Chirila, Myra E. Item 35 10-25-16

From: Amber Kemble <deltalawyers@gmail.com>
Sent: Tuesday, October 25, 2016 1:21 PM
To: Seifert, Linda J.; Hannigan, Erin; Thomson, Skip; Spering, Jim P.; Vasquez, John M.; CAO-Clerk; Laughlin, James W.; Amanda Monchamp
Subject: Middle Green Valley Specific Plan Comment Letter
Attachments: EXH. A.Thomasson, plate 1.pdf; EXH. B.Kamman.2013.pdf; Exhibit C-8-11-14.Kamman.pdf; EXH. D.RICH.2014.pdf; LTR2BOS.10-25-16.AK.pdf

Dear Solano County Board of Supervisors:

I attach a comment letter (with Exhibits A-D) for the matter on today's agenda item re: Middle Green Valley Specific Plan Project - Second Revised Re-Circulated Draft Environmental Impact Report (SCH# 2009062048).

Please incorporate my letter and its exhibits into the Record of Proceedings for the Middle Green Valley Specific Plan matter.

Thank you,
Amber Kemble
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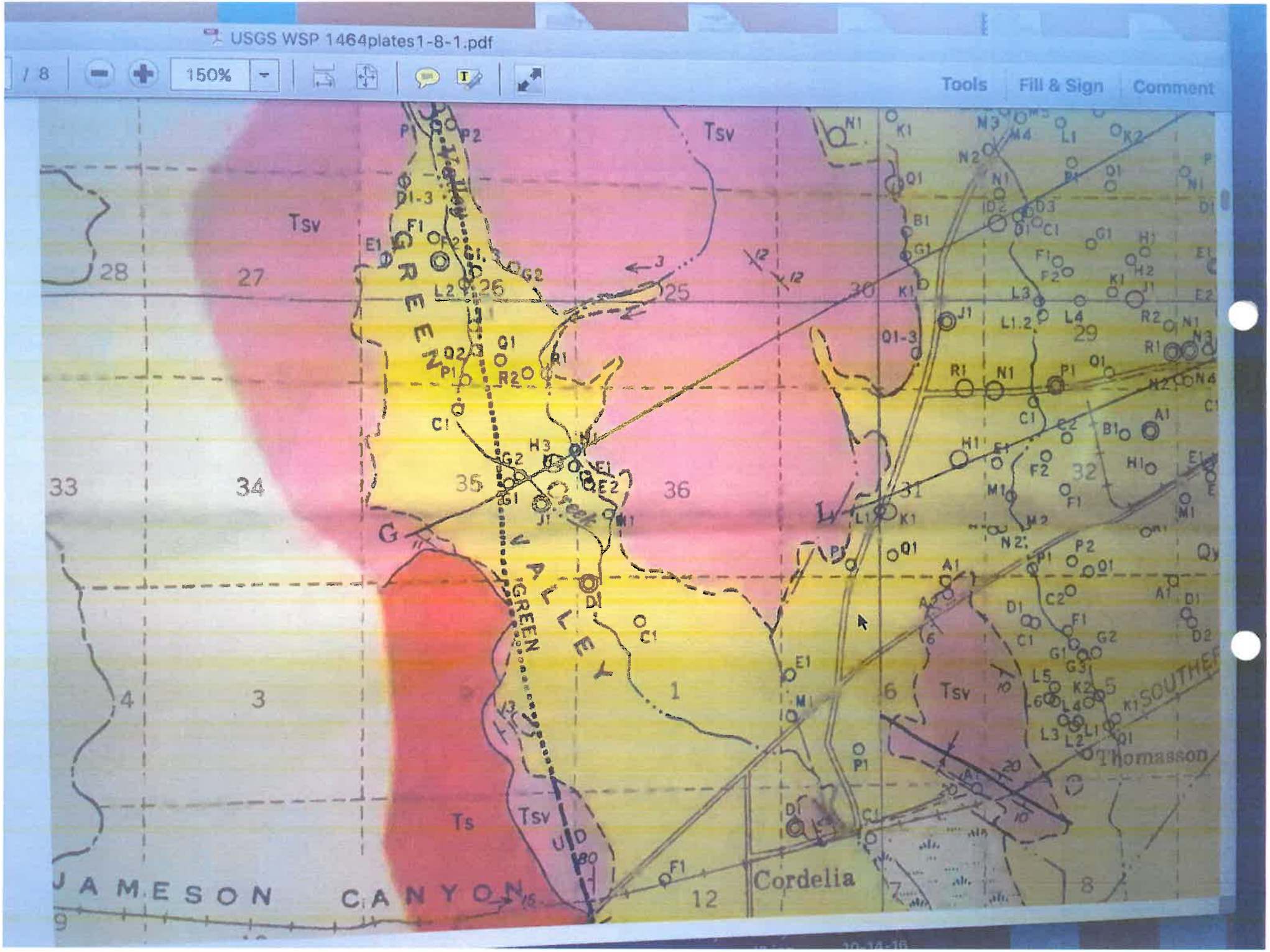
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October 10, 2013

Matt Walsh
Solano County Department of Resource Management
Planning Services Division
675 Texas Street, Suite 5500
Fairfield, CA 94533
Sent via Email: MWalsh@solanocounty.com

Subject: Review of Middle Green Valley Specific Plan Project
Recirculated Draft Environmental Impact Report
SCH#: 2009062048

Dear Mr. Walsh,

On behalf of the Law Office of Amber Kemble, I have reviewed the Middle Green Valley Specific Plan Project Recirculated Draft Environmental Impact Report (DEIR) (SCH#: 2009062048), and associated Water Supply Assessment[1] (WSA) prepared for Solano County, Department of Resource Management and dated August 2013. Because the WSA relies heavily on local area groundwater information contained in a 1960 U.S. Geological Survey report, I have also reviewed this report prepared by Thomasson et al. (1960)[2]. The purpose of this letter is to provide you with an independent opinion regarding potential significant hydrologic impacts to the environment associated with the proposed project.

I have over twenty five years of technical and consulting experience in the fields of geology, hydrology, and hydrogeology. I have been providing professional hydrology services in California since 1991 and routinely manage projects in the areas of surface- and groundwater hydrology, water supply, water quality assessments, and water resources management. Most of my work is located in the Coast Range watersheds of California, including the Northern and Southern San Francisco Bay Counties. My areas of expertise include: characterizing and modeling watershed-scale hydrologic and geomorphic processes; evaluating surface- and ground-water resources/quality and their interaction; assessing hydrologic, geomorphic, and water quality responses to land-use changes in watersheds and causes of stream channel instability; and designing and

[1] Luhdorff & Scalmanini, 2013, Water supply assessment – Middle Green Valley Project, Solano County, California. Prepared for Solano County, May, 69p.

[2] Thomasson, H.G., Jr., Olmsted, F.H., and LeRoux, E.F., 1960, Geology, water resources and usable ground-water storage capacity of part of Solano County, California. Geological Survey Water-Supply Paper 1464, United States Geological Survey, prepared in cooperation with the U.S. Bureau of Reclamation, 711 p.

implementing field investigations characterizing surface and subsurface hydrologic and water quality conditions. I co-own and operate the hydrology and engineering consulting firm Kamman Hydrology & Engineering, Inc. in San Rafael, California (established in 1997). I earned a Master of Science in Geology, specializing in Sedimentology and Hydrogeology as well as an A.B. in Geology from Miami University, Oxford, Ohio. I am a Certified Hydrogeologist (CHg) and a registered Professional Geologist (PG) in the State of California.

Based on my review of the DEIR and supporting technical documents, it is my professional opinion that the DEIR and WSA do not adequately demonstrate that there is sufficient water resources to support the proposed project and that the project may pose a significant impact to the environment. The rationale for these opinions is provided below.

1.0 Incomplete WSA Associated with SID Deliveries

Under water supply Option A, the Project will require increased deliveries from the City of Fairfield. A WSA was prepared for Option A to address this increased water supply demand. Under water supply Option B, the Project will require increased supply from local groundwater wells and the Solano Irrigation District (SID). A WSA was prepared to address this increased potable groundwater supply demand.

The Project proposes a two-fold increase in the agricultural (non-potable) and domestic (potable) demands for water. Existing SID demands are estimated at 160 acre-feet per year (AFY) while the project will increase the agricultural demand for non-potable water by 320 AFY resulting in an expected total SID annual supply of 480 AFY. This increase is assumed to be satisfied by increased SID deliveries. The rationale presented in the WSA and DEIR that this increase is feasible is based on the fact that historic SID agricultural deliveries have been met during 99% to 100% of the time. Therefore, the DEIR assumes that even with a three-fold increase in demand, the SID will likely be able to provide deliveries to satisfy this increased demand. The increase alone in agricultural water demands on the SID represent around one-quarter of the full project water demands. However, there is no WSA[3] demonstrating that adequate SID supplies exist to satisfy this increase in future water demands under any conditions stipulated for analysis under SB 1610. Therefore, I can only conclude that the Project WSA is incomplete as it does not demonstrate or document the feasibility and sufficiency of increased water supply from the SID. Nor does it address the potential water quality impacts from this large percentage of imported water.

2.0 Inconsistent and Non-conservative Domestic/Residential Water Demands

Existing residential water demands in the Plan Area for potable water are estimated at 110 AFY (90 AFY supplied by local groundwater pumping and 20 AFY supplied by SID deliveries). Proposed project residential water demands are estimated to increase by 186

[3] The specific requirements and technical information necessary for WSA's under SB 1610 are detailed in both the DEIR and Luhdorff & Scalmanini WSA.

AFY for domestic use and 54 AFY for landscape irrigation (total increase in project residential water demand of 240 AFY). The 186 AFY domestic increase is proposed to be satisfied by increased local groundwater pumping while the increased 54 AFY residential irrigation demand will be satisfied by project reclaimed water.

Of the 186 AFY increased demand for potable water, 136 AFY will be used to satisfy the residential unit potable water demand. The remaining 50 AFY of total potable water demands are for a variety of other facilities including community center, meeting hall, school, etc. (see Table 5-1 of WSA for complete listing). Combining the 136 AFY residential unit demand with the 54 AFY for residential irrigation sums to 190 AFY of residential unit demand. Assuming 500 residential units, this equates to an annual residential demand of 0.38 AFY per unit (see Table 5-1 of WSA).

Pages 28 through 31 of the WSA provide a number of examples of existing residential unit water demands in the project vicinity. These documented residential unit demands (based on what was actually supplied from provider) are significantly higher than the Project residential unit demand and are summarized as follows: 1) Recent residential M&I deliveries to homes in the Plan Area range from 1.0 to 2.8 AFY (average 1.8 AFY); 2) outside of the Plan Area, recent SID deliveries averaged 0.94 AFY per unit to 254 parcels; 3) the City of Vallejo delivers 0.54 AFY per unit to 429 parcels in the Thomasson study area (north); and 4) the WSA reports (page 31) that groundwater pumping for residential use in the Thomasson study area (north/south) was calculated at 2.0 AFY per residence/residential parcel.

Although the Project proposed conservation measures will lower annual residential water demands, I am skeptical that demands can be reduced to the degree claimed/anticipated in the DEIR. It would seem prudent and responsible that residential demand estimates used in the WSA should reflect more conservative demand estimates, based on actual recent water deliveries, not speculative figures for which no derivation is provided/proven.

3.0 Incorrect Assumption that Annual Groundwater Demands Won't Vary

The WSA assumes that annual groundwater demands (Table 16.6 of DEIR) won't vary from year to year based on wet and dry weather patterns. As presented above, the WSA states (page 28) that recent annual residential M&I deliveries to homes in the Plan Area vary from 1.0 to 2.8 AFY. The rationale for this variation is also provided in the WSA, which states, "*This year-to-year fluctuation is likely related to dry-year versus wet-year demand, where a dry year (such as 2007) leads to an increase in demand for residential landscaping needs, and a wet year leads to a corresponding decrease in demand.*" The DEIR and WSA provide no justification for why this trend won't continue, which suggests that annual variability groundwater demands are likely to continue.

Comparison of available annual groundwater pumping volumes for the Thomasson study area against annual rainfall totals (1945-1950; see Table 47 in Thomasson et al., 1960) indicate an inverse relationship between rainfall and pumping, with highest pumping rates occurring during dryer years and less groundwater pumping during relatively wetter

years (see also Table 4-1 in WSA). This information also suggests that higher demands are warranted during relatively dry year-types, which would translate into the need for increased groundwater pumping. Therefore, WSA water demands should similarly be higher during dry year analysis periods and the WSA should be deemed inaccurate without accounting for this documented condition.

4.0 Unsubstantiated Assumption that Groundwater Pumping Had or Will Have No Adverse Impact on the Environment

The WSA/DEIR state that groundwater levels are "stable" within the Plan Area. These documents also assume that the historic pumping rates did not impart adverse impacts on the environment. The depth to groundwater in the Plan Area is characterized as shallow, especially along creek corridors that aid in winter recharge. However, groundwater levels were commonly lowered 10- to 20-feet seasonally in response to groundwater pumping during the dry season. The WSA/DEIR characterization of "stable" water table conditions is based on the phenomenon that winter recharge is sufficient to recharge the aquifers and restore the seasonally depleted water levels back to the the same elevation each year.

The effect of groundwater pumping logically artificially accelerates the dewatering of areas such as creeks and wetlands that lie within the vicinity of the wells and likely host aquatic organisms and water dependent vegetation. It is my experience that dewatering of shallow aquifers adversely impacts sensitive and endangered species such as salmonids, Western Pond Turtle, California red-legged frog and California Tiger salamander. Therefore, the careful sighting of groundwater extraction wells is critical in being able to evaluate impacts from Project pumping on the environment. Although significant and likely impacts from groundwater pumping are acknowledged in the DEIR, the DEIR proposes to delay the sighting and evaluation of potential adverse impacts from groundwater pumping as a mitigation measure (page 16-3). However, based on descriptions of the aquifer conditions underlying the Plan Area, it is not unreasonable to assume that a majority of Area and existing environment may be susceptible to potential adverse impacts from groundwater pumping (e.g., well interference, dewatering creeks and wetlands, poor aquifer conditions limiting well yields, etc.). Thus, I recommend that the WSA and DEIR must include a feasibility assessment that includes a general screening to identify suitable well locations, compatible with existing/future land-use, water supply facilities and within a favorable hydrogeologic setting. This assessment would take into account potential impacts to existing wells and surface water features. Such an assessment should also identify and evaluate sustainable yields from near-by adjacent wells to better evaluate the ability to attain the desired supplies. This is especially prudent in light of the conclusions presented in the next section.

5.0 Unsubstantiated Derivation of Safe Groundwater Extraction Rate

The project proposes that an annual groundwater pumping rate of 525 AFY or greater is safe and sustainable over the long-term. This rate is derived from a historic (1949) maximum pumping rate of 1400 AFY from the cumulative well extractions within the

entire 2400-acre Thomasson study area.[4] What is not presented in the DEIR, WSA or Thomasson et al. (1960) is the distribution and pumping rates of the wells within the Thomasson study area that contributed this total volume. In summary, the WSA and DEIR do not present relevant empirical data that reflects the Plan Area groundwater conditions, nor demonstrates that an annual pumping rate of 1400 AFY is feasible, sustainable or safe.

Thomasson indicates that groundwater yields are higher in the northern portion of the 2400-acre study area than in the south. Thomasson et al. state the following. "*The alluvium in storage unit E2, Green Valley, is underlain by the Sonoma volcanics throughout all but the southwestern part where the volcanics may be missing in places and the alluvium may reset directly on rocks of Eocene age. Some of the storage capacity in the northern part of Green Valley, the part underlain by the volcanics, probably could be utilized but at very substantial cost for wells and pumping power. On the other hand, it is doubtful that any material part of the storage capacity of the southern part could be utilized effectively because of the tight character of the underlying older rocks and the probably poor quality of the deeper water.*"

If the majority of the total water pumped in 1949 came from the higher producing wells in the northern part of the study area, it would be incorrect to apply these types of yields to the southern part of the Thomasson study area. In short, there appears to be a geographic distribution of aquifer that allow higher pumping yields to the north and lower supply to the south. This raises the concern that the relatively high sustainable yield proposed by the Project is biased by a higher proportion of the 1400-AFY coming from wells in the northern Thomasson study area and applying this anticipated yield would be unreasonable in the southern Thomasson study area. This raises the question as to what the sustainable well yields would be from the centrally located 900-acre project area. It does not appear that the WSA has addressed that desired groundwater yields and supply are truly available within the Plan Area, but uses a potentially biased maximum annual yield estimate that may be unrealistic to meet proposed demands. What I learned from review of project documents is that there is significant spatial variability in underlying aquifer characteristics, which results in stated spatial variability in well yields, available groundwater storage, sources of groundwater recharge (e.g., creeks and groundwater inflow via the Sonoma Volcanics) and water table declines. Again, this spatial variability in groundwater conditions requires more focused assessment of available resources within the Plan Area.

Other data provided in the WSA and the DEIR (e.g. the driller logs and hydrographs in Figures 4-3 and 4-4 of the WSA) do not provide the relevant and missing data from Thomasson et al. that is necessary to analyze the safe yield of the aquifer. While well completion reports can provide basic information for analysis, the information from the well completion reports on page 16-3 of the DEIR are inadequate in providing information of sustainable safe yields. Additionally, site specific aquifer tests are

[4] It is my understanding that these pumping rates are based on interpretation of power consumption records. Although this is a standard method to derive historic pumping volumes, there is considerable uncertainty in the accuracy of actual pumping rates using this method.

necessary to analyze water availability in the Green Valley aquifer, which shows significant spatial variability. Similarly, the information disclosed from the Drillers' logs on page 16-4 is incomplete because it omits total water pumped. The County must disclose and analyze more empirical data to draw well informed conclusions as to the potential yield of the aquifer and sustainable/safe supply rates and volumes.

Although the WSA authors conclude that groundwater extractions of 1400 AFY are safe and sustainable, Thomasson et al. was not able to come to the same conclusion. Based on my review of the DEIR and WSA, there is no new information or relevant empirical data that shed new light on local area groundwater conditions that lead to conclusions that would lead me to deviate from those by Thomasson et al., which include, "*In summary, the usable ground-water storage capacity in the Suisun-Fairfield area is not capable of any reasonably accurate estimation from data available at this time.*" They also concluded that only a tenth to a fifth of the total capacity estimated for the area was a conservative upper limit for extraction and they go on to state, "*The development of anywhere near this amount would require the construction of many deep wells into the Sonoma volcanics and heavy pumping costs concomitant with the necessary deep pumping levels.*"

If you have any questions or wish to discuss these opinions and conclusions further, please feel free to contact me.

Sincerely,

Greg Kamman
Principal Hydrologist

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August 11, 2014

Matt Walsh
Solano County Department of Resource Management
Planning Services Division
675 Texas Street, Suite 5500
Fairfield, CA 94533
Sent via Email: MWalsh@solanocounty.com

Subject: Review of Middle Green Valley Specific Plan Project
Recirculated Draft Environmental Impact Report
SCH#: 2009062048

Dear Mr. Walsh,

On behalf of the Law Office of Amber Kemble, I have reviewed the Revised Re-circulated EIR ("RRDEIR") for the Middle Green Valley Specific Plan ("MGVSP") (SCH#: 2009062048). My review has focused on the Option B Water Supply Assessment[1] (WSA) and the Solano Irrigation District (SID) Option C WSA[2] and supporting documents. Because the Option B WSA may rely heavily on local area groundwater information contained in a 1960 U.S. Geological Survey report, I have also reviewed this report prepared by Thomasson et al. (1960)[3]. The purpose of this letter is to

[1] Luhdorff & Scalmanini, 2013, Water supply assessment – Middle Green Valley Project, Solano County, California. Prepared for Solano County, May, 69p.

[2] Summers Engineering, Inc., 2014, Water supply assessment for the Middle Green Valley Specific Plan Project. Prepared for: Solano Irrigation District, April, 10p.

[3] Thomasson, H.G., Jr., Olmsted, F.H., and LeRoux, E.F., 1960, Geology, water resources and usable ground-water storage capacity of part of Solano County, California. Geological Survey Water-Supply Paper 1464, United States Geological Survey, prepared in cooperation with the U.S. Bureau of Reclamation, 711 p.

provide you with an independent opinion regarding potential significant hydrologic impacts to the environment associated with the proposed project.

Based on my review of the RRDEIR and supporting technical documents, it is my professional opinion that the RRDEIR and supporting Option B WSA do not adequately demonstrate that there is sufficient groundwater resources to support the proposed project and that the project may pose a significant impact to the environment. In addition, I question the adequacy of the SID Option C WSA in demonstrating that there is adequate SID water supply to support the MGVSP project. The rationale for these opinions is provided below.

1.0 Inconsistent and Non-conservative Domestic/Residential Water Demands

Existing residential water demands in the Plan Area for potable water are estimated at 110 AFY (90 AFY supplied by local groundwater pumping and 20 AFY supplied by SID deliveries under Option B WSA). Proposed project residential water demands are estimated to increase by 186 AFY for domestic use and 54 AFY for landscape irrigation (total increase in project residential water demand of 240 AFY). The 186 AFY domestic increase is proposed to be satisfied by increased local groundwater pumping while the increased 54 AFY residential irrigation demand will be satisfied by project reclaimed water.

Of the 186 AFY increased demand for potable water, 136 AFY will be used to satisfy the residential unit potable water demand. The remaining 50 AFY of total potable water demands are for a variety of other facilities including community center, meeting hall, school, etc. (see Table 5-1 of Option B WSA for complete listing). Combining the 136 AFY residential unit demand with the 54 AFY for residential irrigation sums to 190 AFY of residential unit demand. Assuming 500 residential units, this equates to an annual residential demand of 0.38 AFY per unit (see Table 5-1 of Option B WSA).

Pages 28 through 31 of the Option B WSA provide a number of examples of existing residential unit water demands in the project vicinity. These documented residential unit demands (based on what was actually supplied from provider) are significantly higher than the Project residential unit demand and are summarized as follows: 1) Recent residential M&I deliveries to homes in the Plan Area range from 1.0 to 2.8 AFY (average 1.8 AFY); 2) outside of the Plan Area, recent SID deliveries averaged 0.94 AFY per unit to 254 parcels; 3) the City of Vallejo delivers 0.54 AFY per unit to 429 parcels in the Thomasson study area (north); and 4) the WSA reports (page 31) that groundwater pumping for residential use in the Thomasson study area (north/south) was calculated at 2.0 AFY per residence/residential parcel.

Although the Project proposed conservation measures will lower annual residential water demands, I am skeptical that demands can be reduced to the degree claimed/anticipated in the DEIR. It would seem prudent and responsible that residential demand estimates used in the WSA should reflect more conservative demand estimates, based on actual recent water deliveries, not speculative figures for which no derivation is provided/proven.

2.0 Incorrect Assumption that Annual Groundwater Demands Won't Vary

The Option B WSA assumes that annual groundwater demands (Table 16.6 of DEIR) won't vary from year to year based on wet and dry weather patterns. As presented above, the Option B WSA states (page 28) that recent annual residential M&I deliveries to homes in the Plan Area vary from 1.0 to 2.8 AFY. The rationale for this variation is also provided in the WSA, which states, "*This year-to-year fluctuation is likely related to dry-year versus wet-year demand, where a dry year (such as 2007) leads to an increase in demand for residential landscaping needs, and a wet year leads to a corresponding decrease in demand.*" The DEIR and Option B WSA provide no justification for why this trend won't continue, which suggests that annual variability groundwater demands are likely to continue.

Comparison of available annual groundwater pumping volumes for the Thomasson study area against annual rainfall totals (1945-1950; see Table 47 in Thomasson et al., 1960)

indicate an inverse relationship between rainfall and pumping, with highest pumping rates occurring during dryer years and less groundwater pumping during relatively wetter years (see also Table 4-1 in Option B WSA). This information also suggests that higher demands are warranted during relatively dry year-types, which would translate into the need for increased groundwater pumping. Therefore, Option B WSA water demands should similarly be higher during dry year analysis periods and the Option B WSA should be deemed inaccurate without accounting for this documented condition.

3.0 Unsubstantiated Assumption that Groundwater Pumping Had or Will Have No Adverse Impact on the Environment

The Option B WSA/DEIR state that groundwater levels are "stable" within the Plan Area. These documents also assume that the historic pumping rates did not impart adverse impacts on the environment. The depth to groundwater in the Plan Area is characterized as shallow, especially along creek corridors that aid in winter recharge. However, groundwater levels were commonly lowered 10- to 20-feet seasonally in response to groundwater pumping during the dry season. The Option B WSA/DEIR characterization of "stable" water table conditions is based on the phenomenon that winter recharge is sufficient to recharge the aquifers and restore the seasonally depleted water levels back to the the same elevation each year.

The effect of groundwater pumping logically artificially accelerates the dewatering of areas such as creeks and wetlands that lie within the vicinity of the wells and likely host aquatic organisms and water dependent vegetation. It is my experience that dewatering of shallow aquifers adversely impacts sensitive and endangered species such as salmonids, Western Pond Turtle, California red-legged frog and California Tiger salamander. Therefore, the careful sighting of groundwater extraction wells is critical in being able to evaluate impacts from Project pumping on the environment. Although significant and likely impacts from groundwater pumping are acknowledged in the DEIR, the DEIR proposes to delay the sighting and evaluation of potential adverse impacts from groundwater pumping as a mitigation measure (page 16-3). However, based on descriptions of the aquifer conditions underlying the Plan Area, it is not unreasonable to

assume that a majority of Area and existing environment may be susceptible to potential adverse impacts from groundwater pumping (e.g., well interference, dewatering creeks and wetlands, poor aquifer conditions limiting well yields, etc.). Thus, Option B WSA and DEIR must include a feasibility assessment that includes a general screening to identify suitable well locations, compatible with existing/future land-use, water supply facilities and within a favorable hydrogeologic setting. This assessment must take into account potential impacts to existing wells and surface water features. Such an assessment must also identify and evaluate sustainable yields from near-by adjacent wells to better evaluate the ability to attain the desired supplies. This is especially prudent in light of the conclusions presented in the next section.

4.0 Unsubstantiated Derivation of Safe Groundwater Extraction Rate

The project proposes that an annual groundwater pumping rate of 525 AFY or greater is safe and sustainable over the long-term. This rate is derived from a historic (1949) maximum pumping rate of 1400 AFY from the cumulative well extractions within the entire 2400-acre Thomasson study area.[4] What is not presented in the DEIR, Option B WSA or Thomasson et al. (1960) is the distribution and pumping rates of the wells within the Thomasson study area that contributed this total volume. In summary, the Option B WSA and DEIR do not present relevant empirical data that reflects the Plan Area groundwater conditions, nor demonstrates that an annual pumping rate of 1400 AFY is feasible, sustainable or safe.

Thomasson indicates that groundwater yields are higher in the northern portion of the 2400-acre study area than in the south. Thomasson et al. state the following. "*The alluvium in storage unit E2, Green Valley, is underlain by the Sonoma volcanics throughout all but the southwestern part where the volcanics may be missing in places and the alluvium may reset directly on rocks of Eocene age. Some of the storage capacity in the northern part of Green Valley, the part underlain by the volcanics, probably could be utilized but at very substantial cost for wells and pumping power. On*

[4] It is my understanding that these pumping rates are based on interpretation of power consumption records. Although this is a standard method to derive historic pumping volumes, there is considerable uncertainty in the accuracy of actual pumping rates using this method.

the other hand, it is doubtful that any material part of the storage capacity of the southern part could be utilized effectively because of the tight character of the underlying older rocks and the probably poor quality of the deeper water."

If the majority of the total water pumped in 1949 came from the higher producing wells in the northern part of the study area, it would be incorrect to apply these types of yields to the southern part of the Thomasson study area. In short, there appears to be a geographic distribution of aquifer that allow higher pumping yields to the north and lower supply to the south. This raises the concern that the relatively high sustainable yield proposed by the Project is biased by a higher proportion of the 1400-AFY coming from wells in the northern Thomasson study area and applying this anticipated yield would be unreasonable in the southern Thomasson study area. This raises the question as to what the sustainable well yields would be from the centrally located 900-acre project area. It does not appear that the Option B WSA has addressed that desired groundwater yields and supply are truly available within the Plan Area, but uses a potentially biased maximum annual yield estimate that may be unrealistic to meet proposed demands. What I learned from review of project documents is that there is significant spatial variability in underlying aquifer characteristics, which results in stated spatial variability in well yields, available groundwater storage, sources of groundwater recharge (e.g., creeks and groundwater inflow via the Sonoma Volcanics) and water table declines. Again, this spatial variability in groundwater conditions requires more focused assessment of available resources within the Plan Area.

Other data provided in the Option B WSA and the DEIR (e.g. the driller logs and hydrographs in Figures 4-3 and 4-4 of the WSA) do not provide the relevant and missing data from Thomasson et al. that is necessary to analyze the safe yield of the aquifer. While well completion reports can provide basic information for analysis, the information from the well completion reports on page 16-3 of the DEIR are inadequate in providing information of sustainable safe yields. Additionally, site specific aquifer tests are necessary to analyze water availability in the Green Valley aquifer, which shows significant spatial variability. Similarly, the information disclosed from the Drillers' logs

on page 16-4 is incomplete because it omits total water pumped. The County must disclose and analyze more empirical data to draw well informed conclusions as to the potential yield of the aquifer and sustainable/safe supply rates and volumes.

Although the Option B WSA authors conclude that groundwater extractions of 1400 AFY are safe and sustainable, Thomasson et al. was not able to come to the same conclusion. Based on my review of the DEIR and Option B WSA, there is no new information or relevant empirical data that shed new light on local area groundwater conditions that lead to conclusions that would lead me to deviate from those by Thomasson et al., which include, "*In summary, the usable ground-water storage capacity in the Suisun-Fairfield area is not capable of any reasonably accurate estimation from data available at this time.*" They also concluded that only a tenth to a fifth of the total capacity estimated for the area was a conservative upper limit for extraction and they go on to state, "*The development of anywhere near this amount would require the construction of many deep wells into the Sonoma volcanics and heavy pumping costs concomitant with the necessary deep pumping levels.*"

5.0 Adequacy of Option C WSA (SID Surface Water Supply)

The Option C WSA assumes the Solano Irrigation District (SID) would provide water to satisfy the MGVSP project demands. In reviewing the SID's Option C WSA, it appears the WSA does not satisfy the requirements of a WSA preparation as set forth in Water Code Section 10910. The following points are the basis for this determination.

a) The Option C (SID) WSA includes a component of groundwater supply in quantifying SID water supplies. The location and ownership/control over these wells is not discussed. No thorough assessment of the potential impacts from groundwater pumping is provided in the SID WSA. For example, what is the dry year safe yield from available wells? What are the potential impacts from long-term pumping during various year-types? The lack of this analysis on groundwater supplies fails to comply with the Water Code's water supply assessment requirements. Additionally, there may be potentially significant

impacts associated with pumping the municipal supply from such wells, as is proposed by the WSA, such as draw down of neighboring wells, or draw down of neighboring creeks.

b) SID has allocated 141,000-AF supply from Solano Project during minimum, average and maximum year types. This supply value does not to change based on water year-type. However, actual water deliveries stated on Table 1 indicate considerable variability, likely due to water year type conditions, many years falling well below 141,000-AF. How can the SID justify they will receive their full 141,000-AF allocation during all year types especially during prolonged drought periods when there is insufficient carryover storage to satisfy potential deficits? Where is the long-term analysis and accounting during multi-year droughts to demonstrate that there is sufficient carryover storage to meet demands?

c) The water budget presented in Table 4 indicates a deficiency of supply in meeting "maximum scenario type" periods. What types of year types (e.g., dry, normal, wet…) does this represent? What is the frequency of occurrence of such year types? Doesn't this deficiency indicate an inadequate supply to meet project demands?

d) During years of water supply deficiency, the SID indicates that they can rely on carryover storage from Lake Berryessa to meet needed supply. However, under Section 6.2 of the WSA, the PID indicates that there are times during prolonged drought when there is insufficient carryover storage to meet demands. This section indicates that there is a "Drought Measures and Water Allocation Agreement" that calls of mandatory curtailment of Solano Project water. However, where is the analysis that demonstrates that this curtailment will offset the imbalance between available supply and demand? What happens during multi-year dry periods when there is not sufficient carryover storage to meet demands. Section 6.1 of the WSA indicates that the SID and SCWA have created

a 15,000-AF "Emergency Water Pool" in response to drought periods. However, even if the SID were to receive 100% of this resource, they would still be short in meeting the total 17,100-AF "Maximum" year supply deficit indicated in Table 4.

e) The water budget analysis in Table 4 indicates that there is an excess of 6403-AF supply under an Average scenario type. This equates to 4% of the total available supply and represents a very narrow margin for error. This represents virtually no Factor of Safety for long-term planning. If groundwater supply estimates are eliminated from water budgets (Tables 3 and 4), water availability excess/deficit are reduced by 5000-AF. This leaves only 1403-AF (vs. 6403-AF) of excess supply under "Average" scenario types (see Table 4), or less than 1% margin of error. This is an insufficient margin on which to base a new municipal water supply. How reliable are the SID groundwater resources and where is the analysis to demonstrate that they will be reliable over the long-term? How accurate are water budget estimates – could the uncertainty associated with estimates create supply deficits during an Average scenario type?

f) Except for evapotranspiration, the water supply and all demands estimates presented in Table 3 and 4 are not derived from statistical analysis of year type-driven variables or conditions. What is meant by Minimum, Average, and Maximum scenario types? Are all demands and supplies categorized by scenario consistent? What sort of year-types do these scenarios represent? A more standard approach would be to develop water budgets based on "normal, *single dry, and multiple dry water years during a 20-year projection*" periods.

g) Appendix F of the DEIR includes the following statement. *"Because SID does not have water treatment facilities, SID surface water would be treated at the City of Fairfield treatment plant(s) to meet safe drinking water standards for domestic use. There is existing infrastructure that provides Solano Project water to the City. This infrastructure would be sufficient to handle the SID water for the Specific Plan; additional pipeline construction to transmit SID surface water to*

the City's water treatment facilities would not be necessary. Fairfield has indicated that the Specific Plan area would most likely receive water from the Waterman Water Treatment Plant; however, once the City completes its cross-town transmission pipeline connecting the North Bay Regional Water Treatment Plant to Nelson Hill Reservoir, the project could also receive water from North Bay Regional Plant (which treats water from Lake Berryessa and the Delta), in which case the water supply would be a blend from the two treatment plants." This statement indicates that some of the water supply to the project will ultimately come from the Delta. The WSA does not include an evaluation of what percentage of the total 141,000-AF of Solano Project allocation will come from the Delta. How much water is or will be coming from the Delta? Is the Delta supply controlled by year-type and if so, how is that factored into the WSA?

h) Nowhere in the WSA is there a discussion of the "SID Water Supply City" commitments (Table 3 and 4). How will these be affected by various drought periods?

i) The SID WSA states (last paragraph of Section 6.1) that the SID surface water deliveries from the Solano Project are 100% reliable during normal years, 99% reliable during single dry years, and 99% reliable during the 1987-92 drought. However, review of Table C. in Appendix B8[5] of the RRDEIR indicates that the Solano Project allocation reliabilities are as indicted in the table below. These data contradict the conclusion above and suggest much lower allocation reliability during individual and multi-year drought periods.

[5] Solano County Water Agency, 2010, UWMP reliability data (revised for SWP prior memo is date 6/10/10 – Solano Project data unchanged). Memorandum from David B. Okita, General Manager SCWA to City/District Urban Agencies, August 10, 3 pages and tables.

Year	Water Year Type	% Full Allocation
1990	Dry	95%
1991	Normal	95%
1992	Dry	90%
1993	Wet	95%
1994	Dry	95%

If you have any questions or wish to discuss these opinions and conclusions further, please feel free to contact me.

Sincerely,

Gregory R. Kamman

Principal Hydrologist

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November 25, 2014

Board of Supervisors, Solano County
675 Texas Street, Suite 6500
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RE: Middle Green Valley Specific Plan Project-Recirculated Draft Environmental Impact Report (SCH# 2009062048)/Potential Significant Impacts on the Threatened Central California Coast Steelhead (*Oncorhynchus mykiss*); California Red-Legged Frog (*Rana draytonii)*; and, Western Pond Turtle (*Actinemys marmorata*), in Green Valley Creek

Dear Supervisors:

The purpose of this letter is to provide evidence that the Middle Green Valley Specific Plan ("MGVSP") (SCH#: 2009062048) could result in significant adverse impacts to the *Threatened* Central California Coast steelhead (*Oncorhynchus mykiss*) (CCC steelhead)[1], and their critical habitat (Federal Register, 2005). Additionally, I reviewed some of the water requirements for the California Red-Legged Frog (*Rana draytonii)* (CRLF) and, Western Pond Turtle (*Actinemys marmorata*) (WPT), and the potentially significant impacts to these species. I base this professional opinion on a review of the DEIR, the Revised Re-circulated DEIR ("RRDEIR"), related documents for the MGVSP, a letter (dated August 11, 2014) prepared by hydrologist,

[1]As part of the Endangered Species Act (ESA), in 1991, NOAA Fisheries issued a policy for delineating distinct population segments of Pacific salmon, including steelhead (56 FR 58612; November 20, 1991). Under this policy, a group of Pacific salmonid (salmon and steelhead) populations is considered to be an ''evolutionarily significant unit'' (ESU) if it is substantially reproductively isolated from other same-species populations, and it represents an important component in the evolutionary legacy of the biological species. Further, an ESU is considered to be a "distinct population segment" (DPS). The CCC steelhead DPS comprises winter-run steelhead populations from: (1) The Russian River (inclusive) in Sonoma County stretching south to Aptos Creek (inclusive) in Santa Cruz County; and, (2) The tributaries to the San Francisco/San Pablo Bay system (Federal Register, 2006, 1997; NOAA Fisheries, 2011). In addition, Critical Habitat was designated for the CCC steelhead (Federal Register, 2005).

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Gregory R. Kamman (2014), and supporting scientific documents.[2] My Résumé is attached as Exhibit A to this letter and my Statement of Qualifications is attached as Exhibit B to this letter.

1. Proposed Groundwater Extraction may have Significant Impacts on the CCC Steelhead

CCC steelhead are present in Green Valley Creek (DEIR, pp. 6-35 to 6-36).[3] To spawn, hatch, grow, and continue to reproduce for subsequent generations, the CCC steelhead requires water throughout the year in creeks and rivers. Therefore, even small amounts of a reduction of water to Green Valley Creek, and its intermittent tributaries, may have potentially significant impacts on the CCC steelhead.

The groundwater extraction proposed by all Options in the MGVSP could result in the de-watering of Green Valley Creek. Such extraction would likely result in significant impacts on the sensitive CCC steelhead. And, to determine the extent to which groundwater extraction for the proposed MGVSP would result in significant impacts on the CCC steelhead, further studies are required.

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[2] The references cited in this letter are listed as an Attachment A to the letter.

[3] The DEIR states, "Steelhead (*Oncorhynchus mykiss irideus*) -- Central California Coast ESU, Federal Threatened (FT), National Marine Fisheries Service (NMFS), Essentual Fish Habitat (EFH) The central California coast Evolutionary Significant Unit (ESU) includes … Steelhead…in California streams from the Russian River to Aptos Creek, and the drainages of San Francisco and San Pablo bays eastward to the Napa River (inclusive), excluding the Sacramento-San Joaquin River Basin."

"Steelhead is an anadromous salmonid, typically migrating to marine waters after spending two years in the fresh water. Following out-migration to the ocean, individual Steelhead remain there for two years…. before returning to their natal stream to spawn…. Preferred spawning is found in perennial streams with cooler-temperature water, high dissolved oxygen levels, and substantial flow...."

"Steelhead has been documented in Green Valley Creek and its tributaries" (cited Leidy et al. (2005).

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2. The CCC Steelhead is Likely to be on the Brink of Extinction in the Near Future

The failures of the environmental review are especially egregious for CCC steelhead. Being listed as *Threatened* [4], the CCC steelhead is likely to be at the brink of extinction in the near future. If it is re-listed as *Endangered* [5], then it would be likely to be at the brink of extinction at that time. NOAA Fisheries is in the process of drafting a multi-species Recovery Plan that includes the CCC steelhead (NOAA Fisheries, 2011). Currently, there are extremely limited data to assess the status of the CCC steelhead (NOAA Fisheries, 2011), and virtually no data on the population in Green Valley Creek (Rich, 2013). Thus, if groundwater extractions result in the de-watering of Green Valley Creek, the negative impacts of that action on the CCC steelhead could be significant and result in their further decline or, at worse, its extinction.

3. Specific Life Cycle and Life Stage Requirements of the CCC Steelhead are not known for Green Valley Creek

The steelhead is the anadromous form of the resident rainbow trout. An anadromous fish is one that begins life in a freshwater stream or river, migrates out to sea to grow and mature, and then returns to its natal stream or river to spawn. Except for their ocean-going habits and larger spawning size, the steelhead is visually indistinguishable from its non-migratory counterpart, the rainbow trout; only genetic studies can provide the necessary information that differentiates the two forms (Utter et al., 1980; Allendorf, 1975; Behnke, 1972). Whether or not a particular stream supports an anadromous or resident trout population, or both, appears to be the result of local adaptation to geographic location. Steelhead have well-developed homing abilities and usually spawn in the same stream in which they were born.

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[4] Defined under the ESA as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." (www.nmfs.noaa.gov/pr/glossary.htm#species)

[5] Defined under the ESA as "any species which is in danger of extinction throughout all or a significant portion of its range." (www.nmfs.noaa.gov/pr/glossary.htm#species)

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The CCC steelhead, similar to other salmonids (steelhead and salmon), has specific life stage requirements. Life stages for the steelhead include: (1) Adult immigration/passage; (2) Spawning; (3) Egg/alevin (yolk sac not absorbed) incubation; (4) Fry/juvenile rearing; and, (5) Juvenile smoltification/emigration (NOAA Fisheries, 2011; DFG, 1996; Barnhart, 1986). If any natural, or man-made, factor in a creek, such as Green Valley Creek, negatively impacts any of these life stages, the future of that CCC steelhead population may be in jeopardy.

Environmental factors that affect the various life stages of steelhead include stream flows, water temperature, dissolved oxygen concentrations, suitability of spawning and rearing habitat (i.e., size of gravel, percentage of silt and fines), angling pressure, phase of the moon, and photoperiod (Moyle, 2002; DFG, 1996; Barnhart, 1986; Folmar and Dickhoff, 1982; Grau et al., 1981). Depending upon the geographical location and the interaction of environmental factors, included those caused by humans, both the timing of each life stage, and the requirements for each of those life stages, vary. For Green Valley Creek, there are no data on the CCC steelhead, except for a few adult sightings in the past (Leidy et al., 2005; Leidy, 2002; Pinkham and Johnson, 1976; Week, 1975). Thus, before one could determine potential impacts of the MGVSP on the CCC steelhead, the following two types of studies, or the like, would have to be conducted: (1) Studies to determine existing steelhead and habitat conditions; and, (2) Instream flow studies to determine the potential impacts of streamflow alterations on each of the life stages of the CCC steelhead during the year and under different water years.

4. The Water Supply Options in the MGVSP Could Result in De-Watering of Green Valley Creek and Fail to Mitigate Potentially Significant Impacts to CCC Steelhead

Following are some of the conclusions that Kamman (2014) made in his hydrological assessment of the proposed MGVSP that could negatively impact the CCC steelhead.

- *" ... annual variability groundwater demands are likely to continue."*
- *" with highest pumping rates occurring during dryer years and less groundwater pumping during relatively wetter years...."*

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- *"... it is not unreasonable to assume that a majority of area and existing environment may be susceptible to potential adverse impacts from groundwater pumping (e.g., well interference, dewatering creeks and wetlands, poor aquifer conditions limiting well yields, etc.)"*

- *" Additionally, site specific aquifer tests are necessary to analyze water availability in the Green Valley aquifer, which shows significant spatial variability."*

As streamflow significantly affects each life stage, groundwater extractions that alter creek flows at any time of the year could result in significant negative impacts on the CCC steelhead during any of their freshwater life stages. Following are examples of how the CCC steelhead could be significantly negatively impacted if groundwater extractions reduced creek flows in Green Valley Creek.

- Adult steelhead immigrate to their spawning areas in "waves" or pulses, coinciding with storm events (Shapovolov and Taft, 1954). Thus, if streamflows were reduced as a result of groundwater extraction, those adults might not be able to immigrate up Green Valley Creek and reach their spawning grounds.

- If there were adult steelhead that had immigrated into Green Valley Creek and flows were reduced as a result of groundwater extraction, the steelhead might not be able to immigrate over a shallow riffle, or dry area of the creek, and, hence, would not be able to reach their spawning grounds.

- Reduced flows can result in dried-up steelhead redds (nests), or newly-layed eggs being deprived of oxygen (Reiser and White,1982; Coble, 1961). Thus, if groundwater extraction reduced creek flows in Green Valley Creek during the time when the steelhead eggs were in the gravel, the eggs could be dessicated, or be deprived of oxygen, and die.

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- One of the most sensitive times of the year for juvenile anadromous salmonids is when they prepare to change from a freshwater to a marine fish. This process is called the "parr-smolt transformation", or "smoltification" (Folmar et al., 1982). For the CCC steelhead, smoltification occurs during the spring (March through mid-June). One of the factors that stimulates the beginning of smoltification is streamflow (Wedemeyer et al., 1980; Folmar et al., 1982). If flows are reduced and anadromous steelhead are prevented from emigrating out of watersheds and, hence, from completing the parr-smolt transformation, they can revert back to the "parr" (freshwater fish) stage and die (Folmar et al., 1982; Adams et al., 1973).

  Thus, if groundwater extractions reduced flows in Green Valley Creek and the juvenile steelhead were unable to emigrate out of the system, they could revert back to the "parr" (freshwater) stage and die in Green Valley Creek.

- Suitable water temperature is probably the most important requirement for the thermally temperate-water salmonids, including the CCC steelhead (Rich, 1987; Brett, 1956, 1952). The reason is that fish are poikilotherms ("cold blooded" animals) and, as such, water temperature controls all aspects of a fish's life, including its physiology and biology. And, although lethal temperatures are often cited as the water temperatures that kill fishes, sublethal water temperatures have a far greater effect on the overall survival of salmonid populations (Brett, 1956). The optimal water temperature is a site-specific phenomenon, controlled, to a great extent, on the amount of food available for the life stage of a species of fish.

  If the water temperatures increased in Green Valley Creek during the summer months as a result of reduced streamflows caused by groundwater extraction, the higher water temperatures could negatively impact the steelhead. The steelhead's metabolism would increase as a result of the increased water temperatures and they would, thus, require additional food. If there was little food, or water temperatures increased to lethal levels, the steelhead could be harmed or, at the worst, die (Wurtsbaugh, 1973; Brett, 1952).

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5. <u>The Water Supply Options in the MGVSP Could Result in De-Watering of Green Valley Creek and Fail to Mitigate Potentially Significant Impacts to California Red-Legged Frog.</u>

California red-legged frog (*Rana draytonii)* (CRLF) is federally-listed as *Threatened* and state-listed as a *Species of Special Concern* (DEIR p. 6-29). The DEIR describes the life cycle of the CRLF as wholly water dependent at all stages of its life (DEIR, p. 6-40).

The importance of the CRLF and its habitat in the MGVSP is identified throughout Chapter 6 of the DEIR:

- In its summary of the types of aquatic communities in the Plan Area, the DEIR states that there are: 17.1 acres of Stock Ponds and Reservoirs; 13.0 acres Wetlands; and, 6.8 acres Ephemeral, Intermittent, and Perennial Streams (DEIR, p. 6-4, Table 6.1). All of these aquatic habitats are habitats used by the CRLF during the different stages of its life.
- Figure 6.4 shows *critical habitat* for the red-legged frog (DEIR p. 6-34).
- DEIR acknowledges that there is "*High Potential*" for the presence of CRLF – "Both the higher-elevation ponds in the Plan Area Hills and Green Valley Creek and surrounding irrigation channels in the Plan Area Valley provide moderate to high quality habitat (varying between specific sites). There are two recent documented occurrences (including breeding) approximately 0.7 and 0.8 miles south of the Plan area, respectively." (DEIR, p. 6-29)
- "Suitable aquatic habitats include ponds (ephemeral and permanent), streams/creeks (e.g., ephemeral and permanent), seasonal wetlands, springs, seeps, human-made features (e.g., stock ponds, roadside ditches), marshes, dune ponds, and lagoons." (DEIR, p 6-40)

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- "Typical CRLF breeding habitat is characterized by deep and still or slow – moving water associated with emergent marsh and/or riparian vegetation." DEIR, p. 6-40)
- The DEIR further acknowledges that, "Portions of the Draft Specific Plan-proposed development areas are ADHCP-designated conservation areas for Priority Drainages and Watersheds (Green Valley Creek), …California Red-legged Frog, …." (DEIR, p. 6-55)
- Additionally, Figure 6.8 on p 6-70 of the DEIR shows that Green Valley Creek is habitat for protected species, including the CRLF.

Despite the considerable appropriate habitat and presence of the protected CRLF in the vicinity of the Plan Area, the DEIR and related documents fail to identify, disclose and scientifically analyze potentially significant environmental impacts to the CRLF, related to the water supply options that include groundwater pumping from the local basin. In my professional opinion, the information presented by Kamman (2014) related to the potential to dewater the area, and the new proposals to provide all or a portion of groundwater in Options B and C, creates a potentially significant impact to the CRLF. The DEIR, RRDEIR and related documents fail to disclose, analyze and mitigate potentially significant impacts to the CRLF

6. The Water Supply Options in the MGVSP Could Result in De-Watering of Green Valley Creek and Fail to Mitigate Potentially Significant Impacts to Western Pond Turtle

The Western Pond Turtle (WPT) is federally-listed as *Threatened,* and state-listed as a *Species of Special Concern*, and is present in the Plan Area (DEIR, p. 6-29). As stated in the DEIR, "The Western Pont Turtle (WPT) is the only freshwater turtle native to northern California, and is associated with rivers, streams, lakes, and ponds throughout much of the state." (DEIR, p. 6-35).

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The importance of the WPT and its habitat in the MGVSP is identified in Chapter 6 of the DEIR.

- "Green Valley Creek (and associated drainages) as well as irrigation canals in the plan area may support this species." (DEIR, p. 6-35).
- "Some of the aquatic features within the plan area valley (e.g., Green Valley Creek) provide suitable habitat and may also be occupied by WPT." (DEIR, p. 6-74)
- "WPT (including one immature turtle less than two years old) was observed within the two large, perennial ponds in the middle of the portion of the plan area's hill during the site visit. The plan area provides high-quality aquatic habitat for the WPT,..." (DEIR, p. 6-35)
- "The plan area provides high-quality aquatic habitat for WPT..." (DEIR p. 6-35)

Despite the actual presence of the protected WPT, Impact and Mitigation 6-11 provide little to no information, with respect to the foreseeable potentially significant impacts to this species from groundwater extraction.

- Impact 6-11 acknowledges that, "Alteration of hydrology and water quality during construction and following development may indirectly affect WPT by influencing habitat characteristics." (DEIR, p 6-74)
- Mitigation 6-11 also states that, "Alteration of hydrology and water quality during construction and following development may indirectly affect WPT by influencing habitat characteristics." Mitigation 6-11 also states that "Indirect hydrology and water quality impacts on WPT shall be mitigated through implementation of mitigation measures recommended in chapter 11, Hydrology and Water Quality, of this EIR." (DEIR, p. 6-75). But, those mitigations fall short of sound statistically-based studies that would determine whether or not the impacts could be reduced to less than significant.

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7. Conclusion

In summary, groundwater extractions, as part of the proposed RRDEIR for the MGVSP, have the potential to result in reduced flows in Green Valley Creek and other important water features of the area. These extractions may result in significant negative impacts on the CCC steelhead, the Red Legged Frog, and the Western Pond Turtle.

To determine the potentially significant impacts that may occur as a result of the RRDEIR's proposals related to groundwater pumping, the Project's environmental must disclose and analyze further studies relating to the impacts of groundwater extraction on species in and near the Plan area.

If you have any questions, or wish to discuss this letter further, please do not hesitate to contact me.

Sincerely,

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RE: Middle Green Valley Specific Plan Project - Second Revised Re-Circulated Draft Environmental Impact Report (SCH# 2009062048)

Dear Supervisors:

Upper Green Valley Homeowners ("UGH") submits these further comments for County's proposed Middle Green Valley Specific Plan pursuant to California Environmental Quality Act ("CEQA", Public Resources Code §21000 *et seq.*).

The Second Revised Re-circulated Draft Environmental Impact (SRRDEIR) remains fatally flawed and incomplete. Unaddressed potential impacts remain and are not adequately analyzed. However, before discussing those details, it is worth reflecting on the saying that "behind every cloud, there is a silver lining." I urge the County, real parties and my client meet for purposes of settlement of these issues, rather than to further litigate the EIR. As a "public interest petitioner" there is considerable overlap in the parties' mutual goals protect wildlife and the common trust.

Meanwhile, I urge you to deny approval of the Middle Green Valley Specific Plan ("Project"), unless and until the Project complies with CEQA, as set forth in this and other letter.

COUNTY FAILED TO MAKE MANDATORY FINDINGS OF SIGNIFICANCE RELATED TO IMPACTS TO PROTECTED SPECIES

The Court's Order denying the discharge of the writ summarizes County's mandatory duties, related to the protected steelhead, western pond turtle (WPT) and California Red-Legged Frog (CRLF). It states:

"CEQA Guidelines require a lead agency to consider the possible effect of the project on plants and animals located around the project area, especially of endangered, rare, or threatened species. 14 C.C.R. section 15065(a) provides:

A lead agency shall find that a project may have a significant effect on the environment and thereby require an EIR to be prepared for the project where there is substantial evidence, in light of the whole record, that any of the following conditions may occur:

> (1) The project has the potential to substantially degrade the quality of the environment;
> (2) substantially reduce the habitat of a fish or wildlife species;
> (3) cause a fish or wildlife population to drop below self-sustaining levels; threaten to eliminate a plant or animal community; substantially reduce the number or restrict the range of an endangered, rare or threatened species; ...
> (4) The project has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
> (5) The project has possible environmental effects that are individually limited but cumulatively considerable. "Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.

... It is a recognized policy of this state to prevent elimination of wildlife species, and to ensure that wildlife populations do not drop below self-perpetuating levels." Mira Monte Homeowners Ass'n v. County of Ventura (1985) 165 Cal.App.3d 357, 366. (Order Re Motion By Respondents County of Solano and the Solano County Board of Supervisors for Discharge of Peremptory Writ of Mandate, September 23, 2015, p. 8.)

However, the SRRDEIR fails make a Guidelines Section 15065 mandatory finding of significance. This is so even though the SRRDEIR newly acknowledges a potentially significant cumulative impact, resulting from drawdown of the aquifer. Drawdown of the aquifer has the potential to restrict the range or reduce the numbers of steelhead. Accordingly it must be specifically analyzed in the SRRDEIR.

The SRRDEIR recites significance criteria in appendix G, which includes language additional and similar to Guidelines section 15065, but then it falls short of disclosing and analyzing the required Appendix G

information (pp. SRRDEIR, 6-46 and 47). As such the SRRDEIR also fails to discuss its own significance criteria (i.e. restriction of habitat, reduction in numbers, restriction of range or interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.)

Moreover, the SRRDEIR could not make the mandatory findings because it has failed to sufficiently study the matter, having omitted basic facts such as the timing of steelhead life cycles in Green Valley Creek. This is especially egregious because SRRDEIR acknowledges that there is significant variation in steelhead lifecycle, for which all stages are dependent on in stream flows. "Analysis of Potential Effects to Surface Biological Resources from Groundwater Pumping Middle Green Valley Project" by Vollmar Natural Lands Consulting (2016) ("Vollmar Report").

THE SRRDEIR'S CONCLUSION THAT THE PROJECT'S GROUNDWATER PUMPING IS NOT LIKELY TO CAUSE IMPACTS IS NOT SUPPORTED IN THE SRRDEIR.

The SRRDEIR states that various aquifer characteristics mitigate impacts. It concludes, "Given the relatively high water table (see RRDEIR Section 16.1.1[a]), high soil permeability, and large aquifer volume in the plan area, it is expected that groundwater levels would remain stable and there is no evidence to suggest that groundwater pumping from new deep wells would result in significant water table fluctuations." (SRRDEIR, p. 6-54, 68).

This analysis is inaccurate and incomplete. Wildlife values are not solely concerned with stability that occurs, if at all, in the spring. Rather, wildlife values require analyses of the rate of rebound, the delay to surface waters due to the rebound, and the like. The SRRDEIR fails to adequately address this issue.

Additionally, "high water table" does not provide conclusive evidence that there will not be impacts to the Creek. This is especially so with a water table that shows pronounced seasonal fluctuation, such as this one. A high water table can be reduced so as to break connectivity between the water table and the Creek, especially if there is pronounced seasonal fluctuation, such as the case with Green Valley Creek.

Similarly an aquifer's total storage volume doesn't determine the impacts to the Creek from pumping. California has several very large aquifer volumes that are have caused impacts to species, such as to salmon in the Central Valley. If the Project's wells exacerbate the seasonal drop of the water table (Impact 6-15) there may be less connectivity between the

water table and the Creek. Accordingly, regardless of how much total storage is available, there could be interference with the Creek, as has been the case for many steelhead streams in California.

Next, the SRRDEIR states that "high soil permeability" provides evidence that the Project's wells won't impact the Creek by significant water fluctuations. The SRRDEIR fails to explain this conclusion. As such, it is difficult to follow its analytical route. Moreover, high soil permeability may exacerbate a delay of groundwater reaching the Creek. This is because, as the aquifer rebounds in the wet season, the groundwater table will rise. The more permeable the soil means there is a greater overall storage volume?.
In general, regardless of the soil permeability, the more water that is removed from an aquifer, then the more time it will take for water to re-saturate the aquifer.

The SRRDEIR also relies Thomasson's conclusion that the current pumping, plus the Project won't exceed the amount that was historically pumped. The SRRDEIR states that "...the water levels shown in the WSA for current conditions reflect water levels from the time of the Thomasson study (1960), which describes that the water levels in April 1950 throughout Green Valley were so close to the land surface that the contours are considered to represent essentially the native pattern of movement (i.e., pre-dating impacts caused by humans) (see Appendix B of the 2014 RRDEIR)." On that basis the SRRDEIR concludes, " ... it can be concluded that there would be no cumulative impact on streams from project-related groundwater extraction because current water levels are reflective of the natural regimen." (SRRDEIR, pp. 6-55, 69). However, Thomasson's discussion about the natural regime only took into account the eventual rebound in Spring, not the impact to the Creek due to the aquifer's recovery in spring. In other words, Thomasson focused on human values, not the values for wildlife. For example, there are obvious environmental impacts from the wells that Thomasson analyzed because of their proximity to the Creek. In fact nearly all of the wells with hydrographs were replenished with water from the Creek, itself. Thomasson states, "The sharp recovery indicated in November 1950 resulted in part from rainfall and in part from flow in Green Valley Creek, which passes near all the wells except 4/3W-13Gl. The recovery in that well was not nearly so abrupt." (Thomasson, Plate 1, See particularly wells F2, J1, D1). While Thomasson stated that a certain volume was pumped out of the aquifer without adverse consequences, he was not referring to the same type of consequences that have become a part of modern day environmental analysis. (Kamman, 2014)[1]

[1] As stated in my Mr. Kamman's prior comment letter (2013 and 2014), the quantity of water that the WSA extrapolated for the Project is speculative, due to Thomasson's

Similarly, a purported surplus of 144-149 afy is not evidence that the Project's wells won't impact species. This is because a surplus of water by spring doesn't address the issue of impacts due to delay in the rebound of the aquifer. In addition, the surplus calculation that the WSA derived from Thomasson is not appropriate to use as surplus to analyze the Project's biological impacts since the Project will not be able to rely on any wells that are recharged by the Creek.
Finally, the SRRDEIR offers that only if the wells are "improperly placed" will the Project "have adverse effects on stream hydrology or riparian habitat." (SRRDEIR6-68). The SRRDEIR assumes that there is a proper place for a well but falls short of providing meaningful evidence that this can be done. Meaningful analysis to determine impacts from the delay of the recovery of the Creek and aquifer is missing.

THE SRRDEIR CONTINUES TO RELY ON OUTDATED AND INCOMPLETE REPORTS THAT FAIL TO PROVIDE SUBSTANTIAL EVIDENCE THAT THE PROJECT'S GROUNDWATER EXTRACTION IMPACTS TO IN STREAM FLOW CAN BE MITIGATED OR AVOIDED.

The Vollmar Report relies on the WSA's conclusions of water availability and jumps to the conclusion, without sufficient data or substantial evidence, that the same quantity of groundwater can be extracted from the basin without adverse impacts. (SRRDEIR p. 2-54, see section 3.5.1 of Vollmar report in Appendix A). However, the WSA's (based almost entirely on Thomasson)[2] were prepared to show water availability, not the environmental impacts from using the water. The wells that were analyzed by Thomasson are so near to the Creek so as to have directly or indirectly interfered with the flow of the creek (see wells F2, J1, D1 In plate 1 and 22).[3] (See Ex. A to this Letter showing Thomasson's location of wells in Green Valley, plate 1.)

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many admonitions, such as the aquifer's low specific capacity, low transmissivity, 1,000 afy net versus 1,400 afy calculation and due to the very close proximity of the wells that he reviewed to the Creek. Please see Exhibits B and C to this Letter.

[2] Thomasson, H.G., Olmsted, F.H., and E.F. LeRoux. 1960. Geology, Water Resources and Usable Ground-Water Storage Capacity of Part of Solano County, California, U.S. Geological Survey Water Supply Paper 1464. This document is part of the Administrative Record that has been previously certified by the County re: *Upper Green Valley Homeowners v. County of Solano, et al.* (Solano County Superior Court Case No. FCS036446.

[3] Staff's responses to comments incorrectly states that Thomasson's report "is not specific with respect to the location of all the wells and the relative pumping demand for the wells in operation in the valley at the time of that study." On the contrary, Thomasson provides a plate showing the exact location of the wells. For the only wells he used with a hydrographs D1 and J1 are appear on the Creek; Wells F2 and D1 (other) are very near to the creek. As far as the only well located away from the Creek is G1 and Thomasson specifically remarked that all the wells recover in part "from flow in

Moreover, those wells are not indicative as to show timing in rebound because the Project proposes a schedule of year-round pumping, whereas the wells studied by Thomasson, and others were agricultural wells that were shut off for several months during the rainy season, allowing for a steady and *long recovery* of the aquifer through the entire winter. But the Project's wells will not allow such a long recovery because they will require pumping throughout the summer. The new schedule of pumping is expected to cause different rates of rebound.

Nevertheless, the Vollmar Report jumps to the conclusion without sufficient analysis or facts, that 525 afy can be used without adverse impacts. But, the Vollmar Report ignores several potentially significant impacts to steelhead, especially those related to the time it takes the aquifer and Creek to recover from drawdown.

The Vollmar Report attributes a lack of impact to a surplus in groundwater, in part. However, having a "surplus" does not equate with no impacts to the Creek. Just because an aquifer is shown to rebound in spring does not provide evidence that there are no impacts during the wet season months, especially in fall when adult steelhead migrate into the Creek.

Oddly, the SRRDEIR argues that, "The Specific Plan area is not constrained in terms of area and there would be sufficient potential well sites that would be both far from existing wells and riparian areas." This conclusion lacks factual support, and worse yet it contradicts its own experts. First, the Specific Plan area is constrained to approximately 1,905 acres. Next, the WSA states that all well locations off the valley floor are generally less than 100 gpm and thus would be inadequate for the Project. The valley floor occupies only about ½ of the plan area, contains all the creeks, many of the endangered species, and nearly all the residential. AR 1233. This further constrains the location to install at least 3 wells.

The presence of endangered species further constrain well location. The Creek has resource limitations because it has protected fish, turtles and frogs. Moreover, the Creek is clearly hydrologically connected to the groundwater basin, as it parts remain perennial in the dry season, gaining all of its summer water through groundwater seeping through its banks or otherwise intercepting the ground water table. Thus the SRRDIER is inaccurate to state that it is "not constrained" in terms of well locations. There is no substantial evidence that the Project will be

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Green Valley Creek, which passes near all the wells except 413W-13Gl. The recovery in that well was not nearly so abrupt." (AR10352)

able to be located any place in the Plan area so as to mitigate impacts to steelhead to less than significant levels, as is further expanded on below.

THE SRRDEIR FAILS TO ADEQUATELY MITIGATE THE PROJECT'S POTENTIALLY SIGNIFICANT ADVERSE IMPACTS TO STEELHEAD FROM GROUNDWATER EXTRACTION.

County concedes that the Project's groundwater pumping may have potentially significant adverse impacts to protected steelhead. Impact 6-15 states that the Project would have a "potentially significant cumulative impact" if "pumping from multiple wells were to combine to create substantial drawdown such that the water table were to drop below levels sufficient to support riparian vegetation, or below levels sufficient to maintain surface water flows that support fish and aquatic species. (SRRDEIR, pp. 6-68).

However, the SRRDEIR failed to consider and evaluate the effects on riparian an aquatic biological resources caused by past, current and probable future projects for the attendant delay into the fall, not just overall aquifer drawdown.

The Responses to comments discuss how the Department of Water Resources (DWR) stream gauge will monitor for dips in Creek flow. However, this gauge is in the jurisdiction and authority of the Department of Water Resources. There is no contingency agreement that if the DWR no longer operates, maintains or reports on the gauge that County will obtain this all important information elsewhere. County does not have the authority to compel the Department's acts. Therefore to the extent that the gauge provides a threshold of significance or mitigation, it is inadequate.

In addition, this gauge suffers from accuracy issues because beavers build dams near to the gauge. (Pers. Communication, Jay Aldrich, a Control System Technician for the Department of Water Resources and Amber Kemble, Esq., October 13, 2016).

Further yet, even if the gauge were accurate, which it is not, the gauge is not sufficient to make determination as to "any reduction" in flow, as required by the Vollmar Report. This is because the gauge is constantly fluctuating up and down due to other causes including climate change, natural fluctuation, other groundwater puming, and water release events from the City of Vallejo dams, to name a few. The SRRDEIR fails to describe how it will determine whether any reduction in the Creek flow is attributable to the Project's wells. Accordingly the SRRDEIR is incomplete. The County's conclusion that Mitigation Measure 6-15 is not effective for potentially significant impacts related to drawdown.

THE SRRDEIR FAILS TO ESTABLISH A BASELINE FOR STEELHEAD IN GREEN VALLEY CREEK

The SRRDEIR fails to discuss the life stages of steelhead in the creek. There is no updated survey since 2009 to present so as to establish the proper CEQA baseline for impacts to steelhead. Rather, it appears that the last thorough survey occurred in the mid 1970s. (Vollmar, p. 27)

THE SRRDEIR MUST BUT FAILS TO CONSIDER CLIMATE CHANGE IN ITS UPDATED ANALYSIS OF CCC STEELHEAD, CRLF AND WPT.

Climate change must be considered in the County's analysis of groundwater availability and changes in steelhead migration. The SRRDEIR failed to disclose or consider that.

COUNTY INAPPROPRIATELY RELIES ON ANALYSIS OF SAFE YIELD FOR HUMAN VALUES IN ITS ANALYSIS OF SUSTAINABLE YIELD FOR WILDLIFE VALUES.

While the WSA stated that there 525 afy of water is available, the question that the SRRDEIR must but fails to address is at what environmental price is this water available? Rather than analyzing that all important question, County assumes that all of the water that was available in 1960 is available now, despite the fact that the water that counted in 1960 is off limits because that water belonged to the Creek and is not a part of the groundwater that can be safely extracted from the basin. (See Exhibits A, showing Thomasson's wells near to the Creek; and Exhibits B and C, showing prior letters from Greg Kamman, P.E. 2013, 2014)

COUNTY FAILS TO SUFFICIENTLY ADDRESS THE PROJECT'S IMPACT OF DELAY IN AQUIFER AND CREEK RECOVERY FROM FALL TO SPRING

The SRRDEIR fails to provide a sufficient analysis of the potentially significant impact of a delay in water availability in the Creek.

As a result of not adequately assessing the impact, the Project fails to adequately mitigate this impact. Rather, the Project requires speculative and little mitigation and monitoring. It offers the general gauge that is in the jurisdiction of another agency whom the County has no jurisdiction.

It also offers lofty goals instead of performance standards regarding the Project's impact on stream flows or delay in stream flows in Green Valley Creek.

THE SRRDEIR IMPROPERLY DEFERS ANALYSIS OF THE PROJECT'S IMPACT FROM GROUNDWATER EXTRACTION ON STEELHEAD.

The SRRDEIR attempts to defer analysis of the Project's three or more super-wells stating,

> "Until the proposed well locations are identified and tested, analyzed, and monitored, this impact [on Riparian Communities] would be potentially significant. As described therein, steps would be implemented to design, place, and monitor the project wells. A well design planning process is standard industry practice and would include the following components: test hole and test well drilling in several locations to obtain further site-specific aquifer data, which would be used to determine appropriate well design and placement; placement of public supply wells in appropriate locations; spacing of plan wells to avoid interference with each other, with nearby private wells (agricultural or domestic), and surface streams; and ongoing monitoring." (SRRDEIR, p. 6-54)

However, controlling precedent dictates that County cannot defer these mitigations in the first place. *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412. The proposed future testing and monitoring in mitigation measure 16-2a fails to provide the much needed substantial evidence that the impacts from groundwater extraction for the Project can be mitigated to less than significant levels.

Even if it could defer this analysis, which it cannot, the SRRDEIR must articulate adequate performance standards. But, the SRRDEIR fails to do so. For example, the SRRDEIR relies on mitigation measure 16-2a, which promises that the super-wells "shall be designed to avoid any potential interference between the new Plan wells and ... existing nearby private wells and surface streams."[4] This is not a performance standard, but rather is a goal that lacks standards, like having a ladder without the rungs. *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1119. Performance standards require a trigger to ensure that the mitigation measure will actually occur.

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[4] See also SRRDEIR stating, "*2014 RRDEIR Mitigation Measure 16-1* (Water Master Plan that identifies well locations and depths), *Mitigation Measure 16-2a* (well design process to avoid interference between new wells and surface waters), and *Mitigation Measure 16-2b* (adaptive management of groundwater wells), shall be implemented to provide for avoidance of any potential interference between new Plan wells and surface streams." (SRRDEIR, p. 6-59)

For example, in this case the Water Master Plan must trigger the involvement of a hydrologist working with a biologist to evaluate pumping impacts on steelhead. This is especially critical because steelhead in Green Valley Creek are on the brink of extinction. Further yet, the vulnerability of steelhead is in the dry season, when there can be no reduction to the in-stream water flow.

Examples of additional performance standards so as to provide sufficient guidelines to ensure that there will be "no Creek interference" include, but are not limited to:

- County shall hire a hydrogeologist/hydrologist *and* a biologist to work in tandem to review of well testing as part of the Water Master Plan;
- The biologist and hydrologist team shall implement the mitigation measures, especially to analyze the "site-specific aquifer data" and "appropriate locations" and "spacing of plan wells to avoid interference with each other, with nearby private wells (agricultural or domestic), and surface streams; and ongoing monitoring" and determine the likely extent (distance) of the cone of depression of a proposed well in multiple drought years;[5]
- The biologist and hydrologist team shall determine whether the wells are hydrologically connected to the Creek.
- The biologist shall be highly qualified for steelhead/fisheries analysis because County's biologist, Mr. Vollmar, emphasizes that, "Central California coast steelhead is the surface biological resource most vulnerable to the potential impacts of groundwater pumping. *Any reduction* in current Green Valley Creek dry season (May to October) flow that this species uses for juvenile rearing could have potentially significant impacts." (Italics added.); and
- Ongoing monitoring of Green Valley Creek must include at least annual review and documentation of the gauge at Mangels Road to monitor that there is the no "potential interference" between Project wells and the Creek, so as to be fully enforceable. Public Resources §21081.6(b).
- Scientific monitoring shall use the best management practices for conservation of the species and shall occur at least once per year at the same time each year, at the time most effective to best

[5] A useful and analogous example in the SRRDEIR requires that "prior to County approval of any future plan area subdivision or other discretionary development application, the project proponent shall submit a biological resources assessment report prepared by a qualified biologist for County review and approval." A similar requirement should be provided for the review of the testing and monitoring of wells -- requiring a hydrogeologist/hydrologist working in tandem with the biologist to make the necessary evaluations relating to timing, impacts, issues of low flow being exacerbated.

analyze the potential groundwater impacts on the Creek and water table (ie the dry season in order to monitor the "limiting factor");
- Monitoring shall include analysis useful to evaluating 1.) the seasonal delay for recharge and 2.) safe yield.

The SRRDEIR, as drafted, fails to adequately provide guidelines to determine how the Project's proposed super-wells[6] are in compliance with mitigation measures 16-2, 16-2a and 16-2b (e.g. no potential interference with Green Valley Creek, even in the dry season during drought, changing the timing of pumping). It must provide more detail as to how a monitoring well will be placed in relation to the Project's wells' cones of depression to monitor drawdown and delay in the aquifer's recharge.

Moreover, analysis of the future well impacts has already proven to be a complex and scientifically intensive task, just based on the history of this Project alone, along with the extensive and meaningful input from hydrologists and biologists for this Project's proposal to rely extensively on groundwater resources. The indirect impacts from groundwater extraction can be subtle and take place over time (such as cottonwoods dropping limb by limb). At the same time, adverse effects can be sudden but avoidable with adequate monitoring of the wells (drop in water table below 6 feet can result in permanent loss of several types of shallow rooted willow species). A biologist's analysis and evaluation along side the hydrologist is a critical requirement that mitigation measures are fully enforceable and effective.

Yet, despite importance of having qualified scientists evaluate the well test and well monitoring, the SRRDEIR continues to rely on the Mitigation Monitoring and Reporting Program (MMRP, 2014). But, the 2014 MMRP failed to identify *any qualified independent scientific review* that is charged with this *critically important* task of testing and monitoring the super-wells. Rather it lists, "MGV County Service Area or Solano Irrigation District" as the implementation entity for monitoring the wells. Notably, the MGV County Service Area would not normally include a hydrogeologist and or biologist. Therefore members of the

[6] The reference to super-well is to distinguish the 3 or more wells from typical wells in the area that serve only one parcel. In contrast each of the super-wells in Option B would serve up to one third of the Project's 400 new primary residential units, a 100 new secondary residential units, and 60 farmworker houses and 30 guesthouses, ranging in density from to 8 units per acre to 1 unit per 5 acres (AR 1214); community services buildings, including a non-denominational chapel, a recreation center, a school, and a nature conservancy office; agricultural processing, commercial nurseries; hotel and retail for agricultural products; 10,000 feet of general retail and office space; a convenience store; 60 acres of roads; agriculture; and open space. (AR 1; 13, 1189.)

County Service Area are not qualified to make Mitigation Measure 16-2a enforceable.

Accordingly, mitigation measure 16-2a remains fatally flawed because it is not "fully enforceable through permit conditions, agreements, or other measures," as required by CEQA. Public Resources Code §21081.6(b), CEQA Guidelines §15097. [7] The a conditions of approval must require a the initial super-well testing, as well as ongoing monitoring, to be analyzed by a hydrogeologist *and* a biologist. Public Resources Code §21081.6(b), CEQA Guidelines §15097.

In addition, the well information should be made easily accessible by the public, such as on the Conservancy's website, (which incidentally is also required to disclose subdivision and other applications, as part of the 2010 FEIR).

Finally, the SRRDEIR should articulate "enforcement procedures for noncompliance, including provisions for administrative appeal." CEQA Guidelines §15097(e)(5). The SRRDEIR should identify the manner in which an effected landowner with an existing well or an interested party, such as an environmental organization can redress the Project's failure to meet all mitigation measures, in the event that occurs. This contrasts with the existing recourse for an adversely affected well owner to be required to adjudicate the ground water basin (AR731, See also AR715-785, particularly See AR715, showing RREIR did not repeal the FEIR, but rather supplements it.)

The SRRDEIR argues that it has mitigated all potentially significant impacts, but a key issue that remains unanswered and County remains unsupported by substantial evidence is whether mitigation is even achievable. The SRRDEIR must but refuses to expressly make the build out of the Project contingent on water availability. Yet, County also refuses to provide the facts to give the decision-makers necessary analysis to determine whether mitigation is feasible. For example, the SRRDEIR must but fails to provide meaningful scientific data on the potentially significant impact of the Project on migratory and resident steelhead, such as life stages in Green Valley Creek. The EIR must provide these disclosures and analysis at this stage in the approval of CEQA for a Specific Plan.

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[7] The California Environmental Quality Act is codified at Public Resources Code section 21000 *et seq.* See also CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq.) developed by the Governor's Office of Planning and Research and adopted by California's Natural Resources Agency. Public Resources Code § 21083 "[C]ourts should afford great weight to the Guidelines except when a provision is clearly unauthorized or erroneous under CEQA. [Citation.]" (*Laurel Heights Improvement Assn. v. Regents of University of California* ("*Laurel Heights I*") (1988) 47 Cal.3d 376, 391, fn. 2.)

THE SRRDEIR FAILS TO ESTABLISH SUFFICCIENT PERFORMANCE STANDARDS FOR THE PORTION OF THE ANALYSIS THAT IS DEFERRED.

Even if it can defer some analysis pertaining to the particularities of the wells, the SRRDEIR must but fails to provide sufficient performance standards. It fails to do so. For example, Mitigation 6-12 requires consultation for federal actions. However, no federal permit is required for putting in a well (assuming the well is not located in critical habitat), rather only a permit from County is required. The SRRDEIR repeatedly states that mitigation measure 6-12 will mitigate for the Project's groundwater extraction impacts (i.e. see SRRDEIR, p. 2-57), but that mitigation measure is inapplicable because it requires federal consultation if a federal permit is required.

The SRRDEIR must create performance standards that describe the monitoring for ground water flow in and out the Project wells. It should establish numerical thresholds to determine if the wells are impacting drawdown and delay to the recharge of the aquifer. Instead monitoring wells are only recommended, not required. (WSA, 2013, p. 47) The RRDEIR falls short of providing meaningful information as to how the monitoring wells will trigger further investigation of a well that is delaying recharge to the aquifer. [8] RRDEIR, p. 16-45.

Instead of providing this necessary information, the County argues that the CSA will monitor "to confirm that drawdown due to pumping at project wells does exceed the thresholds for significance for impacts to surface waters or existing non project wells." (SRRDEIR, p. 2-56) However, that narrative standard to not interfere with other wells or the creek is insufficient because it fails to identify when the threshold is triggered. It lacks any standard as to what type of delay in the rebound of the well will trigger the mitigation. Wells that are slow to rebound have a tendency to impact the overall drawdown, which can impact the recovery of the Creek in fall to winter. (Kamman, 2014).

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[8] The RRDEIR states, "A well design planning process is standard industry practice and is expected to include the following components: test hole and test well drilling in several locations to obtain further site-specific aquifer data, which will be used to determine appropriate well design and placement; placement of public supply wells in appropriate locations; spacing wells to avoid well interference with each other (other Plan wells), nearby private wells (agricultural or domestic), and surface streams; and ongoing monitoring." (RRDEIR, 16-45).

COUNTY'S RELIANCE ON STANDARD INDUSTRY PRACTICE IS NOT ADEQUATE WHEN ENDANGERED SPECIES ARE PRESENT.

County's staff's response to my comment that County improperly is deferring analysis of the Project's impacts is to state, "For a water supply system of the size proposed under Option B, it is a standard industry practice to identify specific production well locations and well designs after the water supply entity has made a decision to fund construction of the system." See SRRDEIR, p. 2-51.

While the County may rely on some aspects of standard operating procedure, it is clear that standard operating procedure is not enough to protect endangered species. On the contrary, County must affirmatively do more than what is standard. In part, this is because County must make a mandatory fining regarding the endangered species (Guidelines 15065).

Standard operating procedure does not apply when there is a species on the brink of extinction that is in the middle of this Project. Rather, the law requires amped up precautions and analysis PRIOR to taking action to ensure that the protected species are not further jeopardized.

Studies to determine if potential salmonid habitat is available (or could be made available through restoration actions) are critical since it is estimated that greater than 82% of steelhead spawning and rearing habitat in the Central Valley has been lost (Yoshiyama et al. 1996). In addition, the presence and distribution of salmonid species and habitat in Solano County is poorly documented. Salmonid Habitat Assessment Solano Habitat Conservation Plan, LSA, (2008)

THE UNCERTAINTIES ASSOCIATED WITH WELL LOCATION DUE TO ENVIRONMENTAL CONSTRAINTS, PROXIMITY TO EXISTING WELLS, LOW TRANSMISSIVITY AND SPATIAL VARIABILITY REQUIRES THAT THE SRRDEIR INCLUDE A CONTINGENCY FOR A REDUCED PROJECT SIZE

As noted above, the Project acknowledges that the impacts cannot be known until the wells are drilled.[9] As such the SRRDEIR must include an additional mitigation that the size of the Project will be curtailed as to size (e.g. overall number of new houses) if it is not possible to meet all of the mitigation measures while pumping 186 + afy as required by the

[9] See also SRRDEIR, stating, "... it may be conservatively assumed that one or more of the project wells could possibly have adverse effects on stream hydrology or riparian habitat, due to water level fluctuations resulting from well interference. This is a potentially significant impact." (SRRDEIR, p. 6-65 and See also p. 6-69)

Project. This type of mitigation was specifically sanctioned by the Supreme Court in *Vineyard Area Citizens for Responsible Growth, Inc. v. City of Rancho Cordova* (2007) 40 Cal.4th 412. [10] In that case, as is the case here, it is impossible to know the full effects of groundwater use, absent future action. Therefore, providing for a contingency to curtail the size of the Project becomes a necessary mitigation in the event there is any potential interference with Greek Valley Creek or other mitigation measures and the super-wells.

Moreover, there are several undisputed and unusual characteristics about the Green Valley groundwater sub-basin that are relevant to the uncertainties of the impacts that may result from pumping for the 1000+ new residents in the rural County, located outside municipal services. For example, the Record clearly establishes that the subject groundwater basin has low transmissivity. Additionally, the Project requires much higher pumping rates from historic wells (i.e. the new super wells will serve over 100 residences each, as opposed to historic wells serving far fewer residences or an individual farm.

Several of the experts in the Record identified *significant and numerous warnings*. For example, Thomasson and others, highlighted the significant spatial variability of well performance (AR10363); the low transmissivity and low permeability (AR838); the low specific capacity (AR838); the difficulty of extraction of water at economic rates of discharge and drawdown (AR10360), the heavy seasonal fluctuation (10349-50, 10351), the nearby cones of depression (AR9313, 10361; see also AR10357, 10689 showing that there is the same type of alluvium in Suisun Valley, where the 2 ½ mile across cone of depression was documented); the severe drought conditions due to climate change (AR3134, AR2827); and the heavy pumping costs (AR10366). See also Letter from Kamman Hydrology & Engineering, Inc., dated August 11, 2014, which is attached hereto as Attachment A and incorporated into these comments and made applicable by this reference.

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[10] See *Vineyard, supra* at 434, stating, "If the uncertainties inherent in long-term land use and water planning make it impossible to confidently identify the future water sources, an EIR may satisfy CEQA if it acknowledges the degree of uncertainty involved, discusses the reasonably foreseeable alternatives—including alternative water sources and the option of curtailing the development if sufficient water is not available for later phases—and discloses the significant foreseeable environmental effects of each alternative, as well as mitigation measures to minimize each adverse impact. § 21100, subd. (b). In approving a project based on an EIR that takes this approach, however, the agency would also have to make, as appropriate to the circumstances, any findings CEQA requires regarding incorporated mitigation measures, infeasibility of mitigation, and overriding benefits of the project (Public Resources § 21081) as to each alternative prong of the analysis."

Notably, the MGVSP is only approximately 2 miles square, but cones of depression have been historically present in Suisun Valley (with similar rock material as is present in Green Valley) for a span of 2 ½ miles across! Therefore, the SRREIR's conclusion that the wells can be spaced so as to avoid interference with each other, all other existing wells and with environmental constraints may not be obtainable. In the event that it is not then the Project size must be reduced. Without this contingency the SRRDEIR remains fatally flawed because it attempts to defer basic well information that could readily be provided by current a well pump test – stating the quantity pumped, how long it took for the well to pump dry and how quickly the well took to refill from surrounding groundwater, and the like. Much useful information could readily be provided at this time, given the large number of existing wells in the area. Guidelines §15144.

THE SRRDEIR MUST BUT FAILS TO ADEQUATELY DISCUSS AND MITIGATE THE POTENTIAL IMPACTS FROM SEASONAL DELAY IN THE CREEK'S AND BASIN'S RECOVERY COMMENSURATE WITH THE FIRST RAINS

The Groundwater analysis in the SRRDEIR relies on 525 afy as being available to the Project. The problem with relying on that quantity of water availability was that nearly of all the wells that support that figure were located next to the Creek, several were *likely within the 100 feet buffer zone.* These well locations likely adversely affected (caused seasonal delay) for recharge of the Creek. However, such biological impacts were not included in Thomasson's 1960 USGS study. (Plate 1, blown up and attached hereto as Exhibit A)

Biologist Vollmar assumes without sufficient data that there will be no adverse impacts from pumping the super-wells up to 525 afy. This conclusion is not supported by substantial evidence. On the contrary, it is an evidentiary gap. While L&S may rely on 525afy as part of the total for safe yield is concerned for human water consumption, Vollmar must not rely on 525 as safe yield in so far as wildlife is concerned.

In other words the data that is missing is that there is insufficient evidence how wells outside of the Green Valley Creek corridor (as will be the super wells) will affect the water table and therefore affect seasonal delay in recharge. This is especially important because the hydrologic connection between the Creek and the entire basin is exemplified by the perennial nature of Green Valley Creek – it is draining the basin's groundwater even throughout the dry season. The County must discuss this further discuss this the potentially significant impacts associated with the seasonal delay in recharge. After all this was the gist of the

Court's Order re: denial of discharge of peremptory writ, dated September 23, 2015.

THE MITIGATION MEASURE 16-2B CONTINUES TO EXACERBATE THE PROBLEMS ASSOCIATED WITH DRAWDOWN

The SRRDEIR finds that the Project's three or more super-wells could adversely affect other wells and stream habitats (Impact 16-2, referring to the 2014 RRDEIR). Nevertheless, the SRRDEIR continues to rely on the legally inadequate, pre-existing mitigation measures. Some of the mitigation measures from 2009 and 2014 actually *exacerbate* the problems associated with drawdown. For example Mitigation Measure 16-2b requires: lowering or deepening the super well; or pumping more to serve those whose wells have gone dry. In addition these mitigations are band-aids or worse, they are indicators of a problem with exceeding safe yield or lingering cones of depression such that if they occur they must include immediate evaluation of the problem by the aforementioned hydrologist and biologist team as part of the monitoring mitigation stated in Mitigation 16-2b.

Next, the SRRDEIR states that such mitigation will occur if there is "potentially significant drawdown..." (SRRDEIR, p. 6-68). The trigger of "*significant* drawdown" is misplaced. Rather, the SRRDEIR should trigger evaluation if there is *any* drawdown that either delays recharge to the Creek and other water important to biological resources or *any* drawdown that reveals safe yield may be exceeded *at all* and not wait until there is "significant drawdown."

THE SRRDEIR'S FINDING THAT ALL POTENTIALLY SIGNIFICANT IMPACTS ARE LESS THAN SIGNIFICANT AFTER MITIGATION IS NOT SUPPORTED BY SUBSTANTIAL EVIDENCE

The SRRDEIR continues to rely heavily on the pre-existing and unaltered mitigation measures from the 2009 DEIR Mitigation Measures 6-2 to 6-13, the 2014 RDEIR and the RRDEIR.

The SRRDEIR adds a new potentially significant impact: "CUMULATIVE IMPACT ON RIPARIAN AND AQUATIC BIOLOGICAL RESOURCES DUE TO GROUNDWATER EXTRACTION UNDER WATER SUPPLY OPTION B OR C1." However, the SRRDEIR provides no new legally adequate mitigation measures. As stated above several impacts remain potentially significant because there is no substantial evidence that 3 super wells can be situated in the Plan area so as to have no interference with the Creek. On the contrary, there is missing data to provide sufficient knowledge of the impacts and how the ground water basin will behave due to considerable spatial variability in the Valley, *inter alia.*

Therefore the finding that cumulative impacts are not cumulatively considerable is finding is not supported by substantial evidence. (SRRDEIR, Mitigation Measure 6-15, p. 6-69)

Conspicuously missing from the SRRDEIR's meaningful discussion in Mitigation Measure 6-15 is the likelihood that a cone of depression can remain year to year, thereby affecting storage capacity. (Kamman, 2014).

THERE IS NO SUBSTANTIAL EVIDENCE THAT THE IMPACTS TO STEELHEAD ARE MITIGATED TO LESS THAN SIGNIFICANT LEVELS.

County's biologist, Mr. Vollmar writes:

> "Central California coast steelhead is the biological resource most vulnerable to the potential impacts of groundwater pumping. The dry season (May - October) is the time of the year in which groundwater pumping could impact surface flows, and Green Valley Creek is the only stream in the Project Area that provides dry season habitat for this species. Small changes in dry season stream depth could impact critical juvenile rearing aquatic habitat, when juvenile steelhead of various potential age classes require at least intermittently fairly fast-moving water to maintain the food supplies necessary for growth. Any reduction in current Green Valley Creek dry season flow that this species requires for juvenile rearing could potentially have impacts. (Vollmar, 2016, Analysis of Groundwater Pumping and Biological Resources, pp. 39-40).

Additionally, UGH's biologist, Ms. Rich, concurs with the gravity of the impacts to steelhead if the Creek is affected during low flow, i.e. extending the dry season, especially in drought. *Vineyard*, supra at 425-426. Ms. Rich previously commented that, "...the CCC steelhead is likely to be at the brink of extinction in the near future." Letter from Alice Rich, Ph.D. letter to Board of Supervisors, Solano County, dated November 25, 2014, a copy is attached hereto and incorporated herein as a part of these comments by this reference.

For the seasonal drawdown of the water table the SRRDEIR fails to adequately address the critical issue regarding delayed recharge. This is especially key because steelhead are triggered to move by the first rains. (Rich, 2014) Notably, if there is *any* hydrologic connection between the well and the Creek there is the potential for interference with the Creek, depending on the size of the cone of depression. This would violate Mitigation Measure 16-2a. Therefore it is critical that the performance

standard for a well test determine the hydrologic connectivity of the proposed well to the Creek and the extent of a cone of depression.

The SRRDEIR elaborates on the vulnerability of protected steelhead:

> "Green Valley Creek stream gauge data 0.6 miles downstream of the Project Area demonstrates that flow depth annually drops to approximately 1 foot in depth during the dry season from May – October (Figure 6.6) (for additional information about this stream gauge data, see Appendix A of this SRRDEIR). This time period overlaps with the freshwater rearing period for juvenile steelhead of various potential age classes that require at least intermittently fairly fast-moving water to maintain the food supplies necessary for growth (see Section 4.5.1). Small changes in dry season stream depth could adversely affect critical juvenile rearing aquatic habitat, when juvenile steelhead of various potential age classes require at least intermittently fairly fast-moving water to maintain the food supplies necessary for growth. *Any reduction in current Green Valley Creek dry season flow that this species requires for juvenile rearing could potentially have impacts.* The threshold for assessing whether potential impacts to Central California Coast steelhead from groundwater pumping would be significant is defined as the point at which induced recharge begins, and Green Valley Creek begins to lose water to the groundwater aquifer. Induced recharge would begin if the radial extent of the cone of depression in the unconfined aquifer adjacent to a proposed Option B groundwater pumping well extended to the stream channel of Green Valley Creek, where a hydraulic connection was already present between the creek and the unconfined aquifer (as in Figure 6.5). If this occurs and stream depth is reduced, it would represent a significant impact to Central California Coast steelhead." (SRRDEIR, p. 6-66, emphasis added.)
>
> ...
>
> "Potential indirect impacts to surface waters due to drawdown of groundwater under water supply Option B (or C1) would be mitigated by proper well design, as required by the Specific Plan and 2014 RRDEIR Mitigation Measure 16-2a, as well as adaptive well management required by Mitigation Measure 16-2b. The well design process shall precede, and under industry practice would precede, determination of the engineering specifications for well locations and depths. The engineering specifications for well

> locations and depths are required to be identified as part of the Water Master Plan specified under 2014 RRDEIR Mitigation Measure 16-1. The Water Master Plan is required to be prepared prior to subdivision map approval (a discretionary approval subject to CEQA). These measures would provide for avoidance of any potential interface between new plan wells and surface streams." (SRRDEIR, p. 6-68)

This conclusion that the impacts would be mitigated is not supported by substantial evidence because it assumes, without adequate data, that avoidance *is possible*. If the SRRDEIR is to rely on such an assumption it must provide adequate enforceability of the mitigation measure -- there will be an adequate reduction in the number of units/use of water *in the event* there is drawdown over time or *any potential* interference with the Creek.

SIGNIFICANT IMPACTS TO THE WESTERN POND TURTLE (WPT) AND TO THE CALIFORNIA RED LEGGED FROG (CRLF) REMAIN

SRRDEIR claims,

> "CRLF and WPT in Green Valley Creek could be affected by the drawdown of groundwater, if it were to result from groundwater pumping, under water supply Option B or C1, if the radial extent of the cone of depression in the unconfined aquifer adjacent to a proposed groundwater well extended to the edge of the stream channel, where a hydraulic connection was already present between the stream and the unconfined aquifer, causing induced recharge. This could result in a small reduction in surface flow. However, due to perennial surface flow in Green Valley Creek, and the general surplus of groundwater in the Project Area (Luhdorff & Scalmanini 2013; Section 3.5; see Appendix B of the 2014 RRDEIR) that limits the depth that groundwater could decline based on the scale of the proposed pumping in Option B, ponded riparian refugia would not dry up entirely. Therefore, impacts to CRLF and WPT in Green Valley Creek due to the groundwater pumping proposed in Option B would be less than significant." (SRRDEIR, p. 6-61)

However, the finding of less than significant impact is not supported by substantial evidence because it lacks data as to how much water reduction can be tolerated by the protected species, WPT and CRLF. Moreover, the SRRDEIR fails to account for a *delay* in groundwater

recharge due to pumping. The question remains as to the impacts during the sensitive time period when recharge of creeks and the like is delayed due to returning water to the aquifer as a result of the super wells.

Figure 6.2 shows several development areas in CRLF proposed critical habitat. However, a permit for development will not usually trigger federal consultation. Since a large portion of the Specific Plan area is proposed critical habitat, the SRRDEIR must require off site mitigation, or the like, for development within the CRLF proposed critical habitat.

The SRRDEIR focuses on take of individuals, but fails to adequately mitigate for the loss of habitat, in violation of CEQA Guidelines §15065(a)(1).

Finally, Impact 6-13 is for Impact on Wildlife Habitat Corridors and Linkages, must but it fails to discuss the inadequacy of non aquatic riparian animals to get through bridges spans that are not designed to especially allow passage of such creatures under the bridges.

THE SRRDEIR FAILS TO DISCLOSE AND MITIGATE POTENTIALLY SIGNIFICANT IMPACTS FROM GROUNDWATER PUMPING TO SWAINSON'S HAWK (*BUTEO SWAINSONI*)

While the SRRDEIR acknowledges the impacts to nesting pairs and finds that such impact is less than significant, the SRRDEIR fails to disclose and analyze the other impacts to Swainson's hawk, such as reduction in range of a protected species. Reduction in range analysis is required by CEQA. *Napa Citizens for Honest Government v. Napa Board of Supervisors* (2001) 91 Cal. App. 4th 342, 384. The mitigation for impacts to Swainson's hawk must include replacement species for trees that are adversely affected from the Project. For example, the SRRDEIR finds that the shallow rooted riparian tree, the Goodding's black willow, could be used by Swainson's hawk but concludes that if groundwater extraction contributed to reducing its population size the impact would be LTS because it would occur over several seasons. Even if that were so, there are less trees that can provide nesting foliage for the protected avian and as such there are indirect cumulative impacts that the SRRDEIR fails to discuss.

In addition the SRRDEIR fails to analyze the Project's impacts on the other shallow riparian trees such as white alder and narrow-leafed willow and arroyo willow because the trees are not tall enough for nesting. However, such narrow analysis is legally inadequate because Swainson's hawk are protected to do more than nest at the Project site. Rather they are protected for their other activities such as hunting. The smaller

riparian trees provide shelter, cover, habitat for the rodents and other small animals that the Hawk hunts and therefore require further analysis of this identified potentially significant impact of dewatering of shallow rooted riparian species.

THE SRRDEIR IS INCOMPLETE BECAUSE IT FAILS TO DISCUSS THE NEW SUSTAINABLE GROUNDWATER MANAGEMENT ACT (2014).

The SRRDEIR fails to discuss relevant legislation: The Sustainable Groundwater Management Act revised the Water Code to direct the Department of Water Resources (DWR). The new legislative updates useful definitions for sustainable yield. It states, that "'Sustainable yield' means the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result." Water Code §10721(w). An undesirable result includes interference with stream flow Water Code 10721(x)(6).

CIRCUMSTANCES REGARDING INCREASES IN DENSITY

Resources Code §21166 allows that when an environmental impact report has been prepared for a project pursuant, no subsequent or supplemental environmental impact report shall be required, unless there are substantial changes with respect to the circumstances under which the project is being undertaken which will require major revisions in the environmental impact report.

Changes in the circumstances requiring major revisions to the EIR trigger the conditions set forth in Pub. Resources Code §21166(b). Here there are changed circumstances pertaining to: 1.) the increased traffic over what was forecasted in the 2009 EIR constitute a substantially changed circumstance and/or new information. For example, since 2009 the County has approved General Plan amendment(s) pertaining to development near Solano College. Moreover, in the past 7 years there has been an increase in residential development, which in turn has impacts to traffic, *inter alia.*

This changed circumstance "will lead to new significant project impacts not previously considered" in the 1998 EIR. *Fund for Envt'l Defense v. County of Orange* (1988) 204 Cal.App. rd 1538. *See also Security Envt'l Sys. v. South Coast Air Quality Management District* (1991) 229 Cal.App.3rd 110, 125, (New information may require preparation of a subsequent EIR if the new information raises significant questions about the key assumptions or information relied on in the previous environmental document.) The correlative change in GHGs as a result of

more severe traffic conditions is likewise a changed circumstance. These changed circumstances trigger additional environmental review.

CONCLUSION

The SRRDEIR fails to satisfy the requirements of CEQA. This is especially so since CEQA requires that the groundwater option must be fully analyzed at this juncture due to the legal uncertainty of the preferred option to obtain water from the City of Fairfield (either directly or indirectly). See Order re: denial of discharge of peremptory writ, dated September 23, 2015. Therefore, the SRRDEIR must either provide sufficient information to fully and meaningfully evaluate the pros and cons the Project's groundwater impacts, but it does not. On the contrary, it relies on uncertain, ineffective and unenforceable mitigation measures. Accordingly, potentially significant impacts remain.

Thank you for your consideration. Please feel free to contact me if I may provide any further information regarding these comments.

Amber Kemble
Attorney for Upper Green Valley Homeowners

Attachments:

Exhibit A showing Thomasson, plate 1 (blown up) showing well locations on the Creek.

Exhibit B, showing Letter from Kamman Hydrology & Engineering, Inc. to Board of Supervisors, dated October 2013

Exhibit C, showing Letter from Kamman Hydrology & Engineering, Inc. to Board of Supervisors, dated August 2014

Exhibit D, Letter from Alice Rich, Ph.D. letter to Board of Supervisors, Solano County, dated November 2014

Exhibit A:

Thomasson, H.G., Olmsted, F.H., and E.F. LeRoux. 1960. Geology, Water Resources and Usable Ground-Water Storage Capacity of Part of Solano County, California, U.S. Geological Survey Water Supply Paper 1464 Plate 1

Exhibit B:

Letter from Kamman Hydrology & Engineering, Inc.
to Board of Supervisors
October 2013

Exhibit C:

Letter from Kamman Hydrology & Engineering, Inc.
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Letter from Alice Rich, Ph.D.
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