

# JLA Geosciences, Inc.

HYDROGEOLOGIC CONSULTANTS

1907 Commerce Lane, Suite 104  
Jupiter, Florida 33458  
(561) 746-0228  
fax (561) 746-0119

## MEMORANDUM

**To:** Shannon LaRocque, P.E.

**From:** Shelley Day, P.G.

**RE:** Village of Wellington Surficial Aquifer Well Rehabilitation Recommendation – Well 24

**Date:** April 26, 2019

Florida Design Drilling (FDD) has provided the Village of Wellington (Village) with a proposal to perform well rehabilitation services on public water supply Well 24. The Village began experiencing low pumping water levels while operating Well 24 earlier this year. The pumping rate had to be significantly curtailed to avoid drawing air into the pump intake. The well has been removed from the normal operational rotation and is currently is being operated on an as-needed basis.

According to data collected during step-drawdown testing shortly after the completion of well construction in March of 1989, Well 24 had a specific capacity of 32.2 gallons per minute per foot of drawdown (gpm/ft) when pumped at a rate of 618 gallons per minute (gpm). When tested in March of 2017, the specific capacity had decreased to 18.4 gpm/ft when pumped at a rate of 676 gpm. During wellfield testing in March of 2019, the specific capacity of the well had further decreased to 14.7 gpm/ft when pumped at a rate of 481 gpm. JLA recommends rehabilitation to restore capacity to Well 24 and allow operational flexibility for the Village's water supply.

FDD has proposed a scope of work for Well 24 that may include removal and reinstallation of the permanent well pump, a video survey, chlorination and acid treatment, well development, disinfection, and bacteriological testing. The proposed scope of services provided by FDD is attached. The cost of the complete proposed scope of services is \$90,850.00.

JLA Geosciences approves of FDD's proposed scope of work and recommends that the Village rehabilitate Well 24 using a two-step approach. The Village should first perform a video survey of the well to assess the condition of the well and well screen. Following the video survey, FDD will perform a dilute high-volume acidization, where the permanent well pump and wellhead remain in place. Tremie pipe will be run through the existing 2-inch diameter port on the wellhead to allow emplacement of acid at the top of the well screen, located approximately 70 feet below land surface. The dilute acid solution will be pumped into the well and allowed to sit overnight. Prior to removal of the spent acid solution, the pH of the water will be tested to confirm that the acidity is near neutral prior to utilizing the Village's pump to purge the spent acid solution to waste. If the pH of the solution is still acidic, additional water will be pumped into the well to dilute any remaining acid, and the pH of the solution would be retested.

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later. After pumping all of the spent acid to waste, a specific capacity test will be performed to determine the effectiveness of the acid treatment. If the acid treatment effectively increases the capacity of the well, JLA would recommend no further treatment, and FDD would perform a post-rehabilitation video survey. If, however, the acidization alone does not provide sufficient improvement in well capacity, FDD would then perform a more comprehensive well rehabilitation approach, and pull the permanent well pump, and perform further well development and services, utilizing the remaining items listed in FDD's attached scope of services.



April 24, 2019

To: Shannon LaRocque, P.E.  
Utility Director  
Village of Wellington  
12300 Forest Hill Blvd  
Wellington, FL 33414

Project: Village of Wellington

Subject: Well 24 Rehabilitation Revised Cost Proposal

We are pleased to offer this estimate to furnish all labor, equipment, and materials to perform well rehabilitation services identified below.

| <b>EXHIBIT A</b>  |   |                 |             |                   |              |                             |
|---|---|-----------------|-------------|-------------------|--------------|-----------------------------|
| <b>WELLINGTON SAS WELL REHABILITATION - PROPOSED SERVICES</b> |   |                 |             |                   |              |                             |
| <b>Well 24</b>  |   |                 |             |                   |              |                             |
| <b>ITEM #</b>   | <b>DESCRIPTION</b>  | <b>QUANTITY</b> | <b>UNIT</b> | <b>UNIT PRICE</b> | <b>VALUE</b> | <b>CONTRACT TIME (DAYS)</b> |
| 3   | Specific capacity test before or after rehabilitation                               | 2               | Each        | \$500.00          | \$1,000.00   | 2                           |
| 8   | Remove and reinstall fencing to original condition                                  | 0               | Each        | \$500.00          | \$0.00       |                             |
| 9   | Remove Surficial wellhead, column pipe, and well pump with motor and accessories    | 1               | Each        | \$2,500.00        | \$2,500.00   | 2                           |
| 10  | Reinstall Surficial wellhead, column pipe, and well pump with motor and accessories | 1               | Each        | \$2,500.00        | \$2,500.00   | 2                           |



|      |  |      |                |             |             |    |
|------|--|------|----------------|-------------|-------------|----|
| 11   | Combined Static and Dynamic Down Hold 360-degree color video survey with triplicate DVD's including contraction pump                 | 2    | Each           | \$2,500.00  | \$5,000.00  | 2  |
| 14   | Chemical treatment of well with 2,500 gallons of 1,000 ppm chlorine solution and neutralize waste                                    | 1    | Each           | \$1,500.00  | \$1,500.00  | 2  |
| 15   | Acidize well with 1,000 gallons of 15% HCL acid (pump removed), Neutralize and legally dispose of waste. Must use Time Retard Agent. | 1.24 | Each           | \$25,000.00 | \$31,000.00 | 10 |
| 17   | Clean casing and screen with casing scraper and brush  | 1    | Each           | \$2,500.00  | \$2,500.00  | 7  |
| 18   | Brushing, swabbing and jetting to develop well   | 1    | Each           | \$2,500.00  | \$2,500.00  | 14 |
| 19   | Drill rig with crew  | 0    | Hour           | \$500.00    | \$0.00      |    |
| 20   | Two man crew with crane for pipe modifications and small projects  | 0    | Hour           | \$400.00    | \$0.00      |    |
| 21   | Each additional crew member  | 0    | Hour           | \$50.00     | \$0.00      |    |
| 22   | Parts supplied by contractor without Contractor's mark up  | 0    | Lump           | \$10,000.00 | \$0.00      |    |
| 22 A | Contractor's mark up on parts under bid item 22  | 0    | Decimal markup | \$0.15      | \$0.00      |    |
| 23   | Well abandonment (does not include cost of grout)  | 0    | Each per well  | \$5,000.00  | \$0.00      |    |

7733 Hooper Road, West Palm Beach, FL 33411

[www.FLDrilling.com](http://www.FLDrilling.com)

Phone: 561-844-2966 Fax: 561-844-2967

State of Florida Water Well Contractor #11148

State of Florida Certified General Contractor CGC1522104



|    |   |     |             |            |             |    |
|----|---|-----|-------------|------------|-------------|----|
| 24 | Neat cement grout for well abandonment  | 0   | Cubic Yards | \$500.00   | \$0.00      |    |
| 29 | Furnish and install gravel pack for well screen   | 54  | Cubic Feet  | \$25.00    | \$1,350.00  | 7  |
| 30 | Well development by Contractors pump 2,000 to 3,000 gpm   | 100 | Hours       | \$250.00   | \$25,000.00 | 14 |
| 31 | Well development and redevelopment by airlift with 600 to 750 CFM air compressor                                      | 40  | Hours       | \$250.00   | \$10,000.00 | 21 |
| 32 | Disposal of development water to lake or sewer with up to 500' of lay flat hose.                                      | 1   | Each        | \$2,500.00 | \$2,500.00  |    |
| 33 | Disposal of development solids that need to be containerized and properly disposed by Contractor (in excess of 1 yd3) | 0   | Each        | \$2,500.00 | \$0.00      |    |
| 34 | Furnish and install new 1" PVC stilling well 60' to 80' deep  | 0   | Each        | \$2,500.00 | \$0.00      |    |
| 35 | Furnish and install 2 new well S.S motor safety cables and appurtenances 60' to 80' deep                              | 0   | Each        | \$600.00   | \$0.00      |    |
| 36 | On-site Welding   | 0   | Hours       | \$125.00   | \$0.00      |    |
| 37 | Machine Shop Welding  | 0   | Hours       | \$100.00   | \$0.00      |    |
| 38 | Disassembly and inspection of pump in shop  | 0   | Each        | \$1,500.00 | \$0.00      | 0  |
| 39 | Pump Maintenance in shop  | 0   | Hours       | \$100.00   | \$0.00      | 0  |

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|               |   |    |                  |            |                    |    |
|---------------|---|----|------------------|------------|--------------------|----|
| 40            | Trim impeller in shop   | 0  | Each<br>impeller | \$500.00   | \$0.00             | 0  |
| 41            | Motor maintenance   | 0  | Hours            | \$100.00   | \$0.00             | 0  |
| 42            | Disinfect well for Health<br>Department clearance             | 1  | Each             | \$2,000.00 | \$2,000.00         | 2  |
| 43            | Bacteriological testing for<br>Health Department<br>clearance | 10 | Each             | \$150.00   | \$1,500.00         | 20 |
| <b>TOTALS</b> |   |    |                  |            | <b>\$90,850.00</b> |    |

Sincerely,

Mike Black  
Vice President  
Florida Drilling  
561.371.9985  
[mike@fldrilling.com](mailto:mike@fldrilling.com)

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