#8

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July 6, 2012

County of Monterey
Resource Management Agency (RMA)
Attn: Carl Holm, AICP, Deputy Director
168 West Alisal, 2nd Floor
Salinas, CA 93901

Subject: Amendment to Water Well Ordinance, Monterey County Code – Chapter 15.08; File Number REF120022

Dear Mr. Holm:

This Office represents The Open Monterey Project and Friends, Artists, and Neighbors of Elkhorn Slough. We provide these comments on the initial study and proposed negative declaration posted on the County website. Overall, the ordinance includes some changes in the right directions. However, as proposed, the ordinance would have potentially significant unanalyzed environmental impacts, and the proposed negative declaration is not appropriate.

As a separate issue, there are some problems and gaps in the ordinance and the environmental analysis. The ordinance could use an editorial review by a disinterested person with knowledge of water issues in Monterey County, in order to improve and clarify the language and structure. Numerous statements are confusing and ambiguous. Some of those are identified in this letter.

Inconsistency with General Plan Policies and Area Plan Policies

The ordinance and guidelines are not consistent with General Plan Goal PS-3 and Policy PS-3.2. Until the County establishes a definition of long term sustainable water supply, the proposed ordinance should not be considered. Otherwise, the County is putting the cart before the horse. The initial study does not even mention Goal PS-3, which is:

> LONG-TERM WATER SUPPLY – GOAL PS-3:
> ENSURE THAT NEW DEVELOPMENT IS ASSURED
> A LONG-TERM SUSTAINABLE WATER SUPPLY.

The initial study does not adequately mention[1] or discuss policy PS-3.2. Policy PS-3.2 states as follows:

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[1] Except once in quoting NC-5.4.

> Specific criteria for proof of a Long Term Sustainable Water Supply and an Adequate Water Supply System for new development requiring a discretionary permit, including but not limited to residential or commercial subdivisions, shall be developed by ordinance with the advice of the General Manager of the Water Resources Agency and the Director of the Environmental Health Bureau. A determination of a Long Term Sustainable Water Supply shall be made upon the advice of the General Manager of the Water Resources Agency. The following factors shall be used in developing the criteria for proof of a long term sustainable water supply and an adequate water supply system:
> a. Water quality;
> b. Authorized production capacity of a facility operating pursuant to a permit from a regulatory agency, production capability, and any adverse effect on the economic extraction of water or other effect on wells in the immediate vicinity, including recovery rates;
> c. Technical, managerial, and financial capability of the water purveyor or water system operator;
> d. The source of the water supply and the nature of the right(s) to water from the source;
> e. Cumulative impacts of existing and projected future demand for water from the source, and the ability to reverse trends contributing to an overdraft condition or otherwise affecting supply; and
> f. Effects of additional extraction or diversion of water on the environment including on in-stream flows necessary to support riparian vegetation, wetlands, fish or other aquatic life, and the migration potential for steelhead, for the purpose of minimizing impacts on the environment and to those resources and species.
> g. Completion and operation of new projects, or implementation of best practices, to renew or sustain aquifer or basin functions.
> The hauling of water shall not be a factor nor a criterion for the proof of a long term sustainable water supply.

Goal PS-3 and Policy PS-3.2 are critical to the analysis of the proposed ordinance and guidelines. Until the definition of long term sustainable water supply under PS-3.2 is established, does not make sense for the County to adopt this proposed ordinance or proposed guidelines, which purport to identify acceptable levels of well production and recovery and acceptable impacts on aquifers and water sources,

but which do not have a target to hit, namely a definition of long term sustainable water supply.

The reason for the water well moratorium was the uncertainty of long-term supplies for some kinds of water wells and the vagaries of water supplies in general in the County. It does not make sense to adopt an implementing ordinance for a few General Plan policies while ignoring the key Goal PS-3 and key guiding policy PS-3.2.

The initial study briefly mentions General Plan policies PS-3.1 and PS-3.3, both of which "require a long term, sustainable water supply, both in quality and quantity, to serve development beyond the first single-family residence on any lot and commit the County to developing specific criteria for proof of a long-term sustainable water supply for new residential or commercial subdivisions. The criteria will include production rate, recovery ability, effects on nearby wells, and existing groundwater conditions." However, until the definition of long term sustainable supply is identified, the criteria for that supply cannot be established. But that is what the County is proposing to do here in the proposed ordinance.

In this letter, and on these points, we incorporate by reference the comments by The Open Monterey Project and LandWatch Monterey County on the water issues of the 2010 General Plan. These letters are in County files. If the County does not have the letters and needs us to provide additional copies, please let us know and we will do so.

The ordinance and guidelines also do not adequately identify, investigate, assess and disclose the water rights necessary for the various activities, including use of well water, nor does the initial study adequately identify, investigate, assess and disclose the baseline for those issues, including existing problems, in the various areas of the County. Water rights are an environmental issue that should be analyzed under CEQA.

NC-3.8 applies to fractured rock and hard rock areas. PS-2.4 applies to hard rock. It is not clear what parts of the ordinance, if any, apply to hard rock.

The reference on page 8 of the initial study to "fractured hard rock" does not explain how that combined term implements or is different from the two separate terms in NC-3.8 (fractured rock and hard rock). If the section 15.08.114 (on "fractured rock") is intended to apply to hard rock, as well, then the section title and contents should be amended accordingly to so state. Unless hard rock is expressly included in the ordinance, then the ordinance does not adequately implement NC-3.8 and PS-2.4.

Proposed Ordinance to Change Chapter 15.08

The proposed new definition of "agricultural well" would include wells that supply to residences, subdivisions, commercial and industrial operations. Because the word "primarily" in the definition is not defined, it is open to many interpretations, some of which could result in significant effects on the environment. Agricultural wells should be defined as those wells that provide water solely to agricultural uses. By exempting agricultural wells as defined, the new ordinance could have potential significant environmental impacts because it would be exempt wells from further review, even if provided water to non-agricultural uses. As written, the ordinance would not prevent a replacement agricultural well from being drilled on the same lot of record, and that well then being used as the water supply for a future subdivision.

The proposed new definition of "replacement well" could have potential significant environmental impacts because "intensification of use" is not defined. Does it mean the quantity of water pumped, or the nature of the land use for which the water provides the supply? Agricultural use has a lower intensity than residential use, but it is unknown whether that is what is meant by the new definition. The ordinance should define "intensification of use" and the ordinance should be recirculated if it would mean potential impacts. If the definition would allow replacement of agricultural use with residential use, then the use arguably would be intensified because agricultural use can be cut back to zero without harm to the public health and safety, and residential use cannot be cut back without potential harm to the public health and safety. (Note: proposed subdivision "d" does not prevent these potential impacts.)

The proposed new definition of "well" does not include "replacement well" and it is ambiguous as to whether replacement well is intended to be included. If not, there are potentially significant impacts from exempting replacement wells from the well requirements.

The proposed new definition of "well" does not include "agricultural well" and it is ambiguous as to whether agricultural well is intended to be included. If not, there are potentially significant impacts from exempting agricultural wells from the well requirements.

The discussion of fractured rock at 15.08.114 is misleading. By mentioning only some of the areas that have fractured rock, it appears that is the County's focus. We hope that is not what it intended. To be clear, the list of County areas should include Jack's Peak, Big Sur, Carmel-by-the-Sea, Monterey, Pacific Grove, Pebble Beach, and others. Members of our clients are aware of wells in each of these areas that are believed to be fractured rock wells. If the list is intended to be unincorporated County areas only, that should be clarified. However, if the ordinance applies to the entire County, including cities, then cities should be listed. To be clearer, the ordinance could

describe the areas of fractured rock with more geological accuracy, such as, for example, anywhere there is not an alluvial aquifer or fluvial sediments.

The use of the term "immediate area" is potentially misleading as to what is meant. The concern with fractured rock aquifer is that it may be supplied by rainfall in an adjacent area, and not the immediate location of the well.

The discussion of the reason for lower well yields is only one of the reasons. The reasons include infiltration, which is addressed in the following sentence. Therefore, the use of the word "hence" in the first sentence is confusing and misleading. While we appreciate the effort to explain the issues, a partial explanation can be more confusing than no explanation. The explanation should be complete or should be omitted. If the explanation remains, it should be given a subdivision to identify it, like "A."

The organization of 15.08.114 is inconsistent and confusing. For example, each paragraph should have an identifying alphabetical or numerical designation (see, e.g., the unidentified paragraphs after 15.08.114, as well as after the titles for A, B, and C). Otherwise, it is confusing for the public and County staff to refer specifically to those paragraphs.

The County should prohibit new wells for domestic purposes on lots of less than one acre, because there is too much uncertainty about the long term nature of the water supply, as discussed in the paragraph at the top of 15.08.114.

There should be a requirement for a deed restriction preventing more than 50% impermeable surface area after development of the lot, in order for 15.08.114.B.4 to have any meaning or impact. Otherwise, there would be unanalyzed potential impacts when the lot is developed. And unless the restriction is recorded, future owners would not be placed on reasonable notice, and the County planning department may not know about the restriction, either. The definition of "permeable" should be provided, as well. Does it include partially permeable materials or structures? Prohibiting new wells on lots of less than one acre

In 15.08.114.B, it is unclear what is required as to subsections 1 through 5. Are all required, or only one? It is confusing. It looks like 1 is required (but it ends in a semicolon without an "and" or an "or"). It looks like 2 and 3 could be either/or, but maybe it's either 2 or 3+4+5, because those paragraphs have "and" after them.

On 15.08.114.B.5, The sentence that begins "A Rain Water Harvesting System shall be required the flow rate" [*sic*] should be corrected.

On 15.08.114.C.1, the sentence is confusing. Is what is meant "Unless it is a permit for a Replacement well, no Well Permit shall be issued for lots . . ."?

"Existing Lots" is capitalized but is not defined in 15.08.020. Existing as of what date? The definition and date chosen can have unanalyzed potential environmental impacts.

Section 15.08.114.D is unclear. Rain Water Harvesting is capitalized but not defined in 15.08.020. What is meant by "A Rain Water Harvesting (RWH) system shall be designed and installed on all structures for the project . . ."? What project, and what structures?

In 15.08.114.D, sections 1 and 3 are followed by an "and", but there is no "and" after section 2. Please clarify. In section 15.08.114.D.5, which "individual" is required to submit plans – the property owner, the professional identified in D.1, or someone else?

In Section 15.08.115, the first unidentified paragraph, the Director's determination as to whether the well is a replacement well should be in writing and should set forth the entire basis for the determination and should be provided to the neighbors and anyone else who has requested notification of such determinations. Otherwise, the determination could be unwritten and unsupported, and the neighbors and interested persons would never know about it, and therefore not able to pursue their remedies timely if they wanted to do so.

In section 15.08.115.1.a, there is no definition of "immediate vicinity." Some existing wells that may be affected may not be immediately adjacent to the lot where the well is proposed. The definition should be set forth and the impacts of the definition should be analyzed. There are uses of the terms "adjacent" and "neighboring" in 15.08.115, and it is unclear exactly what those terms mean, and how they are different – or the same – as each other and as "immediate vicinity."

The concerns identified in the preceding two paragraphs are significant. Our Office recently experienced significant problems in the unincorporated County where Mr. Aaron Bierman, the County consultant to had a significant role in drafting the County's proposed ordinance, did not notify well owners within the required notification radius, even though he stated that he knew of the notification requirement. As a result, the well was tested but well interference with neighboring property could not be determined because neighbors did not know about the test. Mr. Bierman then blamed the property owners who raised concerns about observed negative impacts to their well, and Mr. Bierman specifically alleged that the property owners must have "dewatered their own well."

Any drafting or review of this ordinance and these comments should not be performed by Mr. Bierman, whom we believe has a conflict of interest in such matters.

The Open Monterey Project has raised concerns with the conflict of interest of Mr. Bierman, who represents a large number, and probably the majority of, applicants to the County who seek a well permit. It is a conflict of interest to allow Mr. Bierman to participate in writing the very rules that he will have to comply with – he is writing his own rules. We disagree with the defenses put forward by the County to date, and we urge the County to reject the ordinance and guidelines. The County should consult with an independent professional who will not be taking advantage of the ordinance or the guidelines. As comments on this initial study, we attach and incorporate by reference the May 22, 2012 letter we sent to the County.

In 15.08.115.A.4, as written, the applicant would not have to agree to implement all the mitigations are proposed, and instead merely agree to "one or more." As written, there would be potentially significant unanalyzed impacts if an applicant did not agree to all the mitigations. The County needs to rewrite this. If not, the potential impacts should be analyzed and disclosed. Separately, we think the County means "required by the Director" as opposed to "proposed and approved by the Director."

As to inactive wells, the ordinance does not provide any standards as to the basis for review of an owners "intentions" and what "evidence" would be satisfactory, or to whom. The ordinance also does not state when the evidence is required to be provided, or what documentation would be put in place.

The discussion of the 15.08.140 are confusing. The so-called "Fort Ord" prohibition zone and the "Fort Ord" consultation zone actually extend far beyond the boundary of the former Fort Ord, according to the Groundwater Protection Zone map (dated 01/21/2011) provided to this Office by the County in June 2012 in response to our public records request. The ordinance limits the area only to Fort Ord, and therefore is inconsistent with the map. If that map is not the correct map, we ask the County immediately to inform us, and to provide us with the correct map so we can provide comments accordingly, and to waive the time deadline.

In the discussion of Appeals, section 15-8.160, there is no mention of appeals of permits that have been granted, or appeals of other violations or sections of the ordinance. Please clarify what those remedies are.

<u>Proposed Administrative Guidelines</u>

Section 4, Requirements, would provide inadequate notice to nearby property owners. As written, it would not require that the notice to property owners be in writing, so it would not be possible to verify whether the applicant had met the 4.A.3

requirements. The County should not rely on the applicant's word for this important step, but that is what is proposed. On this and on other notification requirements, the County should consult with the Monterey Peninsula Water Management District, which has been working on this issue, as well.

As a separate problem, the 14-day notification is inadequate. It is foreseeable that the neighbors would be on vacation, which is quite possible during the high testing season of August, September and October. The notification period should be in a written format with delivery assured at least 30 days in advance of the start of the pump test.

The notification requires that responses be received within 3 days prior to the start of the test. In other words, the notification is only 11 days, not 14 days. And if the neighbor has just returned from vacation and has not had time to put in a sounding tube, the neighbor is out of luck, and the County is prevented from having important data as to possible well interference. There are potentially significant environmental impacts associated with this guideline and all the other guidelines commented on in this letter.

The proposed manual is silent as to who is supposed to be notified – the property owner or the occupant. How is the notification to be performed? In a letter, and if so, when does the 14 days start, at mailing or at delivery? How can the County be sure the mail was deposited in the US postal service on the date claimed?

The notification should state that the monitoring would be done at no cost to the existing well.

The notification should include the contact information for County personnel, who is a contact for the neighbors if there are any questions. It should also include the fact that the notification is provided pursuant to County requirements. The County should consider having a form for such notification, to promote consistency and a more informed public.

Who determines whether the neighboring wells are hydrogeologically connected, and on what acceptable basis, under 4.A.3.c? This should be clarified. The determination, the calculations, and the supporting rationale should be in writing, so the person making the determination can be held accountable, if necessary, by the County and by the public.

Subsection 4.A.3.c should be divided into two subsections, because they are two unrelated topics. The County should describe what "proof of notification" would be acceptable.

These are serious issues that have already given rise to serious problems in the County. They are not to be taken lightly. These guidelines have unanalyzed environmental impacts.

Please see the discussion above with regard to the conflict of interest of Aaron Bierman. Those comments apply to the proposed guidelines, as well.

The State of California requirements are that if 95% recovery is not achieved within the specified interval, then no well capacity can be derived from the well test. There is no scientific basis for the proposed Tables 3 and 4 of the proposed Administrative Manual, and they should be rejected. As a separate reason, the math makes no sense. Either it is a "required recover percentage" or it is not. The County cannot call it a "required recovery percentage" and at the same time allow wells that do not meet the "required" percentage. Wells should meet the required recovery percentage, or be rejected. The wells that do not meet the requirement tend to be the fractured rock wells, which are less reliable, and which would not provide a long term sustainable water supply.

The Theis equation (at pp. 13-15 of 22) is based on an assumption that "The aquifer is homogeneous and isotropic."[2] That assumption is not reasonable in a fractured rock environment. As the County's initial study acknowledges, "fractured rock or hard rock formations . . . . have different characteristics than alluvial formations, most relevantly, that water is not as uniformly transported into the fractures from adjoining areas." The proposed use of the Theis equation would have unanalyzed and potentially significant environmental impacts, because under the circumstances the use of the equation would not accurately capture the potential impacts of pumping.

Why in the Summary of Technical Qualifications are there no calculations for the 800-foot aquifer, sometimes called the Deep Aquifer?

Why does the map of Coastal Area of Groundwater Concern not include much of north County?

The map[3] on p. 22 of 22 is illegible, which prevents informed public comment. The guidelines refer to various zones on the map but they cannot be read. The document should be recirculated with a legible map.

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[2] "Isotropic means "uniform in all directions."

[3] As shown on the online County initial study presented for public review.

Conclusion

As written, the ordinance is not eligible for a negative declaration.

Thank you for your consideration of these comments. Please notify this Office of any changes to the ordinance or administrative manual. Also, please place us on the notification list for all events for the ordinance and/or guidelines, including those notices under Public Resources Code section 21092.2.

Very truly yours,

LAW OFFICES OF MICHAEL W. STAMP

Molly Erickson

Attachment: May 22, 2012 letter to Charles McKee and Leslie Girard

#8

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August 27, 2013

Via Email and Facsimile (831) 757-9516
Jose Mendez, Chair
and Members of the Planning Commission
County of Monterey
168 West Alisal Street, 1st Floor
Salinas, CA 93901

Subject: August 28, 2013 1:30 PM - Water Well Ordinance (REF120022)

Dear Chair Mendez and Members of the Planning Commission:

We have discovered that the County staff has placed on the Planning Commission agenda for August 28 the consideration of a draft ordinance regarding a water well ordinance. We received the staff report yesterday.

This Office has represented The Open Monterey Project with regard to this matter since at least 2010. The Open Monterey Project and LandWatch have sued the County over the County's October 2010 approvals of the 2010 General Plan. Water is an important issue in the litigation. We also have written numerous letters to the County and provided detailed comments on water well ordinance.

We have repeatedly and in writing requested advance notice of these actions. Exhibit A is our request for notice on water well ordinance. Exhibit B is our request for notice of 2010 General Plan implementing ordinances, like the water well ordinance.

However, the County did not give advance notice to our Office of the proposed August 28 workshop on the water well ordinance. Less than 48 hours' notice is not reasonably adequate notice for a matter that has been under consideration since October 2010, nearly three years ago. We are disappointed that the County did not see fit to provide us with adequate notice of tomorrow's agenda item.

We would like to bring your attention some critical issues and concerns with regard to the water well regulations. Due to the late notice, we do not have time to provide written comments, and we are unable to rearrange our schedules to appear at the hearing tomorrow.

We urge you to open the public hearing, take comments, and continue the public hearing to the next Planning Commission hearing. We will plan to provide comments by then either in writing or in person at the next hearing. Under the circumstances, we think that is a reasonable request.

Thank you.

Very truly yours,

Molly Erickson

cc: Mike Novo
Craig Spencer
Les Girard

MEMORANDUM

TO: Monterey County Planning Commission

FROM: Refinement Group[1] (CHISPA, Monterey County Association of Realtors, Monterey Peninsula Taxpayers Association, Monterey/Santa Cruz Counties Building and Construction Trades Council, Monterey County Farm Bureau, Salinas Valley Water Coalition, Independent Growers Association, Center for Community Advocacy, Central Coast Builders Association, Coast Property Owners Association, Salinas Valley Chamber of Commerce, Monterey Peninsula Chamber of Commerce, Monterey County Hospitality Association, Grower-Shipper Association)

RE: Well Ordinance, Draft for Planning Commission Workshop of August 28, 2013

Date: August 16, 2013

Overall Comment:
As recommended by the Planning staff, the draft well ordinance should not apply "county-wide" because the 2010 General Plan expressly limits its application to inland areas only.

1. Limitations on New Domestic Wells

Refinement Group recommended option, Option c:

c. Allow wells on lots less than 2.5 acres if it meets performance based criteria such as:
   1) Setbacks. See II below.
   2) Fractured Rock Geology. See Issue #3 (Fractured Rock) below.
   3) Well Replacement Sites. There must be adequate initial and future sites established.
   4) Water Availability:
      i. There is no water system
      ii. A water system is unable to provide water service

Rationale: This option allows for flexibility and site-specific evaluation based on performance-based criteria.

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[1] The Refinement Group comprises representatives from diverse organizations who had previously organized to review and comment on the General Plan Update and now have re-assembled to participate in the County process for developing the ordinances to implement the General Plan. The Refinement Group supports a pro-active, public participation process in order to resolve issues upfront rather than in a battle at the end.

2. **Setbacks for new Ag wells**

Refinement Group recommended option: Consistent with AAC recommendations below.

AAC Recommendations:

a. Require no setback from the property line between a new Ag well and another Ag zoned property if the well is on land owned by the same person.

b. Require a 20-foot setback from the property line for a new Ag well on the property when the adjacent lot is a non-Ag zoned lot of record, or is on an Ag-zoned property owned by a different land owner.

c. Require no setback from a property line to the new well when the lot is adjacent to a roadway unless there is a defined easement or an approved development project (intent).

d. A well may be placed anywhere within an established well lot.

e. Setbacks should only apply to new Ag wells, not to replacement wells.

3. **Wells in Consolidated Materials (Fractured Rock)**

Refinement Group recommended option, Option a:

a. Allow new wells based on outcome-based performance standards (e.g.; 50% permeable area post-development, Alternative OWTS (i.e. enhanced treatment) where soil < 20', enhance recharge of groundwater with a rainwater recharge system, higher production capability, require two well sites, etc.)

Rationale: This option allows for flexibility and site-specific evaluation based on outcome-based performance standard.

4. **High Capacity Wells**

Refinement Group recommended newly developed option:

Develop separate standards for each basin based on the basin's sustainable yield. In some basins, the aquifer can maintain safe yields despite increased groundwater pumping. In others, recharge and recovery must be closely monitored.

5. **Replacement Wells**

Refinement Group recommended option: Consistent with AAC recommendations below.

AAC Recommendations:

Option c with modification to subsection c(3) as follows:

c. Establish criteria as to what wells may be considered as replacement:

1) Water Source. Replacement well must be located:

i. on the same parcel, or

ii. in the same geographic area (water basin).

2) Similar application/impact. Increase efficiency in Ag operation but not increase impact.
3) Differentiate between Ag and domestic wells as to what constitutes replacement.

6. Assessment of Effect on In-stream Flows

Refinement Group recommended option: Consistent with AAC recommendations below.

AAC Recommendations:
Require an assessment for High Capacity Wells in all cases where the water body is identified as critical Steelhead habitat. Periodically evaluate and use the most up-to-date scientific analysis methodologies applicable.

7. Well Influence Assessment

Refinement Group option, modified Option b, under Testing Requirements:

b. Develop standards – Develop separate standards for each basin based on the basin's sustainable yield. In some basins, the aquifer can maintain safe yields despite increased groundwater pumping. In other basins, recharge and recovery must be closely monitored to ensure that one well will not impact another nearby well.

8. Water Quality Testing Protocols

Refinement Group recommended option, Option a.ii & iii:

a. Maintain existing process and testing protocols for domestic wells only
ii. If results exceed any Maximum Contaminant Level (MCL) or approaching the MCL (e.g. 80% of MCL) for Subdivisions, four quarters of testing may be required.
iii. Treatment is an option for proposed water systems that are to be 15 connections or greater with adequate TMF and individual domestic wells on a single lot of record.

Rationale: For subdivisions, an applicant should be allowed to test until he/she can demonstrate four consecutive quarters of sampling results that meet the water quality standards. Developers should be allowed to propose treatment for water systems of 15 connections or greater.

9. Seawater-Intruded Areas

Refinement Group recommended options, Options a and d, consistent with AAC recommendations (below):

a. Apply regulations only within delineated boundary of "Seawater-intruded Areas."

d. If well is proposed in Seawater-intruded area within Zone 2C, then presume that there is no basis to prohibit the well based on the rebuttable presumption that the Salinas Valley Water Project is minimizing or avoiding expansion of seawater intrusion. Continuation of this presumption is subject to future studies showing that the SV Water Project is working to minimize or avoid expansion of seawater intrusion.

AAC Recommendations:
Apply regulations only within delineated boundary of "Seawater Intruded Areas" as mapped by the WRA and periodically updated.

If an Ag well is located in the Seawater Intruded Area of Zone 2C then it is presumed that the Salinas Valley Water Project will mitigate impacts and the subject well should not be prohibited.

Regulations apply only to production wells, not monitoring wells.

10. Archeological Study Requirements

Refinement Group recommendation – Consistent with AAC recommendations below.

AAC Recommendations:
Require an archaeological report in High Sensitivity Areas for a well if it includes grading (e.g. pit) and is in an area that has not been previously disturbed.

Drilling a well, without grading, is exempt from arch report requirements in all areas.

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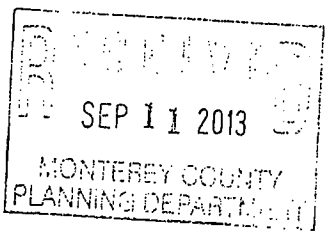
August 27, 2013



FROM: KEVIN PIEARCY

David E. Chardavoyne - Manager, and
The Monterey County Water Resources Agency Board of Directors
893 Blanco Circle
Salinas, CA 93901

RE: Proposed well ordinance Tier I analysis of stream depletion

Dear Mr. Chardavoyne and Agency Board,

I am a hydrogeologist working for Kevin Piearcy and group of landowners in the Salinas Valley. I have been using analytical models since the early 1980s, and both analytical and numerical models to evaluate stream-aquifer interaction since the early 1990s. I have worked on stream-aquifer modeling and water rights issues in the Salinas Valley since 1994. I have a BA in Geology from UC Santa Barbara and an MS in Engineering from UC Berkeley.

I am writing to address concerns regarding MCWRA (Agency) Tier I analysis methods, and the complete lack of response to similar concerns expressed in my letter of April 5, 2013 that was read before Agency staff at the ACC subcommittee meeting on that date. Copies of the letter were provided to those attending. My April 2013 letter is included herein as Attachment A. This letter also includes comments on the August 8, 2013 *Agency Working Document*. These comments are provided on the last two pages. I am not able to attend the August 28 workshop on the Ordinance due to a prior work commitment out of state.

Before addressing specific items in the recent Agency Working document, there are some basic hydrogeologic and modeling principals that should be presented to the Board since it appears Agency staff has apparently not provided the Board or the public with this information. These concepts are important toward an understanding of the limitations of the Tier I methods used by the Agency. Two of the issues discussed below address, a) the pumping rate and period, and b) the stream bed conductivity values used in the Tier I analytical models. The only information on these items that are publicly available is described in the Draft Administrative Manual, dated 5/17/12 (Manual). The August 8, 2013 Working Document refers to "refinements" in the Tier I analysis methods. It has not been made public what these refinements are, so this letter cannot address those changes. It is also unknown how many new well applications were evaluated before the methods were refined.

The following is a list of concerns we have regarding the use of both the Hunt 1999 and Hunt 2003 methods for evaluating pumping induced stream depletion. The limitations of those methods for application in the Salinas Valley are common to other two-dimensional (2D) models for evaluating stream depletion.

1. Agency staff should observe the first rule of groundwater modeling, particularly 2D analytical modeling, and that is - The model should adequately represent the system that it is intended to

simulate. Neither the Hunt 1999 or 2003 models adequately simulate conditions in the Salinas Valley for wells that are deep enough to pump water from below one or more low permeability layers. That, we beleive, applies to most wells in the Valley. The primary limitation of the Hunt models is that they represent a single homogeneous, isotropic aquifer with a constant saturated thickness that is assumed to be directly connected to a nearby stream bed. There are multiple aquifers in the Salinas Valley that are overlain and underlain by fined grained layers of varying thickness that do not conform to the limitations of the Hunt models. Wells that are deeper than about 30 - 50 feet, and that are not close to or in the Salinas River bed, cannot not be simulated using the Hunt models. This conclusion is based on my experience and even a brief review of hydrogeology of the Salinas Valley.

Very thin clay or silt layers above a producing zone will limit and delay or prevent stream depletion entirely. Clay and silt layers occur in varying thickness and depths throughout the Salinas Valley. These layers do not need to have large areal extent to effectively limit stream-aquifer interaction but many such layers are extensive in this basin. The Hunt models, and other analytical methods, are only two-dimensional (2D) and cannot properly account for these conditions at depth and therefore should not be applied to all wells in the Salinas Valley.

The first consideration of a qualified hydrogeologist when selecting a model for evaluating stream depletion in this basin should be to determine whether a new well will produce from a depth below low permeability layers. If the conditions are more complex than can be represented with a 2D model, the model cannot be used, no matter how quickly and easily the result can be produced or how satisfactory the results may appear. Do not leave this task to engineers who can become too easily focused on easily calculated results to satisfy a requirement. The process of simulating stream depletion from this and other complex hydrogeologic systems is beyond the capability of a 2D model.

The cross-sections prepared by Kenney-Jenks (2004) for MCWRA, and that can be downloaded from the MCWRA website, show the complex nature of the aquifers and low permeability layers (aquitards) in the Valley sediments. Figure 1 (attached at the end of this letter) shows a representative part of cross-section C-C' in the Pressure Area from the Kennedy-Jenks study. The complete section C-C" from that report is too large in size and fine in detail to show the entire section in a figure to be included in this letter. The K-J 2004 study covers only the northern Pressure Area, but similar detailed sections should be developed for the entire Valley so that they can be used by the Agency to evaluate new wells, and so that they can be reviewed by the public. The Board is encouraged to review all of the cross-sections in that study and those of a similar stratigraphic study of the basin by Fugro in late 1990s that covered a larger area of the Valley.

Figure 1 shows the presence of various blue and brown colored low permeability zones specified in each graphic well log, from the surface down to 500 feet. The K-J 2004 correlations highlight the thicker zones, but there are many fine grained layers throughout the Salinas Valley that limit, or prevent, vertical flow and hydraulic communication between productive aquifers at depth and nearby stream beds. Geologic sections such as these, and

nearby well logs, should be used to evaluate the validity of using a 2D model to evaluate the impact of new wells in the Salinas Valley.

Figure 2, below, is from a USGS report on the Salinas Valley. It is generalized, but represents the presence of alternating aquifers and aquitards that occur throughout the Valley, and are thickest in the northern part of the basin. Figure 3, below, is from the Hunt 1999 paper on which the Tier I model, used by the Agency, is based. It shows a single aquifer in perfect hydraulic communication with the stream bed. The Hunt models in no way account for low permeability layers below the stream bed or for multiple aquifers. Even a brief review confirms that the Hunt 1999 model does not represent the conditions in the Salinas Valley for all but very shallow wells near the Salinas River. The Hunt 2003 model is similarly limited, as are all 2D analytical models.

A thorough understanding of the limitations on vertical flow and vertical hydraulic communication, due to thick as well as very thin slit and clay layers, is critical to the application of any model to the Salinas Valley. Most of the flow to a well in an aquifer is horizontal and, for all but the shallowest zones, the water in each aquifer originates from various sources of recharge and, in general, the deeper the source aquifer the greater the delay and greater the mixing from sources of recharge replenishing that aquifer. This can be better evaluated using the results of water sample analysis using isotopes for age dating and mixing. Isotope analysis of source waters has become common in the industry. Water sample collection and analysis for isotopes has become very inexpensive, but proper use of the data requires experience.

2. The USGS provides a good example of how best to apply analytical stream depletion models in a report in which the 2D code STRMDEPL was developed (USGS WRI 00-4029, Appen A, 2000), for use with a surface water model. This code was developed from previous work on analytical stream depletion and is very similar to STRMDEPL08 (USGS, 2008) which includes a few more options, including those developed by Hunt 1999 and 2003 that are used by the Agency for Tier I analysis.

   Before the USGS applied the analytical model to their study area, they calibrated it to the flows of the nearby river using actual well extraction data. Figure 4, below, is from Appendix A of the USGS (2000) report. It shows the results of their calibration of a 2D model developed for use in a basin in Massachusetts. With the model calibrated, they were able to establish that, in that study area, there was excellent hydraulic communication between the well and the stream. One of the reasons this method could be applied effectively is that that study area in Massachusetts has a shallow groundwater system. In that area bedrock occurs at depths below about 45 feet and there is good hydraulic communication between the aquifer and the river, unlike conditions in the Salinas Valley.

   The Agency should calibrate any model they use for wells of various depths and demonstrate to the public that it represents wells and stream depletion in all areas of the Salinas Valley basin in which they will apply the model.

3. It is clear that the Agency a) is not aware of current and best methods for evaluating stream depletion in the Salinas Valley, b) that it does not conduct adequate research on the application of models they use, and c) lacks the expertise to make these important evaluations and determinations. Agency engineers and their consultants have demonstrated a poor understanding of important hydrogeologic principals in the past, and it appears this problem persists. If a simplified model is used by the Agency shows that a new well will impact a stream during a specified period, but it is misapplied and gives completely erroneous results, the Agency has not provided the applicant any benefit or cost savings in using a simple model.

   Previous studies, such as one by Kansas Geological Survey, in 1995 paper, *Evaluation of Simplified Stream-Aquifer Depletion Models for Water Rights Administration*, have shown that pumping from a single leaky aquifer reduces stream depletion by over 50%. From that study and from using various stream depletion models myself over the years, it is clear that multiple overlying low permeability layers would completely eliminate direct hydraulic communication to surface zones. This precludes the use of simple 2D methods such as Hunt 1999 and 2003. The KGS study demonstrates what I have found from own my experience, that the more estimated coefficients that are needed in an analytical model, whether for stream bed and leaky aquifers, the greater the uncertainty (and potential error) in the results.

4. Wells that are deeper than approximately 30-50 feet in the Salinas Valley will intercept one or more leaky aquifers that will prevent the occurrence of stream depletion or reduce it to insignificance. It is suggested that the Agency conduct research to determine leaky aquifer coefficients to apply to shallow aquifer conditions in the Valley and use them with the USGS STRMDEPL08 model with the leaky aquifer option. This exercise will prove to them and to the Board that; 1) leaky aquifers reduce stream depletion significantly or entirely, and 2) uncertainty in the leaky aquifer coefficients, estimates of which can range over orders of magnitude, produces a wide range of results. The Agency can then use cross sections and well logs to show the Board that that most wells in the Valley pump from complex aquifer and aquitard systems that are beyond the capability of 2D models for evaluating stream depletion. If there is still a possibility that a 2D model can be used in some areas of the Valley for wells within a certain range of depth, it should be calibrated before it is applied to applications for new wells.

5. Another condition that will preclude use the use of analytical models is whether, at any time, unsaturated flow occurs beneath the River bed along any reach within an area simulated to evaluate stream depletion due to pumping from wells. There are no 2D analytical models for stream depletion, including Hunt 1999 and 2003, that apply where there is unsaturated flow between the aquifer pumped by the well and the stream bed. This condition must first be determined to exist at all times for the results of any 2D modeling are to be considered valid.

6. If the Agency is attempting to evaluate the effects of well pumping on River flow in real time, to determine whether a proposed new well could affect the flow of the River during certain periods, they are not only using a model that fails to represent important aquifer conditions, but are also using the wrong pumping rates and time period for the simulation. To properly represent impacts on stream flows in real time, an approximation of the appropriate monthly

pumping distribution should be used. A footnote in the Draft Administrative Manual (dated 5/17/12), indicates the Tier I calculation represents intermittent pumping over a period of one year by simulating continuous pumping for 183 days. That may have changed as part of "refinements", but the revised pumping distribution that is currently used has not been made public or demonstrated to show that it reasonably represents well pumping during periods in which Salinas River flows are critical to fish.

The 183 day constant pumping rate distribution overestimates the potential impact of proposed wells on nearby streams. A more representative period should be used, that accounts for lower rates of pumping in winter and spring, or zero pumping in winter, if the new well will not be used during that season. An approximate monthly pumping distribution for both irrigation and domestic supply in the Salinas Valley is shown in Figure 5 below. The monthly rate shown is based on seasonal demand. These monthly average rates result in the same total volume pumped in one year as that for a well that is pumped at 1000 gpm for 12 hours per day for 365 days (500 gpm annual average). In the Manual, for Tier I, analysis states that the Agency will represent that same well as pumping 1000 gpm continuously for 183 days. This is shown in Figure 5 by the orange zone at the top of the graph. That rate does not properly represent pumping for this well at any time. In this example, the average rate for this 1000 gpm well, during the first four months of the year is about 300 gpm. If this well is represented in the Tier I analysis for the full 12 months at an average rate of 500 gpm, it does not properly represent pumping by this well during critical fish flow periods. Also, Tier I analyses should not be simulated for a 12 month period for the reasons discussed below in Item 7.

Wells in the Valley are pumping at their lowest rates in winter and early spring when fish flows are most critical. But the Tier I analysis is based on the calculated depletion at the end of the simulated period which overestimates the potential for stream depletion by the well. Whatever method for evaluation of stream depletion is applied by the Agency, the proper pumping rate should be used for the winter and spring periods. The rationale for pumping rates used in these analyses should also be made public.

7. Water levels recover each winter in most areas of the Valley due to recharge from all sources, not just from the Salinas River. Annual groundwater conditions reports and presentations that are posted on the MCWRA web site confirm that winter water level recover in most areas of the Valley, except where cones of depression persist in the East Side area. Therefore, any model applied to evaluate stream depletion should be applied for the correct monthly period to account for the fact that the effects of individual well pumping do not persist through the following winter and into the next spring. The persistent cones of depression in the East Side do not contribute to depletion of the Salinas River. If the effects of pumping by a specific well do not persist through winter, that period cannot be included in the simulation for analysis of stream depletion. In addition, most analytical models cannot represent the effects of recharge from all sources. Some analytic element models can be constructed to allow various sources of recharge but still have the limitations of all 2D analytical models and are more difficult to calibrate than numerical models.

8. The pumping represented in any model used to evaluate stream depletion should account for local return flows to streams or shallow groundwater from the use of the well. This will effectively limit the pumping rate used in the analysis. Return flow to streams or shallow groundwater from water use could have a greater positive real time effect on stream flow than any negative effect of pumping from depths below one or more confining layers. This can be accommodated in models most simply by subtracting return flows from total pumping to obtain net pumping.

9. Since the Tier I method used by the Agency to evaluate stream depletion does not correctly calculate the amount or timing of the stream depletion in Salinas Valley for most wells, except those near the River no deeper than about 50 feet, could it be used to determine the overall effect of pumping by a well on the Salinas River or the entire hydrologic system? The answer is no. A calibrated 3D numerical model, such as the SVIGSM should be used for an impact analysis of that type. The SVIGSM does not represent the actual complex nature of aquifers and aquitards such as shown in the Kennedy-Jenks (2004) and Fugro cross-sections, so it cannot be used to evaluate stream depletion of individual wells in real time. But, as a planning and management tool, it is sufficient to show the effects of many wells pumping on the monthly average flow of the River and, may be able to simulated the delayed effects of deeper well pumping on stream flow, assuming multiple layers are used to properly represent the system. The SVIGSM accounts for monthly varying pumping rates, all sources of recharge and better represents the groundwater gradient effect on the sources of water pumped by wells.

   Rainfall, tributary seepage losses and irrigation return flow provide 50% of the recharge to Salinas Valley aquifers. However, the Hunt models and other 2D analytical models only allow for a nearby stream that provides all recharge to the aquifer and, therefore, overestimate stream depletion in basins such as the Salinas Valley. The USGS STRMDEPL08 report, that includes the Hunt 1999 and 2003 models, states that these models can only simulated the following conditions, "The streambed resistance slows the response of the system, but ultimately, at long times, the streamflow depletion approaches the pumping rate." This does not represent conditions in the Salinas Valley and other basins where there are other sources of recharge and multiple aquifer zones. In addition, when wells pump from zones below one or more overlying low permeability layers, any potential recharge to that zone that may have originated from a nearby stream is delayed, sometimes by years or possibly decades and effects cannot easily be attributed to a single well. Even a simple 3D model, such as the SVIGSM, will be able to show that the effects of wells on stream flow are lower and there is a delay between pumping and stream depletion compared to results from 2D analytical models. The SVIGSM also better represents the effect of the groundwater gradient.

10. The groundwater gradient affects the source of water pumped by wells, even those wells that are close to a stream. The groundwater gradient is another reason 2D stream depletion models, including Hunt 1999 and 2003, do not correctly simulate stream depletion in the Salinas Valley. The effect of the gradient is shown in the Figure 6, below. It shows a well located near the Salinas River between Soledad and Greenfield that has been pumped continuously at 1000 gpm for one year. The slope of the actual Salinas Valley groundwater gradient for this area is

included in this model. The gradient shown was determined from maps that can be downloaded from the MCWRA website and is represented in the figure by the blue groundwater elevation contour lines. The water produced by the well comes from up gradient, not from an ever expanding circular region that will ultimately intercept the River. Other analytical stream depletion models have the same limitation. In Figure 6, this expanding circle is represented by the red circle around the well that is not part of the model calculation, but was added later for this example. The expanding circular region of influence of a well is what is simulated by the Hunt 1999 model. A figure from the Hunt 1999 paper that shows the expanding circular region is included as Figure 7, below.

If the Hunt model were used in this example, the red circle in Figure 6 would eventually expand to contact the Salinas River bed and simulate that all of the flow to the well will come from the River. However, the actual source area and cone of depression for this well will never intersect the River unless the pumping rate was increased by a factor of 3 to 5, and continued without interruption for a very long period.

A model that includes the groundwater gradient, and calculates streamlines, better represents the amount of potential stream depletion by a well. It shows that only a few of the red streamlines could intersect the River, even if the well is pumped at much higher rates. If one or more streamlines intersect the River at higher continuous pumping rates, not all of the flow to the well comes from the nearest stream. The amount of stream depletion that could be attributed to the well could be quantified based on the streamlines using a simple flow net analysis. This is unlike analytical stream depletion models, including those of Hunt that will calculate all of the well flow coming from the nearby stream.

The example in Figure 6 is output from a 2D well head protection model (WhAEM2000). It is not suggested for evaluation of stream depletion because it cannot account for which zone a well is pumping from, and how many low permeability layers overly that production zone that may limit or prevent stream depletion. The model was developed by the EPA for use in designing capture zones for well fields for extract contaminants, and to allow identification of source areas for wells that may be down gradient from contaminant sites. If there are complex aquifers and multiple zones that cannot be accounted for using 2D models, the EPA will require the use of the 3D numerical model.

11. The stream bed conductivity value used in the Tier I model by the Agency is very high. The Draft Administrative Manual (dated 5/17/12) states that 860 m/day is used to represent stream bed conditions for all subareas in the Salinas Valley. Changes to that value may have been made as part of the "refinements" mentioned in the Agency Working Document (dated 8/8/13), but those refinements have not been made public. The conductivity (K') value of 860 m/day is extreme and will result in an overestimate of stream depletion, even if it is applied to the Salinas River bed, which appears sandy in many areas. The value is effectively infinite for the purposes of modeling and would not limit any flow between the stream bed and underlying aquifer. It does not represent the condition assumed in the Hunt models of a "semi-pervious layer" as shown in Figure 3, below.

Most stream beds have a silt or clay zones below surface sand and gravels. The silts and clays control flow and hydraulic communication between the stream and underlying aquifers because they provide the greatest resistance to gains and losses to and from groundwater. These layers cannot be seen in the river channel unless deep trenches are dug that extend to the bottom of the stream bed so that it can be examined in section in different areas. There are likely to be many clay and silt layers in a thick stream bed such as that of the Salinas River, based on geologic cross sections that show its history of deposition over long periods of time and on the current channel morphology.

The use of a high K' values by the Agency for Tier I analysis cancel out any value in using the Hunt 1999 or 2003 models that are intended to account for lower permeability conditions in the stream bed or between the stream bed and aquifer pumped by the well. The Agency should present some supporting data and source for the stream bed K' values they use in their Tier I model.

Hunt stated in his 1999 paper, "Streambed clogging and partial penetration [of the stream into the aquifer] were found to create some of the more significant errors in equations 1 and 2". Hunt indicates his model provides a better solution to the stream partial penetration limitation. However, the Hunt models continue to use the stream bed conductance (K') term, and do not address or solve the problem of errors associated with it. The value of this term is difficult to estimate and is usually defined during model calibration. It carries a high degree of uncertainty and cannot be assumed transferable from one model to another due to different model scales and purposes. A calibration for this purpose should apply to actual and measured stream depletion in real time for a specific location, and a sensitivity analysis should be included as part of the calibration.

While it is apparent that the value for K' used by the Agency is too high to represent the layer that creates the greatest resistance to vertical flow in the Salinas River bed or any tributary - What is a correct value, and can it be determined from field data? These coefficients are very difficult to determine from field measurements or to estimate by examining stream bed material. The primary reason for this difficulty is that a stream bed may look sandy but only one millimeter of silt or clay will impede vertical flow and reduce K' by more than a factor of 10. The physical basis for these low values is that silt and clay particles are flat and not rounded like sand grains. When these particles form a layer in a fluvial environment, they lie flat and present a greater barrier to flow than rounded particles, even if the layer is very thin. K' values for a stream bed with a blend of sand and gravel may be less than 5 m/d and a silt or clay layer may have a K' of 0.1 to 0.0001 m/d based on textbook values, such as those provided in Bower (1978). The use of a more representative K' value will have a significant effect on the results of the Hunt 1999 or 2003 stream depletion models, as noted in Item 3, above.

Field investigations that are used to measure or derived K' values often result in overestimates because they can only evaluate the upper 1 to 2 feet of the stream bed. If there is a significant amount of sand near the surface, these methods cannot represent lower K' zones below 1 to 2

feet because the limited water available (from containers or a tank truck) for such tests spreads out over lower K' layers at depth and may not be detected by the instrumentation or visually. It is not possible to adjust the test results to compensate for these losses. Auger drilling, core sampling and lab testing may obtain more representative results, but stream bed sediments are typically not compacted and it is difficult to preserve an undisturbed sample of them for lab testing. Sample disturbance will change the orientation of the silt and clay particles and will allow more flow through thin layers that were once intact and will result in an overestimate of K'. My experience with soil sampling and testing while at Harding-Lawson Associates during the early 1980s has informed my understanding of field and laboratory methods.

From the analysis presented in Items 1-11 above, it is clear that the current Agency Tier I methods do not apply for most existing or proposed new wells in the Salinas Valley.

The following are specific comments we have on the ***Agency Working Document*** dated 8/9/2013:

Pg 12 – The Tier I method used by the Agency for well interference has similar limitations as the method used for stream depletion because it ignores the multiple aquifers in the basin and potential for direct influence between wells that nearby but pump from different aquifers. See Item 1 through 7, above.

Pg 13 - The Agency needs to demonstrate to the public and the Board that the methods they are using, or propose to use, to protect flows for steelhead and steelhead habitat will actually achieve those objectives at the locations and times of year that are critical. They should also demonstrate that these methods or rules for new wells target only those needs and do not have unintended consequences that adversely affect the rights of the landowners in the County. The Agency should conduct public meetings to show examples of the methods they will use and use only calibrated models. They should also make maps available to the public that show clearly where the critical habitat areas are located and if there are specific times of year that are critical for each area.

Pg 13 – Setbacks from streams for new wells will not have any benefit or effect on the effects of individual wells on the flow of nearby streams, and are not needed if the objective is to protect stream flow or habitat during critical periods (see Items 1 through 11 above). If the wells are deep enough to produce water from below one or more confining layers, they will not have a significant effect on stream flow during critical periods. A thorough analysis of the aquifer stratigraphy at the site, and use of a suitable 3D numerical model that properly represents this stratigraphy, will allow evaluation of the effects and timing of stream depletion by pumping from wells. The numerical model need not be run for each new well for a thorough understanding of monthly varying pumping rates on the flow of the stream during different periods in critical areas. If the a new well is shallow and close enough to a stream to have an effect on flows or habitat, the well permit can limit periods and rates of pumping during these periods.

Pg 14 – Who was/is on the "County's consultant team" ? When was the work done by this team? What was the nature of the work and data reviewed? What were the work products from this team? Please provide a list of these persons, data and work products.

Pg 14- What was the range of distance to the nearest stream for the 85 well that were evaluated? What streams were involved in these evaluations? What mitigations were required for the 11 wells where this was needed? How deep and at what distance from streams are the 4 wells with unresolved issues? What are the issues? Was well depth or aquifer stratigraphy evaluated for these well sites? If so, what methods or data were used for that evaluation? A list of methods, mitigation and unresolved issues should be made available and will not identify the landowner or location. It will inform the public about what to expect if they encounter these problems.

Pg 14 – How has the staff's implementation of the process evolved? What is the current process? Were previously rejected new well applications reevaluated using the revised process?

If the current new well permit application form does not require a depth or depth range for the screened interval of the well, this should be required so that important information can be included in the evaluation of new well permits by the Agency. If the production zone of a new well is not constructed as specified in the application, a second evaluation could be made at the owners expense. In order to evaluate stream depletion by new wells, the Agency should first evaluate nearby well logs and use representative cross-sections to determine if a new well will be completed below one or more confining layers that will affect hydraulic communication between the production zone of the well and the nearby stream. If the degree and timing of depletion will be affected, the new well will have to be evaluated using a calibrated 3D model that accounts for these layers and all sources of recharge. Any model used must demonstrate that it can simulate actual stream depletion by individual wells.

The Agency should use the SVIGSM to demonstrate, to themselves and the Board, the reduced and delayed effects that wells have on streams when the wells are completed below one or more confining layers and when all sources of recharge in the Valley are properly accounted for. It is possible that the SVIGSM can be used to evaluate the effects of depletion from wells pumping from specific aquifer zones and at various distances from streams. However, it would need to be refined so that it includes the low permeability layers present in the Forebay and Upper Valley areas and shallow layers in the Pressure and East Side areas.

We remain hopeful that our concerns will not continue to be ignored and, again, offer our assistance in developing the best approach to evaluating the potential for stream depletion by new wells. We like to obtain copies of the following; 1) A copy of the Excel worksheet models that the Agency is currently using for Tier I analysis, 2) Current methods used for Agency Tier I analyses (including simulated pumping rates, 3) Coefficients currently used for the aquifer and stream bed in the Tier I analysis, 4) A list of analysis requirements for Tier II studies that have been conducted, and 5) General Tier II guidelines provided by the Agency for new well permits that fail the Tier I analysis.

Sincerely,

Peter M. Pyle PG, CHG

Cc: Kevin Piearcy, Nick Jacobs

FIGURES

Figure 1. A portion of Section C-C' from Kennedy-Jenks (2004) Hydrostratigraphic study for MCWRA.

The attempts to correlate the major aquifers and aquitards are not as important in this example as the presence of shallow low permeability layers and the number of them down to 500 feet.

Blue and Brown represent low permeability layers. The Salinas River is shown at upper left.

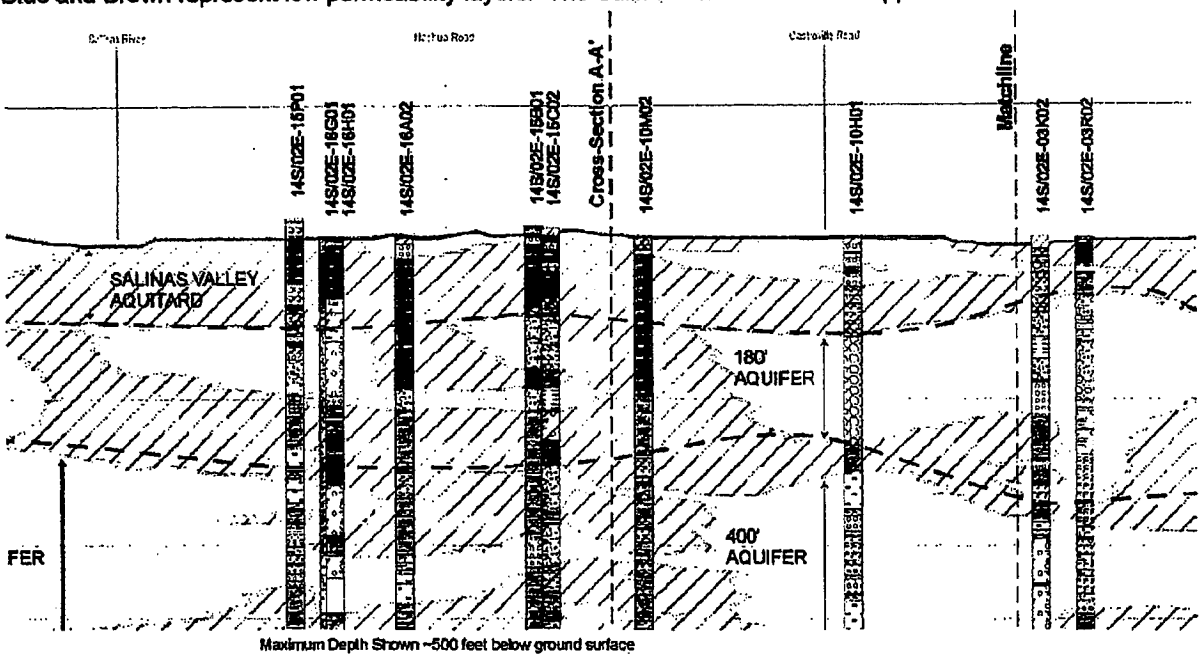
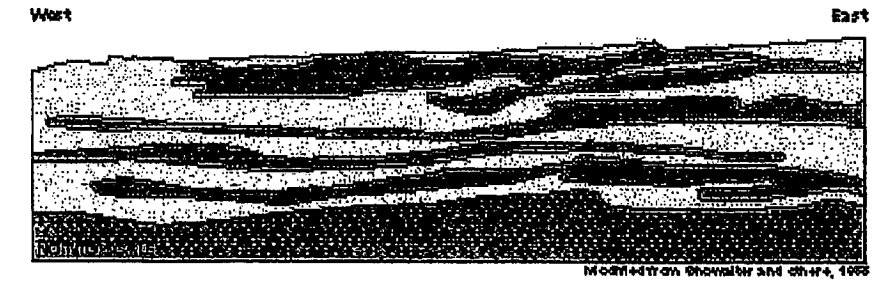


Figure 2. Conceptual section, originally from USGS WRI 83-4049.

Figure 120. A diagrammatic hydrogeologic section illustrates the sequence of complexly interbedded aquifers and confining units in the northern end of the Salinas Valley.



Modified from Showalter and others, 1983

EXPLANATION

Principal aquifer—Sand and gravel

Confining unit—Clay and silt

Consolidated rocks

Showalter, P.E., Akers, J.P., and Swain, L.A., 1983, Design of a ground-water monitoring network for the Salinas River Basin, California: U.S. Geological Survey Water-Resources Investigations Report 83-4049, 74 p.

Figure 3. From the Hunt 1999 paper on which the Agency Tier I stream depletion model is based. It represents a single aquifer with no leaky aquifer or aquitard below.

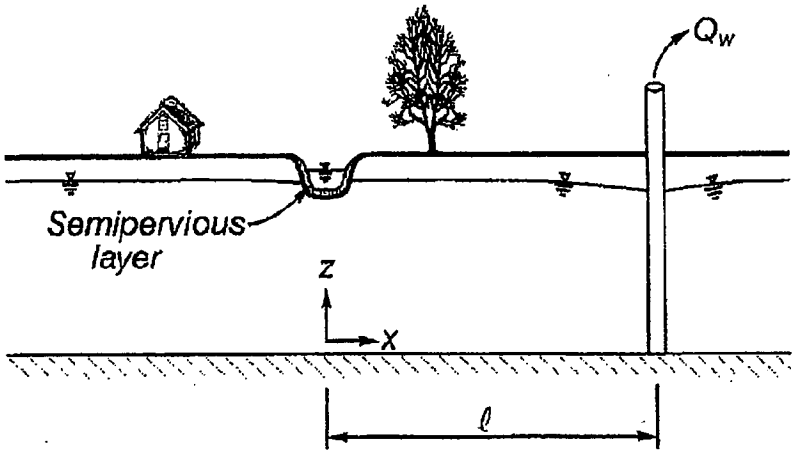


Figure 3. Definition sketch for the problem considered herein.

Figure 4. Calibrated analytical stream flow depletion from USGS WRI 00-4029

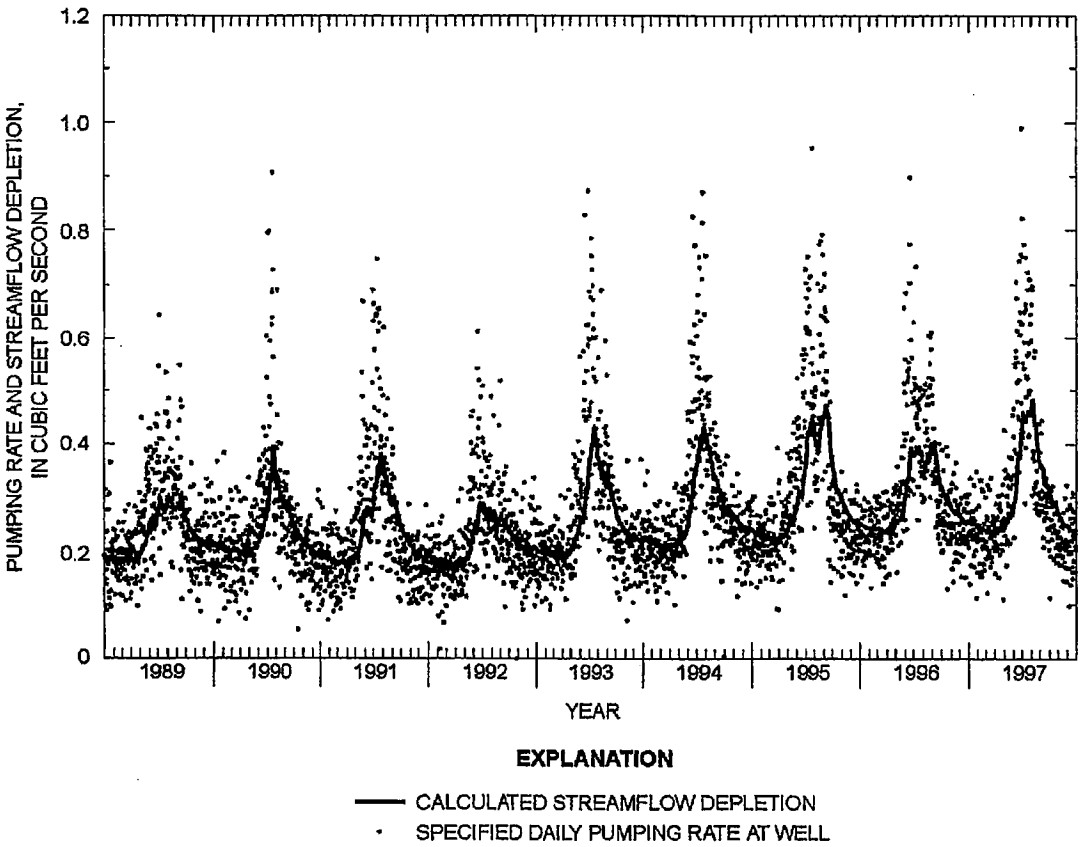


Figure 5. Seasonal Pumping Rate Distribution for a 1000 gpm well.

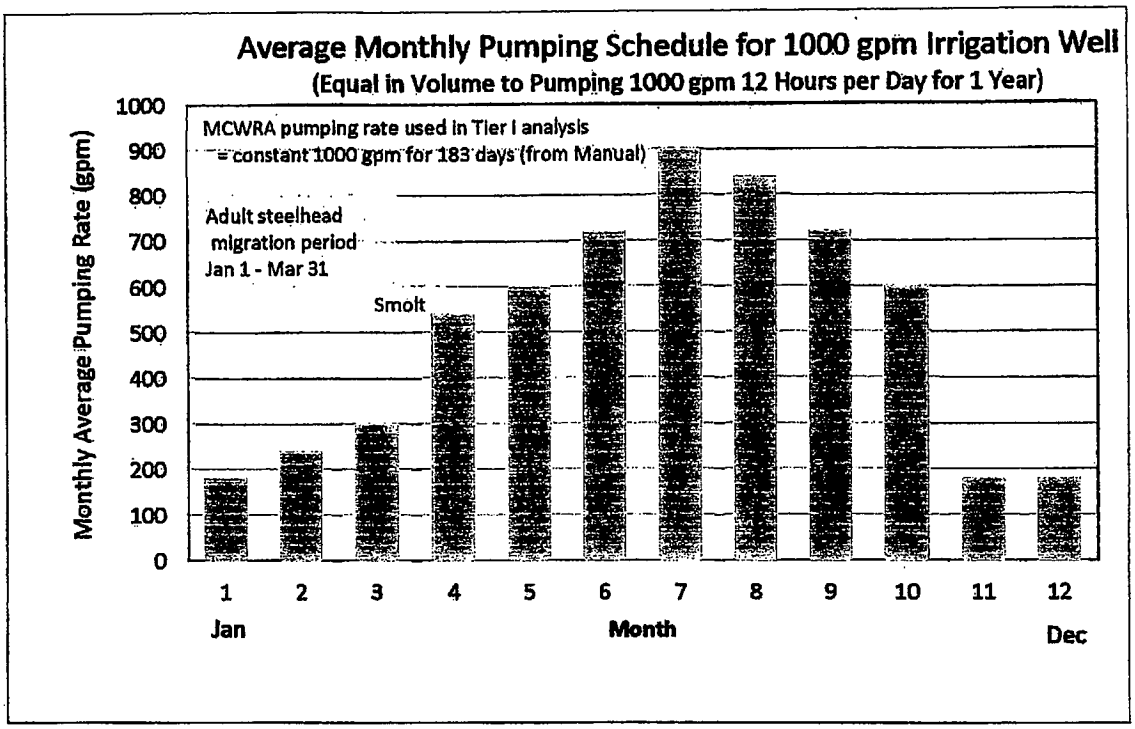


Figure 6. Example of a well pumping 1000 gpm in Salinas Valley with the effects of the regional groundwater gradient.

The red stream lines show the effects of the gradient and the source area to the well is up gradient. The red circle is what analytical models calculate for the area of influence of the well because they do not account for a groundwater gradient. The blue lines represent the groundwater gradient in the Salinas Valley

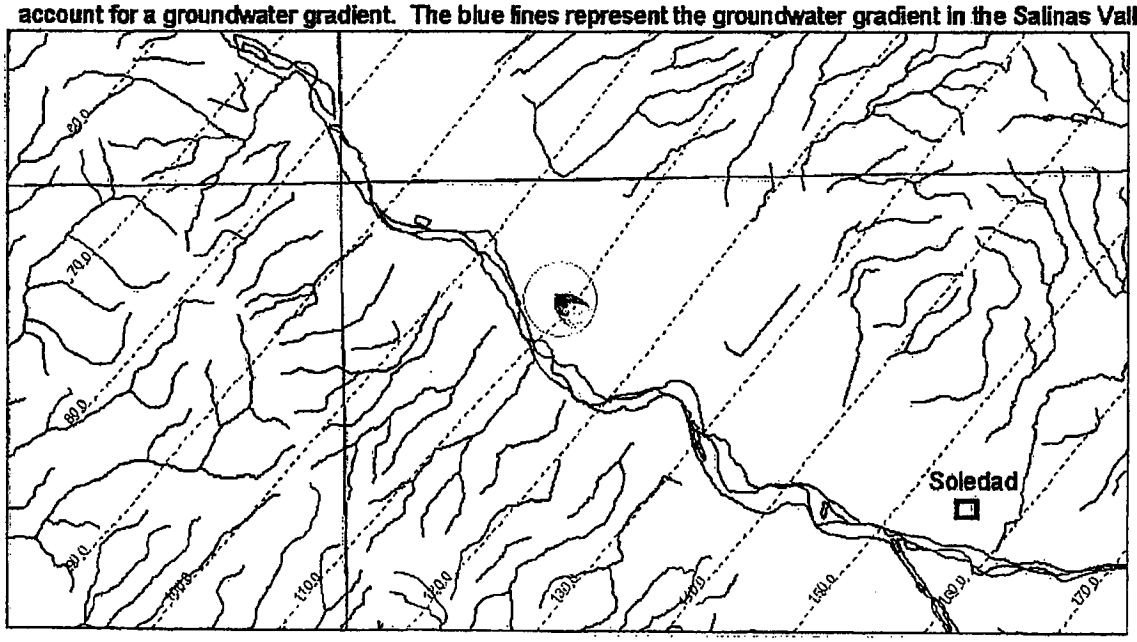


Figure 7. From Hunt 1999, showing ever expanding circular area of influence of the well as simulated in the Hunt analytical model.

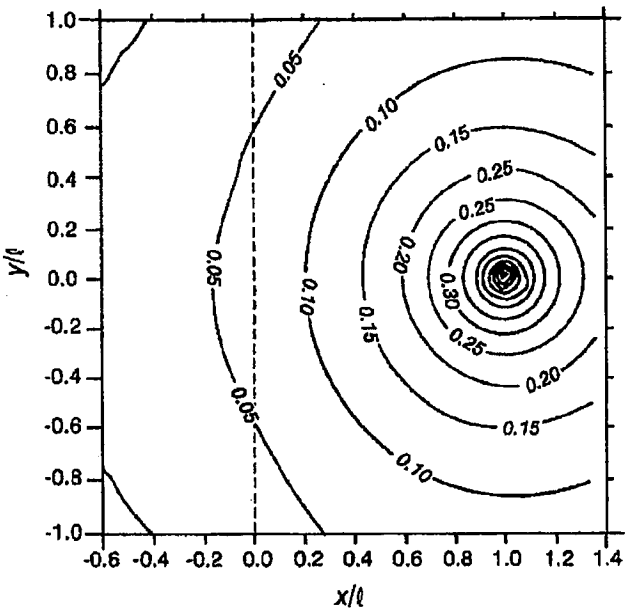


Figure 5. Drawdown contours showing values of $\phi' T/Q_w$ for $Tt/(S\ell^2) = 1$ and $\lambda\ell/T = 1$. The stream location is shown with a dashed line.

ATTACHEMENT A

PM Pyle April 5, 2013 Letter

Peter M. Pyle PG. CHG.
27 San Francisco Blvd, San Anselmo, CA 94960

PGH Consulting Hydrogeology
415-456-3680

April 5, 2013

Mr. Kurt Gollnick Chairman
Monterey County Ag Advisory Committee
Special Ad Hoc Subcommittee/Well Ordinance

RE: Proposed well ordinance and methods for determining limitations on new high capacity wells.

Dear Mr. Gollnick,

I am a consulting hydrogeologist writing on behalf of a group of Salinas Valley landowners coordinated by Kevin Piearcy. I have worked on various aspects of Salinas Valley hydrology since the early 1990's when I was with Stetson Engineers, Inc. I have more than 30 years experience in hydrogeology, the last 20 years of which has involved extensive analysis of groundwater/surface water interactions and modeling. I have been certified as an expert in hydrogeology in court and water rights administrative hearings in California, Nevada, Arizona and Utah. I have reviewed the proposed changes to the County well ordinance, fish flow studies and related documents over the past few months.

This letter includes a brief summary of the technical issues we have found regarding the Tier I and Tier II analyses, and the classification of streams and other habitat areas of concern. I have researched these issues in the technical literature, methods employed in other States and reviewed the approach to them recommended by the U. S. Geological Survey. We are available to assist the County in developing more accurate, defensible methods for identifying new high capacity wells that may affect streams, and more effective methods for evaluating potential impacts of wells on streams and nearby wells and optimize management of resources.

The existing Tier I analytical methods used by MCWRA to limit the location or pumping rates of new high capacity wells are outdated and produce significant errors in results. There are many limitations when these simple methods are applied to large, complex aquifers with multiple wells pumping simultaneously, such as the in Salinas Valley. Analytical methods overestimate the amount of stream depletions caused by pumping from wells because they use simple formulas that assume ideal conditions. These ideal conditions include:

- the aquifer(s) intercepted by the well and that of the nearby stream bed are the same,
- there is no aquifer heterogeneity laterally or vertically, essentially assuming the valley filled with a uniform sand, and that all wells in a each subarea have the same properties,
- the water table is at or above that of that of the stream bed,
- the water table is flat (no regional gradient or other wells pumping),
- there are no other sources of recharge to the aquifer other than the stream, and no return flow from water use goes back to the aquifer or stream.

There are other limiting conditions, but the above list of limitations is the primary cause large inaccuracies (up to 100%) in the results of analytical method used by MCWRA. These ideal conditions rarely occur simultaneously in nature, particularly in large, deep, highly variable (heterogeneous) aquifers such as those of the Salinas Valley. The inaccuracies introduced by analytical methods for determining stream depletion are well documented in the field of groundwater hydrology.

The three critical conditions that occur in the Salinas Valley limit the effective application of the Tier I methods used by MCWRA. These are:

1) There are many producing zones in the aquifers of the Salinas Valley and these are separated by low permeability layers of varying thickness and extent. A low permeability layer need only be an inch thick or less and they need not extend from one side of the Valley to the other or along its entire length to have a significant effect on groundwater/surface water interactions. These low permeability layers separate producing zones from each other and from surface streams. In general, the deeper the well in the Salinas Valley the greater the hydraulic isolation from surface water.
2) A regional groundwater gradient, or slope of the water table, exists that is similar to that of the Salinas River and flows continuously from up to down valley (from south to north). This gradient tends to elongate and narrow the area of influence of a well. It is slightly elongated up gradient and greatly foreshortened down-gradient (downstream). The elongation is generally parallel to the direction of flow of the Salinas River so that even shallow wells near the River may not influence the flow of the River. A well may never influence a nearby stream if the well is close proximity but somewhat up-gradient from the stream. There are semi-analytic methods that take the gradient into account that are simple to apply.
3) There are other sources of recharge to aquifers in the Salinas Valley than other the Salinas or Arroyo Seco Rivers which are of concern to fisheries. The analytical method used by MCWRA assumes all water comes from aquifer storage or the nearest stream. Small intermittent and ephemeral streams, direct rainfall and irrigation return flow contribute at least fifty percent of the recharge to the Salinas Valley, and most of the recharge that does occur from the Salinas River is not controlled by MCWRA.

Another issue of concern is the classification of streams and aquatic habitat. The USGS blue lines on topographic maps (available in digital format at various degrees of accuracy) are a highly unreliable of stream classification. They were not intended for the purposes of evaluating the effects of wells on streams or whether the aquifer(s) underlying the stream are hydraulically connected to the stream bed (year round or intermittently). This limitation was recognized and rejected by the Arizona Superior Court for stream adjudications because the blue lines do not account for conditions, manmade or natural that affect the flow of streams.

We suggest a different approach to the issues raised herein. First, a more rigorous analysis by the County is needed to demonstrate:

- That a significant number of new high capacity wells is expected and that they represent a threat to fish flows and habitat not previously accounted for by MCWRA through the lengthy planning and assessment process for the Salinas Valley Water Project (SVWP).
- That these new wells can be distinguished from pumping by existing wells during periods when minimum flows for fish migration and passage have been specified by NMFS.
- That the producing aquifer zone(s) used by a new wells is hydraulically connected to streams or critical habitat areas during periods that coincide with when the wells are being used (such as during the irrigation season).
- That the current approach to limiting large capacity wells is effective during periods when minimum flows or specific habitat areas could be affected and the new wells are being pumped.

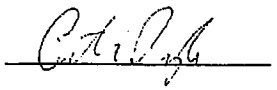
The MCWRA may have conducted some analysis for fish flows using the SVIGSM model. Not all of these studies are readily available. MCWRA should present any details of these studies if they address any of the points listed above and that confirm their overall approach to management of resources.

In addition we make the following recommendations:

- Define sensitive streams, stream reaches or habitat areas of concern with supporting data and maps.
- If a Tier I screening must be used, it should account for well depth, aquifer heterogeneity (not just an estimated stream bed conductivity) using nearby well logs, and account for the groundwater gradient.
- Define replacement wells with respect to construction details such as depth, diameter, depth of grout seal, and whether the new well is allowed to pump at a rate equal to that of the well it replaced, the rate pumped before the old well was abandoned or some other benchmark,
- Better define the Tier II analysis with respect to the data required and how it will be evaluated.
- Consider the use of a numerical model, the SVIGSM if appropriate, to optimize water use and in-stream flow requirements based on currently accepted methods.

In conclusion, it is recommended that the County modify their approach to evaluating the effects of proposed new high capacity wells. The analytical method currently used is too outdated and inaccurate to employ as a basis for limiting the use of water by property owners. These property owners have paid assessments to the County over many years even though most of the groundwater in the Salinas Valley does not occur as a result of management by the County.

Best Regards,



Peter M. Pyle PG, CHG

Cc: Kevin Piearcy, Nick Jacobs

To: Carl Holm (cc: Richard LeWarne, Cheryl Sandoval and Howard Franklin) *via e-mail*

From: Henrietta Stern, Project Manager 831/658-5621 or Henrietta@mpwmd.net

Date: September 10, 2013 at 5:45 pm

Subject: MPWMD Informal Staff Comments on County Well Ordinance for September 11, 2013 Workshop

MPWMD staff did not learn of the September 11, 2013 meeting until earlier this week, and staff members are committed to other meetings or field work on September 11, 2013. Following are informal comments regarding the proposed County Well Ordinance following a brief review. MPWMD Division Managers have not had the opportunity to review the County well materials or this memo, though the general contents were discussed with the District Engineer.

Interagency Coordination Needed—MPWMD is also reviewing its rules and regulations relating to water wells, and have informally communicated with members of Health Department staff about a need for a meeting to ensure our respective regulations are as coordinated as possible. A meeting between Health Department, Planning, MCWRA and MPWMD staff by mid-October is suggested. Alternatively, a brief presentation by County staff on well-related action before the MPWMD Rules & Regulations Committee (October meeting date to be determined) may be productive.

Fractured Rock Wells and Correlative Rights—MPWMD recently adopted Resolution 2013-12 on July 22, 2013. See the MPWMD website at: http://www.mpwmd.dst.ca.us/pae/wds/WDSPermits/2013Updates/Memo8_Res2013_12.pdf. The staff agenda materials are available at: http://www.mpwmd.dst.ca.us/asd/board/boardpacket/2013/20130722/13/item13.htm.

Resolution 2013-12 temporarily suspends setting System Limits (production and connection limits) for fractured rock wells that serve one parcel in absence of evidence of overdraft or other physical or legal constraint on the source of supply. District Counsel advised MPWMD that the agency does not have the authority to set such limits due, in part, to the correlative water rights shared among the well owners. MPWMD is considering rule changes to reflect this new information. Because the well owners have equal water rights, MPWMD no longer requires an assessment of impact to neighboring wells within 1,000 feet. The County may wish to research the effect of correlative rights on its proposed rule changes, especially those rules that require assessing the impact of a proposed fractured rock well on neighboring wells.

It is also noted that the 1,000-foot zone of well influence used by MPWMD was based on extensive well research in Carmel Valley and may not be accurate in other parts of the County with different geology.

Replacement Wells— MPWMD understands the need to properly destroy abandoned wells. However, certain wells would have value as monitor wells. MPWMD has recently revised its Monitor Well Request Form to ask the well owner about the characteristics of the well.

Allen, Carol x5178

#6

From: Richard [bigsur@sprynet.com]
Sent: Monday, September 09, 2013 4:58 PM
To: Allen, Carol x5178
Cc: Holm, Carl P. x5103
Subject: 2nd Letter to Planning Commissioners
Attachments: Memo From Refinement Group Re Well Ordinance _3_ 0816132.pdf

Hello Ms. Allen,

We would appreciate your also distributing the following email letter and attachment to the Planning Commissioners. Again, I am sending this email on behalf of the Big Sur LUAC.

At the combined Big Sur LUAC joint meeting today, September 9, 2013, the Big Sur LUAC voted to support all of the recommendations in the attached memorandum from the Refinement Group and others to the Planning Commission dated August 16, 2013, in reference to the Well Ordinance, Draft for Planning Commission Workshop of August 28, 2013. Specifically, this Ordinance in its current form should not apply in the Big Sur Coastal Planning area, and an ordinance applicable to Big Sur should only be drafted after the Big Sur Coastal Land Use Plan (LUP) is completed to ensure that the ordinance implements the updated LUP.

Thank you very much,
Dick Ravich
for Big Sur LUAC

LAW OFFICES OF
MICHAEL W. STAMP

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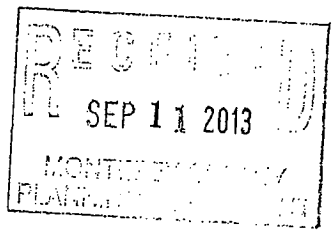
September 11, 2013



E-MAIL

Via Email and Facsimile (831) 757-9516
Jose Mendez, Chair
and Members of the Planning Commission
County of Monterey
168 West Alisal Street, 1st Floor
Salinas, CA 93901

Subject: September 11, 2013 - 11:00 a.m. public hearing
Agenda Item 6 – Water Well Ordinance workshop (REF120022)

Dear Chair Mendez and Members of the Planning Commission:

The public hearing notice for this item states it will be held at 11:00 a.m. today. We would like to attend the hearing in Salinas but are unable to due to other previously scheduled matters.

This Office has represented The Open Monterey Project with regard to this matter. This matter is an implementing ordinance for the 2010 General Plan. The Open Monterey Project is currently in litigation with the County over the General Plan. We have participated in meetings involving County planning staff and we have written letters to the County and provided comments on draft water well regulations and related issues.

We read in the County staff report that staff has been meeting over the past six months with the Agricultural Advisory Committee and others. The Open Monterey Project has not been invited to participate in those meetings, or of meetings focusing on domestic wells, and has not received notice of these or the other meetings that County staff has had in what County staff calls "a more collaborative process." (Staff report, p. 1; list of meetings on pp. 1-2.)

The Open Monterey Project is very concerned about the effect of wells in hard rock areas (issue 3, p. 7 of staff report). TOMP agrees with County staff that these wells have"unpredictable production" that "creates uncertainty for a long-term water supply." When those wells fail, as they have in the Granite Ridge Area, the entire community pays in many ways. The County ordinance should protect the groundwater resource and the quality of life of residents. Due to the vagaries of hard rock aquifers, the issues should be carefully studied and addressed.

The staff report does not propose any option that would resolve this serious problem. (See Options, p. 8.) The three options proposed, called a, b and c, do not

adequately address the foreseeable impacts of "unpredictable production" of hard rock wells, and the consequences of well failure. This problem should be addressed.

Option a (p. 8) does not effectively address the problems or implement the plan policies. It addresses other issues. It is unclear why staff is addressing issues like "post-development permeability" when the issue is unpredictable production. By definition, "unpredictable production" does not meet the General Plan policy requirement for long-term sustainable water supply.

As to new domestic wells, a key issue is water rights, and long-term sustainability. These issues are not addressed in the staff analysis of issue C.1.

As to replacement wells, The Open Monterey Project supports options a and b (staff report, p. 12). These options make sense and appear to be consistent with the plan policies.

As to several of the issues, a key problem with agricultural wells is that they are not metered. The lack of metering leads to problems, including problems with capacity and accountability. The lack of metering reduces the ability to measure the wells' impacts on the water supply, impacts on in-stream flows, and impacts on other wells. Metering also would help address issues with defining "replacement" wells.

As to seawater-intruded areas, The Open Monterey Project supports options b and c. Option d makes no sense. The Monterey County Water Resources Agency has admitted that it will take at least ten years, and probably much longer, to have any idea of the effects, if any, of the Salinas Valley Water Project. Option d looks like an effort to deny the true facts – that the aquifer is contaminated with seawater and therefore does not have a long term sustainable supply.

Again, we regret that we are unable to attend today's workshop. Thank you for considering these comments.

Very truly yours,

Molly Erickson

cc: Mike Novo
Carl Holm

Notice of Public Hearing

Monterey County Planning Commission

NOTICE IS HEREBY GIVEN that the Monterey County Planning Commission, State of California will hold a Public Hearing to consider the project described below. The hearing will be held on **Wednesday, September 11, 2013** at the hour of **11:00 a.m.** in the Monterey County Board of Supervisors Chambers, County Government Center, 168 West Alisal St, Salinas, California, at which time and place any and all interested persons may appear and be heard thereon.

Owner:	COUNTY OF MONTEREY RESOURCE MANAGEMENT AGENCY - PLANNING
Project File No:	**REF120022**
Permit Name:	MONTEREY COUNTY CODE – CHAPTER 15.08 – WATER WELL ORDINANCE
Permit Type:	Workshop
Planning Area:	County-Wide
Project Description:	**CONTINUED FROM AUGUST 28, 2013.** Hold a Public Workshop to consider a draft ordinance amending Monterey County Code, Chapter 15.08 (Water Well Ordinance) and to provide direction to staff. This ordinance is intended to address issues raised regarding wells in fractured rock that led to a moratorium, create implementing language for new General Plan policy, update requirements based on current information and technology, address general issues of concern, and amend language consistent with changes in State laws.

IF YOU CHALLENGE THIS MATTER IN COURT, YOU MAY BE LIMITED TO RAISING ONLY THOSE ISSUES YOU OR SOMEONE ELSE RAISED AT THE PUBLIC HEARING DESCRIBED IN THIS PUBLIC NOTICE OR IN WRITTEN CORRESPONDENCE DELIVERED TO THE APPROPRIATE AUTHORITY AT OR BEFORE THE PUBLIC HEARING

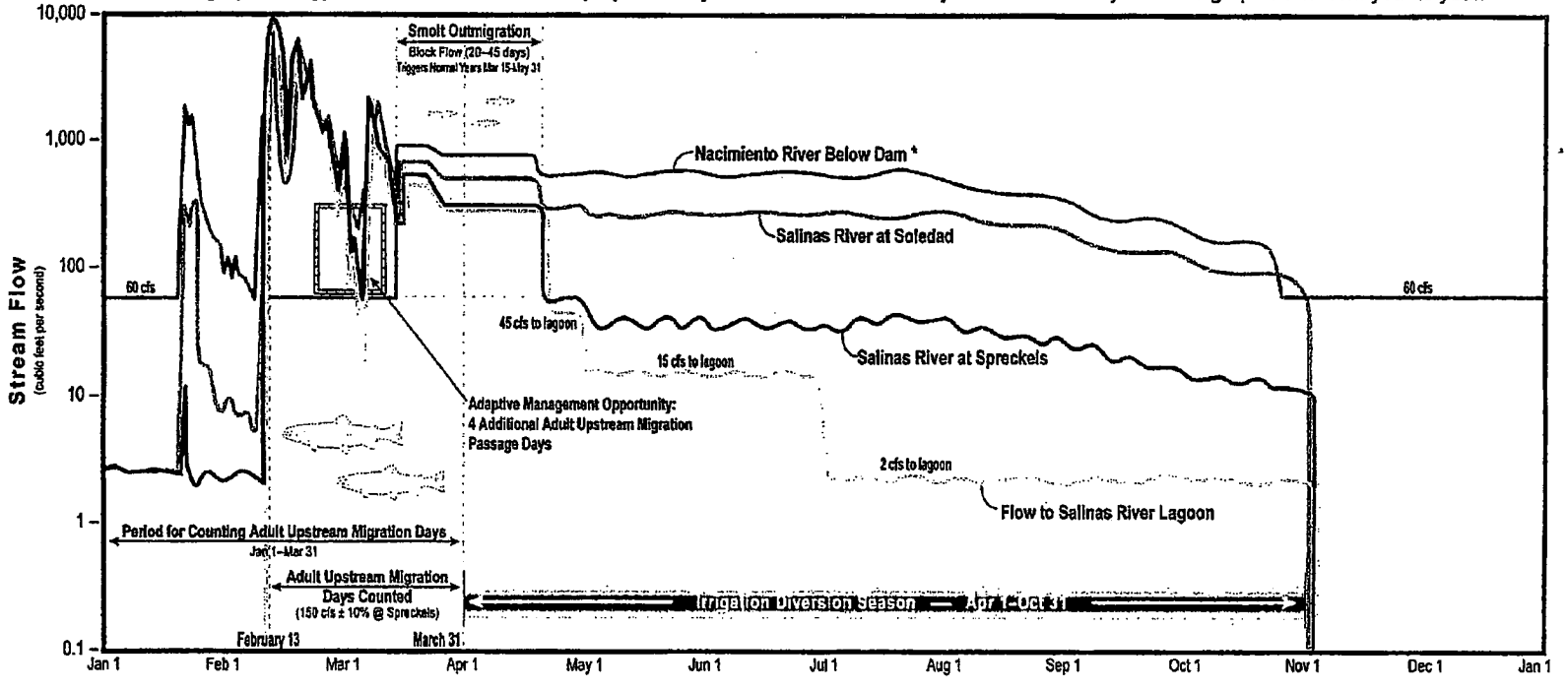
FOR ADDITIONAL INFORMATION CONTACT:

Carl Holm, Assistant Deputy Director
Jacqueline R. Onciano, Project Services Manager
Monterey County Resource Management Agency-Planning Department
168 West Alisal St, 2nd Floor, Salinas CA, 93901
831-755-5103 or holmcp@co.monterey.ca.us
831-755-5193 or oncianoj@co.monterey.ca.us

From: Kevin Piearcy

Illustrative Example of Salinas Valley Water Project Stream Flows

This graphic is hypothetical and for illustrative purposes only. Actual stream flows may differ substantially from this graphic and from year to year.



* For illustrative simplicity, flow contribution from San Antonio Reservoir is not shown.

Figure 9. Illustrative Example of Salinas Valley Water Project Stream Flows

HORAN | LLOYD

ANTHONY T. KARACHALE
STEPHEN W. DYER
MARK A. BLUM
JAMES J. COOK
ELIZABETH C. GIANOLA
JEROME F. POLITZER
PAMELA H. SILKWOOD
JACQUELINE M. PIERCE
BIANCA KARIM

Of Counsel
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E-MAIL

September 25, 2013

VIA ELECTRONIC MAIL & HAND DELIVERY
Leslie Girard, Esq., Deputy County Counsel
Monterey County Counsel's Office
168 West Alisal Street, 3rd Floor
Salinas, California 93901

RE: Well Ordinance and General Plan Amendment

Dear Les:

This firm represents Salinas Valley Water Coalition and Monterey County Farm Bureau. This letter is to comment on the proposed Well Ordinance as it applies to the 2012 Settlement Agreement and subsequent General Plan amendments, amending Policy PS-3.1., i.e. proof of long-term, sustainable water supply. Salinas Valley Water Coalition and Monterey County Farm Bureau request that Monterey County adhere to the parties' intentions under the Settlement Agreement and the General Plan amendments by not applying to any new wells proposed within Zone 2C any prohibitions imposed for the seawater-intruded areas other than those already existing for the Salinas Valley Water Project ("SVWP").

Under the General Plan, Long Term Sustainable Water Supply means a water supply from any source that can provide for the current and projected future demand for water from that source as determined pursuant to the criteria required to be adopted by Policy PS-3.2. Under the General Plan amendments, development within Zone 2C is specifically exempt from proving Long Term Sustainable Water Supply based on a rebuttable presumption that seawater intrusion is being addressed by the SVWP. The SVWP was built to halt seawater intrusion into the Salinas Valley groundwater basin, to help hydrologically balance the basin and to address flooding. In order to meet these goals, the Project imposes limitations and restrictions and through these measures, the Project has already demonstrated success. Accordingly, any wells proposed within Zone 2C should be allowed to proceed subject to these limitations set by the SVWP and under the presumption of Long Term Sustainable Water Supply and should not be subject to any new prohibitions imposed for the seawater-intruded areas.

In closing, Salinas Valley Water Coalition and Monterey County Farm Bureau request that the Well Ordinance reflect the foregoing.

Respectfully submitted,

Pamela H. Silkwood

PHS:mh

Cc: Clients
Carl Holm

4821-4180-4310, v. 1

Christopher Gunn

6 main growing months: April-September = 151 days (not counting Sundays)

151 x 720 (60 minutes x 12 hours) = ~~108,720~~ 113,040 minutes

If using a 1,000 gpm well, then ~~108,720~~ 113,040 minutes x 1,000 gallons = ~~108,720,000~~ 113,040,000 gallons

Blanco area farming water use (celery, red leaf, green leaf, romaine, broccoli, cauliflower)

1 acre/foot of water every 3 months per acre during growing season.

1 acre/foot = 326,000 gallons of water

If assuming a single 1,000 gpm well on a 100 acre ranch, that ranch will only need 32,600,000 every 3 months. Therefore, that ranch will need 65,200,000 gallons for the months of April-September. In required pumping time with the 1,000 gpm well, that equates to 65,200,000 divided by 1,000 = 65,200 (minutes) divided by 60 = 1087 (hours) divided by 151 (days) = ~~7.20~~ 6.92 hours pumping per day.

September 25, 2013

E-Mail

Monterey County Planning Commission
168 W. Alisal Rd.
Salinas, CA 93901

Subject: County of Monterey Well Ordinance – REF 120022

Attn: Chairman Mendez and Planning Commissioners

My name is Kevin Piearcy. I am a property owner and also here representing a large group of property owners. I would like to thank you for the opportunity for us to participate in the workshop today as well as the workshop held on Sept. 11, 2013.

Hopefully since the Sept. 11th workshop you have been able to review all the information that we presented to you and the comments that we made regarding high capacity wells, well abandonments / replacement wells, assessments of effect on the in-stream flows & well influence assessments.

I would like to start by reviewing the information submitted on High Capacity Wells. First we submitted to you "Coastal Ground Water Trough" maps from the pressure 180 foot and Shallow East Side aquifers and Coastal Ground Water Trough Maps for the Pressure 400 foot and Deep East Side Aquifers. These maps where dated August 1999 and were produced by the Monterey County Water Resources Agency. These maps clearly show a large area north of Salinas with major ground water issues. The ground water contour lines show static water levels of as much as 100 ft. below sea level. It should be noted that these measurements improve to positive measurements as they move up (south) the valley.

We also presented you with a map showing the Hydrolic Subareas within the Salinas Valley. "The Salinas Valley Ground Water Basin is divided into major hydrolic subareas, whose boundaries are derived from discernible changes in the hydro geologic conditions of the underground aquifers." These discernible changes in hydro geologic conditions exist in all areas of the county, yet this ordinance defines a high capacity well as being any well that pumps more than 1,000 GPM. We believe this definition is not correct and from the information that we have provided it should be clear that 1,000 GPM is too high in certain areas of the county and to low in other areas of the county. This is not a one figure fits all county with all the recognized different hydrological areas and conditions.

We also spoke on the Replacement Well Policy. We totally support the proper abandonment of wells, yet we also believe that the proposed policy violates California Water Law by allowing one property owner who abandons/ replaces a well to get a new well permit fairly easily while another property owner who has not abandoned a well will possibly be required to pump less water than the property owner who abandoned/ replaces a well. We believe this policy is not legal in that it will create a senior ground water pumper and a junior ground water pumper. (First in time, first in line). This policy as it is currently proposed is a violation of a property owner's right to reasonable and beneficial use of the water underlying their property. This policy clearly needs more refining to create a more equitable policy.

In regards to Assessments of Effect on In Stream Flows, we have made several attempts to county staff in person, as well as through letters dated April 5, 2013 and Aug. 27, 2013. We have not received any response to our many questions and issues regarding the MCWRA (Agency) Tier 1 analysis methods.

It is our belief and the record will show that the current methods used by the county in their assessments are limited. These limitations cause large inaccuracies (up to 100%) in the results of analytical method used by MCWRA. These inaccuracies introduced by analytical methods for determining stream depletion are well documented in the field of ground water hydrology. These inaccuracies have already been proven with the county's current method by the fact that every application for a well permit that the county's method has shown to have an effect, of greater than 2CFS, has shown to have an effect of as little as less than 1CFS. It is very clear that the county is not using the correct or best methods to assessor analyze our wells.

If the county is to require any type of analysis they must be required to use the best and most up to date models available. We have made several recommendations to improve the county's current methods, all of which are in the two letters presented to the county and were also presented to your board on September 11th. In order for this to move forward a response is required from the county in regards to these two letters. So far the county and its staff have appeared to be reluctant to answer the questions and issues presented in these letters. We request your assistance in receiving a proper response to these letters.

One of the county's concerns with effect on In-stream Flows is that of fish flows. From the chart we presented to you 9/11/13(Illustrative Example of Salinas Valley Water Project Stream Flows), you can see critical period appears to be in the winter to early spring. Wells in the Salinas Valley are pumping at their lowest rates in the winter and early spring. The Tier I method however used by the county is based on the calculated depletion at the end of the simulated period which overestimates the potential for stream depletion by the well. Whatever method for evaluation of stream depletion is applied by the county, the proper pumping rate should be used for the winter and spring periods.

In closing we hope that the information and testimony we have provided you with has assisted you in recognizing the current flaws in this Water Well Ordinance. We have presented facts as to how the county's currently proposed Well Ordinance is flawed, limited, outdated, produce significant errors in its results and in some cases may be illegal.

The county agencies and staff on the other hand have given you a definition of a High Capacity Well being a well that produces more than 1,000GPM. Yet they have produced no scientific evidence that this is a correct number. They have openly admitted they are not sure where the number came from. "It was just a number everyone could agree to". Who is everyone? No one ever approached the stakeholders in this county with this number.

They have presented you with a Replacement Wells portion to the Well Ordinance yet state, "there is no current definition of a well for either Agriculture or domestic wells.

The effect on In-stream flows and Well Influence Assessments are marred by an outdated, error riddled, inaccurate analytical model that uses estimates, assumptions and inaccurate information to make a determination. How could we be pleased or be willing to accept this when we know there is a better approach and method?

We feel that the proposed Well Ordinance is a form of adjudication by the County of Monterey. The County of Monterey has no legal standing to adjudicate; only the State of California can. Yet some of the County's policies appear to look like an adjudication measure, but in the reverse of how it would actually be enforced.

We have, and continue to, offer our assistance to the County in developing more accurate, defensible methods for identifying new wells that may affect streams, more effective methods for evaluating potential impacts of a well on streams and nearby wells, a better and more understandable replacement well policy and the optimized management of resources.

Having stated all this, we now ask for your assistance to correct the flaws in this ordinance. We would ask you to table any discussion on the ordinance. We would ask you to direct county staff to go back to the stakeholders to develop a more acceptable and workable well ordinance. Staff needs to be directed to accepting a more accurate and up to date model for their assessment methods and not the one they are currently using.

Sincerely,
Kevin Piearcy