

**GLENN COUNTY
WATER ADVISORY COMMITTEE**

Glenn County Department of Agriculture
720 North Colusa St., Willows, CA 95988
Phone: 530.934.6501 FAX: 530.934.6503
Email: wateradv@countyofglenn.net
Website: <http://www.glenncountywater.org/>

AGENDA

MEETING DATE: **Tuesday October 13, 2009**
TIME: **6:00 p.m. Please Notice: Evening Meeting**
PLACE: **Glenn-Colusa Irrigation District
344 East Laurel Street
Willows, CA 95988**

I. INTRODUCTIONS:

Water Advisory Committee Members:

David Alves	Princeton-Codora-Glenn Irrigation District
Jack Baber	Reclamation District No. 1004
Mark Lohse	BOS District 5 Private Pumpers
Gene Clark	Reclamation District No. 2106
Ted Trimble	Western Canal Water District
Larry Domenighini	Glenn County Farm Bureau
Leigh McDaniel	Glenn County Supervisor
Wade Danley	Kanawha Water District
Donnan Arbuckle	Resource Conservation District
Ken Sullivan	Orland Unit Water Users Association
Larry Maben	BOS District 3 Private Pumpers
Mike Vereschagin	Orland-Artois Water District
Del Reimers	West Colusa Basin Private Pumpers
James Weber	East Corning Basin Private Pumpers
Thad Bettner	Glenn-Colusa Irrigation District
Bob Coruccini	Willow Creek Mutual Water Company
Jere Schmitke	City of Orland
Elwood Weller	Provident Irrigation District
Vacant	Stony Creek Water District
Vacant	West Corning Basin Private Pumpers
Joel Mann	Glide Water District
Rosanna Marino	City of Willows

Technical Advisory Committee Members:

Lance Boyd	South
Kelly Staton	Department of Water Resources
Allen Fulton	UC Cooperative Extension
Randy Murphy	Planning and Public Works Agency
Kevin Backus	Environmental Health
Ben Pennock	Central
Mark Black	Agricultural Commissioner
Andrew Farrar	East
George Wilson	North

II. APPROVAL OF MINUTES:

Approval of the Minutes from the meeting of June 9, 2009.

III. AGENDA ITEMS:

A. Public Comment:

Any person wanting to address the Water Advisory Committee on any item NOT ON TODAY'S AGENDA may do so at this time. The Water Advisory Committee will not be making decisions or determinations on items brought up during Public Comment.

B. Discussion and/or Action Items:

1. Continue Discussion on Strategic Planning for Water Resources.
 - 1) Water Transfer Guidelines: Latest Sub-committee meeting revisions
 - 2) Recommendation of deadline to complete
 - 3) Water Resources Presentation to Board of Supervisors September 15, 2009
2. TCCA Transfer – Jeff Sutton – General Manager TCCA
3. RD 1004 Transfer
4. 2010 Drought Water Bank
5. Prop 84 Regional Acceptance Process
 - 1) Conditional Acceptance for planning purposes
6. Crystal Geysers Update – Jim Strandberg (Malcolm Pirnie)
7. Summer BMO's and DWR Monthly Measurements
 - 1) Summer BMO Review
 - 2) Northern District Contours/Change Maps
8. Update on BMO Graphing Effort to Go to TAC
 - 1) Meet with Private Pumper Area Representatives
 - 2) Schedule TAC Meeting prior to Fall Measurements

C. Communications:

D. Member Reports:

At this time WAC members are encouraged to discuss upcoming or ongoing activities that may be of interest to the committee.

IV. NEXT MEETINGS:

The next Water Advisory Committee meeting will be scheduled today.

The next TAC meeting will be scheduled at a later date.

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E-mail: wateradv@countyofglenn.net Web Page: www.glenncountywater.org

MINUTES

Meeting Date: June 9, 2009

Time: 1:30 pm

Place: Glenn-Colusa Irrigation District
344 East Laurel Street
Willows, CA 95988

Water Advisory Committee Members Present:

Lance Boyd for David Alves Princeton-Codora-Glenn ID
Donnan Arbuckle Resource Conservation District
Ben Pennock for Thad Bettner Glenn-Colusa Irrigation District
Lance Boyd for Wade Danley Kanawha Water District
Larry Domenighini Glenn County Farm Bureau
Leigh McDaniel Glenn County Supervisor
Mark Lohse BOS District 5 P P
Ted Trimble Western Canal Water District
Jere Schmitke City of Orland
Rick Massa for Ken Sullivan Orland Unit Water Users Assoc.
Mike Vereschagin Orland-Artois Water District
Elwood Weller Provident Irrigation District

Water Advisory Committee Members Absent:

Jack Baber Reclamation District No. 1004
Gene Clark Reclamation Dist # 2106 & 1004
Bob Coruccini Willow Creek Mutual Water Co.
Larry Maben BOS District 3 Private Pumpers
Joel Mann Glide Water District
Rosanna Marino City of Willows
Del Reimers West Colusa Basin P P
James Weber East Corning Basin P P

Technical Advisory Committee Members Present:

Mark Black Glenn Co. Dept. of Agriculture
Allan Fulton UCCE
Andrew Farrar East Area
Kelly Staton Department of Water Resources
Ben Pennock Central Area

Others in Attendance:

Tina Brothers WAC/TAC Secretary
Tito Cervantes DWR Northern District
Lydia Harris Tri County Newspaper
Sue King OUWVA
Vickie Newlin Butte County
Pat Parsons DWR Northern District
Eugene Massa Jr. Colusa Basin Drainage District
Lester Messina Glenn Co. Dept. of Agriculture
Andy Popper Planning & Public Works
Jim Strandberg Malcolm Pirnie
Rachelle Valverde Glenn-Colusa Irrigation District

- I. INTRODUCTIONS: Those in attendance introduced themselves.

- II. APPROVAL OF MINUTES: The minutes for February 18, 2009 and April 14, 2009 were approved as mailed.

III. AGENDA ITEMS:

A. **Public Comment:** None.

B. **Discussion & Action Items:**

1. **Proposed Bottled Water Facility in the Orland Area** –Lester introduced Jim Strandberg, Consultant with Malcolm Pirnie representing the client that is interested in constructing a Bottled Water Facility in the Orland Area. Jim provided an updated Project Concept for review. The project is still in the planning stage. The property was identified as a 12 acre parcel W/ of the TC Canal and North of Rd 200. They have installed a 600 foot monitoring well screened in three zones. At this time it appears the 130-170 foot zone may meet their needs for a sparkling mineral water. There is currently no commitment with the property owner for purchase. Additional needs and tasks identified were:
 - a) groundwater source with a total dissolved solids (TDS) concentration of 250-500 mg/L and meet all requirements with Title 21 requirements for potable water
 - b) groundwater supply ranging up to 160 acre-feet/per year at full build-out (10 years)
 - c) aquifer tests from production well with favorable monitoring results
 - d) plan and building site approval from the City of Orland

It is anticipated if built, it may require up to 25 employees. The site application will be submitted to the City in the near future. WAC members asked that they be kept informed of their progress incase they are asked for input or advise by the Board of Supervisors.

2. **Continue Discussion on Strategic Planning for Water Resources**
 - 1) Water Transfer Guidelines: Latest Sub-committee meeting revisions. The sub-committee met on May 27, 2009 and reviewed comments and suggestions from Western Canal Water District legal counsel. The sub-committee agreed with and incorporated them into the guidelines and a revised copy of the Guidelines was sent to the WAC for further discussion prior to today's meeting. Lester informed the WAC that he received comments from Sandy Denn this morning and shared them with the WAC and they were also incorporated. The WAC feels the draft is ready to go to County Council after it is presented to all the water districts for review. A revised copy will be sent to everyone before the next WAC meeting.
3. **TAC Recommendations on BMO's Sub-area 5 and Sub-area 9-**
 - 1) A 5 mile radius of two BMO wells was examined taking into account land and water use changes since the BMO's for the wells were established in 2001. There were three questions that were considered:
 - 1) Are the BMO's alert stages that were established in 2001 using 20 years of history (1977-97) of groundwater levels still relevant for these BMO wells the past 10 years?
 - 2) Are there technical concerns with the methods used in 2001?
 - 3) What's next?

The TAC's current approach to evaluating BMO wells in alert stages was to:

- Focus on the two BMO wells; 22N03W18B01 (18B) and 21N02W23G01 (23G)
- Assess the extent of groundwater pumping within a 5 mile radius of the BMO wells
- Improve understanding of water and land use changes since BMO's were established in 2001
- Re-evaluate water level data for existing BMO wells from 1977 to 2009 in an effort to show changes in historic land water use. To the extent possible Department of Agriculture staff located as many wells as possible from the area surrounding the two

wells in question. Three maps showing progressive changes in land and water use from 1993 to 1998 to 2007 were presented using DWR Land and Water Use Data (2003 data was updated from Department of Agriculture files and additional visual evaluations). The data shows a 5,500 acre increase in groundwater use from 1993 to 2008 within the 5 mile radius for well 18B. There has been a historic 14,160 acre groundwater dependant area of Sub-area 5, which is within the 5 mile radius of well 23G. The 5 mile radius extends to the northwest into Sub-area 5. Historic spring groundwater levels from 1977 to 2009 in graph format were also provided. Presented in this fashion it is clear that the 18B area is declining while the area around 23G shows consistent fluctuations over time.

The recommendations from the TAC for sub-area 5 (18B):

- Important changes in land and water use have occurred and are continuing to occur
- 2009 spring groundwater levels are equal to 30 year historic lows
- History has shown that these deeper groundwater levels have recovered before
- Suggest being patient to see if the 2009 levels will recover during a wetter hydrological cycle
- Important to note that the current land and water use has occurred and it may result in less recovery
- If this becomes more substantiated, additional steps may need to be revisited to manage the groundwater resource in this sub-area

The recommendations from the TAC for sub-area 9 (23G):

- Important changes in land and water use have occurred and are continuing to occur
- Even though these changes have occurred, current groundwater levels are not yet at the historic low which have recovered in the past
- As a first step, the regression method used to define the BMO alert stages in 2001 for this well might be reconsidered in favor of a different BMO method for defining and setting alert stages

2) Reevaluate hydrographs of BMO wells using a period of record from 1977 to 2009 to include land use changes. This is a recommendation from the TAC. Ted Trimble suggested that Lester and the Private Pumpers work together rather than the WAC making the decisions. Larry Domenighini mentioned that he would like to see the last nine years of data be included in the BMO data for comparison. Lester is going to graph all available spring and fall data for 23G so Mark Lohse (Sub-area 9 representative) can compare before the WAC makes a decision.

4. **Drought Water Bank**

- 1) Fallowing, Substitution, etc - Western Canal and GCID reported they will be fallowing approximately 6,000 acres each for the Drought Water Bank. Lester received information from Reclamation 1004 that they will be fallowing as well as water transfer substitution in Glenn County and we are awaiting information on specifics associated with the transfer from the district or their consultant.
5. Update from Northern District Land and Water Use Section- Tito Cervantes explained to the process of how DWR performs their surveys. Currently the regional counties are surveyed every 5 years. Information compiled consists of crops grown, cultural changes, irrigation methods and water source. By collecting this data it helps DWR determine how water moves through the system. Glenn County will be included in this year's survey and DWR is hoping they can get as much help from the county departments of agriculture and irrigation districts to make the survey as complete and accurate as possible.
6. Update on TC Canal Water Supply, Biological Opinion, and Fish Screen- No formal presentation was provided. T.C.C.A districts have recently had their allocation increased to 40% of their contract amount. Progress is being made on the temporary pumping plant in Red Bluff and they have been able to meet district's demands. The gates at the diversion will go down June 14, 2009

at midnight. The T.C.C.A has also received \$110,000,000 dollars in federal stimulus funds for the fish screen project.

7. Prop 84 Regional Acceptance Process
 - 1) Four County Effort-Lester informed the WAC that to be eligible for funding through Prop 84 or 1E for Integrated Regional Water Management Planning and Implementation of water or flood control projects you need to go through a regional acceptance process that deals with boundary and overlapped issue of regions. The counties of Glenn, Colusa, Tehama, Butte, and most recently Sutter is in the process of developing a regional water management group (RWMG). It was discussed that an agreeable level of governance/guidance will be necessary to discuss what projects would be successful and provide the greatest level of benefit to the region.

C. Communications: Letter from RD1004 discussing participation in a substitution program in the 2009 Drought Water Bank.

D. Member Reports: None.

The next WAC Meeting will be determined through a memo to WAC members.

The next TAC Meeting at this date has not been scheduled.

Meeting adjourned at 3:37 pm.

Sincerely submitted by,
Tina Brothers, WAC/TAC Secretary

GLENN COUNTY WATER TRANSFER GUIDELINES

Part 1: Background

The Preliminary Plan for Groundwater and Coordinated Water Management (Plan) was approved by the Glenn County Water Advisory Committee (WAC) in 2004 and adopted by the Glenn County Board of Supervisors (Board) in May 2006. Items presented in the Plan identified the “next steps” that should be undertaken as components of a program to facilitate the management of water resources by local entities within Glenn County. Below is the text from the Plan as Item G) Evaluate Water Transfer Guidelines:

Evaluate Water Transfer Guidelines

Glenn County, by virtue on its physical and hydrologic setting and foresight of its residents in the past, enjoys an enviable water supply situation in relation to many counties in California. The fact that water transfers within and/or outside the county can be considered is a fortunate circumstance. As stewards of the water resources available to Glenn County the resource should be managed to meet the needs of Glenn County, the Sacramento Valley, and California, to the extent practicable. Water law and guidelines or parameters for water use exist. It would be helpful to the community to have guidelines documented that represent established water law and water use parameters that represent the basis for particular types of water transfers.

Types of water transfers that should be considered include:

- *Surface water with groundwater substitution.*
- *Surface water with fallowing.*
- *Groundwater.*
- *Surface water originating in Glenn County (Recommended March 10, 2009)*

To the extent water transfers are configured consistent with adopted guidelines, there should be no need for discussion of a mitigation fund or third party impacts. Having water transfer guidelines in place can facilitate the management of water resources within the county.

At the March 11, 2008 WAC meeting a motion was made to begin the process of evaluating transfer guidelines with the intent of developing a clear policy that will be agreeable to all parties.

A presentation was made to the Board on August 5, 2008 discussing the need for the development of a strategic planning process. From that meeting the Department was directed to bring forward practical options that would be necessary to achieve the objectives presented. The first goal of this process would be to identify a secure and sustainable funding source.

A proposal was submitted to the Board on November 4, 2008 that provided some background in methods that can be put in place to provide secure funding. As you are aware, this proposal was not popular and did create some level of concern regarding the

intentions of the Department and staff. The Board decided to revisit the proposal presentation on a later date when all supervisors would be present.

On December 16, 2008 the presentation was brought back to the Board and open discussion followed. As a result of that presentation the Board directed staff to begin the process of developing sustainable funding sources. Of the options identified, two were selected to move forward in the short term that would not require a Proposition 218 "Engineers Report". They are: 1) Additional well permit fees for domestic and agricultural well installation, with consideration for other existing permitted activities, and 2) A per acre foot fee on groundwater substitution and a dollar per acre fee on land fallowing programs associated with out-of-County transfers. Discussion on Option 1 is not relevant to this document and will be addressed at a later date.

At this time, neither of the options currently being considered would provide a sustainable funding source as requested pursuant to Minute Order 31 of the December 16 Board meeting. In the future it is anticipated that a County-wide Benefit Assessment may be recommended to be adopted by the citizens of the County.

The option that discussed placing a fee on transfers was presented as:

Water transfer fees consist of fees that the County imposes on out-of-County groundwater or groundwater substitution transfers. The fees are imposed to offset the County's cost in insuring that the water resources of the County are not transferred in a manner that economically harms other water users or causes harm to the health and safety of the citizens of Glenn County or conflict with existing legal principals of California Water Code. The water transfer fees will provide the following benefits to transferors:

1. The County's groundwater management activities include reviewing environmental documentation for water transfers and assist ongoing monitoring during water transfers to effectively enforce the Basin Management Objectives. Consequently, the County incurs significant costs as a responsible agency in reviewing proposals, and as a regulatory agency monitoring transfers to ensure that supplies are not harmed by export and water resources needed to protect the health and welfare of the citizens of Glenn County are not jeopardized. Therefore it is necessary that a schedule of fees be imposed to offset these costs and to insure that these costs are not imposed on the general citizenry of Glenn County.
2. The County will use a portion of the proceeds to offer clear transfer guidelines and monitoring oversight services as part of the transfer fee in an effort to simplify transfers for water districts within the County and to not discourage business development in the County.
3. Fees collected by the County are not intended to address mitigation of third party impacts or injury, but are intended to be used to offset expenses the County incurs for document review and additional monitoring during the term of a proposed transfer program.

Current Requirements

Currently the minimum requirements for reporting from County Code 20.03 are:

20.03.110 (E). The Water Advisory Committee shall collect the following data from any district (and) or person engaged in a groundwater substitution program or groundwater export program: the weekly amounts of groundwater extracted from each well, the precise location of the wells, all pumping and non-pumping groundwater level measurements made during the groundwater substitution period, the time periods during which the groundwater substitution program will occur, and all required environmental documentation. It shall be the responsibility of the district and (or) person involved in the groundwater substitution program to provide this information to the Water Advisory Committee including any monetary costs of providing such data.

These requirements are very basic and they are in place from the efforts of a dedicated group of County citizens committed to preserving their water rights.

Conflict Resolution

Incorporated in to County Code 20.03 is the procedure for all water users in the county to register abnormal groundwater level reports for the purposes of determining its cause. The process begins when a report is received and reviewed by the Technical Advisory Committee who then prepares an initial investigation report and notifies the local sub-watershed Water Advisory Committee member(s). Local groundwater information is assembled and committee representatives make site visits, collect and assemble additional data, and prepare and present their findings and recommendations to the Water Advisory Committee for action. County Code 20.03 and the adopted Basin Management Objective (BMO) concept have provisions for the County's authority to intervene in a tiered fashion that include the implementation of an adaptive management program or the cessation of pumping from wells involved in substitution programs or other agricultural wells.

Monitoring

Incorporated into these water transfer guidelines will be program specific components of the Sacramento Valley Water Resource Monitoring, Data Collection, and Evaluation Framework (developed by the Department of Water Resources, DWR) and the Preliminary Plan Comprehensive Groundwater Monitoring Plan (Glenn County). The Framework document was developed in 2007 by the DWR staff with valuable assistance from a panel of local and regional water resource scientists and engineers that have a vast knowledge of the region. The Comprehensive Groundwater Monitoring Plan was completed in 2007 as part of an AB 303 Local Groundwater Assistance grant with the work performed by Wood Rodgers Inc. Specific monitoring requirements will be identified, discussed, and agreed upon by the County and sellers. Every effort will be made to design program monitoring which is intended to gather information that will be beneficial to overall water resource planning and designed in a manner that promotes sound coordinated water management activities.

Mitigation

All water transfers require a mitigation plan that needs to address factors that may arise as a result of the transfer. The monitoring program required of each transferor is an important component of the mitigation plan. The level of detail in the mitigation plan will be a factor in determining the success of the transfer. The County will assume the lead role for conflict resolution. Specific mitigation factors will be identified, discussed, and agreed upon by the County and sellers. Every effort will be made to design a mitigation plan that is intended to adequately address responsibility, response, finances, and methods of avoiding third party impact or injury.

Legal Principles to be Addressed as Part of the Water Transfer

California laws (Water Code Section 1810 *et seq.*) contain numerous protections that apply to water transfers. However, there are three fundamental principles that typically apply: (1) no injury to other legal users of water, (2) no unreasonable affects to fish, wildlife or other in-stream beneficial uses of water, and (3) no unreasonable affects on the overall economy or the environment in the counties from which the water is transferred. The Project Agencies will not support or participate in any water transfer where these basic principles have not been adequately addressed.

Part 2: Guidelines and Principles

The following water transfer principles and guidelines are the most recent version (August 2008) developed by State and Federal Project Agencies, the DWR and the Bureau of Reclamation (USBR). In some instances, transfers can be developed between buyers and sellers outside of an organized program sponsored by DWR and USBR, where they become their own Project Agencies. Glenn County will consider adopting this edited version to be specific to Glenn County based upon thorough review by its WAC and TAC. Their input will be incorporated into the following guidelines prior to adoption:

Glenn County, in collaboration with Project Agencies, recognizes the importance of local leadership in making decisions on how best to manage their local and regional water resources. Accordingly, the County and these agencies will work cooperatively with local water associations, their member agencies, other regional local governments in the Sacramento Valley, and others to assure that local interests have the opportunity to manage their resources in a manner that meets their local objectives. Sellers will be required to contact the County Board of Supervisors and inform them of their intent to sell water for transfer out of the county as soon as discussions on commitments are negotiated.

Before suppliers voluntarily sell and transfer surface water or groundwater out of the county, it is recommended that supplies be made available for others in the county if feasible. There needs to be assurance that critical local public health and safety needs not be adversely affected by water being transferred out of the

county. The project agencies will work with local water agencies and associations and other local interests in the Sacramento Valley and other regions to assure that supplies are reasonably available to meet local needs in those regions.

Glenn County believes strategies for making water supplies available need to be locally driven and developed in cooperation with local public leaders. It is expected that the Project Agencies will respect the right of individual local water entities determining the best way in which local water purveyors can make water available for local, regional, and statewide use. Such local programs shall be in compliance with all applicable laws, including local ordinances. California law recognizes transfers as a beneficial use of water and protects the underlying water rights involved in a transfer.

Water transfers in Glenn County are to be made without injuring other legal water users and without unreasonably affecting fish, wildlife, or other in-stream beneficial uses, and shall be designed to avoid unreasonable effects on the overall economy or the environment in the county. No more than 20 percent of the crop land can participate in transfers unless additional evaluations are conducted relating to both the economic and environmental impacts. Investments of income from water transfers typically go back into local businesses or operations and improvements to local water supply systems. Coordination with transferring water districts, county government representatives, and Project Agencies is needed to help identify situations where actions may become necessary if the cumulative economic effects of a water transfer in the county appear to reach an unreasonable level. Water transfer programs need to establish effective mechanisms to ensure that injury to other legal water users is identified and avoided or mitigated. In addition, evaluations of possible economic and environmental effects of the transfer at the countywide level need to be identified. Real-time monitoring programs will be developed to trigger corrective actions that help avoid possible impacts as they may develop. This is especially important for groundwater substitution transfers in where a well defined mitigation program is required that specifies the actions the Seller will take, to prevent injury from occurring.

Actions to develop additional supplies for water users need to be implemented in a manner that is compatible with ongoing environmental protection and restoration programs. Examples of such programs include the Ecosystem Restoration Program and the Central Valley Project Improvement Act implementation efforts as well as any local actions to protect environmental resources. In fulfilling its obligations, the Project Agencies recognize that it must represent the interests of all parts of the State, both those areas needing additional supplies and those that can make supplies available.

Types of Water in Glenn County That Can Be Transferred

Groundwater Substitution – Reduction in surface water use which is offset with additional groundwater pumping. A groundwater substitution transfer generally consists of the following components:

- The location and characteristics of the wells that will be pumped
- The volume and schedule of transfer-related groundwater pumping
- Monitoring plan designed to assess the effects of the groundwater pumping
- Mitigation measures to alleviate possible injury issues

When developed, Project Agencies will review and evaluate groundwater substitution transfer proposals to determine whether they meet the following objectives:

- Transfer will have no significant unmitigated environmental effects
- Potential adverse effects to other legal users of water are minimized
- Proposal provides a process for review and response to reported third party effects
- Proposal shows that a monitoring and mitigation strategy is in place prior to the transfer
- Transfer operations will result in providing the agreed upon amount of transferable water

Before beginning transfer operations, the water transfer proponent will develop a groundwater substitution transfer proposal and provide it to the Project Agencies and the County. The proposal will include a detailed description of any transfer-related changes to water management operations and a description of the facilities used in the operation. The details of the proposed water management operations will be included as contractual commitments in the water purchase agreement with the seller or agent of the seller. The proposal shall include a description of the following program components:

- Surface water source that will be replaced by groundwater pumping
- Location and construction details of wells that will be pumped
- Schedule and volume of water to be pumped
- Baseline from which the additional pumping will be measured

- Method of measuring and reporting the volume of water pumped
- Monitoring program
- Mitigation measures

The seller will be responsible for assessing and mitigating significant adverse effects resulting from the transfer within the transfer source area. In addition to the details of the water transfer operations, the seller's proposal shall provide an assessment of potential adverse effects due to transfer-related operations.

Cropland Idling/Crop Shifting – Reduction in surface water use resulting from a reduction in the evapotranspiration (ETAW) of applied water to agricultural crops that would have occurred in the absence of the water transfer. (See section titled “Water Transfers Based on Crop Shifting and Idling for DWR’s 2009 Drought Water Bank and Bureau of Reclamation’s Water Acquisition Program” for ETAW values of crops.)

Types of Water Transfers Not Allowable

Direct Pumping of Groundwater – Water Code Section 1220 establishes significant barriers to the export of groundwater outside the Sacramento Valley. The Project Agencies are not interested in facilitating the direct transfer of groundwater from one area to another.

Transfers that Injure Legal Users of Water or Cause Unreasonable Effects to the Environment – Water transfers that simply reclassify existing stream flows from one category to another, making these flows no longer available to historic downstream users, have the potential to injure other legal users of water and cause harm to the environment. Water transfers should focus on either making new surface flows available or reducing surface water use in such a way as to expand the availability of surface water resources for use by others.

Long-Term Transfers - Arrangements for long-term programs related to cropland idling may be developed if the situation arises. Appropriate documentation will determine the number of years acceptable for such a program is intended to help protect the local farm economy and to avoid some environmental impacts. Long-term transfers are potentially detrimental to the welfare and the economy of the county and as a whole are discouraged.

Environmental Documentation

CEQA/NEPA environmental review will be considered adequate if it meets all the requirements of the Project Agencies legal requirements to the extent they assure that the proposed transfers and related actions are in compliance with applicable federal and state laws to prevent unreasonable environmental impacts. In instances of groundwater substitution, a greater level of site specific review may be required. Glenn County will be a responsible agency for any project under CEQA, and will comment and request

mitigation measures as appropriate.

Verification and Reporting

Verification of the actions taken to make water available in a crop shifting or cropland idling program will be conducted by the Project Agencies and participating districts and provides the information to Glenn County staff. Sellers (landowners) must allow access to fields by staff for verification purposes. Water transfers are based on estimates of water made available through cropland idling/ shifting. A mutually agreeable program needs to be developed for each proposed transfer that allows for monitoring of appropriate field data that can be used to verify the water that was actually made available by the transfer action(s) and to modify future guidelines if warranted. Accurate reporting of the activities undertaken as part of a crop shifting and cropland idling program is an essential provision of any water transfer program agreement. Reporting is the responsibility of the seller and needs to be acceptable to the Project Agencies. Reporting requirements will be outlined in the contracting process and communicated to Glenn County staff.

Part 3: Proposed Water Transfer Fees

Water transfer fees being developed will be consistent with the adopted Glenn County Groundwater Management Plan (Ordinance 1115) adopted in February 2000 (codified as County Code 20.03) and local irrigation and water district policies. As a result of actions by the Board, it is now necessary for the County to impose fees on out-of-County groundwater substitution transfers and out-of-County land following transfers. The benefits of water transfer fees are necessary because the County will incur groundwater management costs as a result of some types of transfers and has an ongoing need to maintain a monitoring infrastructure. The County's groundwater management activities include reviewing environmental documentation, performing additional monitoring, and if necessary, enforcement of the Ordinance. It is the County's responsibility to offer clear transfer guidelines and monitoring services to justify any transfer fee. Transfer fees will be paid by the buyer with no added cost to participants. Imposing an excessive water transfer fee without providing clear benefits could encourage buyers to seek transfers from other Counties, potentially driving business away from the County. These fees are in no way to considered part of any level of mitigation for third party impact or injury.

Protection of Water Rights

California law protects the underlying water rights of those parties who wish to transfer a portion of their surface water supply to others. California Water Code Section 1745 et seq. protects the underlying water rights from forfeiture for water transfers. Any water transfer agreement between the buyer and seller for water purchases needs to expressly recognize the legal protections afforded the seller's underlying water rights in a water transfer.

Use of Funds

All funds received by the County from these transfers will be utilized only for groundwater and coordinated water management activities in the County.

Proposed Fees Are As Follows:

Substitution

For each acre foot of groundwater extracted in the County that is replacing an acre foot of surface supply that is not utilized in the County or District there will be a fee of **\$5.00 per acre foot** surcharge paid to the County by the buyer.

Fallowing

For each acre of ground fallowed, that is associated with an out-of-County transfer of surface supply that is not utilized in the County, there will be a fee of **\$1.00 per acre foot** surcharge paid to the County by the buyer.

Option Fees

Option fees and dates are usually developed by the buyer and the seller during their negotiations. When an option date and option fee to purchase water is determined by the buyer and the seller, and the buyer exercises the option, there will be a **\$1.00 per acre foot** surcharge paid to the County by the buyer, regardless of the ability of the buyer to receive the water from a completed transfer.



Aquifer Test

Orland, California

Crystal Geyser Water Company

Presented to

Glenn County Water Advisory Committee

James F. Strandberg, CHg
Malcolm Pirnie, Inc.

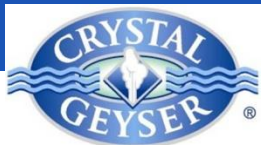
October 13, 2009

Aquifer Test

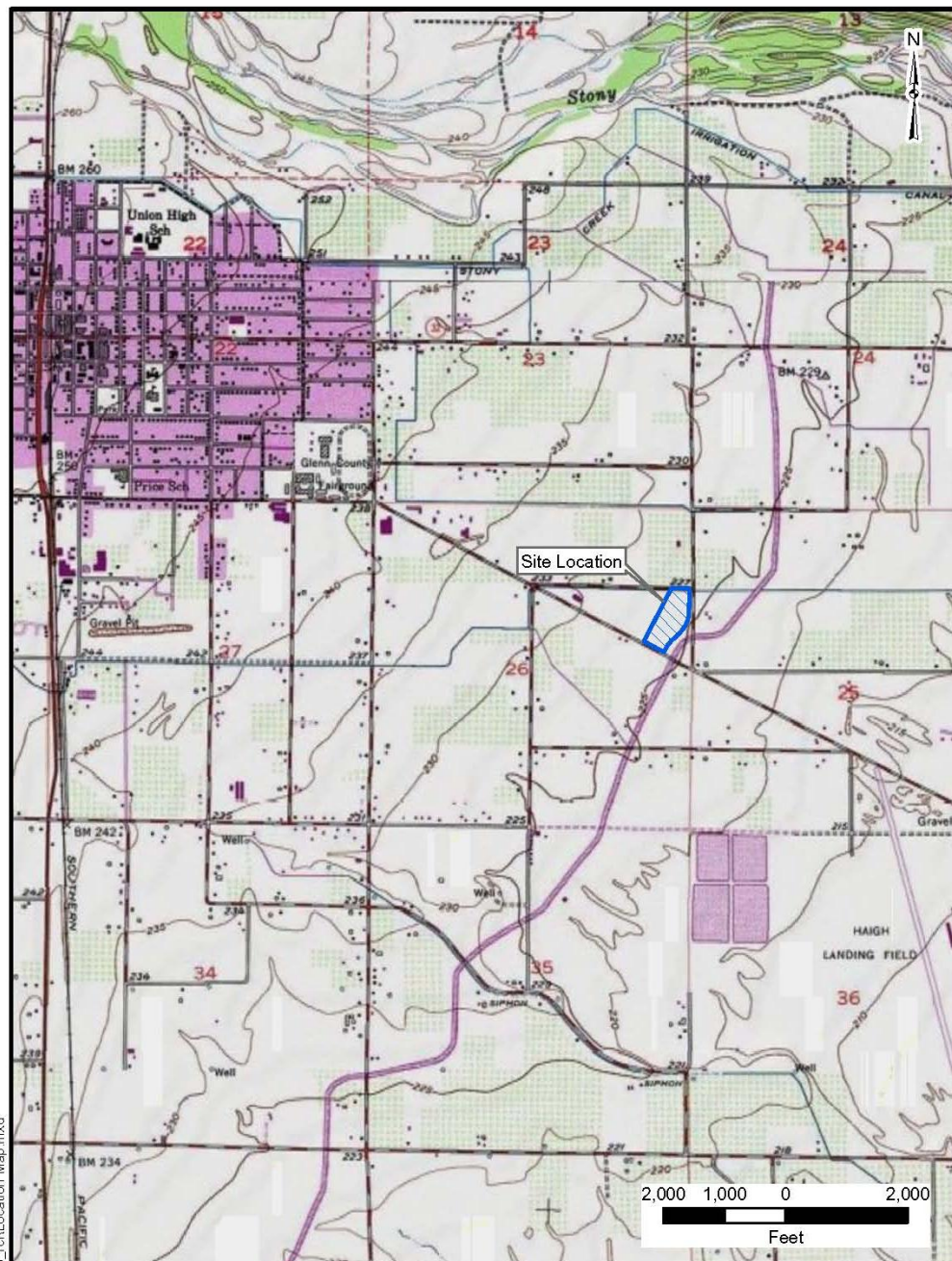
- Objectives
- Drilling and Well Construction
- Hydrogeology
- Aquifer Test Approach and Methods
- Aquifer Test Results
 - Estimation of Transmissivity and Storage Coefficient
 - Evaluation of Potential Impacts to Domestic Wells
- Summary

Aquifer Test Objectives

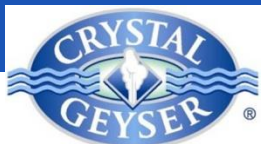
- Evaluate the physical and hydrogeologic characteristics of an unconsolidated, confined aquifer beneath the Site
- Provide information needed to estimate whether the yield of the test well would meet the needs of the proposed project (160 AFY)
- Evaluate whether the operation of the well would negatively impact the use of private domestic wells located within the vicinity of the Site



Location Map

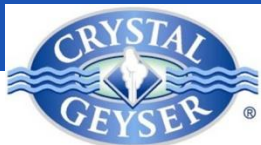


P:\16055\02\GIS_rct\Location_Map.mxd



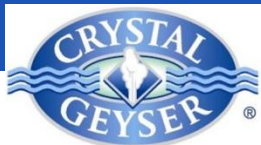
Drilling and Well Construction - Monitoring Well Cluster MW-1

- Drilled an exploratory boring to 620 feet in February 2009
- Used direct mud rotary and ran E-logs
- Constructed three monitoring wells with 2.5-inch-diameter Sch. 80 PVC casing
- Well screen intervals:
 - MW-1S: 130–170 feet
 - MW-1M: 290–310 and 320–340 feet
 - MW-1D: 520–540 and 550–570 feet



Drilling and Well Construction - Test Well and Monitoring Well MW-2

- Test Well
 - Drilling, wire-line coring, and E-logging in May 2009
 - Constructed 10-inch-diameter SS well in June 2009
 - Screen Interval 135–175 feet
 - 100 feet from MW-1 cluster
- MW-2
 - Constructed in June 2009
 - Screen interval 140–150 feet
 - 2.5-inch-diameter Sch. 80 PVC casing
 - 1,000 feet from test well

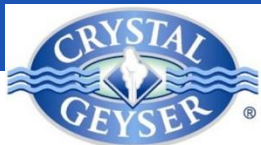


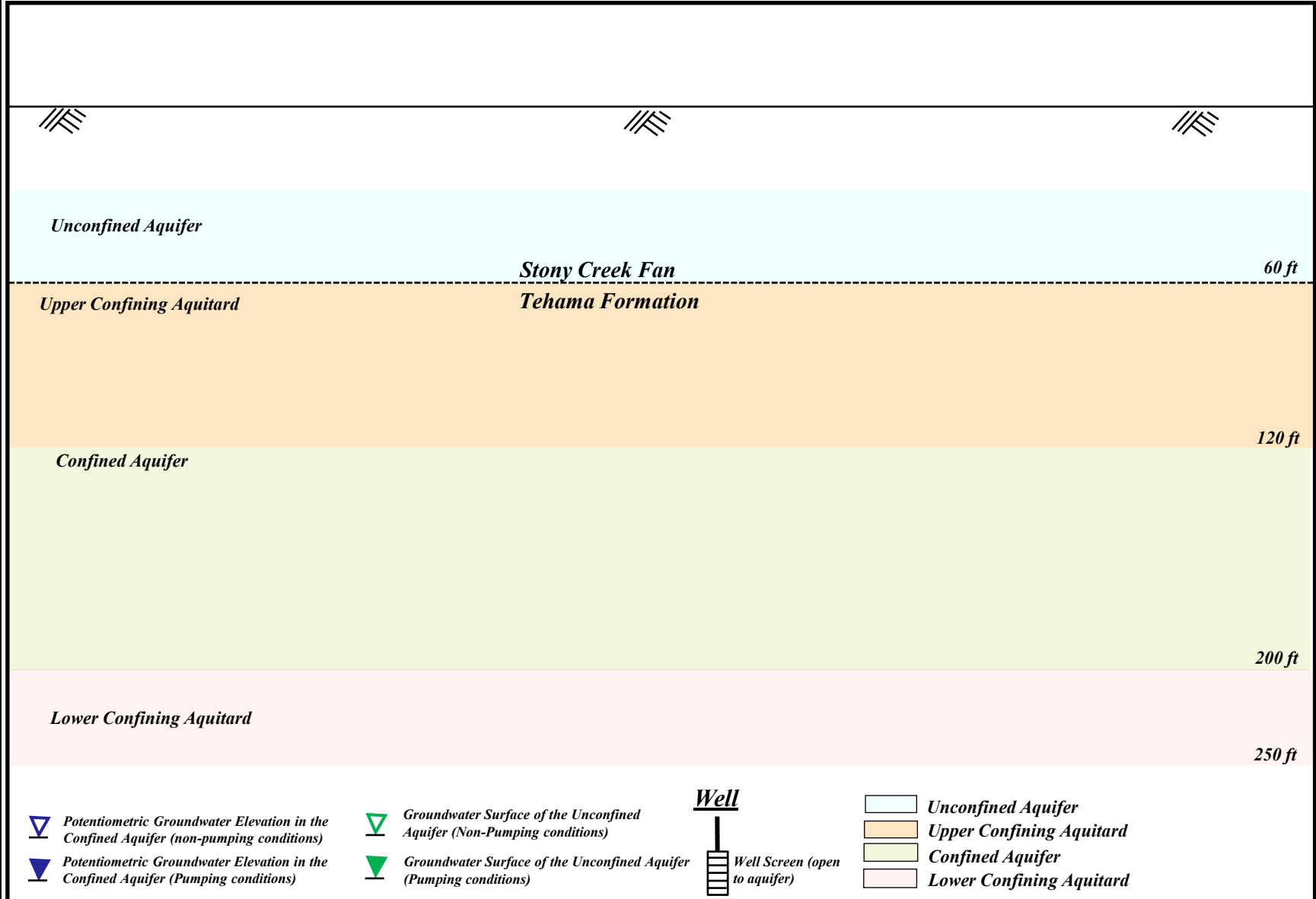
Test Well and Monitoring Well Installation



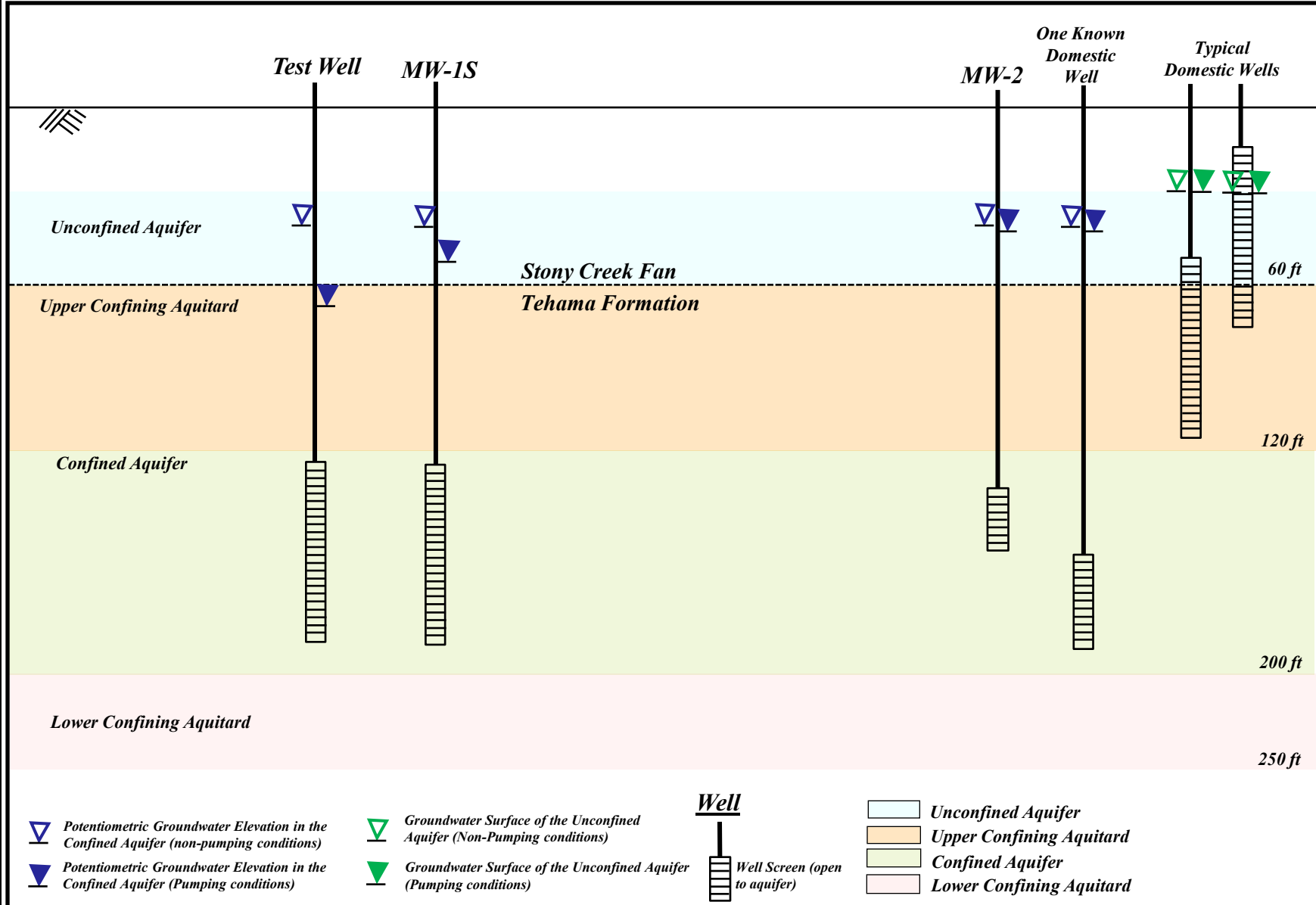
Hydrogeology

- Shallow aquifer consisting of coarse sands and gravels (Stony Creek Fan)
- Deeper aquifers are separated from the shallow aquifer by low permeable silts and clays (60 feet at test well) (Tehama Formation)
 - Test well, MW-1S and MW-2 are screened in the deeper aquifer
 - Most private domestic wells are screened in the shallow aquifer or permeable lenses within the confining layer above the deeper aquifer





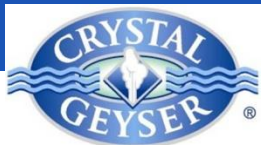
Conceptual Profile of Subsurface Site Conditions



Conceptual Profile of Subsurface Site Conditions

Aquifer Test Approach and Methods

- Conduct a step-drawdown test to select an appropriate pumping rate for the constant rate discharge test
- Measure background water levels for on-site wells and private domestic wells
- Select private domestic wells based on:
 - Distance and direction
 - Homeowner requests
 - Well depth not a factor
 - Selected 11 wells ranging from less than 500 feet to nearly 3,000 feet from the test well

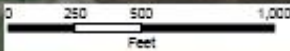


Site and Monitoring Well Locations



Legend

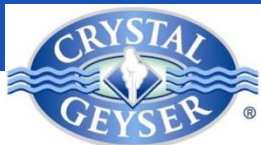
- Test well
- Monitoring well
- Radius in feet from Test Well
- ✚ Domestic well



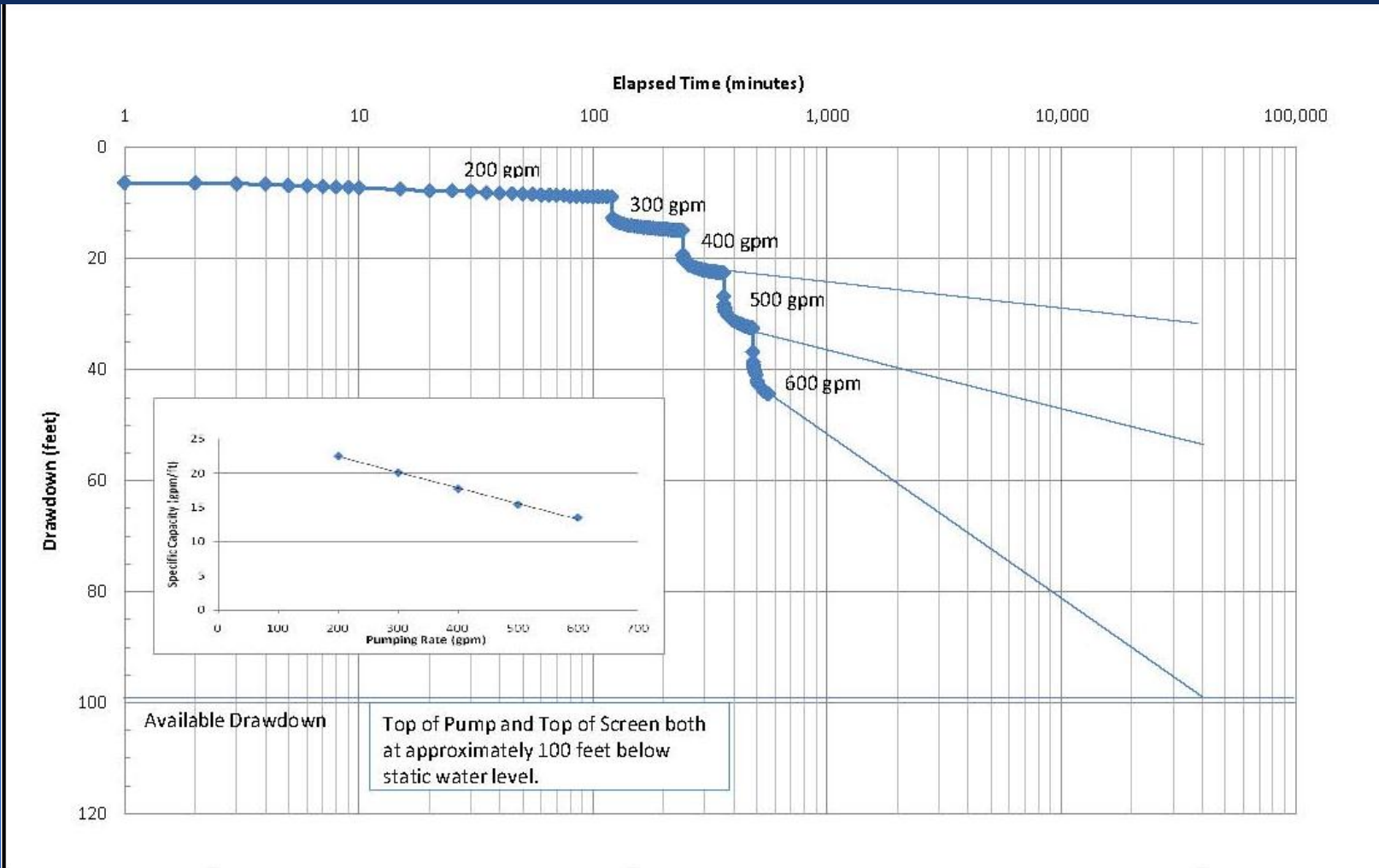
Aquifer Test Approach and Methods (cont.)

Step-drawdown Test

- Conducted the step-drawdown test on July 1, 2009
- Pumped for two hours at four rates:
 - 200 gpm, 300 gpm, 400 gpm, and 500 gpm
- Also pumped at 600 gpm for approximately 1.5 hours
- Selected a rate of 400 gpm for the constant rate discharge test



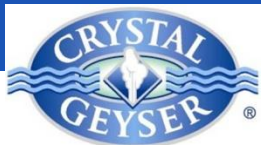
Variable Rate Step-drawdown Test



Aquifer Test Approach and Methods (cont.)

Water Level Measurements

- Collect frequent, reliable data with programmable pressure transducers
- Installation of pressure transducers in the private domestic wells required 1-inch-diameter sampling ports:
 - Replaced well casing top seals (9 wells); modified sampling ports (2 wells)
 - Chlorinated each well
- Work performed by Silva Water Works of Orland, CA
- Programmed pressure transducers to record water levels at a frequency of one minute throughout the test
- Used a hand-held water level meter to confirm data collected by pressure transducers

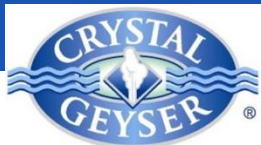


Well Casing Top Seal Replacement and Pressure Transducer



Aquifer Test Approach and Methods (cont.)

- Background Monitoring
 - Measured and recorded water levels from 14 wells
 - Conducted over a two-week period (8/11/09 – 8/24/09)
- Aquifer Test
 - Conducted over a 9-day period (8/25/09 – 9/3/09)
 - Test well pumped at a constant rate of 410 gpm
- Recovery Test
 - Test well shut down on 9/3/09
 - Measured water levels in 14 wells for seven days (9/3/09 – 9/10/09)

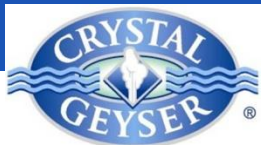


Pump Installation and Wellhead Configuration



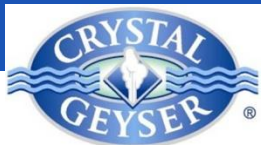
Aquifer Test Results

- Background Monitoring Results Indicate:
 - Short-term water level fluctuations indicative of the homeowner's use of the well
 - Longer-term fluctuations that are consistent with potential affects from nearby irrigation and/or municipal supply well use



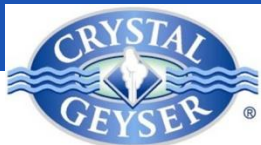
Aquifer Test Results (cont.)

- Water Level Monitoring During Pumping Indicates:
 - Approximately 30 feet drawdown in the test well (PW-1)
 - Approximately 10 feet of drawdown in MW-1S (100 feet from PW-1)
 - Approximately 4 feet of drawdown in MW-2 (1,000 feet from test well)

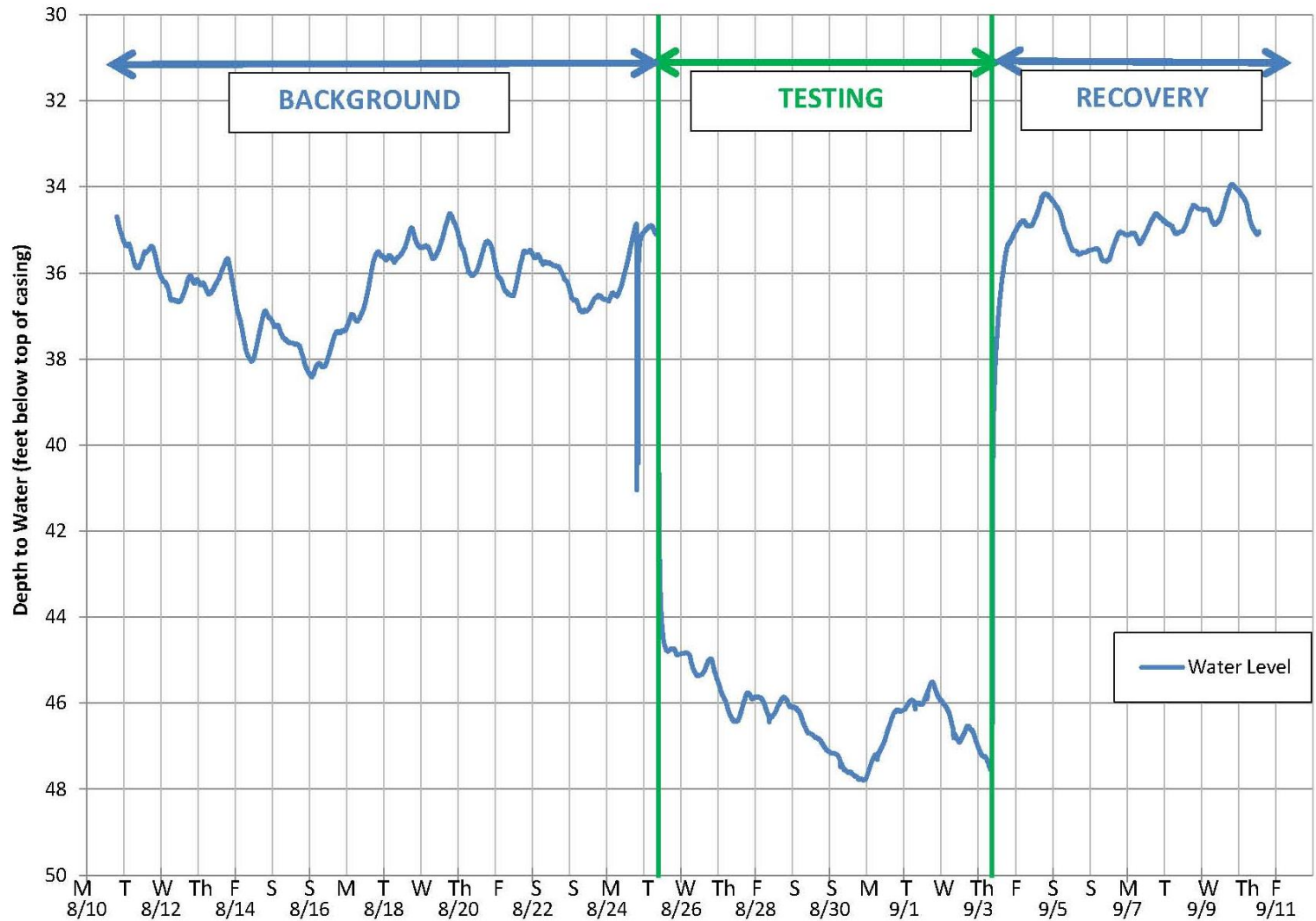


Aquifer Test Results (cont.)

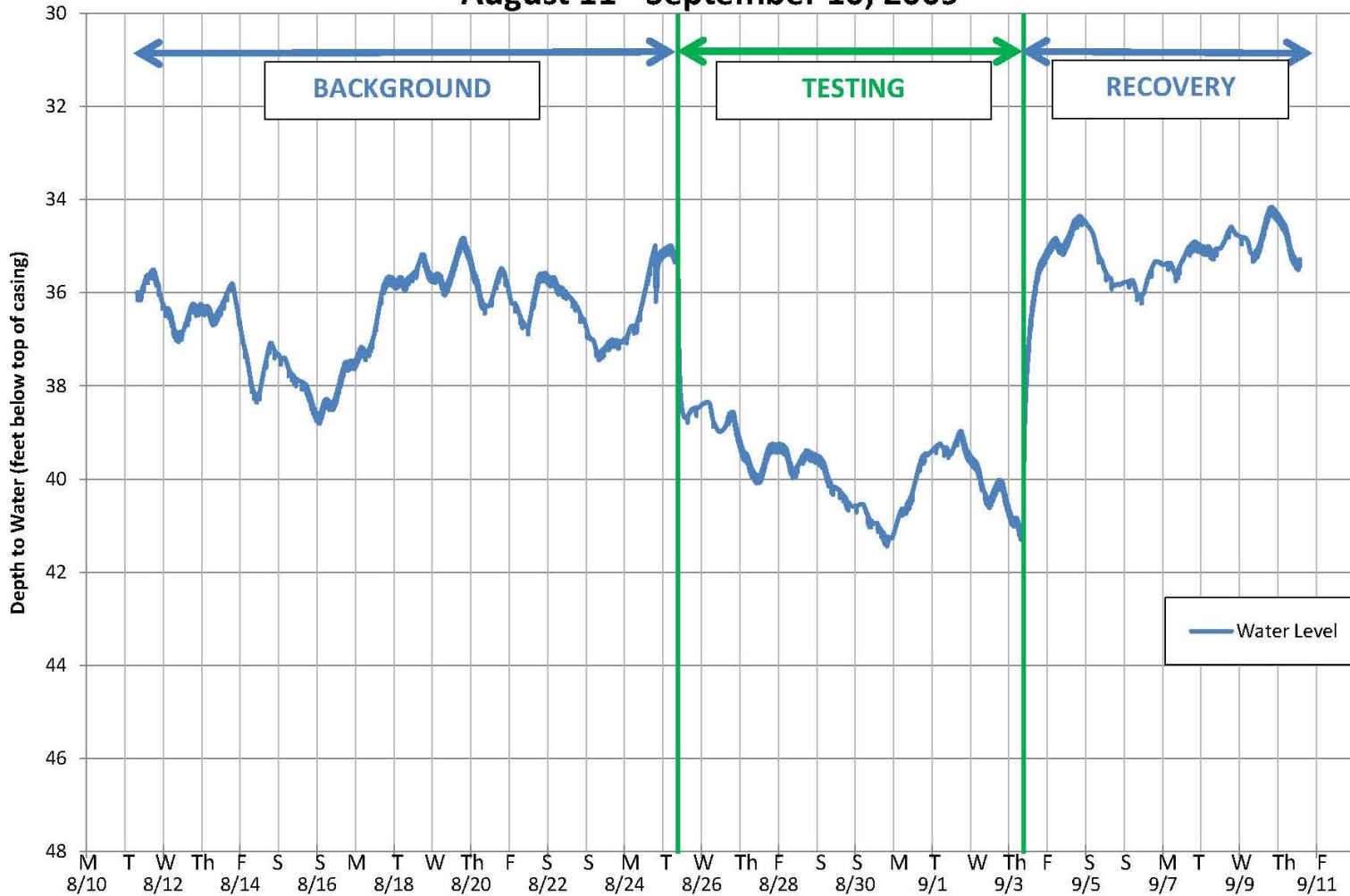
- Water Level Monitoring During Recovery Indicates:
 - Approximately 20 feet of recovery in the test well within 30 seconds of stopping pumping
 - Complete recovery within hours



MW-1S Water Level Data August 10 - September 10, 2009



MW-2 Water Level Data August 11 - September 10, 2009



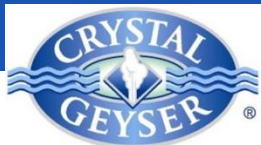
Aquifer Test Results (cont.)

- Estimation of Transmissivity and Storage Coefficient

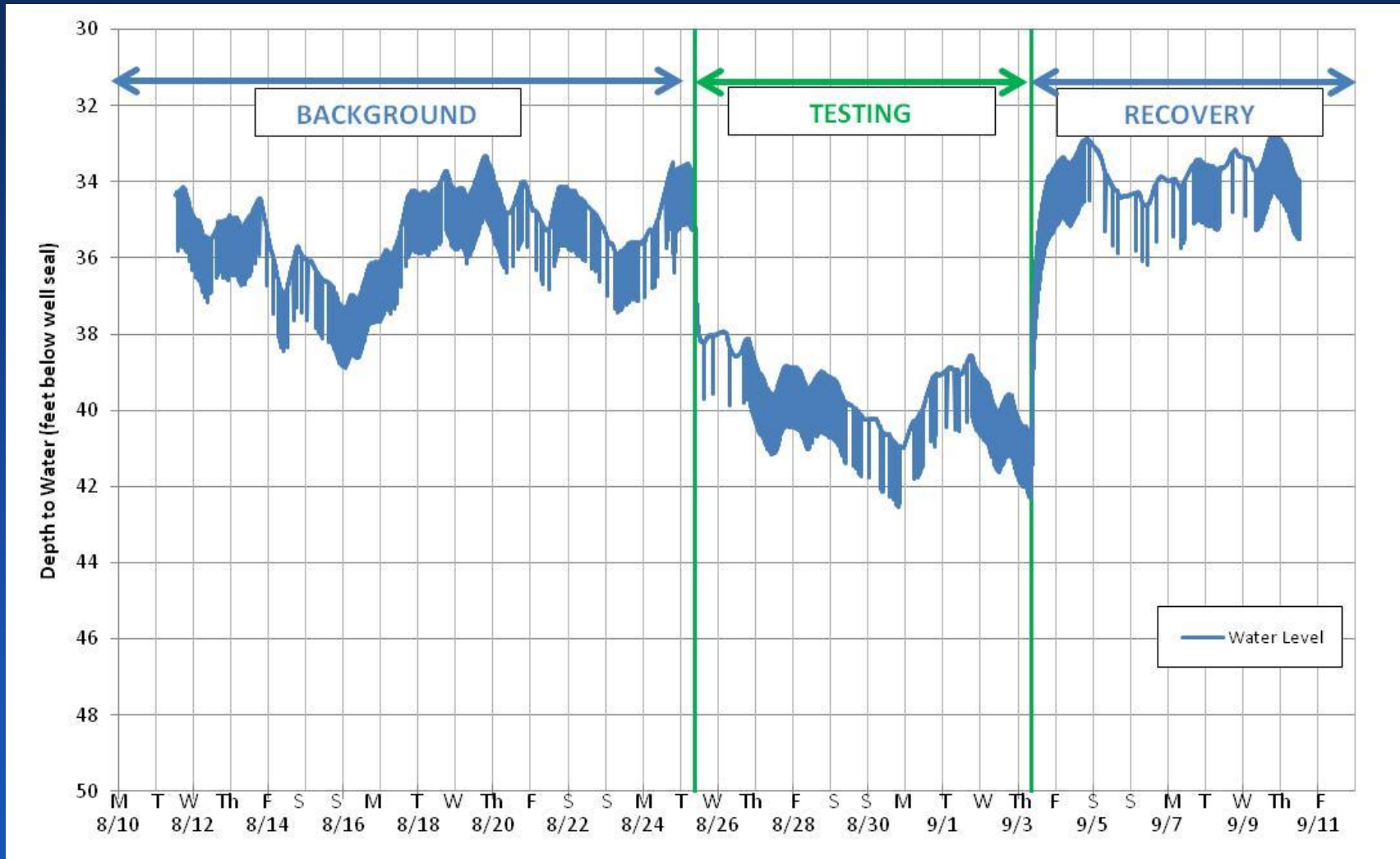
Monitoring Well/Analysis Method	Transmissivity gpd/ft	Storativity
Walton's Leaky Artesian Method		
MW-1S	23,000	6.0E-04
MW-2	34,000	1.0E-04
Cooper-Jacob Distance Drawdown Method		
t=2,000 minutes	39,000	1.0E-03
t=7,300 minutes	39,000	6.0E-04
Theis Recovery Method		
PW-1	29,000	NA
MW-1S	28,000	NA
MW-2	32,000	NA
Average (mathematical)	32,000	5.8E-04
Rounded (one significant digit)	30,000	6E-04
NA=Not Applicable gpd/ft = gallons per day per foot		

Aquifer Test Results (cont.)

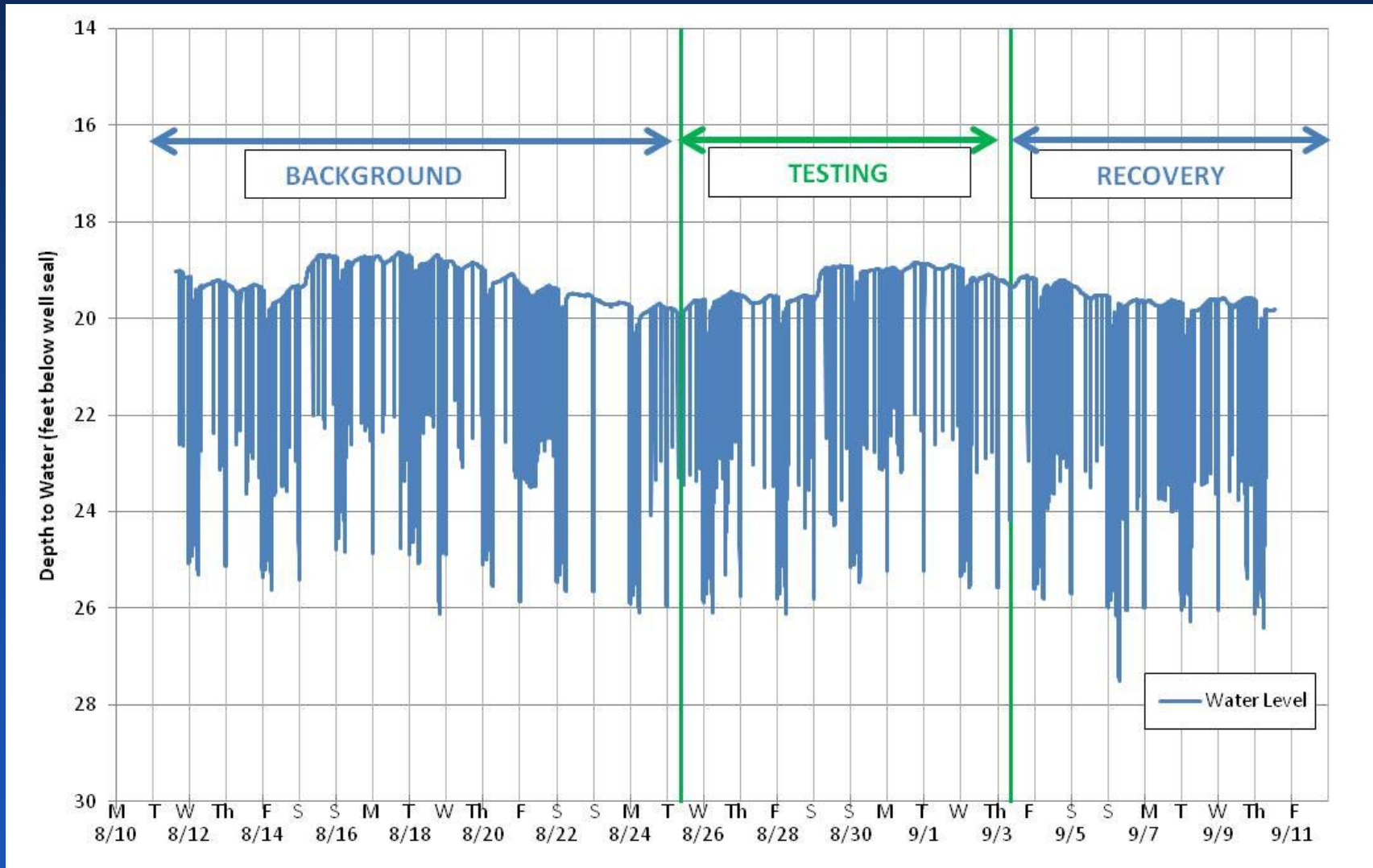
- Evaluation of Potential Impacts to Domestic Wells
 - Approximately 4 feet of drawdown in one private domestic well completed to 175 feet (located approximately 1,000 feet from PW-1)
 - No impact on water levels in the other 10 private domestic wells



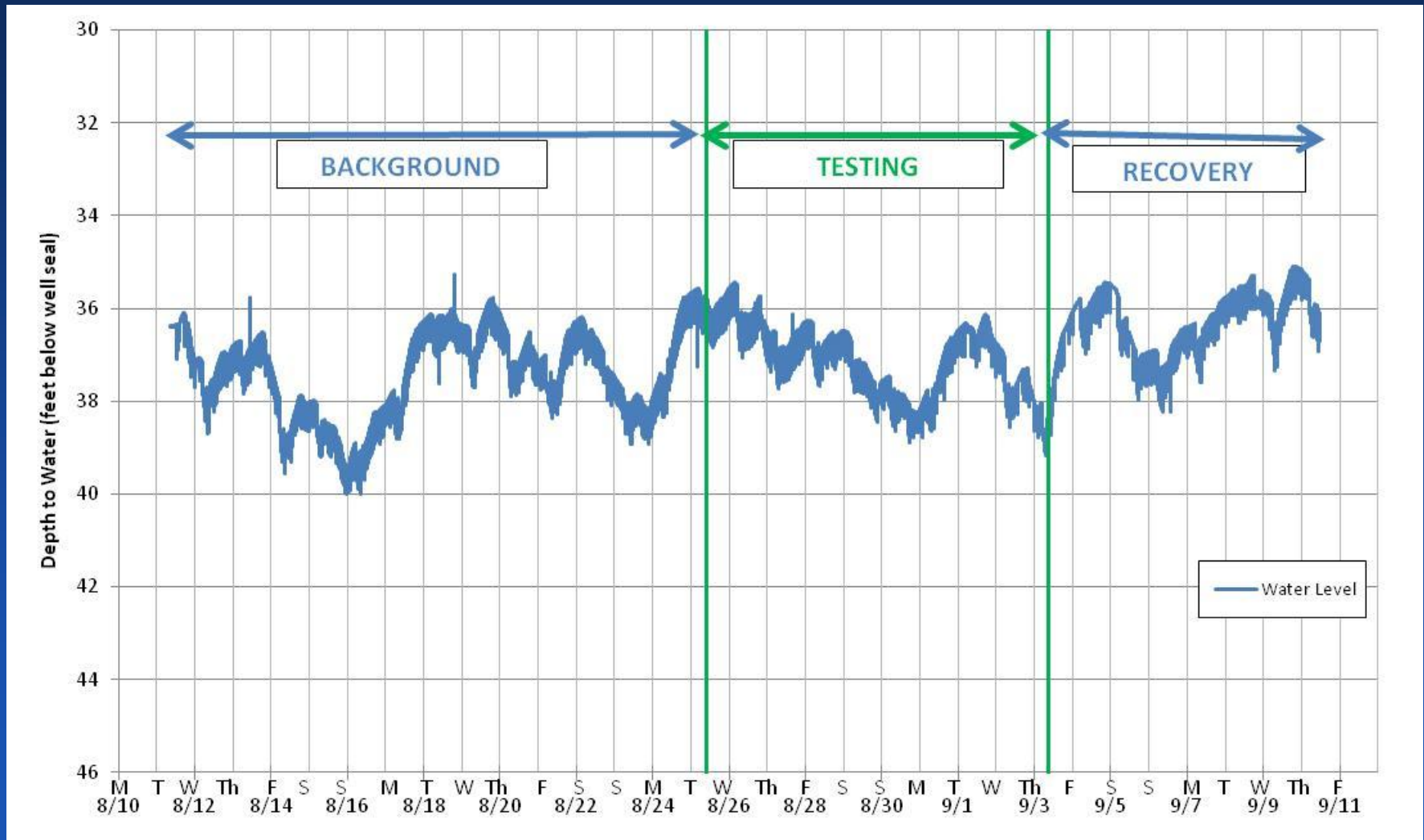
Graph of Water Level Measurements for the Private Domestic Well Screened in the Lower Aquifer (Located Approx. 1,000 feet from the Test Well)



Graph of Water Level Measurements for the Private Domestic Well Located within 500 feet of the Test Well



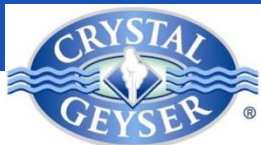
Typical Graph of Water Level Measurements for the Private Domestic Wells in the Vicinity of the Site



Summary

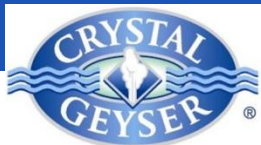
Results of the Aquifer Test Indicate:

- The deeper aquifer is highly transmissive capable of supporting high yielding wells
- The test well can sustain the annual average rate of 100 gpm over the long-term (160 AFY)
- Wells installed in the same aquifer in close proximity to the site (within approximately 1,000 feet) will have a measureable decline in water levels
- The average measureable decline in water level should be one-fourth of that measured during the test (i.e., one to two feet)



Summary (cont.)

- The average water level decline of one to two feet will have no impact on the use of the private domestic well
- Water levels in the other 10 private domestic wells monitored showed no decline from pumping the test well
- The long-term average pumping rate of 100 gpm from the test well will have no impact on private domestic wells screened in the shallow aquifer and/or permeable zones above the deeper aquifer



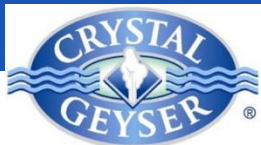
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GLENN COUNTY SUMMER BMO'S STAGE ONE ALERTS 2009

State Well Number	Max Water Surface Elevation (ft-msl)	Min Water Surface Elevation (ft-msl)	Average Water Surface Elevation (ft-msl)	Stage One Alert	2009 WSE	2008 WSE	2007 WSE	Difference from 2008 to 2009	Difference from 2007 to 2008
18N01W02E003M	79.5	53.5	67.2	47	52.5	53.2	53.0	-0.72	-0.5
19N02W33K001M	82.9	73.2	78.9	71	77.8	77.8	78.3	0.00	-0.5
20N02W11A001M	122.2	108.0	117.8	105	119.7	120.4	118.5	-0.68	1.2
20N02W18R008M	128.7	123.0	126.2	122	122.9	122.9	123.8	0.01	-0.9
21N02W01F003M	148.2	132.2	138.4	129	121.0	123.5	124.8	-2.47	-3.8
21N02W05M001M	166.0	139.0	151.5	131	N/M	132.8	126.8		6.0
21N02W33M003M	136.7	114.2	128.0	109	114.5	121.7	120.2	-7.15	-5.7
21N02W36A002M	120.4	101.0	111.8	98	105.6	105.8	107.7	-0.16	-2.1
21N03W01R002M	181.7	148.7	168.2	143	137.6	133.1	137.9	4.49	-0.3
21N03W23D001M	159.7	133.4	147.3	127	96.7	121.1	129.2	-24.38	-32.5
21N03W23D002M	175.1	157.7	166.0	153	138.9	146.1	154.2	-7.16	-15.3
21N03W34Q002M	128.3	102.0	117.6	92	67.1	78.3	94.7	-11.19	-27.6
21N03W34Q003M	139.4	106.1	126.5	94	58.1	75.9	93.6	-17.78	-35.5
21N03W34Q004M	150.5	141.0	145.2	138	112.2	119.2	130.4	-6.99	-18.2
21N04W12A001M	130.1	43.3	89.3	18	N/A	33.5	35.0		-1.5
21N04W12A002M	149.5	110.1	130.7	100	95.4	87.9	104.4	7.47	-9.0
22N02W15C004M	168.6	92.9	142.5	72	104.0	103.6	99.8	0.40	4.2
22N02W15C005M	177.5	157.4	165.6	152	151.2	152.2	155.8	-1.02	-4.6
22N02W30H003M	193.3	153.0	178.6	143	145.6	154.5	158.7	-8.94	-13.1
22N03W28P002M	198.8	185.7	193.3	182	177.2	183.7	184.5	-6.53	-7.3
22N03W28P003M	242.8	232.1	237.4	230	235.3	237.5	237.8	-2.16	-2.5
21N02W23G001M	N/A	N/A	N/A	110.0	110.8	115.7	116.2	-4.90	-5.4
21N02W09M002M	N/A	N/A	N/A	129.0	N/A	124.0	127.3		-3.3