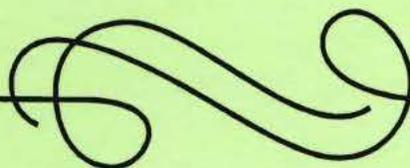


**Vascular Plants
of
Butte Creek Canyon
Ecological Reserve**

Vernon H. Oswald

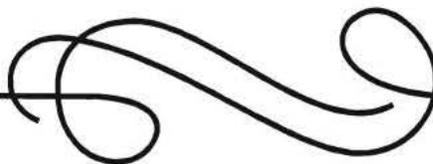


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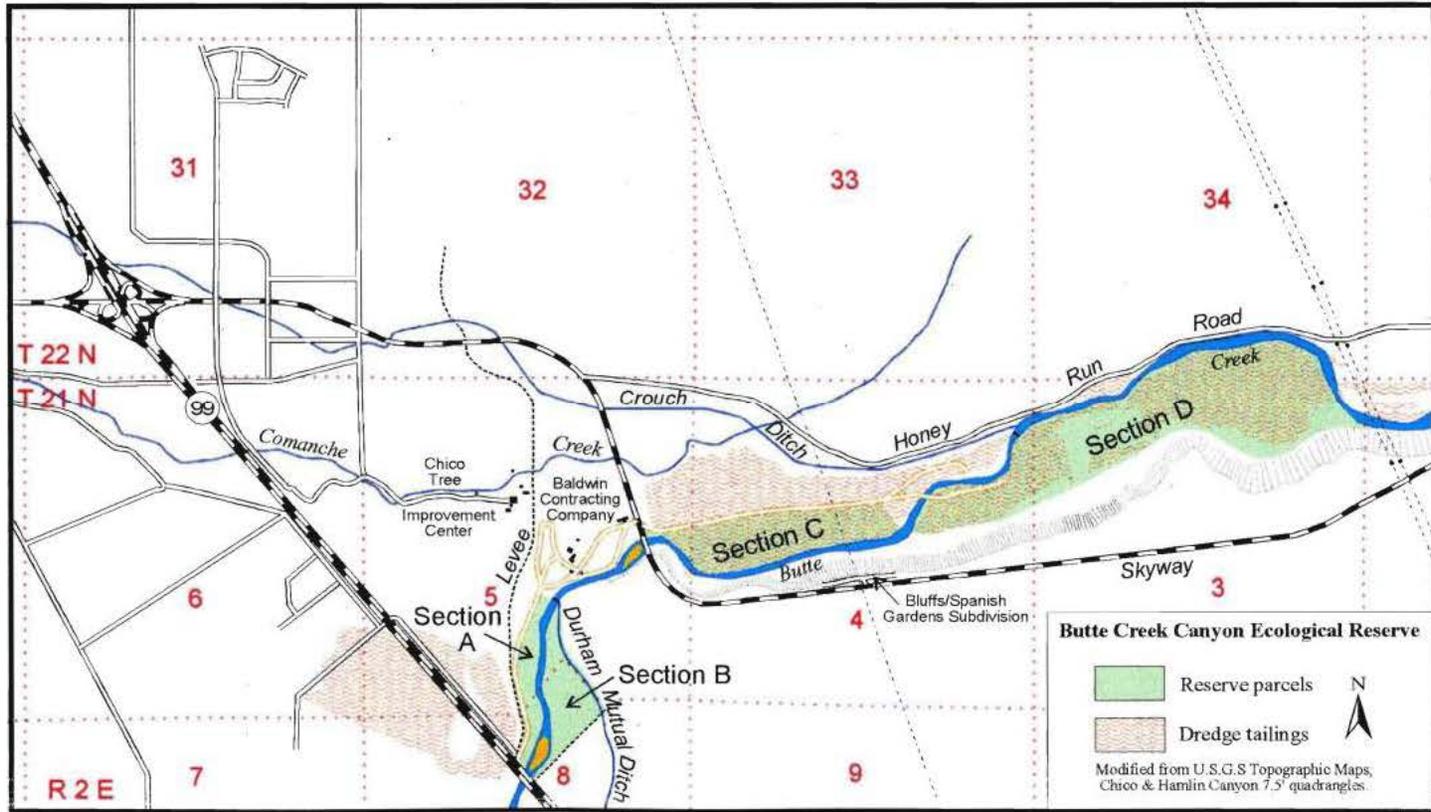
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1997 Revision



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INTRODUCTION

A survey of the vascular flora of the Butte Creek Canyon Ecological Reserve was carried out between March 25 and September 9, 1987. This is part of a continuing study of the vascular flora of Butte County which is being conducted at California State University, Chico (Oswald & Ahart 1994). It also provides some baseline data on the floral composition of the area, which may be of some value in managing the Reserve.

The Reserve consists of a number of parcels of land bordering Butte Creek that have been acquired by the California Department of Fish and Game in their continuing efforts to set aside lands for watershed protection and wildlife enhancement. For the purposes of this survey, the Reserve has been divided into the following four parcels (see map):

Section A: North side of Butte Creek between Hwy. 99 and the diversion dam for Durham Mutual Ditch (T21N R2E, portions of sections 5 and 8). Access is from Hwy. 99 via Southgate Avenue and a haul road belonging to Baldwin Contracting Company. At the west end of this section near Hwy 99, the creek channel is moving southward, resulting in the exposure of a large, rocky, gravel bar on the north side of the creek as the water level drops during late spring and summer. Upstream from this more or less open gravel bar, the creek and an old channel are bordered by typical riparian woodland vegetation. Elevations range from about 200 to 230 feet.

Section B: South side of Butte Creek between Hwy. 99 and the diversion dam for Durham Mutual Ditch (T21N R2E, portions of sections 5 and 8). Access is from Hwy. 99 via a locked gate on M & T Ranch. An open, weedy flat extends from Hwy. 99 eastward to about the location of the control valves for Durham Mutual Ditch. Some man-made ditches and excavations in this area hold water for varying periods during winter and early spring, and a number of plants characteristic of valley grassland and shallow vernal pools are to be found here. Further east the area consists of dense, brushy riparian woodland surrounding a more open grassy area with scattered trees and shrubs. Elevations range from about 200 to 230 feet.

Section C: North side of Butte Creek east of the Skyway bridge (T21N R2E, portions of sections 4 and 5). Access is from the Skyway via a locked gate opposite Baldwin Contracting Company. This area consists mostly of dredge tailings and a series of ponds resulting from rock and aggregate operations of the former Butte Creek Rock Company. During periods of high run-off, some of the flow of Butte

Creek follows a channel through the tailings, carving some deep ponds and leaving behind fresh deposits of mud, sand, and gravel. Seeds of a number of plants that normally grow at higher elevations in the watershed are also left behind, which results in some rather unusual plants in the inventory of the reserve. Although most of the ponds have standing water in the spring, all were dry by late summer during the year of the survey. Elevations vary from about 250 to 275 feet.

Section D: South side of Butte Creek north of the Skyway (T22N R2E, a portion of section 34, and T21N R2E, portions of sections 3 and 4). Access is via a private road at the Bluffs/Spanish Gardens Subdivision and is not open to the public. This area consists of dredge-tailings and numerous ponds, which remain from the rock and aggregate operations of Butte Creek Rock Company. Some deeper ponds are located in this section, and, although some become dry and all show considerable water loss, a number still contained some water during my last visit in early September of the year of the survey. Elevations in this section vary from about 260 to 300 feet.

A total of 388 plant taxa was recorded in the survey (see Table 1). No survey of this type is ever complete, but probably between 85 to 95 percent of the plants which can be expected on the Reserve have been recorded.

TABLE 1. Numerical analysis of the vascular flora of Butte Creek Canyon Ecological Reserve.

FAMILIES	GENERA	SPECIES	VARIETIES*	TOTAL	NON-NATIVE	CNPS LISTED
74	236	380	8	388	160 (41%)	2

*Includes both varieties and subspecies.

About 22 percent of the plants in the Butte County flora are not native to the California Flora. A disproportionate number of plants (41%) found on the Reserve are non-natives. This can probably be attributed to the highly disturbed nature of the area and its proximity to the Chico urban area. Some of the non-natives are generally considered to be invasive and undesirable species, such as French-broom (*Genista monspessulana*), Spanish-broom (*Spartium junceum*), tree-of-heaven (*Ailanthus altissima*), and Himalayan blackberry (*Rubus discolor*). The latter is particularly prevalent in section C, and perhaps attention should be given to some type of control between the ponds in this section to allow access between the haul road and the creek.

Only two plants encountered on the Reserve are listed in the California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of*

California (Skinner & Pavlik 1994). Square-stemmed spike-rush (*Eleocharis quadrangulata*) is in List 2 (rare in California but more common elsewhere). Shield-bracted monkey-flower (*Mimulus glaucescens*) is in List 4 (plants of limited distribution—a watch list).

During the course of the survey, ten plants were found that had not previously been listed for Butte County. Six are horticultural escapes or plants that have been dispersed by birds from the nearby Chico Tree Improvement Center (former USDA Plant Introduction Station). However, narrow-leaved goosefoot (*Chenopodium pratericola*), slender-leaved pondweed (*Potamogeton filiformis*), square-stemmed spike-rush (*Eleocharis quadrangularis*) and hairy bur-clover (*Medicago minima*) would appear to be significant additions to the Butte County flora. Hairy bur-clover is a non-native species.

Nomenclature in the plant list is based upon *The Jepson Manual* (Hickman 1993), although author abbreviations follow Brummitt and Powell (1992). Some synonyms used in *A California Flora* (Munz 1973) are included in brackets. Common names are mostly those of Abrams (1923–1960).

Some voucher specimens have been collected. They are indicated by collection number and are deposited in the herbarium at California State University, Chico (CHSC).

REFERENCES

- Abrams, L. 1923–60. *Illustrated Flora of the Pacific States*. Vols. I–IV.; vol. IV by R. Ferris. Stanford University Press, Stanford.
- Brummitt, R.K. & C.E. Powell, editors. 1992. *Authors of Plant Names*. Royal Botanic Gardens, Kew.
- Hickman, J.C., Editor. 1993. *The Jepson Manual. Higher Plants of California*. University of California Press, Berkeley.
- Munz, P.A. 1973. *A California Flora with Supplement*. [Combined edition of *Flora* (1959) and *Supplement* (1969)]. University of California Press, Berkeley.
- Oswald, V.H. & L. Ahart. 1994. *Manual of the Vascular Plants of Butte County, California*. California Native Plant Society, Sacramento.
- Skinner, M.W. & B.M. Pavlik. 1994. *Inventory of Rare and Endangered Vascular Plants of California*. 5th Edition. California Native Plant Society, Sacramento.

ACKNOWLEDGMENTS

I thank James H. Snowden, Wildlife Biologist, California Department of Fish and Game, for making arrangements for the survey and for taking me on an orientation trip to the area.

Names printed in **boldface** are plants listed in the CNPS *Inventory*. Names in a non-serif typeface, e.g., *Taraxacum officinale*, are not native to the California flora.

THE PLANT LIST

FERNS AND FERN ALLIES

AZOLLACEAE – AZOLLA FAMILY

[Included in Salviniaceae in some floras]

Azolla filiculoides Lam. – LARGE MOSQUITO-FERN. Forming reddish-green, floating masses on the edges of a number of ponds in section D (Oswald 2361).

EQUISETACEAE – HORSETAIL FAMILY

Equisetum arvense L. – COMMON HORSETAIL. Common along the edge of the creek.

Equisetum hyemale L. ssp. *affine* (Engelm.) Calder & R.L.Taylor – COMMON SCOURING-RUSH. Forming a large colony on the dry bottom of a shallow dredge pond in section D.

Equisetum laevigatum A.Braun – SMOOTH SCOURING-RUSH. Occasional colonies on sandy mud bars bordering the creek in sections A and B.

ISOETACEAE – QUILLWORT FAMILY

Isoetes nuttallii A. Braun ex Engelm. – NUTTALL'S QUILLWORT. Found on wet mud in a vernal wet excavation in the weedy field in section B (Oswald 2343).

POLYPODIACEAE – FERN FAMILY

Pentagramma triangularis (Kaulf.) Yatsk., Windham, & E.Wollenw. ssp. *triangularis* – GOLD-BACKED FERN. Rare in sections C and D. [*Pityrogramma triangularis* (Kaulf.) Maxon]

CONIFEROPHYTA – CONIFER DIVISION

PINACEAE – PINE FAMILY

Pinus sabiniana Douglas ex D.Don – GRAY PINE. Scattered in most sections of the reserve.

ANTHOPHYTA – FLOWERING PLANT DIVISION

DICOTYLEDONES – DICOT CLASS

AMARANTHACEAE – AMARANTH FAMILY

Amaranthus albus L. – TUMBLEWEED. Occasional on sand and gravel bars along the creek.

ANACARDIACEAE – SUMAC FAMILY

Pistacia atlantica Desf. – MT. ATLAS MASTICTREE. Several small pistachios referable to this species are scattered throughout the reserve (*Oswald* 2373). They represent escapes from the former USDA Plant Introduction Station.

Pistacia chinensis Bunge – ORNAMENTAL PISTACHIO. Common and widespread throughout the reserve. The pistachios are probably dispersed by birds, which are fond of the fruits.

Pistacia spp. – HYBRID PISTACHIOS. At least ten species of *Pistacia* were under cultivation at the Chico Tree Improvement Center (former USDA Plant Introduction Station), some of which still persist. Pistachios apparently hybridize readily, and seeds from various crosses have been dispersed along Butte Creek by seed-eating birds. Dr. Lloyd Joley, who was in charge of the pistachio project, has examined twigs of a number of these hybrids. In several plants, the commercial pistachio, *Pistacia vera* L., appeared to be one of the parents, but in most cases the parents of the hybrids could not be determined.

Rhus trilobata Nutt. ex Torr. & A.Gray – SKUNKBRUSH. Occasional in sections B and D. [Includes var. *malacophylla* (Greene) Jeps.]

Toxicodendron diversilobum (Torr. & A.Gray) Greene – WESTERN POISON-OAK. Common throughout the reserve. [*Rhus diversiloba* Torr. & A.Gray]

APIACEAE – CARROT FAMILY

[Umbelliferae]

Anthriscus caucalis M.Bieb. – BUR-CHEVIL. Common weed throughout the reserve. [*A. scandicina* (G.Weber) Mansf.]

Sanicula crassicaulis Poepp. ex DC. – PACIFIC SANICLE. A few plants were found along a drainage ditch in section B.

Torilis arvensis (Huds.) Link ssp. *arvensis* – COMMON HEDGE-PARSLEY. Scattered to locally common throughout the reserve.

Torilis arvensis ssp. *purpurea* (Ten.) Hayek – PURPLE HEDGE-PARSLEY. Somewhat more common than the preceding; it differs primarily in having umbels with 2–3 rays rather than 4–12 rays.

APOCYNACEAE – DOGBANE FAMILY

Vinca major L. – PERIWINKLE. A horticultural escape which now covers large areas in moist, shaded places.

ARISTOLOCHIACEAE – PIPEVINE FAMILY

Aristolochia californica Torr. – CALIFORNIA PIPEVINE. A common vine in brushy places throughout the reserve. It is the host plant for the pipevine swallowtail.

ASCLEPIADACEAE – MILKWEED FAMILY

Asclepias eriocarpa Benth. – INDIAN MILKWEED. A large colony of this milkweed was growing near Hwy. 99 in section A. Whether the plants will survive the roadwork in the area remains to be seen.

ASTERACEAE – SUNFLOWER FAMILY

[Compositae]

Achyraea mollis Schauer – BLOW-WIVES. Occasional in the open weedy field in section B.

Agoseris heterophylla (Nutt.) Greene – ANNUAL AGOSERIS. Occasional in moist soil of drying ponds in section D.

Ambrosia psilostachya DC. – WESTERN RAGWEED. Occasional colonies in dry gravelly soil in sections B and D. [Includes var. *californica* (Rydb.) S.F.Blake]

Anthemis cotula L. – MAYWEED. Uncommon in sections C and D.

Artemisia douglasiana Besser – MUGWORT. Common throughout the reserve.

Aster chilensis Nees var. *chilensis* Jeps. – CALIFORNIA ASTER. Occasional along the edge of Butte Creek in section D.

Aster eatonii (A.Gray) Howell – EATON'S ASTER. Occasional in moist, rocky soil along the edge of the creek in section B (*Oswald 2376*).

Baccharis salicifolia (Ruiz & Pav.) Pers. – MULE'S-FAT. Common tall shrub in moist gravel along the edge of ponds and along Butte Creek. [*B. viminea* DC., *B. glutinosa* Pers.]

Bidens frondosa L. – STICKTIGHT. In moist soil along the edge of ponds in section D. It begins to flower in early September.

Brickellia californica (Torr. & A.Gray) A.Gray – CALIFORNIA BRICKELLBUSH. On the rocky flood plain of the creek and occasional in dry dredge tailings.

Centaurea solstitialis L. – YELLOW STAR-THISTLE. Common weed throughout the reserve.

Chamomilla suaveolens (Pursh) Rydb. – PINEAPPLE-WEED. Uncommon in sections A and D. [*Matricaria matricarioides* (Less.) Porter]

Cichorium intybus L. – CHICORY. Occasional on the rocky flood plain of the creek in section A.

Cirsium vulgare (Savi) Ten. – BULL THISTLE. Occasional in moist soil of drying ponds and along the creek.

Conyza canadensis (L.) Cronquist – CANADIAN HORSEWEED. Occasional along the creek and along the edge of ponds.

Conyza floribunda Humb., Bonpl. & Kunth – MANY-FLOWERED HORSEWEED. On the edge of the cattail pond in section D where it was topped by deer.

Erigeron philadelphicus L. – PHILADELPHIA DAISY. Rare in moist soil in sections A and D.

Eriophyllum lanatum (Pursh) J.Forbes var. *grandiflorum* (A.Gray) Jeps. – LARGE-FLOWERED WOOLLY-SUNFLOWER. Uncommon in sections C and D.

Filago gallica L. – NARROW-LEAVED FILAGO. Occasional plant of weedy places. [*Logfia gallica* (L.) Coss. & Germ.]

Gnaphalium luteo-album L. – WEEDY CUDWEED. Common in moist soil along ponds, along the edge of drainages, and near the creek.

Gnaphalium palustre Nun. – WESTERN MARSH CUDWEED. Observed in moist soil on a flood plain in section C and on the bottom of a drying ditch in the weedy field in section B, where it was locally abundant.

Gnaphalium stramineum Humb., Bonpl. & Kunth – COTTON-BATTING CUDWEED. Observed in moist soil of a muddy flood plain in section C and on the drying bottom of a pond in section D where it was locally abundant. [*Gnaphalium chilense* Spreng.]

Grindelia hirsutula Hook. & Arn. var. *davyi* (Jeps.) M.A.Lane – FOOTHILL GUMPLANT. Occasional in sections C and D.

Hedypnois cretica (L.) Dum.Cours. – HEDYPNOIS. Uncommon on the rocky flood plain of the creek in section A.

Helenium puberulum DC. – ROSILLA. A single plant was observed on the edge of the creek in section D.

Hemizonia fitchii A.Gray – FITCH'S SPIKEWEED. In the open, weedy field in section B.

Heterotheca oregona (Nutt.) Shinnery – OREGON GOLDEN-ASTER. On gravel bars along the creek in sections A and D. [*Chrysopsis oregona* (Nutt.) A.Gray]

Hypochoeris glabra L. – SMOOTH CAT'S-EAR. Common throughout the reserve.

Lactuca saligna L. – WILLOW LETTUCE. Uncommon in moist places in section D.

Lactuca serriola L. – PRICKLY LETTUCE. Common weed throughout the reserve. Plants with strap-shaped leaves are the var. *integrata* Gren. & Godr. (= forma *integrifolia* Bogenh.) and grow with the more common plant with pinnatifid leaves.

Lasthenia californica DC. ex Lindl. – CALIFORNIA GOLDFIELDS. A few colonies occur in section D; a single plant was observed in section C. [*Baeria chrysostoma* Fisch. & C.A.Mey. including ssp. *gracilis* (DC.) Ferris]

Leontodon taraxacoides Vill.) Mérat ssp. *longirostris* Finch & P.D.Sell – LONG-BEAKED HAWKBIT. Occasional near the creek. [*Leontodon leysseri* (Wallr.) Beck in part]

Micropus californicus Fisch. & C.A.Mey. var. *californicus* – SLENDER COTTONWEED. Occasional in the weedy field in section B.

Microseris acuminata Greene – SIERRA FOOTHILL MICROSERIS. Uncommon in the weedy field in section B.

Psilocarphus oregonus Nutt. – OREGON WOOLLY-MARBLES. Along the track through the weedy field in section B (*Oswald 2327*).

Psilocarphus tenellus Nutt. – SLENDER WOOLLY-MARBLES. Along the track through the weedy field in section B (*Oswald 2328*); also observed on an open flood plain in section C.

Senecio vulgaris L. – OLD-MAN-IN-THE-SPRING. Common throughout the reserve.

Silybum marianum (L.) Gaertn. – MILK-THISTLE. Occasional to locally common in vernal moist places.

Sonchus asper (L.) Hill ssp. *asper* – SPINY-LEAVED SOW-THISTLE. Scattered throughout the reserve.

Taraxacum officinale Weber – COMMON DANDELION. Uncommon in section C.

Tragopogon dubius Scop. – YELLOW SALSIFY. Uncommon in section C.

Uropappus lindleyi (DC.) Nutt. – SILVERPUFFS. Uncommon in open places in sections C and D. [*Microseris lindleyi* (DC.) A.Gray]

Xanthium strumarium L. – COCKLEBUR. Scattered to locally common in moist places. [Includes var. *canadense* (Mill.) Torr. & A.Gray]

BETULACEAE – BIRCH FAMILY

Alnus rhombifolia Nutt. – WHITE ALDER. Common tree along the edge of the creek.

BORAGINACEAE – BORAGE FAMILY

Amsinckia menziesii (Lehm.) A.Nelson & J.F.Macbr. var. *intermedia* (Fisch. & C.A.Mey.) F.R.Ganders – COMMON FIDDLENECK. Occasional to locally common throughout most of the reserve.

Cryptantha flaccida (Douglas ex Lehm.) Greene – WEEK-STEMMED CRYPTANTHA. A small population was found on a stony flat in section D near Crouch Ditch Dam.

Plagiobothrys fulvus (Hook. & Arn.) I.M.Johnst. – FULVOUS POPCORN-FLOWER. Rare in section A. [Includes var. *campestris* (Greene) I.M.Johnst.]

Plagiobothrys greenii (A.Gray) I.M.Johnst. – GREENE'S POPCORN-FLOWER. In moist soil of a drying pool in the track through the weedy field in section B.

Plagiobothrys stipitatus (Greene) I.M.Johnst. var. *micranthus* (Piper) I.M.Johnst. – STALKED POPCORN-FLOWER. Locally common on the edge of excavations and ditches in the weedy field in section B; also observed on a wet, sandy, flood channel in section C.

BRASSICACEAE – MUSTARD FAMILY

[Cruciferae]

Arabis glabra (L.) Bernh. var. *glabra* – TOWER-MUSTARD. Observed on a weed-covered muddy flood plain in section C.

Barbarea orthoceras Ledeb. – AMERICAN WINTERCRESS. Although similar to the next taxon, plants which seem to fit the description of this species are occasional in moist places in sections C and D (*Oswald 2306*).

Barbarea verna (Mill.) Asch. – EARLY WINTERCRESS. Occasional in moist places (*Oswald 2340*).

Capsella bursa-pastoris (L.) Medik. – SHEPHERD'S-PURSE. Occasional weed throughout the reserve.

Cardamine oligosperma Nutt. – WESTERN BITTERCRESS. Scattered in vernal moist, shaded places throughout the reserve.

Draba verna L. – WHITLOW GRASS. Found in section C (*Oswald 2296*).

Hirschfeldia incana (L.) Lagr.-Foss. – MEDITERRANEAN HOARY-MUSTARD. Common throughout the reserve. [*Brassica geniculata* (Desf.) Ball]

Lepidium nitidum Nutt. var. *nitidum* – SHINING PEPPER-GRASS. In the weedy field in section B.

Lepidium strictum (S.Watson) Rattan – UPRIGHT PEPPER-GRASS. A dense population was located on the dirt road leading into section A

Raphanus raphanistrum L. – JOINTED CHARLOCK. Occasional in sections B and D. Plants are both yellow- and white-flowered.

Rorippa curvisiliqua (Hook.) Bessey ex Britton var. *occidentalis* (Greene) Stuckey – WESTERN YELLOWCRESS. Occasional in wet sand and along the muddy edges of backwaters along the creek.

Rorippa curvisiliqua var. *orientalis* Stuckey – WESTERN YELLOWCRESS. More common than the preceding variety; it grows in moist soil along the edge of ponds and along the creek.

Rorippa nasturtium-aquaticum (L.) Hayek – WATERCRESS. Occasional in shallow water and moist soil along the creek. [*Nasturtium officinale* R.Br.]

Sinapis arvensis L. – FIELD CHARLOCK. Observed in section C. [*Brassica kaber* (DC.) L.C.Wheeler var. *pinnatifida* (Stokes) L.C.Wheeler]

Sisymbrium officinale (L.) Scop. – HEDGE-MUSTARD. Occasional weed in section D.

CALLITRICHACEAE – WATER-STARWORT FAMILY

Callitriche heterophylla Pursh var. *bolanderi* (Hegelm.) Fassett – BOLANDER'S WATER-STARWORT. In a shallow pool in the ditch near the control valve for the Durham Mutual Ditch in section B; also common in shallow water of one of the deeper pools along a flood channel in section C (Oswald 2926).

Callitriche marginata Torr. – WINGED WATER-STARWORT. – Found on moist mud on the drying bottom of a pool in the track through the weedy field in section B (Oswald 2313). [*C. longipedunculata* Morong]

CALYCANTHACEAE – CALYCANTHUS FAMILY

Calycanthus occidentalis Hook. & Arn. – WESTERN SPICEBUSH. Occasional in brushy places.

CAMPANULACEAE – BELLFLOWER FAMILY

Downingia bicornuta A.Gray – DOUBLE-HORNED DOWNINGIA. A few plants were found in a drying ditch along the north edge of the weedy field in section B.

CAPRIFOLIACEAE – HONEYSUCKLE FAMILY

Sambucus mexicana Presl ex DC. – BLUE ELDERBERRY. Common shrub throughout the reserve. [*S. cerulea* Raf.]

Symphoricarpos albus (L.) S.F.Blake var. *laevigatus* (Fernald) S.F. Blake – COMMON SNOWBERRY. Known from a single but fairly large population on the edge of a flood channel in section C (Oswald 2380).

CARYOPHYLLACEAE – PINK FAMILY

Cerastium fontanum Baumg. ssp. *vulgare* (Hartm.) Greuter & Burdet – COMMON MOUSE-EARED CHICKWEED. Growing in wet, muddy soil on the edge of a drying pond in section C. [*C. vulgatum* L. misapplied]

Cerastium glomeratum Thuill. – MOUSE-EARED CHICKWEED. Common weed throughout the reserve. [*C. viscosum* L. misapplied]

Herniaria hirsuta L. ssp. *hirsuta* – HERNIARIA. Observed in sandy soil along a flood channel in section C (Oswald 2331).

Petrorhagia dubia (Raf.) G.López & Romo – GRASS-PINK. Common weed throughout the reserve. [*Kohlrauschia velutina* (Guss.) Reichenb., *Tunica prolifera* (L.) Scop. misapplied]

Sagina apetala Ard. – DWARF PEARLWORT. Scattered throughout the reserve. It is particularly common in cracks in black-topped roads.

Sagina saginoides (L.) H.Karst. – ALPINE PEARLWORT. Uncommon in moist sand along the edge of the creek in section D (*Oswald 2393*).

Saponaria officinalis L. – BOUNCING-BET. A garden plant that is naturalized along the creek.

Scleranthus annuus L. ssp. *annuus* – KNAWEL. Occasional weed throughout most of the reserve.

Silene gallica L. – WINDMILL-PINK. Occasional weed at scattered locations throughout the reserve.

Spergularia bocconeii (Scheele) Foucaud ex Merino. – BOCCONE'S SANDSPURRY. Scattered throughout the reserve. It is particularly common in cracks in black-topped roads.

Spergularia rubra (L.) J. & C.Presl – RUBY SANDSPURRY. Similar to but less common than the preceding species. It also is found in cracks in black-topped roads.

Stellaria media (L.) Vill. – COMMON CHICKWEED. Common weed throughout the reserve.

Velezia rigida L. – VELEZIA. Locally common on gravelly banks in section D.

CHENOPODIACEAE – GOOSEFOOT FAMILY

Chenopodium album L. – LAMB'S-QUARTERS. Occasional near the creek in sections B and C.

Chenopodium ambrosioides L. – MEXICAN-TEA. Common weed on gravel bars and along the edge of ponds.

Chenopodium botrys L. – JERUSALEM-OAK. Common on sandy gravel bars in sections B and C.

Chenopodium pratericola Rydb. – NARROW-LEAVED GOOSEFOOT. A plant (*Oswald 3002*), which seems to correspond to this species, was found on a high bank along Butte Creek in section C. [*Chenopodium desiccatum* A.Nelson var. *leptophylloides* (Murr) Wahl]

Chenopodium pumilio R.Br. – TASMANIAN GOOSEFOOT. Locally common on the edge of the creek in sections B and D.

CONVOLVULACEAE – MORNING-GLORY FAMILY

Convolvulus arvensis L. – BINDWEED. Occasional weedy vine in sections A and B.

CRASSULACEAE – STONECROP FAMILY

Crassula aquatica (L.) Schönl. – WATER PIGMYWEED. In moist soil of a drying pool in the track through the weedy field in section B (*Oswald 3258*). [*Tillaea aquatica* L. in part]

Crassula tillaea Lest.-Garl. – MOSSY PIGMYWEED. Common throughout the reserve. [*Tillaea muscosa* L.]

CUCURBITACEAE – GOURD FAMILY

Citrullus colocynthis (L.) Schrad. Var. *lanatus* (Thunb.) Matsum. & Nakai – WATERMELON. A volunteer seedling was observed on a sand bar along the creek in section D. [*C. lanatus* (Thunb.) Mansf.]

Cucurbita pepo L. var. *melanopepo* (L.) Alef. – ZUCCHINI. A single plant, which was producing fruits, volunteered on a sand bar in section C.

Marah fabaceus (Naudin) Greene var. *agrestis* (Greene) Stocking – CALIFORNIA MANROOT. Scattered vines throughout the reserve.

ERICACEAE – HEATH FAMILY

Arctostaphylos manzanita Parry ssp. *manzanita* – BIG MANZANITA Uncommon in section D.

EUPHORBIACEAE – SPURGE FAMILY

Chamaesyce maculata (L.) Small – SPOTTED SPURGE. Occasional in sandy places near the creek. [*Euphorbia maculata* L., *E. supina* Raf.]

Chamaesyce nutans (Lag.) Small – LARGE SPURGE. In the rocky bed of a flood channel in section C. [*Euphorbia maculata* L. misapplied]

Chamaesyce serpyllifolia (Pers.) Small ssp. *serpyllifolia* – THYME-LEAVED SPURGE. Occasional on gravel bars along the creek. [*Euphorbia serpyllifolia* Pers.]

Eremocarpus setigerus (Hook.) Benth. – TURKEY-MULLEIN. Along dikes and roads in sections B and D.

Euphorbia lathyris L. – GOPHERPLANT. Along Durham Mutual Ditch upstream from Hwy. 99 (*Oswald 2341*).

Euphorbia peplus L. – PETTY SPURGE. Locally common weed in sections A and C (*Oswald 2297*).

Sapium sebiferum Roxb. – CHINESE TALLOWTREE. One tree of reproductive age (*Oswald 3098 & 3219*) and several seedlings (root sprouts?) grow on the edge of Butte Creek in section C. The origin of these volunteers is unknown. The tree, which is used in landscaping in Chico, is naturalized in the southern United States; whether it spreads along Butte Creek remains to be seen.

FABACEAE – PEA FAMILY
[Leguminosae]

Astragalus gambelianus E.Sheld. – GAMBEL'S MILK-VETCH. A single plant was found on a sandy flood plain of the creek in section D.

Cercis occidentalis Torr. & A.Gray – WESTERN REDBUD. Occasional shrub in sections A and D.

Genista monspessulana (L.) L.A.S.Johnson – FRENCH-BROOM. Occasional weedy shrub in sections C and D. [*Cytisus monspessulanus* L.]

Hoita macrostachya (DC.) Rydb. – LARGE LEATHER-ROOT. Several plants were found on the edge of the creek in section D just downstream from Crouch Ditch Diversion Dam (Oswald 3141). [*Psoralea macrostachya* DC.]

Lathyrus latifolius L. – EVERLASTING PEA Uncommon along the creek in section C.

Lathyrus tingitanus L. – TANGIER PEA Distinctive red-flowered pea found on dredge tailings in sections C and D.

Lotus humistratus Greene – FOOTHILL LOTUS. Uncommon in open places in sections C and D.

Lotus micranthus Benth. – SMALL-FLOWERED LOTUS. Recorded for sections A C, and D.

Lotus purshianus (Benth.) Clem. & E.G.Clem. var. *purshianus* – PURSH'S LOTUS. Common throughout most of the reserve.

Lotus wrangelianus Fisch. & C.A.Mey. – WRANGEL LOTUS. A single plant referable to this species was found in section D. [*Lotus subpinnatus* Lag. misapplied]

Lupinus albifrons Benth. ex Lindl. var. *albifrons* – SILVER BUSH LUPINE. Scattered plants in section D. [var. *eminens* (Greene) C.P.Sm.]

Lupinus bicolor Lindl. var. *tridentatus* Eastw. ex C.P.Sm. – BICOLORED LUPINE. Fairly common in all sections of the reserve. A population of plants in section C had pink rather than the normal blue flowers associated with this species. [Varieties not recognized in The Jepson Manual.]

Lupinus microcarpus Sims var. *densiflorus* (Benth.) Jeps. – WHITE-WHORLED LUPINE. A population of this white-flowered annual lupine was found on the sandy bed of a flood channel in section C. [*Lupinus densiflorus* Benth. including var. *lacteus* (Kellogg) C.P.Sm.]

Lupinus nanus Douglas ex Benth. var. *latifolius* (Benth.) Benth ex Torr. – SKY LUPINE. A single plant was found on a sandy flood channel in Section C. [Varieties not recognized in The Jepson Manual.]

Lupinus nanus var. *vallicola* (A.Heller) C.P.Sm. – SKY LUPINE. One plant was found on the edge of the creek in section C and a small population

of plants was found along one section of road in section D. [*L. vallicola* A.Heller; varieties not recognized in The Jepson Manual.]

Lupinus pachylobus Greene – BIG-PODDED LUPINE. Represented by a single plant in section D.

Lupinus polycarpus Greene – SMALL-FLOWERED LUPINE. Common in openings throughout most of the reserve. [*L. micranthus* Douglas; included in *L. bicolor* Lindl. in The Jepson Manual.]

Medicago lupulina L. – BLACK MEDICK Scattered in moist soil along the creek throughout the reserve (*Oswald 2387*). It is also common on the edge of a shallow, spring-fed pond in section D.

Medicago minima (L.) Bartal. – HAIRY BUR-CLOVER. Occasional on the sandy flood plain of the creek in sections A and C (*Oswald 2309 & 2312*) and on the dry bottom of a pond in section D. Based on collections in the University Herbarium, this is a new record for Butte County.

Medicago polymorpha L. – COMMON BUR-CLOVER. Common throughout the reserve. Some plants lack spines on their fruits and correspond to the var. *brevispina* (Benth.) Heyn.

Medicago praecox DC. – SMALL BUR-CLOVER. Similar to the preceding species but with smaller flowers and leaflets.

Melilotus albus Medik. – WHITE SWEET-CLOVER. Common throughout the reserve, sometimes forming dense stands on sand and gravel bars.

Melilotus indicus (L.) All. – INDIAN SWEET-CLOVER. Occasional near the creek in sections B and D.

Robinia pseudoacacia L. – BLACK LOCUST. Common tree in most sections of the reserve (*Oswald 2339*).

Spartium junceum L. – SPANISH-BROOM. Attractive but undesirable weedy shrub scattered throughout the reserve.

Trifolium dubium Sibth. – LITTLE HOP CLOVER. An inconspicuous introduced clover in most sections of the reserve.

Trifolium hirtum All. – ROSE CLOVER. Found in most sections of the reserve.

Trifolium microcephalum Pursh – SMALL-HEADED CLOVER. Occasional in wet sand along the edge of the creek.

Trifolium repens L. – WHITE CLOVER. Scattered along the edge of the creek throughout the reserve.

Trifolium variegatum Nutt. – WHITE-TIPPED CLOVER. Found on the edge of the creek in section B.

Trifolium willdenovii Spreng. – TOMCAT CLOVER. Uncommon in section D. [*T. tridentatum* Lindl. including var. *aviculare* (Nutt.) McDermott]

Vicia sativa L. ssp. *sativa* – SPRING VETCH. Occasional throughout most of the reserve. Some plants are the var. *angustifolia* (L.) Wahlenb. [*V. angustifolia* L.]

Vicia sativa ssp. *nigra* (L.) Erhart – GARDEN VETCH. Occasional throughout most of the reserve. [*V. sativa* var. *angustifolia* (L.) Wahlenb., *V. angustifolia* L. including var. *segetalis* (Thuill.) W.D.J.Koch]

Vicia villosa Roth ssp. *varia* (Host) Corb. – WINTER VETCH. Common in most sections of the reserve (Oswald 2305). [*Vicia villosa* var. *glabrescens* W.D.J.Koch, *V. dasycarpa* Ten.]

FAGACEAE – OAK FAMILY

Quercus lobata Née – VALLEY OAK. Found in all sections of the reserve but most abundant in section B.

Quercus wislizeni A.DC. – INTERIOR LIVE OAK. Found in all sections of the reserve.

GENTIANACEAE – GENTIAN FAMILY

Centaurium muehlenbergii (Griseb.) W.Wight ex Piper – JUNE CENTAURY. Along the ditch near the control valve for the Durham Mutual Ditch. [*C. floribundum* (Benth.) B.L.Rob.]

Cicendia quadrangularis (Lam.) Griseb. – TIMWORT. Found in a wet rut in the track through the weedy field in section B.

GERANIACEAE – GERANIUM FAMILY

Erodium botrys (Cav.) Bertol. – LONG-BEAKED STORK'S-BILL. Occasional in most sections of the reserve

Erodium brachycarpum (Godr.) Thell. – SHORT-FRUITED STORK'S-BILL. Found in most sections of the reserve. [*E. obtusiplicatum* (Maire, Weiller & Wilczek) J.T.Howell]

Erodium cicutarium (L.) L'Hér. – RED-STEMMED FILAREE. Common throughout the reserve.

Erodium moschatum (L.) L'Hér. – WHITE-STEMMED FILAREE. Uncommon near the entry gate to section C.

Geranium carolinianum L. – CAROLINA GERANIUM. A single plant was observed in a sandy spot near the creek in section A.

Geranium dissectum L. – CUT-LEAVED GERANIUM. In moist to wet soil throughout the reserve.

Geranium molle L. – DOVE'S-FOOT GERANIUM. Found throughout the reserve.

HALORAGACEAE – WATER-MILFOIL FAMILY

Myriophyllum spicatum L. – EURASIAN WATER-MILFOIL. Vegetative plants were found in one of the deeper ponds in section D.

HIPPOCASTANACEAE – BUCKEYE FAMILY

Aesculus californica (Spach) Nutt. – CALIFORNIA BUCKEYE. A few plants were found in section D.

HYDROPHYLLACEAE – WATERLEAF FAMILY

Eriodictyon californicum (Hook. & Arn.) Torr. – CALIFORNIA YERBA-SANTA. Uncommon in section D.

Nemophila heterophylla Fisch. & C.A.Mey. – VARIABLE-LEAVED NEMOPHILA. Uncommon in sections A and C.

Nemophila pedunculata Douglas ex Benth. – MEADOW NEMOPHILA. Found in a vernal wet spot in the weedy field in section B.

Phacelia egena (Greene ex Brand) J.T.Howell – ROCK PHACELIA. A single plant was found in a dry stony spot near the creek in section D.

HYPERICACEAE – ST. JOHN'S-WORT FAMILY

Hypericum anagalloides Cham. & Schtdl. – TINKER'S-PENNY. Uncommon in moist soil of drying ponds and along backwaters in section D; also found in section C.

Hypericum perforatum L. – KLAMATHWEED. Found in most sections of the reserve.

JUGLANDACEAE – WALNUT FAMILY

Juglans californica S.Watson var. *hindsii* Jeps. – NORTHERN CALIFORNIA BLACK WALNUT. Scattered small trees are found throughout the reserve. These trees can probably be traced back to escapes from orchard and street trees and are not the endangered populations listed in the CNPS Inventory. [*J. hindsii* (Jeps.) R.E.Sm.]

LAMIACEAE – MINT FAMILY

[Labiatae]

Lamium amplexicaule L. – GIRAFFEHEAD. Occasional weed in most sections of the reserve.

Lycopus americanus Muhl. ex W.P.C.Barton – CUT-LEAVED BUGLEWEED. Scattered to locally common on the edge of the creek and bordering some of the ponds in section D.

Marrubium vulgare L. – HOREHOUND. Occasional weed in most sections of the reserve.

Melissa officinalis L. – BEE-BALM. Garden plant naturalized along the creek in sections C and D.

Mentha arvensis L. – AMERICAN WILD MINT. Occasional near the creek throughout most of the reserve.

Mentha spicata L. var. *spicata* – SPEARMINT. Scattered in moist soil bordering the creek.

Prunella vulgaris L. var. *vulgaris* – COMMON SELFHEAL. The European form of the species, which was found on a gravel bar in section D.

Prunella vulgaris var. *lanceolata* (Barton) Fernald – SELFHEAL. A native variety that is occasional near the creek throughout the reserve.

Stachys ajugoides Benth. var. *rigida* (Nutt. ex Benth.) Jeps. & Hoover – RIGID HEDGE-NETTLE. Occasional in moist soil along the creek. [*S. rigida* Nutt. ex Benth. including ssp. *rivularis* (A.Heller) Epling]

Stachys pycnantha Benth. – SHORT-SPIKED HEDGE-NETTLE. Rare on gravel bars along the creek.

Trichostema lanceolatum Benth. – VINEGAR-WEED. Rare in section D.

LENTIBULARIACEAE – BLADDERWORT FAMILY

Utricularia gibba L. – HUMPED BLADDERWORT. A small-flowered bladderwort in some of the deeper ponds in section D where it also is found in wet mud as the pond dries down during late summer (*Oswald 3237 & 3238*). A dense population was also found in a backwater of the creek in section D.

Utricularia vulgaris L. – COMMON BLADDERWORT. Abundant submerged aquatic with large emergent yellow flowers in some of the deeper ponds in section D.

LOASACEAE – LOASA FAMILY

Mentzelia laevicaulis (Douglas ex Hook.) Torr. & A.Gray – BLAZINGSTAR. On dry gravelly banks and dredge tailings in sections C and D.

LYTHRACEAE – LOOSESTRIFE FAMILY

Ammannia coccinea Rottb. – VALLEY REDSTEM. Found on the edge of a pond in a flood channel in section C.

Ammannia robusta Heer & Regel – ROBUST REDSTEM. On the edge of the creek in section B. The identification is based upon single sessile flowers in the axils of the leaves.

Lythrum hyssopifolia L. – HYSSOP LOOSESTRIFE. Scattered in moist places throughout the reserve.

MOLLUGINACEAE – CARPET-WEED FAMILY

Mollugo verticillata L. – INDIAN-CHICKWEED. Abundant in the bottom of a dry ditch in the weedy field in section B.

MORACEAE – MULBERRY FAMILY

Ficus carica L. – EDIBLE FIG. Scattered small trees grow in most sections of the reserve.

Morus alba L. – WHITE MULBERRY. A small tree was found in section A

MYRTACEAE – MYRTLE FAMILY

Eucalyptus camaldulensis Dehnh. – RED GUM. A single tree is located in section A.

OLEACEAE – OLIVE FAMILY

Fraxinus latifolia Benth. – OREGON ASH. Common tree along the creek and bordering many of the ponds.

ONAGRACEAE – EVENING-PRIMROSE FAMILY

Clarkia purpurea (Curtis) A. Nelson & J.F. Macbr. ssp. *quadrivulnera* (Douglas) F.H. Lewis & M.R. Lewis – PURPLE CLARKIA. A single plant was found on a gravel bar in section D near the diversion dam for Crouch Ditch.

Epilobium brachycarpum C. Presl – TALL ANNUAL WILLOWHERB. Several plants were observed in gravel bordering the road near the locked gate in section D. [*Epilobium paniculatum* Nutt. ex Torr. & A. Gray]

Epilobium ciliatum Raf. ssp. *ciliatum* – FRINGED WILLOWHERB. Common along the creek and on the bottom of drying ponds.

Epilobium minutum Lindl. ex Hook. – SMALL-FLOWERED WILLOWHERB. Rare on the edge of the creek in section D.

Ludwigia palustris (L.) Elliott – MARSH-PURSLANE. Scattered plants in moist sand and gravel on the edge of the creek.

Ludwigia peploides (Humb., Bonpl. & Kunth) Raven ssp. *peploides* – YELLOW WATERWEED. Forming extensive patches on the edge of some of the larger ponds in section D. It also is found on the edge of the creek throughout the reserve.

OXALIDACEAE – WOOD-SORREL FAMILY

Oxalis corniculata L. – CREEPING WOOD-SORREL. A common weed which was found on the edge of the creek in section C.

PAPAVERACEAE – POPPY FAMILY

Eschscholzia caespitosa Benth. – FOOTHILL-POPPY. Occasional plants on sandy flood plains of the creek.

Eschscholzia californica Cham. – CALIFORNIA-POPPY. Scattered to locally common throughout the reserve.

PLANTAGINACEAE – PLANTAIN FAMILY

Plantago coronopus L. – CUT-LEAVED PLANTAIN. A localized population was found between the road and one of the larger ponds in section D.

Plantago elongata Pursh – ELONGATE PLANTAIN. Uncommon in vernal moist places in sections B and C. [*P. bigelovii* A.Gray spp. *californica* (Greene) Bassett, *P. heterophylla* Nutt. misapplied]

Plantago erecta E.Morris – ERECT PLANTAIN. Occasional in sections D and C. [*P. hookeriana* Fisch. & C.A.Mey. var. *californica* (Greene) Poe]

Plantago lanceolata L. – ENGLISH PLANTAIN. Common throughout the reserve.

Plantago major L. – COMMON PLANTAIN. Uncommon in sections A and D.

PLATANACEAE – SYCAMORE FAMILY

Platanus x acerifolia (Aiton) Willd. – LONDON PLANE-TREE. Several sycamores referable to this introduced species, which is commonly planted in the Chico area, were found in sections C and D. [*P. hybrida* Brot.]

Platanus racemosa Nutt. – WESTERN SYCAMORE. The common native sycamore is found in most sections of the reserve (Oswald 2335).

POLEMONIACEAE – PHLOX FAMILY

Collomia heterophylla Douglas ex Hook. – VARIABLE-LEAVED COLLOMIA. Rare on sand bars near the creek in sections C and D (Oswald 2304).

Gilia tricolor Benth. ssp. *tricolor* – BIRD'S-EYE GILIA. A single plant was observed in section D.

Navarretia leucocephala Benth. ssp. *leucocephala* – WHITE-FLOWERED NAVARRETIA. A single plant was observed on the moist edge of the creek in section B.

Navarretia tagetina Greene – MARIGOLD NAVARRETIA. Uncommon in vernal wet depressions in the weedy field in section B.

Phlox gracilis (Hook.) Greene – SLENDER PHLOX. Rare on a muddy flood plain of the creek in section C. [*Microsteris gracilis* (Hook.) Greene]

POLYGONACEAE – BUCKWHEAT FAMILY

Eriogonum luteolum Greene – WICKER ERIOGONUM. A locally common plant on gravel bars, rocky banks, and dry road edges throughout the reserve (Oswald 3097). Although most plants in the reserve would key to this species, some growing in the same area would key as well to *E. vimineum* Douglas ex Benth.

Polygonum hydropiper L. – WATER-PEPPER. In moist soil along the creek in most sections of the reserve.

Polygonum persicaria L. – LADY'S-THUMB. Scattered in moist soil along the creek.

Polygonum punctatum Elliott – DOTTED SMARTWEED. Occasional along the creek but also forming large populations on the beds of a number of ponds that dry during late summer (Oswald 3096).

Rumex acetosella L. – SHEEP SORREL. A single male plant was found on a gravel bar in section A. [*R. angiocarpus* Murb.]

Rumex conglomeratus Murray – GREEN DOCK. Occasion near the creek in sections B and C.

Rumex crispus L. – CURLY DOCK. Occasional in most sections of the reserve.

Rumex pulcher L. – FIDDLE DOCK. Occasional in most sections of the reserve.

Rumex salicifolius Weinm. var. *salicifolius* – WILLOW DOCK. A group of plants was found on a sandy flat in section D near the diversion dam for Crouch Ditch (Oswald 3004).

Rumex salicifolius var. *denticulatus* Torr. – SMOOTH-VALVED DOCK. Occasional plants on gravel bars in sections A, B, and C (Oswald 2377 & 2960). [*R. californicus* Rech.f.]

PORTULACACEAE – PURSLANE FAMILY

Claytonia parviflora Douglas ex Hook. ssp. *parviflora* – SMALL-FLOWERED MINER'S-LETTUCE. Occasional in shaded places in most sections of the reserve. [*Montia perfoliata* (Donn ex Willd.) Howell var. *parviflora* (Douglas ex Hook.) Jeps.]

Claytonia perfoliata Donn ex Willd. ssp. *perfoliata* – COMMON MINER'S-LETTUCE. Occasional in sections B and D. [*Montia perfoliata* (Donn ex Willd.) Howell]

Claytonia rubra (Howell) Tidestr. ssp. *rubra* – NORTHERN MINER'S-LETTUCE. This miner's-lettuce, which normally grows in coniferous forest, is not uncommon on gravel bars and mudbars along the creek (Oswald 2302). [*Montia perfoliata* (Donn ex Willd.) Howell var. *depressa* (A.Gray) Jeps. misapplied]

Portulaca oleracea L. – PURSLANE. Rare in section A

PRIMULACEAE – PRIMROSE FAMILY

Anagallis arvensis L. – SCARLET PIMPERNEL. Occasional throughout the reserve.

RANUNCULACEAE – BUTTERCUP FAMILY

Myosurus minimus L. – COMMON MOUSETAIL. A small population was found in a drying pool in the track through the weedy field in section B (Oswald 3257).

Ranunculus aquatilis L. var. *hispidulus* Drew – WATER BUTTERCUP. In ditches with vernal impounded water in the weedy field in section B.

Ranunculus muricatus L. – PRICKLE-SEEDED BUTTERCUP. In moist soil along the track through the weedy field in section B.

RHAMNACEAE – BUCKTHORN FAMILY

Ceanothus cuneatus (Hook.) Nutt. – BUCKBRUSH. Scattered in the wooded area in section B.

Rhamnus tomentella Benth. ssp. *tomentella* – HOARY COFFEEBERRY. Occasional in sections B and D. [*R. californica* Eschsch. ssp. *tomentella* (Benth.) C.B.Wolf]

ROSACEAE – ROSE FAMILY

Aphanes occidentalis (Nutt.) Rydb. – WESTERN LADY'S-MANTLE. Rare in section B. [*Alchemilla occidentalis* Nutt.]

Heteromeles arbutifolia (Lindl.) M.Roem. – TOYON. Rare in section D.

Potentilla anglica Laichard. – ENGLISH CINQUEFOIL. One spreading colony of this plant, which is grown as an ornamental ground-cover, was found in moist soil on the receding edge of Butte Creek in section B (Oswald 2922).

Potentilla glandulosa Lindl. ssp. *reflexa* (Greene) D.D.Keck – GREENE'S CINQUEFOIL. Rare in sections A and D.

Prunus sp. – PLUM. Several unidentified volunteer plums are located in sections A and B.

Prunus dulcis (Mill.) D.A.Webb – ALMOND. A single small tree was found in section B. [*P. amygdalus* Batsch]

Prunus mahaleb L. – MAHALEB CHERRY. Several trees are located in section B. These are probable escapes from the former USDA Plant Introduction Station (Oswald 2301).

Prunus virginiana L. var. *demissa* (Nutt.) Torr. – WESTERN CHOKECHERRY. Found at or perhaps slightly outside of the east boundary of the reserve in section D (Oswald 2336).

Pyracantha sp. – FIRETHORN. An escape growing on the edge of a pond in section D.

Pyrus calleryana Dcne. – FLOWERING PEAR. A single tree, probably originating from the nearby Chico Tree Improvement Center (former USDA Plant Introduction Station), is located in section B.

Rosa californica Cham. & Schtdl. – CALIFORNIA ROSE. On a high bank of Butte Creek in section B.

Rubus discolor Weihe & Nees – HIMALAYAN BLACKBERRY. This blackberry forms impenetrable bramble patches in much of the reserve. Although its fruits are eaten by wildlife, it is probably the least desirable plant in the reserve. [*R. procerus* P.J.Müll.]

Rubus ursinus Cham. & Schtdl. – CALIFORNIA BLACKBERRY. Occasional in most sections of the reserve (*Oswald 2308*). Plants with pinhead glands on the pedicels and calyx are the var. *macropetalus* (Douglas ex Hook.) R.Br. (*Oswald 2307*) Other plants (*Oswald 2330*) with large perfect flowers and stouter prickles grow at several locations in sections B and C and represent escapes of some domestic cultivar of *R. ursinus*, e.g., boysenberry or youngberry. [*R. vitifolius* Cham. & Schtdl., *R. macropetalus* Douglas ex Hook.]

RUBIACEAE – MADDER FAMILY

Cephalanthus occidentalis L. var. *californicus* Benth. – CALIFORNIA BUTTON-WILLOW. Common shrub throughout the reserve.

Crucianella angustifolia L. – CROSSWORT. Occasional in sections B, C, and D.

Galium aparine L. – CLEAVERS. Common throughout the reserve.

Galium parisiense L. – WALL BEDSTRAW. Occasional in most sections of the reserve.

SALICACEAE – WILLOW FAMILY

Populus fremontii S. Watson ssp. *fremontii* – FREMONT'S COTTONWOOD. Common large tree in most of the reserve.

Salix exigua Nutt. – SAND BAR WILLOW. Common on gravel bars near the creek and on the edge of some of the dredge ponds. [*Salix hindsiana* Benth.]

Salix gooddingii C.R. Ball – GOODDING'S BLACK WILLOW. Common particularly on the banks of many of the dredge ponds.

Salix laevigata Bebb – RED WILLOW. Occasional near the creek and bordering dredge ponds (*Oswald 2298*).

Salix lasiolepis Benth. – ARROYO WILLOW. Abundant in all sections of the reserve (*Oswald 2342*).

Salix lucida Muhl. ssp. *lasiandra* (Benth.) E. Murray – YELLOW WILLOW. Uncommon in sections B and C.

Salix melanopsis Nutt. – DUSKY WILLOW. Several small shrubby willows are located near the creek in section B.

SAXIFRAGACEAE – SAXIFRAGE FAMILY

Darmera peltata (Torr. ex Benth.) Voss – INDIAN-RHUBARB. A single, young plant was observed in wet sand on the edge of the creek in section B. [*Peltiphyllum peltatum* (Torr. ex Benth.) Engl.]

Lithophragma bolanderi A.Gray – BOLANDER'S WOODLANDSTAR. A single plant was observed in the woodland in section B.

SCROPHULARIACEAE – FIGWORT FAMILY

Castilleja attenuata (A.Gray) T.I.Chuang & Heckard – VALLEY-TASSELS. Occasional in open places in most sections of the reserve. [*Orthocarpus attenuatus* A.Gray]

Castilleja exserta (A.Heller) T.I.Chuang & Heckard ssp. *exserta* – PURPLE OWL'S-CLOVER. On a high bank of the creek near Hwy. 99 in section A. [*Orthocarpus purpurascens* Benth.]

Lindernia dubia (L.) Pennell var. *anagallidea* (Michx.) Cooperr. – FALSE PIMPERNEL. Scattered in moist soil on the edge of the creek.

Mimulus cardinalis Douglas ex Benth. – SCARLET MONKEY-FLOWER. Scattered in moist soil along the edge of the creek. One plant in section B had orange rather than typical red flowers.

Mimulus glaucescens Greene – SHIELD-BRACTED MONKEY-FLOWER. Occasional in moist soil near the creek and on the bottom of drying ponds in all sections of the reserve. CNPS List 4.

Mimulus guttatus Fisch. ex DC. – COMMON MONKEY-FLOWER. Scattered to locally common near the creek and in moist soil on the edge of ponds in most sections of the reserve. This is a highly variable species, and plants with varying height, flower size, and flowering periods are to be found.

Mimulus moschatus Douglas ex Lindl. – MUSK MONKEY-FLOWER. Common in moist soil on gravel bars along the creek. Plants with sessile upper leaves (var. *sessilifolius* A.Gray) are abundant on the bottom of the shallow, spring-fed pond near the diversion dam for Crouch Ditch in section D.

Mimulus primuloides Benth. ssp. *primuloides* – PRIMROSE MONKEY-FLOWER. This plant, which is typical of mountain meadows, was found on a moist gravel bar along a backwater of the creek in section D. A small population was also established in moist soil on the edge of a cattail pond in section D. These plants have long hairs on their leaves and are sometimes referred to a var. *pilosellus* (Greene) Smiley.

Penstemon heterophyllus Lindl. var. *purdyi* (D.D.Keck) McMinn – PURDY'S BEARDTONGUE. A single plant was observed in section D.

Triphysaria eriantha (Benth.) T.I.Chuang & Heckard – JOHNNYTUCK. In the weedy field in section B. [*Orthocarpus erianthus* Benth.]

Verbascum blattaria L. – MOTH MULLEIN. Occasional in sections A, B, and C.

Verbascum thapsus L. – WOOLLY MULLEIN. Common in most sections of the reserve.

Veronica americana (Raf.) Schwein. ex Benth. – AMERICAN BROOKLIME. Found on the edge of Butte Creek in section D.

Veronica peregrina L. ssp. *xalapensis* (HUMB., BONPL. & KUNTH) Pennell – PURSLANE SPEEDWELL. In vernal wet places in the weedy field in section B; also found along a wet drainage in section C.

Veronica persica Poir. – PERSIAN SPEEDWELL. Found on a moist, muddy sand bar along a flood channel in section C.

SIMAROUBACEAE – QUASSIA FAMILY

Ailanthus altissima (Mill.) Swingle – TREE-OF-HEAVEN. Scattered to locally common weedy tree in most sections of the reserve.

SOLANACEAE – NIGHTSHADE FAMILY

Datura stramonium L. var. *tatula* (L.) Torr. – PURPLE-STEMMED JIMSONWEED. Known only from a dead plant of the previous year, which was observed in section C.

Nicotiana acuminata (Graham) Hook. var. *multiflora* (Phil.) Reiche – MANY-FLOWERED TOBACCO. Several plants were found on a sandy high bank along the creek in section C.

Solanum americanum Mill. – AMERICAN BLACK NIGHTSHADE. Occasional in sections A and B. [*Solanum nodiflorum* Jacq.]

Solanum parishii A.Heller – PARISH'S NIGHTSHADE. A single plant was observed in section D.

ULMACEAE – ELM FAMILY

Celtis australis L. – MEDITERRANEAN HACKBERRY. A single small tree was observed in section A. It probably represents an escape from the former USDA Plant Introduction Station.

URTICACEAE – NETTLE FAMILY

Urtica dioica L. ssp. *holosericea* (Nutt.) Thorne – HOARY CREEK NETTLE. Forming small to fairly extensive colonies near dredge ponds in sections C and D. [*U. holosericea* Nutt.]

VERBENACEAE – VERVAIN FAMILY

Verbena hastata L. – HALBERD-LEAVED VERVAIN. A single, small plant was observed on the edge of the creek in section B.

Verbena lasiostachys Link var. *scabrida* Moldenke – WESTERN VERVAIN. Several plants were found on the edge of the creek in section D. [*V. robusta* Greene]

VISCACEAE – MISTLETOE FAMILY

[Loranthaceae]

Phoradendron macrophyllum (Engelm.) Cockerell – BIG-LEAVED MISTLETOE. A common mistletoe on cottonwood and occasional on alder. [*P. tomentosum* (DC.) Engelm. ex A.Gray ssp. *macrophyllum* (Engelm.) Wiens]

VITACEAE – GRAPE FAMILY

Vitis californica Benth. – CALIFORNIA WILD GRAPE. Common vine in all sections of the reserve.

ZYGOPHYLLACEAE – CALTROP FAMILY

Tribulus terrestris L. – PUNCTURE-VINE. On the edge of the road in section C.

ANTHOPHYTA – FLOWERING PLANT DIVISION

MONOCOTYLEDONES – MONOCOT CLASS

ALISMATACEAE – WATER-PLANTAIN FAMILY

Alisma plantago-aquatica L. – WATER-PLANTAIN. Occasional in shallow water and on drying beds of ponds and along the edge of the creek (*Oswald 3000*). [Includes var. *americana* Schult. & Schult.f., *A. triviale* Pursh]

CYPERACEAE – SEDGE FAMILY

Carex barbarae Dewey – SANTA BARBARA SEDGE. Forming large colonies in sandy places near the creek and on the bottom of some of the dredge ponds that dry very early in the spring.

Carex densa (L.H.Bailey) L.H.Bailey – DENSE SEDGE. A single tuft was found on the edge of the creek in section B. [*C. breviligulata* Mack.]

Carex deweyana Schwein. ssp. *leptopoda* (Mack.) Calder & R.L.Taylor – SHORT-SCALED SEDGE. Uncommon on the bank of the creek in section D (*Oswald 2392*). [*C. leptopoda* Mack.]

Carex feta L.H.Bailey – GREEN-SHEATHED SEDGE. Occasional along ditches and near the creek in sections B and C (*Oswald 2907*).

Carex gracillior Mack. – SLENDER SEDGE. On the drying bed of a shallow dredge pond in section C.

Carex nudata W.Boott – TORRENT SEDGE. Common tufted sedge in shallow water of Butte Creek or, later in the summer, on the drying edge of the creek.

Carex subfusca W.Boott – RUSTY SLENDER SEDGE. In wet soil bordering the edge of the creek and on the dry beds of some of the shallow dredge ponds (Oswald 2379 & 2391).

Cyperus bipartitus Torr. – TWO-PARTED CYPERUS. Scattered to locally abundant in wet, sandy or muddy soil along the creek and bordering some of the larger dredge ponds (Oswald 3001). [*Cyperus rivularis* Kunth]

Cyperus difformis L. – SMALL-FLOWERED CYPERUS. Uncommon in wet sand in the bed of Butte Creek in section B.

Cyperus eragrostis Lam. – TALL CYPERUS. Occasional in moist places.

Cyperus erythrorhizos Muhl. – RED-ROOTED CYPERUS. Locally abundant in wet soil along the edge of the creek and on the receding edge of some of the larger ponds (Oswald 3099).

Cyperus squarrosus L. – AWNED CYPERUS. Scattered in wet sand in the bed of Butte Creek in mid to late summer. [*C. aristatus* Rottb.]

Cyperus strigosus L. – FALSE NUTSEDEGE. Common in moist to wet soil along the creek and in many of the dredge ponds.

Eleocharis acicularis (L.) Roem. & Schult. var. *acicularis* – NEEDLE SPIKE-RUSH. A small spike-rush which sometimes forms extensive populations in moist to wet sand or mud on the summer bed of the creek and in many of the dredge ponds (Oswald 2924).

Eleocharis macrostachya Britton ex Small – PALE SPIKE-RUSH. Common in moist to wet places along the creek and on the edge of some of the dredge ponds (Oswald 3139). [*E. palustris* (L.) Roem. & Schult.]

Eleocharis parishii Britton – PARISH'S SPIKE-RUSH. Occasional on the edge of the creek in sections B and D. [*E. montevidensis* Kunth var. *parishii* (Britton) V.E.Grant]

Eleocharis quadrangulata (Michx.) Roem. & Schult. – SQUARE-STEMMED SPIKE-RUSH. A large spike rush known from an extensive colony in a single pond in section D, which becomes dry during late summer (Oswald 3239). CNPS List 2.

Lipocarpa micrantha (Vahl) G.C.Tucker – SMALL-FLOWERED LIPOCARPHA In moist soil along the edge of the creek and on the bottom of some of the ponds that dry during the summer. [*Hemicarpha micrantha* (Vahl) Pax including var. *minor* (Schrad.) Friedl.]

Scirpus microcarpus C.Presl – SMALL-FRUITED BULRUSH. A single plant was found on the edge of Butte Creek in section B (Oswald 23923). This bulrush is normally found at higher elevations in the county.

Scirpus mucronatus L. – ROUGH-SEEDED BULRUSH. A common weed of rice fields found on the muddy edge of several of the larger ponds in sections C and D (Oswald 3138).

JUNCACEAE – RUSH FAMILY

Juncus acuminatus Michx. – SHARP-FRUITED RUSH. In the ditch near the control valve for the Durham Mutual Ditch in section B and on the bottom of a drying pond in section C. Plants growing on the sandy flood plain of the creek in sections A and B are the forma *sphaerocephalus* F.J.Herm.

Juncus articulatus L. – JOINTED RUSH. On the edge of the creek in section B.

Juncus bufonius L. var. *bufonius* – COMMON TOAD RUSH. Found in all sections of the reserve. It frequently grows in cracks in black-topped roads.

Juncus effusus L. var. *exiguus* Fernald & Wieg. – SHORT RUSH. Uncommon on the edge of Butte Creek in section D (*Oswald 2389*).

Juncus effusus var. *pacificus* Fernald & Wieg. – PACIFIC RUSH. Common along ditches and on the bottom of ponds in most sections of the reserve.

Juncus ensifolius Wikstr. – SWORD-LEAVED RUSH. On the edge of the creek in sections C and D.

Juncus patens E.Mey. – SPREADING RUSH. Occasional along ditches and ponds in most sections of the reserve.

Juncus tenuis Willd. – SLENDER RUSH. Along the creek in sections A and B and in wet soil near one of the larger permanent ponds in section D.

Juncus xiphioides E.Mey. – IRIS-LEAVED RUSH. Uncommon on the sandy flood plain of the creek in section B (*Oswald 2925*).

LEMNACEAE – DUCKWEED FAMILY

Lemna minuta Humb., Bonpl. & Kunth – LEAST DUCKWEED. Small floating aquatic on some of the more permanent ponds in section D. [*L. minima* Humb. ex Phil., *L. minuscula* Herter]

Spirodela polyrhiza (L.) Schleid. – GREATER DUCKMEAT. Abundant on one of the deeper ponds in section D (*Oswald 2334*). It forms a mixed colony with the previous species.

LILIACEAE – LILY FAMILY

[Includes Amaryllidaceae]

Brodiaea elegans Hoover ssp. *elegans* – ELEGANT BRODIAEA A single plant was seen near the entry gate to section C in early May.

Dichelostemma capitatum A.W.Wood ssp. *capitatum* – BLUE DICKS. Common on the weedy flat between the dike and the creek in section B. [*Brodiaea capitata* Benth., *B. pulchella* (Salisb.) Greene, *D. pulchellum* (Salisb.) A.Heller]

Dichelostemma congestum (Sm.) Kunth – FORK-TOOTHED OOKOW. Occasional on the weedy flat between the dike and the creek in section B. [*Brodiaea congesta* Sm.]

Dichelostemma multiflorum (Benth.) A.Heller – ROUND-TOOTHED OOKOW. Common on the weedy flat between the dike and the creek in section B. [*Brodiaea multiflora* Benth.]

Triteleia laxa Benth. – ITHURIEL'S-SPEAR. Common on the weedy flat between the dike and the creek in section B. [*Brodiaea laxa* (Benth.) S.Watson]

ORCHIDACEAE – ORCHID FAMILY

Epipactis gigantea Douglas ex Hook. – STREAM ORCHID. A single clump was observed on the edge of the creek in section B.

POACEAE – GRASS FAMILY

[Gramineae]

Agrostis exarata Trin. – SPIKED BENTGRASS. Occasional on the sandy edge of the creek in sections A and B (*Oswald 2905*).

Agrostis scabra Willd. – ROUGH BENTGRASS. Common along Butte Creek in section D; also along the edge of a pond on a flood channel in section C (*Oswald 3100*).

Agrostis stolonifera L. – CREEPING BENT. Found on a gravel bar bordering a backwater of the creek in section D (*Oswald 3140*). [*A. alba* L. misapplied]

Agrostis viridis Gouan – WATER BENTGRASS. Found on the edge of one of the larger ponds in section D (*Oswald 2914*). [*A. semiverticillata* (Forssk.) C.Chr., *A. verticillata* Vill.]

Aira caryophyllea L. – SILVER EUROPEAN HAIRGRASS. Scattered in most sections of the reserve.

Andropogon virginicus L. var. *virginicus* – BROOM-SEDGE BLUESTEM. BEARDGRASS. In moist soil bordering the edge of some of the shallow ponds in section D.

Aristida oligantha Michx. – OLDFIELD THREE-AWN. On the dry edge of a cattail pond in section D.

Avena barbata Pott ex Link – SLENDER WILD OAT. Common throughout the reserve.

Avena fatua L. – WILD OAT. Common throughout the reserve.

Brachypodium distachyon (L.) P.Beauv. – FALSE BROME. Scattered to locally common throughout the reserve.

Briza minor L. – LESSER QUAKING-GRASS. Occasional in sections B and C.

Bromus diandrus Roth – RIPGUT BROME. Common throughout the reserve. [*B. rigidus* Roth]

Bromus hordeaceus L. – SOFT CHESS. In most sections of the reserve. [*B. mollis* L.]

Bromus madritensis L. ssp. *madritensis* – FOXTAIL CHESS. Rare in sections B and D.

Bromus madritensis ssp. *rubens* (L.) Husn. – RED BROME. Found in most sections of the reserve.

Bromus racemosus L. – SMOOTH CHESS. Occasional plants were found in section C. [*B. mollis* L. var. *leiostachys* Hartm.]

Bromus sterilis L. – POVERTY BROME. Occasional in all sections of the reserve.

Bromus tectorum L. – CHEATGRASS. Locally abundant in some of the sandy places in section C.

Cortaderia selloana (Schult.) Asch. & Graebn. – PAMPASGRASS. On the bottom of several of the ponds in section D where the soil is moist but without standing water during most of the year (*Oswald 3204*).

Cynodon dactylon (L.) Pers. – BERMUDA-GRASS. Occasional in most of the reserve.

Cynosurus echinatus L. – HEDGEHOG DOGTAIL. Occasional in section C.

Deschampsia danthonioides (Trin.) Munro – ANNUAL HAIRGRASS. In vernal wet ruts in the track through the weedy field in section B.

Deschampsia elongata (Hook.) Munro – SLENDER HAIRGRASS. Scattered to locally common in wet soil in shaded places near the creek.

Digitaria sanguinalis (L.) Scop. – HAIRY CRABGRASS. Scattered in moist soil in most sections of the reserve.

Echinochloa colona (L.) Link – JUNGLE-RICE. In moist soil in most sections of the reserve.

Echinochloa crus-galli (L.) P.Beauv. – BARNYARD GRASS. Near the creek in sections B and C. [Includes var. *zelayensis* (Humb., Bonpl. & Kunth) Hitchc.

Elymus glaucus Buckley ssp. *glaucus* – BLUE WILD-RYE. Scattered to locally common in sections B, C, and D.

Eragrostis cilianensis (All.) Vign. ex Janchen – STINKGRASS. In moist, sandy soil along the creek in sections B and C (*Oswald 3095*).

Eragrostis pilosa (L.) P.Beauv. var. *pilosa* – TUFTED LOVEGRASS. In moist soil along the creek in sections B and C.

Glyceria elata (Nash) M.E.Jones – TALL MANNAGRASS. Rare in wet soil bordering the creek in section B (*Oswald 2958*).

Holcus lanatus L. – COMMON VELVETGRASS. Uncommon in section C.

Hordeum marinum Huds. ssp. *gussoneanum* (Parl.) Thell. – MEDITERRANEAN BARLEY. Common in the weedy field in section B; also observed in section C. [*H. geniculatum* All.]

Hordeum murinum L. ssp. *leporinum* (Link) Arcang. – HARE WALL BARLEY. Found in sections A and C. [*H. leporinum* Link]

Leersia oryzoides (L.) Sw. – RICE CUTGRASS. In shallow water or in wet soil along the edges of dredge ponds and along backwaters of the creek (Oswald 3005).

Lymus triticoides (Buckley) Pilg. – ALKALI RYEGRASS. In the grassy woods along the road in section A. [*Elymus triticoides* Buckley]

Lolium multiflorum Lam. – ANNUAL RYEGRASS. Common throughout the reserve.

Melica torreyana Scribn. – TORREY'S MELIC. On shaded, brushy banks in section C.

Muhlenbergia filiformis (Thurb.) Rydb. – PULLUP MUHLY. Rare on the sandy edge of a flood channel in section C.

Panicum acuminatum Sw. var. *acuminatum* – WESTERN PANICGRASS. Occasional in gravelly soil on the edge of the creek. [*P. occidentale* Scribn., *P. pacificum* Hitchc. & Chase]

Panicum capillare L. – WITCHGRASS. Found on a sand bar bordering a backwater of the creek in section D.

Paspalum dilatatum Poir. – DALLISGRASS. Common in moist soil along the edge of the creek.

Phleum pratense L. – CULTIVATED TIMOTHY. A few plants were found on a gravel bar along a backwater of the creek in section D.

Piptatherum miliacea (L.) Coss. – SMILGRASS. Uncommon on the edge of the creek in section D. [*Oryzopsis miliacea* (L.) Benth. & Hook. ex Asch. & Schweinf.]

Poa annua L. – ANNUAL BLUEGRASS. Common throughout the reserve.

Poa pratensis L. ssp. *pratensis* – KENTUCKY BLUEGRASS. On the moist edge of a muddy flood plain of the creek in section D.

Polypogon interruptus HUMB., BONPL. & KUNTH – DITCH BEARDGRASS. Locally common on the edge of the ditch at the control valve for the Durham Mutual Ditch in section B; also abundant in the shallow, spring-fed pond near the diversion dam for Crouch Ditch in section D.

Polypogon maritimus Willd. – MEDITERRANEAN BEARDGRASS. Occasional in moist soil in section D.

Polypogon monspeliensis (L.) Desf. – ANNUAL BEARDGRASS. Occasional in moist soil in section D.

Setaria pumila (Poir.) Roem. & Schult. – YELLOW BRISTLEGRASS. In moist soil along the creek and on the drying edge of a large pond in section D. [*S. glauca* (L.) P.Beauv.]

Sorghum halepense (L.) Pers. – JOHNSONGRASS. Scattered to locally common in most sections of the reserve.

Vulpia microstachys (Nutt.) Munro var. *ciliata* (Beal) Lonard & Gould – FRINGED FESCUE. A few plants were found in section D. [*Festuca eastwoodiae* Piper and *F. grayi* (Abrams) Piper]

Vulpia myuros (L.) C.C.Gmel. var. *myuros* – RATTAIL FESCUE. Spring annual in most sections of the reserve. [*Festuca myuros* L.]

Vulpia myuros var. *hirsuta* (Hack.) Asch. & Graebn. – FOXTAIL FESCUE. A less common variety found in section D. [*Festuca megalura* Nutt.]

POTAMOGETONACEAE – PONDWEED FAMILY

Potamogeton filiformis Pers. – SLENDER-LEAVED PONDWEED. Uncommon in shallow water of a pond along a channel which carries water during moderate winter and spring floods in section D (*Oswald 2927*).

Potamogeton foliosus Raf. var. *foliosus* – LEAFY PONDWEED. In some of the deeper ponds in section D; also found in a backwater of the creek in section D (*Oswald 2360*).

Potamogeton natans L. – FLOATING-LEAVED PONDWEED. In several of the deeper ponds in section D (*Oswald 2359*).

TYPHACEAE – CATTAIL FAMILY

Typha domingensis Pers.. – SOUTHERN CATTAIL. Found in some of the ponds in section D.

Typha latifolia L. – BROAD-LEAVED CATTAIL. In the ditch at the valve which controls the flow into the Durham Mutual Ditch; also along the creek in section B.

