

From: [Suzanne Scheidt](#)
To: [Suzanne Scheidt](#)
Subject: FW: Inquiry - FYI - Gem State Water Company
Date: Monday, June 10, 2019 3:05:48 PM
Attachments: [ID1280268 DIAMOND BAR ESTATES - FY15 ESS narrative 03-27-15.pdf](#)

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From: Suzanne Scheidt
Sent: Monday, June 10, 2019 2:43 PM
To: 'secretary@puc.idaho.gov'; 'diane.hanian@puc.idaho.gov'
Cc: 'Mike Morrison'; Anna Moody
Subject: RE: Inquiry - FYI - Gem State Water Company

BLS-W-19-01 // DIA-W-19-01

Good Afternoon Mike,

As per our discussion earlier today, the Diamond Bar Water System, ID1280268 currently supplies 43 residential service connections. The system's approved configuration includes the emergency source (well 2) as referenced in the attached survey report. As per system engineering approval, a dedicated well lot needs to be created for the emergency source in the event Mr. Turnipseed sells or transfers ownership of the property well 2 is situated on in the future.

As per the Idaho Rules for Public Drinking Water Systems, **IDAPA 58.01.08.501.17. Ground Water Source Redundancy**. New community water systems served by ground water shall have a minimum of two (2) sources if they are intended to serve more than twenty-five (25) connections or equivalent dwelling units (EDUs). Under normal operating conditions, with any source out of service, the remaining source(s) shall be capable of providing either the peak hour demand of the system or a minimum of the maximum day demand plus equalization storage. See Subsection 501.18 for general design and redundancy requirements concerning fire flow capacity. (5-8-09)

Please email or call if you have questions.



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Our mission is to protect human health and the quality of Idaho's air, land and water.

2015 Drinking Water Supply Report
Idaho Department of Environmental Quality

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System: Diamond Bar Estates

PWS#: ID1280268

County: Kootenai

Date of Survey: March 5, 2015

System Representatives Present at Survey: Robert Turnipseed, Responsible Charge Operator

Surveyed by: Suzanne Scheidt, Analyst

Available Sources: Well 1 (Primary), Well 2 (Emergency)

Primary Source: Ground Water

Water System Type: Community

Population: 100

Service Connections: 43 residential connections

A photographic log is enclosed with the narrative report.

System History and Overview:

The Diamond Bar Estates water system (System) is classified as a community water system serving 43 residential connections. Engineering plans for the water system were submitted to the Idaho Department of Environmental Quality (DEQ) by Jeff Block, P.E., on behalf of developer Robert Turnipseed in September 1995. Water system plans including wells, reservoir and distribution main serving the system were approved by DEQ in February 1996. While the water system was first inspected in 1996; the population criteria of a community public drinking water supply was met in 2001.

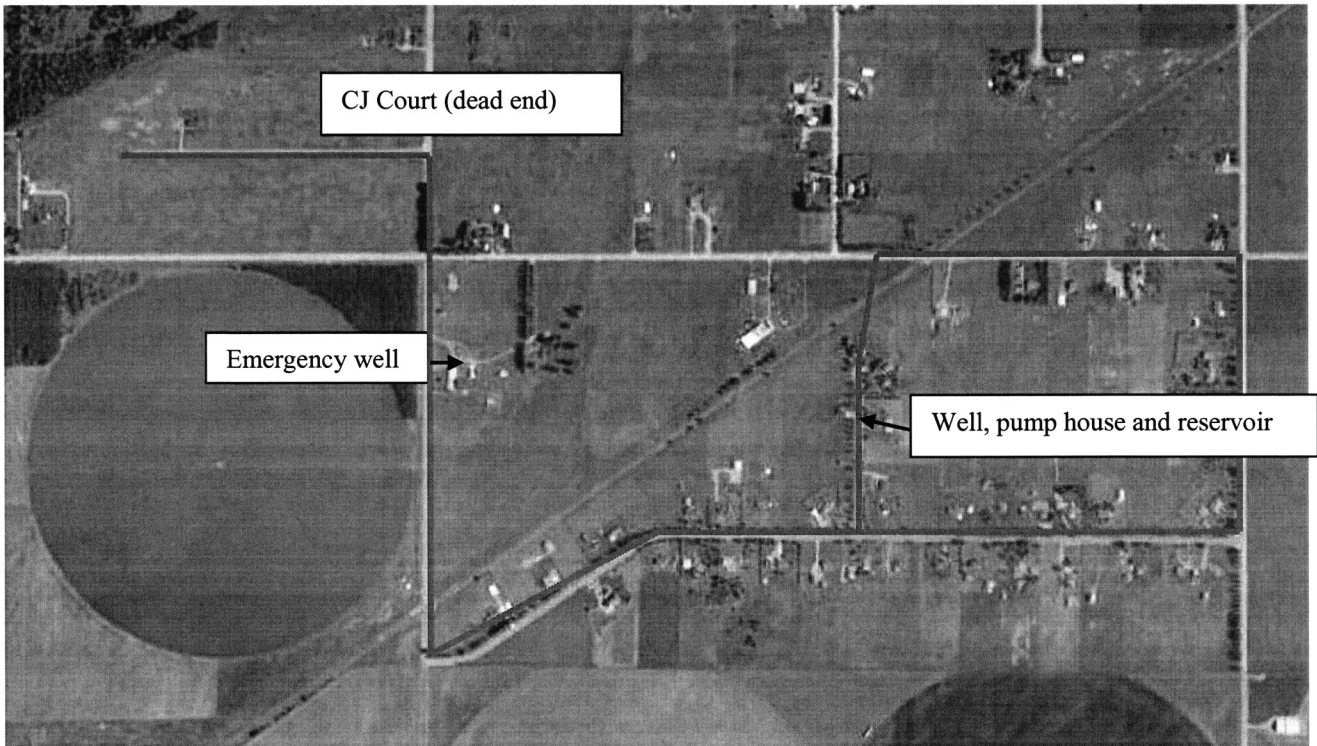
In April 2003, ownership of the Diamond Bar Estates water system was transferred to the Diamond Bar Estates, Limited Liability Corporation.

In January 2005, plans submitted by Roger Glessner, CET were approved by DEQ for an 8-main extension from the 6-inch main on Atlas Road to serve the 14 lot Boekel Estates residential subdivision on CJ Court.

The system consists of the primary and emergency well drawing from the Rathdrum Prairie Aquifer. The primary well discharges to the 55,000 gallon concrete ground level reservoir via pitless adaptor; the well is not plumbed to discharge to pressure. Under routine operation, two booster pumps operating in lead/lag lift water from the reservoir to pressurize the distribution system. A third booster pump provides fire flow. The well, booster pumps and reservoir are constructed on a 1.18 acre lot located at 13919 Rodeo Road. The lot is owned by Diamond Bar Estates, LLC (Parcel Number 0-1774-001-999-0).

The emergency well is drilled on a 59 acre lot (Parcel Number 51N04W-03-3500) owned by Robert Turnipseed on Atlas Road. The emergency well is plumbed to discharge to pressure via 6-inch Class 160 PVC main.

The distribution system is looped with the exception of one 8-inch dead end main serving CJ Court (Boekel Estates). Chlorination is neither required nor provided.



Diamond Bar Estates PWS Overview

Source Information

The Idaho Department of Water Resources (IDWR) website indicates the System has been allocated two water rights shared between the wells with a priority date of November 29, 1965. Water Right No. 95-10068 provides for a municipal beneficial use of 2.7 cubic feet per second (cfs) or 1211 gpm. Water Right No. 95-10067 provides an irrigation beneficial use between April 1 and October 31 with diversion rate of 1.3 cfs or 583 gpm.

Setback distances from potential sources of contamination are met at the primary well.

A potential source of contamination to the emergency well is the Hayden Area Regional Sewer Board's (HARSB) recycled water irrigation site which is located 430 feet west of the well. A minimum buffer distance between a public drinking water well and irrigation site of 1,000 feet is recommended in the Idaho Department of Environmental Quality's (DEQ) document titled "Guidance for Reclamation and Reuse of Municipal and Industrial Wastewater, September 2007." The guidance document also includes a recommended approach to evaluate the potential impacts to a well when there is a reduced buffer distance. Using the recommended "Well Location Acceptability Analysis" from the guidance for the irrigation of Class C recycled water at the HARSB irrigation site and existing ground water quality data from the emergency well, the current well site location is considered "acceptable" relative to the location of the irrigation site. Additional information on ground water flow direction from a report titled "Well Sampling and Water Quality Evaluation, Date Review, Proposed Monitoring Well Construction, and Data Collection Plan for the HARSB Wastewater Land Application Site, October 16, 2006" prepared by Golder Associates indicates the

ground water flow direction in the area of the HARSB irrigation site and emergency well is generally from north-northeast to south-southwest. Therefore the emergency well would not be down gradient from the HARSB irrigation site.

HARSB has been seasonally (May to September) irrigating recycled water on the site since approximately 2003. The HARSB's system is currently operating in accordance with Reuse Permit WRU-M-0109-04. Permit limits include seasonal agronomic hydraulic and nitrogen loading rates for the alfalfa, oats, teff grass and poplars that are grown on the site. The disinfection requirements are weekly total coliform testing and the following: the median number of total coliform organisms cannot "exceed twenty three (23) per one hundred (100) milliliters, as determined from the bacteriological results of the last five (5) days for which analyses have been completed". In addition, "no sample shall exceed two hundred and thirty (230) per one hundred (100) milliliters in any confirmed sample." When the HARSB reuse permit is being renewed in 2017, there will be a reevaluation of any potential impacts from the HARSB irrigation site to the emergency well. Copies of any of the documentation referenced above are available upon request.

Source water assessment delineation reports for the primary and emergency well were completed by DEQ in June 2013. The reports also indicate ground water flow to the wells from the north northeast. Potential contaminants listed within the 0-3 year time of ground water travel zone include: NPDES location (Castle Peak Construction), shallow injection wells, and major and minor roads. Potential contaminants in the 3-6 year time of travel zone include RCRA site (Excel transport), the railroad, and major and minor roads. Potential contaminants in the 6-10 year time of ground water travel zone of the well include: underground storage tanks, remediation sites, shallow injection wells, CAMEO chemical facilities, railroads and major and minor roads.

Individual reports for both sources may be accessed at:

<http://www2.deq.idaho.gov/water/swaOnline/Search>

Primary System: Well 1, Reservoir and Booster Pumps

The primary well that supplies the system was drilled in 1966 for irrigation use by Arnold Holman of Holman Drilling Corporation, Spokane. The Driller's Report is on file and indicates the 16-inch cased well was cable tool drilled to a depth of 373 feet below ground surface (bgs) and constructed with a 94 foot bentonite surface seal. The well was equipped with a telescoping screen from 342 to 373 feet. The lithologic log indicates the well was drilled through multiple layers of sand, gravel and boulders with a blue clay lens encountered between 324 and 332 feet. A static water level was reported at 298 feet bgs.

The well, situated within the center of the fenced well lot, was converted from the original oil lubed irrigation well and equipped with a 60 horsepower submersible pump producing approximately 570 GPM. A screened mushroom cap vent is installed off the well cap.

The well discharges via pitless adaptor through the pump house to the 55,000 gallon partially buried concrete reservoir. A call for water from the well is generated from the float system installed in the reservoir.

The pitless adaptor enters through the reservoir floor via 4-inch galvanized main with valving to isolate the reservoir from well discharge to waste. A Kent instantaneous and totalizing flow meter

and smooth nose raw water sample tap are installed on the 4-inch galvanized line prior to discharge to the reservoir.

The 55,000 gallon concrete reservoir is constructed below the pump house. The reservoir was constructed with a partial baffle wall between the well discharge and booster pump suction lines for structural support of pump house components. The reservoir access hatch is located within the locked pump house and must be equipped with an internal gasket. An adequately screened combined overflow and vent is installed. In the event major modification to water system components are completed in the future or the reservoir should be subject to contamination, a separate vent must be installed and the reservoir overflow must be reconfigured with a downturned screened elbow or weighted flapper valve with expandable mesh at the outlet. A low level reservoir indicator light is installed on the west outer wall of the pump house. Pump house floor drains are plumbed to discharge through the reservoir via the front of the building.

Three suction lines equipped with submersible pumps draw from the reservoir to pressurize distribution. Two 10 hp submersible pumps operating in lead/lag lift water from the reservoir to pressurize distribution under normal operation. The pumps operate off pressure switches on the discharge to distribution. Switches indicate booster pump 1 operates off a 40/60 psi setting while booster pump 2 operates off a 38/60 psi setting. Booster pump 3, the 20 hp fire pump operates off a 35/60 psi switch to provide for fire flow. A secondary flow meter is not installed on the booster pump discharge to distribution. A pressure relief valve is installed in proximity to the pressure switches.

Five 119 gallon Well X-trol hydropneumatic bladder tanks ride on the booster pump discharge to distribution. The bladder in tank number four was found to have failed and will require replacement. Each tank may be isolated and drain. Threaded hose bibb drains are equipped with atmospheric vacuum breakers. A second sample tap is available downstream of the reservoir and hydropneumatic tanks.

Emergency Source (Well #2) and Appurtenances

As previously indicated, the emergency back up 8-inch cased well is located approximately 2,300 feet west northwest of the primary well on private property. The well is the primary source serving the Turnipseed private residential property and provides an emergency back-up source for the Diamond Bar Estates system.

Previous survey reports indicate a dedicated well lot needs to be created for the well in the event Mr. Turnipseed sells or transfers ownership of the property. A Driller's Report is not available for the well; however a pump installation report by Dickerson Pump and Irrigation Company (1990) indicates the 8-inch cased well was drilled by Hollman Drilling Corporation to a completed depth of 373 feet in 1975. A static water level of 295 feet was indicated on the Dickerson report.

The well is enclosed within the locked, heated and ventilated pump house. The well is reportedly equipped with a 15 hp submersible Berkeley pump; the well pump curve provided by Rich Agueros at United Crown Pump and Drilling indicates a maximum production rate of 95 gpm.

The well discharges off the well cap through a 2-inch galvanized water line. A pressure relief valve is installed off well discharge from the well cap. A check valve installed downstream of the pressure

relief valve may preclude distribution pressure relief through the valve. It may be possible to install a downturned screened vent on the outer perimeter of the well cap to allow air to enter and exit the well casing upon well start up and shut down. The addition of a vent will protect the well from potential contamination by minimizing air flow through the electrical conduit. In the event the well is utilized in the future as a primary source to serve the Diamond Bar system, adequate venting of the well would be required.

A smooth nose sample tap is installed immediately off well discharge in the pump house. A 2-inch galvanized tee discharges through an instantaneous and totalizing flow meter to supply the residential connection. The 600 gallon Welk hydropneumatic tank rides on the residential connection. In the event it becomes necessary for the source to supply the Diamond Bar Estates system, the operator may open the manual isolation valve downstream of this hydropneumatic tank. A second instantaneous and totalizing flow meter is installed prior to the discharge to Diamond Bar Estates distribution system.

Well operation is controlled by pressure switches installed off the 600 gallon hydropneumatic tank. The tank appeared to be structurally sound with water levels monitored via sight glass. A pressure gage was installed off the tank and read 60 psi at the time of the survey. The tank is equipped with a pressure relief valve. Air to the tank is supplied by an electric compressor. The original air supply to the tank was piped through an air filter from the shop. While still plumbed, the line has been valved from the system.

Responsible Charge Operator, Robert Turnipseed indicated that there are no unprotected cross connections at the primary residence.

Distribution System

The distribution system serves 45 metered residential connections. Water mains are constructed of 6- and 8-inch Class 160 PVC pipe. Mains provide service to Diamond Bar Avenue, Ramsey Road (between Diamond Bar Avenue and Boekel Road), and Atlas Road from Boekel to the main loop on Rodeo Road. A 6-inch Class 160 PVC main runs north on Atlas under Boekel Road to supply CJ Court (Boekel Estate) via an 8-inch Class 160 PVC main. A flushing hydrant is installed at the end of this 8-inch main and is flushed at least twice per year.

According to Tyler Drecshel, Fire Inspector with Northern Lakes Fire District, the water system meets fire flow requirements.

Cross Connection Control

Diamond Bar Estates initiated a Cross Connection Control Program in June of 2004. The program includes inspections of services to evaluate potential cross connections, installation of adequate and suitable backflow protection, annual testing of backflow assemblies by a licensed backflow assembly tester and discontinuance of service where adequate backflow protection is not available. Annual backflow test reports are tracked and reviewed by the water system as required.

Idaho Rules governing cross connection control for community water systems were updated in 2013 to include: assemblies not passing annual backflow assembly tests or found to be defective shall be

repaired, replaced or isolated within 10 business days or water service to the failed assembly shall be discontinued as per IDAPA 58.01.08.552.06.e.

Monitoring Requirement Summary

Monitoring Requirements and Waivers

The table below lists the current System monitoring requirements:

Sample Type	Frequency	Sample Location
Distribution Monitoring Requirements		
Total coliform	1 sample per month	Distribution
Lead and Copper	5 samples per 3 years	Distribution
Source Monitoring Requirements (Well #1)		
Nitrate	1 sample per year	
Nitrite	1 sample per 9 years	
Alpha	1 sample per 9 years	
Radium 226	1 sample per 9 years	
Radium 228	1 sample per 9 years	
Uranium	1 sample per 9 years	
Arsenic	1 sample per 9 years	
Sodium	1 sample per 3 years	
Fluoride	1 sample per 9 years	
Inorganic Contaminants	1 sample per 9 years	
Volatile Organic Contaminants	1 sample per 6 years	
Source Monitoring Requirements (Emergency Well #2)		
Nitrate	1 sample per year	
Nitrite	1 sample per 9 years	
Total Coliform	At time well brought on line to serve system	

Diamond Bar Estates actively participates in DEQ's monitoring waiver program. The following table summarizes the current waiver status for Well #1:

Contaminant	Next Monitoring Due	Waiver Renewal	Duration
IOCs	12/31/2019	12/31/2019	9 year
Cyanide	none this period	12/31/2019	9 year
VOCs	12/31/2019	12/31/2019	6 year
SOCs	none this period	12/31/2016	3 year
Dioxin	none this period	12/31/2016	3 year

Source monitoring results summary

Source water quality monitoring currently meets all regulatory drinking water standards. Nitrate levels from well #1 have consistently ranged below 1.3 mg/L over the last ten years. The maximum contaminant level (MCL) for nitrate in drinking water is 10.0 mg/L. Nitrate levels from the emergency well #2 have ranged between 1.0 and 3.9 mg/L over the last ten years. Arsenic levels

from the wells have been consistently below minimum laboratory detection limits over the last ten years.

Distribution monitoring results summary

Lead and copper monitoring results from the last round of five samples collected in August 2013 indicated very low levels of lead (0.0013 to 0.0035 mg/L) and copper (0.0315 to 0.0919 mg/L) in the drinking water supply. The action level for lead is 0.015 mg/L and for copper is 1.3 mg/L.

As a community water system, monthly monitoring for total coliform in distribution is required. The system utilizes a coliform monitoring plan consisting of five rotating sampling locations representing the distribution system. A review of coliform sampling locations over the past year indicates coliform samples are collected from four locations on the distribution system: 1900 West Boekel Road, 1798 West Boekel Road, 1990 West Boekel Road, and 2961 Diamond Bar Road. The sampling plan is representative of the distribution system served.

The Idaho Rules for Public Drinking Water Systems have been updated since the time of the last sanitary survey with regard to distribution depressurization response. As per current Rule, during unplanned or emergency situations, when water pressure within the system is known to have decreased below 20 psi, the water supplier must notify DEQ, provide public notice to affected customers within 24 hours and flush and/or disinfect the system. When sampling and corrective procedures have been conducted, the water supplier may re-notify the affected customers that water is safe for consumption.

Management Capacity and Operator Certification

The Diamond Bar water system is classified as a Very Small Water System and is under the direct oversight of responsible charge licensed operator, Robert C. Turnipseed who holds a Very Small Water System license (DWDVSWS-12219). Robert N. Turnipseed is also listed as the operator of record for the system and holds a Very Small Water System license (DWDVSWS-12209GP).

The water system is privately owned and operated by the Diamond Bar Estates Limited Liability Corporation.

Rate Structure

The water system charges a metered rate of \$29.00 per month for up to 55,000 gallons. Additional usage is billed at a rate of \$0.80 per 1,000 gallons.

Conclusion

The water system was found to be operated in full compliance with the Idaho Rules for Public Drinking Water Systems. Please find listed below additional requirements as well as recommendations which may assist the system in future operation.

Additional Requirements

1. One of the hydropneumatic bladder tanks located in the pump house of the primary system has failed and must be replaced.
2. An internal water tight gasket must be installed on the reservoir hatch.
3. The 8-inch dead end main serving CJ Court must continue to be flushed at a minimum frequency of twice per year.
4. During unplanned or emergency situations, when water pressure within the system is known to have decreased below 20 psi, the water supplier must notify DEQ, provide public notice to affected customers within 24 hours and flush and/or disinfect the system. When sampling and corrective procedures have been conducted and after determination by the Department that the water is safe, the water supplier may re-notify the affected customers that water is safe for consumption.

Recommendations

1. It is recommended that all valves are exercised and all mains are flushed annually.
2. It is recommended that totalizing meter readings reflecting primary well use continue to be tracked as a mechanism to track water system leakage.
3. In the event energy savings improvements such as pump replacement or leak detection are necessary in the future, it is recommended the water system contact Layne McWilliams, P.E. with Energy Smart Industrial Program to discuss energy savings financial rebates available to the system. Mr. McWilliams may be reached at 971-244-8581.