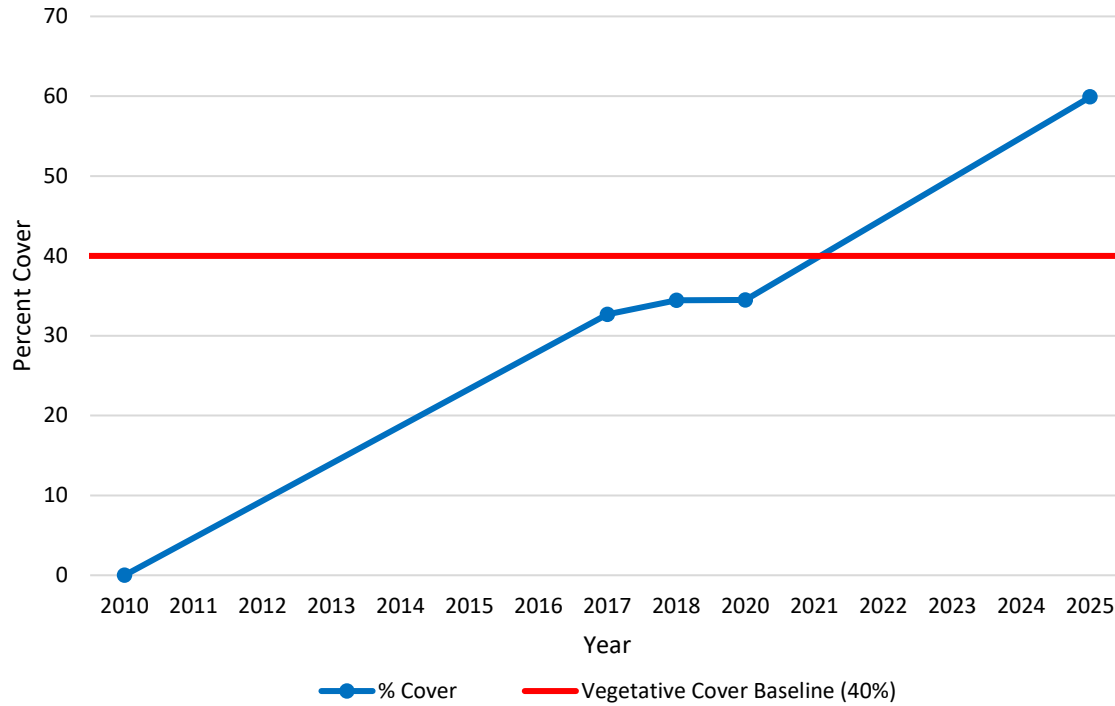


Figure 8-19. Native vegetative cover compared to success criteria at HA 27

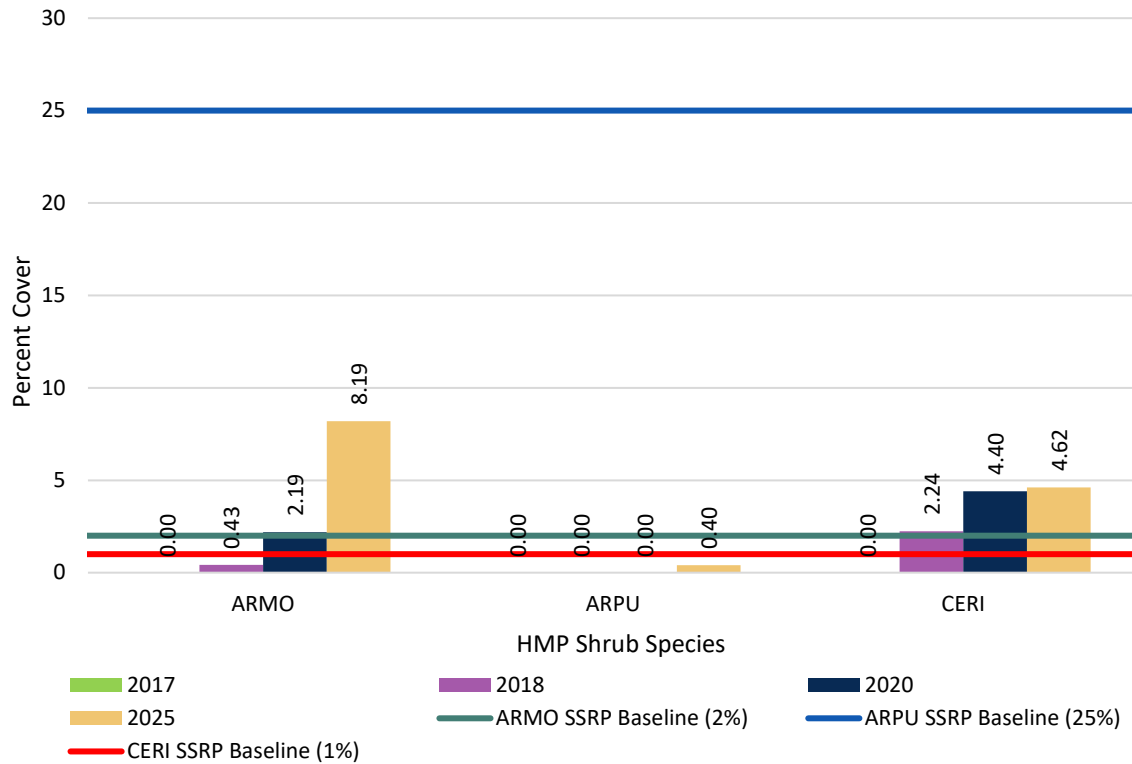


Figure 8-20. Percent cover of HMP shrubs at HA 27 compared to success criteria

8.6.3 Discussion and Conclusion

8.6.3.1 HA 27 Discussion

HA 27, a 0.06-acre site, was in Year 13 of monitoring in 2025 and met two of five success criteria (see Table 30). Specifically, HA 27 met its native vegetation cover and non-native target weed cover criteria. The site did not meet its species richness, HMP shrub cover, and HMP shrub cover by species criteria.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. The species richness, HMP shrub cover, and HMP shrub cover by species criteria were identified as needing intervention. To address these deficiencies, AMP actions included the application of an additional 2.7 pounds of native seed and the planting of 89 targeted plants.

Overall, HA 27 exhibits strong native vegetation cover, effective invasive species control, good species richness, modest HMP shrub cover, and measurable, though limited, progress toward HMP shrub by species targets, indicating that restoration actions have successfully promoted self-sustaining habitat conditions.

8.6.3.2 Species Richness Status

The species richness criterion for HA 27 was not met. This criterion requires the presence of 11 specific native species at the site. In Year 5, ERCO was absent. AMP plantings of 10 ERCO individuals were conducted in Year 6. By Year 8, ERCO was present, and the site met this criterion. However, by Year 13, both ERCO and SAME were absent, and HA 27 no longer met the species richness criterion.

8.6.3.3 Native Vegetative Cover Status

The 40% native vegetative cover success criterion was achieved by Year 13. Native cover was 33% in Year 5, increasing to 34% by Year 8 and 60% by Year 13, demonstrating a sustained positive trajectory in native plant establishment and indicating that restoration treatments are effectively supporting overall vegetative growth. This positive trend is reflected at HA 27, where vegetation has followed the classic transition from early succession to shrub dominance.

8.6.3.4 Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. In Year 5, non-native target weeds were at 1.0% cover and were not detected in Years 8 and 13, demonstrating sustained control of invasive species at HA 27.

8.6.3.5 HMP Shrub Cover Status

The HMP shrub cover class at HA 27 did not meet the baseline cover class of 4 (26–50% absolute cover by HMP shrubs) in any monitoring year. Absolute cover by HMP shrub species was 0.0% in Year 5. AMP plantings of ARMO were conducted in Year 7. By Year 8, cover had increased to 6.60%. Additional AMP plantings of ARPU were conducted in Years 10 and 11. By Year 13, HMP cover reached 13.21%, demonstrating a consistent upward trend; however, the site remained below the success criterion.

8.6.3.6 HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion at HA 27 was not met. This criterion requires ARPU cover $\geq 25\%$, ARMO cover $\geq 2\%$, and CERI cover $\geq 1\%$. In Year 5, ARPU, ARMO, and CERI cover were all 0.0%. AMP plantings of ARMO were conducted in Year 7. By Year 8, ARPU cover remained at 0.0%, while ARMO and CERI were detected at 2.16% and 4.4%, respectively. Additional AMP plantings of ARPU occurred in Years 10 and 11. In Year 13, ARPU cover increased to 0.40%, ARMO to 8.19%, and CERI to 4.62%. As a result, ARPU did not meet this criterion, while ARMO and CERI did. It is important to note that although ARPU was detected during baseline surveys in Unit 1, it was not a dominant species in the unit.

8.6.3.7 HA 27 Conclusion

HA 27 received its full SSRP passive restoration prescription in 2011–2012, followed by AMP seeding, planting, and weed management between 2019 and 2023 to address deficiencies in all success criteria. With 60% native cover, effective invasive species control, and positive trends toward all restoration objectives, the site is on a trajectory toward pre-remediation baseline vegetation conditions. Based on these results (Table 8-30), restoration at HA 27 is considered successfully implemented and ecologically self-sustaining.

Table 8-30. Status for Achieving Success Criteria at HA 27

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	11 Required species: ARMO, ARTO, ARPU, BAPI, CERI, ERCO, CRSC, HOCU, ACGL, DIAU, SAME	No	Yes	No	Year 5: ERCO absent Year 8: met Year 13: ERCO and SAME absent (ERCO planted in 2018/2019)*
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	Yes	Year 5: 32.69% Year 8: 34.48% Year 13: 59.90% (AMP planting occurred in 2018/2019, 2021/2022, and 2022/2023)
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	Year 5: 1.00% Year 8: 0.00% Year 13: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 4: 26-50%	No	No	No	Year 5: 0.00% Year 8: 6.60% Year 13: 13.21% (AMP planting occurred in 2018/2019, 2021/2022, and 2022/2023)
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 25% ARMO ≥ 2% CERI ≥ 1%	ARPU = No ARMO = No CERI = No	ARPU = No ARMO = Yes CERI = Yes	ARPU = No ARMO = Yes CERI = Yes	Year 5: ARPU 0.00% ARMO 0.00% CERI 0.00% Year 8: ARPU 0.00% ARMO 2.19% CERI 4.40% Year 13: ARPU 0.40% ARMO 8.19% CERI 4.62% (ARMO planted in 2018/2019, ARPU planted in 2021/2022 and 2022/2023)*
Objective 3 – No. 4	HMP annual density	NA	NA	NA	NA	No HMP annuals in baseline data

*Planted as part of Adaptive Management Plan

8.7 HA 27A

HA 27A was used by the Army as a small-arms firing range. Soil remediation was completed in 2010; 1,100 cubic yards of lead-contaminated soil were excavated from 0.6 acres (Shaw, 2008). HA 27A rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 27A is relatively flat with a west aspect. HA 27A is located within Unit 6 which was masticated in 2013 to facilitate MEC cleanup, and the unit was monitored for 8 years. All success criteria for Unit 6 were met with an exception of frequency of Monterey ceanothus on shaggy-bark manzanita dominated transects (Burleson, 2022).

HA 27A is made up of three distinct polygons that are located on the southern portion of Site 39, occurring within Aromas formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In the southern most polygon, the surface layer is fine sand (USFS, 2007). Prior to remediation, the site was a combination of a disturbed/ruderal grassland area and disturbed central maritime chaparral. Forty percent of the site was bare ground, and 60 percent was disturbed central maritime chaparral. The adjacent area to the south was a ruderal grassland area with about 50 percent bare ground, about 10 percent cover of jubata grass, and a high percentage of non-native herbaceous cover (Shaw, 2008).

The SSRP prescription for passive restoration at HA 27A consisted of hand broadcast non-irrigated seed and annual weed management activities. The southern polygon at HA 27A lacks topsoil, has exposed hardpan sandstone, and ongoing erosion issues. This area is a transitional vegetative zone between maritime chaparral and grassland.

In 2019, the success criteria for HA 27A was revised due to the marginal response to restoration efforts. Under the revised success criteria, the southern polygon (HA 27A South) will resemble the early successional stages of a maritime chaparral habitat and the existing success criteria will continue to be applied to the two northern polygons (HA 27A North) (USFWS, 2019). HA 27A North and South are now evaluated separately for the species richness and non-native target weed cover success criteria. HA 27A North is the only area of the site to be evaluated for native vegetation cover, HMP shrub cover, and HMP shrub cover by species criteria.

Restoration and AMP activities at HA 27A occurred in 2011, 2012, 2016, and from 2018 to 2024; quantitative monitoring began in 2016. HA 27A was monitored for 15 years by photo documentation and site visits and five years for species richness and vegetative cover (see Table 8-31). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-21 shows the HA footprint, passive restoration area, and transect locations. Success criteria for HA 27A are summarized in Table 8-32 and Table 8-33.

Table 8-31. Historic Summary of Restoration and Monitoring Activities at HA 27A

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•				•		•	•	•	•	•	•		
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Species Richness						•	•	•		•					•
Vegetative Cover						•	•	•		•					•

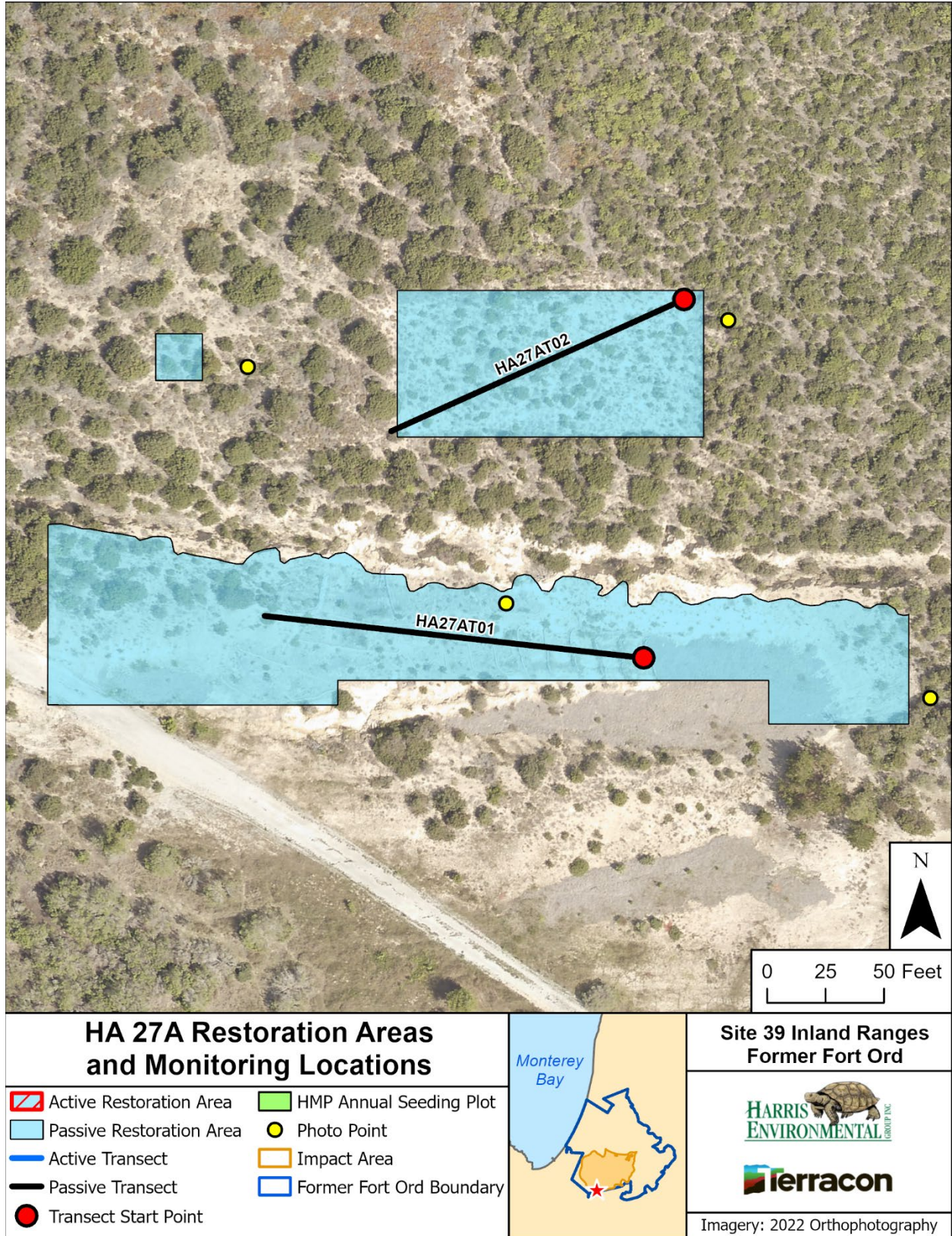


Figure 8-21. HA 27A Restoration Areas and Monitoring Location Map

Table 8-32. Success Criteria and Acceptable Limits for Restoration of HA 27A North

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			chamise Monterey manzanita† shaggy-bark manzanita sandmat manzanita† coyote brush Monterey ceanothus† golden yarrow peak rush-rose wedge-leaved horkelia deerweed sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicated the non-native target weed species jubata grass at 10 percent cover. Therefore, the non-native target weed may be present at less than or equal to 5 percent.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 4 (26-50% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 25.
			Monterey manzanita percent cover, as an average of transect data, must be equal or greater than 2.
HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Density class: Not applicable	

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

Table 8-33. Success Criteria and Acceptable Limits for Restoration of HA 27A South‡

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			coyote brush peak rush-rose wedge-leaved horkelia deerweed sticky monkeyflower
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicated the non-native target weed species jubata grass at 10 percent cover. Therefore, the non-native target weed may be present at less than or equal to 5 percent.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity (North only)	HMP shrub cover class must meet or exceed baseline data	Cover class: Not applicable
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Not applicable
4	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Density class: Not applicable

* Objectives presented in HRP (Shaw, 2009b)

‡ Success criteria for HA 27A South updated in consultation with USFWS (USFWS, 2019)

8.7.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 27A in 2025. HA 27A received its SSRP passive restoration prescription in 2011–2012, and monitoring commenced in 2013. Evaluation of Year 5 data against the success criteria indicated that the southern portion of the site had highly disturbed or absent soil, making the success criteria unattainable. The Army recommended that the site be managed as two distinct areas—south and north—and that the success criteria be reevaluated for the south. This recommendation was accepted by the overseeing agencies. AMP seeding and planting recommendations were developed using both Year 5 and Year 8 data for the south and north areas of the site to address deficiencies relative to native vegetation cover, erosion control, HMP shrub cover, and HMP shrub cover by species (Burlison, 2018; Burlison, 2021). AMP seeding was implemented between 2016 and 2024 (Table 8-34), and AMP plantings were conducted in 2021 and 2022 (Tables 8-35 and 8-36). In addition to the original 17.4-pound SSRP seed prescription, HA 27A received an additional 60.4 pounds of native seed and 525 targeted plants.

Table 8-34. Summary of Passive Restoration Activities for HA 27A

Species	Pounds of Seed Broadcast										
	SSRP Target	2011 (SSRP)	2012 (SSRP)	2016 (AMP)	2018 (AMP)	2019 (AMP)	2020 (AMP)	2022 (AMP)	2023 (AMP)	2024 (AMP)	Total by Species
ACGL	1.200	0.600	0.608	0.800	-	-	2.000	0.400	1.120	0.225	5.753
ACMI	-	-	-	0.400	0.750	0.600	2.000	0.200	1.310	0.026	5.286
ADFA	0.600	0.300	0.308	-	-	-	-	-	-	0.026	0.634
ARCA	-	-	-	-	-	-	-	-	-	0.122	0.122
ARMO*	1.200	0.600	0.611	-	-	-	-	-	-	-	1.211
ARPU*	0.600	0.300	0.308	-	-	-	-	-	-	-	0.608
ARTO	1.200	0.600	0.612	-	-	-	-	-	-	-	1.212
BAPI	0.090	-	0.046	-	-	-	-	-	-	-	0.046
CERI*	0.600	-	0.314	-	-	-	-	-	-	-	0.314
CRSC	0.600	0.300	0.303	-	-	-	-	-	-	0.000	0.603
DIAU	0.060	0.200	0.183	-	-	-	-	-	-	-	0.383
ELGL	-	-	-	14.400	2.000	1.600	-	1.300	2.550	1.500	23.350
ERCO	0.180	0.093	0.093	-	-	-	-	-	-	-	0.186
HOCU	1.200	0.600	0.600	11.400	1.000	0.800	-	-	-	0.057	14.457
<i>Hordeum sp.</i>	5.400	-	5.421	2.000	-	-	-	1.200	0.500	-	9.121
SAME	0.600	0.300	0.306	-	-	-	-	-	-	0.053	0.659
STPU	-	-	-	7.000	1.250	1.000	-	0.600	2.550	1.500	13.900
TOTAL	13.530	3.893	9.713	36.000	5.000	4.000	4.000	3.700	8.030	3.509	77.845

* HMP Species

Table 8-35. Summary of Active Restoration Activities for HA 27A North

Species	Number of Individual Plants		
	2021 (AMP)	2022 (AMP)	Total by Species
ARPU*	160	-	160
ARMO*	-	25	25
CERI*	40	-	40
TOTAL	200	25	225

*HMP Species

Table 8-36. Summary of Active Restoration Activities for HA 27A South

Species	Number of Individual Plants	
	2021 (AMP)	Total by Species
ACGL	100	100
BAPI	100	100
STPU	100	100
TOTAL	300	300

8.7.2 HA 27A North Monitoring Results

HA 27A North was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover monitoring were completed (see Appendix C, page C-7).

8.7.2.1 Species Richness

Twenty-nine species were observed at HA 27A North in 2025. Of those, 17 were native shrubs or perennials, seven were native annual herbaceous species, and five were non-native species (see Table 8-37). Species richness increased by three species since 2020. Native shrub and perennial species richness increased by three, native herbaceous species richness increased by one, non-native species richness decreased by one, and uncategorized species richness did not change.

Table 8-37. Species Observed on HA 27A North, 2025

Scientific Name	Common Name	Code	Category
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Arbutus menziesii</i>	Pacific madrone	ARME	NP
<i>Arctostaphylos montereyensis</i> *	Monterey manzanita	ARMO	NP
<i>Arctostaphylos pumila</i> *	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Carex sp.</i>	sedge	CA	NP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus</i> *	Monterey ceanothus	CERI	NP
<i>Chorizanthe diffusa</i>	diffuse spineflower	CHDI	NF
<i>Crassula connata</i>	pygmy-weed	CRCO	NF
<i>Crocanthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Ericameria fasciculata</i> *	Eastwood's goldenbush	ERFA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Festuca myuros</i>	rattail sixweeks grass	FEMY	NNF
<i>Festuca octoflora</i>	sixweeks grass	FEOC	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Logfia filaginoides</i>	California cottonrose	LOFI	NF
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Lupinus truncatus</i>	Nuttall's annual lupine	LUTR	NF
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Plantago erecta</i>	California plantain	PLER	NF
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Salvia mellifera</i>	black sage	SAME	NP

*HMP Species

8.7.2.2 Vegetative Cover

Harris-Terracon surveyed one 44 meter line-intercept transect at HA 27A North. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 33.20%. The mean vegetative cover by native shrubs and perennials was 0.02% greater in 2025 than in 2020. Shifts in vegetative cover values continue to follow the trend seen at several maritime chaparral sites where we see increasing cover of manzanita species, and decreasing cover from early successional species such as peak rushrose and deerweed. Figure 8-22 presents the percent cover of dominant species at HA 27A North in 2017, 2018, 2020, and 2025. Figure 8-23 shows native vegetative cover compared to success criteria at HA 27A North. Figure 8-24 shows percent cover of HMP shrubs at HA 27A North compared to success criteria.

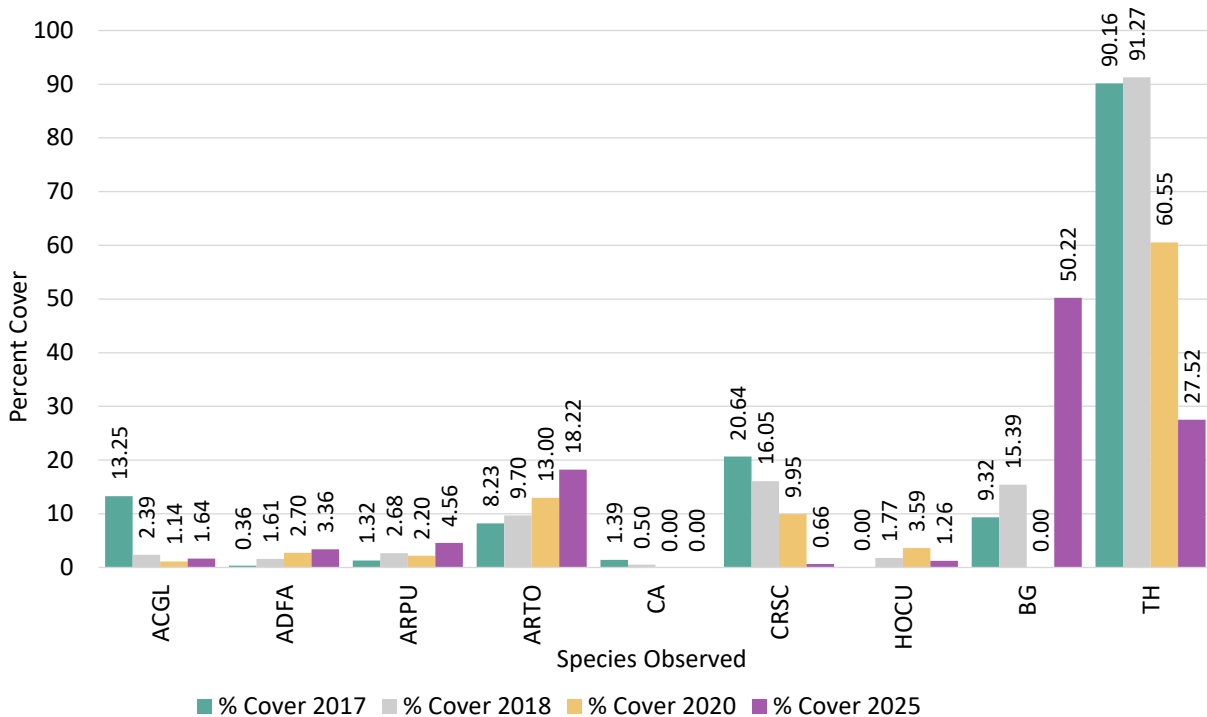


Figure 8-22. Percent cover of dominant species at HA 27A North

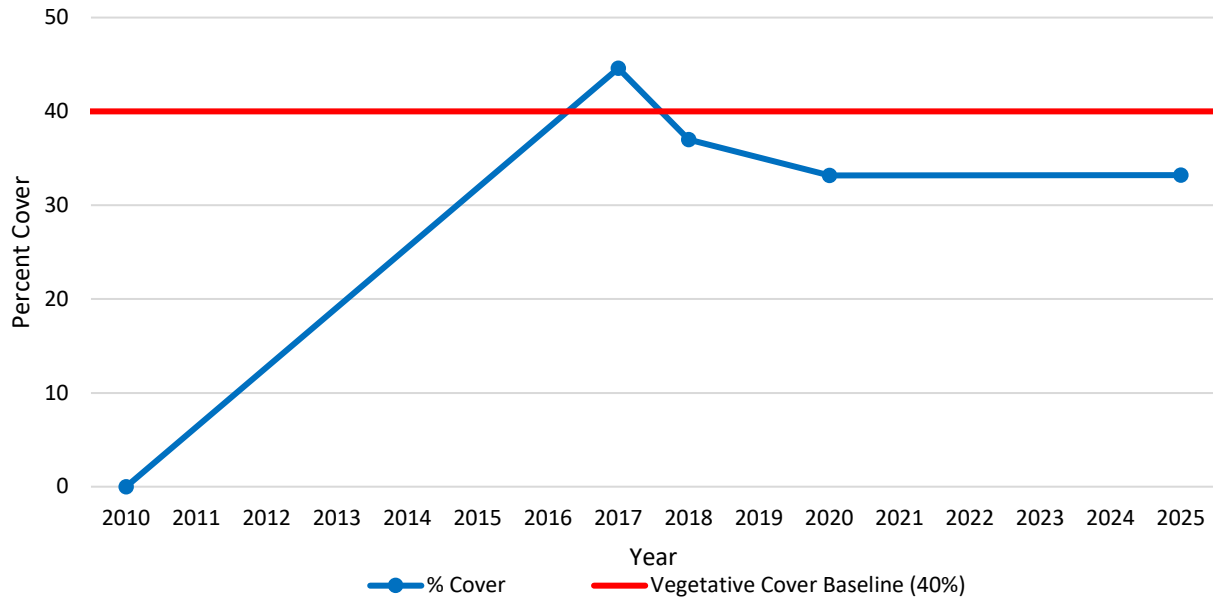


Figure 8-23. Vegetative cover compared to success criteria at HA 27A North

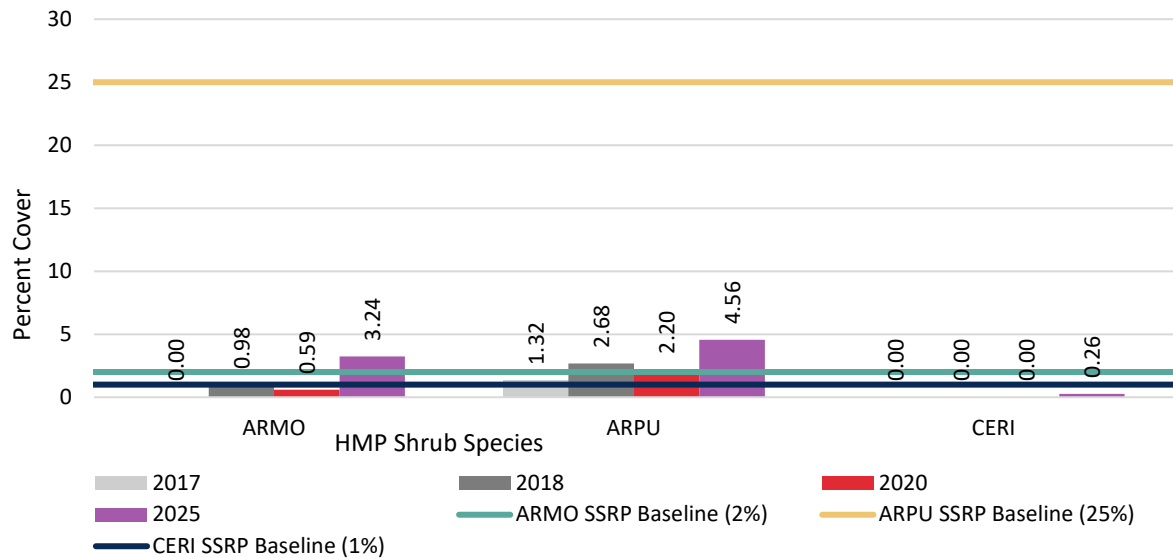


Figure 8-24. Percent cover of HMP shrubs at HA 27A North compared to success criteria

8.7.3 HA 27A South Monitoring Results

HA 27A South was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover monitoring were completed (see Appendix C, page C-8).

Species Richness

Forty-eight species were observed at HA 27A South in 2025. Of those, 21 were native shrubs or perennials, 10 were native annual herbaceous species, and 17 were non-native species (see Table 8-27). Species richness increased by ten species since 2020. Native shrub and perennial species richness did not change, native herbaceous species richness increased by four, non-native species richness increased by six, and uncategorized species richness did not change.

Table 8-38. Species Observed on HA 27A South, 2025

Scientific Name	Common Name	Code	Category
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon americanus</i> var. <i>americanus</i>	Spanish clover	ACAMA	NF
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Aira caryophylla</i>	silver hair grass	AICA	NNF
<i>Arctostaphylos montereyensis</i> *	Monterey manzanita	ARMO	NP
<i>Arctostaphylos pumila</i> *	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Briza maxima</i>	rattlesnake grass	BRMA	NNF
<i>Bromus diandrus</i>	ripgut brome	BRDI	NNF
<i>Bromus hordeaceus</i>	soft chess	BRHO	NNF
<i>Carpobrotus edulis</i>	hottentot fig/ice plant	CAED	NNP
<i>Ceanothus rigidus</i> *	Monterey ceanothus	CERI	NP
<i>Chorizanthe diffusa</i>	diffuse spineflower	CHDI	NF
<i>Cortaderia jubata</i>	jubata grass	COJU	NNP
<i>Crassula connata</i>	pygmy-weed	CRCO	NF
<i>Crocotanthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata</i> *	Eastwood's goldenbush	ERFA	NP
<i>Erigeron canadensis</i>	horseweed	ERCA	NF
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Erodium botrys</i>	long-beaked filaree	ERBO	NNF
<i>Festuca octoflora</i>	sixweeks grass	FEOC	NF
<i>Heterotheca grandiflora</i>	telegraph weed	HEGR	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Juncus bufonius</i>	toad rush	JUBU	NF
<i>Juncus phaeocephalus</i>	brown-headed rush	JUPH	NP
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Lupinus arboreus</i>	yellow bush lupine	LUAR	NP
<i>Lupinus truncatus</i>	Nuttall's annual lupine	LUTR	NF
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Lythrum hyssopifolia</i>	grass poly	LYHY	NNF
<i>Navarretia hamata</i> ssp. <i>parviloba</i>	hooked navarretia	NAHAP	NF
<i>Plantago coronopus</i>	cut-leaved plantain	PLCO	NNF
<i>Polypogon monspeliensis</i>	rabbitsfoot grass	POMO	NNF

<i>Pseudognaphalium beneolens</i>	fragrant everlasting	PSBE	NP
<i>Quercus agrifolia</i>	coast live oak	QUAG	NP
<i>Rumex acetosella</i>	sheep sorrel	RUAC	NNP
<i>Salix sp.</i>	willow	SA	NP
<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Toxicodendron diversilobum</i>	poison oak	TODI	NP
<i>Trifolium angustifolium</i>	narrow-leaved clover	TRAN	NNF
<i>Trifolium hirtum</i>	rose clover	TRHI	NNF
<i>Zeltnera davyi</i>	Davy's centaury	ZEDA	NF

*HMP Species

8.7.3.1 Vegetative Cover

Harris-Terracon surveyed one 50 meter line-intercept transect at HA 27A South. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 24.28%. The mean vegetative cover by native shrubs and perennials was 19.84% greater in 2025 than in 2020. Figure 8-25 presents the percent cover of dominant species at HA 27A South in 2016, 2017, 2018, 2020, and 2025. Figure 8-26 shows native vegetative at HA 27A South. Figure 8-27 shows percent cover of HMP shrubs at HA 27A South.

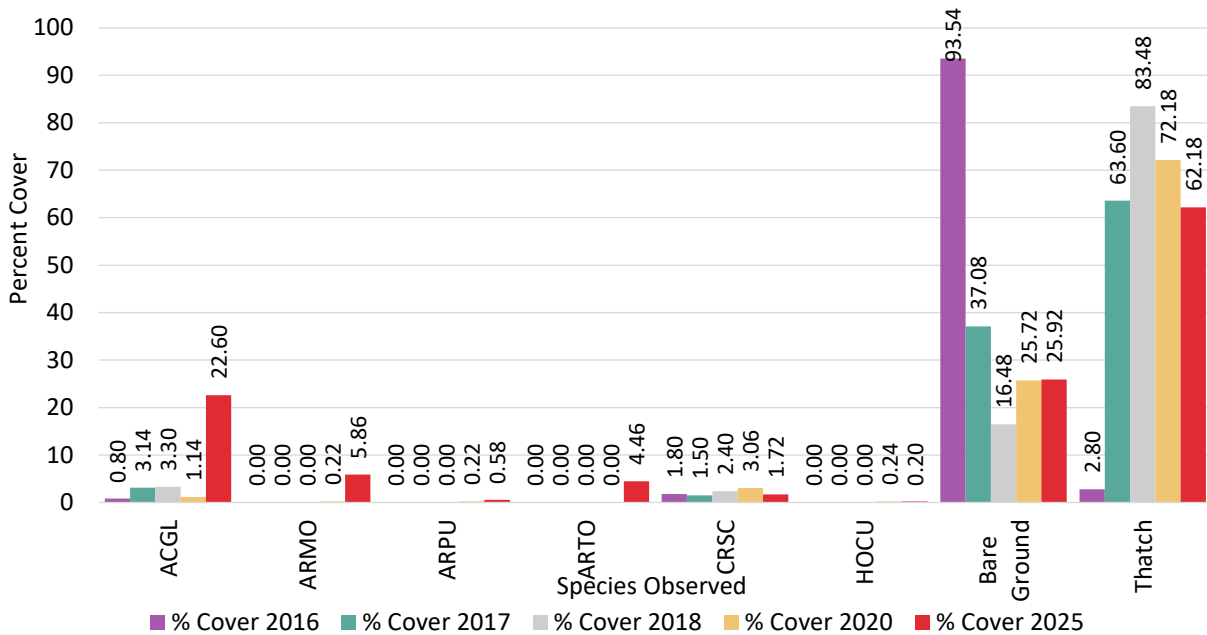


Figure 8-25. Percent cover of dominant species at HA 27A South

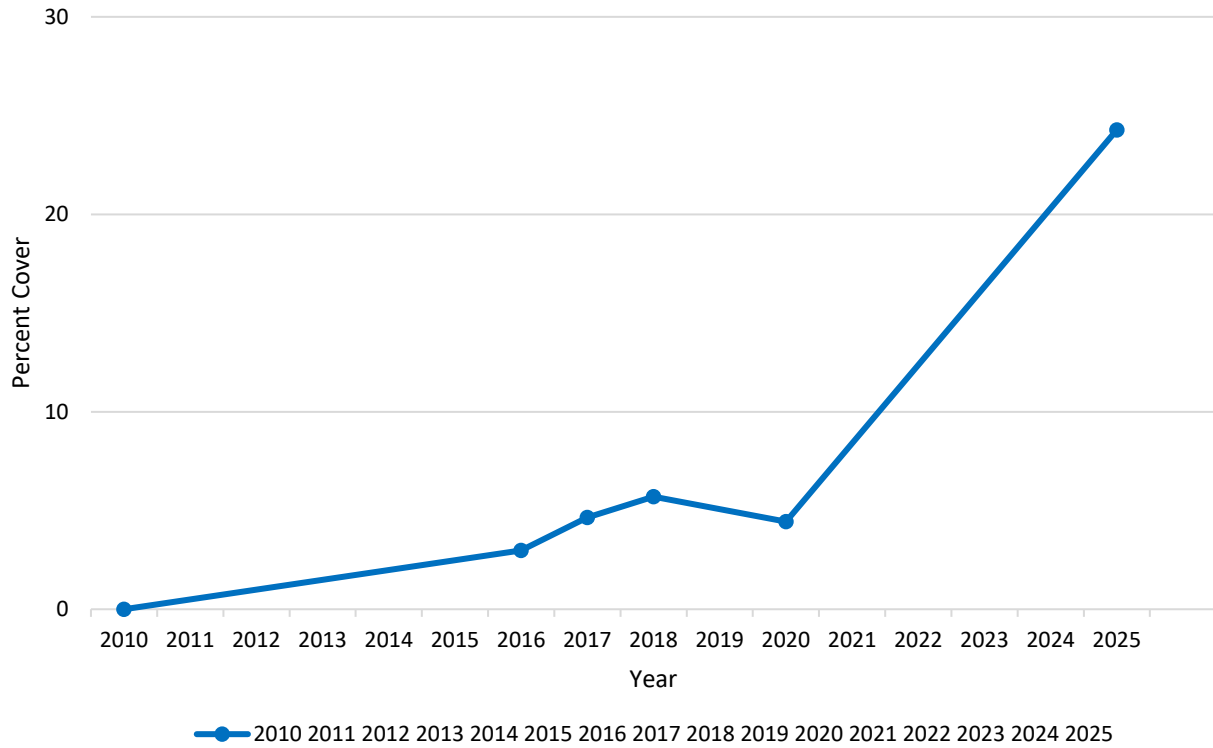


Figure 8-26. Native vegetative cover of criterion species at HA 27A South

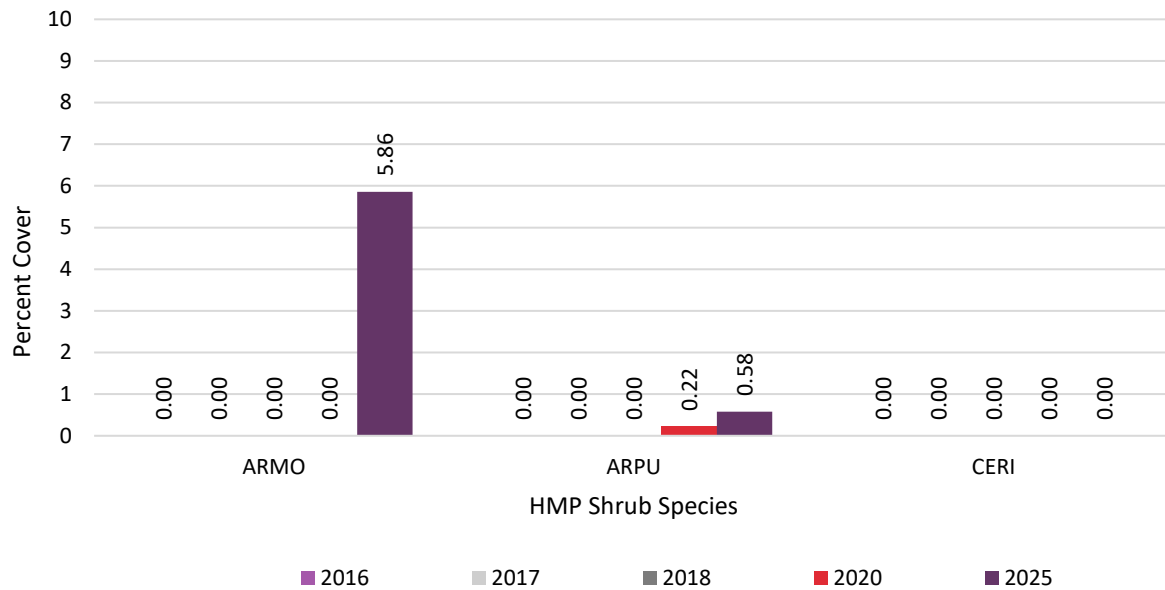


Figure 8-27. Percent cover of HMP shrubs at HA 27A South

8.7.4 Discussion and Conclusion

8.7.4.1 HA 27A North Discussion

HA 27A North, a 0.2-acre portion of HA 27A, was in Year 13 of monitoring in 2025 and met two of five success criteria (see Table 8-39). Specifically, HA 27A North met its species richness and non-native target weed cover criteria. The site did not meet its native vegetation cover, HMP shrub cover, or HMP shrub cover by species criteria.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. Both the species richness and HMP shrub cover by species criteria were identified as needing intervention. To address these deficiencies, AMP actions included seeding 4 pounds of native seed and planting 225 HMP shrubs, in addition to the original SSRP prescription.

Overall, HA 27A North exhibits strong species richness, effective invasive species control, and measurable progress toward native vegetation cover, HMP shrub cover, and HMP shrub by species targets, indicating that restoration actions have successfully promoted self-sustaining habitat conditions.

8.7.4.2 HA 27A North Species Richness Status

The species richness criterion for HA 27A North requires the presence of 12 specific native species at the site. This criterion was met in all benchmark monitoring years: Years 5, 8, and 13.

8.7.4.3 HA 27A North Native Vegetative Cover Status

The 40% native vegetative cover success criterion was not met. Native cover was 45% in Year 5, decreased to 33% by Year 8—largely due to declines in early successional species—and remained at 33% by Year 13, demonstrating sustained native plant establishment but falling short of the success criterion. While total native cover remained similar between Years 8 and 13, substantial changes in community structure were observed, with early successional species transitioning out to make way for slow-growing shrub dominance.

8.7.4.4 HA 27A North Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. Target weeds were not detected in any monitoring year, demonstrating sustained control of invasive species at HA 27A North.

8.7.4.5 HA 27A North HMP Shrub Cover Status

The HMP shrub cover class at HA 27A North did not meet the baseline cover class of 4 (26–50% absolute cover by HMP shrubs) in any monitoring year. Absolute cover by HMP shrub species was 0.62% in Year 5 and increased to 2.80% by Year 8. Corrective management of HMP shrub plantings occurred in Years 8 and 9, and by Year 13, cover reached 8.06%, demonstrating a consistent upward trend; however, the site remained below the success criterion.

8.7.4.6 HA 27A North HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion at HA 27A North was not met. This criterion requires ARPU cover $\geq 25\%$, ARMO cover $\geq 2\%$, and CERI cover $\geq 1\%$. In Year 5, ARPU cover was 0.62%, while ARMO and CERI cover were both 0.0%. By Year 8, ARPU cover increased to 2.2%, ARMO was detected at 0.59%, and CERI remained at 0.0%. Corrective management of HMP shrub plantings occurred in Years 8 and 9, and by Year 13, ARPU cover reached 4.56%, ARMO was 3.24%, and CERI was detected at 0.26%. As a result, ARMO was the only one of the three HMP shrub species to meet this criterion.

8.7.4.7 HA 27A North Conclusion

HA 27A North received its full SSRP passive restoration prescription in 2011–2012, followed by AMP seeding and planting between 2016 and 2022 to address deficiencies in native vegetation cover, HMP shrub cover, and HMP shrub cover by species. With 33% native cover, effective invasive species control, and positive trends toward all restoration objectives, the site is on a trajectory toward pre-remediation baseline vegetation conditions. Based on these results (Table 8-39), restoration at HA 27A North is considered successfully implemented and ecologically self-sustaining.

Table 8-39. Status for Achieving Success Criteria at HA 27A North

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met*	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	12 Required species: ADFP, ARMO, ARTO, ARPU, BAPI, CERI, ERCO, CRSC, HOCU, AGLL, DIAU, SAME	Yes	Yes	Yes	Year 5: met Year 8: met Year 13: met
Objective 1 – No. 2	Native vegetation cover	$\geq 40\%$	Yes	No	No	Year 5: 44.6% Year 8: 33.18% Year 13: 33.20%
Objective 2 – No. 3	Non-native target weed cover	$\leq 5\%$	Yes	Yes	Yes	Year 5: 0.00% Year 8: 0.00% Year 13: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 4: 26-50%	No	No	No	Year 5: 0.62% Year 8: 2.80% Year 13: 8.06% (ARPU and CERI planted in 2020/2021, ARMO planted in 2021/2022)*
Objective 3 – No. 4	HMP shrub cover by species	ARPU $\geq 25\%$ ARMO $\geq 2\%$ CERI $\geq 1\%$	ARPU = No ARMO = No CERI = No	ARPU = No ARMO = No CERI = No	ARPU = No ARMO = Yes CERI = No	Year 5: ARPU 0.62% ARMO 0.00% CERI 0.00% Year 8: ARPU 2.20% ARMO 0.59% CERI 0.00% Year 13: ARPU 4.56% ARMO 3.24% CERI 0.26% (ARPU and CERI planted in 2020/2021, ARMO planted in 2021/2022)**
Objective 3 – No. 4	HMP annual density	NA	NA	NA	NA	NA

*Prior to HA 27A being split into distinct North and South sections for monitoring purposes

**Planted as part of Adaptive Management Plan

8.7.4.8 HA 27A South Discussion

HA 27A South, a 0.4-acre portion of HA 27A, was in Year 13 of monitoring in 2025 and met two of two success criteria (see Table 8-40). Specifically, HA 27A North met its species richness and non-native target weed cover criteria.

Following benchmark monitoring in Year 5, the southern portion of HA 27A (HA 27A South) was determined to have highly disturbed or absent soil, and the original success criteria were deemed unattainable. The success criteria were subsequently revised to focus on species richness and non-native target weed cover, with the goal of resembling early successional maritime chaparral habitat. Following both Year 5 and Year 8 monitoring, AMP seeding, planting, and erosion control measures were implemented to address site conditions. In addition to its SSRP prescription, HA 27A South received approximately 64 pounds of native seed, 300 native plants, and dozens of straw wattles for erosion control.

Overall, HA 27A South exhibits strong species richness, effective control of non-native target weed cover, and good erosion control. The site reflects early successional stages of a maritime chaparral habitat.

8.7.4.9 HA 27A South Species Richness Status

The species richness criterion for HA 27A South requires the presence of 12 specific native species at the site. This criterion was met in all benchmark monitoring years: Years 5, 8, and 13.

8.7.4.10 HA 27A South Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. Target weeds were not detected during transect surveys in any monitoring year, demonstrating sustained control of invasive species at HA 27A South.

8.7.4.11 HA 27A South Conclusion

HA 27A South received its full SSRP passive restoration prescription in 2011–2012, followed by AMP seeding, planting, erosion control, mulch application, and ongoing weed management. With effective erosion control, strong species richness, and 24% native cover, the site is exhibiting characteristics of early successional maritime chaparral habitat recovery. Based on these results (Table 8-40), restoration at HA 27A South is considered successfully implemented; however, continued invasive weed management is recommended to sustain restoration achievements.

Table 8-40. Status for Achieving Success Criteria at HA 27A South

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met*	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	12 Required species: ADFA, ARMO, ARTO, ARPU, BAPI, CERI, ERCO, CRSC, HOCU, ACGL, DIAU, SAME	Yes	Yes	Yes	Year 5: met Year 8: met Year 13: met
Objective 1 – No. 2	Native vegetation cover	NA	NA	NA	NA	Year 5: 4.64% Year 8: 4.44% Year 13: 24.28%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	Year 5: 0.00% Year 8: 0.00% Year 13: 0.00%
Objective 3 – No. 4	HMP shrub cover	NA	NA	NA	NA	NA
Objective 3 – No. 4	HMP shrub cover by species	NA	NA	NA	NA	NA
Objective 3 – No. 4	HMP annual density	NA	NA	NA	NA	NA

*Prior to HA 27A being split into distinct North and South sections for monitoring purposes

8.8 HA 28

HA 28 was used by the Army as a range for automatic rifles. Soil was excavated over 4.3 acres. A vernal pool comprised ponds 30A, 30B, and 30C and partially extends into HA 28. California tiger salamander (*Ambystoma californiense*) and other aquatic species have been documented within the vernal pool. HA 28 rests within unprotected maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 28 is surrounded by medium to very high-quality habitat.

HA 28 is located on the southern portion of Site 39, within the sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for HA 28 included both passive and active restoration consisting of hand broadcast non-irrigated seed, annual weed management activities, and installing native container-grown plants. HA 28 is moderately sloped with some potential for erosion.

Restoration and AMP activities at HA 28 occurred from 2013 through 2020, with additional efforts in 2024 and 2025; quantitative monitoring began in 2015. The HA was monitored for 13 years by photo documentation and site visits; six years for HMP annual density in plots; seven years for plant survivorship; and five years for HMP annual density across the HA, species richness, and vegetative cover (see Table 8-41). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-28 shows the HA footprint, passive restoration area, active restoration area, and transect monitoring locations. Success criteria for HA 28 are summarized in Table 8-42.

Table 8-41. Historic Summary of Restoration and Monitoring Activities at HA 28

Activity	Monitoring Years													
	2013	2014	1	2	3	4	5	6	7	8	9	10	11	13
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2027
Restoration, Erosion Control, and Caretaking Activities	●	●	●	●	●	●	●	●				●	●	
Photo Points and Site Visit	●	●	●	●	●	●	●	●	●	●	●	●		●
Monterey Spineflower Plots			●	●	●	●	●			●				
HMP Annual Density across HA				●	●	●	●			●				
Species Richness				●	●	●	●			●				●
Vegetative Cover				●	●	●	●			●				●
Plant Survivorship			●	●	●	●	●	●	●					

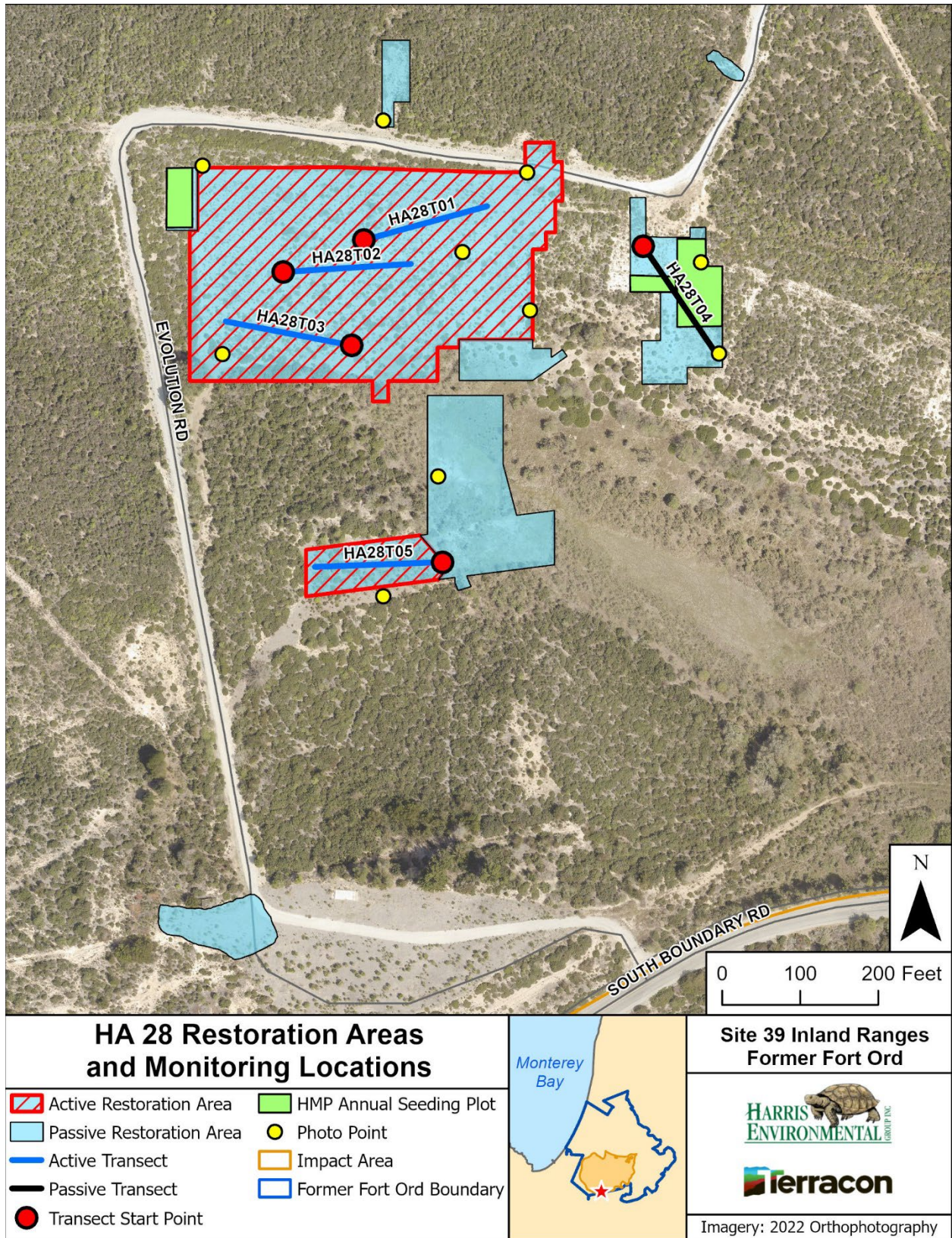


Figure 8-28. HA 28 Restoration Areas and Monitoring Locations Map

Table 8-42. Success Criteria and Acceptable Limits for Restoration of HA 28

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: chamise Monterey manzanita† sandmat manzanita† shaggy-bark manzanita Monterey ceanothus† wedge-leaved horkelia black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicated presence of non-native target weed species jubata grass. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 3 (6-25% of absolute cover)
			Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 35.
			Monterey ceanothus percent cover, as an average of transect data, must be present however, less than 1 percent is acceptable.
HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low	

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.8.1 Restoration and Adaptive Management Plan Activities

Harris-Terracon performed AMP seeding at HA 28 in 2025. A total of 7.5 pounds of native grass seed were broadcast. See Table A-4 in Appendix A for details.

8.8.2 Monitoring Results

HA 28 was in year 11 of monitoring in 2025. Year 11 does not require monitoring and only site visits and photo documentation were completed (see Appendix C, page C-9).

8.8.3 Discussion

8.8.3.1 HA 28 Status

There are no updates to the HA 28 status discussion; see Table 8-43 for a summary of the most recent HA status and likelihood of achieving success criteria. An in-depth discussion of past trends and recommendations is available in the 2022 Annual Report (Burlison, 2023). The site will continue to be monitored by photo documentation, species richness meandering transects, and vegetative cover line-intercept transects in year 13, 2027 (see Table 8-41).

Table 8-43. Status for Achieving Success Criteria at HA 28

Success Criterion	Category	Acceptable Limits	Year 5 (2019) Met	Year 8 (2022) Met	Likelihood of Achieving Success by Year 13 (2027)	Results
Objective 1 – No. 1	Species richness	7 required species: ADFA, ARMO, ARPU, ARTO, CERI, HOCU, SAME	Yes	Yes	HIGH	Year 5: met Year 8: met
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	Yes	HIGH	Year 5: 29.01% Year 8: 40.82%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	HIGH	Year 5: 0.00% Year 8: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	Yes	Yes	HIGH	Year 5: 9.66% Year 8: 17.38%
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 35% ARMO = present CERI = present	ARPU = No ARMO = Yes CERI = Yes	ARPU = No ARMO = Yes CERI = Yes	LOW for ARPU HIGH for ARMO HIGH for CERI	Year 5: ARPU 6.51% ARMO 0.67% CERI 2.49% Year 8: ARPU 11.96% ARMO 2.38% CERI 3.03%
Objective 3 – No. 4	HMP annual density	Low density for CHPUP	Yes	Yes	NA	(Year 13 monitoring not required)

8.9 HA 29

HA 29 was used by the Army as a small-arms firing range. Soil remediation was completed in 2010; 1,700 cubic yards of soil were excavated from 1.0 acre (Shaw, 2008). HA 29 is located within maritime chaparral, with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 29 varies in elevation and has a predominantly west-facing aspect. Adjacent lands are undeveloped and contain substantial amounts of intact native vegetation that may promote natural recruitment in restoration areas. Prior to soil remediation, HA 29 was heavily disturbed and dominated by jubata grass (*Cortaderia jubata*). Approximately half of HA 29 contains compacted soils. HA 29 is located within Unit 5, which was masticated in 2021 to facilitate MEC cleanup and subsequently monitored for three years. Prior to remediation, about half of the site consisted of a degraded area dominated by jubata grass, and the other half was composed of a dense stand of high-quality maritime chaparral. The degraded portion consisted of approximately 60–70 percent bare ground with very low herbaceous cover (Shaw, 2008).

HA 29 is located on the southern portion of Site 39 within Aromas formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for HA 29 included both passive and active restoration consisting of hand broadcast non-irrigated seed, annual weed management activities, and installing native container-grown plants, cuttings, and burls. Areas within HA 29 which are less than 1.0 acre or larger than 1.0 acre but less than 100 feet wide were restored passively using broadcast seed only. Areas larger than 1.0 acre and greater than 100 feet across received both active and passive restoration efforts. The potential for erosion at HA 29 exists along slopes surrounding excavated areas.

Restoration and AMP activities at HA 29 occurred from 2011 to 2013, in 2016, and from 2018 to 2022; quantitative monitoring began in 2013. Additional seed was broadcast in 2016, 2018, 2019, 2020, and 2022 and additional plants were installed in 2019 and 2021. The HA was monitored for 15 years by photo documentation and site visits, three years for plant survivorship, and four years for species richness and vegetative cover (see Table 8-44). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-29 shows the HA footprint, passive restoration area, active restoration area, and transect monitoring locations. Success criteria for HA 29 are summarized in Table 8-45.

Table 8-44. Historic Summary of Restoration and Monitoring Activities at HA 29

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•	•			•		•	•	•	•	•			
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Species Richness						•	•	•		•					•
Vegetative Cover						•	•	•		•					•
Plant Survivorship			•	•	•										

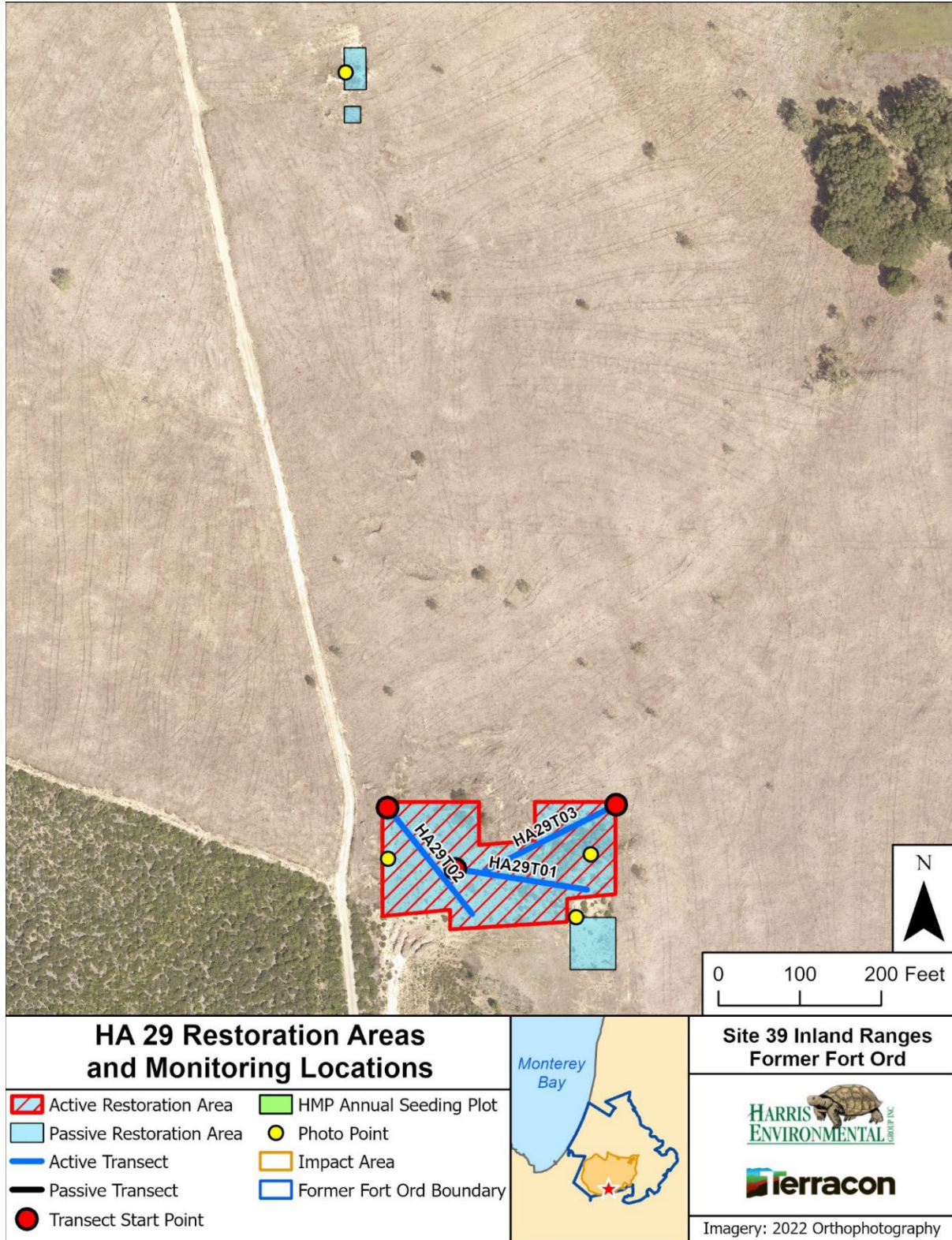


Figure 8-29. HA 29 Restoration Areas and Monitoring Locations Map

Table 8-45. Success Criteria and Acceptable Limits for Restoration of HA 29

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: chamise Hooker's manzanita† Monterey manzanita† shaggy-bark manzanita sandmat manzanita† coyote brush Monterey ceanothus† Eastwood's goldenbush† golden yarrow toyon peak rush-rose wedge-leaved horkelia deerweed sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicated that jubata grass was present at 11%. Therefore, no more than 5% non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 4 (26-50% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Hooker's manzanita percent cover, as an average of transect data, must be equal or greater than 2.
			Monterey manzanita percent cover, as an average of transect data, must be equal or greater than 7.
			Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 27.
Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 1.			

No.	Success Element	Decision Rule	Acceptable Limits
			Eastwood gold fleece percent cover, as an average of transect data, must be equal or greater than 2.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Density class: Not applicable

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.9.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 29 in 2025. HA 29 received its SSRP passive and active restoration prescription in 2011–2013, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP seeding, planting, fertilizing, and mulching recommendations were developed to address deficiencies in species richness, native vegetation cover, HMP shrub cover, and HMP shrub cover by species (Burlison, 2018; Burlison, 2019; Burlison, 2021). AMP seeding was implemented in 2019, 2020, and 2024 (Table 8-46), and AMP plantings were conducted in 2019 and 2020 (Table 8-47). Additionally, a mulch and mycorrhizal-fertilizer mix was applied in 2018 to the base of shrubs to encourage growth. Beyond the original SSRP prescription, HA 29 received 41 pounds of additional native seed, 435 targeted plants—including 420 HMP shrubs—and mulch and mycorrhizal-fertilizer treatments.

Table 8-46. Summary of Passive Restoration Activities for HA 29

Species	Pounds of Seed Broadcast							Total by Species
	SSRP Target	2012 (Feb-SSRP)	2016 (AMP)	2018 (AMP)	2019 (AMP)	2020 (AMP)	2022 (AMP)	
ACMI	-	-	0.800	0.800	0.600	4.000	2.000	8.200
ACGL	2.000	2.025	1.600	-	-	4.000	4.000	11.625
ADFA	1.000	1.005	-	-	-	-	-	1.005
ARHO*	2.000	2.019	-	-	-	-	-	2.019
ARMO*	2.000	2.011	-	-	-	-	-	2.011
ARPU*	1.000	1.020	-	-	-	-	-	1.020
ARTO	2.000	2.010	-	-	-	-	-	2.010
BAPI	0.150	0.083	-	-	-	-	-	0.083
CERI*	1.000	1.035	-	-	-	-	-	1.035
CRSC	1.000	1.015	-	-	-	-	-	1.015
DIAU	0.100	0.616	-	-	-	-	-	0.616
ELGL	-	-	1.600	2.000	1.600	-	5.000	10.200
ERCO	0.300	0.360	-	-	-	-	-	0.360
ERFA*	0.100	0.117	-	-	-	-	-	0.117
<i>Hordeum sp.</i>	9.000	9.030	-	-	-	-	-	9.030
HOCU	2.000	2.021	1.600	1.600	0.800	-	-	6.021
SAME	1.000	1.123	-	-	-	-	-	1.123
STPU	-	-	1.000	2.000	1.000	-	5.000	9.000
TOTAL	24.650	25.490	6.600	6.400	4.000	8.000	16.000	66.490

* HMP species

Table 8-47. Summary of Active Restoration Activities for HA 29

Species	Number of Individual Plants					Total by Species
	SSRP Target	2012 (SSRP)	2013 (SSRP)	2019 (AMP)	2021 (AMP)	
ACGL	189	225	-	-	-	225
ADFA	101	-	120	-	-	120
ARHO*	4	-	5	-	60	65
ARMO*	13	-	15	-	60	75
ARPU*	17	-	20	-	180	200
ARTO	21	-	25	-	-	25
BAPI	76	91	-	-	-	91
CERI*	4	-	5	-	60	65
CRSC	189	225	-	-	-	225
DIAU	189	225	-	-	-	225
ERCO	189	225	-	-	-	225
ERFA*	4	-	25	-	60	85
HEAR	-	-	-	15	-	15
HOCU	189	225	-	-	-	225
SAME	189	225	-	-	-	225
TOTAL	1,374	1,441	215	15	420	2,091

* HMP species

8.9.2 Monitoring Results

HA 29 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover monitoring were completed (see Appendix C, page C-10).

8.9.2.1 Species Richness

Forty-nine species were observed at HA 29 in 2025. Of those, 30 were native shrubs or perennials, four were native annual herbaceous species, and 12 were non-native species (see Table 8-48). Species richness decreased by ten species since 2020. Native shrub and perennial species richness decreased by six, native herbaceous species richness decreased by three, non-native species richness decreased by one, and uncategorized species richness did not change.

Table 8-48. Species Observed on HA 29, 2025

Scientific Name	Common Name	Code	Category
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Aira caryophylla</i>	silver hair grass	AICA	NNF
<i>Arbutus menziesii</i>	Pacific madrone	ARME	NP
<i>Arctostaphylos hookeri</i> *	Hooker's manzanita	ARHO	NP
<i>Arctostaphylos montereyensis</i> *	Monterey manzanita	ARMO	NP
<i>Arctostaphylos pumila</i> *	sandmat manzanita	ARPU	NP

<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Artemisia californica</i>	California sagebrush	ARCA	NP
<i>Avena barbata</i>	slender wild oat	AVBA	NNF
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Briza maxima</i>	rattlesnake grass	BRMA	NNF
<i>Bromus diandrus</i>	ripgut brome	BRDI	NNF
<i>Bromus hordeaceus</i>	soft chess	BRHO	NNF
<i>Carex sp.</i>	sedge	CA	NP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus*</i>	Monterey ceanothus	CERI	NP
<i>Corethrogyne filaginifolia</i>	common sandaster	COFI	NP
<i>Cortaderia jubata</i>	jubata grass	COJU	NNP
<i>Crassula connata</i>	pygmy-weed	CRCO	NF
<i>Crocantemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Drymocallis glandulosa var. wrangelliana</i>	sticky cinquefoil	DRGLW	NP
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata*</i>	Eastwood's goldenbush	ERFA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Festuca myuros</i>	rattail sixweeks grass	FEMY	NNF
<i>Gamochaeta ustulata</i>	purple cudweed	GAUS	NP
<i>Heteromeles arbutifolia</i>	toyon	HEAR	NP
<i>Heterotheca grandiflora</i>	telegraph weed	HEGR	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Lepechinia calycina</i>	pitcher sage	LECA	NP
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Madia exigua</i>	little tarweed	MAEX	NF
<i>Madia gracilis</i>	slender tarweed	MAGR	NF
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Plantago coronopus</i>	cut-leaved plantain	PLCO	NNF
<i>Polypogon monspeliensis</i>	rabbitsfoot grass	POMO	NNF
<i>Pseudognaphalium beneolens</i>	fragrant everlasting	PSBE	NP
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Quercus agrifolia</i>	coast live oak	QUAG	NP
<i>Rumex acetosella</i>	sheep sorrel	RUAC	NNP
<i>Salix laevigata</i>	red willow	SALA3	NP
<i>Salix lasiolepis</i>	arroyo willow	SALA6	NP
<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Toxicodendron diversilobum</i>	poison oak	TODI	NP

<i>Trifolium angustifolium</i>	narrow-leaved clover	TRAN	NNF
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*HMP Species

8.9.2.2 Vegetative Cover

Harris-Terracon surveyed three 50 meter line-intercept transects at HA 29. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 52.78%. The mean vegetative cover by native shrubs and perennials was 22.91% greater in 2025 than in 2020. Figure 8-30 presents the percent cover of dominant species at HA 29 in 2016, 2017, 2018, 2020, and 2025. Figure 8-31 shows native vegetative cover compared to success criteria at HA 29. Figure 8-32 shows percent cover of HMP shrubs at HA 29 compared to success criteria.

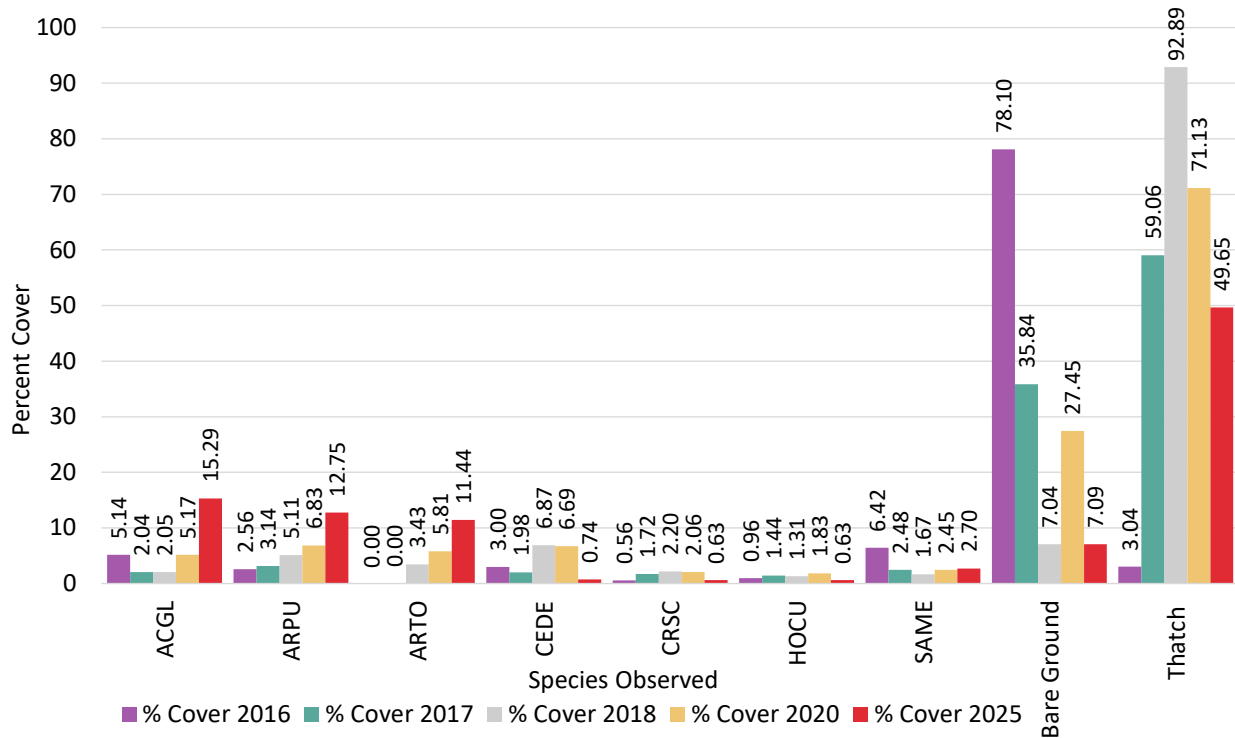


Figure 8-30. Percent cover of dominant species at HA 29

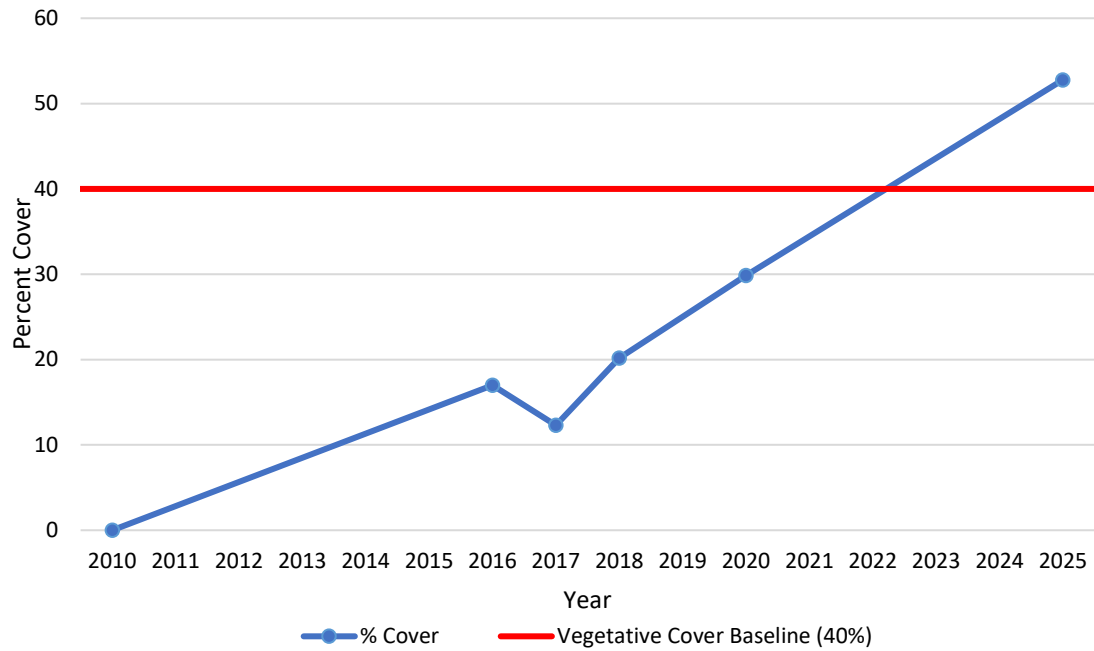


Figure 8-31. Native vegetative cover compared to success criteria at HA 29

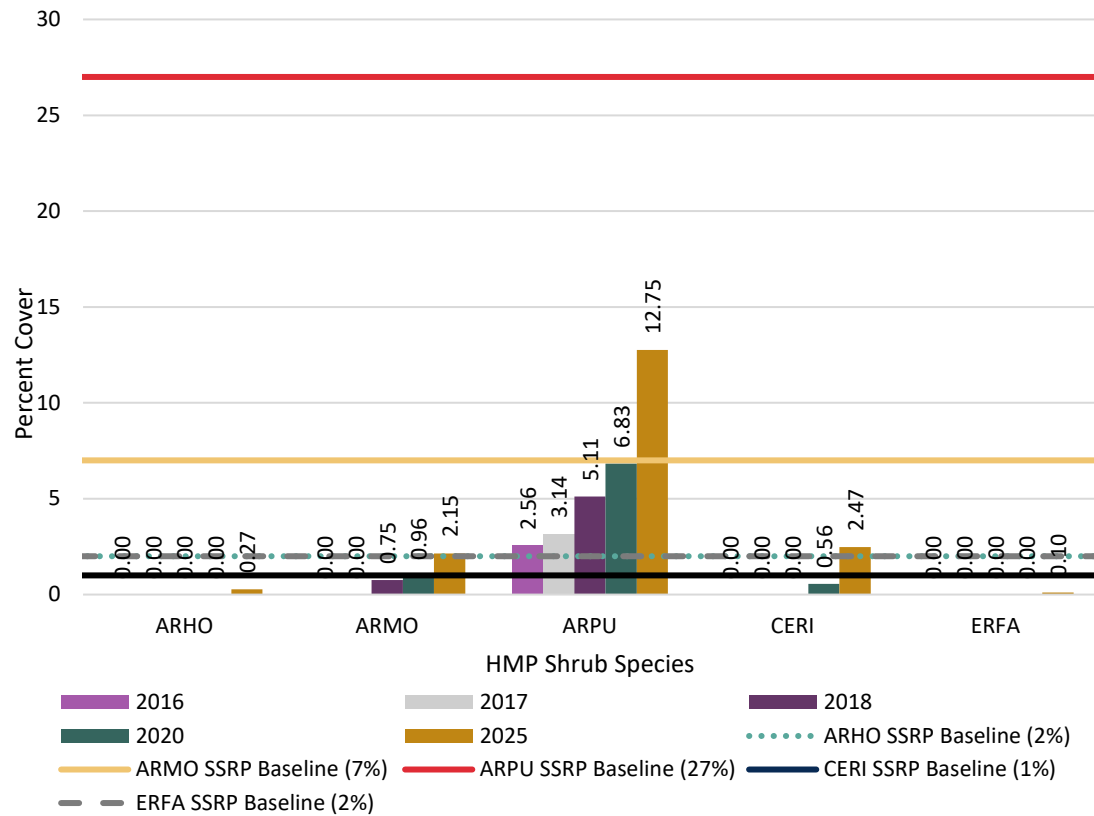


Figure 8-32. Percent cover of HMP shrubs at HA 29 compared to success criteria

8.9.3 Discussion and Conclusion

8.9.3.1 HA 29 Discussion

HA 29, a 1.0-acre site, was in Year 13 of monitoring in 2025 and met three of five success criteria (see Table 8-49). Specifically, HA 29 met its species richness, native vegetation cover, and non-native target weed cover criteria. The site did not meet its HMP shrub cover or HMP shrub cover by species criteria.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. The species richness, native vegetation cover, HMP shrub cover, and HMP shrub cover by species criteria were identified as needing intervention. To address these deficiencies, AMP actions included seeding 41 pounds of native seed, planting 435 native plants—including 420 HMP shrubs—and applying mulch and mycorrhizal-fertilizer treatments to the base of shrubs on site, all in addition to the original SSRP restoration prescription.

Overall, HA 29 exhibits strong species richness, robust native vegetation cover, effective invasive species control, and measurable progress toward HMP shrub cover and HMP shrub by species targets, indicating that restoration actions have successfully promoted self-sustaining habitat conditions.

8.9.3.2 Species Richness Status

The species richness criterion for HA 29 requires the presence of 15 specific native species at the site. In Year 5, HEAR was absent. In Year 6, corrective measures were implemented to plant HEAR. In Years 8 and 13, all required species were present, and the criterion was met.

8.9.3.3 Native Vegetative Cover Status

The 40% native vegetative cover success criterion was met. Native cover was 12% in Year 5, increased to 30% by Year 8, and reached 53% by Year 13, demonstrating a sustained positive trajectory in native plant establishment meeting the success criterion.

8.9.3.4 Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. In Year 5, target weed cover was 0.70%, decreased to 0.21% in Year 8, and target weeds were not detected in Year 13, demonstrating sustained control of invasive species at HA 29.

8.9.3.5 HMP Shrub Cover Status

The HMP shrub cover class at HA 29 did not meet the baseline cover class of 4 (26–50% absolute cover by HMP shrubs) in any monitoring year. Absolute cover by HMP shrub species was 0.62% in Year 5. In Year 6, corrective measures were implemented to plant HMP shrubs. By Year 8, HMP shrub cover increased to 8.35% and further increased to 17.74% by Year 13, demonstrating a consistent upward trend; however, the site had not yet reached the success criterion.

8.9.3.6 HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion at HA 29 was not met. This criterion requires ARPU cover $\geq 27\%$, ARMO cover $\geq 7\%$, ARHO cover $\geq 2\%$, CERI cover $\geq 1\%$, and ERFA cover $\geq 2\%$. In Year 5, cover by

these species was as follows: ARPU 3.14%, ARMO 0.0%, ARHO 0.0%, CERI 0.0%, and ERFA 0.0%. In Year 6, corrective measures were implemented, including additional plantings of HMP shrubs and application of mulch and fertilizer to the base of plants. By Year 8, cover had increased to ARPU 6.83%, ARMO 0.96%, ARHO 0.0%, CERI 0.56%, and ERFA 0.0%. By Year 13, cover further increased to ARPU 12.75%, ARMO 2.15%, ARHO 0.27%, CERI 2.47%, and ERFA 0.10%. As a result, all five HMP shrub species were detected during transect surveys; however, only CERI met its cover-by-species criterion. The other four species remained below their respective targets, although all showed measurable progress.

8.9.3.1 HA 29 Conclusion

HA 29 received its full SSRP passive and active restoration prescription in 2011–2012, followed by AMP seeding, planting, mulch application, and mycorrhizal-fertilizer treatments between 2016 and 2022 to address deficiencies in species richness, native vegetation cover, HMP shrub cover, and HMP shrub cover by species. With 53% native cover, effective invasive species control, and positive trends toward all restoration objectives, the site is on a clear trajectory toward pre-remediation baseline vegetation conditions. Based on these results (Table 8-49), restoration at HA 29 is considered successfully implemented and ecologically self-sustaining.

Table 8-49. Status for Achieving Success Criteria at HA 29

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	15 required species: ADFA, ARHO, ARMO, ARTO, ARPU, BAPI, CERI, ERFA, ERCO, HEAR, CRSC, HOCU, ACGL, DIAU, SAME	No	Yes	Yes	Year 5: HEAR absent Year 8: met Year 13: met (AMP planting occurred in 2018/2019)
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	Yes	Year 5: 12.32% Year 8: 29.87% Year 13: 52.78% (AMP planting occurred in 2021)
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	Year 5: 0.70% Year 8: 0.21% Year 13: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 4: 26-50%	No	No	No	Year 5: 0.62% Year 8: 8.35% Year 13: 17.74% (AMP planting occurred in 2021)
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 27% ARMO ≥ 7% ARHO ≥ 2% CERI ≥ 1% ERFA ≥ 2%	ARPU = No ARMO = No ARHO = No CERI = No ERFA = No	ARPU = No ARMO = No ARHO = No CERI = No ERFA = No	ARPU = No ARMO = No ARHO = No CERI = Yes ERFA = No	Year 5: ARPU 3.14% ARMO 0.00% ARHO 0.00% CERI 0.00% ERFA 0.00% Year 8: ARPU 6.83% ARMO 0.96% ARHO 0.00% CERI 0.56% ERFA 0.00% Year 13: ARPU 12.75% ARMO 2.15% ARHO 0.27% CERI 2.47% ERFA 0.10% (ARPU, ARMO, CERI, and ERFA were planted in 2021)*
Objective 3 – No. 4	HMP annual density	NA	NA	NA	NA	NA

*Planted as part of Adaptive Management Plan

8.10 HA 33

HA 33 was used by the Army as a demolitions range. Soil remediation was completed in 2010; 20 cubic yards of soil were excavated from 0.01 acre (Shaw, 2008). HA 33 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 33 is relatively flat with southwest and west aspects. HA 33 is located within Unit 20, which is planned for mastication to facilitate MEC cleanup. Adjacent lands are heavily dominated by ice plant (*Carpobrotus edulis*) and other non-native species and disturbed central maritime chaparral.

HA 33 is located on the eastern portion of Site 39, occurring within Aromas formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007). Prior to remediation, the site was surrounded by a heavily disturbed, graded area consisting of approximately 90 percent bare ground. In the immediate vicinity, habitat was dominated by ice plant and other non-native species, as well as disturbed central maritime chaparral habitat (Shaw, 2008).

The SSRP prescription for passive restoration at HA 33 consisted of hand broadcast non-irrigated seed and annual weed management activities. HA 33 is relatively flat with little potential for erosion.

Restoration and AMP activities at HA 33 occurred in 2011, 2012, 2016, 2019, 2020, and 2024; quantitative monitoring began in 2013. The HA was monitored for 15 years by photo documentation and site visits; seven years for HMP annual density in plots; and four years for HMP annual density across the HA, species richness, and vegetative cover (see Table 8-50). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-33 shows the HA footprint, passive restoration area, and transect survey locations. Success criteria for HA 33 are summarized in Table 8-51.

Table 8-50. Historic Summary of Restoration and Monitoring Activities at HA 33

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•				•			•	•				•	
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Monterey Spineflower Plots			•	•	•	•	•			•					
HMP Annual Density across HA						•	•	•		•					
Species Richness						•	•	•		•					•
Vegetative Cover						•†	•	•		•					•

† Vegetative cover was monitored using quadrats in 2016

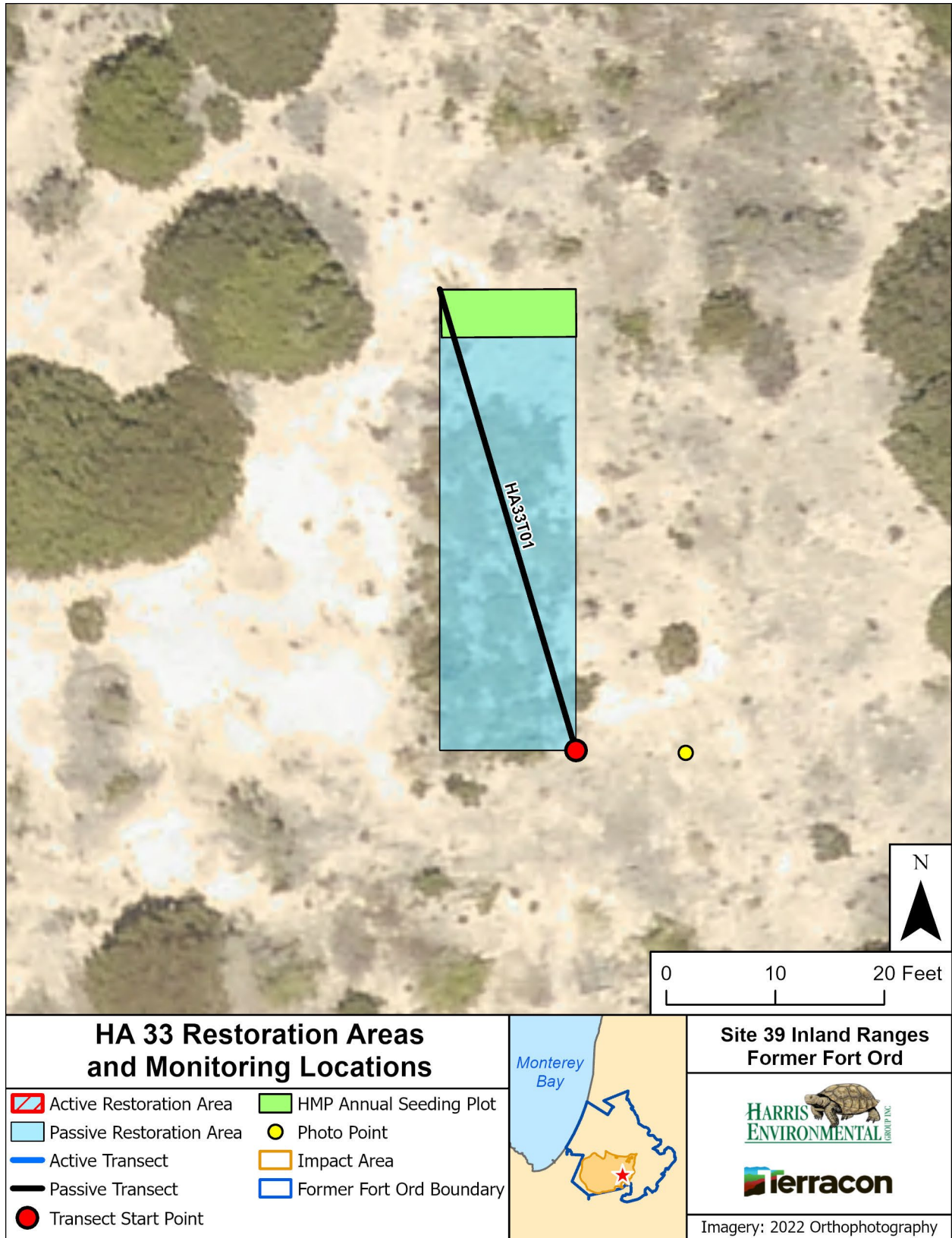


Figure 8-33. HA 33 Restoration Areas and Monitoring Locations Map

Table 8-51. Success Criteria and Acceptable Limits for Restoration of HA 33

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			common yarrow Monterey manzanita† shaggy-bark manzanita coyote brush Monterey ceanothus† dwarf ceanothus golden yarrow toyon peak rush-rose wedge-leaved horkelia deerweed sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline surveys indicated that ice plant was present at HA-33 but was not available in transect data‡. Therefore, no more than 5% non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 4 (26-50% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Monterey manzanita percent cover, as an average of transect data, must be equal or greater than 30. Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 5.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

‡ Source: Shaw 2009a

8.10.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 33 in 2025. HA 33 received its SSRP passive restoration prescription in 2011–2012, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP seeding and planting recommendations were developed to address deficiencies in species richness, native vegetation cover, HMP shrub cover, and HMP shrub cover by species (Burlison, 2018; Burlison, 2021). AMP seeding was implemented in 2019, 2020, and 2024 (Table 8-52), and AMP plantings were conducted in 2019 and 2020 (Table 8-53). Beyond the original SSRP prescription, HA 33 received an additional 4 pounds of native seed and 184 targeted plants.

Table 8-52. Summary of Passive Restoration Activities for HA 33

Species	Pounds of Seed Broadcast						Total by Species
	SSRP Target	2011 (SSRP)	2012 (SSRP)	2019 (AMP)	2020 (AMP)	2024 (AMP)	
ACMI	0.0100	0.007	0.007	0.100	0.400	0.050	0.564
ACGL	0.0200	0.011	0.011	0.300	0.400	0.050	0.772
ADFA	0.0100	0.007	0.011	-	-	-	0.018
ARMO*	0.0200	0.012	0.011	-	-	-	0.023
ARPU*	-	0.007	0.007	-	-	-	0.014
BAPI	0.0015	-	0.001	0.100	-	-	0.101
CERI*	0.0100	0.010	0.006	0.100	-	-	0.116
CHPUP*	0.0002	0.011	0.001	0.010	-	-	0.022
CRCA	0.0100	0.007	0.007	-	-	-	0.014
CRSC	0.0100	0.007	0.007	-	-	-	0.014
DIAU	0.0010	0.003	0.011	0.050	-	-	0.064
ELGL	-	-	-	0.880	-	0.200	1.080
ERCO	0.0030	0.003	0.002	0.030	-	-	0.035
ERER	0.0025	0.003	0.002	-	-	-	0.005
ERFA	-	-	-	0.010	-	-	0.010
<i>Hordeum sp.</i>	0.0900	-	0.090	1.000	-	-	1.090
HOCU	0.0200	0.011	0.011	0.040	-	-	0.062
SAME	0.0100	-	0.011	-	-	-	0.011
STCE	0.0200	0.011	0.011	-	-	-	0.022
STPU	-	-	-	0.050	-	0.200	0.250
TOTAL	0.2382	0.110	0.207	2.670	0.800	0.500	4.287

* HMP species

Table 8-53. Summary of Active Restoration Activities for HA 33

Species	Number of Individual Plants		
	2019 (AMP)	2020 (AMP)	Total by Species
ACGL	-	11	11
ACMI	-	2	2
ADFA	-	10	10
ARCA	-	5	5
ARHO*	-	3	3
ARMO*	12	3	15
ARTO	5	3	8
BAPI	-	12	12
CEDE	15	-	15
CERI*	12	4	16
CRSC	-	11	11
DIAU	10	7	17
ERCO	5	6	11
FRCA	-	3	3
GAEL	-	9	9
HEAR	5	-	5
HOCU	-	11	11
LECA	-	5	5
LUAR	-	4	4
SAME	5	6	11
TOTAL	69	115	184

* HMP Species

8.10.2 Monitoring Results

HA 33 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover monitoring were completed (see Appendix C, page C-11).

8.10.2.1 Species Richness

Thirty-eight species were observed at HA 33 in 2025. Of those, 25 were native shrubs or perennials, three were native annual herbaceous species, and nine were non-native species (see Table 8-54). Species richness decreased by four species since 2020. Native shrub and perennial species richness decreased by one, native herbaceous species richness decreased by three, non-native species richness decreased by one, and uncategorized species richness increased by one.

Table 8-54. Species Observed on HA 33, 2025

Scientific Name	Common Name	Code	Category
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Aira caryophylla</i>	silver hair grass	AICA	NNF
<i>Arctostaphylos hookeri*</i>	Hooker's manzanita	ARHO	NP
<i>Arctostaphylos montereyensis*</i>	Monterey manzanita	ARMO	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Artemisia californica</i>	California sagebrush	ARCA	NP
<i>Avena barbata</i>	slender wild oat	AVBA	NNF
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Bromus madritensis ssp. rubens</i>	foxtail chess	BRMAR	NNF
<i>Cardionema ramosissimum</i>	sand mat	CARA	NP
<i>Carex sp.</i>	sedge	CA	NP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus*</i>	Monterey ceanothus	CERI	NP
<i>Crocantemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Croton californicus</i>	California croton	CRCA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Festuca myuros</i>	rattail sixweeks grass	FEMY	NNF
<i>Gamochaeta ustulata</i>	purple cudweed	GAUS	NP
<i>Garrya elliptica</i>	coast silk tassel	GAEL	NP
<i>Gastridium phleoides</i>	nit grass	GAPH	NNF
<i>Heteromeles arbutifolia</i>	toyon	HEAR	NP
<i>Heterotheca grandiflora</i>	telegraph weed	HEGR	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Juncus sp.</i>	rush	JU	0
<i>Lepechinia calycina</i>	pitcher sage	LECA	NP
<i>Logfia filaginoides</i>	California cottonrose	LOFI	NF
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Lupinus arboreus</i>	yellow bush lupine	LUAR	NP
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Plantago coronopus</i>	cut-leaved plantain	PLCO	NNF
<i>Pseudognaphalium beneolens</i>	fragrant everlasting	PSBE	NP
<i>Quercus agrifolia</i>	coast live oak	QUAG	NP
<i>Rumex acetosella</i>	sheep sorrel	RUAC	NNP
<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Stipa pulchra</i>	purple needle grass	STPU	NP

*HMP Species

8.10.2.2 Vegetative Cover

Harris-Terracon surveyed one twelve-meter line-intercept transect at HA 33. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 36%. The mean vegetative cover by native shrubs and perennials was 23.75% greater in 2025 than in 2020. Figure 8-34 presents the percent cover of dominant species at HA 29 in 2017, 2018, 2020, and 2025. Figure 8-35 shows native vegetative cover compared to success criteria at HA 33. Figure 8-36 shows percent cover of HMP shrubs at HA 33 compared to success criteria.

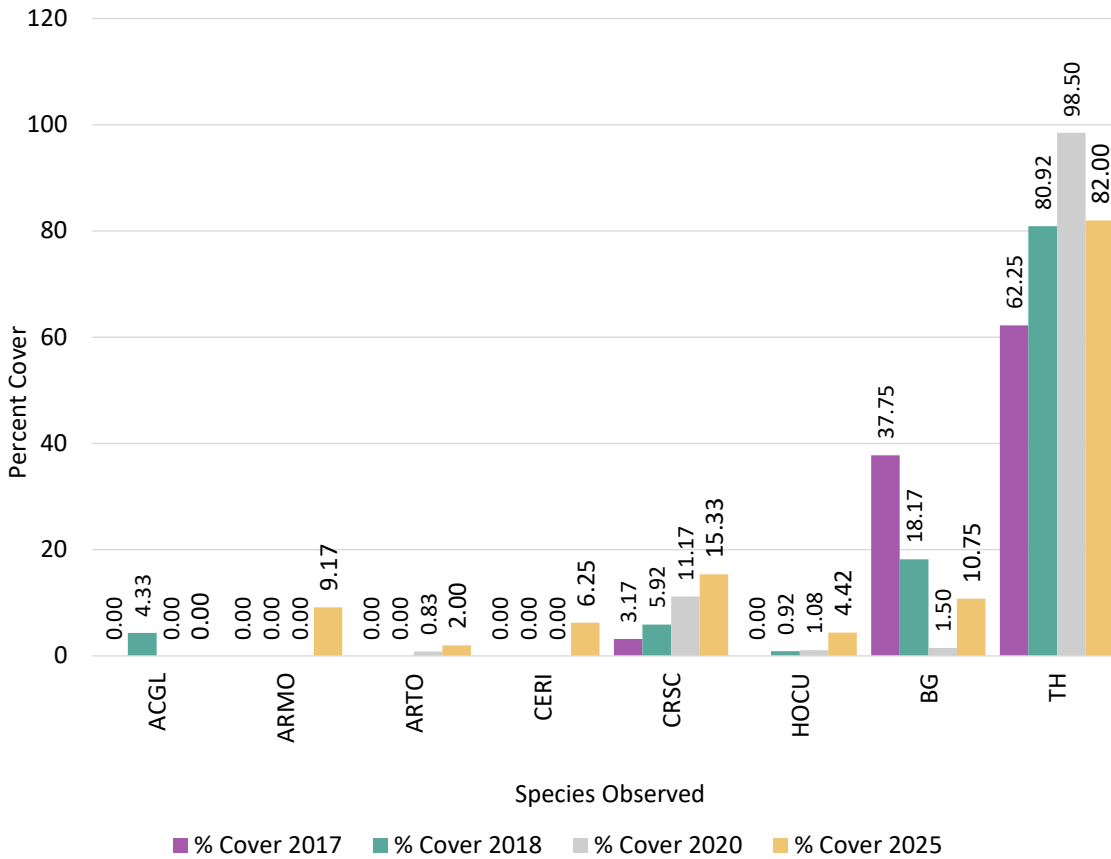


Figure 8-34. Percent cover of dominant species at HA 33

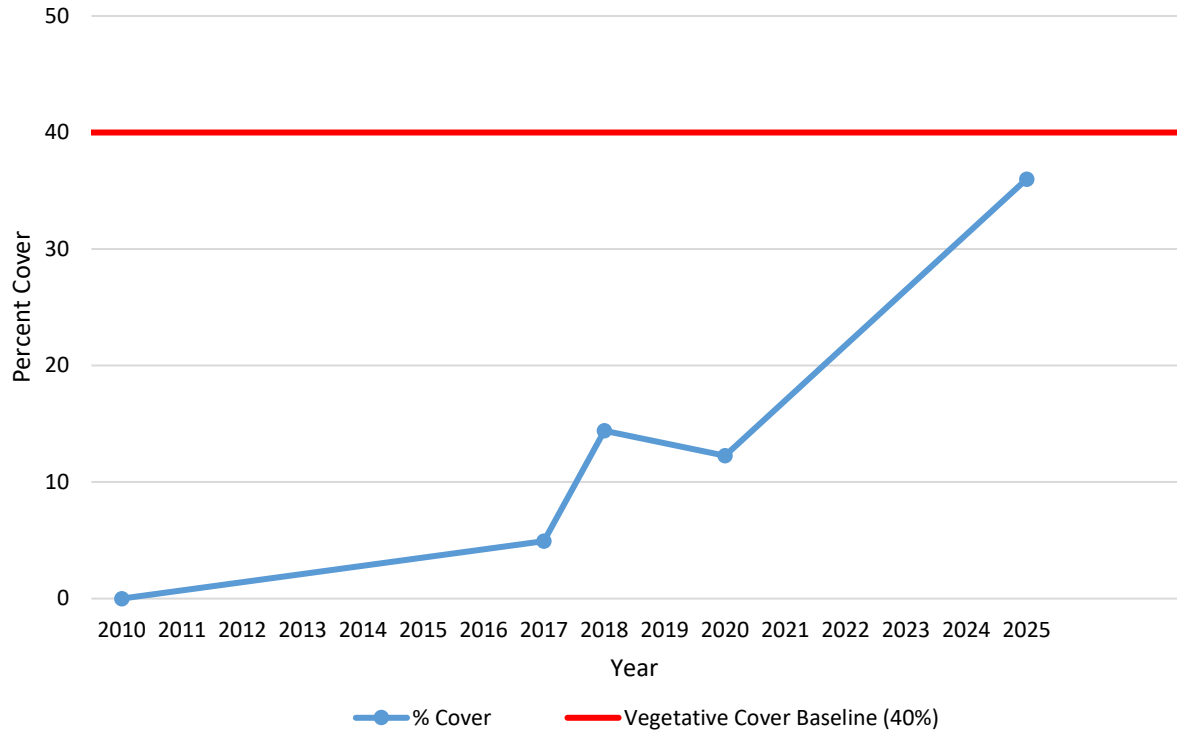


Figure 8-35. Native vegetative cover compared to success criteria at HA 33

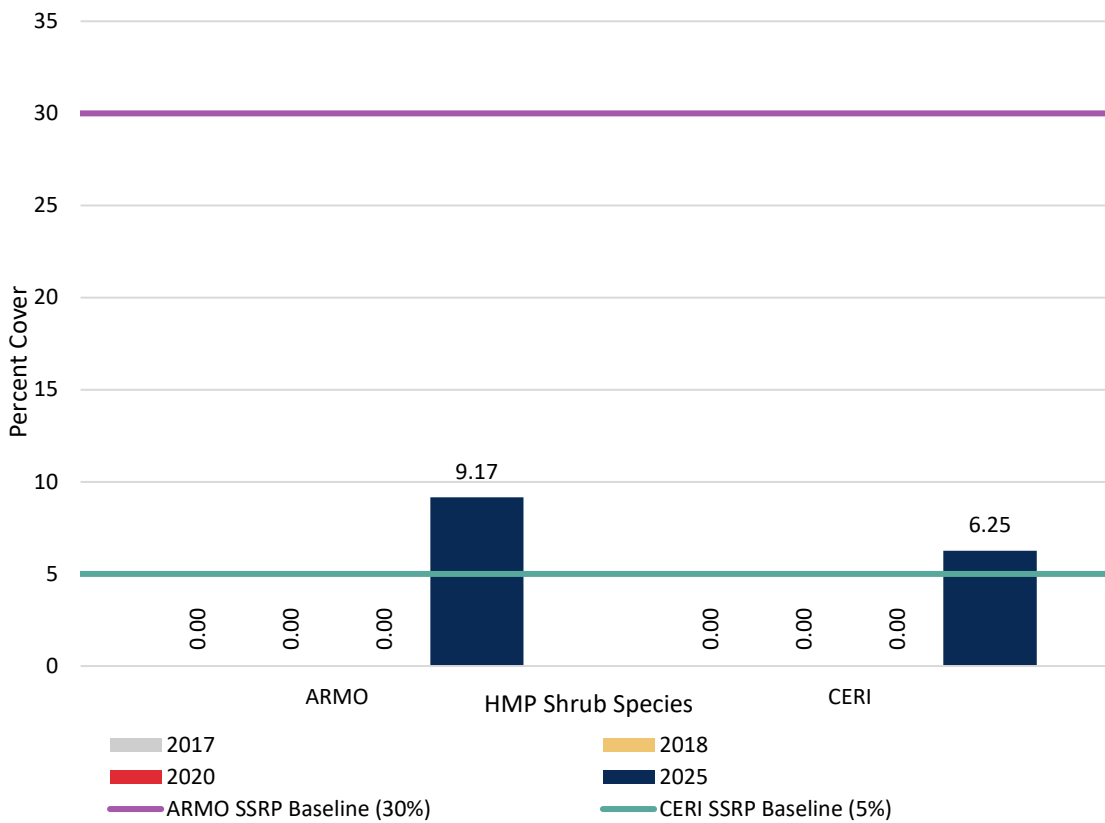


Figure 8-36. Percent cover of HMP shrubs at HA 33 compared to success criteria

8.10.3 Discussion and Conclusion

8.10.3.1 HA 33 Discussion

HA 33, a 0.01-acre site, was in Year 13 of monitoring in 2025 and met two of its six success criteria (see Table 8-55). Specifically, the site met the non-native target weed cover and HMP annual density criteria but did not meet the species richness, native vegetation cover, HMP shrub cover, and HMP shrub cover by species criteria.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. The species richness, native vegetation cover, HMP shrub cover, and HMP shrub cover by species criteria were identified as needing intervention. To address these deficiencies, AMP actions included broadcasting an additional 4 pounds of seed and planting 184 targeted shrubs. These AMP plantings at HA 33, particularly of HMP shrubs ARMO and CERI, provide a strong example of how AMP plantings can directly put a site on a trajectory toward meeting its HMP shrub cover and HMP shrub cover by species success criteria, as well as overall restoration objectives. See Figures 8-34, 8-35, and 8-36 for increases in AMP species cover following plantings.

Overall, HA 33 exhibits good species richness, native vegetation cover, established HMP annuals, and measurable progress toward HMP shrub-by-species targets, indicating that restoration actions have successfully promoted self-sustaining habitat conditions.

8.10.3.2 Species Richness Status

The species richness criterion for HA 33 requires the presence of 13 specific native species at the site. In Year 5, four species were absent: DIAU, ERCO, HEAR, and SAME. AMP plantings were implemented in Years 6 and 7 to plant all missing species. By Year 8, all required species were present; however, by Year 13, DIAU and SAME were again absent, and the site did not meet the species richness criterion.

8.10.3.3 Native Vegetative Cover Status

The 40% native vegetative cover success criterion was not yet met. Native cover was 4.96% in Year 5. Corrective measures were implemented in Years 6 and 7 to plant native species. By Year 8, vegetation cover had increased to 12.25%, and by Year 13, it reached 36%, demonstrating a sustained positive trajectory in native plant establishment, but the site has not yet achieved the success criterion.

8.10.3.4 Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. Target weeds were not detected in any monitoring year, demonstrating sustained control of invasive species at HA 33.

8.10.3.5 HMP Shrub Cover Status

The HMP shrub cover class at HA 33 did not meet the baseline cover class of 4 (26–50% absolute cover by HMP shrubs) in any monitoring year. Absolute cover by HMP shrub species was 0.0% in Year 5. In Years 6 and 7, corrective measures were implemented to plant HMP shrubs. By Year 8, HMP shrub cover

remained at 0.0%, and by Year 13, cover had increased to 15.42%, demonstrating measurable progress from AMP plantings of ARMO and CERI; however, the site remained below the success criterion.

8.10.3.6 HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion at HA 33 was not met. This criterion requires ARMO cover $\geq 30\%$ and CERI cover $\geq 5\%$. In Year 5, cover for both ARMO and CERI was 0.0%. AMP plantings were implemented in Years 6 and 7 to plant ARMO and CERI. By Year 8, ARMO and CERI cover remained at 0.0%; however, by Year 13, ARMO cover had increased to 9.17% and CERI to 6.25%, demonstrating significant improvement. While CERI met its cover-by-species criterion, ARMO did not, and the site overall did not meet the HMP shrub cover by species criterion.

8.10.3.7 HMP Annual Density Status

The HA 33 HMP annual density success criterion required Monterey spineflower density to remain within the baseline low-density class. In Year 8, the final year of monitoring for HMP annuals, density within the HA 33 restoration plot met the low-density threshold for Monterey spineflower (Burleson, 2021). Therefore, the HMP annual density success criterion has been met.

8.10.3.8 HA 33 Conclusion

HA 33 received its full SSRP passive restoration prescription in 2011–2012, followed by AMP seeding and planting between 2019 and 2020 to address deficiencies in species richness, native vegetation cover, HMP shrub cover, and HMP shrub cover by species. With 36% native cover, effective invasive species control, and positive trends toward all restoration objectives, the site is on a clear trajectory toward pre-remediation baseline vegetation conditions. Based on these results (Table 8-55), restoration at HA 33 is considered successfully implemented and ecologically self-sustaining.

Table 8-55. Status for Achieving Success Criteria at HA 33

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	13 Required species: ACMI, ARMO, ARTO, BAPI, CERI, CEDE, ERCO, HEAR, CRSC, HOCU, ACGL, DIAU, SAME	No	Yes	No	<p>Year 5: DIAU, ERCO, HEAR, and SAME absent</p> <p>Year 8: met</p> <p>Year 13: DIAU and SAME absent</p> <p>(AMP planting occurred in 2018/2019 and 2019/2020)</p>
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	No	<p>Year 5: 4.92%</p> <p>Year 8: 12.25%</p> <p>Year 13: 36.00%</p> <p>(AMP planting occurred in 2018/2019, 2019/2020)</p>
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	<p>Year 5: 0.00%</p> <p>Year 8: 0.00%</p> <p>Year 13: 0.00%</p>
Objective 3 – No. 4	HMP shrub cover	Cover class 4: 26-50%	No	No	No	<p>Year 5: 0.00%</p> <p>Year 8: 0.00%</p> <p>Year 13: 15.42%</p> <p>(ARMO and CERI planted in 2018/2019 and 2019/2020)*</p>
Objective 3 – No. 4	HMP shrub cover by species	ARMO ≥ 30% CERI ≥ 5%	ARMO = No CERI = No	ARMO = No CERI = No	ARMO = No CERI = Yes	<p>Year 5: ARMO 0.00% CERI 0.00%</p> <p>Year 8: ARMO 0.00% CERI 0.00%</p> <p>Year 13: ARMO 9.17% CERI 6.25%</p> <p>(ARMO and CERI planted in 2018/2019 and 2019/2020)*</p>
Objective 3 – No. 4	HMP annual density	Low density for CHPUP	Yes	Yes	NA	<p>Year 5: met</p> <p>Year 8: met</p> <p>(Year 13 monitoring not required)</p>

*Planted as part of Adaptive Management Plan

8.11 HA 34

HA 34 was used by the Army as a multi-use range that included a closed combat course, machine gun assault course, and mortar range. An estimated total of 26,300 cubic yards of soil were excavated, including erosion control activities, over approximately 9.7 acres. HA 34 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). The lower portion of HA 34 is moderately sloped and oriented east-west with a ridge in the center of the range. The upper portion of HA 34 is steep and highly susceptible to erosion. Adjacent lands range from low to very high-quality habitat.

HA 34 is located on the northeastern portion of Site 39, within the Aromas formation containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for HA 34 included both passive and active restoration consisting of hand broadcast non-irrigated seed, annual weed management activities, and installing native container-grown plants. In 2020, the success criteria for HA 34 were revised due to the marginal response to restoration efforts. Under the revised success criteria: HMP shrub cover class was reduced from three to two and HMP shrub cover by species was reduced for Monterey manzanita, Monterey ceanothus, and Hooker’s manzanita (*Arctostaphylos hookeri*) from 31%, 7%, and 4% respectively, to equal or greater than 1 percent for each species (USFWS, 2020).

Restoration and AMP activities at HA 34 occurred from 2012 to 2024, and quantitative monitoring began in 2016. HA 34 was monitored for 14 years by photo documentation and site visits, nine years for plant survivorship, and five years for species richness and vegetative cover (see Table 8-56). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-37 shows the HA footprint, passive restoration area, active restoration area, and transect survey locations. Success criteria for HA 34 are summarized in Table 8-57.

Table 8-56. Historic Summary of Restoration and Monitoring Activities at HA 34

Activity	Monitoring Years														
				1	2	3	4	5	6	7	8	9	10	11	13
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2027
Restoration, Erosion Control, and Caretaking Activities	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Photo Points and Site Visit	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Species Richness					●	●	●	●			●				●
Vegetative Cover					●	●	●	●			●				●
Plant Survivorship					●	●	●	●	●	●	●	●	●	●	

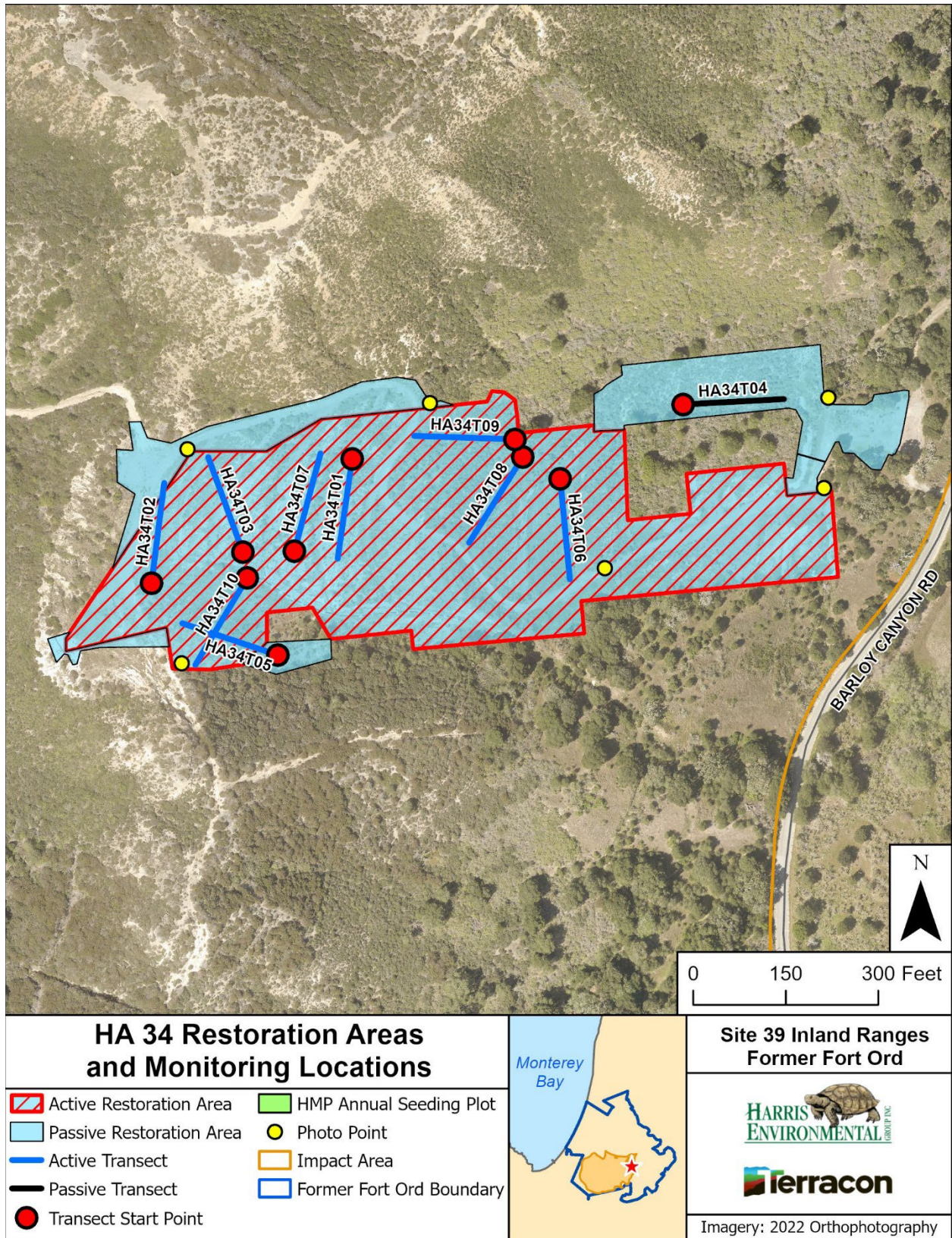


Figure 8-37. HA 34 Restoration Areas and Monitoring Locations Map

Table 8-57. Success Criteria and Acceptable Limits for Restoration of HA 34

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			chamise Monterey manzanita† shaggy-bark manzanita Hooker's manzanita† Monterey ceanothus† sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicated the non-native target weed species ice plant. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 2‡ (1-5% of absolute cover)
			Monterey manzanita percent cover, as an average of transect data, must be equal or greater than 1‡.
			Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 1‡.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Density class: Not applicable

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

‡ Updated success criteria approved by USFWS (USFWS, 2020)

8.11.1 Restoration and Adaptive Management Plan Activities

Harris-Terracon performed AMP seeding at HA 34 in 2025. A total of 6 pounds of native grass seed were broadcast. See Table A-5 and B-8 in Appendix A for details.

8.11.2 Monitoring Results

HA 34 was in year 11 of monitoring in 2025. Plant survivorship monitoring was conducted in addition to photo points and site visits (see Appendix C, page C-12).

8.11.2.1 Plant Survivorship

Plant survivorship monitoring was conducted at HA 34 for plants installed in 2016, 2017, 2019, 2021, 2022, and 2023. 2025 was the final year of survivorship monitoring planned for HA 34 plantings. A total of 13 shrub species and 963 individual plants were monitored for survivorship. By year 3 of monitoring, survivorship was 60% for the 2016 planting, 23% for the 2017 planting, 16% for the 2019 planting, 14% for the 2021 planting, 14% for the 2022 planting, and 38% for the 2023 planting. There are two instances of increases in survivorship from year 2 to year 3 for 2022 plantings (ADFA, BAPI, and CERI) due to more individual plants being found in 2024 monitoring surveys than in 2023. Similarly, there was one instance of an increase in survivorship from year 2 to year 3 for 2023 plantings (CRSC) due to one more individual plant being found in 2025 surveys than in 2024. In 2025, the 2023 planting was in year 3 of survivorship monitoring and survivorship was 38%. Table 8-58 through Table 8-63 present results by species.

Table 8-58. Plant Survivorship Monitoring Summary for 2016 Plantings at HA 34

Species	Planted (# ind.)	Monitored (# ind.)	Year One (2016)	Year Two (2017)	Year Three (2018)
			Alive (%)	Alive (%)	Alive (%)
ADFA	158	16	100	94	94
ARCA	135	14	86	92	79
ARHO*	76	8	62	62	62
ARMO*	76	8	75	75	62
ARTO	76	8	75	38	38
BAPI	95	10	90	90	90
CERI*	132	13	38	25	15
LUAR	95	10	60	10	0
SAME	45	5	100	100	100
Total	888	92	76	66	60

*HMP Species

High ≥ 80%, Moderate = 50 - 79%, and Low ≤ 50%

Table 8-59. Plant Survivorship Monitoring Summary for 2017 Plantings at HA 34

Species	Planted (# ind.)	Monitored (# ind.)	Year One (2017)	Year Two (2018)	Year Three (2019)
			Alive (%)	Alive (%)	Alive (%)
ADFA	372	37	22	20	18
ARCA	208	22	55	38	32
ARHO*	286	32	50	38	33
ARMO*	277	28	36	25	19
ARTO	118	12	33	20	12
BAPI	270	28	86	86	81
CERI*	556	56	27	12	9
LUAL	108	11	18	0	0
LUAR	236	24	21	4	0
SAME	330	34	24	18	16
Total	2,761	284	37	27	23

*HMP Species

High ≥ 80%, Moderate = 50 - 79%, and Low ≤ 50%

Table 8-60. Plant Survivorship Monitoring Summary for 2019 Plantings at HA 34

Species	Planted (# ind.)	Monitored (# ind.)	Year One (2019)	Year Two (2020)	Year Three (2021)
			Alive (%)	Alive (%)	Alive (%)
ADFA	223	21	48	19	19
ARCA	210	21	57	14	19
ARHO*	272	18	56	28	22
ARMO*	148	15	33	20	13
ARTO	199	20	40	5	0
BAPI	248	24	75	52	42
CERI*	266	22	64	36	23
FRCA	10	10	0	0	0
GAEL	9	8	38	0	0
LECA	25	10	20	0	0
LUAR	185	19	5	5	0
SAME	324	32	38	16	16
Total	2,119	220	43	19	16

*HMP Species

High ≥ 80%, Moderate = 50 - 79%, and Low ≤ 50%

Table 8-61. Plant Survivorship Monitoring Summary for 2021 Plantings at HA 34

Species	Planted (# ind.)	Monitored (# ind.)	Year One (2021)	Year Two (2022)	Year Three (2023)
			Alive (%)	Alive (%)	Alive (%)
ADFA	74	9	30	12	22
ARCA	92	10	70	70	60
ARHO*	237	24	4	4	4
ARMO*	171	17	0	0	0
ARTO	94	9	11	0	0
BAPI	92	9	80	50	33
CERI*	227	22	26	14	14
LUAR	92	10	0	0	0
SAME	147	15	27	20	20
Total	1,226	128	23	16	14

*HMP Species

High ≥ 80%, Moderate = 50 - 79%, and Low ≤ 50%

Table 8-62. Plant Survivorship Monitoring Summary for 2022 Plantings at HA 34

Species	Planted (# ind.)	Monitored (# ind.)	Year One (2022)	Year Two (2023)	Year Three (2024)
			Alive (%)	Alive (%)	Alive (%)
ADFA	48	8	78	50	62
ARCA	60	10	33	40	25
ARHO*	48	10	0	0	0
ARMO*	48	10	22	10	0
ARTO	48	10	30	0	0
BAPI	60	8	11	0	11
CERI*	60	10	20	20	25
LUAR	60	10	0	0	0
SAME	94	9	40	11	11
Total	526	85	26	14	14

*HMP Species

High ≥ 80%, Moderate = 50 - 79%, and Low ≤ 50%

Table 8-63. Plant Survivorship Monitoring Summary for 2023 Plantings at HA 34

Species	Planted (# ind.)	Monitored (# ind.)	Year One (2023)	Year Two (2024)	Year Three (2025)
			Alive (%)	Alive (%)	Alive (%)
ADFA	156	10	70	70	70
ARCA	70	9	44	40	30
ARHO*	114	10	100	30	30
ARMO*	89	10	100	30	20
ARTO	66	9	100	0	0
BAPI	60	9	100	70	62
CERI*	119	10	70	40	40
CRSC	213	17	71	67	69
DIAU	118	12	67	42	42
ERCO	104	10	70	20	20
HOCU	189	18	83	76	60
LUAR	65	16	12	0	0
SAME	193	14	79	50	38
Total	1,556	154	72	42	38

*HMP Species

High ≥ 80%, Moderate = 50 - 79%, and Low ≤ 50%

8.11.3 Caretaker of Previous HA

Monterey cypress removal and herbicide application of cut stumps occurred at HA 34 in 2025. Two Monterey cypress trees were removed at HA 34. Tree removal locations are shown in Figure 8-38.

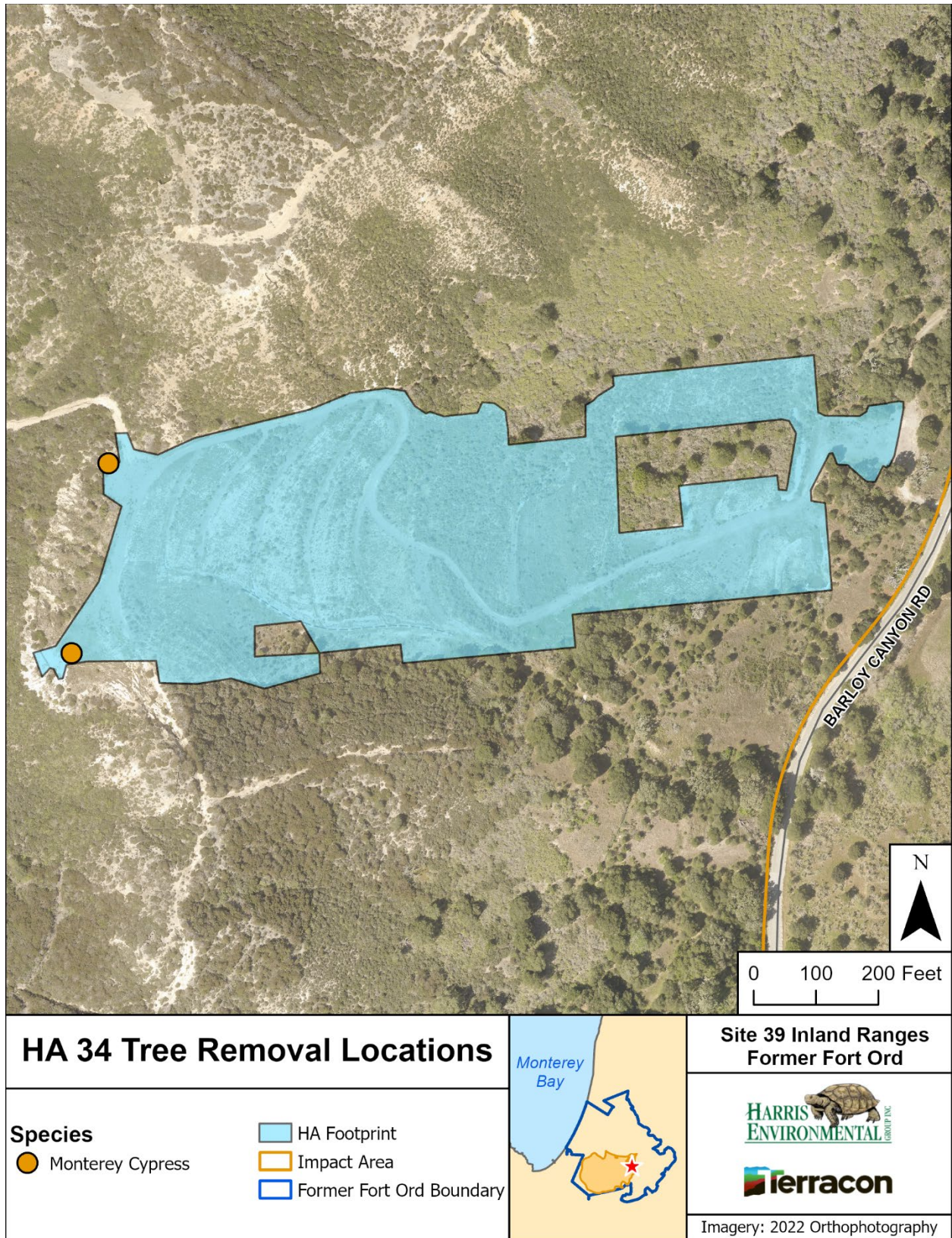


Figure 8-38. 2025 Tree removal locations at HA 34

8.11.4 Discussion

8.11.4.1 Plant Survivorship

Plant survivorship was low for the 2017, 2019, 2021, 2022, and 2023 planting events and moderate for the 2016 planting event at HA 34. The year 3 monitoring of 2023 plantings had a total of 38 percent survivorship. For plant survivorship classifications of each species by planting year, see Table 8-64. Low survivorship for lupine species has been seen at other sites where plant survivorship monitoring occurred; however, there are species (i.e., chamise and black sage) that had low survivorship at HA 34 but had high survivorship elsewhere. The trend of low plant survivorship at HA 34 is likely due to site conditions that are not conducive to plant growth. HA 34 lacks topsoil and is highly compacted; these factors contribute to sheet flow and inhibit water infiltration. Several areas at HA 34 were mulched which should prevent erosion and help with water retention (Kemron, 2018). The 2023 planting was in its final year of monitoring. No future survivorship monitoring is planned for HA 34.

Table 8-64. Plant Survivorship Classifications for All Planting Years at HA 34

Species	Planting Year					
	2016	2017	2019	2021	2022	2023
ADFA	high	low	low	low	moderate	moderate
ARCA	moderate	low	low	moderate	low	low
ARHO*	moderate	low	low	low	low	low
ARMO*	moderate	low	low	low	low	low
ARTO	low	low	low	low	low	low
BAPI	high	high	low	low	low	moderate
CERI*	low	low	low	low	low	low
CRSC	-	-	-	-	-	moderate
DIAU	-	-	-	-	-	low
ERCO	-	-	-	-	-	low
FRCA	-	-	low	-	-	-
GAEL	-	-	low	-	-	-
HOCU	-	-	-	-	-	moderate
LECA	-	-	low	-	-	-
LUAL	-	low	-	-	-	-
LUAR	low	low	low	low	low	low
SAME	high	low	low	low	low	low
Overall Site	moderate	low	low	low	low	low

*HMP Species

High ≥ 80%, Moderate = 50 - 79%, and Low ≤ 50%

8.11.4.2 HA 34 Status

HA 34 was in year 11 of monitoring in 2025 and met three of five success criteria; see Table 8-65 for a summary of the most recent HA status and likelihood of achieving success criteria. An in-depth discussion of past trends and recommendations is available in the 2022 Annual Report (Burluson, 2023). The site will continue to be monitored by photo documentation, species richness meandering transects, and vegetative cover line-intercept transects in monitoring year 13, 2027 (see Table 8-56).

Table 8-65. Status for Achieving Success Criteria at HA 34

Success Criterion	Category	Acceptable Limits	Year 5 (2019) Met	Year 8 (2022) Met	Year 13 (2027)	Results
Objective 1 – No. 1	Species richness	7 required species: ADFA, ARMO, ARTO, ARHO, CERI, DIAU, SAME	Yes	Yes	HIGH	Year 5: met Year 8: met
Objective 1 – No. 2	Native vegetation cover	≥ 40%	Yes	Yes	HIGH	Year 5: 55.17% Year 8: 56.04%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	HIGH	Year 5: 0.00% Year 8: 0.00%
Objective 3 – No. 4	HMP shrub cover‡	Cover class 2: 1-5%	No	No	LOW	Year 5: 0.11% Year 8: 0.10% (ARMO, CERI, and ARHO were planted in 2020/2021, 2021/2022, and 2022/2023)*
Objective 3 – No. 4	HMP shrub cover by species‡	ARMO ≥ 1% CERI ≥ 1% ARHO ≥ 1%	ARMO = No CERI = No ARHO = No	ARMO = No CERI = No ARHO = No	LOW for ARMO LOW for CERI LOW for ARHO	Year 5: ARMO 0.04% CERI 0.00% ARHO 0.07% Year 8: ARMO 0.00% CERI 0.00% ARHO 0.10% (ARMO, CERI, and ARHO were planted in 2020/2021, 2021/2022, and 2022/2023)*
Objective 3 – No. 4	HMP annual density	NA	NA	NA	NA	NA

‡ Success criteria modified in consultation with USFWS (USFWS, 2020)

*Planted as part of Adaptive Management Plan

8.12 HA 36

HA 36 was used by the Army as a grenade and explosive ordnance disposal range. Soil remediation was completed in 2010; 2,750 cubic yards of soil were excavated from 0.5 acres (Shaw, 2008). HA 36 rests within unprotected maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 36 is relatively flat with an east aspect. Adjacent lands are disturbed central maritime chaparral. HA 36 is located in Unit 21, which had a prescribed burn in 2010 to facilitate MEC cleanup, and the unit was monitored for 8 years. All success criteria for Unit 21 were met with an exception of frequency of Monterey ceanothus on sandmat manzanita dominated transects (Burlison 2018).

HA 36 is located on the northeastern portion of Site 39, occurring within the Aromas formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007). Prior to remediation, the site was located within a heavily disturbed area that was approximately 90 percent bare mineral soil, with vegetation cover in the remediation area around 5 percent (Shaw, 2008).

The SSRP prescription for passive restoration at HA 36 consisted of hand broadcast non-irrigated seed and annual weed management activities. HA 36 has some potential for erosion.

Restoration and AMP activities at HA 36 occurred in 2011, 2012, 2016, 2018, 2019, 2020, 2022, 2023, 2024, and 2025; quantitative monitoring began in 2016. HA 36 was monitored for 15 years by photo documentation and site visits and four years for species richness and vegetative cover (see Table 8-66). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-39 shows the HA footprint, passive restoration area, and transect monitoring locations. Success criteria for HA 36 are summarized in Table 8-67.

Table 8-66. Historic Summary of Restoration and Monitoring Activities at HA 36

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•				•		•	•	•		•	•	•	•
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Species Richness						•	•	•		•					•
Vegetative Cover						•	•	•		•					•

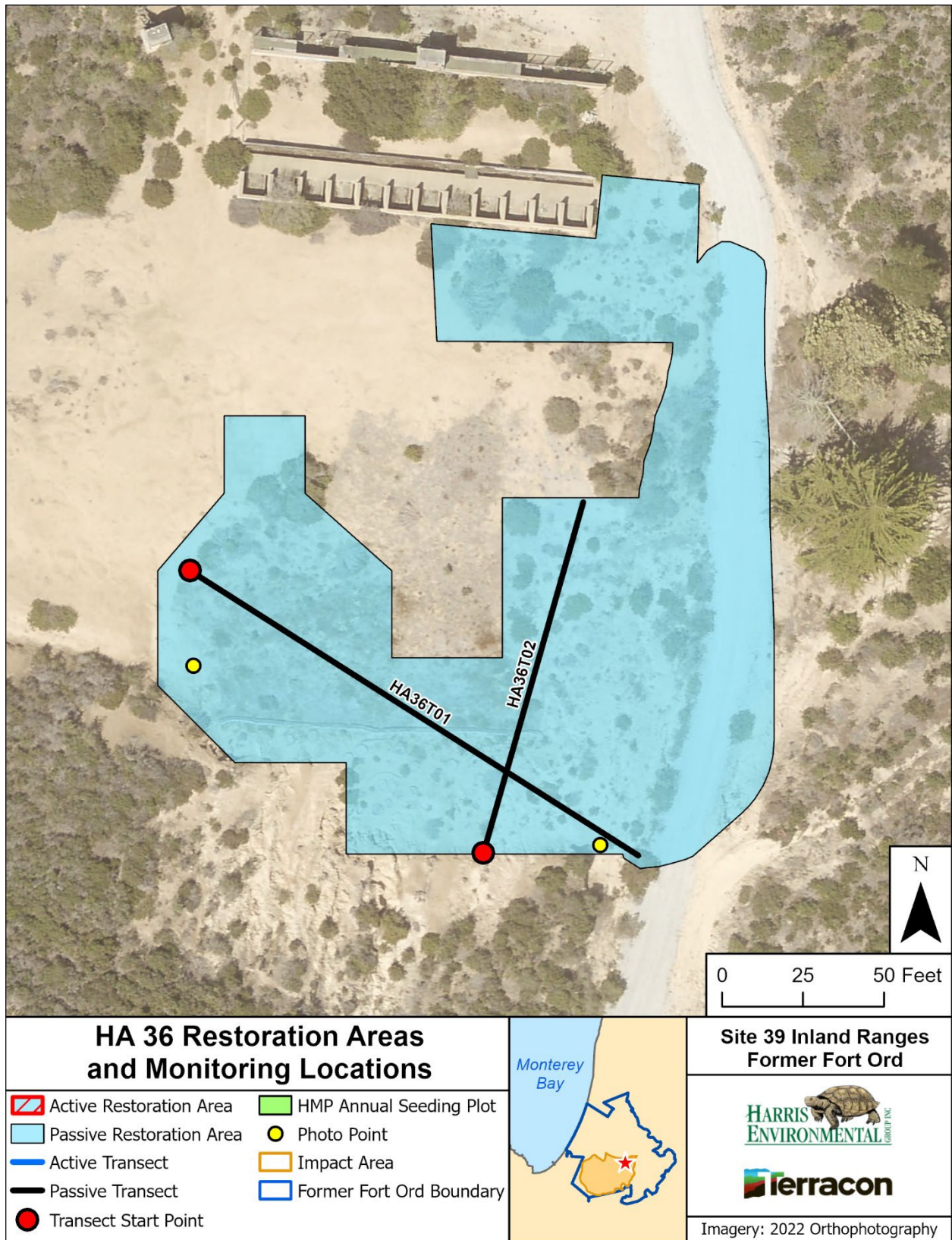


Figure 8-39. HA 36 Restoration Areas and Monitoring Locations Map

Table 8-67. Success Criteria and Acceptable Limits for Restoration of HA 36

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: chamise sandmat manzanita† Monterey manzanita† shaggy-bark manzanita coyote brush Monterey ceanothus† golden yarrow peak rush-rose wedge-leaved horkelia deerweed black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did not indicate non-native target weed species. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 3 (6-25% of absolute cover)
			Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 2.
			Monterey manzanita percent cover, as an average of transect data, must be equal or greater than 9.
			Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 12.
			Hooker's manzanita percent cover, as an average of transect data, must be equal or greater than 1.
			Eastwood's goldenbush percent cover, as an average of transect data, must be equal or greater than 1.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Density class: Not applicable

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.12.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 36 in 2025. HA 36 received its SSRP passive restoration prescription in 2011–2012, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP seeding and planting recommendations were developed to address deficiencies in native vegetation cover, HMP shrub cover, and HMP shrub cover by species (Burlison, 2018; Burlison, 2021). AMP seeding was implemented between 2016 and 2024 (Table 8-68), and AMP plantings were conducted from 2020 to 2023 (Table 8-69). Additionally, a mulch and slow release fertilizer was applied on the site in 2020 to promote vegetation growth. Beyond the original SSRP prescription, HA 36 received 62.5 pounds of native seed, 953 targeted plants, and mulch and fertilizer treatments.

Table 8-68. Summary of Passive Restoration Activities for HA 36

Species	Pounds of Seed Broadcast									
	SSRP	2012 (SSRP)	2016 (AMP)	2018 (AMP)	2019 (AMP)	2020 (AMP)	2022 (AMP)	2023 (AMP)	2024 (AMP)	Total by Species
ACGL	1.000	1.007	1.800	-	-	4.800	0.800	3.630	0.103	12.140
ACMI	-	0.000	0.900	1.200	0.300	4.400	0.400	4.140	0.0001	11.340
ADFA	0.500	0.554	-	-	-	-	-	-	0.021	0.575
ARCA	-	-	-	-	-	-	-	-	0.062	0.062
ARHO*	1.000	1.018	-	-	-	-	-	-	-	1.018
ARMO*	1.000	1.007	-	-	-	-	-	-	-	1.007
ARPU*	0.500	0.563	-	-	-	-	-	-	-	0.563
ARTO	1.000	1.014	-	-	-	-	-	-	-	1.014
BAPI	0.075	0.037	-	-	-	-	-	-	-	0.037
CERI*	0.500	0.252	-	-	-	-	-	-	-	0.252
CRSC	0.500	0.551	-	-	-	-	-	-	0.0001	0.551
ELGL	-	-	1.800	4.000	1.200	1.000	1.000	8.310	0.705	18.015
ERCO	0.150	0.154	-	-	-	-	-	-	-	0.154
ERFA*	0.050	0.089	-	-	-	-	-	-	-	0.089
FRCA	0.500	0.551	-	-	-	-	-	-	-	0.551
HOCU	1.000	1.000	1.800	1.600	0.400	-	-	-	0.029	4.829
<i>Hordeum</i> sp.	4.500	4.510	-	1.200	0.600	-	-	1.550	-	7.860
SAME	0.500	0.551	-	-	-	-	-	-	0.027	0.578
STPU	-	-	1.100	2.500	0.750	0.300	1.000	8.310	0.705	14.665
TOTAL	12.775	12.858	7.400	10.500	3.250	10.500	3.200	25.940	1.652	75.300

* HMP species

Table 8-69. Summary of Active Restoration Activities for HA 36

Species	Number of Individual Plants			Total by Species
	2020 (AMP)	2022 (AMP)	2023 (AMP)	
ACGL	80	-	-	80
ACMI	10	-	-	10
ADFA	37	-	-	37
ARCA	29	-	-	29
ARHO*	50	-	-	50
ARMO*	59	-	59	118
ARPU*	17	50	-	67
ARTO	60	-	-	60
BAPI	23	-	-	23
CERI*	37	-	60	97
CRSC	56	-	-	56
DIAU	50	-	-	50
ERFA*	-	75	-	75
HOCU	76	-	-	76
LUAR	50	-	-	50
SAME	75	-	-	75
TOTAL	709	125	119	953

*HMP species

8.12.2 Monitoring Results

HA 36 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover transect monitoring were completed (see Appendix C, page C-13).

8.12.2.1 Species Richness

Forty-six species were observed at HA 36 in 2025. Of those, 30 were native shrubs or perennials, four were native annual herbaceous species, and 12 were non-native species (see Table 8-70). Species richness decreased by 16 species since 2020. Native shrub and perennial species richness decreased by two, native herbaceous species richness decreased by five, non-native species richness decreased by nine, and uncategorized species richness did not change.

Table 8-70. Species Observed on HA 36, 2025

Scientific Name	Common Name	Code	Category
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Acmispon heermannii var. orbicularis</i>	Heermann's lotus	ACHEO	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Agrostis hallii</i>	Hall's bent grass	AGHA	NP
<i>Aira caryophyllea</i>	silver hair grass	AICA	NNF

<i>Arctostaphylos hookeri*</i>	Hooker's manzanita	ARHO	NP
<i>Arctostaphylos montereyensis*</i>	Monterey manzanita	ARMO	NP
<i>Arctostaphylos pumila*</i>	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Artemisia californica</i>	California sagebrush	ARCA	NP
<i>Avena barbata</i>	slender wild oat	AVBA	NNF
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Bromus hordeaceus</i>	soft chess	BRHO	NNF
<i>Carex sp.</i>	sedge	CA	NP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus*</i>	Monterey ceanothus	CERI	NP
<i>Cortaderia jubata</i>	jubata grass	COJU	NNP
<i>Crocanthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Elymus glaucus</i>	blue wild-rye	ELGL	NP
<i>Ericameria fasciculata*</i>	Eastwood's goldenbush	ERFA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Festuca myuros</i>	rattail sixweeks grass	FEMY	NNF
<i>Frangula californica</i>	California coffeeberry	FRCA	NP
<i>Gamochaeta ustulata</i>	purple cudweed	GAUS	NP
<i>Heterotheca grandiflora</i>	telegraph weed	HEGR	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Madia exigua</i>	little tarweed	MAEX	NF
<i>Plantago coronopus</i>	cut-leaved plantain	PLCO	NNF
<i>Plantago erecta</i>	California plantain	PLER	NF
<i>Pseudognaphalium stramineum</i>	cotton-batting plant	PSST	NP
<i>Quercus agrifolia</i>	coast live oak	QUAG	NP
<i>Rubus ursinus</i>	California blackberry	RUUR	NP
<i>Salix lasiolepis</i>	arroyo willow	SALA6	NP
<i>Salix sp.</i>	willow	SA	NP
<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Senecio glomeratus</i>	cutleaf burnweed	SEGL	NNF
<i>Sisyrinchium bellum</i>	western blue-eyed grass	SIBE	NP
<i>Stipa pulchra</i>	purple needle grass	STPU	NP
<i>Trifolium angustifolium</i>	narrow-leaved clover	TRAN	NNF
<i>Zeltnera davii</i>	Davy's centaury	ZEDA	NF

*HMP Species

8.12.2.2 Vegetative Cover

Harris-Terracon surveyed two 50-meter line-intercept transects at HA 36, the second of which was added in 2025 to better represent vegetative cover on the site. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 12.22%. The mean vegetative cover by native shrubs and perennials was 6.24% greater in 2025 than in 2020. Figure 8-40 presents the percent cover of dominant species at HA 36 in 2016, 2017, 2018, 2020, and 2025. Figure 8-41 shows native vegetative cover compared to success criteria at HA 36. Figure 8-42 shows percent cover of HMP shrubs at HA 36 compared to success criteria.

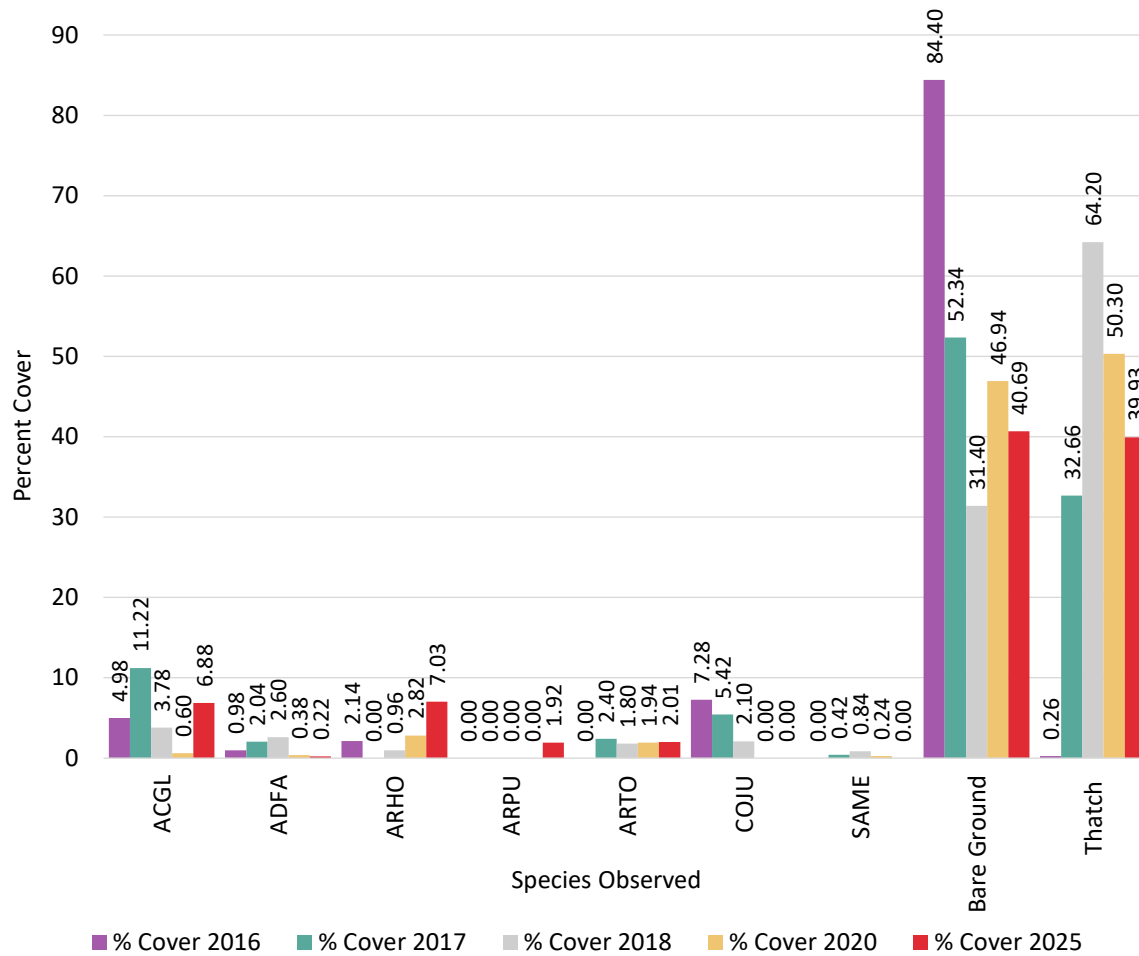


Figure 8-40. Percent cover of dominant species at HA 36

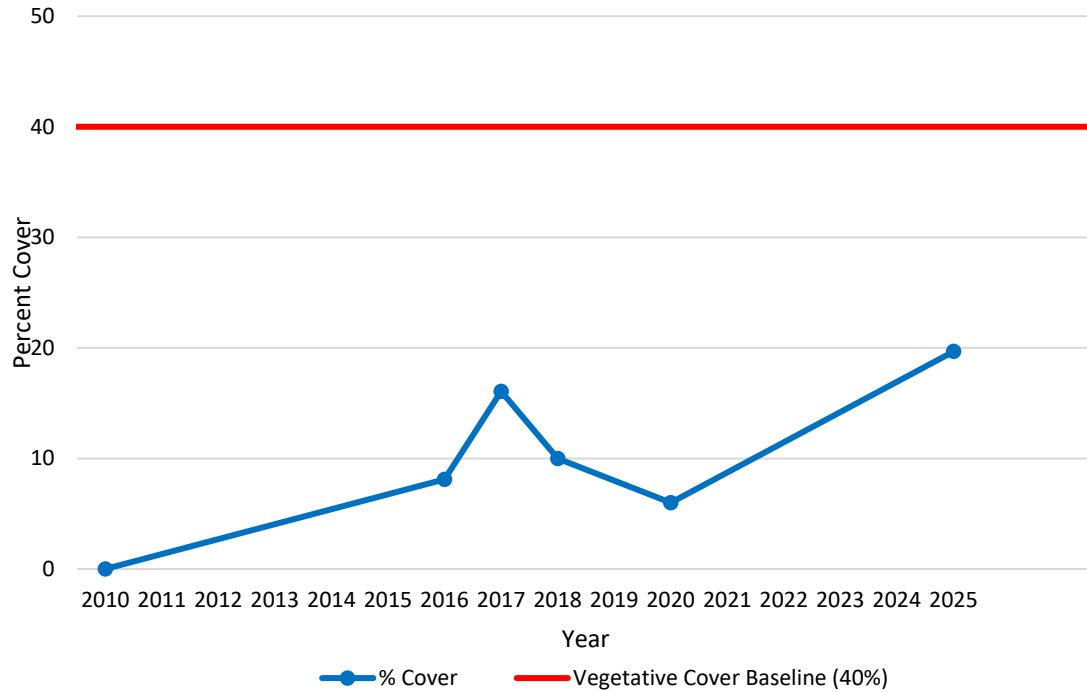


Figure 8-41. Native vegetation cover compared to success criteria at HA 36

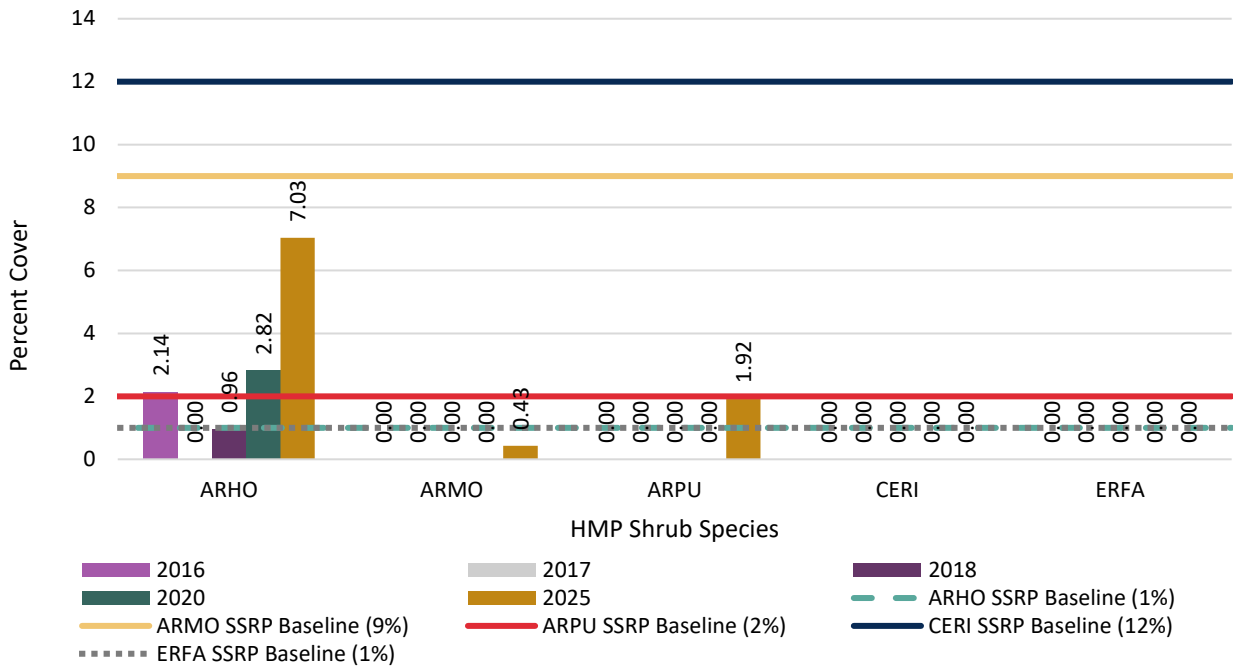


Figure 8-42. Percent cover of HMP shrubs at HA 36 compared to success criteria

8.12.3 Caretaker of Previous HA

Monterey Pine, Monterey Cypress, and Golden Wattle (*Acacia longifolia*) removal and herbicide application of cut stumps occurred at and nearby HA 36 in 2025. Three hundred and ten trees were removed in total at and nearby HA 36 along Tongue Ridge Road. Tree removal locations are shown in Figure 8-43.

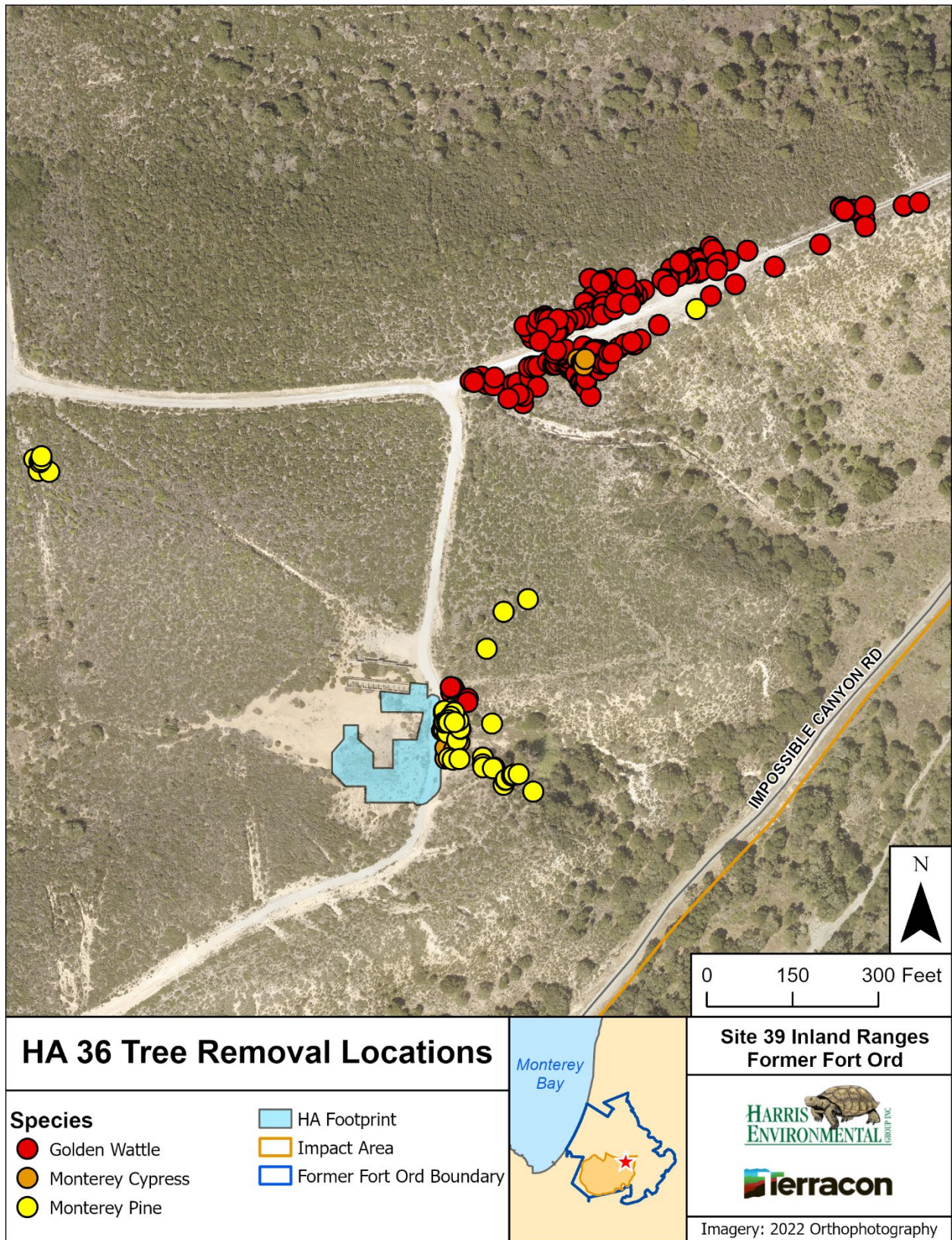


Figure 8-43. 2025 Tree removal at HA 36 and surrounding areas

8.12.4 Discussion and Conclusion

8.12.4.1 HA 36 Discussion

HA 36, a 0.5-acre site, was in Year 13 of monitoring in 2025 and met three of five success criteria (see Table 8-71). Specifically, HA 36 met its species richness, non-native target weed cover, and HMP shrub cover criteria. The site did not meet its native vegetation cover or HMP shrub cover by species criteria.

During initial restoration efforts in 2011–2012, it was noted that HA 36 had more disturbed soil than other restoration sites and would likely require AMP actions. The site is characterized by hardpan soil conditions, which make seeding and planting challenging.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. The native vegetation cover, HMP shrub cover, and HMP shrub cover by species criteria were identified as needing intervention. To address these deficiencies, AMP actions included 62.5 pounds of native seed, 953 native plantings, and mulch and fertilizer treatments.

Overall, HA 36 exhibits strong species richness, effective non-native target weed control, good native vegetation and HMP shrub cover, and measurable progress toward HMP shrub by species targets for most species, indicating that restoration actions have successfully improved site conditions and are supporting continued progress toward restoration objectives.

8.12.4.2 Species Richness Status

The species richness criterion for HA 36 requires the presence of 11 specific native species at the site. This criterion was met in all benchmark monitoring years: Years 5, 8, and 13.

8.12.4.3 Native Vegetative Cover Status

The 40% native vegetative cover success criterion was not achieved by Year 13. Native cover was 16.08% in Year 5. Corrective measures were implemented in Years 5 and 8, including installation of additional native plants and application of mulch and slow-release fertilizer. However, by Year 8, native cover had decreased to 5.98%, largely due to declines in early successional species such as deerweed. Additional corrective measures were implemented in Years 9 and 10 to install HMP shrubs, and during Year 13 monitoring, a second 50-meter transect was established to better represent the site. By Year 13, native cover had increased to 19.67%, demonstrating positive improvement but remaining below the native vegetative cover success criterion.

8.12.4.4 Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met by Year 8. In Year 5, pampas grass cover was 5.42%, and the site did not meet the criterion. Through annual weed management, non-native target weeds were not detected during transect surveys in Year 8 and Year 13, demonstrating control of invasive species at HA 36.

8.12.4.5 HMP Shrub Cover Status

The HMP shrub cover class at HA 36 met the baseline cover class of 3 (6–25% absolute cover by HMP shrubs). Absolute cover by HMP shrub species increased from 0.0% in Year 5 to 2.82% in Year 8. Corrective plantings were implemented in Years 9 and 10, and during Year 13, an additional 50-meter transect was established to better represent the site. By Year 13, HMP shrub cover had reached 9.38%, and HA 36 successfully met this success criterion.

8.12.4.6 HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion at HA 36 was not met. This criterion requires ARPU cover $\geq 2\%$, ARMO cover $\geq 9\%$, CERI cover $\geq 12\%$, ARHO cover $\geq 1\%$, and ERFA cover $\geq 1\%$. In Year 5, none of the HMP shrub species were detected. In Year 8, only ARHO was detected at 2.82%. AMP plantings were implemented in Years 9 and 10 (including 75 ERFA individuals), and in Year 13, an additional 50-meter transect was established to better represent the site. By Year 13, cover was as follows: ARPU 1.92%, ARMO 0.43%, CERI 0.0%, ARHO 7.03%, and ERFA 0.0%. ARHO met the success criterion, ARPU nearly reached its target, ARMO remained low, and CERI and ERFA were not detected on transects; however, CERI was observed elsewhere on the site, and ERFA was not observed despite 75 individuals being planted in Year 10. It is important to note that CERI showed a strong recovery following burn and mastication treatments in the surrounding Unit 21, while ERFA was only detected during the baseline year at very low cover (Burlison, 2018).

8.12.4.7 HA 36 Conclusion

HA 36 received its full SSRP passive restoration prescription in 2011–2012, followed by AMP seeding, planting, mulch application, and fertilizer treatments between 2016 and 2024 to address deficiencies in species richness, native vegetation cover, HMP shrub cover, and HMP shrub cover by species. HA 36 is a highly disturbed site with hardpan soil conditions, making restoration challenging and requiring substantial AMP efforts. Additionally, in Year 13, a second transect was added to better represent site conditions. With 20% native cover, effective invasive species control, and positive trends toward most restoration objectives, the site is on a slow trajectory toward pre-remediation baseline vegetation conditions. Based on these results (Table 8-71), restoration at HA 36 is considered successfully implemented; however, continued weed management is recommended to ensure continued progress toward restoration objectives.

Table 8-71. Status for Achieving Success Criteria at HA 36

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	11 required species: ADFA, ARPU, ARMO, ARTO, BAPI, CERI, ERCO, CRSC, HOCU, ACGL, SAME	Yes	Yes	Yes	Year 5: met Year 8: met Year 13: met
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	No	Year 5: 16.08% Year 8: 5.98% Year 13: 19.67%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	No	Yes	Yes	Year 5: 5.42% Year 8: 0.00% Year 13: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	No	No	Yes	Year 5: 0.00% Year 8: 2.82% Year 13: 9.38% (AMP planting occurred in 2021/22 and 2022/23)
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 2% ARMO ≥ 9% CERI ≥ 12% ARHO ≥ 1% ERFA ≥ 1%	ARPU = No ARMO = No CERI = No ARHO = No ERFA = No	ARPU = No ARMO = No CERI = No ARHO = Yes ERFA = No	ARPU = No ARMO = No CERI = No ARHO = Yes ERFA = No	Year 5: ARPU 0.00% ARMO 0.00% CERI 0.00% ARHO 0.00% ERFA 0.00% Year 8: ARPU 0.00% ARMO 0.00% CERI 0.00% ARHO 2.82% ERFA 0.00% Year 13: ARPU 1.92% ARMO 0.43% CERI 0.00% ARHO 7.03% ERFA 0.00% (AMP planting occurred in 2021/22 and 2022/23)
Objective 3 – No. 4	HMP annual density	NA	NA	NA	NA	NA

8.13 HA 37

HA 37 was used by the Army as a short distance firing range, bazooka range, and rifle grenade range. An estimated total of 19,500 cubic yards of soil were excavated over approximately 11.2 acres. HA 37 rests within unprotected maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 37 is relatively flat and surrounded by low to very high-quality habitat with documented occurrences of California tiger salamander on the range.

HA 37 is located on the northeastern portion of Site 39, within the Aromas formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for HA 37 included both passive and active restoration consisting of hand broadcast non-irrigated seed, annual weed management activities, and installing native container-grown plants. HA 37 has some potential for erosion.

Restoration and AMP activities at HA 37 occurred from 2013 to 2022, 2024 and 2025; quantitative monitoring began in 2014. HA 37 was monitored for 13 years by photo documentation and site visits; seven years for HMP annual density in plots; six years for HMP annual density across the HA; five years for species richness and vegetative cover; and eleven years for plant survivorship (see Table 8-72). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-44 shows the HA footprint, restoration areas, and transect survey locations. Success criteria for HA 37 are summarized in Table 8-73.

Table 8-72. Historic Summary of Restoration and Monitoring Activities at HA 37

Activity	Monitoring Years													
			1	2	3	4	5	6	7	8	9	10	11	13
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2027
Restoration, Erosion Control, and Caretaking Activities	●	●	●	●	●	●	●	●	●	●		●	●	
Photo Points and Site Visit	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Monterey Spineflower Plots			●	●	●	●	●	●		●				
HMP Annual Density across HA				●	●	●	●	●		●				
Species Richness				●	●	●	●			●				●
Vegetative Cover				●	●	●	●			●				●
Plant Survivorship		●	●	●	●	●	●	●	●	●	●	●		

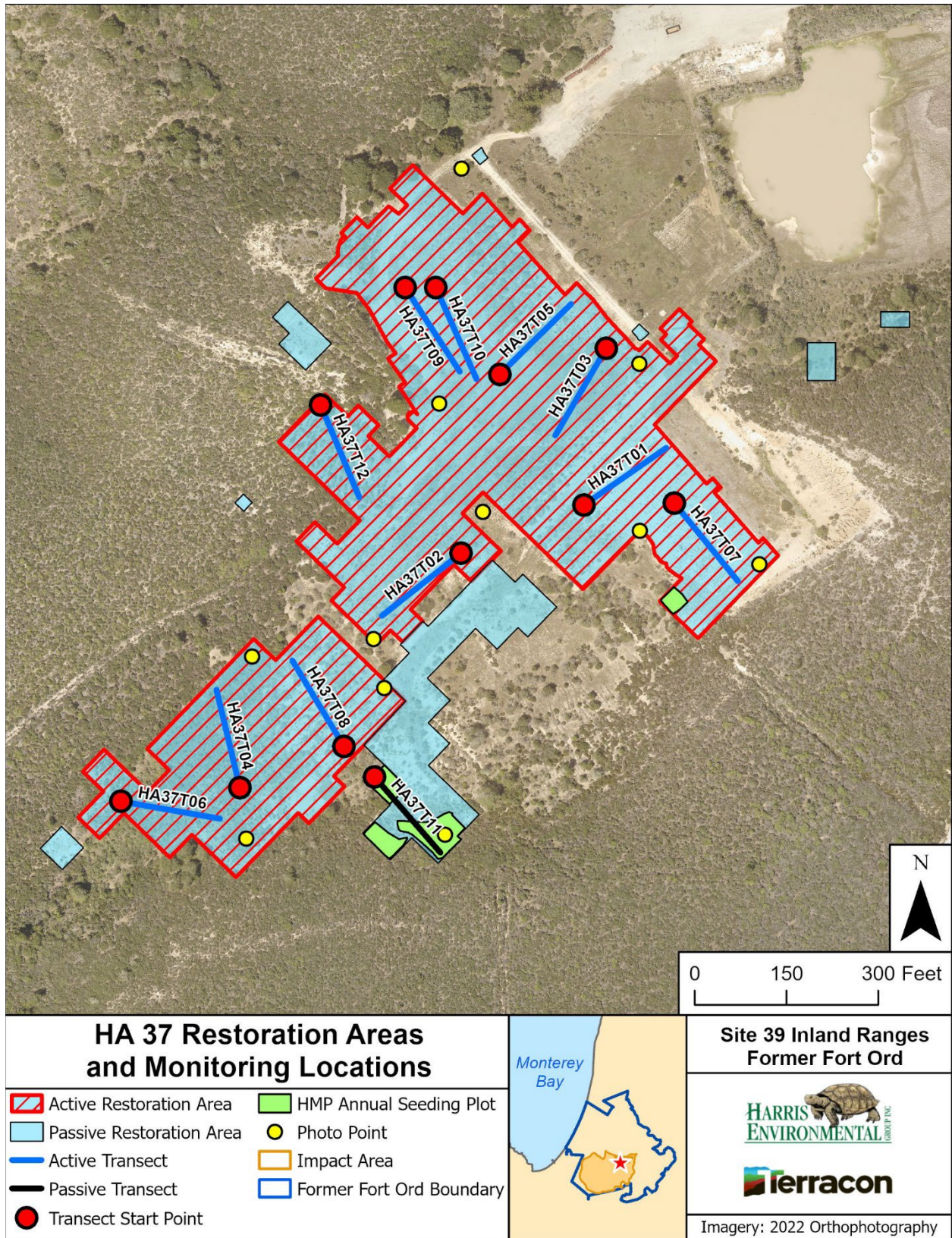


Figure 8-44. HA 37 Restoration Areas and Monitoring Locations Map

Table 8-73. Success Criteria and Acceptable Limits for Restoration of HA 37

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: shaggy-bark manzanita chamise black sage coast silk tassel Monterey manzanita† Monterey ceanothus† sandmat manzanita† coyote brush Hooker's manzanita†
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicates presence of non-native target weed species jubata grass, broom (<i>Genista</i> sp.), and ice plant. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 3 (6-25% of absolute cover)
			Monterey manzanita percent cover, as an average of transect data, must be equal or greater than 4.
			Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 2.
			Hooker's manzanita percent cover, as an average of transect data, must be equal or greater than 1.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.13.1 Restoration and Adaptive Management Plan Activities

Harris-Terracon performed AMP seeding at HA 37 in 2025. A total of 6 pounds of seed were broadcast. See Table A-6 in Appendix A for details.

8.13.2 Monitoring Results

HA 37 was in year 11 of monitoring in 2025. Site visits and photo documentation were completed (see Appendix C, page C-14).

8.13.3 Caretaker of Previous HA

In 2025, caretaker activities at HA 37 included tree removal, seeding, and erosion control. Two Monterey cypress trees were removed, followed by herbicide application to the cut stumps. Additional hand removal of French broom (*Genista monspessulana*) occurred opportunistically when observed along and near the eastern boundary of the HA. Twelve straw wattles were installed on the eastern side of the site, replacing old, deteriorated wattles. Approximately 80 linear feet of minor rills were repaired in the southern portion of the site.

Approximately 28 cubic yards of mulch were broadcast on site. Of that total, 14 cubic yards were applied in three concentrated areas (Figure 8-24), and the remaining 14 cubic yards were spread across larger areas on the eastern and southern portions of the site. All mulched areas were seeded using a 0.2-acre seed mix. Tree removal and concentrated mulch application areas are shown in Figure 8-24.

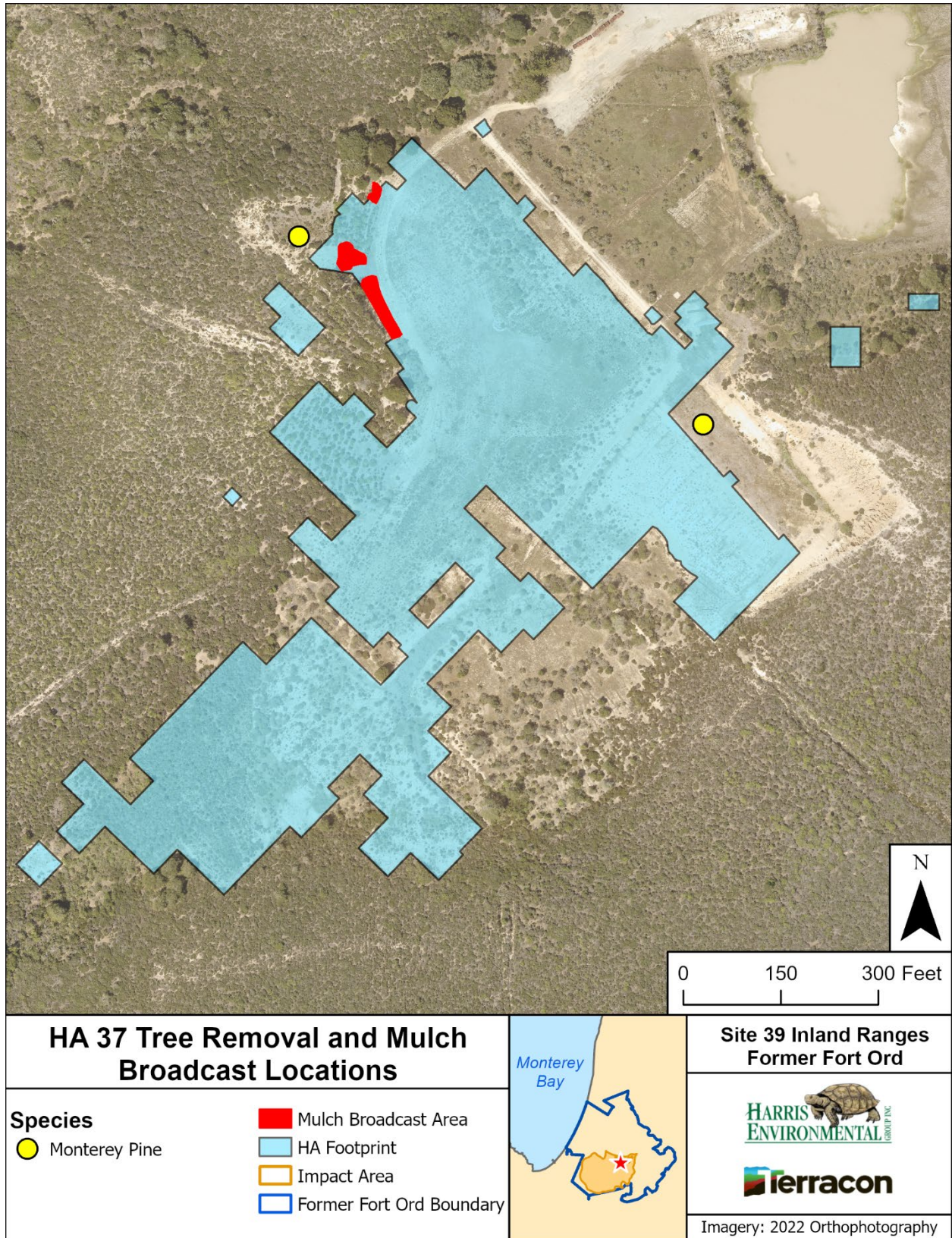


Figure 8-45. 2025 Tree removal and mulch broadcast locations at HA 37

8.13.4 Discussion

8.13.4.1 HA 37 Status

HA 37 was in year 11 of monitoring in 2025. Site visits, photo documentation monitoring, and caretaking activities were conducted (See Appendix B, pages B-9 and B-10). The site will continue to be monitored by photo documentation, species richness meandering transects, and vegetative cover line-intercept transects in year 13, 2027 (see Table 8-72). Table 8-74 summarizes the status of HA 37 including which success criteria were met and projections for meeting criteria at year 13 of monitoring.

Table 8-74. Status for Achieving Success Criteria at HA 37

Success Criterion	Category	Acceptable Limits	Year 5 (2019) Met	Year 8 (2022) Met	Likelihood of Achieving Success by Year 13 (2027)	Results
Objective 1 – No. 1	Species richness	9 Required species: ADFA, ARHO, ARMO, ARPU, ARTO, BAPI, CERI, GAEL, SAME	Yes	Yes	HIGH	Year 5: met Year 8: met
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	HIGH	Year 5: 27.01% Year 8: 36.60%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	HIGH	Year 5: 0.00% Year 8: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	No	Yes	HIGH	Year 5: 3.56% Year 8: 6.55%
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 2% ARMO ≥ 4% CERI ≥ 2% ARHO ≥ 1%	ARPU = No ARMO = No CERI = No ARHO = No	ARPU = No ARMO = No CERI = Yes ARHO = Yes	MODERATE for ARPU HIGH for ARMO HIGH for CERI HIGH for ARHO	Year 5: ARPU 0.31% ARMO 0.88% CERI 1.73% ARHO 0.64% Year 8: ARPU 0.85% ARMO 2.18% CERI 2.29% ARHO 1.24% (ARPU, ARMO, CERI, and ARHO planted in 2021/2022)*
Objective 3 – No. 4	HMP annual density	Low density for CHPUP	Yes	Yes	NA	(Year 13 monitoring not required)

*Planted as part of Adaptive Management Plan

8.14 HA 38

HA 38 was used by the Army as a firing range. Soil was excavated over 1.01 acres. HA 38 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 38 is moderately sloped and surrounded by low to very high-quality habitat.

HA 38 is located on the northeastern portion of Site 39, occurring within the Aromas formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for HA 38 included both passive and active restoration consisting of hand broadcast non-irrigated seed, annual weed management activities, and installing native container-grown plants. HA 38 is moderately sloped and has little potential for erosion.

Restoration and AMP activities at HA 38 occurred from 2013 to 2015, in 2017, 2020, 2021, and 2025; quantitative monitoring began in 2014. Additional seed was broadcast in 2020 and 2021 and additional plants were installed in 2021. HA 38 was monitored for 13 years by photo documentation and site visits, eight years for HMP annual density in plots, seven years for HMP annual density across the HA, four years for plant survivorship, and five years for species richness and vegetative cover (see Table 8-75). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-46 shows the HA footprint, passive restoration area, active restoration area, and transect survey locations. Success criteria for HA 38 are summarized in Table 8-76.

Table 8-75. Historic Summary of Restoration and Monitoring Activities at HA 38

Activity	Monitoring Years													
			1	2	3	4	5	6	7	8	9	10	11	13
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2027
Restoration, Erosion Control, and Caretaking Activities	•	•	•		•			•	•				•	
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Monterey Spineflower Plots			•	•	•	•	•	•	•	•			•	
Sand Gilia Plots						•	•	•	•	•	•	•	•	
Seaside Bird’s Beak Plot									•	•	•	•	•	
HMP Annual Density across HA				•	•	•	•	•	•	•			•	
Species Richness				•	•	•	•			•	•			•
Vegetative Cover				•	•	•	•			•				•
Plant Survivorship		•	•	•	•									

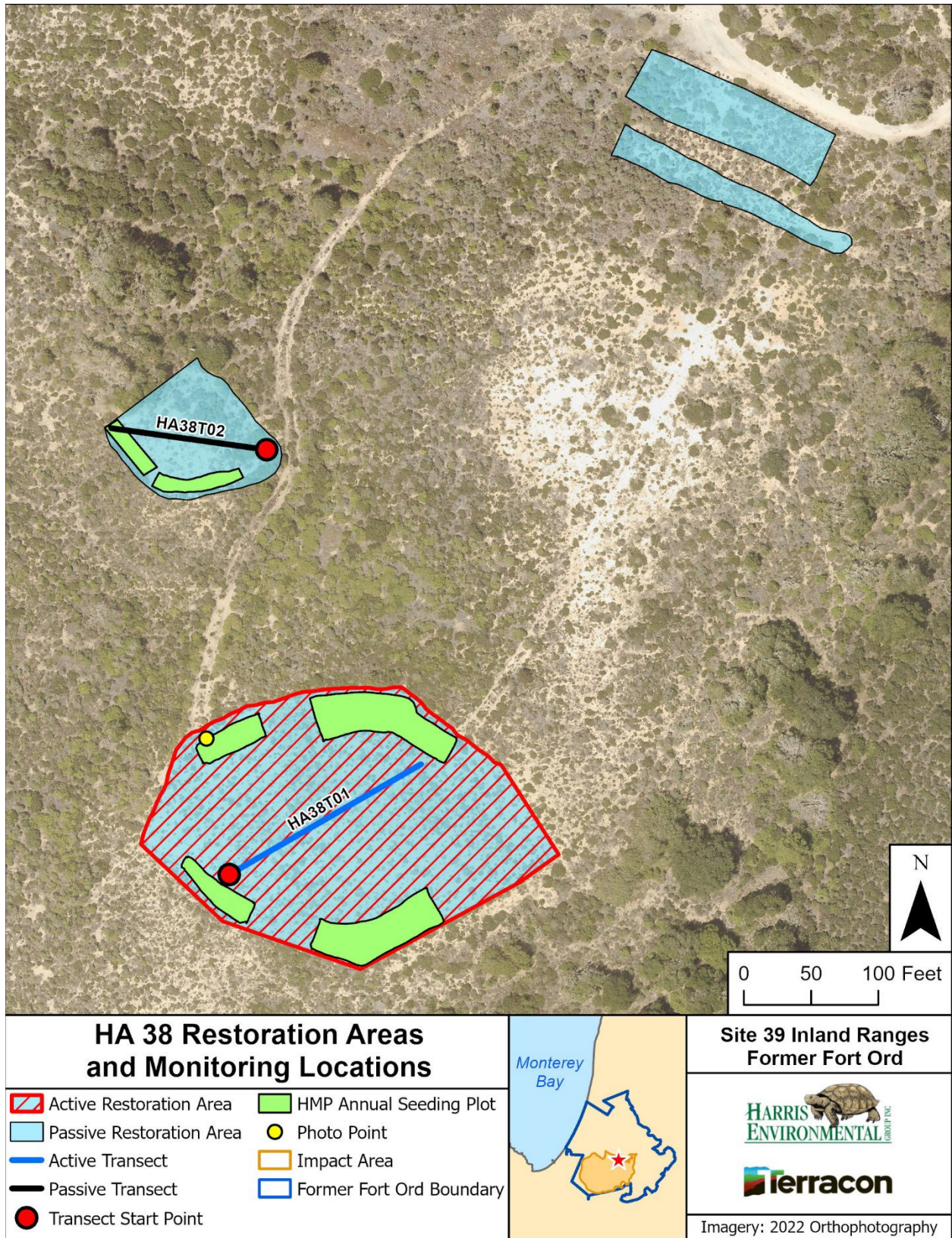


Figure 8-46. HA 38 Restoration Areas and Monitoring Locations Map

Table 8-76. Success Criteria and Acceptable Limits for Restoration of HA 38

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			shaggy-bark manzanita chamise coyote brush deerweed black sage Monterey manzanita† Monterey ceanothus† sandmat manzanita† Hooker's manzanita†
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 20 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicates presence of non-native target weed species <i>Carpobrotus edulis</i> (ice plant). No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 2 (1-5% of absolute cover)
			Monterey manzanita percent cover, as an average of transect data, must be equal or greater than 1.
			Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 1.
HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Hooker's manzanita percent cover, as an average of transect data, must be equal or greater than 1.	
		Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 4.	
			Monterey spineflower density class: Low Sand gilia density class: Low Seaside bird's beak density class: Low

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.14.1 Restoration and Adaptive Management Plan Activities

Harris-Terracon performed AMP seeding at HA 38 in 2025. A total of 3 pounds of native grass seed were broadcast to support overall cover. See Figure A-6 and Table A-7 in Appendix A for details.

8.14.2 Monitoring Results

HA 38 was in year 11 of monitoring in 2025. Year 11 was not a required monitoring year, however HMP annual density surveys were completed due to HMP seeding plots being established in multiple different years. Photo documentation was also completed (see Appendix C, page C-15).

8.14.2.1 HMP Annual Density

Monterey spineflower, sand gilia, and seaside bird’s beak restoration plots were monitored for density at HA 38 in 2025.

Five Monterey spineflower restoration plots were monitored for year 8 (Plots 2-5) and year 11 (Plot 1) density at HA 38 in 2025. The plots are numbered 1-5 on (Figure 8-48) and are located throughout HA 38. Monterey spineflower density was low at Plots 1, 2, 3, and 5. Monterey spineflower was not present at Plot 4. Figure 8-47 presents Monterey spineflower restoration plot densities for HA 38 throughout all monitoring years.

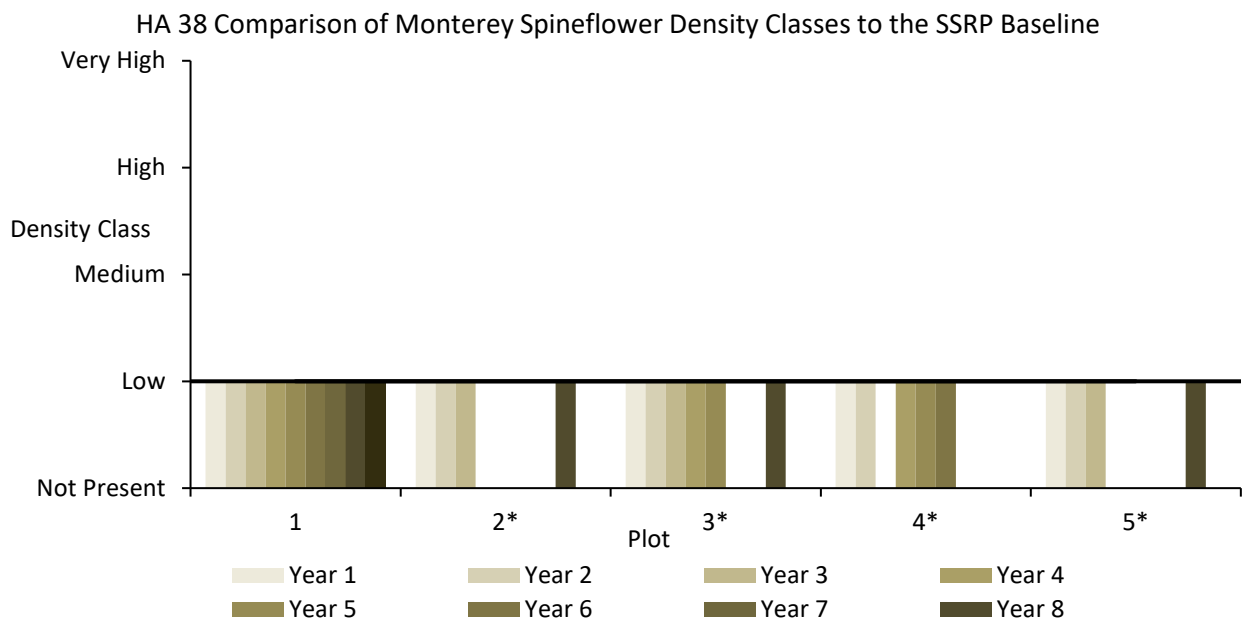


Figure 8-47. Monterey spineflower plot density at HA 38

*Plots 2, 3, 4, and 5 were seeded in 2018 and therefore were in year 8 in 2025

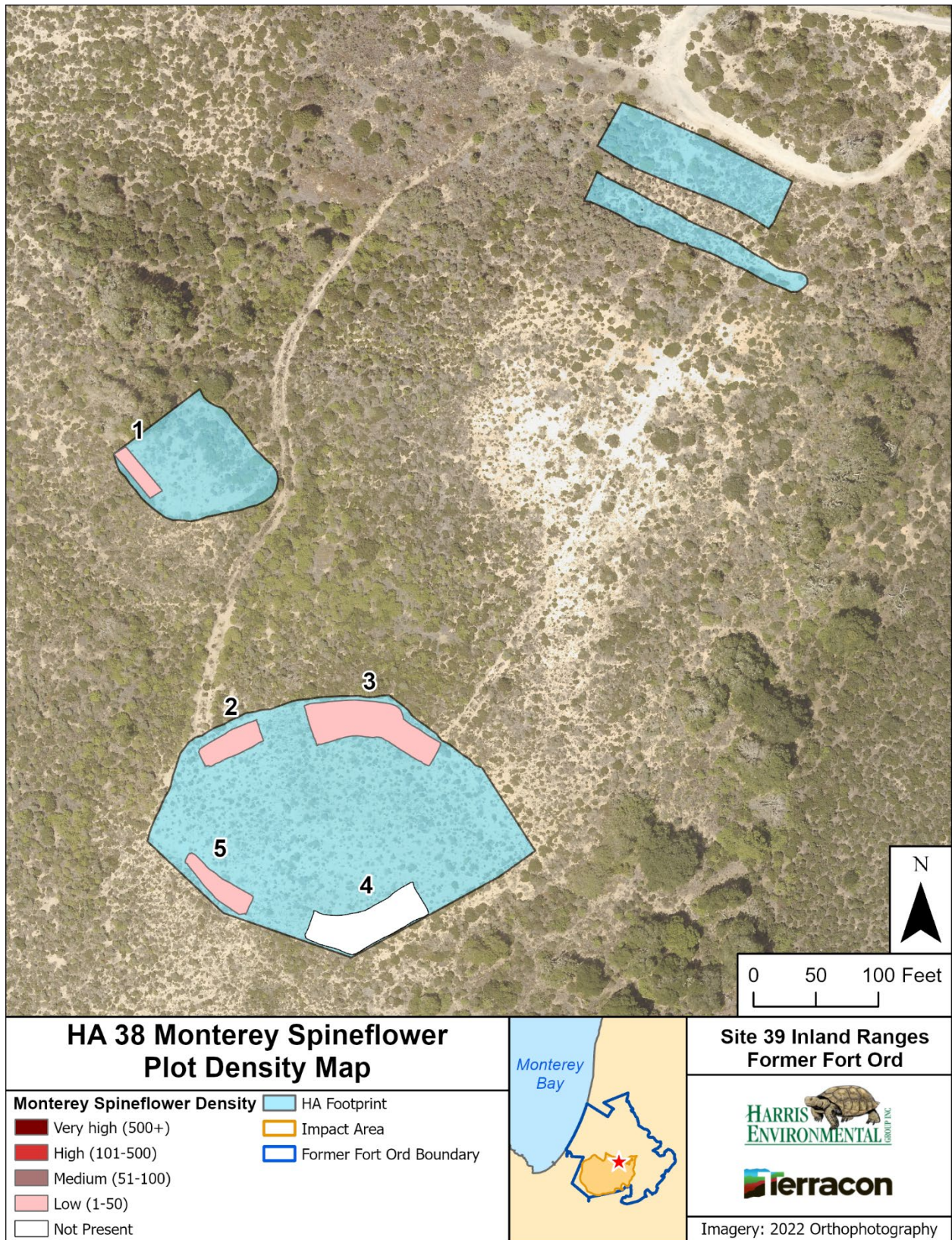


Figure 8-48. HA 38 Year 11 (Plot 1) and Year 8 (Plots 2-5) Monterey spineflower Plot Density Map

Four sand gilia restoration plots (Plots 1-4) were monitored for year 8 density at HA 38 in 2025, and Plot 5 was monitored for year 5 density. The plots are numbered 1-4 on Figure 8-50 and are located throughout HA 38. Sand gilia density was low at Plots 1, 2, 3, and 4. Figure 8-49 presents sand gilia restoration plot densities for HA 38 throughout all monitoring years.

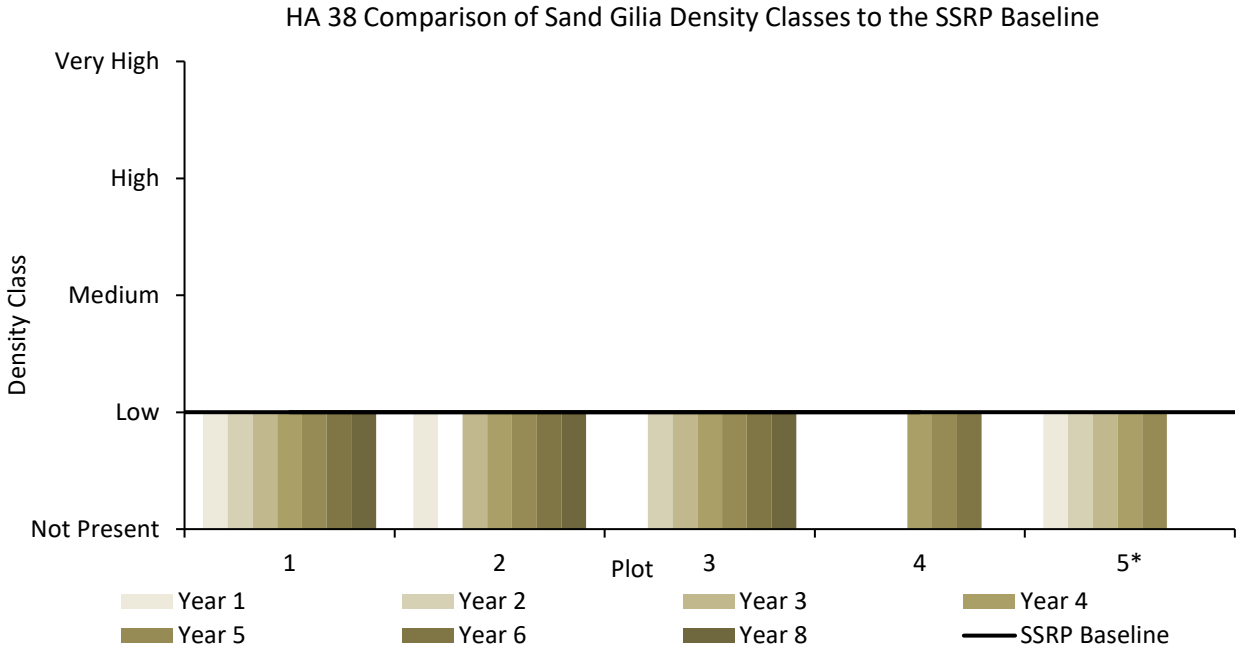


Figure 8-49. Sand gilia plot density at HA 38
 *Plot 5 was seeded in 2021 and therefore was in year 5 in 2025

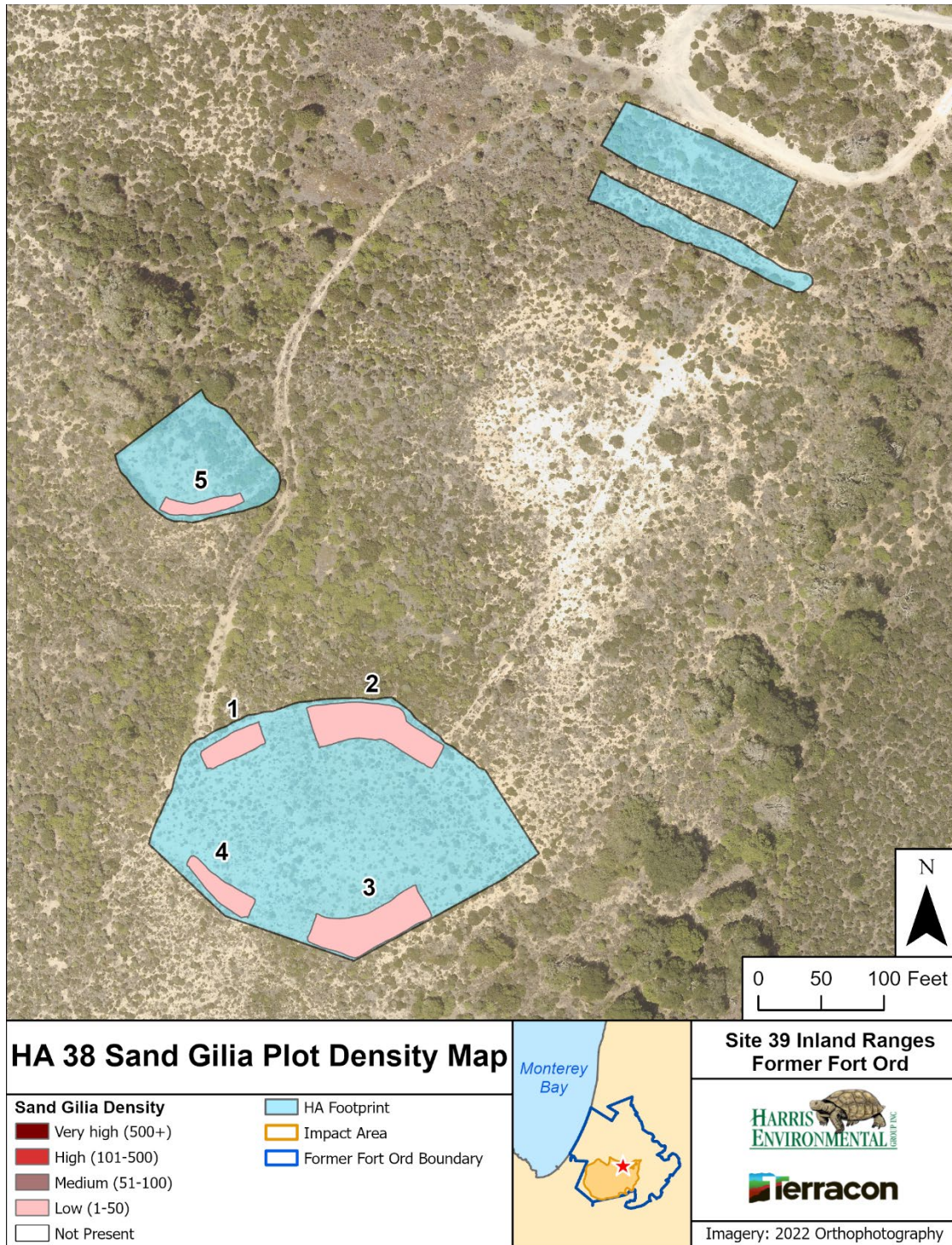


Figure 8-50. HA 38 Year 5 (Plot 5) and Year 8 (Plots 1-4) Sand Gilia Plot Density Map in 2025

One seaside bird’s beak restoration plot was monitored for year 5 density at HA 38 in 2025. The plot is numbered 1 on Figure 8-52 and is located in the southern part of the site. Seaside bird’s beak density was low at Plot 1. Figure 8-51 presents seaside bird’s beak restoration plot densities for HA 38.

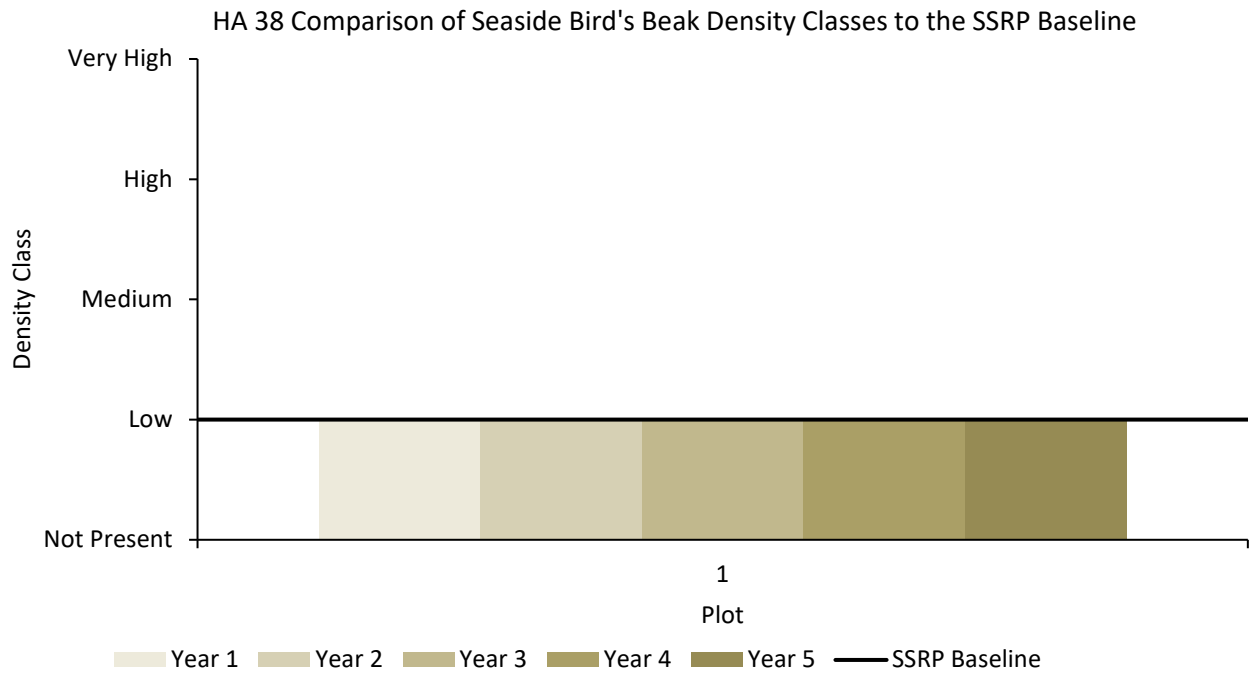


Figure 8-51. Seaside bird's beak plot density at HA 38

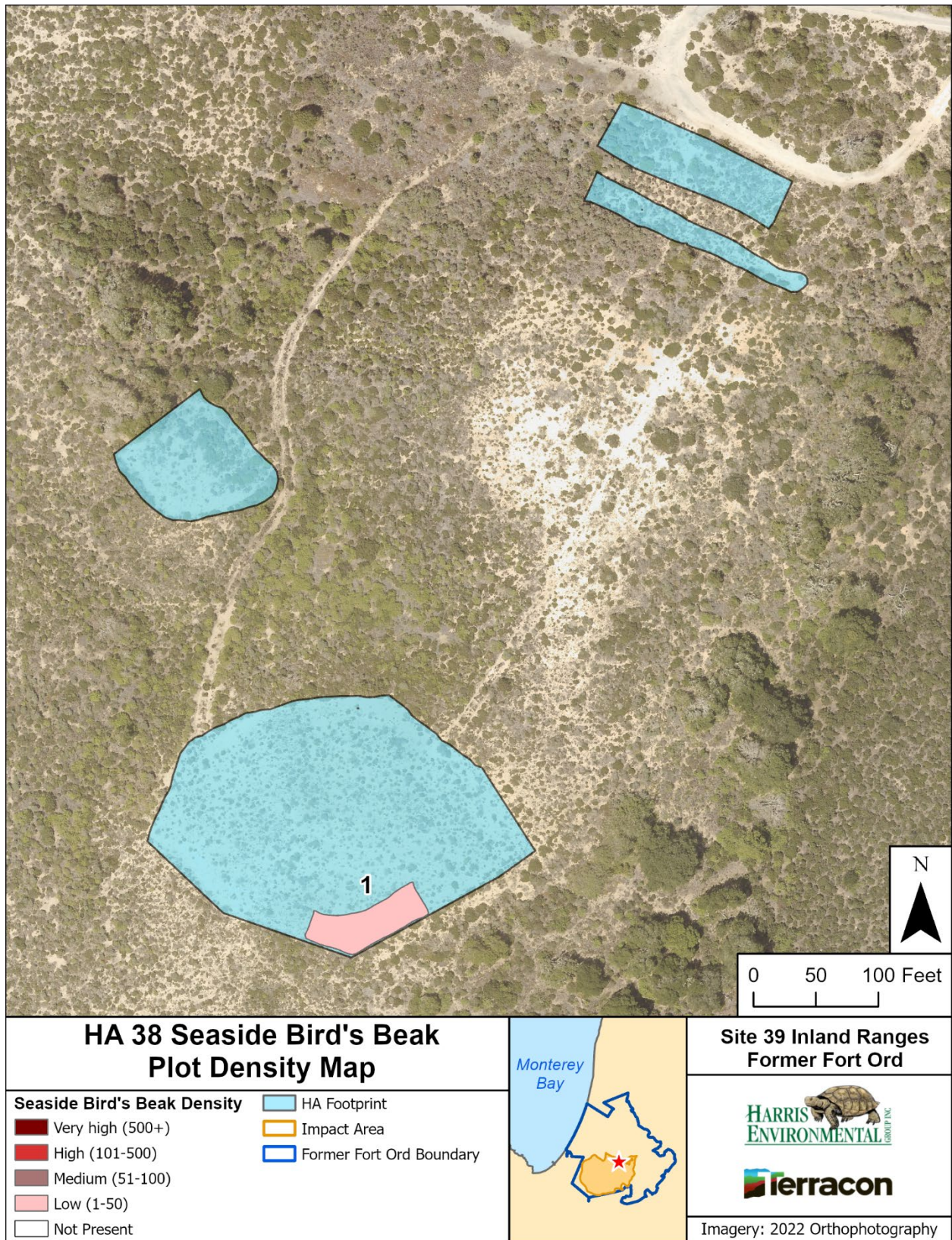


Figure 8-52. HA 38 Year 5 seaside bird's beak plot density

HMP annual density monitoring included mapping discrete patches of HMP annuals within the restoration area but outside of the HMP annual restoration plots. This survey was completed for Monterey spineflower, sand gilia, and seaside bird’s beak at HA 38.

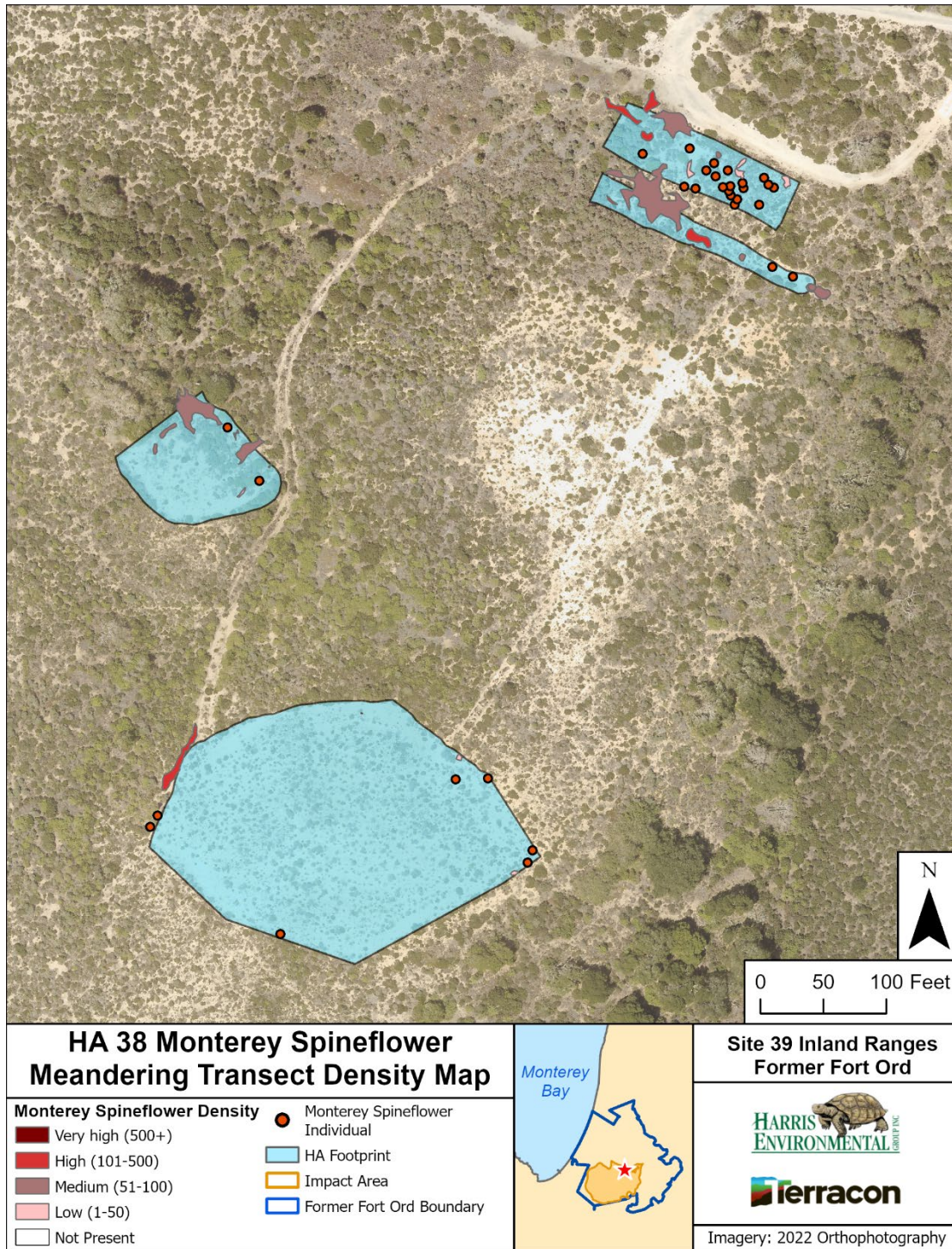


Figure 8-53. HA 38 Monterey spineflower meandering transect density

Fifty-one individual plants and 26 discrete patches of Monterey spineflower were mapped and individual plants were counted within each patch (see Figure 8-53). The densities ranged from low to very high and the total acreage of Monterey spineflower patches with a density at or above the SSRP baseline density class of low was 0.075 acre. From 2022 to 2025, the density range remained the same and acreage above the SSRP baseline increased.

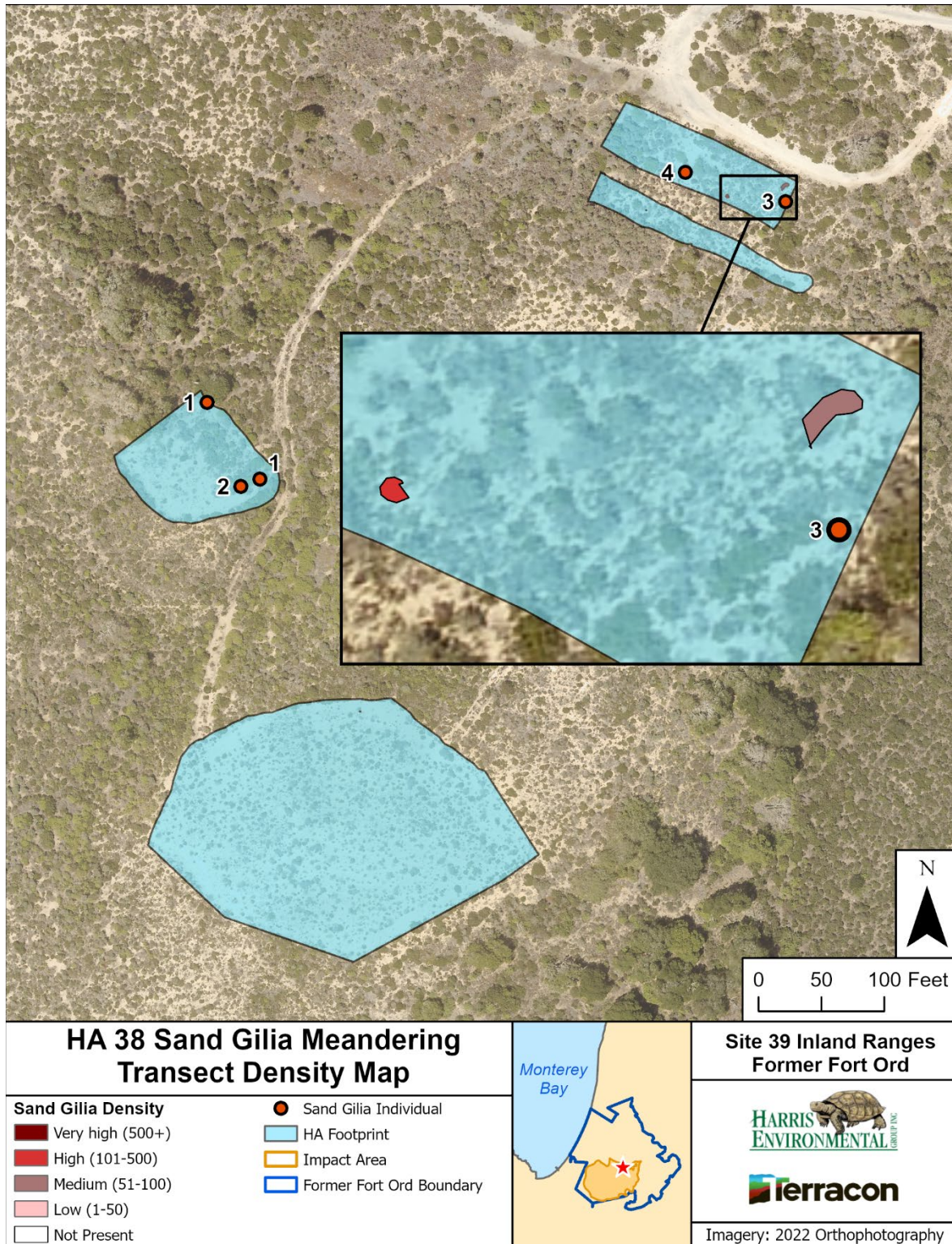


Figure 8-54. HA 38 sand gilia meandering transect density

Eleven individual plants and two discrete patches of sand gilia were mapped and individual plants were counted within each patch (Figure 8-54). Densities ranged from low to high and the total acreage of

sand gilia patches with a density at or above the SSRP baseline density class of low was 0.001 acre. From 2022 to 2025, the density range and acreage above the SSRP baseline remained the same.

Seaside bird's beak was not observed at HA 38 outside of the SSRP plot which is consistent with previous monitoring years.

8.14.3 Discussion

8.14.3.1 HMP Annual Density Status

The HA 38 HMP annual density success criterion required Monterey spineflower, sand gilia, and Seaside bird's beak densities to remain within the baseline low-density class.

Monterey spineflower density was within the acceptable limit for HMP annual density at HA 38. The SSRP baseline density class for Monterey spineflower was low. Year 8 and year 11 Monterey spineflower restoration plot results show that the density met the success criterion under Objective 3 in four out of five plots. In addition, Monterey spineflower was present outside the restoration plots. Discrete patches, with density that met or exceeded the success criterion, covered 0.075 acre. From 2022 to 2025, the density range remained the same and acreage above the SSRP baseline increased.

Sand gilia density was within the acceptable limit for HMP annual density at HA 38. The SSRP baseline density class for sand gilia was low. Year 5 and year 8 sand gilia restoration plot results show that the density met the success criterion under Objective 3 for five out of five plots. In addition, sand gilia was present outside the restoration plots. Discrete patches, with density that met or exceeded the success criterion, covered 0.001 acres of HA 38. From 2022 to 2025, the density range and acreage above the SSRP baseline remained the same.

Seaside bird's beak was within the acceptable limit for HMP annual density at HA 38. The SSRP baseline density class for seaside bird's beak was low. Year 5 seaside bird's beak restoration plot results show that the density met the success criterion under Objective 3. Seaside bird's beak was not observed outside of the restoration plot.

Monterey spineflower, sand gilia, and seaside bird's beak restoration plot results indicated that all HMP species met the success criterion in 2025.

8.14.3.2 HA 38 Conclusion

HA 38 was in year 11 of monitoring in 2025. HMP annual density monitoring was conducted due to some SSRP plots being in benchmark monitoring years due to multiple years of establishment. Meandering transect monitoring for HMP annuals was also conducted. Monterey spineflower monitoring is complete for HA 38 at all plots. Sand gilia plot 5 will be monitored once more for year 8 in 2028. Seaside bird's beak plot 1 will also be monitored for year 8 in 2028.

The site will continue to be monitored in Year 13 (2027) through photo documentation, species richness meander transects, and vegetative cover line-intercept transects (see Table 8-75). Table 8-77 summarizes the status of the HA, including which success criteria have been met and the likelihood of meeting remaining criteria by Year 13.

Table 8-77. Status for Achieving Success Criteria at HA 38

Success Criterion	Category	Acceptable Limits	Year 5 (2019) Met	Year 8 (2022) Met	Likelihood of Achieving Success by Year 13 (2027)	Results
Objective 1 – No. 1	Species richness	9 Required species: AGL, ADFA, ARHO, ARMO, ARPU, ARTO, BAPI, CERI, SAME	Yes	Yes	HIGH	Year 5: met Year 8: met
Objective 1 – No. 2	Native vegetation cover	≥ 20%	Yes	Yes	HIGH	Year 5: 43.47% Year 8: 27.71% (LUCH/LUAL cover decreased by 19.74% between years 5 and 8)
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	HIGH	Year 5: 0.00% Year 8: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 2: 1-5%	Yes	Yes	HIGH	Year 5: 2.29% Year 8: 4.07%
Objective 3 – No. 4	HMP shrub cover by species	ARMO ≥ 1% CERI ≥ 1% ARHO ≥ 1% ARPU ≥ 4%	ARMO = No CERI = No ARHO = No ARPU = No	ARMO = Yes CERI = No ARHO = No ARPU = No	HIGH for ARMO LOW for CERI LOW for ARHO MODERATE for ARPU	Year 5: ARMO 0.61% CERI 0.00% ARHO 0.00% ARPU 1.68% Year 8: ARMO 1.88% CERI 0.00% ARHO 0.00% ARPU 2.19% (CERI planted in 2020/2021)*
Objective 3 – No. 4	HMP annual density	Low density for CHPUP, GITEA, and CORIL	Yes GITEA Yes CHPUP Yes CORIL	TBD GITEA Yes CHPUP TBD CORIL	NA	Year 8 monitoring for remaining GITEA and CORIL plots will occur in 2028

*Planted as part of Adaptive Management Plan

8.15 HA 39/40

HA 39/40 was used by the Army as a small-arms firing range. Soil remediation was completed in 2010; approximately 6,500 cubic yards of soil were excavated from 2.4 acres (Shaw, 2008). HA 39/40 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 39/40 is broken up into four distinct areas. Plots 1-4 are located in the upland zone of a vernal pool with surface water runoff from the south draining towards the north into the vernal pool. Plot 1 is grassland habitat, Plot 2 is a combination of grassland and wet meadow, Plot 3 is wet meadow which can be submerged depending on the water-year, and Plot 4 is a combination of coastal scrub and grassland which includes the active restoration area. HA 39/40 is located within Unit 22, which had a prescribed burn in 2008 to facilitate MEC cleanup. Unit 22 was monitored for 8 years and met all success criteria (Burlinson, 2016).

HA 39/40 is located on the northeastern portion of Site 39, occurring within the Aromas formation containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for HA 39/40 included both passive and active restoration, consisting of hand-broadcast, non-irrigated seed and the installation of native container-grown plants. HA 39/40 is relatively flat to moderately sloped and has some potential for erosion; special care should be taken to prevent runoff from entering the vernal pool.

The HA 39/40 area consists of multiple habitats: grassland, ruderal grassland with a wet meadow component, and coastal scrub (Burlinson, 2010; Shaw, 2009a). The SSRP divided the site into four plots (zones) to develop plant palettes for each area. The SSRP plant palettes for each plot were based on baseline transects within the vicinity of each habitat zone and were supplemented with species appropriate for each plot. Baseline transects represent SSRP Plots 1, 3, and 4 (Figure 8-56); no baseline data exist for Plot 2. Based on these baseline data, native species cover was estimated at 24.1% for Plot 1, 22.7% for Plot 3, and 10.3% for Plot 4. Plot 1 contained four native species and was dominated by clustered field sedge (*Carex praegracilis*) and rattail sixweeks grass (*Festuca myuros*). Plot 3 had one native species and was dominated by clustered field sedge and ripgut brome (*Bromus diandrus*). Plot 4 had 16 native species across three transects and was dominated by ripgut brome with a mix of non-native grasses and common yarrow (*Achillea millefolium*), with all other native species averaging approximately 1% cover or less. Both ripgut brome and rattail sixweeks grass are non-native species.

Restoration and AMP activities at HA 39/40 occurred from 2011 to 2013, and in 2020, 2021, 2024, and 2025; quantitative monitoring began in 2013. HA 39/40 was monitored for 15 years by photo documentation and site visits, eight years for HMP annual density in plots, five years for HMP annual density across the HA, and four years for species richness and vegetative cover (see Table 8-78). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-55 shows the HA footprint, passive restoration area, active restoration area, and transect survey locations. Success criteria for HA 39/40 are summarized in Table 8-79.

Table 8-78. Historic Summary of Restoration and Monitoring Activities at HA 39/40

Activity	Monitoring Years													
			1	2	3	4	5	6	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•	•						•	•			•	•
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Monterey Spineflower Plots			•	•	•	•	•	•	•					
Sand Gilia Plots			•	•	•	•	•	•	•	•				
Seaside Bird's Beak Plots			•	•	•	•	•	•	•					
HMP Annual Density across HA						•	•	•	•	•				
Species Richness						•	•	•	•					•
Vegetative Cover						•	•	•	•					•
Caretaker/Tree Removal														•

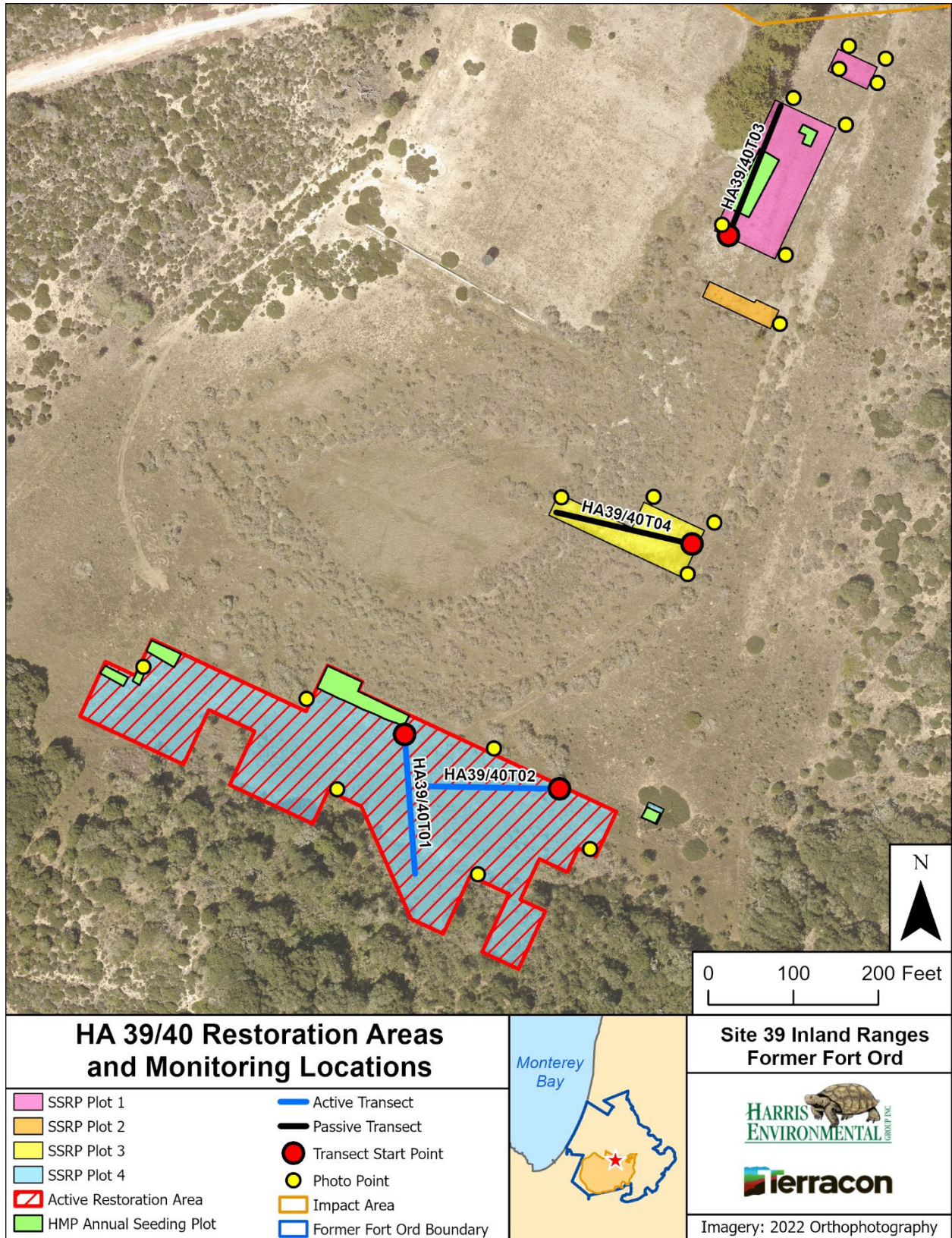


Figure 8-55. HA 39/40 Restoration Areas and Monitoring Locations Map

Table 8-79. Success Criteria and Acceptable Limits for Restoration of HA 39/40

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: common yarrow coyote brush sedge saltgrass blue wild-rye California poppy rush wedge-leaved horkelia yellow bush lupine silver bush lupine deerweed sticky monkeyflower
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP†.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline surveys indicate that non-native weeds were present in lands adjacent to HA-39/40. Therefore, no more than 5% non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 1 (0% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Baseline data indicated no HMP shrubs. Therefore, no HMP shrubs need to be present at this restoration site.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low Sand gilia density class: Low Seaside bird’s beak density class: Low

* Objectives presented in HRP (Shaw, 2009b)

† Each habitat zone (P1-P4) will be evaluated separately based on its unique plant palette

8.15.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 39/40 in 2025. HA 39/40 received its SSRP passive and active restoration prescription in 2012–2013, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP seeding and planting recommendations were developed to address deficiencies in native vegetation cover, specifically in Plots 1, 2, and 3 (Burlson, 2018; Burlson, 2021). AMP seeding was implemented in 2020 and 2024 (Table 8-80), and AMP plantings were conducted in 2021 (Table 8-81). Beyond the original SSRP prescription, HA 39/40 received 72.3 pounds of additional native seed and 1,388 targeted plants.

Table 8-80. Summary of Passive Restoration Activities for HA 39/40

Species	Pounds of Seed Broadcast					Total by Species
	SSRP Target	2012 (SSRP)	2013 (SSRP)	2020 (AMP)	2024 (AMP)	
ACGL	3.820	3.814	-	16.000	0.400	20.214
ACMI	2.290	2.340	-	16.000	0.200	18.540
ADFA	-	-	-	-	0.100	0.100
ARCA	-	-	-	-	0.200	0.200
ARDO	0.210	0.210	-	-	-	0.210
BAPI	0.340	0.618	-	-	-	0.618
Carex sp.	0.210	-	-	-	-	0.000
CHPUP*	0.080	0.110	-	-	-	0.110
CORIL*	0.080	0.086	-	-	-	0.086
CRCA	0.550	0.575	-	-	-	0.575
CRSC	-	-	-	-	0.100	0.100
DIAU	0.220	0.877	-	-	-	0.877
DISP	0.210	-	-	-	-	0.000
ELGL	22.140	23.400	-	24.000	2.300	49.700
ESCA	2.290	0.551	-	-	-	0.551
GITEA*	0.080	0.018	0.021	-	-	0.039
HOCU	4.500	4.551	-	-	0.410	4.961
<i>Hordeum</i> sp.	22.140	26.918	-	-	-	26.918
JUPA	0.550	0.675	-	-	-	0.675
LUAL	2.290	2.287	-	-	-	2.287
LUAR	2.290	2.446	-	-	-	2.446
LUNA	2.460	2.461	-	-	-	2.461
SAME	-	-	-	-	0.100	0.100
SOVE	0.550	0.575	-	-	-	0.575
STCE	4.580	-	-	-	-	0.000
STPU	4.840	4.620	-	10.000	2.300	16.920
TRWI	0.550	0.380	-	-	-	0.380
TOTAL	77.270	77.512	0.021	66.000	6.110	149.643

* HMP species

Table 8-81. Summary of Active Restoration Activities for HA 39/40

Species	Number of Individual Plants				Total by Species
	SSRP Target	2012 (SSRP)	2013 (SSRP)	2021 (AMP)	
ACGL	150	150	-	-	150
ACMI	380	200	-	-	200
BAPI	75	75	-	200	275
<i>Carex sp.</i>	-	-	623	100	723
DIAU	75	75	-	-	75
DISP	-	-	240	100	340
ELGL	300	300	-	-	300
ESCA	250	-	260	-	260
HOCU	150	150	-	-	150
JUPA	-	-	-	100	100
LUAL	75	-	75	-	75
LUAR	75	75	-	100	175
LUNA	150	-	150	-	150
STCE	250	285	-	-	285
STPU	200	160	-	100	260
TOTAL	2,130	1,470	1,348	700	3,518

8.15.2 Monitoring Results

HA 39/40 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover transect monitoring were completed (see Appendix C, page C-16).

8.15.2.1 Species Richness

One hundred twenty-eight species were observed at HA 39/40 in 2025. Of those, 65 were native shrubs or perennials, 32 were native annual herbaceous species, and 31 were non-native species (see Table 8-82). Species richness increased by 17 species since 2020. Native shrub and perennial species richness increased by 12, native herbaceous species richness increased by eight, non-native species richness decreased by two, and uncategorized species richness decreased by one.

Table 8-82. Species Observed on HA 39/40, 2025

Scientific Name	Common Name	Code	Category
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon americanus var. americanus</i>	Spanish clover	ACAMA	NF
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Acmispon parviflorus</i>	hill lotus	ACPA	NF
<i>Acmispon strigosus</i>	Bishop's lotus	ACST	NF
<i>Agoseris grandiflora</i>	large-flowered agoseris	AGGR	NP
<i>Agrostis exarata</i>	spike bent grass	AGEX	NP

<i>Agrostis hallii</i>	Hall's bent grass	AGHA	NP
<i>Aira caryophyllea</i>	silver hair grass	AICA	NNF
<i>Arctostaphylos pumila*</i>	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Artemisia douglasiana</i>	mugwort	ARDO	NP
<i>Avena barbata</i>	slender wild oat	AVBA	NNF
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Briza minor</i>	small quaking grass	BRMI	NNF
<i>Bromus carinatus</i>	California brome	BRCA	NF
<i>Bromus diandrus</i>	ripgut brome	BRDI	NNF
<i>Bromus hordeaceus</i>	soft chess	BRHO	NNF
<i>Bromus madritensis ssp. rubens</i>	foxtail chess	BRMAR	NNF
<i>Cardionema ramosissimum</i>	sand mat	CARA	NP
<i>Carex barbarae</i>	Santa Barbara sedge	CABA	NP
<i>Carex brevicaulis</i>	short stem sedge	CABR8	NP
<i>Carex praegracilis</i>	clustered field sedge	CAPR	NP
<i>Carex sp.</i>	sedge	CA	NP
<i>Castilleja affinis</i>	coast paint-brush	CAAF	NP
<i>Castilleja densiflora</i>	owl's clover	CADE	NF
<i>Cerastium glomeratum</i>	sticky mouse-ear chickweed	CEGL	NNF
<i>Chorizanthe pungens var. pungens*</i>	Monterey spineflower	CHPUP	NF
<i>Clarkia lewisii</i>	Lewis' clarkia	CLLE	NF
<i>Clarkia purpurea ssp. quadrivulnera</i>	winecup clarkia	CLPUQ	NF
<i>Clinopodium douglasii</i>	yerba buena	CLDO	NP
<i>Collinsia heterophylla var. heterophylla</i>	Chinese-houses	COHEH	NF
<i>Corethrogyne filaginifolia</i>	common sandaster	COFI	NP
<i>Crocانthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Croton californicus</i>	California croton	CRCA	NP
<i>Cyperus eragrostis</i>	tall cyperus	CYER	NP
<i>Danthonia californica</i>	California oat grass	DACA	NP
<i>Dichelostemma capitatum</i>	blue dicks	DICA	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Distichlis spicata</i>	salt grass	DISP	NP
<i>Drymocallis glandulosa var. wrangelliana</i>	sticky cinquefoil	DRGLW	NP
<i>Eleocharis macrostachya</i>	spike rush	ELMA	NP
<i>Elymus condensatus</i>	giant wild-rye	ELCO	NP
<i>Elymus glaucus</i>	blue wild-rye	ELGL	NP
<i>Elymus triticoides</i>	beardless wild rye	ELTR	NP
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata*</i>	Eastwood's goldenbush	ERFA	NP
<i>Erigeron canadensis</i>	horseweed	ERCA	NF

<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Erodium botrys</i>	long-beaked filaree	ERBO	NNF
<i>Erodium cicutarium</i>	red-stemmed filaree	ERCI	NNF
<i>Eschscholzia californica</i>	California poppy	ESCA	NF
<i>Euthamia occidentalis</i>	western goldenrod	EUOC	NP
<i>Festuca bromoides</i>	brome fescue	FEBR	NNF
<i>Festuca myuros</i>	rattail sixweeks grass	FEMY	NNF
<i>Festuca perennis</i>	Italian rye grass	FEPE	NNF
<i>Galium aparine</i>	goose grass	GAAP	NF
<i>Galium californicum</i>	California bedstraw	GACA	NP
<i>Galium porrigens</i>	climbing bedstraw	GAPO	NF
<i>Gamochaeta ustulate</i>	purple cudweed	GAUS	NP
<i>Geranium dissectum</i>	cut-leaved geranium	GEDI	NNF
<i>Gilia tenuiflora ssp. arenaria*</i>	sand gilia	GITEA	NF
<i>Heliotropium curassavicum var. oculatum</i>	seaside heliotrope	HECUO	NP
<i>Hesperocyparis macrocarpa</i>	Monterey cypress	HEMA22	NP
<i>Heterotheca grandiflora</i>	telegraph weed	HEGR	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Juncus balticus ssp. Ater</i>	baltic rush	JUBAA	NP
<i>Juncus bufonius var. bufonius</i>	common toad rush	JUBUB	NF
<i>Juncus occidentalis</i>	western rush	JUOC	NP
<i>Juncus phaeocephalus</i>	brown-headed rush	JUPH	NP
<i>Lastarriaea coriacea</i>	leather spineflower	LACO	NF
<i>Layia platyglossa</i>	tidy-tips	LAPL	NF
<i>Lepechinia calycina</i>	pitcher sage	LECA	NP
<i>Lessingia pectinata</i>	common lessingia	LEPE	NF
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Lupinus chamissonis/albifrons</i>	silver bush lupine	LUCH/LUAL	NP
<i>Lupinus arboreus</i>	yellow bush lupine	LUAR	NP
<i>Lupinus bicolor</i>	miniature lupine	LUBI	NF
<i>Lupinus nanus</i>	sky lupine	LUNA	NF
<i>Luzula comosa var. comosa</i>	Pacific wood rush	LUCOC	NP
<i>Lysimachia arvensis</i>	scarlet pimpernel	LYAR	NNF
<i>Lythrum hyssopifolia</i>	grass poly	LYHY	NNF
<i>Madia gracilis</i>	slender tarweed	MAGR	NF
<i>Madia sativa</i>	coast tarweed	MASA	NF
<i>Marah fabacean</i>	wild cucumber	MAFA	NP
<i>Medicago polymorpha</i>	California burclover	MEPO	NNF
<i>Melica torreyana</i>	Torrey's melic	METO	NP

<i>Microseris paludosa</i>	Marsh microseris	MIPA	NP
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Nuttallanthus texanus</i>	blue toadflax	NUTE	NF
<i>Petrorhagia dubia</i>	hairypink	PEDU	NNF
<i>Plantago coronopus</i>	cut-leaved plantain	PLCO	NNF
<i>Platystemon californicus</i>	cream cups	PLCA	NF
<i>Polypogon monspeliensis</i>	rabbitsfoot grass	POMO	NNF
<i>Pseudognaphalium beneolens</i>	fragrant everlasting	PSBE	NP
<i>Pseudognaphalium luteoalbum</i>	weedy cudweed	PSLU	NNF
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Pseudognaphalium stramineum</i>	cotton-batting plant	PSST	NP
<i>Pteridium aquilinum var. pubescens</i>	western bracken fern	PTAQP	NP
<i>Quercus agrifolia</i>	coast live oak	QUAG	NP
<i>Ranunculus californicus var. californicus</i>	common buttercup	RACAC	NP
<i>Ribes speciosum</i>	fuchsia-flowered gooseberry	RISP	NP
<i>Rubus ursinus</i>	California blackberry	RUUR	NP
<i>Rumex acetosella</i>	sheep sorrel	RUAC	NNP
<i>Rumex salicifolius</i>	willow leaved dock	RUSA	NP
<i>Salix sp.</i>	willow	SA	NP
<i>Sanicula crassicaulis</i>	Pacific sanicle	SACR	NP
<i>Senecio glomeratus</i>	cutleaf burnweed	SEGL	NNF
<i>Silene gallica</i>	small-flower catchfly	SIGA	NNF
<i>Sisyrinchium bellum</i>	western blue-eyed grass	SIBE	NP
<i>Stachys bullata</i>	wood mint	STBU	NP
<i>Stipa pulchra</i>	purple needle grass	STPU	NP
<i>Symphoricarpos albus var. laevigatus</i>	common snowberry	SYALL	NP
<i>Toxicodendron diversilobum</i>	poison oak	TODI	NP
<i>Trifolium angustifolium</i>	narrow-leaved clover	TRAN	NNF
<i>Trifolium campestre</i>	hop clover	TRCA	NNF
<i>Trifolium dubium</i>	little hop clover	TRDU	NNF
<i>Trifolium gracilentum</i>	pinpoint clover	TRGR	NF
<i>Trifolium hirtum</i>	rose clover	TRHI	NNF
<i>Trifolium microcephalum</i>	small-head clover	TRMI	NF
<i>Trifolium willdenovii</i>	tomcat clover	TRWI	NF
<i>Uropappus lindleyi</i>	silver puffs	URLI	NF
<i>Vicia americana ssp. americana</i>	American vetch	VIAMA	NP
<i>Vicia ludoviciana ssp. ludoviciana</i>	slender vetch	VILUL	NF
<i>Vicia sativa ssp. Nigra</i>	narrow-leaved vetch	VISAN	NNF
<i>Zeltnera davyi</i>	Davy's centaury	ZEDA	NF

*HMP Species

8.15.2.2 Vegetative Cover

Harris-Terracon surveyed four 50 meter line-intercept transects at HA 39/40 in 2025. A fourth transect (HA 39/40 T04) was added in 2025 in attempts to better represent all of vegetation types present throughout the HA. See Figure 8-55 for transect locations. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 11.04%. The mean vegetative cover by native shrubs and perennials was 6.07% less in 2025 than in 2020. Figure 8-56 presents the percent cover of dominant species at HA 39/40 in 2016, 2017, 2018, 2020, and 2025. Figure 8-57 shows native vegetative cover compared to success criteria at HA 39/40. Photos B-12 and B-13 in Appendix B show vegetative cover monitoring at HA 39/40.

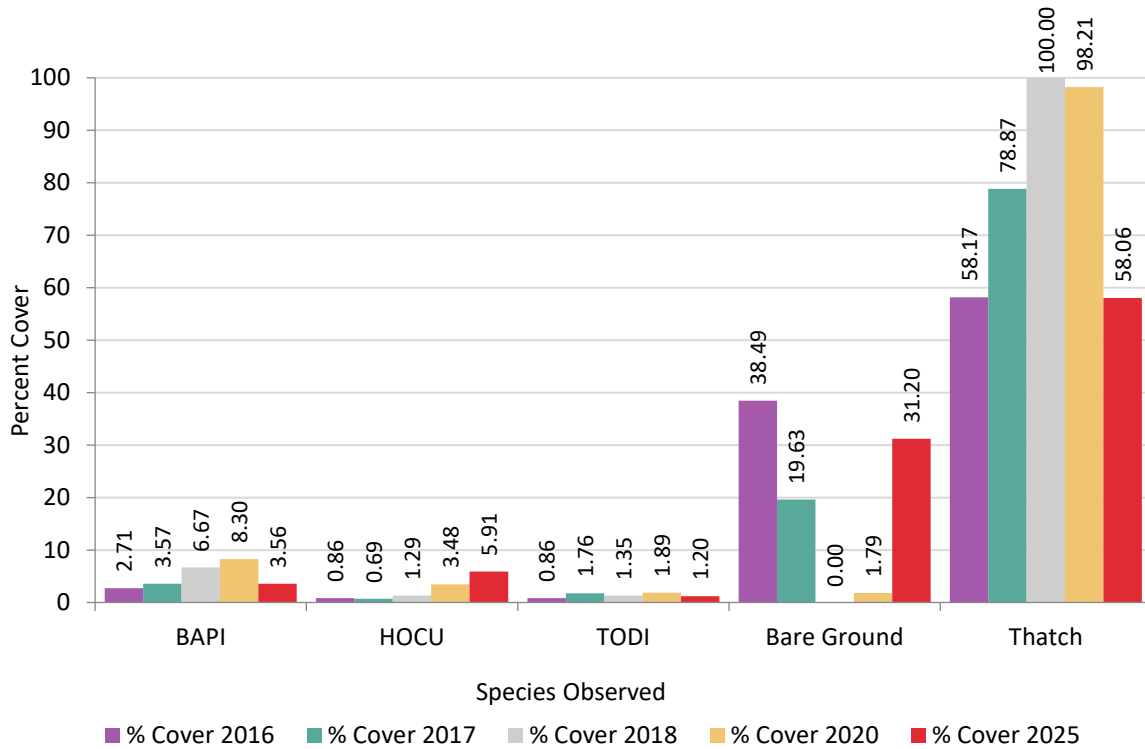


Figure 8-56. Percent cover of dominant species at HA 39/40

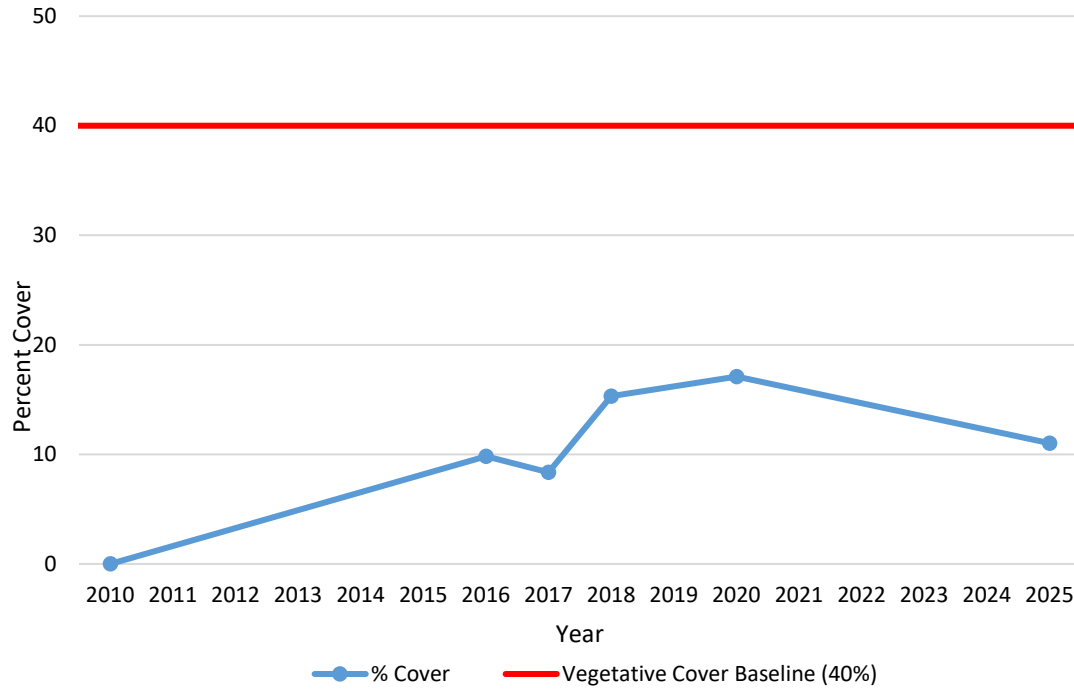


Figure 8-57. Native vegetative cover compared to success criteria at HA 39/40

8.15.3 Caretaker of Previous HA

Monterey cypress removal and herbicide application of cut stumps occurred at HA 39/40 in 2025. Eight Monterey cypress trees were removed at HA 39/40. Tree removal locations are shown in Figure 8-58.

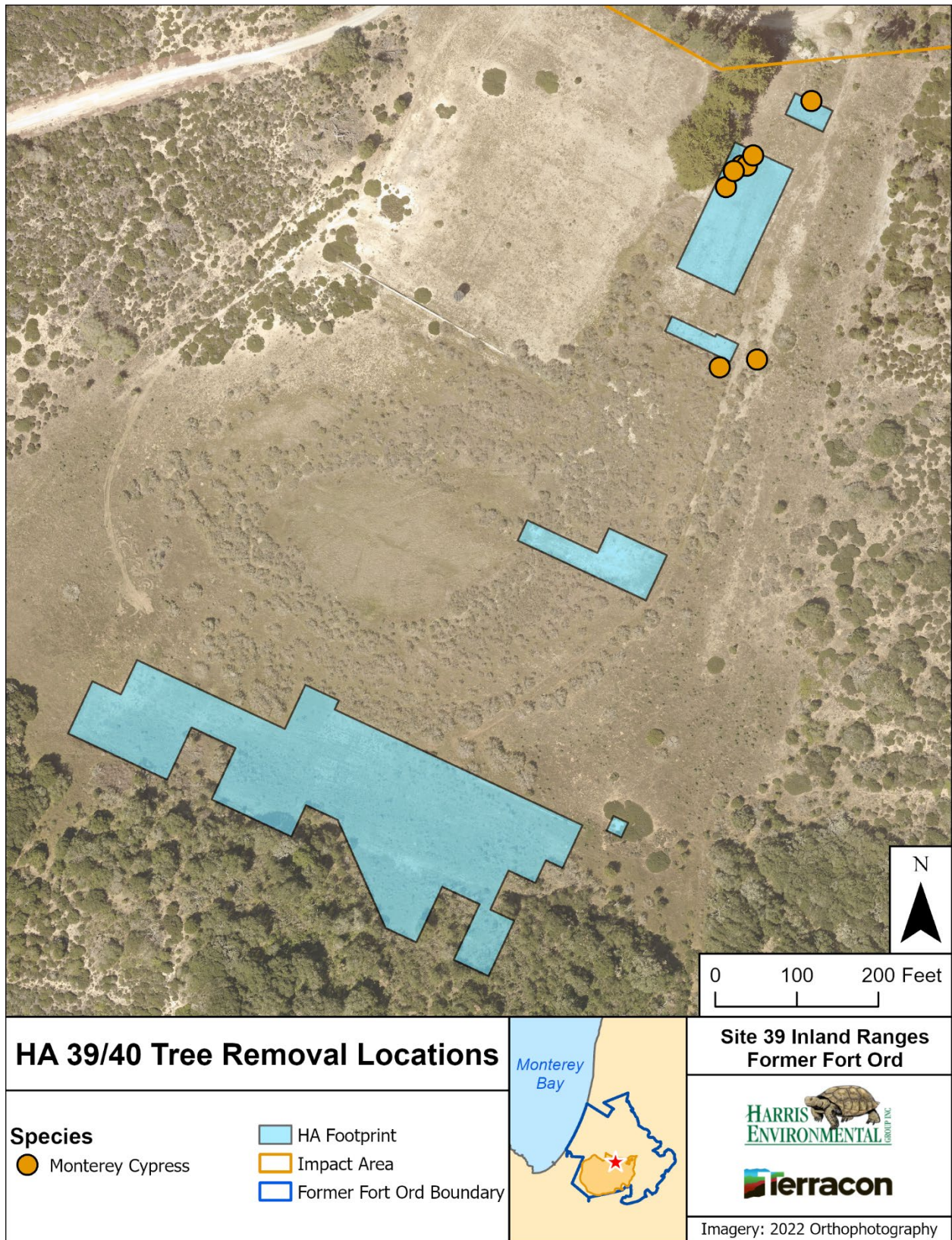


Figure 8-58. 2025 Tree removal locations at HA 39/40

8.15.4 Discussion and Conclusion

8.15.4.1 HA 39/40 Discussion

HA 39/40 was in Year 13 of monitoring in 2025 and met three of the four success criteria (see Table 8-83). Specifically, the site met the species richness, non-native target weed cover, and HMP annual density criteria, but did not meet the native vegetation cover criterion.

8.15.4.2 Species Richness Status

The species richness criterion for HA 39/40 requires the presence of 9 specific native species at the site. This criterion was met in all benchmark monitoring years: Years 5, 8, and 13.

8.15.4.3 Native Vegetative Cover Status

The HA 39/40 native vegetative cover success criterion is to meet or exceed 40% native cover for species listed in the SSRP plant palette. However, baseline data for Plots 1, 3, and 4 were 24.1%, 22.3%, and 10.3%, respectively, with an average of 18.9% native cover.

A 40% native cover target is not considered achievable for ruderal grassland and coastal scrub habitats at HA 39/40. Therefore, it is recommended that HA 39/40 be evaluated against a 20% native cover target, which is more representative of baseline conditions.

The 40% native vegetative cover success criterion was not met, nor was the recommended 20% target. Native cover for listed SSRP species was 7.98% in Year 5 and increased to 17.10% by Year 8. Corrective measures were implemented in Year 9 to install additional native plants. By Year 13, native vegetative cover had decreased to 11.04%, remaining below both targets. The decrease in cover between Years 8 and 13 is largely attributed to a decline in coyote brush cover and the addition of a fourth transect in SSRP Plot 3, a low-cover area. Despite this decline, the site demonstrates overall native plant establishment, indicating that restoration treatments are supporting vegetative growth in grassland and coastal scrub habitats.

In addition to the overall native vegetation cover criterion, success criteria require that each habitat zone (SSRP Plots 1–4; see Figure 8-56) be evaluated separately based on its respective plant palette (Burlison, 2010). However, baseline data for these plots consist of total native cover estimates rather than SSRP listed species. Therefore, current conditions are evaluated using total native cover within transects located in each plot. No baseline data are available for SSRP Plot 2; therefore, it is not evaluated.

Estimated baseline native cover for SSRP Plot 1 (grassland habitat) was 24.1%, compared to 6.12% in Year 13. For SSRP Plot 3 (ruderal grassland with a wet meadow component), baseline native cover was 22.3%, compared to 2.84% in Year 13; however, Plot 3 exhibited 44.42% herbaceous cover, with a strong representation of native forbs. For SSRP Plot 4 (coastal scrub habitat), baseline native cover was 10.3%, compared to 24.59% in Year 13.

By Year 13, SSRP Plots 1 and 3 exhibited lower native cover relative to baseline conditions, whereas SSRP Plot 4 exhibited higher native cover. However, because baseline transect locations are unknown and baseline values are estimates, the ability to draw definitive conclusions is limited. Overall, results

indicate that native cover in Year 13 is broadly comparable to baseline conditions, with notable variability among plots.

8.15.4.4 Non-native Target Weed Cover Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. Target weeds were not detected in any monitoring year, demonstrating sustained control of invasive species at HA 39/40.

8.15.4.5 HMP Annual Density Status

The HA 39/40 HMP annual density success criterion required Monterey spineflower, sand gilia, and Seaside bird's beak densities to remain within the baseline low-density class. In Year 8, the final year of monitoring for HMP annuals, densities within the HA 39/40 HMP annual restoration plots met this criterion (Burlison, 2021). Additionally, Monterey spineflower and sand gilia were present outside their restoration plots, while Seaside bird's beak was not observed outside its restoration plot. Therefore, the HMP annual density success criterion for HA 39/40 has been met.

8.15.4.6 HA 39/40 Conclusion

HA 39/40 received its full SSRP passive and active restoration prescriptions in 2011–2013, followed by AMP seeding and planting between 2013 and 2024 to address deficiencies in native vegetation cover. Additionally, in Year 13, a second transect was added to better represent vegetation conditions in the grassland habitat. With 11.04% native cover, no concerns related to target invasive species, and positive trends toward most restoration objectives, the site is progressing toward restoration goals. It is recommended that HA 39/40 be evaluated against a 20% native cover target, which is more representative of baseline conditions. Restoration at HA 39/40 is considered a successfully implemented restoration site supporting a combination of coastal scrub and grassland habitats.

Table 8-83. Status for Achieving Success Criteria at HA 39/40

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met	Year 8 (2020) Met	Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	12 required species: ACMI, BAPI, Carex sp., DISP, ELGL, ESCA, Juncus sp., HOCU, LUAR, LUCH/LUAL, AGCL, DIAU	Yes	Yes	Yes	Year 5: met Year 8: met Year 13: met
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	No	Year 5: 7.98% Year 8: 17.10% Year 13: 11.04% (AMP planting occurred in 2021)
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	Year 5: 0.00% Year 8: 0.00% Year 13: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 1: 0%	NA	NA	NA	NA, no HMP shrubs at baseline
Objective 3 – No. 4	HMP shrub cover by species	NA	NA	NA	NA	NA, no HMP shrubs at baseline
Objective 3 – No. 4	HMP annual density	Low density for CHPUP, GITEA, and CORIL	Yes	Yes	NA	(Year 13 monitoring not required)

8.16 HA 43

HA 43 was used by the Army as a long-distance small-arms firing range. Munitions removal and soil remediation were completed in 2010; 150 cubic yards of lead-contaminated soil were excavated from 0.09 acre. HA 43 rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 43 is relatively flat with surface water runoff draining to the west. Adjacent lands are high quality habitat areas which contain intact native vegetation that may promote natural recruitment within restoration areas. HA 43 is located within Ranges 43-48 area, which had a prescribed burn in 2003 to facilitate MEC cleanup, and the unit was monitored for 10 years (Tetra Tech, 2014).

HA 43 is located on the north central portion of Site 39, occurring within the sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas the surface layer is fine sand (USFS, 2007).

The SSRP prescription for passive restoration at HA 43 consisted of hand broadcasting non-irrigated seed and annual weed management activities. HA 43 is relatively flat with little potential for erosion.

Restoration and AMP activities at HA 43 occurred in 2011, 2012, 2019, 2020, 2021, 2022, and 2024; quantitative monitoring began in 2013. HA 43 was monitored for 15 years by photo documentation and site visits; nine years for HMP annual density in plots; six years for HMP annual density across the HA; and five years for species richness and vegetative cover (see Table 8-84). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-59 shows the HA footprint, passive restoration area, and transect monitoring locations. Success criteria for HA 43 are summarized in Table 8-85.

Table 8-84. Historic Summary of Restoration and Monitoring Activities at HA 43

Activity	Monitoring Years														
			1	2	3	4	5	6	7	8	9	10	11	12	13
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Restoration, Erosion Control, and Caretaking Activities	•	•							•	•	•	•		•	
Photo Points and Site Visit	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Monterey Spineflower Plots			•	•	•	•	•	•		•					
Sand Gilia Plots			•	•	•	•	•	•		•	•	•			
Seaside Bird's Beak Plots			•	•	•	•	•	•		•					
HMP Annual Density across HA						•	•	•		•	•	•			
Species Richness						•	•	•	•	•					•
Vegetative Cover						•†	•	•	•	•					•

† Vegetative cover was monitored using quadrats in 2016

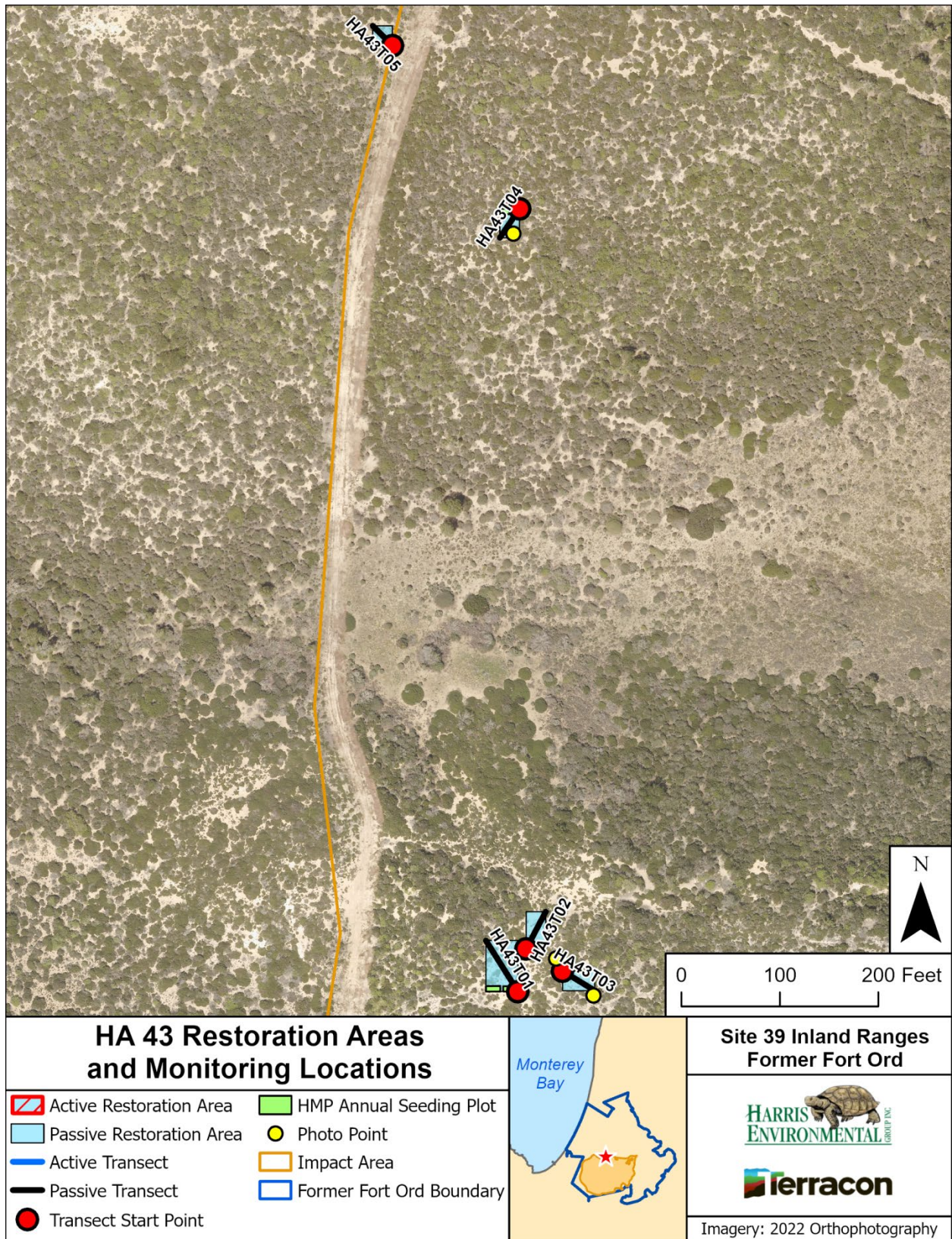


Figure 8-59. HA 43 Restoration Areas and Monitoring Locations Map

Table 8-85. Success Criteria and Acceptable Limits for Restoration of HA 43

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: chamise sandmat manzanita† shaggy-bark manzanita coyote brush Monterey ceanothus† dwarf ceanothus mock heather golden yarrow peak rush-rose wedge-leaved horkelia deerweed sticky monkeyflower coffeeberry black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did not indicate non-native target weed species. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Cover class: 3 (6-25% of absolute cover)
			Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 6. Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 15.
			Eastwood’s goldenbush percent cover, as an average of transect data, must be equal or greater than 1.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Medium Sand gilia density class: Medium Seaside bird’s beak density class: Medium

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.16.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 43 in 2025. HA 43 received its SSRP passive restoration prescription in 2011, and monitoring commenced in 2013. Following evaluation of Year 5 and 8 monitoring results, AMP seeding and planting recommendations were developed to address deficiencies in species richness, native vegetation cover, and HMP shrub cover by species (Burleson, 2018; Burleson, 2021). AMP seeding was implemented between 2019 and 2024 (Table 8-86), and AMP plantings were conducted from 2019 to 2022 (Table 8-87). Beyond the original SSRP prescription, HA 43 received 4.5 pounds of native seed and 119 targeted plants.

Table 8-86. Summary of Passive Restoration Activities for HA 43

Species	Pounds of Seed Broadcast					Total by Species
	SSRP Target	2011 (SSRP)	2019 (AMP)	2020 (SSRP)	2024 (AMP)	
ACMI	-	-	0.270	0.800	0.050	1.120
ACGL	0.180	0.190	-	0.800	0.050	1.040
ADFA	0.090	0.520	-	-	-	0.520
ARPU*	0.090	0.108	-	-	-	0.108
ARTO	0.180	0.194	-	-	-	0.194
BAPI	0.014	0.008	-	-	-	0.008
CERI*	0.090	0.107	-	-	-	0.107
CHPUP*	0.001	0.013	-	-	-	0.013
CORIL*	0.001	0.008	-	-	-	0.008
CRSC	0.090	0.118	-	-	-	0.118
ELGL		-	0.720	-	0.200	0.920
ERCO	0.027	0.039	-	-	-	0.039
ERFA*	0.009	0.013	-	-	-	0.013
FRCA	0.090	0.092	-	-	-	0.092
GITEA*	0.001	0.002	-	0.001	-	0.003
<i>Hordeum sp.</i>	0.810	0.836	-	-	-	0.836
HOCU	0.180	0.185	0.360	-	-	0.545
SAME	0.090	0.106	-	-	-	0.106
STPU	-	-	0.450	-	0.200	0.650
TOTAL	1.943	2.539	1.800	1.601	0.500	6.440

* HMP species

Table 8-87. Summary of Active Restoration Activities for HA 43

Species	Number of Individual Plants		Total by Species
	2019 (AMP)	2022 (AMP)	
ADFA	10	-	10
CERI*	20	-	20
DIAU	14	-	14
ERFA*	-	75	75
TOTAL	44	75	119

*HMP species

8.16.2 Monitoring Results

HA 43 was in year 13 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover transect monitoring were completed (see Appendix C, page C-17).

8.16.2.1 Species Richness

Thirty-four species were observed at HA 43 in 2025. Of those, 26 were native shrubs or perennials, four were native annual herbaceous species, and four were non-native species (see Table 8-88). Species richness did not change since 2025. Native shrub and perennial species richness increased by two, native herbaceous species richness decreased by two, non-native species richness did not change, and uncategorized species richness did not change.

Table 8-88. Species Observed on HA 43, 2025

Scientific Name	Common Name	Code	Category
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Aira caryophylla</i>	silver hair grass	AICA	NNF
<i>Arctostaphylos pumila</i> *	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Cardionema ramosissimum</i>	sand mat	CARA	NP
<i>Carex sp.</i>	sedge	CA	NP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus</i> *	Monterey ceanothus	CERI	NP
<i>Chorizanthe pungens var. pungens</i> *	Monterey spineflower	CHPUP	NF
<i>Cordylanthus rigidus ssp. littoralis</i> *	seaside bird's-beak	CORIL	NF
<i>Corethrogyne filaginifolia</i>	common sandaster	COFI	NP
<i>Crocانthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Diplacus aurantiacus</i>	sticky monkeyflower	DIAU	NP
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata</i> *	Eastwood's goldenbush	ERFA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Frangula californica</i>	California coffeeberry	FRCA	NP
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Hypochaeris glabra</i>	smooth cat's ear	HYGL	NNF
<i>Hypochaeris radicata</i>	rough cat's ear	HYRA	NNP
<i>Logfia filaginoides</i>	California cottonrose	LOFI	NF
<i>Logfia gallica</i>	daggerleaf cottonrose	LOGA	NNF
<i>Lomatium parvifolium</i>	coastal biscuitroot	LOPA	NP
<i>Lupinus chamissonis/albifrons</i>	silver bush lupine	LUCH/LUAL	NP
<i>Navarretia hamata ssp. parviloba</i>	hooked navarretia	NAHAP	NF
<i>Polygala californica</i>	California milkwort	POCA	NP

<i>Pseudognaphalium beneolens</i>	fragrant everlasting	PSBE	NP
<i>Pseudognaphalium californicum</i>	California everlasting	PSCA	NP
<i>Pteridium aquilinum var. pubescens</i>	western bracken fern	PTAQP	NP
<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Toxicodendron diversilobum</i>	poison oak	TODI	NP

*HMP Species

8.16.2.2 Vegetative Cover

Harris-Terracon surveyed five line-intercept transects from eight to 17 meters in length at HA 43 in 2025. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 37% (Figure 8-62). The mean vegetative cover by native shrubs and perennials was 6.69% greater in 2025 than in 2020 (Figure 8-62). Since 2020 ARPU cover increased by 11.15%, making it most significant increase for any species over those five years. Early successional species such as AGCL and CRSC showed declines of in vegetative cover since 2020, following the trend seen at maritime chaparral sites with woody shrub cover replacing early successional vegetation especially after Year 8. Figure 8-60 presents percent cover of dominant species at HA 43 in 2017, 2018, 2019, 2020, and 2025. Figure 8-61 shows native vegetative cover compared to success criteria at HA 43. Figure 8-62 shows percent cover of HMP shrubs at HA 43 compared to success criteria.

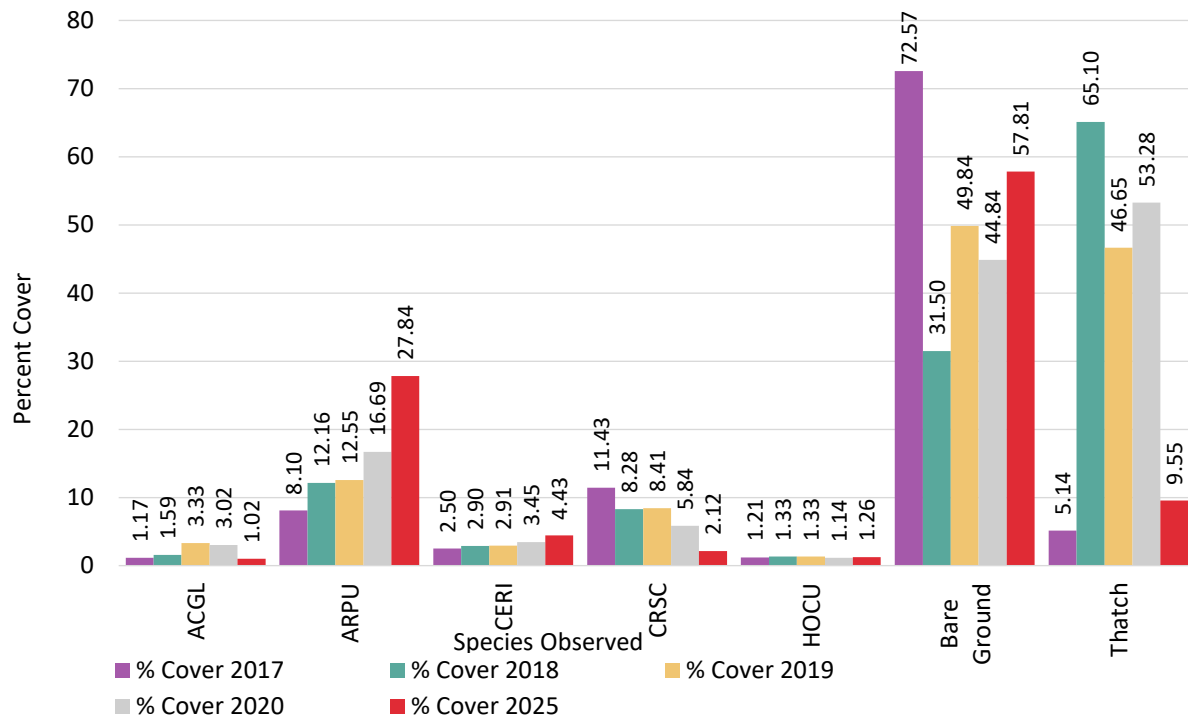


Figure 8-60. Percent cover of dominant species at HA 43

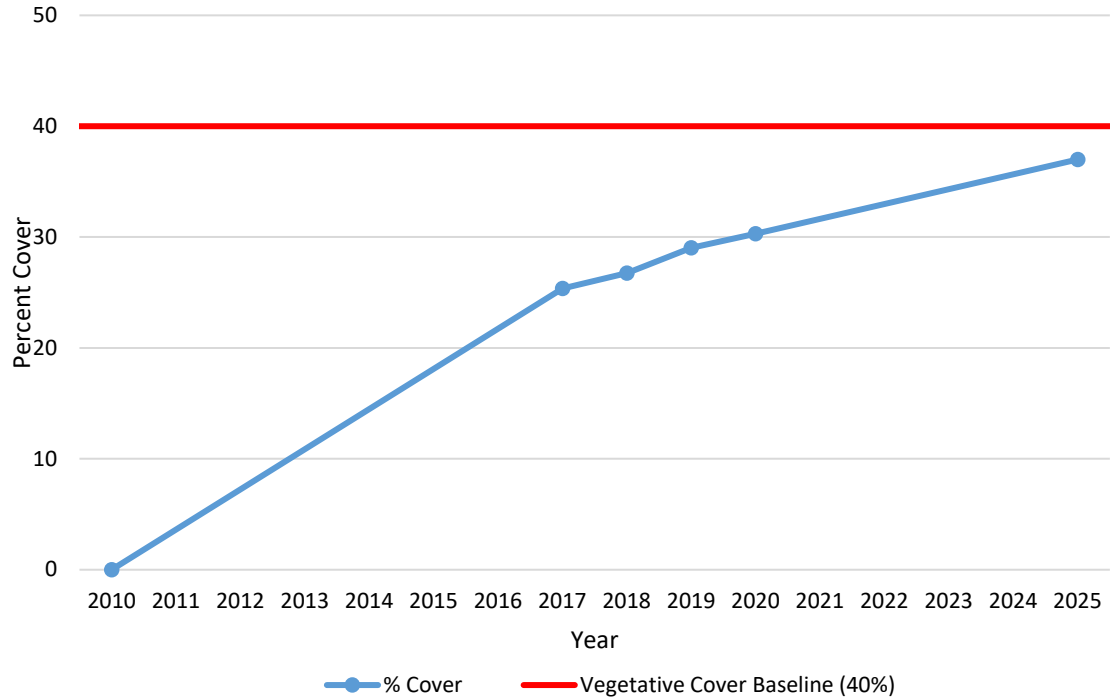


Figure 8-61. Native vegetative cover compared to success criteria at HA 43

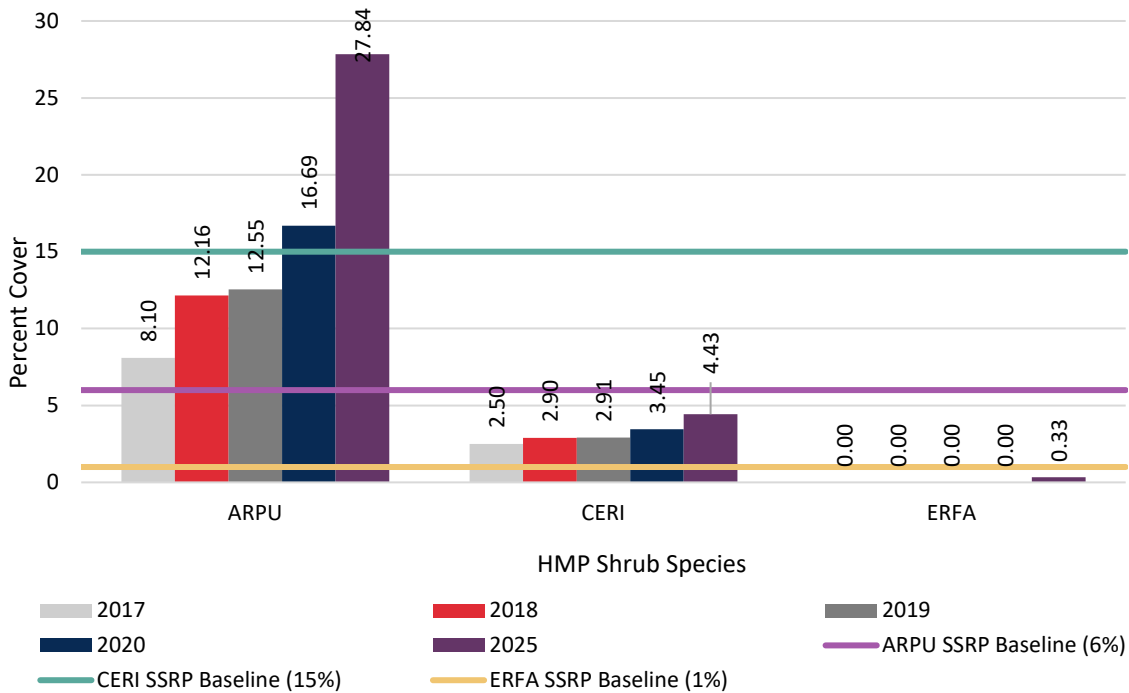


Figure 8-62. Percent cover of HMP shrubs at HA 43 compared to success criteria

8.16.3 Discussion and Conclusion

8.16.3.1 HA 43 Discussion

HA 43, a 0.09-acre site, was in Year 13 of monitoring in 2025 and met three of six success criteria (see Table 8-89). Specifically, HA 43 met its species richness, non-native target weed cover, and HMP shrub cover criteria. The site did not meet its native vegetation cover, HMP shrub cover by species, or HMP annual density criteria.

Following benchmark monitoring in Years 5 and 8, data were compared to success criteria to identify deficiencies, and AMP recommendations were developed. The species richness, native vegetation cover, HMP shrub cover by species, and sand gilia density criteria were identified as needing intervention. To address these deficiencies, AMP actions included seeding 4.5 pounds of native seed, re-seeding the sand gilia plot in Year 8 with two additional years of monitoring, and planting 119 targeted shrubs to support progress toward restoration objectives.

Overall, HA 43 exhibits strong species richness, good native vegetation and HMP shrub cover, established HMP annuals (with sand gilia density slightly below the criterion; Burleson, 2021; Burleson, 2022; Burleson, 2023), effective invasive species control, and measurable progress toward HMP shrub by species targets, indicating that restoration actions have successfully promoted stable and progressing habitat conditions.

8.16.3.2 Species Richness Status

The species richness criterion for HA 43 requires the presence of 14 specific native species at the site. In Year 5, DIAU was absent. In Year 6, corrective measures were made to install DIAU. In Years 8 and 13, all species were present and the criterion was met.

8.16.3.3 Native Vegetative Cover Status

The 40% native vegetative cover success criterion was not met. Native cover increased from 25.38% in Year 5 to 30.31% in Year 8 and 37.00% by Year 13, demonstrating a sustained positive trajectory in native plant establishment and indicating that restoration treatments are effectively supporting overall vegetative growth.

8.16.3.4 Non-native Target Weed Status

The non-native target weed cover criterion ($\leq 5\%$ cover of ice plant, French broom, and pampas grass) was met. Target weeds were not detected in any monitoring year, demonstrating sustained control of invasive species at HA 43.

8.16.3.5 HMP Shrub Cover Status

The HMP shrub cover class at HA 43 met and exceeded the baseline cover class of 3 (6–25% absolute cover by HMP shrubs) in all monitoring years. Absolute cover by HMP shrub species was 10.60% in Year 5, increased to 20.14% by Year 8, and reached 32.60% by Year 13, demonstrating a consistent upward trend. As a result, HA 43 successfully exceeded this success criterion.

8.16.3.6 HMP Shrub Cover by Species Status

The HMP shrub cover by species criterion at HA 23 was not met. This criterion requires CERI cover $\geq 15\%$, ARPU cover $\geq 6\%$, and ERFA cover $\geq 1\%$. In Year 5, CERI cover was 2.50%, ARPU cover was 8.10%, and ERFA cover was 0.0%. By Year 8, CERI cover had increased to 3.45%, ARPU increased to 16.69%, and ERFA remained at 0.0%. Corrective plantings of ERFA were conducted in Year 10. By Year 13, CERI cover reached 4.43%, ARPU increased to 27.84%, and ERFA was detected at 0.33%. As a result, ARPU met its species-specific cover criterion, but CERI and ERFA did not.

8.16.3.7 HMP Annual Density Status

The HMP annual density success criterion at HA 43 required Monterey spineflower and Seaside bird's beak densities to remain within the baseline medium density class. Both species were also observed spreading beyond the restoration plots. In contrast, sand gilia remained in the low-density class during all monitoring years and did not meet the baseline medium density class. Corrective measures included re-seeding the sand gilia plot in Year 8, followed by two additional years of monitoring (Burlison, 2021). During Year 9 monitoring, sand gilia met the medium density class; however, by Year 10, it had declined to the low-density class again (Burlison, 2022; Burlison, 2023). Therefore, HA 43 was slightly deficient in meeting the HMP annual density success criterion due to sand gilia.

8.16.3.8 HA 43 Conclusion

HA 43 received its full SSRP passive restoration prescription in 2011–2012, followed by AMP seeding and planting in 2019 and 2022 to address deficiencies in species richness, native vegetation cover, HMP shrub cover by species, and sand gilia density. With 37% native cover, effective invasive species control, and positive trends toward all restoration objectives—including exceeding the HMP shrub cover class criterion—the site is on a clear trajectory toward pre-remediation baseline vegetation conditions. Based on these results (Table 8-89), restoration at HA 43 is considered successfully implemented and ecologically self-sustaining.

Table 8-89. Status for Achieving Success Criteria at HA 43

Success Criterion	Category	Acceptable Limits	Year 5 (2017) Met	Year 8 (2020) Met	Likelihood of Achieving Success by Year 13 (2025)	Results
Objective 1 – No. 1	Species richness	14 required species: ADFA, ARPU, ARTO, BAPI, CERI, CEDE, ERER, ERCO, CRSC, HOCU, ACGL, DIAU, FRCA, SAME	No	Yes	Yes	<p>Year 5: DIAU absent Year 8: met Year 13: met</p> <p>(AMP planting occurred in 2018/19)</p>
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	No	<p>Year 5: 25.38% Year 8: 30.31% Year 13: 37.00%</p>
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	Yes	<p>Year 5: 0.00% Year 8: 0.00% Year 8: 0.00%</p>
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	Yes	Yes	Yes	<p>Year 5: 10.60% Year 8: 20.14% Year 13: 32.60%</p>
Objective 3 – No. 4	HMP shrub cover by species	CERI ≥ 15% ARPU ≥ 6% ERFA ≥ 1%	CERI = No ARPU = Yes ERFA = No	CERI = No ARPU = Yes ERFA = No	CERI = No ARPU = Yes ERFA = No	<p>Year 5: CERI 2.50% ARPU 8.10% ERFA 0.00% Year 8: CERI 3.45% ARPU 16.69% ERFA 0.00% Year 13: CERI 4.43% ARPU 27.84% ERFA 0.33%</p> <p>(ERFA planted in early 2022)*</p>
Objective 3 – No. 4	HMP annual density	Medium density for CHPUP, GITEA, and CORIL	Yes for CHPUP Yes for CORIL No for GITEA	Yes for CHPUP Yes for CORIL No for GITEA	NA	<p>Year 5: not met Year 8: not met</p> <p>(GITEA plot was reseeded in 2021 and monitored in 2022 and did not meet criterion)</p> <p>(Year 13 monitoring not required)</p>

*Planted as part of Adaptive Management Plan

8.17 HA 44

HA 44 was used by the Army as a range for anti-tank weapons and other explosive munitions. Approximately 2,900 cubic yards of soil was excavated over 1.8 acres. HA 44 rests within unprotected maritime chaparral with mean annual temperatures ranging between 56° and 58° F and regular fog typical of maritime climates (USFS, 2007). HA 44 is relatively flat with a southwest aspect and is surrounded by very high-quality habitat.

HA 44 is located on the northern portion of Site 39, within the sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for HA 44 included both passive and active restoration consisting of hand broadcast non-irrigated seed, annual weed management activities, and installing native container-grown plants. HA 44 is relatively flat with little potential for erosion.

Restoration and AMP activities at HA 44 occurred in 2017, 2018, 2020, 2024, and 2025; quantitative monitoring began in 2016. The initial monitoring in 2016 was to assess the level of natural recruitment occurring at that site. HA 44 was monitored for 10 years by photo documentation and site visits, HMP annual density across the HA, species richness, and vegetative cover, and three years for plant survivorship (see Table 8-90). Monitoring years are counted from a year when at least 50% of SSRP prescription has been applied to a site. Figure 8-63 shows the HA footprint, restoration areas, and transect monitoring locations. The success criteria for HA 44 are summarized in Table 8-91.

Table 8-90. Historic Summary of Restoration and Monitoring Activities at HA 44

Activity	Monitoring Years											
	2016	2017	1	2	3	4	5	6	7	8	13	
Restoration, Erosion Control, and Caretaking Activities		●	●		●					●	●	
Photo Points and Site Visit	●	●	●	●	●	●	●	●	●	●	●	●
HMP Annual Density across HA	●	●	●	●	●	●	●				●	
Species Richness	●	●	●	●	●	●	●				●	●
Vegetative Cover	●	●	●	●	●	●	●				●	●
Plant Survivorship			●	●	●							

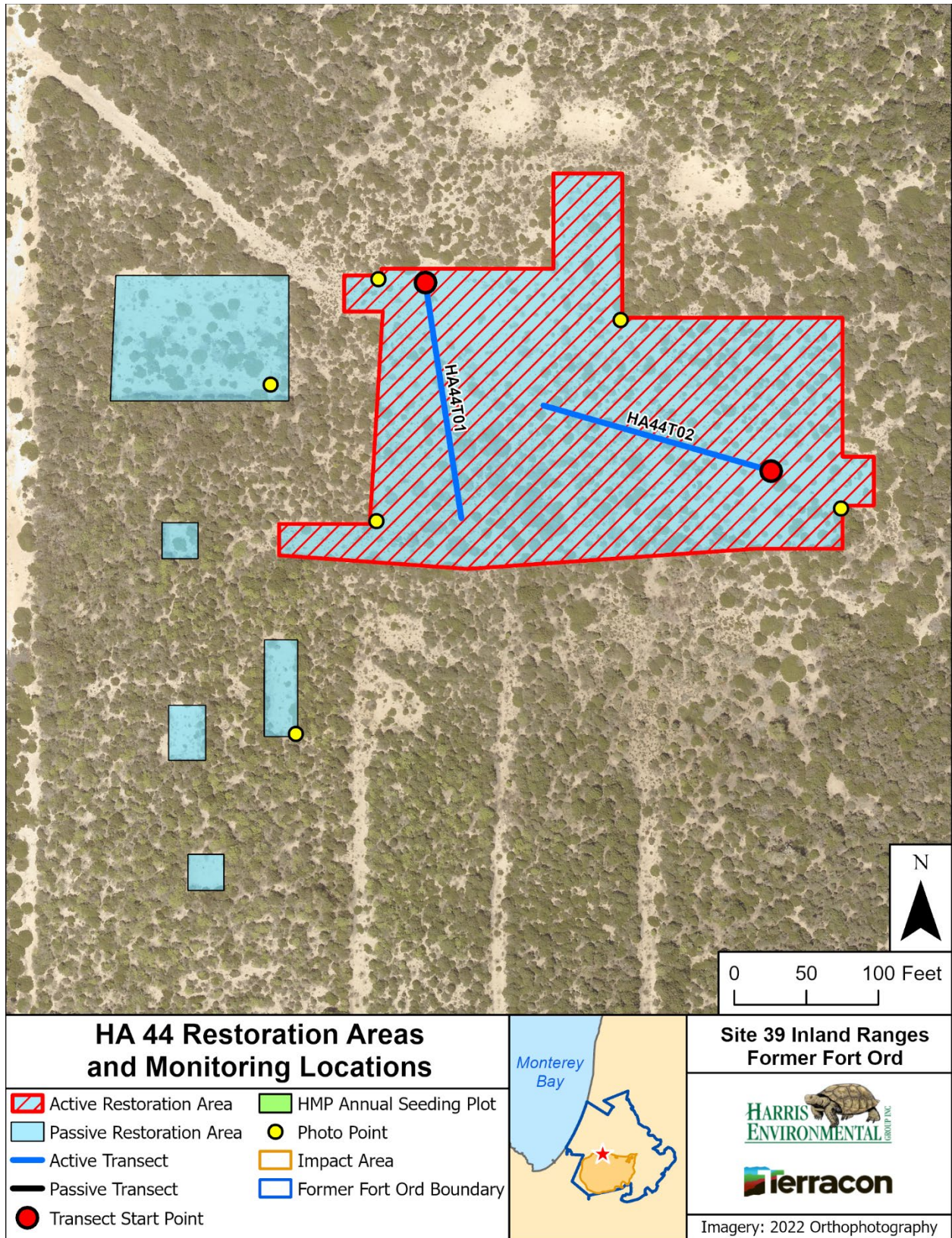


Figure 8-63. HA 44 Restoration Areas and Monitoring Locations Map

Table 8-91. Success Criteria and Acceptable Limits for Restoration of HA 44

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness:
			chamise sandmat manzanita† shaggy-bark manzanita Monterey ceanothus† California coffeeberry
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data indicated absence of non-native target weed species. In the event of their establishment, no more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 3 (6-25% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 2. Monterey ceanothus percent cover, as an average of transect data, must be present however, less than 10 percent is acceptable.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low Sand gilia density class: Low Seaside bird’s beak density class: Low

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.17.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at HA 44 in 2025. HA 44 received its SSRP passive and active restoration prescription in 2017–2018, and monitoring commenced in 2018. In 2025, HA 44 was in its benchmark Year 8. Following early observations prior to Year 5 monitoring, AMP seeding recommendations were developed to advance the site toward restoration objectives. After benchmark monitoring in Year 5, data were compared to success criteria to identify deficiencies, and additional AMP seeding recommendations were implemented to increase native vegetation cover. AMP seeding occurred between 2020 and 2024 (Table 8-92). Beyond the original SSRP prescription, HA 44 received 40.6 pounds of additional native seed. In 2025, HA 44 was meeting all its success criteria.

Table 8-92. Summary of Passive Restoration Activities for HA 44

Species	Pounds of Seed Broadcast					Total by Species
	SSRP Target	2017 (SSRP)	2018 (SSRP)	2020 (AMP)	2024 (AMP)	
ACGL	5.50	1.69	1.00	4.00	0.60	7.29
ACMI	1.80	2.00	2.00	4.00	0.0007	8.00
ADFA	-	-	-	-	0.10	0.10
ARCA	-	-	-	-	0.40	0.40
BAPI	0.30	0.05	0.20	-	-	0.25
CERI*	1.80	0.25	1.00	-	-	1.25
CHPUP*	-	-	0.21	-	-	0.21
CRSC	4.60	0.62	2.50	-	0.0009	3.12
ELGL	-	9.00	8.00	6.00	4.20	27.20
ERCO	0.50	0.07	0.30	-	-	0.37
FRCA	1.80	0.25	1.00	-	-	1.25
<i>Hordeum sp.</i>	18.20	2.48	10.00	-	-	12.48
HOCU	4.60	1.25	8.00	-	0.20	9.45
LUAL	1.80	0.25	1.00	-	-	1.25
SAME	1.80	0.25	1.00	-	0.20	1.45
STPU	-	-	5.00	-	4.20	9.20
TOTAL	42.70	18.16	41.21	14.00	9.90	83.27

* HMP species

Table 8-93. Summary of Active Restoration Activities for HA 44

Species	Number of Individual Plants		
	SSRP Target	2018 (SSRP)	Total by Species
ACGL	200	31	31
ACMI	100	100	100
ADFA	40	144	144
ARPU*	30	40	40
ARTO	40	52	52
BAPI	40	87	87
CERI*	30	101	101
CRSC	150	150	150
ERCO	150	-	-
FRCA	50	300	300
HOCU	200	-	-
LUAL	50	68	68
SAME	30	37	37
TOTAL	1,110	1,110	1,110

* HMP Species

8.17.2 Monitoring Results

HA 44 was in year 8 of monitoring in 2025. Site visits, photo documentation, species richness, and vegetative cover transect monitoring were completed (see Appendix C, page C-18).

8.17.2.1 Species Richness

Thirty-two species were observed at HA 44 in 2025. Of those, 25 were native shrubs or perennials, five were native annual herbaceous species, and two were non-native species (see Table 8-94). Species richness decreased by 12 species since 2022. Native shrub and perennial species richness decreased by four, native herbaceous species richness decreased by five, non-native species richness decreased by three, and uncategorized species richness did not change.

Table 8-94. Species Observed on HA 44, 2025

Scientific Name	Common Name	Code	Category
<i>Achillea millefolium</i>	common yarrow	ACMI	NP
<i>Acmispon glaber</i>	deerweed	ACGL	NP
<i>Adenostoma fasciculatum</i>	chamise	ADFA	NP
<i>Arctostaphylos montereyensis</i> *	Monterey manzanita	ARMO	NP
<i>Arctostaphylos pumila</i> *	sandmat manzanita	ARPU	NP
<i>Arctostaphylos tomentosa</i>	shaggy-bark manzanita	ARTO	NP
<i>Baccharis pilularis</i>	coyote brush	BAPI	NP
<i>Carex</i> sp.	sedge	CA	NP
<i>Carpobrotus edulis</i>	hottentot fig/ice plant	CAED	NNP
<i>Ceanothus dentatus</i>	dwarf ceanothus	CEDE	NP
<i>Ceanothus rigidus</i> *	Monterey ceanothus	CERI	NP
<i>Chorizanthe diffusa</i>	diffuse spineflower	CHDI	NF
<i>Chorizanthe pungens</i> var. <i>pungens</i> *	Monterey spineflower	CHPUP	NF
<i>Cordylanthus rigidus</i> ssp. <i>littoralis</i> *	seaside bird's-beak	CORIL	NF
<i>Crocانthemum scoparium</i>	peak rush-rose	CRSC	NP
<i>Croton californicus</i>	California croton	CRCA	NP
<i>Ericameria ericoides</i>	mock heather	ERER	NP
<i>Ericameria fasciculata</i> *	Eastwood's goldenbush	ERFA	NP
<i>Eriophyllum confertiflorum</i>	golden yarrow	ERCO	NP
<i>Frangula californica</i>	California coffeeberry	FRCA	NP
<i>Gilia tenuiflora</i> ssp. <i>arenaria</i> *	sand gilia	GITEA	NF
<i>Horkelia cuneata</i>	wedge-leaved horkelia	HOCU	NP
<i>Lomatium parvifolium</i>	coastal biscuitroot	LOPA	NP
<i>Lupinus chamissonis/albifrons</i>	silver bush lupine	LUCH/LUAL	NP
<i>Navarretia hamata</i> ssp. <i>parviloba</i>	hooked navarretia	NAHAP	NF
<i>Pseudognaphalium californicum</i>	California everlasting	PSCA	NP
<i>Pseudognaphalium ramosissimum</i>	pink everlasting	PSRA	NP
<i>Pteridium aquilinum</i> var. <i>pubescens</i>	western bracken fern	PTAQP	NP
<i>Rumex acetosella</i>	sheep sorrel	RUAC	NNP

<i>Salvia mellifera</i>	black sage	SAME	NP
<i>Solanum umbelliferum</i>	blue witch	SOUM	NP
<i>Toxicodendron diversilobum</i>	poison oak	TODI	NP

*HMP Species

8.17.2.2 Vegetative Cover

Harris-Terracon surveyed two 50 meter line-intercept transects at HA 44. The transect survey results indicated that the mean vegetative cover by native shrubs and perennials was 48.91%. The mean vegetative cover by native shrubs and perennials was 21.9% greater in 2025 than in 2022. This increase was largely due to a 17.38% increase in ARPU from 2022 to 2025. Figure 8-64 presents the percent cover of dominant species at HA 44 in 2016, 2017, 2018, 2020, 2021, 2022, and 2025. Figure 8-65 shows native vegetative cover compared to success criteria at HA 44. Figure 8-66 shows percent cover of HMP shrubs at HA 44 compared to success criteria.

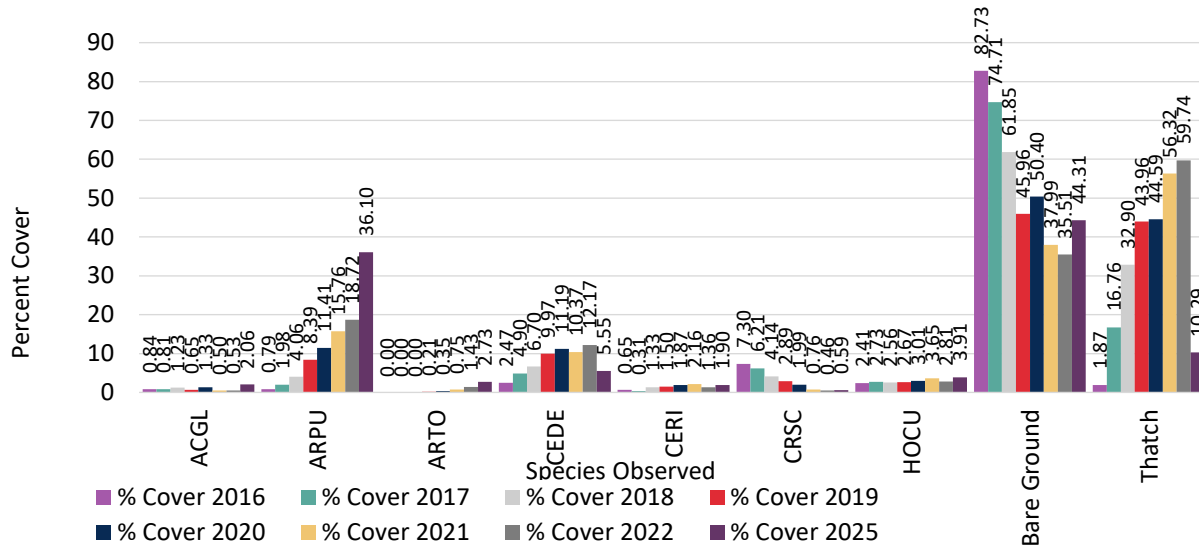


Figure 8-64. Percent cover of dominant species at HA 44

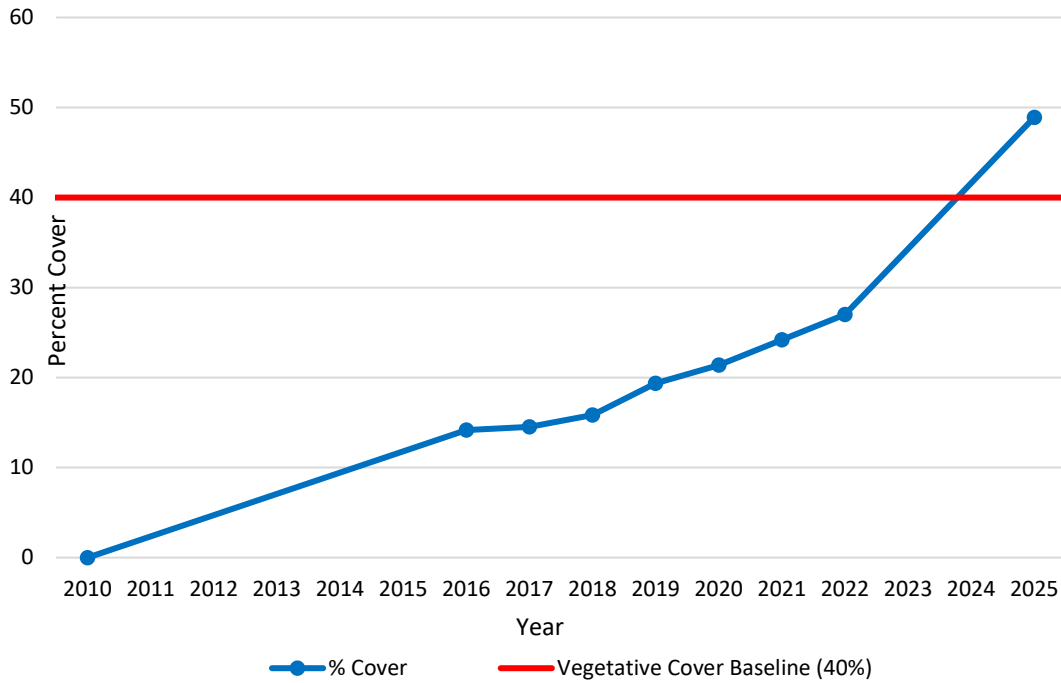


Figure 8-65. Native vegetative cover compared to success criteria at HA 44

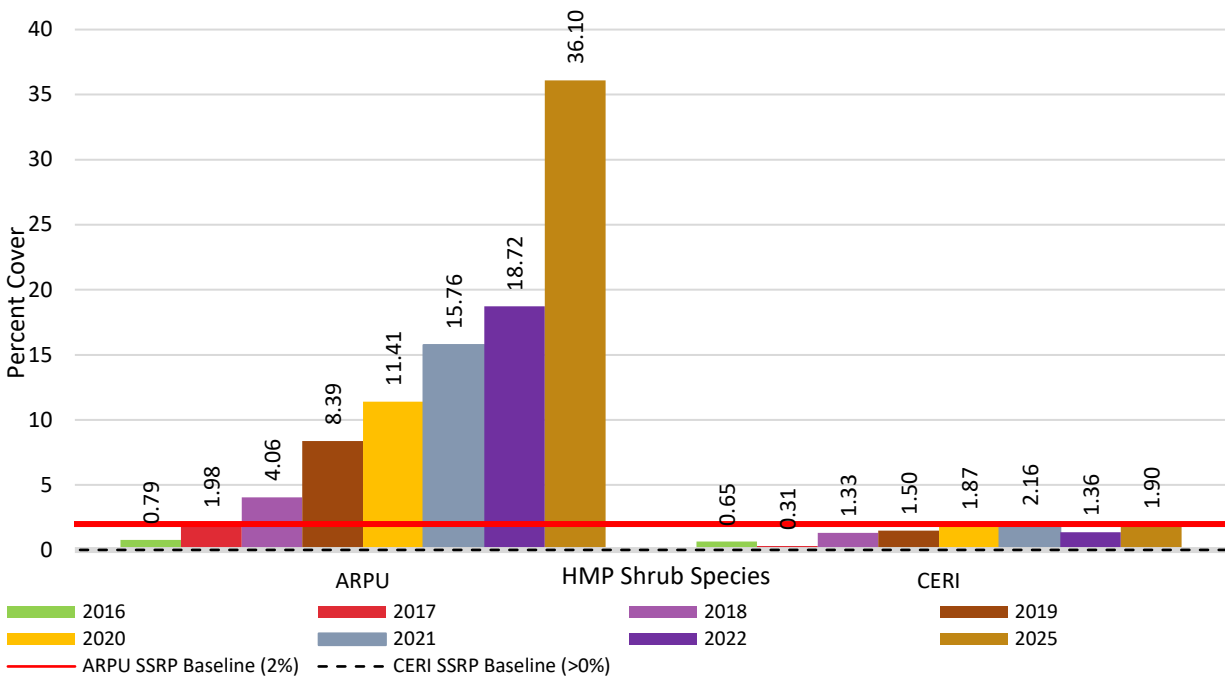


Figure 8-66. Percent cover of HMP shrubs at HA 44 compared to success criteria

8.17.2.3 HMP Annual Density

No restoration plots were established for HMP annuals at HA 44. However, HMP annuals were mapped as part of the meandering transect survey and all three HMP annual species met or exceeded the density success criterion.

Fifty-five individual plants and nine discrete patches of Monterey spineflower were mapped and individual plants were counted within each patch (see Figure 8-67). The densities of Monterey Spineflower ranged from low to high and the total acreage of Monterey spineflower patches with a density at or above the SSRP baseline density class of low was 0.013 acre.

Three individual sand gilia plants were mapped within HA 44 (see Figure 8-68). The densities were low and the total acreage of sand gilia patches with a density at or above the SSRP baseline density class of low was 0.0002 acre.

Seventeen individual plants and five discrete patches of seaside bird's beak were mapped and individual plants were counted within each patch (see Figure 8-69). The densities ranged from low to high and the total acreage of seaside bird's beak patches with a density at or above the SSRP baseline density class of low was 0.003 acre.

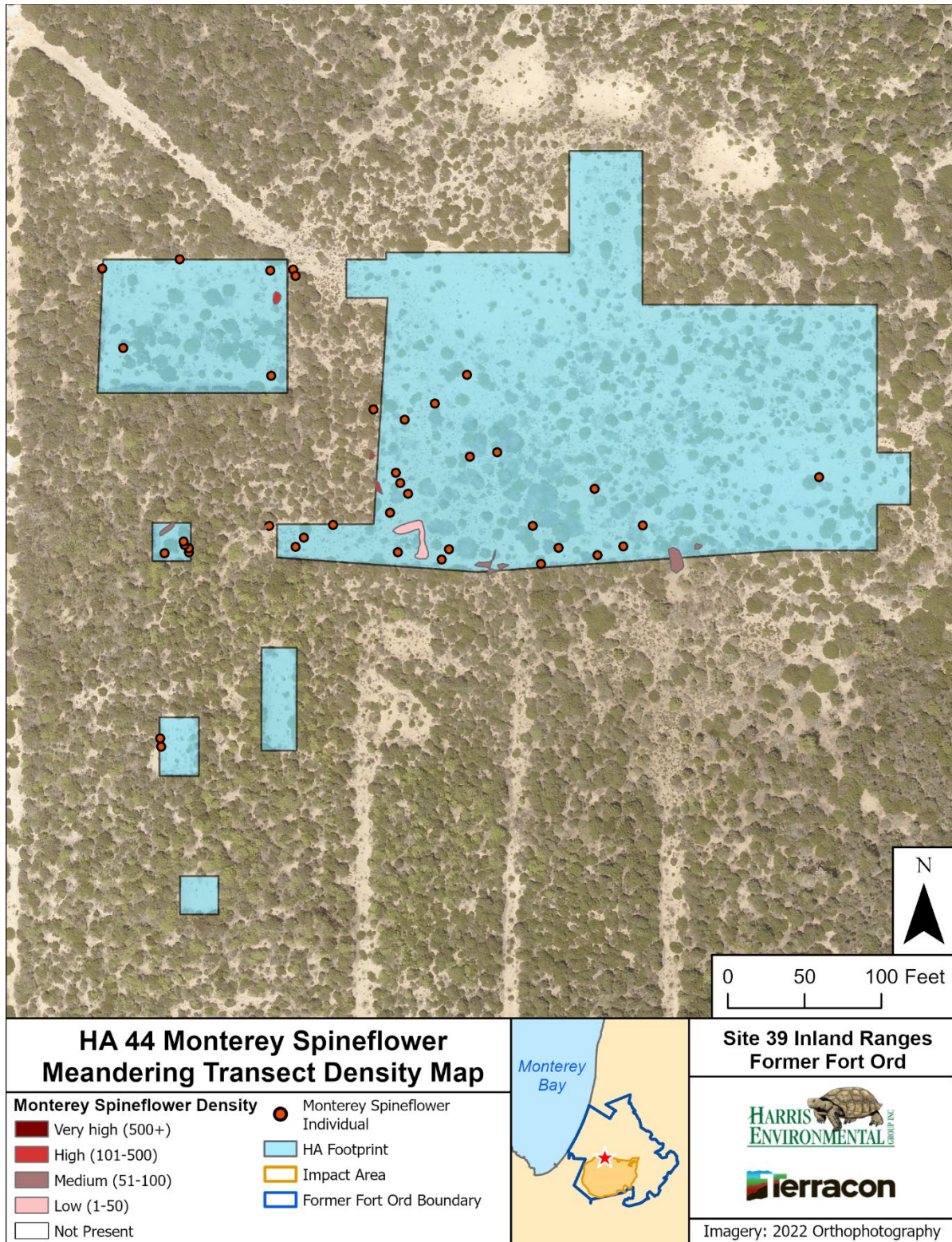


Figure 8-67. HA 44 Monterey spineflower density in 2025

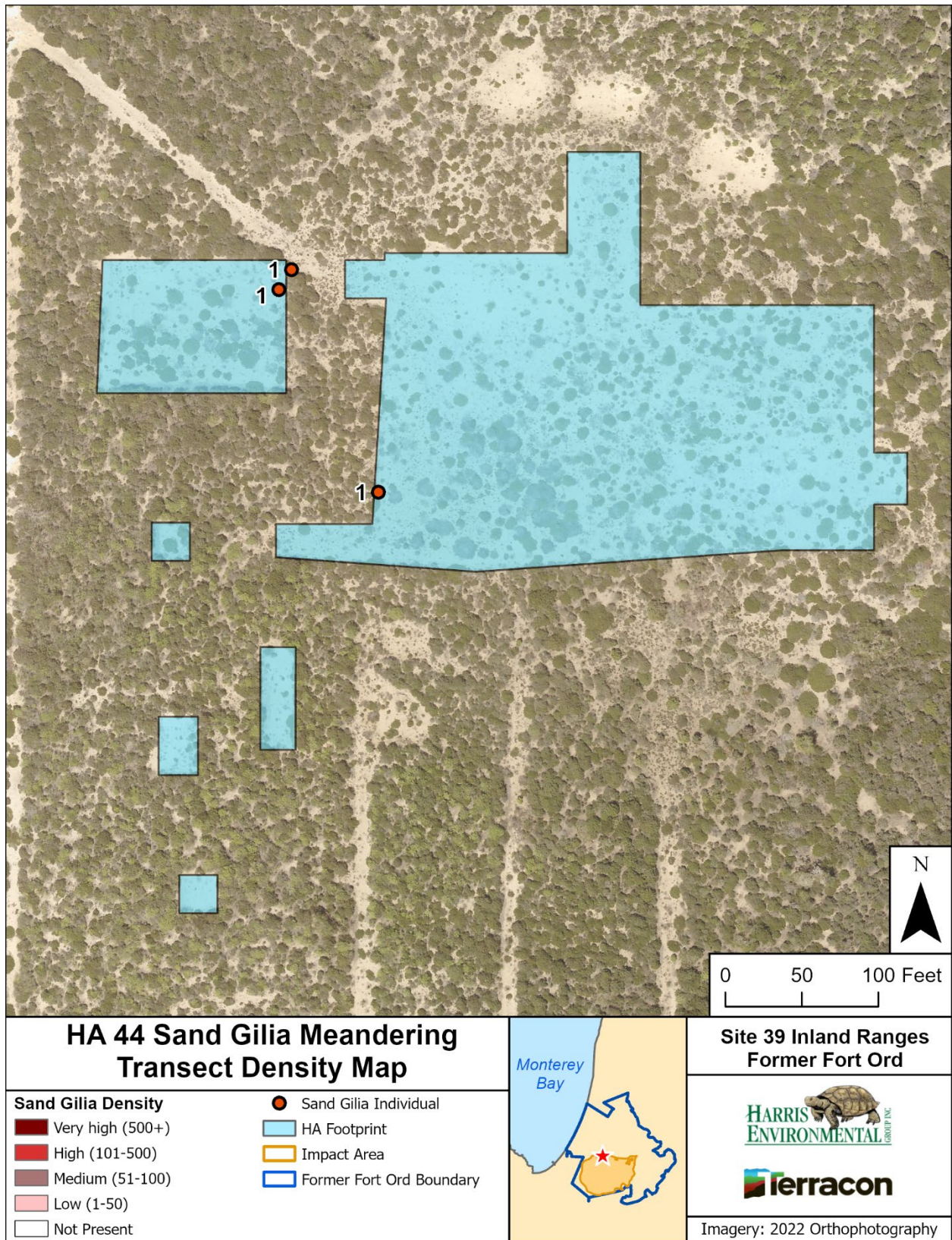


Figure 8-68. HA 44 sand gilia density in 2025

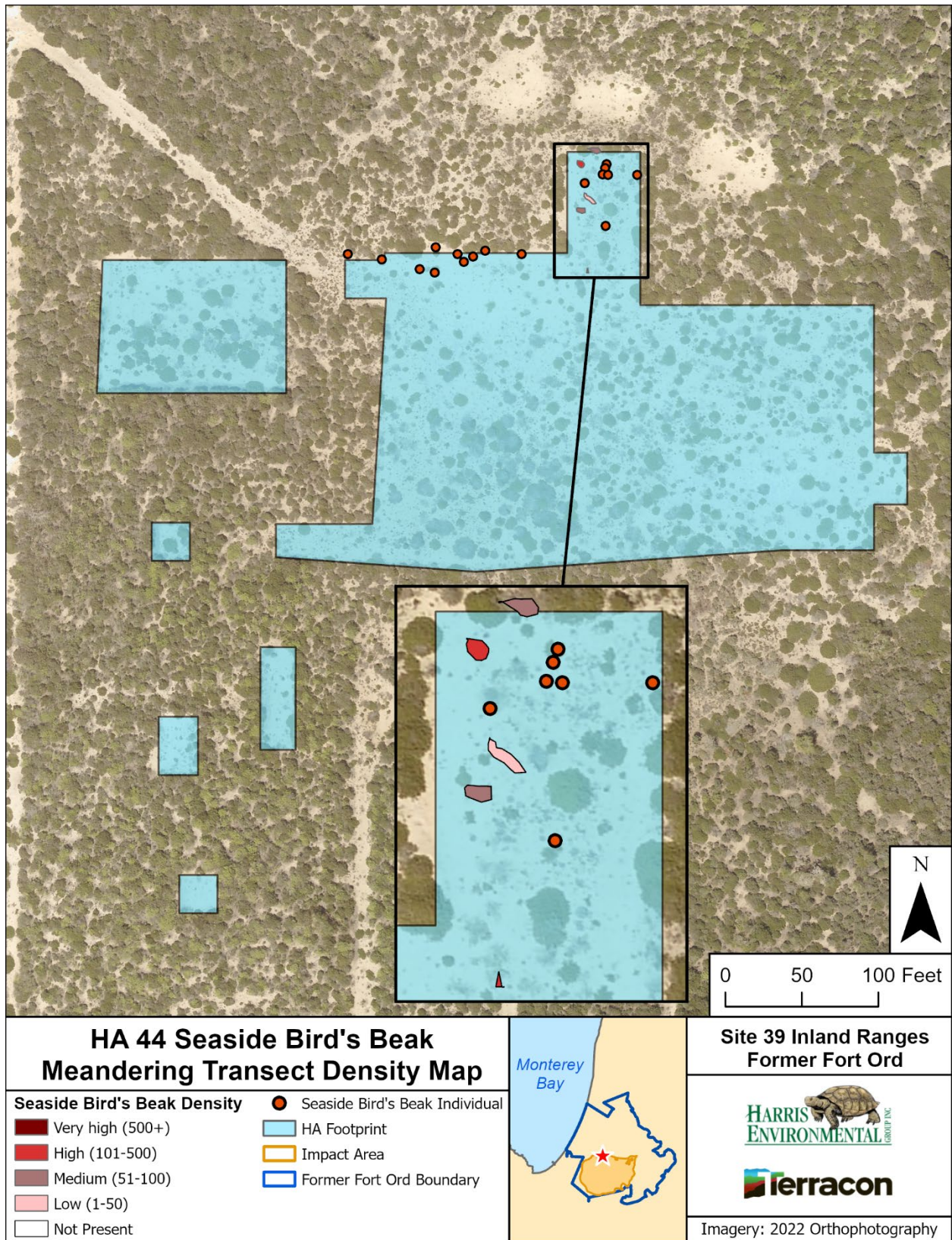


Figure 8-69. HA 44 seaside bird's beak density in 2025

8.17.3 Discussion and Recommendations

HA 44 was in Year 8 of monitoring in 2025 and met all six success criteria (see Table 8-95), even exceeding its HMP shrub cover class criterion. The full restoration prescription has been implemented, with the exception of establishing HMP annual restoration plots, as these species were already present on site. A qualitative overview of site conditions was documented through photo points (see Appendix C, page C-18).

The site will continue to be monitored in Year 13 (2030) through photo documentation, species richness surveys, target non-native weed monitoring, and vegetative cover measurements (see Table 8-90). Table 8-94 summarizes the current status of HA 44, including the success criteria met and associated recommendations. No recommendations are proposed at this time.

Table 8-95. Status and Recommendations for Achieving Success Criteria at HA 44

Success Criterion	Category	Acceptable Limits	Year 5 (2022) Met	Year 8 (2025) Met	Recommendation	Results
Objective 1 – No. 1	Species richness	5 required species: ADFA, ARPU, ARTO, CERI, FRCA	Yes	Yes	None	Year 5: met Year 8: met
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	Yes	None	Year 5: 27.01% Year 8: 48.91%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	None	Year 5: 0.00% Year 8: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	Yes	Yes	None	Year 5: 20.08% Year 8: 38.00%
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 2% CERI = present	Yes	ARPU = Yes CERI = Yes	None	Year 5: ARPU 18.72% CERI 1.36% Year 8: ARPU 36.10% CERI 1.90%
Objective 3 – No. 4	HMP annual density	Low density for CHPUP, GITEA, and CORIL	Yes	Yes	None	Year 5: met Year 8: met (Establishment of restoration plots was not necessary)

8.18 HA 48

HA 48 was used by the Army as a range for mortars, weapons demonstrations, sniper training, anti-tank weapons, and various other weapons. Approximately 150 cubic yards of soil were excavated over 0.05 acre. HA 48 is within unprotected maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). HA 48 is relatively flat with a southeast aspect and is surrounded by very high-quality habitat.

HA 48 is located on the northern portion of Site 39, within the sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for passive restoration at HA 48 consisted of hand broadcast non-irrigated seed and annual weed management activities. HA 48 has little potential for erosion.

Restoration activities at HA 48 occurred in 2019 and quantitative monitoring began in 2016. HA 48 was monitored for 10 years by photo documentation and site visits, six years for HMP annual density across the HA and species richness, and five years for vegetative cover (see Table 8-96). Figure 8-70 shows the HA footprint, passive restoration areas, and photo point monitoring locations. Success criteria for HA 48 are summarized in Table 8-97.

Table 8-96. Historic Summary of Restoration and Monitoring Activities at HA 48

Activity	Monitoring Years										
	1	2	3	4	5	6	7	8	9	10	13
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2028
Restoration: Active and Passive				●							
Photo Points and Site Visit	●	●	●	●	●	●	●	●	●	●	●
HMP Annual Density across HA	●	●	●	●	●			●			
Species Richness	●	●	●	●	●			●			●
Vegetative Cover		●	●	●	●			●			●

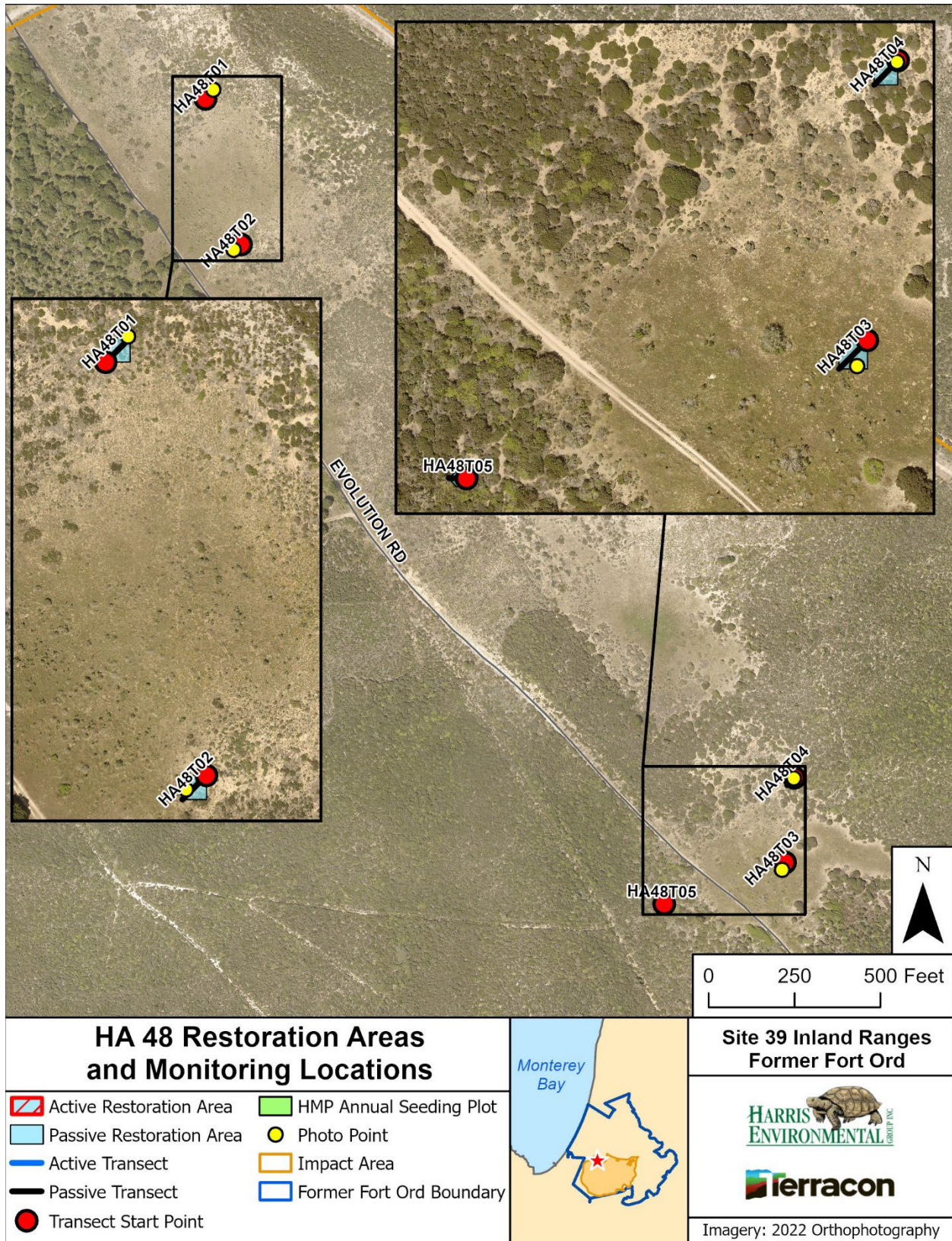


Figure 8-70. HA 48 Restoration Areas and Monitoring Locations Map

Table 8-97. Success Criteria and Acceptable Limits for Restoration of HA 48

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: chamise sandmat manzanita† shaggy-bark manzanita Monterey ceanothus† wedge-leaved horkelia black sage silver bush lupine peak rush-rose
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did not indicate presence of non-native target weed species. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 3 (6-25% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Sandmat manzanita percent cover, as an average of transect data, must be equal or less than 1 percent. Monterey ceanothus percent cover, as an average of transect data, must be present however, less than 4 percent is acceptable.
	HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low Sand gilia density class: Low

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.18.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities were conducted at HA 48 in 2025.

8.18.2 Monitoring Results

HA 48 was in year 10 of monitoring in 2025. Year 10 does not require monitoring and only site visits and photo documentation were completed (see Appendix C, page C-19).

8.18.2.1 HA 48 Status

There are no updates to the HA 48 status discussion; see Table 8-98 for a summary of the most recent HA status and likelihood of achieving success criteria. An in-depth discussion of past trends and recommendations is available in the 2022 Annual Report (Burleson, 2023).

HA 48 will continue to be monitored by photo documentation, species richness meandering transects, and vegetative cover line-intercept transects in monitoring year 13, 2028 (Table 8-96).

Table 8-98. Status for Achieving Success Criteria at HA 48

Success Criterion	Category	Acceptable Limits	Year 5 (2020) Met	Year 8 (2023) Met	Likelihood of Achieving Success by Year 13 (2028)	Results
Objective 1 – No. 1	Species richness	8 required species: ADFA, ARPU, ARTO, CERI, CRSC, HOCU, LUCH/LUAL, SAME	Yes	Yes	HIGH	Year 5: met Year 8: met
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	No	LOW	Year 5: 28.38% Year 8: 29.74%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	Yes	HIGH	Year 5: 0.00% Year 8: 0.00%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	Yes	Yes	HIGH	Year 5: 20.75% Year 8: 17.46%
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 1% CERI = present	ARPU = Yes CERI = Yes	ARPU = Yes CERI = No	HIGH for ARPU and MODERATE for CERI	Year 5: ARPU 20.12% CERI 0.64% Year 8: ARPU 17.46% CERI 0.00%
Objective 3 – No. 4	HMP annual density	Low density for CHPUP and GITEA	Yes	Yes	NA	Year 5: met Year 8: met

8.19 Austin Road Stockpile

Austin Road Stockpile encompasses approximately 0.45 acres and was used by the Army as a stockpile for soil remediation and by the Presidio of Monterey Fire Department to provide water to helicopters. The top six inches of soil at the Austin Road Stockpile were removed. The Austin Road Stockpile rests within maritime chaparral with mean annual temperatures ranging between 56° and 58°F and regular fog typical of maritime climates (USFS, 2007). The Austin Road Stockpile is relatively flat. Adjacent lands were not developed and contain intact native vegetation that may promote natural recruitment within restoration areas.

The Austin Road Stockpile is located on the western portion of Site 39, occurring within sand hill formation maritime chaparral containing the Baywood soils series based on previous baseline data (USACE, 1992). Baywood soils consist of very deep, somewhat excessively drained soils on old sand dunes and narrow valleys. Typically, the surface layer is brown, slightly acid loamy sand, and 17 inches thick. The underlying material to a depth of 61 inches is brown, slightly acid loamy sand, and sand. In a few areas, the surface layer is fine sand (USFS, 2007).

The SSRP prescription for passive restoration at the Austin Road Stockpile consists of hand broadcast non-irrigated seed and annual weed management activities. Austin Road Stockpile is relatively flat with little potential for erosion.

Restoration activities have not occurred at Austin Road Stockpile. Quantitative monitoring began in 2016. Austin Road Stockpile was monitored for 10 years by photo documentation and site visits, nine years for HMP annual density across the HA, and eight years for species richness (see Table 8-99). Figure 8-71 shows the site footprint, passive restoration area, and photo point monitoring locations. Success criteria for Austin Road Stockpile are summarized in Table 8-100.

Table 8-99. Historic Summary of Monitoring Activities at Austin Road Stockpile

Activity	Monitoring Years									
	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Photo Points and Site Visit	●	●	●	●	●	●	●	●	●	●
HMP Annual Density across HA	●	●	●	●	●	●	●	●	●	
Species Richness	●	●	●	●	●	●	●		●	
Vegetation Cover									●	
Caretaking Activities									●	

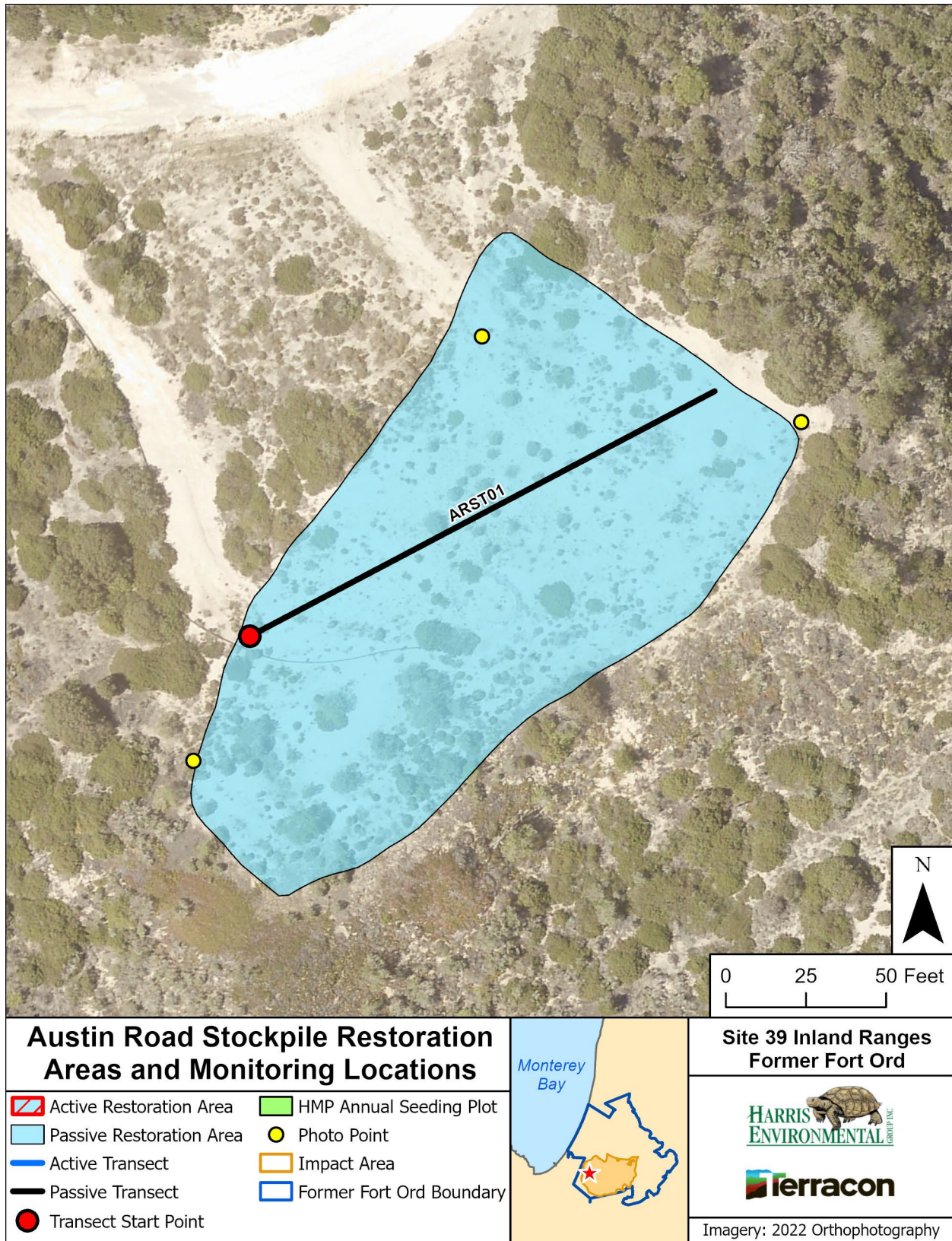


Figure 8-71. Austin Road Stockpile Restoration Areas and Monitoring Locations Map

Table 8-100. Success Criteria and Acceptable Limits for Restoration of Austin Road Stockpile

No.	Success Element	Decision Rule	Acceptable Limits
Objective 1*			
1	Restoration demonstrates native species richness	Equivalent native species richness equal to baseline data.	Native species that must be present to demonstrate richness: common yarrow chamise Hooker's manzanita† shaggy-bark manzanita sandmat manzanita† coyote brush Monterey ceanothus† Monterey spineflower† mock heather golden yarrow peak rush-rose wedge-leaved horkelia deerweed silver bush lupine sticky monkeyflower black sage
2	Percent cover of native species	Percent cover equals 40 percent for native species	For the restoration area, percent cover monitoring data must meet or exceed 40 percent for native species listed as part of the plant palette in Table 2 of the SSRP.
Objective 2*			
3	Percent cover of non-native target weeds	Percent cover of non-native target weeds must be equal or less than baseline data or equal or less than 5 percent [whichever is lower]	Baseline data did not indicate non-native target weed species. No more than 5 percent non-native target weeds may be present at this restoration site.
Objective 3*			
4	HMP shrubs percent cover, density, and diversity	HMP shrub cover class must meet or exceed baseline data	Cover class: 3 (6-25% of absolute cover)
		No net-loss of HMP shrubs, percent cover, density, diversity must equal baseline HMP data	Sandmat manzanita percent cover, as an average of transect data, must be equal or greater than 25.
			Monterey ceanothus percent cover, as an average of transect data, must be equal or greater than 4.
HMP annuals percent cover and abundance [density class]	HMP annuals density class must meet or exceed baseline data	Monterey spineflower density class: Low	

* Objectives presented in HRP (Shaw, 2009b)

† HMP Species

8.19.1 Restoration and Adaptive Management Plan Activities

No restoration or AMP activities occurred at Austin Road Stockpile in 2025 (see Appendix C, page C-20).

8.19.2 Monitoring Results

Austin Road Stockpile was in Year 10 of informal monitoring in 2025, as restoration has not yet occurred. Site visits and photo documentation were completed in 2025.

8.19.3 Discussion

Austin Road Stockpile did not receive any SSRP prescription activities by 2025. The site is used by the Presidio of Monterey Fire Department to supply water to helicopters for the Army's Fort Ord Prescribed Burn Program and will not be restored until those activities are complete. A qualitative overview was documented by photo points (see Appendix C, page 27). Restoration activities may occur in the future at the site.

Austin Road Stockpile will be monitored in 2026 by photo documentation and site visits. Table 8-101 summarizes the current status of Austin Road Stockpile including which success criteria were met based on 2024 monitoring and recommendations.

Table 8-101. Status for Achieving Success Criteria at Austin Road Stockpile

Success Criterion	Category	Acceptable Limits	Met in 2024	Recommendation	Notes
Objective 1 – No. 1	Species richness	16 required species: ACGL, ACMI, ADFA, ARHO, ARTO, ARPU, BAPI, CERI, CHPUP, DIAU, ERER, ERCO, CRSC, HOCU, LUCH/LUAL, SAME	No	Wait for restoration to begin	2024: ACMI and ARHO absent
Objective 1 – No. 2	Native vegetation cover	≥ 40%	No	One 50m transect installed in 2024	2024: 22.76%
Objective 2 – No. 3	Non-native target weed cover	≤ 5%	Yes	One 50m transect installed in 2024	2024: 0%
Objective 3 – No. 4	HMP shrub cover	Cover class 3: 6-25%	No	One 50m transect installed in 2024	2024: 0%
Objective 3 – No. 4	HMP shrub cover by species	ARPU ≥ 25% CERI ≥ 4% ARHO ≥ 1%	No	One 50m transect installed in 2024	2024: ARPU: 0% CERI: 0% ARHO: 0%
Objective 3 – No. 4	HMP annual density	Low density for CHPUP	Yes	Establishment of restoration plots not necessary	

8.20 Summary of Former Fort Ord Inland Ranges Site 39

As of 2025, there are 19 restoration sites within the Former Fort Ord Site 39 Inland Ranges. Eighteen sites have received restoration prescriptions under the Site-Specific Restoration Plan (SSRP) and are in various stages of monitoring. The Austin Road Stockpile remains the only site that has not yet undergone restoration; however, limited monitoring has been conducted to assess existing site conditions.

Based on the year of restoration implementation, 18 sites currently range from Year 8 to Year 13 of post-restoration monitoring. Pursuant to the Habitat Restoration Plan (HRP), each site undergoes benchmark reviews at Years 5 and 8 to determine whether substantial corrective measures are needed to keep the site on track to meet Year 13 success criteria (Shaw 2009b).

In 2025, eleven sites were in a benchmark monitoring year. HA 44 was in benchmark Year 8, and ten restoration areas (HAs 18, 22, 23, 27, 27A, 29, 33, 36, 39/40, and 43) reached their final monitoring year (Year 13).

Across all 19 restoration sites, performance relative to the success criteria was generally strong. Fifteen sites met the species richness criterion - the HRP's primary measure of whether a site has returned to its pre-remediation ecological character. Ten sites met the native vegetation cover criterion, and all 19 met the non-native target weed cover criterion. Eleven sites met the HMP shrub cover class criterion, three met the HMP shrub cover by species criterion, and 13 of 14 applicable sites met the HMP annual density criterion. See Table 8-102 for a detailed breakdown of success criteria met for each site.

Two sites - HA 26 and HA 44 - met all success criteria by Year 8, five years ahead of schedule. More favorable soil conditions, including reduced excavation and disturbance, likely contributed to this outcome. Similar conditions may explain the comparably strong performance observed at HA 19. HA 26 is the only site where irrigation was implemented.

Table 8-102. Status for Achieving Success Criteria at Historic Areas in Former Fort Ord Inland Ranges Site 39

HA	Monitoring Year (2025)	Success Criteria					
		Species Richness	Native Vegetation Cover	Non-native Target Weed Cover	HMP Shrub Cover Class	HMP Shrub Cover by Species	HMP Annual Density
18	13	No	Yes	Yes	Yes	No	Yes
19	12	Yes	No	Yes	Yes	Yes	Yes
22	13	No	Yes	Yes	No	No	Yes
23	13	Yes	Yes	Yes	Yes	No	Yes
26	10	Yes	Yes	Yes	Yes	Yes	Yes
27	13	No	Yes	Yes	No	No	NA
27A North	13	Yes	No	Yes	No	No	NA
27A South	13	Yes	NA	Yes	NA	NA	NA
28	11	Yes	Yes	Yes	Yes	No	Yes
29	13	Yes	Yes	Yes	No	No	NA
33	13	No	No	Yes	No	No	Yes
34	12	Yes	Yes	Yes	No	No	NA
36	13	Yes	No	Yes	Yes	No	NA
37	12	Yes	No	Yes	Yes	No	Yes
38	12	Yes	Yes	Yes	Yes	No	Yes
39/40	13	Yes	No	Yes	NA	NA	Yes
43	13	Yes	No	Yes	Yes	No	No
44	8	Yes	Yes	Yes	Yes	Yes	Yes
48	10	Yes	No	Yes	Yes	No	Yes
Austin Rd Stockpile	0*	No	No	Yes	No	No	Yes

HAs in years 1-5, 8, and 13 are in benchmark monitoring years and the status of each success criterion is based on current data. For sites not in these monitoring years, the status of each success criterion may be from past monitoring years.

* Austin Rd Stockpile has not yet received restoration, so a monitoring year clock has not started. Austin Rd Stockpile will remain in year "0" until restoration is performed. Therefore no post-restoration data is available.

NA - the success criterion does not apply.

8.20.1 Restoration Sites in Year 13 – the Final Year of Monitoring

In 2025, ten restoration sites were evaluated in their final monitoring year (Year 13): HAs 18, 22, 23, 27, 27A, 29, 33, 36, 39/40, and 43. All ten met the non-native target weed cover criterion, seven met the species richness criterion, and five met the native vegetation cover criterion. Of the nine sites with an applicable HMP shrub cover class criterion, five met the criterion, and five of six applicable sites met the HMP annual density criterion. No sites met the HMP shrub cover by species criterion. Native vegetation cover averaged approximately 41% and HMP shrub cover averaged approximately 17% across Year 13 sites, reflecting the maturing succession of a central maritime chaparral plant community.

All Year 13 sites supported at least some of the targeted HMP shrub species identified in the success criteria, including *Ceanothus rigidus*, *Ericameria fasciculata*, *Arctostaphylos montereyensis*, *Arctostaphylos hookeri*, and *Arctostaphylos pumila*. The presence of these species across sites is itself a meaningful indicator of restoration progress, as each represents a long-lived component of mature central maritime chaparral that establishes slowly under natural conditions. Of these, *A. pumila* (sandmat manzanita) recorded the highest average cover at approximately 12% across applicable sites. This is largely a reflection of growth form: as a prostrate, mat-forming species, *A. pumila* spreads horizontally across the soil surface and accumulates cover increasing the likelihood of intersecting monitoring transects. The more erect manzanita species - though present and establishing at many sites - grow vertically before spreading laterally, and their contribution to measurable canopy cover will increase as stands continue to mature.

The results for HMP shrub cover and HMP shrub cover by species reflect the inherently slow establishment and growth rates of these species, several of which rely on fire-related germination cues and may require many years to develop substantial canopy cover. Establishment was further constrained at several sites by severely compacted soil conditions that predated cleanup activities. Eight of the ten Year 13 sites were initially designed as passive restoration areas relying on seeding and natural recruitment. Benchmark monitoring at Years 5 and 8 revealed that seeding alone did not consistently produce adequate HMP shrub establishment, with several required species found to be absent. In response, adaptive management plan (AMP) actions, including direct installation of container plants, were implemented. In most cases, these interventions were followed by measurable increases in shrub presence and cover. This demonstrates that longer-lived shrub species benefit significantly from direct planting, while seeding remains most effective for early successional species. The successful establishment of HMP shrub species across all Year 13 sites, achieved through adaptive management rather than passive seeding alone, demonstrates that the restoration program has been responsive, effective, and capable of achieving its ecological objectives.

A critical context for interpreting Year 13 results is that success thresholds at several sites were established using reference vegetation that did not reflect the extensive soil disturbance caused by decades of Army activities. Applying criteria derived from undisturbed plant communities to sites with severely degraded soils set an inherently high bar - one that does not diminish the genuine restoration progress achieved. The HMP shrub cover by species criterion represents the most granular and demanding threshold in the success criteria framework; its non-attainment at Year 13 sites should be

considered alongside the broader body of evidence showing diverse, established, and expanding native plant communities across all sites. Monitoring data indicate that rates of HMP shrub cover increase accelerated markedly during later monitoring years, confirming that sites are transitioning from early successional dominance to the canopy expansion characteristic of a maturing maritime chaparral community. The presence and continued growth of all targeted HMP shrub species across Year 13 sites demonstrate that establishment is actively progressing and that the restoration areas are developing toward the structure and composition of the surrounding native landscape.

Site-specific results for the Year 13 sites are as follows:

HA 18

HA 18 is a 1.4-acre passive restoration site with an SSRP seed target of 50.2 pounds. The seed prescription was met in 2012, and an additional 2 pounds of AMP seed were applied in 2019, for a total of 53.2 pounds. AMP planting of 353 targeted shrub species also was conducted in 2019, 2020, and 2022 to help the site progress toward its success criteria. The site has responded positively to restoration and AMP efforts and is on a clear trajectory toward meeting all success criteria. In 2025, HA 18 supports approximately 63% native vegetation cover and 9% HMP shrub cover, exceeding the HMP shrub cover class criterion and meeting four of six success criteria: native vegetation cover, non-native target weed cover, HMP shrub cover class, and HMP annual density. While species richness and HMP shrub cover by species criteria were not met, species richness is strong and measurable progress toward all HMP shrub species has been made. Based on these results (Table 8-6), restoration at HA 18 is considered successfully implemented and ecologically self-sustaining.

HA 22

HA 22 is a 0.05-acre passive restoration site with an SSRP seed target of 1.2 pounds. The seed prescription was met in 2011–2012. AMP planting of 225 targeted shrub species was conducted in 2019 and 2022 to support progress toward the site's success criteria. The site has responded positively to restoration and AMP efforts and is on a trajectory toward meeting all success criteria. In 2025, HA 22 supported approximately 48% native vegetation cover and approximately 6% HMP shrub cover, meeting three of six criteria. Although the species richness, HMP shrub cover, and HMP shrub cover by species criteria were not fully met, the site exhibits strong species richness, HMP shrub cover fell just 0.11% below its threshold, and all HMP shrub species are present and progressing toward their targets. Based on these results (Table 8-15), restoration at HA 22 is considered successfully implemented and ecologically self-sustaining.

HA 23

HA 23 is a 0.3-acre passive restoration site with an SSRP seed target of 7.3 pounds. The seed prescription was met in 2011–2012, and AMP seeding of 7.6 pounds of native seed was conducted in 2019–2020, totaling 14.9 pounds of seed applied at the site. AMP planting of 155 targeted shrubs also was conducted in 2019 and 2023 to help the site progress toward its success criteria. The site has responded positively to restoration and AMP efforts and is on a clear trajectory toward meeting all success criteria.

In 2025, HA 23 supported approximately 48% native vegetation cover and 37% HMP shrub cover—the highest HMP shrub cover recorded among Year 13 sites. The site met five of six criteria; only the HMP shrub cover by species success criterion was not met, but it is progressing toward those targets. Based on these results (Table 8-21), restoration at HA 23 is considered successfully implemented and ecologically self-sustaining.

HA 27

HA 27 is a 0.6-acre passive restoration site with an SSRP seed target of 1.3 pounds. The seed prescription was met in 2011–2012, and AMP seeding of 2.7 pounds of native seed was conducted between 2019 and 2024, for a total of 4 pounds applied to the site. AMP planting of 89 targeted plants also was conducted between 2019 and 2023 to help the site progress toward its success criteria. The site has responded positively to restoration and AMP efforts, is showing a strong transition from early succession plant dominance to climax shrub dominance, and is on a trajectory toward meeting its success criteria. In 2025, HA 27 supported approximately 60% native vegetation cover and 13% HMP shrub cover, meeting two of five applicable criteria: native vegetation cover and non-native target weed cover. Species richness, HMP shrub cover class, and HMP shrub cover by species success criteria were not met, but the site is progressing toward those targets. Based on these results (Table 8-30), restoration at HA 27 is considered successfully implemented and ecologically self-sustaining.

HA 27A (27A North and 27A South)

Due to highly disturbed or absent soils in the southern portion of HA 27A, the site was managed as two distinct areas—HA 27A North and HA 27A South—with different success criteria.

HA 27A North is a 0.2-acre portion of HA 27A with an SSRP seed target of approximately 4.5 pounds. The seed prescription was met in 2011–2012, and AMP seeding of approximately 4 pounds of native seed was conducted between 2016 and 2024, for a total of 8.5 pounds. AMP planting of 225 HMP shrubs also was conducted between 2021 and 2022 to support progress toward HMP shrub cover and HMP shrub cover by species criteria. The site has responded positively to restoration and AMP efforts, is showing a strong transition from early successional plant dominance to climax shrub dominance, and is on a trajectory toward meeting its success criteria. In 2025, HA 27A North supported approximately 33% native vegetation cover and 8% HMP shrub cover, meeting two of five criteria: species richness and non-native target weed cover. Native vegetation cover, HMP shrub cover, and HMP shrub cover by species criteria were not met; however, the site is demonstrating measurable progress toward those targets. Based on these results (Table 8-39), restoration at HA 27A North is considered successfully implemented and ecologically self-sustaining.

HA 27A South is a 0.4-acre portion of HA 27A with an SSRP seed target of approximately 9 pounds. The seed prescription was met in 2011–2012, and AMP seeding of approximately 60 additional pounds of native seed was conducted between 2016 and 2024, for a total of 69 pounds. Additional erosion control measures, including straw wattle installation and mulching, were implemented during this period to address significant erosion. AMP planting of 300 native plants also was conducted in 2021 to support progress toward general restoration objectives. The site has responded positively to restoration and

AMP efforts, erosion is now minimal, and it resembles an early successional plant community with some shrub cover. In 2025, HA 27A South supported approximately 24% native vegetation cover and 7% HMP shrub cover, meeting two of two criteria: species richness and non-native target weed cover. Based on these results (Table 8-40), restoration at HA 27A South is considered successfully implemented; however, continued weed management is recommended to sustain restoration achievements.

HA 29

HA 29 is a 1.0-acre active and passive restoration site with an SSRP seed target of 24.6 pounds and 1,174 plants. The seed and plant prescription was met in 2011–2013, and AMP seeding of 41 pounds of native seed was conducted between 2016 and 2022, for a total of 65.6 pounds. AMP planting of 435 targeted plants also was conducted between 2019 and 2021, for a total of 2,091 plants. The site has responded positively to restoration and AMP efforts and is showing a strong transition from early succession plant dominance to climax shrub dominance, placing it on a trajectory toward meeting its success criteria. In 2025, HA 29 supported approximately 53% native vegetation cover and 18% HMP shrub cover, meeting three of five applicable criteria: species richness, native vegetation cover, and non-native target weed cover. HMP shrub cover class and HMP shrub cover by species criteria were not met but showed measurable progress. Based on these results (Table 8-49), restoration at HA 29 is considered successfully implemented and ecologically self-sustaining.

HA 33

HA 33 is a 0.01-acre passive restoration site with an SSRP seed target of 0.2 pounds. The seed prescription was met in 2011–2012, and AMP seeding of 4 pounds of native seed was conducted between 2019 and 2024, for a total of 4.2 pounds. AMP planting of 184 targeted plants also was conducted between 2019 and 2020 to support progress toward its success criteria. The site has responded positively to restoration and AMP efforts, is showing a strong transition from early successional plant dominance to climax shrub dominance, and is on a clear trajectory toward meeting its success criteria. In 2025, HA 33 supported approximately 36% native vegetation cover and 15% HMP shrub cover, meeting two of six success criteria: non-native target weed cover and HMP annual density. The native vegetation cover criterion was missed by only 4%. Species richness, HMP shrub cover class, and HMP shrub cover by species criteria were not met. Based on these results (Table 8-55), restoration at HA 33 is considered successfully implemented and ecologically self-sustaining.

HA 36

HA 36 is a 0.5-acre passive restoration site with an SSRP seed target of 12.8 pounds. The seed prescription was met in 2011–2012; however, due to highly disturbed hardpan soil conditions, substantial AMP efforts were required to support progress toward restoration objectives. AMP seeding of 62.5 pounds of native seed, planting of 953 targeted plants, mulch application, and fertilizer treatments were implemented between 2016 and 2024. The site has responded positively to restoration efforts and is on a slow trajectory toward meeting most of its success criteria. In 2025, HA 36 supported approximately 20% native vegetation cover and 9% HMP shrub cover, meeting three of five success criteria: species richness, non-native target weed cover, and HMP shrub cover class. Native vegetation

cover and HMP shrub cover by species criteria were not met. Based on these results (Table 8-71), restoration at HA 36 is considered successfully implemented; however, continued weed management is recommended to ensure continued progress toward restoration objectives.

HA 39/40

HA 39/40 is a 2.4-acre passive and active restoration site with a seed target of 77.3 pounds and 2,130 plants. The seed and plant prescription was met in 2012–2013, and AMP seeding of 77.3 pounds of native seed was conducted between 2020 and 2024, for a total of 149.6 pounds. AMP planting of 1,388 targeted plants also was conducted, for a total of 3,518 plants at the site. The site has responded positively to restoration and AMP efforts, is exhibiting good native cover for grassland and coastal scrub habitats, and is progressing toward meeting its success criteria. In 2025, HA 39/40 supported 11% native vegetation cover, meeting three of four applicable criteria: species richness, non-native target weed cover, and HMP annual density. The 40% native vegetation cover criterion was not met; however, it is recommended that HA 39/40 be evaluated against a 20% native cover target, which is more representative of baseline conditions. Based on these results (Table 8-83), restoration at HA 39/40 is considered a successfully implemented site supporting a combination of coastal scrub and grassland habitats.

HA 43

HA 43 is a 0.09-acre passive restoration site with an SSRP seed target of 1.9 pounds. The seed prescription was met in 2011–2012, and AMP seeding of 4.5 pounds of native seed was conducted between 2019 and 2024, for a total of 6.4 pounds. The sand gilia restoration plot was re-seeded in 2020 and monitored for two additional years to support the HMP annual density criterion, and AMP planting of 119 targeted plants was conducted in 2019 and 2022 to support progress toward the HMP shrub cover by species criterion. The site has responded positively to restoration and AMP efforts and is exhibiting a transition to HMP shrub cover dominance, even exceeding the HMP shrub cover class criterion. In 2025, HA 43 supported approximately 37% native vegetation cover and 33% HMP shrub cover, meeting three of six success criteria: species richness, non-native target weed cover, and HMP annual density. The native vegetation cover criterion was missed by only 3%, the HMP annual density criterion for sand gilia was slightly deficient, and HMP shrub cover by species showed measurable progress. Based on these results (Table 8-89), restoration at HA 43 is considered successfully implemented and ecologically self-sustaining.

8.20.2 Remaining Restoration Sites

The remaining restoration sites not yet in their final monitoring year continue to progress through their respective monitoring schedules. HA 44, currently in benchmark Year 8, met all applicable success criteria and joins HA 26 as a site that has achieved full restoration goals ahead of its final monitoring year. The benchmark review confirmed that no substantial corrective measures are required at this time.

All other sites will continue to be monitored annually, with performance trends tracked against Year 13 success criteria. Where benchmark reviews have identified deficiencies - particularly in HMP shrub

establishment - adaptive management measures, including targeted planting, have been implemented and are being evaluated for effectiveness.

8.20.3 Conclusion

The 2025 monitoring cycle demonstrates that restoration across the Site 39 Inland Ranges has achieved, and in several cases exceeded, the ecological conditions present at these sites prior to remediation. Vegetation communities are diverse, non-native target weeds are effectively controlled, and native species richness at most sites meets or surpasses pre-remediation benchmarks - the foundational goal established by the HRP. Where success criteria have not been fully met, this reflects criteria that did not account for the severity of pre-existing soil disturbance, derived as they were from surrounding undisturbed reference vegetation rather than from the degraded conditions that characterized these sites prior to remediation. Reference-based criteria inherently set a higher bar than pre-remediation baselines, and their partial non-attainment does not indicate failure. The Army has successfully implemented adaptive management techniques, including erosion control measures, mulch and fertilizer applications, and direct planting, that have demonstrably improved outcomes beyond those achievable under SSRP prescriptions alone. The successful establishment of HMP shrub species across all Year 13 sites demonstrates that the restoration program has been responsive, effective, and capable of achieving its ecological objectives. While HMP shrub establishment remains the most difficult criterion to satisfy due to the inherently slow growth rates of these species and, in some cases, severely degraded pre-remediation soil conditions, annual monitoring trends confirm that canopy development is accelerating as sites transition into more mature successional stages. The trajectory of vegetation cover across the restoration program provides strong confidence that these communities are sustainable and continuing to develop toward - and in many respects already reflecting - the structure and composition of the native landscape. Based on the totality of monitoring evidence, the Army considers restoration at the Year 13 sites to be complete, with vegetation communities established, largely self-sustaining, and reflective of the surrounding native landscape, with targeted weed management recommended in highly disturbed soil areas to ensure continued progress.

9. COMMUNITY INVOLVEMENT WORKSHOP / OPEN HOUSE BUS TOUR

In addition to general restoration activities, Harris-Terracon updated a PowerPoint presentation highlighting the restoration progress at various HAs over time with an audio voiceover for the former Fort Ord Clean-Up Virtual Open House held in February 2025. The Harris-Terracon team also participated in the former Fort Ord Clean-Up Open House on July 26, 2025. The team engaged with the public on habitat restoration at former Fort Ord and distributed approximately 26 packets of native seed. A new feature at the table was the inclusion of two California tiger salamanders, a federally and state threatened species, displayed under the guardianship of Thor Anderson with approval from the U.S. Fish and Wildlife Service. The salamanders drew significant interest from attendees and served as an effective focal point for discussing habitat restoration and environmental protection efforts at Fort Ord. Photograph B-2 in Appendix B shows the Harris-Terracon table at the July open house event.

10. ANNUAL SITE 39 HABITAT RESTORATION MEETING

In accordance with the HRP, annual meetings were held with regulatory agencies, BRAC, and USACE to review and discuss restoration site data, restoration activities, annual monitoring results, and proposed adaptive management strategies to improve restoration success. These meetings also addressed weed management, sampling protocols, passive versus active restoration approaches, the need for corrective measures, and evaluation of the 13-year monitoring endpoint proposed in the HRP.

The Fourteenth Annual Site 39 Habitat Restoration and Habitat Monitoring Meeting was held on April 10, 2025. Participants included USFWS, the California Department of Fish and Wildlife, the U.S. Environmental Protection Agency, the Department of Toxic Substances Control, BRAC, USACE, the Bureau of Land Management, UC Santa Cruz Natural Reserves, Chenega Reliable Services, JBW Federal, Denise Duffy and Associates, Ahtna, Terracon, and Harris.

Harris-Terracon presented details on Site 39 habitat restoration activities conducted during the 2024 calendar year and provided an update on overall restoration progress.

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APPENDIX A

Restoration Activities

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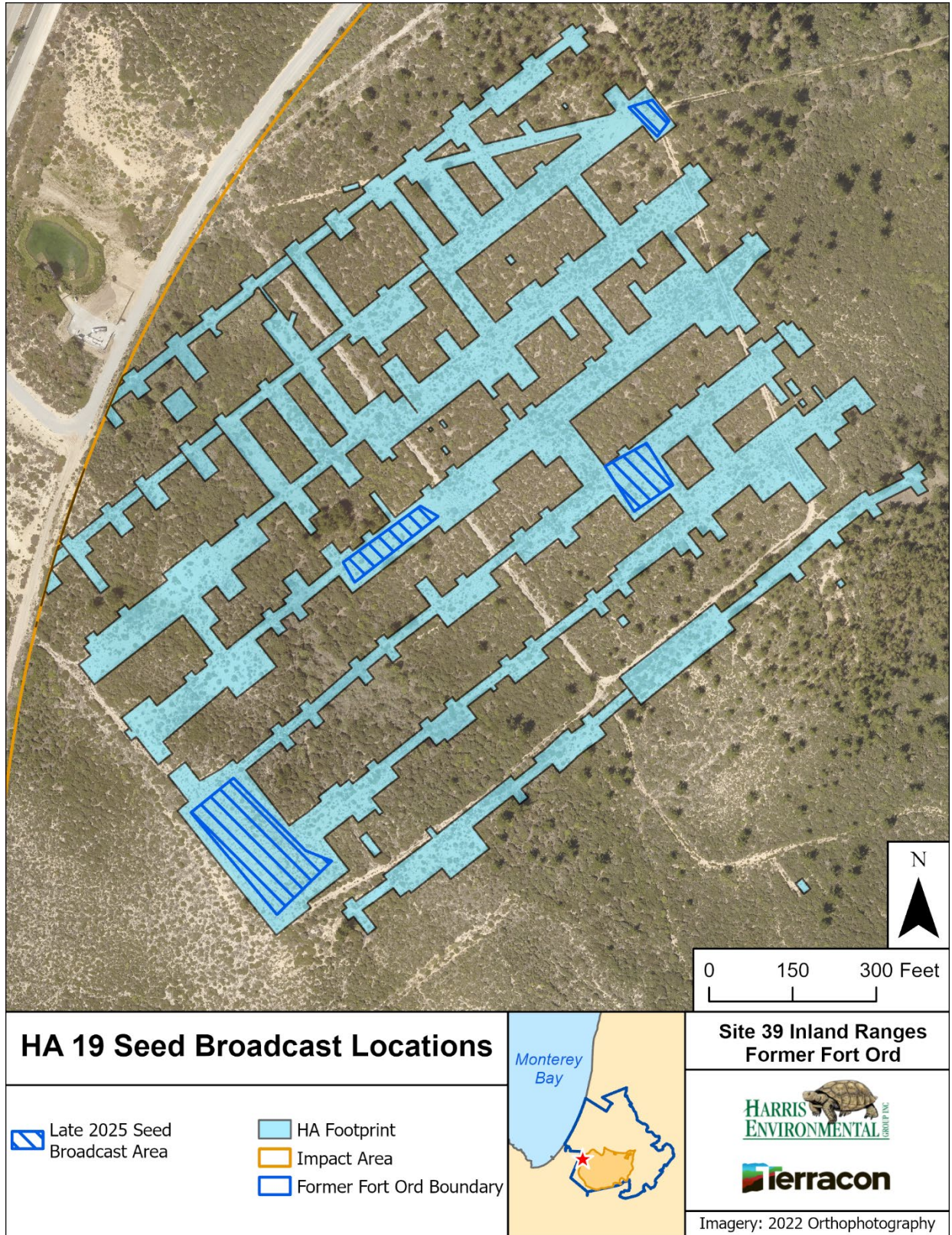


Figure A-1. HA 19 Seed Broadcast Locations, Former Fort Ord

Table A-1. HA 19 Production Seed Mix (Late 2025)

Species	Amount (lbs)
<i>Elymus glaucus</i> (blue wild-rye)	10
<i>Stipa pulchra</i> (purple needlegrass)	20
Supplemental seed	<0.1
TOTAL	30

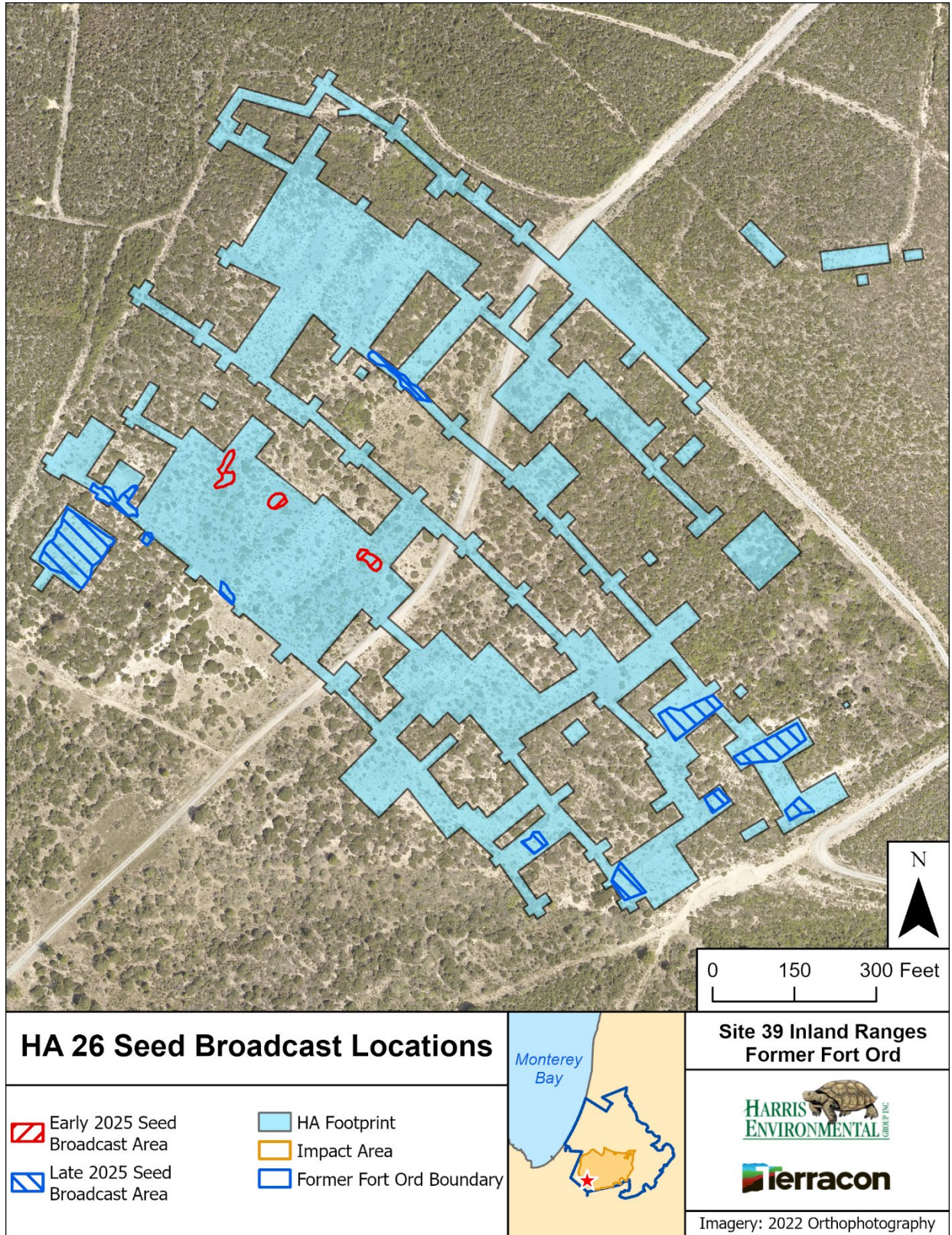


Figure A-2. HA 26 Seed Broadcast Locations, Former Fort Ord

Table A-2. HA 26 Production Seed Mix (Early 2025)

Species	Amount (lbs)
<i>Elymus glaucus</i> (blue wild-rye)	1
<i>Stipa pulchra</i> (purple needlegrass)	1
TOTAL	2

Table A-3. HA 26 Production Seed Mix (Late 2025)

Species	Amount (lbs)
<i>Elymus glaucus</i> (blue wild-rye)	7.5
<i>Stipa pulchra</i> (purple needlegrass)	15
Supplemental seed	<0.1
TOTAL	22.5

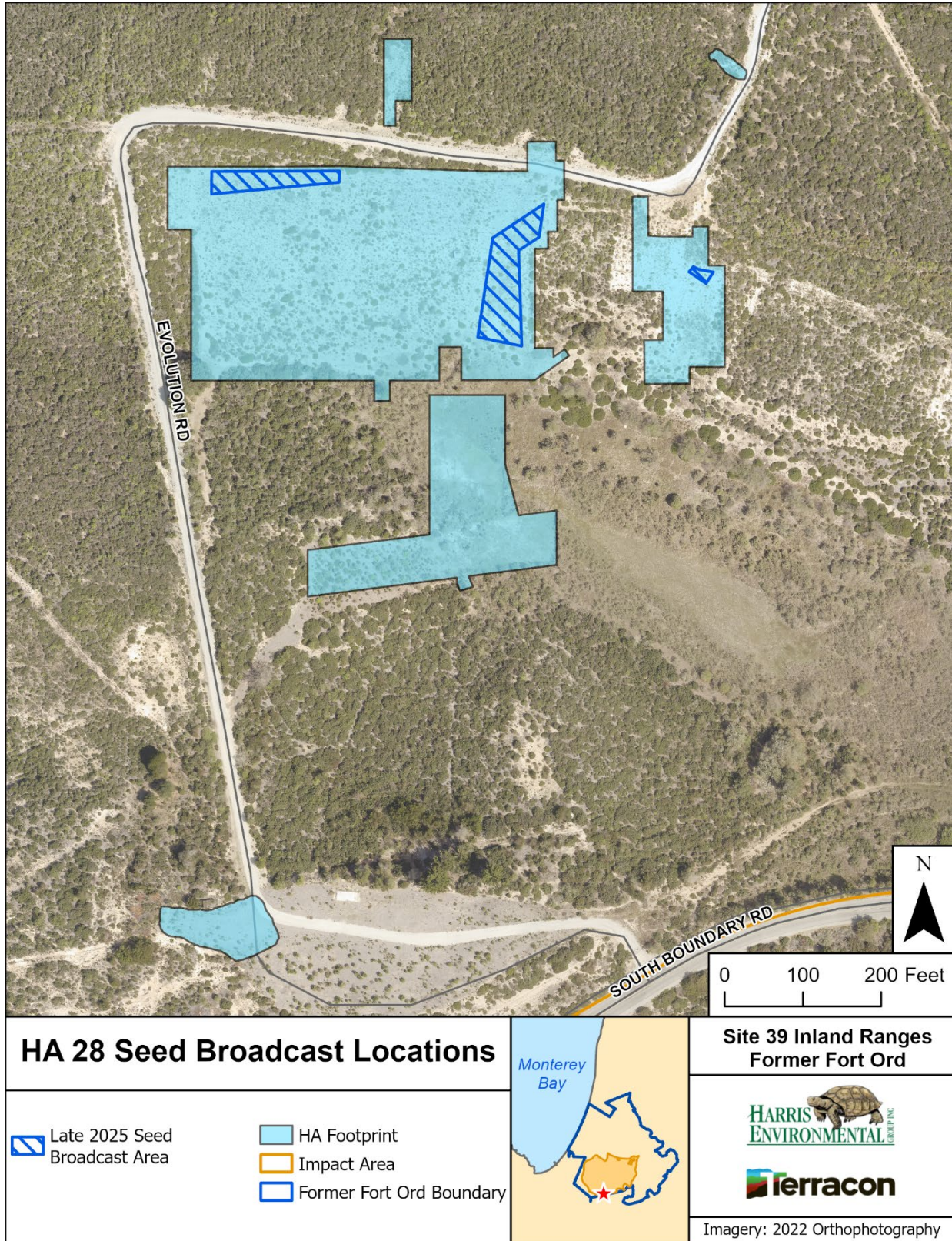


Figure A-3. HA 28 Seed Broadcast Locations, Former Fort Ord**Table A-4. HA 28 Production Seed Mix (Late 2025)**

Species	Amount (lbs)
<i>Elymus glaucus</i> (blue wild-rye)	2.5
<i>Stipa pulchra</i> (purple needlegrass)	5
Supplemental seed	<0.1
TOTAL	7.5

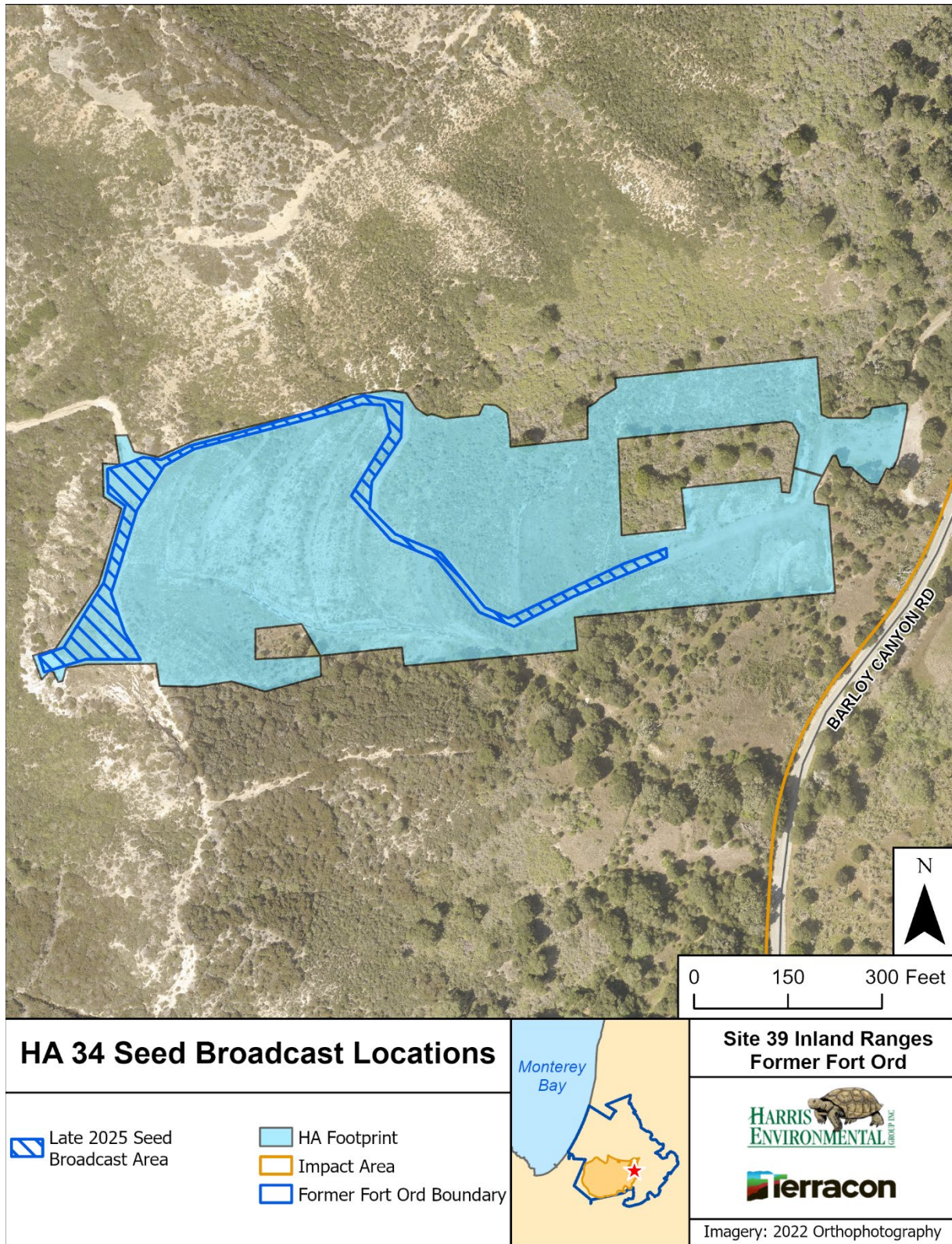


Figure A-4. HA 34 Seed Broadcast Locations, Former Fort Ord

Table A-5. HA 34 Production Seed Mix (Late 2025)

Species	Amount (lbs)
<i>Elymus glaucus</i> (blue wild-rye)	2
<i>Stipa pulchra</i> (purple needlegrass)	4
Supplemental seed	<0.1
TOTAL	6

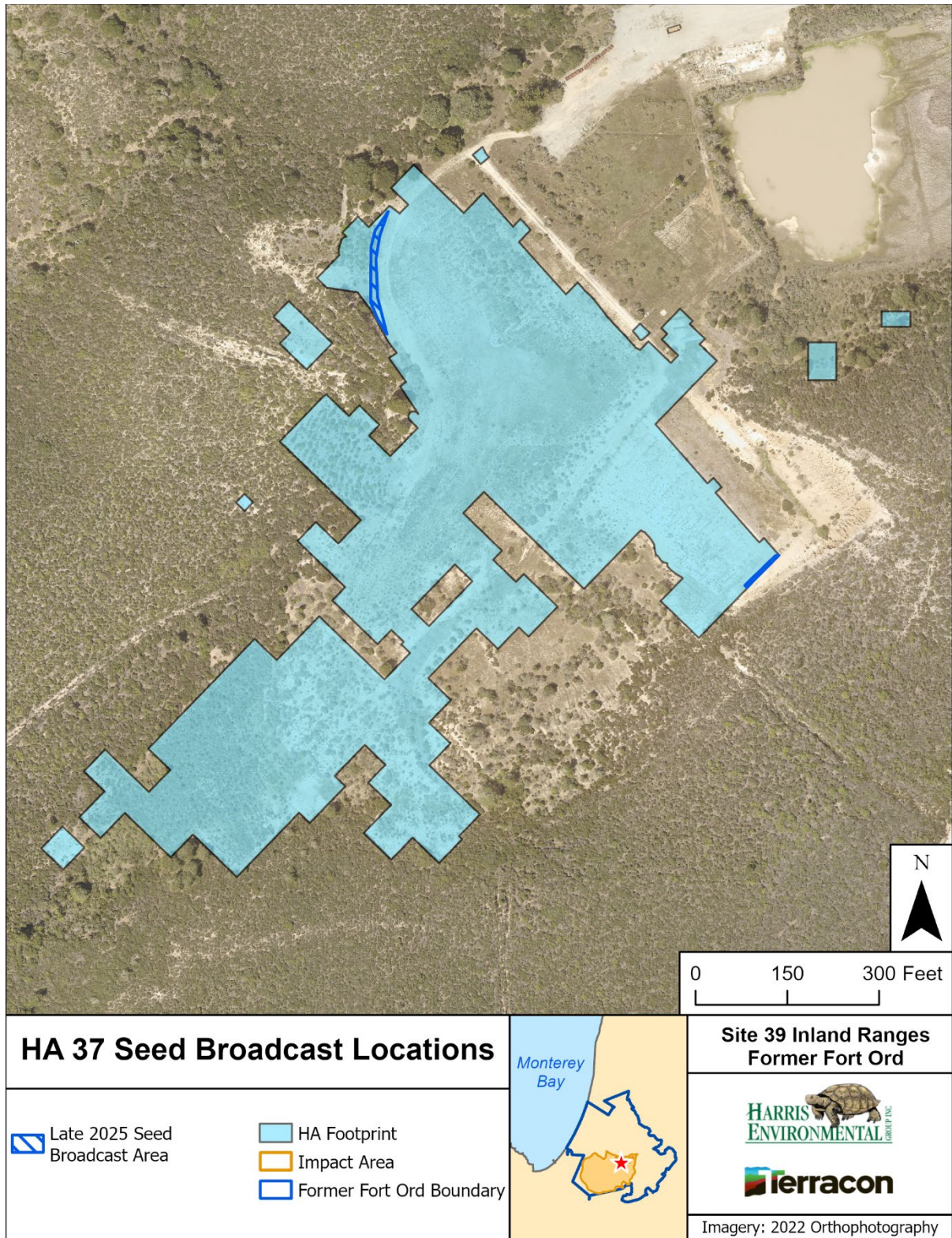


Figure A-5. HA 37 Seed Broadcast Locations, Former Fort Ord.

Table A-6. HA 37 Production Seed Mix (Late 2025)

Species	Amount (lbs)
<i>Elymus glaucus</i> (blue wild-rye)	2
<i>Stipa pulchra</i> (purple needlegrass)	4
Supplemental seed	<0.1
TOTAL	6

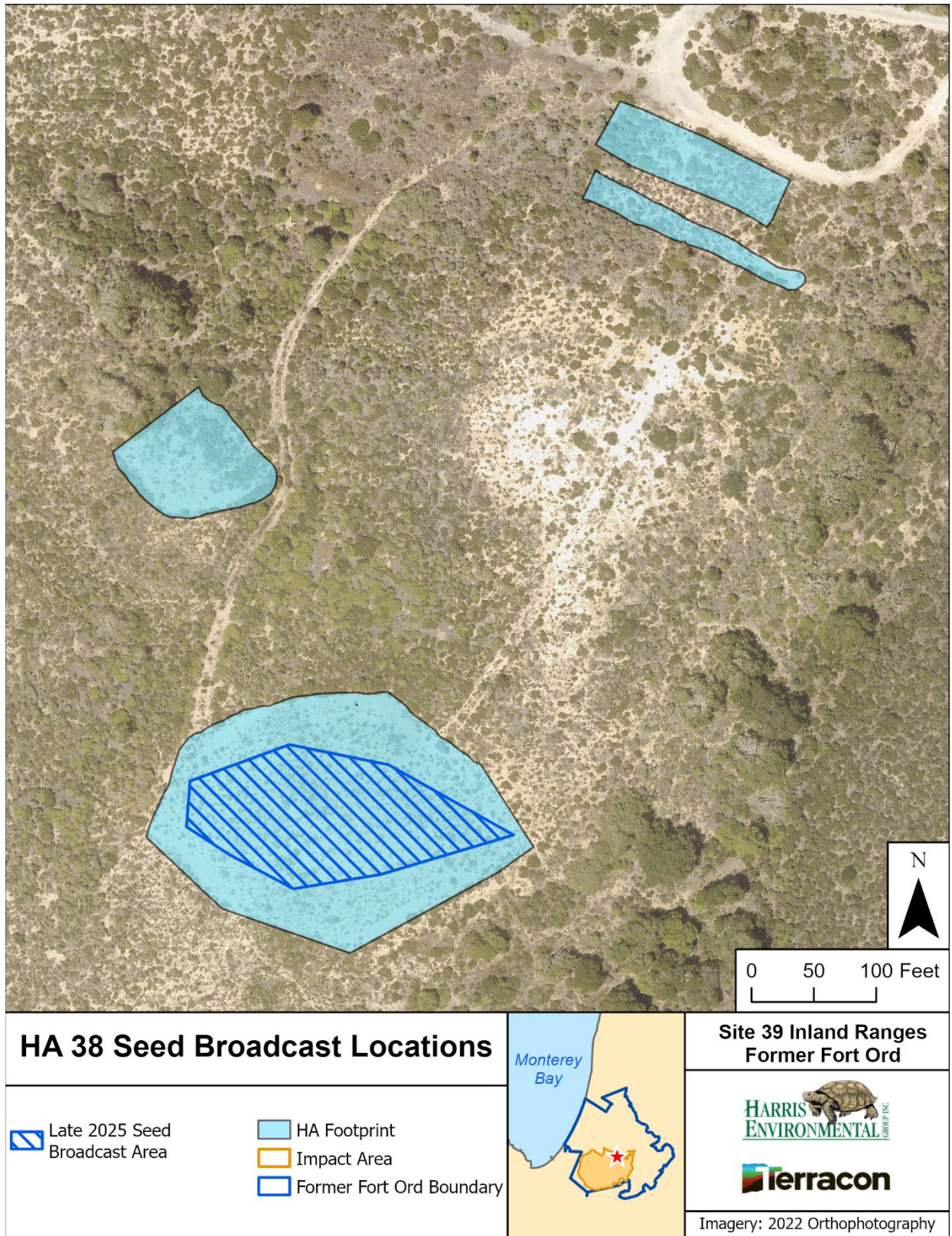


Figure A-6. HA 38 Seed Broadcast Locations, Former Fort Ord

Table A-7. HA 38 Production Seed Mix (Late 2025)

Species	Amount (lbs)
<i>Elymus glaucus</i> (blue wild-rye)	1
<i>Stipa pulchra</i> (purple needlegrass)	2
Supplemental seed	<0.1
TOTAL	3

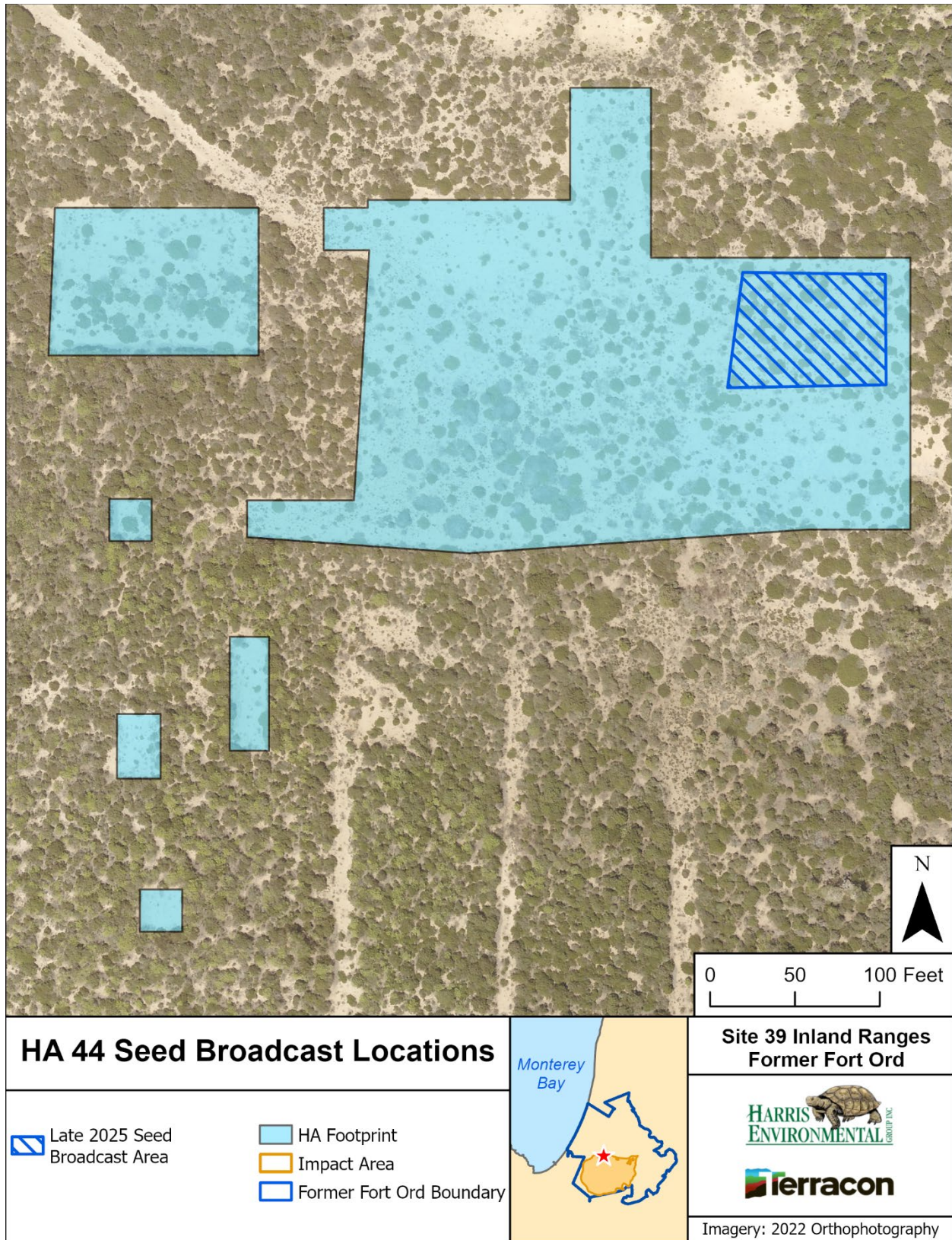


Figure A-7. HA 44 Seed Broadcast Locations, Former Fort Ord

Table A-8. HA 44 Production Seed Mix (Late 2025)

Species	Amount (lbs)
<i>Elymus glaucus</i> (blue wild-rye)	1
<i>Stipa pulchra</i> (purple needlegrass)	2
Supplemental seed	<0.1
TOTAL	3

APPENDIX B

Photo Log

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Photo Description	Photo
<p>Seed Viability Tests</p> <p>Seed viability testing using the paper towel germination method. Each batch of 100 seeds was placed on a moist paper towel, folded, and stored in a one-gallon Ziploc bag to monitor germination.</p> <p>B-1</p>	
<p>Community Involvement Workshop</p> <p>Harris-Terracon biologist staffing the habitat restoration booth at the July 26 Community Involvement Workshop</p> <p>B-2</p>	



Photo Description	Photo
<p>Habitat Restoration Caretaking</p> <p>A Harris-Terracon biologist felling a Monterey pine with a DBH of less than 10 inches at HA 18</p> <p>B-3</p>	
<p>Habitat Restoration Caretaking</p> <p>Herbicide being applied to a cut stump</p> <p>B-4</p>	



Photo Description	Photo
<p>Habitat Restoration Caretaking</p> <p>A Harris-Terracon biologist girdling a 34-inch DBH Monterey pine at HA 18</p> <p>B-5</p>	
<p>Habitat Restoration Caretaking</p> <p>Herbicide being applied to girdled area</p> <p>B-6</p>	



Photo Description	Photo
<p>Habitat Restoration Caretaking</p> <p>Hand removal of Monterey pine saplings</p> <p>B-7</p>	
<p>Habitat Restoration Caretaking</p> <p>A Harris-Terracon biologist hand removing French broom at HA 37</p> <p>B-8</p>	

Photo Description	Photo
<p>Habitat Restoration Monitoring</p> <p>Harris-Terracon biologist conducting a transect survey at HA 33</p> <p>B-9</p>	
<p>Habitat Restoration Monitoring</p> <p>Harris-Terracon biologist using a quadrat for a vegetative cover survey at HA 39/40</p> <p>B-10</p>	

Photo Description	Photo
<p>Habitat Restoration Monitoring</p> <p>Harris-Terracon biologist identifying plant species at HA 39/40 during a species richness survey</p> <p>B-11</p>	
<p>Habitat Restoration Caretaking and Erosion Control</p> <p>Coir fabric installation at HA 28</p> <p>B-12</p>	



Photo Description	Photo
<p>Habitat Restoration Caretaking and Erosion Control</p> <p>Mulch placed at the base of planted manzanita to improve soil nutrients and enhance water retention at HA 37</p> <p>B-13</p>	
<p>Habitat Restoration Caretaking</p> <p>Felling of acacia trees less than 10 inches DBH and girdling of trees greater than 10 inches DBH, followed by herbicide application</p> <p>B-14</p>	



Photo Description	Photo
<p>Habitat Restoration Caretaking</p> <p>Cutting and herbicide application on a cluster of small acacia trees</p> <p>B-15</p>	
<p>Habitat Restoration Caretaking</p> <p>Harris-Terracon biologist removing a small acacia tree growing in maritime chaparral habitat near HA 36 along Tongue Ridge Road</p> <p>B-16</p>	



Photo Description	Photo
<p>Habitat Restoration Caretaking and Erosion Control</p> <p>Before photo of straw wattle and mulch berm installation at HA 37</p> <p>B-17</p>	
<p>Habitat Restoration Caretaking and Erosion Control</p> <p>After photo of straw wattle and mulch berm installation at HA 37</p> <p>B-18</p>	

Photo Description	Photo
<p>Habitat Restoration Caretaking and Erosion Control</p> <p>Before photo of a sandy slope with limited vegetation cover, prone to erosion, at HA 37</p> <p>B-19</p>	
<p>Habitat Restoration Caretaking and Erosion Control</p> <p>After photo of mulch applied to the slope to reduce erosion, retain moisture, and promote native vegetation recovery at HA 37</p> <p>B-20</p>	

APPENDIX C

Photo Points

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Photo Points



HA 18 | October 2011



HA 18 | October 2025 | Photo Point ID: HA18PP17b

Photo Points



HA 19 | May 2013



HA 19 | April 2025 | Photo Point ID: HA19PP07b

Photo Points



HA 22 | October 2011



HA 22 | April 2025 | Photo Point ID: HA22PP02b

Photo Points



HA 23 | October 2011



HA 23 | October 2025 | Photo Point ID: HA23PP01b

Photo Points



HA 26 | May 2016



HA 26 | April 2025 | Photo Point ID: HA26PP09b

Photo Points



HA 27 | October 2011



HA 27 | October 2025 | Photo Point ID: HA27PP04a

Photo Points



HA 27A North | October 2011



HA 27A North | April 2025 | Photo Point ID: HA27APP04b

Photo Points



HA 27A South | October 2011



HA 27A South | April 2025 | Photo Point ID: HA27APP02c

Photo Points



HA 28 | April 2014



HA 28 | April 2025 | Photo Point ID: HA28PP05a

Photo Points



HA 29 | October 2011



HA 29 | April 2025 | Photo Point ID: HA29PP02b

Photo Points



HA 33 | October 2011



HA 33 | April 2025 | Photo Point ID: HA33PP01

Photo Points



HA 34 | January 2013



HA 34 | April 2025 | Photo Point ID: HA34PP01b

Photo Points



HA 36 | October 2011



HA 36 | April 2025 | Photo Point ID: HA36PP01b

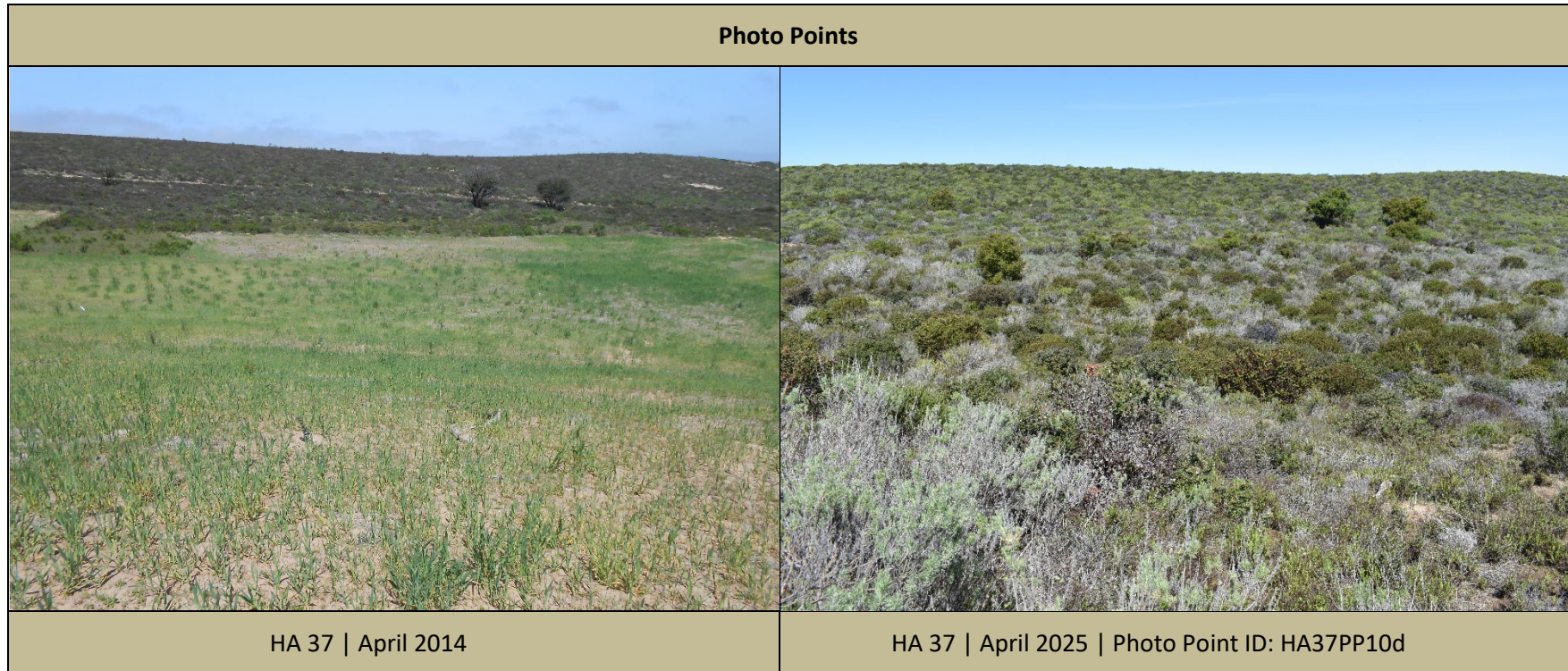




Photo Points	
	
HA 38 April 2014	HA 38 April 2025 Photo Point ID: HA38PP01

Photo Points



HA 39/40 | October 2011



HA 39/40 | April 2025 | Photo Point ID: HA3940PP13c

Photo Points



HA 43 | October 2011



HA 43 | April 2025 | Photo Point ID: HA43PP01a

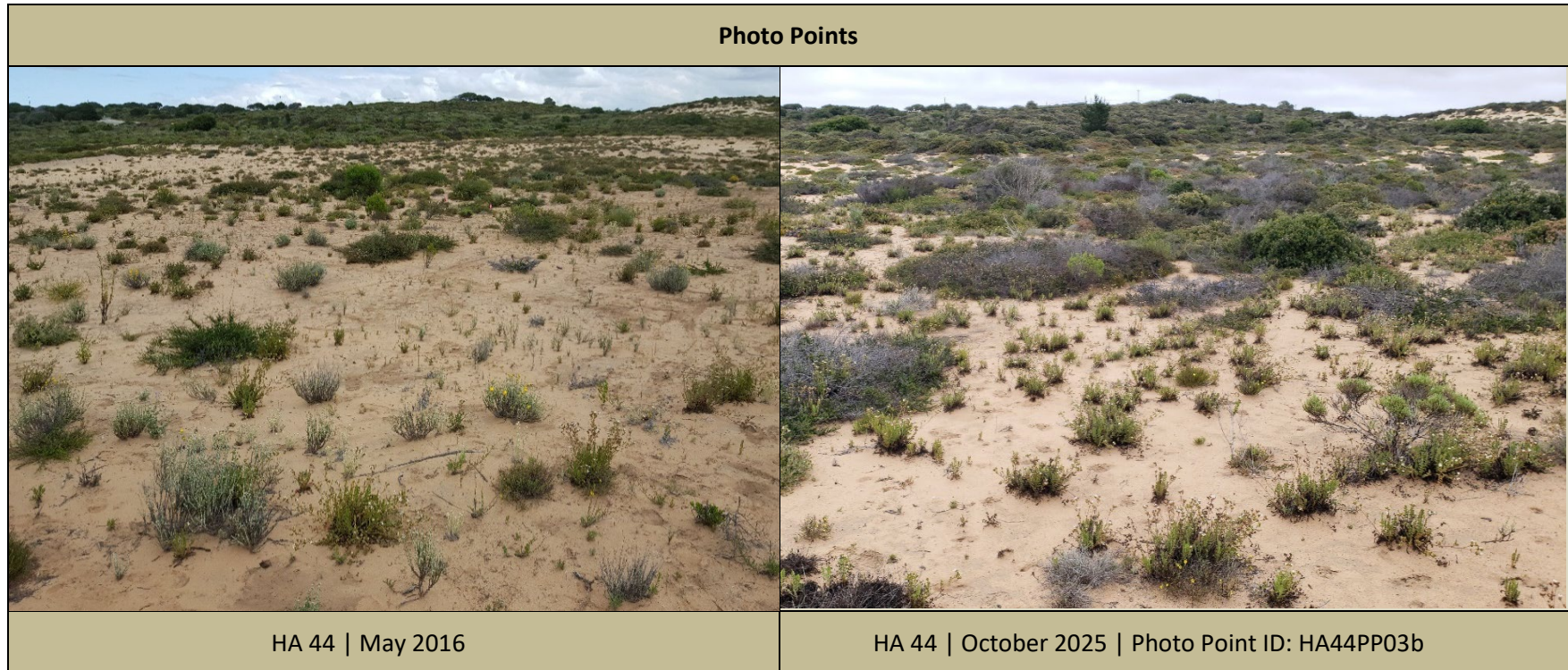


Photo Points



HA 48 | April 2016



HA 48 | April 2025 | Photo Point ID: HA48PP02

Photo Points



Austin Road Stockpile | May 2016



Austin Road Stockpile | October 2025 | Photo Point ID: ARSPP03a