

**New Jersey Geological and Water Survey
NJGWS Groundwater Monitoring Project
Final Technical Report**

USGS - National Ground-Water Monitoring Network

**Award Number: G17AC00172
September 1, 2017 to March 1, 2019**

Final Technical Report Submission Date: June 3, 2019

Abstract:

The New Jersey Geological and Water Survey/New Jersey Department of Environmental Protection in cooperation with the United States Geological Survey (USGS) operate the New Jersey Ambient Groundwater Quality Monitoring Network. One hundred and forty-five (145) of the 150 well network is incorporated in the National Ground-Water Monitoring Network.

Effective on September 1st, 2017 the New Jersey Geological and Water Survey (NJGWS) was awarded \$24,125 in Cooperative Agreement Number G17AC00172 to replace up to three (3) bedrock NJAGWQMN monitoring wells that are part of the national network.

The NJGWS meet all project goals and objectives. Two replacement bedrock monitoring wells were installed by a contractor driller and one monitoring well was installed directly by NJGWS. NJGWS has meet 100% of its in-kind match.

**New Jersey Geological and Water Survey, P.O. Box 420, Mail Code: 29-01, Trenton, NJ 08625-0420
Phone: (609) 633-1071 Fax: (609) 633-1004, Email: Raymond.Bousenberry@dep.nj.gov**

NJGWS Groundwater Monitoring Project

Background

The New Jersey Geological and Water Survey (NJGWS) was awarded \$24,125 from the United States Geological Survey (USGS) in Cooperative Agreement No. G17AC00172 with an effective date of September 1, 2017 through March 1, 2019.

The NJGWS operates a state-wide groundwater quality monitoring network (NJAGWQMN) that is comprised of 150 monitoring wells. This network is a cooperative surveillance network between the NJGWS/NJDEP and the USGS, which provides information about land-use-related nonpoint source contaminant effects on shallow non-confined groundwater quality. One hundred and forty-five (145) of the 150 well network have been designated as surveillance wells and provide long-term trend data to the National Ground-Water Monitoring Network (NGWMN).

Goals and Objectives of the Grant G17AC00172

The objective and goal of the cooperative agreement is to identify three (3) NJAGWQMN monitoring wells that are included in the NGWMN and replace them with wells that would provide high quality data and meet the network goals.

NJGWS identified monitoring wells 74 (MW74), 80 (MW80) and 91 (MW91) as wells in need of replacement for various reasons such as poor pump rate, high turbidity, loss of access to land, not a representative sample of the shallow aquifer would be obtained.

Work Completed

The objective of the proposed work was to replace a total of two to three underperforming AGWQMN wells for sampling in Fiscal Year's 18 and 19. NJGWS has met this goal in accordance to NJDEP regulations.

Contractual Driller

NJGWS secured B&B Drilling as the contract driller and issued P.O. # 8626594 for \$20,000 to install two (2) monitoring wells.

NJGWS solicited closed email bids from three (3) NJ based drilling companies. Each company was contacted via same email, being provided the same information and instructions. Due to the fact the wells are expected to be at least 100 feet in depth, NJGWS was hoping to keep the monitoring wells as open boreholes to be able to log the wells with geophysical equipment. However, due to changes in NJ regulations only allowing to keep 20-feet of well as open borehole, it was deemed prudent to go with two inch (2-inch) single cased monitoring wells. This was in keeping with the well design of the majority of NJAGWQMN wells.

As per NJ Purchasing regulations, the lowest bidder was selected. The winning bid is attached (attachment 1). A price comparison between expected costs and actual bid costs for a 100-foot well are in attachment 2.

After the installation of MW80R and MW91R there was \$4,281.50 unencumbered in P.O. #8626594 and the monies were returned to the grant account (attachment 3).

Monitoring wells

Monitoring well 91

Originally installed on private property in Amwell Township, Hunterdon County, this well was a very poor producer, high turbidity, and installed on a private homeowner's property. On August 16, 2017, NJGWS sealed MW 91 at the request of the property owner due to the fact the property was for sale.

NJGWS identified a few possible replacement locations. The ideal location was on the property of the Amwell Church of the Brethren, located only a few hundred feet down the road of the original monitoring well. NJGWS contacted the church leaders, whom were strongly in favor of supporting the AGWQMN and its goals. By church bylaws, any actions taken by the church must have a super majority backing of the whole congregation. As such, NJGWS was asked to give two presentations to the whole congregation. Most of the congregation supported the goals of the network, however NJGWS was unable to meet the required threshold.

Alexauken Creek Wildlife Management Area located in the western portion of Amwell Township meets all the criteria set by the network for an agricultural monitoring well. NJGWS obtained permission from the NJDEP Fish and Wildlife program to install the replacement well at this location.

The replacement monitoring well was installed and has been designated as MW 91R. The USGS site ID is 40244007452580 and USGS GWSI number is 190626.

Monitoring well 80

Monitoring well 80 is currently located in Washington Crossing State Park along a small creek. Due to the extreme shallow depth and close approximately to the creek, NJGWS believes surface water is infiltrating the weathered bedrock and is being sampled.

NJGWS, identified a few possible new locations within the park, that ensured undeveloped land use dominated the upgradient recharge area. The final location for the replacement well is westward (towards the Delaware River) of the original well and located at a slightly lower elevation.

The replacement monitoring well has been designated as MW 80R. The USGS site ID is 401802074515801 and the USGS GWSI number is 210781.

Monitoring well 74

Based on geology, well records in the area, and experience, NJGWS is expected both replacement wells for MW 91 and MW 80 to be at a minimum of 100-feet in total depth each. With an expected total cost of \$15,060 for both wells it was expected to have \$4,940 remaining. It was NJGWS's belief that this sum would not cover a third bedrock monitoring well, so the excess monies were set aside to be used to cover unexpected costs of possibly having to drill deeper than 100-feet at one or both locations.

Due to the conditions listed above, NJGWS made the decision to find a location for the replacement monitoring well for MW 74 at a location NJGWS could install. The replacement well was installed in Ewing Township, and set in the same geology as the original well. The replacement well has been installed and is designated as MW 74R. The USGS site ID 401557074461401 is and the USGS GWSI number is 210779.

New Site ID	Principal Aquifer	Well Depth (ft. bgs)	Previous Site ID
40244007452580	Early Mesozoic Basin Aquifer	135.00	402633074541301
401557074461401	Early Mesozoic Basin Aquifers	13.10	401619074462401
401802074515801	Early Mesozoic Basin Aquifers	75.50	401829074513301

New Jersey Geological and Water Survey Spending In-kind

The NJGWS has met its \$24,125 obligation and exceeded it due to unexpected work related to obtaining permission and newly required Land Use Permits and reviews. The actual cost run is in attachment 4.

Summary

The New Jersey Geological and Water Survey project accomplishments:

- Secured contract drilling company – B&B Drilling.
- Installed replacement monitoring well for MW 91 at Alexauken Wildlife Management Area.
- Installed MW 80 R in Washington Crossing State Park.
- NJGWS installed a replacement well (MW 74R) for monitoring well 74.
- NJGWS has met its in-kind match.

ATTACHMENT 1

STATE OF NEW JERSEY DEPARTMENT OF THE TREASURY AGENCY REQUEST FOR PROPOSAL

VENDOR NAME AND ADDRESS: B&B Drilling, Inc PO Box 8 Netcong, NJ 07857			RETURN THIS PROPOSAL TO: Raymond Bousenberry Raymond.Bousenberry@dep.nj.gov		DELIVER TO: Raymond Bousenberry Mail Code:29-01 29 Arctic Parkway P.O. Box 420 Trenton, NJ 08625-0420	
SBE CATEGORY:			FAX NO: 609-633-1004			
NOTE: This proposal must be received by the opening date/time: 4/23/18 at 12 PM EST at the place named above.			AGENCY PERSON TO CONTACT: Raymond Bousenberry Raymond.Bousenberry@dep.nj.gov			
FISCAL YEAR 2018		ACCOUNT NUMBER		AGENCY REFERENCE NO. 042		COMMODITY CODE NO:
ITEM NO.	QUANTITY	UNIT	DESCRIPTION (ALL ITEMS MUST BE DELIVERED F.O.B. DESTINATION)	UNIT PRICE	AMOUNT	
1	1	LS	Mobilization/Demobilization	\$2,750.00	\$2,750.00	
2	200	LF	Drill 6-inch Diameter Borehole	\$39.00	\$7,800.00	
3	180	LF	Install 2-inch Schedule 40 PVC Well Casing	\$18.00	\$3,240.00	
4	20	LF	Install 2-inch Schedule 40 PVC Slotted Well Screen	\$24.00	\$480.00	
5	2	EA	Construct Protective Well Casing/Road Box	\$395.00	\$790.00	
		NOTES:	a) Bid quantities based upon drilling two (2) 100 foot single cased 2-inch PVC wells.			
			b) Unit pricing includes all annular backfill materials (grout & filter)			
			c) Final billing will be based upon actual work successfully completed in the field.			
PRICES ARE FIRM UNTIL THE FOLLOWING DATE: 90 DAYS				TOTAL	\$15,060.00	
CASH DISCOUNT NA		DATE OF DELIVERY TBD		VENDOR'S FEDERAL ID. NUMBER 22-3019658		VENDOR'S TELEPHONE NO. (973) 347-2250
VENDOR'S SIGNATURE (Must be Signed): H. Robert Seybold			PRINT OR TYPE NAME BELOW: H. Robert Seybold		DATE: 5/3/2018	

ATTACHMENT 2

Item Description	Estimated Cost Proposal (\$)	Estimated Cost Bid (\$)	Actual Cost (\$)
Installation of 1 Bedrock Monitoring Well	16,000	7,530	7,859.25
Installation of 2 Bedrock Monitoring Wells	32,000	15,060	15,718.50

Estimated cost in the original grant proposal included sealing of the abandon monitoring wells. To save monies at the time of the bidding NJGWS did not included abandonment in the proposal bid. The bid estimated cost is for two (2) 100-foot monitoring wells. The monitoring wells were of different depths, MW 91 has a total depth of 135 fgs and cost \$9,555.00 and MW 80 has a total depth of 75.5 fgs and cost \$6,163.50. NJGWS averaged the costs of these two wells to obtain the actual cost per well.

ATTACHMENT 3

Bousenberry, Raymond

From: Bralynski, Susan
Sent: Wednesday, March 20, 2019 12:41 PM
To: Sutphin, Octavia
Cc: Haywood, Tenika; Bousenberry, Raymond; McCoy, Robyn
Subject: RE: Cancel PO# 8626594

Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Octavia,

Po was cancelled, see below:

ENTER FUNCTION: TRANS: OCHG
DATE: 03/20/19
ORDER CHANGE TABLE TIME: 12:38:39
KEY IS ORDER NUMBER AND CHANGE ORDER NUMBER TERM: #OZU

ORDER NUMBER..... 8626594 : BEDROCK
ORDER STATUS..... 493 : ORDER BALANCE CLOSED
CHANGE ORDER NUMBER: 01 BUDGET FY: 18 DOC TYPE: DPA
STATUS CODE..... 493 : ORDER BALANCE CLOSED
STATUS CHANGE DATE.: 03/20/19
CHANGE TYPE CODE...: CNB : CANCEL ORDER BALANCE
WHIM.....: PRINT....: Y DATE PRINTED...:
USER ID LAST CHANGE: EPNBRAL DATE LAST CHANGE: 03/20/19
FUNDS AVAIL DATE...: CHANGE AMT...: -4281.50 ENCUM STATUS E
DESCRIPTION:
CANCEL BAL. AS PER ATTACHED EMAIL, OCTAV
IA.

01-E444W OCHG ENC CANCELLED IN NJCFS 01-+SC08 PREVIOUS UPDATE SUCCESSFUL
01-*L030 ALL LINES ADDED

ATTACHMENT 4

Groundwater Monitoring Project
G17AC00172 / 18-000-042-4861-083
Project Period: September 01, 2017 through March 01, 2019
FFR Period: September 01, 2017 through March 01, 2019

SOURCE:

COST RUN DATED	04/01/19	03/01/19
REPORTING PERIOD	09/01/17	03/01/19
GRANT PERIOD	09/01/17	03/01/19
SALARY	09/01/17	03/01/19
NON-SALARY	09/01/17	03/01/19

2NGWMINGX	Fiscal Year 2018		Fiscal Year 2019		TOTAL
	REGULAR SALARY	OTHER SALARY	REGULAR SALARY	OTHER SALARY	

SALARIES:					
TCODE 521	\$ 37,456.28	\$ 0.00	\$ 24,277.58	\$ 0.00	\$ 61,733.86
TCODE 525	0.00	0.00	0.00	0.00	0.00
TCODE 52H	0.00	0.00	0.00	0.00	0.00
TCODE 52L	0.00	0.00	0.00	0.00	0.00
TCODE 52S	0.00	0.00	0.00	0.00	0.00

SALARY ADDITIVE					
	23.00%	8,614.84	0.00	24,277.58	0.00
		46,071.22	0.00	5,563.84	0.00
FRINGE BENEFITS	30.69%	23,335.07	0.00	29,861.42	0.00
		69,406.29	0.00	14,647.03	0.00
INDIRECT	21.17%	14,593.31	0.00	44,508.45	0.00
		84,059.60	0.00	9,422.44	0.00
				53,930.89	0.00

NON-SALARY					
OBJECT 3610	CONSULTANT/ADVISORY PROF FEE	15,718.50	0.00	0.00	0.00
		15,718.50	0.00	0.00	0.00
TOTAL		99,818.10	0.00	53,930.89	0.00
					153,748.99

FEDERAL SHARE OF EXPENDITURES
FEDERAL SHARE BASED ON BUDGETED VS. ACTUAL
REIMBURSED TO DATE
CURRENT DRAW

50%

DRAW HISTORY
FEDERAL AWARD
Less: DRAWN TO DATE
FEDERAL BALANCE

24,125
(24,125)
0

Prepared by
Richard Burgess
PB 9/11/19

Reviewed by
Revised to correct Drawn to Date amount

* Refer to Budgeted vs. Actual for Drawdown Amount

Endorserment Amt.	0
Recipient Share	24,125
	(24,125)
Overmatch	0
	129,624
	(24,125)
	105,499

Reviewed by - Richard Burgess 9/19/19