APPENDIX B
COMMENTS ON THE INITIAL STUDY/NOTICE OF PREPARATION

State of California

30166
FILE

Memorandum

To: Ms. Victoria Whitney, Chief
State Water Resources Control Board
Division of Water Rights
Post Office Box 2000
Sacramento, CA 95812

Attention Mr. Paul Murphey
Project Manager

Date: June 30, 2006

From: C. Catalano
Robert W. Floerke, Regional Manager
Department of Fish and Game - Central Coast Region, Post Office Box 47, Yountville, California 94599

Subject: Water Right Application No. 30166, El Sur Ranch, Monterey County - Notice of Preparation, Draft Environmental Impact Report (DEIR), SCH# 2006061011

Department of Fish and Game (DFG) has reviewed the Initial Study (IS) prepared by the State Water Resources Control Board (SWRCB) regarding Water Right Application (WA) No. 30166 for the El Sur Ranch (ESR), Monterey County, California. DFG is a Trustee Agency and potentially a Responsible Agency pursuant to CEQA, and as such, we offer the following comments on the proposed project as it relates to fish and wildlife resources of interest to DFG.

The project proposes to divert on a year-round basis, with a maximum direct diversion quantity of 1,615 acre-feet per annum (afa), with a twenty-year rolling average not to exceed 1,200 afa, from two wells near the mouth of the Big Sur River for irrigating 267 acres of pasture land out of a 292-acre place of use. The rate of diversion is proposed as a maximum instantaneous rate of 5.84 cubic-feet per second (cfs) with a running 30 day diversion average rate of 5.34 cfs

DFG has already provided comments, dated November 6, 2002, to the SWRCB regarding the issuance of a previous Notice of Preparation (NOP) for this project application (attached). The previous project was substantially the same (proposing instead to divert 1,800 afa for the irrigation of 292 acres of land as the currently proposed project. Therefore, our concerns remain the same and our previous comments are incorporated by reference.

In addition to concerns which we expressed in response to the previous NOP, as summarized below in Section 1, we have additional concerns based on review of the IS which was released with this NOP. First, the project description as provided in the IS does not entirely address the scope of the proposed project. Second, we are very concerned that the SWRCB has utilized assumptions contained in the ESR 2005 Technical Reports submitted by the applicant, rather than conclusions supported by data, to assess impacts and to support potential mitigation measures in the IS. DFG has provided recommendations for information needed to fully understand the impacts of the

proposed diversion and to identify appropriate and meaningful mitigation measures. Third, we remain concerned about the CEQA baseline which the SWRCB has assumed for this project as stated in the IS. Detailed comments can be found in Section 2 below.

Section 1: Summary of Previously Stated Concerns

As a result of issuance of a NOP in 2002, DFG provided a detailed response identifying our concerns regarding the proposed project and information needed to adequately assess impacts and identify appropriate mitigation measures. We have attached our previous letter to the SWRCB, dated November 6, 2002.

In May 2004, ESR proposed to conduct an "Interim Monitoring Plan" to study instream impacts from the diversion. At that time, SWRCB requested DFG to review the plan and to provide comments on whether the proposed study would provide the information necessary to adequately assess the instream effects of pumping on the Big Sur River. DFG provided comments to the SWRCB in a memo dated July 9, 2006, requesting specific modifications to the plan; the study moved forward without the requested modifications resulting in significant and predicted data gaps. The completed fisheries study, provided by the applicant in May 2005, and referred to as the biological section of the ESR 2005 Technical Reports, was deficient in information needed to fully identify potential effects of pumping on instream conditions.

DFG provided comments to the SWRCB regarding all three sections of the ESR 2005 Technical Reports in a memo dated September 16, 2005 (attached). DFG also contracted for additional technical review of the hydrogeologic section and when those comments were provided to DFG in a memo dated December 16, 2005, we transmitted them to the SWRCB on December 22, 2005, with a summary memo.

We have attached the five referenced memos and request that these previous comments also be incorporated into this response to the current NOP. In addition, we would like to reiterate the previously identified twelve areas of interest that should be addressed as part of an EIR for the proposed project. Briefly, those are:

1. The status of sensitive resources known to occur in the vicinity of the diversion, including seven sensitive species (three Federally listed) and one sensitive natural community.

2. Whether the proposed diversion would have significant impacts on the sensitive resources at the diversion site, and measures identified which would avoid or minimize impacts to public trust resources.

3. The status of sensitive resources potentially occurring at the place of use of the diverted water, including ten sensitive species (four State or Federally listed) and one sensitive natural community.

4. Potential impacts to the place of use from the application of 1,615 af of water, such as acceleration of seabluff retreat and coastal erosion, increased runoff that can lead to erosion and sedimentation, alteration of habitats, and decline of associated species.

5. Whether the proposed project would have significant impacts on the sensitive resources at the place of use, and measures identified which would avoid or minimize impacts to public trust resources.

Additionally, we requested specific information to address the effect that the proposed diversion would have on the flows of the Big Sur River, and resources supported by those flows, including:

6. A water availability analysis, including a water budget which would address water availability and water consumption in the watershed, and propose defensible flow reservations for the various trust resources dependent on the riverine environment. The water analysis should be stratified by five water year types (Wet, Above Normal, Median/Average, Below Normal/Dry and Critically Dry); and segregated base on 20 percent-40 percent-60 percent-80 percent exceedence flows.

7. A fisheries flow analysis, acceptable to DFG and the National Marine Fisheries Service, to be conducted in order to define flows necessary to support public trust resources.

8. Analysis addressing the effects the diversion has on water temperature, riparian health and canopy, salinity, and other water quality parameters which may be influenced by the diversion.

In addition, this request for water diversion appears to be far in excess of that which is considered a beneficial use, potentially constituting waste (which is prohibited by California law); that the request was far in excess of the historic (and unpermitted) use of the wells; and that the request may not be consistent with Conservation Easements and/or conveyance documents for the property. We asked that the SWRCB determine both the appropriate level of such a request and establish a baseline so that impacts of the proposed diversion could be evaluated. Toward this end, we requested information to establish historic use and baseline:

9. Information needed to establish baseline use should include data such as parcel and water right conveyances, easements, well logs, water meters, or electrical bills demonstrating water use, or other information that would clarify historic use and basis for any riparian rights.

10. Consistency with the terms and conditions of any conservation easement placed over the ESR lands; and terms and conditions which may have been placed at the

time of conveyance of Department of Parks and Recreation (DPR) lands from Frances Molera to The Nature Conservancy and from The Nature Conservancy to DPR.

11. Full disclosure of the location of all water use, including whether any portion of this will require an out-of-basin transfer.

12. Identification of any portion of the proposed place of use which is subject to an existing riparian right.

We believe the twelve areas to be pertinent to the currently proposed project, and request that these issues be addressed in the DEIR.

After review of the ESR Technical Reports provided by the applicant, we believe them to be only partially responsive to 5 of the 12 areas of interest we have identified. The ESR Technical Reports include significant data gaps and we believe that some of the conclusions presented in the ESR Reports are not supported by data. We also do not believe that a previous submittal by the applicant, a 1999 report by Jones & Stokes Associates, can be relied upon to support impact analysis and/or identification of appropriate mitigation measures for this project. Comments related to DFG review of these documents are attached.

Section 2: Comments Based on Review of the IS Released with the NOP

Comments Concerning the Project Description

The diversion proposed for this project may significantly affect the quantity and quality of water in the Big Sur River, including subterranean flows, and impact resources that are dependent on the riverine environment. In addition, place of use impacts on, and adjacent to, the lands being flood irrigated must be evaluated. To allow this to occur there first must be an adequate project description. The project has been revised but the description and environmental setting in the IS does not provided a clear description of the activities proposed to allow adequate information to be used in our review. DFG requests that the following information be included in the DEIR:

Without a clear description of where water is being applied, it is impossible to assess potential impacts to the irrigated pasture land, Swiss Gulch, the unnamed tributary, and other areas that may be disclosed to be sensitive. DFG requests full disclosure of the location of all water use and suggests that inclusion of a map providing the following information would help clarify the text description.

- The total acreage of the parcel(s) within the project area.

- The acreage of land being flood irrigated within each pasture block . (It is assumed that it is less than the total acreage of the parcels. However, the map provided in the

IS appears to show the entire parcel(s) as the place of use for flood irrigation including watercourses, riparian areas and dunes. If this is the case, then additional biological impacts associated with flood irrigation of these areas would need to be disclosed. If they are not intended for irrigation, the size of the Place of Use should be adjusted accordingly.)

- The acreage of land within the land parcel(s) that is not being flood irrigated (for example the acreage of: 1) The Swiss Gulch watershed; 2) the watershed of the unnamed tributary to the Pacific Ocean; 3) the tailwater pond; 4) the sea bluff and sand dune area; and 5) the berms between the pastures).

- A clear delineation of the acreage of lands receiving water under the riparian claim and lands which will receive water under this water application. The SWRCB previously determined that the riparian area within the land parcel(s) was 90 acres but the revised application has reduced the area to 25 acres. Clear mapping which identifies pertinent watershed boundaries will clarify this discrepancy.

The project described should be the whole of the action. In this case, water to serve riparian lands, while not subject to the water right application, is being diverted to serve the place of use from the same set of wells. Disclosure of all water to be diverted from the wells is necessary to allow adequate assessment of the full potential impacts of this project.

The project description discloses that water used to flood irrigate the upper border strips flows to lower ones, but it does not disclose where the water from the lower border strips flows. The DEIR should disclose how and where the tailwater discharges from the site. The IS also does not disclose sufficient information about the existing tailwater pond. This pond and how it functions should be fully described. This allows disclosure of any impacts to water quality or to the cliffs due to release of tailwater from that pond. This disclosure is necessary to understand and assess any potential erosion problems and determine appropriate erosion control measures.

The IS discloses that the pastures are annually fertilized but did not elaborate on how this was done, what types of chemicals were used, and what methods were used to ensure that these chemicals are not being discharged in tailwater to waters of the State. This information should be included in the DEIR.

The ESR project wells are clearly described, but the IS states that the New Well was not intended to significantly increase pumping, water use, or to be used to irrigate lands in addition to the Place of Use. However, there is no information provided that the "old well" once pumped at the combined rate of the both wells (as described on Page 2-7 of the IS). As presented, it appears that the use of both wells at maximum capacity now exceeds the historical pumping rate and that the use of the "new well" now allows pumping during the lowest flow season when salt water intrusion would have curtailed pumping at the old well.

If there is to be a claim that these two wells have not increased the pumping/water use or extended the season of pumping, the validation of those claims needs to be included in the DEIR (see also our comments below on CEQA baseline).

In addition, the historical (and current) use of water is limited to the period of April 15 to October 15; a request to divert out of the river year-round constitutes a new period of use (October 16 to April 14) with its own set of potential impacts. Winter drought exacerbated by diversion has the potential for numerous adverse effects. In a dry year, diversion during the period of October to April can be detrimental to fish passage; it is also the season for root growth for many plants in this system. The DEIR should address impacts of a project which would divert year-round, addressing the season of diversion in conjunction with quantity of diversion. Winter diversions should not be considered a less than significant impact unless data supports that conclusion.

The IS mentions but does not adequately describe the other wells in the well field. If information regarding these wells are to be used in further analysis or discussions within the DEIR, which we recommend, then their characteristics also need to be included in the Project Description. The effects of pumping from all wells should be included in a discussion of cumulative effects.

Comments Concerning Information to be Collected for the DEIR

General Comments

We recommend that the SWRCB; 1) Identify information needed to support the impact analysis and identification of appropriate mitigation measures; 2) identify information gaps; and 3) then collect or contract to collect the information needed. We are very concerned that the SWRCB retain control over the type and scope of information needed, in consultation with the applicant, the trustee and responsible agencies, and in consideration of public input. We are concerned that information which has been previously provided directly by the applicant may not meet the needs of the CEQA process. This results in delays that benefit neither the applicant nor the permitting process.

Our previous experience with the "Interim Monitoring Plan" indicates that recommended information was not collected by the applicant, in spite of review and comment by DFG as to how the work plan could be revised to meet our needs. Instead, considerable time and effort was spent by the applicant on a study which had predictable data gaps and which addressed issues which were outside the proposed and reviewed scope of work. We are very concerned that the SWRCB has utilized unsupported assumptions contained in the ESR Technical Reports for impact assessment, as well as to formulate potential mitigation measures. This only serves to obfuscate the issues and delay the process.

Comments on Hydrogeolgical Issues

We have provided an analysis of the utility of the ESR hydrogeological information, as well as recommendations for additional specific information that we believe are necessary to quantify potential impacts from the proposed water diversion, in the attached memo from Mr. Kit Custis, June 28, 2006. We recommend that the SWRCB provide the necessary oversight, with the input of the Trustee and Responsible agencies, to insure that the scope of work and data collected will meet our collective needs and expedite completion of the CEQA process.

In summary, Mr. Custis' memo identifies gaps in the hydrogeologic and hydrology data, and recommends specific information be collected and analyzed in order to determine impacts, the available waters, and to assist in selection of type, location and timing for monitoring water quality, quantity and flow data. The specific recommendations are related to the need for: 1) Ground water and surface water hydraulic head data along both sides of the river; 2) hydraulic conductivity data on the streambed; 3) information concerning the quantity of ground water upwelling into the river; 4) the influence of saltwater influx on upwelling ground water; 5) water level and water quality data for ground water outside the pumping well field; 6) data on the changes in surface water flow rates from water quality stations #6 to #12; 7) a longitudinal profile of the river channel; and 8) a review of historic aerial photos and topographic maps to assess changes in channel morphology and its relationship to the movement of groundwater. Please see the attached memo, dated June 28, 2006, for more detail.

Comments on Water Availability Analysis

Water Code requires that water be available for diversion. However, a comparison of water to be diverted to water available on a mean annual basis is an insufficient approach for the analysis required to provide protection of the public trust. Diversion for crop irrigation is likely to be highest when the stream flows are lowest. Therefore, the analysis must address seasonal water availability and water consumption in the watershed, and include defensible seasonal flow reservations (protective bypass flows) for the various trust resources dependent on the riverine environment.

DFG recommends that this analysis be done at least at the monthly level. An adequate analysis must consider both seasonal and year-type variation so any water analysis should also be linked to water-year type variation. DFG recommends that the information be stratified by five water year types (Wet, Above Normal, Median/Average, Below Normal/Dry and Critically Dry); and segregated base on 20 percent-40 percent-60 percent-80 percent exceedence flows.

Comments on the General Information Related to Water Flow Requirements

The seasonal flow reservations (protective bypass flows) should assure that both water quality and quantity to support sensitive life stages of aquatic resources are being bypassed. This can be accomplished with a fisheries flow analysis that is acceptable to

DFG and the National Marine Fisheries Service. It should be conducted to define flows necessary to provide passage, maintain habitat, and protect water quality during the entire diversion season (which has been requested to be altered from a historic April to October regime to a year-round diversion).

It appears from our review that the IS has repeated the assumption of the ESR Technical Reports that pumping has no affect on instream flows or water quality regardless of the pumping rate or natural flow condition. There is no data provided to support that conclusion. DFG has previously recommended that the effects of pumping and changes in those effects due to different pumping regimes (including having the pump off for a period that allows recovery) be addressed in a way that clearly distinguishes conditions due to pumping from those that naturally occur. Those comments can be found in correspondence provided to the SWRCB dated July 9, 2004, and September 16, 2005 (attached). They are incorporated by reference into this letter and are summarized below.

Comments Related to Impacts to Passage

The IS states that the ESR 2005 study "implied continuous habitat connectivity where no physical disruption in migration would have occurred." A stream can exhibit shallow connectivity without providing passage. Not enough information was provided in the ESR Report to support a claim that passage could occur during the summer rearing period nor did the Report make that assertion directly. Additional data will need to be provided to address this issue.

Additionally, diversion during the winter months should not be considered a de minimus impact since winter diversion for crop irrigation are likely linked to periods of low rainfall and corresponding low flow levels in the river. Low flows in the winter can affect species ability to migrate and any impacts must be disclosed and mitigated.

Comments Related to Impacts to Water Quality

Analysis should also address the effects of this diversion on water temperature, dissolved oxygen (DO), riparian health and canopy, salinity, and other water quality parameters which may be influenced by the diversion. An appropriate analysis of the quantity and quality of water remaining in the stream (as surface flow) after the proposed diversions (under both riparian and appropriative rights) is critical in assessing the type and magnitude of impacts to sensitive resources.

Additionally, the IS repeats the Technical Reports' claims that reduced dissolved oxygen levels appear to be unrelated to the project. Data was only collected when the pumps were operating so there is no data to support this claim or the additional claim that pumping actually reduces low levels of DO and improves water quality. Continuous DO monitoring and data collection during various pumping regimes is needed to support such claims and its collection was recommended to fill this data gap in our previous communications with ESR and the SWRCB.

Comments Related to the Impacts to Available Habitat.

Impacts of pumping on the availability of aquatic habitat have not yet been addressed. While a small change in stage height was reported during the 2004 study, an assessment of impacts to flows and, in turn, on available aquatic habitat is not available. Biological sample is reported to have only occurred when the pump was operational allowing no comparison between natural flow conditions and pumping periods. Data needs to be collected, analyzed and made available concerning impacts of pumping as compared with the natural condition to adequately assess pumping impacts to flow, availability of habitat at the stream margin, and water quality.

Comments Related to the Impacts due to the Excessive Application of Water

Department of Water Resources has compiled information intended for planning and determining irrigation efficiencies for various crops in different hydrographic areas. A clear project description, including the acerage that will actually be irrigated, will provide a basis for comparison of the requested water use of this project to that being used in other similar projects in the same hydrographic areas. This information should be made available in the DEIR.

Our agency continues to maintain that even the estimated six af per acre is far in excess of that necessary for the proposed beneficial use of pasture irrigation and may constitute waste, unreasonable use, or unreasonable method of use. This has the potentially to be particularly egregious in the winter if irrigation were to be applied as suggested with a year-round request for diversion. Excessive application has the potential for a range of adverse biological effects. These potentially significant effects result from the fact that: 1) Irrigation water applied under appropriative rights for this project moves diverted water out of the basin (since excess tail water flows to the ocean or into other watercourses), which does not allow excess water to flow back to the Big Sur River to support resources there; and 2) excess water application and the resulting run off threatens adverse water quality and erosional impacts to the seas cliffs and watercourses within, and outside, the project area where tailwater is being released.

Although the IS proposed erosion control measures to mitigate for any excessive runoff of tail water, DFG recommends avoiding this impact by requiring the application of the appropriate amount of water as the superior mitigation in terms of resource protection.

Comments Concerning the CEQA Baseline

The IS details the information that the SWRCB used to determine the CEQA baseline for this project, which is "the point above which the project's contributory impacts are evaluated." We are concerned about several aspects of the determination of the baseline, but in particular, we are very concerned that the SWRCB has used a period of unpermitted use to set the baseline. The New Well was constructed and put into use without either a permit or review under CEQA, after dates which are used to define an

"ongoing project" exempt from CEQA (PRC 21169; CEQA Guidelines 15261). Failure to get a water right further excludes the new well as an exempted project since they must be "otherwise legal and valid" (PRC 21169). The new well served to increase the amount of water diverted over and above that of the old well, which could be regarded as "pre-CEQA," but nonetheless, was still operating without a valid water right.

As stated in the IS, the period selected for establishing the pumping baseline does not capture the years of lowest water use. As such, it sets a higher baseline, decreasing the level of impacts which are being evaluated, as well as the level of impacts which would need to be mitigated to protect public trust.

In addition, the historical use of water is during the period of April 15 to October 15; a request to divert out of the river year-round constitutes a new period of use (October 16 to April 14). We believe that the season of use is also pertinent to designation of the baseline, in addition to the overall volume of water, and both should be analyzed regarding impacts which have the potential to occur with year-round diversion.

DFG has provided the SWRCB with specific comments regarding informational needs in previous correspondence; we suggest that these and other documents pertinent to this project's impacts be made available for public review on the SWRCB website.

Thank you for the opportunity to provide you with our concerns regarding this project. Should you have questions regarding our comments, please contact Ms. Linda Hanson, Staff Environmental Scientist, at (707) 944-5562; or Ms. Deborah Hillyard, Staff Environmental Scientist, at (805) 772-4318.

Attachments:
cc: See next page

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Attachment 1

State of California

Memorandum

To: Mr. Kyriacos C. Kyriacou
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Division of Water Rights
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Fax: (916) 341-5400

Date: November 6, 2002

Orig. signed by Robert W. Floerke

From : Robert W. Floerke, Regional Manager
Department of Fish and Game - Central Coast Region, Post Office Box 47, Yountville, California 94599

Subject: Response to Notice of Preparation of Draft Environmental Impact Report for Water Right Application 30166 by El Sur Ranch to Appropriate Water from Big Sur River Subterranean Stream, Monterey County

The Department of Fish and Game (DFG) has received the Notice of Preparation (NOP) for a Draft Environmental Impact Report (DEIR) for Water Right Application (WA) 30166, submitted by the El Sur Ranch, requesting an appropriation of 1,800 acre feet annually (afa) from the underflow of the Big Sur River, Monterey County. DFG has several concerns regarding the proposed appropriation and its effects on the environment, and requests that these concerns be addressed in the DEIR. As you are aware, DFG is both a Trustee and Responsible agency under the California Environmental Quality Act (CEQA). As such, we are responsible for providing input on projects that may have an effect on fish and wildlife resources.

WA 30166 seeks a permit to directly divert 1,800 afa from January 1 through December 31 of each year. The water would be diverted from the Big Sur River subterranean flow through wells in Andrew Molera State Park for the purpose of irrigation of 292 acres of pasture on the nearby El Sur Ranch. We have concerns regarding the effect that this diversion would have on the resources of the Big Sur River and its estuary, and on the adjacent riparian and upland habitats.

This proposed project may significantly affect the quantity and quality of water in the Big Sur River, including subterranean flows, and impact resources that are dependent on the riverine environment. In addition, place of use impacts on and adjacent to the 292 acres where the water is proposed to be discharged must be evaluated. The DEIR must include information from surveys that have been conducted to assess the presence of special status species and habitats, as well as addressing the potential for impacts to occur to these resources as a result of implementation of the proposed diversion and application of water as irrigation. In addition, analysis of the quantity and quality of water remaining in the stream after this proposed diversion as well as the other diversions within the watershed is critical in assessing the type and magnitude of impacts to sensitive resources.

A number of sensitive resources are either known or believed to occur in association with the riverine habitat of the Big Sur River including but not limited to:

1. Steelhead - South/Central California Coast ESU *(Oncorhynchus mykiss)*, listed as threatened under the Endangered Species Act (ESA) and a California species of special concern;

2. Tidewater goby *(Eucyclogobius newberryi)*, listed as endangered under the ESA and a California species of special concern;

3. California red-legged frog *(Rana aurora draytonii)*, listed as threatened under the ESA and a California species of special concern;

4. Coast range newt *(Taricha torosa torosa)*, a California species of special concern;

5. Southwestern pond turtle *(Clemmys marmorata pallida)*, a California and Federal species of special concern;

6. Two-striped garter snake *(Thamnophis hammondii)*, a California species of special concern;

7. Pacific lamprey *(Lampetra tridentata)*, a species in decline; and

8. Central California Sycamore Alluvial Woodland, a rare and declining natural community of high inventory priority to DFG.

Surveys should be conducted at the appropriate time of year to determine if: 1) these resources occur on the project site, and 2) if the proposed project will have any impacts to these resources. Measures should be identified which would avoid or minimize all identified potential impacts to public trust resources.

Of particular concern to DFG is the information which will be needed to assess the effects that diversion of 1800 acre-feet (af) of water will have on the flows of the Big Sur River and the resources supported by those flows. The applicant submitted a report entitled *El Sur Ranch Hydrologic Investigation*, an analysis of the river prepared by Jones and Stokes Associates (JSA) in April 1999. This report was reviewed in October 2001, by the Department of Conservation's Division of Mines and Geology (DMG) through an interagency contract with DFG (see attached). DMG found a number of deficiencies with the JSA analysis. We request that the deficiencies identified by DMG be addressed.

A water availability analysis should be conducted to determine if this application, in addition to flows currently diverted from the Big Sur River, would significantly reduce the water available for public trust resources in the vicinity of the diversion. Such an analysis should include a water budget which would address water availability and water consumption in the watershed, and propose defensible flow reservations for the various trust resources dependent on the riverine environment. The water analysis should be stratified by five water year types (Wet, Above Normal, Median/Average, Below Normal/Dry and Critically Dry); and segregated base on 20 percent-40 percent-60 percent-80 percent exceedence flows. We

recommend that an Instream Flow Incremental Methodology (IFIM), or other fisheries flow analysis that is acceptable to DFG and the National Marine Fisheries Service, be conducted in order to define flows necessary to support public trust resources. Analysis should also address the effects the diversion has on water temperature, riparian health and canopy, salinity, and other water quality parameters which may be influenced by the diversion.

Discharge of 1800 acre-feet of water onto the upland environment can have a number of impacts, ranging from acceleration of seabluff retreat and coastal erosion, increased runoff that can lead to erosion and sedimentation, alteration of habitats, and decline of associated species. In the vicinity of the place of use for WA 30166, a number of sensitive resources are known or have the potential to occur, including but not limited to:

1. Smith's blue butterfly *(Euphilotes enoptes smithii)*, listed as endangered under the ESA;

2. Monarch butterfly *(Danaus plesippus)* wintering sites;

3. Black swift *(Cypseloides niger)*, a California species of special concern;

4. Little Sur manzanita *(Arcotostaphylos edmundsii)*, of which the form found in the area *(parvifolia)* is listed as California rare;

5. Monterey paintbrush *(Castelleja latifolia)*;

6. Hutchinson's larkspur *(Delphinium hutchinsoniae)*;

7. Fragrant fritillary *(Fritellaria liliacea)*;

8. Dudley's lousewort *(Pedicularis dudleyi)*, listed as California Rare;

9. Adobe sanicle *(Sanicula maritima)*, listed as California rare;

10. Maple-leaved checkerbloom *(Sidalcea malachroides)*; and

11. Central Dune Scrub and California Oatgrass Grassland, sensitive natural communities of high inventory priority to DFG.

Surveys should be conducted at the appropriate time of year to determine if these resources occur on the place of use for the project site and, if so, what the impacts on these resources will be as a result of the proposed project. Other potential place of use impacts, such as accelerated bluff retreat, coastal erosion, or other erosion and sedimentation, should be identified and evaluated, and measures proposed to avoid or minimize all identified potential impacts. This should include identification of irrigation technology which would maximize water conservation, and/or other measures intended to reduce water demand.

While the NOP refers to the diversion of 1800 af for use on 292 acres, it does not provide information on the amount of water also diverted by the applicant under riparian claim for use on 90 acres of El Sur Ranch property. Any use of additional water under a riparian claim, above the 1800 af requested in WA 30166, should be disclosed to allow adequate assessment of the full potential impact of this project. Even if the total amount of water diverted is limited to the 1800 af requested, our agency believes that 6 af per acre is far in excess of that necessary for the proposed beneficial use of pasture irrigation and may constitute waste, unreasonable use, or unreasonable method of use balancing the proposed use against the potential significant impacts on this sensitive area. In addition, this amount may not be consistent with either the amount that the applicant has a legal right to use or the historic use of the wells in question. This latter issue should be addressed in order that the CEQA baseline for evaluation of impacts be appropriately established; we agree with SWRCB's initial determination that the baseline should be the pre-project condition in 1975, and we would be concerned if the unpermitted use of water would provide the only basis

for establishing a new baseline. Information needed to establish baseline use should include data such as parcel and water right conveyances, easements, well logs, water meters, or electrical bills demonstrating water use, or other information that would clarify historic use and basis for any riparian rights.

The DEIR needs to identify whether this request, in combination with other allocations from the Big Sur River, would be consistent with the *Big Sur River Protected Waterway Management Plan*, prepared in April 1986 by the County of Monterey. In addition, the diversion itself and the impacts on the place of use need to be evaluated for consistency with the Big Sur Local Coastal Plan; with the terms and conditions of any conservation easement placed over the El Sur Ranch lands; and terms and conditions which may have been placed at the time of conveyance of Department of Parks and Recreation (DPR) lands from Frances Molera to The Nature Conservancy and from The Nature Conservancy to DPR. DFG requests full disclosure of the location of all water use, including whether any portion of this will require an out-of-basin transfer. Significant additional impacts may result from such an action. The diversion needs to be evaluated for consistency with any Monterey County policy or other policies which may preclude or counsel against such transfers.

Thank you for the opportunity to identify information needed to adequately analyze the effects that the proposed project may have. Should you have any questions regarding our comments, please contact Deborah Hillyard, Staff Environmental Scientist, at (805) 772-4318; or Carl Wilcox, Habitat Conservation Manager, at (707) 944-5525.

Attachment

cc: See next page

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bcc: Harllee Branch, Office of General Counsel

e✉: Hillyard, Urquhart, Wilcox, Hanson, Hill,
Anderson, Nelson - CCR
DH/LH/SW/kg

Attachment 2

State of California **The Resources Agency**

Memorandum

To: Kevan Urquhart
Senior Biologist Supervisor (Fisheries)
Department of Fish & Game,
Central Coast Region - Southern Units
20 Lower Ragsdale Dr. Suite 100
Monterey, CA 93940
831-649-2882

From: Department of Conservation
Division of Mines and Geology
Watershed Restoration Program
1027 10th Street, 4th Floor
Sacramento, CA 95817

Subject: Hydrogeologic Review of El Sur Ranch Hydrologic Investigation

Introduction

At the request of Mr. George Heise, Department of Fish & Game (DFG), Native Anadromous Fish & Watershed Branch, the Department of Conservation's Division of Mines and Geology (DMG) has reviewed the report entitled El Sur Ranch Hydrologic Investigation (Report) prepared by Jones & Stokes Associates, Incorporated. Mr. Heise was acting on behalf of Mr. Kevan Urquhart, Senior Biologist Supervisor (Fisheries) of DFG, Central Coast Region. Mr. Urquhart was consulted during the course of the review, providing valuable insight and project history.

Findings

1. The Report includes significant hydrogeologic analyses and conclusions and thus constitutes a geologic report as defined in California Code of Regulations, Title 16, Division 29, Article 1, Section 3003 (f). The Report lacks the signature of the appropriately licensed professional geologist responsible for the work in accordance with Chapter 12.5, Article 3, Section 7835 of the Business and Professions Code, which reads;

   > 7835. Required Preparation of Plans by Registered Geologist - Signing or Stamping with Seal. All geologic plans, specifications, reports or documents shall be prepared by a registered geologist, or registered certified specialty geologist, or by a subordinate employee under his direction. In addition, they shall be signed by such registered geologist, or registered certified specialty geologist or stamped with his seal, either of which shall indicate his responsibility for them.

2. The Report concludes on page 3-2 "WELL PUMPING DOES NOT SIGNIFICANTLY DECREASE FLOW, STAGE, OR VELOCITY IN THE RIVER AND LAGOON". However, the Report does not contain any data to substantiate this conclusion. DMG's review indicates the flow, stage, and velocity data in the Report were gathered (measured) incorrectly and thus are invalid for the following reasons:

   - In order to evaluate the impact of stream recharge (losses to the aquifer) induced by the pumping of wells, several calibrated cross-sections located up- and down-stream of the wells are required. Changes in the cross-section (wetted perimeter) of the channel can readily mask losses due to ground-water recharge. For example, if the grade (s) is held constant and the wetted perimeter is reduced and the stage (water level) does not change, then there has been a reduction in the cross-sectional area in which flow is occurring and a corresponding reduction in flow (Q). Only by surveying the wetted perimeter and the grade of the reach can Q for a given stage be determined. Losses, if occurring, are then evaluated by comparing up-stream and down-stream Q.

   - The Report's discussion of the water-level monitoring network indicates that wetted perimeter and grade of the river channel were not measured at instrument locations and thus cross-sectional area was not determined. Without cross-sectional area (A) at each instrument location and the grade (s) of the reach, the "stage" data cannot be interpreted. Only by knowing A and s can Q be calculated for a given stage and a comparative analysis of Q performed. As such, the water-level (stage) data presented in Figures 7a, 7b, 7c, 8a, 8b, 8c, and 13, can not be used for evaluating the impact of pumping the irrigation wells on the Big Sur River. Thus, the question regarding the magnitude of the impacts from pumping on the Big Sur River has not been addressed and cannot be addressed with the data presented in the Report.

Recommendations

1. The Report should be signed in accordance with the requirements of Chapter 12.5, Article 3, Section 7835 of the Business and Professions Code.

2. In order to resolve the ambiguity regarding the impacts from pumping on the Big Sur River DMG recommends that the following be undertaken:
   - Establish and survey reference stream cross sections and stream grade with routine checks;
   - Calibrate the United States Geologic Survey (USGS) stream gauge;
   - Install the necessary piezometer clusters to resolve spatial and temporal issues associated with use of the irrigation wells and the behavior of the aquifer;
   - Install data loggers to monitor head and water quality in the piezometers, the reference stream cross sections, and at the USGS gauge;
   - Collect data for one year;
   - Analyze data using methods that are appropriate for the hydrogeologic setting (conceptual model).

   The recommended tasks should provide sufficient data of acceptable quality to resolve the current ambiguity and answer the questions regarding impacts to the Big Sur River from the operation of the El Sur Ranch wells.

3. The Report should be revised to address the specific comments provided below.

Comments

Executive Summary

Page ES-2: The Report states that " In all but critically dry years, the maximum possible rate of stream flow depletion with both wells operating simultaneously (6cfs) is substantially less than the amount of summer base flow in the river (10–20 cfs) plus groundwater underflow (5cfs)." The data in Figures 17 and 18 indicate that five of the eight years for which data is presented, i.e. 62 percent of the time, the late summer through fall flow in the Big Sur River was less than or equal to 10cfs. These data also indicate that 6 cfs represents a depletion ranging from 60 to 100 percent of the river's base flow. The data indicates that the 100 percent level was reached four of the eight years for which data is presented, i.e. 50 percent of the time. Thus the use of the phrase "(6cfs) is substantially less than the amount of summer base flow in the river" is inaccurate.

Chapter 2

Page 2-2: The Report states that " stream flow is somewhat depleted as a result of domestic well pumping along the reach between the gage and Andrew Molera State Park. The Report does not present data to support this claim.

Page 2-3: The discussion of the water-level monitoring network indicates that surveyed cross-sections of the river channel were not made at instrument locations and thus cross-sectional area was not determined. Without cross-sectional area (A) at each instrument location and the grade (s) of the reach, the "stage" data cannot be interpreted. Only by knowing A and s can Q be calculated for a given stage and a comparative analysis of Q be performed. Thus, the water-level (stage) data presented in Figures 7a, 7b, 7c, 8a, 8b, 8c, and 13, can not be used for evaluating the impact of pumping the irrigation wells on the Big Sur River.

Page 2-5: The Report points out that the Big Sur River is dynamic and had experienced dramatic changes in channel morphology following the winter of 1998. Given the reliance on data from the USGS stream gage, it does not appear that the gage site was surveyed following the winter of 1998 to confirm that it was still in calibration. Without a confirmatory survey, the data from this is questionable and should be considered unsuitable for analyses such as evaluating the impact of pumping the irrigation wells on the Big Sur River.

Page 2-7: Table Four indicates the watershed of the Big Sur River is 58.5 square miles. On page 2-2 the Report states that the watershed of the Big Sur River is 46.5 square miles, a difference of over 25 percent. Watershed area is important in estimating flow, the area of the Big Sur River watershed needs to be clarified.

Page 2-7: The Report states that 80% of the water extracted for non-agricultural uses will return to either ground water or the river. A basis for this estimate is not provided.

Page 2-7: The Report presents spot measurements of flow in the tributaries in Table 4. The source of these data is cited as USGS 1996. The full citation (Chapter 4 References) indicates the data contained in the cited Report is from 1995, which the data in Figures 5, 17, and 18 indicate was a rather wet year, as it does for 1996. The assumption is made that flow in the tributary was, at the time of measurement, minimum and constituted a worst-case scenario (with respect to inflow to the Big Sur River). Thus, rather than a worst-case scenario, those tributary flows more realistically represent a best-case scenario.

Figures 17 & 18: The data in these figures indicates that five of the eight years for which data is presented, the late summer through fall flow in the Big Sur River was less than or equal to 10cfs. This is important in that, throughout the Report, the focus has been on the average flow and not critical seasonal flows. Thus, as noted in the previous comment, the analysis does not represent a conservative or "worst-case" scenario, but a scenario more akin to a best-case scenario.

Page 2-8: The water balance for the lower Big Sur River did not include evapotranspiration, even though the presence of a significant occurrence, i.e. "heavily vegetated", of phyreatophytes was noted (Appendix B). Phreatophytes significantly impact the water balance, especially at low-flow conditions and must be accounted for in the water balance.

Page 2-10 & 2-11: The Report indicates that the monitoring wells had well screen lengths from 15 to 20 feet. It is DMG's experience that well screens of this length are too long to provide the spatial and temporal resolution needed to determine the frequency and duration of periods for which the river is either effluent or influent. Site conditions, e.g. shallow depths, anisotropic alluvium, and close proximity of no-flow and recharge boundaries, indicate that the requisite data would have been acquired through use of depth-staggered piezometer clusters. The piezometers would have well screens on the order of one- to two- feet in length (Fetter 1994).

Page 2-16: The Report states "As long as flow is present in the Big Sur River, the groundwater basin will remain approximately full". DMG is of the opinion that this statement is not completely accurate. The lower reaches of the Big Sur River, the subject of the Report, will vary seasonally from effluent to influent. With respect to the operation of the wells, the stream becomes influent. While it is influent, the stream may have water in it, yet the water table can be significantly lower than non-pumping periods. This occurs because alluvial materials are anisotropic, a condition in which the horizontal hydraulic conductivity can be in excess of 20 times greater than the vertical hydraulic conductivity (Weeks 1969). Thus, recharge from the river channel takes significantly longer (time) to reach and replenish the aquifer than does the removal of the water by wells. This is due to the recharge process being controlled by vertical conductivity while the extraction process is controlled by horizontal conductivity. This condition manifests itself in the form of a recharge mound beneath the stream rather than a uniform flat water-table surface. Thus the aquifer can be significantly depleted while surface water is still present in the stream.

Page 2-17: The Report hypothesizes that the cyclic increases in salinity of water pumped from the wells is the result of "wave overwash" into the estuary during high tides. The water-level and electrical conductivity data presented in Figure 19 and the results of chemical analyses in Appendix F are given as the basis for the "overwash" hypothesis. However, the chemical data in Appendix F consists of a one-time sampling that temporally does not correspond to the data presented in Figure 19. The location where the sample was taken is not shown on a map so the spatial correlation to the data in Figure 19 is uncertain. The chemical data suggests that at the time (low tide? slack tide? high tide?) and place where the sample was taken, surface and ground water had similar chemistry. The data in Figure 19 is interesting in that it indicates that the mean water level in the estuary (lagoon) is approximately 0.75 feet and that the mean ocean level is approximately 2.5 feet. Neither the figure nor the text indicate whether these are elevations based upon a standard datum such as Mean Sea Level (msl) or some other datum or if they are elevations at all. However, if these are elevations based on a uniform datum, then these data indicate that there is a landward, salt-water gradient. This is consistent with a classic coastal aquifer setting. Figure 19 also indicates that the salinity intrusion or pulse occurred approximately 48 hours after the water level in the aquifer had been depressed by heavy pumping. Again, this is consistent with a coastal aquifer setting in which there is a delay or temporal attenuation of the tidal pulse (Fetter 1994). Thus, the data in this section provides a fairly classic example of salt-water intrusion. During the later portion of the irrigation

season the prism of fresh water (aquifer) is depleted, as the river can no longer provide sufficient recharge. The depletion of the aquifer results in an increase in the relative hydrostatic pressure of the salt-water, especially at high tides, causing the salt water – fresh water interface to migrate towards the wells. As the salt water – fresh water interface migrates toward the wells so does the associated zone of mixing. It is this zone of mixing which is causing the increase salinity in the wells.

Appendix D: This appendix presents data on the analysis of the aquifer test. Table D.1 indicates that the aquifer test data was evaluated by use of Boulton early- and late-time type curves for delayed yield from a homogeneous anisotropic unconfined aquifer (Figures D1, D2, D8, & D9). This model is a good first approximation for the aquifer underlying Creamery Meadow, which is a heterogeneous anisotropic unconfined aquifer. However, the curves shown in Figures D1, D2, D8, and D9 are not Boulton curves (Boulton 1963, 1971), but are Theis curves which are for the analyses of homogeneous isotropic confined aquifers and are not appropriate for the analyses of the aquifer underlying Creamery Meadow (Theis, 1935). The other analytical method listed on Table D.1 is identified as that of Jacob, but is actually the method developed by Cooper and Jacob. This method is a simplification of the Theis method and is also not appropriate for the analyses of test data from the aquifer underlying Creamery Meadow (Cooper & Jacob, 1946).

It is DMG's opinion that the appropriate method to have used for the analyses is the Neuman method (Neuman 1972, 1974,1975). Analytical method is critical to the evaluation of aquifer test data. In this case, the flattening of the draw-down curve that the Report attributes to rapid recharge from the river, could in fact be from delayed yield, which is a manifestation of the anisotropy discussed under the comment for page 2-16. If the apparent recharge is actually delayed yield, then the parameters ascribed to this aquifer are incorrect and thus a safe yield (long-term pumping rate) cannot be ascertained.

Appendix E: This appendix consists of a report prepared by Mussetter Engineering Incorporated for Jones & Stokes Associates, Incorporated entitled Geomorphic Evaluation of Big Sur River, Andrew Molera State Park. The key focus of this four–page document is on the morphological features associated with peak stream-flow events (pages 2, 3, & 4). Though interesting, peak flow phenomena are not germane to the issue of concern, impacts to the river at low or minimal flows.

References:

1. Jones & Stokes Associates, Inc., April 1999, El Sur Ranch Hydrologic Investigation.

2. Morisawa, Marie, 1968, STREAMS their dynamics and morphology, McGraw-Hill pub., San Francisco, 175pp.

3. Fetter, C. W., 1994, Applied Hydrogeology, Macmillan pub., New York, 3rd ed., 691pp.

4. Weeks, Edwin P., 1969, Determining the Ratio of Horizontal to Vertical Permeability by Aquifer-Test Analysis, Water Resources Research, Vol. 5, No. 1, Pub. AGU

5. Boulton, Norman Savage, 1963, Analysis of Data from Non-Equilibrium Pumping Tests Allowing for Delayed Yield From Storage, Inst. Of Civ. Eng. Proceedings, V. 26, paper No. 6693.

6. Boulton, Norman Savage and Pontin, James M. A., 1971, An Extended Theory of Delayed Yield From Storage Applied to Pumping Tests in Unconfined Anisotropic Aquifers, Journal of Hydrology, Vol. 53, No. 65

7. Theis, Charles V., 1935, The relation Between the Lowering of the Piezometric Surface and the Rate and Duration of Discharge of a Well Using Ground-Water Storage, Transactions of the American Geophysical Union, Vol. 16.

8. Cooper Jr., H. H. and Jacob, C. E., 1946, A Generalized Graphical Method for Evaluating Formation Constants and Summarizing Well-Field History, Transactions of the American Geophysical Union, Vol. 27, No. IV.

9. Neuman, Schlomo P., 1972, Theory of Flow in Unconfined Aquifers Considering Delayed Response of the Water Table, Water Resources Research, Vol. 8, No. 4.

10. Ibid, 1974, Effect of Partial Penetration on Flow in Unconfined Aquifers Considering Delayed Gravity Response, Water Resources Research, Vol. 10, No. 2.

11. Ibid, 1975, Analysis of Pumping Test Data From Anisotropic Unconfined Aquifers Considering Delayed Gravity Response, Water Resources Research, Vol. 11, No. 2.

I look forward to working with you in the future toward the resolution of this challenging project. If you have any questions regarding this memorandum or the project in general, please feel free to contact me at 916-322-6968 or sdreynol@consrv.ca.gov.

Cordially,

10-4-01 ***Original signed by***
Date, Stephen D. Reynolds, CEG 1286, HG 200
Senior Engineering Geologist

Concur

10-4-01 ***Original signed by***
Date, Trinda L. Bedrossian, CEG 1064
Supervising Geologist

Attachment 3

e of California

Memorandum

To: Ms. Victoria Whitney, Chief
State Water Resources Control Board
Division of Water Rights
Post Office Box 2000
Sacramento, CA 95812-2000
Fax: (916) 341-5400

Date: July 2004

Attention Mr. Kyriacos C. Kyriacou:

From: Robert W. Floerke, Regional Manager ***COPY - Original signed by Robert W. Floerke***
Department of Fish and Game - Central Coast Region, Post Office Box 47, Yountville, California 94599

Subject: Comments on the Interim Monitoring Plan Proposed for WA 30166 by El Sur Ranch to Appropriate Water from Big Sur River Subterranean Stream, Monterey County

Department of Fish and Game (DFG) personnel have received and reviewed the May 2004 El Sur Ranch Interim Monitoring Plan for Water Right Application (WA) #30166 (2004 Monitoring Plan) as submitted by the Source Group, Inc. This WA project seeks to divert 1,800 acre-feet per annum (afa) from the underflow of the Big Sur River from January 1 to December 31 of each year to irrigate 292 acres of pasture land. As stated in our response to the Notice of Preparation (NOP) for this project (attached), DFG has concerns regarding the effect of this diversion, and the others in the area, on the resources of the Big Sur River, its estuary, and on the adjacent riparian and upland habitats. DFG has previously provided comments (attached) on a report entitled *El Sur Ranch Hydrologic Investigation*, prepared by Jones and Stokes Associates. DFG continues to be concerned about the deficiencies and data gaps identified at that time and recommend that those concerns be appropriately addressed in the current hydrological studies.

The focus of this letter is to provide comments on our review of the portion of the 2004 Monitoring Plan dealing with the assessment of fishery habitat quality and availability. The stated objectives of the 2004 Monitoring Plan are: 1) to determine if seasonal changes occur within the lower Big Sur River and lagoon that would adversely affect habitat quality and availability during the summer and fall season, and 2) to assess the potential effects of the diversion operation on fishery habitat if changes in quality and availability of habitat are detected. Our comments and recommendations follow.

Stated Objective #1: to determine if seasonal changes occur within the lower Big Sur River and lagoon that affect fishery habitat.

On review, DFG found that the proposed study should provide sufficient additional information to allow changes in fishery habitat, both habitat quality and availability, to be assessed under a variety of natural seasonal flow conditions. However, we make the following recommendations for modifications to the study to ensure the appropriate future analysis of results:

- The monitoring report should include the specific temperature and dissolved oxygen (DO) data collected over the range of flows rather than utilizing a "stressful" threshold that may not be held in general agreement. However, any thresholds utilized in the analysis should be included in the report.

- The survey should be modified to include continuous DO monitoring at specific locations in addition to the proposed continuous temperature monitoring. The continuous DO monitoring locations should be located in areas subject to temporal change due to depth and/or aquatic vegetation.

Stated Objective #2: to assess the potential effects of the diversion operation on fishery habitat if changes in seasonal quality and availability of habitat are detected.

DFG recognizes that this *is* the primary objective of any monitoring plan designed to provide information concerning the potential impacts of a diversion. To accomplish this objective, the effects of pumping on habitat quality and availability should be clearly distinguishable from any effects caused by changes in the natural flow. Yet our review of this monitoring plan found that there is nothing proposed to allow for the impacts of pumping component to be adequately assessed. Instead there is a masking of potential impacts of pumping by allowing them to become an indistinguishable and difficult to quantify part of the "natural" flow conditions within the lower El Sur River.

The primary component of this portion of the monitoring endeavor should disclose the impacts of pumping as initially discussed in DFG comments to the NOP. To that end, the effects of pumping and any changes in pumping regime need to be addressed in a way that clearly distinguishes those activities from the changes that would naturally occur within the system. This parameter is

missing from the monitoring as proposed and as such the information collected will not provide conclusive results concerning the effects of pumping on habitat quality or availability.

- DFG recommends that relatively minor modifications be made to the 2004 Monitoring Plan to allow for sampling to occur during specific "pump on" and "pumps off" periods, with adequate time allowed for recovery in between these sampling events. Providing sampling during times when pumping activity is occurring and when it is not will allow the impacts of the pumping activity to be more easily discerned from the flow reductions that naturally occur during the summer and fall. As proposed, the study does not appear to allow for the inclusion of this essential component for analysis and the effects of pumping will be masked by natural seasonal variability and groundwater recovery with inconclusive results concerning the impacts of pumping the likely outcome. Study design should attempt to avoid masking of pumping impacts to provide the analysis required by the California Environmental Quality Act (CEQA) and requested in our response to the NOP.

- The pumping regimes to be tested (including the different pumping rates, pumping durations, and the recovery times between pumping tests) need to be clearly defined in the monitoring plan procedures and in the subsequent report.

- If none of the three proposed stage/flow transects are within the well field zone of influence, then DFG recommends that an additional transect within the zone of influence be added so that the effects of pumping on stage/flow can be adequately assessed. (Transect # 1 appears to be above the well zone, it was unclear if Transect # 2 is within this well zone or above it, and Transect # 3 is within the zone of tidal influence that will mask any pumping impacts.) As described, it appears that the three transects will likely yield inadequate information to determine the impacts of the well pumping on steelhead.

Acting as both a Trustee and Responsible agency under CEQA for this project, DFG is responsible for providing input during the environmental review of projects that have the potential to impact fish and wildlife resources. DFG has provided these recommendations and comments to allow for the modification of the Monitoring Plan prior to the low flow season so that it will specifically address the areas of concern stated in our original

NOP. It is expected that a revised Monitoring Plan will provide adequate information for the analysis needed to assess the type and magnitude of impacts to sensitive resources of the Big Sur River caused by this diversion, and others in the well field.

Finally, and of special concern in light of the sensitivity of resources potentially impacted by this study, the monitoring plan does not appear to provide for a cessation of pumping activities if adverse impacts to listed species are detected. During extremely low flow conditions, pumping restrictions have already been recommended for this project to help ensure that listed species are protected. However, based on the information presented in the 2004 Monitoring Plan, an increase in survey frequency will occur rather than the restriction on pumping recommended for low flow periods. Since increasing the frequency of surveys does nothing to avoid adverse impacts, it would be prudent to incorporate procedures for avoiding adverse impacts to listed species into the 2004 Monitoring Plan.

Thank you for the opportunity to identify information needed to adequately analyze the effects of the project. If you have questions regarding our comments, please contact Ms. Linda Hanson, Staff Environmental Scientist, at (707) 944-5562; or Mr. Carl Wilcox, Habitat Conservation Manager, at (707) 944-5525.

Attachments
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e✉: Department of Fish and Game
Harllee Branch, Office of General Counsel
Hillyard, Urquhart, Wilcox, Hanson, Hill (CCR)

LH/pm

Attachment 4

Interoffice Technical MEMORANDUM

To: Deborah Hillyard, Senior Environmental Scientist
Central Coast Region

From: Kris Vyverberg, Senior Engineering Geologist
Robert Hughes, Hydraulic Engineer
Fisheries Engineering Team
Headquarters

Date: 7 September 2005

Subject: Comments on the El Sur Ranch Technical Report, Water Rights Application #30166, Monterey County

Our comments and recommendations based on a (very) preliminary review of the El Sur Ranch Technical report include the following:

1. **How does the fact that a large number of the September flow records are estimated (and may be of poor quality) affect the El Sur Ranch (ESR) single-variable and multi-variable regression analysis?** The USGS Water Data Report for 2002 includes the following comment for gage 11143000 Big Sur River near Big Sur, CA: *"Records are good except for estimated daily discharges and flows during summer season, which are poor." The 2003 USGS Water Data Report includes a similar statement suggesting that the records are "fair".* A review of the USGS streamflow database indicates that some or all of the September streamflows are estimated in the following years: 1991, 1992, 1995, 1999, 2002, and 2004.

2. **ESR should revisit their analysis based on proposed pumping practices recognizing that the requested 5.84 cfs diversion rate is proposed as a monthly average, and that short term diversion rates may be substantially higher.** The ESR technical report establishes a streamflow threshold of 5.3 cfs below which ESR will modify its irrigation practices. The associated analysis was based on existing pumping practices, yet the water rights application (as we understand it) is for an increase in diversion authorization.

3. **ESR should substantiate the decision to apply upper watershed evapotranspiration (ET) estimates to the lower portion of the watershed and study area.** In general, the water availability analysis is overly simplistic. It uses average annual streamflow and rough estimates of average annual precipitation to estimate ET in the upper watershed. (Note: ESR's ET term is not evapotranspiration; rather, it is a term to account for all unknown depletions from the watershed.) ESR then assumes the same unknown depletion term for the lower watershed without adequately justifying the appropriateness of this assumption.

4. **We recommend that ESR revisit their water availability analysis based primarily on the stream flow record for USGS streamflow gage 11143000 (recognizing the concern with the summer season data noted above in (1)).** This gage covers more than 80 percent of the watershed and has a 55 year record. Very few projects are fortunate enough to have this type of stream gage record available. The revised water availability analysis should be based on monthly streamflow data extended through the project. The analysis should evaluate the impact of average and maximum diversion rates on minimum and average monthly streamflows throughout the diversion season.

5. **Clarify the sources of information that are the basis for the subsurface model developed to explain bedrock, groundwater, saltwater relations and the influence of pumping (or lack thereof) on these relations.** The hydrogeology report states that the underlying bedrock constricts the alluvial valley a short distance inland from the ocean, and refers to geophysical surveys that substantiate the shape of the alluvial basin. The effect of the bedrock constriction is to force underflow in the alluvium upward so that it emerges as surface flow into the river (at sampling stations 7, 8 and 9). The report concludes that this upwelling of subsurface water – which was a documented occurrence throughout the 2004 pumping season – is evidence of a large groundwater reserve unlikely to be affected by pumping during even the driest of years. Before accepting this as a technically sound hypothesis against which to consider the impacts of the proposed diversion on terrestrial and aquatic resources, we recommend that ESR address the following inconsistency: Figure 3-12 cross section D-D' of the report illustrates the shape of the bedrock basin and its alluvial filling of sand, gravel and cobbles. This cross section is consistent with the report narrative and with the 3D representation of the bedrock and ground surfaces shown on Figure 3-9. Plate 1 in the geophysical report (Appendix E) is a map that shows the location of the geophysical survey lines. Survey line 1 is at the mouth of the river and more less runs west to east along the beach. This survey line is parallel to and ± 400 feet from cross section D-D' as shown on Figure 3-12. Plates 2 and 6 of the geophysical report

show the results of the surveys in cross section. The shape and location of the bedrock surface in the geophysical cross sections is not consistent with the shape of the bedrock as described in the narrative or shown on the figures in the main body of the report (Figures 3-9, 3-12, and 3-48). The project geologist indicated that the shape of the basin was determined by subsurface sampling done in the 1960's In conversation (DFG and consultants to El Sur Ranch, 26 August 2005, Yountville). The narrative briefly mentions this sampling, but no drill logs or maps of the sampling results are provided.

6. **Resolve the inconsistency between the water data provided and the conclusion that groundwater pumping is not an influence on water quality.** The information on losing and gaining river reaches was collected primarily when the wells were pumping. There is either a paucity of data for pre-pumping water quality, or the data are not provided. In Appendix M, the earliest sampling is April 18, 2004, before the irrigation season begins. At this time the temperature at stations 7, 8 and 9 are similar to the other stations and align with a linear trend of warming in the downstream direction. The first electrical conductivity (EC) measurements are taken on April 18th and, like temperature, they show a linear trend with no variation at stations 7, 8, and 9. These data suggest that groundwater flow into the river is not significant during pre-pumping conditions, but that it increases and EC rises to a measurable level with pumping and, hence, that there is a link between water quality and pumping.

7. **Resolve the inconsistency between these water quality data and the conclusion that the shape of the bedrock basin controls groundwater upwelling and, thus, is an effective barrier against salt water intrusion that might otherwise result from existing or increased rates of groundwater pumping.** As noted above, the first EC measurements show a linear trend with no variation at stations 7, 8, and 9 before pumping begins, but EC rises to a measurable level during pumping. These data seemingly suggest that pumping – with or without a bedrock influence on upwelling – is reducing the amount of groundwater discharging to the ocean and that salt water may be moving in to fill the void. If this is the case, then an alternative explanation for the upwelling might plausibly be that as the salt water wedge moves inland and intersects the sloping groundwater gradient, the fresh subsurface water that would otherwise be discharged to the ocean is forced upward to emerge as surface flow in the river (see Figure 3-47). Thus, transect #3 gains flow, as was the case in August, before the lagoon closed.

8. **Clarify the relation between pumping, high tides, and salt water intrusion.** Specifically, the pumping data and periods of pump operation are inconsistently shown. There is some suggestion that the Old Well was only pumped during high tides, which would confound any meaningful conclusions about the relation between tides and salt water intrusion. Similarly, the study does not show what happens to the salt water wedge during winter, non-pumping months when there are also high tides.

9. **Substantiate the statement that *"data conclusively indicate that the surface flow of the Big Sur River combined with the accompanying subterranean underflow is adequate to support normal irrigation season pumping at least 20% above average without any measurable impacts to surface water flow or water quality...for flows equal to and above 10 cfs..."*** (Section 5.4, Alternatives for Management and/or Mitigation, page 5-8). As far as we can tell, no data and/or technical discussion is provided in support of this statement.

Call if you have any questions.

Regards,

Kris Vyverberg, P.G.
Senior Engineering Geologist

Robert W. Hughes, P.E.
Hydraulic Engineer

Fisheries Engineering Program
Statewide Technical Advisory Team
Native Anadromous Fish and Watershed Branch

State of California

Memorandum

~~VAW~~
~~TJM/RGM~~
30166

To: Ms. Victoria A. Whitney
State Water Resource Control Board
1001 I Street, 14th Floor
Sacramento, CA 95812-2000

Attention Paul Murphey
Via Fax: (916) 341-5400

Date: September 16, 2005

STATE WATER RESOURCES CONTROL BOARD
DIV OF WATER RIGHTS SACRAMENTO
2005 SEP 19 PM 3:40

From : Robert W. Floerke, Regional Manager
Department of Fish and Game - Central Coast Region, Post Office Box 47, Yountville, California 94599

Subject : Review of May, 2005, Technical Reports in Support of Water Right Application #30166, El Sur Ranch, Monterey County, California

Department of Fish and Game (Department) personnel have completed preliminary review of information provided by the applicant, entitled "Technical Reports in support of Water Rights Application #30166 El Sur Ranch, Monterey County, California, May 20, 2005. We are responding to your request to review the provided material sent to this Department July 18, 2005. It is our understanding that this information was provided by the applicant to facilitate development of a California Environmental Quality Act (CEQA) document for public review of the El Sur Ranch water right application. Our comments are intended to address the responsiveness of the provided information as they pertain to the responsibility of both of our agencies to address potential impacts on public trust resources which have the potential to result from implementation of the requested water appropriation.

The Technical Reports submitted are only partially responsive to our initial identification of issues which will need to be addressed under CEQA for this project. Please refer to our Notice of Preparation (NOP) response memorandum of November 6, 2002 (attached - 2 items), to Mr. Kyriacos Kyciacou of your agency, which details the specific information which we believe will be required to adequately identify impacts to public trust resources and to appropriately identify mitigation measures which may be required to fully mitigate impacts to resources. In summary, we identified the need to survey for seven sensitive species and one sensitive habitat associated with the aquatic environment of the lower Big Sur River; a request to analyze the effects that diversion of the requested amount of water would have on the resources present near the diversion site; development of a water availability analysis, including a water budget; proposal of defensible flows based on IFIM or other fisheries flow analysis. In addition, we identified the need to survey for 10 sensitive species and 2 sensitive natural communities which may be associated with the upland environment of

the place of use. The submitted technical reports only partially respond to our initial request; more information needs to be acquired to provide the basis for the level of evaluation which would be required under CEQA.

Additionally the information in the Technical Reports is not complete as discussed in our meeting with Hunter Ruiz on August 26, 2005, and as identified by more detailed review of the documents provided. This letter will summarize the information deficiencies which we have identified, which should be provided and evaluated prior to development of the appropriate CEQA document. Additionally, this Department does not have all of the necessary expertise to evaluate some of the information provided. The technical nature of the information pertaining to Hydrogeology and Water Use Reports, and the ability of these topics to affect interpretation of the biological impacts, required DFG to seek outside expertise for additional review. The contract necessary for that review is in process. We anticipate the contract being in place concurrent with the subsequent submittals which we have requested, and are requesting by way of this memorandum from the applicant. We have requested from your agency that our final review of the Technical Reports (including any subsequently provided information) be extended beyond this initial 60-day period, to include an additional 60-day period which would commence upon receipt by our Department of the requested information. Our final review and comments would then include any needed revisions to our current comments.

Prior to commencement of this review, you requested this Department to provide comments on the May, 2004, El Sur Ranch Interim Monitoring Plan (2004 Monitoring Plan). We provided detailed comments to you in a memorandum dated July 9, 2004, (Attached) especially in regard to the portion of the plan dealing with the assessment of fishery habitat quality and availability. Specifically, these recommendations were made to remedy anticipated data gaps and deficiencies in the proposed plan:

1. Data for temperature and dissolved oxygen (DO) be collected over a range of flows.
2. The survey to include continuous DO monitoring.
3. Sampling to occur during specific "pump on" and "pumps off" periods, with adequate time allowed for recovery between these sampling events. This was considered essential to avoid masking the effects of pumping and to provide the analysis required by CEQA and requested in the NOP response.
4. Test different pumping regimes, including different pumping rates, pumping duration, and recovery times between pumping.
5. Add an additional transect within the zone of influence so the effects of pumping on stage/flow could be adequate assessed.

The recommendations of that memorandum were not incorporated into the Monitoring Plan study. As a result, the data collected were not sufficient to support a

conceptual hydrogeologic model; or to draw conclusions regarding the effect of pumping on water quality and quantity, or the quality and availability of habitat for steelhead (and cannot be extended to the riverine system in general or other specific resources of interest). Our detailed comments follow, referenced to pertinent sections of the Technical Reports.

Hydrogeology Report

The first technical report, entitled *Hydrogeologic Investigation and Conceptual Site Model within the Lower Reach of the Big Sur River, El Sur Ranch, Big Sur, California (01-ESR-001)*, was prepared by The Source Group. The report was prepared with the stated purpose to "(1) provide a significant base of hydrogeologic data, and (2) allow refinement of the conceptual hydrogeologic site model for a better technical understanding of natural conditions and the potential effects from the two ESR pumping wells and one pumping well used by Andrew Molera State Park (the Navy Well) on these conditions."

We do not believe the information collected is sufficient to support the conclusions that have been put forward, and have identified some deficiencies that need to be addressed before conclusions can be formulated. We have attached (Attachment #4) an Interoffice Technical Memorandum, jointly prepared by the Senior Engineering Geologist and Hydraulic Engineer of the Department's Fisheries Engineering Program. That memorandum which specifically addresses the first Technical Report regarding the Hydrogeologic Investigation is hereby incorporated into our comments.

In addition to information requested by our Department's Fisheries Engineering Program, additional information is needed on the impacts of pumping versus tidal influence. The document discusses a saltwater intrusion model, Section 3.5.3, that was done to show how saltwater moves inland. Additional information is needed on the model, including:

1. What information was used in the selection of a two layer model for the aquifer; and how were the hydraulic properties of each layer determined, hydraulic conductivity, storage coefficient, thickness, etc.?
2. How do these hydraulic parameters compare to the pumped well test results; and what is the justification for using different values?
3. The pumping rate of the old and new wells were 1,800 gallons-per-minute, which is approximately 4 cfs for each well; this rate was used to simulate the discharge of upwelling of groundwater to the stream. How is this representative of the proposed pumping conditions?

4. The model did not account for recharge or discharge to surface water, nor the high water level condition during the lagoon closure; if it had, would the simulation results differ from the modeled condition?
5. How was the model calibrated, given that during the model's time interval, June 10, 2004 to July 15, 2004, the old well was only pumped periodically (7 of 26 days), at a rate of approximately 1,160 gpm; and the new well pumped almost continuously, at an average rate of approximately 1,066 gpm?
6. How does this model simulation of high tides compare to other times of the year, i.e., how significant are the spring high tides relative to other tides?
7. How do the model's results demonstrate the relative contribution to salt water intrusion from tides versus pumping impacts?
8. Is the model result in the saltwater intrusion profile depicted in Figure 3-47? If not, what is the source of Figure 3-47?
9. Do the model's results agree with the geophysical interpretation of the groundwater conditions? In particular, does the model predict the less saline R3 layer underlying the saline R2 layer, and the response of the R2/R3 interface to high tides?

Additional clarification is needed on the hydrogeologic and hydraulic setting that causes the upwelling of groundwater at stations 7, 8, and 9. The hydrogeologic report concludes that the groundwater is forced into the river by the bedrock constriction of the alluvium, and that this condition occurs throughout the summer irrigation season regardless of pumping conducted (Page 4-2). However, the data on water quality at stations 7, 8, and 9 suggest that the upwelling is not an ongoing condition and may be related to pumping and/or low flow conditions, since it did not occur for approximately four months into the pumping season.

The data in the Hanson Environmental Biological report shows that the water quality variation caused by the upwelling condition was not observed in the EC data until middle of August 2004 (Pages 8-35); temperature didn't vary until the middle of August 2004 (Pages 8-20); and dissolved oxygen measurements were not taken at stations 7, 8, and 9 before the end of July 2004 (Pages 8-39), so the early pumping season conditions are unknown. The upwelling condition also does not seem to extend downstream of station 7, suggesting that upwelling is a localized condition. Apparently, the bedrock constrictions causing the upwelling is at the mouth of the river, as cross-sections B-B' and C-C' (Figure 3-11 of the Source Group report) in the area of the upwelling don't show a bedrock constriction, while D-D' does. Further discussion is needed to explain why the upwelling is localized at a point approximately 800 feet upstream of the constriction, but not closer.

This section will be reviewed in more detail, and additional comments provided, once we have received requested clarifications of the submitted information. As stated above we are currently processing a contract to engage outside expertise to assist us

in this review. We anticipate the contract will be in place concurrent with the applicant's submittal of the requested materials. That review could influence our interpretation of pertinent materials and may require modification of the above comments.

Biology Report

The second Technical Report, entitled *Assessment of Habitat Quality & Availability within the Lower Big Sur River: April-October, 2004*, was prepared by Hanson Environmental, Inc. The three objectives of the second Technical report, addressing biological issues, as stated in the report, were:

1. Determine whether or not seasonal changes occur within the lower Big Sur River and lagoon what would adversely affect habitat quality and availability for juvenile steelhead/rainbow trout rearing throughout the summer and fall months.
2. Assess the potential occurrences of sensitive and protected wildlife species within the area.
3. If changes in habitat quality and availability are detected within the lower river and lagoon, assess the potential effects of El Sur Ranch irrigation diversion operation on habitat conditions for steelhead and/or sensitive wildlife. Habitat quality and availability for steelhead within the lower Big Sur River were used as an indicator of change in habitat conditions potentially affecting other sensitive or protected species.

Our review finds that these objectives have not been met; our detailed comments follow, focusing on the results, discussion and conclusions put forward in the report.

Section 4.0 Results

Section 4.1 Velocity and Streamflow

The decision to sample only at the river mouth and not include at least one additional transect, as recommended in the 2004 Monitoring Plan review, produced a predictable data gap in flow assessment downstream of the diversion when the mouth of the river closed. The Report states that the mouth closed after the August 19 survey and remained closed until after the September 15 survey. This should represent a loss of two sample periods. However, Figure 14 reports no stream-flow data collected at VT-3 (river mouth site) on four sampling days.

Tables which summarize flow and channel measurements for the three transects (Tables 5-7) provide only mean values for transect depth which does not allow adequate review of habitat condition (especially loss of habitat at the stream margins) under differing flow conditions. The relationship of this data to pumping activity is not

presented. It is impossible to discern if there was loss of habitat at the stream margin when the pumps were operating. Even small changes in stage can have a significant effect on the loss of shallow water habitat.

Some of the data provided (Figures 12-14) shows flows at sampling sites drop when evening transects are taken. This is counter intuitive since night flows tend to increase as transpiration in the riparian zone ceases. The results are not discussed in the conclusion and from the data presented it is unclear if the results are simply within the expected error for the sampling device or if they are related to pumping since this seems to be occurring most frequently a VT-2 adjacent to the well field.

Section 4.2 Habitat Conditions and Surface Water Connectivity

A set of 10 photographs (Figures 15-24) are presented to show habitat conditions. Four of the 10 show the condition of the sandbar at various times. It is unclear from the information provided in this section how these photos were used to assess habitat conditions in this study.

The surface water flow section states that during the period from April to October surface water flows were sufficient to maintain connectivity among all habitat units. However, it is unclear what data was utilized to draw this conclusion. The section references Appendix E, but that appendix contains no supporting data.

Section 4.3 Periodic Water Quality Survey

The Periodic Water Quality Survey component of the biological study used a hand-held meter to sample water temperature (°C), conductivity (EC,) and dissolved oxygen (DO) at 21 sites. This survey was limited to eight sampling days from July 12 to October 15. Apparently sampling was not specifically conducted during different pumping regimes which precludes any assessment of the effects of pumping activity on these water quality parameters.

Additionally water quality data are not provided for early in the season, although pumping was occurring during that time. In our meeting with the consultants we were told that sampling did not begin until July because of permitting issues. It is our understanding there were no permits required for water quality sampling as it related to the studies done in the biological section of the Report, and thus we are still unclear as to the lack of early season information.

The data sets collected for the eight sampling days were not complete for all the water quality parameters. Both EC and °C data were missing from some of the 21 sampling sites during sampling in July and October. More importantly, DO data (which

appears to be the most problematic water quality parameter in terms of exceeding suitable thresholds for steelhead rearing) were missing for the three most important sampling sites (sites 7, 8, and 9) on 25 percent of the sampling days.

It is unclear why the complete data sets were not available since the Report states that these parameters were measured during each survey and the sampling was done with a portable hand-held meter, apparently functioning well both above and below these sites on that sampling day. It is a cause for concern that data for the sites of greatest interest were not included.

This section concludes there is no apparent adverse effect on water temperature during this study period and low river temperatures in the Creamery Meadows area would provide a thermal refugium for juvenile steelhead in the event that surrounding temperatures became unsuitable. This statement fails to consider that this reach provides stressful/potentially lethal DO levels accompanying those low temperatures.

Section 4.4 Continuous Temperature Survey

Although DFG recommended in the 2004 Monitoring Plan review that both DO and temperature be continuously monitored, only temperature was monitored on a continuous basis. Even so, the continuous temperature data set fails to provide readings from April to late June for many of the sample locations (see Figures 65 to 75). These data gaps in continuous monitoring do not allow adequate review of spring temperatures or a comparison of the differences between surface and bottom temperature throughout the entire period.

Section 4.5 Steelhead Snorkel Surveys

Although not discussed in the text, Table 9 shows the complete elimination of steelhead from snorkel Reach 2 occurred between the July 27 and October 16 survey dates. This result was masked by only including the cumulative results for the entire study area in the discussion.

Section 4.6 Fish and Wildlife Species

This study did not survey for riparian or terrestrial species and it is unclear if acceptable protocols were used to survey for sensitive aquatic species other than steelhead. Assessing the potential occurrences of sensitive and protected wildlife species within the area was a stated objective for the portion of the Report, this is a serious oversight. Results of a data base search are not considered an adequate alternative to surveys and previous survey results were not disclosed.

Section 5.0 Discussion and Conclusion

Section 5.1 Ranch Well Operation

The Report provided data on average pumping but did not provide a clear indication if the pump(s) were running, or at what rate, during the collection of biological data. The consultants provided additional information that the pumps were likely running all day during the days biological sampling was done, except for September 30. On that day, no pumping occurred.

There was apparently no effort made to coordinate biological sampling with pumping activity as recommended. Although assessment of the potential effects of El Sur Ranch irrigation diversion operation on habitat conditions for steelhead and/or sensitive wildlife was listed in objective #3 for this project, there appears to have been no attempt made to examine changes in instream water quality, flow, or habitat availability under both pumping and non-pumping scenarios.

Even with early data collection showing that the DO levels in the area of the pumping (sites 7, 8, and 9) were in the stressful/unsuitable range, no effort was made to collect DO data under differing pumping regimes (including pump off) to assess the effects of pumping on DO.

There is no assessment of changes in usable habitat during pumping and non-pumping periods. The Report does not quantify how the changes in stage effected the available habitat within the zone of influence when pumping was occurring.

The only information provided in the biological section that attempted to link sampling data to well operation was provided in Figure 80. That Figure was nearly impossible to read, so Table 2-2 in the hydrogeological section was used in this review. Unfortunately both provided diversion rates as a daily average. However, DFG was provided additional information by the consultants that these averages were typically for a 24-hour pumping period and therefore also represent the maximum instantaneous diversion rate.

Pumping using both wells at about a 5.5 cfs diversion rate (near the proposed diversion rate) occurred several times during the study period. No water quality or flow data was collected in conjunction with that level of pumping. Instead all data was collected when the diversion operated between 1.65 cfs and 3.25 cfs, a rate of diversion well below that currently proposed for this project. No data was provided to assess changes in DO, EC, stream flow, or habitat availability at this higher rate of pumping. This is a serious data gap considering the great emphasis the resource

agencies had previously placed on determining the effects of pumping, especially at high rates during low flows, on habitat availability and water quality parameters within the system.

Finally, this section suggests that a reasonable analysis of the effects of pumping can be made by comparing data for September 15 when one well was operating and September 30 when both wells had been operating simultaneously. This is misleading since it fails to clearly disclose that neither well was operating on September 30 (although both wells operated prior to that). There is no information provided that would support the claim that September 30 represents a period "when irrigation well operation were the greatest". On the contrary, it more likely that September 30 represents a period of time when the irrigation well operations were the lowest since no diversion occurred on that day. This inconsistency changes conclusions drawn below.

Section 5.2 Velocity and Streamflow

This discussion is based on the premise that conditions in the stream on September 30 represented high pumping influence. Without additional data that would support that premise there is no validity to the discussion and conclusion presented in the report.

Section 5.3 Habitat Conditions and Surface Water Connectivity

This section claims no evidence was developed as part of this investigation that the irrigation well resulted in formation of the bar. In reality, this study did not gather any data that could support a claim either way in terms of effect of pumping on sand bar formation. There was simple no data collected that would allow any conclusion to be reached.

Section 5.4 Water Quality

This discussion is again based on a comparison between data collected on September 15 and September 30. The conclusion states that "The localized reductions in oxygen levels within the Creamery Meadow reach were greater during the September 15 survey when compared to results of the September 30 survey (Figures 61 and 62). If irrigation well diversions were the cause of the localized reduction in dissolved oxygen, we would have expected the magnitude of the reduction to be greater when irrigation well operation were greatest..." Rather than supporting a conclusion that pumping has no effect on water quality in the Creamery Meadow reach, it appears that the localized reduction was instead greater when well pumping was instead higher on September 15.

Although not part of the biological section, Pages 3-28 of the Hydrogeological Section of the Report provides a discussion of changes in water elevation, salinity and temperature caused by pumping. It fails to include any discussion or information on the effect of pumping on DO. In terms of upwelling in general, the statement was simply "Pumping throughout the irrigation season did not reverse the condition of upwelling in the course of the river adjacent to the area of the pumping wells between stations 7 and 9." While this provides some clarity on the effect in terms of reversing upwelling, it is more important (in terms of resource protection) to determine if pumping causes an increase in this condition. This is problematic because while the upwelling does provide low temperature water, it also delivers water with DO levels deleterious to aquatic live.

Section 5.5 Steelhead Snorkel Survey

There was no discussion concerning the loss of 100 percent of the steelhead in snorkel survey reach 2. The relationship of this loss, the fact that this reach corresponds with the area of "upwelling" with low DO, and any effects of pumping on this "upwelling" were not addressed.

Section 5.6 Sensitive and Protected Species.

There does not appear to be a basis for the assumption in objective #3 that steelhead and their habitat would serve as an indicator of potential adverse effects on other sensitive species. Not all sensitive species have the same water quality tolerances and these would have to be adequately addressed. For example, the *Draft Recovery Plan for the Califonria Red-Legged Frog (Rana aurora draytonii)*, U. S. Fish and Wildlife Service, January 2000 states, in part, that "California red-legged frogs are found throughout the Big Sur area including the Big Sur River...California red-legged frogs are sensitive to high salinity which often occurs in coastal lagoon habitats. When eggs are exposed to salinity levels greater than 4.5 parts per thousand (ppt), 100 percent mortality occurs. California red-legged frog larvae die when exposed to salinity greater than 7.0 ppt.

"California red-legged frog embryos are tolerant of temperatures only between 9°C and 21°C. Both the upper and lower lethal limits are the most extreme known for any North American ranid frog. Data show that California red-legged frogs are absent when temperatures exceed 22°C, particularly when the temperature throughout a pool is this high and there are no cool, deep portions of the pool."

Habitat requirements for other species and habitats should also be addressed, if they are found to be present on the project site.

Section 5.0 Summary of Conclusions

This section states, among other conclusions, that steelhead observed in the river and lagoon showed, among other things, good summer growth rates. Data supporting this conclusion was not provided.

The conclusions reached attributed all localized changes in habitat to natural events (sandbar formation, breaching, and upwelling) but the report failed to provide adequate data to support the conclusion that these natural events were not influenced by pumping; and concluded that no adverse effects on steelhead or their habitat were detected. The study completely failed to analyze the effects of pumping; in particular, there was no analysis of the effect of pumping at the rate requested in the water right application. It simply concluded that at the rate of 1.65 to 3.25 cfs of diversion, when flows were between 11 and 14 cfs at the USGS gauge, no harmful effects were detected (although what happened in Reach 2 may have been harmful but not detected). Even under pumping regimes less than that requested, habitat conditions did not remain within the suitable range as stated in the report, since there were certainly DO problems in the vicinity of the diversion.

There are no data provided to support the assertion that there would no effects of pumping; specifically when pumping at the rate of the request, and at a time when flows are below 11 cfs. Similarly, the conclusion that the "results" for steelhead would serve as an indicator that adverse effects to other sensitive and protected wildlife species would not be expected is not supported by the results presented.

This section will be reviewed in more detail, and additional comments provided, once we have received requested clarifications of the submitted information. As stated above we are currently processing a contract to engage outside expertise to assist us in review of pertinent materials. We anticipate the contract will be in place concurrent with the applicant's submittal of the requested materials. That review could influence our interpretation of the biological materials, and may require modification of the above comments.

Water Use Report

The third technical report, entitled *Reasonable Beneficial use – Land use study for El Sur Ranch Irrigated Pastures*, was prepared by Natural Resources Consulting Engineers, Inc. We have a number of questions and comments regarding this section, particularly regarding the assumptions used to develop the models to determine the expected water use and relationship to both the actual use as well as appropriate use.

The Report states that the existing irrigation system provides for reasonable beneficial use of water; however, there is little examination of alternatives which may

reduce the demand for water such as season of use, alternate forage species utilized in the pasture, and/or more efficient use of irrigation. In addition there does not seem to be a relationship between the calculated irrigation requirement and the amount actually pumped by the El Sur Ranch based on comparison of Tables 6-8 and 6-9; Table 6-11 more nearly reflects actual season of use.

In addition the actual amount pumped was significantly less than the total amount of this water right request. Actual water pumped from 1975 through 2004, as reported in Table 6-9, averaged 937 af/year. This amount is only 52 percent of the total amount requested (1,800 acre feet per year). In addition, the amount estimated to be needed, as reported in Table 6-11, averages 560 acre feet per year. While this does not reflect irrigation efficiency (73 percent for the last 10 years), when included, the total estimated need (767 acre feet per year) is only 43 percent of the requested amount.

There is no discussion of how the irrigated pasture fits into the overall Ranch operation. Section 10 indicates that the main purpose of the irrigated pasture is "providing high quality forage during the dry summer months"; records of pumping (Table 6-13 of this report and Table 2-2 of The Source Group report), indicate that the primary period of water use in 2004 was April 12 to October 15. Table 6-10 indicates that for the period of 1975 through 2004, that is the general pattern, with exceptions presumably based on low rainfall years. Yet the crop water requirements, leaching requirements, and irrigation system performance are calculated based on year-round need for irrigation.

The basis of water use proposed is 290 acres of irrigated pasture. This acreage includes areas which are not, or should not be, subjected to irrigation, including areas which constitute "borders" for directing irrigation: the whole of Swiss Gulch; a dune area; other boundary areas which are not grazed; the tailwater control area; and any other area not directly subject to irrigation. In addition areas of the pastures which are defined as "riparian" and subject to different water rights should not be included in the appropriative water need calculations for this request unless there is no intention of pumping water to that acreage under riparian rights. If so, that should be clarified. The entire issue of riparian use, and its relationship to the total amount of water pumped from the Big Sur River under all bases of rights, should be disclosed to allow for adequate CEQA review of this project.

According to the report, leaching is required to prevent the salt concentration in the soils from significantly (>10 percent) reducing crop production. It is not clear that the salt tolerance thresholds identified in Table 7-1 are intended to apply to pasture grasses and legumes, but instead were developed for grasses and legumes grown and harvested as crops. Additionally, the leaching requirements for the purposes of this report are based on amounts intended to protect the most sensitive crop in the pasture mix. Since the "crop" which is produced is actually livestock, we question the

assumption that leaching requirements be based on plant crop species which are characterized as moderately sensitive to salinity. And because the irrigation water itself is the source of the salt accumulation, emphasis on use of crop species which are more tolerant to salinity would help to reduce the overall water requirement.

It is not clear how NRCE arrived at a leaching fraction of 11 percent; there is no data or analysis identified in the report. Additionally, it is not clear that the leaching benefit of wintertime precipitation has been factored into the overall leaching requirements. This could be particularly important if, as the pumping records show, there is a minimum of irrigation applied in the period of November to March.

The estimated need for water, the so-called "beneficial use" of Table 8-1 is approximately 560 acre feet of water per year based on a pasture size of 290 acres. We believe that the actual water need could be additionally reduced by utilizing an agricultural model which focuses on growing forage for use by cattle in the summer season, which is the actual use of the site, and the basis for the water request. Modifying the assumptions such as reducing the acreage to reflect that which is actually irrigated, considering only the seasonal need of April to October, and modifying the leaching requirements to more nearly reflect actual operations, could further reduce the estimated "beneficial use" figures. Given the 73 percent irrigation efficiency the applicant has achieved on average since 1994, the total water request could be reasonably revised to about one-third of the current request.

This section will be reviewed in more detail and additional comments provided once we have received requested clarifications of the submitted information. As stated above, we are currently processing a contract to engage outside expertise to assist us in this review. We anticipate the contract will be in place concurrent with the applicant's submittal of the requested materials. That review could influence our interpretation of pertinent materials, and may require modification of the above comments.

The CEQA Process

The Department has previously provided comments on the appropriate CEQA baseline, the need to protect the public trust (not limited to steelhead), and the applicability of Water Code Section 1004 (limiting beneficial use of water for irrigation on uncultivated lands to no more than 2.5 af/acre per annum). Those comments are incorporated into this response by reference. One aspect of the Department's responsibilities under CEQA, as a responsible and trustee agency, is to provide the lead agency with a recommendation on the appropriate environmental document to analyze the potential effects of a proposed project. We are troubled by your suggestion to the applicant that this project, if revised to request a diversion of the equivalent of the estimated existing use of 3.0 af/acre, based on unpermitted use, could be exempted from CEQA, or processed under a Negative Declaration.

It is our opinion that this project has the potential to have significant and potentially unmitigable effects on the aquatic and terrestrial resources of the project area, including both the place of diversion as well as the place of use. These impacts, even if mitigated, could be cumulatively considerable given the level of water diversion that is taking place and anticipated to occur from the Big Sur River. We believe that the applicant has not provided, nor is the Board in currently possession of, sufficient information to currently make the determination as to appropriate document, and that the determination is appropriately made in consultation with the Responsible agencies.

We would like to meet with your staff once the appropriate information is provided and the Department has had the opportunity to review it in the context of the material previously provided. In particular we would like to discuss the issues relative to the CEQA baseline, public trust resources, and the beneficial use of water as well as identification of the appropriate environmental document to prepare for this project.

Thank you for the opportunity to review the information contained in the various Technical Reports for the El Sur Ranch Water Right Application. Should you have questions about our comments, please fell free to contact Ms. Deborah Hillyard, Staff Environmental Scientist, at (805) 772-4318; Ms. Linda Hanson, Staff Environmental Scientist, at (707) 944-5562; or Mr. Carl Wilcox, Habitat Conservation Planning Manager, at (707) 944-5525.

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30166
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June 28, 2006

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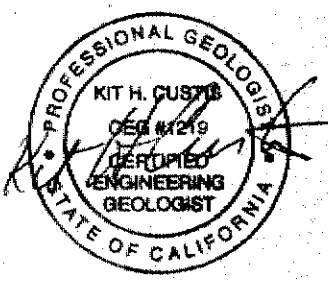

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Subject: Comments on June 2006 Notice of Preparation and Initial Study for El Sur Ranch Water Rights Application No. 30166, Monterey County, California

Water Right Application No. 30166 seeks to extract ground water from underflow at the mouth of the Big Sur River. The point of diversion is two existing agricultural irrigation wells located in the flood plain northwest of the river within the Andrew Molera State Park. The El Sur Ranch (ESR) submittal included three technical documents dated May 2005 in support of their Water Rights Application. These documents provide the environmental data and technical analyses for the June 2006 Notice of Preparation (NOP) and Initial Study (IS) prepared by EIP Associates for the State Water Resources Control Board. The two ESR agriculture wells are called the Old Well and the New Well. A third smaller well, called the Navy well, is operated by State Parks and Recreation Department.

At the request of the Department of Fish and Game, Agreement No. P0530003, I have reviewed the three technical reports and the Initial Study. This letter presents my findings and opinions on the technical data and Initial Study and makes recommendations in section 9 for additional hydrologic, hydrogeologic and environmental assessment and filling of data gaps that would help quantify the potential impacts from the proposed water diversion. The recommendations for additional study are based on the data, analysis and conclusions provided in the ESR technical submittals. The amount and complexity of the recommendations are in part due to both the complexity of the project site and to the applicant's reliance on ground water upwelling as mitigation for potential pumping impacts.

Summary of Comments

1. Hydraulic constriction of the alluvial aquifer at the ocean does not appear to be present due to the high hydraulic conductivity zone below an elevation of –20 feet below mean sea level (msl) which makes up for the reduction in aquifer cross-sectional area.

2. The influence of saltwater intrusion on upwelling of ground water at the "cold pool" needs to be quantified.

3. Data are needed on the elevation of surface water and ground water in the river reach adjacent to the pumping wells to measure the hydraulic gradient between the river and aquifer in order to calculate the quantity of ground water inflow and outflow, and to establish the location of the transition from the losing to gaining reach.

4. Calibration is needed of the relationship between water quality parameters, temperature, dissolved oxygen and electrical conductivity, and ground water flow direction and quantity before they can be used as indicators of impact.

5. Additional data and analysis are needed to explain the variation in water temperature observed during the 2004 pumping season.

6. The water balance for the study area needs to be revised to reflect pumping levels requested in the water rights application and to provide more information on the known inflows and outflows to reduce the high percentage of unknowns.

In reviewing the documents provided, a key hypothesis of the hydrogeologic setting at the ESR well field is that "upwelling" ground water at the "cold pool" that lies between water quality transects #7 and #9 demonstrates that the river is not losing flow due to pumping, and that there is sufficient inflow of cooler ground water to the river to mitigate the impacts from pumping. Pumping may even benefit surface water quality by capturing ground water low in dissolved oxygen, thereby preventing it from reaching the river. This upwelling is the result of the constriction of the river valley at the ocean which reduces ground water outflow to a rate that is less than at the middle of the alluvial valley causing ground water to rise to the surface. Because this constriction is a physical barrier to groundwater flow, the upwelling occurs throughout the irrigation season regardless of the level of pumping. The applicant assumed for the salt water intrusion model that the upwelling may be as high as half the pumping rate, approximately 1,200 gpm (gallons per minute) or 2.67 cfs (cubic feet per second). The applicant reasons that the upwelling has to stop before the pumping can cause an impact to the river, i.e., deplete the river, apparently because as long as the river is gaining it can't be losing. This letter will discuss several issues related to the data supporting the upwelling hypothesis and make recommendations for additional study to quantify the effects of upwelling on river quality and flow rates.

1. The Initial Study appears to accept the upwelling ground water hypothesis and relies on it throughout the evaluation of environmental impacts. For example, on pages 5-14 and 5-15, the discussion of potential impacts to biological resources from groundwater pumping lists impacts on the riparian resources from a reduction of underflow and groundwater levels and potential changes in salinity caused by increased saltwater intrusion. The Initial Study does not however list as a potential impact to biological resources the possibility for a reduction in the flow of the Big Sur River as the result of pumping ground water. A potential for impacts to surface water from ground water pumping does exist for reasons discussed below and should be addressed as a potential environmental impact.

2. The May 2005 hydrogeologic report by The Source Group, Inc. (SGI) discusses the hydrogeologic setting and the constriction of the aquifer in sections 3.3 and

5.1. The report states on page 5-2 that the reduction in the aquifer width between the Franciscan bedrock from 1,600 to 700 feet results in a pinching of the aquifer. While the width of the alluvial valley in the project area does lessen at the ocean, the flow of ground water is the result of the aquifer's transmissivity, not just width at the top of the aquifer. The ability of an aquifer to transmit water can be calculated by the product of the hydraulic conductivity and the cross-sectional area, the k*A portion of Darcy's Law, Q = k*i*A.

The change in the aquifer cross-section between the wider part of the aquifer and the ocean can be measured using the geologic cross-sections B-B' on Figure 3-11 and D-D' on Figure 3-12. Measurement of the cross-sectional area needs to separate the aquifer area above minus 20 feet below msl from that below because of the difference in hydraulic conductivity (see discussion on SGI page 3-10). The hydraulic conductivity of the shallow aquifer (above minus 20 feet below msl) can be taken from the pump test data that resulted in an average value of 3,623 feet/day (SGI page 3-9), although a value of 1,500 feet/day was used for the saltwater intrusion modeling effort (see SGI page 3-33). The deeper aquifer (below minus 20 feet below msl) is thought to be much coarser grained to bouldery with a hydraulic conductivity ranging from 10,000 to 100,000 feet/day (see SGI page 3-10). A hydraulic conductivity of 15,000 feet/day was used for the saltwater intrusion modeling effort (see SGI page 3-33).

Based on these two geologic cross-sections and the stated hydraulic conductivities, I did not find that the alluvial aquifer is constricted at the ocean, rather it appears to be more transmissive at the ocean than at the mid-section of the alluvial valley by approximately 20 to 75%, depending on an assumption on the inland extent of the deeper, high conductivity layer. The SGI report also attributes the rise in ground water at the ocean to the presence of the saltwater wedge. While this may have an effect, the inland extent of the saltwater wedge is not fixed, but varies based the elevation of surface water, tidal influences and to a significant extent on the rate of pumping, particularly at the Old Well (see SGI section 3.5.2).

Thus, the Initial Study's findings under the Hydrology Section 8b, starting on page 5-30, include: (1) the magnitude of any pumping withdrawals are exceeded by the influx of ground water recharging or upwelling into the river; and (2) water quality changes in the river near Creamery Meadow are naturally occurring and unrelated to pumping. These two findings may not be valid because they rely on the aquifer constriction to drive the "natural" upwelling ground water. Without the constriction of the aquifer at the ocean, the cause(s) of any groundwater inflow or upwelling and the changes in surface water quality are an open question. The lack of a constriction may result in the pumping rates and timing, as well as location of the wells, becoming the most significant parameters in determining the movement of ground water, the amount and timing of saltwater intrusion, and the resulting impacts to river flows. Without the constriction of the aquifer at the ocean, the monitoring mitigation measures mentioned in the Initial Study may differ substantially from those now being considered.

3. The Initial Study appears to agree with the 2005 SGI report's conclusion that water quality parameters can be used to measure hydraulic conditions between the river and aquifer. Specifically, the direction of change in water quality parameters, namely, temperature, dissolved oxygen, and electrical conductivity indicates the direction and quantity of water flow. This assumption becomes critically important in the discussion of the "cold pool" and its significance. However, the reliance on this assumption requires calibration of the relationship(s) between water chemistry, and ground water and surface water hydraulics which has not yet been done. In fact, there are no hydraulic gradient or flow data in the area of the "cold pool" to document the direction(s) or volume of water flow, either across or along the river channel. Recommendations are provided below in section 9 for additional data needed to demonstrate that water quality parameters can be used as a measure of water flow direction and quantity.

4. It is known that the pumping of a well in an unconfined aquifer lowers the water table around the well, creating a cone of depression that decreases in depth radially outward. The water table depressions created around the ESR irrigation wells must eventually intercept the river. The river and ground water are said to be in good hydraulic connection (see SGI sections 3.4.8.1, 4.0, and 5.2). The aquifer and the stream bed are coarse-grained with high hydraulic conductivity (see SGI section 3.3.2). No continuous low permeability layer has developed in the riverbed (see SGI section 4.0). The river can be a recharge boundary and lose water to the aquifer during pumping (see SGI section 5.2). Evidence of the recharge boundary can be found in the pumping test of the New Well, where no pumping related effects, i.e., drawdown, were observed in monitoring well JSA-05 located on the opposite side of the river (see SGI section 5.2). However, the river as a recharge boundary conflicts with the inflow of ground water that's needed to create the "cold pool." Resolving the apparent conflict of the river acting as a source of recharge to the aquifer during pumping while at the same time receiving inflow from upwelling is important to understanding the potential impacts from pumping and for selection of the appropriate monitoring requirements. The SGI report does provide some data on the hydrogeologic and hydraulic setting of the river and wells that may provide insight as to the location and nature of the losing-to-gaining transition as discussed below.

    a. The 2005 SGI report (section 3.4.6.3) identifies the reach of the Big Sur River between velocity transect #1 (VT#1) and velocity transect #2 (VT#2) as being a recharging or losing reach where higher temperature surface water infiltrates and was eventually seen as warm ground water in the monitoring wells ESR-10A, B, and C as well as ESR-02 and ESR-03 (see SGI section 3.4.6.3). As noted above, the "cold pool" was identified as a gaining reach where cooler ground water is thought to flow into the river generally between water quality stations #7 and #8, and sometimeS as far upstream as station #9. The SGI report does not provide any information on where upstream of VT#2 the infiltration occurs, or what happens downstream of VT#2 before reaching the gaining "cold pool" reach. If the river changes from a losing to a gaining reach, there must be a point or section of channel where this transition occurs and an associated physical reason for this reversal in hydraulic gradient. The SGI report

does not discuss the nature of this transition, what causes it, or whether it is stationary or moves as the result of changes in pumping rates, pumping times, river flow, tides, etc. Additional information is needed on the location and orientation of this transition zone in order to determine the appropriate monitoring locations and times.

b. The available information on the hydraulic gradient between the river and the aquifer comes from the river elevations measured at the stilling well installed near VT#2 (see SGI Figure 1-3), and water levels measured in the ESR-10 wells located in a southwesterly direction about 300 feet from the New Well (see SGI Figure 2-2). The direction of hydraulic gradient between the stilling well and ESR-10 wells was always away from river towards the pumping wells (see attached Figures 1 and 2). Similarly, the direction of hydraulic gradient between the stilling well and the more distant monitoring wells ESR-02 and ESR-03 located approximately 750 to 800 feet from the river was also always sloping from the river towards the pumping wells. This suggests that the losing reach of the Big Sur River extends at least into the area of the stilling well near VT#2. Additional information is needed to determine how far upstream and downstream the losing reach extends.

c. In order for the river to transition from a losing reach at VT#2 to a gaining reach by water quality station #9, the direction of the hydraulic gradient must reverse and a groundwater divide or boundary must develop where the direction of hydraulic gradient changes from flowing towards the river to flowing away towards the pumping wells. This groundwater divide must lie either between the river and the pumping wells or possibly beneath the river. The divide would also likely connect with the point of transition from losing to gaining river between water quality station #9 and VT#2, as discussed above. To create this groundwater divide, either the elevation of the water table between the river and the wells must rise above the river water surface, the surface water elevation drop below the water table, or a combination of both. Unfortunately, no data are available on the elevation of either surface water or ground water between VT#2 and water quality station #7, the downstream end of the "cold pool" to help determine where and by how much the hydraulic gradient between the river and ground water changes. In addition, there are no flow data for the river downstream of VT#2 to measure river flow gains or losses except the VT#3 gage at the ocean, which was not available during closure of the lagoon. Hydraulic gradient and flow data are needed from the area of groundwater upwelling to the losing reach at VT#2 to determine the nature of the transition. Additionally, a longitudinal profile of the river should be developed to help determine whether changes in the grade of the channel bottom are causing any changes in hydraulic gradient. Specific recommendations for additional data are given below in section 9.

d. In order for the river to be a continuously gaining reach at the "cold pool," the water table elevation for at least a portion of the Creamery Meadow area south of the river must be higher than the surface water between

stations #7 to #9. Again, there are no data to document the elevation of the water table in Creamery Meadow relative to the adjacent river. Piezometers are needed in Creamery Meadow adjacent to the "cold pool" reach of the river and possibly further upstream to the area of VT#2 to document the direction and gradient of groundwater flow. Consideration should be given to making these piezometers so that water quality samples can be obtained to document upgradient groundwater quality.

e. Although there is no water elevation data in the vicinity of the "cold pool," one sampling event at water quality station #8 might provide some information on the complexity of ground water flow in the reach. On September 15, 2004, the water quality sampling event at station #8 consisted of two samples at different water depths for each of the three sampling sites, #8-L, #8-M and #8-R. The results of that sampling event are given in the following table.

September 15, 2004 Temperature, Dissolved Oxygen, and Electrical Conductivity at Water Quality Station #8

Station ID	Date	Time	Temp °C	Temp °F*	Conductivity µS/cm	DO mg/L	Sample Depth, ft
#8-L	15-Sept.	16:45	15.15	59.27	247	6.15	3.8
#8-L	15-Sept.	16:50	13.21	55.78	234	3.45	4.5
#8-M	15-Sept.	16:50	13.50	56.30	239	4.87	3.5
#8-M	15-Sept.	16:45	14.20	57.56	237	5.84	4.3
#8-R	15-Sept.	16:50	13.15	55.67	232	4.50	3.8
#8-R	15-Sept.	16:45	14.30	57.74	241	5.57	4.0

* Converted from °C

At the left sampling point, #8-L, located on the Creamery Meadow side of the river, there was an upward increase in temperature with a decrease in sampling depth which suggests upward movement of cooler waters, which agrees with the "upwelling" hypothesis. For the middle and right side sampling stations, #8-M and #8-R, the direction of water quality change reverses. There is a downward increase in temperature and dissolved oxygen. If the water quality change by itself is an indicator of water flow direction, the data from this sampling event suggest water flows into the river on the Creamery Meadow side and out on the middle and right, pumping well side. Although, this is the only sampling event and sampling station where two depths were sampled at the same time, it demonstrates the importance of the location and depth that a sample is taken, and reinforces the need for specific water elevation information during water quality sampling events to document the direction and amount of hydraulic gradient between the river and ground water.

5. The Initial Study's Hydrology and Water Quality section on page 5-30 states that, "the ability to measurably affect river stage remains inconclusive, yet there was no noticeable effect on surface water elevations when the pumps were turned off for the season in 2004." This statement appears to ignore the documented change

in surface water and groundwater levels as the result of increasing the pumping from one to two wells as discussed in SGI section 3.4.8.1 and as shown in SGI Figure 3-35. SGI Figure 3-35 shows the water levels dropping from mid-September to early October in 2004 at the stilling well in the river adjacent to VT #2 and in monitoring well ESR 10-B. The SGI report noted that the surface water level dropped approximately ½ inch and the ground water in the well dropped approximately 1 foot as a result of increased pumping. While this may not appear to be much of a physical change to the river, it is a significant change in hydraulic gradient between the river and well. The change in hydraulic gradient is a measure of the significance of increase, or decrease, in pumping because ground water flow is governed by Darcy's Law ($Q = k*i*A$). Assuming the hydraulic conductivity (k) and cross-sectional area (A) are not significantly changed, then the change in hydraulic gradient (i) quantifies the change and level of impact. As the Initial Study noted, ground water losses or gains to a river do not generally occur at a single point, but are spread along the river reach. Thus, the total change in flow can't be measured at a single point but must be measured between at least two points placed on either side of the impacted reach. By the statement of "no noticeable impact," the Initial Study appears to expect that the impacts from pumping the wells will be similar to a diversion into a pipe or canal, all occurring at one point on the river. The following discusses the significance of the hydraulic changes measured when the pumping rates varied.

a. The volume change from ½-inch rise or fall in surface water level at VT#2 where the average depth was less than 2 feet all pumping season is not insignificant. From the velocity profile calculation sheets in Appendix L, the average velocity at VT#2 is at least 0.10 feet per second (ft/sec), and the top width of the channel is approximately 20 to 24 feet (wetting perimeter – channel bank depths). Assuming that the surface velocity is equal to the average (generally it is considered slightly greater) and using the relationship Quantity = Velocity * Area, then ½-inch of flow is:

   $Q = 0.1$ ft/sec. * (½ / 12)ft * 20 ft = 0.083 cfs = 0.623 gal/sec ~ 37gpm
   $Q = 0.1$ ft/sec. * (½ / 12)ft * 24 ft = 0.1 cfs = 0.748 gal/sec ~ 45gpm

   A loss at this rate over a river length of 100 feet would cumulatively be 8 to 10 cfs, which clearly is not the case here. The point is, however, that ½-inch of change in surface water level while seemingly a minor change in elevation, is not an insignificant change in rate of flow, particularly when the change accumulates along a reach during a period low flow.

b. As noted above, the SGI report acknowledges that the river between VT#1 and VT#2 is a losing reach. The change in water levels at the stilling well and the increase in groundwater gradient that resulted from the increased pumping rate document that river losses from pumping can extend downstream to at least VT#2. Before September 19th, the Old Well was pumping at 2.55 cfs (see SGI Table 2-2). After the New Well began pumping, the combined rate of pumping was approximately 4.8 cfs, an increase of approximately 88%. Because the flow of ground water follows Darcy's Law, a change in groundwater flow is proportional to the change

in hydraulic gradient. With an almost doubling of the pumping rate, the hydraulic gradient between VT#2 and ESR 10-B increased approximate 50 percent (SGI Figure 3-36). This increase in gradient agrees with the analysis by Miller and Durnford (2005) that when the rate of stream depletion approaches the rate of pumping, then approximately half of the seepage occurs within a reach of stream centered on the well, the length of which is twice the closest stream-to-well distance. For the study area, the river's closest point to the New Well is approximately 500 feet away (see SGI Figure 2-2) and VT#2 is approximately the same distance upstream. Therefore, with the 88% increase in pumping rate, the hydraulic gradient of ground water increased by approximately 50%, which suggests an increase in seepage losses from the river of approximately 50%.

c. A second opportunity to evaluate the impacts of pumping on river flow was made by using data from mid-October 2004 when both wells were turned off (see SGI Figure 3-36). Following cessation of pumping on October 16, 2004, there was no immediate rise in surface water elevation at the stilling well near VT#2. In fact, an analysis of the daily average elevation at the stilling well indicates that it dropped approximately ½ inch from October 15th to October 16th (see the ESR technical reports data). The surface water elevation began to rise the following day likely in response to the rain event on October 17th and 18th. If pumping ceased, why did the surface water level drop?

   Jenkins (1968) provides an explanation to this apparent inconsistency. River losses from pumping do not stop immediately when pumping stops; there is residual depletion. In fact, for certain hydrogeologic settings, the amount of water lost from a river after cessation of pumping can exceed the losses during pumping. Thus, the continued drop in surface water level is not inconsistent with known residual depletion and suggests that the river was still a losing reach. The rise in river stage due to the rain event eventually obscured the effects of stopping the pumping.

6. Periodic water quality sampling of the river was undertaken during the 2004 pumping season along the river at twenty-one sampling sites, while continuous sampling of river temperature was done at five temperature logger sites (see SGI Figure 2-2 for sampling locations). Two continuous recording temperature loggers, numbered 3 and 4, were placed in the section of river between water quality stations #12 and #6, temp-logger #3 at water quality station #7R, and temp-logger #4 at water quality station #11R. Temp-loggers #4 is in an apparent losing reach and temp-logger #3 is in an apparent gaining reach, the "cold pool." Figure 3 (attached) shows the continuous data from the upstream, bottom temp-logger #4 in red, with the downstream "cold pool," bottom temp-logger #3 values superimposed in grey. Point symbols indicate the measurements taken at adjacent water quality stations. Figure 4 shows the temperature logger data as a 24-point running average; most samples were taken hourly. These graphs show that temperatures at the two locations do not differ significantly from the beginning of the record on April 18th to approximately July 16th when a difference of 2 °F to 4 °F occurs for highest temperatures only. On August 26th, the lagoon closes and

the temperature differences increase for both high and low temperatures. Between September 2nd and the 20th, there is a gradual drop in the temperature at the upstream temp-logger #4. By mid-October, near the end of the record, the temperature range and variations are again similar at the two locations. Even though these temperature data were taken from the right side of the channel, the pumping well side, the data show that the differences between the hotter upstream reach and the "cold pool" were not uniform throughout the irrigation season. The questions then are why is there a variation, how consistent is the upwelling, and what impact might this have on the proposed mitigation monitoring program. The following is a discussion of the 2004 irrigation season temperature data taken by the two continuous temperature loggers, and at the adjacent water quality stations.

a. From the beginning of data collection on April 18th, through July 16th, the river bottom temperatures at the two temperature stations appear to be similar. This may be due in part to the higher flow rates during this period of time. Following the initial measurements on April 18th, no water quality transect sampling was reported from stations #7 through #10 until July 23rd, 96 days later. Thus, the available data do not appear to document the "cold pool" effect of ground water upwelling during the first half of the 178-day 2004 irrigation season.

b. The hypothesized upwelling is in part thought to be caused by the presence of a saltwater wedge, and high spring tides are thought to be a significant factor in the landward movement of the saltwater wedge (see SGI section 3.5.2). The saltwater modeling effort simulated the high spring tides from June 15 to July 10 (see SGI section 3.5.3). No water quality data were collected from the "cold pool" reach during the period of highest tides. The July 12th transect sampling skipped water quality stations #7 through #10, as well as several others. In the period when saltwater intrusion is thought to have had the greatest influence on upwelling, there are no data to document the effect in the "cold pool."

c. The period of measurable temperature difference between the temperature loggers begins on July 16th when the higher temperatures start to differ. This time corresponds with the beginning of the period of lowest flow in the river as measured at the USGS gage (see SGI Figures 3-26 and 3-27). The high temperature difference continues until August 26th when a sand bar closes the lagoon's surface water outlet to the sea.

d. On August 26, 2004, when a sand bar closes the river's outlet, the lagoon surface water level starts rising from approximately 5.2 feet above msl and reaches 8.5 feet above msl by mid-September (see SGI Figure 3-43 and section 3.4.8.3). By the end of September, the lagoon surface drops to approximately 6.75 feet above msl. Groundwater levels in monitoring wells also go up approximately 1.5 feet to 2.0 feet by the start of September (see SGI Figure 3-44 and section 3.4.8.3). By mid-September, groundwater levels drop back to below approximately 6.25 feet above msl. The attached Figure 5 shows the changes in groundwater levels at monitoring well ESR-02 which is representative of the effects of the

lagoon closure over a longer period than shown in SGI Figure 3-44. The rise in river stage with the closure of the lagoon may have extended upstream into the reach of the "cold pool" (see SGI Figures 3-28 and 3-29 for a comparison of lagoon water levels). The evidence for this can be found in the sampling depths of the water quality stations.

e. The March 11, 2005 Hanson Environmental, Inc.'s Biology report states in Section 3.3 that water quality samples were taken mid-way in the water profile. Thus, the depth of each sample can be used as a general index of the total depth at each transect location during each sampling event. A review of the sampling depths finds similarities to the lagoon data, in that the sampling depths at water quality stations #6 to #9 increase after the lagoon closure. The average sampling depth across each transect increases typically from approximately 1.0 to 1.5 feet (see summary table below). This corresponds to an increase in total water depth of 2 to 3 feet, assuming the mid-column sampling criteria. The cause of this rise does not appear to be an increase in surface water flow from upstream, as discussed below. If the river rise is the result of an increase in ground water discharge at the 'cold pool," the discharge would have to be very significant to cause this amount of sustained change.

Range of Sampling Depth Before and After Lagoon Closure

Transect	Aug. 19 Depth, ft	Sept. 2 Depth, ft	Difference, Min-Max
#6	0.40 – 0.90	2.00 – 3.20	2.10 – 2.50
#7	2.25 – 3.50	3.70 – 4.50	0.05 – 1.95
#8	2.10 – 2.70	3.30 –3.90	0.65 – 1.70
#9	1.70 – 3.75	3.80 – 5.20	0.10 – 1.45
#10	1.60 –3.10	1.80 – 3.25	0.15 – 0.60
#11	2.50 – 3.00	2.50 – 3.50	-0.20 – 1.00
#12	0.40 – 0.85	0.70 – 1.15	0.15 – 0.60

f. The differences in sampling depth do not appear to correspond to an increase in surface water flow as measured upstream at VT#2 (see SGI Table 3-1). On August 19th, the flows at VT#2 ranged from 5.90 to 6.97 cfs with sampling depths at water quality station #8 ranging from 2.10 to 2.70 feet. On September 2nd, the stream flows measured at VT#2 were higher at 7.28 to 10.26 cfs with the sampling depths at water quality station #8 ranging from 3.3 to 3.9 feet, showing an increase sampling depth with increased flows. However, on September 15th and 16th, VT#2 surface flows are reduced, ranging from 6.18 to 5.96 cfs, respectively, with sampling depths at water quality station #8 at 3.5 to 4.5 feet, slightly higher than on September 2nd and much higher than on August 19th when surface flows were at a similar rate. On October 28, after the river mouth has opened to the ocean, the measured surface water flow at VT#2 is approximately 46 cfs and the sampling depths at water quality station #8 range from 2.7 to 3.2 feet the following day, October 29th, showing shallower conditions than on September 2nd and September 15th and 16th.

Clearly, the greater water quality sampling depths at station #8 after closure of the lagoon on August 26th do not have a linear correlation with the total rate of surface water flow as measured at VT#2 suggesting some change in channel hydraulics or inconsistencies at the sampling locations. A possible reason for this lack of correlation between flow rate and water depth at station #8 is that the rising lagoon waters extended upstream creating a backwater effect in the area of the "cold pool" area, which likely widened the channel surface, creating the non-linear relationship between stage and flow before and after lagoon closure.[1]

g. The temperature values plotted for station #6 to #12 on SGI Figure 3-31, River Temperature Profiles, are generally taken from the left sampling point at water quality station #8, except on April 18 and October 29. Those for the other water quality stations were taken from the middle sampling point. The range of temperatures across stations #7, #8 and occasionally #9 is generally greater than at the other transects. The attached Table 1 shows temperature differences of water quality stations #6 to #12 for each reported sampling event in 2004. Data plotted on SGI Figure 3-31 are shown with red highlights. The question arises as to why the sampling points for the "cold pool" were taken from the bank opposite the pumping wells, likely the greatest area of upwelling, while the upstream samples were taken from the middle of the reach?

7. The lower section of the Big Sur River is a dynamic environment. The rates of surface water flows, precipitation, natural vegetation and crop evapotranspiration, and to some extent groundwater underflow vary throughout the year. The water balance for the pumping area is discussed in SGI section 3.4.7 and its subsections starting on page 3-22, and in Tables 3-6A and B. The water balance assumes for outflow that the surface water and groundwater underflow are a single system, which is generally correct, except that the timing and locations of inflows and outflows for each can have a significant impact on the local availability of water, which is a critical condition for some plants and wildlife. Although the water right being applied for requires a 30-day running average, the SGI water balance for the study area, Table 3-6B, does not provide analysis on a short term basis, e.g., monthly, but instead gives an annual and a 2004 season water balance. The combining of surface flow and underflow for the outflow balance misses the issue that the availability of surface flow is at times critical to sustaining the resource. The following is a discussion of the water balance.

a. In calculating the water balance for the study area, the surface water runoff and groundwater underflow were kept separate as inflow, but combined as outflow. In the outflow portion of the 2004 season water balance, the combined outflow to the ocean of runoff and underflow was considered an unknown. The value was "solved for" by calculating the difference between the inflow and outflow and setting the imbalance equal to the combined outflow of runoff and underflow to the ocean. This

[1] Compare SGI Figures 3-28 and 3-29 for effects on lagoon water surface width, from pre- to post-lagoon closure.

combined outflow of runoff and underflow to the ocean made up approximately 83% of the total outflow for the 2004 season study area water balance. Because such a large percentage of the outflow is unknown, it creates concerns about the accuracy of the estimate and introduces the issue of measurement error. That is, if 80% of the flow can't be measured, how accurate is the estimate? It would be a more useful water balance if what is known about the runoff and underflow draining to the ocean is included and what is not known is calculated. This would give a measure of not only the inflow and outflow, but also the accuracy of the measurement.

b. In the annual water balance calculations for the study area (Table 3-6B), the combined runoff and underflow to the ocean was given as a known value taken from the total watershed discharge water balance presented in Table 3-6A. In the calculation of the total watershed water balance, this discharge to the ocean was taken from the Lower Big Sur watershed water balance, where it was an unknown and "solved for." Thus, an unknown at the watershed scale become a known at the scale of the study area. This appears to create a fact out of a previously unknown. As noted above, establishing what is accurately known and identifying what is still unknown is probably a better use of the water balance exercise because it will point to where more data should be collected.

c. In the annual study area water balance (Table 3-6B), the unknown that was "solved for" was the surface water inflow at cross-section A-A', which represents approximately 94% of the inflow. However, this value was previously estimated in Table 3-4 using an assumption that it has a relationship to the upstream USGS gage. The "solved for" value of 82,271 ac.-ft. (116.64cfs) in the study area's annual water balance is higher than the value that would result from summing the monthly values in Table 3-4, 77,851 ac.-ft. (107.53cfs). It is unclear why the surface water inflow at section A-A' was considered an unknown for the annual study area water balance and why the calculated result exceeds that estimated elsewhere. Again, the inconsistency of the water balance reduces its accuracy and questions its utility.

d. In the annual study area water balance (Table 3-6B), the annual value for pumping was 977 ac.-ft. This value is much less than the quantity requested in the water right application, a maximum of 1,615 ac.-ft., with a 20-year rolling average not to exceed 1,200 ac.-ft. The note in the table states that it is the average pumping rate for 1975 to 2004 with the addition of the Navy well's pumping. While this would be of interest in establishing the baseline water usage, there is no analysis of future use which is the subject of the environmental review. An additional water balance using the permit requested pump rate is needed.

e. In the 2004 season study area water balance (Table 3-6B), rainfall of 7.59 inches is assumed over a one-square-mile area producing 405 ac.-ft of inflow. Based on the ratio of cfs to acre-feet for the terrace subsurface

inflow line item, the 405 acre-feet of rainfall appears to represent approximately 1.15 cfs. This rate is approximately 20% of the peak pumping rate requested in the water right application, a maximum 30-day average of 5.34 cfs and a maximum instantaneous rate of 5.84 cfs. However, most of this precipitation fell after mid-October (see SGI Appendix G) and was essentially never available during the 2004 pumping season which ended before mid-October (see SGI Table 2-2). In addition, the period for the surface water inflow at section A-A' was stated as July to September. The inclusion of precipitation that fell outside of the pumping season adds more inflow than was actually available. The water balance should be revised.

Based on the above discussion, the SGI water balance for the study area does not appear to provide a sufficiently accurate estimate to allow for use in measuring potential impacts from pumping on surface water flows or to measure the available waters. The water balance analysis for the study area should be done on a shorter time interval, no longer than monthly, because when less water is available in summer, more water is needed, and the water right being sought is in part based on a 30-day running average. The water balance and availability analysis should demonstrate that the requested 30-day average can be sustained. The analysis should also keep separate the surface water and groundwater flows to demonstrate how much of each is available. Because much of the outflow to the ocean is difficult to measure and subsequently has a high standard of error, it would be a more useful if the water balance documents what is known and then calculates the level of the unknown or error in the measurement. A water balance analysis where 80% or more of the data are unknown is not reliable. The balance should present data and calculations using both rate and volume, because the water right seeks diversion using both measures. The balances should be estimated for not only the average water year, but also for low flow years to establish minimum by-pass flow requirements and associated triggers.

8. A source of groundwater inflow to the river that was not discussed in the applicant's technical documents is bank storage. The rise in surface water flow during winter and spring months will raise the river stage and, with a sufficiently long duration, surface water will infiltrate the adjacent alluvium, temporarily storing ground water as bank storage (Freeze and Cherry, 1979). The rate of infiltration is dependent on the hydraulic conductivity of the stream bed and surrounding aquifer. The high hydraulic conductivity values of the Creamery Meadow area should allow for rapid saturation of the aquifer. In fact, the annual water balance for the study area (Table 3-6B) assumed an increase in underflow at sections A-A' of 0.55 cfs in winter months. This increase requires an approximate 5-foot rise in the groundwater level during winter months at section A-A', which likely extends downstream throughout the study area. With a drop in river stage during the spring and summer, the stored ground water will discharge back into the river, delivering baseflow. The rate of groundwater discharge decays over time as the gradient between the river and the water table falls (Glover, 1964). The volume of available bank storage is limited in the project area because the alluvial valley is bounded by low permeability bedrock (see SGI section 3.4.4). If all of the approximately 200-acre alluvial plain of the valley

surrounding the ESR wells is saturated for an additional 5 feet, then approximately 250 acre-feet of bank storage would be produced annually. The potential for ground water inflows to the river being derived from bank storage has not been discussed or eliminated as a source in the technical documents submitted by ESR. Given that the aquifer constriction is questionable and the influence of saltwater intrusion on upwelling is not yet quantified, as discussed above, bank storage should be considered as a potential source of summer inflow to the river, although the quantity is likely to be much less than the 1,200 gpm assumed in the SGI report (see SGI section 3.5.3).

9. Based on the discussions given above, there are several data gaps in the hydrogeologic and hydrology data for the study site that should be collected and analyzed in order to determine the available waters, quantify the gains and losses to the river from various pumping rates, and to assist in selection of type, location, and timing for monitoring water quality, quantity, flow rate, and elevation data. The following are my recommendations for additional data needs.

    a. **Lack of ground water and surface water hydraulic head data along the river on both sides.** This is especially critical between stations #6 to #12 and within the areas not under pumping influence, e.g., Creamery Meadow, to document water level differences within and outside the area of upwelling, to obtain background groundwater quality parameters, and to delineate the transition from a losing to a gaining river. Upstream of VT#2 where surface water is said to be infiltrating, hydraulic head data are needed to document flow direction. Without data on the water levels, surface and ground water, the validity of the chemistry signature of the upwelling ground water hypothesis can't be validated.

    Piezometers are needed in Creamery Meadow adjacent to the "cold pool" reach of the river and possibly further upstream to the area of VT#2 to document the elevation and gradient of groundwater flow. Data from these piezometers should be tied to surface water elevations in the adjacent river. Consideration should be given to making these piezometers so that water quality samples can be obtained to document upgradient ground water quality.

    b. **Lack of hydraulic conductivity data on the stream bed.** There is no information on whether the channel bed develops a clogging layer of fine materials, as asserted in the applicant's response to my previous comments. The text of the hydrogeology report suggests otherwise. If there is a large percentage of the channel bed covered with a fine-grained layer, then the clogging will reduce the rate of groundwater movement **into or out of** the channel. Variation in this clogging will also result in a variation in the impacts on the river. If fine sediments are commonly found covering the stream bed, then documentation is needed because it might affect where and when monitoring is done. Hydraulic conductivity data are needed for the channel bed. The number and location of measurements should adequately document the channel variability.

c. **Estimate the quantity of ground water upwelling into the river.** The presence of upwelling ground water in the reach of the river adjacent to the pumping wells is said to be an indicator of no surface water losses and is apparently thought to supply sufficient water to mitigate impacts of ground water pumping. However, none of the technical documents submitted provide a measured estimate of the rate or volume of upwelling ground water. The saltwater intrusion modeling effort assumed an upwelling inflow of 50 percent of the pumping, approximately 1,200 gpm, but this value was not measured or validated. The hydraulic gradient data combined with stream bed permeability data can be used to estimate the quantity and volume of inflowing or outflowing ground water.

d. **Estimation of influence of saltwater influx on upwelling ground water.** The cause(s) of the upwelling ground water in the reach of the river adjacent to the pumping wells still needs to be determined. As discussed above, the aquifer constriction appears to be unlikely, and the influence of the saltwater intrusion on upwelling is not adequately quantified. In addition, if the cause of the upwelling ground water is largely due to saltwater intrusion, then the rate and timing of the pumping of ground water is linked. Control of the pumping schedule might determine the rate and timing of upwelling. Data are needed to demonstrate the influence of saltwater intrusion on upwelling and to quantify the effects of pumping on upwelling.

e. **Water level and water quality data are lacking for ground water outside of the pumping well field.** The upwelling hypothesis is based an assumption that water chemistry changes and differences along the channel are caused primarily by inflows of ground water to the stream, but the background quality of ground water is assumed. Data are needed on the quality of background ground water to determine the extent of aquifer and surface water mixing and to track the migration direction and rate of surface water and ground water movement.

f. **Data are needed on the changes in surface water flow rates from water quality stations #6 to #12.** Stream flow data are needed in this critical reach to document the rate and timing of ground water inflow or loss. The value of inflow assumed for the salt water intrusion model between June 15th and July 10th was approximately 2.67 cfs (1,200 gpm) or 50% of the pumping rate (see SGI pages 3-33 and 3-34). However, the hydrogeology report fails to provide data and calculations on how this inflow rate was measured, estimated, or validated. Flow measurements at VT#2, near water quality station #10, do not have a downstream counterpoint of measurement to document rates of groundwater inflow in this most critical section of the reach, before water quality station #6. The velocity transect VT#3 at the mouth of the river failed when the lagoon closed and was not available during the time of greatest temperature variability. In addition, VT#3 was not hydraulically a good measuring point because of the upstream lagoon's non-linear storage characteristics

and the downstream variability in elevation of discharge at the ocean, which causes variations in surface water gradient.

g. **A longitudinal profile of the river channel.** Data are needed to document the relationship between ground water and surface water levels and the channel bottom. The hydrogeology report indicates that upstream of VT#2 the river is a losing reach and a gaining reach downstream of water quality station #9. Is this the result of a change in elevation of the river bottom? If so, is this caused by the change in direction of the channel from down the valley axis to across the valley, or is there a geologic barrier? It is important to know whether there is a natural change in channel gradient or a geologic barrier in the transition zone between the losing and gaining portions of the river.

h. **Review of historic aerial photos and topographic maps.** Figure 9-1 of the May 18, 2005 NRCE water use report shows the study area in 1929. A comparison of the 1929 river configuration to that of today (see attached Figure 6) clearly shows that today's sinuous channel next to the pumping wells was instead rather linear and a somewhat braided reach. This change in channel morphology may be an important feature in determining where to monitor, and may help explain the movement of ground water because the main channel of a river is often coarser grained than bank deposits and becomes a preferred flow path. Historic photos, aerial or ground based, would be a valuable source to document historic changes in channel morphology. Knowledge of any changes in the channel is critical in interpreting the existing data and in selecting monitoring points for the water rights permit. An effort should be make to collect and analyse these.

Cited References:

Freeze, R.A., and Cherry, J.A.,1979, Groundwater, Prentice-Hall, Englewood Cliffs, New Jersey, 604 pp.

Glover, R.R., 1964, Ground-Water Movement, Engineering Monograph No. 31, Water Resources Technical Publication, Bureau of Reclamation, U.S. Department of Interior, Denver, Colorado, 76 pp.

Jenkins, C.T., 1968, Techniques for Computing Rate and Volume of Stream Depletion by Wells, Groundwater, vol. 6, pgs. 37-46.

Miller, C.D., and Durnford, D.S., 2005, Modified Use of the "SDF" Semi-Analytical Stream Depletion Model in Bounded Alluvial Aquifers, Hydrology Days 2005, pgs, 146-159.

Table 1
El Sur Ranch
Station #6 to #12 Temperature Differences of Plotted Data

18-Apr-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream					
								6	***7***	***8***	***9***	***10***	***11***
55.76	55.58	55.58	55.64	**0.18**	**-0.06**	55.58	***6***	-	-	-	-	-	-
55.40	55.40	55.76	55.52	**0.36**	**-0.12**	55.40	***7***	-0.18	-	-	-	-	-
54.50	55.40	55.22	55.04	**0.90**	**0.36**	55.40	***8***	-0.18	0.00	-	-	-	-
55.04	55.04	55.04	55.04	**0.00**	**0.00**	55.04	***9***	-0.54	-0.36	-0.36	-	-	-
55.04	55.04	55.04	55.04	**0.00**	**0.00**	55.04	***10***	-0.54	-0.36	-0.36	0.00	-	-
54.86	54.86	55.04	54.92	**0.18**	**-0.06**	54.86	***11***	-0.72	-0.54	-0.54	-0.18	-0.18	-
54.68	54.68	54.68	54.68	**0.00**	**0.00**	54.68	***12***	-0.90	-0.72	-0.72	-0.36	-0.36	-0.18

23-Jul-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream					
								6	***7***	***8***	***9***	***10***	***11***
66.72	66.97	67.33	67.01	**0.61**	**-0.04**	66.97	***6***	-	-	-	-	-	-
-	-	-	-	-	-	-	***7***	-	-	-	-	-	-
58.10	66.63	67.23	63.99	**9.13**	**-5.89**	58.10	***8***	-8.87	-	-	-	-	-
66.24	68.54	68.79	67.86	**2.55**	**0.68**	68.54	***9***	1.57	-	10.44	-	-	-
68.97	68.94	68.63	68.85	**0.34**	**0.09**	68.94	***10***	1.97	-	10.84	0.40	-	-
68.29	68.34	68.31	68.31	**0.05**	**0.03**	68.34	***11***	1.37	-	10.24	-0.20	-0.60	-
68.34	68.52	68.41	68.42	**0.18**	**0.10**	68.52	***12***	1.55	-	10.42	-0.02	-	0.18

6-Aug-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream					
								6	***7***	***8***	***9***	***10***	***11***
63.37	62.04	62.06	62.49	**1.33**	**-0.45**	62.04	***6***	-	-	-	-	-	-
59.65	60.73	61.11	60.50	**1.46**	**0.23**	60.73	***7***	-1.31	-	-	-	-	-
60.35	61.72	61.65	61.24	**1.37**	**-0.89**	60.35	***8***	-1.69	-0.38	-	-	-	-
62.08	62.13	62.35	62.19	**0.27**	**-0.06**	62.13	***9***	0.09	1.40	1.78	-	-	-
61.79	61.70	61.79	61.76	**0.09**	**-0.06**	61.70	***10***	-0.34	0.97	1.35	-0.43	-	-
61.09	61.09	61.14	61.11	**0.05**	**-0.02**	61.09	***11***	-0.95	0.36	0.74	-1.04	-0.61	-
62.20	62.31	62.19	62.23	**0.12**	**0.08**	62.31	***12***	0.27	1.58	1.96	0.18	0.61	1.22

Red highlight values plotted on Figure 3-31

Table 1, cont'd

19-Aug-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream					
								6	***7***	***8***	***9***	***10***	***11***
62.42	61.86	61.95	62.08	**0.56**	**-0.22**	61.86	***6***	-	-	-	-	-	-
59.74	60.78	61.84	60.79	**2.10**	**-0.01**	60.78	***7***	-1.08	-	-	-	-	-
58.10	60.87	59.90	58.74	**4.79**	**-2.66**	-	***8***	-	-	-	-	-	-
56.08	-	-	-	-	-	56.08	***8***	-5.78	-4.70	-	-	-	-
63.25	63.28	63.30	63.28	**0.05**	**0.00**	63.28	***9***	1.42	2.50	7.20	-	-	-
63.19	63.03	62.92	63.05	**0.27**	**-0.02**	63.03	***10***	1.17	2.25	6.95	-0.25	-	-
62.58	62.60	62.60	62.59	**0.02**	**0.01**	62.60	***11***	0.74	1.82	6.52	-0.68	-0.43	-
63.50	63.66	63.46	63.54	**0.20**	**0.12**	63.66	***12***	1.80	2.88	7.58	0.38	0.63	1.06

2-Sep-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream					
								6	***7***	***8***	***9***	***10***	***11***
64.00	64.04	64.11	64.05	**0.11**	**-0.01**	64.04	***6***	-	-	-	-	-	-
60.04	57.87	58.53	58.81	**2.17**	**-0.94**	57.87	***7***	-6.17	-	-	-	-	-
56.03	57.54	57.56	57.04	**1.53**	**-1.01**	56.03	***8***	-8.01	-1.84	-	-	-	-
64.40	59.45	57.96	60.60	**6.44**	**-1.15**	59.45	***9***	-4.59	1.58	3.42	-	-	-
67.03	66.94	66.92	66.96	**0.11**	**-0.02**	66.94	***10***	2.90	9.07	10.91	7.49	-	-
67.46	67.33	67.19	67.33	**0.27**	**0.00**	67.33	***11***	3.29	9.46	11.30	7.88	0.39	-
67.73	67.95	67.77	67.82	**0.22**	**0.13**	67.95	***12***	3.91	10.08	11.92	8.50	1.01	0.62

15-Sep-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream					
								6	***7***	***8***	***9***	***10***	***11***
63.09	63.79	64.53	63.80	**1.44**	**-0.01**	63.79	***6***	-	-	-	-	-	-
-	57 74	60.26	59.00	**2.52**	**-1.26**	57.74	***7***	-6.05	-	-	-	-	-
59.27	57.56	57.74	58.19	**1.71**	**-2.41**	55.78	***8***	-	-	-	-	-	-
55.78	56.30	55.67	55.92	**0.63**	**-0.14**	55.78	***8***	-8.01	-1.96	-			
64.06	62.47	62.22	62.92	**1.84**	**-0.45**	62.47	***9***	-1.32	6.69	6.69	-	-	-
65.77	65.73	65.73	65.74	**0.04**	**-0.01**	65.73	***10***	1.94	9.95	9.95	0.00	-	-
65.62	65.61	65.62	65.62	**0.01**	**-0.01**	65.61	***11***	1.82	9.83	9.83	-0.12	0.00	-
65.28	65.28	65.26	65.27	**0.02**	**0.01**	65.28	***12***	1.49	9.50	9.50	-0.45	-0.33	-0.33

Table 1, cont'd

30-Sep-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream 6	7	8	9	10	11
59.81	60.15	60.76	60.24	0.95	-0.09	60.15	6	-	-	-	-	-	-
57.31	59.22	58.89	58.47	1.91	0.75	59.22	7	-0.93	-	-	-	-	-
56.75	58.10	58.39	57.75	1.64	-1.00	56.75	8	-3.40	-2.47	-	-	-	-
60.48	60.42	60.24	60.38	0.24	0.04	60.42	9	0.27	1.20	3.67	-	-	-
60.40	60.40	60.39	60.40	0.01	0.00	60.40	10	0.25	1.18	3.65	-0.02	-	-
60.42	60.44	60.42	60.43	0.02	0.01	60.44	11	0.29	1.22	3.69	0.02	0.04	-
60.51	60.53	60.51	60.52	0.02	0.01	60.53	12	0.38	1.31	3.78	0.11	0.13	0.09

15-Oct-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream 6	7	8	9	10	11
56.53	56.57	56.55	56.55	0.04	0.02	56.57	6	-	-	-	-	-	-
56.19	56.57	56.68	56.48	0.49	0.09	56.57	7	0.00	-	-	-	-	-
55.72	56.68	56.68	56.36	0.96	-0.64	55.72	8	-0.85	-0.85	-	-	-	-
56.97	56.82	56.77	56.85	0.20	-0.03	56.82	9	0.25	0.25	1.10	-	-	-
56.55	56.52	56.52	56.53	0.03	-0.01	56.52	10	-0.05	-0.05	0.80	-0.30	-	-
56.39	56.39	56.37	56.38	0.02	0.01	56.39	11	-0.18	-0.18	0.67	-0.43	-0.13	-
56.39	56.43	56.48	56.43	0.09	0.00	56.43	12	-0.14	-0.14	0.71	-0.39	-0.09	0.04

29-Oct-04

L	M	R	Average	Range	Plotted - Ave	Plotted oF		Temp. Difference Going Upstream 6	7	8	9	10	11
-	-	-	-	-	-	-	6	-	-	-	-	-	-
51.69	51.46	51.51	51.55	0.23	-0.09	51.46	7	-	-	-	-	-	-
51.69	51.55	51.49	51.58	0.20	-0.03	51.55	8	-	0.09	-	-	-	-
51.37	51.33	51.35	51.35	0.04	-0.02	51.33	9	-	-0.13	-0.22	-	-	-
51.26	51.28	51.33	51.29	0.07	-0.01	51.28	10	-	-0.18	-0.27	-0.05	-	-
51.21	51.21	51.21	51.21	0.00	0.00	51.21	11	-	-0.25	-0.34	-0.12	-0.07	-
-	-	-	-	-	-	-	12	-	-	-	-	-	-

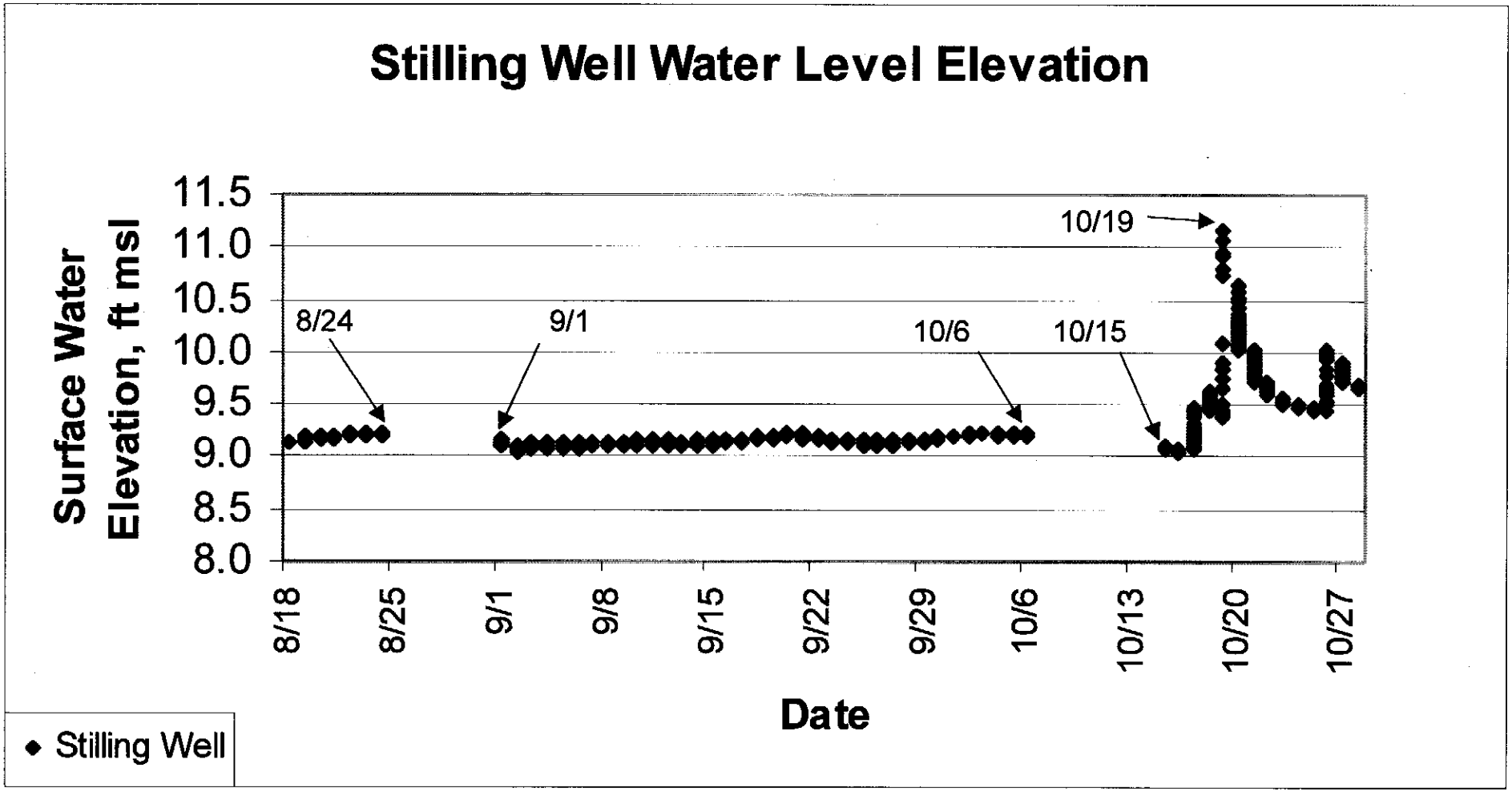

Stilling Well Water Level Elevation
Surface Water Elevation, ft msl
11.5
11.0
10.5
10.0
9.5
9.0
8.5
8.0
8/24
9/1
10/6
10/15
10/19
8/18
8/25
9/1
9/8
9/15
9/22
9/29
10/6
10/13
10/20
10/27
Date
Stilling Well

Figure 1

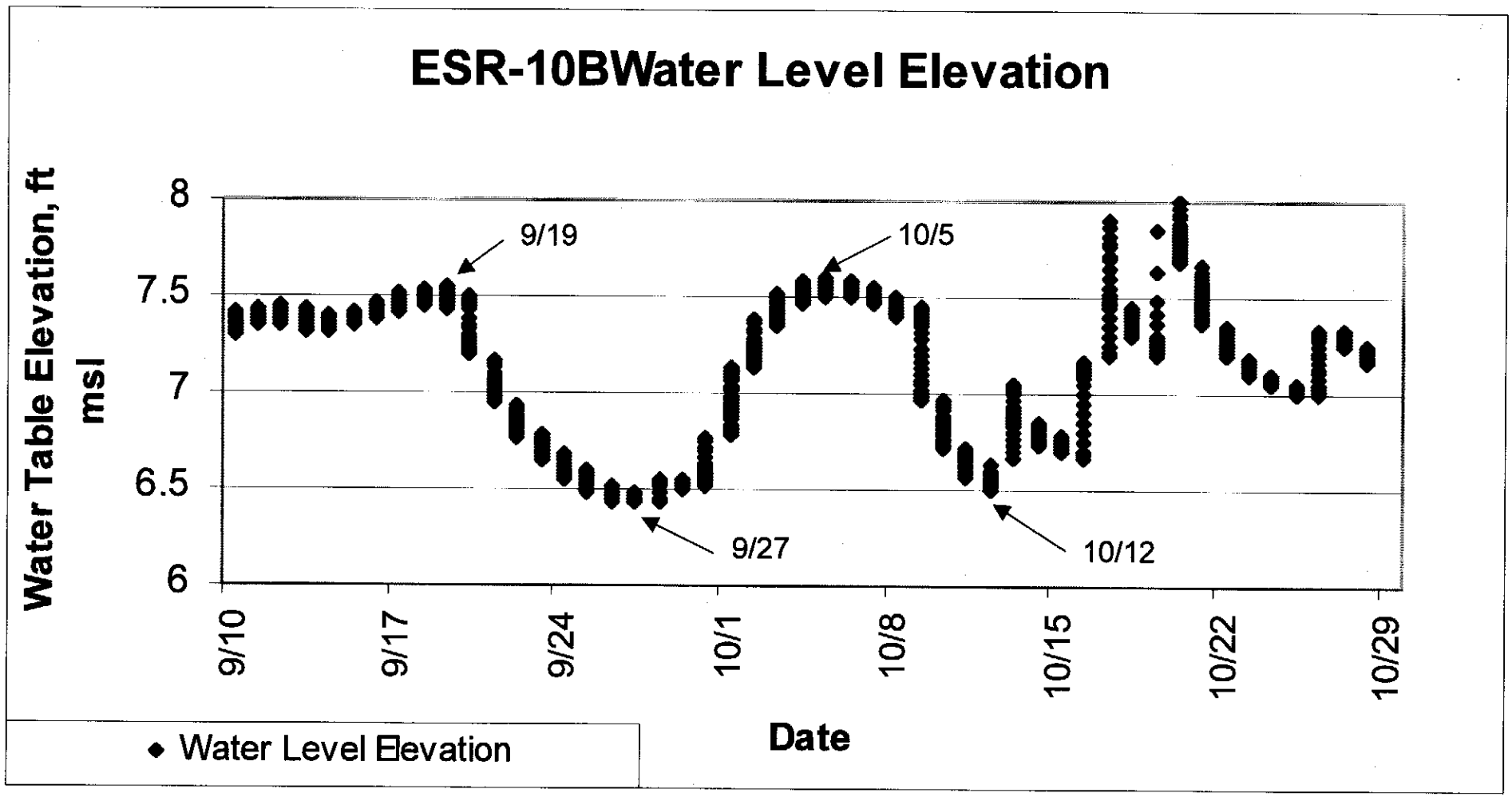

ESR-10BWater Level Elevation
Water Table Elevation, ft msl
8
7.5
7
6.5
6
9/19
10/5
9/27
10/12
9/10
9/17
9/24
10/1
10/8
10/15
10/22
10/29
Date
Water Level Elevation

Figure 2

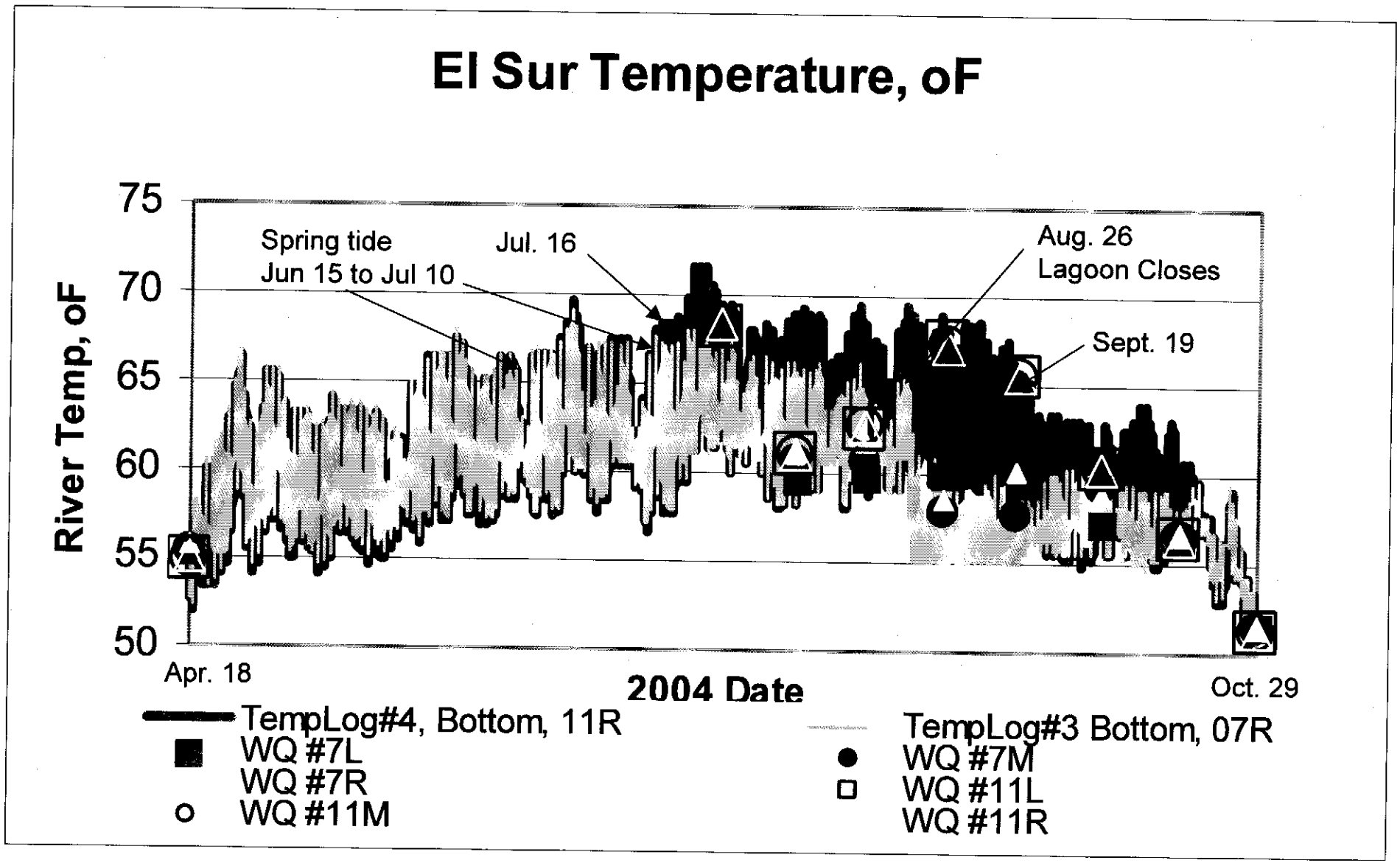
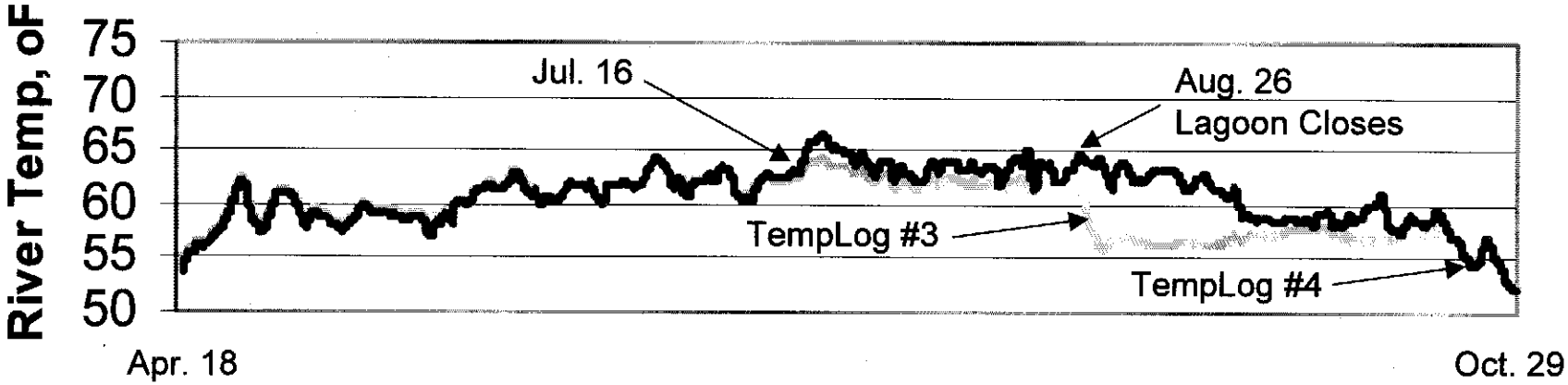

El Sur Temperature, oF
River Temp, oF
75
70
65
60
55
50
Spring tide
Jun 15 to Jul 10
Jul. 16
Aug. 26
Lagoon Closes
Sept. 19
Apr. 18
2004 Date
Oct. 29
TempLog#4, Bottom, 11R
WQ #7L
WQ #7R
WQ #11M
TempLog#3 Bottom, 07R
WQ #7M
WQ #11L
WQ #11R

Figure 3

El Sur Temperature, °F
24-Pt Running Average



2004 Date

Figure 4

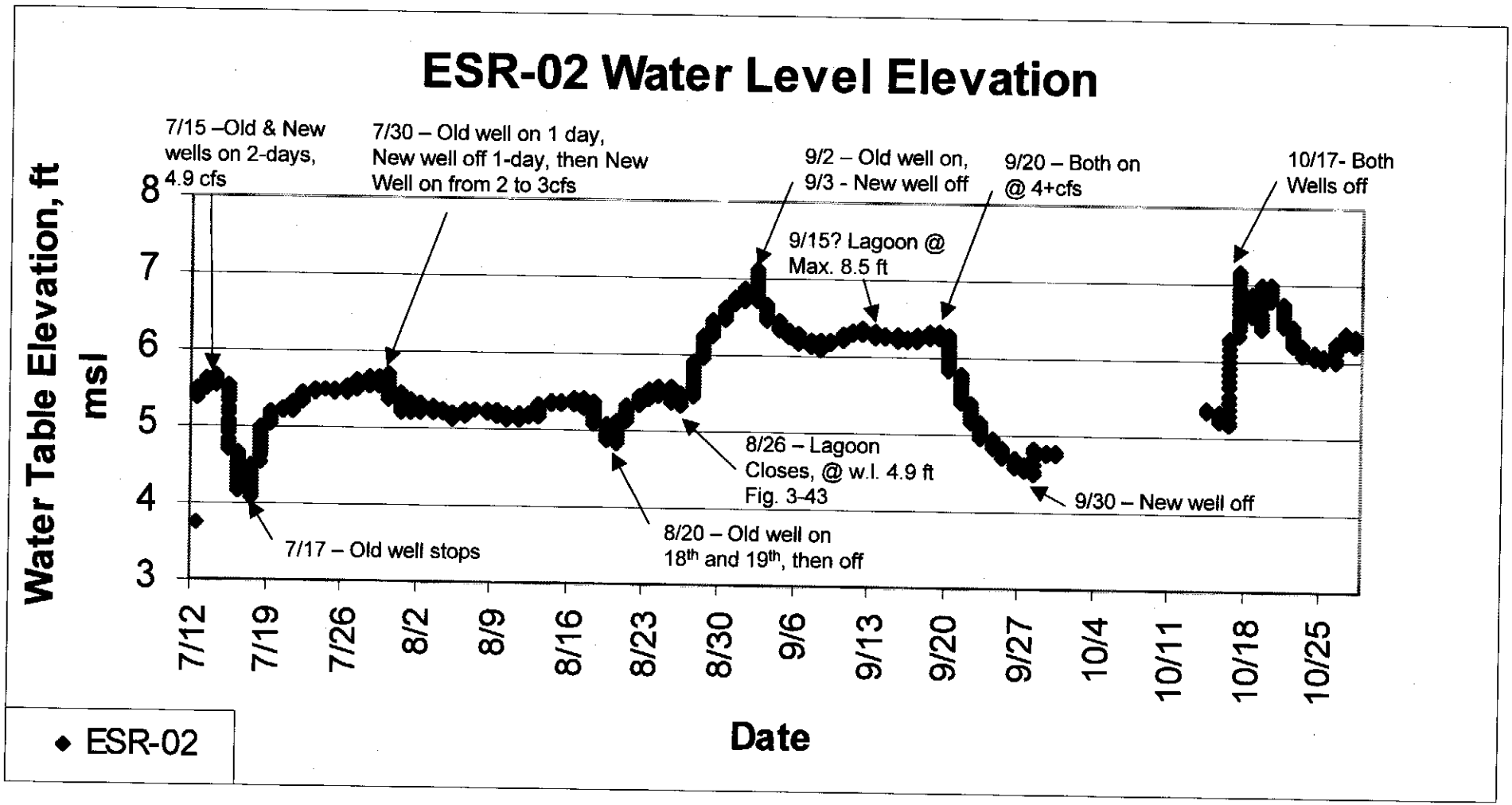
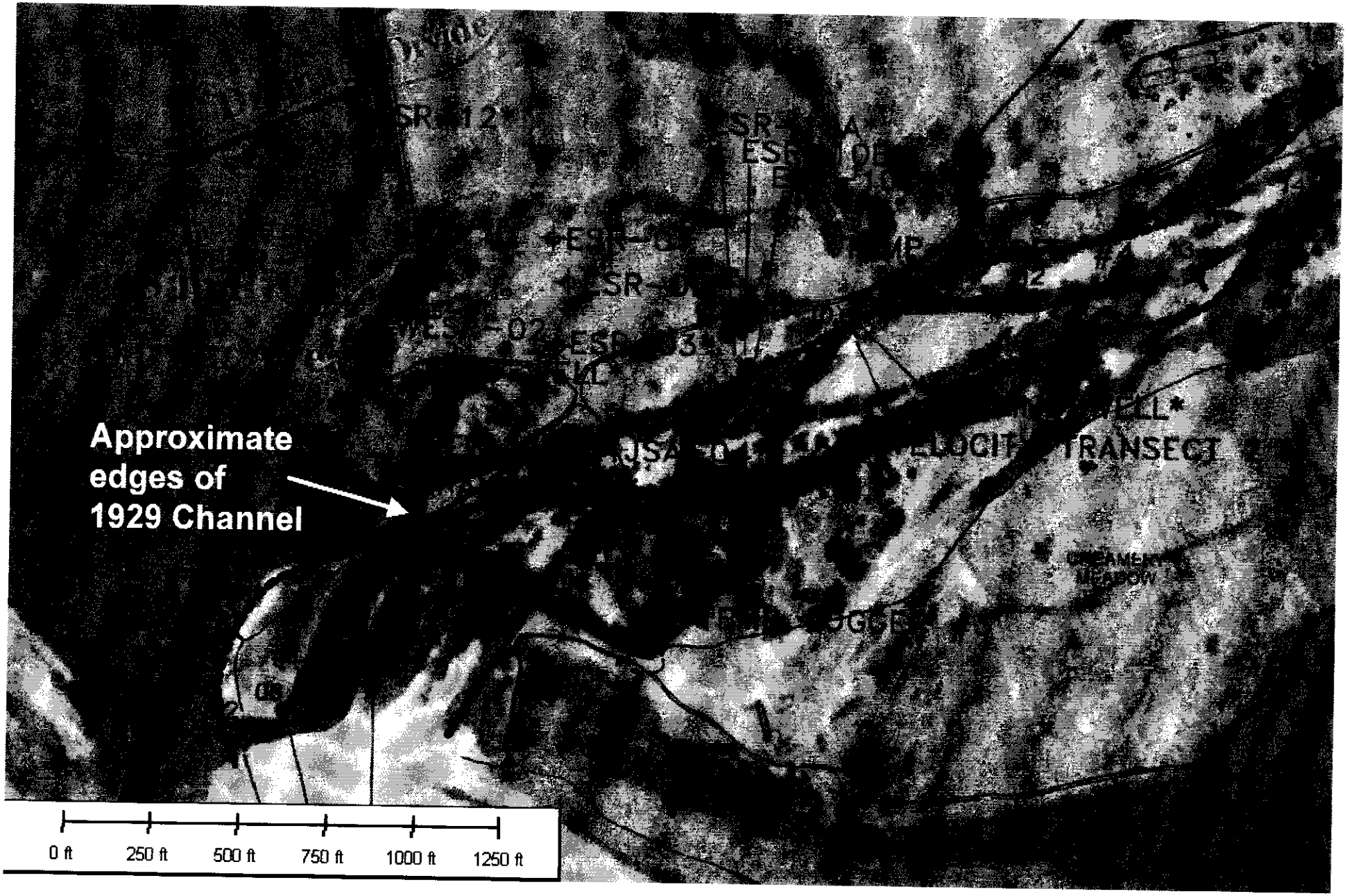

ESR-02 Water Level Elevation
Water Table Elevation, ft msl
8
7
6
5
4
3
7/15 –Old & New wells on 2-days, 4.9 cfs
7/30 – Old well on 1 day, New well off 1-day, then New Well on from 2 to 3cfs
9/2 – Old well on, 9/3 - New well off
9/20 – Both on @ 4+cfs
10/17- Both Wells off
9/15? Lagoon @ Max. 8.5 ft
8/26 – Lagoon Closes, @ w.l. 4.9 ft Fig. 3-43
9/30 – New well off
7/17 – Old well stops
8/20 – Old well on 18th and 19th, then off
7/12
7/19
7/26
8/2
8/9
8/16
8/23
8/30
9/6
9/13
9/20
9/27
10/4
10/11
10/18
10/25
Date
◆ ESR-02

Figure 5



El Sur Ranch wells, closeup of 2004 channel overlayed on to 1929 image

Figure 6

FILE 30166

HUNTER◄►RUIZ
Research, Strategies & Advocacy

5 July 2006

Paul Murphey
Project Manager
Division of Water Rights
1101 I Street, 14th Floor
Sacramento, California 95814

Re: **El Sur Ranch Water Right Application #30166**
Response to Initial Study and Notice of Preparation

Dear Mr. Murphey:

Attached please find a marked up copy of the Initial Study (IS). Within the highlighted and designated areas are comments providing ESR's concerns and input for the record. At the direction of Janet Goldsmith and Applicant, please consider the following and attached as comments to the Notice of Preparation (NOP) that incorporates the Initial Study (IS) dated, June, 2006:

Overall, the IS fails to address the disconnect between the Board's definition of project and how to analyze for potential impacts. Fundamental flaws within the IS will most assuredly result in yet another aborted and costly ADEIR. To date, neither the IS nor discussions with Division Staff have provided the Applicant with a description of how potential impacts will be differentiated as between riparian, baseline and project usage. Providing a survey of existing conditions at either the place of diversion or within the place of use does nothing to provide the public or the Board with an understanding of the potential for impacts. The only thing a survey of existing conditions will show is what conditions exist as a result of all three uses.

It is not unreasonable for ESR to look for some degree of certainty that the CEQA process will be both fair and transparent. Based upon the provided IS and NOP it is highly unlikely that this CEQA review will achieve either goal.

~~Kindest~~ regards,

Darlene E. Ruiz

cc: E. Mahaney
C. Spector
L. Grober
DFG
DPR
J. Crenshaw

1130 K Street, Suite 350 Sacramento, California 95814 Telephone 916.552.6700 Fax 916.552.6705

Additionally, the State Water Board has the responsibility to ensure that the water resources of the State of California are put to beneficial use, and to prevent waste, unreasonable use, unreasonable method of use, or unreasonable method of diversion of water in the State. (Cal. Const., art. X, § 2; Wat. Code §§ 100, 275.) The State Water Board also has an obligation to consider the effect of the proposed project on public trust resources and to protect those resources where feasible. *(National Audubon Society v. Superior Court* (1983) 33 Cal.3d 419 [189 Cal.Rptr. 346].) The State Water Board may subject a water right appropriation to terms and conditions "as in its judgment will best develop, conserve, and utilize in the public interest the water sought to be appropriated," and each water right permit is issued subject to other terms and conditions. (Wat. Code, §§ 1257, 1382, 1391.)

In determining whether to approve the water right application and under what conditions, the State Water Board will consider the project's potential environmental impacts and any mitigation measures identified through the CEQA process.

Proposed Project

In summary, the proposed project that is being considered for approval by the State Water Board and is analyzed in this Initial Study is Water Right Application No. 30166, as amended December 30, 2005. The original irrigation system based on the Old Well pre-dates CEQA. The 1983 augmentation of the original irrigation system which occurred when the New Well was placed in operation received CEQA review and approval from DPR in 1981. Accordingly, the Project for CEQA purposes is not the original irrigation system or the augmentation by the new well, but the permitting of the use since 1951 which is sought by Water Right Application No. 30166, as amended December 30, 2005. Through this application, the Ranch seeks to appropriate only that amount of water needed for reasonable and beneficial use in irrigating the POU but in no event to exceed 1,615 afa year round (January 1 to December 31), with a twenty-year rolling average not to exceed 1200 afa, at a maximum rate not to exceed 5.34 cfs on a 30-day running average and not to exceed 5.84 cfs at any time, from the lower Big Sur River. Whether the amount for which the permittee applies is consistent with such reasonable and beneficial use can be determined by the SWRCB staff at any time from data reported monthly as to (1) the crop water requirement; (2) the portion of the latter requirement satisfied by sufficient precipitation; and (3) the estimated effect upon this requirement of wind, temperature, humidity, solar radiation and other factors (herein "Estimated Irrigation Need"). This method of diversion would be from two existing wells

Comment [HJ1]: I don't think this information is necessary in the I.S. – it is essentially information related to legal position, not environmental issues.

Comment [HJ2]: This information is not currently a part of the application.

(the Old and New Wells) located on lands deeded by Applicant to DPR and within Andrew Molera SP upon which DPR granted appropriate easements to the Ranch and on which the Ranch reserved water rights. Water would be beneficially put to use for flood irrigation of coastal grasses and legumes within the intended POU; 267 acres of upland Ranch pastures (Assessor Parcel Numbers (APN) 159-011-05 and 159-031-04). The Ranch's riparian lands would be subject to this water right application. Under the proposed project, the Purpose of Use, the Place of Use, the method of irrigation, the irrigation system, and the irrigation operating practices will also be the same as described in the baseline defined below and the same as during the last several decades of cattle operations. Another factor that will continue into the future will be the wholly unpredictable nature of climatic variations including precipitation.

If the State Water Board approves Application 30166, diversion of the amount needed for reasonable and beneficial use; i.e., the above defined "Estimated Irrigation Need" subject to the above limitations, as so requested by the Ranch's application, as amended, then the Ranch will have a right to divert up to 1615 acre feet in a year, as limited by irrigation needs and the twenty-year 1200 af rolling average, subject . said Estimated Irrigation Need as so limited subject to any terms or conditions that the State Water Board imposes. The priority date of the water right would be July 10, 1992. The Ranch would have the right to take and use the amount of water specified in the permit for the approved purposes until a license is issued or until the permit is revoked. The Ranch would have to seek the State Water Board's approval of any changes to the authorized place of use, purpose of use, or points of diversion.

Comment [HJ3]: I'd leave this out.

Comment [HJ4]: Delete the yellow-shaded portion.

CEQA Project Baseline

In CEQA analyses, potential environmental impacts are assessed against a *baseline* condition. This condition is intended to represent that point, above which, a project's contributory impacts are evaluated. This project involves an existing, but unpermitted, water right activity. Nonetheless, the physical environmental conditions as they exist at the time the notice of preparation is published normally will constitute the baseline. (Cal. Code Regs., tit. 14, § 15125, subd. (a).)

4. DETERMINATION

This section presents the determination that the State Water Board's Division of Water Rights concluded that, based on the results of the environmental review presented in this Initial Study, the preparation of an EIR is required in order to meet the environmental review requirements for the proposed project under CEQA.

On the basis of this initial evaluation:

☐ I find that the Proposed Project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the applicant. A MITIGATED NEGATIVE DECLARATION will be prepared.

~ I find that the Proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Comment [HJ5]: This determination, as well as all the sub-conclusions upon which is premised, should be reconsidered in light of a legally correct statement of the baseline.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR OR NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature	Date
Victoria Whitney, Chief Division of Water Rights	State Water Resources Control Board (State Water Board)
Printed Name	For

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
ordinances protecting biological resources, such as a tree preservation policy or ordinance?				
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	■	□		

Discussion

a. - b. *Overview of Sensitive Species and Habitat*

The Big Sur River drains an approximate 58 square-mile watershed that is mostly contained within Los Padres National Forest and, therefore, generally undeveloped. The project area, being located within the Big Sur River watershed, contains riparian, wildlife, and aquatic habitat. Riparian vegetation in good ecological condition provides favorable environmental conditions and supports a tremendous diversity and abundance of wildlife and aquatic life. Extraction of a portion of underflow associated with this project potentially may have a detrimental effect on the ecological health of the riparian vegetation in the Big Sur River watershed, and to the sensitive wildlife and aquatic life that are dependent on this riparian habitat for breeding/spawning, nesting, rearing, foraging, and migrating.

The presence of sensitive, and listed species, as defined under the California and federal Endangered Species Acts, has been documented in the California Natural Diversity Database (CNDDB). Searches of the CNDDB in 2004 and 2005 indicate that several listed species of flora and fauna known to inhabit, or have the potential to inhabit, the project area (inclusive of both the POD and POU) could potentially be impacted by project operations. These species include but are not limited to:

Comment [HJ6]: Clarify what is meant by excessive. Is this pumping in excess o baseline or pumping in excess of permit limits? Why is there any potential for the former to occur? Assuming the latter would be improper under CEQA.

Comment [HJ7]: Note that no analysis is presented to support this position. The term Excessive Pumping is an unsupported value judgment and predetermined conclusion

Comment [HJ8]: A search of the database would only indicate that a species was potentially within one or more quads surrounding the wells and provides no ability to determine if an impact would potentially occur. In addition, the database search covered a broad geographic area that is not representative of the habitat or species within the narrow area surrounding the wells. This is misleading.

Comment [HJ9]: Clarify how this is possible if the POU is already being irrigated and the IS concludes there is no proposal for any change in historic operations or practices.

ocean bluffs or, a mix of coyote bush *(Baccharis pilularis),* French broom *(Cytisus monspessulanus),* non-native grasses, sweet fennel *(Foeniculum vulgare),* and thistles are found on the upland edges of the riparian habitat. While estimates of vegetative cover by broad categories have been made, no detailed botanical species surveys have yet been prepared to characterize the nature of these species, their abundance, specific locations, and habitat conditions/vitality. A botanical survey of the area in the immediate vicinity of the wells and surrounding areas is currently being conducted, however, results are not yet available. Results of this survey will be used to further refine the species that potentially occur in the area surrounding the wells and will be used to refine the assessment of potential impacts.

Fauna

- American badger (Taxidea taxus), California species of special concern
- Black swift *(Cypseloides niger),* California species of special concern
- Monarch butterfly *(Danaus plesippus),* wintering sites
- Prairie falcon (Falco mexicanus), California species of special concern
- Smith's blue butterfly *(Euphilotus enoptes smithii),* federally Endangered

Nesting habitat for sensitive birds like yellow warblers *(Dendroica petechia),* a California species of special concern, and saltmarsh common yellowthroats *(Geothlypis trichas sinuosa)* can also be found within the riparian habitat of the Big Sur watershed, as can Monterey dusky footedwoodrat *(Neotoma macrotis luciana)* nests, a DFG species of concern.

A recent query of the CNDDB for the USGS Big Sur 7.5-minute Quadrangle and the surrounding seven Quadrangles (Soberanes Pt., Mt. Carmel, Carmel Valley, Ventana Cones, Point Sur, Pfeiffer Pt, and Partington Ridge) has resulted in a list of 42 sensitive species and habitats.[3] Of these, five

Comment [HJ10]: See comment about the quads above

were observed during an October 2004 survey compared to 417 observed during an earlier July survey. Juvenile rearing steelhead/rainbow trout were observed inhabiting all of the survey reaches (8 in total) during both the July and October surveys. The highest densities were observed within the lagoon (65% and 88% of the observations occurred here, for the July and October surveys, respectively) and within an upstream reach; the latter characterized by large woody debris and significant shaded riverine instream cover.

In general, the study concluded that for the 2004 study year: streamflows were sufficient to maintain habitat connectivity; summer baseflows were sufficient to provide suitable physical habitat for juvenile steelhead/rainbow trout rearing; water quality conditions were deemed suitable for juvenile steelhead/rainbow trout rearing. A fundamental premise for this investigation was that steelhead/rainbow trout were assumed to represent an appropriate indicator species. For the fishery assessment, this was appropriate. However, it is not appropriate to state that the juvenile steelhead/rainbow trout study findings are representative of all other wildlife species, sensitive or otherwise.

The fisheries analyses were based on recent data collected during the 2004 irrigation season. The analytical results for juvenile steelhead/rainbow trout were based on several evaluation methodologies including lagoon fisheries habitat surveys, a consideration of summer time flows, habitat characteristics and connectivity, water quality correlation (including the parameters of water temperature, electrical conductivity, and dissolved oxygen). Instream surveys were also conducted to document abundance, survival, growth, and spatial distribution. Again, this was primarily limited to juvenile steelhead/rainbow trout. While the two surveys' dates covered the two well operating scenarios (e.g., one well versus two wells operating), natural changes in river dynamics (i.e., sand bar formation at the mouth) complicated the evaluation of the relationship between irrigation pumping and fishery habitat.

The conclusions of the fisheries analysis were based largely on field observations correlated against temporally coincident hydrologic metrics.

Comment [HJ11]: This is good survival – the report implies that the reduction is bad. Survival estimates from other coastal rivers should be included to give a context for evaluating these survey results.

Comment [HJ12]: The fundamental objective of this survey was to assess habitat conditions for steelhead

Comment [HJ13]: The Initial Study should identify any species for which the adequacy of flow for fish would not serve as a surrogate for environmental health. I cannot think of any.

Comment [HJ14]: There is no support given for this conclusion. In the absence of any contrary data there is no support for or against the use of steelhead as a general indicator of general aquatic habitat conditions during the period of these observations.

Comment [HJ15]: The 2004 study was specifically designed to address conditions for steelhead since they were identified as the primary species of concern.

Comment [HJ16]: Since there were NO major changes in the juvenile steelhead abundance between the two survey periods, juvenile steelhead appeared to be healthy and grow, and habitat in the general area was considered to be suitable (with the exception of the specific area where groundwater upwelling was thought to occur, there is no evidence from 2004 of a significant problem caused by pumping. A study plan has been developed for implementation in 2006 to specifically test the effects of pumping on instream habitat conditions and water quality.

Resource agencies have requested additional studies to determine the impacts this project may have on fish and on wildlife. Specifically, because aquatic habitat availability, and hence, fisheries health, is directly correlated to instream flows, the agencies request a water availability analysis and a water budget that addresses water consumption in the watershed, and a fisheries flow analysis, acceptable to DFG and NMFS, that defines and proposes flow reservations to maintain long-term sustainability of various trust resources dependent on the Big Sur riverine environment.

The interactive relationships between the proposed project and the breadth of the species inhabiting the Big Sur River watershed ecosystem (e.g., instream riverine, riparian shoreline, uplands, etc.) has not yet been fully identified. The impacts of the proposed project to native species and, in particular sensitive listed species, as defined by both the California and federal Endangered Species Acts, and associated habitat is ***potentially significant*** based on the following:

(1) The corroborated presence of federal and state-listed, sensitive flora and fauna species that are known to inhabit or have the potential to inhabit the project area;

(2) Concerns and requests for additional information by resource agencies, including DFG and the National Oceanic and Atmospheric Administration/National Marine Fisheries Service (NOAA/NMFS), who are concerned about listed sensitive species and native species;

(3) Preliminary field studies suggest the potential for adverse environmental impacts to biological resources within the project area;

(4) Groundwater pumping, has the potential to affect sensitive biological habitat, such as the biological habitat within and surrounding the project area, because:

- pumping of groundwater and underflow of the Big Sur River can reduce underflow and groundwater levels that sustain flora and fauna, particularly the riparian obligates that rely on these wet zones;

Comment [HJ17]: See response above.

Comment [HJ18]: It is not clear that this is an independent assessment or simply re-phrasing the CDFG comments

Comment [HJ19]: A specific study design has been developed to address these issues. This is just a re-statement of the concerns with no additional or independent supporting analysis

Comment [HJ20]: This statement does not belong in an environmental document. The only appropriate statement would be a discussion of whether a water availability analysis and water budget are necessary, and a conclusion stating whether and why they should be done.

Comment [HJ21]: This should be tightened to identify the species that actually inhabit the area of the wells and not just a blanket statement that is generic in nature

Comment [HJ22]: The concern of resource agencies is not a valid indication of potential impact. There must be a rationale, supported by evidence.

Comment [HJ23]: This statement is uninformative. What field studies? How do they suggest potential impact?

Comment [HJ24]: Be specific – what are these effects and how do they relate to well diversions. As stated this conclusion has no foundation

Comment [HJ25]: The IS should not deal with abstract theory. It must be based on evidence of potential harm **due to the proposed project.** We are not dealing with "theory" – there is a demonstrated history and proposed project.

Comment [HJ26]: The IS does not present analyses that support this finding

- excessive pumping can facilitate saltwater intrusion and change the natural composition of freshwater and brackish water in the river and estuary, reduce habitat area for fish such as the Tidewater goby, a federally endangered fish that lives in estuaries and lagoons along the California coast from Del Norte to northern San Diego counties. Juvenile steelhead can suffer stress by entering the smoltification process prematurely when exposed to abrupt changes in salinity, as they migrate from the Big Sur River, through the estuary, and to the Pacific Ocean;
- saltwater intrusion into the Big Sur River can diminish the diversity and abundance of native riparian vegetation, as dominant saline-tolerant vegetation takes over. Canopy cover can be reduced and instream water temperature can increase which can be harmful to instream aquatic species;
- riparian obligates such as the Monarch butterfly, Southwestern Pond turtle, Western Pond turtle, steelhead, California tiger salamander, federally threatened California red-legged frog, Yellow warbler, and tri-colored blackbird require riparian zones to support some part or all of their life stages. For instance, riparian obligate birds place greater than 90 percent of their nests in riparian vegetation, or greater than 90 percent of their abundance occurs in riparian vegetation during the breeding season. They may forage outside the riparian zone, but the presence of these species will not occur without riparian zones in good ecological condition.

Therefore, pumping can have a deleterious and potentially significant impact on the native and listed flora and fauna that inhabit the Creamery Meadow and Big Sur River riparian zones and the Big Sur River Estuary.

Comment [HJ27]: Not found in the Big Sur River

Comment [HJ28]: There is no technical support presented in the IS for this conclusion. What is the reference that documents tidewater goby in the estuary?

Comment [HJ29]: What evidence is presented in the IS to demonstrate that pumping results in abrupt changes to surface water salinity within the river or estuary. This needs more support or should be deleted

Comment [HJ30]: The IS speculates but does not provide any support for this finding

Comment [HJ31]: What is the evidence that saltwater intrusion into the Big Sur River could occur as a result of the project? All of the evidence shows that the contrary is true. The freshwater flows on top of the saline wedge, and would not intrude into the surface waters.

Comment [HJ32]: Again, there is no support for this speculation. The impact analysis is based on speculation and unsupported hypotheses that have no foundation presented in the IS

Comment [HJ33]: The IS concludes that the riparian vegetation is in good shape. Where is the evidence or independent analysis that well pumping has caused these problems?

Comment [HJ34]: What is the evidence that the riparian zone might be adversely impacted by the project? None cited.

Comment [HJ35]: Again, while true in the abstract, what is the evidence that THIS PROJECT could have such effects?

Comment [HJ36]: See comments above regarding the lack of analysis, independent assessment, and data to support these "findings"

The potential alteration or degradation of riparian habitats is an important consideration in assessing ecosystem health and vitality. Without such assessment, the proposed project may have a ***potentially significant impact*** on any element of the riparian system. These impacts could be mitigated by implementing a monitoring plan and requiring pumping restrictions when certain thresholds, such as salinity levels, are met during certain hydrologic year types.

Comment [HJ37]: The IS presents no support for this other than speculation

Comment [HJ38]: WHAT IMPACTS ???? The Initial Study ASSUMES impacts, and then says they could be mitigated. No evidence.

c. Under the proposed project, increasing quantities of irrigation water, relative to the baseline, would be applied to the pastures potentially resulting in increased surface runoff to Swiss Canyon and possibly onto State Park property. The Swiss Canyon drainage runs between the pastures and discharges water directly to the ocean. According to the DPR complaint, there is erosion across the ocean beach from the ephemeral stream during and after irrigation events. The ephemeral creek appears to support riparian habitat, but it is unknown if this area also supports wetlands, marshes, coastal estuarine systems, related sensitive species, and/or their habitats.

Comment [HJ39]: This premise depends entirely upon a legally incorrect baseline and should be adjusted accordingly.

Comment [HJ40]: There is no analysis of any potentially adverse effects upon the riparian habitat if irrigation practices were to be altered in a way that might reduce seepage of irrigation water into the canyon.

No detailed field surveys have yet been completed to characterize the current existing condition within Swiss Canyon related to lands applicable under Section 404 of the Clean Water Act or, related species and habitats. A vegetation survey is scheduled to occur during the summer 2006 that will include Swiss Canyon and provide additional information on the plant communities inhabiting this area. The documented presence of listed species in the area, however, along with the geomorphic character of the canyon as a drainage way (i.e., conducive to water accumulation and conveyance) suggest a sensitive area that could support lands under Section 404 of the Clean Water Act. Project-induced surface runoff has the potential to substantially adversely affect the riparian system within Swiss Canyon. In addition, as discussed in the DPR complaint, the potential exists for flooding of State Park trails during and after irrigation events. Accordingly, until such time as further documentation can attest to the actual conditions present on site, this represents a ***potentially significant impact.*** This impact could be mitigated by erosion control methods such as placement of wattles to reduce runoff or construction of a tail-water recovery system.

Comment [HJ41]: What documentation does this refer to? The database search mentioned earlier in the IS is not sufficient to determine whether or not protected plant species inhabit Swiss Canyon or any potential impacts associated with runoff.

Comment [HJ42]: Depending on the species of interest the increase in water availability may benefit the plant community.

Comment [HJ43]: This premise depends entirely upon a legally incorrect baseline and should be adjusted accordingly.

Comment [HJ44]: The Initial Study should have investigated DPR's claim, and identified where and when alleged flooding occurs. If it is across the beach, I question whether it constitutes "flooding of DPR trails." In any event, why is the allegation alone considered evidence? It would have been simple to require DPR to provide facts.

d. A recent study indicated that the Big Sur River and lagoon can remain hydrologically connected, at least as exhibited during the 2004 investigation year. This discovery implied

since it avoids the potential risk of fish stranding in isolated pools and backwater areas. The Big Sur River flows over a gravel and cobble bed with finer sediments being found in the bottoms of larger pools. Upstream of the confluence with the ocean, the river forms a lagoon as the outfall is partially constricted by a sandbar. The lagoon is intermittently affected by tidal action and receives salt-water during high tides and storm events that overtop the sand bar. On occasion, the sandbar closes across the river mouth. This is a natural phenomenon and temporary. However, reduced flow from pumping and resulting salinity changes could interfere substantially with the movement of steelhead and native resident fish, and could impede the use of wildlife nursery sites in the Big Sur River and the Big Sur River Estuary. Therefore, the proposed project may have a ***potentially significant impact*** on the movement of wildlife or fish, in particular steelhead acclimation to abrupt or excessive saline conditions before swimming to the Pacific Ocean, and could impede the natural functioning of the estuary. These impacts could, however, be mitigated by complying with a water quality monitoring plan that imposes pumping restrictions when certain thresholds, such as salinity levels, are met during certain hydrologic year types. Monitoring reports would also be prepared and submitted to the State Water Board as required.

Comment [HJ45]: The IS presents no data or evidence to support this finding. Data on EC gradients was collected as part of the 2004 study that should have been analyzed in the IS to address this issue. As in many other locations this finding is speculative and does not appear to be based on any analyses

Comment [HJ46]: The IS presents no evidence to support a finding that ESR well operation could or has resulted in an abrupt salinity gradient or degradation of the lagoon

Comment [HJ47]: The IS implies water quality impacts resulting from well operation that have not be observed or analyzed

e.f. The project area is not within an area covered by an adopted habitat conservation plan or, a natural community conservation plan. The Lower Big Sur River Protected Waterway Management Plan (April 1986) seeks to maintain and enhance the river as a fish and wildlife habitat. Therefore, to the extent the proposed project adversely affects the instream and riparian habitat, as discussed above, it will conflict with plans or policies relating to biological resources and, at this point, should be considered a ***potentially significant impact.*** As noted above, these impacts are mitigable.

Comment [HJ48]: As noted above, no evidence is presented to support this finding

Issues	Less Than Significant Potentially Significant Impact	With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	~

Discussion

a.i.- iii. The Alquist - Priolo Earthquake Fault Zoning Map does not identify any active or known earthquake faults in the project area. The closest faults identified are the significant San Benito faults on the eastern slopes of the Santa Lucia Mountains to the east and the small Pied ras Blancas fault at San Simeon to the south. The proposed project would not expose people or property to increased risks from earthquakes. Accordingly, the project would have ***no impact.***

a.iv. The PODs are located on the flat alluvial deposits that represent the floodplain of the lower Big Sur River. Topography is low, and unconducive to catastrophic mass wasting events such as landslides. While there is historic evidence of landslides along the steeper slopes of the Quaternary alluvium of the upland terraces, these are over 1,000 feet away to the northeast of the PODs. Therefore, the proposed project would not increase the exposure of persons or property to landslides. ***No impact.***

b. The proposed project would result in an increase in the total amount of water delivered to the POU. Approximately 85% of the POU is mapped as soil of the Santa Ynez series. Representative profiles of the Santa Ynez soils exhibit a surficial layer of fine sandy loams to 18-inches in depth; underlain by a clay layer at 26-36-inches in depth. These soils have a low permeability and a slow percolation rate, and thus, have a moderate runoff potential and erosion hazard.

Comment [HJ49]: This premise depends entirely upon a legally incorrect baseline and should be adjusted accordingly.

A maximum of 1,615 afa of water would be used on 267 acres, equating to 6 acre-feet (af) per acre annually. Given the existing soil conditions, a significant portion of the water made available would need to be offset by annual evapotranspiration and crop uptake totals, or surface ponding and runoff would occur. This runoff does appear to occur since the DPR protest claims that during irrigation periods, surface water flows

across the pastures causing erosion and sometimes flooding State Park trails, which are outside the POU.

Swiss Canyon is an incised drainage channel with some exposed soils and is accessible to cattle. Exposed soils together with cattle access could substantially exacerbate bank erosion and soil instability. With the physical degradation of the soil structure by animal traffic, there is therefore a potential increase of soil erosion in Swiss Canyon due to irrigation practices.

The proposed project could have a ***potentially significant impact*** to soil erosion in Swiss Canyon, at the edges of the POU and areas outside the POU. This impact could be mitigated by erosion control methods such as placements of wattles to reduce runoff or construction of a tail water recovery system.

Comment [HJ50]: This is merely an unsubstantiated claim that does not merit inclusion in an IS. There is a limited area comprising approximately six acres of the POD with the potential to drain to the Big Sur river if irrigation valves cannot be closed in time. There is no evidence of any erosive impacts associated with this condition, but a report has been submitted to the SWRCB which concludes this condition has not resulted in any erosion of state park or other lands and is able to be fully mitigated, as noted below.

c. The POU of the project is located primarily on an alluvial terrace and, to a lesser extent, on rocks of the Franciscan Formation. The PODs are located in alluvium that consists of sands, gravels, and cobbles. Although the Franciscan Formation is prone to landslides in certain areas, a landslide is unlikely to occur within the POU since the Franciscan Formation outcrops in a relatively small area near the beach. These geologic units would not become unstable as a result of the project and it is unlikely that it would result in on or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Therefore, the project would have a ***less-than-significant impact.***

d. The proposed project does not involve construction of additional structures. Moreover, no expansive soils exist on the project site. The proposed project would not create substantial risks to life or property. ***No impact.***

e. The proposed project does not involve soils incapable of adequately supporting the use of septic tanks or alternative waste disposal systems. The proposed project does not involve construction of septic tanks or sewer facilities, or the generation of wastewater. ***No impact.***

the beneficial uses[6] and water quality objectives for the region. The Regional Water Board has identified numeric water quality objectives for Total Dissolved Solids (TDS) (200 micrograms per liter (mg/L)) and chloride (20 mg/L) to protect Big Sur River surface water quality and applicable beneficial uses.

Comment [HJ51]: Is there any evidence that well operations result in these water quality criteria not being met? If water quality within the river meets the Regional Board requirements to protect beneficial uses, including coldwater fish habitat, there should be no adverse impacts. The IS should present an analysis of water quality data (e.g., EC)

The proposed project does not involve construction of any facilities in or adjacent to the Big Sur River that would affect water quality. No instream or embankment activities are proposed that could directly affect Big Sur River water quality objectives.

However, project pumping operations potentially may affect water quality and beneficial uses. A recent study has generally affirmed the existence of a saltwater wedge beneath the stream underflow with direct connection to the ocean. The dynamics of how this wedge continually changes is complex, but thought to be controlled by the combined effects of well pumping, river discharge, depth and shape of the ancestral canyon bottom, and tidal influences. Density driven saline water constantly responds to these factors and can migrate beneath the alluvial aquifer underlying the river for considerable distances inland (e.g., distance to the Old Well). Saltwater intrusion brought on by groundwater pumping, particularly if pumping is excessive, may have an adverse affect on water quality of the underflow of the Big Sur River and disturb natural salinity conditions in the Big Sur River Estuary.

Comment [HJ52]: See earlier comment concerning lack of foundation to support assumption of excessive pumping. Moreover, if only Old Well experiences salinity above 1 mmhos, and it must be shut down at such times, how can there be an effect on the estuary, assuming such an effect is even possible, which the SGI model and reports show not to be the case.

Comment [HJ53]: Since this is a naturally occurring phenomenon, it is not an adverse effect of this project. The question for CEQA review should be whether the moving dilution front of no more than 1 mmhos at the old well constitutes a potentially adverse effect on the intermittent lagoon in light of the hydrologic effects precluding entry of the underflow into the surface water of the lagoon.

The 2004 field results presented in Assessment of Habitat Quality and Availability within the Lower Big Sur River: April - October 2004 (Hanson, 2005), concluded that water temperatures, electrical conductivity and dissolved oxygen were within the ranges considered to be suitable for juvenile steelhead rearing. As discussed below, there are concerns over the adequacy of this study and therefore these conclusions may not hold up under further analysis.

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6 Big Sur River: Municipal and Domestic Supply, Agricultural Supply, Groundwater Recharge, Water Contact Recreation 1, Water Contact Recreation 2, Wildlife Habitat, Cold Freshwater Habitat, Warm Freshwater Habitat, Migration, Spawning, Preservation of Biological Habitats of Special Significance, Rare Threatened or Endangered Species, Freshwater Replenishment, Commercial Fishing.
Big Sur River Estuary: Water Contact Recreation 1, Water Contact Recreation 2, Wildlife Habitat, Cold Freshwater Habitat, Warm Freshwater Habitat, Migration, Spawning, Preservation of Biological Habitats of Special Significance, Rare Threatened or Endangered Species, Estuary Habitat, Commercial Fishing, Shellfish Harvesting.

Reduced dissolved oxygen (below 6 mg/L) would represent a potentially adverse effect to juvenile steelhead rearing. Localized reductions of dissolved oxygen were observed below the 6 mg/L level near the Creamery Meadow and were hypothesized to be due to upwelling of groundwater in the area. These reduced dissolved oxygen levels appear to be unrelated to the project. The amount of groundwater upwelling could be reduced as a result of operation of the project. The groundwater upwelling near the Creamery meadow was observed to have low dissolved oxygen, low temperature, and low electrical conductivity. A reduction of this groundwater upwelling would therefore have a positive impact to dissolved oxygen levels and a corresponding negative impact on temperature and electrical conductivity.

Accordingly, the proposed project may have potentially beneficial water quality effects on biological beneficial uses, which have been discussed in the previous Biological Resources section. The biological beneficial uses that may be impacted are wildlife habitat; cold freshwater habitat; warm freshwater habitat; migration; spawning; preservation of biological habitats of special significance; rare, threatened or endangered species; freshwater replenishment and estuary habitat.

To protect water quality, the Ranch currently must comply with the DPR easement condition that may prohibit pumping of the New Well when chloride concentrations (as measured as electrical conductivity) exceed specific thresholds. When electrical conductivity is above 1.0 mmhos/cm, the Ranch must perform additional analysis to determine if the chloride concentration exceeds 250 ppm. In the event that the chloride concentrations exceed 250 ppm, DPR may require the Ranch to terminate pumping until chloride concentration in the New Well is reduced. According to the Ranch, it typically stops pumping the Old Well voluntarily when salinity levels reach 1.0 mmhos/cm.

These current operational measures may not be adequate to protect the designated beneficial uses[7]. Therefore, the project's operation may have a ***potentially significant***

Comment [HJ54]: The technical basis for this finding is not clear. The water temperatures and EC levels were within a range considered to be suitable for steelhead both within the area of upwelling and in other parts of the river. How would a reduction in upwelling adversely impact water quality for steelhead?

Comment [HJ55]: There is no evidence from the 2004 test results that temperature ever was out of range during the irrigation season.

Comment [HJ56]: Spawning by what species? The substrate in the area is poor for steelhead

Comment [HJ57]: No support is offered for any of these findings. This seems to simply be a generic list of beneficial uses with no analysis or linkage to the project

Comment [HJ58]: What is the basis for this conclusory statement? It is not explained by footnote 7.

[7] Big Sur River: Municipal and Domestic Supply, Agricultural Supply, Groundwater Recharge, Water Contact Recreation 1, Water Contact Recreation 2, Wildlife Habitat, Cold Freshwater Habitat, Warm Freshwater Habitat, Migration, Spawning, Preservation of Biological Habitats of Special Significance, Rare Threatened or Endangered Species,

During the 2004 study, a total of approximately 1,136 af was pumped by the Ranch (spanning a total pumping period of 178 days). This equated to an average mean daily total pumping rate of 3.3 cfs; the maximum daily total pumping rate recorded was 6.06 cfs. The median over this period, however, was approximately 2.68 cfs. The proposed project seeks to divert a maximum rate not to exceed 5.34 cubic feet per second (cfs) on a 30-day running average and not to exceed 5.84 cfs at any time, from the lower Big Sur River. The 2004 study results provided by the Ranch do not, however, disclose the effect that maximum project pumping, at a rate of 5.84 cfs and diverting the entire requested allocation of 1,615 afa, would have on the Big Sur River system and biological resources, in particular during dry and critically dry years. The requested maximum rate of pumping is nearly double what the Ranch typically pumps and nearly double the median and minimum rates identified during the 2004 study period.

Diverting a high percentage of flow from the Lower Big Sur river, particularly during dry and critically dry periods, could likely cause a significant change in river stage and flow because, unlike direct surface water diversion where all flows are diverted at one location, stream depletion from pumping is spatially cumulative so the measurement of surface water levels changes at a static location reflects only a portion of the total stream loss. Taken over a larger stream segment, stream depletion losses can be significant.

Reduced dissolved oxygen levels of indeterminant upstream source that were measured near the Creamery Meadow appear to be naturally occurring and, therefore, unrelated to the project. Though project pumping operations could reduce groundwater upwelling that would have a positive impact on dissolved oxygen levels and instream aquatic life in the river; however, groundwater pumping would have a corresponding negative impact on temperature and electrical conductivity.

Comment [HJ59]: In surface or groundwater? Where were the measurements taken and by whom?

Comment [HJ60]: See related comment above regarding this finding

Comment [HJ61]: There is no evidence from the 2004 test results that temperature ever was out of range during the irrigation season.

Pumping at the requested maximum rate could also cause an upstream advancement of the known saltwater wedge that exists beneath the Big Sur River underflow and that has direct connection to the Pacific Ocean.

The identified hydrologic relationships and impact evaluations developed from the 2004 study year are not likely to be fully representative of what the proposed project's impacts are if the applicant pumps and diverts the maximum amounts and at the maximum rates requested. In a water short year such as 2004, the potential adverse effects on the Big Sur River system and biological resources could very likely be adversely impacted.

Therefore, possible environmental impacts of proposed project pumping on the Big Sur River system and biological resources needs to be adequately and fully assessed and the impacts of pumping on these resources identified. Therefore, these impacts should be considered ***potentially significant,*** based upon the available information the Applicant has provided to date. These impacts potentially could be mitigated by implementing a monitoring plan and requiring pumping rate and quantity restrictions during certain hydrologic year types, such as dry and critically dry hydrologic years, and when certain thresholds, such as salinity levels, are met during certain hydrologic year types.

Comment [HJ62]: A study plan is being developed to address these issues during the late summer 2006

c.d. The proposed project will deliver water to the upland pastures for flood irrigation. There is no intention to alter the alignment, configuration, or character of the lower Big Sur River. The proposed project will not alter stream drainage.

The Ranch has a collection basin at the downgradient end of Pasture 6 abutting the northwest corner of the Pump House Field. Tail-water from the upland pastures are collected in this basin and discharged to the ocean by direct pipeline. The collection basin may not operate efficiently since the DPR claims that their trails get flooded during and after irrigation events and that the current irrigation practices cause erosion across the ocean beach. Moreover, a similar collection basin does not exist for the pasture area west of Swiss Canyon, thereby increasing the potential for on and off site erosion and flooding in this area. Therefore, these impacts should be considered ***potentially significant.*** However, with proper mitigation measures, the proposed project could have a ***less-than-significant impact*** *on* on- or off-site erosion or flooding. A potential mitigation measure would be construction of an effective tail-water recovery system.

Comment [HJ63]: Aren't the ocean tides and waves the most significant effect on beach erosion? What exactly does "beach erosion" mean?

Comment [HJ64]: What is the basis for determining that this potentially significant effect is less than significant because mitigation measures can be developed when other potential impacts for which the IS concludes effective mitigation can be developed are still shown as potentially significant. The treatment is inconsistent.

Comment [HJ65]: What is meant by an "effective" tail water recovery system? One that recycles water back onto the pasture?

Discussion

a.c. The proposed project would result in an increase in the diversion of water from the Big Sur River using existing pumps at the Old and New Wells. The proposed project, if fully implemented, would require an increase in pumping operation; likely both in pumping rates at individual pumps and, in overall pumping duration (daily and seasonally). The pumps, however, are currently enclosed in separate structures with noise reduction materials. Key receptors to noise generated by the pumps are primarily pedestrians on the park trails.

Comment [HJ66]: This is a false premise and is internally inconsistent with statements at pages 5-5, 5-7 and elsewhere.

Comment [HJ67]: This is incorrect. Actually, if under-irrigation is corrected, there could be an increase.

The proposed project could expose persons to noise levels exceeding existing standards and could result in a substantial permanent increase in ambient noise levels. These impacts have been reduced to less than significant levels with noise reduction materials. Noise levels in the vicinity of the well pumps would represent a ***less-than-significant impact.***

b. The proposed project would not generate any groundborne vibrations. Groundborne noise levels again, as discussed above, would be confined to the pump houses and, with proper sound attenuation, would be effectively mitigated. Collectively, groundborne vibrations and noise would have ***no impact.***

d. The proposed project would not use equipment that would expose persons in the park or neighboring areas to excessive levels of groundborne noise or vibration. While the hours of pumping operation may increase, relative to baseline, this would unlikely affect park users. Evening or early morning disruptions would not, for the most part, be evident given the distant proximity to the park campgrounds. The proposed project would have ***no impact*** on sensitive receptors in regards to substantive temporary noise levels.

e.f. The proposed project is not located in an airport land use plan or in the vicinity of any private airstrip. There is no airport- or aircraft-related noise effects associated with the proposed project. The project would have ***no impact.***

Issues	Potentially Significant Impact	Less Than Significant With Mitigation Incorporated	Less-Than-Significant Impact	No Impact
12. POPULATION AND HOUSING. *Would the project:*				
a. Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	■	☐
b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■
c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

Discussion

a. The proposed project would not involve any construction activities, such as new homes, businesses or, the modification of existing infrastructure at the project site. No new streets/roads would be constructed, widened or extended as a result of the proposed project. The proposed project would be implemented in an undeveloped portion of the north Central Coast where there are few residences and businesses; the area is characteristically open space and agricultural. Furthermore, the proposed project would not result in the conversion of land use designations under the Monterey County General Plan or, be applicable to a zoning change because of the deed restrictions placed on the Ranch land. As a direct population growth or growth inducement project, this project has none of the traditional features or elements that would promote or encourage such urban development. The applicant would have to petition the State Water Resources Control Board to change the purpose of use from irrigation to any other use; such change would require additional compliance with the Board's procedures and CEQA.

No permanent jobs would be added to the area. Therefore, the project would not induce substantial population growth. ***No impact.***

Comment [HJ68]: What is the basis for concluding that there would be ANY impact???? The conclusion is at odds with the discussion above.

1. The project, as fully implemented, has not been assessed under a range of potential hydrological water year types; causal mechanisms that could explain some of the instream water quality parameters have not been verified by analyses within the study area;
2. Groundwater pumping, in theory, and resulting saltwater intrusion has the potential to adversely affect native and sensitive flora and fauna by impairing one or more elements of riparian habitat;
3. Groundwater pumping tests have not been fully performed to ascertain how proposed maximum pumping rates and maximum diversion of underflow could affect the riparian habitat of the Big Sur River watershed. If maximum diversions occur during a water short year, the potential impacts to the instream and riparian resources could well be exacerbated;
4. Preliminary field studies conducted to date document potential adverse environmental impacts to native and listed flora and fauna that are known to exist or have the potential to exist within the project area; however:
    a. not all of the listed threatened and endangered species have been surveyed and documented,
    b. other non-listed native biological species in the project area must receive consideration under CEQA, but have not been documented or fully evaluated,
    c. no independent field studies have been undertaken as part of this Initial Study;
5. The Division's water rights records indicate that there are 21 permitted or licensed water rights, and 3 pending appropriative water right applications that have been filed and that seek diversions from the Big Sur River. These impacts may be cumulatively considerable in light of the other existing appropriations from the Big Sur River.

Comment [HJ69]: Where are these? What environmental review has been conducted for them.

Comment [HJ70]: What impacts are referred to?

Further evaluation, directly focused on the remaining uncertainties and existing data gaps could generate substantive evidence that may support an alternative finding.

1x9 / PGM
FILE 30166

KRONICK MOSKOVITZ TIEDEMANN & GIRARD
A PROFESSIONAL CORPORATION

JANET K. GOLDSMITH

jgoldsmith@kmtg.com

July 6, 2006

VIA FAX AND U.S. MAIL

Paul Murphey
Project Manager
Division of Water Rights
1101 I Street, 14th Floor
Sacramento, CA 95814

Re: El Sur Ranch Water Right Application 30166
Response to Initial Study and Notice of Preparation

Dear Mr. Murphey:

At my direction, Darlene Ruiz transmitted to you the Applicant's comments and suggested revisions to the draft Initial Study and Notice of Preparation for Application 30166. In reviewing the transmitted document and cover letter, it appeared to me that some clarification of the document was needed.

In reviewing the drafts, the Applicant noted a number of inaccuracies and omissions. Among them were

- the erroneous statement that the riparian acreage was not included in the place of use of the application;
- the erroneous statement that the El Sur Ranch consists of 292 acres (it is substantially larger; 292 acres is merely the proposed place of use);
- the erroneous statement that Swiss Canyon is not included within the 292-acre place of use;
- the omission of the facts that there is no evidence that the Applicant's pumping caused the 1990 dewatering of the Big Sur River that occurred approximately half a mile upstream of the El Sur Ranch pumps, the fact that the stream was not dry adjacent to the pumps, and the finding of Jones and Stokes that the Ranch pumping was unlikely to have caused the stream dewatering;

- the omission of any information (including location) of claimed erosion of park trails alleged by the Department of Parks and Recreation, and

- other misstatements and omissions.

The comment document the Applicant sent by letter of July 5, 2006 included corrections to the inaccuracies and omissions, revisions to the statement of baseline, which has been a matter of contention for many months, and Applicant's comments. These revisions and corrections are shown as a revised document, not as a "red-line" version, due to our understanding (based on my conversation with you) that the Division of Water Rights will not consider any revisions to the Initial Study, and in fact had accepted the document as final before receiving the Applicant's comments.

We have submitted the revised document to preserve the record of the Applicant's review and corrections. However, the record should also be clear concerning the nature of the document submitted.

Sincerely,

KRONICK, MOSKOVITZ, TIEDEMANN & GIRARD
A Law Corporation

Janet K. Goldsmith
Agent for Applicant James J. Hill, III

JKG/lll
cc: Darlene Ruiz
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Jan 24th 2006

Water Right Appl No 30166

Division of Water Rights
P.O Box 2000
Sac Ca 95812

Dear Paul Murphey / State Water Resources Control Board

We of the Carmel River Steelhead association are concerned with the way the State Water Board is carrying out its authority as it pertains to this application. There has not been a complete investigation of the quantity of extracted water and the damage done with the present over extraction during dry years and droughts. It is our observation from our members that live in the area that during dry times some tributaries as well as the lower river have been pumped dry. We believe that the river is already over appropriated during the dry season and dry years. We also do not see how doubling the flood irrigation of a coastal plain at the expense of rare valuable coastal wetlands is in the "public interest." We also believe that doubling the volume of flood irrigation in a cool coastal wetland involves a reasonable method of use or even a reasonable use of rare coastal water owned by the people of California. We believe that much more water is being used than is necessary and that it could be applied for much more efficient use with sprinklers

We also believe that this request for appropriation is destined for future development not ultimately for cattel. We believe that the Jones and Stokes 1999 hydrologic study which apparently concluded that "well pumping by the Ranch does not significantly affect river flow or stage" is incorrect. We challenge the State to pump 5.89 CFS for 10 days straight in any normal or below normal year in Oct or November and with a straight face repeat Jones and Stokes 1999 conclusion. The report is a sham.

As for your CEQA Project Baseline "Conditions is intended to represent that point above which, a projects contributer impacts are evaluated." You recognize that the ranch has been and continues to extract water "unpermitted" a trespass and a punishable offence. You have chosen not to protect the Public Trust from this trespass and have even decided to not even consider this illegal use of the peoples water when evaluating "that point above which, a projects contributes impacts are evaluated. How do you sleep at night? how do you look your self in the mirror? What an abomination. The baseline is before illegal use or all applied for use has had an effect. You have also glossed over the "Navy" well, its effects and its replacement

Do to time Constraints and that we are a Volenteer organization these Comments are in my own hand writing; Sorry. I also apologize for being so blunt but you know what you do. I still feel that the actions of the State board that you represent are at times repulsive to the intentions of the framers of the State Constitution and its desire to protect the publics water.

Sincerely

Ray Adams PhD
Carmel River Steelheaders
26535 Carmel Rancho Suite A
Carmel Calif 93923

LFC/PGM
~~WRP 30166~~
FILE

12 June 2006

Mr. Paul Murphey
Ca. State Water Resources Control Board
Division of Water Rights
P.O. Box 2000
Sacramento, Ca. 95812-2000

Re: Initial Study for the El Sur Ranch Water Right Application No. 30166 Monterey, California. Ranch is located in Big Sur and contains approximately 7,000 acres.

Dear Board:

I have just read your Study distributed 1 July 2006. I am a Big Sur resident living on a parcel adjacent to the Big Sur River (for 1000'feet) and adjacent to the southern boundary of Molera Park. I am a frequent Park visitor and hiker. My comments follow:

Hydrology. 5-26. c.d. p. 32

The park accurately reports their trails flood. My grandson enjoys the splash through about a forty foot length of water when it occurs on the campground trail to the beach and look-out. Trees protect this area from ocean winds. He wants to go home when he hits the beach and the ocean chill hits him. Me too.

Mosquitos breed in the standing water on warm days.

Geology 5-19.

Please check out two Monterey County Herald articles by Judie Marks describing geologic search by the Monterey Bay Aquarium Research Institute using their remote controlled submarine. They have mapped the Bay's faults and put out sensors.

The San Gregorio Fault is the major California fault west of the San Andreas, in our area. It crosses the Bay from Santacruz North and runs just off our coast. It was mapped from Yankee Point to Bixby Creek and inland to Rancho San Carlos on the east side of the mountains - hence across the El Sur Ranch northern acreage.

The Division of Geology and Mines upgraded the San Gregorio to a Class A fault. USGS, Menlo Park, has a seismic map of the Monterey Peninsula with an overlay of a county map of parcels. Map No. 97-30 is available at wrgis.wr.usgs.gov. It is reported to have the potential for an up to 7.3 quake.

The Herald articles were dated 1 May 1999 and January 1999. You can read them on microfisch at the Monterey Public Library.The Aquarium can be reached at 831-648-4888.

Project Location - page 2-1. Line 4.

The Ranch consists of approximately 7,000 acres. The POU consists of approximately 292 acres. Check Monterey County Recorder's Office P.O. Box 29,Salinas, Ca. 93902 or phone 831-647-7741.

Transferring water from one watershed to another is illegal and environmentally damaging. Hopefully no more water will be transferred to the Swiss Canyon watershed from the Big Sur River watershed.

The Ranch has spent millions of dollars these past fifteen years researching data to support is application request. Why?

CAN the Ranch supply the concerned agencies and public with examples of other ranches on the coast using flood irrigation for cattle in such large quantities?

The Ranch has successfully operated since 1950 with its current or less, level of irrigation. Does the economic benefit to Mr. Hill off-set the environmental damage if the water is doubled?

Why would a wealthy ranch owner spend millions in environmental studies to justify trashing, especially in low rain years, a California Protected River flowing through Molera State Park, one of the most beautiful on the Central California Coast?

Is he planning to raise water buffalo?

Please deny the Ranch's request for above what now pumps IF there is no environmental damage with the 800 or so afy.

Sincerely,

Lorri Lockwood

Lorri Lockwood
P.O. Box 264
Big Sur, Ca. 93920