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1

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SANTA ROSA SUBREGIONAL WASTEWATER TREATMENT EXPANSION

DRAFT EIR / EIS WEST COUNTY ALTERNATIVES

SUBMITTED ON BEHALF OF FRIENDS OF THE ESTEROS

ANTICIPATED SEVERE EROSIONAL / SEDIMENTATION IMPACTS OF THE PROPOSED RESERVOIRS AND ASSOCIATED IRRIGATION

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INTRODUCTION

The slopes of the tributaries of Estero Americano are predominantly underlain by the weak, soft, highly erodable siltstones, sandy siltstones and claystones of the Pliocene Wilson Grove formation. Stratigraphically underlying the Wilson Grove formation and often in fault contact with it, is the intensely fractured and deformed Cretaceous Franciscan group. The Two Rock site, tributary to Stemple Creek and Estero de San Antonio, is underlain by the weak, very unstable melange of the Franciscan group as well as by the Wilson Grove formations. 001

Upland erosional surfaces, consisting of remnants of wave cut marine terraces, progressively rise eastward to between 400' to 600' above sea level. The topography is characterized by steep, relatively uniform slopes (25% to 40%) which change suddenly at their base into gently-sloping alluviated valleys. At their heads, tributary streams are typically deeply incised into bedrock, while their mid and lower reaches consist of bedrock valleys buried by deposits of colluvium/alluvium derived and transported by a wide variety of slope-erosion processes. The lower

portions of the slopes are buried by colluvial aprons consisting of material removed and transported from the adjacent steep slopes by a variety of slope-erosion processes, including soil creep, rills, piping, sheet wash, gullying, debris flows and surficial and deeper-seated landslides. At the mouths of ephemeral third-order drainages, debris fans, often incised, are common. The apices of these deposits extend upslope and bury the lower portions of the third-order bedrock valleys. 001 (cont.)

EXECUTIVE SUMMARY

1] Erosion Processes 002

The draft EIR / EIS is seriously defective in assessing the presently active and project-related erosion processes and rates. It only addresses sheet erosion, a relatively minor process on properly-managed, grass-covered grazing land. The U.S.L.E. ("Universal Soil Loss Equation") is highly subjective in application to other than tilled agricultural land. The EIR /EIS and the USLE methodology totally ignore the important role in this landscape of soil creep, rilling, gullying, debris flows and a wide variety in type and size of mass wasting processes.

Although the draft EIR/ EIS occasionally and sporadically cite "landslides" and "erosion gullies", its treatment is inadequate in recognition, scale, resolution, and accuracy.

2] Direct Effects of Reservoir Filling / Drawdown. 003

The EIR / EIS fails to address the direct effects of filling and drawdown of the proposed reservoirs on the wide variety of erosion processes present in the watershed.

As pore pressures (ground water levels) are raised, the strength of soils and bedrock are significantly reduced, leading to new landslides and the acceleration of dormant landslides. On drawdown of the reservoir, seepage pressures directed toward the falling water levels in the reservoir will further decrease slope stability by adding to the driving forces.

The increase in erosion rates will not only destroy site productivity by loss of soil, but will also permanently reduce reservoir storage capacity by the accumulation of silt. Once slides are triggered, they will progressively increase the area effected in an upslope direction, and also expand laterally (parallel to the reservoir shores), increasing the area impacted by accelerated mass erosion. The active landslide zones will also expand laterally, parallel to the reservoir shores. 003 (cont.)

The EIR / EIS has failed to address both the reduction in static slope stability and dynamic slope stability. Earthquakes may very likely trigger major, deep-seated landslides on slopes subjected to artificially-elevated pore pressures. The very fact that landslides are already common in the area strongly suggests that only marginal factors of safety exist in the case of presently "stable" slopes. The San Andreas Fault is only six to ten miles to the west. 004

The active Rogers Creek fault is approximately nine miles to the northeast. Several other presently dormant faults in the vicinity, notably the Bloomfield fault, may be subject to reactivation in the event of major stresses developing in the zone between the San Andreas and the Rogers Creek strike slip faults.

3] Indirect Effects of Reservoir Construction and Operation and Mass Erosion of Slope Stability Beyond the Immediate Borders of the Reservoirs.

The filling of the proposed reservoirs will lead to a significant rise in ground water levels (phreatic surfaces) over broad areas as water seeps into soil and rock fractures. This fact alone will necessarily lead to the propagation of a front of instability over broad areas. Major increases in mass erosion and sedimentation will occur. Seepage paths will be directed along paths approximately parallel to the ground surfaces, further destabilizing slopes. Piping (subsurface erosion) can be expected to significantly increase in silt-rich soils and along colluvium choked third-order tributaries, particularly on drawdown of the reservoirs. 005 006

None of these factors and impacts are discussed and analyzed in the EIR / EIS.

4] Direct Effects of Irrigation of Slope Areas with Wastewater. 007

The present morphology of the landscape represents an expression of a delicate dynamic equilibrium adjusted to the present climate and rainfall regime.

Increasing the degree of saturation of soil and fractured rock masses by artificially-induced change in rates and quantities of water infiltration will necessarily effect both the finite pore water pressure levels and consequently the rates of erosion by mass wasting. The artificial raising of water tables during the ordinarily dry summer months will decrease the capacity of the soil and rock masses to receive additional recharge at the onset of the normal rain season. The ground, in effect, will be closer to saturation as the normal winter rainstorms arrive, decreasing the rate of infiltration compared to existing conditions.

This, without doubt, will lead to a significant increase in downstream flood peaks and a more sudden rise in the rate of discharge compared to the present condition.

An increase in the magnitude and frequency of flood peaks will necessarily lead to a marked increase in channel bank and bed erosion along second order tributaries and the main Americano Creek and the Estero Americano. The same conditions and circumstances apply to the Stemple Creek watershed and to the Estero de San Antonio.

5] Cumulative Impacts. 008

The EIR / EIS fails to address the problem of cumulative impacts arising from erosion / sedimentation effects of the proposed actions added to the agricultural abuses of the 1880's - 1920's. The severe erosion / sedimentation damage already suffered by Americano Creek and Estero Americano and by Stemple Creek and Estero de San Antonio will be further severely exacerbated by the proposed actions.

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5