Draft EIR for the Stagecoach Vineyard Expansion Erosion Control Plan Application # P06-0042-ECPA

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This report addresses three fundamental questions about the Stagecoach Vineyards Erosion Control Plan Application (ECPA) #P06-0042-ECPA in the Atlas Peak area of the Rector Creek watershed in Napa County, California.

These are:

1. How has the proposed ECPA justified conversion of 107 acres of oak-chaparral woodland to vineyard without increasing either sediment yield or peak flow yields from the various Stagecoach parcels?
2. Are proposed vineyard expansion impacts being mitigated by upgrading or repairing existing vineyard erosion and runoff problems that are regulated under earlier on-site ECPs?
3. If past ECPs have failed to meet goals, will the new ECP practices adequately compensate for past failures and are the proposed practices likely to meet stated standards and goals for erosion control, sediment yield, and storm runoff?

Background:

This review is being conducted based on the available ECPA documents that have been downloaded from the Napa County Conservation, Development and Planning Department web site in December, 2007. In addition to that document, I have reviewed limited County file documents that include ECPAs and later modifications for the Stagecoach site filed in 1996-97 under ECPAs #96586-ECPA, and #95374-ECPA and some of the Plan Sheets that accompanied those earlier plans. I also have a 5-page ECPA narrative for the Soda Canyon Road Vineyard assigned ECPA #95024 approved 8-16-1995. I have also looked at the full plan sheet for the contemporary P06-0042 with the latest update dated 6-16-2006. I have reviewed aerial photos of the site beginning with the July 6, 1993 Orthophoto Quarter Quadrangle (DOQQ) that serves as the basis for Napa County's Conservation Regulation[1]

The basic Erosion Control Plan and Specifications prepared by PPI Engineering is dated June 2006. The Erosion and Sedimentation Assessment prepared by Martin Trso that I copied from the County website is dated October, 2006 and the

[1] The Napa County Conservation ordinance requires retention of 40% of the brush cover and 60% of the tree cover along with associated understory if present that existed June 16, 1993. However this site was not photographed by NASA under the USGS DOQQ contract until July 6th of that year. (see §18.108.027 Sensitive domestic water supply drainages)

basic Draft Environmental Impact Report prepared by Analytical Environmental Services was dated November, 2007.

Overview:

The proposed project is described as a vineyard infill although there are also expansions into parcels adjacent to the southern boundary of the existing 541.2 acres approved under 3 previous ECPAs. The site was burned severely in the Atlas Peak fire of June, 1981. Thus, the June 1993 vegetation conditions for cover under the Napa County Conservation Ordinance represents only a 12-year post-fire recovery period for this site. The EIR (p. 3-6) states that there are 22 acres of tree canopy cover and about 551 acres of "scrub" on the property today. Using the contemporary Google-Earth aerial photos (12-27-2006) we see that what is called "scrub" is in some places a developing oak/chaparral woodland with young oaks replacing shrub and brush in some sites such as the vicinity of proposed blocks 15 and 16. The base-line 1993 aerial photos do not show 1993 tree cover except in a few isolated areas and near then-extant buildings. In 1993, the number of trees in these (unburned?) areas was greater than today as was the extent of tree cover, but some of the areas of trees have been encroached by vineyards. By using the term "scrub" rather than "shrub and brush cover" as used in the ordinance, the EIR language is technically accurate since most ecologists include oaks in the term *scrub*, but may not imply that oaks exist in *shrub and brush*. To confuse matters further, the table on Erosion Control App. B page B-1 lumps "*brush, shrub and grass*" under both the present vineyard acreage without canopy cover (551 acres) and proposes to remove 106.8 ac of Brush/Shrub/Grass. The ECP itself (EC-9) addresses "...change from narrowleaf chaparral to vineyard..." This is a semantic point, but the confusion does promote clearing of what will be oak woodland in a few more decades.

Because the new ECPA is requesting that past ECPs that were out of compliance with respect to vegetation retention be "deemed in compliance" (ECPA p. EC-1), the issues of definitions of *brush, scrub,* and *shrub* and the more general term *cover* need to be more carefully considered and the nomenclature needs to be standardized. The strategy of the applicants seems to be to take full advantage of the vague Napa County Conservation Ordinance and the Atlas Peak Fire history, but it is clear from inspection of sequential aerial photos that several large old oaks have been sacrificed for vineyard in the past. The current ECPA covers a newly purchased parcel (APN-032-030-016) that includes deeper canyons near Rector Reservoir with denser vegetative cover than the previously developed parcels. By expanding the area of the parcel into lands less suitable for vineyards, the owners may be able to meet the 40-60 Rule while clearing more lands with infill vineyards despite apparent excess clearing under prior ECPs. We are told that no trees will be removed with the proposed project but we are not told either how far out of compliance past ECPAs have

been nor what acreages needed to be rectified. Further, we do not know the mix of trees and brush in the newly added parcels or how the brush to be cleared from them affects the overall composite 60:40 tabulation.

Findings and Analyses:

1) Because peak flow runoff and sediment yield are both associated with infiltration capacity of surface soils, this EIR attempts to assess runoff and sediment yield under existing conditions and modeled future conditions. The authors acknowledge that vineyards and associated development do not intercept as much rainfall as does native chaparral, and thus may yield more runoff and are subject therefore to more erosion. As we have demonstrated elsewhere[2] on these eastside Napa Valley mountainous volcanic soils, the native chaparral and scrub oak woodland is characterized by a nearly continuous cover of litter and woody debris and a locally porous and permeable soil surface. Vineyards, under current Erosion Control Plans, attempt to compensate for lesser infiltration capacity in the managed vineyard block by planting cover crops to protect soil between the vine rows from rainsplash, sheetwash, and rill erosion. This is not "best management practice" for stony soils, but it seems to be accepted by local authorities and consultants for erosion control. See for example, the Southern Sonoma County RCD web site under "cover crop" at http://www.sscrcd.org/area/vineyard-demo.html. This site presents examples of stone mulch with live cover crops as the local Sonoma County desired vineyard management. See also Nachtergaele et al, 1998; Blavet, et al, 2006 for historic European perspectives. Real BMPs must both minimize sediment yield and minimize erosion in order to maximize site productivity. The proposed Stagecoach management goals are simply to minimize offsite transport of sediment without reducing onsite erosion.
2) For this Stagecoach Vineyard expansion EIR, Martin Trso modeled *before* and *after* hydrology and found no net change in either peak flow or sediment yield (see Sections 4.3 and 5; pp 18 ff of the Trso Appendix). This was partly accomplished by counting roads and their sediment and water delivery in several different ways. The proposed new vineyard development is reported to include 107 acres of "new vineyard". Table 3.4-1 (EIR 3-9) indicate that this figure includes vineyard avenues. We are told that there will be no new roads or driveways [see Table 3.4-1 and p 3-8 of the EIR]. The term Vineyard Avenues appears to be used for both the internal roadways within vineyard blocks and the 24-foot wide roads that surround vineyard blocks; but again we are told that there will be no new roads [Sect 3.4.2, p. 3-19]. An introductory section on

[2] See Napa Valley Hillside Vineyards – Cumulative Effects of conversion of upland woodlands and chaparral to vineyards. December 24, 2000 report by Robert Curry to Thomas N. Lippe.

definitions of these three terms is needed. Trso's Figures 12-15 are photos of roads and vineyard avenues but all are along side the vineyard blocks and thus would be considered "Avenues", not roads.

3) It is simply not possible to determine from the EIR documents how these calculations were made. For example, we are told (Trso p. 22, footnote 7) that the area of proposed vineyards within the three Stagecoach watersheds of 65.0 acres is equivalent to 72% of the total proposed vineyard within the Stagecoach property. This equates to 90 total acres, not 107 acres. We infer that some parts of the vineyard expansion lie outside the three modeled East, Central, and West Stagecoach drainage basins. Also, some of the existing vineyards and proposed expansion within the three modeled Stagecoach watersheds are on adjacent properties. But the basic math is confusing. Table 3.4-1 differentiates *vineyard acreage* and *acreage with avenues*. In that table, the proposed vineyard acreage is 91.44 acres and "with avenues" is 107.6.

4) Peak flow is modeled to be identical *before* and *after* conversion. This was accomplished by use of a computer program called WinTR-55. With this analysis, a series of variable parameters representing before and after conditions are plugged into a program to calculate runoff for different magnitudes of storm events. The *before* and *after* results were identical for all modeled storms because exactly the same parameters were used for each set of calculations. Trso states that "*According to the WinTR-55 analysis, there would be no change in the curve number or time of concentration due to the proposed project within the Stagecoach … watersheds. As a result, there would be zero increase in peak flow discharge within or off the property from either of the three watersheds during the 2-, 5-, 10-, 25- 50- and 100-year frequency storms, under the post project conditions*" (App. F, p. 19).

5) To come to this conclusion, Trso had to assume no changes in channel characteristics such as channel type, length, gradient, dimensions and substrate. He had to assume that the deep ripping and very substantial change in the soil characteristics that occur with conversion of a stony loam chaparral soil to a vineyard block made no change in runoff characteristics. These assumptions are incorrect because of several reasons. 1. The runoff from vineyard blocks will increase because sheetflow is more effective in grassed intervine rows at 20 year return storm intensities or greater. 2) Runoff from roads even if called vineyard avenues increases because these are compacted by vehicles within and surrounding the vineyard blocks, and 3) lack of stones on the surface and litter from chaparral decrease surface detention of sheet and rill runoff. Together these changes lengthen and expand the network of channels that feed storm runoff to local watercourses.

6) The infiltration and runoff characteristics of the site will change significantly when the stones are removed from the top two to three feet of surface soil. As far as I can determine, the Napa Valley vineyard advisors

have taken a position that is unique worldwide in believing that one can remove the rocks and cobbles from a stony loam soil without changing its hydrologic characteristics. While some Napa County vineyard conversions have accepted the widespread understanding of the value of maintaining or enhancing stone cover or "stone mulch", many eastside vineyards[3] still adhere to the belief that yields or quality will improve if you remove stones from the surface soils before converting to vineyard.

7) While it is true that soil moisture holding capacity can be increased in that portion of some soils by decreasing the ratio of stones to loam, there is no evidence that I can locate to indicate that soil erosion is not increased when a surface lag of stones (or the distributed stones in a soil profile that can be concentrated through erosion to produce such a lag or surface concentration of stones) is removed[4]. Thus, in the Stagecoach Vineyard expansion sites, the substrate characteristics change through rock removal and through grassed inter-vine rows or swales. As determined on similar Eastside Napa Valley volcanic soils at the Pahlmeyer Vineyards in 2000 (op cit, footnote 2) the shrink-swell characteristics of clay minerals in the stony surface soils that have developed from additions of airfall volcanic ash create seasonal voids around the margins of stones in the upper part of the soil profile. These voids remain open to the first winter rains and enhance infiltration capacity of the soil. At Stagecoach we do not know how clay-content, if any, it distributed or what happens to it after deep ripping for site preparation. Thus, we do not know if infiltration capacity and hence storm-flow runoff will be altered.

8) Trso recognizes and maps areas of sheetflow runoff from the vineyard blocks but does not factor the changed characteristics of sheetflow that are induced by rock removal and grass cover crops. The TR-55 runoff calculation focuses on channelized runoff in headwater stream channels, but not on the significant changes that are proposed for the vineyard blocks themselves. He seems to make the assumption that the hydrologic characteristics of the soil itself are unchanged, presumably because the planting of a cover crop will partly compensate for the loss of chaparral and its litter. This is not supported by cited literature, and is contrary to Natural Resource Conservation Service (NRCS) guidance for selection of runoff curve numbers for use of the TR-55 calculations.

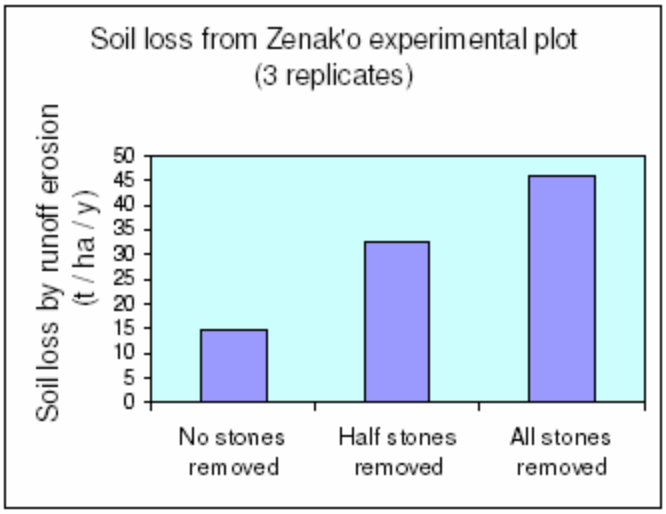
9) In searching for support for the assumptions made by Trso, I have had to look widely for quantitative assessments of hydrologic characteristics of soils with altered stone content that compare pre-agricultural soils and their site conversions. I have found good science and repeatable analyses in the hillside areas of Ethiopia. Only in the undeveloped areas of the world do I find the questions still being raised that typify parts of

[3] Very stony loams characterized the east side of Napa Valley where volcanic rock is the dominant bedrock. Westside and southern Napa Valley vineyard conversions generally occur on less stony hillside soils.

[4] The three soil types on the site are Guenoc-Rock Outcrop, Hambright-Rock Outcrop and Rock Outcrop-Hambright complexes. The common element is **rock**.

Napa County in this century. Because runoff and erosion are two sides of the same coin, the peak flow assumptions made by Trso also drive the erosion estimates. In fact, Trso does not make erosion estimates beyond those presented by the Universal Soil Loss Equations. He is concerned with sediment delivery to watercourses that could potentially carry that sediment offsite.

10) Site conversion with removal of stones from topsoil and shallow subsoil layers has been reviewed experimentally by Nyssen et al (2007) in volcanic, limestone and granitic bedrock terrains. This paper is particularly relevant because the stones are placed along the edges of the fields to capture sediment in sheetflow and rill runoff as is the proposed practice at Stagecoach vineyards. Nyssen compared three conditions: No stones removed, half the stones removed, and all stones removed. The following figure is from that paper:



Effect of stone removal on soil loss

Rainfall conditions at these experimental sites differ from those in Napa Valley but the overall strategies for erosion control are remarkably similar. Their data suggest a two to three times increase in soil erosion, even where cover crops exist seasonally, and further document that the stone berms or sediment retention rock walls and rock energy dissipators are only effective up to a limited capacity and storm intensity.

11) The Executive Summary of the Stagecoach EIR acknowledges that "Several measures are also proposed to correct existing erosion and sediment problems on the Stagecoach Vineyards property" (EIR Chapt. 2, p. 2-2). This raises the question of adequacy of prior ECPAs and/or adequacy of maintenance. We are told that the existing vineyards were designed for a minimum 70% no-till vegetation cover crop and that most are currently managed such that cover is at or above 70% (EIR Chapt. 2 p. 2.2). The actual corrective measures outlined in the EIR are somewhat vague. We are told (cf EC-4, ¶ 6) that there are existing facilities that require maintenance. However, the referenced specific section of the

ECP (§ 10, SP-6 to SP-7) that is supposed to call out these existing facilities lists only one site below existing E-3 block. Nowhere can I find a breakdown of current sediment yield that will be prevented with the proposed corrections. Footnote 4, Trso Appendix F, p. 23, states that *"About 7.4 acres of the vineyard OFA (*overland flow area*) deliver 14.5 tons of sediment to the on-site watercourses through road stream crossing annually, under current conditions. Due to road improvements proposed in the ECP, this sediment delivery will be zero under the post-project conditions."*

12) Photos 7 and 9 on pp A-4 and A-5 of Appendix A to the ECPA show obvious contemporary erosion problems. We are told that the sediment and runoff from the roads shown on Photo 9 will be diverted into the adjacent vineyard block to disperse flow and capture sediment and are generally told that roads at stream crossings will be covered with crushed rock for an arbitrary length of 105 m total per crossing [Trso, p.21, 4th ¶] and that "level spreaders" and various rock energy dissipaters will be constructed or reconstructed, but detail is not available to evaluate future vs. present impact mitigations. Existing rock "staging areas" and disposal sites are readily seen on contemporary aerial photography and on the photo-based ECP plate, Sheet 1 of 3, dated 6-16-06. However, the present existing rock disposal areas as of 12-27-2006 do not appear to be strategically located to capture sediment, even if they could despite their very porous and permeable nature. Martin Trso includes helpful photos in his Appendix F (pp 68-70) of what he considers effective capture and dispersion rock structures, but does not identify their locations or numbers of occurrences. Thus, it is difficult to identify the volumetric sediment or runoff mitigation contributions of modifications or repairs to facilities that were permitted under prior ECPAs.

13) The effectiveness of the proposed stone disposal berms, turn-arounds, and basins is in doubt. These features are to be designed to pass water but to slow its passage so that sediment is trapped. Maintenance is necessary to remove the interstitial sediment and maintain the effectiveness of these features, but such maintenance is difficult if not impossible. Trso in Appendix F (pp. 68-70) provides photographs that include a porous sediment settling basin (Fig 16) and an existing rock berm (Fig. 17). The settling basins clearly trap coarser sediment fractions but pass suspended sediment in the silt and clay sized fractions that are exposed by the ripping and stone removal for site preparation. The "existing rock berm" looks like those seen in the aerial photos around most vineyard blocks and is in no way effective to trap more than a fraction of sediment delivered to it. This is the kind of feature that either plugs up or passes sediment easily and cannot be maintained as permeable in large storms.

14) Trso includes photos of two rock-walled basins (Figs 16 and 18, App. F, p. F-70) and PPI Engineering's Detail Sheet 3-10 under "Rock Energy

Dissipator/Slope Protection" shows one such feature, but there is no assessment or information that would allow one to assess effectiveness of the proposed or constructed features. Because on-site sediment yield of the vineyard blocks and various kinds of unsurfaced roads is not to be the focus of this EIR to insure zero increase in sediment yield to Rector Reservoir, it is the effectiveness of the various sediment capture facilities that ultimately determine accuracy of the Trso predictions.

15) Rock repositories and rock walls can have only limited storage capability and cannot be maintained or cleaned of accumulated sediment. The structures illustrated by Trso on page F-70 (road settling basins?) can be effective and can be excavated to maintain capacity. But what design criteria are used for these sediment traps? Silt and clay will largely pass through the stone structures so it is the sand and gravel fractions that will be captured. Silt and clay are apparently to be captured by diverting road runoff into vineyard blocks or by diverting sheetflow onto roads (road alluvial fans?). The detailed sediment yield calculations presented in the EIR on pp. 4.4-19/20 and the generalized calculations presented by Trso, p. 31, Table 21 and Section 5.4.4 all present annual average data. Sediment is **not** produced or moved in "annual averages". While the sediment capture and dispersal schemes that are proposed may work for average annual volumes, erosion and sediment yield is episodic.

16) For example, using the Universal Soil Loss Equation calculations presented in the EIR where an allowable converted vineyard block may have a proposed 2-to-4 ton per year per acre average yield for sediment; that yield will generally occur only in big storms of 10-20 cumulative inches over a period of three consecutive days. Such storms locally have a 20-year or longer return frequency. Thus, for a 15-acre vineyard block, every 20 years we may have on the order of 900 tons of sediment added to the runoff to create 1500 to 1800 tons of mud. At a bulk density of 2 tons per cubic yard, 800 cubic yards of mud must be captured from that vineyard block. Such volumes would overwhelm the structures illustrated by Trso on p. F-70 and would reasonably pass on downslope to Rector Reservoir.

17) A serious omission in the current ECPA is any analysis of the erosion history, failures of past erosion control efforts, and review of the frequency-magnitude-duration of storms that would test past ECPAs. We can see from the photographs in the current ECPA and Appendix F that road-related sheet erosion, gullying, and rilling have occurred. We do not know if those actions contribute sediment to watercourses. Because significant erosion is not to be expected except in large storm events of about a 20-year return interval or larger magnitudes, we need to know what the site history has been for the prior ECPAs. We cannot evaluate the effectiveness of the theoretical calculations without knowing if the sites have been "tested". Because erosion has occurred in the past and because corrective measures are proposed under the current ECPA, the

storm history of the site since the first vineyards were constructed in 1996 is critically important.

18) Equally important is an assessment of how the proposed deep ripping and stone removal will affect the soil characteristics that were used in the Universal Soil Loss Equation calculations. Appendix C of the current ECPA lists the values used in the calculations that generate the 70% cover requirement for the final vineyard blocks that is mandated in the ECPA. It is important to note that the applicants have used soil erodibility (K-factor) that differs from that listed by the Napa County Soil Conservation Service (NRCS) [see http://www.ca.nrcs.usda.gov/mlra02/napa/rusletbl.html#Kf]. The values given for the fine-grained fraction (less than 2 mm) of both soil units on the Stagecoach site is 0.37 while applicants have used 0.15 in the listed calculations in Appendix C. The Soil Survey notes that: "Rocks and rock fragments in the soil profile are not considered. Values for Kf range from .10 to .64". The higher the value, the more susceptible to sheet and rill erosion. The very low value choice of 0.15 would only be applicable to the Cortina Very Gravelly Loam on 5% slopes in Napa County. Thus, the applicants have erred by choosing a value that reflects a soil that is less susceptible to erosion after their deep ripping, rather than more susceptible. This is all the more reason to critically evaluate the effectiveness of past ECPAs but that is not part of this EIR.

19) ***Prior ECPAs***: To assess the effectiveness of prior ECPAs on the parcel covered by the present ECPA, I have reviewed each to try to determine where past erosion control structures and activities have succeeded and where they have failed.

20) The first 51-acre conversion (**95024-ECPA**) does note trees in sites to be cleared for vineyards and calls for straw bales or silt fences at the ends of vine rows for erosion control. The ECP plate dated 7-19-95 does show vineyard avenues as part of the ECPA and calls out setbacks from what has been termed a "blue-line stream per USGS Quad". Continuous vineyards now cross that feature. No drainage structures are proposed for that first ECPA. In the current ECPA, drainage structures (ditches, stone drop inlets, and several storm drains) are now shown. These must have been added after the approval of the early ECPA. They are not proposed as part of the contemporary ECPA. Maintenance of the straw bales and silt fences is not discussed in this ECPA.

21) The second 324-acre conversion ECPA (**95374-ECPA**) acknowledges additions to the prior 95024-ECPA increasing its area to 74 acres but changing the area of applicability of the former ECPA from 51 to 46.2 acres. This is apparently accomplished by redefining the vineyards of #95024 to exclude avenues. The #95374 ECPA calls for in–vineyard diversion ditches, rock level spreaders, rock sediment traps, plastic storm drain pipes and diversion ditches in addition to straw bales and silt fences.

Waterbars are called for on some vineyard avenues. Design of some of the vineyard avenues are specified on the Plan. This ECPA contains explicit maintenance requirements (Section 9, p. SP-6). Among the requirements, are monitoring during the rainy season and "necessary repairs and/or maintenance are [to be] performed immediately".

22) This #95374 ECPA does call for erosion control features that appear to be proposed for renewal or revision in the current 2006 ECPA. A V-ditch and rock sediment trap shown between blocks P and Q of #95374 is now proposed to be removed and replaced in the current Block P3 with the addition of inlet structures and new corrugated perforated plastic pipe. Proposed block E-3 in the contemporary ECPA is associated with reconstruction of a rock lined ditch and rock berm in Block E of #95374.

23) The third prior ECPA (**96586-ECPA**) proposed 116 acres of new vineyards in two phases in 1997. This ECPA includes "field revisions" to the previous #95374. At least part of this addendum to the previous plan addresses "overclearing" done by the owner (see final paragraph of May 12, 1997 letter to Arvin Chaudhary from Dave Steiner). This ECPA acknowledges realignment and extension of vineyard access roads. This ECPA builds upon the specified erosion control structures of the prior plan with the addition of rock energy dissipaters. As with prior Plans, no accommodations are proposed for increased stormwater because the TR-55 storm runoff calculations using identical values before and after conversion predict no changes in runoff.

24) The ECP Plate for this #96586 Plan primarily calls for new roads and realigned roads in the south west and west sides of the area, and energy dissipater rock structures to accommodate sediment and runoff from the proposed new vineyard Block E of this ECPA. These structures are being "reconstructed" per the contemporary ECPA in one area. Modifications to this 96586 ECPA in 1998 called for installation of drop inlets, pipelines and energy dissipaters in and adjacent to Block E. Reasons for the modifications are not given.

25) *Postscript*:

An important criticism is that the EIR and its supporting documents, under one "cover" on the Napa County website, is poorly organized and very difficult to effectively review. A fundamental failing is that the Adobe Postscript version of the documents on the County website is locked. One cannot copy material from the document into a critique or index apparent contradictions as the Adobe Postscript software is designed to facilitate. The full document is 698 pages long and includes many sections with differing paginations. Because the various parts of the document were apparently converted to Postscript at different times before posting to the County website, one cannot even search through the un-indexed material beyond page 216 out of 698. While I appreciate that a report of this magnitude with so many authors may have been difficult to edit, it is evident from the many contradictions and

inconsistencies that even the applicants may not know what is proposed or why. For example, Trso's discussion of the WinTR-55 runoff calculations (Trso, p 18, Sect 4.3) lists the input variables for the model and includes rocked roads but no other roads. The total areas listed imply that dirt roads and avenues are included in "chaparral open space" or "existing vineyards" but it is these unsurfaced roads that contribute the most sediment and runoff to the watersheds and that are critical for evaluation. We simply cannot assess the areas of proposed and past conversion. The lack of organization effectively renders this document as unusable for environmental review by the public and presumably by the County.

Conclusions:

The questions posed for this report are answered as follows:

We *cannot really tell* how the proposed ECPA justified conversion of 107 acres of oak-chaparral woodland to vineyard without increasing either sediment yield or peak flow yields from the *combined* Stagecoach parcels. They claim to have accomplished this by reducing sediment yield delivered to watercourses while simultaneously not increasing peak storm flow. But we are given no frequency-magnitude-duration storm history from which to assess past management practices and no tabulation or assessment of past successes or failures of proposed management structures or strategies.

Proposed vineyard expansion impacts *are* being partly mitigated by upgrading and/or repairing existing vineyard erosion and runoff problems that were regulated under earlier on-site ECPs.

Applicants *have not* demonstrated that new ECP practices will adequately compensate for past failures and meet stated standards and goals for erosion control, sediment yield, and storm runoff. They present vague non-quantitative guidelines and requirements such as sub-figure 3/2 of Detail Sheet 3-10 calling for removal of past structures and "dispersal through existing vineyard" without any discussion of why the prior structures did not work and how the proposed solutions will correct past failings.

Citations:

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Nachtergaele, J.;Poesen, J.;Wesemael, B. van;Poesen, J.;Wesemael, B. van, 1998, Gravel mulching in Southern Switzerland. Soil & Tillage Research, 46 (1-2) 51-59,

NRCS, 2000, Technical Guide Section II, Soil Survey of Napa County. USDA.

Nyssen, J., Descheemaeker, K., Nigussie Haregeweyn, Mitiku Haile, Deckers, J., Poesen, J. (eds.), 2007. Lessons learnt from 10 years research on soil erosion and soil and water conservation in Tigray. Tigray Livelihood Papers No. 7, Mekelle: Zala-Daget Project, Mekelle University, K.U.Leuven, Relief Society of Tigray, Africamuseum and Tigray Bureau of Agriculture and Rural Development, 53 p. ISBN 978-90-8826-027-8. [available from jan.nyssen@geo.kuleuven.ac.be)]

Respectfully Submitted

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