GLOVER CONSTRUCTION
PEMBROKE SQUARE SUITE 501A
6512 SIX FORKS ROAD
RALEIGH, NC 27615

February 20, 2016

Re: Proposal Number: 16-01-099
Project Name: Dominion Water Treatment
Project Location: Dumfries, VA

Glover Construction proposal on this project. It is our understanding that water will be pumped via a floating suction from pond D to Treatment system at a flow rate up to 2,000 GPM. The system is to remove TSS and dissolved metals prior to discharge to an outfall location. Glover will provide the equipment and labor as specified below.

- Level and structurally secure equipment pad (Must be sufficient to hold water weight of all equipment)
- 30 Yard Filter Dewatering Boxes
- Electrician for electrical connections
- 8 light towers for night operation
- Diesel refueling of pumps and generators
- Equipment for unloading, transporting to pad location and placing equipment (Est. 50 ton crane or larger)
- Labor to assist in install and operation, combined Glover/ProAct labor of 10 Techs per shift
- Forklift for duration of project
- Staging area for storage of equipment
- (4) Aeration Frac Tanks with Blower Capabilities and Electric Pump out
- (2) Automated injection trailers for injection of dual Polymer
- -Includes control panel with operator interface, Turbidity and pH monitoring
- -Includes in-line mixers
- -Includes injection pump
- pH adjustment skid
- 3-8" Diesel Pumps (one in standby)
- 1- Diesel Pump for System Supply
- (4) 4-48 Sand Filter Skids
- Duplex 8pod Multiround Bag Filter Skids
- (2) 185 CFM air compressors
- (2) 2" diaphragm pump
- PC 78's Activated Alumina Vessels (will be set-up with bypass piping)
- PC 78's with Ion Exchange Resin (will be set-up with bypass piping)
- (80,000 lbs) of granular activated alumina (AA)
- (1200 cubic feet) of Purolite C104Na ion exchange resin
- (3) 275gallon totes BHR P50
- (3) 275gallon totes LBP2101
- (2) Duplex 12pod Multiround Bag Filter Skids
- (1000) P2 bag filters (Size to be determined on site)
- Lot of interconnecting hose and piping for all connections from Aeration tanks to influent of Lake tank
- -600' of 6" hose
- -4000 of 4" hose
- 5 HDPE Manifolds
- 2 Manifolds for Filter boxes
- Flow meters
- pH monitor for discharge
- Anti siphon loop
- 38' x 90' Lake Tank
- Equipment and supplies storage trailer

_ (2) 300Kw Generator Trailer

Description
*Plus sales tax if applicable

Delivery and Mobilization -Includes Media Purchase -Includes Estimated Freight to Site -Includes on-site set-up of 0ne(1) ~100,000 gallon modular tank	**$629,670.59**
On site set up of equipment by Glover	**$29,117.65****
Lump Sum for 12 months of Operation ***After 12months from the mobilization date additional months can be added by the Client at $1,173,932.56 per month.**	**$14,087,190.73***

Labor*
-1 Treatment Project Manager
-2 Supervisors, one (1) for each 12 Hour Shift
- 18 water treatment technicians, nine (9) for each 12 Hour Shift
The labor rate and monthly rental rate will begin on first day on site.
*Glover has included the cost for a only the above personnel for **12 months of the project**. If Dominion requires more personnel for standby or security they will be billed under the time and material rates.

Equipment
Operating 24hr/day, 120hr/week, 480hrs/month max,

Demob **$59,705.88**
- Disposal of all media and waste by Glover via placement in Pond D or Disposed of through the Ash waste facility as CCR waste.
- All equipment must be decontaminated prior to removal from site
- Includes return freight from site at conclusion of project
Consumables and Chemical Costs ~$1,500,000.00

General Description of Glover treatment plan –
****Glover Construction/ProAct will provide an operations manual and matrix of the protocol for control of the system in conjunction with the sample notifications from Dominion. All Safety Devices and Methods will be included in the submission for evaluation by Dominion. This manual and matrix will be submitted to Dominion after the site assembly is under way and all aspects of the system are on site. Variables prior to equipment arriving on site must be identified prior to submission of the manual and protocol.**

Basin Pump System
Glover will provide the pump and controls to transfer water from the basin to the equalization/aeration frac tanks. (4 tanks) Initially, the water will be received from the dewatering basin pumps to a manifold connected to four frac tanks. Each frac tank will include an aeration blower and a 500gpm electric transfer pump and controls. The pumps will operate from float controls within the tanks. The aeration blowers will not be used unless necessary.

pH Adjustment skid
The pH will be adjusted, if necessary at the equalization tanks and prior to the polymer injection trailer. It is anticipated that the pH will need to be adjusted with caustic to keep the pH between 6 and 9. The pH of the basin water at the time of on-site testing on 02-03-16 was 7.3.

Polymer Addition System
Water transferred from the frac tanks enters two independent trailers and flows through and encounters the turbidity and pH meters and chemical feed systems. The treatment trailer includes a dual chemical injection system for dual polymer treatment.
This includes the polymer addition to enhance the coagulation and flocculation of the solids. On-site testing performed on 02-03-16

included polymer dosing of water collected at the lower basin A. This water was a representative sample of what may be encountered during treatment of the Basin D water. The sample tested was well over 2000NTU and beyond the range of the turbidity meter. Best results were obtained using a combination of BHR P50 and LBP2101. This chemical addition precipitated over 99% of the NTU values. Actual field testing will be done during water processing to establish the optimum dosing concentrations but we can use the results of this field test to estimate chemical usage based upon volumes of water treated.

Some chemical estimates based on volumes:
25 MG treated 50 MG treated 100 MG treated
P-50 2,500 gal. P-50 5000 gal. P-50 10000 gal.
LBP 1,250 gal. LBP 2500 gal. LBP 5000 gal.
Based on bench scale testing we do not anticipate needing injection at start-up but during heavy excavation periods may require 10,000 gallons of P-50 and 5,000 gallons of LBP based on 100 MG water volume.
The polymer feed systems operate based upon a set point for polymer concentration predetermined by bench tests on the process water. The concentration set point and dosing feed rate for the polymer is tied to the incoming turbidity of the process water and will be manually set and adjusted by the treatment operator. The Chemical Feed pump will be responsible for feeding chemicals (polymer) into the water line. The injection system consists of multiple injection points and an inline mixer to allow a more uniformed injection and mixing of polymer with the process water. Safeties have been programmed into the system to automatically shut down the system (including the chemical feed system) to prevent overdosing. If the dewatering pump is not operational, the chemical injection pumps will not operate.

Clarifier Geotubes / Dewatering Box Systems
The floc and solids will be collected into external geotubes placed in dewatering boxes on site. Geotube filter socks will be placed in individual dewatering boxes. Water leaving the geotubes will gravity drain to an incorporated sump in each dewatering box. When the geotubes need servicing, and before demobilization, will removed the geotube from the dewatering boxes for disposal.

Transfer Pumps
Two 1000gpm diesel pumps will remove water from the geotubes/dewatering box sumps and pump water through the sand filter and bag filter housing and then to further treatment and discharge. An additional third diesel pump will be on site as a back up for shut downs or servicing.

Sand Filter Housing
We will utilize four stainless steel 4-48” diameter sand pod filter systems. Combined, these models can
manage up to 2000 GPM and also are designed to allow easy automated backwashing. The system is designed to monitor the pressure coming into the filters and out of the filters and
the pressure differential. When operated in auto mode the selected differential pressure will cause the system to enter a backwash cycle. When a backwash cycle is required, compressed air will provide valve cycling to allow one of the multi pods to backwash at a time until all the pods have completed a backwash cycle. Backwash water will be routed back to the basin source area. Each pod will contain approximately silica sand .44 - .55 uniformity coefficient of 1.6 and approximately. x ó gravel.

Primary Bag Filter Housing
We will utilize four (4) dual 8pod steel bag filter housings after the sand filters. These filters will include 25 micron bag filters in all four systems. The pair of housings will be plumbed in parallel to allow changing of the bag filters without shutting down the system. This is done by isolating the multiround with isolation valves, de-energizing the system of pressure and opening the lid. The bag filters are plumbed with unions before and after each housing for easy servicing and removal. The bottom of the bag filter housing will contain a 1” valve and drain. The pressure differential will be monitored. When the pressure differential reaches a set pressure, an operator is needed to service the bag filters.

Media Beds for metals removal
Once the solids are removed in the system, the water will pass through four pair of media filters for polishing of metals of concern. We will utilize four (4) pair of 800 cubic ft. min media vessels filled with Activated Alumina followed by ion exchange media C-104Na. Activated alumina is the primary media used to remove the Arsenic and Selenium. Other heavy metals will be treated with C-104Na. The four pair will be set up in parallel. Vessels are equipped with pressure gauges, sample ports and other appurtenant materials and equipment necessary for operation, monitoring and maintenance of the treatment system. Each pair of media vessels will include an effluent flow meter to ensure a balanced flow through each pair of vessels.

Discharge Bag Filter Housing
We will utilize two (2) dual 12 pod steel bag filter housings after the sand filters. These filters will include 0.5 micron bag filters. The pair of housings will be plumbed in parallel to allow changing of the bag filters without shutting down the system. This is done by isolating the multiround with isolation valves, de-energizing the system of pressure and opening the lid. The bottom of the bag filter housing will contain a 1" valve and drain. The pressure differential will be monitored. When the pressure differential reaches a set pressure, an operator is needed to service the bag filters.

Discharge flow meter and pH
Final flow will be directed to the lake tank through a flow meter and pH meter and an anti siphon loop.

Lake tank for treated water holding tank
Water from the discharge will be directed to a Modutank model ET1024 modular and rectangular holding tank for the treated water. This tank footprint is approximately 46'x 100' and holds 103,800gallons of water with 15% freeboard. The tank is lined with 30mil reinforced polyethylene and included galvanized cables and footing plates. It will be the responsibility of the client to confirm ballast weight and calculations for proper placement of the tank on site.

Notes/Assumptions
1. The actual equipment to be used on this project is based upon availability at time of order.
Glover may substitute equivalent or larger equipment at time of shipment as needed.
2. The filter media prices quoted are based upon current market price for the media quoted. These prices are subject to change without notice.
3. Onsite sampling by others.
4. Loading and unloading of equipment will be by Glover Construction
5. All labor to be provided is non-union.

• We will require 100% of the mobilization fee at the Notice to Proceed.
• This is a Lump Sum Project for up to twelve months of operation.

Proposal and pricing valid for 15 days.
• This proposal and pricing is based on our interpretation of the sections of the RFP or specification that have been made available to us. Exceptions have been noted wherever possible. In the event of a conflict between the language in the specification and the proposal, the language in the proposal takes precedence and is the basis of the proposed pricing. Glover reserves the right to reject any order based on differences in pricing. Glover reserves the right to reject any order based on differences in interpretation of the specification, or for any reason, at the time the order is tendered.

• The proposed equipment can generally be shipped within 2-4 weeks, after receipt of the Notice to Proceed and all updated information from Dominion/GAI, shipment timeframe will be updated at the time of order execution.
• Sales tax is not included in the prices quoted. The client must pay all applicable Federal, State and Local sales or use taxes.

If you have any questions or comments concerning this information, please feel free to call me at 252-578-7134.

Thank you for the opportunity.

Alan L Eudy
Glover Construction