CONSERVATION INNOVATION GRANT
Final Report

Grantee Name: Gold Ridge Resource Conservation District	
Project Title: Insectaries for Pollinators and Farm Biodiversity	
Agreement Number: NRCS 69-3A75-9-156	
Project Director: Noelle Johnson	
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Period Covered by Report: April – June 2012; final report	
Project End Date: December 2012	

Summary of work

April – June 2012 summary:

The seventh and final site, New Family Farm, was planted on May 9th, 2012, with the farm owners volunteering their time to assist. A total of 310 plants consisting of 22 different flowering species were installed in four different planting sites covering nearly 8,000 square feet. Additional plantings were conducted at Gabriel Farm (75 plants), Dierke Enterprises (54 plants), Three Ox Farm (55 plants), and Rued Vineyards (14 plants). Ten of the plants at Rued Vineyards were installed using Groasis waterboxxes ®, an innovative technology designed to trap irrigation water using condensation (see photos). A grand total of 6,107 plants, of 125 different species have been planted throughout the life of the project, covering approximately 1.85 acres.

Total project summary/deliverables:

Plant installation totals: A total of 6,107 plants were installed on the seven sites throughout the life of the project. Some acreage originally planned for pollinator plantings on the six properties included in the proposal estimates was no longer available by the time of the plantings. A seventh site was added (New Family Farm) to compensate. (Please see below "Lessons learned: Project scale and timeframe" for additional discussion). Total plantings were as follows:

property	SSN/EIN	No. plants	Sq. ft. planted	No. of species/varieties used
Singing Frogs Farm (Paul Kaiser)	SSN: 545-45-9945	1768	18545	89
Rued Vineyards (Catherine Younger)	SSN: 569-90-1912	1674	21000	47
Three Ox Farm (Steve Howard)	SSN: 555-76-1704	538	3500	30

Dierke Enterprises (John Dierke)	EIN: 94-3319126	787	20000	36
Joy Road Ranch (Joe Pozzi)	SSN: 566-47-5078	362	5000	29
Gabriel Farm (Torry Olson	EIN: 33-0888434	668	12600	42
New Family Farm (Adam Davidoff)	SSN: 550-89-8369	310	7920	22
total		**6,107**	**1.85 acres**	

A map of the seven sites is included in **Appendix C.** Final planting plans for each site are included in **Appendix D**. **Appendix E** contains photo-monitoring results from each site.

Plant survival rate and native bee population monitoring results: As discussed below in more detail, the timeframe for plant installations did not allow for three years of monitoring within the timeframe of the grant agreement. Two RCD staff members and one consultant (Rose Roberts of Farm Stewards) completed a training in native been population monitoring in June 2010, conducted through the Xerces Society's Citizen Science Monitoring program, which allowed for some data collection showing that a diversity of native bee species were using the plantings for pollen and nectar collection. However, the monitoring protocol required very specific weather conditions and timing considerations that did not allow for sufficient data collection during the timeframe of the grant to allow for any significant analysis. The protocol is really designed more for longer-term monitoring of sites as plant mature. Plant survival information was collected bi-annually, and used to design replacement plant plans for areas with low survival. However, while some plantings were conducive to plant counts, with individual plants marked with color-coded flags, many areas were not, such as rush beds. (See "Lessons Learned: diversity vs. permanence"). Monitoring efforts focused instead on ensuring overall planting area establishment. Some planting areas were abandoned as conditions indicated they were too difficult to maintain (such as highly flooded areas). When evaluated by total planting area, approximately 75% of plantings led to successful establishment of pollinator habitat.

Workshops/Public outreach: Working in conjunction with project partners, the Gold Ridge RCD hosted a pollinator workshop in 2009 to promote the project among local landowners. A total of 32 people attended, which included landowners, partners, and NRCS and RCD staff. Presenters included Jessa Guisse of The Xerces Society, entomologist Dr. Robert Bugg of UC-Davis (that is his real name!), master beekeeper Serge LaBesque of Santa Rosa Junior College, and RCD staff.

RCD staff also helped to facilitate a large workshop conducted through the local non-profit Partners for Sustainable Population in 2010, attended by approximately 200 people. Project staff gave a presentation that included an overview of the project, and preliminary results of planting efforts.

The Gold Ridge RCD also worked through the Sonoma County Volunteer Center and other avenues, such as the local paper, to recruit volunteers for planting days. These included

presentations for participants to discuss the importance of native bee populations and the goals of the project. Seven planting days were held throughout the life of the project, including participation from over 80 community members. Participants included Cub and Boy Scout troupes, staff from the Fruit Guys (a local fruit distribution company), and members of Partners for Sustainable Pollination, along with interested community members.

The Gold Ridge RCD also received an additional $1,000 from the North Coast Resource Conservation and Development Council to organize a pollinator planting day with the local Salmon Creek grade school to further develop its pollinator curriculum. This included the installation of a pollinator garden at the school with over 30 fifth-graders and 6 parent volunteers.

The RCD and project partners also conducted multiple farm tours on pollinator sites. Community Alliance with Family Farmers (CAFF) conducted a farm tour on Three Ox Farm in September 2010, discussing the importance of the recently-installed insectaries for farm productivity. Singing Frogs Farm gives regular farm tours to its CSA members, which includes the numerous planting sites. In November 2011, a large volunteer planting day and class session was held with 24 students from the Sonoma State University's Restoration Ecology course.

Finally, in August 2012, project partner Rose Roberts of Farm Stewards gave a presentation on pollinator habitat to the West Sonoma County Seed Exchange.

Collaboration with UC-Berkeley's Agroecology Research Group's monitoring efforts: While this was originally planned in the proposal phase, the planting sites were not appropriate for the research the ARG was conducting, and this collaboration was abandoned. Instead, project staff collaborated with The Xerces Society to implement its Citizen Science Monitoring program to estimate diversity and abundance of native bee species. More details are provided below.

NRCS CIG Showcase event: It was originally intended that the project manager attend the NRCS Showcase Event in Washington DC during the final year of the project. However, the project manager went on maternity leave in early 2012, and then suffered a knee injury that made such a trip impossible with a small infant. The project manager discussed alternatives with NRCS staff, and instead presented project results at the annual Partners for Sustainable Population meeting in June 2012. The project manager also assisted the Petaluma office in incorporating project lessons into EQIP practices by helping to develop a pollinator plant list appropriate for the area.

Discussion of Project Innovations

Several innovative features were included in this pilot project:

1. *Pollinator-focused plantings*. Plantings were specifically designed to provide nesting habitat and year-round pollen and nectar sources for both native bee species and honeybees, while also supporting other pollinator species such as hummingbirds and bats. While increasing awareness about the dramatically declining populations of both native bee

species and European honeybees have made this an increasingly common practice, few on-farm biodiversity projects focused on pollinators when the project began in 2009. Workshop attendance and landowner response has indicated a greatly growing interest in this type of work. NRCS practices have also begun to focus on pollinators, and numerous grant programs are beginning to include pollinator support in their stated goals.

2. *Particular emphasis on native bee species.* Rather than just providing pollen and nectar for managed hives of European honeybees, the plantings were designed to focus primarily on native bee species, who have different habitat needs. Many of these species are ground nesters, cavity nesters, or stem borers. This necessitated that plans use species beyond simply flowering plants, including rushes, sedges, or woody species known to house cavity nesters. Plantings also had to take into account flower shapes, colors, and bloom times.

3. *Comprehensive property assessment.* The development of the Pollinator Farm Plans considered the multiple functions each planting area would play, such as buffers, windbreaks, screens, and erosion control. Plantings providing multiple uses for the landowner would be more likely to be properly maintained. Detailed farm plans for each site are included in **Appendix B**.

4. *Expansion of biodiversity plantings into non-irrigated areas.* On-farm biodiversity plantings have generally been limited to areas where irrigation is available. Several of the plantings were conducted in areas where irrigation was not feasible, including a rangeland property and a non-irrigated vineyard. The rangeland site used DriWater®, packets of a gel which is digested by soil microbes to release water as soil dries. The packets need to be replaced every six weeks during the dry season. The non-irrigated vineyard site used Groasis Waterboxxes®, plastic tubs which trap water through condensation while providing weed control and browse protection.

5. *Biodegradable weed control.* Plantings generally require plastic weed mats to combat weeds and preserve soil moisture. However, many native bee species are ground-nesting, and would not be able to use weed-matted areas as habitat. Additionally, the weed mats degrade over time, leaving plastic remnants permanently in the soil. The project attempted to use only biodegradable materials for weed control, such as cardboard, burlap, and mulch.

6. *Effectiveness monitoring.* Many project goals focus exclusively on plant survival rates as an indicator of project success, rather than considering the effectiveness of the plantings at providing habitat value and supporting bee species. This project attempted to monitor the plantings for abundance and diversity of native bees using The Xerces Society's Citizen Science Monitoring techniques.

7. *Incorporation into environmental education program.* While not originally included in the proposal, the RCD was able to include information about native pollinators collected during the Xerces Society training in the curriculum for its environmental education program, TEAM Conservation. The program targets third- and fourth-graders in local schools, bringing them out onto agricultural properties within the district to discuss important local conservation issues.

Lessons learned

Project management considerations.

Project scale and timeframe. The original proposal, developed in collaboration with landowners and consultants and submitted to Natural Resources Conservation Service in 2009, called for the installation of at least 6,340 plants on six properties, covering at least 2.3 acres of farmland. Plants were scheduled for installation in the 2009-2010 rainy season, allowing for nearly three years of maintenance within the grant period. A matching funds proposal was approved for funding by the Wildlife Conservation Board in 2010.

This timeframe proved to be highly ambitious. In reality the level of planning and coordination with landowners, and actual planting efforts (particularly when involving volunteers and community groups), could not have been implemented within the original timeframe. Plantings needed to spaced out throughout the grant period, to allow project staff to properly plan and monitor them, and to allow landowners to stay on top of irrigation installation and site maintenance. The final site was not planted until May 2012.

The scale of the plantings was also ambitious. While the originally plant numbers were almost achieved (6,107 plants were installed on 1.85 acres), the project as a whole would have benefitted if smaller plantings were planned, with more funds devoted to site maintenance. While landowners have gone to great lengths to maintain the plantings, they have been surprised by the level of maintenance required, particular on sites with larger plantings. A better strategy would have been to do smaller plantings on each site (< 300 plants) and ensure establishment before adding additional planting areas. This would have also allowed the project manager to ensure that landowners were indeed going to assume ownership over the plantings and maintain them properly in accordance with their landowner agreements. Smaller plantings could also use more elaborate weed and browse control, necessary on some sites.

Landowner ownership. Not surprisingly, landowner involvement has proven essential for overall success, even if just monitoring the plantings to let project staff know how the sites are doing and if they need assistance with maintenance.

Design considerations.

Diversity vs. permanence. The planting plans allowed for a high diversity of plants in an effort to provide year-round sources of pollen and nectar, using plants with different flower colors and shapes that would bloom throughout the year. This level of diversity required the use of some more tender, herbaceous species that had low survival rates, such as buckwheats, penstemons,, and fuschias. Many of these species were also low-growing, and die back in the winter, creating the need for perpetual maintenance. Several of these species, such as aster or *Eriogonum giganteum* (St. Catherine's lace, a large, woody buckwheat), do form large shrubs, but were more difficult to get established. Other larger, woody species, such as ceanothus, coffeeberry, and manzanita, are more appropriate for low-maintenance, permanent hedgerows. The more herbaceous species should still be used to provide for immediate habitat needs, as they flower copiously the first year while some woody plants can take several years to produce significant flowering. However, they should be interspersed with woody species with the idea that they eventually become shaded out as the woody species become established. A detailed list of species success is included in **Appendix A**. Distinction is made between species where significant (as with *Eriogonum giganteum,* a large woody buckwheat, as opposed to other buckwheat species listed simply as *Eriogonum spp,* which were more herbaceous and less successful). While the project staff tried to use truly native species as much as possible, local nurseries often had only cultivars available. While differences between cultivars can be significant, in terms of their size, tolerance to different planting conditions, or bloom timing and color, the nurseries themselves would often intermix them to complete an order, so it became difficult to consider these distinctions. However, cultivar names are noted where that used was a hybrid of two species.

The project monitoring objectives were originally established to consider survival rates for each species. However, while monitoring of some plantings could include an exact count of flagged plants, other areas were planted to achieve a thick, diverse cluster and could only be evaluated by overall establishment. Plugs of rushes and sedges were also not flagged and could not be counted. Flags were also not appropriate for some sites due to aesthetic reasons, or were removed by maintenance crews when a plant died. Flag colors also faded due to sun exposure. Even where it was feasible to do an exact survival count, the scale of the project made this cost prohibitive. Therefore, an overall survival rate was not feasible or necessary; a more subjective assessment of hedgerow establishment is more appropriate.

As recommended in publications about native pollinators, plans were originally designed to allow for grouping of plant species, as bees visit one species at a time. However, this wasn't conducive to overall hedgerow establishment, as this meant that many smaller herbaceous species with low survival rates were planted in a row, leaving

a gap. Species should be intermixed to ensure large woody species are evenly distributed.

Natural area plantings. Most sites were highly modified farmland, and therefore could incorporate non-native species without compromising the integrity of a natural area. Habitat interface sites using strictly native pollinator plants, such as those in riparian corridors, have proved difficult. These seem to suffer from combining goals, and would benefit from being treated as riparian restoration sites (using the full spectrum of native plants and riparian restoration techniques) rather than as pollinator habitat sites. This project as designed is more appropriate for highly disturbed, on-farm habitat areas than natural areas.

Another difficulty in prioritizing the true native status of a species, as opposed to using a cultivar, is that few self-proclaimed "native plant nurseries" actually offer true natives; they instead propagate plants from their own seed stock, which are often cultivars or from plants originating from other areas. "Native" also usually refers to "native to California", not to the specific region (for example, many native plant nurseries throughout the state sell Channel Island species). Only one nursery in the area of this project (Nature's Acres Nursery), propagated plants from locally-collected seed stock.

Planting considerations.

Community involvement. Initial plantings were facilitated through expanded efforts to engage volunteer community members, through new partnerships with a variety of community groups, including the Volunteer Center of Sonoma County. Several area Cub Scout troupes also participated, in order to fulfill a planting requirement for their forestry badge. Volunteer planting days were essential for getting large numbers of plants in the ground at once, and provided a much-appreciated public education component of the program. However, these efforts come with a risk – plant orders could not be cancelled or even postponed, so if a volunteer group backs out, or inclement weather causes low turnout, then it's difficult to ensure plants get installed quickly. The results have thus far proved worth the risk.

Flagging. Use of color-coded flags has also proven essential for both monitoring and maintenance, as new plants can be difficult to see, particularly during dormancy. Flagging was also needed to evaluate mortality. However, flags can create aesthetic concerns for some landowners, so would need to be discussed during project development.

Plant protection. Protection from deer browse has also proven to be essential to ensure survival of many species. It was originally believed that deer browse, especially on native plants, will not kill plants and hinder overall hedgerow establishment, but this has not been the case. While few plants were killed from the browse, plants were so stunted as to require continual maintenance, and would never have been able to grow without protection. Deer browse protectors, constructed from aviary wire and bamboo poles, have been placed on hundreds of

plants based on observations of susceptibility to browse. Poultry wire, as opposed to gopher wire, is much cheaper and lighter weight. Rolls of 3' and 4' wire were used, with 4' and 5' poles, respectively. Cages can be removed for use on other plants, or combined for resizing as a plant grows.

Two sites (Joy Road Ranch and New Family Farm) have livestock. While the plantings were installed in areas believed to be protected from the livestock, they nonetheless suffered considerable damage when the fencing failed. It is therefore recommended that more sturdy protectors (made with hog wire and t-stakes) be used for any sites with risk of browse from livestock. However, these are very expensive and time consuming to install. Another local non-profit recently have the RCD materials for several hundred of these cages, which are currently stockpiled at the office. This should greatly reduce future costs.

Protection from weeds also proved a challenge. Field staff time to assist landowners with weed control is essential, as even dedicated landowners would struggle to control springtime weeds. While plastic weed mats are generally least expensive and most effective, the project staff worked to avoid them. Not only does the plastic prohibit ground-nesting pollinator species from establishing, but prior experience with it has shown that the mats cannot be effectively removed once installed, leaving plastic remnants permanently in the soil. On most of the project sites, cardboard covered in mulch was used, which was effective for the first year but required weed control afterwards. Cardboard rolls, generally used in lawn removal, were available for purchase and inexpensive. Burlap has proven successful on the sites where it was used, but was expensive to purchase. However, a local coffee distributor has recently made free bags available, which would greatly reduce weeding and material costs. The RCD has already begun to stockpile these for future planting projects.

Another advantage to burlap is that it is a relatively thin layer compared to mulch or straw. Many plants installed in mulch or straw, especially on volunteer sites, suffered from stem rot as the mulch was laid too thickly around the stems.

One effective technique in combating weeds was to purchase plants that were already tall – at least two feet high at purchase. This was not feasible on large plantings for which plants were ordered from a nursery, and it proved too expensive to visit a variety of nurseries in search of taller plants of the right species. Tall nursery plants can also simply be rootbound, and not take well once planted. One rule of thumb that would be effective is to plant fast-growing, tall species in areas that indicate high weed pressure, such as ninebark, dogwood, or spicebush.

Another technique that has proven effective at controlling weeds on other projects (although not used on this project) is to begin weed control efforts before a planting using solarization. The solarizing plastic could be laid during the August-September heat before a fall planting. While the solarizing tarp can be more easily pulled up than plastic weedmats, it is often degraded and cannot be easily reused, creating large amounts of plastic waste. While less

effective and more labor intensive, very heavy mulching using burlap, straw, or mulch for a full year before a planting may be preferable for this reason. Plants could then be planted directly into the mulch, with care taken to remove mulch from around the plant base to avoid stem rot.

Plantings on dry sites. One of the innovative aspects of the project was the attempts to establish plantings on sites without irrigation. As described above, this involved the use of DriWater® and Groasis Waterboxxes®. While DriWater has proven successful on other Gold Ridge RCD restoration efforts, one difficulty with the use of the gel packs is that they require a small amount of water to be poured into each tube when being replaced, which can be logistically difficult from a maintenance perspective.

The Waterboxxes were installed in Spring 2012, so their effectiveness has yet to be determined. However, due to the size of the opening of the Waterboxx, it is only appropriate for a select few species with flexible growth, as the box could not be removed after the establishment period without severely damaging a rigid woody plant. The ten Waterboxxes were installed on *Cercis occidentalis* (redbud), *Ceanothus* 'Ray Hartman' (wild lilac), *Cornus sericea* (redtwig dogwood), and *Calycanthus occidentalis* (spicebush). The landowner is very interested in the efforts and is currently monitoring the boxes. As of late July, all but one contained water three months after installation, and all plants were thriving.

Monitoring considerations.

Need for regular monitoring. While yearly monitoring is sufficient to determine survival rates, monitoring throughout the year is needed to determine species' tolerance to drought, frost, deer and rabbit browse, gopher browse, flooding, and weed competition. Without this information, it is impossible to design successful replacement planting plans. Sites also required a high level of involvement from project staff to ensure landowners were staying on top of maintenance needs.

Effectiveness monitoring. As discussed above, project staff were also trained in effectiveness monitoring, which involved monitoring specific sections of plantings seasonally to record observations of groups of native bees. While an interesting component to the project, staff would have had to devote too much time to it in order to collect enough data for proper analysis, which was not included in the original budget.

Plans for future work

The Gold Ridge RCD plans to expand the program to new sites, pending funding availability, while continuing to monitor the current sites for effectiveness and establishment. The expanded program would include collaboration with the North Coast Resource Conservation

and Development Council (which is considering a name change to "Cultivating Commerce"), and the "Bee Friendly Farming" certification program, which is managed by the local non-profit Partners for Sustainable Pollination. The program would also work to transfer information and experiences to the neighboring RCDs (including Sotoyome, Southern Sonoma, Marin, and Mendocino), who are working to establish pollinator programs within their districts. Finally, Gold Ridge staff will work with the local NRCS office to ensure the information from this pilot program is included in EQIP/WHIP program materials and practices.

Future planting sites would be implemented in a more cost effective manner than in the pilot program, as the most successful techniques and plant species would be used. The RCD has also stockpiled materials that will increase survival rates, including browse protection materials and burlap weed matting. Future plans will also include smaller, more manageable plantings, staggered to allow landowners to stay on top of maintenance needs. Finally, and most significantly, as pollinator plantings are now a priority for NRCS Farm Bill programs, the next phase of the project will work with landowners willing and able to get EQIP or WHIP matching funds to contribute to plant installation.

The Gold Ridge RCD has also continued to include a pollinator component to its TEAM environmental education program, conducted in 2012 on a local organic apple orchard.

Matching funds

Matching funds for the project came from two additional sources: a Wildlife Conservation Board Ecosystem Restoration on Agricultural Lands grant for $73,000 and a Sonoma County Fish and Wildlife Commission Grant for $7,500. Landowners also contributed significantly, providing irrigation installation, planting and maintenance labor, and mulch materials. The Gold Ridge RCD also contributed staff time towards the project, including maintenance of sites and reporting beyond the completion of the current grants.

TABLE A: Total program expenditures through June 30, 2012

	Singing Frogs	Rued Vineyards	Joy Road Ranch	Dierke Enterprises	Three Ox Farm	Gabriel Farms	New Family	total
# plants installed	1768	1674	362	787	538	668	310	6107
NRCS outlays Oct09-Mar10	$5,976.44	$11,906.33	$0.00	$705.92	$529.44	$0.00		$19,118.13
NRCS outlays Apr10-Sep10	$1,375.24	$491.53	$3,317.62	$5,471.60	$3,147.90	$758.52		$14,562.40
NRCS outlays Oct10-Mar11	$2,852.54	$132.36	$370.01	$616.69	$416.00	$1,235.99		$5,623.59
NRCS outlays Apr11-Sep11	$1,347.26	$1,275.63	$275.85	$599.71	$409.97	$509.03		$4,653.67
NRCS outlays Oct11-Mar12	$0.00	$0.00	$0.00	$0.00	$0.00	$0.00		$0.00
NRCS outlays Apr12-Jun12	$0.00	$0.00	$0.00	$617.27	$617.27	$617.27	$3,052.00	$4,903.81
total payments to date	**$13,319.48**	**$15,479.85**	**$4,325.48**	**$8,798.19**	**$5,658.58**	**$3,788.81**	**$3,362.00**	**$48,861.60**
other program expenses								$22,658.40
total billed to NRCS to date								**$71,520.00**
landowner match to date	$8,573.18	$6,148.96	$1,742.96	$4,569.12	$2,793.04	$4,833.28	$3,100.00	$31,760.54
matching funds (SCFWC)								$7,500.00
matching funds (WCB)								$73,000.00
matching funds (GRRCD)								$5,310.28
total match to date								**$117,570.82**

Program total	**$189,090.82**

APPENDIX A: Success by plant species

Species	Common Name	Native	Flower color	Bloom	size (ft)
Most successful species - high survival rates under variety of conditions					
Amelanchier alnifolia	western serviceberry	yes	white	spring	3x3
Arctostaphylos spp.	manzanita	yes	white	early spring	6x6
Baccharis pilularis	coyote bush	yes	white	fall/winter	6x6
Calycanthus occidentalis	spice bush	yes	maroon	spring/summer	6x6
Carex spp.	sedge	yes	white	spring/summer	1x1
Ceanothus spp.	California lilac	yes	blue	early spring	6x6
Cercis occidentalis	western redbud	yes	pink	early spring	12x6
Cistus spp.	rockrose	no	various	summer	5x5
Cornus spp.	dogwood	yes	white	spring	8x6
Corylus cornuta californica	California hazelnut	yes	white	spring	8x6
Crataegus douglassii	black hawthorn	yes	white	spring	20x6
Juncus effusus	common rush	yes	white	spring/summer	3x4
Juncus patens 'Elk Blue'	common rush	yes	white	summer	2x2
Lonicera involucrata	twinberry	yes	yellow	spring	6x6
Mahonia dictyota/aquifolium	Oregon grape	yes	yellow	spring	3x6
Myrica californica	Pacific wax myrtle	yes	white	spring	10x6
Physocarpus capitatus	Pacific ninebark	yes	white	spring	4x4
Rhamnus californica	coffeeberry	yes	white	spring	6x6
Ribes spp.	currant/gooseberry	yes	various	spring	3x3
Rosa californica	California rose	yes	pink	summer	3x3
Salvia clevlandii	Cleveland sage	yes	blue	spring-sum	4x6
Salvia leucophylla	purple sage	yes	lavender	spring-fall	3x3
Salvia mellifera	black sage	yes	white	summer	4x4
Symphoricarpos albus	snowberry	yes	white	summer	3x3
Species that performed well but not widely used					
Acer circinatum	vine maple	yes	white	spring	20x6
Acer macrophyllum	big leaf maple	yes	white	spring	20x6
Acer negundo	box elder	yes	white	spring	20x6
Feijoa sellowiana	pineapple guava	no	pink	spring	10x6
Festuca idahoensis	blue idaho fescue	yes	white	spring	3x3
Fraxinus latifolia	Oregon ash	yes	yellow	spring	12x12
Fremontodendron ‘San Gabriel’	Flannel bush	yes	yellow	early spring	15x6
Garrya elliptica	silk tassel	yes	white	winter	6x6
Gaultheria shallon	salal	yes	pink	spring	3x3
Heuchera 'Canyon delight'	alum root	yes	pink	spring	2x2
Juglans californica var. hindsii	no. California black walnut	yes	white	spring	20x6
Rhus integrifolia	lemonade berry	yes	white	spring	3x3
Ribes aureum	golden currant	yes	yellow	spring	3x3
Rosmarinus officinalis	rosemary	no	blue	early spring	3x3
Salvia ugilosia	bog sage	no	blue	spring/summer	3x3
Solidago rugosa	goldenrod	no	gold	summer/fall	3x3
Teucrium fruticans	bush germander	no	blue	early spring	3x3
Westringia ‘Wynyabbie Gem’	coast rosemary	no	lavender	summer	3x3
Species with moderate success rates					
Coreopsis grandiflora	tickseed	no	yellow	summer/fall	3x3
Eriogonum giganteum	St. Catherine's lace	yes	white	spring-fall	4x4
Helianthus angustifolius	swamp sunflower	no	yellow	summer/fall	4x3
Heteromeles arbutifolia	toyon	yes	white	summer	6x6
Lavatera maritima	tree mallow	no	pink	spring/summer	6x6
Philadelphus lewisii	mock orange	yes	white	summer	6x6
Phlomis fruticosa	Jerusalem sage	no	yellow	summer	3x3
Sambucus spp.	elderberry	yes	white	spring/summer	10x20
Least successful species - very low survival rates under variety of conditions*					
Achillea spp.	yarrow	yes	various	spring/summer	2x2
Aster spp.	aster	yes	blue	summer/fall	3x3

Epilobium canum	California fuschia	yes	orange	summer/fall	3x3
Eriogonum spp.	buckwheat	yes	yellow	spring/summer	1x3
Linum lewisii	blue flax	yes	blue	spring/summer	1x1
Penstemon spp.	penstemon	yes	various	summer/fall	3x3
Ratibida columnifera	prairie coneflower	yes	yellow	summer/fall	3x3

*These species were tender herbaceous species that had difficulty outcompeting weeds during establishment, especially as they die back in the winter. Many also arrived from the nursery very small, often only an inch high even in gallon pots. They may perform better in high-maintenance settings where they are weeded and watered frequently during establishment, or where plastic weedmatting is used. Once established, they have proven much hardier.

Monitoring of the remaining species used in the project were inconclusive, as they were either too recently planted, not widely planted, or subject to atypical stresses, such as irrigation failure, undue weed pressure, or livestock browse:

Arbutus unedo	strawberry tree	no	white	spring	6x6
Bupleurum fruticosum	shrubby hare's ear	no	yellow	spring-sum	4-6'x6
Carpenteria californica	CA bush anemone	yes	white	May-July	5-7'x3'
Grindelia stricta	gumplant	yes	yellow	spring/summer	2x2
Lavandula angustifolia	English lavendar	no	lavender	summer	3x3
Lepechinia hastate	pitcher sage	yes	purple	summer	3x3
Leymus triticoides	creeping wildrye	yes	white	sum	3x3
Lupinus albifrons varollinus	bush lupine	yes	yellow	spring-sum	3x3
Malacothamnus fremontii	Fremont's bush mallow	yes	pink	summer	6x6
Mimulus spp.	sticky monkey flower	yes	orange	winter/spring	3x3
Monardella spp.	coyote mint	yes	pink	spring-fall	3x3
Ptelea crenulata	western hop tree	yes	yellow	spring	5x4
Punica granatum 'Wonderful'	pomegranate	no	red-orange	summer	15x15
Prunus ilicifolia	evergreen cherry	yes	white	early spring	12X6
Prunus virginiana	western chokecherry	yes	white	spring/sum	18'
Rhamnus alaternus 'Variegatus'	variegated Italian buckthorn	no	white	spring	6x6
Rhododendron occidentale	western azalea	yes	white	early spring	6x6
Rhus trilobata	basket bush	yes	yellow	spring	6x7
Salix lucida ssp. Lasiandra	shining willow	yes	green	spring	20x10
Salvia brandegei	Brandegees sage	yes	white	summer	3x3
Scabiosa farinosa	pincushion flower	no	lavender	summer	2x3
Scrophularia californica	CA figwort, beeplant	yes	maroon-red	spring-sum	3x3
Sisyrinchium bellum	blue-eyed grass	yes	blue	spring-summer	1x1
Spirea douglasii	western spirea	yes	pink	summer	4x4
Tagetes lemonii	Mexican bush sunflower	no	yellow	fall	6x6
Vaccinium ovatum	evergreen huckleberry	yes	white	spring	3x3

Appendix B: Pollinator Farm Plan Template

1. Purpose

Pollinator Farm Plans are comprehensive property assessments that will provide farmers with the information that they need to create and enhance pollinator habitat on their farms. Farm Plans will include information on practices that can be adopted or modified, as well as plans for conservation plantings that will be designed to maximize nesting and food sources for a variety of native bee species, honeybees, and other native pollinators, while providing secondary benefits such as ecological pest management, improved air, water and soil quality, and harvestable products. Particular emphasis will be given to habitat creation for native bee species, which have proved resilient to many of the current threats to managed honeybees, and essential to the production (and reproduction) of many plant species throughout California. This farm plan will support the farmer's efforts to create, maintain and enhance pollinator habitat, by suggesting new or modified management practices, suggesting ideas for conservation plantings, and creating a site-specific design and implementation plan for enhancing pollinator habitat on the property.

2. Background – Pollinators and Crop Pollination

Bees and other pollinators play an integral role in California farm industries, pollinating 1/3 of all food crops and 90% of all flowering plants, including numerous native plant species. Despite their significance, populations of native and European honeybees have crashed dramatically, throughout the US and worldwide, over the past 25 years as pesticide use, habitat loss, parasites, and other forces have combined to decimate many of these vital species. This has led to a parallel decline in the plant world, as flowering species dependent on insect pollination are unable to reproduce. International attention focused on the losses with the recognition of Colony Collapse Disorder in 2006, a phenomenon that has affected thousands of professional beekeepers, some losing their entire colonies.

Bees are the superior, and often the only, pollinators of many crops. Local crops that rely on bees for pollination include apples, blackberries, pears, plums, squash and other cucurbits, tomatoes and watermelons. While much research has focused on the collapse of managed colonies of European honeybees, attention is turning to the 30,000+ species of native bees, including more than 1,400 in California. The sheer diversity of these species allows them to be more effective overall pollinators than the imported managed hives, as different species can tolerate a much wider range of conditions, and as many are active early in the spring before honeybee colonies have reached a large size, allowing them to pollinate early-blooming plants. Many native bees (i.e. mason & bumble) will forage in colder & wetter conditions than honey bees. Others have adapted their life cycles to certain crops, emerging from dormancy just as the crops begin flowering. For example, native squash bees pollinate plants in the cucurbit family, and greatly increase their productivity compared to honeybees. Some native

species, unlike honeybees, can also pollinate through vibration, a process which produces more fruit in certain crops (such as tomatoes and peppers) than traditional pollination. Two hundred fifty female orchard mason bees can pollinate an acre of apples, a feat which would require 15,000-20,000 honey bees. An added bonus, most native pollinators rarely sting.

Even more importantly, the diversity of native bees, and the fact that they are not managed and moved around by people, has allowed them greater resiliency against the primary forces affecting their European counterparts. Native species have proved resistant to the Varroa mites that are partly responsible for weakening and destroying many managed hives, and as most native bees don't live in large colonies, they are less affected by the factors that lead to Colony Collapse Disorder. Onsite native bee populations also don't contribute to pathogen transfer, a significant concern among beekeepers who sometimes transport their hives thousands of miles to meet demand throughout the country.

Despite this resilience, native bee populations are also plummeting, primary due to pesticide use, and habitat loss and fragmentation. As European honeybee colonies across the world continue to decline, managing crop land to support a broad diversity of native bee species is becoming more and more essential in the effort to retain this critical ecosystem service. Many agricultural producers have responded by recreating bee habitat on their farms by planting insectaries.

UC-Berkeley researchers have been studying the role of native bee pollination for summer crop production throughout California, and have identified 65 native species that pollinate important crops. Many of these are more important to local crop pollination than managed honeybees, and in some cases appeared to provide sufficient pollination when the surrounding habitat has enough floral resources to support them. Small fragments of wild or semi-wild habitats can support abundant, diverse bee populations, highlighting the importance of even small-scale on-farm insectary habitat. Studies in California and Canada have shown that if 30% of the area near a field is natural habitat, native pollinators can fully pollinate some crops (watermelons, canola).

3. Solutions – Adoption of Pollinator-Friendly Farming Practices

Farmers can create, enhance, or restore pollinator habitat by modifying some current practices or adopting new ones. Pollinator-Friendly Farming Practices include:

<u>Modify pest management practices</u>

Pollinators need a pesticide-free area to survive and thrive. Thus, providing areas of habitat that are never sprayed is a critical components of creating on-farm pollinator habitat. In addition to unsprayed areas, crop areas can be managed to reduce the impact of pesticides on pollinators. These actions include:

- Create an on-farm IPM (integrated pest management) plan.
- Encourage biocontrol; get to know predatory insects (which will also benefit from pollinator habitat enhancements).
- Only treat when pests are economically significant.

- Modify “by the calendar” spring mildew control practices & investigate alternatives (i.e. compost teas, whey) which may allow for delayed fungicide application.
- If pesticides are necessary, spray when pollinators are not active (i.e. late in the evening) and use pesticides with short residual periods, and in formulations that are less toxic (i.e. granules or solutions).
- If pesticides are necessary, choose those that are known to be less toxic to bees. For more information, see the publication “How to Reduce Bee Poisoning from pesticides”, publication PNW 591, December 2006, produced by the Pacific Northwest Extension. Available at: http://extension.oregonstate.edu/catalog

Modify soil management practices

Ground nesting bees need some untilled areas for nesting and overwintering queens. All pollinators can benefit from flowering cover crops that provide pollen and nectar. There are many different types of cover crops (annual and perennial, winter and summer) that can fit into any crop production system.

- Explore no-till, reduced tillage, or minimum tillage systems that may work for your crop. Additional benefits include reduced fuel use and greater soil organic matter.
- Incorporate pollinator-friendly cover cropping. Include flowering plants in grass mixes. The traditional legumes used for building nitrogen in soils (clover, vetch, bell beans) provide excellent pollen and nectar resources. While wildflowers tend not to establish easily in grass or cover crop mixes, you can establish wildflower mixes alone, in alternate rows in perennial systems (i.e. every 5th vineyard or orchard row) or in beds or rows in an annual crop system.
    - Good winter insectary mixes: CA poppy, mustard, daikon, clovers (crimson, balansa, rose), as well as other native spring-blooming wildflowers, such as farewell-to-spring, Chinese houses, mountain garland, gillia, tidy tips, mountain phlox, blue flax, miniature lupines, blazing star, baby blue eyes, five spot, and desert bluebells.
    - Good summer mixes: annual buckwheat, phacelia, queen anne’s lace.
    - Low-growing perennial flowering plants can be established under trees or vines that will provide flowers during the summer, but minimal competition with the roots. Plants such as alyssum have been used for this purpose extensively in vineyards; but use caution using alyssum near wildlands, as it can spread into riparian areas.

Provision some “wild” habitat areas

In addition to leaving some areas unsprayed and untilled, you can enhance pollinator habitat in these areas by providing a water source, and some nesting

materials. Some areas of overgrown bunch grasses, snags or fallen dead wood can create the perfect habitat for different native pollinator species.

- Water sources can be provided by creating small ponds or depressions in naturally wet areas, or by placing shallow bowls under irrigation emitters. Butterflies need damp sand or soil for drinking. Bees need shallow, low-angled ramps to get to water without drowning.
- Ground-nesting bees appreciate partially bare, well-drained ground for burrowing. Other ground-nesters use abandoned rodent holes or areas of overgrown, fallen-over bunchgrasses.
- Cavity-nesters will make tunnels in standing dead wood or plants with pithy stems, such as elderberry, box elder, reeds, etc.
- Nesting material can be provided by bundling or piling pithy wood or reeds (teasel, bamboo, reed, elderberry, box elder, etc.), and by drilling some holes in a log or a stump.
- Bee blocks can be created by drilling holes, 3/32 to 3/8" in diameter, 3-6" deep, and ¾" apart in a 4x4 or 4x6 block of untreated wood.

4. Solutions – Conservation Plantings

"Conservation planting" is an umbrella term for any kind of planting project done for the purpose of conserving or restoring biodiversity and habitat and/or improving soil, air, or water quality. There are many types of conservation plantings farmers can install, from simple seeding projects to large and complex hedgerow/insectary or riparian habitat restoration projects.

<u>Types of Conservation Plantings</u>

- Seeding annual/perennial wildflowers
- Creating a meadow
- Creating buffer strips & drift barriers between habitat areas and managed/sprayed areas (both on-farm and neighbors)
- Restoring wildland areas – ponds, riparian zones, upland areas with native flowering plants, trees, shrubs & grasses
- Creating hedgerows along field edges, fencelines, roads, drainages, etc.
- Creating insectaries & habitat borders in any non-cropped area

<u>General Guidelines for Conservation Plantings</u>

- Choose a diverse list of species. Studies show that gardens with 10 or more flowering plants are more visited by bees than gardens with fewer flowers. Try to include 15-20 different species

- Choose species that flower year-round, particularly in times of critical importance to pollinator biology (i.e. early spring when population build-up begins, late summer/fall before overwintering) or when local conditions change and make other food sources unavailable (i.e. late spring when flowering cover crops are tilled under in vineyards). The period from April-July is most critical for honeybees.
- Incorporate plants attractive to pollinators: honeybees prefer flowers that are blue, lavender, white or yellow. Favored families for bees are the aster family and the mint family.
- Incorporate native plants to provide habitat for native pollinators. Native pollinators are 4 times as likely to visit native rather than nonnative plants.
- Block plants in order to maximize efficient foraging by pollinators. Clusters of the same flower in clumps at least 4' in diameter encourage efficient foraging.
- Include a diversity of flower shapes and sizes to appeal to different sized bees with different tongue lengths.
- Include host plants for butterfly larvae.
- Choose plants that are appropriate to the site (i.e. drought and sun tolerant on many road and field edges; shade and water tolerant in riparian or wetland areas).
- Avoid cultivars of ornamental plants that do not flower or that do not produce pollen or nectar – many rose cultivars, for example.
- Choose noninvasive plants.
- Choose plants that are not hosts of pests or diseases of the surrounding crop (i.e Pierce's disease)

<u>Design, planning & implementation of conservation plantings</u>

No matter what kind of conservation planting you choose to install, several steps are critical: planning, budget & cost estimating, sourcing plant material, site prep, planting, irrigation, mulching, maintenance and monitoring.

- Planning
    - Planting should be timed based on rainfall and irrigation availability. Generally, planting just at the beginning of the rainy season, or in the spring near the end of the rainy season, is best. Don't plant in the "fall" (i.e. Sept. 21) – this is when soil is at its driest and many plants are dormant and may be fatally stressed by planting. Don't try and plant in the coldest, wettest part of winter when the ground is saturated. A late Oct./early Nov. (depending on when the rains start) or an April/early May planting date usually works best, with the caveat that the early rainy season planting is better if no summer irrigation will be supplied.

    - Budget & Costs – understand what the project cost is likely to be before you begin. If eligible, seek financial and technical assistance through NRCS cost-share programs such as EQIP (see Resources) or other grant projects, which you can usually access through your local Resource Conservation District. Typically, NRCS pays $2-$3/linear foot for hedgerow projects; this payment is designed to cover ~50% of the total project cost.
    - Working with a professional or going it alone. The information in this Plan and the Resource section below is designed to provide you all the tools you need in order to plan and install a hedgerow; however many growers find that it is more cost-effective in the long run to get help from a professional. Depending on your location, you may have a NRCS District Conservationist or a RCD staff person who can assist you. The cost of hiring a consultant will depend on the project size and complexity, but most competent professionals charge $75-$100 per hour, and a minimum design cost for a small project would start around $2500.
- Sourcing Plant Material. You can pre-order plants from native plant nurseries that contract grow. This requires advanced planning, commitment, and deposit, but you can generally get what you want in the container size you specify. Alternatively, you can buy from wholesale or retail nurseries close to planting time– you can get things quickly just as you need them, but you are limited to what is on hand at the time. Both kinds of nurseries are listed in the Resources section.
    - Plant container sizes: generally, it is more cost-effective to use the smallest container sizes that will successfully establish. For well-prepared sites where weed pressure is low, this can be liners (supercells, treebands, etc.). Research in the landscaping industry has repeatedly shown that, all other factors being equal, 4” pots (which cost 50-75% less than gallons) establish and grow more quickly than gallon pots, with plants showing equal growth by then end of the first growing season. However, when weed pressure is high, larger container sizes may be warranted, particularly for slow-growing trees and shrubs.
    - Max container sizes: trees and shrubs – gallon or deepot
    - Most perennials & herbaceous - 4” pots or treebands
    - Grasses and grass-like plants can be established large-scale using plugs or liners.
- Site Preparation
    - The type of site prep will depend on soil & site conditions, timing of planting, and the type of equipment available. Ideally, an area should be prepared in such a way to minimize weed competition, which could be by

tilling the area (possibly more than once in order to kill emergent weeds) and then mulching it, or by sheet-mulching it well in advance of planting time. Tillage is a good way to prepare a site if the equipment is available and the soil is not too wet, but sheet mulching (covering the area with a thick but ultimately biodegradable material, like cardboard, and then mulching on top of that) can work fine, too.
    - Generally, no soil amendments are necessary for perennial plantings – appropriate plants do not require extra soil fertility, which will encourage weed growth.
- Planting
    - Avoid planting when the soil is either extremely saturated, or bone dry.
    - Planting holes should be the size of the plant's root ball – wider is okay, but no deeper. Drought-tolerant plants should be installed at or slightly above soil surface, not in a depression – stems will rot if buried in soil or mulch. Riparian or wetland plants can be planted in a slight depression.
    - It is best to water in each plant thoroughly, as soon as possible after planting. Even if the soil is moist or rain is in the forecast, proper watering-in will help the plant survive transplant shock and will help settle the soil, filling in any air pockets. It also provides an opportunity that plants were installed at the correct level (not too high or too low).
- Irrigation
    - Simulate the rainfall regime of the plant's native area. Riparian plants like willows will always need some summer water, so don't plant them with drought-tolerant plants in hedgerows. Block plants with the same water needs, and place the plants in the correct site.
    - Many native and other drought tolerant plants can survive with little or no irrigation if they are installed properly, and receive several deep watering (or rain) in the weeks after planting. With spring plantings, plants will require a deep watering once every 7-14 days through the first summer.
    - Overhead watering is not a good idea, as it encourages weed growth that will overtake and choke the installed plants. Microsprinklers that fully saturate the entire root area are ideal, but are very expensive.
    - Drip irrigation is the best compromise in this area – most farmers use drip, and can manage conservation planting irrigations along with crop irrigation. However, it is important to install drip correctly – emitters placed at the crown of drought-tolerant species will rot & kill the stem and crown. Emitters should be placed ~1' away from the plant crown.
    - Do not use T-tape in wildland areas. The emitter spacing is too close for most plantings, and will encourage weed growth, and the thin hoses will

be chewed by animals. Half-inch pipe with emitters directly in the pipe, or with spaghetti tubing, are better.

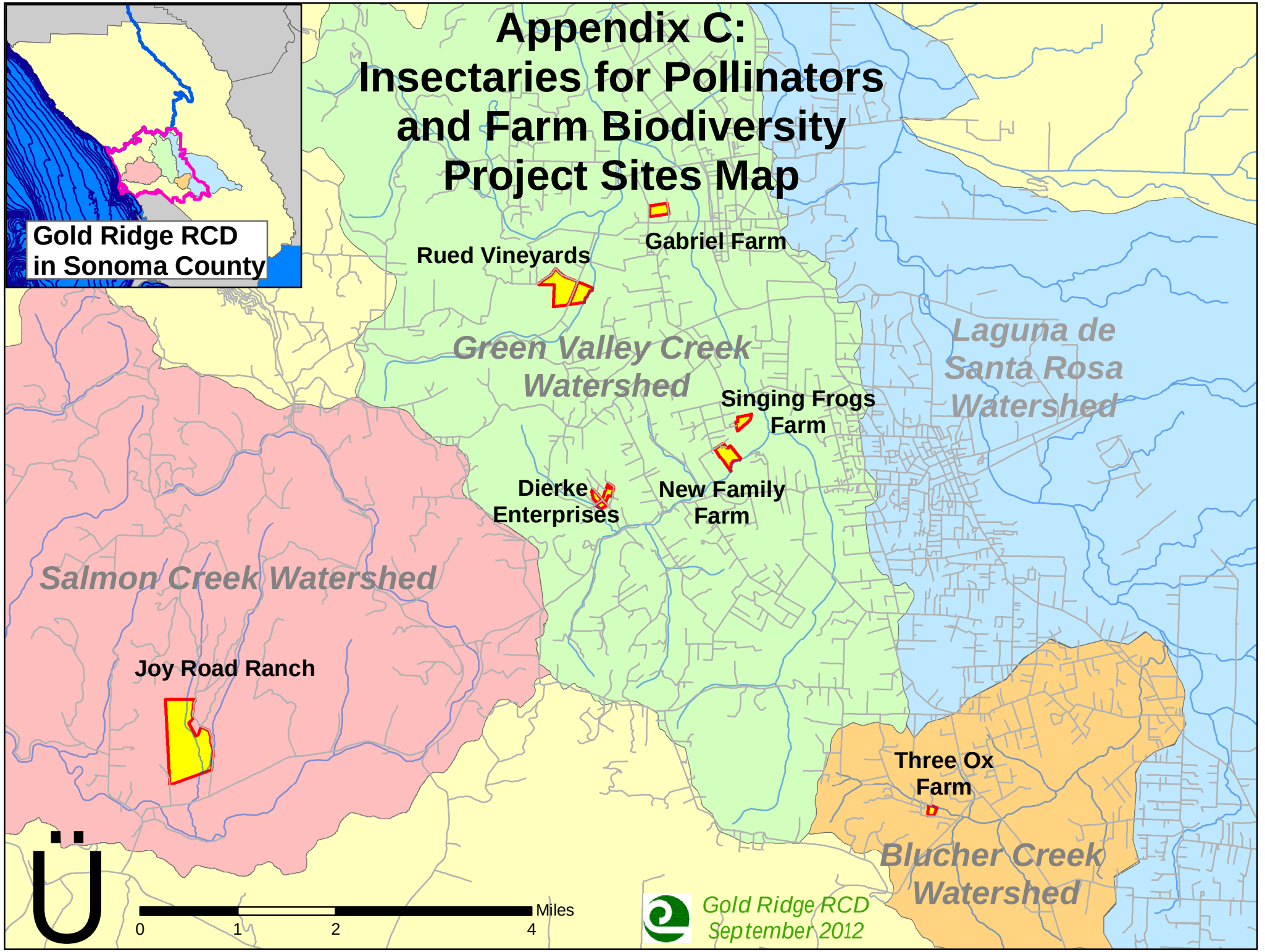
- Mulching
    - Mulching is critical for weed control during the establishment period. A minimum of 3" of mulch is necessary. Mulch should cover the entire planting strip or zone, but should not cover the crown/stems of the plants.
    - Using cardboard or some other biodegradable weed cloth under mulch is ideal.
    - Mulch material can be anything readily available – wood chippings, straw, grape pomace/stems, etc. Ideally, use mulch from the kind of plant community you are trying to establish (i.e. redwood mulch is fine in the redwood zone, oak mulch is better for upland/oak woodland plantings).
    - Once plants are established, and shading out weeds, don't add more mulch – leave some bare ground for ground-nesting bees and birds like towhees that forage for seeds and insects in leaf litter.
- Maintenance
    - Check irrigation pipes for leaks or clogs regularly during the dry season.
    - During the plant establishment phase (1-2 years post-planting), weed early and often. Being choked by spring weeds is the biggest hazard to successful establishment. Plan for a minimum of 5 weedings in the first year, most clustered during the late winter-early summer (March-June).
    - Habitat plantings require minimal pruning or cutting back – seed heads left on plants provide winter forage, and even dead shrubs provide excellent cover and nesting habitat for beneficial creatures.
    - After 3-5 years, flowering will decrease on some plants if they are not cut back in winter or deadheaded. A winter pruning can lead to a newly luxurious spring growth and increased flowering. After 3 years, cutting back every other year, or half of the planting each year, will maintain habitat and maintain flowering.
    - Don't worry about replanting or filling holes in the first few years (unless there are extensive patches of damage, due to gophers, a broken irrigation line, etc.) Many plants will grow quickly and fill in some dead spaces. However, after 3-5 years you may need to fill some holes with new plants.

5. Solutions – Site Specific Conservation Planting Design

    (See individual property maps and plant lists)

6. Appendix – Resources

- Design & Consultation
    - Farm Stewards, www.farmstewards.com
- Technical & Financial Assistance
    - Gold Ridge RCD, www.goldridgercd.org
    - NRCS (EQIP and WHIP grants, technical help) http://www.ca.nrcs.usda.gov
        1. Santa Rosa office: (707) 526-6797
        2. Petaluma Service Center: (707) 794-1242
- Online Resources
    - Community Alliance with Family Farmers: www.caff.org/programs/farmscaping. Downloadable brochures and technical information on hedgerows; "Hedgerows for California Agriculture" manual.
    - Wildfarm Alliance: www.wildfarmalliance.org. Downloadable briefing papers on how and why to farmscape.
    - Xerces Society: www.xerces.org. Information on native pollinators and creating habitat.
    - Napa Solano Audubon Society: www.napasolanoaudubon.com/habrest/, information on bird boxes and other habitat improvements for vineyards
    - Urban Bee Gardens, http://nature.berkeley.edu/urbanbeegardens/ Information on native & honeybees, and plant lists of native and nonnative species; not all are appropriate for field-scale plantings
- Sources – Plants
    - California Flora Nursery, Fulton, www.calfloranursery.com (retail, no advance orders).
    - Cornflower Farms, Elk Grove, www.cornflowerfarms.com (contract grow, delivery available, wholesale pricing)
    - CFSES Native Plants Nursery, Windsor, www.cfses.org (contract grow, no delivery)
    - Emerisa Gardens, Santa Rosa, www.emerisa.com (wholesale, delivery availabe, no contract grow)
    - North Coast Natives Nursery, Petaluma, www.northcoastnativenursery.com (wholesale, contract grow)
- Sources – Seeds
    - Harmony Farm Supply, Sebastopol, www.harmonyfarm.com
    - Larner Seeds, www.larnerseeds.com – wildflower mixes, mailorder
    - LeBallister's, Santa Rosa, www.leballisterseed.com
    - Peaceful Valley Farm Supply, www.groworganic.com, mailorder


Appendix C:
Insectaries for Pollinators
and Farm Biodiversity
Project Sites Map
Gold Ridge RCD
in Sonoma County
Rued Vineyards
Gabriel Farm
Green Valley Creek
Watershed
Laguna de
Santa Rosa
Watershed
Singing Frogs
Farm
Dierke
Enterprises
New Family
Farm
Salmon Creek Watershed
Joy Road Ranch
Three Ox
Farm
Blucher Creek
Watershed
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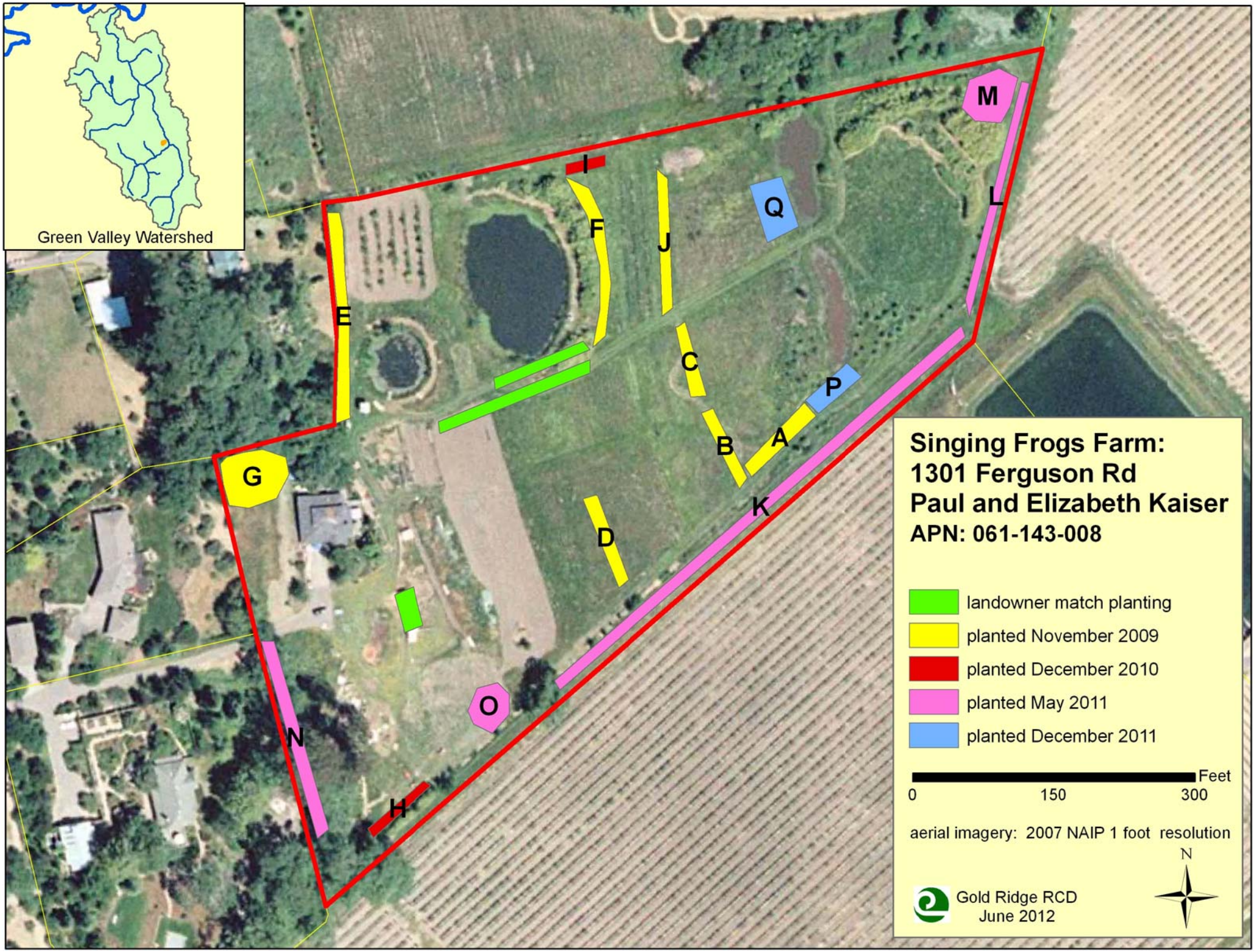
Gold Ridge RCD
September 2012


Green Valley Watershed
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Singing Frogs Farm:
1301 Ferguson Rd
Paul and Elizabeth Kaiser
APN: 061-143-008
landowner match planting
planted November 2009
planted December 2010
planted May 2011
planted December 2011
Feet
0
150
300
aerial imagery: 2007 NAIP 1 foot resolution
N
Gold Ridge RCD
June 2012

Singing Frogs Farm

A. 2009 Field 7 Spillway (South Border - bottom field drainage) 75 x 15, 1125 sq'

Species	Common Name	Native	Flower color	Bloom	Qty
Physocarpus capitatus	ninebark	yes	white	spring	5
Sambucus mexicana	elderberry	yes	white	April-Aug	5
Cornus sericea occidentalis	dogwood	yes	white	spring	5
Rosa californica	CA Rose	yes	pink	spring	6
Carex praegracilis	clumping field sedge	yes	white	spring	30
Mimulus cardinalis 'Santa Cruz Island Gold'	sticky monkey flower	yes	gold	spring/sum	18
Grindelia stricta platyphylla	gumplant	yes	yellow	spring/sum	7
Helianthus angustifolius 'Mellow Yellow'	swamp sunflower	yes	yellow	summer, fall	6
Aster chilensis 'Purple Haze'	aster	yes	lavender	summer/fall	16
Acer circinatum	vine maple	yes	white	spring	3
Salix lucida ssp. Lasiandra	shining willow	yes	white	early spring	2
Total					**103**

A. 2010 Field 7 Spillway additions					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Acer circinatum	vine maple	yes	white	spring	2
Carex occidentalis	western pond sedge	yes	white	spr-sum	14
Juncus patens 'Elk Blue'	blue spike rush	yes	white	spr-sum	23
Total				**Total**	**39**

B. 2009 Field 7 Top Hedgerow (East field - top hedgerow, south block) - 100 x 10', 1000 sq'

Species	Common Name	Native	Flower color	Bloom	Qty
Baccharis pilularis	coyote bush	yes	white	fall/winter	5
Ceanothus 'Blue Jeans'	CA lilac	yes	blue	early spring	5
Cornus 'Hedgerows Gold'	dogwood	yes	white	spring	5
Heteromeles arbutifolia 'Norton's Gold'	toyon	yes	white	spring,sum	5
Eriogonum giganteum	St. Catherine's lace	yes	white	summer, fall	8
Eriogonum fasciculatum	CA buckwheat	yes	white	summer, fall	6
Aster 'Bluebird'	aster	no	blue	summer, fall	5
Salvia 'Hot Lips'	sage	no	red&white	spring-fall	6
Tagetes lemonii	Mexican bush sunflower	no	yellow	summer-fall	5
Total					**50**

C. 2009 Field 7 Top Hedgerow (East field - top hedgerow, north block) - 60 x 6', 600 sq'

Species	Common Name	Native	Flower color	Bloom	Qty
Ceanothus 'Blue Jeans'	CA lilac	yes	blue	early spring	6
Cornus 'Hedgerows Gold'	dogwood	yes	white	spring	3
Heteromeles arbutifolia 'Norton's Gold'	toyon	yes	white	spring, summer	3
Eriogonum giganteum	St. Catherine's lace	yes	white	summer/fall	4
Aster 'Bluebird'	aster	no	blue	summer/fall	4
Salvia 'Hot Lips'	sage	no	red&white	spring-fall	6
Tagetes lemonii	Mexican bush sunflower	no	yellow	summer/fall	6
Total				**Total**	**32**

D1. 2009 Middle Field - bottom hedgerow - 150' x 3', 450 sq'

Species	Common Name	Native	Flower color	Bloom	Qty
Aster laevis 'Bluebird'	aster	no	blue	summer, fall	8
Eriogonum fasciculatum	CA buckwheat	yes	white	spring, summer	3
Salvia clevlandii 'Allen Chickering'	Clevland sage	yes	lavender	spring, summer	8
Salvia 'Hot Lips'	sage	no	red&white	spr, sum, fal	4
Salvia greggii 'Coral'	sage	no	coral	summer, fall	8
Eriogonum giganteum	St. Catherine's lace	yes	white	summer, fall	6

Rosmarinus officinalis 'Mozart'	rosemary	no	blue	spring	6
Penstemon 'Lady Alice Hindley'	penstemon	yes	lavender	spring, summer	8
Total				**Total**	**51**

D1. 2010 replants					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Helianthus angustifolius	swamp sunflower	yes	yellow	summer, fall	5
Rhamnus californica 'Phil's Low'	coffee berry	yes	white	spring	5
Cornus alba 'Elegantissima'	CA Rose	yes	pink	spring	5
Physocarpus capitatus	ninebark	yes	white	summer	5
Total					**20**

D1. 2011 replants					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Helianthus angustifolius	swamp sunflower	yes	yellow	summer, fall	5
Rosa californica	CA Rose	yes	pink	spring	5
Total					**10**

D2. 2010 existing hedgerow in-fill					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Eriogonum crocatum	CA buckwheat	yes	white	summer	7
Eriogonum giganteum	St. Catherine's lace	yes	white	summer, fall	2
Salvia 'Hot Lips'	sage	no	red	summer	4
Salvia brandegei	Brandegee's sage	yes	white	summer	2
Total				**Total**	**15**

E. 2009 Orchard hedgerows		**125x6', 600 sq ' 10-12' high, dense screen**			
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Arbutus 'Marina'	madrone	yes	white	spring	3
Ceanothus 'Ray Hartman'	CA lilac	yes	blue	early spring	5
Heteromeles arbutifolia 'Norton's Gold'	toyon	yes	white	spring,sum	4
Garry elliptica 'James Roof'	silk tassel	yes	white	early spring	7
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	6
Total				**Total**	**25**

E. 2010 Orchard hedgerow					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Ceanothus 'Ray Hartman'	wild lilac	yes	blue	early spring	6
Heteromeles 'Davis Gold'	toyon	yes	white	summer	6
Total				**Total**	**12**

F. 2009 Blueberry fenceline 180 x 10 - 1800 sq '					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Baccharis pilularis	coyote bush	yes	white	fall/winter	6
Ceanothus 'Blue Jeans'	CA lilac	yes	blue	spring	6
Cornus 'Hedgerows Gold'	dogwood	yes	white	spring	6
Ceanothus 'Ray Hartman'	CA lilac	yes	blue	spring	4
Heteromeles arbutifolia 'Norton's Gold'	toyon	yes	white	spring	8
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	6
Lepechinia hastata	pitcher sage	yes	maroon	summer, fall	8
Tagetes lemonii	Mexican bush sunflower	no	yellow	summer, fall	8
Salvia 'Hot Lips'	sage	no	red&white	summer, fall	7
Eriogonum fasciculatum	CA buckwheat	yes	white	summer, fall	5
Eriogonum giganteum	St. Catherine's lace	yes	white	summer, fall	6
Helianthus angustifolius 'Mellow Yellow'	swamp sunflower	yes	yellow	spring	8

Aster 'Monte Cassini'	aster	yes	white	summer, fall	19
Total				**Total**	**97**

F. 2010 Blueberry fenceline additions					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Cornus 'Midwinter Fire'	dogwood	yes	white	spring	6
Heteromeles arbutifolia	toyon	yes	white	summer	6
Philadelphus 'Belle Etoile'	mock orange	yes	white	spring	6
Ribes aureum	golden currant	yes	yellow	spring	5
Total					**23**

F. 2011 Blueberry fenceline replants					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Arctostaphylos manzanita 'Dr. Hurd'	manzanita	yes	pink	winter	3
Ceanothus 'concha'	CA lilac	yes	blue	early spring	1
Epilobium canum spp. Canum	CA fuschia	yes	orange	summer-fall	4
Eriogonum grande rubescens	buckwheat	yes	pink	summer	12
Eriogonum ursinum	Bear valley buckwheat	yes	pale yellow	spring-summer	3
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	1
Cornus stolonifera 'Peter's Choice'	dogwood	yes	white	spring	8
Crataegus douglasii	black hawthorn	yes	white	spring	8
Total					**40**

G. 2009 NW Border drainage 50'x20', 1000 sq'					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Sambucus mexicana	elderberry	yes	white	April-Aug	5
Symphoricarpos albus	snowberry	yes	white	summer	21
Rosa californica	CA rose	yes	pink	spring/summer	21
Calycanthus occidentalis	spice bush	yes	scarlet	spring	20
Ribes sanguineum 'Heart's Desire'	flowering currant	yes	pink	early spring	11
Spirea douglasii	western spirea	yes	purple-ping	summer	11
Vaccinium ovatum	evergreen huckleberry	yes	pink	spring	11
Total				**Total**	**100**

H. 2010 Southwest Greenwall - 25'x2 rows, 45x1 row					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Rhamnus californica	coffeeberry	yes	white	spring	7
Physocarpus capitatus	ninebark	yes	white	spring	5
Ribes speciosum	gooseberry	yes	white	spring	6
Total					**18**

I. 2010 North "basket fence"					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Rhus trilobata	basket bush	yes	white	summer	16
Corylus cornuta californica	CA hazlenut	yes	white	spring	5
Total					**21**

J. 2009 Blackberry/Grape Hedgerow: 80 x6' (single line)					
Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Corylus cornuta californica	CA hazlenut	yes	white	early spring	4
Cornus sericea occidentalis	stream dogwood	yes	white	spring	4
Sambucus nigra	black elderberry	no	white	spring	4
Crataegus douglassii	black hawthorn	yes	white	spring	4
Punica granatum 'Wonderful'	pomegranate	no	red	spring	5
Salix lucida ssp. Lasiandra	Shining Willow	yes	white	early spring	2

Total					**23**

J. 2010 additions - Berry Field Hedgerow

Species	Common Name	Native	Flower color	Bloom	Qty
Myrica californica	Pacific wax myrtle	yes	white	spring	5
Cornus 'Hedgerow's Gold	dogwood	yes	white	spring	5
Crataegus douglasii	black hawthorn	yes	white	spring	4
Ribes aureum	golden currant	yes	yellow	spring	5
Total					**19**

J. 2011 replants - Berry Field Hedgerow

Species	Common Name	Native	Flower color	Bloom	Qty
Baccharis pilularis	coyote brush	yes	white	winter	10
Cornus stolonifera 'Peter's Choice'	dogwood	yes	white	spring	7
Cornus sanguinea 'Midwinter Fire'	dogwood	yes	white	spring	8
Total					**25**

K. 2009 South Hedgerow/Green Wall continuation 50x6, 300 sq'

Species	Common Name	Native	Flower color	Bloom	Qty
Arbutus 'Marina'	madrone	yes	white	spring	8
Baccharis pilularis	coyote bush	yes	white	fall/winter	3
Mimulus aurantiacus	sticky monkey flower	yes	peach	spring/summer	5
Grindelia stricta platyphylla	gumplant	yes	yellow	spring/summer	5
Salix lucida ssp. Lasiandra	Shining Willow	yes	white	early spring	2
Total					**23**

K2. 2011 Greenwall Infill

Species	Common Name	Native	Flower color	Bloom	Qty
Arctostaphylos manzanita 'Dr. Hurd'	manzanita	yes	pink	winter	6
Arctostaphylos bakeri 'Louis Edmunds'	manzanita	yes	white	early spring	3
Arctostapylos pajaroensis 'Paradise'	manzanita	yes	pink-white	early spring	1
Salvia clevlandii	Cleveland sage	yes	blue	spring-sum	10
Calycanthus occidentalis	western spice bush	yes	scarlet	Apr-Aug	15
Rhamnus californica 'Eve Case'	coffebush	yes	white	spring	6
Ceanothus spp.	wild lilac	yes	blue	win-spr	10
Ribes speciosum	gooseberry	yes	fuschia	spring	10
Salvia spathacea 'Las Pilitas'	hummingbird sage	yes	scarlet	spring-sum	12
Mahonia aquifolium	Oregon grape	yes	yellow	spring-sum	55
Total					**128**

L. 2011 New Greenwall- 165 x 2 rows 33 tall 66 short

Species	Common Name	Native	Flower color	Bloom	Qty
Ceanothus 'Ray Hartman'	wild lilac	yes	blue	spring	7
Cercis occidentalis	western redbud	yes	pink	spring	9
Crataegus douglasii	western hawthorn	yes	white	spring	8
Ptelea crenulata	western hop tree	yes	yellow	spring	15
Cornus stolonifera	red stem dogood	yes	white	spring	10
Aster chilensis	CA aster	yes	whie/lav	sum/fall	16
Helianthus angustifolius	swamp milkweed	yes	yellow	sum/fall	12
Philadelphus lewisii	mock orange	yes	white	spring	2
Ribes aureum aureum	golden currant	yes	yellow	spring	12
Total					**91**

M. 2011 Woodlot - 3000 sq ' @ 6x6' spacing w/ 10' tractor row

Species	Common Name	Native	Flower color	Bloom	Qty

Juglans californica var. hindsii	No. CA black walnut	yes	white	spring	20
Umbellularia californica	CA Bay	yes	white	always	20
Fraxinus latifolia	Oregon ash	yes	yellow	spring	20
Acer macrophyllum	bigleaf maple	yes	white	spring	20
Total					**80**

N. 2011 West Deer Fenceline

Species	Common Name	Native	Flower color	Bloom	Qty
Arctostaphylos manzanita 'Dr. Hurd'	manzanita	yes	pink	winter	4
Arctostaphylos bakeri 'Louis Edmunds'	manzanita	yes	white	early spring	5
Rhamnus californica 'Eve Case'	coffebush	yes	white	spring	16
Calycanthus occidentalis	western spice bush	yes	scarlet	Apr-Aug	2
Ceanothus 'Concha'	wild lilac	yes	blue	win-spr	9
Physocarpus capitatus (from prior)	ninebark	yes	white	spring	5
Amelanchier alnifolia	western serviceberry	yes	white	spring	3
Total					**44**

O. 2011 SouthWest Pond 100-200 sq' juncus, 24 shrubs - buckwheat

Species	Common Name	Native	Flower color	Bloom	Qty
Monardella villosa	coyote mint	yes	purple	spring-summ	17
Eriogonum ursinum	Bear valley buckwheat	yes	pale yellow	spring-summer	4
Eriogonum grande rubescens	buckwheat	yes	pink	summer	18
Epilobium canum spp. Canum	CA fuschia	yes	orange	summer-fall	11
Juncus effusus	common rush	yes	white	spring-summ	100
Total					**150**

P. 2011 Field 7 spillway extension - s rows of 120', 10' wide middle					
Carex praegracilis	clumping field sedge	yes	white	spring	100
Juncus balticus	rush	yes	white	summer	100
Physocarpus capitatus	ninebark	yes	white	spring	20
Sambucus mexicana	elderberry	yes	white	April-Aug	10
Cornus stolonifera 'Peter's Choice'	dogwood	yes	white	spring	20
Rosa californica	CA Rose	yes	pink	spring	10
Mimulus cardinalis	scarlet monkeyflower	yes	scarlet	spring-fall	10
Helianthus angustifolius	swamp sunflower	yes	yellow	summer, fall	10
Aster chilensis 'Purple Haze'	aster	yes	lavender	summer/fall	21
Acer circinatum	vine maple	yes	white	spring	1
Total					**302**

Q. 2011 Pond Reveg - low, 5' stuff near bridge/road, higher as it goes toward north fence for wildlife refuge

Species	Common Name	Native	Flower color	Bloom	Qty
Physocarpus capitatus	ninebark	yes	white	spring-sum	10
Acer negundo	box elder	yes	white	spring	5
Acer circinatum	vine maple	yes	white	spring	5
Crataegus douglasii	black hawthorn	yes	white	spring	10
Sambucus mexicana	elderberry	yes	white	summer	10
Lonicera involucrata	twinberry	yes	yellow	spring	10
Amelanchier alnifolia	western serviceberry	yes	white	spring	10
Total					**60**

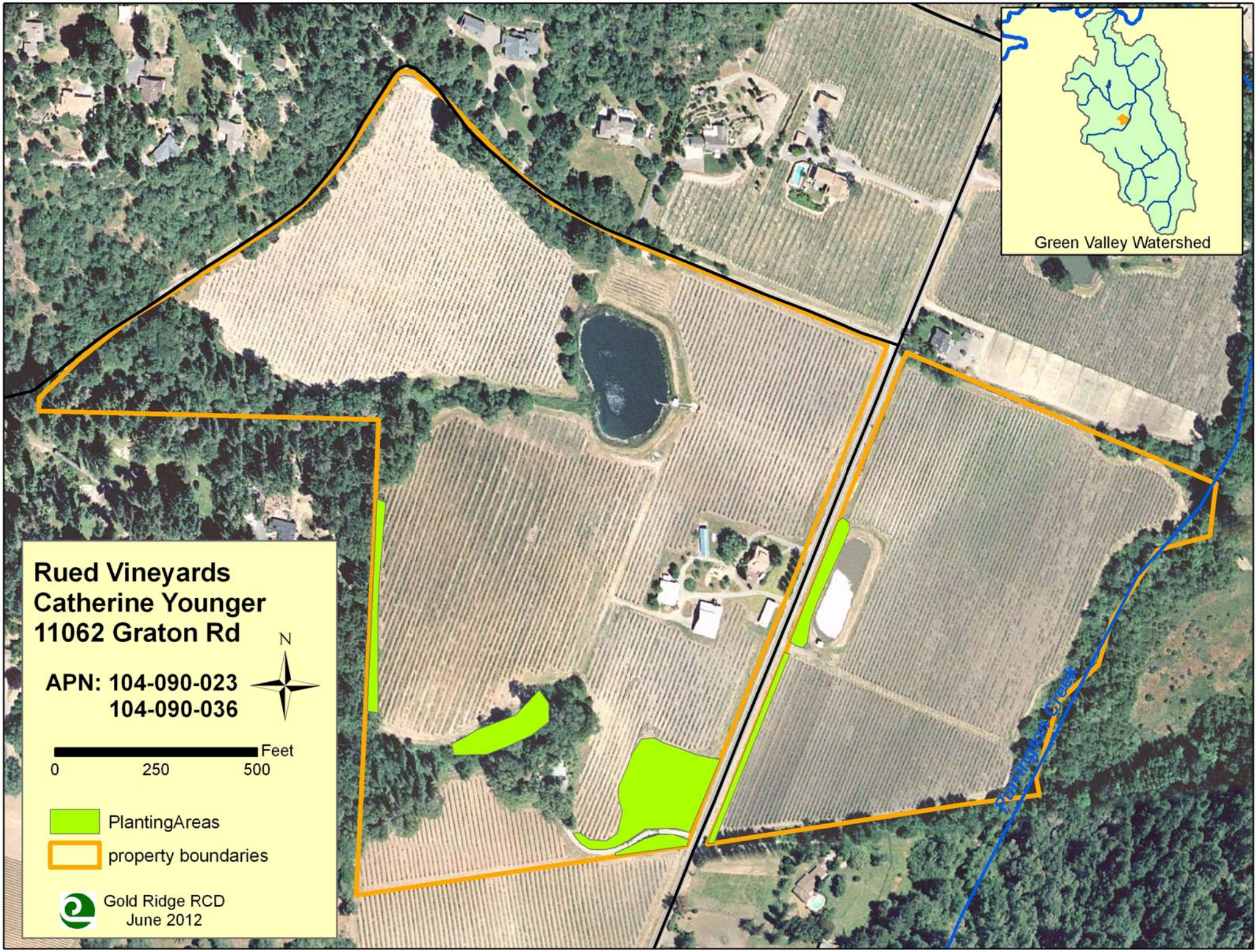
2011 planting -Barn Insectary - 100 plants landowner match; 75x20' planted

Salvia leucophylla	purple sage	yes	lavender	spring-fall	8
Salvia chamaedryoides	germander sage	no	blue	spring-fall	8
Total					**16**

2010 Supplemental plants - into existing hedgerows

Species	Common Name	Native	Flower color	Bloom	Qty
Aster alpigenus	mtn meadow aster	yes	blue	summer-fall	22
Coreopsis grandiflora	tickseed	no	yellow	summer-fall	22
Linum lewisii	western blue flax	yes	blue	spring-summer	20
Penstemon heterophyllus	foothill penstemon	yes	blue	spring-sum	8
Ratibida columnifera	yellow prairie coneflower	yes	yellow	summer-fall	40
Rosa californica	CA wild rose	yes	pink	summer	39
Total					**151**

2009 planting total	504
2010 planting total	318
2011 planting total	946
Total	**1768**


Green Valley Watershed
Rued Vineyards
Catherine Younger
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PlantingAreas
property boundaries
Gold Ridge RCD
June 2012
Purrington Creek

Rued Vineyards

2010 Pond Border plantings (inside roadway): 300' x 18', 5400 sq',

Species	Common Name	Native	Flower color	Bloom	Qty
Ceanothus griseus horizontalis	CA lilac	yes	blue	early spring	12
Baccharis 'Pigeon Point'	prostrate coyote bush	yes	white	fall/winter	6
Cercis occidentalis	western redbud	yes	pink	early spring	10
Salvia clevlandii 'Whirly Blue'	Clevland sage	yes	blue	spring/summer	12
Salvia 'Pozo Blue'	grey musk sage	yes	blue	spring/summer	16
Salvia mellifera	black sage	yes	white	spring/summer	24
Rosa californica	CA rose	yes	pink	spring/summer	50
Achillea 'Moonshine'	yarrow	no	yellow	spring/summer	26
Achillea 'Island Pink'	yarrow	no	pink	spring/summer	28
Aster 'Little Carlow'	aster	no	blue	summer/fall	16
Cistus 'Sunset'	rockrose	no	pink	summer	14
Rosmarinus officinalis 'Tuscan Blue'	rosemary	no	blue	early spring	8
Penstemon 'Blackbird'	penstemon	no	burgundy	summer	28
Salvia nemorosa 'Caradonna'	Meadow sage	no	purple	summer	16
Westringia 'Wynyabbie Gem'	Coast rosemary	no	lavender	summer	16
Grindelia stricta	gum plant	yes	yellow	spring/summer	100
Salvia 'Moonlight'	autmn sage	no	pale yellow	summer/fall	42
Eriogonum giganteum	St. Catherine's lace	yes	white	spring/summer	28
				2010 Total	**452**

2011 Pond Border plantings

Mahonia aquifolium	Oregon grape	yes	yellow	spring-sum	20
Epilobium californicum	CA fucshia	yes	orange	summer-fall	20
Rosa californica	CA rose	yes	pink	summer	1
Salvia mellifera	black sage	yes	white	summer	12
Phlomis lanata	Jerusalem sage	no	yellow	spring-sum	13
				2011 Total	**66**

2010 Road Border plantings (outside roadway): 300' x 9', 2700 sq',

Species	Common Name	Native	Flower color	Bloom	Qty
Ceanothus griseus horizontalis	CA lilac	yes	blue	early spring	6
Baccharis 'Pigeon Point'	prostrate coyote bush	yes	wjite	fall/winter	3
Cercis occidentalis	western redbud	yes	pink	early spring	5
Salvia clevlandii 'Whirly Blue'	Clevland sage	yes	blue	spring/summer	6
Salvia 'Pozo Blue'	grey musk sage	yes	blue	spring/summer	7
Salvia mellifera	black sage	yes	white	spring/summer	6
Rosa californica	CA rose	yes	pink	spring/summer	12
Achillea 'Moonshine'	yarrow	no	yellow	spring/summer	12
Achillea 'Island Pink'	yarrow	no	pink	spring/summer	12
Aster 'Little Carlow'	aster	no	blue	summer/fall	4
Helianthus 'Mellow Yellow'	swamp sunflower	yes	yellow	summer/fall	22
Cistus 'Sunset'	rockrose	no	pink	summer	7
Rosmarinus officinalis 'Tuscan Blue'	rosemary	no	blue	early spring	4
Penstemon 'Blackbird'	penstemon	no	burgundy	summer	14
Salvia nemorosa 'Caradonna'	Meadow sage	no	purple	summer	7
Westringia 'Wynyabbie Gem'	Coast rosemary	no	lavender	summer	7
Grindelia stricta	gum plant	yes	yellow	spring/summer	50
Salvia 'Moonlight'	autmn sage	no	pale yellow	summer/fall	14
Eriogonum giganteum	St. Catherine's lace	yes	white	spring/summer	14

				2010 Total	**212**

2011 Road Border plantings (outside roadway): 300' x 9', 2700 sq',

Cistus x sunset	sunset rockrose	no	pink	summer	20
Phlomis lanata	Jerusalem sage	no	yellow	spring-sum	20
Lavatera 'Kew Rose'	tree mallow	no	pink	spring-sum	4
				2011 Total	**44**

2010 Gully plantings

Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Carex occidentalis	western sedge	yes	white	spring/summer	100
Calycanthus occidentalis	western spicebush	yes	scarlet	spring	10
Lonicera involucrata	twinberry	yes	yellow	spring	10
Physocarpus capitatus	Pacific ninebark	yes	white	spring/summer	10
Ribes sanguineum glutinosum 'Barrie C	flwering currant	yes	red	early spring	10
				2010 Total	**140**

2011 Gully plantings

Ribes speciosum	Fuschia-flowering gooseberry	yes	fucshia	spring	20
Symphoricarpos albus	snowberry	yes	white	sum-fall	14
Calycanthus occidentalis	western spicebush	yes	scarlet	summer	18
Rhamnus californica	coffeeberry	yes	white	spring-sum	8
Carex pansa	meadow sedge	yes	white	sum	200
Leymus triticoides	creeping wildrye	yes	white	sum	50
				2011 Total	**310**

2010 Entrance plantings (around wetland): 380 x 10, 3800 sq'

Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Lavatera 'Kew Rose'	Bush Mallow	no	pink	summer	14
Rosmarinus officinalis 'Tuscan Blue'	rosemary	no	blue	early spring	16
Penstemon 'Midnight'	penstemon	no	burgundy	summer	16
Salvia nemorosa 'Caradonna'	Meadow sage	no	purple	summer	33
Achillea 'Moonshine'	yarrow	yes	yellow	summer	16
Achillea 'Island Pink'	yarrow	no	pink	summer	16
Rosa californica	CA rose	yes	pink	spring/summer	18
Salvia clevlandii 'Whirly Blue'	Clevland sage	yes	blue	spring/summer	15
Salvia 'Pozo Blue'	grey musk sage	yes	blue	spring/summer	15
Salvia mellifera	black sage	yes	white	spring/summer	3
Scrophularia californica	CA figwort	yes	maroon	spring/summer	44
Scabiosa farinosa	pincushion flower	no	lavender	summer	5
Salvia 'Hot Lips' & Coral	autmn sage	no	red & coral	spring/summer	15
Ceanothus 'Centennial'	CA lilac	yes	blue	early spring	10
				2010 Total	**236**

2011 Entrance plantings

Lepechinia hastata	pitcher sage	yes	purple	summer	12
Phlomis lanata	Jerusalem sage	no	yellow	spring-sum	12
Cistus ladanifer	crimson-spot rockrose	no	white	summer	16
				2011 Total	**40**

2010 West Border plantings, top section: 600'

Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**

Baccharis 'Pigeon Point'	prostrate coyote bush	yes	white	fall/winter	20
Cercis occidentalis	western redbud	yes	pink	early spring	20
Heteromeles arbutifolia	toyon	yes	white	spring/summer	20
Rhamnus 'Mound San Bruno'	coffeeberry	yes	white	spring	20
Rosa californica	CA rose	yes	pink	spring/summer	20
Symphoricarpos albus	snowberry	yes	white	summer	20
Arctostaphylos manzanita 'Dr. Hurd'	manzanita	yes	white	early spring	20
Ceanothus 'Concha'	CA lilac	yes	blue	early spring	20
				2010 Total	**160**

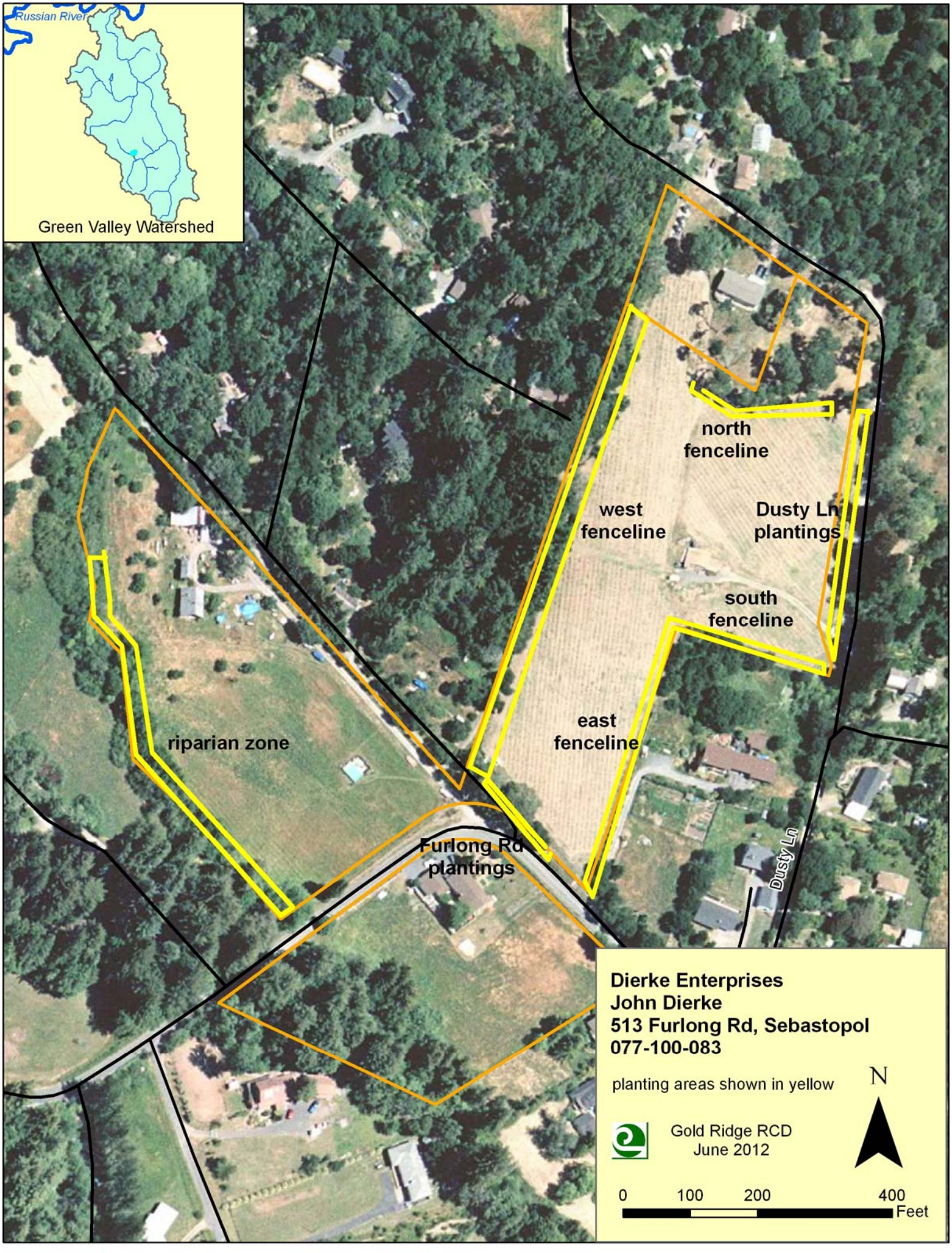
2012 Waterboxx plantings (West Border)

Species	**Common Name**	**Native**	**Flower color**	**Bloom**	**Qty**
Calycanthus occidentalis (gully)	western spicebush	yes	scarlet	summer	1
Ceanothus 'Ray Hartman'	CA lilac	yes	blue	early spring	4
Cercis occidentalis	western redbud	yes	pink	early spring	1
Cornus sericea	redtwig dogwood	yes	white	spring	4
				2012 Total	**10**

2012 surplus plant plantings (road border

Lavatera 'Kew Rose'	tree mallow	no	pink	spring-sum	1
Cercis occidentalis	western redbud	yes	pink	early spring	1
Fremontodendron 'San Gabriel	flannel bush	yes	red	spring-sum	2
				2012 Total	**4**

2010 plantings	1200
2011 plantings	460
2012 plantings	14
TOTAL	**1674**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north fenceline
west fenceline
Dusty Ln plantings
south fenceline
east fenceline
riparian zone
Furlong Rd plantings
Dusty Ln
Dierke Enterprises
John Dierke
513 Furlong Rd, Sebastopol
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planting areas shown in yellow
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Gold Ridge RCD
June 2012
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100
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400
Feet

Dierke Enterprises

Zone 1 - Furlong Road Border, 180' x 2 rows, 3/4 sun 1/4 shade

Species	Common Name	Native	Flower color	Bloom	Size	Linear'	Qty
Arctostaphylos hookeri 'Wayside'	Montery manzanita	yes	white	early spring	3x8	96	12
Epilobium canum	CA fuschsia	yes	orange	summer-fall	3x3	36	12
Eriogonum grande var. rubsecens	buckwheat	yes	pink	summer	3x3	48	16
Monardella odoratissima	mountain pennyroyal	yes	pink	spring-fall	3x3	24	8
Penstemon heterophyllos	foothill penstemon	yes	blue	spring-sum	3x3	24	8
Ceanothus 'Centennial'	wild lilac	yes	blue	early spring	3x6	36	6
Baccharis pilularis 'Twin Peaks II'	prostrate coyote bush	yes	white	fall	3x6	36	6
Rosa californica	CA rose	yes	pink	summer	3x3	36	12
Symphoricarpos albus	snowberry	yes	white	summer	3x3	36	12
Mahonia 'Golden Abundance'	Oregon grape	yes	yellow	spring	3x6	36	6
Festuca 'Siskyou Blue'	blue idaho fescue	yes	white	spring	3x3	24	12
Totals						432	**110**

Zone 2 - Vineyard -West Fenceline, 6000 Sq', 600 x 1 row

Species	Common Name	Native	Flower color	Bloom	Size	Linear'	Qty
Ceanothus 'Julia Phelps'	wild lilac	yes	blue	early spring	6x6	84	14
Cercis occidentalis	western redbud	yes	pink	early spring	12x6	42	7
Philadelphus lewisii 'Goose Creek'	mock orange	yes	white	summer	6x6	36	6
Mahonia 'Golden Abundance'	Oregon grape	yes	yellow	spring	3x6	48	8
Ribes nevadense	Sierra currant	yes	pink	spring-summer	3x3	24	8
Garrya elliptica 'Evie'	silk tassel	yes	white	winter	6x6	84	14
Rhamnus californica	coffeeberry	yes	white	spring	6x6	90	15
Cistus ladanifer	orchid spot rockrose	no	white	summer	4x4	60	15
Achillea 'Coronation Gold'	yarrow	no	yellow	spring-sum	3x3	45	15
Penstemon heterophyllos	foothill penstemon	yes	blue	spring-sum	3x3	48	16
Eriogonum grande var. rubsecens	buckwheat	yes	pink	summer	3x3	54	18
Festuca 'Siskyou Blue'	blue idaho fescue	yes	white	spring	3x3	28	14
Totals						643	**150**

Zone 2 - Vineyard - Western Addition - 150'

Species	Common Name	Native	Flower color	Bloom	Size	Linear'	Qty
Cercis occidentalis	western redbud	yes	pink	early spring	12x6	24	4
Arctostaphylos 'Lutsko's pink'	manzanita	yes	white	early spring	6x6	18	3
Prunus ilicifolia	holly-leaf cherry	yes	white	early spring	12X6	30	4
Rhamnus californica 'Haven's Neck'	coffeeberry	yes	white	spring	6x6	30	5
Myrica californica	Pacific wax myrtle	yes	white	spring	10x6	36	6
Ceanothus parryi	Parry's ceanothus	yes	blue	early spring	6x6	18	3
2012 replacement planting							
Ceanothus 'Dark Star'	wild lilac	yes	blue	early spring	6x6		18
Rhamnus californica	coffeeberry	yes	white	spring	6x6		18
Cistus 'Sunset'	rockrose	no	pink	summer	4x4		18
Totals						156	**79**

Zone 3 - Rain Border - North 250'x1 row, under oak - heavy gopher pressure

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Ceanothus 'Julia Phelps'	wild lilac	yes	blue	early spring	6x6	18	3
Mahonia 'Golden Abundance'	Oregon grape	yes	yellow	spring	3x6	36	6
Ribes nevadense	Sierra currant	yes	pink	spring-summer	3x3	24	8
Garrya elliptica 'Evie'	silk tassel	yes	white	winter	6x6	18	3
Lonicera involucrata	twinberry	yes	yellow	spring-sum	5x4	40	10
Heuchera 'Canyon Delight'	alum root	yes	pink	spring	2x2	26	13
Eriogonum grande var. rubsecens	buckwheat	yes	pink	summer	3x3	39	13
Festuca 'Siskyou Blue'	blue idaho fescue	yes	white	spring	3x3	12	6
Totals						213	**62**

Zone 4 - Dusty Lane - outside of fence, 320' x 2 rows, tall & dense - deer & gopher pressure

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Ceanothus 'Julia Phelps'	wild lilac	yes	blue	early spring	6x6	114	19
Cercis occidentalis	western redbud	yes	pink	early spring	12x6	42	7
Arctostaphylos bakeri 'Louis Edmunds'	manzanita	yes	white	early spring	6x6	84	14
Salvia clevlandii 'Whirley Blue'	cleveland sage	yes	blue	spring-sum	4x6	84	14
Garrya elliptica 'Evie'	silk tassel	yes	white	winter	6x6	108	18
Heteromeles arbutifolia	toyon	yes	white	summer	6x6	84	14
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	6x6	84	14
Philadelphus lewisii 'Goose Creek'	mock orange	yes	white	summer	6x6	54	9
Totals						654	**109**

Zone 5 - Vineyard - Fenceline S of Heidi's,180' x 1 rows, shady

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Rosmarinus officinalis 'Irene'	rosemary	no	blue	early spring	2x6	35	7
Rosa californica	CA rose	yes	pink	summer	3x3	21	7
Cistus x purpureus	rockrose	yes			6x6	42	7
Heuchera 'Canyon Delight'	alum root	yes	pink	spring	2x2	14	7
Eriogonum grande var. rubsecens	buckwheat	yes	pink	summer	3x3	21	7
Heteromeles arbutifolia	toyon	yes	white	summer	6x6	66	11
Ribes nevadense	Sierra currant	yes	pink	spring-summer	3x3	21	7
Totals						220	**53**

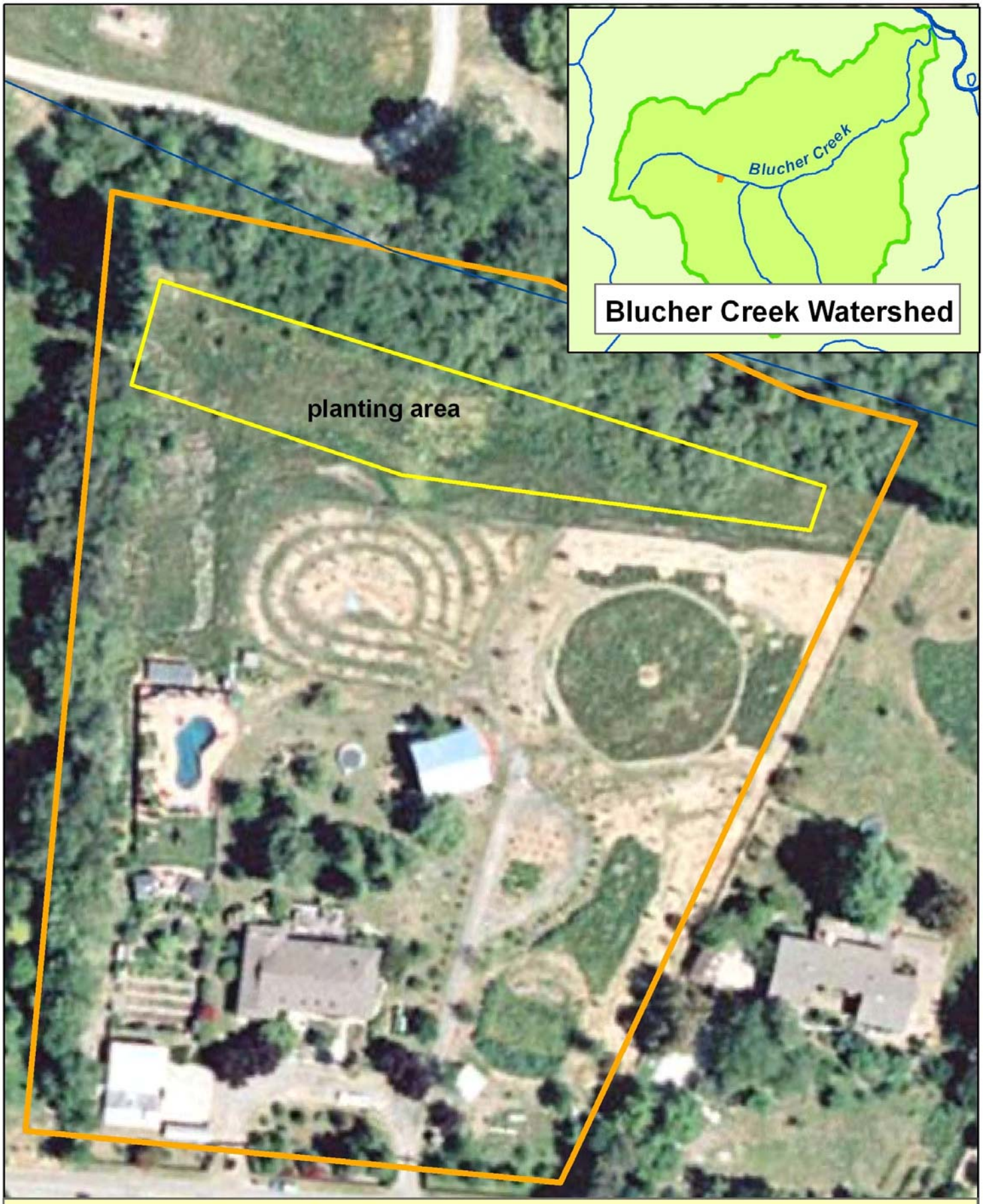
Zone 6 Vineyard - Jeffreys, 350 x 1 row, tall

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Ceanothus 'Ray Hartman'	wild lilac	yes	blue	early spring	6x6	48	8
Cercis occidentalis	western redbud	yes	pink	early spring	12x6	24	4
Salvia clevlandii 'Whirley Blue'	cleveland sage	yes	blue	spring-sum	4x6	78	13
Garrya elliptica 'Evie'	silk tassel	yes	white	winter	6x6	84	14
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	6x6	84	14
Philadelphus lewisii 'Goose Creek'	mock orange	yes	white	summer	6x6	24	4
Symphoricarpos albus	snowberry	yes	white	summer-fall	3x3	72	8
Totals						342	**57**

Riparian Zone

Species	Common Name	Native	Color	Blooms	Size	Sq'	Qty
Calycanthus occidentalis	spice bush	yes	maroon	spring-summer	6x6	720	20
Lonicera involucrata	twinberry	yes	yellow	spring	6x6	720	20
Rosa californica	CA rose	yes	pink	spring-summer	3x3	495	55
Sambucus caerulea	elderberry	yes	white	spring	9x6	720	20
Symphoricarpos albus	snowberry	yes	white	summer-fall	3x3	450	50
Acer circinatum	vine maple	yes					2
Totals							**167**

2010 plantings	731
2011 plantings	56
Total Plants	**787**



Three Ox Farm: 2827 Blucher Valley Rd

Steve Howard **APN: 025-050-044**

Gold Ridge RCD
June 2012

0 62.5 125 250 Feet

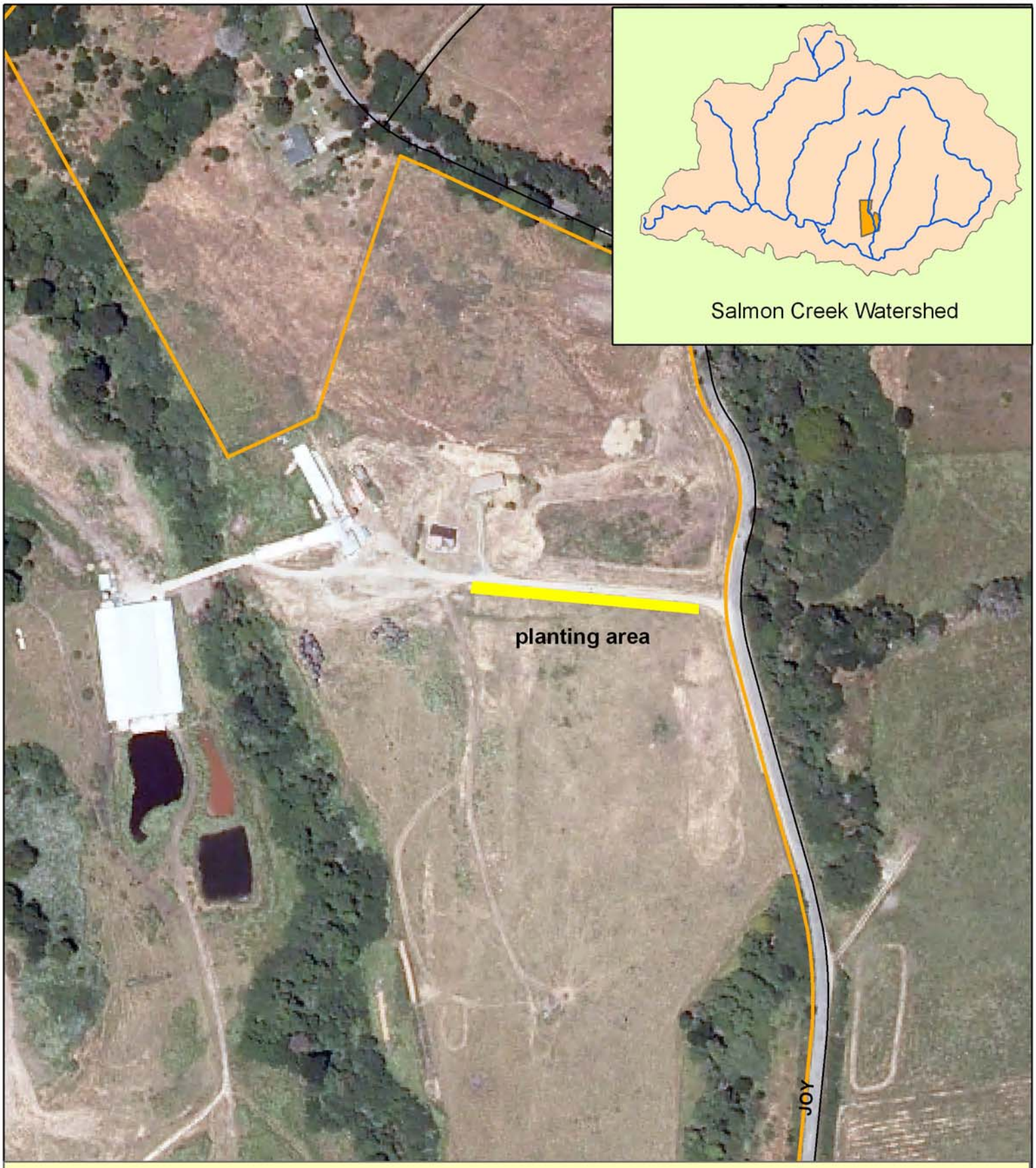
N

Three Ox Farm					
Species	**Common Name**	**Native**	**Color**	**Blooms**	**Qty**
Large Shrubs - 2010 planting					
Calycanthus occidentalis	spice bush	yes	maroon	spring-summer	23
Cercis occidentalis	redbud	yes	pink	early spring	10
Lonicera involucrata	twinberry	yes	yellow	spring	21
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	35
Sambucus caerulea	elderberry	yes	white	spring	20
				total	**109**
Large Shrubs - 2011 planting					
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	1
Sambucus caerulea	elderberry	yes	white	spring	8
Myrica californica	Pacific wax myrtle	yes	white	spring	2
Cornus sericea	redtwig dogwood	yes	white	spring	15
Ceanothus 'Blue Jeans'	CA lilac	yes	blue	early spring	3
Ceanothus 'Joyce Coulter'	CA lilac	yes	blue	early spring	2
Ceanothus thursiflorus	CA lilac	yes	blue	early spring	2
Prunus ilicifolia	hollyleaf cherry	yes	white	early spring	12
				total	**45**
Medium Shrubs - 2010 planting					
Eriogonum fasciculatum	CA buckwheat	yes	white	spring-summer	20
Eriogonum parvifolium	seacliff buckwheat	yes	pink	spring-summer	12
Eriogonum ursinum	bear valley buckwheat	yes	pale yellow	spring-summer	23
Penstemon heterophyllus	foothill penstemon	yes	blue	spring-summer	25
Rosa californica	CA rose	yes	pink	spring-summer	41
Symphoricarpos albus	snowberry	yes	white	summer-fall	42
				total	**163**
Medium Shrubs - 2011 planting					
Physocarpus capitatus	ninebark	yes	white	spring	5
Symphoricarpos albus	snowberry	yes	white	summer-fall	5
Ribes speciosum	fuschia flowering gooseberry	yes	fucshia	spring	6
Salvia uliginosa	bog sage	no	blue	spring-sum	10
				total	**26**
Small Perennials & Wildflowers - 2010 planting					
Aster alpigenus	Mt. meadow aster	yes	blue	summer-fall	21
Coreopsis grandiflora	tickseed	no	yellow	summer-fall	21
Linum lewisii	blue flax	yes	blue	spring-fall	25
Ratibida columnifera	prairie coneflower	yes	yellow	summer-fall	25
Sisyrinchium bellum	blue-eyed grass	yes	blue	spring-summer	40
				total	**132**
Small Perennials & Wildflowers - 2011 planting					
Juncus sp.	common rush	yes			8
				total	**8**

2012 replants

Species	**Common Name**	**Native**	**Color**	**Blooms**	**Qty**
Philadelphus lewisii 'Marjorie Schmid	mock orange	yes	white	spring-sum	5
Physocarpus 'Diablo'	ninebark	yes	white	spring-sum	5
Philadelphus coronarius 'Variegatus'	mock orange	yes	white	spring-sum	9
Sambucus 'Black Beauty'	elderberry	yes	white	spring-sum	13
Aster chilensis	aster	no	blue	sum-fall	23
				total	**55**

planted in 2010	404
planted in 2011	79
planted in 2012	55
total	**538**



Joy Road Ranch
Joe Pozzi
APN: 103-100-059

N

0 150 300 600 Feet

Gold Ridge RCD
June 2012

Joy Road Ranch

Driveway - 350x10', 2 rows, 60 tall 120 short

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Arctostaphylos manzanita 'Dr. Hurd'	manzanita	yes	pink-white	early spring	12x6	432	12
Heteromeles arbutifolia	toyon	yes	white	spring-summer	6x6	396	11
Fremontodendron 'San Gabriel'	flannel bush	yes	yellow	early spring	15x6	432	12
Ceanothus 'Ray Hartman'	blue blossom	yes	blue	early spring	12x6	432	12
Cercis occidentalis	redbud	yes	pink	early spring	15x6	216	6
Salvia 'Whirley Blue'	Clevland sage	yes	lavender	summer	4x6	432	12
Cistus ladanifer	crimson spot rockrose	no	white	summer	5x5	300	12
Cistux x purpureus	orchid rockrose	no	pink	summer	4x4	192	12
Lavandula angustifolia	English lavender	no	lavender	summer	3x3	108	12
Eriogonum ursinum	bear valley buckwheat	yes	pale yellow	spring-summer	2x3	135	15
Penstemon heterophyllus	foothill penstemon	yes	blue	spring-summer	3x3	135	15
Rosa californica	CA rose	yes	pink	spring-summer	3x3	72	8
Epilobium canum	CA fuschia	yes	orange-red	summer-fall	3x3	135	15
				Totals:		**2800**	**154**

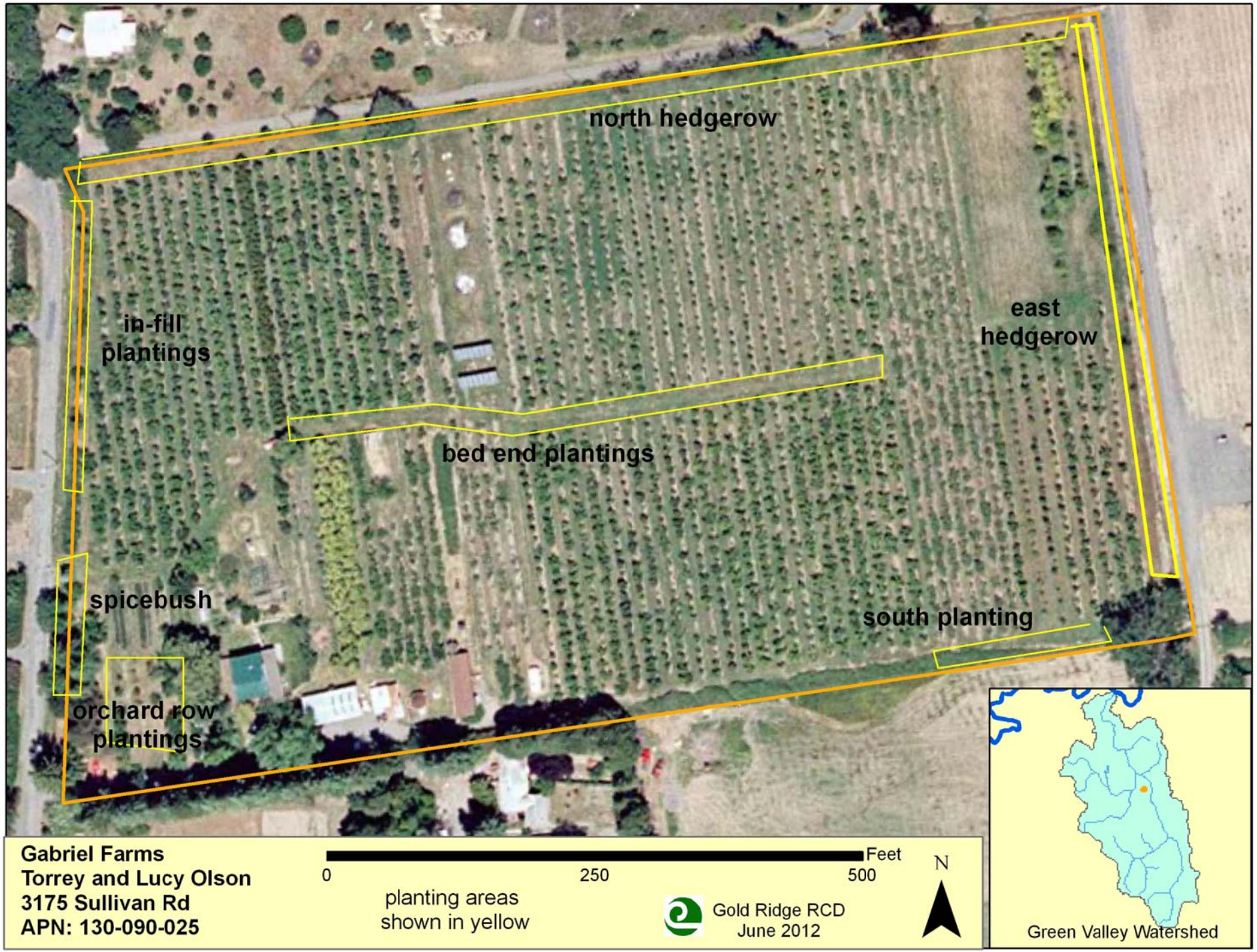
Lower West Border: **300 x30, 9000 sq' 200 large 400 small**

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Cercis occidentalis	redbud	yes	pink	early spring	15x6	648	18
Lonicera involucrata	twinberry	yes	yellow	spring	6x6	432	12
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	6x6	432	12
Sambucus caerulea	elderberry	yes	white	spring	9x6	432	12
Rosa californica	CA rose	yes	pink	spring-summer	3x3	288	32
Eriogonum ursinum	bear valley buckwheat	yes	pale yellow	spring-summer	2x3	90	10
Eriogonum fasciculatum	CA buckwheat	yes	white	spring-summer	2x2	40	10
Eriogonum parvifolium	seacliff buckwheat		white	spring-summer	2x3	40	10
Linum lewisii	blue flax	yes	blue	spring-fall	2x2	40	10
Penstemon heterophyllus	foothill penstemon	yes	blue	spring-summer	3x3	90	10
Sisyrinchium bellum	blue-eyed grass	yes	blue	spring-summer	1x1	20	10
Coreopsis grandiflora	tickseed	no	yellow	summer-fall	3x3	20	10
Aster alpigenus	Mt. meadow aster	yes	blue	summer-fall	3x3	90	10
Ratibida columnifera	prairie coneflower	yes	yellow	summer-fall	3x3	90	10
				Totals:		**500**	**176**

2011 Driveway additions

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Arctostaphylos densiflora 'Howard McM	manzanita	yes	pink-white	early spring	6x6	216	6
Arctostaphylos pajarvensis 'Paradise'	manzanita	yes	pink-white	early spring	6x6	72	2
Garrya elliptica	silk tassel	yes	white	winter	6x6	108	3
Myrica californica	Pacific wax myrtle	yes	white	spring	10x6	60	1
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	6x6	72	2
Salvia 'Whirley Blue'	Clevland sage	yes	lavender	summer	4x6	288	8
Lavandula angustifolia	English lavender	no	lavender	summer	3x3	54	6
Philadelphus lewisii 'Goose Creek'	mock orange	yes	white	summer	6x6	36	1
Epilobium canum	CA fuschia	yes	orange-red	summer-fall	3x3	27	3
				Totals:		**2800**	**32**

2010 plantings	330
2011 plantings	32
TOTAL	**362**


north hedgerow
in-fill plantings
east hedgerow
bed end plantings
spicebush
south planting
orchard row plantings
Gabriel Farms
Torrey and Lucy Olson
3175 Sullivan Rd
APN: 130-090-025
0
250
500
Feet
planting areas shown in yellow
Gold Ridge RCD
June 2012
N
Green Valley Watershed

Gabriel Farm

2010 in-row orchard planting

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Aster alpigenus	Mt. meadow aster	yes	blue	summer-fall	3x3		22
Coreopsis grandiflora	tickseed	no	yellow	summer-fall	3x3		22
Linum lewisii	Blue flax	yes	blue	spring-summ	1x1		20
Total							**64**

2010 Perimeter Hedgerow Fill-ins

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Cercis occidentalis	western redbud	yes	pink	early spring	12x6		22
Rosa californica	CA rose	yes	pink	summer	3x3		40
Sambucus caerulea	elderberry	yes	white	spring	9x6		8
Total							**70**

2010 Sullivan Rd planting

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Calycanthus occidentalis	spicebush	yes	maroon	spring-summ	6x6	96	16
Total							**16**

2011 Perimeter Hedgerow Fill-Ins - 12-20' tall

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Crataegus douglasii	western hawthorn	yes	white	spring	6-20'	900	25
Prunus virginiana	western chokecherry	yes	white	spring/sum	18'	900	25
Rhamnus californica 'Eve Case'	coffebush	yes	white	spring/sum	8x6	900	25
Ceanothus 'Ray Hartman'	wild lilac	yes	blue	early spring	12-20'	900	25
Ceanothus 'Concha'	wild lilac	yes	blue	early spring	6x6	900	25
Garry elliptica 'Evie'	silk tassel	yes	white	early spring	12x6	720	20
Cornus stolonifera	red stem dogood	yes	white	spring	12x12	540	15
Lonicera involucrata	twinberry	yes	yellow	spring	10x6	720	20
Myrica californica	Pacific wax myrtle	yes	white	spring	10x6	720	20
Teucrium fruticans 'Azureum'	bush germander	no	blue	early spring		720	20
Total						**7920**	**220**

2011 Guava Hedge - 2 rows, guava in back & short plants in front/between

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Feijoa sellowiana	pineapple guava	no	pink	spring	10x6	1440	40
Gaultheria shallon	salal	yes	pink	spring	3x3	180	20
Salvia 'Hot Lips'	sage	no	red&white	summer	3x3	45	5
Salvia bradegei	Brandegee's sage	yes	white	summer	3x3	18	2
Eriogonum fasciculatum	CA buckwheat	yes	white	summer	3x3	108	12
Penstemon 'Papal Purple'	penstemon	no	purple	summer	3x3	36	4
Penstemon 'Lady Alice Hindley'	penstemon	no	blue	summer	3x3	36	4
Phlomis 'Edward Bowles'	Jerusalem sage	no	yellow	summer	3x3	153	17
Rosmarinus 'Mozart'	rosemary	no	blue	early spring	3x3	144	16
Total						**2160**	**120**

2011 Bed Ends - inside end of each tree row

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Amelanchier alnifolia	western serviceberry	yes	white	spring	3x3	100	10

Mahonia 'Golden Abundance'	Oregon grape	yes	yellow	spring-sum	3x3	120	12
Ribes aureum	golden currant	yes	yellow	spring	3x3	140	14
Salvia brandegei	Brandegee sage	yes	white	summer	3x3	250	25
Rhus integrifolia	lemonade berry	yes	white	spring	3x3	140	14
Total						**750**	**75**

2011 Bed Ends replants

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Mahonia 'Golden Abundance'	Oregon grape	yes	yellow	spring-sum	3x3	90	9
Rhus integrifolia	lemonade berry	yes	white	spring	3x3	40	4
Total						**130**	**13**

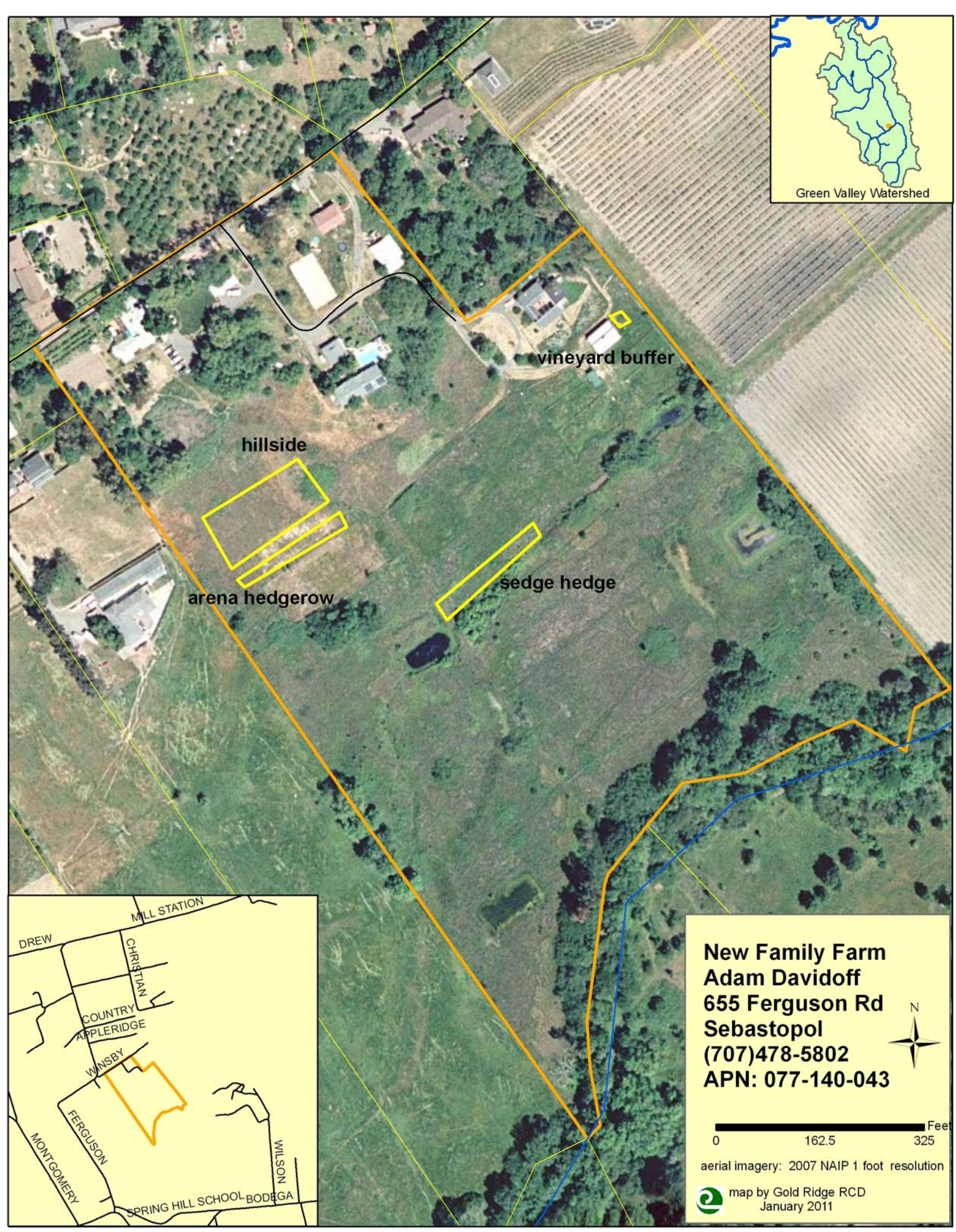
2011 Driveway/Packing Shed area

Species	Common Name	Native	Flower color	Bloom	Size	Sq'	Qty
Rhododendron occidentale	western azaela	yes	white	early spring	6x6	180	5
Philadelphus coronarius 'Aureus'	mock orange	yes	white	spring	6x6	180	5
Rhamnus alaternus 'Variegatus'	variegated Italian buckthor	no	white	spring	6x6	180	5
Total						**540**	**15**

2012 Spring Replants

Species	Common Name	Native	Flower color	Bloom	Size		Qty
Aster 'Little Carlow'	aster	no	white	sum-fall	4x3'		7
Helianthus 'Mellow Yellow'	swamp sunflower	no	yellow	sum-fall	4x3'		11
Carpenteria californica	CA bush anemone	yes	white	May-July	5-7'x3'		4
Prunus illicifolia	hollyleaf cherry	yes	white	spring-sum	10-25'x6'		8
Scrophularia californica	bee plant	yes	maroon-red	spring-sum	3x3		4
Sambucus mexicana	elderberry	yes	white	spring-sum	10-20'		12
Bupleurum fruticosum	shrubby hare's ear	no	yellow	spring-sum	4-6'x6		8
Ribes odoratum	clove-scented currant	yes	yellow	spring	4-6'x6		12
Phlomis 'Edward Bowles'	Jerusalem sage	no	yellow	summer	3x3		9
Total							**75**

2010 plantings	150
2011 plantings	443
2012 plantings	75
Total	**668**


Green Valley Watershed
vineyard buffer
hillside
arena hedgerow
sedge hedge
MILL STATION
DREW
CHRISTIAN
COUNTRY APPLERIDGE
WINSBY
FERGUSON
MONTGOMERY
WILSON
SPRING HILL SCHOOL
BODEGA
New Family Farm
Adam Davidoff
655 Ferguson Rd
Sebastopol
(707)478-5802
APN: 077-140-043
N
0
162.5
325
Feet
aerial imagery: 2007 NAIP 1 foot resolution
map by Gold Ridge RCD
January 2011

New Family Farm - May 2012							
Vineyard buffer, 125x15'							
Species	**Common Name**	**Native**	**Color**	**Blooms**	**Size**	**Sq'**	**Qty**
Garrya elliptica	silk tassle	yes	white	winter/spring	12x6	360	10
Ceanothus 'Ray Hartman'/'Julia Phelps'	wild lilac	yes	blue	spring	12x6	360	10
Cercis occidentalis	redbud	yes	pink	spring	12x6	360	10
				Total		**1080**	**30**
Sedge Hedge - Along Fenceline between two main fields							
Species	**Common Name**	**Native**	**Color**	**Blooms**	**Size**	**Sq'**	**Qty**
Cornus sericea 'Flavrimea'	dogwood	yes	white	spring	8x6	432	12
Calycanthus occidentalis	spice bush	yes	scarlet	spring	6x6	360	10
Myrica californica	Pacific wax myrtle	yes	white	spring-sum	12x6	216	6
Sambucus mexicana	blue elderberry	yes	white	spring-sum	12x6	252	7
				Total		**1260**	**35**
Arena Hedgerow, 150' - wet							
Species	**Common Name**	**Native**	**Color**	**Blooms**	**Size**	**Sq'**	**Qty**
Helianthus angustifolia 'Mellow Yellow'	swamp sunflower	no	yellow	sum-fall	3x3	63	7
Aster 'Little Carlow'	aster	no	blue	sum-fall	3x3	144	16
Sambucus nigra	elderberry	yes	white	spring-sum	10x6	900	25
Physocarpus 'Diablo'	ninebark	yes	white	spring-sum	6x6	72	2
Rhamnus californica 'Eve Case'	coffeeberry	yes	white	spring	6x6	360	10
				Total		**1539**	**60**
Hillside							
Species	**Common Name**	**Native**	**Color**	**Blooms**	**Size**	**Sq'**	**Qty**
Baccharis pilularis	coyote bush	yes	white	fall-winter	6x6	1044	29
Baccharis pilularis 'Twin Peaks'	prostrate coyote bush	yes	white	fall-winter	3x6	900	25
Lupinus albifrons varollinus	bush lupin	yes	yellow	spring-sum	3x3	225	25
Monardella villosa 'Russian River'	Coyote mint	yes	lavender	spring-sum	3x3	225	25
Aster chilensis 'Pt. St. George'	aster	yes	lavender	summer	3x3	225	25
Salvia uliginosa	bog sage	no	blue	spring-sum	3x3	54	6
Helianthus angustifolia 'Mellow Yellow'	swamp sunflower	no	yellow	sum-fall	3x3	144	16
Ribes malvaceum "dancing Tassles'	chapparal currant	yes	pink	spring	6x6	792	22
Rhus trilobata	basket bush	yes	yellow	spring	6x7	216	6
Malacothamnus fremontii	Fremont's bush mallow	yes	pink	summer	6x6	216	6
				Total		**4041**	**185**
Plant Totals							**310**

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone A at planting
06 November 2009

Singing Frogs Farm Zone A
28 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone B and C at planting
06 November 2009

Singing Frogs Farm Zone B and C
28 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone D at planting
06 November 2009

Singing Frogs Farm Zone D
28 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone F at planting
06 November 2009

Singing Frogs Farm Zone F
28 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone G at planting
06 November 2009

Singing Frogs Farm Zone G
13 October 2010

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone J at planting
06 November 2009

Singing Frogs Farm Zone J
28 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone K at planting
12 May 2011

Singing Frogs Farm Zone K
12 October 2011

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone O at planting
12 May 2011

Singing Frogs Farm Zone O
28 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone P at planting
09 December 2011

Singing Frogs Farm Zone P
28 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Singing Frogs Farm Zone Q at planting
09 December 2011

Singing Frogs Farm Zone Q
28 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Rued Vineyards Graton Rd at planting
14 January 2010

Rued Vineyards Graton Rd
23 May 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Younger driveway during planting
24 November 2009

Younger driveway planting
23 May 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Younger waterboxx installation
23 May 2012

Younger waterboxx installation
23 May 2012

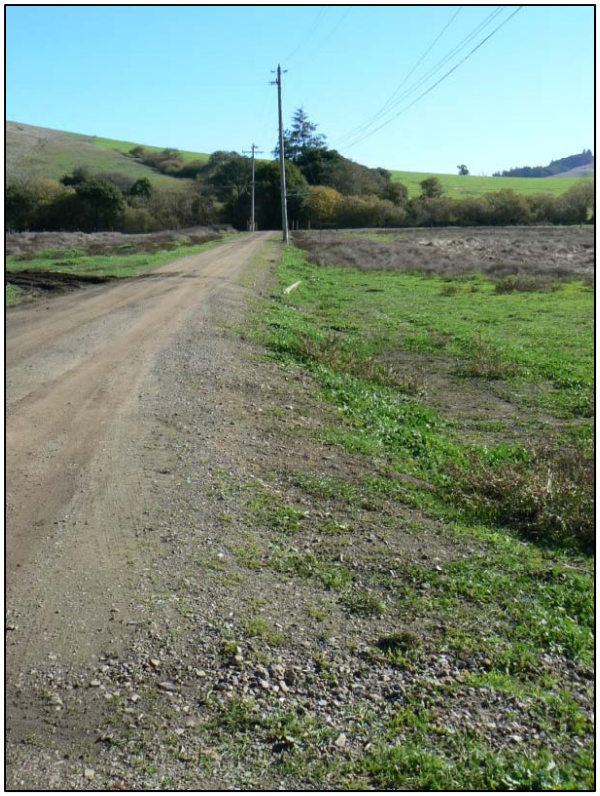
Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Younger gully planting
13 January 2010

Younger gully planting
23 May 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Joy Road Ranch before planting
24 November 2009



Joy Road Ranch
12 October 2011

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
NRCS Conservation Innovation Grant 69-3A75-9-156
September 2012

Joy Road Ranch volunteer planting day
07 May 2010

Joy Road Ranch livestock damage
26 June 2012

Appendix E: Photo monitoring
Insectaries for Pollinators and Farm Biodiversity
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September 2012

Dierke Enterprises east fenceline at planting
14 May 2010

Dierke Enterprises east fenceline
19 June 2012

Appendix E: Photo monitoring
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September 2012

Dierke Enterprises south fenceline at planting
14 May 2010

Dierke Enterprises south fenceline at eleven months
19 June 2012

Appendix E: Photo monitoring
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September 2012

Dierke Enterprises riparian zone at planting
14 May 2010

Dierke Enterprises riparian zone
19 June 2012

Appendix E: Photo monitoring
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September 2012

Dierke Enterprises west fenceline at planting
14 May 2010

Dierke Enterprises west fenceline
19 June 2012

Appendix E: Photo monitoring
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September 2012

Dierke Enterprises Dusty Lane planting at planting
14 May 2010

Dierke Enterprises Dusty Lane planting
19 June 2012

Appendix E: Photo monitoring
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September 2012

Dierke Enterprises north fenceline at planting
14 May 2010

Dierke Enterprises north fenceline
19 June 2012

Appendix E: Photo monitoring
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Three Ox Farm at planting
23 May 2010

Three Ox Farm
16 May 2012

Appendix E: Photo monitoring
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September 2012

Three Ox Farm at planting
23 May 2010

Three Ox Farm
16 May 2012

Appendix E: Photo monitoring
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September 2012

Three Ox Farm at planting
23 May 2010

Three Ox Farm
16 May 2012

Appendix E: Photo monitoring
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Gabriel Farm east fenceline at planting
12 March 2011

Gabriel Farm east fenceline
26 June 2012

Appendix E: Photo monitoring
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Gabriel Farm south fenceline before planting
04 February 2011

Gabriel Farm south fenceline at planting
26 June 2012

Appendix E: Photo monitoring
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Gabriel Farm spicebush hedgerow
25 April 2011

Gabriel Farm spicebush hedgerow
26 June 2012

Appendix E: Photo monitoring
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Gabriel Farm north fenceline
25 April 2011

Gabriel Farm north fenceline
26 June 2012

Appendix E: Photo monitoring
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Gabriel Farm row end planting
26 June 2012

Gabriel Farm orchard in-row plantings
26 June 2012

Appendix E: Photo monitoring
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Gabriel Farm planting with Cub Scouts
12 March 2011

Gabriel Farm planting with Cub Scouts
12 March 2011

Appendix E: Photo monitoring
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New Family Farm before planting
07 May 2012

New Family Farm planting day
09 May 2012

Appendix E: Photo monitoring
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New Family Farm before planting
07 May 2012

New Family Farm vineyard buffer at planting
09 May 2012

Appendix E: Photo monitoring
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TEAM Conservation Pollinator Field Station
(Funded through Sonoma County Agricultural Preservation and Open Space District)

Fourth graders and parent volunteers playing “Bee Alive” game at the TEAM Conservation field day