STATE OF CALIFORNIA

STATE WATER RESOURCES CONTROL BOARD

HEARING ON WATER RIGHT APPLICATION OF THE El SUR RANCH

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COASTAL HEARING ROOM

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ALSO PRESENT

Mr. Tom Hopkins, Ventana Wilderness Alliance

Mr. Richard Hutchinson, Cal Fire

Mr. David Hines, National Marine Fisheries Service

Mr. Butch Kronlund, Coast Property Owners Association

Mr. Justin Oldfield, California Cattlemen's Association

Mr. Alan Perlmutter, Big Sur River Inn

Dr. Peter Raimondi

Ms. Carolyn Shearer, Clear Ridge Mutual Water Association

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PROCEEDINGS

HEARING OFFICER DODUC: Good morning. This is the time and place for the hearing to receive evidence relevant to determining whether to approve, subject to terms and conditions, Water Right Application 30166 for the El Sur Ranch. Also, whether to subordinate the priority of the ranch's application 30166 to application 30946, which is held by Clear Ridge Mutual Water Association.

I'm Tam Doduc, a member of the State Water Resources Control Board. And with me is Board Chairman Charley Hoppin to my right. Also present to my left are staff assigned to assist with the hearing: Senior Staff Counsel Erin Mahaney; to her left, Staff Geologist Paul Murphey; and to his left, Staff Environmental Scientist Jane Farwell. And we have Senior Water Resources Control Engineer Larry Lindsay.

Before we get started, two very important announcements. The first one is please take a minute right now and check your phone, Blackberry, iPhone, whatever you have that is a noise-making device and turn it on silent or off right now, please.

And then secondly, I'm required to review the evacuation procedures. In the event of a fire alarm, we are required to evacuate this room immediately. Please look around now and identify the two exits closest to you. Please take your valuables with you and do not use the elevators. Exit down the stairway and go to our relocation site, which is across the street in Cesar Chavez Park. If you cannot use the stairs, you will be directed to a protective vestibule inside the stairwell.

The hearing is being held in accordance with the Notice of Public Hearing dated December 23th, 2010, and Notice of Rescheduling of Public Hearing dated January 12, 2011.

The purpose of this hearing is to provide parties who have filed a Notice of Intent to appear an opportunity to present relevant testimony and other evidence that addresses the four key issues contained in the hearing notices. To summarize, the key issues address whether water is available for appropriation and will be put to beneficial use; whether the requested approval will result in significant adverse impacts on the water quality, the environment, or public trust resources; and if the Board approves the requested actions, what conditions, if any, should the Board impose. The Board will also consider if it should subordinate the priority of the ranch application to Clear Ridge's application.

We are broadcasting this hearing on the internet recording both audio and video. A court reporter is present to prepare a transcript of the proceeding. Anyone who would like a copy of the transcript must make separate arrangements with the court reporter. To assist her, please provide her with your business card and make sure that you use the microphone whenever you speak.

Also, I caution you that the Internet broadcast continues during all breaks. So be very careful that you do not have private conversations near an open mike at any time.

With that, we'll begin with the policy statements. So before we begin the evidentiary presentation, we'll hear from any speakers who wish to make non-evidentiary policy statements.

If you wish to make a policy statement and have not filed a Notice of Intent to appear, please fill out a blue speaker card and hand it to the staff, if you have not already done so.

The Board will also accept written policy statements.

We remind you that a policy statement is a non-evidentiary statement. It is subject to the limitations identified in the hearing notice. Persons making policy statements must not attempt to use their statement to present factual evidence either orally or by introduction of written exhibits. Policy statements will be limited to five minutes or less.

We will begin with interested persons who did submit NOIs indicating they intend to present a policy statement. We'll begin with Ken Gray from California State Parks. Is Mr. Gray here?

Seeing that he is not, we'll move on to Mr. Richard Hutchinson from Cal Fire.

MR. HUTCHINSON: Good morning. I just wanted to take this opportunity to express my interest in this matter as it relates to public safety. There are two issues here.

One is the water source or pond that has been provided on the Sur Ranch. We use that quite extensively for both initial attack and extended attack fire use. The good thing about that is it is fresh water. If we do have to pull from the ocean, which we do on larger incidents, we have to be very cautious where we put that, staying away from waterways and such. So we have that as a very big interest in wanting to hopefully see that maintained so we can continue to use that.

The second is the irrigated pasture area, which is below the highway, between the highway and the ocean, we regularly set up incident bases at Molera State Park. However, due to its make-up, very heavily covered in brush, we only have a small area that we can set up. And parking and aircraft operations we move onto that irrigated area. The reason for that is obviously it's easier to drive in there, but we don't have to worry about puncturing tires, doing excessive damage by having to clear that stuff out to allow for parking of resources.

Additionally, with the helicopters, one of our big requirements is to make sure that landing zones are free of brush. We don't want to catch a skid or what the gears are for the helicopter that can potentially cause an accident by causing the aircraft to roll over. So that irrigated area is a very good and very suitable place for our use. It is large enough where we can separate our helicopter types out. We have to keep smaller helicopters away from the larger ones for the obvious safety issues. So it's provided us very good use and support for our large incidents during the Kirk Complex back in '99 and then again during the Basin Complex in 2008 proved very valuable.

If we were to lose the ability to use that area, if it were to revert back to brush fields, we would be forced to fall back into the Carmel Valley for incident base. That is not suitable for aircraft operations, because there are too many residents and businesses that we do not wish to fly over if we don't have to. So our aircraft would be based out of Fort Hunter Liggett. Both of those are quite a distance from the Big Sur area, which would extend our reaction times and support time.

We'd have a lot more equipment on the road for much farther distances, increase the potential for accidents on some of those narrow roads. I don't like driving down Naciemento Ferguson Road in my car, much less in a fire engine. So it would be an added risk by moving all that equipment up and down. And that added risk, that added reflex time could adversely impact our ability to serve the public in that area.

So I do support the use of water to sustain the pond and the pasture land. Thank you.

BOARD CHAIRPERSON HOPPIN: Mr. Hutchinson, when you're in a fire fight situation, would you ever draw directly out of the river, or is it generally too shallow or you don't have the access to it?

MR. HUTCHINSON: The river in that area is -- most of the area is very difficult to access because of the trees. So if we were to attempt to pull water from the river, we'd have to use a long line, which is just a longer line below the helicopter for suspending the bucket. But a lot of those areas are not deep enough. So we'd have to find just the little pooling areas to pull from. And in my history of fire fighting on the central coast, I don't believe we've ever been able to pull out of the river because of being so restricted in that area.

BOARD CHAIRPERSON HOPPIN: Okay. Thank you.

HEARING OFFICER DODUC: Thank you very much, Mr. Hutchinson.

Next, Mr. Justin Oldfield from the California Cattlemen's Association.

MR. OLDFIELD: Good morning. Thank you for letting me testify today.

California Cattlemen's Association represents ranchers like the El Sur Ranch who base their livelihood on producing food and caring for the land. I'm here today to support maintaining their ability to continue to do that. Not only is upholding historical water rights certainly a fundamental property right, it's critical to producing food and fiber. Without that, they would not be able to sustain themselves as an operation.

A couple of things to note specific to this issue. California, our ranchers here, are required to adopt a very unique grazing system, and that is we have a rotational grazing system, where in the Midwest you don't have that. You have precipitation that is falling throughout the year. You can pretty much stay on the same area with little movement and maintain your herd. In California, you can't do that. So we must rotate the cattle here in California from pasture to pasture here in different seasons. Not only for the land, but also for the cattle.

The water used at El Sur Ranch is -- the water in question here is used to maintain the irrigated pasture during summer when the cattle are basically put to graze to let winter land rest. And that also then provides forage for the following year. It's completely, from what I understand, a self-sustaining ranch. So they have both winter ground and summer ground. But it's pretty critical to note that without the ability to have the irrigation water available for the summer pasture, the entire system falls apart because again it's -- both are critical. You can't have one or the other. Both are necessary to maintain the ranch year-round.

There has been some mention I think of feeding hay as an alternative. I can tell you that's a completely economically prohibitive alternative. Margins in livestock production are very small, so you can go from a profitability -- potential profitability to a loss very quickly, especially doing something like that. We saw that in drought years a couple years ago where folks started having to sell cattle because they couldn't afford to make the payments or to meet their bottom line at the end of the year by feeding alternative feed sources.

Hay is used as an alternative feed source during the wintertime as a substitute when you're running low on grass, but it's not something that you feed year round, especially during the summer months.

The ranch is also protected by a conservation easement that was used, taxpayer dollars, to keep that ranch as a working cattle ranch in perpetuity. Again, I'd like to clarify, without the ability for the ranch to maintain their pasture, the system collapses, and that conservation easement has locked that ranch into working as a cattle ranch for perpetuity. So there's really not a whole lot of alternative left for the ranch to do something else in terms of land use. So that would severely limit their ability.

Plus, on top of that, there was a public investment involved in keeping it a working ranch. So certainly we don't want to see that hindered as well.

That being said, we respectfully ask -- the association acknowledges how important this issue, but also the general issue that we continue to protect our members and our ranchers' ability here in California to continue to produce food. And I can't clarify or make the point enough that that water, as these are very controversial issues at times, is very critical, especially in California. So thank you very much.

HEARING OFFICER DODUC: Thank you, Mr. Oldfield.

Mr. Steve Evans, Friends of the River. I'm not seeing Mr. Evans.

Mr. Tom Hopkins, Ventana Wilderness Alliance.

Mr. HOPKINS: Good afternoon, ladies and gentlemen.

I'm Tom Hopkins, President of the Ventana Wilderness Alliance, a nonprofit organization of over 1,000 supporters dedicated to the preservation of the wilderness qualities and biological diversity of the Northern Santa Lucia Mountains and Big Sur Coast.

The El Sur Ranch diversion of the Big Sur River is not a publicly beneficial use of this water. The diversion is continuing threat to other public trust resources, including the several listed species dependent on the lower river and lagoon. Because of this, there is no legitimate decision the Board can make, other than to either deny the ranch's water right application outright or issue a permit with significant restrictions of use.

During this hearing, numerous experts representing the several parties will describe and debate the ecological and public trust values of Big Sur River. These are important matters and warrant your full attention and careful consideration and ultimately your wise judgment.

The VWA is participating in this matter because of our concern for the protection of these public trust resources and the environmental integrity of Big Sur, one of California's natural treasures.

You will also be told by El Sur Ranch that it is a viable cattle ranching business, completely dependent on diversions from the Big Sur River for its economic survival.

For your consideration, I would like to suggest two possible economic scenarios which may have bearing on this matter.

The first is the possibility that the El Sur Ranch is not a viable business. The ranch may well be no more than an extravagant pastime for the enjoyment of its wealthy owners who spare no expense in operating the ranch as a show place for their personal benefit, a hobby ranch.

With a herd of 450 animals, the ranch probably produces 300 animals to sell each year. If it sold an average value of $1,000 per head, that generates $300,000 in annual income. The combined cost of the ranch's two employees is likely to be about $100,000 a year with payroll taxes and benefits included, one-third of the annual budget. Add to that all the other costs of operating the ranch, and it's quite possible the ranch does not produce a taxable profit. But it may provide tax benefits in conjunction with the owner's other business income.

The only way to know that for sure is to analyze audited financial statements of the ranch and the tax returns on which its incomes or loss is reported. It would be a monumental error for a public trust resource as unique and valuable as the Big Sur River to be given to a ranching operation that may exist solely for the personal enjoyment and tax benefits of wealthy owners.

The second possible economic scenario for your consideration is that the commercial value of the diverted water is significantly greater as drinking water than as irrigation water. As you are aware, once a water right is granted, its use can be changed with relatively little effort because the end use does not have any effect on the environmental impact of its diversion.

For this reason, any permit awarded must restrict the purpose for which the water is to be used and the location of use. Fresh water is the blue gold of the future, and savvy business interests are buying up fresh water resources. Fresh water is the most underpriced of the essential human commodities, yet top-shelf bottled water, particularly those branded with exotic place names, retail for over $10 per gallon. Figi Water is a good example.

Big Sur is an equally exotic place name with international recognition. What better source of Big Sur bottled water than the Big Sur River itself.

The El Sur Ranch water right application is for sustained diversion of 1200 acre feet per year. That's 400 million gallons of water. That means the El Sur Ranch water application, if bottled and marketed in a manner similar to Figi water, could generate gross annual retail sales of over four billion dollars. The upside profit potential for a newly granted Big Sur River water right is astronomical.

Another consideration is that the ranch has spent huge sums in legal and consulting fees over the last 20 years in pursuit of this permanent water right. If the ranch is not a profitable business, what other justification can there be for incurring this expense, other than a more profitable use of the water sometime in the future.

A hundred years ago, powerful forces in Los Angeles usurped the public trust and diverted most of the water of the eastern sierra. The ruthless way in which L.A. used its power became the subject of legend, and most important, public trust legal doctrine which now recognizes that the public has a fundamental and prior right to our common resources, and that those resources must be used for the common good.

In light of that doctrine, there is no legitimate decision the Board can make, other than deny or severely limit the ranch's appropriation and order the ongoing diversion to be subject to bypass flows that will fully protect the public trust resources of the Big Sur River.

We ask that the Board not endanger this State treasure for the benefit of an extravagant hobby ranch and the promise of windfall profits from bottled water or other future commercial uses.

Thank you.

HEARING OFFICER DODUC: Thank you, Mr. Hopkins.

Mr. Aaron Johnson with Monterey County Cattlemen's Association. Not seeing Mr. Johnson, Mr. Steve Shimek of the Monterey Coastkeeper.

Not seeing Mr. Shimek, Mr. Alan Perlmutter from Big Sur River Inn.

MR. PERLMUTTER: Good morning. I'm Alan Perlmutter. I've lived in Big Sur for 33 years. I'm the general partner and principal owner of the Big Sur River Inn. The River Inn property is adjacent to and just south of Andrew Molera State Park, so the River Inn is the first commercial enterprise --

HEARING OFFICER DODUC: May I ask that you move the microphone closer? Thank you.

MR. PERLMUTTER: The River Inn is the first commercial enterprise that travelers driving southbound on Highway 1 see after the Molera Park and the El Sur Ranch.

For the 23 years I've operated the River Inn, visitors have always commented and asked about the spectacular cattle ranch they had just seen. The El Sur Ranch is the gateway to Big Sur, and travelers from all over the world are invariably struck by the ranch's breathtaking vistas, by the dozens of cattle they see in the well-kept and perfectly fenced pastures. They are thrilled to see one of the last very few coastal ranches in California.

At the River Inn, we host more than 300,000 visitors every year. And we, I, people who work for us -- and we have 70 employees -- are delighted to share our knowledge of the history and the unmatched contribution that the El Sur Ranch makes to our community.

The River Inn has about a thousand feet of river frontage, and we depend on the health and the vitality of the river as a feature of our business. People talk and there have been pictures of the chairs -- our chairs, our chairs that sit on our lawn, people take them into the river. And they sit in the river and take pictures of that. And people remark all the time about having been to the river and sitting on the chairs in the river.

We depend on it. And we depend on the El Sur

Ranch to be careful caretakers of that river.

I've read many of the studies that have been made by the proponents of this application and those who want to deny the application. And what's clear to me is that all of the evidence, all of the studies that I've looked at, show clearly that the water that's being used has been the ranch's to use since the early 1950s. The water is clearly not the cause of the river running dry some years ago, and that was described by your agency, the State Water Resources Control Board, nor was the water taken by the ranch causing depletions of any flows going to the ocean when those have occurred.

It's also clear that the water has been reserved when the El Sur Ranch granted -- gave the property, some to the Andrew Molera State Park, that it was clear that when that property was granted, was given to State Parks, that the ranch donated the land with the wells and the State Department of Parks and Recreation permitted that use. And so with that, they were exempted from CEQA study or review. And that all happened some 15 years before this complaint was filed.

And after 60 years of continuous use by El Sur Ranch, the lower river remains in pristine condition and supports a very substantial and healthy steelhead population.

When the application is approved, as it should be, El Sur Ranch is committed to doing everything physically feasible to assure that its continued use for cattle grazing will not overdraft the river, nor cause harm to steelhead, nor damage the native habitat. If the application is denied, the ranch will diminish and become something less than the magnificent cattle ranch we're fortunate enough to have as a neighbor.

The diminishing of the ranch, that possibility is what concerns me and our 70 employees and the entire Big Sur community. We depend on the continued success of the El Sur Ranch.

The El Sur Ranch has been an extraordinary member and contributor to the Big Sur community. Here are just a few of the major contributions made by the ranch, contributions which will stop if the ranch is forced to shrink or close. During the severe fires we've had over the past 30 years, the ranch has consistently contributed fire-fighting equipment and personnel. The ranch, as Chief Hutchinson just pointed out, the ranch has provided staging areas for space for all kinds of vehicles, for personnel, and equipment including, fire fighting aircraft.

HEARING OFFICER DODUC: Mr. Perlmutter, I need you to wrap up.

MR. PERLMUTTER: I'd like to say that the fellow that spoke before me spoke for eight-and-a-half minutes. I'm old and slow. I'd appreciate a few more minutes. I'm just about done.

The ranch is at the forefront of every fire fighting emergency. The ranch is a regular and significant contributor to the Big Sur Fire Brigade and the Big Sur Health Center, the only medical facility for 90 miles of the coast. The ranch helps support that. The ranch provides at their expense qualified and credentialed security personnel that assists local -- and assists in emergencies, 911 calls. Without them, we would very possibly be without any security people in Big Sur. Monterey County Department of Sheriffs and the Highway Parole provide no service. No permanent residents there.

Several years ago, the El Sur Ranch sold a conservation easement to Monterey County, putting over 3200 areas of critical property in permanent agricultural use. Many of us benefited from that sale. The Big Sur Land Trust received both property and dollars. The millions of visitors who drive from Highway 1 have a once-in-a-lifetime experience of seeing that.

The purchase of easement the people of the State of California have made a determination to maintain the El Sur Ranch as a cattle ranch, not a water bottler. Cattle grazing is the only economical, viable use left to the ranch under that easement. And moreover, the easement contains strict standards for the conduct of grazing, which would adopt it in contemplation of our ongoing irrigated pasture operation.

The Big Sur River Inn fully supports --

HEARING OFFICER DODUC: I'm going to interrupt you. I do have your policy statement in full. There is no need to finish reading the rest of it.

MR. PERLMUTTER: I'm almost done.

HEARING OFFICER DODUC: Thank you very much.

MR. PERLMUTTER: Thank you very much.

HEARING OFFICER DODUC: Next, Mr. David Hines from the National Marine Fisheries Services.

MR. BERLINER: Excuse me, Your Honor.

HEARING OFFICER DODUC: Mr. Berliner.

MR. BERLINER: Before the National Marine Fisheries Service starts their statement, I'd like to note that this statement goes well beyond a policy statement and discusses science on the river. And from your opening today, you indicated that policy statements are not supposed to be fact based.

On that basis, I would object both to the introduction of this policy statement that's been provided in writing and ask that it be stricken from the record, as well as the having the Board direct National Marine Fisheries Service to limit its oral comments to only those that would be appropriate for policy statements.

HEARING OFFICER DODUC: Thank you, Mr. Berliner. Your objection is noted. I will allow Mr. Hines to continue.

MR. HINES: I trust you'll stop me if I cross the line.

Good morning, Mr. Chairman and members of the Board. My name is David Hines. I'm a fishery biologist and water policy program coordinator for the National Marine Fisheries Service.

Our agency is responsible for implementation of the Federal Endangered Species Act as it relates to marine species, including salmon and steelhead. In particular, we are mandated to work cooperatively with state and local governments to resolve water resource issues in concert with the conservation of endangered species.

Given the information we have to date, it is our position that the El Sur water right application as proposed does not ensure the protection of threatened steelhead in the Big Sur River. I would like to read to you today a short summary of our reasoning and our recommendations for bypass flows and water conservation measures.

The Big Sur steelhead population is important to the survival of the species. All steelhead that spawn and rear in the Big Sur River constitute a single population. It is one of many populations that comprise the South Central California steelhead distinct population segment, which is the legally defined species under the Endangered Species Act. The distinct population segment as a whole has suffered an estimated 98 percent decline in abundance. Due to its location and size, the Big Sur River population is considered essential to the recovery of the species.

The Big Sur River Lagoon is a keystone habitat and plays a critical role in maintaining the viability of the population. Estuaries and lagoons typically form the interphase between fresh water and saltwater habitats for steelhead. Below these habitats typically constitute less than five percent of the watershed area. They provide disproportionate value as nursery habitat for steelhead. They are heavily relied upon by smolts to facilitate their physiological transition to saltwater during their migration to the ocean.

But perhaps the greatest value of lagoons and estuaries is in their ability to promote rapid growth in rearing juveniles. This growth has a significant advantage in survival to adulthood. Research in Scott Creek, 56 miles north of the Big Sur River, found that 87 to 95 and a half percent of the returning adult population had reared in the estuary, despite representing between 8 and 48 percent of the out-migrating juvenile population.

The timing of the transition from the tidal estuary to fresh water lagoon is important for maintaining water quality parameters, such as temperature, dissolved oxygen, and salinity, which are important indicators of ecological health in estuaries and lagoons. Vertical stratification of saltwater and fresh water can occur in response to reduced fresh water inputs. This can lead to hypoxic or anoxic conditions that severely limit benthic protection and reduce the available rearing habitat in the lagoon.

The question of what flows are needed to protect lagoon function in the Big Sur River have not been adequately addressed by either the applicant's studies or the flow recommendations of the California Department of Fish and Game. Fish and Game's proposed interim bypass flow study evaluated wetted channel conditions in the fresh water stream environment, as is appropriate for protecting rearing space invertebrate production and riparian vegetation. However, there is nothing in the report to quantify flow needs for the lagoon.

Similarly, the applicant studies, while they evaluate several important lagoon habitat attributes, they do not inform the flow needs for the lagoon. The studies are not sufficient for this purpose for at least two reasons. First, they do not collect data in the lower lagoon prism where the most significant interactions between salt and fresh water are found. Secondly, the studies do not quantify the relative proportion of water diversions and fresh water inputs to the lagoon, thus the critical issue of effects to reduce stream flows in the lagoon and cause ecology in the lower estuary to remain unexamined.

The uncertainty associated with flow inputs to the lagoon creates risk to the steelhead population if large scale water diversions are permitted, because the actual effects will be largely unknown. Given this risk, combined with the importance of the population for the recovery of the species and the importance of the lagoon as habitat for steelhead, we recommend a conservative approach for permitting diversion until such time as the uncertainty can be substantially reduced. We, therefore, support the more conservative and rigorous Fish and Game interim recommendation.

NMFS recommends the following measures for continued operation of the El Sur Ranch to minimize or avoid impacts to threatened steelhead in the Big Sur River: Reduce water demand, establish seasonal and water year type constraints for the period of diversion based on results of additional studies of diversion effects on the lagoon habitat; and develop off-stream storage facilities to offset the water demand during low flow periods.

In addition, capturing rain water as it runs off existing or new roof structures is a potentially viable alternative to diverting water from streams to groundwater due to the high levels of precipitation along the Big Sur coast. This may be an effective way to offset a significant portion of the overall water demand and should be explored. I've placed a few posters describing water harvesting techniques in the back of the room for anyone who's interested.

Thank you for the opportunity to comment on these proceedings.

HEARING OFFICER DODUC: Thank you, Mr. Hines.

MR. BERLINER: Excuse me, Your Honor.

Under the rules of 648.1, policy statement presenters may not be cross-examined, but they may be asked clarifying questions. I was wondering if I can ask him a clarifying question?

HEARING OFFICER DODUC: Mr. Berliner, I appreciate your concerns and your objections are certainly noted and taking your advisement. But policy statements are not evidentiary and certainly will not be weighed or considered or used as such by the Board in issuing the order. So I'm just going to ask that we move on.

MR. BERLINGER: Thank you, Your Honor.

HEARING OFFICER DODUC: Next speaker, Ms. Carolyn Shearer from Clear Ridge Mutual Water Association.

MS. SHEARER: Good morning. My name is Caroline Shearer, and I'm a homeowner and resident of Big Sur.

I'm here today to ask for the Board to consider granting priority of our water permit over the application of the El Sur Ranch. We are a small mutual benefit water association serving 42 parcels located on 850 acres of land. We are located on the south side of the Molera Park.

California water law wisely recognizes domestic use's priority over agricultural use, and we are asking that to be reflected in the placement of priority. Our only reliable source of water is the well located next to the Big Sur River, and wells that have been attempted in our neighborhoods have all yielded futile results.

We are in a high fire area, and therefore, require all of our members to maximize water storage for fire protection.

Big Sur is blessed with abundant rainfall. But droughts do occur every 10 to 25 years. And during droughts, we have to live with our water use and in extreme low water conditions to halt all pumping.

Our neighborhood is one of the largest pools of load-low income housing workers in Big Sur. As members of the Big Sur community, we strongly support continued agriculture and traditional ranching in Big Sur. For eleven years, working without attorneys and yet bearing costs for studies and many hours of volunteer labor, we have attempted to give the State Water Resources Control Board all of the information that can be discovered so we can make wise and just decisions and very much look forward to concluding these last steps in the process.

We thank you for your consideration.

HEARING OFFICER DODUC: Thank you, very much.

Next, Mr. Butch Kronlund from Coast Property Owners Association. I will apologize to everyone in advance for mangling your names.

MR. KRONLUND: No problem.

My name is Butch Kronlund. Good morning. I'm President of the Big Sur Coast Property Owners Association, and nearly a life-long resident of the central coast.

For the last 23 years, I've lived in Big Sur building homes and relationships on a foundation of trust, honesty, and hard work. Anyone that has ever spent any time in Big Sur knows the place is very special. Those of us that own property here recognize that there is a responsibility of stewardship associated with that privilege. No single property owner in Big Sur, to my knowledge, better exemplifies that sense of responsibility then El Sur Ranch.

In my capacity as president of the CPOA, I'm aware of a host of issues in which El Sur Ranch has been instrumental in making a difference for both the residents and the environment. Among those contributions has been a commitment to successfully see to its adoption of the Monterey County Community Wildfire Protection Plan. El Sur Ranch, through its counsel, Pam Silkwood, was instrumental in brokering a satisfactory resolution to a contentious process. Without that leadership, Monterey County would still be without an important tool in securing grants to make neighborhoods safe from wildfire.

That willingness to engage in tough, hard-to-solve problems I believe is a contributing factor in the demonstration of new thinking on the part of local government and state and federal agencies. That new thinking currently stretching its legs as a Forest Service program, known as Firescape Monterey, has the makings to reset a history of mistrust among the players that traditionally have been unable to accomplish anything due to set agendas.

I can go on and on about the things big and small that El Sur Ranch has done to sustain the Big Sur community. Those about deeds run the gamut from offering to supply a part-time deputy sheriff at no expense to the county along 70 miles of coast when needed, to the donation of critical fire fighting equipment to support our volunteer fire brigade. The long list of good deeds includes a native tree planting and large scale removal of invasive plant species. The list also includes outreach to their immediate neighbors at the State Park to provide qualified backup in cases of emergency.

Having said all that, it is my opinion that El Sur Ranch is a trusted, valued, and capable steward of lands under its control, that the mouth of the Big Sur River is an environment worth protecting, as strong evidence that the El Sur Ranch has exercised exemplary stewardship over the last 60 years of pasture operations. Those operations should be allowed to continue for the benefit of the environment and the Big Sur community. Thank you.

HEARING OFFICER DODUC: Thank you very much.

Dr. Peter Raimondi.

DR. RAIMONDI: I'll try to be brief. My name is Peter Raimondi. I'm professor and Chair of the Department of Ecology and Evolutionary Biology at the University of

California Santa Cruz. I'm a marine biologist, and my main areas of expertise are in coastal ecosystems, particularly near-shore rocky reefs like kelp forests and near tidal areas like tide pools and other rocky areas that are at the interface between the terrestrial habitats and the environment.

In addition to my teaching and chair responsibility, I'm also the faculty director of the Landels-Hill Big Creek Natural Reserve in the U.C. Natural Reserve System. Big Creek is located just south of Big Sur. I lead a number of projects related to the monitoring and assessment of coastal impacts. Recently, I've worked on projects related to water quality, for example, the assessment of areas of special biological significance through many areas of the states, oil spills in San Francisco and the gulf oil spill. Marine protected areas, we need base line monitoring for the monitoring enterprise, wave energy for the CEC, the California Energy Commission, once-through cooling for CEC, Coastal Commission, and the Water Boards, de-sal for the Coastal Commission and Endangered Species National Marine Fisheries Service for black abalone.

Our monitoring program has over 125 sites that span the area between Glacier Bay, Alaska and Mexico. We've been monitoring these sites for almost 20 years.

This monitoring program has been used to identify coastal impacts from the variety of sources like ship wrecks or oil discharges through the use of data collected on biological communities at these sites. Many of these species are familiar to everyone: Muscles, kelp, sea stars, and abalone. And these species are in some ways indicative of the community as a whole.

One of the sites that we've been monitoring now for over a decade lies directly below the El Sur Ranch at its southern boundary near Andrew Molera State Park. It is adjacent to the mouth of the Big Sur River. As you know, the Big Sur coast line is very species diverse and largely pristine. It is the jewel of the California coast line in many ways. In part, this is due to natural drivers of ecosystems structure and function like the geology that's present there, upwelling productivity, just the coast itself. And in part, this is also due to lack of what exploitation and the lack of coastal impacts.

We've been to many sites throughout the country, and sometimes these impacts are detectable only using very sophisticated statistical methods. In part, that's what we did for the areas of biological significance down in southern California. In other parts of the state and sometimes adjacent to agricultural lands, not the El Sur Ranch, you can see immediately when there is an impact because the entire inter-tidal area is dead. Muscles are gaping. That's due usually to runoff and sometimes due to pesticides.

The site at El Sur Ranch stands out as being particularly rich and untouched. In particular, there is an extraordinarily important and large population of black abalone, which has recently been designated as an endangered species. This area perhaps has the highest concentration of black abalone in the world.

My assessment of the El Sur site based upon comparisons to our network of monitoring sites, including nearby sites, is that activities on the ranch have had no impact on the biological value of the coastal ecosystems on the ranch. To put this in a broader context, based on our base line assessment for the central coast marine protected area network, the site at El Sur Ranch is a prototype for what we hope to see in the reestablished State reserve.

HEARING OFFICER DODUC: Thank you.

Mr. Pinney.

Mr. PINNEY: Good morning. I put my water bottle up here. It has the logo of the Big Sur Fire Brigade on it. It's not Figi water. It's Big Sur water. And I do accept responsibility for exporting it from the watershed. So with that as on opener --

(Laughter)

BOARD CHAIRPERSON HOPPIN: Are you going to recycle it in our community?

Mr. PINNEY: I have already made that first move and I thought before we leave. I'm sure it will be treated properly.

BOARD CHAIRPERSON HOPPIN: You need to get a discharge permit.

(Laugher)

Mr. PINNEY: All the paperwork will be forthcoming.

My name is Frank Pinny. I'm a Chief Emeritus of the Big Sur Volunteer Fire Brigade. I'm humbled by the comments that have been presented before both from the antagonists and the protags for the issue that you're facing. And I don't for one minute envy any of your decisions that you have to reach in basically separating this bay from one point to the other.

What I would like to say is to clarify the picture and to re-emphasize the point, the El Sur Ranch is a good neighbor. I think the facts that I've read over indicate that it has not in any way detrimentally affected the ecology of our area. And in every way possible, they have affected the ability of our community to survive.

I was the incident commander for a number of efforts that we've gone through in survival mixer including the 1998 road closure that lasted for several months as the Big Sur community struggled to get back to being able to live after 27 places on the highway broke through and we had to repair the entire highway from end to end and weren't to be able to get from home to Carmel.

So my experience has been extensive in as far as working with the community to survive and be able to exist. In every case that my experience has been, the El Sur Ranch has been a partner, leader, and a very quiet and unassuming member of the community, making things happen from the background and being able to help us.

The Fire Brigade in Big Sur is the fire department. We do have a station of fire service there which is staffed during the summer and they take care of what they can in the wildfire. But oftentimes, they are out of the area. Big Sur Fire is it. We are unsupported by tax. We are basically an all volunteer program and the only support we get is .72 sales tax. And that's parceled to us in a battle with the county every year. We're one of the few counties that gets 172 money to fire. Most of it is not going to fire. We are basically living hand to mouth, and we've been able to make that happen by the spirit of the people who live there, and the El Sur Ranch is part of that spirit in a great way.

My wife and I moved to Big Sur 39 years ago. In fact, we weren't married at the time. We are now married and raised our children there. And we chose to stay there after careers back in the east in areas of finance, career-type jobs. And we found our place to live in Big Sur because it is a place in which neighbor and the human element is highly prized over the structure of society as we know it in the city. I have nothing against cities. I'm in one right now, and I appreciate those of you who live here and work here. But the area we live in is one which is critical to the spirit of the folks who have stayed there and live their lives there. And the El Sur Ranch is that type of place.

I've been drawn to it as an individual and a person, and I've been very fortunate to get to know the owner personally. I've been in the trenches with Mr. Hill during most of the fires that have gone on.

There have been numerous, on average, every ten years, there is a giant fire in Big Sur. There's been ten campaign fires in the time I've been involved in fire for 39 years. And all of those have been participation of El Sur Ranch as a major role. So I will reiterate for you from a relatively emotional point of view rather than from a fact-based point of view that this is not a situation in which we're dealing with a person who is taking from or a group that is taking from or an organization taking from. They are putting back, and I want you to consider that in your deliberations concerning the water use at the El Sur Ranch.

Thank you very much. And I do have a little bit left for those of you that are thirsty.

HEARING OFFICER DODUC: Just put it to beneficial use.

Next speaker is Ms. Kristin Gafill. Not seeing anyone come up. That was all the NOIs that we received for policy statements.

Let me go back and check to make sure Mr. Ken Gray from California State Parks, did you show up late?

MS. FERRARI: Chandra Ferrari from the Department of Fish and game. And we were actually going to give a policy statement also.

HEARING OFFICER DODUC: Are you preparing to provide an opening statement as well?

MS. FERRARI: Yeah. The Department was just going to do a couple minutes. We were going to do some updates on the study that we have underway.

HEARING OFFICER DODUC: That cannot be done as part of your case in chief or your opening statement?

MS. FERRARI: We could add it to that. We just have the very specific person who's been doing the study here today to do a brief update on that.

HEARING OFFICER DODUC: And you realize this is a policy statement and will not be taken no account as evidence?

MS. FERRARI: Yes.

HEARING OFFICER DODUC: You may proceed.

MR. SINGLE: Chairman Hoppin, Ms. Doduc, Board staff, my name is Jeffrey Single, Department of Fish and Game. I'm the Regional Manager of the central region which includes the Big Sur River area. Thank you for hearing what we have to offer for your deliberations today.

I'd like to note that the applicant filed an amendment on June 14th, quite recently. And of course, our department's written testimony provided to you already can't deal with any of those issues totally.

We did note that many of the numbers that the applicant submitted testimony match up with numbers in the new amendment, but we were unable to meet that standard.

But in any events, our basic conclusion --

BOARD CHAIRPERSON HOPPIN: Will you center up on that microphone, please?

MR. SINGLE: Is this better?

In any event, our basic conclusions about the public trust resources on the Big Sur River and the effects of the project remain the same.

Also, this proposed amendment includes a discretionary artificial flow in the place of natural surface bypass flows, and we have some strong objections to that particular item.

I also wanted to inform the Board that -- you probably can assume we have been working to come up with a settlement. We very much want to remain in a collaborative role with the Board and Mr. Hill. And it's certainly not our goal to stop ranching there. We do, however, want to ensure that if an appropriate water right is granted it does allow for good conditions for steelhead in the Big Sur River.

Now, the written version of this policy statement explains our logic and approach to a number of issues. There are many. Some of them include, of course, the steelhead numbers have dropped all along the coast, including in the Big Sur River under existing historic conditions. And the Big Sur River, as you'll hear, is essential to maintain steelhead population up and down the coast for a long range. So impacts to steelhead in the Big Sur River affect the larger area.

There are a number of deficiencies in supporting analyses. There are some diversions that are not included in the water availability analysis. We still have issues with the CEQA baseline, which you noted. And the analyses used to tend to focus on fish passage and not the other components of the life history of the fish, which are also necessary to maintain steelhead in the river in good condition.

And the amount of water requested does seem unusually large for the purpose of the application, but you'll be hearing a lot of information on that, I'm sure.

What is not before the Board are the results of our comprehensive in-stream flow studies. And these really would provide the best picture of the relation of flows to fish habitat. And Robert Holmes, our principle investigator on that, is here to try to provide you with a little bit of information on that, because we do think they're quite important. And if you have any questions for Mr. Holmes on these issues, he is here.

HEARING OFFICER DODUC: Ms. Goldsmith.

MS. GOLDSMITH: I have an objection to that as a policy statement. This testimony, if it is appropriate at all, perhaps they could call him as a rebuttal witness. But this goes well beyond the bounds of the policy statement.

HEARING OFFICER DODUC: I'm sorry. I didn't catch your name.

MS. FERRARI: Chandra Ferrari.

We believe this is not part of our case in chief. It's really a broader policy idea for the Board to consider, because it's studies that are going to be done in the future that we think would inform a Board process at that time. And so, you know, it's not something that we're presenting on, it's not something that's done yet, but we think it's very important that the Board know it's happening. And, in fact, pursuant to our statutory duties we'll be providing minimum in-stream flows for the Big Sur River as a result of the conclusion of this study when it's done.

So we think it's very important for you to know about, particularly as it relates to the Big Sur River. But it's not part of our case in chief right now. It's not done.

HEARING OFFICER DODUC: Ms. Goldsmith.

MS. GOLDSMITH: I believe that the record of this proceeding, including comments in the DEIR and the numerous comments that have been presented by Fish and Game throughout this proceeding certainly inform the Board that Department of Fish and Game is conducting an IFIM study. And when it is complete, it will be presented to the Board and the Board can take it into account.

But I think the fact that it's being undertaken is well before the Board already, and I object to any further discussion of it at this point.

HEARING OFFICER DODUC: I'll sustain the objection.

MR. SINGLE: Well, then, thank you very much. If I may conclude, I appreciate your attention and tolerance and thank you.

BOARD CHAIRPERSON HOPPIN: Mr. Single, will you be available later on in the proceeding for questions?

MR. SINGLE: I intend to be here for most of the proceeding. I have some other duties I have to attend to as well.

BOARD CHAIRPERSON HOPPIN: I have a question to ask, but I don't think it's appropriate at this time. So thank you.

HEARING OFFICER DODUC: Anyone else? I do not have any other blue cards or none to call up. All right. With that, we will now move on to the evidentiary portion of the hearing.

Before we hear the parties' cases-in-chief, Nathan Jacobsen with the State Water Board's Office of Chief Counsel will present the witnesses who prepared the CEQA document. The parties may then cross-examine witnesses.

Following presentation of the CEQA consultant's testimony and cross-examination, we will then hear the parties' cases-in-chief in the following order starting with: El Sur Ranch; the California Department of Fish and Game; the California Sportfishing Protection Alliance and Center for Biological Diversity, and Ventana Wilderness Alliance as a joint party. The forth party will be Trout Unlimited; and the Carmel River Steelhead Association.

We received NOIs from Ms. Lorri Lockwood and Mr. Werner Motzel, but both of them have informed us they will not be appearing today or tomorrow.

At the beginning of each case-in-chief, a representative of the party may make an opening statement. Briefly summarize the objectives of the case, the major point that the proposed evidence is intended to establish, and the relationship between the major points and the key issues.

After any opening statement, we will hear testimony from the parties' witnesses. Before testifying, witnesses should identify their written testimony as their own and affirm that it is true and correct. Witnesses should summarize the key points of their written testimony and should not read their written testimony into the record.

Direct testimony will be followed by cross-examination by the other parties, by Board staff, by me, and by Chairman Hoppin. Redirect examination may be permitted followed by recross-examination. Any redirect examination and recross examination is limited to the scope of the cross examination and redirect examination, respectively.

After all the case-in-chiefs are completed, the parties may present rebuttal evidence. Parties are strongly encouraged, directed, to be efficient in presenting their cases and their cross-examination. Except where I approve a variation, we will follow the procedure set forth in the Board's regulation, the hearing notices, and the subsequent rulings.

The parties' presentation are subject to the following time limits: Opening statements are limited to 20 minutes for each party. Oral presentations of direct testimony will be limited to a maximum of 20 minutes for each witness and a two hours total for a party to present all of its witnesses' testimony. Cross-examination of each party's witnesses will be conducted as a panel. And cross-examination of the panel will be limited to one hour initially. Additional time may be allowed upon the showing of good cause. We will request written closing briefs, and we'll discuss page limits and a due date at the end of the hearing.

With that in mind, I will invite appearances by the parties who are participating in the evidentiary portion of the hearing. Will those making appearances please state your name, address, and whom you represent so that the court reporter can enter this information into the record. And when I call you, please, come up and speak into the microphone.

State Water Resources Control Board, Mr. Jacobsen.

STAFF COUNSEL JACOBSEN: Thank you, Board Member Doduc. Nathan Jacobsen, Staff Counsel, State Water Resources Control Board.

Can you please state --

HEARING OFFICER DODUC: I'm just asking you to identify yourself for now.

STAFF COUNSEL JACOBSEN: Oh, sorry.

HEARING OFFICER DODUC: Thank you, Mr. Jacobsen.

El Sur Ranch?

MS. GOLDSMITH: This is a little lengthy.

I'm Janet Goldsmith from Kronick, Moskovitz, Tiedemann & Girard. I will be assisted by Stan Powell of our firm and Danielle Teeters of our firm.

My co-counsel is Tom Berliner of Duane Morris, and he will be assisted by Jolie-Anne Ainsley.

We'll give you cards.

HEARING OFFICER DODUC: Thank you.

California Department of Fish and Game?

MS. FERRARI: Chandra Ferrari with the California Department of Fish and Game. With me today is also Kevin Takei. And we'll also give you our cards. Thank you.

HEARING OFFICER DODUC: The joint party of California Sportfishing Protection Alliance, Center for Biological Diversity, and Ventana Wilderness Alliance.

MR. LAZAR: Good morning, Your Honor. I'm Adam Lazar. I'm here with the Center for Biological Diversity as a staff attorney. I will be representing California Sportfishing Protection Alliance, the Center for Biological Diversity, and Ventana Wilderness Alliance.

HEARING OFFICER DODUC: Trout Unlimited.

MR. JOHNSON: Good morning. My name is Brian Johnson, and I'm staff counsel and director of California Water Project. And I'm here on behalf of the Trout Unlimited.

HEARING OFFICER DODUC: Carmel River Steelhead Association.

MR. LE NEVE: My name is Brian LeNeve. I'm representing Carmel River Steelhead Association. And I'm not an attorney.

HEARING OFFICER DODUC: At this time, I will ask Mr. Paul Murphey to introduce staff exhibits.

STAFF GEOLOGIST MURPHEY: I would like to offer into evidence the staff exhibits identified in our

December 20th, 2010, hearing notice and in the e-mails I sent to the service list on May 18th and May 27th, 2011.

If there are no objections, I'll dispense on reading the list of the exhibits. And I'll make sure the court reporter gets a list.

So I ask that Exhibits SWRCB 1 through 9 be accepted into evidence.

HEARING OFFICER DODUC: Any objections?

Not hearing any, we will accept those exhibits into evidence.

(Thereupon the SWRCB Exhibits 1-9 were received by the ALJ into evidence.)

HEARING OFFICER DODUC: I will now administer the oath. Will all those persons who may testify during this proceeding please stand up and raise your right hand.

(Thereupon all prospective witnesses were sworn.)

HEARING OFFICER DODUC: Thank you. You may be seated.

Mr. Jacobsen, you may begin.

DIRECT EXAMINATION

STAFF COUNSEL JACOBSEN: Nathan Jacobsen, Staff Counsel, State Water Resources Control Board.

Can you please state your names for the record?

MR. HANSON: Rick Hanson.

DR. COOK: Dr. Sabrina Cook.

STAFF COUNSEL JACOBSEN: Are State Water Board Exhibits 8 and 9 true and correct copies of your experience and qualifications?

MR. HANSON: Yes, they are.

DR. COOK: Yes.

STAFF COUNSEL JACOBSEN: Did you prepare environmental documents for the State Water Resources Control Board, specifically, draft environmental impact report and final environmental impact report as included by reference in State Water Resources Control Board Exhibits 1 and 2 for the El Sur Ranch Water Right Application 30166?

MR. HANSON: Yes.

DR. COOK: Yes.

STAFF COUNSEL JACOBSEN: Are there any corrections or clarifications you would like to make to any of the exhibits?

DR. COOK: Yes, I would.

There was a question about the change in water surface elevation due to pumping and the calculation. And re-visiting the numbers, there was a spreadsheet error in my calculations. And it was reported in the response to comments the change in water surface elevation was .14 feet for the 5.02 CFS pumping. It's actually 0.04 feet, which translates to about .1 inch per CFS.

It does not change the level of significance, because we decided that because of the special status species and the critical habitat that any measured change would be considered potentially significant change. So that remains potentially significant. And we also -- it does not change our mitigation measures. I'm only presenting that in case it's informative to the Water Board in determining permit conditions and limitations.

STAFF COUNSEL JACOBSEN: Thank you.

Mr. Hanson, do you have any corrections?

MR. HANSON: Yes. There is a reference to the place of use on page 1-2 of the final EIR and the text related to the place of use is reflective of what was presented in draft EIR. But in the final EIR in responses to comments, that language was changed.

The more accurate depiction of the place of use fell to Swiss Canyon. This follows Swiss Canyon bisects the place of use and comprises approximately 19 acres of a place of use. Although this area is not and would not be directly irrigated, this area is irrigated by seepage water from the irrigated field and is therefore included in the irrigation requirement calculations.

STAFF COUNSEL JACOBSEN: Thank you. I have no further questions.

BOARD CHAIRPERSON HOPPIN: I have a question.

When you commented a moment ago that you felt that given the sensitivity that any measurable change was a significant change, when you get down to that conclusion, how do you distinguish between changes that resulted from possibly pumping as opposed to those that could have resulted from natural declines in flows, differences in evapotranspiration by vegetation along the river? How do you distinguish for any measurable changes can be contributed to one source or another?

DR. COOK: For one thing, it's only potentially significant because we don't know for certain, yes. And the river system down there is highly variable and there's all sorts of things going on.

So in doing the analysis of the measurable change, we looked at the information of no pumping versus pumping conditions. Just the small part where the most steady state least affected by lagoon opening/closing, precipitation events, small time periods, so that, you know, evapotranspiration issues were less likely.

And we did a trends analysis through the data to come up with sort of an average, because it's got this diurnal cycle too going to get like an average. And it is a very complicated system. So the measurable change that we identify is potentially significant. And that's the best we can do based on best available.

BOARD CHAIRPERSON HOPPIN: You're comfortable that the change you're talking about is directly attributable to pumping?

DR. COOK: Yes, I'm comfortable with that.

HEARING OFFICER DODUC: Thank you, Mr. Jacobsen.

At this time, we'll begin with the cross-examination of these two witnesses by El Sur Ranch.

CROSS-EXAMINATION

BY MR. POWELL:

Q Good morning. My name is Stan Powell, and I'm one of the attorneys for the El Sur Ranch. And I have a few questions for Dr. Cook.

Did you conduct an independent analysis of the data to prepare the draft EIR?

A Yes, for the most part. Well, there was some places where I had to rely on information in various reports. But for the most part, yes.

Q So if you received data from the El Sur Ranch, you would typically do your own analysis and draw your own conclusions from that data?

A Yes.

Q Does that same answer apply to the final EIR?

A Yes.

Q Does that same answer also apply to the response to comments within the final EIR?

A Yes.
Q So I'd like to ask you a few questions about some of your specific responses.
And, Mr. Lindsay, I'd like to put up on the screen PDF page 154.
SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: That's the final EIR?
MR. POWELL: Yes, the final EIR.
Q This would be page 379, if you have the final EIR in front of you, Dr. Cook.
If you could scroll down so it shows response to comment 3-26.
Do you recognize this comment?
A Sort of, yes.
Q Were you the person responsible for preparing that response?
A For the most part, I believe, yes. Yeah. Does it go on? Yes.
MR. POWELL: Mr. Lindsay, could you scroll down so she can see the rest of the comment?
THE WITNESS: Yep.
MR. POWELL: I'm sorry to do this, can you scroll back up? Thank you.
BY MR. POWELL:
Q The comment that you received stated if the permit

assumed that something other than the full rate of diversion impacts the flows in the river, then a bypass flow limitation is moving target; is that correct?
A That was taken from the comment.
Q Okay. Did you also interpret the comment to mean that the Department of Fish and Game believes impacts should be assessed based on a one-to-one correspondence between the amount pumped from the El Sur Ranch wells and the water taken from the surface expression of the El Sur Ranch?
A Yes. That was my understanding of the comment.
Q Okay. Did the DFG provide any data or field studies that supported that comment?
A Not to my knowledge. Certainly not in the comment that was received.
Q Your response to that comment seems to indicate a misunderstanding of the data collected in your analysis of Big Sur River characteristics; is that correct?
A It was my interpretation of the comment that the commentor had a misunderstanding regarding where exactly the point of diversion was and what and how -- and what portion of the entire Big Sur River of the subterranean and the surface expression was actually being diverted.
Q Okay. And the point of diversion was a well located within the aquifer near the river?
A Yes, within the alluvial aquifer near the river, which

the subterranean portion of the river flow.

Q So with that, is it your understanding when that well pumps water, a portion of that water comes from the surface expression of the river and a portion of it comes from the other flow?

A Correct.

Q Is it your opinion, based on actual data collected, that the ESR wells which are placed in the subterranean stream divert groundwater from the stream?

A I think this was part of the difficulty in interpretation when we use groundwater and alluvial aquifers and subterranean flow. The groundwater that we discussed in the EIR is a simplification. It is more appropriately subterranean flow at the Big Sur River and the alluvial aquifer portion of the portion of Big Sur River. So groundwater in that sense, yes.

Q Thank you.

On that basis, is it correct that only a fraction of the water pumped by the El Sur Ranch is taken directly from the surface flow of the river?

A Yes.

Q Would you also agree that as the actual data shows it is inappropriate to assign the bypass flow based on the assumption that there is the 5.84 impact on the surface expression of the Big Sur River when the Big Sur River

wells are pumping 5.84 CFS?
A I believe that's what I have stated in this comment or response to comment or another one.
MR. POWELL: Okay. And I'd like to look at one more, Mr. Lindsay. If we could look at PDF page number 178. And if you could put the heading 3-79 at the top of the page.
BY MR. POWELL:
Q So Dr. Cook, did you prepare the response to comment 3-79?
A Yes.
Q Is it your independent opinion, as indicated in your response to 3-79, that the assumption that a 5.84 CFS rate of pumping equals a 5.84 CFS impact the surface flow on the Big Sur River is unsupported by the many data points collected and used in your analysis?
A Yes.
Q Of the data that you have collected and evaluated, is there any support for the notion that the amount of water pumped at the El Sur Ranch comes out of the surface expression of the Big Sur River on a one-to-one basis?
A No.
MR. POWELL: That's all my questions. Thank you.
HEARING OFFICER DODUC: Thank you.
Next, cross-examination by the Department of Fish

and Game. No cross-examination.

CSPA?

CROSS-EXAMINATION

BY MR. LAZAR:

Q On page 2-25 of the final EIR, you state that, "The basic project objectives of the DEIR are for allowing the continued diversion and beneficial use of water for irrigation of 267 acres of pasture for cattle grazing."

Can we put that up on the screen? Is that possible to do?

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Page 2-25?

MR. LAZAR: Please.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I'll try. Do you happen to know the PDF page?

BY MR. LAZAR:

Q Can one of you affirm this is accurate then? I can just read it.

"The basic project objectives specified in the DEIR included allowing for the continued diversion and beneficial use of water for irrigation of 267 acres of pasture."

You then go to explain why the CDGF alternative to meet the basic project objective is infeasible. And my question would be: Under the CDFG alternative, would there be no water available for pasture irrigation and grazing on the land?

A When we analyzed the proposed limitations on the permit for the CDFG alternative, it was based on bypass flows at a location just upstream of the El Sur Ranch zone of influence and based on a potential loss from the Big Sur gauge down to that point.

When you look at the historical data at the Big Sur gauge for the entire base line period, it turns out that only about ten percent of the time does the flow meet the conditions where diversions can be allowed in the CDFG alternative. So that means only 10 percent of the time would the applicant be allowed to divert. So that's where -- that's why that comes up.

Q And you say that the purpose though of the project is to allow the continued diversion of beneficial use of water for irrigation. But then the CDFG alternative still allows for irrigation and for continued diversion of beneficial use of that water. So in that sense, the CDFG alternative would allow for irrigation and grazing.

A But certainly not for 276 acres and not at the level that could support and sustain 276 acres at any level. Because like I said, at best, about ten percent of the time would the applicant be allowed to divert. And I went through some more analysis and came up with things like --

Q But my question was whether or not they would still be allowed to irrigate and divert water. And it seems like they would. And then my follow-up question to you was whether or not CDFG's proposed alternative to irrigation would meet the purpose of diversion of beneficial use of that water for that pasture there.

MS. GOLDSMITH: Objection. Asked and answered.

MR. LAZAR: I'm not sure what has been asked and answered.

HEARING OFFICER DODUC: Hold on a second. Let's give the witness a chance to answer.

THE WITNESS: Not for 267 acres.

BY MR. LAZAR:

Q How would CDFG's alternative not provide irrigation and water for those -- for the acres there? It seems like to me --

HEARING OFFICER DODUC: She's answered before, but we'll take the opportunity for her to answer again.

DR. COOK: Because at best, only ten percent of the time would the applicant be able to divert. And that's simply not enough water to support 276 acres of irrigated pasture at whatever -- even if you use the CDFG's proposed duty factors of 2.5 acre feet per acre -- or was it 2.5 CFS acre feet per acre? It's simply not enough.

BY MR. LAZAR:

Q When you say it's not enough, are you referring to it would never be enough for the year-round or just not enough for the summer?

A Year round, especially in the summer.

MR. LAZAR: No further questions. Thank you.

HEARING OFFICER DODUC: Thank you, Mr. Lazar.

Trout Unlimited, Mr. Johnson, do you wish to cross-examine?

MR. JOHNSON: Thank you. I have one clarification question.

CROSS-EXAMINATION

BY MR. JOHNSON:

Q If the page could be put up -- I'm not sure it's necessary. But it's response to comment 3-1. I believe it's page 364 of the document.

The response reads the response to comment 3-1, "The mitigation measures are not intended to be bypass flows to protect public trust resources. Determining and defining bypass flow requirements to protect public trust resources is not within the scope of CEQA."

And that continues to say, "To date, there have been no studies determining what minimum bypass flow requirements would be required to protect public trust resources."

I think that's pretty straight forward. But I just want to clarify that there was no response to comment saying that there are no studies and that would be used to protect public trust resources and that the CEQA document should not be used for that purpose?

On the minimum bypass flows. No studies determining what minimum bypass flow requirements would be required to protect public trust resources. You're saying the CEQA document should not be used to establish minimum bypass flow requirements to protect public trust resources?

MR. HANSON: I don't think that's the purpose of the CEQA document, if that's your question.

MR. JOHNSON: Okay. Thank you.

HEARING OFFICER DODUC: Thank you, Mr. Johnson.

Does the Carmel River Steelhead Association wish to cross-examine?

MR. LE NEVE: No, ma'am.

HEARING OFFICER DODUC: That concludes the cross-examination.

Mr. Jacobsen, do you have any redirect?

STAFF COUNSEL JACOBSEN: I don't.

HEARING OFFICER DODUC: With that, then your witnesses are excused. I'm sorry. Mr. Lindsay and I believe Ms. Mahaney has questions.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: This is Larry Lindsay with the hearing team.

I want to explore with you a little bit how some of the maps that we've seen through the application process and go over a couple questions with those.

On the map we received yesterday from -- this would be an updated application map that we received from the applicant yesterday, there's a little area up here I'm pointing to on the very northwest end of the place of use. And according to the legend on this map, that's part of the place of use, but not irrigated pasture boundary. And see what quarter-quarter that is. It appears to be in the southwest of the northeast and in the northwest of the southeast.

And switching, I want to show you the map that was in the final EIR. And if you look again in that same area where I'm pointing to, I don't see any place of use depicted there. Is there any explanation for that?

MR. HANSON: I have no explanation of that. What was presented above was provided to us by the applicant showing the place of use as they're proposing in the application. And this is what was used in our analysis.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I'll leave it to my colleagues if there's any follow-up on this. Thank you.

HEARING OFFICER DODUC: Ms. Mahaney.

BOARD MEMBER MAHANEY: Not to follow up on the map issue, but to follow up on the earlier conversation about public trust resources. Can you explain how the EIR treats the project under CEQA, just very briefly? And to the extent it does address environmental impacts, do those involve public trust resources?

MR. HANSON: Yes. The focus of the EIR as required under the CEQA guidelines was to determine what the existing physical environment is on the ranch at the time that the environmental review was initiated, determine what changes to that physical environment would occur as a result of approving the project application, and then determine the significance of those impacts and define mitigation, which would reduce the effect of those impacts to a level of less than significant. And that's how we view the purpose and the focus of our analysis in the EIR under CEQA.

HEARING OFFICER DODUC: Thank you.

Any other questions? Thank you. The witnesses are dismissed.

And we will take a short ten-minute break. And when we return, we'll begin, Ms. Goldsmith, with your case-in-chief.

(Whereupon a recess was taken.)

HEARING OFFICER DODUC: Whenever you're ready Ms. Goldsmith.

MS. GOLDSMITH: Thank you. I would like to take a few moments before my opening statement to let the participants know they all did get copies of this fourth amended application. But as you know from seeing the facts that there have been a number of application amendments over the years. As the science has informed us better, we, the applicant, has attempted to more closely describe the water needs and is now at a point where he has also offered some permit terms he would be agreeable to.

Instead of 1,615 acre feet per year as a maximum, we are amending the application down to 1,320 acre feet.

HEARING OFFICER DODUC: Ms. Goldsmith, could you get closer to the mike? Bring it closer to you.

MS. GOLDSMITH: We are amending it down to 1,320 acre feet per year maximum, and the rolling average of no more than 1,087 per year, instead of the 1,200.

The amount requested for diversion during the low-flow years from July 1st through October 31st is also being amended from 735 feet for the season to 676 feet for the season -- acre feet for the season.

And the maximum amount that is requested for diversion in each of the calendar months of July, August, September, and October is limited to no more than 203 acre feet per month instead of 230 acre feet per month.

In addition, the conditions that are being proposed are that from May 1st through October 31st, no diversion will occur when the USGS gauge is below ten CFS, unless the applicant can document using the established passage measurements that there is fish passage at that low-flow transect that's down -- it's P-4L. It's also referred to by Fish and Game as DFG 9. It's down just beyond the head of the lagoon.

Further, that there will be no diversion during the summer holidays of July 4th and Labor Day from 6:00 in the morning the day before until 8:00 o'clock the day after, because that tends to be a tourist mecca where there may be greater depletions between the gauge and the ranch's wells.

For the winter flow period, based on our science, we're proposing that diversion will not occur unless -- at any time when the USGS flow is below 30 is what we have calculated is necessary for adult fish passage, unless passage can be documented.

If a gauge is established in Molera State Park, then we may approach the Board to shift the diversion limits based on whatever correlations those turn out to be. And, of course, that would be a proceeding that would be noticed.

There's also proposal that has been made, and this is based on the fact when you pump from the underground, not 100 percent of it comes from the surface. And so that allows you to pump, for example, one CFS. It depletes the surface flow by a third of a CFS, and you could put the one CFS in back of the head. This is an augmentation proposal that I think you heard testimony of Department of Fish and Game that they're adamantly opposed to. But it could benefit the river, and we put it in here as a proposal for an alternative fish passage permit condition in the event it can be --

BOARD CHAIRPERSON HOPPIN: Ms. Goldsmith, is that your Alternative E?

MS. GOLDSMITH: Yes, it is.

BOARD CHAIRPERSON HOPPIN: So that proposed water would actually be coming from the current irrigation wall which is going back --

MS. GOLDSMITH: It would go back above the passage, so it would increase the flows at those passage ripples that are difficult. It's the same source of water.

The ability to do that comes from the fact that when you pump, you're pumping mostly from the underground flow. And if you put it all back in the river, you're increasing the river's flow.

BOARD CHAIRPERSON HOPPIN: Okay. I wasn't sure when I read the amended request if that was a new source of water or where it was coming in. I wasn't really clear.

MS. GOLDSMITH: It would be new to the surface flow of the river. But it's coming from the underflow. And it's based on that differential between what you pump and what the surface river experiences.

BOARD CHAIRPERSON HOPPIN: Thank you.

HEARING OFFICER DODUC: Before you continue, Ms. Goldsmith, let me ask Counsel Mahaney a procedural question. This obviously was submitted to everyone yesterday or the day before -- I can't remember. And so legally and procedurally, what is your recommendation with respect to considering this change as well as any evidence associated with this change is currently not in the record?

BOARD MEMBER MAHANEY: With respect -- we haven't received any objections to receiving this information into the record. But I would like to ask Ms. Goldsmith whether one of her witnesses, to ensure that we do have this information in the record, is prepared to testify regarding these amendments to the application and to answer any questions we may have about these amendments.

MS. GOLDSMITH: Certainly. My feeling is this is not evidence. This is an operative amendment to the application by reducing the amounts we're requesting. The information that supports some of those flow numbers that are in here is already in the record and will be testified to by Chuck Hanson, for example, and the SGI witness Paul Horton.

BOARD MEMBER MAHANEY: Just to clarify, this is your fourth amended application. And if it's something that you want the Board to consider in approving a water right permit, would you want that in the record?

MS. GOLDSMITH: Well, absolutely. We expect to be bound by it.

BOARD MEMBER MAHANEY: Oh, right. So back to my original question is to get this information into the record, will you have someone who's willing to testify about that application and available to answer any questions? And I understand this would be part of the water right files. But will you have someone available?

MS. GOLDSMITH: Well, I guess I want to cross that bridge when we get there, because I'm not sure exactly what questions could come up. But the questions generally that could come up about this amendment would have to do with what the numbers are in the bypass provisions that we have offered. Obviously, the Board is going to set whatever bypass limits it feels is appropriate. But this is an operative legal document, if you will, that binds the ranch in terms of what it's willing to do.

BOARD MEMBER MAHANEY: Thank you.

HEARING OFFICER DODUC: Ms. Goldsmith, let's go ahead and please wrap up your --

MS. GOLDSMITH: Well, the last measure I wanted to point out is a measure that's come up in a number of comments. And that is flow meters capable of measuring flows that are being pumped, and that's also included in this amendment.

HEARING OFFICER DODUC: Thank you.

Before you begin your policy statement, let me ask the other parties if there are any objections. Please come up.

MR. LAZAR: Good morning. We don't object to the new application, but we are concerned that the applicant's experts will provide -- if they're going to provide evidence to support the new application and also that our direct testimony didn't take into account this new evidence. So I would like to have permission to at least be able to ask my witnesses what they think about this new information, even though it was not contained in their direct testimony.

HEARING OFFICER DODUC: Ms. Goldsmith.

MS. GOLDSMITH: I'm not sure how to deal with that. I think if the time comes and a question comes that I think is inappropriate, I may object.

The point is that it's not that this application informs our witness's testimony; it that our witness's testimony informed our ability to make this application amendment.

HEARING OFFICER DODUC: Well, granted, the applicant has the right to amend your application when you submit it. However, given it was submitted just a few days ago, I'm going to allow Ms. Lazar and other parties to ask questions and ask that you have witnesses be available to answer any questions should they pertain to this amended application.

And with that, please proceed with your opening statement.

MS. GOLDSMITH: All right. I've introduced my team here. As a prelude to my opening comments, I'd like to show a short video to orient the hearing participants of the El Sur Ranch and the Big Sur River.

HEARING OFFICER DODUC: That would be fine, but this will be part of your 20 minutes.

(Whereupon the following video presentation ESR-13 was made.)

NARRATOR: "The El Sur Ranch, just north of the Big Sur River, has been a working ranch since before California became a state. One of hundreds of ranches created in the early 1800s, it was granted to Juan Bautista Alvarado in 1834.

"Jim Hill understands the El Sur's history. His first memories of the ranch are from his earliest childhood after his father bought the property in 1955.

MR. HILL: "Before that, it was in the Hunt family. They acquired it from the Cooper-Molera family. The way the history reads is something along this: 1834, the King of Spain deeded it to Cooper's wife, because the King of Spain couldn't deed land to anybody but a Spaniard. Cooper married a Spanish woman. He deeded the land to her.

NARRATOR: "Over the centuries, the land has produced mules, dairy cattle, cheese, beef cattle, row crops, and grain. Today, it is a cow/calf ranch.

Jim learned the values of hard work on the family-owned ranch. When he was 18, he went off to college. But in 1978, during his junior year, his father died. So he returned to Monterey to take over operation of the El Sur Ranch.

MR. HILL: "My dad died March 28th, '78, and I actually stayed out of school for six months and then went back in September, finished out my college education. And I've been doing this ever since.

"Highway 1 separates the oceanside of the ranch from the inland portion of the ranch. And on the oceanside of the highway, you have 267 acres of permanent pasture. We call it permanent pasture because it's irrigated. So it's permanent in terms of it being green year round.

The reason for irrigating the pasture is in the summer months, the east side or the inland side of the highway, the grass turns brown. And we don't have any rain for six to eight months. So in order to sustain the herd effectively, we have to have permanent pasture to balance the nutritional needs of the herd for their life cycle.

"The north pasture, Pastures 1, 2, 7, and 8, are on the far side of the drainage that you see there that runs from the highway out to the ocean. You see that? We call that Swiss Canyon.

"To the south of that are fields what we call the south pasture or old grass field and Pastures 3, 4, 5, and of 6 and the old well and the pump house. That well was drilled about 1950. And about 200 yards left of that or southeast is the new well. And they're all within 1,000, 1500 feet of the ocean, which is the best place to put the wells because the water has already traveled down the watershed. It's given all the beneficial use to the trees, the flora, the fauna. And just before the water's wasted to the ocean, we're able to pump it up and utilize it.

"You'll also see at the base there a pond. That's a reclamation pond. The water from these fields during the winter months runs into that tailwater pond. The cows drink from it.

"If there happen to be wildland fires in the area, that happens to be a good place for helicopters to go and get their water. If it weren't for that, they'd be putting salt water on the fire.

"One thing that's not directly related to the water, but it is. When there are disasters that isolate the community, these fields are used -- especially during fires, used as a heli-base. We land as many as 15 to 20 helicopters up here. It's short grass. There's no dust. It's an ideal landing zone.

(Scene transition)

"We are in the old original well house. Well is about 32 feet deep. In order to start it, turn the switch to manual. Push the start button.

"The water is pumped from the wells up hill to the top of the field. After that, we use a really, really complicated principle to irrigate the fields; it's called gravity. These fields are sloped from the highway towards the ocean. So water is running downhill. So we open the alfalfa valves and the water, by gravity, runs down the fields and at the individual furrows guide the water and keep it controlled so that we're very specifically irrigating and using the water usefully and beneficially for the purpose of irrigating the pasture for the cows.

NARRATOR: "The irrigation season varies from year to year depending on rainfall. Generally, it starts in May and ends with the first rain after summer, around the end of October. The irrigation is operated manually by opening and adjusting valves. The irrigator determines the number of valves based on experience.

(In the pasture)

MR. HILL: "Depending on the distance -- and that's the key factor. How far is it from this valve to the end of the field? And the water travels from the top of the field down to the bottom of that field in about eight hours.

"Now, at nighttime because that's twice as long, we open twice as many valves, plus 50 percent. So if there were four valves during the day, we open ten valves at night. The rate of flow from the well does not change.

"Let's say you have four valves, and let's say there is a thousand gallons a minute being delivered. That means there's 250 out of each valve.

"Now, if I open ten valves, still a thousand gallons a minute delivery. And because it comes out at 100 gallons a minute and not 250, it's going to take longer to get down the end of the field than what was done during the daytime. So that way I'm assured the rate of progression is such that it won't flood the end of the field before daybreak.

"We don't want water over-irrigating. Reasonable and beneficial use is the mantra of irrigation, whether you're holding a garden hose or whether you own rights to the Colorado River.

(Scene change to riverbank.)

"An EIR of the El Sur Ranch conducted has measured -- there is an area called the zone of influence. How far out do the wells influence flow and to what degree? The further out, the less influence.

"It's no different than a vacuum cleaner. Hold your hand against a vacuum cleaner, it's got maximum influence. As you pull your hand away, the amount of suction on your hand becomes less and less.

"Same thing with pumping water out of the ground. The further out you go, the less the impact. From here out to the river -- from this old well out to the river, our impact on the surface flow out in the river, can't hardly measure it.

"If you were to go out here and put a huge pane of glass and put a big valve in it and measure the water that runs out of this watershed to the ocean, the yield is 98,000 acre feet. 98,000. How much do we use? 980 of that.

"With the old well, our rotation was about 40 days for us to irrigate the fields we now have. That wasn't fast enough. The grass was dying before we got back to it. With the second well, we had enough volume we were able to irrigate fast enough so the grass would never be harmed.

"The other feature that's important to note is the old well occasionally gets a little bit of salt water. We monitor that water every day. When it becomes salty, we shut it off because I don't want to pump salt water on the grass. It's going to turn it brown. Cows won't eat that.

"So the new well provides fresh water. It's not influenced by salt at all. And our tests have shown that when we turn these on, run them for seven days, shut them down, the water returns back where it started to an 80 percent of that within 24 hours. Within 36 hours, it's at 90 percent. Within three days, it's back to 98 percent.

This is a really efficient operation.

NARRATOR: "Coastal ranching is part of California's rich heritage. And this historic property has been preserved through the growth era of the 20th century because of its farming and ranching operations. Both have been dependant on water to irrigate the land.

MR. HILL: "I went to the Big Sur Land Trust and placed a 4300 acre conservation easement on ranch land. It's about 60 percent of the ranch. So what you see when you drive down Highway 1 -- in fact, everything on the oceanside of the highway is forever guaranteed to remain as it is, forever. It is in perpetuity. There is no other economical use of this land."

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MS. GOLDSMITH: Thank you. This hearing will decide the fate of El Sur Ranch. As the evidence will show, this is not a case in which the Board must choose between protecting fishery resources and allowing an historic ranch operation to continue.

Can you show number one?

Over 60 years of history shows that El Sur's irrigated pasture and the steelhead fishery of the Big Sur River can not only co-exist, they can both flourish. The Big Sur River and the steelhead are in good condition. This is a fact that even Department of Fish and Game's expert fishery scientist Rob Titus acknowledges. This is his statement that's in evidence dated 2010. It was originally written back in 1997.

Next slide.

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MS. GOLDSMITH: He concludes "recent study of juvenile steelhead habitat use in the lower Big Sur River shows that the entire area from the lagoon to the gorge remains highly functional for steelhead production."

--o0o--

MS. GOLDSMITH: And the status overall, "overall, the Big Sur River continues to support a healthy steelhead population, one that Nelson classified a stock of special concern" for reasons that you'll hear.

What you won't hear is evidence that the steelhead population is in decline, has diminished, is in trouble, or is in crisis. You won't hear any evidence or data that supports those contentions.

Pumping from the El Sur Ranch wells began in the middle of the last century under the assumption that the water being pumped was not drawn from the Big Sur River, but from percolating groundwater. I know you've heard that before throughout the state.

Then under that same assumption, the federal government and the state government also pumped from an unpermitted well just yards away from El Sur to supply Point Sur Lighthouse, which is three miles to the north. Water was drawn from these wells through three critically dry periods to date 1976, 1977 -- 1977, '78, the 90s, and most recently the extreme dry year, 2007.

Ironically, it's the very health of the Big Sur steelhead fishery that has generated the most concerns by protestants and has driven the lion's share of the studies and inquiries that El Sur Ranch has commissioned. Because of these studies, this Board will not be forced to rely on conservative estimates for its decision. It will have the luxury of science, of actual direct measurements of pumping impact at the highest pumping rates that could be achieved during that extreme dry year, 2007.

Paul Horton, a professional geologist and California certified hydrogeologist, led the research scientists of The Source Group and will describe the complex interaction of river, groundwater alluvium, tides, ocean levels in the stream, and in the lagoon. SGI's hydrologists spent hundreds of hours on the river and were able to conduct studies and gather data in three different kinds of years: A dry year in two 2004, a wet year in 2006, a critically dry year of 2007.

Based on analysis of the data collected, Paul Horton will explain two very important conclusions.

First, that the irrigation water comes largely from the subterranean portion of the stream; and second, that pumping the water from the subterranean stream does not correspondingly reduce the surface flows by the same amount.

At least -- at least two-thirds of the water pumped by El Sur Ranch is underground flow that would otherwise exit the system without ever having surfaced. SGI's 2000 investigation compared the river conditions with no pumping at all, not just base line pumping, with maximum pumping and thus provides a solid basis for this Board to exercise its public trust jurisdiction.

The studies show the maximum impact of flow was calculated to be 1.2 CFS and that pumping has no measurable effect on the river's temperature, oxygen content, and depth, the characteristics that define the fishery habitat for the steelhead. No impact on water depth was detectable by measurement, but SGI calculated that at the maximum pumping rate that could be achieved in 2007 a theoretical reduction in surface depth could occur. At most, a half of an inch at the most downstream location of the zone of impact where the greatest effects of the pumping would be experienced. That is very consistent with what you heard Sabrina Cook of PBS&J, now Atkins, testify to.

In addition to the hydrogeology studies, noted fisheries biologist Chuck Hanson conducted stream studies and characterized fish habitat throughout the lower portion of the river during all three study years. You will hear him testify that the key habitat components for juvenile steelhead rearing, the critical life stage for steelhead in this river, which all agree, remained suitable in all water years and under all pumping conditions.

Snorkel surveys completed under his direction provide irrefutable evidence of healthy steelhead population in both dry and critically dry years, with growth rates that rival those of northern California streams.

Significantly, his studies show that the lagoon, which according to NMFS is an important rearing habitat for juveniles is thriving and functionally unaffected by El Sur's pumps.

The same scientific rigor has been applied to develop a precise understanding of the irrigation needs of the El Sur pastures.

Dr. Neil Allen of NRCE analyzed two-and-a-half years of site-specific data from a weather station, a CIMIS-type station that Mr. Hill had sited on the El Sur pastures themselves. And Dr. Allen correlated that with over 50 years of long-term records from other nearby weather stations to determine specific ranch crop water requirements. He will testify as to his conclusions. And his conclusions are found in the fourth amendment to our application, which you now have.

Irrigation at the ranch was managed by Tom Asmus who lived on the ranch from 1935 to 1990 and ran its irrigation system for 30 years. Mr. Asmus will recount the development of the El Sur Ranch irrigation system. And the applicant, Jim Hill, will testify concerning current operation and the importance of irrigation to the continued viability of the ranch itself.

Dr. Orrin Sage, a specialist with extensive coastal range land management experience, will testify that irrigated pasture is critical to a successful cow/calf operation such as that operated by the El Sur Ranch.

These scientific studies and technical studies and all of the data that supported them culminated in the critical peer review by your environmental consultant PBS&J, now Atkins, who produced the draft and final EIRs, and they worked independently under your staff's direction. Their analyses essentially confirm the findings of Dr. Hanson and the SGI team.

The Department of Fish and Game will proffer the work of two scientists to attack both the analyses by the professionals retained by the ranch and the final environmental impact report.

Kit Custis will ask this Board to deny the ranch the ability to irrigate based on his assumption stated in his testimony that the amount of diversion from the subterranean stream results one for one in reduced flow in the surface of the river. This fatal flaw undermines each of his conclusions.

You will also hear from DFG staff scientist Rob Titus, who did a fair amount of work in the 1990s on the Big Sur River, as to the status of the condition of this Big Sur steelhead fishery. And it is his report which I excerpted in my opening statements here.

He acknowledges that it's healthy and the ecosystem from the mouth of the river up to Pfeiffer State Park, seven miles above El Sur Ranch, is a good ecosystem. Yet, Department of Fish and Game ignores the health of the steelhead fishery, ignores 60 years of co-existence of the fishery and -- the healthy fishery and the El Sur Ranch pastures and urges establishment of bypass flows that would doom the ranch -- the historic El Sur Ranch to oblivion.

What refutes the analyses of DFG's employees and testimony of other interested parties is the condition of the river and the steelhead fishery, that of an undeniably flourishing ecosystem habitat and population. Thank you.

HEARING OFFICER DODUC: Please call up your witnesses and begin your case-in-chief.

MS. GOLDSMITH: Thank you. My first witness is Mr. Tom Asmus.

HEARING OFFICER DODUC: Can you see the timer okay from there?

MS. GOLDSMITH: I can.

HEARING OFFICER DODUC: If you like, you can have all the witnesses come up here.

MS. GOLDSMITH: While the witnesses are coming up, I'd like to ask this Board's indulgence and that of the parties to have the cross-examination of Mr. Tom Asmus occur immediately after his testimony. He has some health problems, and I think he needs to get back home.

HEARING OFFICER DODUC: All right. We'll accommodate that. Thank you very much.

DIRECT EXAMINATION

BY MS. GOLDSMITH:

Q Good morning, Mr. Asmus.

A Good morning.

Q I have a question --

HEARING OFFICER DODUC: Let's wait until we get the microphone set up.

MS. GOLDSMITH: It was my understanding we had two hours to present our case-in-chief.

STAFF GEOLOGIST MURPHEY: I can only put 60 minutes at a time.

BY MS. GOLDSMITH:

Q Mr. Asmus, will you tell us your name for the record and spell it, please?

A My name is Tom Asmus. It's spelled A-s-m-u-s.

Q What is your relationship to the El Sur Ranch?

A Oh, I was raised on the El Sur Ranch. My father was the manager there from 1935 until 1961 when he passed away. And I've lived there until 1990.

Q After your father passed away, did you become the foreman?

A Yes, I did.

Q And before he passed away, did you work on the ranch?

A Yes, I did.

Q What's your educational background, please?

A I have a Bachelor of Science in animal husbandry from the California State University.

Q University of California at Davis?

A Yes.

Q And what was your duty -- what were your duties as foreman?

A As foreman? Well, I took care of the entire ranch --

or supervised taking care of the entire ranch and irrigated pasture.
Q Before 1950, were there irrigated crops on the terraced land of the ranch?
A Yes.
Q What were they?
A They were alfalfa and fescue and there was some sugar beets in there and -- what the hell else? I don't know.
Q How did water get -- what were they irrigated with?
A What were they irrigated with? Well, there were a couple of ditches that Andrew Molera put in that brought river water from the Big Sur down and used it to irrigate crops.
Q But for the crops on the terrace how did the water get to the terrace?
A It was pumped up there after 19 -- I think about 1946.
Q Was it pumped up with a fuel oil pump before then?
A Yes, it was. Early on, there was a gas-powered or powered engines that pumped it up for -- it was before my time though.
Q I'm going to ask Paul, please, to turn -- and this is the overview of the large overview slide, please.
I'm showing you a map. And if you can get the map up on the screen so the Board members can see it as well. You can just lean it against the stand.

So would you please describe what happened when electricity came to the ranch and when it came --

BOARD MEMBER MAHANEY: Excuse me, Ms. Goldsmith. Can you identify the exhibit?

MS. GOLDSMITH: It is exhibit Figure 1 to Paul Horton testimony.

BY MS. GOLDSMITH:

Q So when electricity came to the ranch, did Mr. Hunt change his pumps?

A Oh, he didn't change them at the time that the electricity. He re-did what had been earlier pumped with engines, internal combustion engines. And electricity came while Mr. Hunt put in electric motors rather than.

Q What were the fields that were irrigated by Mr. Hunt at that time?

A The fields that were irrigated were numbers 1 through 8.

Q Thank you. And around 1960, did he add fields?

A Yes, he did.

Q What fields did he add?

A That was 1960. That was Mr. Courtland Hill that --

Q Okay.

A -- that added fields to the original irrigated pasture.

Q And which fields did he add?

A The "Old Grass" and "New Grass" and "Pump House" field.
Q I'm going to have Mr. Hill describe how irrigation was managed. But can you tell us how did you determine how long to irrigate a field?
A Well, it's all border checked irrigation so that you just got to camp down there and turn on the valves and let them run down until they're down far enough they'll run on through. And then you can shut the valves off and open some more.
Q So you check the fields to see where the water has gotten to; is that what you're saying?
A Right.
Q Okay. And how did you determine which well to use for which field?
A Which wells to use for which field, well, the piping determines that for you. In other words -- and to some extent. And then the other is you just have to use the well that's -- in the lower fields, it's much more economical to use the upper well if you can.
Q The new well?
A Yes, the new well.
Q Okay.
A And other than that, it's just a matter of piping which ones piped to where and how you can manipulate the

valves to get what you want done.
Q Did you say you retired in 1990?
A Yes, I did.
Q Where do you live now?
A I live in Sonora.
Q Do you remember telling me why you moved from the Big Sur area?
A To get out of the wind.

MS. GOLDSMITH: Thank you, Mr. Asmus.

Cross-examination.

HEARING OFFICER DODUC: Thank you. Does the Department of Fish and Game wish to cross-examine this witness? No from Fish and Game.

Does Mr. Lazar wish to cross-examine?

We'll keep track of Mr. Lazar.

CROSS-EXAMINATION

BY MR. LAZAR:
Q Just really quickly, Mr. Asmus, the channels you're describing where you originally diverted before the wells, can you briefly point out on the map where those were?
A The channels were -- the old system?
Q Yes.
A Yeah. How do you do that?
Q Were they in the upper reach? Were they in the upper reach of the river there, Mr. Asmus?

A Yeah, some of them was.
Q Some of the channels were?
A Yeah.
Q When you stopped using the channels, did you fill them in?
A No. No. They stayed there.
Q The channels are still there.

No further questions. Thank you.

HEARING OFFICER DODUC: Thank you, Mr. Lazar.

Does Dr. Johnson wish to cross-examine?

MR. JOHNSON: No.

HEARING OFFICER DODUC: And our Carmel River Steelhead Association, any cross-examination?

MR. LE NEVE: No.

HEARING OFFICER DODUC: Any redirect?

MS. GOLDSMITH: I do.

REDIRECT EXAMINATION

BY MS. GOLDSMITH:

Q When you talk about the ditches that were used to irrigate, were those ditches used to irrigate Creamery Meadow?
A Creamery Meadow, yes.
Q Were they used to convey water to the terraced fields?
A No.
Q Did they come from the diversion dam on the river

itself?
A There was a time that we did dam the river and run it down ditches to the Creamery Meadow and that area.
Q And did they before the electric pumps, did the gas-powered pumps pump from that diversion pond?
A From that diversion pond, no. No. They pumped from little different location, but not far away.
Q Okay. Thank you very much.

HEARING OFFICER DODUC: Any recross, Mr. Lazar?

MR. LAZAR: Yes.

RECROSS-EXAMINATION

BY MR. LAZAR:
Q Do you think you can point out where the diversion dam was?
A The diversion dam that ran it down the ditch?
Q Yes.
A That was up where you see the river coming down and then it makes a sharp left-hand turn and you come down about -- from there, about halfway and you see --
Q Little more specific there?

HEARING OFFICER DODUC: Larry, can you use the pointer to help us?

MR. HILL: Is that the general area?

MR. LAZAR: Upstream or down from there?

MR. ASMUS: Yeah. Whoa. Right in the there.

MR. LAZAR: Right there. Okay. No further questions. Thank you.

HEARING OFFICER DODUC: Thank you, Mr. Lazar.

MS. GOLDSMITH: I'd like the record to show that Mr. Asmus is pointing to a point on the river that was just slightly downstream of the western-most boundary what's labeled the Walk-in campground.

HEARING OFFICER DODUC: Are you finished with this witness?

MS. GOLDSMITH: I'm finished.

HEARING OFFICER DODUC: Thank you very much, Mr. Asmus. Hope you feel better and be in good health.

DIRECT EXAMINATION

BY MS. GOLDSMITH:

Q Mr. Hill, would you please identify your relationship to these proceedings?

A My name is James Hill. I'm the applicant and the owner of the El Sur Ranch.

Q Is ES-11 your testimony in these proceedings?

A Yes, ma'am.

Q Oh, Tom.

Can I have a stipulation that ES-1 is Mr. Asmus' testimony? I didn't cover all of it.

HEARING OFFICER DODUC: Sorry could you please repeat that?

MS. GOLDSMITH: I'm wondering if I could have a stipulation from all the parties that ES-1 is Mr. Asmus' testimony?

HEARING OFFICER DODUC: That's fine. We'll move exhibits and testimony after the end of the case-in-chief.

MS. GOLDSMITH: I didn't ask him specific. Thank you.

BY MS. GOLDSMITH:

Q Are there any corrections you'd like to make to your testimony?

A Thank you very much. In the video clip, there were four elements that I incorrectly stated. One, the conservation easement is not 4,000 acres. It's 3,200 acres. That's 4,000 that remains. The yield of the Big Sur watershed is not 98,000, but 85,000 acre feet per year. And the complaint with DPR I believe I misstated the date. It was 1990. There was one more thing.

Q The other thing was recovery of the groundwater.

A Thank you. The recovery of the groundwater I stated was 80 percent in 24 hours. And it's actually 90 percent in 24 hours.

Q How long have you been involved with the El Sur Ranch?

A Starting about -- involved with the ranch, I first went down there as an infant at two-and-a-half. I was exposed to ranching operations at ten. I participated in

most of the operation related to the ranch operation.
Q And when did you take over the ranch operations?
A I became responsible for ranch operations on March 28th of 1978. I was 21.
Q What can you tell us of the history of irrigation of the ranch?
A Well, the El Sur Ranch, most of the history -- anything prior to my involvement is what I've heard from Tom Asmus and from others that were involved with the ranch operations, including our -- actually, Tom's father, Rudy Asmus, back in 1905 thereabouts, our ranch made an application for diversion of water. And that water was pumped from the surface flow of the Big Sur River through pipes to the area that's -- I don't have it up there on the fields -- thank you.
Q What is this a picture of, sir?
A That's a picture looking towards the ocean. And what you see there are border checks, borders between individual feed portions of the field. Just want to identify that there is one valve -- alfalfa valve for every other check. So one alfalfa valve irrigates two borders.
Q And the checks are the mounds?
A Yeah. You've got the -- right. Correct. And there is about 14 feet between the borders.

Q Okay. Next slide.

Can you describe for us the irrigation, how the irrigation works?

A The irrigation system, the current centrifugal pump, also referred to as the old well, currently sucks water out of the ground and pumps it up. And it is the most efficient pump for supplying water currently to the northern pastures identified as north pasture, south pasture.

It's also capable of delivering water to pastures one, two, three, four, five, six, seven, and eight and the pump house.

In or about '80 -- excuse me -- in the late '70s, mid '70s, my father made an agreement with State Parks to drill an additional well because we couldn't irrigate the property efficiently with just one well. So he applied to State Parks. State Parks said yes, go ahead. We have their full agreement and their participation and knowledge.

We put in the well. It wasn't until 1984 that we actually started pumping and testing it. And through litigation where they wanted to actually revoke the terms of use after everything had been agreed to, we finally put the well into use.

The water is now distributed mostly in pastures one through eight and the pump house through using the new well, because it's a turbine pump and more efficient for lower elevations and the old well was used for the higher elevation.

BOARD MEMBER MAHANEY: Ms. Goldsmith, if you could -- and this applies to the other parties as well. If you're referring to a figure or a diagram, if you could identify it so when we read the transcript later we know exactly what we're talking about.

MS. GOLDSMITH: This is Figure 2 of Mr. Hill's testimony.

MR. HILL: Thank you. I'll do my best.

BY MS. GOLDSMITH:

Q The arrows, I take it, indicate the direction of flow?

A Yes. Correct. In the particular diagram identified as Figure 2 on the screen at this time, the arrows do show the direction of flow. It's a pretty complicated concept. It's called gravity. And just takes the water from above from uphill, downhill.

Q Is it possible to irrigate each and every field from each well?

A No. The new well cannot pump to the upper elevation directly. It has to do so indirectly. And so in that case, we pump to fields, the lower elevation especially. Number five and six, the water will go into the tail water pond. And I have tested separate engine-driven pump and re-pumped the water 3,600 feet back up to the top of the north pasture and south pasture fields to irrigate. I also had to do that during times when the salinity was high.

Q Can we go to the next slide?

Next slide. Let's not go there yet.

What function does salinity play in your irrigation?

A Salinity -- saltwater intrusion salinity in the well comes -- starts to show up mid-summer depending on the rain year. If we have a really wet year, there's usually enough water in the river and in groundwater aquifer to keep the groundwater basin in good condition and fresh water.

And so as we pump, as the flows diminish, the saltwater will come into the well and we'll start to taste it.

What created this in our mind is we know the Navy drilled their well a few years after the old well was drilled and they drilled about ten feet deeper than the ranch did and actually hit a saltwater membrane. That brought water very close to within a few feet of the ranch well.

Now we monitor the salinity daily. Any salinity over one milli mho concentration kills the grass or damages it. And we just willingly stop when that occurs. And sometimes that's a very significant part of the time of irrigation that I'm only afforded one well to pump.

Q And that well would be the new well?

A That's right. If the old well is salty, that's the one we terminate. We've never had salty conditions in the new well.

Q What prevents runoff from fields when you irrigate?

A Well, we have the border checks that were shown in the previous slide. There's also access roads that border the fields. And that plays a really important role. Not only does that control irrigation water. But also in the wintertime when it's raining and there is tremendous amounts -- we'll get 30 to 40 inches of rain a year. And sometimes we'll get 6 to 10 inches in 24 hours. Those roads act as a barrier and prevent water from entering in the Swiss Canyon, causing erosion and loss of habitat.

Q What is the importance of the irrigated pasture to your cow/calf operation? How do you use it and why?

A We use it as a feed source when we do not have one on the inland side of the east side of the highway, which is only green due to winter rains. It's an essential component of the grazing operation in order to have green grass in the late summer months.

The late summer months is a key growth period for cattle. In August, we bring in the cows usually mid to late August, about a month before they start to calf. And we will put the cows on there to really bolster their nutrition and milk production. They'll start to calf. It's a very wonderful place for calving; grass, sunshine. There is also really good visibility so they're able to fend off predators such as coyotes which we have too many of.

Additionally, as breeding finish -- and I must also say, it's close to headquarters. So access and visibility of the herd for husbandry dealing with difficult heifers that are first-time mothers that need assistance or if there is abandonment issues which happen occasionally.

When it comes at the end of calving season, we have breeding season, which follows on the heels of that about a month or so after we finish our calving. And this gives flat grounds for the bulls to breed. Can you imagine the alternative of being up in the hills having to chase the cows down? And I'm afraid that it causes significant injuries when the bulls are breeding in the hills. It also causes much more traffic in the hills, tougher to maintain or -- excuse me -- maintain or monitor their condition.

Q How did you become aware that a water right permit was needed for your irrigation wells?
A About 1990, State Parks filed a complaint because the Big Sur River had dried up due to a project of theirs that had failed. They filed a complaint. State Water Board contacted the ranch regarding the complaint and asked the ranch to hire a firm -- I believe it was Jones and Stokes -- for them to make the determination as to what type of water were we pumping. Was it groundwater, subterranean water, underflow, et cetera. And they made the determination -- or studied it and made the determination, passed the information on to the State Board. State Board said, well, this is water that's regulated. Therefore, you must apply for a preferred permit, which we did immediately. We've been in the process ever since.
Q Now they told you you could continue to pump for your riparian; is that right?
A Yes, ma'am. That's correct.
Q Are there other wells that are in close proximity that pump out of the watershed?
A Yes. When my father went in in the mid '70s and drilled alternative wells, one of which is the new well we're currently using -- there were several others they drilled, one for State Parks. But we have an alternate

irrigation well, and that's one of the proposals that's been mentioned is for flow augmentation that will be a source for that water to supply or supplement the flow of water in the river.

Q Can you tell us anything about the Navy well that's shown on Figure 1 of Mr. Horton's testimony?

A Looking at Figure 1 here in front of me, very difficult to see. It's approximately 100 yards south of the old well. It's probably within 75 to 100 feet of the lagoon. That well pumps water to the Navy base principally.

Q Where is the Navy base?

A The Navy base is about two to three miles north on Highway 1 from the irrigated pasture.

Q On the other side of Swiss Canyon?

A Oh, yes, ma'am.

Q On the other side of Morro Ditch?

A On the other side of Morro Ditch, on the other side of Dairy Canyon and Lighthouse Ditch.

Q Once the complaint was filed, how did you approach the permit process?

A Rather aggressively, I believe. I hired numerous consultants, and their advise with legal team that we currently have started out with your predecessor Mr. Moskovitz, wonderful man, and have been in the process of

researching and making a determination and measuring water conditions in the river and also making a determination for the ranch's own knowledge are we really doing anything that harms anything. And we'd like to know that first, as opposed to having somebody else tell us that we're doing something. So therein lies some of the rationale why the ranch owner took so many analyses just to be sure we were really doing the right thing.
Q Did you have your own water needs analyzed at the same time?
A Yes, ma'am. We had part of that process included not only are we impacting the river, but once we have the water, are we making beneficial use of it. In that case, we hired NRCE. In this case, Dr. Allen is with us today. And he analyzed the use of the water, the application, as well as also correspondence from competing interests that said, well, you should use this or you should do this or you should do that. He's here today to comment on that.
Q Now, ESR-20 -- could you put that up -- is an agreement between you and the county of Monterey; is that right?
A Thank you very much. Yes. Let's see. 1990 or thereabouts, funds from the California -- I'm not quite certain -- I want to say the Fish and Wildlife Fund, but it's conservation fund money. There was money set aside

for purchasing conservation easements in Monterey County specific to the Coastal Act. I waited until literally about the last two months of the availability of the funds before they were sent back to the general fund. And I contacted Big Sur Land Trust, and we came together with an agreement that establishes a conservation easement that's been placed on everything on the ocean side of Highway 1. The only use that can be made of that use of that land is agricultural purposes, cow/calf operations.

Q Is Exhibit ESR 20 a copy of that agreement?

A Yes, that does appear to be the cover sheet for that conservation easement.

Q I'd like to put up on the board a chart. This will be in Jim Hill's testimony. And Stan or --

A Thank you, Chair again for allowing Tom for testimony and cross and allowing him to leave. Thank you very much.

Q I have on the board a chart that was provided in the Department of Fish and Game's testimony. It's Exhibit DFG-C-4. But the coloring is mine. And the coloring is intended to show by the green the circumstances under which, given the recommendation -- the bypass flow recommendation by Department of Fish and Game -- you would be able to irrigate. If the El Sur Ranch were able to irrigate only when the flows were in the green portion, is it your opinion that the ranch will be able to continue

its current ranching operations?
A No. It would be impossible. The flow rates they show there would guarantee the demise of the ranch. There's no way to run an operation. The green zone might be enough -- and I don't mean to be sarcastic -- but enough to run maybe a drinking fountain but not a cattle operation.
Q Particularly in August, September, and October, you wouldn't even be able to irrigate it in the wet years?
A Yes, ma'am. That is correct.
Q Now, if you wanted to continue to irrigate to raise cattle without irrigating, what would you have to do?
A In order to operate a cattle ranch with no permanent pasture, the only thing -- we have two choices: Sell the herd and run it as a seasonal operation or go out and buy hay. I've had experts calculate the amount of hay. Dr. Orrin Sage and others have predicted amounts of several hundred thousand dollars a year in hay purchase. Right now I think we buy one truckload a year. And at this rate, we'd be feeding at least two, maybe semi-loads a week to the cattle to sustain them and maintain the quality of their condition for calving purposes, as I explained the permanent pasture provides.
However, with the feeding of that hay, on ground that's not irrigated, it's going to bring impacts. Those

cows have a way of collecting in one area. They're going to strip the ground of any vegetation.

There's also a lot of competition for the feed. So anybody that's nearby, such as little calves, they're going to get head butted out of the way, not by their mother, but by the other 449 moms.

So there is a lot of impact that comes with that. And, frankly, I think it puts me in violation of the conservation easement that taxpayers of California paid to place on this property to protect it.

Q Thank you. Very much.

BOARD MEMBER MAHANEY: Ms. Goldsmith, just a housekeeping matter. You identified this as DFG-C-4 --

MS. GOLDSMITH: I have copies. I want this marked as exhibit. And I have 15 copies for the other parties. So I'm not sure what exhibit number this would be, but it would be an exhibit number. And I guess for the record, we'll call it whatever exhibit number is given. And I'll call it the "colored death chart."

STAFF GEOLOGIST MURPHEY: Your last exhibit is 35. This would be 36.

MS. GOLDSMITH: This would be 36.

(Whereupon the above-referenced document was marked for identification as Exhibit 36.)

MS. GOLDSMITH: Turning now to Mr. Horton, Mr.

Horton -- let's get the slides up.

Madam Chair, we have done a lot of honing trying to meet the 20 minutes, and so I'm cognizant of seconds here.

HEARING OFFICER DODUC: That's fine.

MS. GOLDSMITH: And Mr. Horton would like the clicker and tell him where to point it.

DIRECT EXAMINATION

MS. GOLDSMITH:

Q Mr. Horton, would you please give your name and a brief description of your education and experience?

A My name is Paul Horton. I gave you the other exhibits that have labels on them that you had. Slide show.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I've got three people asking me to do things.

MR. HORTON: You had the right exhibits up previously that you showed that had my name on them, labeled "Horton testimony exhibits." Go back. You made a folder for it.

There you go. Thanks.

So back to the question. I'm Paul Horton. I'm a principal hydrogeologist for The Source Group. For the last 14 years, a professional geologist in California and a certified hydrogeologist in California. Also registered geologist in Oregon, Masters in science and geology with emphasis in geophysics and contaminant hydrology. I've got 24 years experience in investigating hydrologic and hydrogeologic systems in California and throughout the US, the last ten years working on several projects involving groundwater, surface water interactions.

That's my answer.

MS. GOLDSMITH: Click to the next slide.

BY MS. GOLDSMITH:

Q Would you tell us what you did in terms of studying the river and what results you found?

A Sure. So I personally directed and participated in studies on the Big Sur River starting in 2004. The question I asked was: Can we determine the effect of pumping the El Sur Ranch irrigation wells on the hydrologic and hydrogeologic characteristics of the river? This work involved three intensive field studies and data collection 2004 year, 2006, and 2007. Also involved field visits and observances in all years since 2004. Literally, hundreds of hours of myself and my team on the river and hundreds of hours of data analysis. If you've seen my three technical reports, you might get an idea the amount of data.

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MS. GOLDSMITH: Tell us when you change slides what slide you're looking at.

MR. HORTON: I'm on slide three of my testimony exhibit slides.

Moving on to the key effect that we found in the three years of intensive studies is during the lowest flow period of a critically dry flow year, which is 2007, our last intensive year of study, we were able to measure a combined pumping -- pumping combined rate of 5.02 CFS from the old and the new wells. We were able to measure a correlating reduction in surface flow loss in zone two, which on this figure is the green area at the turn in the river prior to entering the lagoon. Correlates from 1.2 CFS to our pumping. Putting this in perspective, I believe at the time of this part of the study the river was well below 10 CFS at the USGS gauge flowing on the order of six CFS.

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MR. HORTON: Changing slides, correlating with that, we looked for surface water level drawdowns. And due to the normal fluctuations that occur in the river from tidal influences at that location and the daily diurnal changes, very difficult to determine an actual correlatable drawdown in the surface water level of the river. We're able to -- because of multiple measurements made upstream of flow and then water levels, we're able to calculate a maximum impact of 0.5 inches in surface water level of the river. This correlates with a drawdown under the river at the location where we measured it of .17 feet, or two inches.

This .5 inches is the number -- same as referred to by Ms. Cook earlier today of .04 feet. That's the same number I want to point out.

Also, during the studies, we measured water quality looking specifically for correlatable impacts to the pumping seasons that we did. And we were able -- we were not able to determine significant impact to the surface water quality in all three seasons from our pumping, with minor exceptions I'll get to.

--o0o--

MR. HORTON: How we determine this was, again, we did three seasons of extensive data collection. This is slide five of my exhibits. It shows monitoring stations and locations in 2007. We studied the river from the Andrew Molera State Park parking lot all the way to the ocean in all three seasons of the study.

This is showing flow measuring stations, passage transects stations, water quality monitoring stations, monitoring well stations, pumping wells, every place we collect the data points in the river.

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MR. HORTON: Slide six of my exhibits is a figure detailing monitoring locations in our 2006 -- 2004 study where we directed more of our focus in the last 3,000 feet of the river, as you can see by the indication of stations there. This was based on and informed by all the work and analysis from the 2004 study conducted previously.

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MR. HORTON: Moving on to slide 7, in 2007, we realized we had a critically dry year to study. We intensified our focus in the lower 3,000 feet of the river.

Overall, over the three study periods, we collected river flow measurements at a total of five transects across this zone in the river from the parking lot to the ocean, water levels continuously in eleven monitoring wells, as well as the three pumping wells: The new well, the old well, and the Navy well; the surface water levels throughout the river. We put ten piezometer stations in the river in 2007. I believe we had eight or nine in the river in 2006. These piezometer stations measured the surface water level on both sides of the river and directly underneath the river on both sides of the river, up and down the area of focus next to the pumping wells.

We also measured riverbed hydraulic conductivity at I believe 36 locations, 100-plus individual tests of the hydraulic conductivity of the streambed. Calculated river fluxes in response to natural conditions in pumping throughout this zone. Also installed a weather station adjacent to the river and one on the ranch to get site-specific weather parameters to estimate the transpiration impacts on the river and how it effects things.

MS. GOLDSMITH: Would this be a good time to show the ESR 10?

MR. HORTON: Yeah. So I would like to show an animation that tries to simplify and explain a lot of the three-dimensional data we've collected and describe the characteristics of the river from a hydrogeologic perspective. If we can get the lights down low.

(Whereupon the following video presentation was made.)

NARRATOR: "The Big Sur River flows within alluvium, shown in yellow, that it has carried from the Santa Lucia Mountains and deposited on the underlying bedrock foundation over the centuries. The bedrock shown here in green is Franciscan formation, which is essentially impermeable. Toward the ocean, a bedrock constriction narrows the aquifer.

"In red are the beach dunes consisting of sand. To the left shown in brown are the terraced materials that consist of alluvial material that has been partially cemented and consolidated, making them less permeable than alluvium.

"The El Sur Ranch pastures are located on the terrace to the west of the river. El Sur Ranch irrigation wells, the old well and new well, pump water to the pastures for irrigation. A third well, the Navy well, is now out of service.

"Underneath the alluvium lies the Franciscan formation bedrock, which varies in depth as sculpted by the river over the centuries. While the vertical scale is exaggerated, the surface features shown here were based on data collected by numerous investigators starting in 1964.

"As it nears the ocean, the alluvial channel cut into the bedrock is bifurcated by a knob of meta-volcanic rock into two channels: One on the western, or left, and one on the eastern side. The western channel is up to 100 feet deep, deeper than the eastern channel, and is therefore the preferential path for the denser saline water of the ocean to move it into the deep alluvium under the lagoon.

"This tidally-driven movement of ocean water in the aquifer at the mouth of the river is evidenced by the fact that the Navy well and old well, but not the new well, exhibits more saline water on occasion.

"The general direction of groundwater movement in the Big Sur River alluvial aquifer when the irrigation wells are not pumping is down valley out the mouth of the river. On the map, the lagoon is shown in a different color blue, because it is a ponded water body, more of a flat water environment than the rest of the river.

"PT-11, Passage Transect 11, is an upstream transect that could pose passage difficulties for juvenile steelhead during extreme low flows.

"Piezometer 2 location, P2L, is located just upstream of the lagoon area and is the piezometer station at which the greatest effect of irrigation pumping on the groundwater beneath the river could be detected in my three years of studies.

"When the irrigation pumps are operating, they alter the direction of groundwater flow in their vicinity. Groundwater drawdowns were measured up to four feet immediately adjacent to the wells and up to a maximum of two inches under the river at transect P2L.

"When pumping, groundwater continues to move out of the system, but some is captured by the wells and some is induced from the terrace deposits to the west. From our drawdown measurements, the wells' zone of influence was determined to extend a maximum of 1,000 feet up-gradient from the new well and for a limited distance under the river and Creamery Meadow. The dashed line indicates the calculated zone of influence.

"Moving upstream and cutting a cross-section through the river, three aspects of the Big Sur River are depicted: The surface flow, shown in bright aqua, a colmation zone in the bed of the river zone shown in brown, and groundwater moving within the alluvium shown in dark blue. The colmation zone is a layer of silt, clay particles, and organic debris that clog the pore space of the sand, gravel, and cobbles in the riverbed and impede water flow between the surface flow and alluvium.

"The arrows depict the relative speed of water flow in these three components of the system. The leaves in the river indicate the speed of surface flow. Movement in the colmation zone, shown by the small arrows, is an order of magnitude slower than the groundwater flow in the alluvium; comparably, the difference between a bicycle and an airplane. Piezometers placed in the river at P5L detected no impact in either the groundwater levels or surface water levels when both irrigation wells were pumping.

"Moving downstream, a cross-section shows the localized impacts of the irrigation wells. The colors correspond to the degree of drawdown from pumping from four feet at the wells to two inches at piezometer P2L.

The cone of drawdown develops quickly, with 90 percent of it occurring within 24 hours and stabilization occurring within three to four days.

"Water level recovery after pumping mirrors these same drawdown times. The black band just below the ground surface represents the scale of drawdown vertically exaggerated for clarity.

"In the natural condition of the river channel, the region of the river nearest the wells, Zones 2 through 4, is a region where groundwater discharges into the river. This groundwater has significantly lower temperature, 55 to 58 degrees, and lower dissolved oxygen than the surface water.

"When the irrigation wells are pumping, some of this groundwater is intercepted, reducing the amount of groundwater flowing into the river. In Zones 2 and 3, the area where pumping has the greatest impact to groundwater levels under the river, the groundwater discharge is reversed and the river starts to lose flow to the aquifer.

"Below Zone 2, moving towards the ocean in the lagoon, the river again becomes a gaining stream due primarily to two natural conditions: The bedrock constriction, which concentrates groundwater flow; and the hydraulic influence of the high density ocean water at the river's mouth.

"Zone 2, the area around piezometer P2L, is the area of greatest influence of the irrigation wells. Because impacts cumulate in a downstream direction, piezometers placed in Zone 2 measured the maximum influence of the irrigation wells on the groundwater elevation to be 0.17 feet, or two inches.

"The effect of pumping on the river's surface elevation at the Piezometer 2 location could not be detected among the natural moment-to-moment and daily fluctuations of the water elevation of the river surface as a result of ripples, naturally changing upstream in-flows, changing evapotranspiration demands, and tides.

"However, the impact of surface water elevations could be calculated based on mass balance and utilizing measurements made further upstream in the study area. The maximum calculated reduction in surface water depth was 0.5 inches, a bit less than the diameter of a dime."

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MR. HORTON: Thank you. Can we go back to my slide show, Mr. Lindsay? If we can start at slide 9.

So kind of recapping from that animation, five major key conclusions that you should know result from my study. The first is that the El Sur Ranch pumping impact is to reduce the benefit of the groundwater in-flows. And this was able to be quantified only really in the 2007 study year to the level we saw.

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MR. HORTON: Moving on to slide 10, the natural condition of the river just up-gradient of the pumping well is for groundwater inflow. Because during our study years of 2006 and 2007, we did specifically constructed pumping of the El Sur Ranch irrigation wells to stress the system, we did it with each well pumping singly, with recovery periods, and with both wells pumping at maximum we could pump at that time, each time proceeding and ending the cycle with recovery periods to monitor the impacts on the river.

As a result of studies, we were able to measure the fluxes going in and out of the river from our piezometer. We were able to correlate inflow reduction of .04 to 0.34 per each one CFS pumped as our maximum flow of impact.

Moving on to slide 11.

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MR. HORTON: The combined pumping at -- I just said that.

Correlate to that flow reduction, we estimate 0.5 inch max calculated surface water impact. At the one location, the P2-L at the end of our zone of influence area. For comparison, the daily ET demands, normal impact on water level is approximately 1.2 inches.

The reason we see these difference in impacts between the surface water and the groundwater system is the colmation zone, which is shown here in brown, which significantly retards transfer of flow from the river to the aquifer.

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MR. HORTON: My second key summary statement is that El Sur Ranch irrigation pumping has a theoretical maximum zone of influence in groundwater of 1,000 feet actual measured impacts do not extend this far.

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MR. HORTON: Slide 13, I've excerpted the picture from my animation. And on this slide, the dashed line represents the calculated theoretical zone of influence at 1,000 feet radius from the new well. In actuality, we haven't measured any groundwater drawdown at P5-L to pass this or at P4-UL below this, nor have we measured any surface water level drawdowns at any place in the river, including our most maximum impact area of P2-L. So clarifying that the thousand feet is a maximum theoretical zone of influence.

Thirdly is that El Sur Ranch pumping we weren't able to correlate it to significantly impacting river water quality.

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MR. HORTON: I'm now on slide 15 showing a temperature profile of the river taken in 2004 from the Andrew Molera State parking lot to the ocean with color-coded by the river temperature. See, the green is all the way down to the area marked by the zone of influence wherever the water is shown in dark blues. That's cold water demonstrating groundwater inflow. That's a corollary as well as for low-dissolved oxygen entering the water along with the cold of the groundwater.

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MR. HORTON: Zooming in on that in slide 16, the cooling effect of in-flowing groundwater and the low-dissolved oxygen that comes along with it is evident in all three of our study years and defines the gain stream part of the river. Above this blue zone in the turn of the river, it's a neutral. And measurements above that show losing ground surface water to groundwater.

Couldn't find any significant impacts to temperature in the river.

My colleague here, Dr. Hanson, did a very detailed statistical analysis that concluded that a possible temperature impact of less than 0.3 degrees C occurred in the late 2007 pumping season and we were pumping both wells at five CFS.

Put that comparison, the daily fluctuation of that zone naturally is three degrees C. And the natural variation just across the area shown in that picture is because of the groundwater inflow is six degrees Celsius.

With respect to dissolved oxygen in the river, we document dissolved oxygen changes as a result of the groundwater inflows. And during our maximum pumping impact in 2007, where we did take 1.2 CFS of flow out of the river, we documented a slight decrease in dissolved oxygen at P2-L. The reason for that is, one, the low DO that's coming into the river above combined with the dynamics of the river channel and at that time as well the reduction in flows.

Throughout the years and especially the study focused in 2004, studies of the water quality in the lagoon have been able to detect no impacts correlated to pumping, including salinity. We have monitored salinity conditions in the lagoon directly related to wave over-wash, directly into the lower end of the lagoon that are very brief in occurrence and extend.

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MR. HORTON: Moving on fourthly, El Sur Ranch irrigation pumping is minimal compared to total watershed discharge moving past the wells.

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MR. HORTON: Slide 18 shows the watershed outline on the topographic map, upper watershed in blue, lower watershed in brown. And the study area watershed, sub-watershed in purple.

We did a water balance on all three watersheds, calculated 85,455 acre feet per year on average flows out the mouth of the Big Sur River, combined surface flow and underflow or subterranean flow.

Of that amount, El Sur Ranch pumps on average less than 1.1 percent.

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MR. HORTON: Slide 19 shows the geology of the river as the river approaches the ocean. The El Sur Ranch wells in the alluvium in yellow are 1350 feet from the new well to the ocean. This water -- this less than 1.1 percent of the flow is being captured literally in its last hours before it hits the ocean.

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MR. HORTON: Fifth, and finally, the El Sur Ranch irrigation pumping impact to the aquifer water levels are temporary and local. Aquifer overdraft is not occurring and based on water use history and requirements for El Sur Ranch is not an issue for the future.

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MR. HORTON: Slide 21 shows cross-sections of the geology at the mouth of the river. The lower cross section here goes from the mouth of the river up through the wells. Vertical line shows the Navy well, the new well, and the river on the far right. You see dimension of the aquifer as it approaches the ocean. And we are literally capturing this water in the last minute. The yellow alluvium is very high conductivity aquifer material recharged by the entire watershed with a steady inflow from up above.

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MR. HORTON: The high activity of aquifer in Slide 22 is shown here in these drawdown graphs across a pumping season. In this case, it's 2006, and a monitoring well near to the new well between the new well and the river.

This graph demonstrates aquifer drawdown is 90 percent of the drawdown in 24 hours stabilized in four days the drawdown impacts. And recoveries also mimic the drawdown and recovery and not more than four days.

This condition was monitored in all four of our study seasons and data we have, not just a one-time period, and establishes the very local responsiveness of the aquifer to the pumping impacts that occur.

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MR. HORTON: And then so finally with respect to the question of aquifer depletion due to pumping, we have aquifer water levels around pumping wells since 2004.

The area in blue, the average water levels in 2004 prior to any pumping at all, had occurred that season. With the river flowing at 50 CFS, we have an average groundwater elevation of 5.85 feet.

Following 2007, the critically dry year with our pumping occurring in October, the same wells, same average groundwater elevation 5.89 feet. This really demonstrates the nature of the watershed and the aquifer and its very local and temporary effect of pumping.

MS. GOLDSMITH: Thank you.

BOARD CHAIRPERSON HOPPIN: Ms. Goldsmith, what slide number was that last one?

MS. GOLDSMITH: The last one I believe is 27.

MR. HORTON: Slide 23.

MS. GOLDSMITH: I'd like to have these slides marked as an Exhibit ESR-37. I believe they've been handed out.

(Whereupon the above-referenced document was marked for identification as Exhibit 37.)

BOARD MEMBER MAHANEY: Also I have one clarification about ESR 36, which is the DFG Exhibit C-4 with the color overlay. It came up with a second page that's marked as ESR 27, which didn't match the ESR 27.

MS. GOLDSMITH: That's correct. Actually, it's from there and we will get to that.

BOARD MEMBER MAHANEY: Okay. So just to clarify, this ESR --

MS. GOLDSMITH: ESR 36 is a single page.

BOARD MEMBER MAHANEY: Thank you.

MR. HORTON: Thanks for listening.

MS. GOLDSMITH: Perhaps we could mark that second page as ESR A.

BOARD MEMBER MAHANEY: This is --

MS. GOLDSMITH: That's an exceedance chart from the Jones and Stokes report.

BOARD MEMBER MAHANEY: Right. It says at the bottom Figure 6 enhanced, page 116.

(Whereupon the above-referenced document was marked for identification as Exhibit 38.)

MS. GOLDSMITH: So ESR 37 would be the -- it's 12:15. Do you want to go to the next one?

HEARING OFFICER DODUC: How long do you anticipate requiring for your next witness?

MS. GOLDSMITH: Twenty minutes.

HEARING OFFICER DODUC: Let's do that and then take a lunch break after.

MS. GOLDSMITH: Chuck, did you have any handouts that I need to hand out?

MR. HANSON: No. I do have a PowerPoint.

MS. GOLDSMITH: Are we ready, Mr. Lindsay?

If you hear a beep, it's my timer. And this thing turns itself off. There is a red button or there's a little button at the top that will light it up. And then to open up the things so you and see, just drag your finger down. All right.

MS. GOLDSMITH: Mr. Hanson, Dr. Hanson --

MR. HANSON: This is not the right Power Point.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Which one?

MR. HANSON: One dated 6-15.

MR. HANSON: Thank you.

(Thereupon an overhead presentation was presented as follows.)

DIRECT EXAMINATION

BY MS. GOLDSMITH:

Q Dr. Hanson, would you please state your name and address and tell us your relationship to this proceeding?

A My name is Charles Hanson, H-a-n-s-o-n. I'm a principal biologist with Hanson Environmental, located at 132 Cottage Lane, Walnut Creek, California.

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MR. HANSON: My background, I have 35 years of experience in conducting fisheries investigations in

California. I've made numerous presentations to the State Water Resources Control Board with respect to fisheries issues. I'm a certified fisheries scientist as well as a member of the U.S. Fish and Wildlife Service Native Delta Fishery Recovery Team and the National Fisheries Salmonid Recovery Teams. I've conducted a number of studies on salmonids in Central California as well as the central coast.

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MR. HANSON: The purpose of the studies that I was asked to undertake were to determine whether or not the El Sur Ranch well operations resulted in changes in the lower Big Sur River and the lagoon that would adversely impact habitat for juvenile steelhead rearing during the summer and fall.

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MR. HANSON: And to address that, I identified four key questions that were the focus of our studies.

The first is: Was there a significant reduction in in-stream flows within the river or the lagoon as a result of El Sur Ranch well operations that would impact steelhead passage?

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MR. HANSON: The second key question was: Were dissolved oxygen concentrations electrical conductivity, which is a measure of salinity, and water temperatures altered to a level that would be stressful or unsuitable as habitat for juvenile steelhead rearing as a function of well operations?

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MR. HANSON: Was there water quality stratification within the lagoon associated with well operations that would adversely affect habitat conditions within the lagoon for juvenile steelhead rearing?

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MR. HANSON: And finally, were juvenile steelhead observed rearing in the lower river and lagoon? If so, what was their abundance, their size distribution, and geographic distribution with respect to habitat characteristics and the location of the El Sur Ranch irrigation wells.

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MR. HANSON: The results of our studies are documented in four separate reports, the first three of which document results for each of the three years of investigation. And there are parallel reports by SGI that document the hydrogeology and the other physical measurements that were made. The fourth report is a synthesis discussing the lagoon of the Big Sur River.

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MR. HANSON: To develop our studies, we looked at the life history and habitat requirements of steelhead. Steelhead, as you know, are an anadromous species that live a portion of their life cycle in the coastal marine waters and migrate seasonally into fresh water rivers such as Big Sur for spawning and juvenile rearing.

We looked at the seasonal timing of when the migration would be occurring, the habitat requirements that were needed to meet those life history requirements, and that served as part of the technical foundation and framework within which our studies were designed.

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MR. HANSON: This is a photograph of the Big Sur River Lagoon. These photographs were taken in 2004, which was a dry hydrologic year. This is looking downstream. You can see the outlet from the lagoon on the right-hand side of the photograph and the coastal marine waters near the top of the photograph.

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MR. HANSON: This is a photograph of one of our biologists making measurements in the outlet canal from the lagoon to the coastal marine waters.

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MR. HANSON: This is a photograph showing the lagoon looking upstream towards the more riverine section of the Big Sur River.

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MR. HANSON: This is the riverine section. And we'll talk about groundwater upwelling. Mr. Horton's already mentioned that. This is the area adjacent to Creamery Meadow where the groundwater upwelling was observed.

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MR. HANSON: This is the habitat, the substrate, the riparian community in the river located at the upper bound of our study reach, which was about a mile upstream from the ocean near the Andrew Molera State Park parking lot.

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MR. HANSON: We conducted studies in the late summer and fall of three years. 2004 was classified as a dry year. The flows in August and September were typically in the range around 12 CFS as measured at the USGS gauging station. And all the flows I refer to will be in reference to the gauging station.

The flows in 2006, which was considered to be a wet year range, from roughly 20 to 30 CFS in August and September. And the flows in 2007, which was considered to be a critically dry year, were in the range from seven to eight CFS. So we had a range of hydrologic conditions that we could take advantage of.

As Mr. Horton pointed out, in 2004, we established 21 different monitoring locations within this mile reach that extended physically from the sand bar at the mouth of the lagoon all the way up to the parking lot. And the purpose of that was more reconnaissance. We wanted to understand under dry hydrologic conditions what were the habitat functions and the habitat characteristics within the entire reach. We used that data in 2004. We used the hydrogeologic data that Mr. Horton described, and as we moved forward with our studies --

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MR. HANSON: -- in 2007, we concentrated our study effort on that reach of the river where the expectation of any effects of the wells were greatest.

So we wanted to maximize our ability to detect effects of the wells, should they occur, under the critically dry conditions that occurred in 2007.

And that's shown in this figure, which -- I apologize -- is slide number 17 in my Power Point.

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MR. HANSON: Slide number 18 shows typical data that were collected. This is water temperature. Was measured at half-hour 15 minute intervals at various locations throughout the river. This provided this information on key habitat parameters.

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MR. HANSON: This is another depiction of how we analyzed that water temperature data. And what this shows is not only the temperature data that were analyzed, but it also shows how the pumps, the irrigation well pumps manipulated during the period of our study with periods of a week when the wells were off, followed by a week when the wells were both on, followed by a week, for example, when the new wells were on, and then both wells off and the old well on, so that we could actually physically manipulate the well operations while we were collecting our data to enhance our opportunity of detecting effect of the well operations on these habitat parameters.

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MR. HANSON: This is slide 19.

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MR. HANSON: Slide 20 is similar data. This is dissolved oxygen, a very important parameter for habitat suitability for steelhead. I want to illustrate in this particular case what we saw on our second measurement was a decrease in dissolved oxygen. This is at Transect 5. This was during a period when the new well was operating. But importantly, this physical measurement that we were making of habitat conditions followed immediately after the Labor Day weekend. And what we found was that there was a high change in the water demands associated with the State Parks.

So all of our analyses not only looked at whether the wells were on or off, but they also needed by necessity to look at the flows and other parameters that were effected throughout the course of our study to help us identify the confounding factors that were occurring during the period of our study. This is slide number 20.

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MR. HANSON: Slide number 21 shows electrical conductivity as an example. This is a measure of salinity. This was taken down at Transect 1 in 2007. This is down in the lagoon reach.

And what you can see is that during the early part of our study, the salinity was very, very low and consistent. And then in one survey, we had a marked spike in salinity that then dropped back down. What occurred during this period of the spike as we had wave over topping. The waves were coming over the top of the sand bar. The saltwater was coming into the lagoon, and that was effecting our salinity.

What we found as soon as that storm event and that wave overtopping stopped, we then saw a resumption of the low salinities as that saltwater was flushed from the lagoon. So it was a type of dynamics that we were looking at in terms of our measurements. That was slide 21.

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MR. HANSON: On slide 22, you can see the corresponding salinities measured immediately upstream of the lagoon. And here you don't see any evidence at all of that wave overtopping. So we had to take into account not only the spatial scale, but the temporal scale and whether the wells were on or off as part of our experimental design for evaluating the effects on fishery habitat.

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MR. HANSON: In terms of our results -- and this is slide 23 -- what we found were water temperatures, electrical conductivity, and dissolved oxygen in the river and the lagoon were suitable for juvenile steelhead rearing during all three years of our study, with the exception that we did observe in low flow years -- and the 2007 critically low flow year -- a groundwater upwelling in the vicinity of Creamery Meadow that resulted in reduced dissolved oxygen and reduced water temperature in a very localized area. That was a naturally occurring phenomenon, but we did observe it and have reported it as part of our results.

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MR. HANSON: That was slide number 23.

Slide number 24 shows the results of the statistical analyses that Mr. Horton described from our 2007 data. We did analyses for all the various habitat parameters each of the years. The only year that we detected any statistically significant effect was in the critically dry year of 2007. We had over 26,000 measurements of water temperature in the river at our different locations in that year, and we were able to statistically detect a 0.3 degree Centigrade increase in water temperature at two out of our eleven sites when the wells were on.

That water temperature increase was within the range of natural variation that occurs in the river. And it's not expected that that would have any adverse effect on the environmental cues of a habitat quality. But it was an effect that we actually determined and documented. That's slide 24.

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MR. HANSON: In slide 25, we observed surface water conductivity. There have been concerns early about the effects of the well in actually de-watering reaches of the river. In none of the three years of our examination, including the critically dry year, did we see any evidence of channel de-watering with the exception of the naturally occurring period in 2004 and 2007 when the sand bar formed at the mouth of the lagoon, a naturally occurring process that did obstruct passage and conductivity between the river and the coastal marine waters. That's slide 25.

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MR. HANSON: In slide 26, we found that water quality and habitat conditions within the lagoon, an important rearing habitat as referenced by the National Marine Fisheries Service and acknowledged by fisheries biologists, were considered to be good in all three years of our investigation. There was no indication of vertical stratification in water quality parameters that would adversely effect habitat conditions for steelhead. We didn't see any evidence of depressed dissolved oxygen or anoxic types of conditions that have been observed in other coastal estuaries that have extended and prolonged closure of the lagoon.

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MR. HANSON: In slide 27, we did observe the naturally occurring critically dry flows, such as the ones that we observed in 2007, in combination with short periods of high local demand, that occurred coincident in this case with the Labor Day weekend, had a major impact on the in-stream flows and the conditions for juvenile steelhead passage in the lower river.

Well operations under those critically dry low flow conditions did contribute a small incremental reduction inflow and passage in the lower most river. But when we take --

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MR. HANSON: -- into the account the natural variation in the flows and the flows coming into the study area, we found that there was no statistically significant effect that could be detected between well operations and water depths that would affect steelhead passage.

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MR. HANSON: And that's in response to the kind of measurements that Mr. Horton reported where surface elevation in the area most affected by the wells changed by 0.3 to 0.4 feet or less. And under very low flow conditions, that would have an incremental effect on water depths and presumably steelhead passage. But it's not detectable in the kind of field measurements that we were making. And it would have very small effect in terms of the change in water depths or the habitat available to steelhead.

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MR. HANSON: Based on all the various results of our collections, and this is in slide number 30, we found that in-stream flows for adult steelhead passage -- and for this we assume a 0.7 foot depth criteria as adopted by the State Board in the north coast policy, the flows that met that criteria were estimated to be in the range of 28 to 30 CFS. That occurs during the winter period when adult steelhead are migrating upstream or the kelts are migrating downstream. During the summer period when juveniles are rearing, we used the 0.3 foot depth criteria and that was met at flows between 8 and 10 CFS.

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MR. HANSON: In slide 31, we did observe that in 2004, 2006, 2007, the in-stream flows provided physical habitat that was suitable in the lower river and lagoon to support juvenile steelhead rearing.

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MR. HANSON: And we conducted snorkel surveys to actually document the geographic occurrence and abundance of steelhead in the mile of river from the lagoon to the State Park parking lot in 2004 and again in 2007. This is figure number 32.

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MR. HANSON: And slide number 33 is just an illustration of our diver that you can see under the riparian canopy snorkeling the river and making observations of steelhead, where they occurred, their size, and their relative abundance.

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MR. HANSON: And what we found was that the majority of steelhead, as reported in slide number 34, reared in the lagoon. We found that the juveniles were in good health. They had good condition. The summer growth rates and summer survival estimates -- and this is all based on our observations in the dry year condition of 2004 were good. And that the steelhead showed evidence of going through the physiological transportation of smolting that allows them to migrate from fresh water to coastal marine waters. We observed that both during our 2004 as well as our 2007 studies.

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MR. HANSON: This is just an example of the length frequency data that was observed and collected by the divers; in this case, observations in 2004 in July and again in October. And from this, we were able to estimate the growth rate for juvenile steelhead inhabiting the lower river in the dry conditions of 2004 over the summer. This is Figure 35.

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MR. HANSON: In Figure 36, we have compared the growth rates that were estimated from our study in 2004, which are shown in the fourth line down. Our estimated growth between July and October was 0.48 millimeters per day. That compares very favorably. In fact, it was the fourth highest among all these various rivers and streams that were available in the literature.

In terms of the growth rates, you see that it's towards the top of all these various coastal river streams and substantially greater growth than has been observed in many other systems. That suggestion is consistent with the idea that the lower Big Sur River habitat is suitable for steelhead, provides good summer conditions for their growth and survival. We have adequate food to support growth, and it's also supported by the observation that many of these steelhead achieve a sufficient size at age one to physiologically go through the smolting process and emigrate from the river to the coastal marine waters.

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MR. HANSON: This is slide number 37. This was taken from the National Marine Fisheries Service south central steelhead recovery planning effort. The important thing to note here is what NMFS did here is they went through and classified various stressors that are affecting steelhead habitat up and down the central coast.

The Big Sur River is shown as the fifth column over, titled "Big Sur River." And they classified not only the stressors, but their importance. And what you can see is among the stressors identified on the Big Sur River, the only two that ranked as even moderate threat were natural barriers to passage. And we do have a natural barrier that occurs in the gorge about eight miles up from the lagoon that limits the upstream reach of anadromy for steelhead and limits the area where steelhead could spawn or rear in the Big Sur River, as well as recreational facilities such as those associated with the State Park.

That was slide number 37.

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MR. HANSON: And finally, our conclusions in slide number 38 are that habitat conditions for steelhead in the lower river in the lagoon are in good condition as evidenced by all three years of our studies in 2004, 2006, 2007, including the critically dry year.

Habitat conditions in the lower river and lagoon supports steelhead rearing and passage.

Steelhead were observed to be in good condition, had good summer survival and growth rates as evidenced by our observations during the summer and fall of 2004, a dry year. And that they reached the sufficient size to emigrate at age one, another indicator of good conditions and good growth rates in the river.

We found that under moderate flows, the dry and normal years of 2004 and 2006, that there were no adverse effects on steelhead habitat associated with El Sur Ranch well operations that were detected through our studies. In 2007, the critically dry year, we did identify de minimis effects that were incremental to other effects such as natural hydrology as well as upstream demand within the State Parks that do affect the river system and do have an incremental affect on steelhead habitat in the lower river and extending down into the lagoon.

HEARING OFFICER DODUC: Thank you.

Ms. Goldsmith, did you wish to submit the Power Point?

MS. GOLDSMITH: What I'd like to do is identify the Power Point as an exhibit and I think it would be ESR 38.

HEARING OFFICER DODUC: That would be 39.

MS. GOLDSMITH: It would be 39.

HEARING OFFICER DODUC: 38 is your -- whatever.

MS. GOLDSMITH: Thank you. Yes. Thank you.

(Whereupon, the above-referenced document was marked for identification by the Hearing Officer.)

HEARING OFFICER DODUC: All right. With that, then we will take a 30-minute lunch break and reconvene at ten after 1:00.

(Whereupon a recess was taken.)

AFTERNOON SESSION

01:14 PM

HEARING OFFICER DODUC: Let's get back on the record.

And before Ms. Goldsmith continues, two items.

One is let the record show we've now been joined by Assistant Chief Counsel Andrew Sawyer who's sitting in for Erin Mahaney.

And secondly earlier this morning, Mr. Lindsay had a question for the CEQA consultants who I do not see in the room -- there they are way in the back -- with respect to the map. Have you had an opportunity to reflect on that question and provide us with some of the information?

BOARD CHAIRPERSON HOPPIN: This is not coming off your time.

MS. GOLDSMITH: Good.

MR. HANSON: We have looked at the map, and the map that is presented in the draft EIR and the final EIR represent the area that we looked at in terms of potential impacts related to direct irrigation and indirect irrigation related to Swiss Canyon.

The area in the upper left-hand corner was not part of our biological survey or the investigation because our assumption was that that area was not going to be directly irrigated by the proposed project and the water right that was being applied for.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: One follow-on question. So if that area -- your analysis assumed it was not going to be directly irrigated, if the water drained off into that area, as a result of the project operations, do you -- that would not change the impacts of the project?

MR. HANSON: Our main concern would be if, indeed, there are facilities proposed to irrigate that area as identified in the project description presented in the EIR. We assumed that no new facilities would be done.

So yes, we don't anticipate that there will be any significant change in existing operations if, indeed, they aren't planning on putting in new facilities for that corner.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you.

MS. GOLDSMITH: Madam Chair, can I make a comment as well on the subject?

The application calls for irrigation of, I believe at this point, 267 net irrigated acres out of the gross use of 292. The upper triangle is within the gross, but it could not be irrigated unless irrigation was subtracted from some other part of the irrigated land.

And, of course, it has no facilities to irrigate at the present.

HEARING OFFICER DODUC: Thank you for the clarification.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: To be absolutely clear on the record, we're talking again about Section 8 southwest corner of the northeast and the northwest corner of the southeast corner. Thank you.

MS. GOLDSMITH: I'd next like to --

HEARING OFFICER DODUC: Yes, that's all we need CEQA consultants for. So you may leave. Thank you.

And with that, Ms. Goldsmith we'll return to you for continuation of your case-in-chief.

MS. GOLDSMITH: Thank you.

HEARING OFFICER DODUC: I know there were some technical difficulty with getting the PowerPoints, but we'll just add a few more minutes to your case-in-chief should we need it.

MS. GOLDSMITH: I'm hoping we'll be able to meet your difficult standards.

I'd like to call Dr. Orrin Sage.

DR. SAGE: Good morning.

MS. GOLDSMITH: Dr. Sage -- and Mr. Lindsay, have you got his slides? Great.

DIRECT EXAMINATION

BY MS. GOLDSMITH:
Q Please state your name and address.
A My name is Orrin, O-r-r-i-n. Sage, S-a-g-e. My address is 1396 Danielson, D-a-n-i-e-l-s-o-n, Road, Santa Barbara, California, 93108.
Q Is Exhibit ESR-26 an accurate statement of your testimony?
A It is.
Q What was your assignment with respect to the Water Right Application 30166?
A My assignment was to assess the cattle grazing operation of the El Sur Ranch with particular emphasis on the irrigated pasture land.
Q Would you please summarize for us your educational background and the experience you brought to this assignment?
A Yes. I have a Bachelors degree, a Masters degree, Ph.D. degree in geological science from the University of California at Santa Barbara. I have been preparing agricultural studies in California and western Nevada for approximately the last 40 years. The land area covers about three million acres. And my experience within the south and central coast of California involves detailed studies on approximately 170 to 180,000 acres.
Q What factual investigation did you undertake in

completing your assignment?

A This started in April, so I've not been involved nearly as long as some of the other team members. But my work, first of all, involved reviewing some of the testimony that you heard today already from the team. It also involved reading some recently published statement material and doing site assignment, meeting Mr. Hill, who escorted myself around the ranch. And I might add that during the site assessment, all of my questions were answered freely and no area that I wanted to see was withheld from my observations. I then went back to the office and brought up the submittal that you received.

MS. GOLDSMITH: I would note the slide projection is not the correct one.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Just need to tell me. Forward? Backwards? What?

MS. GOLDSMITH: Well, the one that should have some photographs at the beginning.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I'm showing the slides you all gave me to load.

MS. GOLDSMITH: That's the right one. No.

BY MS. GOLDSMITH:

Q Dr. Sage, you wouldn't happen to have a memory stick on you?

A No, I do not.

Q Do you have your testimony in front of you?
A I do.
Q Do the Board members have their testimony? Okay. We're going to have do it with you describing the photographs that are apparently not -- what were the climatic conditions when you visited the ranch?
A The climatic conditions temperature was in the upper 50s. It was sunny. And through the entire day, I was there, there was a persistent north/north westerly wind blowing.
Q After looking at the El Sur pasture, do you have an opinion concerning whether or not the irrigated pasture can be considered irrigated cropland?
A The irrigated pasture is definitely irrigated cropland.
Q Cultivated cropland is the term.
A Right. It is definitely cultivated, because if you look at the non-cultivated ranch land that is adjacent to the irrigated pasture, the forage composition of the plants growing there is much different than on the irrigated pasture.
Also, the irrigated pasture has certain cultural practices associated with it that would also indicate that it's cultivated. This includes things like fertilization of it, the weed control, also re-seed and re-planting.

Any restoration that is done periodically is needed. And probably one of the more important features is that this was grazed by cattle in a rotation schedule that again is important as a cultural management practice for cultivating irrigated pasture land.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I have in front of us his written testimony that was on the web, so you can direct me through that.

MS. GOLDSMITH: Paragraph two I believe is the one you wanted to see first.

DR. SAGE: Paragraph two is fine.

BY MS. GOLDSMITH:

Q I take it in photograph two what you've pointed out is the vegetation that is across the fence from the irrigated pasture is strikingly different?

A Yes, it is.

Q And it has different species or --

A Right. Well, to orient you with the photo, this is taken from a photo location that over the years I have monitored on my own.

One of my qualifications is that I taught California agriculture and environmental impact analysis at UCSB in the environmental studies program and used this in the California agriculture class as a very good example of grazing management, which you see on the right of the brush line that is in the middle left of the photo. And then on the left side what happens without managed cattle grazing where you have the brush land encroachment on grassland.

The land in the foreground on the photo is non-irrigated range land. And that has a much different forage composition that the land to the west of Highway 1 that you see going diagonally across the middle part of the photo.

Q After visiting the ranch and observing the conditions, did you develop an opinion concerning the applicant's management of this irrigated pasture?

A Yes.

Q And what was the opinion?

A The opinion was that it's very well managed. The irrigation is crucial to the survivability of the pasture. The amount of irrigation water utilized on creates a very good forage composition and very good production.

Q And did you see much evidence of invasive weeds?

A There were very small areas of what we call milk thistle. And Mr. Hill indicated that that is actively managed with spot herbicide treatment. And they don't spray the entire area like you might have to with other crops. It's only by spot application.

Q Now based on your education and your experience, your

site investigation, and your familiarity with central coast range land, were you able to form an opinion concerning the appropriateness of the border flood irrigation method that's used by El Sur Ranch?
A I did.
Q What is your opinion?
A The opinion is that the Boarder Flood Irrigation for the climatic area that the ranch is located in is the only feasible type of irrigation you could use.
Q Why would other forms -- what other forms are there that would be less feasible?
A Well, the other form for irrigated pasture land that may be used in other areas is sprinkler irrigation. This could be done by high pressure cannons, water cannons water booms. Could also be done with fixed wheel lines moved across a pasture area, or it might be by hand set lines which are moved manually.
Q Were there other photographs you wanted to put up? I think six was one of them, but I don't know where you wanted to site.
A Yeah. Three page down, photo number six -- back up to number six. And this photo -- this would be the second exhibit or second photo, this just shows the condition of the irrigated pasture in April. You have good continuous ground cover. The pasture is somewhat short in terms of

the amount of growth on it. This was, best way I can describe it, a strange year. We had good early rains and then things just petered out. And the pasture reflects that. And I think this was prior to irrigation.
Q Did you review the irrigation demand estimate that was calculated by Dr. Allen and NRC?
A I did.
Q In your judgment and experience, was the water duty that he estimated a reasonable amount for coastal pasture such as El Sur Ranch?
A For irrigated pasture land, usually the average water duty factor or range of water application is somewhere between four and five acre feet per acre per season. And I think Mr. Allen estimated 4.4 acre feet, which is commensurate with my knowledge.
Q Did you develop an opinion concerning the carrying capacity of the pastures for the cow/calf operation?
A I did.
Q What was that?
A The irrigated pasture has a carrying capacity of approximately one animal unit per acre per year. And for non-irrigated range land, the carrying capacity for the -- let's say if the 246 acres of irrigated land was not irrigated and converted to range land, that would have a carrying capacity of about 35 animal units. So it's 35

versus about 240 to 50.
Q About an 85 percent reduction?
A Yes.
Q Now, you took a look at the soils that were on the ranch. And your written testimony talks about the importance of those soils. Would you explain that briefly?
A The soils have been classified a number of different ways in terms of their farmability and the ability to grow crops. Part of the soils on the El Sur Ranch irrigated pasture land are prime soils, meaning they have very few limitations to use.

There are other definitions also of cropland that take into account soil conditions. The one that is used most commonly in California is the Department of Conservation Important Farmlands Mapping Program classification, which you may be aware of. And that program since the inception -- the first maps were published in 1986. And the El Sur irrigated pasture cropland was listed as "prime" and "of statewide importance." And this takes into account the fact that the land has to be irrigated and it has all the other factors of being able to produce at high yield crops such as irrigated pasture.

MS. GOLDMAN: Now Mr. Lindsay, can you go back to the incorrect slide show?

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BY MS. GOLDSMITH:

Q Can you explain this slide to us?

A Yes, I can. I guess probably the easiest thing is to divide the slide in half with that vertical line down the middle. And on the left, it represents one year and on the right it represents conditions in another year.

The left axis shows the percent protein that exists within non-irrigated range land. The lower axis going from left to right shows the months JFM, January, February, March, and the graph itself shows the stages of maturity versus protein content.

So, for example, if you look at January, the grasses contained a protein content of 20 percent. As a particular year progresses, you see the line falls fairly precipitously and bottoms out sometime in September, October, November, maybe even December, depending on if you have late rains, which result in a dry fall or the spring growing season if you have a really dry situation on the right side.

Now, if you look at the black squares, that indicates the necessary protein for a cow at various stages of its maturity and breeding cycle, the calving cycle, et cetera. So you can see protein content at ten percent. There's plenty of protein usually in January, February. In March, April, the calves are weaned. The cow needs less protein.

Then as the animal moves through the yearly cycle, it's bred. It's lactated. It gives birth to a calf. The protein requirements go up.

But guess what? From the slide, the protein availability from the non-irrigated pasture goes down. So within that center part there, you can see there is a number of months where there is a lack of protein availability for the animals. And this is why Mr. Hill's irrigated pasture is so valuable to his operation. And it's a somewhat unique situation that he's able to do this. And it creates a very well managed property, very good for animals, animal health. It's a haven for calving. It gives protection from predators. It reduces the animal stress. It improves weight gain. And it's a very enviable position to have it on a ranch.

Q Now I'd like Mr. Lindsay to put up ESR-36. It's this one.

Now looking at ESR-36, which I'll describe to you, the green -- it is the depiction of when Mr. Hill could irrigate if the Department of Fish and Game's recommendations for flow bypass were adopted. And he would be able to irrigate any time when the color is green, and he would not be irrigate any time when it's brown.

Now, looking at that slide, if the El Sur Ranch were able to only irrigate in the green portion, is it your opinion the El Sur Ranch could continue in operation?
A It is my opinion that it would be very difficult.
Q What changes would need to be made, if any, in order to allow the ranch to continue to irrigate or to operate?
A Well, first of all, the brown versus the green there, would concern April/May when if you don't irrigate and get the grass growing, as the temperatures increase, you're going to have a shorter grass.

If you move into June, July, August -- or July, August, September, et cetera, you'll have very little production. And what that will do will basically turn the pasture into the weed patch. And probably the limited amount of irrigation, the water will not even reach through the midpoint of the fields. It's only going to be irrigated in the upper part. Cattle are going to then concentrate in that area, creating lower grazing and erosion, weed problems, dust, things like that.
Q Now you did -- well, let's take this time to look at the one next one, which I'd like introduced as ESR --

HEARING OFFICER DODUC: Actually, we had designated it as 38 earlier.

MS. GOLDSMITH: Thirty-eight. Thank you very much.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I can't tell which one you all are talking about.

MS. GOLDSMITH: It's the one following the green and yellow death slide.

BY MS. GOLDSMITH:

Q This is the table that was taken from the Jones and Stokes report, a hydrogeology report, of the river that was done in 1999. And I've taken the liberty of putting a red horizontal line approximately -- I think I've got it at the 30 CFS mark. It should be, as I understand, Fish and Game's proposal 29 percent mark.

And then I have drawn vertical lines at the points at which the exceedance curves cross that line. And for June, it would be around 55, 56, 57 percent of the time. For July, it would be about 30 percent of the time. For August -- for August, it would be 30 percent of the time. For July, it would be 10 percent of the time. And for June, it would be five percent of the time.

Is that consistent with the statements in your conclusions based on ESR-30?

A It appears to be, yes.

Q Thank you. Now, you did some investigation into the cost of alternate feeding. Can you explain what you found?

A I was asked to take a look and evaluate what effects feeding with hay would have on the ranch. And my conclusions are that you'd have some real severe impacts or issues both economically, operationally, and also environmentally if you were to transform the 246 acres of cultivated irrigated pasture into just feeding hay.

And first of all, the economic effect, the cost for Mr. Hill to feed the requisite amount of hay to his 450 cows would be at least 160 to over $320,000 per season. And this goes back to the table that you saw earlier where we could look at the protein deficiencies, and there is a five- to seven-month period where that irrigated pasture provides necessary protein.

In order to substitute for that requirement, you would need to feed some type of a supplement or hay. And this would be done most effectively from a labor cost in that irrigated pasture area. Probably the conservation easement would preclude this because of the impact. You basically would be creating the feed lot, dry lot position along I think maybe 2,000 feet of Highway 1. And picture driving into the gateway of Big Sur, and you would be looking on your right towards the ocean. And you would have 2,000-foot-long feeding facility and hay storage. And you would have the necessary dust, the mud, the odors, the manure concentrations, the bare ground, the runoff, all of these that are environmental effects, operationally, this would be completely different than what Mr. Hill's family has been practicing on that ranch since their ownership began because of the cow/calf operation and using range land that the conservation easement talks about precluding erosion on, historical use of that ranch, and all this would basically go out the window.

MS. GOLDSMITH: Thank you very much. I have no further questions of you.

The next witness that I'd like to offer is Dr. Allen of NRCE, Natural Resources Consulting Engineers.

DIRECT EXAMINATION

BY MS. GOLDSMITH:

Q And good afternoon. Tell us your name, your address, and what you were asked to do and how you did it and what you found.

A Okay. Thank you. I'm Dr. Neil Allen. I work for Natural Resources Consulting Engineers in Fort Collins, Colorado.

Q Is there a slide?

A There is a slide presentation. It was in that folder that was up last.

So I was asked by the applicant, Mr. Hill, to review the irrigation requirements of the irrigated pasture on the El Sur Ranch, and also to evaluate issues of erosion that could be associated with that irrigation.

And just a little bit about my background. I grew up on an irrigated farm and had surface irrigated pasture and sprinkler irrigation for field crops. And I received my Bachelors of Science and Masters of Science from Utah State University in agriculture in irrigation engineering.

And then for several years, I designed and installed, sold irrigation systems, primarily sprinkler irrigation systems, and then went back to Utah State University as a faculty member. And there I was an irrigation specialist, one of the irrigation specialists for the State working with cooperative extension. And I also took some coursework then. And during that time went up to University of Idaho for a year and received my Ph.D. in civil engineering still focused on irrigation and drainage and water resources from the University of Idaho.

And since that time, I've worked with the University of Nevada for a short time, and then with the consulting firm here in Sacramento, both in engineering. And the last 14-and-a-half years, I've been with Natural Resource Consulting Engineers in Fort Collins. And all my work, all my career has dealt with irrigated agriculture and water rights.

So just briefly --

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Q By the way, the clock up there is the time you've got remaining.

A So this is just a picture of the irrigated pasture from near the bottom of the pasture towards the ocean looking up towards the San Lucia mountains and just a good illustration of the fencing of the pasture and the area. So my first visit to the ranch was in 2003, and so this was taken at that first visit.

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DR. ALLEN: To calculate irrigation needs, we want to consider the climate, crops. The management of those crops makes a big difference. You manage it for high production, and it uses more water than if you manage it a different way and control the pests and the weeds. And then also the irrigation system and the management of that irrigation system determines the efficiency of it and how much water you need for irrigation.

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DR. ALLEN: So the climate factors, I think we are all pretty familiar with these. But the temperature definitely impacts the crop evapotranspiration, which is evaporation from the soil surface and expiration by crops.

And then the wind is also an important factor. Solar radiation, that's the energy coming in from the sun. The humidity, also the drier the air, the greater the rate of evaporation. And then the rain is considered when we look at how much of the crop EP needs to be provided by the irrigation.

And so the method that I selected to use, which is the recommended method by the American Society of Civil Engineers, the Irrigation Drainage Division, also recommended by the Natural Resource Conservation Service. It's recommended by the United Nation's FAO, Food and Agriculture Administration. And it's the same method that is used by the State of California in the California Irrigation Management Information Systems. So it's the ideal method.

It's an energy-based method. It's found to be reliable in all climates, very transferable. And so it's been used for several decades now because we can get weather data that's required. And because of the limited historical weather data at the ranch, Mr. Hill installed two electronic weather stations similar to those operated by the State of California in their CIMIS system. One was located in a central location in the pasture. That location was in the intersection of pastures 3, 4, 5, and 6. And so that was right in the center of the pasture.

So the weather data, the climate data that that measured was actually the same climate data that grass would see and the other forages in the pasture.

So that gave us the best -- the ideal information to calculate crop water requirements using the FAO Penman-Monteith method. So that weather station was there for --

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DR. ALLEN: I'm going to slide five. That station was there from August 2004 to January 2007. So we have a little more than two years' data to work with. And that weather station, coupled with the one -- the second one that was by the old well but it recorded on an hourly basis, but the measurements were taken I believe on a ten-minute basis and then summarized and recorded in the tables. So we have daily weather data for that period of time with all the information we needed to calculate crop water requirements using the Penman-Monteith method. And of course that is a limited period of time.

So we looked at several other weather stations that were nearby. That included the Big Sur State Park weather station, which had data I think from maybe 20-plus years. And then we also looked at the Monterey National Weather Service Station, which had been up and running for a long period of time. We actually looked at data from

1949 through 2007 when we reviewed that. So we were able to correlate some of that data.

And luckily, we had some precipitation data that the ranch had kept track of over the years. So the precipitation was probably pretty important because there's more precipitation at El Sur Ranch monitor but much less than the Big Sur weather station, which is up in an area that you just tell by the vegetation all the large trees there is a big difference in precipitation. So particularly in that area, it was important to have that weather station, because in the coastal environment, things change quite rapidly.

And one thing we did find there is that it's very windy. The average wind during the year on a daily basis was in the 10 to 15 mile an hour range. That's the average for the entire day and night. But during each day, the maximums typically were in the 20 to 25 mile an hour range. So it's good weather to put a clothes line in I guess and dry your clothes. It's a lot of wind, and some of that wind coming across some very dry areas. And so we're able to calculate the ET. And we did that for an extended period of time

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DR. ALLEN: These are some of the results of that. This is crop ET using the standard methods we used crop coefficients that were obtained from the FAO publication 56, which is the same publication that was authored by several scientists from the State of California in putting together the crop coefficients. And we used a rotated pasture versus a heavily grazed because Mr. Hill rotates his cattle through the pasture. He gets good growth on the pasture for good production, and that uses more water than extensively grazed pasture.

So in my calculations, I wanted to look at what the potentials were of water use was for a good management and an optimal forage production. So that's where the 3.6 feet comes or 43.3 inches. And then the average annual calculated net irrigation requirement was approximately one foot less than that, at 31.01 inches. And I know that the precipitation is much greater than that 12 inches. But because of the climate there that nearly all the rain comes during the winter when the ETs are lower because of lower temperatures and less sunshine.

And so looking using the SCS method, the Soil Conservation Service method, to calculate effective precipitation, it averaged out to be approximately one foot of the 20-plus inches of irrigation. The rest of that precipitation comes at a time when it can't be stored in the soil moisture and can't be used by the crops. So it's either runoff or deep percolation. And there's a little bit of both that occurs mostly in winters. But there were months --

MS. GOLDSMITH: Ten minutes.

DR. ALLEN: There were times in all months when irrigation would have been required. I think in general there's not very much irrigation in the winter. But there are times through drought periods when the precipitation is less than a crop water requirement.

As a maximum value for the net irrigation requirement, it was slightly over three feet at 37.66 inches in a year.

And the next thing we needed to look at, now we've calculated the crop ET, so I'm on slide seven now. We need to look at the irrigation method and determine an efficiency. And so I did evaluate the existing irrigation method and found it to be very suitable for that pasture -- irrigated pasture, given the terrain, the slope, and also given the view shed it's a very --

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DR. ALLEN: -- good management of water with the pipelines and the valves and it's not distracting.

I looked at a couple of other irrigation methods the same as Dr. Sage. I looked at sprinkler irrigation systems. I actually designed a sprinkler irrigation system for that pasture, and it was approximately a half-million dollars to install. We'd need to replace all the pipeline. The pipeline that's there now is built for surface irrigation with lower heads, and the energy cost would approximately double. Now we're lifting the water to the high part of the pasture, maybe a hundred feet. We had to add another 50 PSI, which is another 120 feet ahead to that. So that's a big detriment to it also.

But the fields and the pasture is not rectangular, and that's what's most suitable for wheel lines, for example, that grow in rectangular back and forth. So without redoing the fences and the pasture, it wouldn't work very well.

I guess one of the biggest things is that the efficiency improvement would only be slight, if any, because with these 25-mile-an-hour-winds or 20-mile-an-hour-winds, the sprinkler systems, the water is blown all over so you lose your uniformity and you have high evaporation rates of water, at least the sprinklers. So it doesn't really help us much in reducing diversion requirements, but it is very expensive in my opinion. And it just doesn't fit in that nice coastal view area.

So the other system that I looked at was a drip irrigation system, but with the cattle there, it's kind of difficult. Same as with the wheel lines. The cattle like to rub on things, and wheel lines would get pushed around and they can blow around. They might end up in the park, in the ocean. I've had plenty of experiences go gathering up wheel lines. It's not a good place for wheel lines.

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DR. ALLEN: So just I think I've talked about most of this, but one thing that I needed to bring up is the leaching requirement. I think it's been mentioned a few times today that the old well is in a location that saltwater intrusion from the ocean reaches that well, particularly when the tide is high. So it has pressure to push that saltwater back. So he's limited his pumping from that well, which limits his irrigation. But even when he shuts it off, he puts some salts up in the pasture that need to be leached.

So I calculated a leaching requirement based on quite a bit of data where they measure that salinity on a daily basis. And I determined ten percent, but it's not something that's needed every year. But it's something that needs to be watched and managed so that we don't end up with too much salts in the soil which reduces the yield and stresses the pasture.

And so with that, I calculated diversion requirements.

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DR. ALLEN: I used a 65 percent irrigation efficiency. And this was based on a number of factors. But as has been explained this morning, the ranch manager and the ranch hands have a lot of duties, and this is just one of them. And so they changed the water twice a day and maybe check it a couple times during the day. But it's not a full-time irrigator. So that's one limitation.

Another limitation is that there's just the slope, the soils, and the flow rates. It has not a lot of flexibility with flow rates because the pumps are pretty much a fixed flow based on what elevation they're pumping at. And so the 65 percent I think is a good range. It is based on my judgment of what I think is practical. Surface irrigation can go from 50 up to 80 and maybe a little higher with very sophisticated water recovery systems. Sixty-five is what I chose.

And based on that, the average annual irrigation requirement for the 246 acres as directly irrigated is a 1,087 acre feet per year and the maximum annual irrigation diversion requirement that I've calculated for full production of the pasture is 1320. And the maximum monthly irrigation requirement is 203 acre feet.

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DR. ALLEN: And just to look at some of the variability year to year, this is the calculated irrigation diversion requirements based on 246 acres, ten percent leaching requirements, which would not necessarily be needed every year, and then the 65 percent irrigation efficiency.

So, you know, it's my opinion that Mr. Hill has done a good job with his irrigation. I've looked at a lot of aerial photos. I've been on the ranch several times. The system I think is very appropriate for the purposes of that irrigated pasture.

The land has been cultivated in the past and is seeded with appropriate grasses and forages, and he maintains those well. And he doesn't ask me how to irrigate. But looking at historical photos, I think there's been enough constraints that many times they've irrigated less than for optimal yield, because there's a lot of aerial photos.

For example, the one in my expert witness testimony on page 47 shows that there is a lot of things happening that are outside of the calculation of water requirements, but he's a good steward of the water. He uses it as he needs it and does not over use it, which is generally how I found that farmers who pay a lot for their water operate pumps and have labor, they use the water very wisely. And it's my opinion that he has done that and he desires to continue to do that.

So these are the numbers, if he needed the full water requirement I calculated he would need. I appreciate the opportunity to present this information. Thank you.

MS. GOLDSMITH: Thank you, Dr. Allen.

BY MS. GOLDSMITH:

Q I would go back to Dr. Hanson. On page 27 of your Exhibit E, SR-21, did you become aware of an error that needs correcting?

A I did.

Q What is that error?

A In paragraph 50, there is a typographical error. It identifies a percentage of passage that we used for evaluation AS 15 percent, and that number should be 10 percent.

Q Thank you very much.

That concludes my case-in-chief.

HEARING OFFICER DODUC: Thank you, Ms. Goldsmith.

I'll ask you to join your witnesses, and we'll ask the Department of Fish and Game if you wish to cross-examine.

CROSS-EXAMINATION

MR. TAKEI: My name is Kevin Takei, staff counsel with the Department of Fish and Game.

BY MR. TAKEI:

Q Dr. Allen, I have a number of questions for you. So the rest of the panel, gentlemen, you can probably relax for the next 10, 15 minutes. Let's begin.

So do you utilize an irrigation efficiency of 65 percent to calculate the required diversions; correct?

A Correct.

Q And in your testimony, you testified that there is a targeted irrigation efficiency of 65 to 70 percent; correct?

A Yes. I believe there is one graph that has a band of a targeted irrigation efficiency.

Q Right. It will be on page 12 of your testimony.

And just to clarify, what exactly irrigation efficiency is, is one would essentially divide the amount of water used by the amount of water supplied; correct, in laymen's terms?

A Yes, in laymen's terms. The amount of water that's used in crop ET and leaching by the amount of water that's applied, yes.

Q So translating the target efficiency rate for a layman like myself, essentially you would be putting 30 to 35 more water on the land that will be used by the plants?

A Right. It will be used by the plant. And there are several reasons for that. One, he has a surface irrigation system. So we apply the water to the head of the field, so it takes time for the water to advance towards the tail-end of the field. So a different intake opportunity time, differences in soil infiltration rates.

Q Thank you. And Figure 13 in your testimony, it shows a band of reasonable efficiency. And this band reaches from just below about 60 percent to about just below 80 percent. And just for clarification, this is ESR-12, page 42.

So could one imply from this reasonable range that in an irrigation efficiency of, say, 70 to 75 percent is reasonable?

A So this is a band of reasonable irrigation efficiency based on literature. I think you would need to look at the situation --

Q Certainly.

A -- and circumstances in each field to find out what would be reasonable in that band.

Q Okay. So I'm trying to understand more specifically how you determine that the 65 percent irrigation efficiency rate is optimal for the ranch. And in your testimony, you listed a number of factors. This would be on page 53 of your testimony. And you mentioned irrigation methods, soils and topography, weather conditions, land use constraints, pasture conditions, water supply limitations, soil variability, labor constraints, and economic constraints.

We were able to identify some of those factors in your testimony, but not all of them. Specifically, does your testimony discuss the economic constraints that the ranch has and that conformed your opinion?
A I believe that maybe some of my earlier reports discuss that. But one of the economic constraints is not having housing or ability to have a full-time irrigator for this relatively small irrigation project. And so that's one constraint that would make a difference. If somebody was there 24/7, I think the irrigation efficiencies could improve. But so that's kind of one economic constraint to it. And so --
Q But that wasn't in your testimony though?
A I believe that I have labor constraints in an earlier one, but perhaps not in this one. If it's not there, it's not there.
Q Not the economic constraints.
And so the land use constraints, was that in your testimony or prior documents that you provided?
A The land use constraints, looking at it's constrained for the irrigated pasture.
Q But that -- it's just specific?
A That's just kind of a general -- these are the things that went into my determination. I probably did not discuss them all. It's kind of based on a lot of

experience, and it's not a calculated number. It's a number that's is based on review of a lot of different circumstances.

Q So it's you're estimate, not without specific calculations?

A Right. I did look at aerial photos and had subcalculated irrigation efficiencies of the ranch, but I can look at the year when the efficiencies are very high and I could see a lot of under-irrigation. So I figured it should be lower than that so that he could fully irrigate his pasture.

Q Okay. And you testified that from 1975 to 2006 the ranch's irrigation efficiency averaged 66 percent; correct? And that would be on page 41 of your testimony.

A I believe that is correct.

Q And you also determined that from 1975 to 2009 the ranch pumped on average 889 acre feet per year; correct? And that would be on page 38 of your testimony.

A Correct. I believe that is correct.

Q So if the ranch was at a 66 percent efficiency rate and it was pumping on average 889 acre feet per year, why wouldn't 889 acre feet per year be what you're recommending the annual use be?

A So if you go to the figure on page 42 that you referenced, you'll notice there is quite a number of years that there's not an irrigation efficiency calculated, and that's because he applied less than the net irrigation requirement. So those years would not be included in there. And so that's the reason that the average is where it's at, primarily because of under-irrigation in some of those years, which brings down the average of the water applied to less than the 69 percent.

Q Figure 11 in your testimony is a chart reflecting your estimation of the amount of water that the ranch used from 1975 to 2009; correct? And that would be on page 39.

A Correct.

Q And Figure 17 is also a chart of the water that you estimate would have been required by the ranch from 1975 to 2006? And that's on page 47 of your testimony.

A Okay.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Will you site his testimony?

MR. TAKEI: That will be in Exhibit 12 of ESR-12.

BY MR. TAKEI:

Q Was that correct?

A That's correct.

Q And just as a reminder for myself -- I always forget -- when we're calculating efficiency, you're essentially by the water used by the water supply; correct?

A The water used for beneficial use by the crop.
Q Including leaching?
A Beneficial use is a technical term, not a legal term. But that's included for crop ET and leaching, yes.
Q Okay. So when you calculated your -- the average efficiencies through 1975 to 2005, did you use the same data to create your Figures 11 and 17?
A Yes.

MR. TAKEI: Mr. Lindsay, could you show ESR-12, Figures 11.17. It would be a separate exhibit.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Figure 11, do you remember what page it's on?

MR. TAKEI: There should be a file called ESR-12, Figures 11.17.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Right now I have ESR-12 open.

MR. TAKEI: There is a file called ESR-12, Figures 11.17.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Is that in the submitted testimony prior to the hearing or the one that came in today?

MR. TAKEI: This is the one that we provided to you on the CD.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Today?

MR. TAKEI: Yes.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I'm looking in the PowerPoint.

MR. TAKEI: There shouldn't be any PowerPoints in there. We don't have a PowerPoint. That's not ours.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: If you could just refer me to the submitted prior to the hearing where in his testimony --

MR. TAKEI: No. This would be the documents that --

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I understand that, but I can't find it.

MR. TAKEI: Under the folder Fish and Game. There is a folder on your desktop labeled Fish and Game.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I'm sorry. I'm looking in their testimony, not yours.

MR. TAKEI: It would be on the second from the left.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Sorry. I was looking in their testimony.

MR. TAKEI: So if you could shrink it a little bit.

BY MR. TAKEI:

Q We pulled Figure 11 and 17 from Dr. Allen's testimony.

And so just to recap, so you used the same data

to create -- when you calculated your average irrigation efficiency, you used the same data to create Figures 11 and 17?
A Correct.
Q And Figure 11 is the --
A Well, let me take that back. I didn't use the same data. Figure 11, which is the irrigation amount pumped, it was based on the energy records of the El Sur Ranch. So that does not have anything to do with what I calculated is a crop water requirement.
Q Right. But to calculate your irrigation efficiencies --
A Yeah, which you have got up there. But the irrigation efficiencies were calculated with the same crop irrigation requirements.
Q But not based on the amount of water that was pumped?
A Well, based on that, plus the amount of water pumped. But I believe that Figure 11 is just the annual irrigation pumping.
Q So then you added in the ten percent leaching requirement.
A No. This is actual pumping estimated or calculated based on monthly energy bills for the first few years.
Q Because, well, perhaps you can clarify for me. Because it's a little bit difficult to tell because of the

scale. But generally, like we said, to calculate the irrigation efficiency, it would be the water supply by the water used, correct. But if you look at many of these years, most of them that the water supplied is actually significantly less than the water that you're saying is required. So essentially the water use.

A Right.

Q And then because of that, if you under-irrigate, you're not able to calculate an efficiency. How were you able to calculate the efficiency if they actually pumped less than what they needed?

A So you can't calculate an efficiency as long as you have less water -- as long as you have less -- more water applied than the ET, which generally happened.

But what occurs is because of the uniformity of the irrigation, if you have very high efficiencies, you're under-irrigating the crop because you're not putting the water on uniformly. So there is an optimal irrigation efficiency that's based on the system and the soils.

Q But my point is that they're pumping less than what you're saying is required and, yet, you're able to still calculate an efficiency. And I'm just trying to figure out what data you used to calculate the efficiency, if they're pumping less than what they actually required. You said yourself you can't calculate an efficiency if

you're putting on less than what you actually need.
A There's probably a couple of different numbers there. I may have confused you.
So the net irrigation requirement is what is used to calculate the efficiencies. And the gross irrigation requirement or the diversion requirement has an irrigation efficiency component built into it.
But there were just a couple of years when the calculated net irrigation requirement was greater than the amount they pumped. It didn't happen very often, but it did happen on occasion.
Q Well, my point is if you look at these charts, it happens almost every single year except for perhaps --
A Well, you're looking at irrigation diversion requirement. But I think you're thinking that -- which is in almost every single year greater than the net irrigation requirement.
Q So I guess the bottom line though, even though that your data is showing that they require more water than was pumped, that's not -- that doesn't reflect an actual discrepancy than being able to have calculated the irrigation efficiency?
A I think I illustrated that in one of my earlier reports. But for example, if you just apply, say, very small irrigation and turn the waters off, all that water

would be used by the crop, because there was no deep percolation, no tailwater. So that would be 100 percent irrigation efficiency, but it wouldn't irrigate the entire area of that border for just as an example.

Q I have a quick question about runoff and so just to cap.

So, essentially, you would be adding about ten percent more water for leaching so -- and if we are irrigating -- so essentially the water has to run off somewhere; correct?

A Yeah. There's two components that the water would -- some of it deep percolation, some of it runoff, yes.

MR. TAKEI: Mr. Lindsay, could you show -- there is a photo that is entitled October 28th, 2005. And if you could zoom in, there is a corner in the lower right-hand of the pasture. And let the record reflect this is a photo from October 28th, 2005, pasture seven.

I'm pointing at a lower right-hand corner. If you could zoom in a little bit more because you can see the -- and scroll down a little bit. Zoom in a little bit more. So if you look at the -- you can probably zoom even one more time, actually.

And we're zooming into a scale where you can see actually looks like cows. You can tell the fence line here. And if you look below the fence line between the fence line and the bluff, there is a patch of green. And we've heard testimony that there hasn't been any sort of erosion or runoff. What would you attribute the green patch to, especially in contrast to the ground patch that would be to the right of it in this photo?

A You know --

Q Could that patch be from the irrigation runoff?

A You know, if I recall, when I was there, there's a irrigation drainage ditch that goes across the front of that. So I doubt that it is. It could be just different variety of grasses. I really couldn't get from this photo --

Q Is it possible that could be runoff as compared to this just dry patch to the right of that?

A Yeah, but I wouldn't have an opinion on whether it's one or the other. Because my recollection is that there's a ditch through there that would prevent that from reaching the edge of the bluff.

Q Okay.

And Mr. Lindsay, could you also pull up a photo October 11th, 2004? It would be in the upper left corner of that file. And if you could zoom into that same point again, Mr. Lindsay.

Let the record reflect this is a photo from October 11th, 2004. And the similar patch again has the green, especially in contrast to the brown patch to the right of it as pictured in this photo.

Again, given the different year, you wouldn't be able to tell what this is from, irrigation, runoff, or --

A It could be just different varieties of vegetation. I don't know.

Q Different variety of vegetation from the one next to it or the vegetation growing on the bluff as well?

A I couldn't tell.

Q Okay. Thank you. Thank you, Dr. Allen.

BY MS. FERRARI:

Q My name is Chandra Ferrari. I'm staff counsel with the Department of Fish and Game.

Mr. Horton, I'm going to be asking you a couple questions.

To begin, in your testimony, you state that pumping of the ESR wells does not and cannot create a condition of overdraft of the alluvial aquifer system or impact upstream users. Do you agree that without the occurrence of any pumping in this system that the aquifer is in balance? In other words, the water inputs would more or less equal the water outputs?

A Either way, the water is always in balance.

Q Okay. Thank you. So essentially though when you do have pumping as opposed to the natural condition, you're

creating essentially an additional water output for which some corresponding amount of water input would be found to keep the watershed in balance?
A Correct.
Q If that balance wasn't happening, we would expect to see the water table in the aquifer drop; right?
A Yes, we would.
Q And that would be when we would expect to see overdraft conditions?
A Well, what you would see is steadily declining water table over time. And it would manifest itself. And certainly when most of the pumped area of the aquifer that we're talking about here is about 25 feet of saturated thickness, 60 years of pumping would have certainly been manifest in terms of the overdraft condition.
Q So when you say then the pumping cannot create a condition of overdraft, you're talking on a long-term basis, not a short-term basis?
A Well, pretty sure overdraft really is a long term.
Q So could there be some sort of situation where you would be dealing with more outputs than inputs on a, say, seasonal basis? So it wouldn't be necessarily maybe defined as overdraft in a long-term sense, but you would be seeing similar overdraft-like conditions on a short-term basis?

MS. GOLDSMITH: Objection. I find that question vague and ambiguous. And I wonder if you could specify what kinds of conditions you're talking about.

HEARING OFFICER DODUC: Rephrase the question.

BY MS. FERRARI:

Q We're talking about overdraft. And that means that essentially what you seem to have said is it's a long-term effect of lowering of the water table for a sustained period of time.

A Correct.

Q So what I'm asking then is: Is it possible for there to be a sustained drawdown in the water level on a seasonal basis?

A I'll give a two-part answer to that question. So as long as we're pumping wells seasonally during summer, there is a drawdown on the wells similar to what you see on the exhibits. And that is sustained while the pumps are on.

What we've also seen is measuring groundwater during pumping in the season and comparing the pumping after the season in the same exact wells, we actually have higher groundwater elevations. So --

Q You have higher groundwater elevations when?

A You noticed in my last slide in my testimony exhibit today, I presented the average groundwater elevation in

2004, April 15th, I believe about 5.85 feet in the wells surrounding the pumping well.

In 2007, in October 15th, same group of wells -- again, we stopped pumping for the season -- groundwater elevation is 5.89 feet.

Differential in river flow between those two periods is more than 40 CFS; 50 CFS in April after a big winter flow, recharging the entire alluvial aquifer system. It's very clear data to me that there's no long-term seasonal or very long term impact to the storage in the aquifer.

Q So you essentially think though that any amount of water that might come out of the aquifer during a dry season would be replenished in the winter season with the precipitation?

A That's what our data shows.

Q Okay. Do you agree with the Jones and Stokes study estimate that the aquifer's volume is about 765 acre feet?

A I don't know. I'd have to look at calculations on that.

Q So you don't have an estimate of the aquifer's volume?

A I might have done that in 2004, and I really don't recall. And I'm not sure if I put that in my report.

Q Can we assume for a minute that the aquifer is at 765 acre feet?

A Which portion of the aquifer are we talking about? All the way up to the USGS gauge?
Q I think we are, yeah.
MS. GOLDSMITH: Are you talking about with no inflow of surface water?
MS. FERRARI: Yes. Just the volume -- the storage volume of the aquifer.
HEARING OFFICER DODUC: Ms. Goldsmith, do you have an objection?
MS. GOLDSMITH: My objection is it's not clear to me what the conditions are that she's describing.
HEARING OFFICER DODUC: Please specify.
BY MS. FERRARI:
Q I'm talking about the storage volume of the aquifer?
A I'm sorry. I can't verify whether or not that number is even close. And I'm sure that they have no idea on the actual volume of the aquifer above the Andrew Molera State Park to gauge in terms of actual measuring thickness of alluvium, et cetera. So my point is fruitless right now.
Q Okay. So why don't we discuss then this concept of that overdraft can't happen even on a seasonal basis or anything like that. So we're dealing with the ranch's pumping constituting what is an additional output. Where does the input of water come from that replenishes it?
A During -- my studies show that we have pretty steady

flow up just below Andrew Molera parking lot around location of VT 1, a cross-sectional flow and underflow around three-and-a-half CFS.

Q Is that the transect AA?

A I think so.

Q You said it was three-and-a-half CFS?

A Correct.

Q Okay. That's consistent. I think you --

A I didn't finish here.

Q Sorry. Please continue.

A In 2007, between VT 1 gauge and the top of the zone of influence or the VT-3 gauge where we're losing flow into the groundwater system again, we add another 3 CFS to that. As we come around the corner to the big bend in the river, we estimate groundwater flow is approximately six-and-a-half, six CFS that is coming by there. This is why again as the river bends we start to take flow into the river on the order of another one or plus CFS.

Q Now you're done?

A Did I answer any part of your question?

Q Part of it. Thank you.

So let's get back to it. So I understand what you're saying: You've got about three-and-a-half CFS coming down from the transect underflow?

A Correct.

Q And then you're telling me you also have an additional three CFS leaving the surface upstream between VT 1 and VT-3, because it's a losing reach? That's what you're telling me? Because it's entering the aquifer at that point?
A Hold on. I'll tell you the number. Yeah. An average loss of three CFS during the 2007 study season based on daily data before any rain and impact and incoming flows upstream.
Q But that turns into a gaining reach right after it's a losing reach?
A Correct.
Q So then we would be seeing a lot of that water coming right back into the river at that point?
A We do exactly.
Q So I guess if you've got three-and-a-half CFS coming in the transect AA, we're dealing with what would be your maximum average pumping is 5.34 CFS?
A Maximum average pumping during the summer season is actually around 2.9 CFS, I believe.
Q But you would have -- the ranch would have the capability to pump 5.34 CFS?
A It's a capability, but in actuality because of the salinity conditions that occur in the old well with the spring tides, the average period of time that Mr. Hill is

able to pump both wells in the summer is around six or less days per month.

Q Okay. But if you're asking for it, we have to assume it could happen, that you would be pumping 5.34 CFS in the summer?

A It does happen for some days.

Q It does happen some days.

So 5.34 CFS, you have three-and-a-half CFS coming down from the transect. And you're apparently getting three CFS that's coming out of the river. But some of that is going to be going right back into the river. Where else are we getting water from?

A We have some flow from the terrace deposited entering the system on there.

Q That was .64 CFS?

A Right around there.

Q That's not a whole lot.

A And then we have the river flow.

Q Which you calculated the maximum river flow to be 30 percent of that amount. Then, in addition, it appears that we've got evapotranspiration we need to take care of. You have the in-flows back in the river, which you've estimated anywhere from .3 to .6 CFS. It just seems like these things aren't equaling. Is there enough water for the maximum amount of pumping?

A First off, the ET demands are largely already accounted for in those numbers because those occur in the five miles of the watershed up above. And so below VT 1, our peak demands are not large.
Q Are they .29 CFS or less?
A Is that what I calculated before?
Q I think you might have said .29.
A Okay. That's a smaller number.
Q Right. It's a small number, but the pumping amount is a larger number, as is the amount that should be going back into the river between VT-2 and VT-3. What I'm wondering is, if you don't mind, is it possible that this aquifer could be getting drawn down during some of these pumping times and perhaps the river is actually supplying some of that replenishment water back into the aquifer?
A Let me do a two-part answer to that one as well. The river is the source for all the water in the aquifer. Sourcing that aquifer up at the gauges, it tumbles out the gorge and we start to develop an alluvial channel filled with alluvial deposits that can transmit this water. And that water flows all the way down.
Along those stretches, we certainly have zones of inflow and outflow, as Mr. Custis showed in his report. We get down to the study area. The question you're asking about water balance is going on there, and what I've

testified is I measured directly what those water balances were. And when we're pumping at a maximum rate of 2007, actually it was 2006 numbers is .3. The water makeup into the well, it made up underflow. A third of it is basically derived from river flow that would have been river flow at VT-2. The rest is derived from underflow of which I have about six-and-a-half CFS coming by. And as they come by those wells, the underflow experiences a constriction on the aquifer as well as the gate of saline water at the mouth that starts to force it up into the bottom of the lagoon as well, which makes more of the underflow available to the pump wells.

Q I guess what my question to you -- and maybe you can help me clarify this. And maybe we just need to get back to the basics real quick.

But when we were talking about pumping the wells, you're talking about a cone of depression forming, and then after four days, it's stabilized essentially?

A Correct.

Q At that point, we're expecting that -- well, I guess my question is: If the pumping continues after the point of stabilization of that cone, where is the water coming from? It's coming from inside the cone?

A That's correct. It's coming from storage in the aquifer and induced flows.

Q Is that within the cone, the cone of depression?
A The cone of -- in a confined aquifer situation -- again, this is not confined. It has to follow gravity. It's a free flowing surface of the cone of depression that makes the water go to the well.
Q But what's the volume inside that cone? I'm asking, with sustained pumping, can this volume drain all the water out of the cone essentially and you have water coming from somewhere else to replenish what has been calculated as that area within the cone?
A I think we've already stated that the river does discharge water and that does make it to the well. If that's what you're trying to get me to say.
Q No. But I'm looking for a --
MS. GOLDSMITH: I have an objection. I think it assumes a fact that's not in evidence, and that is that within the zone of depression there is water.
MS. FERRARI: Within the cone of depression.
MS. GOLDSMITH: That's what I'm hearing you say.
HEARING OFFICER DODUC: Why don't you ask that question and we'll go from there.
BY MS. FERRARI:
Q Within the cone of depression, Mr. Horton, is there water? I hope so.
A So -- sorry. Within the cone of depression, we're

getting drawndowns at around four feet in the pumping wells. And we have a saturated thickness of around 25 feet. So we still have a saturated thickness of 20 feet. If we didn't have that, the wells couldn't make any water.

Within the four foot of drawdown that occurs right next to the wells, that slowly drains out if you sustain that drawdown. And you see the lay drainage out of that. If you continued that, it would drain until you reach the point of residual saturation or tension to get the water in the flow spaces.

Q Right. Is the fact that we are using the river as this recharge source, could that be contributing to the fact that it is a losing reach between VT-1 and VT-3, a continually losing reach?

A The answer in this case is no.

Q Why would that be?

A Because we have an unconfined aquifer with a very high conductivity. Because it's unconfined, we can only influence where we can actually physically influence the elevation of water where we can draw it down.

It's analogous to pumping from the pool at the bottom of a waterfall and then saying that you affected how much water fell over the top of the waterfall into your pool. We can only influence outside of that zone of influence, which is literally defined as the zone of zero drawdown in the aquifer.

Q Right. So maybe we're misunderstanding each other right now. So we had talked about the cone of depression that forms. And essentially when you are seeing this cone of depression form that that is informing what is ultimately going to be your zone of influence; correct?

A Correct.

Q So when you're pumping, initially, all the water volume that's within that cone of depression is what's feeding the demand. And eventually you hit groundwater stabilization, in which case your groundwater levels don't go down any more?

A Correct.

Q But with sustained pumping, you still need more water?

A Yes.

Q So that water has to be replenishing, that volume, from somewhere. And we had talked about the various inputs into this aquifer. And so isn't it possible that the river is supplying some more inputs into the aquifer higher upstream so that it can continue to replenish the volume within that cone of depression?

A So the losing stream of the river above the zone of influence is going to lose that no matter whether or not I'm pumping, because in order to induce it to lose more, I have to actually draw down the water table up there, which is outside the zone of influence.

So yes, we're pumping some of that water that has come out of the river above the zone of influence. That's just because that's a natural condition in this aquifer.

Q Didn't your own data indicate that the gradient did actually change upstream in P-5 and P-6 during the 2007 studies? But you had indicated that your theory was it was actually the river rebounding from a storm event and that's why we were seeing those different elevations?

A You'll have to give me a minute to look at that.

Q Did you say 2007? I believe it was 2007 pumping period. I didn't have it written down here. It is one of your exhibits, too. It's a memo to Ms. Goldsmith where you explain it's a weather event. It might be ESR-5. I believe that's right. It's ESR-7.

A I'm trying to find the right graph. There we go.

Q Mr. Horton, I'm not going to get into your conclusion on that right now. I guess I just wanted to know if the follow-up study was ever done when the storm hadn't just occurred to see if there was still a gradient there during pumping?

A Well, I'm looking -- you were talking about P-6 and P-5.

Q I think it was P-5 and 6.

A In the 2007 study year. And I'm looking at figure 3-5 of my 2008 report, which covered that data. And consistent with what we saw in 2006, I'm showing a continuously negative vertical gradient for both of those stations. I'm not sure what you're referring to.

Q Actually, let's just move on for right now. I might go back to that if there's time.

Isn't it correct that as pumping continues over time, drawdown of groundwater will expand outwards from the well?

A Until it reaches a static or steady state condition, if that's possible.

Q Okay. So it's correct to say that the timing and amount of groundwater drawdown is affected by the distance between a well and a point in the zone of influence?

A Yes.

Q Okay. GSA 4 is located adjacent to the new well; correct?

A Yes.

Q And it was -- results taken from JSA well where you determined it takes four days to reach equilibrium in groundwater drawdown; correct?

A It's one set of the data I used. I had data from all of the wells, eleven monitoring wells. So it just happens to be one that's demonstrative.

Q But you found then that GSA 4 then represented the

results you had at other wells?
A   Yeah. I mean, fairly representative.
Q   So they would be representative then of the wells that were in A-10, B-10, and 10-C, which are about halfway to the zone of influence?
A   I'm not sure what that question means.
Q   I'm wondering if given that you see drawdown influenced with greater distance from the well, if you had wells that were stationed at different locations, if you would see the drawdown stabilize at a different time based on the fact that they're located at farther away from the well, farther away from the pumping well?
A   Cone of depression expands over time in a post-study state. You reach closer to the level of stabilization or closer to the pump well.
Q   Would it be possible that the wells 10-A, 10-B, 10-C wells would be influenced by the river's recharge boundary right there, they're located close to the losing reach of the river?
A   They're actually located near the bend where it was shown the river is kind of neutral. And we did look at the vertical -- we completed a well cluster there, various depth wells, specifically the vertical gradients.
Q   Is it true that groundwater drawdown and stream depletion are two distinct concepts?

A Yes.
Q So essentially when pumping stops, stream depletion does not stop; correct?
A To the extent the cone of depression effect remains, that's how long the depletion will occur in this case.
Q So is it possible then when pumping stops though that the river can continue to lose surface water after that point?
A Yeah. I would say it's on the order of less than four days.
Q Okay. Can we pull up Figure 3-11 from ESR-8? That would be Adobe page 12.
We're looking at your pump tests here; right? Looking at the blue location, which I believe -- is that VT-2, the flow volume at VT-2? And this is VT-3, is that correct? Blue dot, VT-2?
A Correct. Yeah.
Q We have the pump test starting here, it looks like. VT-2 looks like it has an elevation that's greater than VT-3. We continue this pump test four days, it seems like. And then the four-day recovery period around here, right, started on 9-27. Is your pumping finishing about right here?
A Yeah. Where the arrow is, just above you. So right at that line.

Q And then you're looking for recovery time at this point?
A Yeah. We're looking at flow of the river here and not drawdown.
Q Right. But at this point, it looks like four days has passed; right? This is your recovery period you're talking about where stream depletion should stop?
A Correct.
Q But it seems like VT-2 hasn't made it back up to the elevation it had prior to pumping; correct?
A Correct.
Q So recovery hasn't completed within four days?
A What was occurring there, if you notice the spike that is occurring to the left before pumping both wells, where you have flow and VT-2 up to greater than 3 CFS, this is a period when we're not pumping the well. The flow goes up and then starts to come down. This is reflective of a rain event in the watershed, increased flow in the river. So the flows here represent the natural hydrograph receding after a small rain event as we come down. And unfortunately, that clouds the data. But that's what happened. If we start pumping, that trend has continued, but we do see reversal of inflow. Whereas, we had a gaining stream up to this point, and now we're losing some flow. And this is what makes up the 1.2 CFS loss we

interpret from pumping derived. And the pumps turn off, we're recovering back. We're not recovering back to this level. This was an artificial hydrograph induced by flow from the rainfall event. We flat out and you see this is way less than four days. We flatten out and we get another rainfall, and it starts to spike flows again.
Q How do you ever know where your base line level is supposed to be? You have these rain events. Where's the static rate of VT-2? How are you distinguishing between what the river is doing on their natural event and what is being caused by the pumping?
A Because we're watching it continuously during this period and we know when the rain falls.
Q Can you tell me this exact point right there is related to the storm event and that should not be where the level normally is? If this wasn't allowed to continue before the rain event came, that this VT-2 wouldn't end up right about back up there?
A Well, you know, the river flow is not a continuum on a normal what it should be every day. It's changing. And the hydrograph is falling as we stop raining all summer long and hitting a low in September and then it's responding daily to changes that occur in the watershed up above it that cause these fluctuations in flow that you see on different days. And then we start to get rainfall

events that come in.

But by watching -- we instrumented this river so highly we have rain gauge data. We know the USGS gauge which really tells us all about rain events in the upper watershed. We had our own gauge on a ranch for a long time. We used that to evaluate these trends that occur and determine what's happening.

Q So is it your testimony today that the stream depletion cannot continue past four days?

A I'm going to say very specifically to this problem that's what we've measured, yes.

Q Yes. Okay.

What was the longest time period that you ever conducted a pump test for?

A Can you rephrase a pump test?

Q Yeah. The longest continuous -- continuous amount of pumping that you did for a test?

A Well, in 2004, we simply monitored all these conditions during the regular pumping of the El Sur Ranch irrigation system. So we had near continuous pumping for the season.

Q Your focused tests were within 2006 and 2007?

A Our focused off tests extended usually a week. Maybe up to nine days --

Q Seven days?

A -- a couple times.
Q I think the largest was eight days.
A Okay.
Q So let me see here. Essentially, though, we do not have any information on the pumping impacts to the river that would happen longer than eight days?
A That's not --
Q In your focus pumping tests.
A That would impact to the river longer than eight days?
Q Yeah.
A Well, the groundwater elevation data that we collect after we stop pumping both the entire 2004 season and after each of these pumping tests answers that question, because without groundwater drawdown under the river, we cannot induce extra flow that would not actually happen. And the groundwater levels indicate that.
Q Okay. So for the 2007 study, you didn't -- you commenced pump tests on August 31st, five days after ESR had been operating their wells or their pumps almost continuously throughout all of June and July and all but nine days in August, and that's when you commenced your test. You had a five-day break period in between continuous pumping in your pump tests, correct?
A Okay.
Q Okay.

A I can tell you why that was.
Q That's okay.
Does the zone of influence, Mr. Horton, does it extend into Zone 1 and other parts of the lagoon?
A Yes. It does.
Q Why did the study area focus on Zones 2 to 4?
A My study was focused on the effects that pumping can do on the characteristics of the river. And after the 2004 study, they were refined to potential effects to riverine habitat. And those were focused to ability to impact flow and ability to impact water level and water quality.
The 2004 study, we determined that the pumping effects in the lagoon were insignificant compared to in terms of water level -- potential impacts were insignificant compared with the natural daily fluctuations that occur in the water level in the lagoon. For example, those are regularly one to two feet in response to tidal conditions.
And we also established that there were -- that it appears to be a correlation to water quality impacts. So we focused on stressors of the river where we had the ability to do a potential impact, and those became Zones 2 through 4.
Q If you had any indication that habitat maybe could be

affected by these other parameters by the pumping, you would have included Zone 1 or even more of your lagoon in your analysis?
A Well, we did include it in our analyses. And we instrumented it in all three years. And I believe in the 2007 study year, again a critically dry flow year, we documented an upward flow gradient into the lagoon for the entire period we were studying there.
And that's significant, because as you just pointed out, we've been pumping all season before we started this test. And we were getting gauge flows up at the USGS gauge and still were having continuous upward flow gradients at the lagoon. This is because exactly what's happening again as I mentioned before as the river approaches the mouth. The constriction of the aquifer and the presence of the saline wedge, this large amount of flow and the underflow of the six-and-a-half CFS has to rise up to get out of the system.
Q Mr. Horton, you stated that the only measurable impact to river flow of pumping the ESR irrigation wells occurs within river Zones 2 through 4, the only measurable impact; correct?
A Correct.
Q Okay. Is it correct that your 2006 analysis determined that groundwater flux had a maximum flux of 30

percent? That would be ESR-5, Tables 3-4 and 3-5.
A That's correct.
Q Isn't it true that when Zone 1 was added to the analysis that the maximum flux jumped to 56 percent?
A Can you refer me to the table?
Q That would be ESR-5, Tables 3-4, 3-5.
MR. TAKEI: I believe that's page 319 and 320.
MR. HORTON: You said .56?
BY MS. FERRARI:
Q Sorry? What?
A That's correct. So in 2006, as we were -- the first year we had all the piezometer data to measure fluxes out of the bed of the river, we were still looking at the lagoon. And we included in these calculations as a conservative analysis to see what might really be happening. If you actually go to look at the vertical gradients in the lagoon over this entire period, there was only a small period of time where they showed flow loss out of the lagoon. I'm not talking about three or four days. I can direct you to the exhibit. All the rest of the time, the gradient was positive into the lagoon. So this is a snapshot based on three days at that time we determined was anomalous, likely related to low tide condition.
Q So you determined this result was not accurate?

A   It's not representative of the regular condition that we saw the rest of that year, nor in 2007 when we studied it.

Q   But it does show that the groundwater does enter the river in Zone 1?

A   It did for three or four days there in 2006.

Q   Could how much it enters the river in Zone 1 change if river conditions changed?

A   Can you give me a little more on that?

Q   For instance, if the channel location was to change in the river, would it be possible that the amount of groundwater entering the river in Zone 1 could change the quantity?

MS. GOLDSMITH: Objection. Calls for speculation.

HEARING OFFICER DODUC: Please repeat the question.

MS. FERRARI: Assuming that the river channel was to change, is it possible that the amount of groundwater entering the lagoon could change?

HEARING OFFICER DODUC: I'll allow the question. You're welcome to say you don't know.

MR. HORTON: Okay. I don't really think so, because where the lagoon is located right there in the constriction point of the aquifer as the water is just about to climb up the saline wedge and get out into the ocean either through surface flow or under the beach, movement of the river channel doesn't change that mass balance. We have all this water that has to go out. It's going to come up and follow the path of least resistance. And that will either be surfacing of the lagoon and going out the notch or going through the beach sands over the top of the water.

BY MS. FERRARI:

Q Okay. You noted that the groundwater flux into Zone 1 was anomalous. Do you also consider the .8 CFS downward trend in groundwater flux in Zone 1 caused by both wells pumping to be anomalous the Figure 3-27 from the 2006 study?

A Let me take a look. What exhibit are we in?

Q Exhibit 5.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: ESR-5?

MS. FERRARI: Yes.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Just so the Board can keep up, what page again?

MS. FERRARI: It's Figure 3-27, PDF page 107.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you.

MR. HORTON: I'm looking at that graph, and I need your question again.

By MS. FERRARI:

Q I was asking would you also consider the .8 CFS downward trend in groundwater flux in Zone 1 caused by both wells pumping to be an anomalous event?

A It's anomalous compared to the follow-on data that we collected in 2007.

Q Would you also consider a .1 groundwater drawdown contour that includes Zone 1 and is presented in Figure 3-9 from the 2006 study and the 2007 study Figure 3-1 to be anomalous? You could look at that on 2006 study ESR-5, PDF page 89.

A Yeah. What starts to happen as you get around that way towards the lagoon, we predict an idealized cone of drawdown. We don't have wells over there. But we do know things are happening over there that make that not so bright. And that is the fact that the tidal -- it's continuous changing tide actually continually changes the groundwater elevation in the lagoon area. So a .1 foot drawdown within the range of what the tide is doing to the groundwater elevation sort of would disappear.

Q What about the .25 groundwater drawdown at P1-L that's represented in Figure 3-1 from the 2007 study?

A In my declaration, I issued a correction on that. That was a typo. Some sort of production error. I can't actually find that there's any drawdown recorded there.

Q Don't your figures in Appendix G of the 2007 study show a drop in the water level at P1-LS and P1-LD during pumping?

A Let's take a look.

Q ESR-6, PDF pages 145, 146.

A Does that show a drawdown?

Q Yes.

A I mean, it's hard to interpret a drawdown there. It's a continuation of a trend. If you recall, that's the same time period where we had a rise in river flow to a rainfall event. So all of the river flow conditions were following that standard hydrograph DK downward trend. You can look at the rest of these hydrographs in Exhibit G and see the effect of that.

So in my analysis, I did not see any significant break there, and we start to pump both wells. And in fact, I see -- as you note there, you see in the middle of the pumping both wells, we should be accelerating drawdowns. And at the four-day mark, we actually have the water level trend reverse and start to go up again. And this is following the trend in the river again related to flows in the river itself.

Q Okay. Mr. Horton, you employ a single geometric mean of 104 feet per day for the hydraulic conductivity for the

Darcy equation. Do you acknowledge that substituting a geometric mean for hydraulic conductivity of 104 when there is a range from 35 to 300 can lead to inaccurate calculations of groundwater flow?

A I will not agree. Where are you referring to? What table?

Q It's 2006, ESR-5, Table 3-2 on Adobe, page 124.

A So are you asking me if I think my geometric mean is a valid way to look at these data?

Q I'm asking you if it can lead to inaccurate calculations of groundwater flow?

A Well, I'll just give you my assessment of this data and what it means in that regard.

For hydraulic conductivity measurements of the same geologic media, this range is a very tight range of measurements. This is a very good data set indicating that we're measuring essentially the same geologic media. And when you look at hydraulic conductivity in materials, it generally has a much bigger variance than that.

And so because you look at the tightness of the range, I think the application of the geometric mean as the overall streambed conductivity is totally appropriate in this case.

Q Is it true the riverbed is made up of many different types of material, however?

A Sand, gravel, cobbles.
Q Could you have obtained a more accurate estimation of the groundwater flows if you calculated separate hydraulic conductivities for parts of the streambed that were composed of the same materials and then averaged those numbers together?
A Well, I'm referring to Table 3-2 you can see up there. And the answer is that this data told me that the riverbed hydraulic conductivity was very uniform; therefore, it's extremely valid to use a geometric mean value in this case to consider the effects of flux through this river -- this section of river as a whole.
I mean, we measured the values all -- these are from tests conducted all up and down the stretch of river we're talking about.
Q Do you think that the colmation layer will change during a high-flow event such as a typical storm event or winter runoff?
A Well, you can sort of remove the development colmation zone if you take off. In our case, we showed -- our studies showed it was about a foot thick zone, no more, developed in the riverbed there.
Q Sorry. How thick?
A About a foot. And so again you have the ability to just remove those gravels through flood events, then you

have to reestablish a colmation zone.
Q So it can move?
A Certainly.
Q Haven't you stated in your testimony too that a high-flow event can scour the channel?
A Probably.
Q So that the colmation layer will change when the river channel changes?
A Yeah. So as the river responds, you'll reestablish the colmation zone. Essentially, the natural condition here would be cycles of reestablishing a colmation zone after the winter rains establishes. Clearly, based on our studies, you know, colmation zone developed as the flows get lower and velocity gets lower in each spring. So you re-develop it every spring it's been destroyed.
Q When the colmation layer re-settles, does it always re-set in the same way?
A Well, I mean, we have a pretty consistent system here. I mean, we have the same set of aquifer materials. And we have the same watershed. And I think my only difference to that would be that I think we'll develop lower conductivity colmation zones since the fire and as we're putting more stuff into the system in the wintertime and post-wintertime. And I think those changes are going to go to less communication through the riverbed.

Q But the hydraulic conductivity is not static then; it will change?
A Hydraulic activity of the aquifer itself is static, but the colmation zone varies in development.
Q Okay. Can we put back up Figure 3-11, page 68 from ESR-6?
HEARING OFFICER DODUC: While Mr. Lindsay is doing that, Ms. Ferrari, do you need to request additional time for your cross-examination?
MS. FERRARI: I probably just need a couple extra minutes if that's okay.
HEARING OFFICER DODUC: That's fine.
SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Was this it?
MS. FERRARI: I'm sorry? What?
SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: What page number?
MS. FERRARI: Page 68.
SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: PDF?
MS. FERRARI: That should be PDF.
BY MS. FERRARI:
Q I'm going to do a quick turn around of these figures, but I just wanted you to acknowledge this one real quick, Mr. Horton. So this graph shows the average daily volume

of VT-3 and VT-2. It shows the .4 CFS loss that you calculated; correct?
A It does show that.
Q Okay. Can we take a look at ESR-8 now, Adobe page 12?
This figure should show the same data; correct?
A It's the same data.
Q And you've got the 1.2 CFS flow loss indicated there?
A Correct.
Q Can you explain to me the difference between the .4 and the 1.2?
A The 1.2 CFS loss is the total loss in flow at the specific location of VT-2, that gauge. If you compare the flow at VT-3 to VT-2 at the start of pumping, the total flow loss is 0.4 CFS across that zone, the difference of those numbers. The differential is made up by the reversal of groundwater inflows as a result of pumping.
Q So is there a difference in the impact to the surface water from diversion of a surface flow versus reducing the amount of groundwater that flows into the river?
A Yes.
Q There is? What would that be?
A You have the ability to affect the water level.
Q But we're still talking about groundwater that ultimately ends up in the river that you're taking from; correct?

A You're going to have to rephrase that one.
Q Sorry? What?
A You're going to have to rephrase that.
Q Is there a difference in the impact to surface water from a diversion from the surface flow versus reducing the amount of groundwater that flows into the river?
A Certainly.
Q What is that?
A To the surface flow of the river?
Q Yeah. So if you were to divert directly from the surface as opposed to diverting from groundwater that flows into the river, is there a difference?
A So it's a reduction in the amount of gain in the river flow as opposed to a reduction in river flow. That's the difference.
Q Wouldn't that water have ended up in the river?
A Exactly. You're reducing the gain across that inflow zone.
Q But that's reducing the surface level?
A That's correct.
Q Which you would have also done if you had a diversion from the surface?
A Well, in this case, it's a three-to-one differential though. Relative impact to the surface water and the pumping.

You're making me tired, too.

Q I just have one more topic and then I'll leave you alone.

So your 2007 study effectively ignored Zone 1 and explains that Zones 2 through 4 were shifted until the overall piezometer gain/loss graph approximated the actual measured flow loss between the upstream gauging station, VT-3, and the downstream gauging station, VT-2. So basically you shifted Zones 2 through 4 to match up with the observed losses from the gauge, the piezometer data; correct?

A Yes. So we calibrated our calculations based on the actual surface flows, because we know our mass balance has to work out.

Q So essentially though to do that, you had to, in fact, calculate the area -- the area component of the Darcy's equation?

A Yeah. We had to apply the appropriate areas over which the flux -- the calculated flux from the limit from the piezometer well would apply.

Q When you were calibrating the VT-3 to VT-2 losses to match up with Zones 2 through 4, how did you account for any gain/losses that you observed in Zone 1 that were above VT-2, essentially the part of Zone 1 that didn't make it?

A I really can't interpret that question. Zone 1 is below that. So it's after -- mass balance doesn't factor in right there.

Q Right. But didn't --

A And 2007, again, Zone 1, we had a continuously gaining situation while we were monitoring.

Q So you didn't calculate losses in Zone 1?

A There were no losses at our piezometer.

Q When you back calculated the area, is it correct you used the flow loss of .4 CFS?

A You know, we used all of the data we collected to make those calculations. So did the .4 come before or after? I can't tell you.

Q I'm just wondering if you used the .4 or 1.2 CFS that we used at in Figure 3-11?

A A lot of data under the bridge. Sorry.

Q Is it true that the portion of former Zone 2 that's upstream of the ripple still continues to act like the new Zone 2, specifically that it is a losing area of the river?

A Yes.

Q Okay. So shouldn't this part of Zone 1 that included in the area of the analysis essentially been included in Zone 2?

A Zone 2 is losing. Zone 1 is gaining.

Q Okay.
A So no.
Q So that's how you partitioned off the different zones when you changed them was strictly based on if it was a losing or gaining stretch of river?
A Yeah. As defined by both the piezometer data that gave us the actual gradients across the riverbed, as well as the chemical data in the river, which very discretely helped define where we had inflows that correlated with the piezometer data. And that's how we can extrapolate areas beyond the actual piezometer locations.

MS. FERRARI: I think I'm done.

HEARING OFFICER DODUC: Does that conclude Fish and Game's cross-examination?

MS. FERRARI: Yes, thank you.

HEARING OFFICER DODUC: Let's take a break.

We will resume at 3:30.

(Whereupon a recess was taken.)

HEARING OFFICER DODUC: Mr. Lazar, do you have cross-examination?

MR. LAZAR: Yes.

HEARING OFFICER DODUC: We'll resume with your cross-examination.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: If you can direct me to an exhibit that was submitted to the group and then give me a PDF page.

MR. LAZAR: I don't have PDF pages. I'm going to be referencing ESR 2, 21, 22, and 24.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Take me along as you go.

CROSS-EXAMINATION

BY MR. LAZAR:

Q Good afternoon. My name is Adam Lazar. I'm a staff attorney with the Center for Biological Diversity. And I'm here today representing the California Sportfishing Protection Alliance, the Ventana Wilderness Alliance, and the Center for Biological Diversity. I'd like to begin with a couple questions for Mr. Hill.

Mr. Hill, what year was the easement -- conservation easement placed on your land?

A My recollection is mid 90s.

Q And does that prohibit all development on the land?

A Anything on the conservation land, if there is any, depending on -- could you define "development"?

Q Okay. So does the conservation easement cover the entire property?

A No.

Q It doesn't. So there is property outside the conservation easement?

A Yes.

Q Is it possible to build on that land?
A Which? The conservation easement?
Q On the land outside of the conservation easement.
A Yes.
Q It is possible. Have you ever prepared any plans for development on that land?
A No.
Q Have you ever prepared any plans for development on the El Sur land in general?
A Yes.
Q Yes. And do you currently have any plans to develop on either piece of land?
A No.
Q Do you have any sponsorship of the fire brigade, local fire department?
A Could you define what you mean by "sponsorship"?
Q Do you provide any financial support to the local fire department?
A Any support I gave is purely voluntary.
Q Voluntary. So you do give money, but it's voluntary?
A At times -- I say that, let me clarify. It's usually directed at a very specific purpose that they control entirely.

For example, as they were developing their fleet, one thing that was an important element of success for them is water, because water is a scarce resource on the coast. And as part of that, they were developing water reservoirs or storage in tanks, especially in residential or areas where there were homes. An essential component of that, as we've identified, in most cities is the standardization of the fitting threads size where --

Q Mr. Hill --

A So I provided support for specific mission-specific matters.

Q So you have provided them financial support, but just for special measures?

A Correct.

Q Mr. Allen -- Mr. Allen, I understand that the El Sur Ranch been well managed for cattle production; is that accurate?

A That's my opinion that it has for --

Q It's been well managed. And when you say "well managed," do you mean it's produced healthy cattle for resale?

A Yeah. That's not my expertise but --

Q That's not your expertise.

A Right. I've just looked at the pasture and I think the pasture has been well managed.

Q And yet, we've been told there's been under-irrigation of the pasture, that it's been under-irrigated. Mr. Hill

earlier said that he used 980 acre feet for what you call good maintenance of the pasture. 988 feet, that's from the video, by the way. And yet, we've also been told that there's under-irrigation. So were you able to detect then some sort of long-term negative effects of that irrigation?
A So on a year-to-year basis, there's probably a lot of constraints that I'm not aware of --
Q I see.
A -- but labor would be one of them, system breakdown --
Q I see.
A -- the old well salinity, so -- and maybe his need for production. So the decisions to irrigate or not to irrigate, I couldn't evaluate those.

But I do know that he has constraints on the ranch and that he uses water as he needs water. So far as the condition of the pasture, I think every year he uses --
Q So you weren't able to detect any --

HEARING OFFICER DODUC: Mr. Lazar, I would appreciate it if you'll allow him to answer your question before asking another.

MR. LAZAR: I apologize.

DR. ALLEN: On a year-to-year basis, there may be specific years where there's under-irrigation followed by years of full irrigation or near full irrigation. And in any one year, there may be months of under-irrigation and months of adequate irrigation.

So in total, you know, the numbers I calculate for optimal production are greater than the historic irrigation diversions on average.

BY MR. LAZAR:

Q So it is possible to do a good job of management and still have what would you call under-irrigation?

A Yes. I think he's demonstrated that in the past.

Q Okay. Thank you.

Mr. Horton, you say in your testimony that you're able to measure depletion of the wells at 5.02 CFS. That's less than the maximum instantaneous and less than the 30-day sustained rate. Can you explain why you would have tested at a rate lower than what they're requesting in the permit?

A Sure, I can.

In 2007, the goal was to test the wells at the maximum we could. And based on rotations of the irrigation that occurred before we did that test and the set of fields that were available and then the variable head requirements that -- in other words, we had to pump the higher field during that test so we couldn't get a maximum rate as opposed to, say, if we were irrigating the

lower fields.
Q And so it was not possible to test at the maximum rate?
A Well, we were under very big scrutiny not to over-irrigate any fields, nor let any surface water runoff escape. So that was not a possibility.
Q I see. And the permit also requests a 30-day sustained diversion. Did you ever test a 30-day sustained diversion?
A We did monitor in 2004 during a sustained entire season of diversion.
Q So you pumped for an entire season nonstop?
A I can tell you the details.
Q Did you measure the depletion of the lagoon?
A We did have issues with --
MS. GOLDSMITH: I have an objection to that. It assumes that there was depletion of the lagoon.
BY MR. LAZAR:
Q Did you measure the water levels in the lagoon?
A We did, yes. And in 2007, and I was just discussing we actually measured positive inflow from groundwater inflow throughout our testing period.
Q Okay. And did you also measure the zone of influence for the wells?
A It is measured and calculated and projected.

Q And how did you measure the zone of influence?
A Yeah. So we have eleven monitoring wells that surround the pumping centers. And as we pump, we have transducers. Those record the water levels every minute in those pumping wells. So we're able to record in real time, compared to exactly when we start pumping, the progression of drawdown that occurs as a result of the pumping. And we can analyze that data to then project beyond where we don't have monitoring wells based on hydraulic characteristics. And that's how we get the projected zone of zero drawdown or zone of influence in this case.
Q Could I take a look at ESR-2, Figure 4-4, please?
SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: About where is that?
MR. LAZAR: You mean what page it is?
SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: What page?
MR. LAZAR: I don't have pages here unfortunately. The exhibit itself doesn't have page numbers. Thank you. That's exactly right.
BY MR. LAZAR:
Q Can you show me on here where the piezometers were that you used? Are they on this map?
A No, they're not on this map.

Q Are they plotted on what? 4-3?
A Figure 3-3, 3-2.
Q Can we take a look at those, please?
HEARING OFFICER DODUC: Do you have the page number for that?
SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Here's 3-3.
BY MR. LAZAR:
Q Mr. Horton, the Ps on there, are those the piezometers? No.
A There's passage transects, which start with PT, and the piezometers are P-1-L would be P-1 piezometer on the left.
Q Okay. So that's where you're measuring the groundwater then?
A So this is where we have piezometers both in the surface water and the groundwater underneath the river here. P-12, both sides of the river. Both sides of the river. Both sides of the river. Left side of the river. Left side of the river. Left side of the river.
Q So the area south of the river, south is the area that's going toward Creamery Meadow there. Did you measure the groundwater in that area there?
A Just underneath the river on the right side.
Q Just underneath the river. But not in the meadow and

not in the areas immediately south and east of the river?
A Correct.
Q Okay. I'd like to bring your attention to ESR-24, please. I'm going to look at Tables 16 and 17. That's great. Thank you. Can you point out for me on September 5th, 2007, the mean depth there?
A Are you still talking to me?
Q Yes, I am.
A This is not my table.
Q I'm aware of that.
A That's 9/5, depth .06 feet.
Q Just to clarify, we have these dates here. And then we have on the right side it says "pump status, new well on; both wells on; both wells off." And is there a time period going on between those when the wells are left on or the wells are left off?
A Yeah. We did cycle pumping. So we would go at least a solid week with no wells pumping to allow recovery of the system and then pump for a week and then switch what we were pumping.
Q So the mean depth looks like it was lowest on 9/5. And that's just with the new well on. It also looks like, again, just based on the mean depth here, that that was the lowest level that I see recorded, at least on the tables -- the two tables that I've got here on page 107,

Tables 16 and 17.

Did you ever try pumping with both pumps during that period?

Let me ask that a different way. When it says on 9/5 the new well was on, that means the old well was off; right?

A Correct.

Q Okay. So in other words, both pumps were not on at the same time?

A Not on that particular test.

Q And then my understanding from ESR-24, Section 3.2 -- we don't need to pull it up -- but that the old well had 2.26 CFS pumping and 2.37 CFS for the new well.

A When the old well was pumping alone in 2007, an average of 2.26 CFS; is that what you said?

Q Yeah.

A Yeah.

Q So 2.37 CFS with the new well on and we see -- on 8/30, we see a .12 mean depth with both wells off. And then we turn the new well on, and then we see a .06 difference here between turning the wells off and putting the new well on. So just with one of the two wells turned on, we've lost .06 depth here, is what it would appear to me. Does that look like -- is that what I'm getting out of there? If I look at 8/30, the mean depth is .12. And

then at 9/5, it's .06. So you lost .06 feet of depth there.
A That's what it looks like.
Q That's what it looks like.
And then you turn both wells off on 9/12 and it goes from .06 to .15. So when you'd turned the well off, it went up by .09 in terms of depth.
A There's a lot of other things going on at that time. I just realized we're talking about passage Transect 11.
Q Yes, we are.
A You're talking about a period when Labor Day weekend occurred.
Q I didn't ask you for the explanation.
A If you want to correlate changes to pumping, you have to account for the trends that come into the system.
Q But I thought the point of this test was to correlate pumping with the depths.
A It is. But you have to correlate the effect of pumping on the depth, not the effect of all the other factors on the depth.
Q I see. So in other words, there is a change there from .06 to .15. And it is when one of the wells was turned off, but you think there are other reasons why that could be?
A I know there are other reasons. It was a serious

reduction in the flow of the river overall caused by withdrawal at the upstream.

Q And 2.37 CFS, that's what was being pumped with the new well on. Is that the -- as I understand it, the permit asks for 5.84 CFS as an instantaneous maximum. So 2.37 would seem to be like about half of that.

A Yeah.

Q Okay. I'm just checking things. So these dates here at which there was .06 depth is occurring with only half of the permitted requested maximum instantaneous diversion going on, which you've just affirmed; correct?

A Correct.

Q Thank you.

Mr. Hanson, I have some questions for you.

Let's take another look at the depth. I'm going to be looking at ESR-21, Mr. Hanson's testimony -- excuse me. Dr. Hanson. Sorry about that.

A That's fine.

Q If we could look at page 12 here of ESR-21, paragraph 20, the last sentence there says that, "Our studies, even under a critically dry water year, provide no evidence that El Sur Ranch irrigation well operations result in channel dewatering or fish stranding within the lower river or lagoon."

Let's take a look again at Tables 17 and 18, page

107 of ESR-24.

So let's just take a look at Table 17.

Now, Mr. Hanson, on page 14 of your testimony, you say that, "Within the lower reach of the Big Sur, we identified passage Transect 11 as the critical ripple for passage purposes within the entire study area."

A That's correct.

Q And Table 17 of ESR-24 is also for passage Transect 11. So we're talking about the same transect?

A We are for 2007, yes.

Q If you look at where it says "meets criteria" on the right side, we see a whole series of "no's" there. No. No. No. No. No. No. Those refer to whether or not the measurements taken meet the passage criteria of 25 percent of the 10 percent; correct?

A That is correct.

Q And does this strike you as conditions that then would be less than ideal for juvenile steelhead?

A We recognize these as less an ideal. And we identify factors that contributed to that.

Q So regardless of -- just for a moment -- just for a moment, the factors that contributed, the fact is based on the criteria that you've set forth, these series of no, no, no, means that fish passage -- juvenile fish passage here is not occurring under those 25 percent and 10 percent?

A That's what this means.

Q Okay.

A But there's more to the answer.

Q So on page -- and then just to follow-up on that, on page 28 of your testimony, you talk about mean depth changes.

Then we've got Table 6 and 7 on ESR-24, Table 6 and 7. It's going to be just a couple pages before this. So if you look at the mean depth here between September 5th and September 12th, we see it going from .12 to .18. Is that accurate?

A That's an accurate reading those two cells in the table.

Q Okay. Now let's look again at Table 16 and 17. And you'll see here that the flows increased at VT-1. Do you see that? For example, between 9/6 and 9/12?

A The flow on 9/6 was 1.97.

Q And then at 9/12, it goes up to 5.03?

A Correct. The flows at VT-2 and VT-3 also changed.

Q Right. But they don't go up nearly as much, do they?

A The flow at VT-2 does not go up nearly as much.

Q Is it possible that the differences in pumping there, the differences could be a result of pumping?

A Mr. Horton is the one to really answer that.

My understanding is that passage Transect 11 is right at upstream zone of the theoretical calculated zone of influence of the pumps. So taking that -- that's my understanding about where the zone of influence would be affecting the potential surface waters. That's a factor that needs to be taken into account, as well as the actual flows that were occurring at the river during the time these measurements were made.

Q Okay.

A So I don't have an opinion as to what would have caused that difference in those flows.

Q Okay. Let's talk just for a moment about temperature.

On page 13, you say that, "The average daily temperatures of 18 degrees Celsius or less during the spring, summer, and fall juvenile rearing period." "Average daily temperature of 18 degrees Celsius." This is on page 13 of your testimony.

A Those are some of the criteria that have been suggested.

Q So the National Marine Fisheries Service recommends the average daily temperature of 18 degrees or less during the late spring, summer, fall, and juvenile rearing period.

Let's take a look at ESR-24, Figure 31. It looks to me like the 6th of September the temperature there has

exceeded 20 degrees; is that accurate?
A The instantaneous temperatures that we measured, because we measure temperatures throughout the day, there were maximum temperatures during that period that did exceed 20.
Q It says hourly and average. So I guess those are the hourly temperatures then?
A The hourly temperatures are what are showing the diel variation. The average is the green line.
Q So there were spikes above 20 degrees?
A During that period.
Q During that period.
A That was the period that we looked at in Table 17 when the flow in the Big Sur River was .35 CFS.
Q And let's look at Figure 33 as well. Once again, it looks here like we've got temperatures above 20 degrees; is that also accurate?
A There are instantaneous temperatures above 20 degrees.
Q So there are temperatures above 20 degrees?
A That isn't the criteria for an average daily.
Q I don't quite understand how you can have a whole week or two weeks -- excuse me -- a whole week of measurements there and then these spikes here are just for single hour points when you have it over the course of a whole week. If we were to flatten that out, are you saying we would

only see specific points, random moments, when it would go above 20 degrees?
A No, I don't really understand your question.
But, for example, there are days within this week where the temperature during the night looks to be 14. And then during the day under these low flow conditions, the temperature increased on that particular day in the afternoon to it looks like about 21.
Q Twenty-one degrees. And so when you're taking the averages here, you're averaging the much lower temperature at night as well?
A The daily average based on a 24-hour period.
Q Okay. We do see some 28 degree temperatures there.
A I think the average daily has exceeded 20. But instantaneous, there never were temperatures of that.
That's one of the reasons on these graphs for purposes of providing guidance we highlighted the 20 degrees, which would be an indicator for average daily in our analysis. And the dashed lines at 24, which would have been a red flag for instantaneous temperatures --
Q So in other words, from what I understand then, what you just said, there's a temperature there that approaches instantaneous fatality rate?
A There is a temperature on a short-term basis that would have provided and contributed to very stressful

conditions for steelhead in this reach of the river. Based on that, we recognized and made recommendations for actions to avoid that.
Q Okay. Let's talk about dissolved oxygen for just a moment.
Before we do, let's talk about carbon dioxide for a moment. Is carbon dioxide an important consideration when considering the relative health of the stream for raising of steelhead?
A It's not one of the primary water quality constituents that is typically measured, carbon dioxide, pH.
Q It is one --
A There are factors that effect overall water quality within a system.
Q I see. So would having higher CO2 levels then impact the steelhead?
A It would depend on a whole host of conditions, including what the magnitude of those are, the duration, the health of the fish at the time those occurred.
Q So it could be a factor?
A Could be a factor. I didn't identify any way through which the well operation would necessarily influence that, but that could be a factor.
Q If the CO2 in the river increases, does that also increase the amount of oxygen needed for the steelhead?

A Many of these water quality parameters act together. So if electrical conductivity goes out, that may influence the fish's bioenergetics, its physiology and influence its need for oxygen or other constituents.
Q My question was, though, if there is higher CO2, would that raise the oxygen requirements for the steelhead?
A It may, depending on the magnitude of that CO2 and the duration and how it affected the physiology of the fish.
Q Does groundwater typically have a greater CO2 concentration than surface water?
A That's really not my area of expertise.
Q Okay. But let's go back to Mr. Horton then. Are you familiar with whether or not CO2 in concentrations is higher in the underflow or in surface flow?
A We did not study that in this case.
Q I see.
A So I'm not.
Q Would you be surprised to learn that underflow actually the underground groundwater actually has a higher CO2 concentration? Would that surprise you?
A Not necessarily.
Q I see.
Let's talk a little bit about dissolved oxygen, DO. I'm going to go to page 24 of Dr. Hanson's testimony.
Dr. Hanson, you've repeatedly referenced six

milligrams per liter is the criteria developed for adequate oxygen in the stream for steelhead.

A There are individuals that use five milligrams per liter, six milligrams per liter, and seven. We selected six milligrams per liter.

For purposes of providing a context of our results, we present all the results as they were measured so that anyone could apply a different criteria should they choose to.

Q Are you familiar with what the minimum dissolved oxygen requirements are in various basin plans in California?

A Just in general, not specifically for individual basin plan.

Q Were you aware that, for example, the San Francisco Bay Basin Plan listed water quality objective of seven milligrams a liter?

A I'm generally aware some of the basin plans and that may be one that identifies seven milligrams per liter.

Q And also a saturation rate of not less than 80 percent?

A That would be familiar and that would be typical.

Q Okay. Could high water temperature within the levels suitable for steelhead be detrimental at six milligrams a liter?

A There is an interaction between water temperature and dissolved oxygen concentrations. There is also an interaction between water temperature and the metabolic needs of a steelhead in terms of its oxygen consumption rate. So depending on the magnitude of the temperature, depending on the magnitude of the DO, those do interact. As temperature goes up, that DO requirement may very well go up.

Q As the temperature goes up, the DO requirement may go up as well?

A Yes.

Q Let's take a look at page 30 of your testimony, paragraph 56. It says here, "No obvious limiting factors to juvenile steelhead were observed during the surveys." But isn't it possible that low-dissolved oxygen in 2004 and 2007 could be a limiting factor?

A Low-dissolved oxygen in 2004, for example, in a very localized area could have affected the habitat quality for steelhead in that area. And they may well have avoided that localized area of groundwater upwelling. We've seen in other systems where they're actually attracted to the cooler temperatures, however.

Q I also want to turn to page 40, which you call limiting factors.

As I understand from what you just said, periods of low DO concentrations and high temperatures that occurred in 2004 and 2007 could possibly have been a limiting factor. The favorable DO and suitable temperature conditions were present during the study period, according to Dr. Hanson. So I would like to bring up Figures 59 to 63 of ESR-22.

Could you describe what you see there at numbers 8 and 9 there?

A Certainly. What these are, these are results of graph sample measurements that were made in August 19th of 2004 when we went out. And did our surveys, the crew started it typically at the lagoon and they block up the channel. And they would have a hand-held dissolved oxygen electrical conductivity and temperature meter. At each of these prescribed locations, they would then measure the dissolved oxygen temperature and conductivity.

This is a plot of the dissolved oxygen measurements on the vertical axis in milligrams per liter as a function of the transect locations going from one in the lagoon to 21 up in the Andrew Molera State Park parking lot. Stations 6, 7, and 8 are typically in the area of the river adjacent to Creamery Meadow. And what this shows is evidence that dissolved oxygen concentrations were greater in the reaches downstream of that area adjacent to Creamery Meadow. They were greater in the area upstream of Creamery Meadow. And they were depressed within the reach of, in this case, transects roughly 6, 7, 8, and 9 adjacent to Creamery Meadow.

Q I see. And so there are areas there where the DO falls below 6. And if we use the standard criteria that, for example, the San Francisco Basin Plan recommends or requires, which would be 7, then we would see an additional couple of figures there at least hovering right around 7.

A I believe the same three data points would be below 7, but there would be several that would be right just above the seven line.

Q And did you examine the percentage of saturation here?

A We did not. We measured dissolved oxygen concentrations. We didn't calculate percent saturation.

Q You weren't able to determine if it reached 75 or 80 percent?

A We didn't make that calculation.

Q And let's just keep looking for. Let's take like a 59, 60. Okay, here's 60. And here we have dissolved oxygen level dropping even below 4. Would you describe oxygen level of that low to have some sort of negative impact on the steelhead?

A We would consider those to be stressful for habitat for steelhead and would potentially create a localized area where steelhead would avoid those stressful conditions.

Q I see. And can we keep going? Let's keep looking at the different figures here.

So here we have another one. It's interesting how Transect 8 seems to fall this right off the scale there, down, down, down.

We could also look at ESR-24, please.

Thank you for shuttling back and forth.

Figures 52 to 55, please. Thank you.

So it looks like with the wells on -- with the wells on and off here, we still have dissolved oxygen below the six milligram level. Is that also how you're reading that?

A In this example, Figure 52, there were dissolved -- these were based on a continuous monitoring as opposed to the grab sample that we talked about from 2004. So this is a richer data set.

Q This is a richer data set?

A And what that shows is that at this particular location -- I'm not sure which piezometer pair two, but left bank and right bank, the DO in that reach of the river, both when the wells were on and when the wells were off. But recognizing that that was an extremely low flow period in the Big Sur River.

Q Absolutely. We went over that a moment ago. That was Table 17.
A Correct. That's one of the factors we took into account when we looked at this data. We also looked at that pattern to see and we also focused at the September 6th and 13th pair.
We looked to see if that pattern was repeated at other times during our survey. If we had a repeated pattern that was more independent of flow, that would give us a stronger signal that the well was having an effect, as opposed to the natural occurring flow of the river.
Q But your assumption is that all of the flow is accounted for through Dr. Hanson -- through Mr. Horton's calculations? You are correlating the measurements from Mr. Horton's studies with your own measurements; is that correct? Is that how you're making that determination?
A Yes. We did the monitoring together as a joint effort. We established VT-1, 2, 3, which were the flow measurement locations, which gave us basically continuous flow at various locations within our reach of interest.
Q Within the VTs; between the different transects?
A We used the VT data within our reach, and then we supplemented that with the USGS gauging station from the significant Big Sur River located further upstream.
Q VT-1?

A No. The USGS gauge station.
Q Above VT-1?
A Considerably above VT-1.
Q Above the parking lot?
A It's considerably above the parking lot. It's the flow that's basically entering --
Q Way up there?
A Way up there.
Q Okay. So, again, you drew a correlation between the low flows, the dissolved oxygen, and the pumping based on Mr. Horton's -- his own studies of the pumping going on?
A Yes. What we ended up doing is we ended up putting this entire data set, along with the flow data and the pumping data and temperature data and other data, into the a statistical database that allows us to then do multiple analyses of what were the contributing factors that were observed and effect these DOs.
Q Sure. Thank you for that response.
We can take a look at a few more figures here, 53, 54, 55. Let's look at 53 for just a moment, here. Again, it looks like for more than just the Labor Day holiday, but for a few weeks there, we've got pretty low DO there.
A We've seen consistently this groundwater upwelling along the right-hand bank of the river looking upstream

adjacent to Creamery Meadow. What this shows is that during the Labor Day weekend when the flows were extremely low, we had low DO on both left and the right banks. As the flow started to increase, we started to see a response on the level bank first. We were still having influence of the groundwater on the right bank, and that's reflected in the data that we collected.

Q But you do see very low DO at least continually there?

A These would be conditions that would be stressful and very likely that steelhead would react to.

Q I see. Couple more points, Dr. Hanson. Thank you for your patience.

On page 4 of your testimony, you say that, "The juvenile steelhead and rainbow trout were characterized as being in good health and condition."

And let's go the page 30 now. You say here, "Juvenile steelhead were observed inhabiting all eight reaches surveyed during the July and October surveys." Well, that might be true for 2004.

Let's take a look at the last page of ESR-24. Go down to the very last one. Now, this is 2007, mind you. So this is an exceptionally dry year.

A This was our critically dry year. Exceptionally dry year, yes.

Q Now, what's going on there in the top right-hand

corner of that graph?
A Reach H?
Q Reach H, what's the total number there?
A Total number of -- in this case, Oncorhynchus mykiss, which steelhead resident rainbow trout, zero were observed in Reach H during this October 22nd, 2007, survey.
Q I see. So it is possible to have no fish in the reaches during critically dry periods?
A The results that are reported on page 30 of my declaration are from the 2004 study. In this particular case, our reaches went from Reach A in the lagoon to Reach H up by the parking lot. Reach H, although it had zero fish, is well outside the area that has been identified by Mr. Horton as being affected by the wells. But there are other factors. There are habitat conditions and other factors that affect steelhead in this river.
Q Dr. Hanson, wouldn't the fish have to at some point go through the area affected in order to reach Zone H?
A These fish may have come through in February, March, April. They may come through in October, November, December. Based on flows, based on their physiology, based on a variety of factors, these fish move within the river system to different rearing habitats.
Q I see. So let's take a look at ESR-22 for just a moment, please. And can we look at Table 9, please? If

could you compare the reaches there in July and October compare, for example, Reach Number 2?

A   Reach Number 2 during the July 27th survey had 43 juvenile steelhead that were observed; while on October 16th, there were none.

Q   I see. So didn't you just say that there were fish in all the reaches in 2004? Is this again not 2004?

A   This would be 2004.

Q   So it would appear then in Reach 2 on October 16th in 2004 there are no fish present there.

A   But you can't discount whether or not those fish moved down to Reach 1, because that number went up.

Q   I see. Within the period between the end of July and the --

A   These two reaches are immediately adjacent to each other and both in the lower reach down in the lagoon section.

Q   The statement you made that juvenile steelhead were observed inhabiting all eight reaches during both the July and October surveys, at least on October 16th in Reach 2, that would seem to be inaccurate?

A   That would be inaccurate. That would apply to the July 27th date.

Q   I see. Again, that was page 30 of your testimony.

And just a couple more points here. Going to once again one more time back to my favorite table, ESR-24, page 107, I want to look at Table 16 here. Sorry. ESR-24. Thank you.

Looking at these no, no, no, this is the results of the adult habitat conductivity and passage during the 2007 study. That's how I'm reading this table here.

A That's correct.

Q And you don't express concern with this in your findings, because of the number of adult steelhead in the river during the period that you've measured here; is that correct?

A Right. Adult steelhead typically don't migrate into a river like the Big Sur River in August, September. October, depending on rainfall and attraction cues. Under these extremely low-flow conditions, in my opinion, it would be unlikely that adult steelhead would be migrating up when flows are in the five, six, seven, eight CFS range.

Q What if they were already in the river?

A There could potentially be steelhead that come up either on earlier rainfall events or come downstream as what we call kelts, those steelhead that spawned the previous winter but didn't return to the ocean.

We did see an observation in the 2004 snorkel survey or 2007 -- one of the surveys -- of at least one adult that was rearing in this lower reach. So there could be adults. They could be holding in various deeper pools, things like that.

Q So it wouldn't surprise you actually to see adult steelhead in here at least in October?

A There's -- depending on the rainfall and their life history, I wouldn't be surprised that there are occasional fish that occur in the river in October.

Q Adults?

A There could be adults that would very likely be holding in deeper pools. Basically, we think anticipating higher rainfall events that would create better flows and better opportunities for them to migrate either upstream or downstream. But they typically wouldn't be migrating extensively within the river at this time.

Q I see. But in terms of meeting the criteria there, you do -- it says no. So all that means is that they couldn't move? They could be stationary?

A They could certainly be holding, and holding in these deeper pools in these deeper areas. Based on the Thompson criteria, which is what we used, during this low-flow period, it did not meet the Thompson criteria in this case of 0.6 feet either 25 percent or 10 contiguous percent of of the river.

Q Just a point of verification there. When it said the

wetted width, is that the total width of the stream there, the transect?
A That is the width of the stream from the left water's edge where it's just wet to the right water's edge where it's wetted.
Q Are these 25 percent and 10 percent percentages of the wetted width then?
A They are. So that percentage fluctuates depending on the flow and the wetted width and the number of cells that were measured.
Q So 10 percent of 30.6, for example, would be about three feet?
A Roughly so.
Q Okay. Just wanted to clarify that.
A And that would be a contiguous ten percent. It would be basically a channel, roughly three feet wide, the fish can migrate up and through.
Q And I think that's my last question for Dr. Hanson.
Just one more question for Mr. Horton.
Mr. Horton, were you aware that there was a major flooding event in the Big Sur River area in the lower reach in 1995?
A Yeah, I think so.
Q Were you aware that the channel of the river changed dramatically at that point?

A Yes, I was.
Q You were aware of that. Based on the fact that it changed dramatically at that point, isn't it possible that a major storm event could once again change the channel?
A Yes, it is.
Q When the channel was changed in 1995, did it move the well of the river away from the well locations?
A I believe so.
Q It did. And so it would be possible then with another major storm event for the river to move back closer to the well locations?
A It's all possible.

MR. LAZAR: No further questions. Thank you very much.

HEARING OFFICER DODUC: Thank you. Mr. Lazar.

Mr. Johnson, do you have cross-examination?

MR. JOHNSON: I do. Thank you.

CROSS-EXAMINATION

BY MR. JOHNSON:
Q Good afternoon, everybody. Again, my name is Brian Johnson with Trout Unlimited. And I have just a few questions beginning for Mr. Hill, just clarification questions about operations. I think they're fairly straight-forward.

In your testimony, Mr. Hill, you said that the

average size of the herd at approximately 450 a head is limited by the number of acres and employees. And continued to say greater irrigation of the existing fields would not substantially increase herd capacity above 450 cattle.
A That's generally true.
Q And my question is just when you say greater irrigation of the existing fields, you mean greater than historical practice?
A Yes.
Q Thank you.
I gather that over the past 50 years or so at the ranch you've occasionally had to apply water to the pastures to leach out salts for maintaining the productivity. And my questions go to understanding the procedure for that and the timing of it.
And so is it -- do you apply water to leach salts independently of the irrigation schedule or is it part of the irrigation schedule and maybe more water is being applied than would otherwise be the case?
A If you don't mind me asking -- that's kind of a compound question. Could you break that into two pieces for me?
Q Sure.
Are there ever times when you apply water

specifically for the purpose of leaching salts when irrigation water is not needed?

A Our practice is to irrigate as often as we can. We don't have a specific practice of irrigating just for leaching independent of growing -- for the purpose of growing grass. And I think a lot of the leaching also occurs when it rains do a great job of leaching.

Q Right. So that makes sense. At the beginning of the year, after the winter rains, it's leached out. And then your decision about whether -- is it a conscious decision to add more water than you might otherwise because salts are building up?

A No.

Q So at the beginning of the year, after the winter rains, you wouldn't have to add that extra water because the salts are leached out; is that correct?

A Yes.

Q And then after that -- I guess I'm just getting at how do you know when it's time to add the extra water for the leaching?

A Again, we don't have a specific protocol or program for adding additional water. The water that we apply is applied for maximizing or optimizing the grass growth. The additional component for leaching is not a separate event.

Q Fair enough. I believe one of your consultants said that it's not necessary every year; is that correct?
A Yes.
Q Okay. I believe it was Dr. Allen, perhaps, who said it's not necessary every year and also maybe calculated or participated in the calculation of the average acre feet requested and the maximum. Is the 10 percent for leaching included in the 1087 acre feet per year average, or is that part of the differential between the average acre feet needed and the maximum acre feet needed since it's not needed every year?
DR. ALLEN: That question is directed to me; right?
Q I believe so.
A So I did not do a soil calculation of the effect, the leaching, during the wintertime on an annual basis. So the 1087 includes the leaching fraction. So it was just a straight calculation based upon the water quality of the irrigation water.
Q Okay. Thank you.
Again for Dr. Allen, you testified that higher irrigation efficiencies associated with tailwater recovery and pump ag systems aren't practical due to higher cost. I'm wondering if -- I wasn't able to find a place where those higher costs are specified and quantified. And I wonder if you can tell me what those higher costs would

be.
A I can, to the best of my memory. I did prepare at the request of Mr. Hill a cost for a tailwater recovery system. So they already have a pond that catches the tailwater from the south portions.

But on the north portion would need to construct siphon across there -- a siphon pipe across the Swiss Canyon and then direct that water into the reclamation pond.

I did calculate a cost. If I remember right, it was kind of in the 125- or $50,000 range. And that included pumps to move the water back up to a portion of the pasture that was irrigated.

So for the difference in cost for on a per acre foot basis, it was quite significant as compared to just pumping it straight from the river.

Now, in places where they do do that that I've worked before, it's on the order of 100-something-dollars an acre foot for recovered tailwater, particularly looking at even ideal fields for that such as down in the Imperial Valley. So it's an expensive proposition to recover all the tailwater, and then tailwater is in these conditions is a necessary part of the irrigation if you are going to fully irrigate the bottom portion of the field, sure.
Q Thank you.

For the sprinklers, you said you looked at a sprinkler system and the increase in efficiency was not as great as some people might think because of the wind and other things. And I'm wondering if you can, to the best of your recollection, quantify how great the efficiency gain would have been.

A I can. Under most conditions, a sprinkler system such as a wheel line or hand line where it's not a continuous move would be on the order of 75 percent efficient because of the non-uniformity of the irrigation and maybe losing the eight percent or more -- even more in this El Sur Ranch from the evaporation from the time the water leaves the sprinkler to hitting the ground and being infiltrated into the soil.

So when I calculated energy cost, I used a 70 percent. So I decreased it five percent. So it's only five percent higher than the surface irrigation efficiency that I used. But I'm not even sure with those high winds that it might be closer to the same. So a lot of cost and a relatively small differential in irrigation efficiency gain.

Q Thank you.

Same question for the drip system. I know you said it was expensive, and it might not work very well because of cattle and so on. Do you have an estimate of

cost for that?
A I didn't get so far into a complete design on that. But the sprinkler system was on the order of $2,000 per acre. And a subsurface drip irrigation system would be on the order of 3- to 4,000.
And probably the biggest problem with that is that just a lot of electronics and wires, lots of above-ground filtration equipment and just the maintenance. Typically, these subsurface drip irrigation systems are used in high value crops and in places where cattle are not allowed to go. And they could just -- if it's raining and they're there and it's muddy, you know, there is a lot of maintenance problems with a drip system where there is cattle.
Q Thank you. Mr. Hill, have you ever considered seeking grant funding for any types of efficiencies, improvements, these others that we've assessed?
A No.
Q Thank you.
Dr. Sage -- I'm sorry. I think I lost a question for Dr. Allen.
You said cultivation refers to the preparation of soil, planting of seeds, and growing of crops. My question is whether all three of those factors must be present for it to be considered that. Did I get that

right?

A Could you rephrase it?

Q Sorry. I'm getting my doctors confused. I was sitting behind you and I really apologize.

So Dr. Allen, I believe, was the one who said cultivation refers to preparation of soil, planting of seeds, and growing of crops. And the question is whether all three of those factors must be present?

A I think, in this case, they were all present because these fields have been leveled to some extent and cultivated in planting the pasture. The better job you do maintaining the pasture, of course, would minimize the number of times you need to reestablish and till the pasture. But, you know, pastures can be quite permanent, but they are started through cultivation and planning. These are all improved pasture grasses, legumes, clover. They're not plants that would typically grow in that environment because of the dry, dry summers.

Q Thank you.

Last question about the pastures and the cultivation for Mr. Hill. How often have the irrigated pastures been replanted?

A None that I'm aware of whole scale. We've done some small remediation projects. In fact, there was one about ten or so years ago just up slope of the reclamation pond where there was some sluffing and some gullying occurring. And we brought in some top soil and revegetated that.

The problem with disturbing the current structure of the grass crop that's there, the minute you start disturbing the soil, the subsoil or anything, you get nothing but weeds and thistles. It's not worth the hassle. And you have to almost start over.

The problem with starting over though is we have a very, very shallow soil horizon. It's only about 12 to 18 inches deep. So the manipulations and so forth bring dire consequences and takes a long time, many, many, many, many years, herbicides and poisoning and so forth, to get back on top of a very consistent and continuous irrigated pasture that requires a lot less manipulation, a lot less herbicides, et cetera, et cetera, to maintain the quality crop you need for the cows.

Q Thank you.

For Dr. Hanson, I have just maybe 10, 15 minutes tops I think.

So going to the transects and the migration depths, I was -- I'm familiar with the Thompson method and with the policy setting the adult depths at seven-tenths of a foot rather than the original six-tenths of a foot, and for juveniles at three-tenths of a foot.

Well, first of all, to clarify that's a migration number, correct, as opposed to a heavy hand something number or something else?

A It's a number that we chose to allow the juveniles to move from one habitat unit to another, not necessarily for migration as if they were going up to a spawning area.

Q Fair enough.

A But for movement in response to environmental conditions.

Q And I forget whether that was -- that number -- we talked about that number and whether that ended up in the policy or whether that's your expert judgment or a literature value.

A It was based in combination on both my expert judgment as well as discussions with other investigators. Hence, it's a number we've used on other river systems for looking at juveniles since they're so much smaller than the adults.

Q Sure. So I'm wondering, did you develop habitat measurements or estimates at those times that flows would be at three-tenths of a foot in a weighted habitat area or habitat quality?

MS. GOLDSMITH: I would object as unintelligible. I don't understand what the question was.

BY MR. JOHNSON:

Q Did you measure habitat when flows were at three-tenths of a foot?

A We measured habitat parameters like temperature, water depth, dissolved oxygen, electrical conductivity. We did not measure habitat in the sense of weighted usable area.

Q So weighted usable area -- you didn't measure area generally that would meet suitability criteria?

I'm trying not to do the compound question.

A We established a number of transects that represented different types of habitats within the reach. Some were representing the shallow critical ripple type habitat. Some were in deeper runs. Some were in pools. So we could look at habitat conditions across the landscape that was occurring in the reach. And that was based on our 2004 reconnaissance study that included everything from the lagoon all the way up to the parking lot.

Q Right. And you didn't develop site-specific habitat suitability criteria for this trend?

A We did not.

Q I understand that you did snorkel surveys in at least 2004 and 2007. Am I correct that you didn't capture the fish and tag them and recapture them? Am I correct?

A You're correct. And, you know, we're dealing with a listed species. We're dealing with concerns about harassment and take. We've had a number of discussions with the National Marine Fisheries Service and the

Department of Fish and Game on other river systems about alternative methods, many of which, like electro-fishing, could be damaging to the fish. We thought for this particular stream it was more appropriate to avoid that kind of harassment and rather relying more on a visual survey, especially given the great visibility that we have in the Big Sur River.

Q Thank you.

But given that you didn't tag the fish, I'm wondering about the -- maybe you could just explain a little bit the basis for the conclusion that over summer survival was high?

A What we ended up doing is we did a complete survey of that lower one-mile reach in July of 2004. And we assessed the distribution of juvenile steelhead. We made estimates visually of their size distribution and we counted them.

Then we had the same divers come back with the same training and same protocol, and they re-did the survey in exactly the same area in October. And what we found was that in the July survey -- and I'm just going to kind of make -- I'm not going to make the numbers up. I'm going to tell you from page 30 of my exhibit. We had 417 steelhead that were observed in that one-mile reach. When we came back in October, we had 358.

So putting aside the assumption of immigration or emigration from the study area and simply assuming that we have a population that was territorial and had site fidelity, we can look at the net change between those two surveys. And that gave us both an indication of the growth rate as well as the survival rate.

And what we saw was that the numbers of fish from 417 to 358 was pretty good in terms of the survival over the summer compared to many other river systems. And that suggested to us that we had good summer survival.

Q Okay. Thank you.

Do you recall whether the three-tenths of a foot juvenile movement depths were met during the period during the first and the second snorkel survey?

A Could you be more explicit as to exactly which transects are where?

Q Sure. We'll start with the one that you just gave me numbers for. And the question is whether juvenile fish would have had three-tenths of a foot to move upstream or downstream from the survey reach in between the snorkels that yielded those two numbers?

A I've got the data. But in 2004, we had flows that were roughly 12 CFS or in that range. Those would have been flows that typically would have met the criteria that would allow fish to move upstream or downstream among habitat units.

Q That's all.

I have what I hope is not a question that will send us all into tears about your statement that in your testimony I believe page 11 that there doesn't appear to be a pattern in steelhead abundance that would suggest the population abundance has declined substantially. And I'd like to get at what you consider a substantial decline. So I think I'll start by just asking whether an 80 percent decline over a 50-year period would be considered a substantial decline

A And we use -- well, let me back up. We looked in the literature and we talked with other folks about what kind of information do we have available on the population dynamics of steelhead within the Big Sur River. And steelhead are very difficult to survey, especially the adults, since they migrate upstream at the wintertime when turbidity is high. It's usually raining. The flows are high. It's hard to observe. And unlike chinook or other salmon that have the ability to die after they spawn so you can do carcass surveys, steelhead don't, which makes it very difficult to develop quantitative data on the abundance.

So we really relied -- and I don't put a lot of reliance on that particular statement, but we talked with fishermen. We looked on the web. We looked at some of Rob Titus' data. We looked at Duffy's data and some of the other compilations to see if we used to have 10,000 fish and now we have 100. Or if we had evidence that in the past the numbers were three, four, 500 and now we've got one, two, 300. And at least that anecdotal information that we were able to look at suggested that at least on the Big Sur River it wasn't a precipitous crash in population abundance as has been observed in other river systems, coastal and the central and southern California areas. But it's based on very, very limited data.

Q Okay. Thank you.

And I sympathize with the idea, the difficulty of tracking populations of steelhead in general. I'd like to try again. And I want to draw my question not at the review of the data of steelhead, but just ask about what you mean when you talk about a significant decline. So I'd like to ask, you know, in general, for Stream A, in your expert opinion, do you consider an 80 percent decline to be substantial?

A I would.

Q Twenty percent?

A Twenty percent is probably within the natural variability, given the hydrology and the other factors that influences these populations.

Q How about 50 percent, and say it's sustained over a period of decades?

A Now you're adding qualifiers that are appropriate. If it's 50 percent that's sustained, that's an indicator that there's something happening to that population or that watershed that is more than just an annual hydrologic condition or an ocean condition that effects one or two year classes. And that would be more of an indicator of a long-term and more serious decline.

Q Thank you.

Just a couple of questions about temperature. I wonder if we might pull up I believe it's Figure 20 of ESR-21. It's one of the temperature graphs that we've seen before. Thank you.

And I know the feeling.

So my understanding here was that the monitoring started before September 1st. I could be wrong. Do you have data for the period before September 1st?

A In 2004, we started in April/May time period. In 2007, we basically started that last week of August. So our start date varied from one year to the next. The data we've reported here is the complete data set that we collected.

Q That was my question.

You used a threshold for daily average temperatures of 68 degrees or 20 degrees Celsius. You also in your testimony referred several times to some National Marine Fisheries Service publications, but you didn't use the National Marine Fisheries Service temperature thresholds which I believe were 64 and 18. That's correct?

A They -- all of these temperatures in an unregulated group where we can't really control temperature I consider more guidelines than something we would actually try to use as a standard or regulate to.

And so we use the 68 degrees, the 20 degrees Centigrade, as a general indicator of the habitat conditions for steelhead, recognizing that others have used 65. There is a range of temperatures in there. And the effects of temperature are much more complex than I think most people recognize in that it has to do with things like the duration and the magnitude of diel fluctuations. It has to do with their food availability, their habitat conditions, the energy they expend for avoiding predators or interacting with competitors.

We don't use it as an absolute. It's more of a guideline to just give us a sense of how would these data match up with the general habitat conditions for the species.

Q Right. I understand that it's not a binary thing, that fish die when they cross one of these thresholds.

You mentioned food availability. Is it correct that as a general rule steelhead will do better at higher temperatures if they also have more food rather than less food?

A They do better at higher temperatures up to a threshold. And some of the growth studies that Chris Myers and others done have shown if there is a high food availability, the steelhead can grow faster at higher growth rates, until the basal metabolism of that higher growth rate exceeds the energy that they get from their food.

And so there is a bio-energetic feedback loop there that really links temperature and food and the energy they expend just to swim in their habitat and forage. Those are all factors that influence their growth rate and their response to temperature.

But yeah, in general, if you've got higher temperatures, higher foods, you'll get higher growth rates.

MR. JOHNSON: Okay. That's all. That concludes my questions. Thank you.

HEARING OFFICER DODUC: Thank you, Mr. Johnson.

Does the Carmel River Steelhead Association have cross-examination?

MR. LE NEVE: I have just a couple questions.

HEARING OFFICER DODUC: Please come on up.

Ms. Goldsmith, to help you prepare, if you wish to have redirect, I will allow you up to 20 minutes for redirect and allow parties up to ten minutes for re-cross.

With that, you may begin.

MR. LE NEVE: Thank you. Please forgive me. I suffer from stage fright, so if I stumble a little bit, it's not because I don't know what I'm talking about; I'm quite nervous.

CROSS-EXAMINATION

BY MR. LE NEVE:

Q Going back to the fish numbers, Dr. Hanson, we've pretty well established that no one knows what the numbers of fish historically were or what the number of fish are right now?

A That's my sense from looking at the information, talking with other experts. I think we have a general idea, but I don't think we have precise numbers. And we certainly don't have numbers that we track a trend or be able to tell us over time how it's changed.

Q Has anyone calculated what the carrying capacity of the Big Sur River would be?

A I don't know whether the Department of Fish and Game

or the National Marine Fisheries Service has done that. That was beyond the scope geographically and in terms of what we were trying to accomplish, so I did not do that.
Q On your snorkel surveys, when you counted 400 fish, judging from other rivers of comparable size, would that be a high number or a low number of juveniles?
A If you just took the number of steelhead that we observed and the size and the quality of habitat, especially in the lower river in the lagoon, my feeling is that number would be very low. I think it would have the capacity to support a higher number of juveniles.
So as I started to think about that, then I started to think about this issue of carrying capacity that you raise, other limiting factors. And one of those factors is how much access do adult steelhead have to suitable spawning areas? And it comes in two areas. One is the complete barrier to upstream anadromy that occurs in the gorge that occurs as a result of the natural blockage.
And the other is the Lower Big Sur River, at least in the areas I've looked at, I would characterize as having relatively low availability of suitable spawning grounds.
And those may be factors that are influencing not the juvenile habitat, but rather the adult spawning

capacity of the river and maybe the overall population abundance.

Q   Okay. Going back to the depths for juvenile passage, my understanding, Thompson sets the criteria for adult passage?

A   Thompson originally in his studies in Oregon set the criteria for adults, and he set it at 0.6 feet of depth over 25 percent of the cross section. He did.

Q   I'm going through the results of this.

The EIR, the only thing I can come up with with juvenile fish passage is more it counted the Big Sur River Waterways Management Plan that's listed .5 feet as a criteria for juvenile fish passage. Considering that was in the EIR, why do you choose to use .3 as criteria for juvenile passage?

A   I think the distinction -- and I'm not completely familiar with the documents that you reference. But the 0.5 foot depth is typically a criteria that we use for juvenile rearing, not passage. And we were simply looking at the ability having enough depth and enough water to be able to allow the fish to move upstream or downstream from one habitat unit to the next, not whether they were rearing in that habitat.

Q   So again, it was more of your criteria?

A   The 0.3 was the criteria I selected for this specific purpose and this specific application.

Q I have a question for Mr. Hill.

In your video, if I heard it correctly, I think I did, when you were standing by the river and talking about taking the water out at the last minute, I believe the statement was, "We took the water out at the last minute before it's wasted to the ocean."

A I believe that's the way I used it, but I would say that we capture the water -- a more appropriate phase might be that we capture the water and reuse it or used it before it was, shall we say, lost to the sea.

Q My question, do you believe that any water that makes it out to the ocean is wasted?

A No. It certainly has a role to play. I think Dr. Raimondi came here and spoke to that.

In terms of fresh water and its use and its availability, it's a scarce resource in this state. And so recognizing that, the extent that only one percent of the fresh water, the yield of the watershed, is being utilized I think using it beneficially with the other 98 percent or the 99 percent going out I think there is enough fresh water going to the ocean.

Q Thank you. That was all.

A Thank you.

CHAIRPERSON DODUC: I believe Chairman Hoppin has some questions.

BOARD CHAIRPERSON HOPPIN: I know it's getting late, but while it's all fresh in your mind and you guys are softened up by a barrage of questions, I'd rather ask them now than when you're fresh in the morning is the bureaucratic way of doing things, you know.

Mr. Hill, you mentioned that you placed a conservation easement on the lower portion of your property about in the mid 90's; is that correct?

MR. HILL: Correct. Just for clarification, it includes everything on the ocean side of Highway 1. It does include some lands east of Highway 1 or inland.

BOARD CHAIRPERSON HOPPIN: Was the value you received for that easement higher because it was irrigated land than it would have been if it had been native pasture further up the hill?

MS. GOLDSMITH: If you know.

BOARD CHAIRPERSON HOPPIN: Based on a -- they consider an easement on irrigated lands more valuable than on non-irrigated land, is the question.

MR. HILL: I don't know that.

BOARD CHAIRPERSON HOPPIN: I assume -- and maybe not correctly -- that you or your family donated the land to the State Parks since you have an easement on that land for a well; is that correct?

MR. HILL: That is correct.

BOARD CHAIRPERSON HOPPIN: When did you deed that property to the State?

MR. HILL: That was done -- I believe the initial gifting was in the 80s, 80s or 90. It was after the well had been drilled.

And understand that there was a rather complicated transaction that occurred there. There was a portion of the land that belonged to the Molera family that they gave to the State. And that land was actually originally part of the ranch. The ranch was originally about 9,000-plus acres. And it was managed as one unit. And so as the Cooper-Molera family grew, they separated and created two different operations.

The Molera family gave their land, now Molera State Park, there was a small piece of acreage, four or five, six acres that the old well currently resides on and some of the pasture we call the pump house that needed to be deeded because State Parks felt they had to have it for Molera because it was in their watershed or whatever and they needed it and they were going to condemn it. And I said, no, I'll give it to you before you can condemn it. It occurred, if I remember correctly, in the 80s.

BOARD CHAIRPERSON HOPPIN: When your family deeded that land to the State, the State didn't indicate that as soon as they got the deed they were going to turn around and put stipulations on your ability to extract water from the well they had given you an easement on? Or was there a dispute?

MR. HILL: Thank you. I'll do my best to recall this, Mr. Chairman. It's not really super clear for me.

As I understand it, my father originally approached the State of California. I believe at that point the transaction was just in the phase of being developed between the Cooper-Molera family. My father approached State Parks and said -- a Nature Conservancy I think facilitated the purchase. Said, "I'd like to be able to drill an extra well. We find there is a shortfall in the current irrigation system. It doesn't meet our needs. We'd like to look for an additional water source."

And let me also add it was not only a well for ranch irrigation. We also drilled a few extra test wells, one for the Navy base because they had suffered saltwater intrusion. And we realized we might in some way be contributing to that. So we wanted to say, hey, let's help them out. National defense and all is an important thing. My dad gave up the Navy base because of World War II, cold war. So that -- and also drilled a well for the State Park facility up the road.

So anyway, as part of that process, they were very accommodating giving us permits to enter, come in, drill and test, and gave us an easement to withdraw the water for utilities and underground water pipes. When it came time to install the facilities, they said, "No. You can't do that." We had to take them to court. The letter of the law fortunately held up. We were able to withdraw it.

But it was just -- there was a change of administration in there, too, I believe that played a human dynamic that made unfortunately the litigation necessary. But we finally got it done.

And part of that process, if I recall -- and don't quote me on the details of this -- we asked them, you know, we're going to be withdrawing water here. Are there any permits needed. They said don't worry about it. You're in compliance and so forth. So we went ahead and understanding we were doing everything we were supposed to be doing.

Hope that answers your question.

BOARD CHAIRPERSON HOPPIN: You, or one of you, referred to the Navy well and that at times the pumping from the Navy well might increase the plume of salinity that comes. Who was it that talked about that? Was it you, Mr. Horton?

MS. GOLDSMITH: That was Mr. Horton.

BOARD CHAIRPERSON HOPPIN: What I'm curious about this Navy well -- I didn't know there was a Navel base there. But compared to the volume of water that you extract on an annual basis, do you have any idea of how that compares with what the Navy extracts from their well?

MR. HILL: Two things I can comment on. The relationship between the two, the ranch's extraction I would say is significantly -- and I'll put on a magnitude of three to four times greater than the Navy well. It's also further inland.

An important element that's been told to me and was verified through the well drillers' log is that the Navy, when they put in their well, they drilled about 10 to 15 feet deeper and got into a strata that allowed almost saltwater to enter into the well. I understand that they went back after they ended up practically pumping saltwater and did what they could to plug or cement the bottom of that to stop that problem.

As a result of that, basically, over the history of their occupancy at the Navel facility, three miles north of the place they currently use to irrigate, the winter months, say, October, November, December, January through May, April, May, June, usually the water quality was sufficient for them. And they run their pumps and fill their two big redwood water tanks and supply a military base of about 150 people.

Well, as irrigation season and the old well was put into production and were drawn on the groundwater, it started to cause inflows. They started to get salt. As a result of that, certainly my father was interested in good relations with the commander. He sought other water sources, drilled other wells to come up with a water source because he knew and wasn't going to argue with him and say look, "I'll work with you. I'll help you out." And drilled another well and provided him saltwater when their wells weren't working well. And so -- fresh water. Thank you. I'm sorry if I didn't make that clear. Fresh water.

BOARD CHAIRPERSON HOPPIN: Thank you.

Mr. Horton, when you were going through your diagrams and -- I didn't write down which one. I'm going to spare Mr. Lindsay from having to dig through the file. But when you showed the alluvial flow, is there any accretion that goes to the ocean, or does it all ultimately go into the river or the lagoon from the alluvial fill?

MR. HORTON: We have both things going on. In 2004 we measured the flow right out of the notch just feet before it went into the ocean. And just in the distance between VT-2, which was at our Zone 2 location, if you recall from the maps the big turn and V-1 we pick up one-and-a-half and two CFS of flow so that's discharged being pushed up. And depending on the minute-to-minute tidal conditions, we still have discharge going out in the aquifer below the beach.

So again, we have a mass balance where, you know, coming into that area we estimate there's six-and-a-half CFS in the groundwater system independent of what's flowing through that has to get out.

BOARD CHAIRPERSON HOPPIN: When you were questioned about the recharge of the aquifer after the pumping, is it correct or incorrect to say that a portion of the water you're pumping from those wells would never reach the river in any way?

MR. HORTON: Correct.

BOARD CHAIRPERSON HOPPIN: But you don't know -- it's hard to quantify the exact amount, and I assume it would vary under conditions?

MR. HORTON: Yeah. In fact, I tried to make some simple mixing models in our analyses that we've conducted over the years and come up with sort of the ratios of those. I don't recall specifically, but definitely on the order of, you know, one to two CFS what we pump is stuff that would not --

BOARD CHAIRPERSON HOPPIN: Since none of you brought it up, I assume that there isn't any percolation that comes from the irrigation of this pasture, at least south of Swiss Canyon, which I assume would be a barrier between any contribution. I would assume there's no contribution to the aquifer from percolation from the coastal practices on this ranch; is that correct?

MR. HORTON: Yeah. In fact, we drilled wells and the deposits just above the old well and put in monitoring wells. And when we drilled those, we continuously poured them from ground surface as well as specifically to look for an infiltration profile. And just below the one to two feet of surface, we logged very dry terrace deposits all the way to the water table.

BOARD CHAIRPERSON HOPPIN: Thank you.

Dr. Hanson, if I'm asking you a question that you don't feel comfortable with -- and Ms. Goldsmith doesn't jump on my back -- if you could give me dates that you would say were typical for in-migration of steelhead into the system? Could you give me a range of months?

DR. HANSON: I can give you a general response to that, recognizing there's variability depending on rainfall events and things like that. But steelhead typically migrate predominantly in the late winter. So we have fish that are migrating upstream usually in, say, late November, December, January, and March. And that's coincident with most of the heavier rainfall events that provide the attraction, that provide the opportunity for those fish to migrate up into these watersheds.

BOARD CHAIRPERSON HOPPIN: When they reach the upper portions of the watershed, do they immediately spawn? Or do they hang around like the salmon will for a period of time? When they get there, do they do their thing and leave?

MR. HANSON: It depends on, like, the condition of the fish, the stage of maturity, things like that. But typically these fish are coming up at a stage where they're approaching maturity. If they're migrating up in January or February, they migrate up and I think they spawn relatively quickly. And then the kelts that survive spawning migrate downstream and re-enter the ocean.

BOARD CHAIRPERSON HOPPIN: And their reach would extend, I assume, from December until sometime after March, is that correct, for outward passage?

MR. HANSON: Correct. They would be migrating downstream after they spawn, which would be in that December through April time period typically.

BOARD CHAIRPERSON HOPPIN: And then for the smolts, even if there was optimal conditions and there wasn't an obstruction on the bar, they're going to stay in the river just genetically with their own choosing, if you will, for a period of up to a year; is that correct?

MR. HANSON: They rear in the river for at least a year. And if the fish has reached a sufficient size and it's gone through the physiological process of smolting, that fish, say, at 150 or 200 millimeters, can then migrate out into the ocean.

If the fish doesn't go through that smolting process, doesn't reach that sufficient size or for any other reason, it may reside in the river for a second year. And under the kind of worst-case conditions, since steelhead are the anadromous form resident trout of the -- rainbow trout are the resident form, under the most severe conditions, you can have certainly steelhead prodigy that reside in the river for their entire life. It's that plasticity that allows steelhead the adaptive response to accept the highly variable hydrologic and environmental conditions that occur in a lot of these watershed.

BOARD CHAIRPERSON HOPPIN: Is there consistent refugia for smolts above the lagoon on a regular basis, or is that pretty much it?

DR. HANSON: There's good riverine habitat all the way up through the park. We have good riparian growth. We have good conditions in most of those areas.

There are influences in terms of manmade activities and recreational activities and things that influence some of that habitat.

But the upstream rearing areas are important. The middle reaches typically are important for some of the steelhead, and they're certainly important as a migratory corridor for adults and juveniles.

But we're finding more and more that the growth and the habitat conditions in the lagoon is really where a lot of the steelhead tend to put on a lot more growth, tend to contribute more to the adult population than some of the fish that seem to rear further upstream.

BOARD CHAIRPERSON HOPPIN: And because of the focus of your investigation, because of your client in this case, your survival studies were focused on the lagoon, and you don't have any comparative data or refugia and survival upstream; is that correct?

DR. HANSON: That's correct. We didn't do any studies upstream of the Andrew Molera State Park, at the parking lot basically downstream of Highway 1.

BOARD CHAIRPERSON HOPPIN: Thank you.

And Dr. Sage, do you have knowledge of when in California's history people started planting pasture and stopped irrigating native feed, if you will? There had to have been a time when some of the pasture blends that we had today weren't available. Do you have any idea what stage in our history in California we started cultivating pasture?

DR. SAGE: There was very little irrigated range land in California, because most of the range land would be introduced. Annual plant species do not do well in the summertime even if they're irrigated, because they're a cool season grass basically.

So when irrigated pasture started, probably would have been back in the time of Miller and Lux possibly. That would have been in the -- probably in the late 1800s.

BOARD CHAIRPERSON HOPPIN: So you're saying Miller and Lux was probably cultivating or planting pasture; is that right?

DR. SAGE: I'm sorry? Planting what?

BOARD CHAIRPERSON HOPPIN: You're saying Miller and Lux were planting pastures --

DR. SAGE: I would imagine that since they developed the irrigation systems in the central valley, they probably did plant pasture, although I have no proof of that.

BOARD CHAIRPERSON HOPPIN: Thank you.

And one last question. Dr. Allen, you talked about higher production requires more water. I guess even the person that's not a scientist doesn't have a doctorate in front of his name would assume that's correct.

Given the limitations of arable land on this ranch and the fact it might possibly worth a little bit more per acre than some pasture land in the state of California, would it be an assumption that someone would do everything they could to maximize the production on that land? I hope that's an easy question.

DR. ALLEN: I think they would maximize it -- optimizing looking at the economics. I mean, if the herd was down for some reason and they didn't need the pasture, they'd irrigate enough to maintain its health but probably not maximum production.

I think that has occurred in the past. I had looked at the number of cattle over a period of time. I don't remember all the results. But it hasn't stayed the same. And also some years there's more available outside of the irrigated pasture. So I think you would maximize it, but you wouldn't waste money to grow feed you didn't need.

BOARD CHAIRPERSON HOPPIN: Thank you. There's it for me.

HEARING OFFICER DODUC: Staff, do you have questions?

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Yes. Let me lead off here. And for the rest of the staff, if you have any follow-up as we go along, please jump in.

Mr. Hill, let me start with you. And again assuming if you do get a permit at the end of all of this, it will be the three of us that write it. So I have to make sure we understand a few things here.

I've put up here Table A out of the draft EIR, section 4.2. And potentially this could show up related to one of the mitigation measures. And what I want to question you on is just how well you open actually operate to this table.

On the right-hand side, you'll see allowable diversion rates. Let me explore that a little bit. As I think I understand, your old well is either on or off; is that correct?

MR. HILL: Yes.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: The new well, you can throttle that?

MR. HILL: No.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: All the wells are either on or off?

MR. HILL: Yes, sir.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: So is the only control you have over diversion rate, other than that, which valves are opened? In other words, whether the high field or the low field?

MR. HILL: Correct. The elevation that the pump is pumping to will influence the delivery rate and therefore the diversion rate.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Okay. So looking at January here, you wouldn't be allowed to exceed an instantaneous rate of .01?

BOARD CHAIRPERSON HOPPIN: Can I ask a clarifying question?

Are you saying if you are pumping to the upper reaches of your property, just the head that's created by that elevation reduces the volume that comes out of your well?

MR. HILL: Yes, sir.

BOARD CHAIRPERSON HOPPIN: So there is a variation in the amount of water that comes out of your well depending on what section you're irrigating.

MR. HILL: Yes, sir. That applies to both wells.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: So January, let's take that one. Can you actually do that?

MR. HILL: I don't know. .01 CFS, no. No. I don't think there is any manner in which I would pump that low a number.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Okay. Without going through every one of them, just can you give me an estimate of about the lowest rate you could pump out based on your experience?

MR. HILL: I'd say -- I don't know precisely. I would say that certainly May/June numbers in terms of volume, there may be locations where we pump water with the well where the delivery rate is as low as that based on the elevation that's pumping to. That's possible.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Any plans that again -- this is we're looking for a permit here. Any plans to change your system so that you could irrigate at lower rates?

MR. HILL: It's a consideration certainly. Being more efficient, we're always looking for -- we've just recently done a fair amount of repair lines -- repair on the water lines. Some of them are 60 years old. We're dealing with that still and making sure we don't have any leaks. So looking at improvements is something we always consider.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Okay. Thank you. Follow up on a few other things.

DR. ALLEN: Mr. Lindsay, maybe I could talk about that table?

Those are averages. So those base line flows I think were derived from averages over a long period of time. So, you know, in one month, we might run 15 days on and off 15 days. And that's why you would get the lower flow.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Let me bring that up. The right hand column was not an instantaneous rate?

DR. ALLEN: That's an average based on historical pumping. So he's writing that the pumps are on or off. He's never pumped .01 CFS for the month of January. I think he irrigated in two Januarys and that ended up being the average.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Let me go back to that, because I want to be clear on this.

As I remember, that right-hand column was an operational -- wasn't based on history. Was an operational report. Whereas, the middle column was the amounts that were based on history. This is important to our understanding of this.

MS. GOLDSMITH: My understanding of it is that the right-hand column was based on history, and that would be the base line averages. The second column, the middle column, is the conclusions of the --

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I understand. I think I understand what you're saying. The numbers came from -- they're base line numbers from history, but if this was to be put into operation, Mr.

Hill's diversions in January, for example, if it met the criteria in the second column, he'd be limited to .01 CFS.

MS. GOLDSMITH: The other thing I would remind you is the testimony -- I think it was Dr. Allen who said that because of the salinity issues, he's able to pump both wells during the summertime only about six days of the month. And so that affects the average pumping during the irrigation season which is far, far lower than 5.34, but for flexibility needs to -- permit needs to cover the higher rates.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Is your interpretation of this chart -- if in January the limited flow dropped to 18 CFS in the river that he would turn his pump on at 5.83 CFS?

MS. GOLDSMITH: He has two pumps.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Would he turn on any of the pumps?

MS. GOLDSMITH: I doubt it.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you.

DR. ALLEN: Just looking at his pumping, it looks like in 30 years he pumped three times in January. So it doesn't -- seldom occurs and even fewer times in February. I think in 1977 was the only pumping. So I think some of these come from that. And it's very few times that in the wintertime that we calculated irrigation requirement also.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I think you answered the question.

MR. HILL: Just a footnote. Understand that what we're looking at are historical or look-back numbers. When I approach any month, I have to do the best I can at forecasting. And I think we all know how reliable some weathermen are in terms of being able to predict. And put together a business plan and I have to say what condition is the land in and what do I need to do to keep it in good condition for the herd size I have. The implications are months, sometimes a year in advance.

So say I'm never going to pump in January, when all of a sudden we don't get any rain for eleven months. That's why we did irrigate then was because we hadn't had any rain in almost ten months. We had to turn the pump on or else we were going to lose the grass crop.

MS. GOLDSMITH: On the other hand, in terms of the new permit amendment, we would not pump if it were below 30 CFS.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Okay. Moving on to the map.

Mr. Hill, do you recall after lunch Rick Hanson, who prepared the EIR, talked to us? We asked him a question about that upper northwest corner of your land just south of Highway 1, just west of your place? Actually, it's within your place. You remember the land we are talking about? I'll point it --

MR. HILL: I'm familiar with the triangle you're speaking of.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: And you recall how he described the operations in that area? Do you agree with that?

MR. HILL: I vaguely remember that, his description of it.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Okay. Essentially, as I understood it, it's not land that you have irrigation equipment on, but it may get some water.

MR. HILL: Let me clarify.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you.

MR. HILL: That land is within the area of use or applied. That area is considered if I were to take other lands that are, shall we say, less efficient using water. This could be an alternative location to apply the water. There are no irrigation facilities there. And to the best of my knowledge, that land does not receive any benefit from the irrigation system as it's currently configured.

Does that answer your question?

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Yes. So to irrigate that area, you would have to adjust your hardware?

MR. HILL: Yes, sir. Yes, sir.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: And you might do that?

MR. HILL: That's of consideration. That's an option.

One thing I want to mention, I think there is a phrase I want to mention we haven't heard here today. It doesn't get any easier in agriculture any more. Operational flexibility is a feature or a luxury that we have to do the best we can to create opportunities where they exist. This is the kind of small opportunities where we might be able to shift some land that may use more water to land that might be more efficient using the water.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Okay. Thank you. And the Swiss Canyon area, your intent in that area -- again, it's not -- as we look at this map, there is an irrigated pasture boundary that's light gray, and the place of use is slashed. Swiss Canyon is not the irrigated pasture boundary. Do you intend to irrigate that area either by adjusting your irrigation system, plans in the future, or does it just get watered sometimes because it runs off the land?

MR. HILL: We do not plan, nor do I plan, to ever modify irrigating it. It doesn't make sense. It currently benefits from I think also a lot -- fair degree of water that comes down the Swiss Canyon drainage, runs through there and creates a really nice area that the cows love to go and calve. It's essential to calving. It keeps predation down. It's a shelter from the winter storms and so forth. That's where the moms like to go have the babies as opposed to out on the wind-swept terraces. So I don't plan on changing anything.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Also on this map, it says "irrigated area within place of use, total 246."

Now going back to your previous answer on that little area up to the northwest, if you were to expand irrigation of that area, would you take some other area out of irrigation?

MR. HILL: Yes, sir.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Okay. So you're going to stick with the 246?

MR. HILL: Yes, sir.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: And as we look at how much water you're applying for and try to figure out how much you're using per acre, is 246 the number we should be --

MR. HILL: Yes, sir.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you.

Let me move on to another area. The new application we just got, few questions about that.

MS. GOLDSMITH: Which is based on 246.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Yes, of course. Understood.

So I'm talking about the June 14th letter that we received. The maximum amount you're requesting now is 1,320 acres. Prior to that, it was 1,615. Why has it decreased?

MS. GOLDSMITH: Would you like me to handle that?

HEARING OFFICER DODUC: I would prefer that Dr. Hill answer that question, since you are not a witness.

MR. HILL: I'll do my best.

The reduction I think again -- part of the reduction had to do with a good faith attempt on the ranch's part to evaluate and consider lower flows. The original numbers that we used at the very beginning of the process was to maximize and create, shall we say, a buffer.

And let me speak to how that applies operationally. If I applied, which was the original permit at 1800 acre feet, the reason for that was I never know when it's going to rain. I still don't know. But I think based on the calculations and the advise of my experts, I think we'll be able to get by most of the time. It's going to be a compromise. It's not going to be the same operation. There's going to be some significant changes that are going to have some impacts of 1320 versus 1800.

But the ranch is responsive to circumstances. Most recently, there was a rain event two weeks ago. We shut the wells off and haven't turned them back on. I contrast that to when I'm driving down to the Salinas Valley in the middle of January and everybody has their sprinklers going and there's puddles everywhere. Doesn't make sense. We don't do that.

So the original philosophy was probably more the 1800 was I need to ask for whatever I can. And it was a number we actually pumped. So I think a smaller number is an effort on the part of the ranch to be committed to water conservation and tightening our belt again.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you. If I was to ask you -- I asked that question with regards to the maximum. If I was to ask that question with regards to all the other limits, would your answer be similar?

MR. HILL: Yes, it would.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you. Requesting a rolling average is unusual. Any reason for requesting a rolling average?

MR. HILL: Operational flexibility, sir. I mean, knowing -- if there are years that I can find a way to conserve water, I didn't want to be penalized. It would be nice to be able to take some of those waters and carry them to the next year. Like you do with taxes, carry forward and carry losses and so forth.

It gives us opportunities to do things so we can optimize what we're doing. I plan six months to a year-and-a-half in advance on my herd size. I can't make herd -- I could make herd decisions, but the consequences would be drastic. If I had today I'm going to sell, tomorrow I'm going to buy, you just can't do things like that and generate a quality herd, maintain quality land without impacts.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you.

Just to be sure we're all on the same page, the amount you're applying for includes your riparian amount; is that correct?

MR. HILL: Yes, it does.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY:

Thank you.

MR. HILL: I like your sunset.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I just can't do two things at once.

Moving on here, again I'm looking at the June 14th letter. I want to be clear, paragraph 3A talks about a proposal the ranch has for monitoring the fish passage criteria. It says in here if the flow is below 10 CFS until the permittee documents on a weekly basis, you would cease the burden. It says documents on a weekly basis. Does that mean that you go out once a week and check this once it drops below 10 CFS, is that what the ranch is proposing?

MR. HILL: Mr. Lindsay, I have to say I'm not that fluent in that. But if that's --

MS. GOLDSMITH: The answer is yes.

MR. HILL: Yes. That's what it says.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you. Paragraph D in there, to refresh your memory, this talks about the two gauges -- the two USGS gauges. And if you know, there's one further upstream and one closer to your project, which is coming online shortly. In fact, it may be.

In this paragraph, the suggestion is that the two are essentially interchangeable. If the flow requirements we could use the same numbers and get either gauge.

Anyway, is that just in the context of this application or just what it says there in paragraph D or -- what I'm searching for is for other aspects of your application other -- if we had bypass requirements, for example, in a permit, could we in general use the same numbers at both gauges?

MR. HILL: Both gauges, there is a difference between the two gauges. And there's loss between the two. We're still waiting to see what the correlation is between them and the accuracy. I think that's going to be a validating process that's going to lead to giving us greater certainty and comfort to be able to rely on this lower gauge. I think that's part of the adaptive management that's being proposed.

MS. GOLDSMITH: I have great difficulty staying quiet.

If there's confusion over that paragraph, the fault is mine. The idea of it was that both the fishery and the ranch could benefit by having a more accurate reliable understanding of the flow in the river at that point by using a closer gauge than by basically taking what we've documented in terms of average losses upstream.

And so the intent would be that the correlation would be established. And I'm sure Fish and Game would be involved in that. USGS would be involved in that. And then those standards would be the ones that would apply.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: So to be clear, in Paragraph A, the standard is 10 CFS and in paragraph C it's 30. And those are based -- because that's what it says -- on the upper gauge. But if the lower gauge becomes available, 10 CFS and 30 CFS are not the numbers we would be using.

MS. GOLDSMITH: That's pretty much my understanding. The six CFS of loss is thrown in as part of the calculation of the ten.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: This is a tough question here. Depending if anybody remembers in the testimony, is there somewhere you can point this to a correlation that's available now in the testimony?

DR. HANSON: In doing the various analyses that we've reported in our documents, we've used the flow that was measured temporarily at VT-1, VT-2, VT-3, and that's right in the zone of interest.

We've then correlated that with what's the flow that was occurring upstream on that day at the USGS gauging station. And that's the flow that we've reported. But the flow that would actually be in effect would be the equivalent flow at the downstream gauge. So it would take into account losses accretions and depletions that occur between the two gauging locations.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: In your testimony, is there someplace where we can do this conversion where we'd have that available to us after the hearing is over?

MR. HORTON: This is Paul.

I'm not sure if we've put these numbers anywhere specifically. But, for example, in 2007, I have the numbers here, USGS gauge versus comparison of a loss to the VT-1 gauge. Average flow also was 2.9 CFS during the period. So what we expect is that the new gauge will establish that new average loss, and then that would be compared to the number set here at 10 and 30 to adjust the numbers for the permit going forward. They would then link to the new gauge.

So we expect the new gauge -- in my last report, we had a correlation graph showing a correlation coefficient with USGS gauge and this gauge. Pretty high correlation, but a little scattered there because of the nature of the withdrawals of the stream.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I think I recall seeing that when I was reading through testimony. That was in your testimony, sir?

MR. HORTON: Yes.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Just making sure there wasn't someone else.

MS. GOLDSMITH: Mr. Lindsay, my understanding is the Andrew Molera gauge is so new it will probably take a year or two, some period of time, before there will be enough reliable data to actually correlate them.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you.

Another question. Mr. Hill, this is for you again. I'm still looking at the June 14th letter. Sub-paragraph F where it discusses install and properly maintain a meter on each point of diversion. As I recall, up to now, the records of flow of diversion have been based on power records; is that correct?

MR. HILL: Yes.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: So what I'm taking from this is you are willing to install flow meters?

MR. HILL: Yes.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: Thank you.

STAFF GEOLOGIST MURPHEY: I had a question before we leave this memo. In paragraph E, you said you will add -- or the permittee may elect to augment river flow and dissolve oxygen at a minimum of three CFS from the aerated alluvial aquifer. Would that be done in the existing wells or new wells or old well?

MR. HILL: It would be a combination of facilities, whatever is necessary to make sure that we can provide that.

Initially, the concept was -- is that there are several -- or at least two I'm aware of -- wells that are capped currently that could be used for that that are separate from the irrigation wells.

If what's needed would be to augment that with water from the wells, that's going to diminish what we irrigate with. But it's something that we would then provide to improve habitat, water flow.

It's my assumption, at least, that when you add that kind of water to the river, you're going to -- dissolved oxygen is going to go up and water temperature is going to go down.

STAFF GEOLOGIST MURPHEY: The existing wells aren't set up to do this? You would have to put something in?

MR. HILL: Absolutely. You would have to modify something working with State Parks and Fish and Game to put something in.

STAFF GEOLOGIST MURPHEY: It's my understanding looking at Mr. Horton's testimony that there is a lot of low-dissolved oxygen in the groundwater. How would low-dissolved oxygen in the river help fish?

MR. HILL: What's going to happen -- I don't know if you ever heard of a motional mixer or Venturi. Either of those products can be put in a pipe to create aeration so that the water when it enters the surface flow again in the river, it would be maybe over-oxygenated. It will have significantly more air and I think exceed the threshold requirement. I'm sure it will exceed the threshold requirements stated here.

STAFF GEOLOGIST MURPHEY: Would you be willing to do studies to verify that as you put it in -- I think it was Transect 11 -- that the DO would be of sufficient percentage within a very small reach where it will actually improve the oxygen in the lower reaches?

MR. HILL: The answer is yes. It wouldn't make any sense for me to put it in if it didn't work.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: I have one last question. Very general, Mr. Hill.

In general, it appears you're requesting more water than you used in the past, at least on an average. Would you agree with that?

MR. HILL: Yes.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: And as I've read your testimony, I hear the term "optimal yield." And it implies to me that in the past you haven't obtained this optimal yield, but you're looking to do that in the future. Why haven't you done that in the past?

MR. HILL: There are a couple reasons for that. The statistics, the numbers we have here are reflective of what's happened in the past. At any one time something new happens, we get a break in the line, I have to shut a pump down. All of a sudden now what would have been a regime of pumping, let's say, a particular well that I planned to pump for the next two weeks is all of a sudden shut down for a week or ten days. Well, immediately that's going to impact my optimal delivery rate for the water to create optimal grass.

So impacts such as that, facilities, repair, maintenance, available labor, could be also impacts -- or I should say again -- salt, shutting down the well due to water quality issues in the old well.

Again, we strive to maximize the amount of water we apply. We may be at a particular field or juncture where, shoot, if we irrigate tonight, we might -- the water might go too far. We don't want it to go out the end of the field. We might under-irrigate and come back the next day and pick up, and we never get caught up. You're always then -- once you get behind, that differential of loss is with you for the rest of the year.

You never catch it back up. It's impossible. You can't get ahead, unless all of a sudden you were to double or triple our delivery rate to get caught back up. Once there's an interruption, that has a cascading effect for the rest of this year.

Hopefully, that help answers your question. We always strive for the optimal. It's difficult to achieve.

SENIOR WATER RESOURCES CONTROL ENGINEER LINDSAY: So these operational problems that you describe have not affected irrigation in the past? I think the average goes back about 20 years. You haven't had those problems before?

MR. HILL: If you look at the irrigation history, there's some years -- not very many -- where we've over-irrigated and other years where we under-irrigated.

And I think one thing you'll notice that I think management deserves a little credit for is the fact we've decreased the total amount of water as an average over the last 20 years. And so labor has had an effect on that. Ranch used to have four full-time people. We have two-and-a-half now. Availability of staffing. Trained, qualified people to do the work has a huge impact.

I think I'm kind of risk adverse. If I've got a person I don't think can do the job, I'm going to say don't irrigate today and we've lost out on that irrigation. Like I said, we never got it caught back again.

Those kinds of circumstances occur in today's labor pool. They don't stay around forever.

BOARD CHAIRPERSON HOPPIN: Mr. Hill, clarity on my behalf. If I can tack onto Mr. Lindsay's last question to you.

Given your responses to his question, as we consider what's before us, would it be fair to stipulate that the water you are applying for will be used for irrigation of pasture, period, end of subject?

MR. HILL: Yes, sir. I mean, it's for application of that field. I mean, maybe a half a step beyond that, let's not forget that some of the tailwater does go in the tailwater pond. And there are -- so there is that application. But that's not why we do it.

BOARD CHAIRPERSON HOPPIN: We won't shut the helicopters off.

MR. HILL: Thank you for your consideration.

HEARING OFFICER DODUC: Other questions from staff?

STAFF ENVIRONMENTAL SCIENTIST FARWELL: I have three questions for Mr. Hanson.

The first question is: Can you describe the studies you performed in regard to the benthic prey or microorganisms the steelhead consume in the Big Sur River and lagoon?

MR. HANSON: We did not do any specific studies on drift macro vertebrates or benthic macro vertebrates that would be prey for steelhead.

STAFF ENVIRONMENTAL SCIENTIST FARWELL: Thank you.

My second question is: In your opinion, what percentage of the time is the summer low-flow period affected by human activities, such as the Labor Day and the summer holiday periods?

MR. HANSON: I think under critically low-flow years, the upstream demand has an effect on the in-stream flows. It's most pronounced in those Memorial Day, Labor Day kinds of Fourth of July weekends when lots of folks come out. They stay there in the park. They extend their stays typically for a number of days either before or after the holiday. Those are the major events that we've identified. The Labor Day weekend being the worst, because that occurs in that critically low-flow late summer/early fall time period.

STAFF ENVIRONMENTAL SCIENTIST FARWELL: Right. Understand. Thank you.

My last question is: Can you please summarize your testimony regarding the project's contribution to cumulative flow reductions in the Big Sur River?

MR. HANSON: As we've just talked, there are a number of factors that influence in-stream flows in the river, the most important of which is just the natural variation and hydrologic conditions from year to year.

But we have upstream demands that influence that, and we have the wells. We have other factors.

In looking at our studies and looking at those results, we concluded that from a fishery habitat standpoint the incremental contribution of the wells to the cumulative effects on habitat were most pronounced in the critically dry years. And we identified through our studies a flow threshold of 10 CFS below which those cumulative impacts become more exacerbated. And that's part of the rational that we offered in terms of how you could manage to accommodate the naturally occurring low flows, the holiday weekends, and to avoid to whatever extent that incremental contribution of the wells to those conditions.

STAFF ENVIRONMENTAL SCIENTIST FARWELL: Thank you, Mr. Hanson.

STAFF GEOLOGIST MURPHEY: I had a question for Mr. Horton about the colmation layer. Did you observe that layer only during low-flow conditions? Or did you observe it during moderate or normal or high flow conditions?

MR. HORTON: We measured that in 2006, which was a wet year. So I'm not sure exactly the days and the flows in the river at that time. You can try to look that up right now.

STAFF GEOLOGIST MURPHEY: Just curious like when you did your pump test, like 2004, 2006, and 2007, was that layer present at all times?

MR. HORTON: Well, I think it was. The pumping tests don't measure the presence of the colmation zone. I guess they do indirectly by not showing drawdowns in the surface water of the river.

STAFF GEOLOGIST MURPHEY: That was my next question. 2007, I think it was in piezometer two, we saw the greatest drawdown in the river. And that was with the colmation layer.

I just want to know, did you do a similar pump test hopefully in the same location without that layer? And did that -- I mean, is it reasonable to say that you see a greater decrease in the river flow because there's not this low hydraulic conductivity layer there?

MR. HORTON: Certainly, if you get rid of the streambed colmation zone, it's naturally there. You have a better connection with the river and could take more water out of the river.

STAFF GEOLOGIST MURPHEY: But there's no comparative study with the colmation layer present and the pump test and colmation layer absent the pump test?

MR. HORTON: No. I'm not aware of when the colmation zone was began.

STAFF GEOLOGIST MURPHEY: Would it be reasonable to assume if the colmation layer was absent you would get more drawdown in the river, measured drawdown?

MR. HORTON: It's potential. The fact is though at times we're going to have the colmation layer disturbed is in the wintertime when the river flows are going to be high, pumping doesn't occur, and there is no possible impact as river flows. They're well above 50 CFS.

By the time pumping gets the ability to really do impact to the river flows again is the critically dry year. It's late in the season in August when we definitely have developed the colmation zone that we observed.

MR. HILL: I do have an addendum to assist in this process. There was a time where the colmation zone was completely non-existent. That was a time above the measurement areas. It was up by the parking lot where State Parks did their project and disturbed the river gravels and the water disappeared in that construction area. There was a time where it was absolutely non-existent. The winter rains reestablished it.

STAFF GEOLOGIST MURPHEY: And that was the event that led to the protest?

MR. HILL: Yes, sir.

STAFF GEOLOGIST MURPHEY: One more question for you, Mr. Hill.

I just want the clarifying question if your testimony this morning. You had mentioned when the old well -- when you see salinity in the old well, you stop pumping and you rely on the new well. But the new well doesn't have the capacity to irrigate, I think it's the south pasture in the very upper pasture. And you actually pump from the tailwater pond up there to irrigate that section of your pasture. Is that true, for one?

MR. HILL: Yes. We've tested the theory. Did it. Performed that for three years.

STAFF GEOLOGIST MURPHEY: Okay. Is that the only pasture you do irrigate on occasion with the tailwater pond? You don't have infrastructure or plumbing of those two other parts of the pasture?

MR. HILL: We could irrigate other parts with that, but pumping the water twice and then applying it to other places wouldn't make any sense, because we can irrigate those pastures with a new well.

In other words, we pump it one time from the new well and irrigate fields. If you remember the layout, one, two, three, four, five, six, seven, eight and the pump house. We can do all of that with the new well.

The old well, which is a centrifugal pump, has a capability of much higher pressure and has the head pressure to pump up to the north and south pasture. Those are the only two fields that are not capable of being serviced by the new well. Only the old well can pump up there. Right?

So those two fields have to be re-pumped if the old well is off from the reclamation pond in order for the north and sound pasture. Could we irrigate the rest of the fields? Yes. But that would be redundant and really expensive. Does that answer your question?

STAFF GEOLOGIST MURPHEY: Yeah. Thanks for clarifying.

HEARING OFFICER DODUC: Any other questions?

BOARD MEMBER MAHANEY: Good evening, Mr. Hill.

I'd like to better understand the transition of the cattle grazing operations on what I assume was native grasslands to the pasture you have today. My understanding was in the 50s -- and you can correct me if I'm wrong -- your father worked to develop the pastures that exist today; is that correct?

MR. HILL: Let me back up a little bit. Harry

Hunt owned the property, installed the current old well about 1950 and irrigated the field one, two, three, four, five, six, seven, and eight, the pump house. And my father purchased the ranch in '55, made some additions and added the north and south pasture. And also did some work in the mid to late 50s, '56, '57 where he filled in gullies that were, at the time, northeast of the tailwater pond. And basically took the soil that is now the tailwater pond and carried it uphill and filled in the pasture so it could be reclaimed for grazing purposes, therefore minimizing the impact or eliminate erosion. So that's how that occurred.

Did that answer your question?

BOARD MEMBER MAHANEY: In part.

Was seeding for the fescue and veges and other crops that you see today done then? Or can you tell me about when that began?

MR. HILL: My understanding is in the '55, '56, '57 is when the additional fields were put in. And my father in about 1960 hired -- I can't remember the name of the company -- IAS, International Agricultural Services, and they did assessments both on the ocean side of the highway, which included the permanent pasture, as well as the east side. Part of that did translate into some seeding of the permanent pasture.

BOARD MEMBER MAHANEY: And then today any remediation you do I believe you described as being on a small scale, as needed, sort of operation?

MR. HILL: Yes, ma'am. It's both in the irrigated pasture as well as the non-irrigated pasture where there's gullies and so forth. And Caltrans has a big slide. We capture the dirt and find an efficient way of getting it there, and reclaim areas that are unusable that are going noxious weeds, et cetera, and also causing siltation to go to the ocean.

BOARD MEMBER MAHANEY: Absolutely off subject. Is the Navy well still in operation today?

MR. HILL: The Navy well is not in operation today. The State Parks vacated the Navel facility I think three years ago due to black mold.

BOARD MEMBER MAHANEY: Thank you.

HEARING OFFICER DODUC: Ms. Goldsmith, do you plan to redirect?

MS. GOLDSMITH: May I do it from here?

HEARING OFFICER DODUC: Actually, I was going to suggest we do it in the morning.

MS. GOLDSMITH: That would be even better.

HEARING OFFICER DODUC: Before we adjourn for the day, because he is my Chairman and because I actually like him, I'm going to ask the gentleman from the Department of

Fish and Game to please come up. Chairman Hoppin has a question for you. And as he's coming up, I'll want to get a sense from all of you, is there any problem with starting at 8:30 in the morning?

Seeing none, okay.

BOARD CHAIRPERSON HOPPIN: Mr. Single, I suppose you can refuse to answer my question, because you're not listed as a witness. When you came up to give a policy statement, I didn't realize why my Member Doduc was kicking me in the shin because I said I wanted to ask you a question. Legally, I can't do it. If you don't want to answer my question, I'll ask somebody else.

MR. SINGLE: I will try if I can, unless I'm advised otherwise by counsel.

BOARD CHAIRPERSON HOPPIN: It's my understanding -- and pardon me for not knowing the exact structure of Fish and Game. I have a hard enough time understanding the structure of the State Water Board which I Chair. But your area of responsibility includes the El Sur Ranch; is that correct?

MR. SINGLE: Yes. The central region covers the twelve central counties in the state from the sierra crust to the ocean.

BOARD CHAIRPERSON HOPPIN: So we could consider you the resident expert in this area; is that correct? Or certainly knowledgeable in this area?

MR. SINGLE: I'm somewhat knowledgeable. I'm not a fisheries biologist.

BOARD CHAIRPERSON HOPPIN: That's all right. You don't have to do that one.

MR. SINGLE: More of a manager rather than a hands-on person at this point in time.

BOARD CHAIRPERSON HOPPIN: It would appear that since for almost 21 years there's been a course that's been set by Parks as far as their complaint and requirements that have led us here today, which is in a way a sad statement that it takes that long to get something through the system of California.

During this period of time, when clearly Mr. Hill has employed a wide array of experts to conduct studies on his behalf so he knows what he's doing on his ranch, what has Fish and Game been doing during this 21-year interim as far as studies to validate their opinions as to the fishery and the impacts that irrigated agriculture in this area might have on that fishery? What has Fish and Game been doing?

MR. SINGLE: I haven't been involved. I don't have that personal knowledge. Dr. Titus might know or maybe not.

BOARD CHAIRPERSON HOPPIN: Do you know if there have been any studies conducted by Fish and Game in the last 21 years? There was talk about instream flow studies that were going to be done.

MR. SINGLE: Those are going on currently.

BOARD CHAIRPERSON HOPPIN: They're not necessarily a direct result of this complaint that was issued by Parks? I mean, they are part of a much more statewide comprehensive instream flow study; is that not correct?

MR. SINGLE: That's correct.

BOARD CHAIRPERSON HOPPIN: When you look in your capacity at what the biological -- and we hear a lot about flows and cones of influences and spheres of influences and all the terms that all the experts will use. Getting down just to the basics, when you look at it from Fish and Game's perspective -- obviously you had a great deal of interest in this issue. What are the real biological impacts that you can quantify that have been set in motion by pumping on this ranch? I mean, you and your staff are concerned about this pumping. When you correlate that back to what the biological impacts have been, what are they?

MS. FERRARI: That is our testimony from our fisheries biologist.

MR. SINGLE: That will be our testimony of our fisheries biologist.

BOARD CHAIRPERSON HOPPIN: We are going to hear that. We will hear that tomorrow.

Thank you. That's it for my questions. Thank you for your consideration in answering something you didn't have to. I would like to thank Ms. Doduc for allowing me to answer that question.

HEARING OFFICER DODUC: Thank you for allowing me to indulge my Chairman.

We will note for the record that the doctor from Fish and Game was here to a provide policy statement. He did not take the oath and his answer is not considered testimony. He responded to Chairman Hoppin's questions.

With that, thank you all. We will reconvene at 8:30 in the morning where Ms. Goldsmith will conduct her redirect for 20 minutes and other parties will have ten minutes for re-cross.

(Whereupon the hearing recessed at 6:03 PM.)

CERTIFICATE OF REPORTER

I, TIFFANY C. KRAFT, a Certified Shorthand Reporter of the State of California, and Registered Professional Reporter, do hereby certify:

That I am a disinterested person herein; that the foregoing hearing was reported in shorthand by me, Tiffany C. Kraft, a Certified Shorthand Reporter of the State of California, and thereafter transcribed into typewriting.

I further certify that I am not of counsel or attorney for any of the parties to said hearing nor in any way interested in the outcome of said hearing.

IN WITNESS WHEREOF, I have hereunto set my hand this 29th day of June, 2011.

TIFFANY C. KRAFT, CSR
Certified Shorthand Reporter
License No. 12277