

1 **Carrie L. Gleeson, SBN 144778**  
2 **Lori W. Girard SBN 188370**  
3 **California-American Water Company**  
4 511 Forest Lodge Road, Suite 100  
5 Pacific Grove, California 93950  
6 Tel: (831) 646-3240  
7 Fax: (831) 375-4367

8 Attorneys for Plaintiff, CALIFORNIA AMERICAN WATER

9 **SUPERIOR COURT OF CALIFORNIA**  
10 **COUNTY OF MONTEREY**

11 CALIFORNIA AMERICAN WATER,

12 Plaintiff,

13 vs.

14 CITY OF SEASIDE, et al.,

15 Defendants.

Case No.: M66343

**NOTICE OF FILING OF WATERMASTER  
RESPONSE TO JANUARY 6, 2010  
MINUTE ORDER**

Assigned for All Purposes to the  
Honorable Roger D. Randall (Ret.)

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17 MONTEREY PENINSULA WATER  
MANAGEMENT DISTRICT,

18 Intervenor,

19 MONTEREY COUNTY WATER  
RESOURCES AGENCY,

20 Intervenor,

21 AND RELATED CROSS-ACTIONS.

22  
23 **TO ALL PARTIES AND TO THEIR RESPECTIVE COUNSEL OF RECORD:**

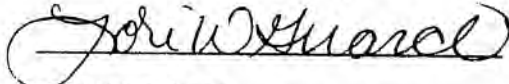
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25 **PLEASE TAKE NOTICE** that the attached Watermaster Response to January 6,  
26 2010 Minute Order is hereby filed with the Court by California American Water on behalf  
27 of the Seaside Groundwater Basin Watermaster ("Watermaster"). By Minute Order  
28 dated January 6, 2010 ("Minute Order"), the Court ordered the Watermaster to respond

1 to the Court's concerns regarding the matters set forth in the Minute Order within thirty  
2 (30) days of the mailing of the Minute Order.

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Respectfully submitted,

Dated: February 4, 2010



Lori W. Girard  
Attorney for Plaintiff  
California American Water



**SERVICE LIST**

Judge Roger D. Randall

**JUDGE'S COPY**

Russell M. McGlothlin  
Brownstein Hyatt Farber Schreck, LLP  
21 East Carrillo Street  
Santa Barbara, CA 93101

**CITY OF SEASIDE**

Telephone No: (805) 963-7000  
Facsimile No: (805) 965-4333  
[rmcglathlin@bhfs.com](mailto:rmcglathlin@bhfs.com)

Donald G. Freeman, Esq.  
Law office of Perry & Freeman  
P.O. Box 805  
Carmel, CA 93921-0805

**CITY OF SEASIDE**

Telephone No: (831) 624-5339  
Facsimile No. (831) 624-5839  
[klglegal@hotmail.com](mailto:klglegal@hotmail.com)

Deborah Mall, Esq.  
Monterey City Attorney  
City Hall  
399 Madison Street  
Monterey, CA 93940

**CITY OF MONTEREY**

Telephone No: (831) 646-3915  
Facsimile No. (831) 373-1634  
[mall@ci.Monterey.ca.us](mailto:mall@ci.Monterey.ca.us)

James G. Heisinger, Jr., Esq.  
Heisinger, Buck & Morris  
P.O. Box 5427  
Carmel, CA 93921-5427

**CITY OF SAND CITY**

Telephone No: (831) 624-3891  
Facsimile No. (831) 625-0145  
[hbm@carmellaw.com](mailto:hbm@carmellaw.com)  
[jim@carmellaw.com](mailto:jim@carmellaw.com)

Robert Wellington, Esq.  
Wellington Law Offices  
857 Cass Street, Suite D  
Monterey, CA 93940

**CITY OF DEL REY OAKS**

Telephone No: (831) 373-8733  
Facsimile No. (831) 373-7106  
[attys@wellingtonlaw.com](mailto:attys@wellingtonlaw.com)

Brian Finegan, Esq.  
Law Office of Brian Finegan  
60 W. Alisal St. #1  
Salinas, CA 93902

Telephone No: (831) 757-3641  
Facsimile No. (831) 757-9329  
[brian@bfinegan.com](mailto:brian@bfinegan.com)

David C. Sweigert, Esq.  
Fenton & Keller  
2801 Monterey Salinas Highway  
P.O. Box 791  
Monterey, California 93940

Telephone No. (831) 373-1241 Ext: 202  
Facsimile No. (831) 373-7219  
[dsweigert@fentonkeller.com](mailto:dsweigert@fentonkeller.com)

John M. Garrick, Esq.  
Larson Garrick & Lightfoot LLP  
US Bank Tower  
633 West Fifth Street, Suite 1750  
Los Angeles, CA 90017

Telephone No: (213) 404-4100  
Facsimile No: (213) 404-4123  
[jgarrick@lgl-law.com](mailto:jgarrick@lgl-law.com)  
[mpearson@lgl-law.com](mailto:mpearson@lgl-law.com)

Robert A. Goodin, Esq.  
James D. Squeri, Esq.  
Vidhya Prabhakaran (**Responsible attorney**)  
Goodin, MacBride, Squeri, Ritchie & Day  
505 Sansome Street, Suite 900  
San Francisco, CA 94111

Telephone No: (415) 398-4321  
Fax No. (415) 398-4321  
[jsqueri@goodinmacbride.com](mailto:jsqueri@goodinmacbride.com)  
[ahartman@goodinmacbride.com](mailto:ahartman@goodinmacbride.com)  
[rgoodin@goodinmacbride.com](mailto:rgoodin@goodinmacbride.com)

David C. Laredo, Esq.  
DeLay & Laredo  
606 Forest Avenue  
Pacific Grove, CA 93950

Telephone No: (831) 646-1502  
Facsimile No. (831) 646-0377  
[dave@laredolaw.net](mailto:dave@laredolaw.net)

## GRANITE ROCK COMPANY

D.B.O. DEVELOPMENT COMPANY  
NO. 27

ALDERWOOD GROUP, INC. dba  
MISSION MEMORIAL PARK

PASADERA COUNTRY CLUB, LLC

MONTEREY PENINSULA WATER  
MANAGEMENT DISTRICT

J. Terry Schwartz, Esq.  
Craig A. Parton, Esq.  
Price, Postel & Parma LLP  
200 East Carrillo Street, 4th Floor  
Santa Barbara, CA 93010

Telephone No: (805) 962-0011  
Facsimile No. (805) 965-3978  
[jts@ppplaw.com](mailto:jts@ppplaw.com)  
[cap@ppplaw.com](mailto:cap@ppplaw.com)

Kevin M. O'Brien, Esq.  
Steven P. Saxton, Esq.  
Downey Brand LLP  
555 Capitol Mall, 10<sup>th</sup> Floor  
Sacramento, CA 95814-4684

Telephone No: (916) 444-1000  
Facsimile No. (916) 444-2100  
[kobrien@downeybrand.com](mailto:kobrien@downeybrand.com)  
[ssaxton@downeybrand.com](mailto:ssaxton@downeybrand.com)

Janet K. Goldsmith, Esq.  
Eric N. Robinson, Esq.  
Kronick, Moskovitz, Tiedemann & Girard  
400 Capitol Mall, 27<sup>th</sup> Floor  
Sacramento, CA 95814

Telephone No: (916) 321-4500  
Facsimile No: (916) 321-4555  
[erobinson@kmtg.com](mailto:erobinson@kmtg.com)

Elizabeth Gianola  
Horan, Lloyd, Karachale, Dyer,  
Schwartz, Law & Cook  
499 Van Buren Street  
P.O. Box 3350  
Monterey, CA 93940

Telephone No: (831) 373-4131  
Facsimile No. (831) 373-8302  
[gianola@horanlegal.com](mailto:gianola@horanlegal.com)

Thomas D. Roth, Esq.  
Law Office of Thomas D. Roth  
One Market, Spear Tower, Suite #3600  
San Francisco, CA 94105

Telephone No: (415) 293-7684  
Facsimile No: (415) 435-2086  
[Rothlaw1@comcast.net](mailto:Rothlaw1@comcast.net)

**MONTEREY PENINSULA WATER  
MANAGEMENT DISTRICT**

**MONTEREY COUNTY WATER  
RESOURCES AGENCY**

**LAGUNA SECA RESORT, INC.  
and  
BISHOP, McINTOSH & McINTOSH**

**YORK SCHOOL, INC.**

**SECURITY NATIONAL GUARANTY, INC.**

Sheri L. Damon  
Damon Law Offices  
618 Swanton Road  
Davenport, CA 95017

Telephone No: (831) 345-3610  
Facsimile No: (831) 423-8382

Charles J. McKee, Esq.  
Dennis E. Le Clere, Esq.  
Irv Grant, Esq.  
Office of County Counsel, County of  
Monterey  
168 West Alisal Street, 3<sup>rd</sup> Floor  
Salinas, CA 93901-2680

Telephone No: (831) 755-5045  
Facsimile No. (831) 755-5283  
[mckeecj@co.monterey.ca.us](mailto:mckeecj@co.monterey.ca.us)  
[leclered@co.monterey.ca.us](mailto:leclered@co.monterey.ca.us)  
[granti@co.monterey.ca.us](mailto:granti@co.monterey.ca.us)

Dewey Evans  
Chief Executive Officer  
2600 Garden Road, Suite 228  
Monterey, California 93940  
[watermasterseaside@sbcglobal.net](mailto:watermasterseaside@sbcglobal.net)

**SECURITY NATIONAL GUARANTY, INC.**

**COUNTY OF MONTEREY**

**WATERMASTER EXECUTIVE OFFICER**

## SEASIDE GROUNDWATER BASIN WATERMASTER

### WATERMASTER RESPONSE TO JANUARY 6, 2010 MINUTE ORDER

The Seaside Basin Watermaster submits the following report in response to the Minute Order of the Court dated January 6, 2010.

The Court's Order in part directs that the Watermaster provide written responses to three concerns pertaining to the Watermaster's 2009 Annual Report. Each of the concerns is shown in boldface *italics*. The responses immediately follow each of the listed concerns.

**Concern 1 - The MOU between the City of Seaside and SGBW regarding the proposed in lieu replenishment assessments.** The Report, Section F, Page 3, references the MOU between the City of Seaside and SGBW regarding proposed in lieu replenishment assessments. The MOU is attached as Attachment 3. The MOU, paragraph 4, it appears ambiguous to the court, in that it can be read to allow a stay of enforcement of replenishment assessments in advance of the securing of replenishment water for the golf courses, and to stay enforcement of any replenishment assessment after such replenishment water is obtained, even though the assessment might accrue beyond 200 AF. If this is the intent of the parties, it is not acceptable to the court, since it would tend to reduce the funds available to secure additional water resources for the basin.

**Response:** The Court correctly interpreted the parties' intent with respect to a stay of enforcement action to collect Replenishment Assessments. The Watermaster believed the proposed in-lieu replenishment program would be beneficial to the Seaside Groundwater Basin and desired to assist the City of Seaside in implementing the proposed program.

The Watermaster is informed that the City of Seaside has prepared and will be filing a response to the Court's concern. The Watermaster respectfully requests that the Court provide an opportunity to discuss the Court's concern at a hearing.

The Watermaster will take all actions necessary to comply with the Court's final decision on this matter.

**Concern 2 - The question raised by Cal Am and City of Seaside regarding Double RA on Operating Yield Overproduction.** Concerning the question raised by Cal Am and City of Seaside regarding Double RA on Operating Yield over Production, there is no ambiguity in the use of the term "additional Watermaster replenishment assessment" in Amended Decision III.L.j.iii. The OY0 assessment is to be assessed in addition to the base assessment for production in excess of NSY, which applies to all production exceeding NSY. The additional assessment, of course, only impacts that portion of usage exceeding the Operating Yield allotment.



**Response:** The Watermaster believed that it correctly interpreted the meaning of the additional Watermaster Replenishment Assessment. The Watermaster is informed that the City of Seaside has prepared and will be filing a response to the Court's concern. The Watermaster respectfully requests that the Court provide an opportunity to discuss the Court's concern at a hearing.

The Watermaster will take all actions necessary to comply with the Court's final decision on this matter.

**Concern 3 - Reduced monitoring of Sentinel Wells.** The Report, Paragraph J., proposes to reduce monitoring of sentinel wells, but provides no basis for such a reduction. This reduction is not acceptable absent a basis presented to the court for such a significant reduction.

**Response:** The only reduction being proposed is in the frequency of performing induction logging of the Sentinel wells. All other monitoring of these wells would continue to be performed as in the past. The reduction is being proposed for two reasons: (1) The data obtained from induction logging over the past two years indicates that quarterly induction logging is unnecessary and that semi-annual induction logging will be adequate, and (2) Induction logging is costly to perform, with each event costing approximately \$7,000.

Quarterly geophysical (induction) logging has been performed by the Watermaster at the four Watermaster Sentinel wells since they were installed in 2007. The induction logging results have shown very little variations and no trends since this monitoring began, indicating that the coastal water quality conditions are not changing at this sample frequency. Because over two years of conducting this logging on a quarterly basis, at a cost of approximately \$7,000 per logging event for the four Sentinel wells, has shown no trends or variations in the shapes of the induction log curves, the issue of whether or not it was necessary to continue performing induction logging on a quarterly basis was posed to the Watermaster's hydrogeologic consultants, and was discussed with the Watermaster's Technical Advisory Committee.

These consultants are all registered Professional Geologists and/or Certified Hydrogeologists. Their conclusions and recommendations on this matter are presented in two of the reports prepared for the Watermaster in 2009 through contracts with these consultants. The pertinent findings of these reports are discussed below.

#### **WATER YEAR (WY) 2009 SEAWATER INTRUSION ANALYSIS REPORT**

The WY 2009 Seawater Intrusion Analysis Report (SIAR) was prepared for the Watermaster under contract with HydroMetrics LLC. The principal members of HydroMetrics' staff who prepared the SIAR were Derrik Williams, PG<sup>(1)</sup>, CHG<sup>(1)</sup> and Georgina King, PG, CHG.

Martin Feeney, PG, CHG, prepared a report describing the construction of the four Coastal Sentinel wells in 2007. The WY 2009 SIAR (page 38) contains the following

summary of the baseline induction logs for each of the wells, taken from Martin Feeney's report:

*"SBWM-1—The upper 50 feet of this well shows very high conductivities. This signature is present in all of the wells and is the result of the 50-foot steel conductor casing. However, because the water table is below the conductor casing at all locations, the steel casing does not interfere with data collection within the saturated sediments below. Below the conductor casing in SBWM-1, the sediment materials are dry to a depth of approximately 115 feet. Below this depth, there is approximately 10 feet of sand containing fresh water. Below 125 feet and extending to approximately 350 – 400 feet is sand containing saline water with conductivities measuring as high as 10,000  $\mu\text{mhos/cm}$ . This saline water is contained within the Dune /Beach Sand Deposits and the Aromas Sand. Below this depth, conductivities are relatively low with the exception of the thick marine clay between approximately 600 -700 feet. The other conductive zones also correlate with clay zones.*

<sup>(1)</sup> PG designates registered by the State as a Professional Geologist; CHg designates certified by the State as a Hydrogeologist.

*SBWM-2— As in SBWM-1 there is a thin layer of fresh water overlying a zone of saline water to approximately 130 feet within the Beach/Dune Sands and Aromas Sand. Below this depth, the materials become increasingly clayey, complicating the interpretation. Below this depth, there are no obvious zones of anomalous conductivity; that is, the zones that are more conductive correlate with clay zones.*

*SBWM-3— In SBWM-3 saline water extends to a depth of approximately 100 feet within the Dune/Beach Sand and Aromas Deposits. Below 100 feet, the materials become clay and conductivities rapidly decline. Again, below the shallow saline water in the sand deposits, all zones of increased conductivity correlate with clay zones.*

*SBWM-4— As with the other wells, the induction log reveals a thin layer of fresh water overlying saline water with the Dune Sands/Beach Deposits to a depth of approximately 100 feet. Below this depth the materials become clay and there are no additional zones of increased conductivity uncorrelated with clay zones.*

*The WY 2009 SIAR continues with the following (page 39):*

*The salinity changes shown in the baseline induction logs are only relative to one another, and as such do not allow for a direct measurement of TDS or chloride concentrations in the aquifer. They do, however, provide a means to determine changes in salinity over time. In general, the Dune Sands and Aromas Formation show slightly increasing salinity, with no detectable changes to the lower aquifers where production*

wells extract groundwater. This indicates that there is no seawater intrusion into these deeper aquifers”.

As reported in the Watermaster’s 2007 Annual Report, Paragraph J, Mr. Feeney’s 2007 report also contained the recommendation that *“The new Sentinel Wells should be induction logged quarterly, and water quality samples should be collected as part of the induction logging activity using the same down-hole equipment. In subsequent years, it may be feasible to reduce the sampling frequency if a good correlation between the induction logging data and the sampling data is found to exist.”*

The WY 2009 SIAR also discussed the eight down-hole induction logging events that have been carried out in the Sentinel wells since they were constructed in October 2007. The logs from these events were included in the WY 2009 SIAR (page 40) and are also included at the end of this Response. As can be seen from examining these logs, there are nearly identical plots, i.e. the plots are virtually superimposed on each other, for the data from each of the logging events at each well. These logs substantiate the following excerpts from the Recommendations contained in the WY 2009 SIAR (page 55):

#### ***“SEMI-ANNUAL WATER QUALITY SAMPLING IN WELL SBWM-4***

*It is recommended that semi-annual samples continue to be collected at sentinel well SBWM-4 because chloride concentrations from a depth of 900 feet below surface were greater than 250 mg/L.*

#### ***REDUCE FREQUENCY OF INDUCTION LOGGING IN SENTINEL WELLS***

*Induction logging in the four sentinel wells has shown very little variation in salinity. Currently logging takes place quarterly. This could be reduced to semi-annually or annually.”*

#### **WATER YEAR 2009 GROUNDWATER QUALITY AND LEVEL DATA**

The *“Report of Water Year 2009, Groundwater-Quality and Groundwater-Level Data Collected for the Seaside Groundwater Basin Watermaster,”* dated November 2, 2009 and contained in Attachment 8 to the Watermaster’s 2009 Annual Report, was prepared for the Watermaster through a contract with the Monterey Peninsula Water Management District (MPWMD) by Joe Oliver, PG, CHg, Jonathan Lear, PG, CHg, and Tom Lindberg, all of whom are hydrologists on the staff of the MPWMD.

One of the Conclusions contained in this report (page 7) is that the chemical data from WY 2009 for the MPWMD dedicated coastal monitor wells do not show significant changes relative to previous samplings, and are not indicative of seawater intrusion into the basin at the locations and depths of these monitor wells. This conclusion is supported by the WY 2009 SIAR as discussed above.

One of the Recommendations contained in this report (page 8) is that *“Given that the geophysical and water-quality data that have been collected since the installation of the Watermaster’s coastal Sentinel Wells in 2007 have not shown any emerging trends or significant variations since this monitoring began, it is recommended that the frequency of induction logging at these sites can be reduced from quarterly to semi-annually without unduly compromising the utility of the monitoring program.”*

#### **REVIEW AND ACTIONS TAKEN BY THE WATERMASTER**

The reports referenced above were discussed by these consultants (Mr. Williams, Ms. King, Mr. Oliver, Mr. Lear, and Mr. Feeney) with the Watermaster’s TAC. There was unanimous agreement among the TAC members and its consultants that beginning in Water Year 2010 the Watermaster could reduce the frequency of induction logging the Sentinel wells from quarterly to semi-annually. The Watermaster Board approved the TAC’s recommendation, and consequently the Scope of Work for the 2010 Monitoring and Management Program, and the budget to support the work of that program, reflects this reduced frequency of induction logging. This resulted in a cost-savings of approximately \$14,000 for FY 2010.

Reducing the induction logging frequency from quarterly to semi-annually is more conservative than a reduction to an annual frequency, justification for which may be provided by the additional groundwater modeling work that will be performed during WY 2010. That modeling work is expected to produce results supporting the belief there is no direct hydraulic connection of the main aquifer unit (Santa Margarita Sandstone) to the ocean at the ocean/continental slope interface offshore. However, until that additional modeling work is completed, which would serve as justification for a further reduction in the frequency of induction logging, the switch to semi-annual (as opposed to annual) is a more protective and prudent approach for the Watermaster to take in its ongoing monitoring and management of the Basin. The frequency of water sample collection from the Sentinel Wells would remain the same, i.e. on an annual basis, except that SBWM MW-4 would be sampled semi-annually, as recommended in the WY 2009 SIAR. These samples are analyzed for water quality and provide additional information useful in preparing each year’s Seawater Intrusion Analysis Report.

In summary the Watermaster feels that ample monitoring data is being gathered for sound Basin management and that this data, including the reduced frequency of induction logging, will be fully sufficient to detect any indications of seawater intrusion.

# Induction Logging Results from 2007 Through 2009

