

ADDENDUM NO. 2
February 8, 2017
CITY OF HAVELOCK
WTP BACKWASH WASTE SOLIDS HANDLING PROJECT
JOB NO. 2015020
DRAWING NO. W-3642
NCBELS LICENSE NO. F-0334
NCBOLA LICENSE NO. C312

A. SCOPE

This Addendum No. 2 consists of pages ADDENDUM 2-1 through ADDENDUM 2-94.

BIDDERS are hereby notified of the following changes in the specifications and drawings.

B. SPECIFICATIONS

1. TABLE OF CONTENTS

Page TOC-3. REVISE the list of APPENDICES to appear as follows:

“Appendix A – GeoTechnologies Report of Subsurface Investigation *July 18, 2016*
Appendix B – Erosion and Sedimentation Control Plan *October 27, 2016*
Appendix C – Stormwater Permit SW7011019 Modification *November 10, 2016*
Appendix D – Havelock Land Clearing Permit *January 31, 2017*
Appendix E – Bulk Asbestos Analysis Phase I Re-Inspection *January 24, 2017*”

2. SECTION C-410 – BID FORM

Pages B1 through B11, DELETE Bid Form Pages B1 through B11; ADD Bid Form Pages ADDENDUM 2-7 through ADDENDUM 2-17 covering revisions to Bid Form B1 through B11 for submittal of bid by the Contractor.

3. SECTION 01150 – PAYMENT

Pages 01150-1 through 01150-5, DELETE Section 01150 Pages 01150-1 through 01150-5; ADD Section 01150 with pages 00150-1 through 00150-5.

4. SECTION 02210 – CLEARING, EXCAVATION AND TRENCHING

Page 02210-6 Filter Cloth: DELETE, “provide spun synthetic fiber; 20 oz/sy; burst strength of 500 psi, vertical water flow of 265 gpm/sy”; ADD “provide needle-punched non-woven geotextile composed of polypropylene fibers; weight 7.5 oz/sy, CBR puncture strength 550 lbs; flow rate of 70 gpm/sf”

5. SECTION 02910 – CLEARING, EXCAVATION AND TRENCHING

Page 02210-6 Filter Cloth: DELETE, “provide spun synthetic fiber; 10 oz/sy; burst strength of 500 psi, vertical water flow of 265 gpm/sy; Trivera 1135,

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MIRAFI 140 or approved equal.”; ADD “provide needle-punched non-woven geotextile composed of polypropylene fibers; weight 7.5 oz/sy, CBR puncture strength 550 lbs; flow rate of 70 gpm/sf.”

6. SECTION 03310 – CONCRETE WORK
Page 03310-7 Polyethylene sheet: DELETE, “not less than 8 mils”; REPLACE with “not less than 6 mils”

7. SECTION 09910 – Painting
Pages 09910-13, ADD the following:

“REPAINTING SYSTEMS SCHEDULE:

Exterior Concrete Surfaces - Previously painted
Proposed Polishing Basin, Concrete Water Tank

Surface Preparation: Remove all loose paint, dirt, dust, efflorescence, mildew and all other foreign matter. This can be achieved using 3,500 PSI pressure washing with rotating tip. Sand and feather the edges of remaining tightly adhered existing paint. Series 217 shall be used for rebuilding the surface where necessary in accordance with manufacturer’s application or construction details guide. All bare concrete shall be treated as recommended in In accordance with SSPC-SP-13/NACE 6 Surface Preparation of Concrete. Surface shall be clean and dry prior to coating.

| | |
|------------------|---|
| <u>1st Coat:</u> | Series 151 Elasto-Shield applied at 0.7 – 1.5 dry mils. |
| <u>2nd Coat:</u> | Series 156 Enviro-Crete applied at 6.0 - 8.0 dry mils. |
| <u>3rd Coat:</u> | Series 156 Enviro-Crete applied at 6.0 - 8.0 dry mils.” |

8. SECTION 11215 – FLOATING LIQUID DECANter
Pages 11215-1 through 11215-4, DELETE Section 11215 Pages 11215-1 through 11215-4; ADD Section 11215 with pages 11215-1 through 11215-4.

9. SECTION 11361 – CIRCULAR SLUDGE COLLECTING EQUIPMENT
Pages 11361-1 through 11361-8, DELETE Section 11361 Pages 11361-1 through 11215-8; ADD Section 11361 with pages 11361-1 through 11361-8.

10. SECTION 13215 – SAND DRYING BEDS
Pages 13215-1 through 13215-6, DELETE Section 13215 Pages 13215-1 through 13215-6; ADD Section 13215 with pages 13215-1 through 13215-6.

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11. SECTION 13413 – PRESTRESSED COMPOSITE CONCRETE TANK

Page 13413-3, GENERAL DESIGN CRITERIA: DELETE “Maximum net allowable Soil bearing capacity, psf” and “300”; ADD “Soil Bearing Capacity” “See GeoTechnologies Report of Subsurface Investigation – July 18, 2016”

Page 13413-4, Floor: DELETE “4-inch thick” from last sentence in the second paragraph.

Page 13413-5, Deformed Steel Reinforcement: ASTM A615, REPLACE “18,000” with “24,000” and REPLACE “40,000” with “60,000”.

Page 13413-5, Steel Shell Diaphragm: ASTM A653/A653M, DELETE “for Commercial Quality Cold Rolled Steel, 26 gauge.” ADD “A galvanized steel diaphragm shall be used in construction of the core wall and be 26-gauge with minimum thickness of 0.017 inch conforming to ASTM requirements with weight of zinc coating not less than G90 shown in Table 1 of ASTM A653/A653M.”

12. SECTION 13620 – INSTRUMENTATION AND CONTROLS

Page 13620-2, DELETE “Dechlorination Feed controls provided by others”; ADD “Dechlorination Feed controls provided by others”

Page 13620-20, General: DELETE the second sentence.

13. SECTION 15100 – VALVES

Page 15100-9, Reduced Pressure Principle Backflow Preventer; DELETE last sentence of second paragraph. ADD “The assembly shall be provided as lead free with a strainer. The reduced pressure backflow preventer shall be similar in all respects to Backflow Preventer as manufactured by Watts Series LF909, Ames, Cla-Val Co. or equal.”

14. SECTION 15060 – PIPE AND FITTINGS

Page 15060-13 and Page 15060-14, THRUST RESTRAINT, DELETE both the first and second paragraph.

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15. APPENDICES: ADD appendices as follow:

APPENDIX A – GEOTECHNOLOGIES REPORT OF SUBSURFACE INVESTIGATION

ADD first five (5) pages of GeoTechnologies Report of Subsurface Investigation (dated July 18, 2016)

APPENDIX B – EROSION AND SEDIMENTATION CONTROL PLAN

ADD Erosion and Sedimentation Plan dated October 27, 2016 Seven (7) Pages

APPENDIX C – STORMWATER PERMIT NO. SW7011019

ADD Stormwater Permit No. SW7011019 dated November 10, 2016 Five (5) Pages

APPENDIX D – HAVELOCK LAND CLEARING PERMIT

ADD Havelock Land Clearing Permit dated January 31, 2017 One (1) Page

APPENDIX E – BULK ASBESTOS ANALYSIS PHASE I RE-INSPECTION

ADD Bulk Asbestos Analysis Phase I Re-Inspection – January 24, 2017
Sixteen (16) Pages

C. DRAWINGS

SHEET G3 – CONSTRUCTION SEQUENCE 44, ADD “Contractor to convey solids from proposed waste polishing basin to the sand drying beds.”

SHEET CS3 – At location near the Altitude Valve Vault and Elevated Tank, DELETE “Proposed NPW Water Meter X/Y”; ADD “Proposed Connection for NPW with RPZ 7 / D4.”

SHEET CS3 – Designate the a filtrate FM as pipeline with 4-inch Diameter

SHEET C2 – Show valves and fittings with 4-inch diameter relevant to the Filtrate FM

SHEET C2 – DELETE “GEOTEXTILE” and arrow pointing to interface between stone and concrete. ADD “GEOTEXTILE – 8 oz non-woven” with arrow pointing to interface between the soil and the stone.

SHEET D4 – ADD Detail 6/D4, “Clean-Out (Exterior)”;

SHEET D4 – ADD Detail 7 /D4, “RPZ and Enclosure”

SHEET C7 – DELETE “NOTE: DRILL AND TAP ALL FLANGES FLUSH WITH THE WALL”

SHEET E1 – Add note to the site plan that follows:

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- a. Provide electrical material and labor for six (open-close) motor-operated valves to have actuators located on stand above grade for each of the sand drying beds. The valves will be located at the rear of each sand drying bed.
- b. Refer to Sheet E-5 for electrical installation. Refer to Specification addenda 13620 for I/O additions to PLC-2 for controls and feedback

SHEET E-5 – Add note to the one line diagram that follows:

Provide electrical work for six (open-close) motor-operated valves to have actuators located on stand above grade for each of the sand drying beds. The valves are located at the rear of each sand drying bed. The electrical work shall include the following:

- a. Provide 120 VAC back to Panel LP-4 in the electrical room.
Add two additional conduits # 5 in the ductbank from the underdrain pump station. One 120 VAC circuit will feed valves 1,2, 3. The other conduit will feed valves 4, 5, 6.
- b. Provide control wiring for six (open-close) actuator valves back to PLC-2 in the existing office/lab room. Add six additional conduits # 11 in the ductbank from the Underdrain Pump Station. Each conduit # 11 shall be routed to each of the six actuator valves at the rear of each sand drying bed for control and status feedback. Provide additional I/O at PLC-2 for control and feedback.

SHEET E-5 – Add to the Panel LP-4 Schedule the following:.

Utilize circuit breakers 38 and 40; label as Sand Drying Bed Actuator Valves 120 VAC.

SHEET E-1 –Add note to the site plan that follows:.

“For the proposed NPW connection with RPZ hot box near pole # 6 adjacent to an existing altitude valve vault. Add note to provide 120 VAC circuit from the adjacent altitude valve vault and route to hot box location. Refer to civil detail. Provide 1 # 12 AWG Cu. THHN ungrounded and 1 # 12 AWG Cu. Neutral and 1 # 12 AWG Cu. THHN grounding conductor in ¾” conduit. Stub into proposed hot box and provide non GFCI receptacle with raintight while in use cover for heat tape.”

- D. GENERAL – Attached are post pre-bid meeting questions from the bidders and answers by the engineer which documents questions received after project meeting held on Thursday, January 19, 2017. This document is not to be considered a part of the Addendum or Contract Documents. It is provided for information only. All revisions are included in the appropriate Addendum.

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This Addendum No. 2 is submitted this 8th day of February, 2017. Each BIDDER is requested to acknowledge receipt of this Addendum in the space provided in the Bid Form.

RIVERS & ASSOCIATES, INC.
107 East Second Street
Greenville, North Carolina 27858
(252)752-4135

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APPENDICES

| | | |
|---|--------------------------|----------------------------|
| Appendix A – GeoTechnologies Report of Subsurface Investigation | <i>July 18, 2016</i> | <i>Fourteen (14) Pages</i> |
| Appendix B – Erosion and Sedimentation Control Plan | <i>October 27, 2016</i> | <i>Seven (7) Pages</i> |
| Appendix C – Stormwater Permit SW7011019 Modification | <i>November 10, 2016</i> | <i>Five (5) Pages</i> |
| Appendix D – Havelock Land Clearing Permit | <i>January 31, 2017</i> | <i>One (1) Page</i> |

BID FORM

City of Havelock – WTP Backwash Solids Handling

CWSRF Project No. CS370429-06

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Article 1 – Bid Recipient

Article 2 – Bidder’s Acknowledgements

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Article 5 – Basis of Bid

Article 6 – Time of Completion

Article 7 – Attachments to this Bid

Article 8 – Defined Terms

Article 9 – Bid Submittal

ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

***City of Havelock
One Governmental Avenue
Havelock, NC 28532***

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2 – BIDDER’S ACKNOWLEDGEMENTS

2.01 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 90 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

ARTICLE 3 – BIDDER’S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, and any data and reference items identified in the Bidding Documents, and hereby acknowledges receipt of the following Addenda:

| <u>Addendum No.</u> | <u>Addendum Date</u> |
|---------------------|----------------------|
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |
| _____ | _____ |

B. Bidder has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and satisfied itself as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and has satisfied itself as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or adjacent to the Site and all drawings of physical conditions relating to existing surface or

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subsurface structures at the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings, and (2) reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, especially with respect to Technical Data in such reports and drawings.

- E. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and any Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder; and (3) Bidder's safety precautions and programs.
- F. Bidder agrees, based on the information and observations referred to in the preceding paragraph, that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.
- G. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
- H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and confirms that the written resolution thereof by Engineer is acceptable to Bidder.
- I. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance and furnishing of the Work.
- J. The submission of this Bid constitutes an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article, and that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

- A. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation;
- B. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid;
- C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

- D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:
1. “corrupt practice” means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;
 2. “fraudulent practice” means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition;
 3. “collusive practice” means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels; and
 4. “coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

ARTICLE 5 – BASIS OF BID

- 5.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s) **on the Bid Schedule:**
- A. All specified cash allowances are included in the price(s) set forth in the Bid Schedule and have been computed in accordance with Paragraph 13.02 of the General Conditions.**
 - B. Unit Prices have been computed in accordance with Paragraph 13.03 of the General Conditions.**
 - C. Bidder acknowledges that each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor’s overhead and profit for each separately identified item.**
 - D. Bidder acknowledges that estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.**

BID SCHEDULE

CONTRACT I - GENERAL CONSTRUCTION:

ITEM

| <u>NO.</u> | <u>QTY.</u> | <u>UNIT</u> | <u>DESCRIPTION</u> | <u>ALTERNATE</u> | <u>BASE BID</u> |
|------------|-------------|-------------|---|------------------|-----------------|
| 1. | 1 | LS | WTP Backwash Solids Handling Facilities including all work and materials except equipment allowances and unit price items listed below. A LUMP SUM OF: | | \$ _____ |
| 2A. | 1 | LS | Instrumentation and Controls - Base Bid A LUMP SUM OF: | | \$ _____ |
| 2B. | 1 | LS | Instrumentation and Controls - Lord & Co. - Alternate | \$ _____ | |
| 3A. | 1 | LS | Prestressed Composite Concrete Tank - Base Bid A LUMP SUM OF: | | \$ _____ |
| 3B. | 1 | LS | Prestressed Composite Concrete Tank - Crom - Alternate | \$ _____ | |
| 4A. | 1 | LS | Packaged Suction Lift Pumps and Ancillary Equipment - Base Bid A LUMP SUM OF: | | \$ _____ |
| 4B. | 1 | LS | Packaged Suction Lift Pumps and Ancillary Equipment - Gorman Rupp - Alternate | \$ _____ | |
| 5A. | 1 | LS | Submersible Pumps and Ancillary Equipment - Base Bid A LUMP SUM OF: | | \$ _____ |
| 5B. | 1 | LS | Submersible Pumps and Ancillary Equipment - Xylem - Alternate | \$ _____ | |

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| | | | | |
|-----|---|----|--|---------------------|
| 6A. | 1 | LS | Prefabricated Fiberglass Building - Base Bid A LUMP SUM OF: | |
| 6B. | 1 | LS | Prefabricated Fiberglass Building - Warminster - Alternate | \$ _____ |
| 7A. | 1 | LS | Peristaltic Chemical Feed Pumps and Ancillary Equipment - Base Bid A LUMP SUM OF: | \$ _____ |
| 7B. | 1 | LS | Peristaltic Chemical Feed Pumps and Ancillary Equipment - Blue-White Industries - Alternate | \$ _____ |
| 8A. | 1 | LS | Circular Sludge Collecting Equipment Base Bid A LUMP SUM OF: | \$ _____ |
| 8B. | 1 | LS | Circular Sludge Collecting Equipment Evoqua - Alternate | \$ _____ |
| 9. | 1 | LS | Six (6) motor-operated plug valves for 6-inch FM at the Sandbeds | \$ _____ |
| 10. | 1 | LS | Umbrella or Excess Liability Insurance | \$ _____ |
| 11. | 1 | LS | Mobilization <i>{not to exceed 3% of Total Bid}</i> | \$ _____ |
| 12. | 1 | LS | Testing Allowance | \$ <u>10,000.00</u> |
| 13. | 1 | LS | Utility Service Entrance Allowance | \$ <u>25,000.00</u> |

BID SCHEDULE

CONTRACT I - GENERAL CONSTRUCTION:

| <u>ITEM NO.</u> | <u>QTY.</u> | <u>UNIT</u> | <u>DESCRIPTION</u> | <u>UNIT PRICE</u> | <u>BASE BID</u> |
|-----------------|-------------|-------------|-----------------------------|--------------------|-----------------|
| 14. | 500 | CY | Undercut Excavation | @ \$ _____ /CY | \$ _____ |
| 15. | 500 | CY | Off-Site Borrow | @ \$ _____ /CY | \$ _____ |
| 16. | 50 | CY | Stablization Stone (Trench) | @ \$ _____ /CY | \$ _____ |
| 17. | 400 | LB | Ductile Iron Fittings | @ \$ _____ /LB | \$ _____ |
| 18. | 2,000 | LF | Silt Fence | @ \$ _____ /LF | \$ _____ |
| 19. | 6 | EA | Temporary Rock Check Dam | @ \$ _____ /EA. | \$ _____ |
| 20. | 3 | EA | Rock Inlet Sediment Trap | @ \$ _____ /EA. | \$ _____ |
| 21. | 50 | TN | Class B Rip Rap | @ \$ _____ /TN | \$ _____ |
| 22. | 100 | SY | Excelsior Matting | @ \$ _____ /SY | \$ _____ |

TOTAL BASE BID FOR CONTRACT I: \$ _____

REQUIRED EQUIPMENT & SUPPLIER LISTING:

CONTRACT I - BASE BID

Instrumentation & Controls (Circle One, or Write In an Equal Approved Previously by Addendum):

Lord & Company; Fortech; Nix Purser; **Approved**
Equal_____

> Prestressed Composite Concrete Tank (Circle One, or Write In an Equal Approved Previously by Addendum):

Crom; Precon; **Approved**
Equal_____

> Packaged Suction Lift Pump Station (Circle One, or Write In an Equal Approved Previously by Addendum):

Gorman Rupp; **Approved**
Equal_____

> Submersible Pumps (Circle One, or Write In an Equal Approved Previously by Addendum):

Flygt; Fairbanks-Morse; Gorman Rupp; **Approved**
Equal_____

> Prefabricated Fiberglass Houses (Circle One, or Write In an Equal Approved Previously by Addendum):

Warminster Fiberglass; EFC; Tracom; **Approved**
Equal_____

> Liquid Chemical Feed Equipment (Circle One, or Write In an Equal Approved Previously by Addendum):

Blue-White Industries; **Approved**
Equal_____

> Circular Sludge Collecting Equipment (Circle One, or Write In an Equal Approved Previously by Addendum):

Evoqua; Walker Process; Eimco; **Approved**
Equal_____

ARTICLE 6 – TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 Bidder accepts the provisions of the Agreement as to liquidated damages **in the event of failure to complete the Work within the Contract Times.**

ARTICLE 7 – ATTACHMENTS TO THIS BID

7.01 The following documents are submitted with and made a condition of this Bid. **Failure to provide the documentation with the Bid may be grounds for rejection of the Bid.**

- A. **Required Bid security in the form of a bid bond (EJCDC No. C-430) or certified check (circle type of security provided;**
- ~~B. List of Proposed Subcontractors;~~
- ~~C. List of Proposed Suppliers;~~
- ~~D. List of Project References;~~
- ~~E. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license within the time for acceptance of Bids;~~
- ~~F. Contractor’s License No.: _____ or Evidence of Bidder’s ability to obtain a State Contractor’s License and a covenant by Bidder to obtain said license within the time for acceptance of Bids;~~
- ~~G. Required Bidder Qualification Statement with supporting data; and~~
- H. **All required MBE documentation:**

In accordance with GS 143-128.2©, Bidder shall identify on its bid the minority businesses that it will use on the project and the total dollar value of the bid that will be performed by the minority businesses.

Bidder shall list the good faith efforts made to solicit participation in Affidavit A.

A Bidder that will perform all of the work with its own workforce may submit an Affidavit B to that effect in lieu of the Affidavit A required above.

- 1. Identification of Minority Business Participation (MB-1)**
- 2. Affidavit A, Listing of Good Faith Efforts (MB-2)**

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3. Affidavit B, Intent to Perform Contract with Own Workforce (MB-3)

- I. EPA Form 6100-3 (front and back) for each DBE subcontractor and American Iron and Steel (AIS) Certification for SRF Project form (Page 2 of 6 in AIS Guidance Section).

7.02 After the bid opening the Owner will consider all bids and alternates and determine the lowest responsible, responsive Bidder. Upon notification of being the apparent low Bidder, the Bidder shall then file within 72 hours of the notification of being the apparent lowest Bidder, the following:

- A. Affidavit C (MB-4) that includes a description of the portion of work to be executed by minority businesses, expressed as a percentage of the total contract price, which is equal to or more than the goal established by the Owner and indicated in the Minority Business Guidelines, paragraph Minority Business Subcontract Goals. This affidavit shall give rise to the presumption that the bidder has made the required good faith effort; or
- B. Affidavit D (MB-5) of its good faith effort to meet the goal. The document must include evidence of all good faith efforts that were implemented, including any advertisements, solicitations and other specific actions demonstrating recruitment and selection of minority businesses for participation in the contract.
- C. Tables A & B under NC Division of Water Infrastructure MBE/WBE (DBE) Compliance Supplement section.

7.03 After the Bid opening, the Bidder will supply the information for Qualification of Bidders, as required in Article 3 of the Instructions to Bidders, within 5 days of the Owner's request.

7.04 The Bidder/Awarded Contractor shall supply any necessary forms and information, including EPA Form 6100-2 (front and back), as required by the Owner to meet compliance requirements with SRF Guidelines. This shall also include E-Verify statements and requirements, Iran Divestment Act Certification, etc.

ARTICLE 8 – DEFINED TERMS

8.01 The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

Bid Schedule – The Bid Schedule includes the Bidder's prices and is part of Article 5 – Basis of Bid in the Bid Form.

ARTICLE 9 – BID SUBMITTAL

BIDDER: *[Indicate correct name of bidding entity]*

By: _____
[Signature]

[Printed name]
(If Bidder is a corporation, a limited liability company, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
[Signature]

[Printed name]

Title: _____

Submittal Date: _____

Address for giving notices: _____

Telephone Number: _____

Fax Number: _____

Contact Name and e-mail address: _____

Contractor's License
Number: _____
Contractor's
Classification: _____

Contractor's Limitation: _____

Employer's Tax ID No.: _____

SECTION 01150 - PAYMENT

RELATED DOCUMENTS:

The general provisions of the Contract, including the General, Special Conditions and Division-1 Specification sections apply to work of this section.

SCOPE:

This section covers methods of payment for items of Work under this Contract.

GENERAL:

The total Bid Price for each part of the Project shall cover all Work required by the Contract Documents. All costs in connection with the proper and successful completion of the Work, including furnishing all materials, equipment, supplies and appurtenances; providing all construction plant, equipment and tools; and performing all necessary labor and supervision to fully complete the Work shall be included in the unit and lump sum prices bid. All Work not specifically set forth as a pay item in the Bid Form shall be considered a subsidiary obligation of CONTRACTOR and all costs in connection therewith shall be included in the prices bid.

ESTIMATED QUANTITIES:

All estimated quantities stipulated in the Bid Form or other Contract Documents are approximate and are to be used only (a) as a basis for estimating the probable cost of the Work and (b) for the purpose of comparing the bids submitted for the Work. The actual amounts of work done and materials furnished under unit price items may differ from the estimated quantities. The basis of payment for work and materials will be the actual amount of work done and materials furnished. CONTRACTOR agrees that he will make no claim for damages, anticipated profits or otherwise on account of any difference between the amounts of work actually performed and materials actually furnished and the estimated amounts therefore. Payment will be made or lump sum prices adjusted according to unit prices bid and as described below.

GENERAL CONSTRUCTION:

PAYMENT

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The Work under this contract shall be bid for the lump sum items as indicated in the Bid Schedule and paid for as an approved percentage of completion based on the approved schedule of values. Payment for mobilization and unit price items shall be in accordance with the Bid Schedule based on the requirements set forth below. The Work shall include all items as shown on the plans and described in the specifications complete in place and ready for use. Work not specifically stated as a pay item in the Bid Schedule shall be considered a subsidiary obligation and all costs associated therewith shall be included in appropriate bid items.

1. Water Treatment Plant Backwash Solids Handling Facilities: This item shall include mobilization, materials, labor, and equipment to construct the proposed upgrades to the Backwash Handling Facilities at the existing Water Treatment Plant. The Work shall include erosion control, demolition, dewatering, sheeting and shoring, site work, earthwork, piping, meters and vaults; construction of the waste settling basin, packaged solids pump station, sand drying beds, submersible underdrain pump station, dechlorination feed system, chemical injection system and vault, composite wastewater sampler, non-potable water system, modifications to the backwash holding basin to have an effluent polishing basin; modifications and additions to the WTP SCADA system; access roadway improvements; final grading; landscaping; electrical; and all other work shown on the plant site except items of equipment, allowances and unit price items listed in the Bid form. Payment for mobilization shall be limited to one percent (1%) per month. The total amount for mobilization shall not exceed three percent (3%) of the total Bid price.

2A. Instrumentation and Controls – Base Bid: This item shall include equipment and programming for the plant instrumentation system as described in Specification Section 13620 – Instrumentation and Controls and applicable plan sheets. Payment shall be lump sum.

2B. Instrumentation and Controls – Lord & Company Alternate: As described above, but with price based solely on instrumentation and control improvements provided by Lord & Company of Fort Mill, South Carolina.

3A. Waste Settling Tank – Pre-stressed Composite Concrete – Base Bid: This item shall include materials, equipment and labor for installation of pre-stressed composite concrete tank, installation of floor and wall pipes, embedments, and ancillary items as described in Specification Section 13413 – Pre-stressed Composite Concrete Tank and applicable plan sheets. Payment shall be lump sum.

3B. Waste Settling Tank - Prestressed Composite Concrete – Crom Alternate: As described above, but with price based solely on Crom Corporation of Gainesville, Florida.

4A. Packaged Suction Lift Pumps and Ancillary Equipment - Base Bid: This item shall include a packaged dual suction lift pumping equipment, piping and valves, integral control panel housed in a

pre-wired fiberglass enclosure with associated access panels as described in Specification Section 11335 – Packaged PTU and applicable plan sheets. Payment shall be lump sum.

4B. Packaged Suction Lift Pumps and Ancillary Equipment – Gorman-Rupp Alternate: As described above, but with price based solely on packaged pump station manufactured by Gorman-Rupp, Inc. of Mansfield, Ohio.

5A. Submersible Underdrain Pumps and Ancillary Equipment - Base Bid: This item shall include dual underdrain feed pumps and ancillary equipment as described in Specification Section 11316 - Submersible Sewage Pump Station and applicable plan sheets. Payment shall be lump sum.

5B. Submersible Underdrain Pumps and Ancillary Equipment - Xylem Alternate: As described above, but with price based solely on pumps manufactured by Xylem of Rye Brook, New York.

6A. Prefabricated Fiberglass Building – Base Bid: This item shall include all materials, tools, tools, equipment, labor, subcontracts, and all else necessary to construct pre-fabricated fiberglass shelters as described in Section 13120 and applicable plan sheets. Payment shall be lump sum.

6B. Prefabricated Fiberglass Building – Warminster Alternate: As described above, but with price based solely on fiberglass houses manufactured by Warminster Fiberglass of Southampton, Pennsylvania.

7A. Peristaltic Chemical Feed Pumps and Ancillary Equipment – Base Bid: This item shall include peristaltic feed pumps, controls and ancillary equipment as described in Specification Section 11235 – Liquid Chemical Feed Systems and applicable plan sheets. Payment shall be lump sum.

7B. Peristaltic Chemical Feed Pumps and Ancillary Equipment – Blue-White Alternate: As described above, but with price based solely on peristaltic feed pumps manufactured by Blue-White Industries of Huntington, California.

8A. Circular Sludge Collecting Equipment – Base Bid: This item shall include materials, equipment and labor for installation of circular sludge collecting equipment including center pier/influent diffuser, feedwell, motor and overload device, drive mechanism and reducer, all structural components, scraper, access bridge with handrailing/toe plate and ancillary items as described in Specification Section 13361 – Pre-stressed Composite Concrete Tank and applicable plan sheets. Payment shall be lump sum.

8B. Circular Sludge Collecting Equipment – Evoqua Alternate: As described above, but with price based solely on Evoqua, Warrendale, Pennsylvania.

9. Motor-Operated Plug Valves (on-off): This item shall include installation of six (6) motor-operated plug valves instead of six (6) manual valves on the six-inch force main at location adjacent to the sand drying beds as specified in Section 15100 including actuators and stands, plus conduit, wire, appurtenances and ancillary equipment to provide power and control of the valves as noted on applicable plan sheets and described by Addendum No. 2. Payment shall be lump sum.
10. Umbrella or Excess Liability Insurance: Lump sum payment for provision of umbrella insurance as described by General Conditions Section 6.03 Contractor's Insurance Paragraph E. on page GC 21 of 65 and Supplemental Conditions Section 6.03 Paragraph K. 4. On page SC 5 of 12.
11. Mobilization and Bonding: Lump sum payment for initial moving of equipment and supplies to the job site, providing bonds, insurance and permits. One half the total amount will be paid with first partial payment after construction begins, and the remaining one half with the second partial payment. The total amount for mobilization and bonding shall not exceed 3 percent of the total bid price for each part. If the Contractor's bid cost for this item on the Bid Schedule exceeds 3% of the Contractor's Total Bid Price, then the bid cost for this item shall be corrected to equal 3% of the Contractor's Total Bid.
12. Testing Allowance: The Testing Allowance is for testing of soils as specified in Section 02210, testing of concrete specified in Section 03310, etc. Payment will be made for actual amount invoiced by the Testing Company when authorized by the ENGINEER.
13. Utility Service Entrance Allowance: This item is for electrical service entrance expenses charged by Carteret-Craven EMC to provide underground power service to the project facilities. Payment will be for the actual amounts invoiced by the Utility Company.
14. Undercut Excavation w/ Offsite Disposal: Includes removal and off-site disposal of unsuitable material below subgrade or sub-base elevation as directed by ENGINEER. No additional compensation will be made for proof-rolling subgrade. Payment will be made for the actual number of cubic yards of undercut excavation within the area authorized by the ENGINEER and measured in the field.
15. Off Site Select Borrow Material: This item shall include the furnishing, excavation, transportation, compaction and grading of offsite select borrow material used in backfilling undercut areas. Excavation shall be placed and compacted in accordance with Specification Section 02210. Payment shall be per cubic yard of compacted material according to the unit price shown in the Bid Proposal.
16. Stabilization Stone (Trench): This item shall include replacement of organic material or other unsuitable foundations that cannot be adequately stabilized by well pointing/dewatering and disposal of the unsuitable material. It will be authorized as a pay item by the Engineer, if in his

opinion, the Contractor has made adequate attempts to dewater and/or in the Engineer's opinion, the material cannot be dewatered by well pointing. It may not be a pay item if the Contractor refuses to attempt to lower the water table below the trench invert when requested by the Engineer. Payment per cubic yard installed as measured in trench as agreed to daily in writing by ENGINEER and CONTRACTOR.

17. Ductile Iron Fittings: This item shall include bends, tees, plugs, caps, sleeves, reducers, all required accessories and associated labor and materials. Fittings not shown on the plans or that are required due to unforeseen field conditions shall be approved in advance by the ENGINEER. Payment for fittings shall be for the actual amount installed in the Work and will be paid for per pound of weight for compact ductile iron fittings (including accessories) according to the unit price as shown in the Bid form.

18. Silt Fence: Includes posts, wire fence, fabric, excavation, backfill, anchors, bracing, and minor grading as required or directed by the ENGINEER. Payment shall be per lineal foot of fence installed. This item also includes silt fence removal upon completion of project work.

19. Temporary Rock Check Dam: Includes rip-rap (class as required) and No. 57 stone placed as required by the plans at locations shown or directed by the ENGINEER, maintained in place. Payment shall be made per each installed. This item also includes check dam removal upon completion of project work.

20. Temporary Rock Inlet Sediment Trap (RIST): Provide and install with all material as shown by plan detail including No. 57 stone placed as required by the plans at locations shown or directed by the ENGINEER, and maintained in place. Payment shall be made per each installed. This item also includes removal of RIST upon completion of project work.

21. Class B Rip-Rap: This item includes excavation, furnishing and placing filter fabric and rip-rap material in accordance with plans and as directed by the ENGINEER. Payment shall be per ton of each class rip-rap installed when authorized by the ENGINEER.

22. Excelsior Matting: This item shall include all materials, equipment, labor and supplies to install excelsior matting according to specifications at the locations indicated or required. Payment shall be per square yard of matting actually installed.

SUBSIDIARY OBLIGATIONS

Earth Excavation: Earth excavation is considered a subsidiary obligation and all costs shall be included in the appropriate bid items.

Authorized Trench Widths: Bottom of embedment stone or stabilization material shall be installed according to authorized maximum trench width to 12" above top of pipe per specifications. Backfill from top of embedment 12" above top of pipe to top of trench, at width necessary for trench box. This width shall be a maximum of six (6) feet wide unless otherwise approved by Engineer. Additional widths may be approved, if in the Engineer's opinion, the Contractor utilized proper dewatering methods and did not contribute to caving of slopes. Aggregate base course and pavement patching shall be the approved trench width plus up to 2' additional when necessary due to cracking of pavement.

Removal and Replacement of Existing Features: Removal and replacement of existing features such as mailboxes, paper boxes, signs, fences, sidewalks, grass, lawns, ornamental shrubs such as azaleas, dogwoods, crepe myrtles, etc., stone in front of mailboxes, removal and replacement of driveway pipe and replacement with new pipe if damaged, parallel pavement replacement along the length of the pavement, etc. is considered a subsidiary obligation and all costs shall be included in the price for pipeline.

END OF SECTION 01150

SECTION 11215 – FLOATING LIQUID DECANter

PART 1 – GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

SCOPE:

This section covers furnishing and installing the floating liquid decant system in the Polishing Basin as indicated on the drawings.

RELATED WORK SPECIFIED ELSEWHERE:

Instrumentation and Controls: Section 13620

Painting: Section 09910

Valves: Section 15100

Electrical: Section 16050

GENERAL:

Equipment provided under this section shall be fabricated, assembled, erected and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions and recommendations of the equipment manufacturer, unless exceptions are noted by the ENGINEER.

Each floating liquid decant system shall be furnished complete with fabricated decant tee pipes, swing joints, floats, anchor bolts and all other accessories required for proper operation.

SUBMITTALS:

Shop Drawings: Submit complete product data and/or shop drawings on floating liquid decant system and all items of equipment. Furnish certifications that the floating liquid decant system and accessories supplied are suitable for the service intended.

Operation and Maintenance Manuals: Submit four (4) complete operation and maintenance manuals to include the following:

Equipment function, normal operation characteristics and limiting conditions.

Assembly, installation, alignment, adjustment and checking instructions.

Operating instructions for startup, routine and normal operation, regulation and control, shutdown and emergency conditions.

Lubrication and maintenance instructions.

Guide to “troubleshooting”.

Parts lists and predicted life of parts subject to wear.

Outline, cross section and assembly drawings, and engineering data.

Test data and performance curves, where applicable.

DRAWINGS AND DATA:

Complete fabrication, assembly, electrical schematics, wiring diagrams and installation drawings, together with detailed specifications and data covering materials used, parts, devices and other accessories forming a part of the equipment furnished, shall be submitted in accordance with the submittals section.

PART 2 - PRODUCTS

General Equipment Stipulations: the General Equipment Stipulations shall apply to all equipment furnished hereunder.

DESIGN REQUIREMENTS:

The floating liquid decant system shall include a floating liquid decanter with 10-inch diameter and designed for a nominal decant rate of 1000 gpm. The floating liquid decant system shall be by Mass Transfer Systems, Fluidyne, Parkson or approved equal.

Each floating liquid decanter shall be comprised of a fabricated decant tee pipe, a draw pipe, a swing joint, and supports. The liquid decant tee shall be fabricated of type 304L stainless steel; decant tee openings shall be sized for flow velocity of 1 ft/sec at with flow equal to 1000 GPM. The liquid draw pipe shall be fabricated of type 304L stainless steel (this pipe may or may not be a separate section - depends upon the overall length of the decanter.) Decanter components shall be connected via flanges with ANSI 150# drilling. Type 18-8 stainless steel hardware shall be supplied for decanter connection flanges. Hardware for swing joint to wall interface flange is not provided.

Each floating liquid decanter shall be connected to a 10" diameter swing joint. The swing joint be comprised of a U-shaped yoke and flanged tee section. The swing joint shall be manufactured of cast iron with Ni-Resist bushing and Buna-N O-rings.

Each liquid decanter shall be supported in the liquid by a float system, consisting of two (2) cylindrical floats integrally mounted on the decant arm tee. Floats shall be 18" x 30" capsule floats. Floats shall be fabricated of high impact polyethylene, filled with closed-cell foam to ensure flotation when punctured. Floats shall be sized to provide enough buoyancy such that the float balls will be approximately 60% submerged while supporting the decanter. Float system hardware shall be fabricated of type 18-8 stainless steel.

A minimum of two (2) swing joint support legs and two (2) decant arm rest supports shall be provided. All submerged supports shall be fabricated of type 304L stainless steel. Support legs shall be fabricated from schedule 40 pipe welded to a 3/8" baseplate. The baseplate of each support shall be anchored to the floor with four (4) type 18-8 stainless steel anchor bolts grouted in place. The swing joint and decant arm support legs shall respectively support the swing joint and the decant arm from the floor.

CONTROLS:

Flow through the polishing basin and the floating liquid decanter is controlled by two motor operated valves that are normally in the OPEN position. MOV-3 is a flow control valve that modulates to limit water level in the polishing basin and MOV-4 is an OPEN-CLOSE valve that allows

or prevents liquid to exit from the polishing basin. The pressure transducer in the polishing basin relays a 4-20mA signal through the SCADA system to the MOV-3 to limit water level in the polishing basin to an operator set-point for limit. The *normal decant operation* initiated by the operator causes MOV-4 to CLOSE. When water level in the basin reaches operator set-point level to decant, the SCADA system causes MOV-4 to OPEN and flow passes through the polishing basin with MOV-3 modulating to limit water level in the polishing basin. For more detailed information refer to Section 13620 - Instrumentation and Controls and Section 15100 - Valves.

PART 3 - INSTALLATION

With the proposed waste settling basin and sand drying beds in-service, the owner will pump liquid from the proposed polishing basin to the existing discharge point. The contractor shall remove solids from the basin and may convey them to the sand drying beds while continuing modifications to the proposed polishing basin including installation of the floating liquid decanter for conversion of the polishing basin. Prior to placing the polishing basin in-service, it shall be cleaned by pressure washing and any necessary concrete repairs made as additional work and as directed by the engineer.

GENERAL:

Install as shown on the drawings and in accordance with manufacturer's recommendations.

PAINTING:

The mechanical swing joint and all items except those of stainless steel or other corrosion resistant material shall be painted as specification Section 09910.

END OF SECTION 11215

SECTION 11361 - CIRCULAR SLUDGE COLLECTING EQUIPMENT

PART 1 - GENERAL

RELATED DOCUMENTS:

The general provisions of the Contract, including the General and Special Conditions and Division-1 Specification sections apply to work of this section.

SCOPE:

This section covers circular sludge collecting equipment for the one new clarifier.

QUALITY ASSURANCE:

Manufacturer's Abilities and Experience: The equipment manufacturer shall certify to not less than the years of experience specified in Section 01610 in the application, design, and manufacture of Circular Sludge Collecting equipment in wastewater treatment plants and shall submit a list of not less than twenty-five (25) operating installations as evidence of meeting the experience requirement. When the manufacturer has less than the required experience, a bond shall be required in an amount sufficient to allow replacement of the equipment. The bond shall be posted for a period of time equal to the required experience less the manufacturer's actual experience.

Equipment Installation Inspection: The manufacturer's factory representative shall visit the project for at least 1 (one) 8-hour day to inspect the Circular Sludge Collecting Equipment prior to grouting the bottom of the tank.

Initial Start-up and Field Testing: Upon completion of the Circular Sludge Collecting Equipment installation, the manufacturer's factory-trained representative shall visit the project for at least one (1) 8-hour day to inspect the Circular Sludge Collecting equipment for proper installation and then to initially start the equipment, making necessary tests so as to insure the proper operation of the equipment.

DRAWINGS AND DATA:

Complete assembly, foundation, and installation drawings, together with detailed specifications and data covering material used, power drive assemblies, and accessories forming a part of the equipment furnished, shall be submitted in accordance with the submittals section. Drawings shall indicate all dimensions and member sizes, and shall bear the seal of a registered professional engineer. Data and specifications for each unit shall include, but shall not be limited to, the following:

Sludge Collecting Equipment

Torque rating.

Arm tip speed.

20-year AGMA design torque.

Structural drawings.

Size, make, and type of electrical motor.

Electrical control equipment.

Type, specifications, details, input and output speeds, exact gear ratios, and service factor (24 hour continuous service) of gear reducers.

Description of overload device.

PART 2 - MATERIALS

GENERAL:

Equipment furnished and installed under this section shall be fabricated, assembled, erected, and placed in proper operating condition in full conformity with drawings, specifications, engineering data, instructions, and recommendations of the equipment manufacturer unless exceptions are noted by the Engineer.

Each unit shall be furnished and installed complete with all concrete foundations, piers, and supports; all mechanical equipment required for proper operation, including complete drive units; all steel, iron, and other metal construction indicated by the drawings; and any additional materials or construction required by the manufacturer's design.

General Equipment Stipulations: The General Equipment Stipulations shall apply to all equipment furnished under this section.

Piping and Valves: Sludge drawoff piping and all other piping shall conform to Section 15060 – Pipe and Pipe Fittings. Valves shall conform to Section 15100 – Valves.

All components of the drive mechanism shall be designed in accordance with AGMA Standard 6034-B92 "Practice for Enclosed Cylindrical Worm Gear Speed Reducers and Gearmotors", and Standard 2001-C95 "Fundamental Rating Factors and Calculation Methods for Involute Spur and Helical Gear Teeth"; for 24-hour continuous, uniform load duty and 20-year design gear life at the specified output speed. The AGMA rated torque of the drive shall be the lowest value computed for worm gear set, spur gear and pinion for strength and durability. Select conservative values for bending strength and pitting resistance life factors K1 and C1 based on a minimum of 420,000 cycles of the main gear. The drive AGMA torque rating shall be as specified above with a minimum 1.25 service factor.

Structural Design: The ratio of unbraced length to least radius of gyration (slenderness ratio) shall not exceed 200 for any compression member and shall not exceed 240 for any tension member (for angles about the Z-Z axis). In addition, all structural members and connections shall be designed so that the unit stresses will not exceed AISC allowable stresses when subject to 100% of the 20-year AGMA torque rating of the drive.

Bolts and Anchor Bolts: All field assembly bolts and anchor bolts, nuts, and washers shall be Stainless Steel AFI-104, Grade 303 or 305. Anchor bolts shall comply with the anchor bolts section.

Fabrication: All welded joints which will be fully or partially submerged, shall be sealed watertight with continuous welds. Faying surfaces of bolted joints shall be shop painted.

Edge Grinding: Sharp corners of cut or sheared edges which will be submerged in operation shall be dulled by at least one pass of a power grinder to improve paint adherence.

Surface Preparation: All iron and steel surfaces, except motors and speed reducers, shall be shop cleaned by sandblasting or equivalent, in strict conformance with Section 09910 – Painting.

Shop Painting: All surface preparation shall be per Section 09910 - Painting.

Power Supply: Power supply to the drive unit equipment will be 480 volt, 60 Hz, 3 phase. Power supply to the control equipment shall be 120 volt, 60 Hz, single phase.

DESIGN REQUIREMENTS:

Sludge collecting equipment shall be suitable for installation in circular concrete basins and shall be Evoqua/Envirex, Walker Process, Eimco, or approved equal. The equipment for each basin shall be furnished complete with components and accessories necessary for an operating installation and shall include combination center pier and influent diffuser, center cage, truss, center feedwell, drive mechanism with reducer, motor and overload device, scraper with supports, access bridge with handrailing and toe plate, and control equipment.

Basin Dimensions: The equipment shall be designed to operate in basins having the following dimensions:

| | |
|----------------------------|--------------------------------|
| Inside diameter | 60'-0" |
| Sidewall water depth | 18'-6" at maximum water level |
| Total sidewall height | 20'-6" |
| Water depth at center pier | 20'-10" at maximum water level |
| Diameter of influent pipe | 20 in. |

The equipment shall be designed for installation in a basin having a radial slope to the center of approximately 1 to 12.

Service Conditions: Equipment shall be designed for the following requirements.

| | |
|-----------------------------|---------------------------------------|
| Total Daily Flow | 290,000 GPD |
| Minimum influent flow | 66 GPM |
| Average influent flow range | 350 – 400 GPM |
| Maximum influent flow | 1360 GPM |
| Collector components | |
| Minimum rated torque | 21,900 ft-lb with 1.25 service factor |
| Approximate tip speed | 7.5 feet per minute |
| Ball race diameter, inches | 42-inch minimum |
| Influent Well | |
| Minimum diameter | 10 feet |
| Minimum depth | 5 feet w/ 2'0 below inlet-port |

Center Support: Each mechanism shall be supported with a 1/4" thick steel center pier with minimum 3/4 inch thick top and bottom flanges. The center pier shall be proper height to permit level installation of the access walkway and to support the turntable above the water level. Each center pier shall have an inside diameter not smaller than the basin influent line and shall be designed to support all loads imposed thereon, including torque and eccentric loads from the revolving mechanism. A minimum of eight (8) 1-inch diameter anchor bolts shall be provided.

The center pier shall be provided with a series of inlet ports located near basin low water level.

Influent baffles which will diffuse the influent into the basin without disturbance shall be provided for the center pier inlet ports. Flow shall impinge three (3) overlapping vertical target baffles in succession with series of four (4) increasing port areas. The maximum baffle exit velocity shall be less than 0.15 fps at maximum influent flow. The influent baffles shall include horizontal shelf baffles to prevent downward currents in the flocculation zone. The influent baffles shall be fabricated from A36 steel-plate with minimum thickness of 3/16" and bolted to the well support beams or the center cage. Hydraulic calculations shall be provided showing dimensional characteristics, port area, velocity, headloss and mixing intensity.

The influent feedwell shall be of adequate size to diffuse flow into the tank at an uniform velocity. It shall be fabricated from A36 carbon steel-plate with minimum thickness of 3/16" having stiffeners at top and bottom to maintain shape and rigidity, and supported by the drive cage or bridge extensions.

Center Mechanism: The center mechanism shall consist of the drive unit, gearing, and supporting structure for the sludge collecting equipment. The equipment shall have a cast iron or ductile iron turntable with annular bearing raceways near the outer circumference. The turntable shall rotate on alloy steel balls. Renewable ball races shall be provided. The balls shall run in an oil bath and shall be protected by a felt seal and dust shield. A cast iron, ductile iron, or steel ring gear shall be provided on each turntable. The center mechanism shall be designed so that the balls, raceways, and ring gear can be replaced without raising the access walkway. A valved oil bath drain shall be easily accessible from the center platform. The drain shall terminate in a turned down elbow and shall be suitable to support a container to receive waste oil. The main ring gear shall be split construction. Grease lubricated main bearings will not be acceptable.

Drive Unit: Each drive unit shall be rigidly connected to the turntable base and shall consist of a worm gear reduction unit connected by a roller chain or V-belt drive to a gearmotor or a speed reducer and motor combination. Swivel base mounting of the drive unit to the turntable will not be acceptable.

All gears and chains shall run in oil or shall have a positive means of constant lubrication. Seals shall be provided to prevent oil leakage around shafts. Drive units shall be designed so that all parts

are protected from the weather. Lubrication systems shall be protected against contamination and shall be designed so that the lubricants cannot contaminate the water being treated. A visual method of checking lubricant level externally without removing any parts or fittings shall be provided in each lubrication system. Lubrication facilities shall be convenient and accessible. Oil drains and fill openings shall be easily accessible from the operating platform; and shall allow for convenient collection of oil in containers, from the platform, without removing the unit from its normal installed position.

Overload Mechanism: The drive for the rotating scraper assemblies shall be equipped with an indicating torque overload mechanism with two independently adjustable, one normally open and one normally closed contacts. The "Alarm" contact shall operate specified alarm devices when the load reaches approximately 100 percent of the rated torque of the drive unit. The "Stop" contact shall unlatch a relay to stop the motor at approximately 110 percent of rated torque. The overload mechanism shall be factory adjusted. Torque overload contacts and torque indication shall be actuated by the worm shaft or by precise motor current measurement. Current measuring devices shall not cause alarm or shutdown due to starting current. The overload device shall have a weatherproof, cast iron or stainless steel housing. The electrical contacts shall be backed up by a mechanical shear pin device set for approximately 130 percent at the rated torque of the drive unit.

Rotating Scraper Assemblies: Each unit shall be provided with two rotating scraper arms. The rotating arms shall be attached to and supported by a central cage of adequate strength and rigidity to support and rotate the scraper arms under maximum load conditions with an adequate factor of safety, and shall be reinforced at top and bottom for proper distribution of loads to supports. Scraper arms shall be fabricated from structural steel members using triangular or box truss construction. Trussed arms shall be designed so tie rods will not be required.

Blades shall be provided on the rotating arms to move settled sludge to the central sludge collection hopper. Blades shall be spaced on each arm so settled sludge is collected over the full area of the basin by each arm. Blades shall be vertically adjustable or adjustable edges shall be provided.

The scraper arms shall conform to the slope of the bottom of the basin. The clearance between the basin floor and the blades shall be 1-1/2 inches maximum.

Access Walkway: Each turntable top shall provide a platform above the center pier for convenient access to the center drive mechanism. The overall dimension of the platform shall be 8'0 by 9'0 as shown by the drawings.

Access to the platform shall be by a galvanized steel beam walkway at least 36 inches wide extending from the platform to the wall in arrangement shown by the drawings. The walkway includes a self-supporting cantilever section near the wall with overall dimension 6'8" by 3'0 as shown by the drawings. No holes can be made and no supports attached to in the basin wall for the

cantilever section. The walkway shall be floored with 1-1/2 inch aluminum grating, and shall be diagonally braced against lateral movement. The walkway shall be designed and constructed so deflection will not exceed L/360 considering all dead loads plus a live load of 50 pounds per square foot and a horizontal wind speed of 130 miles per hour. Slide plates shall be provided at the wall supports.

A galvanized steel stair with aluminum grating treads shall be provided at the basin wall end of the walkway. Two-rail railings shall be provided along each side of each beam supported walkway, stair, and around the center platform and with top railing 3'-6" above the surface. A rectangular aluminum mounting plate shall be provided on the center platform railing for control and alarm equipment.

The access walkway and stairs shall be constructed of galvanized steel with aluminum grating, check end plate and aluminum handrails and toeboard as specified in Section 05100 - Structural and Miscellaneous Metals.

CONTROL EQUIPMENT:

Control equipment shall be furnished in a NEMA 4X stainless steel enclosure equipped for mounting on the clarifier bridge handrail. The control panel shall be equipped with the following components.

Selector switch: A heavy-duty, waterproof, two-position, on-off selector switch shall be flush-mounted on the door of the control panel for the operation of the clarifier. The selector switch shall operate the clarifier when the "local-off-remote" switch at the instrument panel is in the "local" position.

Push Button Switch: Heavy-duty, waterproof, momentary contact, push-button switches shall be flush-mounted on the door of each clarifier. Push-buttons shall be provided for the following applications:

Shutdown Reset
Alarm Reset

Power Lights: A white "power on" light shall be provided to indicate that normal power is available to the motor drive. The light shall operate off a 3-phase undervoltage relay and shall be of a dim-glow nature. The relay shall be interlocked to the motor starter to shutdown the motor should undervoltage, single phasing or phase reversal occur.

Operating Lights: A green “clarifier on” light and a red “clarifier off” light shall be provided to indicate the operational status of each clarifier. The lights shall operate off the motor starter auxiliary contacts and shall be of a dim-glow nature.

High Torque Shutdown Indicator: An amber “high torque shutdown” light shall be provided to indicate that the motor has stopped as a result of high torque overload. This condition will occur at approximately 110 percent of rated torque. The light shall be of the dim-glow nature.

Alarm Lamp: The alarm light shall be a vaportight, weatherproof strobe with 3/4 inch bottom hub, red globe, guard and 60 watt bulb. The alarm will be activated when the torque overload mechanism reaches approximately 100 percent of rated torque.

Starters: Provide starter in accordance with Section 16050 - Basic Electrical Materials and Methods.

All alarms within the control panel shall be provided with interfacing dry contacts for Instrument Panel alarm and status indication.

PART 3 - INSTALLATION

INSTALLATION:

The blades on each scraper shall be adjusted to the contour of the basin floor.

To insure that each sludge collecting mechanism is functioning properly, it shall be run at least 4 hours before flow is admitted to the basin.

END OF SECTION 11361

SECTION 13215 - SAND DRYING BEDS

PART 1 - GENERAL:

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division - 1 Specification sections, apply to work of this section.

All grading, concrete, and piping quality standards shall govern the construction of the sludge drying beds through the applicable division of these specifications. Other applicable divisions of these specifications shall be applied as necessary to obtain proper construction standards.

SCOPE:

This section covers the construction of six (6) 20' x 53' sand drying beds and related appurtenances. The beds will be used to dry sludge from the waste holding basin which will contain iron, manganese, and brine particles.

RELATED WORK SPECIFIED ELSEWHERE:

Clearing, Excavation & Trenching: Section 02210

Concrete Work: Section 03310

DRAWINGS AND DATA:

Complete specifications, data, and drawings covering the items furnished in this section shall be submitted in accordance with the submittals section. Drawings shall include all piping entering and exiting the sludge drying beds plus stop-log closure for equipment entrance to each sandbed.

The liner supplier will also be required to provide a 20 year warranty on the liner covering any defects of the product under normal sand drying bed usage.

PART 2 - MATERIALS:

SAND:

The 24" deep layer of sand, infill sand for cellular confinement (6") and top layer (2") of sand shall have uniformity coefficient less than 3 and an effective size of 0.35 to 0.50 millimeters. Sand samples shall be submitted to a testing laboratory for analysis and approved prior to placing any sand in the beds. Another sample from the bed shall be submitted after placement of the sand. The cost of testing and inspection shall be paid for out of the testing allowance as specified in Division 1. Testing agency shall be selected by and work for the OWNER, but be paid by the CONTRACTOR.

CELLULAR CONFINEMENT SYSTEM:

A cellular confinement system shall be provided as a component of sand drying beds, which will hold the sand media as well as provide structural stability and strength capable of supporting bucket loader traffic without sustaining damage.

Cellular confinement system shall have a cell depth of 6 in. (150 mm) with nominal 1 x w dimensions 11'3' x 12' 6" (±10%), minimum certified cell seam strength of 480 lbf (2130 N), and other physical properties that follow:

| <u>Property</u> | <u>ASTM Test Method</u> | <u>Value</u> |
|-----------------|-------------------------|---|
| Material | ASTM D 1505 | polyethylene 0.935 – 0.965 g/cm ³ |
| Minimum ESCR | ASTM D 1693 | 5000 hours |
| Sheet Thickness | ASTM D 5199 | Prior to Texture: 50 mil After Texture: 60 mil |

Cellular confinement system shall be as supplied by Presto Geosystems of Appleton, Wisconsin, Geo Products, L.L.C. of Houston, Texas, Professional Reinforcement Solutions, or approved equal.

LINER:

A liner shall be provided under the sand drying beds as indicated on the drawings. The liner shall be suitable for direct burial and shall be at least 22 feet in width when received at the site.

The liner shall be reinforced geomembrane with a thickness no less than 30 mil meeting the requirements of ASTM Test Method D-751. The liner shall meet or exceed requirements for other physical properties that follow:

| <u>Property</u> | <u>ASTM Test Method</u> | <u>Value</u> |
|---|---|--------------|
| Dimensioned Stability (each Direction, percent change max.) | ASTM D-1204 212 F, 1 hr. | ±0.5 |
| Hydrostatic Resistance (lbs./square inch) | ASTM D-751 Method A, Procedure 1 | 800 |
| Tear Strength (lbs) | ASTM D 751 Trap Tear | 40/55 |
| Breaking Yield Strength (lbs) | ASTM D 751 Grab Tensile | 550/550 |
| Bonded Seam Strength (lb min) | ASTM D-751 Grab Test Method Procedure A | 550 |
| Abrasion Resistance | ASTM D-3389 H-18 Wheel | |
| 1. Cycles (min) before fabric exposure | 1kg load | 2000 |
| 2. mg/100 cycles maximum weight loss | | 50 |
| Weathering Resistance hrs (min)-No appreciable changes, stiffening or cracking of coating | ASTM G-153 (Carbon-Arc) | 8000 |
| Water Absorption | ASTM D-471 Section 12 | |
| 1. kg/m ² max @ 70°F / 21°C | 7 Days | 0.025 |
| 2. kg/m ² max @ 212°F / 100°C | | 0.14 |

| | | |
|---|---------------------|----------------------|
| Wicking (in. max) | ASTM D-751 | 1/8 |
| Puncture Resistance (lb min) | ASTM D-4833 | 275 |
| Coefficient of Thermal Expansion/ Contraction (in/in/°F max) | ASTM D-696 | 8 x 10 ⁻⁶ |
| Bursting Strength (lb min) | ASTM D-751 Ball Tip | 750 |

The finished membrane liner shall consist of two calendared plies laminated over one ply of polyester reinforcing fabric.

Unreinforced material shall fully encapsulate the reinforcing fabric at roll edges and shall extend a minimum of 1/8" beyond the reinforcing fabric. Exposed fabric will not be accepted.

The liner shall be as fabricated by Seaman Corporation, Wooster, Ohio; MPC Containment, Chicago, Illinois; Watersaver Company, Commerce City, Colorado or approved equal.

STOP LOG, FRAME AND SEAL CLOSURE:

The equipment entrance to each sand drying bed shall be as shown on the drawings and include an embedded frame and stop-log closure unit utilizing steel reinforcement, fiber-reinforced plastic (FRP) and sealant materials manufactured, delivered and installed to provide a watertight unit for the sand drying bed.

Stop Log shall be steel tube reinforced and completely encapsulated by FRP, which is formed in one piece to be free of cracks, seams or ridges. The stop log shall be impervious to moisture and contain UV stabilizing pigment in the resin to provide long-term protection from UV radiation. The stop log shall be highly resistant to corrosion and come with a 25 year warranty against failure from corrosion. Stop logs shall have EDPM seals and meet AWWA C563 leakage requirements.

Guide Frame shall be T-304 stainless steel and form a watertight seal with stop logs equipped with EDPM or neoprene seals.

Lifting Pins shall be T-316 stainless steel and attached to stop log by passing completely through the log. Stainless steel lifting pins shall be fastened to the log with sufficient reinforcing to withstand lifting force, and the through holes shall not pass through or be in contact with the internal steel reinforcing.

Lifting Beam shall be T-304 stainless steel and of appropriate size to lift stop logs.

PART 3 - INSTALLATION

General: Place flexible membrane liner over prepared surfaces in such a manner as to assure minimum handling. Fit closely and seal around inlets, outlets, structures and other projections through liner. Follow installation procedures as recommended by liner fabric manufacturer.

Sufficient lining material shall be furnished to cover all lines areas shown on the plans including seam overlaps and trenches. One percent shall be added to the length of each panel to allow for shrink and wrinkles. The liner shall be installed in a relaxed condition and shall be free of tension or stress upon completion of the installation.

Field Joints: Use lapped and sealed joints in field, matching factory-fabricated joints. Form lapped joints by lapping edges of pieces 2 inches to 4 inches, unless larger overlap recommended by liner manufacturer. Wipe contact surface of pieces clean and free of dirt, dust, moisture, and other foreign materials. Use solvent cleaning methods when recommended by liner manufacturer. Thermal Fusion field seaming shall be accomplished with a hotwedge welder, hot air welder, or hand held leister or use other seaming methods recommended by liner manufacturer to result in a continuous thermal weld. Roll to remove wrinkles or fish mouths. Carefully inspect seams and reseal voids.

If the soil beneath the geomembrane is frozen, a seaming board or slip sheet made from the same geomembrane material shall be placed between the soil and the liner to be seamed to prevent condensation of moisture between the surfaces to be joined.

Liner Attached to Concrete: Attach as shown on plans. Remove curing compounds and coatings from joint area. Use liner manufacturer's recommended adhesive system. Install batten strips over bonded liner as required by liner manufacturer.

Lining Repairs: Repair tears, punctures, and other imperfections in liner fabric using patches of liner material itself and bonding methods recommended by liner fabric manufacturer. Roll as required to remove wrinkles.

Patches shall have rounded corners and shall extend a minimum of 6" in each direction from damaged area. Exposed scrim at patch edges shall be caulked or protected as recommended by the liner manufacturer.

Protect installed liner in accordance with liner manufacturer's instructions. Repair or replace areas of liner showing injury from scuffing, penetration by foreign objects, distress from rough subgrade, or other unacceptable conditions.

Inspect seams and patched areas immediately prior to installing filter material to ensure tight, properly bonded installation. Repair damaged seams in accordance with membrane manufacturer recommendations.

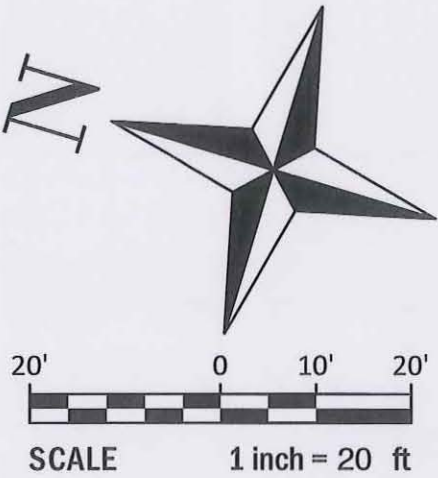
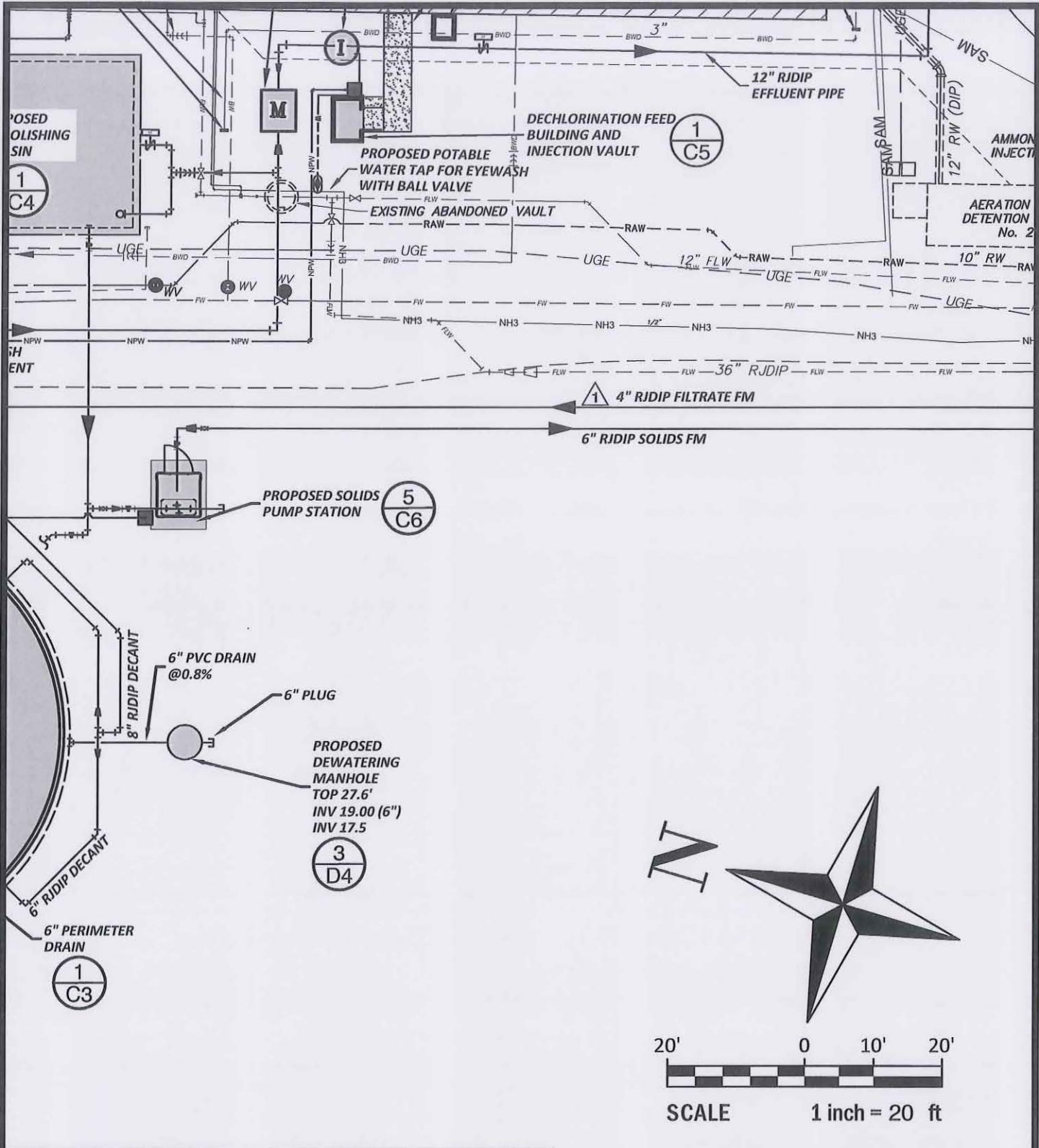
Inspection and Testing: Upon completion of the liner installation the liner fabricator shall fully test all field seams with an air lance tester, hook vacuum seam tester or other Engineer approved method. Once the seams have been tested, the installation supervisor and the Engineer's field representative shall fully inspect every lineal foot of field seam and all seals around penetrations. Any doubtful areas shall be tested with a vacuum seam tester or other device as directed by the Engineer.

CONSTRUCTION:

After wall and pier construction is completed, the Contractor shall regard and backfill the bottom of the beds as necessary to conform with the plans. The drainage pipe shall be laid true to grade utilizing "dig outs" for the bell ends of the perforated PVC pipe. Just at a point where the PVC goes under the wall footing, there shall be a flexible connection using stainless straps for changing from PVC to ductile iron pipe. Also at this point the pipe trench shall be filled with sand clay and compacted underneath the footing to prevent seepage from exiting the beds. The sand clay backfill shall continue for a minimum distance of 5 feet. The Contractor shall take special precautions in excavating and backfilling around the wall footing to prevent settlement and wall damage.

Gravel from 3/4" to 1-1/2" in size shall be placed and uniformly spread in the pipe trench and beds to the elevations shown on the plans. Two subsequent 3" deep gravel layers, respectively 1/4" to 3/4" size and 1/8" to 1/4" size shall then be placed as shown by drawing. Each gravel layer shall be placed uniformly and leveled to required lines.

END OF SECTION 13215



| | | | |
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| 1 | ADDENDUM NO. 1 | 1/23/17 | GVS |
| REV. | DESCRIPTION | DATE | BY |

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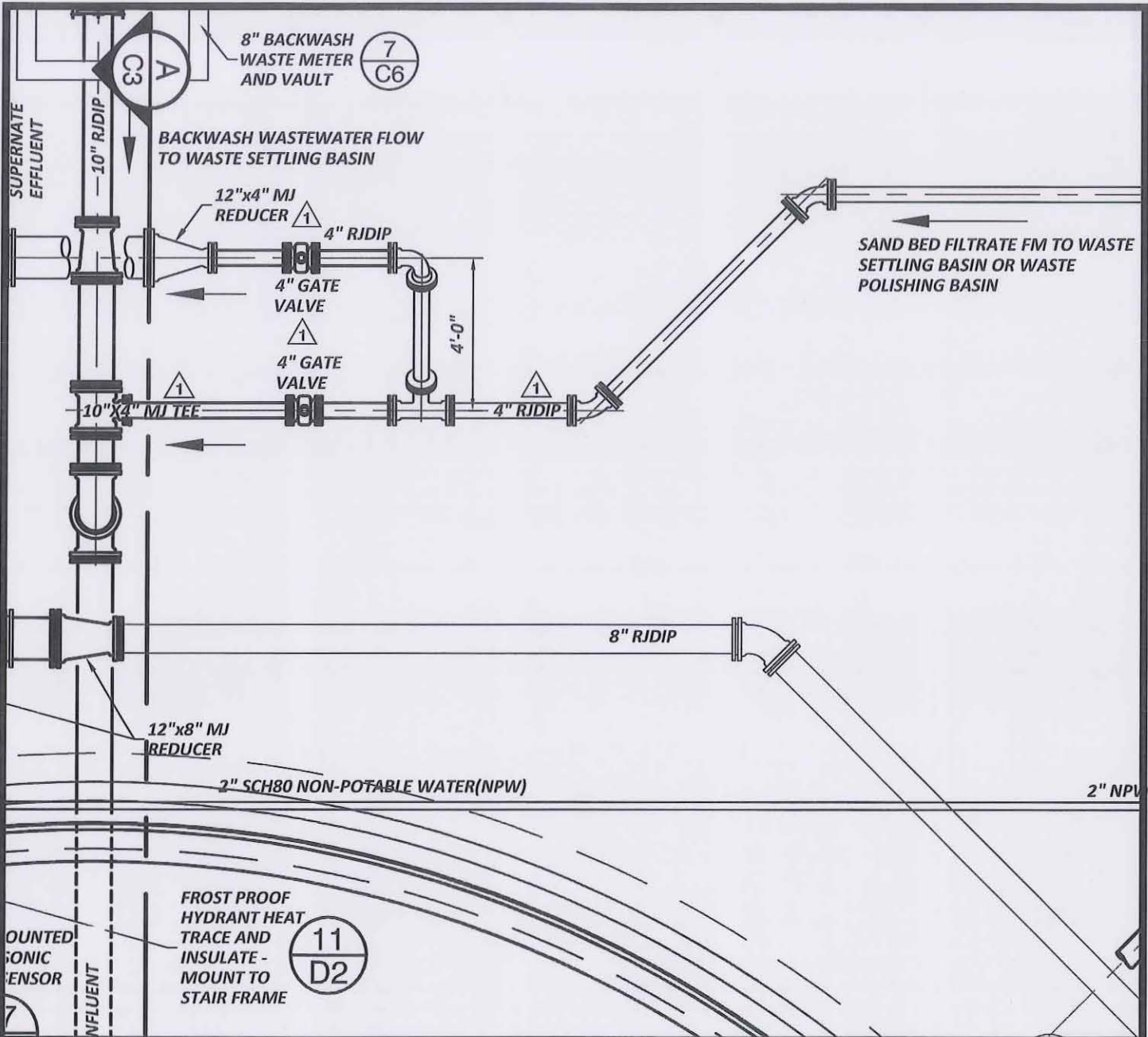
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(252) 752-4135

SITE - PIPING
WTP BACKWASH SOLIDS HANDLING
CITY OF HAVELOCK
CRAVEN COUNTY NORTH CAROLINA

| | | | | |
|-----------|----------|-------|---------|-----------|
| Project # | 2015020 | Draft | JIM | Sheet No. |
| Drawing # | W-3642 | Check | GVS | |
| Scale: | AS NOTED | Date: | 1-23-17 | |





1 PLAN
WASTE SETTLING BASIN SCALE: 1/4" = 1'-0"

| | | | |
|----------|----------------|---------|-----|
| 1 | ADDENDUM NO. 1 | 1/23/17 | GVS |
| REV. | DESCRIPTION | DATE | BY |

WASTEWATER SETTLING BASIN PLAN

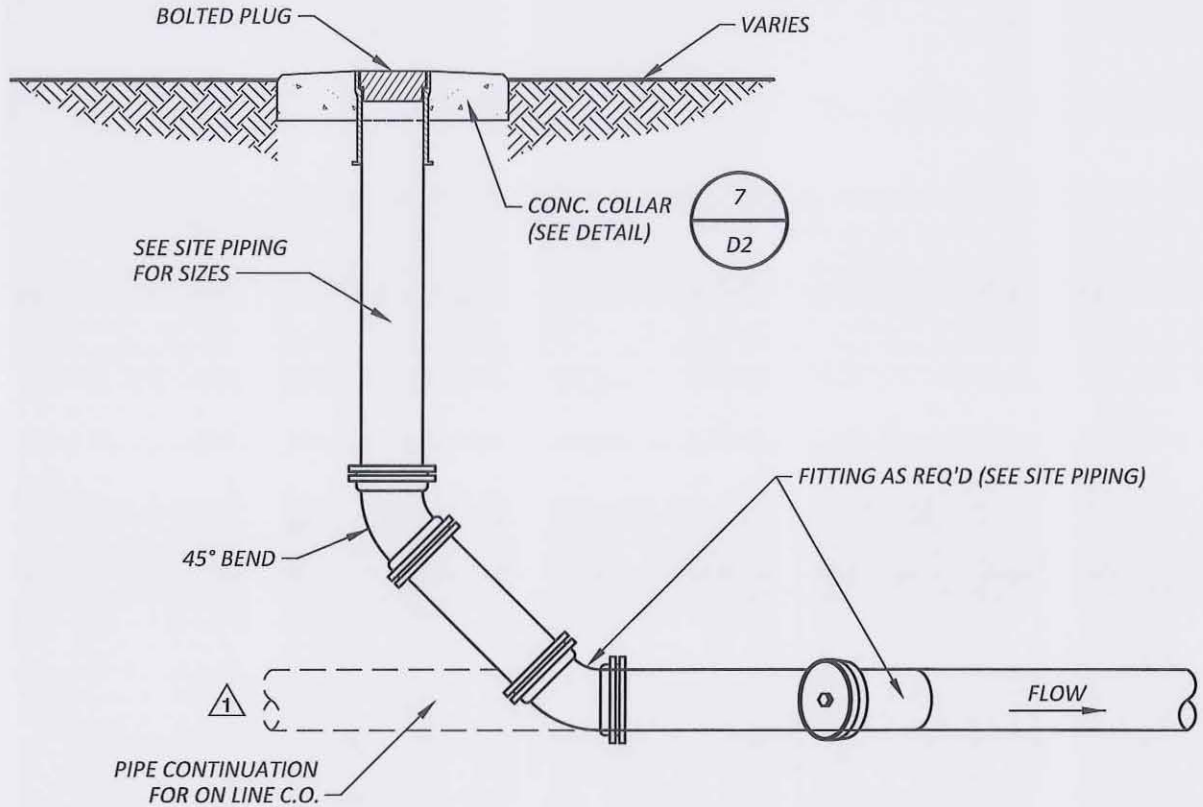
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WTP BACKWASH SOLIDS HANDLING
CITY OF HAVELOCK
 CRAVEN COUNTY NORTH CAROLINA

| | | | | |
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| Project # | 2015020 | Draft | JIM | Sheet No. |
| Drawing # | W-3642 | Check | GVS | C2 |
| Scale: | AS NOTED | Date: | 1-23-17 | |



6 CLEAN-OUT (EXTERIOR)
 N.T.S.
 SS-2B

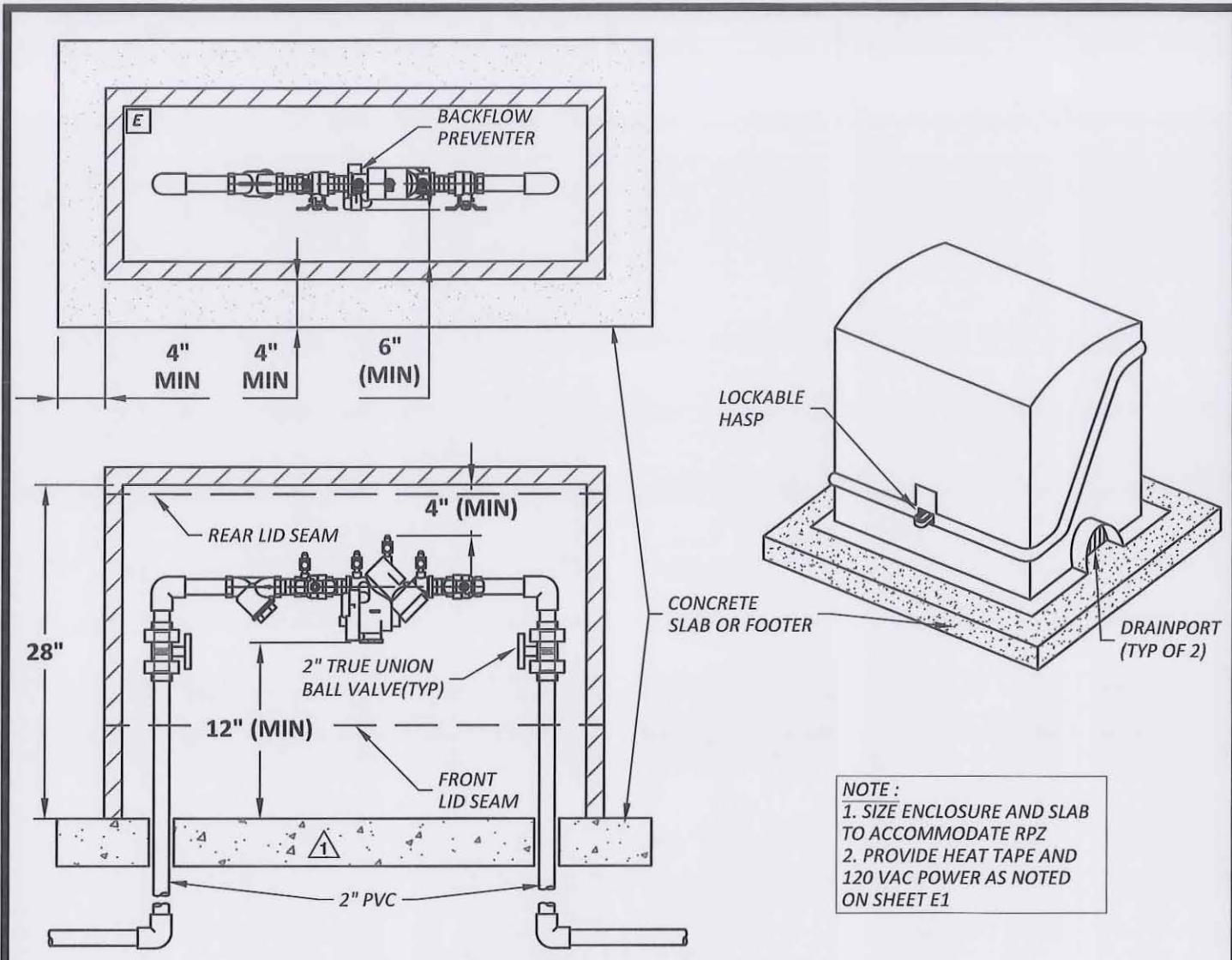
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| 1 | ADDENDUM NO. 1 | 2/2/17 | GVS |
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MISCELLANEOUS DETAILS
 WTP BACKWASH SOLIDS HANDLING
CITY OF HAVELOCK
 CRAVEN COUNTY NORTH CAROLINA

| | | | | |
|-----------|-----------------|-------|---------------|-----------|
| Project # | 2015020 | Draft | JIM | Sheet No. |
| Drawing # | W-3642 | Check | GVS | D4 |
| Scale: | AS NOTED | Date: | 2/2/17 | |



7 RPZ AND ENCLOSURE
 N.T.S. W-48A

NOTE :
 1. SIZE ENCLOSURE AND SLAB TO ACCOMMODATE RPZ
 2. PROVIDE HEAT TAPE AND 120 VAC POWER AS NOTED ON SHEET E1

| 1 | ADDENDUM NO. 1 | 2/2/17 | GVS |
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| REV. | DESCRIPTION | DATE | BY |


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|-----------|-----------------|-------|---------------|-----------|
| Project # | 2015020 | Draft | JIM | Sheet No. |
| Drawing # | W-3642 | Check | GVS | D4 |
| Scale: | AS NOTED | Date: | 2/2/17 | |

Appendix A

GeoTechnologies Report of Subsurface Investigation

July 18, 2016

July 18, 2016

Mr. Frank Bottorff
CITY OF HAVELOCK
PO Box 368
Havelock, NC 28532

Re: Report of Subsurface Investigation
Proposed Havelock Water Treatment Plant Upgrades
Havelock, North Carolina
GeoTechnologies Project No. 1-15-0915-EA

Dear Mr. Bottorff:

GeoTechnologies, Inc. has completed the authorized subsurface investigation to evaluate foundation support considerations for structures associated with the upgrades to the water treatment plant in Havelock, North Carolina. Subsurface conditions at the site were investigated by drilling 7 soil test borings in the approximate locations shown on the attached Figure 1. The proposed boring B-3 fell under overhead power lines and could not be completed. Borings at the site were located in the field by measuring off existing buildings and fences shown on the provided site plan and those locations should be considered approximate. The borings were advanced to depths of about 15 to 60 feet below existing grade utilizing rotary mud drilling techniques. Soils were sampled at selected intervals using standard penetration test procedures designated in ASTM D-1586. This report presents the findings of the investigation and our recommendations for site grading and foundation support.

SITE AND PROJECT INFORMATION

The project site is located at 601 Webb Boulevard in Havelock, North Carolina. The site is located immediately adjacent to, and west of the existing Havelock water treatment plant. The site is occupied by an existing building which we understand will be torn down. Outside of the building area, the northern portion of the site is comprised of a paved asphalt parking lot and the southern portion of the site consists of grass lawn areas.

The proposed project will involve construction of new upgrades to the existing water treatment plant. The upgrades will include a new 60 foot diameter waste settling basin tank, a new pad mounted suction lift pump station, six sludge drying beds and a filtrate pump station. The waste holding tank will likely bear relatively near existing grade and the filtrate pump station will be embedded about 10 to 12 feet below grade. The sludge drying beds will be constructed primarily below grade with about 18 inches of sludge expected to be retained by concrete walls above grade. The heaviest structure will be the waste settling basin tank which will be a prestressed concrete tank with a side wall depth of 20.5 feet. The side water depth is expected to be 19 feet. The tank will have a sloped floor and the center of the tank will have a water depth of 22.5 feet. The tank edges are expected to be embedded about 5 feet below grade. The remainder of the structures are expected to be relatively light.

SUBSURFACE CONDITIONS

A generalized subsurface profile prepared from the test boring data is attached to this report as Figure 2 to graphically illustrate subsurface conditions encountered at this site. More detailed descriptions of the conditions encountered at the individual test boring locations are then presented on the attached test boring records.

Subsurface conditions on the site were characterized by near surface asphalt and stone or topsoil which generally extended to about 3 to 6 inches below existing grade. The topsoil and pavement section was typically underlain by near surface silty and clayey sand. Penetration resistances ranged from 0 to 16 blows per foot (bpf). The sand extended to the 60 foot boring termination depth with occasional zones of clays dispersed throughout the boring depths.

Groundwater levels were encountered at depths of 3 to 8 feet below existing grade. However, regional groundwater levels can fluctuate with seasonal and climatic changes and may be different at other times.

RECOMMENDATIONS

The following recommendations are made based upon a review of the attached test boring data, our understanding of the proposed construction, and past experience with similar projects and subsurface conditions. Should existing plans change significantly from those now under consideration, we would appreciate being provided with that information so that these recommendations may be confirmed, extended, or modified as necessary. Additionally, should subsurface conditions adverse to those indicated by this report be encountered during construction, those differences should be reported to us for review and comment.

Site Grading Considerations. The first step in site preparation should involve demolition of the existing building and removal of all foundations, vegetation and topsoil from beneath proposed structure locations. Generally, we anticipate topsoil thicknesses will be on the order of 6 inches. Following stripping operations, we recommend that those areas which will be constructed at grade or receive structural fill be proofrolled with a partially loaded dump truck. Any areas which rut or pump under the action of the dump truck should be repaired by discing, drying, and recompacting the near surface soils or by undercutting and replacing the soils with structural fill as directed by the geotechnical engineer. Since the near surface soils are moisture sensitive, the need for repairs can be minimized by grading the site during periods of extended drier and warmer weather. Grading the site during the cooler winter months of the year will likely result in higher near surface moisture contents which will increase the need for subgrade repairs.

Following repair of the exposed subgrade, any additional fill required to achieve desired grades can be placed. We recommend that any fill imported to the site consist of clean to silty and clayey sands with Unified Soil Classifications of SP, SM and SC. All fill material placed beneath structures or pavements should be compacted to a minimum of 95% of the standard Proctor maximum dry density except in the final 12 inches where compaction should be increased to 98% of the maximum dry density. Additionally, moisture contents should be maintained at +/- 2 percent of optimum moisture to facilitate compaction and to maintain stability of the fill section.

Below Grade Construction. We anticipate that some of the structures will be constructed partially below grade. Due to the high groundwater conditions and the sandy nature of the subsurface soils, we anticipate that

some dewatering may be required. Shallow excavations that encounter groundwater can likely be dewatered using pumps and sumps placed within the excavation. If deeper excavations are proposed we recommend that consideration be given to dewatering with closely spaced well points. We recommend that design of the dewatering system be left as a responsibility of the contractor.

Below grade structures should be designed to resist earth pressures assuming a triangular lateral earth pressure distribution computed based on an equivalent fluid pressure of 50 pcf above the groundwater table and 85 pcf below the groundwater table. Groundwater was encountered at depths of 3 to 8 feet below existing grade.

We recommend that all below grade structures be designed to resist hydrostatic uplift pressures including when the structures are emptied for maintenance. Hydrostatic uplift can be resisted by increasing the size of the base slabs to engage additional weight of soil or by installing some type of anchor. Helical anchors or grouted anchors would be well suited for this application.

Foundation Support Considerations. Foundation support recommendations have been broken down in various sections to address the different structures which will be constructed at the site.

Filtrate Pump Station. The filtrate pump station will have an invert about 10 to 12 feet below existing grade. As such, the structure weight will be compensated by removal of soil weight to achieve invert depth. The exposed soils will consist of loose sands and dewatering will be required to building the structure. The soils will have an allowable bearing capacity of 2,500 psf and settlements are expected to be negligible. The structure will need to be designed to resist uplift from buoyancy of the structure assuming that groundwater could approach the surface during heavy storm events. This could be achieved through dead weight of the structure, extending out the foundation base to engage addition over burden soil weight (use buoyant weight of 50 pcf), or using some type of anchor such as helical anchors.

Sludge Pump Station. It is our understanding that the sludge pump station will be supported on a new surface slab on grade. We expect that the slab will be lightly loaded. Due to the presence of overhead power lines a boring could not be completed at this location and the subgrades will need to be evaluated by an engineer at the time of construction. Based on conditions encountered in the nearby boring B-2 at the waste settling tank soils will likely consist of very loose to loose sands or soft clay. Depending on the consistency of subgrades some repairs could be required; however, this will have to be determined at the time of construction.

Waste Settling Basin Tank. We understand that the waste sludge tank will be prestressed concrete tank with a side wall depth of 20.5 feet. The side water depth is expected to be 19 feet. The tank will have a sloped floor and the center of the tank will have a water depth of 22.5 feet. The diameter will be 60 feet. We understand that the tank will likely be embedded about 5 feet below existing grade. Due to the very loose soils to a depth of 8 feet in B-1 there will be a need to remove any excessively loose soils and recompact or replace them with compacted fill or washed stone. If compacted fill if used the material will need to be compacted to 95% of the standard Proctor maximum dry density. Following these repairs, wall foundations can be designed for a contact pressure of 2,500 psf and our our calculations indicate that the structure will likely settle approximately 1 ¾ inches in the center with edge settlements of less than 1 inch.

Dewatering may be required to facilitate construction. Additionally, it will likely be necessary to place 12 to 18 inches of stone under the tank slab to provide a stable working surface for construction of the tank foundation. As discussed for the filtrate pump station, the structure will need to be designed to resist uplift from buoyancy of the structure assuming that groundwater could approach the surface during heavy storm events. We understand that this will be achieved with pressure relief valves placed in the tank bottom. If the washed stone under the tank is tied to a manhole structure the stone could be dewatered during tank maintenance to prevent activation of the relief valves.

Sand Drying Beds. We understand that the sludge drying beds will be constructed primarily below grade with an invert depth of about 6 feet. Soils at bearing elevation for the concrete side walls are expected to consist of loose to medium dense sands. We recommend designing the wall foundations for a contact pressure of 2,500 psf. The majority of the structure weight will be compensated due to construction of the structure below grade. Weight of the 18 inches of sludge expected above grade will likely result in a total settlement of the structure of less than one inch.

Miscellaneous Considerations. During excavation for structures on the site, we recommend utilizing a temporary side slope of no steeper than 1.5H:1V and we recommend that excavations be monitored on a daily basis by qualified personnel. All OSHA regulations should be strictly adhered to when employees are working in below grade excavations. Since groundwater is relatively shallow on the site, we anticipate that it may be necessary to overexcavate approximately 12 inches followed by placement of uniformly graded washed #57 or #67 stone to provide a stable surface for construction of the deeper slab foundations. Excavation to final subgrade and placement of the stone will likely have to be accomplished in short sections to prevent excessive softening of the bottom for structures extending below the groundwater level.

Seismic Design Considerations. Based on the results of the test borings this site is a seismic site class “E” under the building code, excluding liquefaction. However, the profile includes zones of very loose sand which are subject to liquefaction during the design seismic event indicating that the site is technically an “F”. This indicates that during the design earthquake event (Charleston, SC) which is predicted to occur with a 2% probability in a 50 year period (return period of approximately 2,500 years), that some of the sands may liquefy. During liquefaction, pore pressures within the sands increase resulting in subsequent densification of those sands which causes settlement. Liquefaction also temporarily significantly reduces the shear strength of the impacted sands such that the load carrying capacity (bearing capacity) of foundations may be impacted.

Based on a review of the Building Code and past correspondence with personnel at the Department of Insurance, mitigation is only mandatory for structures in Seismic Design Categories D, E, and F. We have not been provided with the Seismic Design Category for this particular site; however, if the site is not a Category D, E, or F, the owner can decide whether or not to mitigate for liquefaction. If the owner elects to proceed with construction without provisions for liquefaction, he should be aware that the building may be damaged should a strong seismic event occur which results in liquefaction. The literature suggests that very large earthquakes such as the Charleston event will occur about every 2,500 years; however, that is a number based on probability and the reoccurrence interval could be much shorter. If the owner is compelled or elects to mitigate against liquefaction, potential options include, vibro-replacement, earthquake drains, and chemical stabilization. Liquefaction mitigation is typically performed by design and install specialty contractors.

Town of Havelock

Re: Proposed Havelock Water Treatment Plant Upgrades

July 18, 2016

Page: 5

If liquefaction is not mitigated, the building code includes the provision that structures with a fundamental period of vibration of 0.50 seconds or less may be designed using the class determined in the absence of liquefaction (Class E). As such, if the period of the structures is 0.50 seconds or less, a site class of E may be used for seismic design. If the period is higher, a site specific analysis to determine seismic design parameters is required. We can provide a site specific analysis should it be needed.

GeoTechnologies, Inc. appreciates the opportunity to be of service on this phase of the project. Please contact us if you have any questions concerning this letter or if we may be of additional service on this or other projects.

Sincerely,

GeoTechnologies, Inc.



David L. Israel, P.E.

NC Registration No. 14319



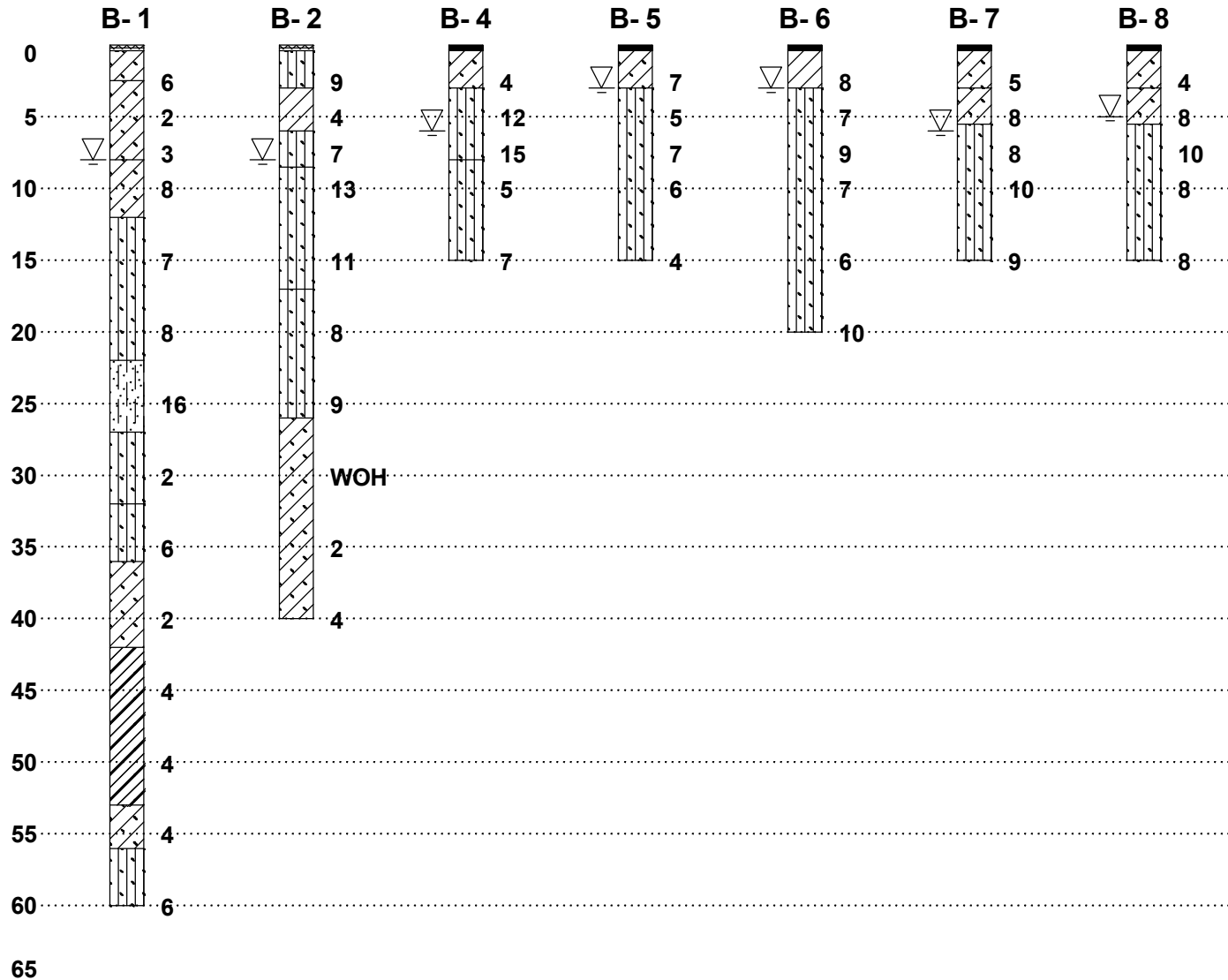
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Attachments











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Depth (Feet)

GENERALIZED SUBSURFACE PROFILE

LEGEND



-  Asphalt
-  CABC Stone
-  Clayey Sand
-  Silty Sand
-  Poorly-graded Sand with Silt
-  Moderate Plasticity Clay
-  Low Plasticity Clay
-  Topsoil
-  8 Standard Penetration Resistance
-  Groundwater at Time of Boring

PROJECT:
 Havelock WTP Upgrades
 Havelock, North Carolina



SCALE: As Shown
JOB No: 1-15-0915-EA
FIGURE No: 2
 ADDENDUM 2-53 of 94

TEST BORING RECORD

| DEPTH (FT.) | DESCRIPTION | ELEVATION (FT.) | PENETRATION (BLOWS/FT.) | BLOWS PER SIX INCHES |
|----------------|---|--------------------|------------------------------|-------------------------|
| | | | 0 10 20 40 60 100 | |
| 0.0 | Asphalt | SC | | |
| 0.2 | CABC Stone | SC | | |
| 0.4 | Loose Dark Brown Clayey Silty Fine SAND w/Organics | SC | ● | 5-3-3 |
| 2.5 | | | ● | 2-1-1 |
| 8.0 | Very Loose Dark Brown to Gray Clayey Fine SAND | SC | ● | 1-1-2 |
| | Loose Gray Clayey Fine SAND | | ● | 3-4-4 |
| 12.0 | Loose Gray Silty Fine to Medium SAND | SM | ● | 3-4-3 |
| | | | ● | 2-4-4 |
| 22.0 | | | ● | 6-9-7 |
| 27.0 | Very Loose Gray Silty Fine to Medium SAND | SM | ● | 1-1-1 |
| 32.0 | Loose Gray Silty Fine SAND | SM | ● | 6-4-2 |
| 36.0 | Very Loose Gray Clayey Fine SAND w/Shell Fragments | SC | ● | 1-1-1 |
| 42.0 | | | ● | 3-2-2 |
| | Soft Gray Silty CLAY w/Shell Fragments | CL CH | ● | 2-2-2 |
| 53.0 | | | ● | 2-2-2 |
| 56.0 | Very Loose Gray Clayey Fine to Medium SAND w/Shell Fragments | SC | ● | 2-2-2 |
| | Loose Gray Silty Fine to Medium SAND w/Shell Fragments | SM | ● | 2-3-3 |
| 60.0 | Boring terminated at 60' | | ● | |

GTL_MAIN 150915.GPJ GTL.GDT 1/18/16

Groundwater encountered at 8' at time of boring.

JOB NUMBER 1-15-0915-EA
BORING NUMBER B- 1
DATE 1-11-16



TEST BORING RECORD

| DEPTH (FT.) | DESCRIPTION | ELEVATION (FT.) | PENETRATION (BLOWS/FT.) | BLOWS PER SIX INCHES |
|----------------|---|--------------------|------------------------------|-------------------------|
| 0.0 | | | 0 10 20 40 60 100 | |
| 0.2 | Asphalt | | | |
| 0.4 | CABC Stone | | | |
| 3.0 | Loose Brown Silty Fine to Medium SAND | | ● | 5-4-5 |
| 6.0 | Soft Brown Fine Sandy Silty CLAY w/Organic Traces | | ● | 2-2-2 |
| 8.5 | Loose Light Brown Silty Fine SAND | | ● | 3-3-4 |
| | Medium Dense Brown to Gray Silty Fine SAND | | ● | 3-6-7 |
| 17.0 | Loose Dark Gray Silty Fine to Medium SAND | | ● | 6-5-6 |
| | | | ● | 3-4-4 |
| 26.0 | Very Loose Dark Gray Clayey Fine to Medium SAND | | ● | 4-5-4 |
| | | | ● | WOH |
| | | | ● | 1-1-1 |
| 40.0 | Boring terminated at 40' | | ● | 1-1-3 |

▽

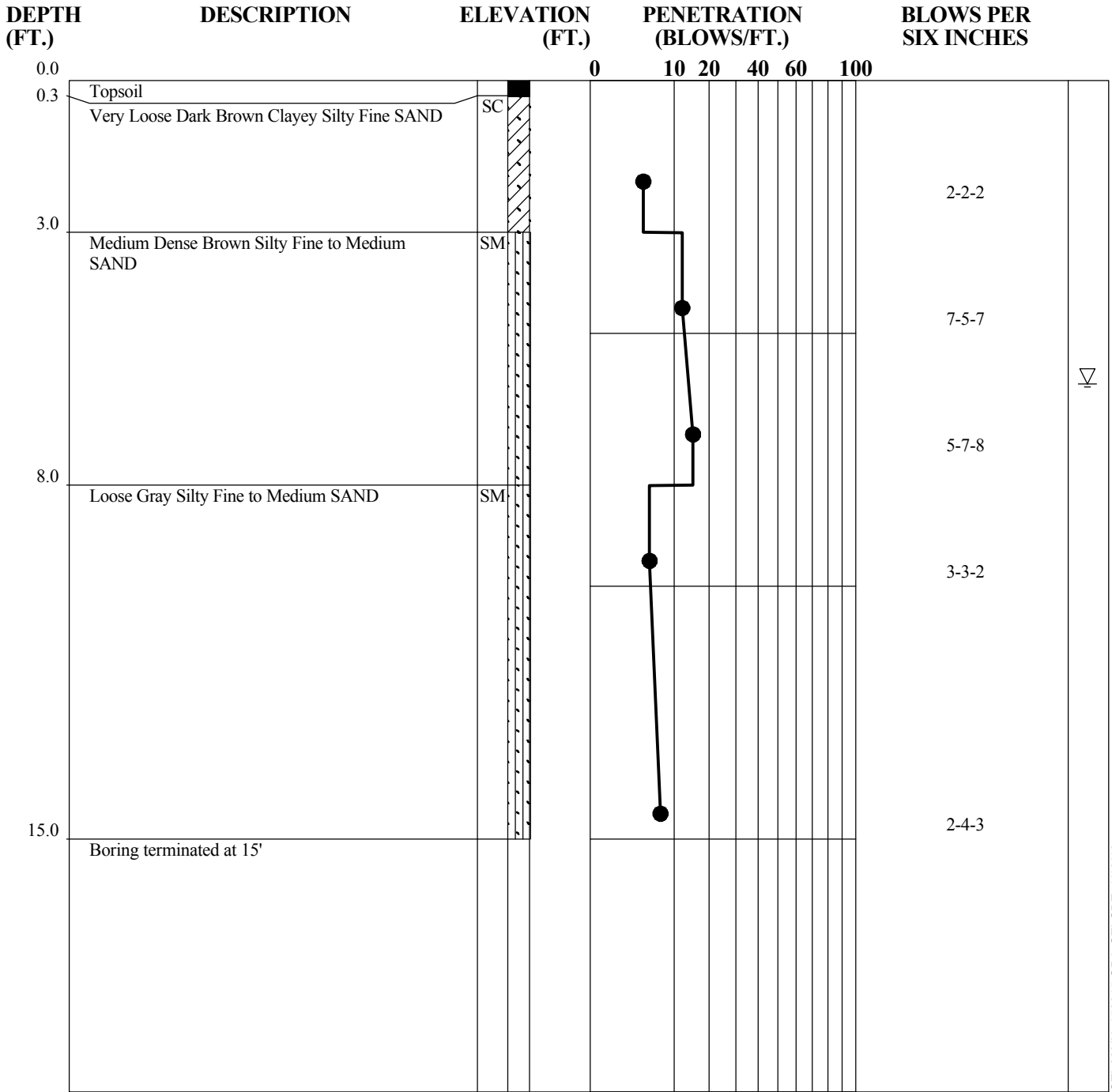
GTL_MAIN 150915.GPJ GTL.GDT 1/18/16

Groundwater encountered at 8' at time of boring.

JOB NUMBER 1-15-0915-EA
BORING NUMBER B- 2
DATE 1-11-16



TEST BORING RECORD



GTL_MAIN 150915.GPJ GTI.GDT 1/18/16

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-15-0915-EA
BORING NUMBER B- 4
DATE 1-11-16



TEST BORING RECORD

| DEPTH (FT.) | DESCRIPTION | ELEVATION (FT.) | PENETRATION (BLOWS/FT.) | BLOWS PER SIX INCHES |
|----------------|-------------------------------------|--------------------|------------------------------|-------------------------|
| 0.0 | | | 0 10 20 40 60 100 | |
| 0.3 | Topsoil | | | |
| | Loose Black Clayey Silty Fine SAND | SC | ● | 3-3-4 |
| 3.0 | Loose Brown to Gray Silty Fine SAND | SM | ● | 3-2-3 |
| | | | ● | 4-4-3 |
| | | | ● | 2-3-3 |
| 15.0 | Boring terminated at 15' | | ● | 2-2-2 |

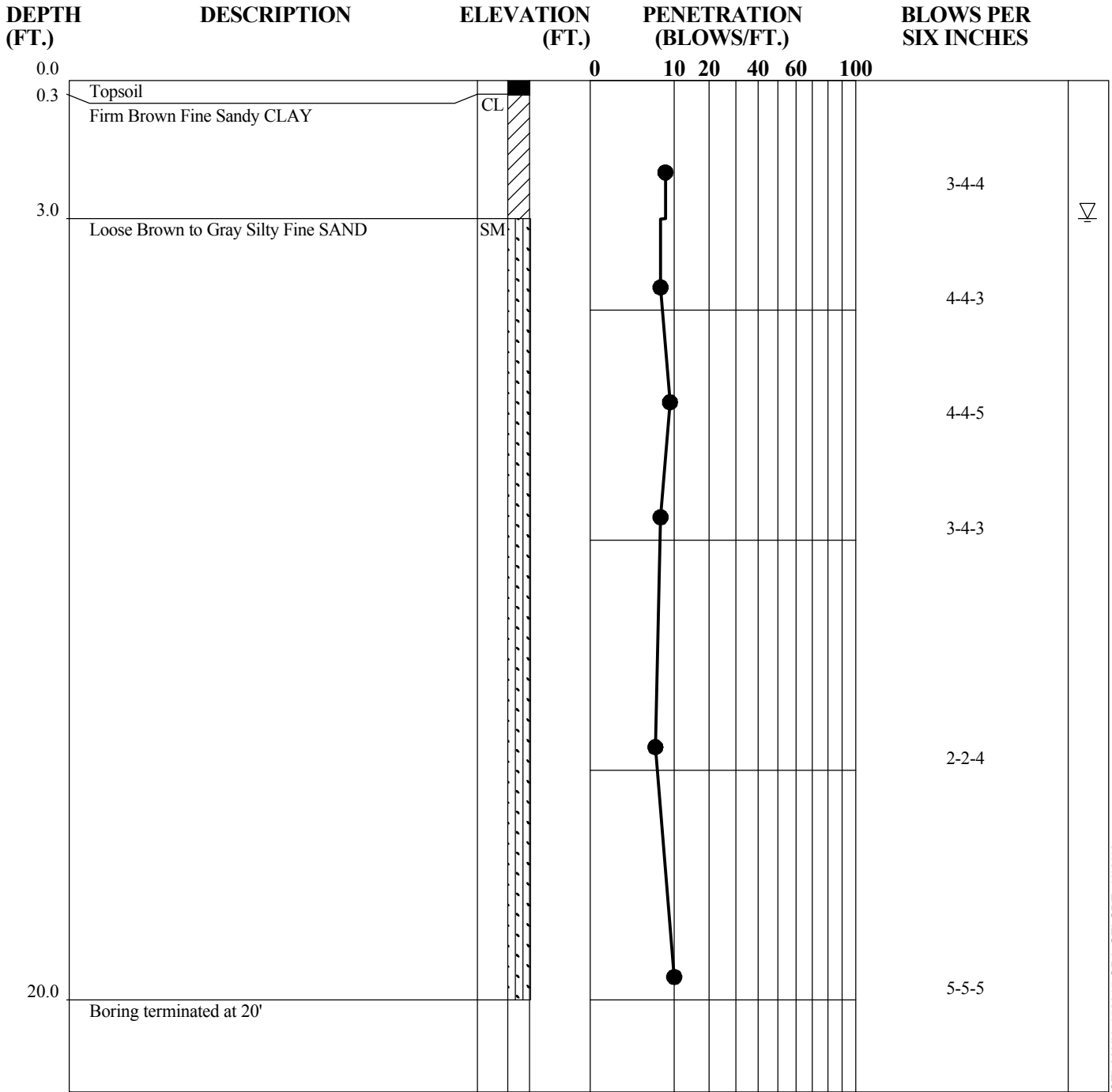
GTL_MAIN 150915.GPJ GTI.GDT 1/18/16

Groundwater encountered at 3' at time of boring.

JOB NUMBER 1-15-0915-EA
BORING NUMBER B- 5
DATE 1-11-16



TEST BORING RECORD



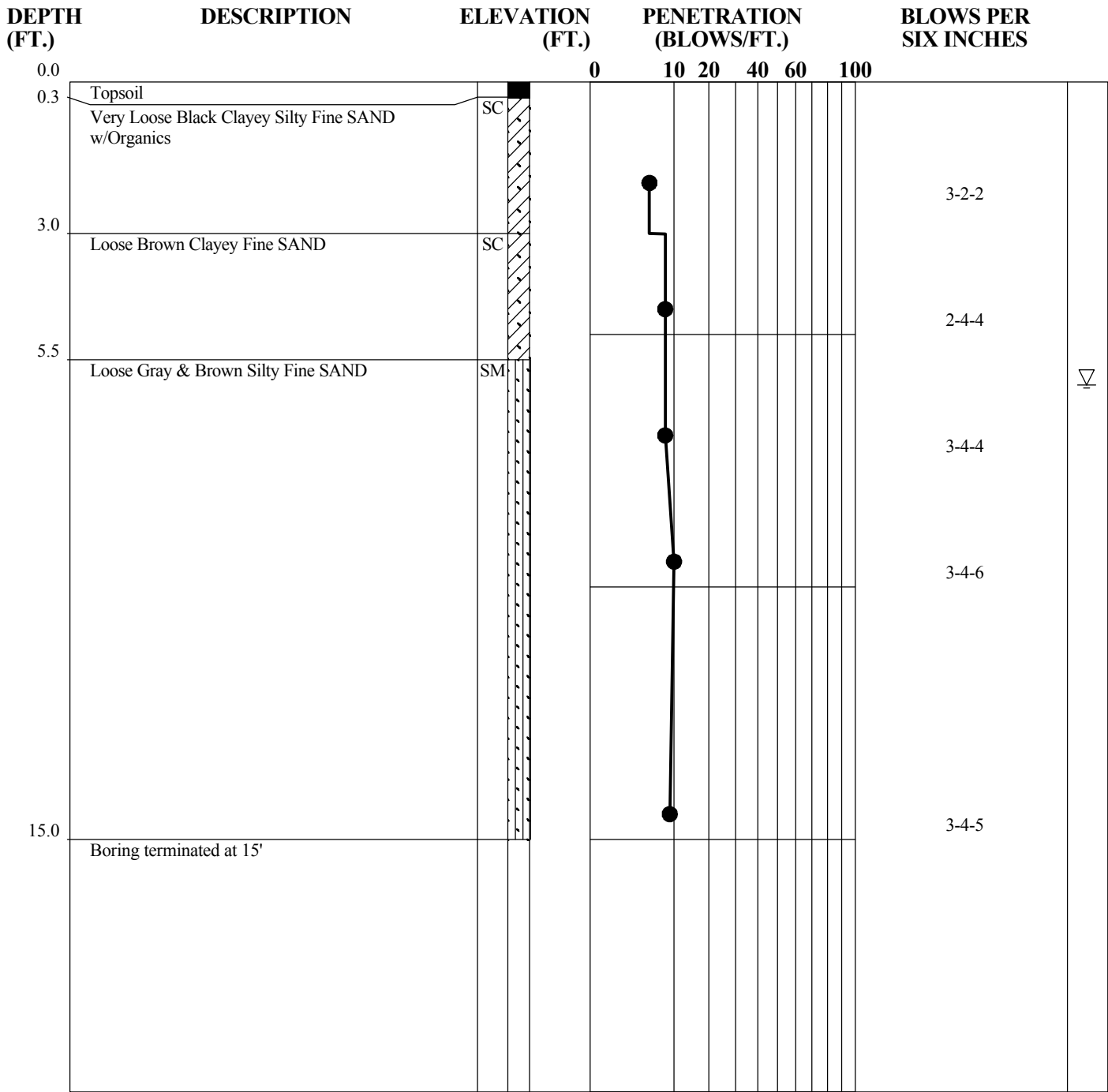
GTL_MAIN 150915.GPJ GTL.GDT 1/18/16

Groundwater encountered at 3' at time of boring.

JOB NUMBER 1-15-0915-EA
BORING NUMBER B- 6
DATE 1-11-16



TEST BORING RECORD



GTL_MAIN 150915.GPJ GTL.GDT 1/18/16

Groundwater encountered at 6' at time of boring.

JOB NUMBER 1-15-0915-EA
BORING NUMBER B- 7
DATE 1-11-16



TEST BORING RECORD

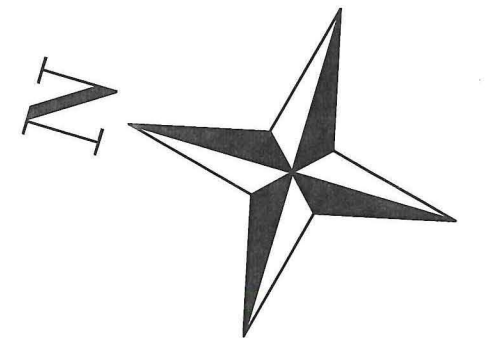
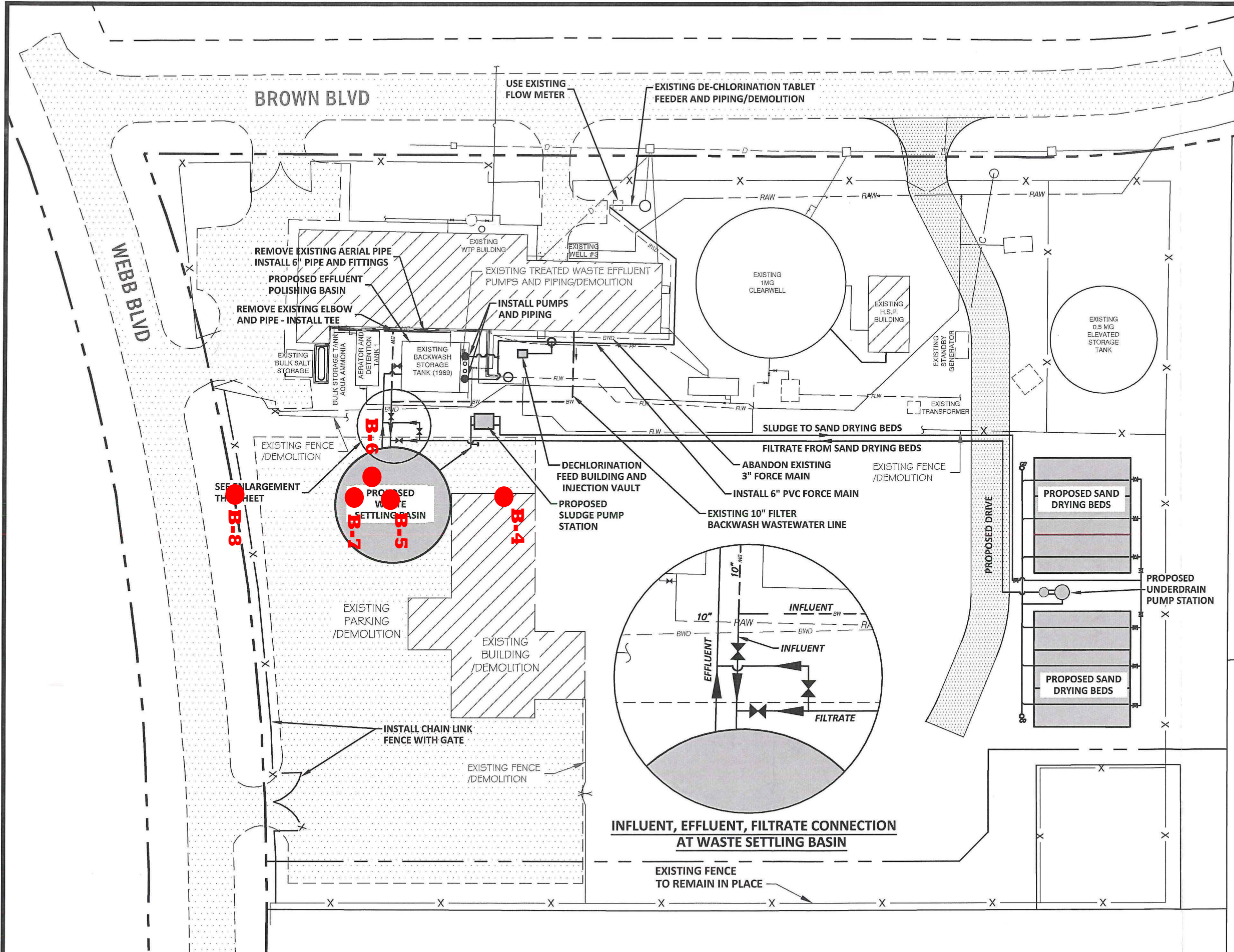
| DEPTH (FT.) | DESCRIPTION | ELEVATION (FT.) | PENETRATION (BLOWS/FT.) | BLOWS PER SIX INCHES |
|----------------|---|--------------------|------------------------------|-------------------------|
| 0.0 | | | 0 10 20 40 60 100 | |
| 0.3 | Topsoil | | | |
| | Very Loose Black Clayey Silty Fine SAND w/Organics | SC | ● | 3-2-2 |
| 3.0 | Loose Brown Clayey Fine SAND | SC | ● | 2-3-5 |
| 5.5 | Loose Brown to Gray Silty Fine SAND | SM | ● | 4-4-6 |
| | | | ● | 2-3-5 |
| 15.0 | Boring terminated at 15' | | ● | 3-4-4 |

GTL_MAIN 150915.GPJ GTI.GDT 1/18/16

Groundwater encountered at 5' at time of boring.

JOB NUMBER 1-15-0915-EA
BORING NUMBER B- 8
DATE 1-11-16





**CITY OF
HAVELOCK WTP**

**CONCEPTUAL
BACKWASH SOLIDS
HANDLING FACILITIES**

FIGURE No. 2.4

NC License: F-0334

Rivers
& ASSOCIATES, INC.

riversandassociates.com Since 1918

107 East Second Street
Greenville, NC 27858
(252) 752-4135

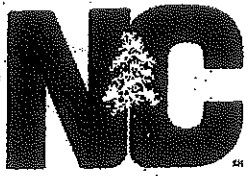
Engineers
Planners
Surveyors
Architects

FIGURE 1

Appendix B

Erosion & Sedimentation Control Plan

October 27, 2016



Energy, Mineral
and Land Resources
ENVIRONMENTAL QUALITY

RECEIVED OCT 31 2016

PAT MCCRORY

Governor

DONALD R. VAN DER VAART

Secretary

TRACY DAVIS

Director

October 27, 2016

LETTER OF APPROVAL WITH GUIDELINES

City of Havelock
ATTN: Mr. Frank Bottorff, City Manager
Post Office 368
Havelock, North Carolina 28532

RE: Erosion and Sedimentation Control Plan No. Crave-2017-009
Project Name: Havelock WTP Backwash Solids Handling
Location: Webb Boulevard County: Craven
River Basin: Neuse
Date Received by LQS: September 28, 2016
Acres Approved: 2.6 Project Type: New
Project Description: Land disturbance associated with the upgrading of an existing water treatment plant, as shown on the plans received by this office on September 28, 2016 and October 25, 2016.

Dear Sir:

This office has reviewed the subject erosion and sedimentation control plan. We find the plan to be acceptable and hereby issue this Letter of Approval (NOTE: Attached is a list of guidelines and statutory requirements for conducting land disturbance activities). This plan approval shall expire three (3) years following the date of approval, if no land-disturbing activity has been undertaken, as required by 15A NCAC 4B.0129, unless modified by other legislation.

Please be advised that 15A NCAC 4B.0118(a) requires that a copy of the approved erosion and sedimentation control plan be on file at the job site. Also, you should consider this letter as giving the Notice required by G.S. 113A-61.1(a) of our right of periodic inspection to ensure compliance with the approved plan.

North Carolina's Sedimentation Pollution Control Program is performance oriented, requiring protection of existing natural resources and adjoining properties through the use of reasonable and appropriate Best Management Practices throughout the course of the project. If, following the commencement of this project, it is determined that the erosion and sedimentation control plan is inadequate to meet the requirements of the Sedimentation Pollution Control Act of 1973 (G.S. 113A-51 through 66), this office may require revisions to the plan and implementation of the revisions to ensure compliance with the Act.

Acceptance and approval of this plan is conditioned upon your compliance with Federal and State water quality laws, regulations and rules. In addition, local city or county ordinances or

City of Havelock
ATTN: Mr. Frank Bottorff, City Manager
October 27, 2016
Page 2

rules may also apply to this land-disturbing activity. This approval does not supersede any other permit or approval.

Please note that this approval is based in part on the accuracy of the information provided in the Financial Responsibility/Ownership Form, which you have submitted. You are required to file an amended form if there is any change in the information included on the form. NOTE: Neither this approval nor the financial responsibility/liability cited in it automatically transfer with a change in project ownership. In addition, 15A NCAC 4B.0127(c) requires that you notify this office of the proposed starting date for this project (using the enclosed Project Information Sheet). Please notify us if you plan to have a preconstruction conference.

Please be advised that a rule to protect and maintain existing buffers along watercourses in the Neuse River Basin became effective on July 22, 1997. The Neuse River Riparian Area Protection and Maintenance Rule (15A NCAC 2B.0233) applies to the 50-foot wide zone directly adjacent to surface waters (intermittent streams, perennial streams, lakes, ponds, and estuaries) in the Neuse River Basin. For more information about this riparian area rule, please contact the Division of Water Resources Wetland/401 Unit at 919-807-6300, or DWR in our regional office at 252-946-6481.

Please be aware that your project will be covered by the enclosed NPDES General Stormwater Permit NCG010000 (Construction Activities). You should first become familiar with all of the requirements for compliance with the enclosed permit.

Sincerely,



Richard Peed, CPESC
Regional Engineering Associate

Enclosures

cc w/o enc: Andrew T. Mitchell, E.I., Rivers & Associates, Inc.
WaRO Surface Water Operation Section Supervisor, Division of Water Resources

1. **AS THE DECLARED RESPONSIBLE PARTY, YOUR LEGAL RESPONSIBILITY** is to understand the Act and comply with the following minimum requirements of the Act:
 - A. In the event of a conflict between the requirements of the Sedimentation Pollution Control Act, the submitted plan and/or the contract specifications, the more restrictive requirement shall prevail;
 - B. The land-disturbing activity shall be conducted in accordance with the approved erosion and sedimentation control plan;
 - C. The **LATEST APPROVED** erosion and sediment control plan will be used during periodic unannounced inspections to determine compliance and a copy of the plan must be on file at the job site. If it is determined that the implemented plan is inadequate, this office may require the installation of additional measures and/or that the plan be revised to comply with state law;
 - D. All revisions, including those required by other local, state or federal agencies, which affect site layout, drainage patterns, limits of disturbance and/or disturbed acreage must be submitted to this office for approval a minimum of 15 days prior to the start of construction;
 - E. Revisions exceeding the approved scope of this project without prior approval of the plan showing the changes can be considered a violation. Failure to comply with any part of the approved plan or with any requirements of this program could result in appropriate legal action (civil or criminal) against the financially responsible party. Legal actions include Stop Work Orders and the assessing of a civil penalty of up to \$5000 for the initial violation plus an additional penalty of up to \$5000 per day for each day the site is out of compliance;
 - F. The **CERTIFICATE OF PLAN APPROVAL** must be posted at the primary entrance to the job site and remain until the site is permanently stabilized;
 - G. In cases of natural disaster related changes to the proposed land disturbing activity, all appropriate actions and adequate measure installations may be performed to prevent sediment damage, prior to submitting and receiving approval of the revised plan. A revised plan must be submitted for approval as soon as possible, but no later than 15 days after all emergency actions have been performed;

- H. Erosion and sediment control measures or devices are to be constructed and/or installed to safely withstand the runoff resulting from a 10 year storm event (25 year storm event in High Quality Zones). The 10 year storm event is generally equivalent to a storm producing 6.5 - 7 inches of rain in 24 hours or at the rate of 6.5 - 7 inches of rain in 1 hour, depending on the location of the project within the region;
- I. No earthen material is to be brought on or removed from the project site, until the off-site borrow and/or disposal sites are identified as part of the erosion control plan. If an off-site borrow and/or disposal site is to be utilized, prior to the start of construction submit the name and identification number (E&SCP # or Mine Permit #) using the enclosed Project Information Sheet;
- J. Buffer zone, sufficient to restrain visible sedimentation within the 25% of the width closest to the land disturbance, must be provided and maintained between the land-disturbing activity and any adjacent property or watercourse;
- K. In order to comply with the intent of the Act, the scheduling of the land-disturbing activities is to be such that both the area of exposure and the time between the land disturbance and the providing of a ground cover is minimized;
- L. Unless a temporary, manufactured, lining material has been specified, a clean straw mulch must be applied, at the minimum rate of 2 tons/acre, to all seeded areas. The mulch must cover at least 75% of the seeded area after it is either tacked, with an acceptable tacking material, or crimped in place;
- M. New or affected cut or filled slopes must be at an angle that can be retained by vegetative cover, AND must be provided with a ground cover sufficient to restrain erosion within 21 calendar days of completion of any phase (rough or final) of grading (ANNUAL RYE GRASS IS NOT in the APPROVED seeding specifications NOR is it an ACCEPTABLE substitute for the providing of a temporary ground cover);
- N. A permanent ground cover, sufficient restrain erosion, must be provided within the shorter of 15 working or 90 calendar days (if in a High Quality Zone, the shorter of 15 working or 60 calendar days) after completion of construction or development on any portion of the tract (ANNUAL RYE GRASS IS NOT in the APPROVED seeding specifications NOR is it an ACCEPTABLE substitute for the providing of a nurse cover for the permanent grass cover);

- O. All sediment and erosion control details for this project must conform to the standards as shown in the current Erosion & Sediment Control Planning and Design Manual; these details must be utilized for construction and incorporated in the plan. The manual can be found online at <http://portal.ncdenr.org/web/tr/publications>
- 2. Adequate and appropriate measures must be properly installed downstream, within the limits of disturbance, of any land disturbing activity to prevent sediment from leaving the limits of disturbance, entering existing drainage systems, impacting an on-site natural watercourse or adjoining property.

PROJECT INFORMATION SHEET

APPROVAL DATE: October 27, 2016

RESPONSIBLE PARTY: City of Havelock

PROJECT NAME: Havelock WTP Backwash Solids Handling

COUNTY: Craven NO.: Crave-2017-009

OFF-SITE BORROW AND/OR DISPOSAL SITE: _____ NO.: _____

START-UP DATE: _____

CONTRACTOR: _____

ON-SITE CONTACT: _____

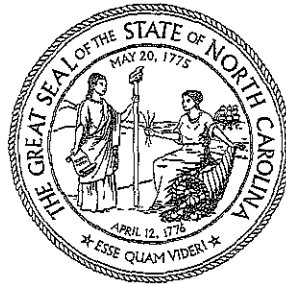
ON-SITE PHONE NO.: _____

OFFICE PHONE NO.: _____

**COMPLETE & RETURN THIS FORM
PRIOR TO THE START OF CONSTRUCTION TO:**

**N.C.D.E.N.R.
LAND QUALITY SECTION
ATTN: *Chris Pullinger*
943 WASHINGTON SQUARE MALL
WASHINGTON, NORTH CAROLINA 27889**

CERTIFICATE OF PLAN APPROVAL



The posting of this certificate certifies that an erosion and sedimentation control plan has been approved for this project by the North Carolina Department of Environmental Quality in accordance with North Carolina General Statute 113A – 57 (4) and 113A – 54 (d) (4) and North Carolina Administrative Code, Title 15A, Chapter 4B.0107 (c). This certificate must be posted at the primary entrance of the job site before construction begins and until establishment of permanent groundcover as required by North Carolina Administrative Code, Title 15A, Chapter 4B.0127 (b).

HAVLOCK WTP BACKWASH SOLIDS HANDLING

W50A BOULEVARD

Craven County

Project Name and Location

10/27/2016

Date of Plan Approval



Environmental
Quality

Samuel Dunbar, P.E.

Regional Engineer

CANE-2017-009

Appendix C

Stormwater Permit No. SW7011019 Modification

November 10, 2016



Energy, Mineral
and Land Resources
ENVIRONMENTAL QUALITY

PAT MCCRORY

Governor

DONALD R. VAN DER VAART

Secretary

TRACY DAVIS

Director

November 10, 2016

City of Havelock
Attn: Mr. Frank Bottorff
PO Box 368
Havelock, NC 28532

**Subject: Permit No. SW7011019 Modification
Water Treatment Plant - Havelock
Low Density Stormwater Project
Craven County**

Dear Mr. Bottorff:

The Washington Regional Office received a complete Stormwater Management Permit Modification Application for the Havelock Water Treatment Plant on September 29, 2016. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H.1000. We are forwarding Permit No. SW7011019 Modification dated November 10, 2016, for the construction of the subject project.

This permit replaces all previous stormwater permits for this site, and shall be effective until rescinded and shall be subject to the conditions and limitations as specified therein, and does not supercede any other agency permit that may be required.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 27699-6714. Unless such demands are made this permit shall be final and binding.

If you have any questions, or need additional information concerning this matter, please contact me at (252) 946-6481.

Sincerely,

Samir Dumpor, PE
Regional Engineer

cc: Rivers & Associates, Inc.
City of Havelock Inspections
Washington Regional Office

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF ENERGY, MINERAL AND LAND RESOURCES
STATE STORMWATER MANAGEMENT PERMIT
LOW DENSITY DEVELOPMENT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules and Regulations

PERMISSION IS HEREBY GRANTED TO

City of Havelock

Water Treatment Plant - Havelock

Craven County

FOR THE

construction, operation and maintenance of a low density development in compliance with the provisions of 15A NCAC 2H .1000 (hereafter referred to as the "stormwater rules") and the approved stormwater management plans and specifications, and other supporting data as attached and on file with and approved by the Division of Energy, Mineral and Land Resources and considered a part of this permit.

The permit replaces all previous stormwater permits for this site, and shall be effective from the date of issuance until rescinded and shall be subject to the following specific conditions and limitations:

I. DESIGN STANDARDS

1. This project involves 64,038 sf of existing impervious area; 23,723 sf to be removed; and 13,200 sf of new impervious area; for a total site built-upon area of 53,515 sf.
2. The overall tract built-upon area percentage for the project must be maintained at 30%, as required by Section .1005 of the stormwater rules.
3. Approved plans and specifications for projects covered by this permit are incorporated by reference and are enforceable parts of the permit.
4. The only runoff conveyance systems allowed will be vegetated conveyances such as swales with minimum side slopes of 3:1 (H:V) as defined in the stormwater rules and approved by the Division.
5. No piping is allowed except that minimum amount necessary to direct runoff beneath an impervious surface such as a road or to provide access.
6. Unless specified elsewhere, permanent seeding requirements for the swales must follow the guidelines established in the North Carolina Erosion and Sediment Control Planning and Design Manual.
7. Roof drains must terminate at least 50' from the Mean High Water line.

II. SCHEDULE OF COMPLIANCE

1. Projects covered by this permit will maintain a minimum 50' foot wide vegetative buffer between all impervious areas and surface waters.
2. The permittee is responsible for verifying that the proposed built-upon area does not exceed the allowable built-upon area.
3. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the Director that the changes have been made.
4. Prior to the subdivision and/or sale of this project, in whole or in part, the following deed restrictions must be recorded with the Office of the Register of Deeds:
 - a. The following covenants are intended to ensure ongoing compliance with State Stormwater Management Permit Number SW7011019 Modification, as issued by the Division of Energy, Mineral and Land Resources (DEMLR) under NCAC 2H.1000.
 - b. The State of North Carolina is made a beneficiary of these covenants to the extent necessary to maintain compliance with the Stormwater Management Permit.
 - c. These covenants are to run with the land and be binding on all persons and parties claiming under them.
 - d. The covenants pertaining to stormwater may not be altered or rescinded without the express written consent of the State of North Carolina, DEMLR.
 - e. Alteration of the drainage as shown on the approved plans may not take place without the concurrence of the DEMLR.
 - f. Construction of additional built-upon area in excess of 53,515 square feet will require a permit modification.
 - g. Construction of additional impervious areas such that low density requirements are no longer met must be submitted to DEMLR and a permit modification must be issued prior to construction. An engineered system will be required to collect and treat the runoff from all built-upon area associated with the project, including that area permitted under the low density option.
 - h. Filling in or piping of any vegetative conveyances (ditches, swales, etc.) associated with this development, except for average driveway crossings, is strictly prohibited by any persons.
 - i. A minimum 50-foot wide vegetated buffer area shall be provided between surface waters and all impervious surfaces.
5. A copy of the recorded restrictions must be received in this Office within 30 days of the date of sale.

6. Filling in or piping of any vegetative conveyances (ditches, swales, etc.) associated with the permitted development, except for average driveway crossings, is strictly prohibited by any persons.
7. The permittee shall submit to the Director and shall have received approval for revised plans, specifications, and calculations prior to construction, for any modification to the approved plans, including, but not limited to, those listed below:
 - a. Any revision to the approved plans, regardless of size.
 - b. Project name change.
 - c. Transfer of ownership.
 - d. Redesign or addition to the approved amount of built-upon area.
 - e. Further subdivision, acquisition, or sale of the project area. The project area is defined as all property owned by the permittee, for which Sedimentation and Erosion Control Plan approval was sought.
 - f. Filling in, altering or piping any vegetative conveyance shown on the approved plan.
8. Swales and other vegetated conveyances shall be constructed in their entirety, vegetated, and be operational for their intended use prior to the construction of any built-upon surface.
9. During construction, erosion shall be kept to a minimum and any eroded areas of the swales or other vegetated conveyances will be repaired immediately.
10. The permittee shall at all times provide the operation and maintenance necessary to operate the permitted stormwater management systems at optimum efficiency to include:
 - a. Inspections
 - b. Sediment removal.
 - c. Mowing, and revegetating of the side slopes.
 - d. Immediate repair of eroded areas.
 - e. Maintenance of side slopes in accordance with approved plans and specifications.
11. Within 30 days of completion of the project, the permittee shall certify in writing that the project has been constructed in accordance with the approved plans.
12. The permittee shall submit all information requested by the Director or his representative within the time frame specified in the written information request.

III. GENERAL CONDITIONS

1. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to an enforcement action by the (DEMLR) in accordance with North Carolina General Statutes 143-215.6A to 143-215.6C.
2. The permit issued shall continue in force and effect until revoked or terminated.
3. The permit may be modified, revoked and reissued or terminated for cause. The filing of a request for a permit modification, revocation and reissuance, or termination does not stay any permit condition.
4. The issuance of this permit does not prohibit the Director from reopening and modifying the permit, revoking and reissuing the permit, or terminating the permit as allowed by the laws, rules, and regulations contained in Title 15A of the North Carolina Administrative Code, Subchapter 2H.1000; and North Carolina General Statute 143-215.1 et. al.

5. This permit is not transferable except after notice to and approval by the Director. The Director may require modification or revocation and reissuance of the permit to change the name and incorporate such other requirements as may be necessary. A formal permit request must be submitted to the DEMLR accompanied by the appropriate fee, documentation from both parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits, and may or may not be approved. The permittee is responsible for compliance with all permit conditions until the Director approves the transfer.
6. The permittee grants permission to DEMLR Staff to enter the property for the purpose of inspecting all components of the stormwater management facility.
7. The permittee shall notify the Division of any name, ownership or mailing address changes within 30 days.
8. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state and federal) which have jurisdiction.

Permit issued this the 10th day of November, 2016

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION



----- for
Tracy E. Davis, PE, CPM, Director
Division of Energy, Mineral and Land Resources
By Authority of the Environmental Management Commission

Permit Number SW7011019 Modification

Appendix D

Havelock Land Clearing Permit

January 31, 2017



LAND CLEARING PERMIT

CITY OF HAVELOCK

Craven County, NC
Planning & Inspections Department
P.O. Drawer 368
Havelock, NC 28532-0368
(252) 444-6433

Project Permit Number: 20170281

ADDRESS: 527 WEBB BLVD

PARCEL NO.: 6-220-A -102

ZONING: HC

NUMBER OF UNITS:

ISSUED TO: RIVERS AND ASSOCIATES, INC.
107 EAST 2ND STREET

PERMIT DATE: 01/31/2017

EXPIRE DATE:

PERMIT TYPE: LAND CLEARING PERMIT

FEE: 0.00

PROJECT: LAND CLEARING PERMIT

EST. COST: 20000


STRUCTURE: 6-220-A AND 6-220-A -097 PARCEL ACREAGE 199,635 SQ FT, LAND DISTURBANCE 113,110

CONTRACTOR: RIVERS AND ASSOCIATES, INC.; 252-752-4135

SEE ATTACHED SHEET FOR REQUIRED INSPECTIONS.
CALL (252) 444-6433 TO SCHEDULE THESE INSPECTIONS.
A MINIMUM OF 24 HOURS ADVANCED NOTICE IS REQUIRED.

APPROVED BY:

DATE: 01/31/2017


Building Department

***This permit shall be posted on site where it is visible from the street.
All rubbish/debris shall be contained on site during construction & appropriately
disposed of by completion of project.***

Appendix E

Bulk Asbestos Analysis Phase I Re-Inspection

January 24, 2017

Bulk Asbestos Analysis

Date: 24 JAN 2017
 Project: CY 17 PHASE I, RE-INSPECTION
 Job # 601

Location: HAVELOCK, NC
 Building: 601 WEBB BLVD.

| Sample Number (Bldg. sample) | Sample Description/Location |
|---------------------------------|---|
| 601-01-01 | LINDLEUM TAN CABINET SMALL ADDITION |
| 601-01-02 | LINDLEUM TAN CABINET SMALL ADDITION |
| 601-02-01 | 12" FT TAN w/ TAN SPECKS STAGE ROOM |
| 601-03-01 | CEILING MATL MUD TROWLED ON STAGE ROOM |
| 601-04-01 | 12" FT WHITE w/ GRAY SPECKS w/ ADH STAGE |
| 601-04-02 | 12" FT WHITE w/ GRAY SPECKS w/ ADH STAGE |
| 601-03-02 | CEILING MATL MUD TROWLED ON STAGE ROOM |
| 601-05-01 | 12" FT BROWN w/ WHITE STREAKS w/ ADH OFFICE |
| 601-05-02 | 12" FT BROWN w/ WHITE STREAKS w/ ADH OFFICE |
| 601-03-03 | CEILING MATL MUD TROWLED ON OFFICE |
| 601-06-01 | DRYWALL CEILING OFFICE |
| 601-03-04 | CEILING MATL MUD TROWLED ON OFFICE |
| 601-06-02 | DRYWALL CEILING STAGE ROOM |
| 601-07-01 | JOINT MATL DRYWALL SEAM CEILING STAGE ROOM |
| 601-07-02 | JOINT MATL DRYWALL SEAM CEILING STAGE ROOM |

Notes 5 DAY TAT

| Relinquished by (Signature) | Date | Received by (Signature) | Company | Date |
|-----------------------------|------------------|-------------------------|---------|------|
| <u>Earl E. Bowers</u> | <u>25 JAN 17</u> | | | |
| | | | | |

Bulk Asbestos Analysis

Date: 24 JAN 2017
 Project: CY 17 PHASE I RE-INSPECTION
 Job # 601

Location: HAVELOCK, NC
 Building: 601 WEBB BLVD.

| Sample Number (Bldg. sample) | Sample Description/Location |
|---------------------------------|--|
| 601-08-01 | 12" FT BEIGE w/BEIGE SPECKS w/ADH KITCHEN |
| 601-08-02 | 12" FT BEIGE w/BEIGE SPECKS w/ADH KITCHEN |
| 601-07-03 | JOINT MAT'L DRYWALL NAIL WALL KITCHEN |
| 601-02-02 | 12" FT TAN w/TAN SPECKS w/ADH FRONT OFFICE |
| 601-07-04 | JOINT MAT'L DRYWALL NAIL WALL FRONT OFFICE |
| 601-06-03 | DRYWALL WALL FRONT OFFICE |
| 601-09-01 | LINOLEUM RESIDUAL TAN CLOSET MEN'S ROOM |
| 601-10-01 | PIPE WRAP TAR CLOSET MEN'S ROOM PIPE'S |
| 601-11-01 | CLOTH LAGGING CLOSET MEN'S ROOM PIPE'S |
| 601-10-02 | PIPE WRAP TAR CLOSET MEN'S ROOM PIPE'S |
| 601-11-02 | CLOTH LAGGING CLOSET MENS ROOM PIPE'S |
| 601-08-03 | 12" FT BEIGE w/BEIGE SPECKS w/ADH MEN'S ROOM |
| 601-05-03 | 12" FT BROWN w/WHITE STREAKS w/ADH (BLACK) TYPE II BAR |
| 601-08-04 | 12" FT BEIGE w/BEIGE w/ADH BAR |
| 601-03-05 | CEILING MAT'L MUD TROWLED ON BAR |

Notes 5 DAY FAT

| Relinquished by (Signature) | Date | Received by (Signature) | Company | Date |
|-----------------------------|-----------|-------------------------|---------|------|
| <i>[Signature]</i> | 25 JAN 17 | | | |
| | | | | |

Bulk Asbestos Analysis

Date: 24 JAN 2017
 Project: CY 17 PHASE I, RE-INSPECTION
 Job # 601

Location: HAVELOCK NC
 Building: 601 WEBB BLVD.

| Sample Number (Bldg. sample) | Sample Description/Location |
|---------------------------------|--|
| 601-05-04 | 12" FT BROWN ^w /WHITE STREAKS ^w ADH (BLACK) TYPE II, BAR |
| 601-06-04 | DRYWALL CEILING, BAR |
| 601-07-05 | JOINT MAT'L DRYWALL SEAM, CEILING, BAR |
| 601-07-06 | JOINT MAT'L WALL, NAIL HEAD, BACK FOYER |
| 601-06-05 | DRYWALL, WALL, BACK FOYER |
| 601-06-06 | DRYWALL CEILING, LARGE ADDITION, TYPE II |
| 601-12-01 | MISC MAT'L GRAY FREEZER, LARGE ADDITION |
| 601-13-01 | MISC MAT'L, BLACK TAPE, FREEZER, LARGE ADDITION |
| 601-14-01 | SHINGLE ROOFING, ATTIC, LARGE ADDITION, BROWN |
| 601-15-01 | TAR PAPER, ATTIC, LARGE ADDITION |
| 601-06-07 | DRYWALL CEILING, LARGE ADDITION, TYPE II |
| 601-06-08 | DRYWALL, FIREWALL, ATTIC, TYPE III |
| 601-06-09 | DRYWALL, FIREWALL, ATTIC, TYPE III |
| 601-16-01 | EXT CAULK, WHITE, DOOR, MAIN ENTRANCE |
| 601-16-02 | EXT CAULK, WHITE, DOOR, STAGE ROOM ENTRANCE |

Notes 5 DAY TAT

| Relinquished by (Signature) | Date | Received by (Signature) | Company | Date |
|-----------------------------|------------------|-------------------------|---------|------|
| <u>[Signature]</u> | <u>25 JAN 17</u> | | | |
| | | | | |

Bulk Asbestos Analysis

Date: 24 JAN 2017
 Project: CY 17 PHASE I, RE-INSPECTION
 Job # 601

Location: HAVELOCK, NC
 Building: 601 WEBB BLVD.

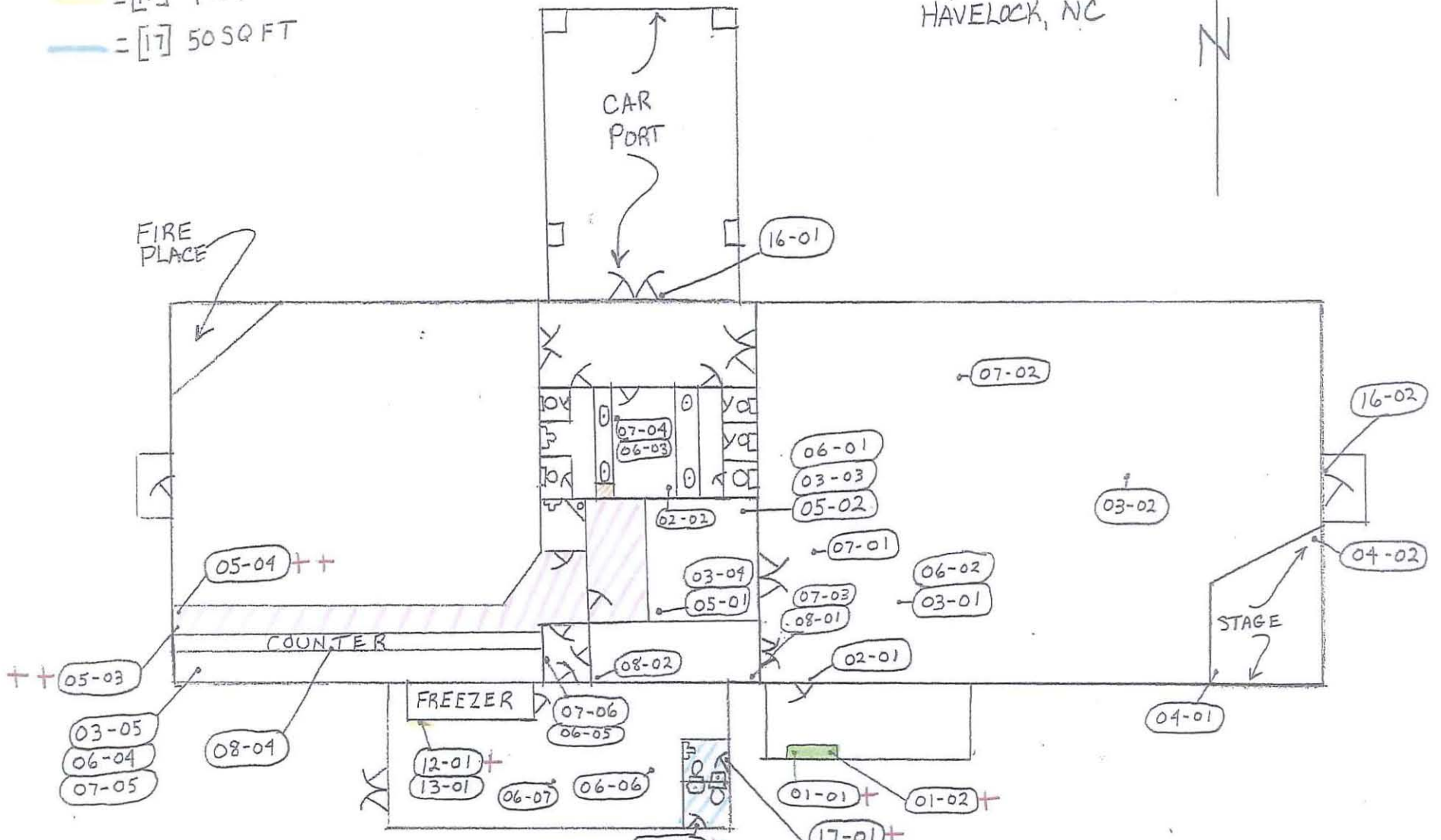
| Sample Number (Bldg. sample) | Sample Description/Location |
|---------------------------------|--|
| 601-17-01 | 12" FT BEIGE ^w /WHITE STREAKS ^w /ADH EXT RESTROOM |
| 601-17-02 | 12" FT BEIGE ^w /WHITE STREAKS ^w /ADH EXT RESTROOM |
| 601-17-03 | 12" FT BEIGE ^w /WHITE STREAKS ^w /ADH EXT RESTROOM #2 |
| 601-14-02 | SHINGLE ROOFING, BROWN, MAIN ROOF, EAST |
| 601-15-02 | TAR PAPER, MAIN ROOF EAST |
| 601-14-03 | SHINGLE ROOFING, BROWN, MAIN ROOF, WEST |
| 601-15-03 | TAR PAPER, MAIN ROOF, WEST |
| 601-18-01 | ROOF SEALER, BLACK, CHIMNEY |
| 601-18-02 | ROOF SEALER, BLACK, CHIMNEY |
| 601-18-03 | ROOF SEALER, BLACK, WEST ENTRANCE ROOF |
| | |
| | |
| | |
| | |

Notes 5 DAY FAT

| Relinquished by (Signature) | Date | Received by (Signature) | Company | Date |
|-----------------------------|-----------|-------------------------|---------|------|
| <i>[Signature]</i> | 25 JAN 17 | | | |
| | | | | |

- = [02] 30 SQ FT
- = [05] 242 SQ FT
- = [12] 1 SQ FT
- = [17] 50 SQ FT

601 WEBB BLVD.
HAVELOCK, NC



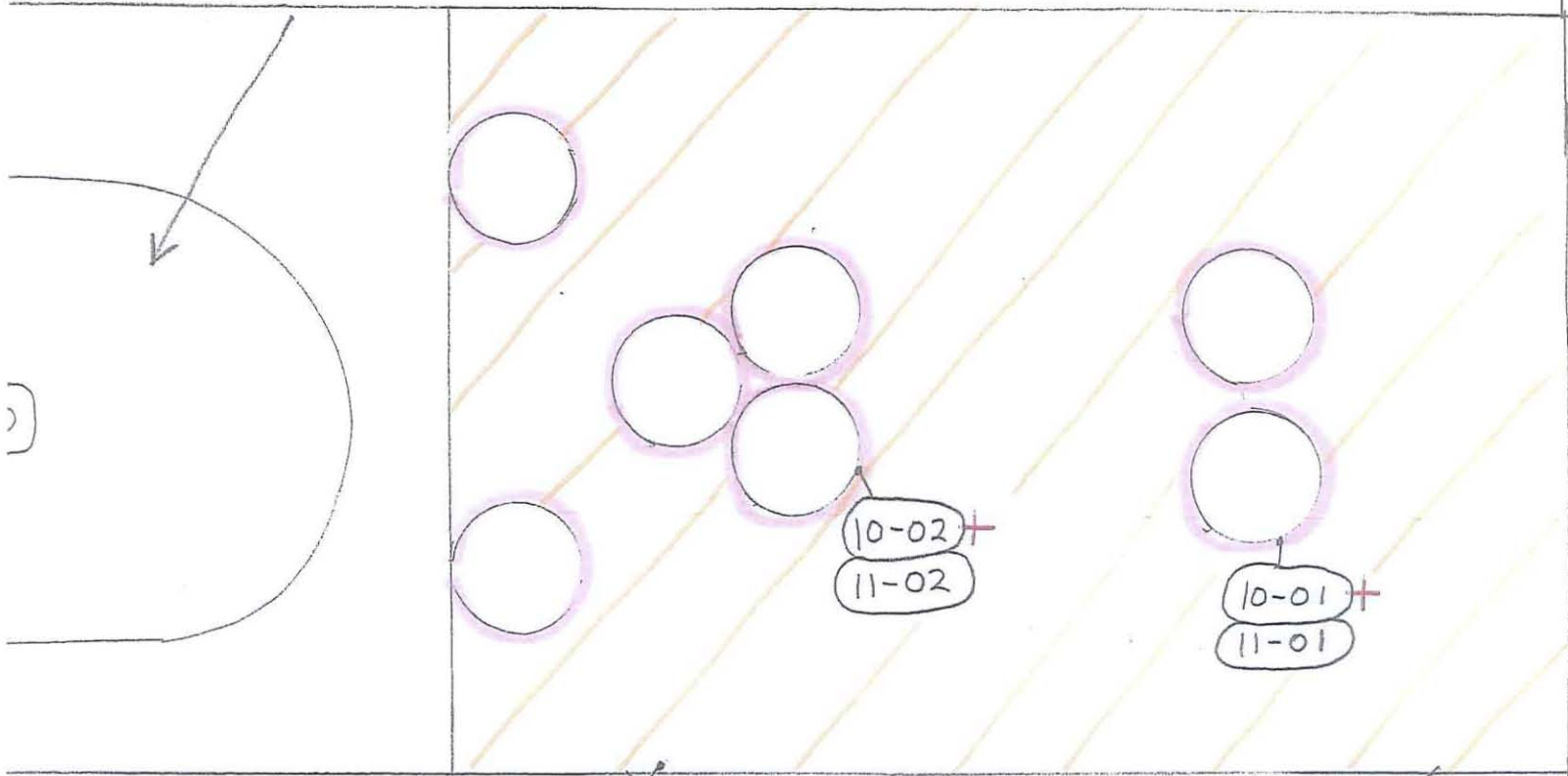
NOT TO SCALE



601 WEBB BLVD.
HAVELOCK, NC

SINK

— = [09] 125 SQ FT
— = [10] 18 L FT



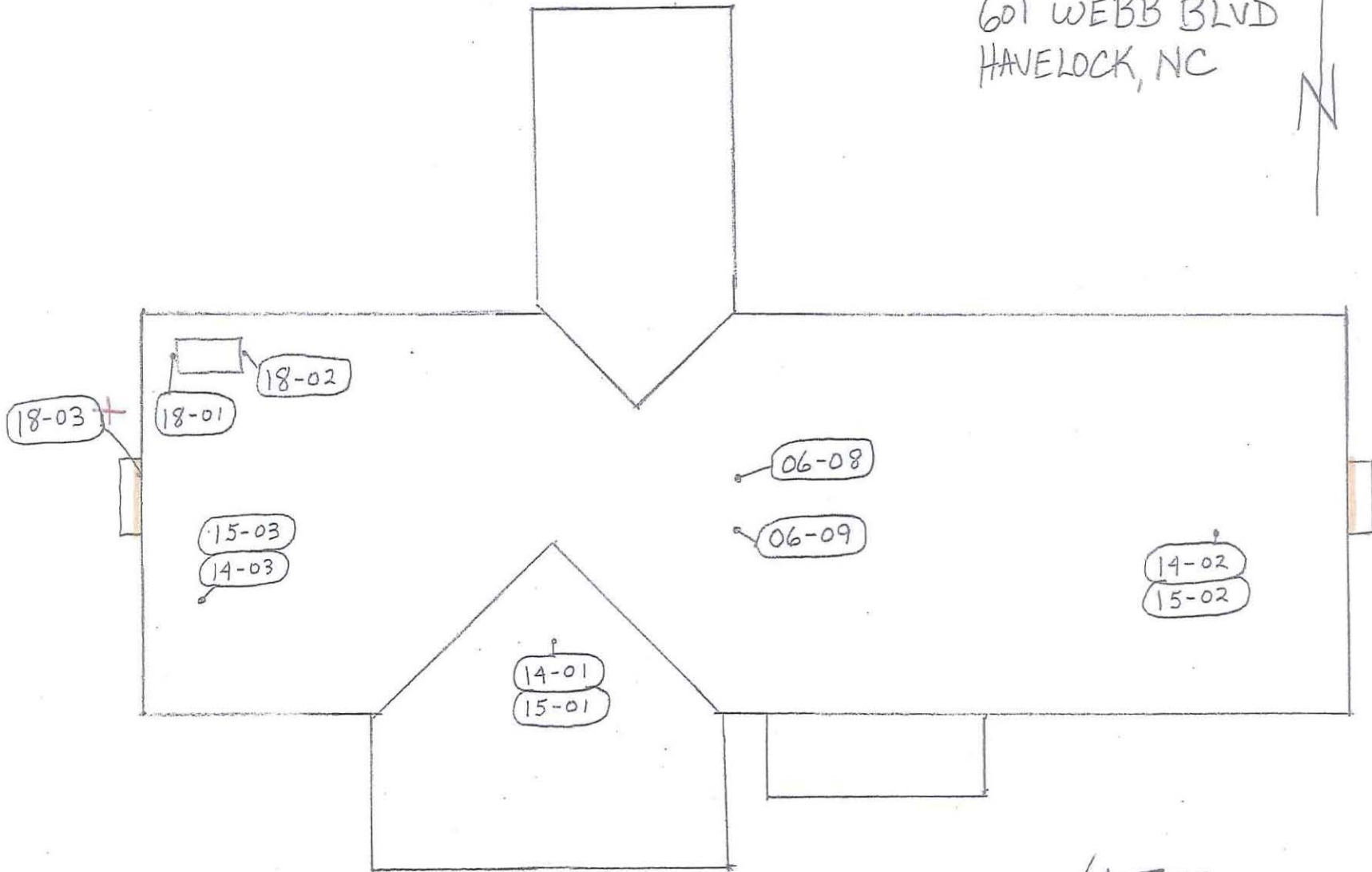
NOT TO SCALE

CLOSET MALE RESTROOM

BIFOLD DOOR

— [18] 20 L FT

601 WEBB BLVD
HAVELOCK, NC



NOT TO SCALE

ROOF/ATTIC.



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SanAir ID Number

17003041

FINAL REPORT

Project Number: 601
P.O. Number:
Project Name: CY 17 Phase I, Re-Inspection

Collected Date: 1/24/2017
Received Date: 1/26/2017 9:35:00 AM
Report Date: 2/2/2017 4:04:34 PM
Analyst: Childress, Susan

Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-03-02 / 17003041-007 Ceiling Mat'l, Mid, Troweled On, Stage Room | White Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|---------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-05-01 / 17003041-008 12" FT, W/ Adh, Office, Floor Tile | Various Non-Fibrous Homogeneous | | 100% | Other | None Detected |
| 601-05-01 / 17003041-008 12" FT, W/ Adh, Office, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|---------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-05-02 / 17003041-009 12" FT, W/ Adh, Office, Floor Tile | Various Non-Fibrous Homogeneous | | 100% | Other | None Detected |
| 601-05-02 / 17003041-009 12" FT, W/ Adh, Office, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-03-03 / 17003041-010 Ceiling Mat'l, Mud, Troweled On, Office | White Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers | |
|--|-------------------------------------|-----------|---------------|-----|-----------------|---------------|
| | | | % Non-Fibrous | | | |
| 601-06-01 / 17003041-011 Drywall, Ceiling, Office | Beige Non-Fibrous Homogeneous | 2% | Cellulose | 98% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-03-04 / 17003041-012 Ceiling Mat'l, Mud, Troweled On, Office | Beige Non-Fibrous Homogeneous | | 100% | Other | None Detected |

Certification

Analyst: *Susan P. Childress*
Analysis Date: 2/2/2017

Approved Signatory: *[Signature]*
Date: 2/2/2017



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SanAir ID Number

17003041

FINAL REPORT

Project Number: 601
P.O. Number:
Project Name: CY 17 Phase I, Re-Inspection

Collected Date: 1/24/2017
Received Date: 1/26/2017 9:35:00 AM
Report Date: 2/2/2017 4:04:34 PM
Analyst: Childress, Susan

Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|---|--------------|---------------|--|-----------------|
| | | | % Non-Fibrous | | |
| 601-06-02 / 17003041-013 Drywall, Ceiling, Stage Room, Drywall | Off-White Non-Fibrous Homogeneous | 2% Cellulose | 98% Other | | None Detected |
| 601-06-02 / 17003041-013 Drywall, Ceiling, Stage Room, Joint Compound | White Non-Fibrous Homogeneous | | 100% Other | | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|--|-----------------|
| | | | % Non-Fibrous | | |
| 601-07-01 / 17003041-014 Joint Mat'l, Drywall Seam, Ceiling, Stage Room | White Non-Fibrous Homogeneous | | 100% Other | | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|--|-----------------|
| | | | % Non-Fibrous | | |
| 601-07-02 / 17003041-015 Joint Mat'l, Drywall Seam, Ceiling, Stage Room | White Non-Fibrous Homogeneous | | 100% Other | | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|--------------------------------------|-----------|---------------|--|-----------------|
| | | | % Non-Fibrous | | |
| 601-08-01 / 17003041-016 12" FT, W/ Adh, Kitchen, Floor Tile | Beige Non-Fibrous Homogeneous | | 100% Other | | None Detected |
| 601-08-01 / 17003041-016 12" FT, W/ Adh, Kitchen, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% Other | | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|--------------------------------------|-----------|---------------|--|-----------------|
| | | | % Non-Fibrous | | |
| 601-08-02 / 17003041-017 12" FT, W/ Adh, Kitchen, Floor Tile | Beige Non-Fibrous Homogeneous | | 100% Other | | None Detected |
| 601-08-02 / 17003041-017 12" FT, W/ Adh, Kitchen, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% Other | | None Detected |

Certification

Analyst: *Susan P. Childress*
Analysis Date: 2/2/2017

Approved Signatory:
Date: 2/2/2017

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SanAir ID Number

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FINAL REPORT

Project Number: 601
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Project Name: CY 17 Phase I, Re-Inspection

Collected Date: 1/24/2017
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Analyst: Childress, Susan

Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-07-03 / 17003041-018 Joint Mat'l, Drywall Nail, Wall, Kitchen | White Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|--------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-02-02 / 17003041-019 12" FT W/ Adh, Front Office, Floor Tile | Tan Non-Fibrous Homogeneous | | 100% | Other | None Detected |
| 601-02-02 / 17003041-019 12" FT W/ Adh, Front Office, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-07-04 / 17003041-020 Joint Mat'l, Drywall Nail, Wall, Front Office | White Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|---|-----------|---------------|-----------|-----------------|
| | | | % Non-Fibrous | | |
| 601-06-03 / 17003041-021 Drywall, Wall, Front Office | Off-White Non-Fibrous Homogeneous | 2% | Cellulose | 98% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-----------------------------------|-----------|---------------|-----------|-----------------|
| | | | % Non-Fibrous | | |
| 601-09-01 / 17003041-022 Linoleum, Residual, Closet, Men's Room | Tan Non-Fibrous Homogeneous | 10% | Cellulose | 70% Other | 20% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-10-01 / 17003041-023 Pipe Wrap, Tar, Closet, Men's Room, Pipes | Black Non-Fibrous Homogeneous | | 96% | Other | 4% Chrysotile |

Certification

Analyst: *Susan P. Childress*
Analysis Date: 2/2/2017

Approved Signatory:
Date: 2/2/2017

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FINAL REPORT

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Report Date: 2/2/2017 4:04:34 PM
Analyst: Childress, Susan

Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|---------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-11-01 / 17003041-024 Cloth Lagging, Closet, Men's Room, Pipes | Beige Fibrous Homogeneous | 90% Cellulose | 10% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-------------------------------------|--------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-10-02 / 17003041-025 Pipe Wrap, Tar, Closet, Men's Room, Pipes | Black Non-Fibrous Homogeneous | 4% Cellulose | 91% Other | 5% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|---------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-11-02 / 17003041-026 Cloth Lagging, Closet, Men's Room, Pipes | Beige Fibrous Homogeneous | 90% Cellulose | 10% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|--------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-08-03 / 17003041-027 12" FT, W/ Adh, Men's Room, Floor Tile | Beige Non-Fibrous Homogeneous | | 100% Other | None Detected |
| 601-08-03 / 17003041-027 12" FT, W/ Adh, Men's Room, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-05-03 / 17003041-028 12" FT, W/ Adh, Type II, Bar, Floor Tile | Brown Non-Fibrous Homogeneous | | 98% Other | 2% Chrysotile |
| 601-05-03 / 17003041-028 12" FT, W/ Adh, Type II, Bar, Adhesive | Black Non-Fibrous Homogeneous | | 96% Other | 4% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|--------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-08-04 / 17003041-029 12" FT, W/ Adh, Bar, Floor Tile | Beige Non-Fibrous Homogeneous | | 100% Other | None Detected |
| 601-08-04 / 17003041-029 12" FT, W/ Adh, Bar, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% Other | None Detected |

Certification

Analyst: *Susan P. Childress*
Analysis Date: 2/2/2017

Approved Signatory:
Date: 2/2/2017

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FINAL REPORT

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Collected Date: 1/24/2017
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Report Date: 2/2/2017 4:04:34 PM
Analyst: Childress, Susan

Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-03-05 / 17003041-030 Ceiling Mat'l, Mud, Troweled On, Bar | White Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-05-04 / 17003041-031 12" FT W/ Adh Type II, Bar, Floor Tile | Brown Non-Fibrous Homogeneous | | 97% | Other | 3% Chrysotile |
| 601-05-04 / 17003041-031 12" FT W/ Adh Type II, Bar, Mastic | Black Non-Fibrous Homogeneous | | 96% | Other | 4% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-06-04 / 17003041-032 Drywall, Ceiling, Bar | Beige Non-Fibrous Homogeneous | 2% | 98% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|--|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-07-05 / 17003041-033 Joint Mat'l, Drywall Seam, Ceiling, Bar | White Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|-------------------------------------|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-07-06 / 17003041-034 Joint Mat'l, Wall, Nail Head, Back Foyer | White Non-Fibrous Homogeneous | | 100% | Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | % Fibrous | Components | | Asbestos Fibers |
|---|---|-----------|---------------|-------|-----------------|
| | | | % Non-Fibrous | | |
| 601-06-05 / 17003041-035 Drywall, Wall, Back Foyer | Off-White Non-Fibrous Homogeneous | 2% | 98% | Other | None Detected |

Certification

Analyst: *Susan P. Childress*
Analysis Date: 2/2/2017

Approved Signatory:
Date: 2/2/2017

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SanAir ID Number

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FINAL REPORT

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Collected Date: 1/24/2017
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Analyst: Childress, Susan

Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|---|--------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-06-06 / 17003041-036 Drywall, Ceiling, Large Addition, Type II | Off-White Non-Fibrous Homogeneous | 2% Cellulose | 98% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-12-01 / 17003041-037 Misc Mat'l, Freezer, Large Addition | Grey Non-Fibrous Homogeneous | | 85% Other | 15% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-------------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-13-01 / 17003041-038 Misc Mat'l, Tape, Freezer, Large Addition | Black Non-Fibrous Homogeneous | 15% Cellulose | 85% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|---------------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-14-01 / 17003041-039 Shingle Roofing, Attic, Large Addition | Brown Non-Fibrous Heterogeneous | 10% Cellulose | 90% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|---------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-15-01 / 17003041-040 Tar Paper, Attic, Large Addition | Black Fibrous Homogeneous | 45% Cellulose | 55% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-------------------------------------|--------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-06-07 / 17003041-041 Drywall, Ceiling, Large Addition, Type II | Beige Non-Fibrous Homogeneous | 2% Cellulose | 98% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-------------------------------------|--------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-06-08 / 17003041-042 Drywall, Firewall, Attic, Type III | Beige Non-Fibrous Homogeneous | 2% Cellulose | 98% Other | None Detected |

Certification

Analyst: *Susan P. Childress*
Analysis Date: 2/2/2017

Approved Signatory:
Date: 2/2/2017

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SanAir ID Number

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FINAL REPORT

Project Number: 601
P.O. Number:
Project Name: CY 17 Phase I, Re-Inspection

Collected Date: 1/24/2017
Received Date: 1/26/2017 9:35:00 AM
Report Date: 2/2/2017 4:04:34 PM
Analyst: Childress, Susan

Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-------------------------------------|--------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-06-09 / 17003041-043 Drywall, Firewall, Attic, Type III | Beige Non-Fibrous Homogeneous | 2% Cellulose | 98% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-16-01 / 17003041-044 Ext Caulk, Door, Main Entrance | White Non-Fibrous Homogeneous | | | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-16-02 / 17003041-045 Ext Caulk, Door, Stage Room Entrance | White Non-Fibrous Homogeneous | | | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-17-01 / 17003041-046 12" FT W/ Adh, Ext Restroom, Floor Tile | Beige Non-Fibrous Homogeneous | | 97% Other | 3% Chrysotile |
| 601-17-01 / 17003041-046 12" FT W/ Adh, Ext Restroom, Adhesive | Black Non-Fibrous Homogeneous | | 94% Other | 6% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-17-02 / 17003041-047 12" FT W/ Adh, Ext Restroom, Floor Tile | Beige Non-Fibrous Homogeneous | | 97% Other | 3% Chrysotile |
| 601-17-02 / 17003041-047 12" FT W/ Adh, Ext Restroom, Adhesive | Black Non-Fibrous Homogeneous | | 94% Other | 6% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-17-03 / 17003041-048 12" FT W/ Adh, Ext Restroom #2, Floor Tile | Beige Non-Fibrous Homogeneous | | 97% Other | 3% Chrysotile |
| 601-17-03 / 17003041-048 12" FT W/ Adh, Ext Restroom #2, Adhesive | Black Non-Fibrous Homogeneous | | 94% Other | 6% Chrysotile |

Certification

Analyst: *Susan P. Childress*
Analysis Date: 2/2/2017

Approved Signatory:
Date: 2/2/2017

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SanAir Technologies Laboratory, Inc.

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SanAir ID Number

17003041

FINAL REPORT

Project Number: 601
P.O. Number:
Project Name: CY 17 Phase I, Re-Inspection

Collected Date: 1/24/2017
Received Date: 1/26/2017 9:35:00 AM
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Analyst: Childress, Susan

Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|---------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-14-02 / 17003041-049 Shingle Roofing, Main Roof, East | Brown Non-Fibrous Heterogeneous | 5% Glass | 95% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|---------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-15-02 / 17003041-050 Tar Paper, Main Roof, East | Black Fibrous Homogeneous | 45% Cellulose | 55% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|---------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-14-03 / 17003041-051 Shingle Roofing, Main Roof, West | Brown Non-Fibrous Heterogeneous | 5% Glass | 95% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|---------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-15-03 / 17003041-052 Tar Paper, Main Roof, West | Black Fibrous Homogeneous | 45% Cellulose | 55% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-------------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-18-01 / 17003041-053 Roof Sealer, Chimney | Black Non-Fibrous Homogeneous | 10% Cellulose | 90% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-------------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-18-02 / 17003041-054 Roof Sealer, Chimney | Black Non-Fibrous Homogeneous | 10% Cellulose | 90% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-------------------------------------|--------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-18-03 / 17003041-055 Roof Sealer, West Entrance Roof | Black Non-Fibrous Homogeneous | 7% Cellulose | 88% Other | 5% Chrysotile |

Certification

Analyst: *Susan Childress*
Analysis Date: 2/2/2017

Approved Signatory: *[Signature]*
Date: 2/2/2017



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FINAL REPORT

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Asbestos Bulk PLM EPA 600/R-93/116

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-----------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-01-01 / 17003041-001 Linoleum, Cabinet, Small Addition | Tan Non-Fibrous Homogeneous | 10% Cellulose | 70% Other | 20% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-----------------------------------|---------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-01-02 / 17003041-002 Linoleum, Cabinet, Small Addition | Tan Non-Fibrous Homogeneous | 10% Cellulose | 70% Other | 20% Chrysotile |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|--|-----------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-02-01 / 17003041-003 12" FT, Stage Room | Tan Non-Fibrous Homogeneous | | 100% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|-------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-03-01 / 17003041-004 Ceiling Mat'l, Mud, Troweled On, Stage Room | White Non-Fibrous Homogeneous | | 100% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|---------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-04-01 / 17003041-005 12" FT, W/ Adh, Stage, Floor Tile | Various Non-Fibrous Homogeneous | | 100% Other | None Detected |
| 601-04-01 / 17003041-005 12" FT, W/ Adh, Stage, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% Other | None Detected |

| SanAir ID / Description | Stereoscopic Appearance | Components | | Asbestos Fibers |
|---|---------------------------------------|------------|---------------|-----------------|
| | | % Fibrous | % Non-Fibrous | |
| 601-04-02 / 17003041-006 12" FT, W/ Adh, Stage, Floor Tile | Various Non-Fibrous Homogeneous | | 100% Other | None Detected |
| 601-04-02 / 17003041-006 12" FT, W/ Adh, Stage, Adhesive | Yellow Non-Fibrous Homogeneous | | 100% Other | None Detected |

Certification

Analyst: *Susan Childress*
Analysis Date: 2/2/2017

Approved Signatory:
Date: 2/2/2017

QUESTIONS AND ANSWERS FOR CLARIFICATION AND REFERENCE TO ADDENDA

Pre-Bid Conference Questions and Post-Conference Questions

Project: City of Havelock
WTP Backwash Solids Handling Project

Date of Pre-Bid Conference: Thursday, January 19, 2017
Date of Bid Opening: Thursday, February 09, 2017 at 2:00 PM

Attendees: Pre-Bid Conference Sign-in Sheet

Post-Conference Questions

TO BE ANSWERED BY GENERAL – ADDENDUM NO. 2

-
1. Question on the bid form--Spec Section 01150 lists more unit price/allowance type bid items than we have on the bid form. The spec references a Tnemec Paint Alternate, Spare Part Allowance, Off-Site Borrow Material, Trench Stone, and Ductile Iron Fittings, but these items are not listed on the bid form? Also, Bid Item #10-Owners Umbrella Liability Insurance, this is not described in section 01150. Please advise.

In regard to Umbrella Liability Insurance, as shall be stated in Addendum 01, bidder shall provide as described by General Conditions Article 6-Bonds and Insurance; Section 6.03-Contractor's Insurance; Paragraph E. Umbrella or excess liability: *{see GC 21 of 65}* plus Supplementary Conditions SC-6.03 Contractor's Liability Insurance; Paragraph K. *{see SC 4, 5, 6 of 12}*

Bid Form and Bid Schedule plus Section 01150 – Payment with revisions are be issued by Addendum 02.

2. Currently Substantial Completion is 6 months, and Final Completion is also on the same day. Can consideration be given to adding another month for Final Completion? After reviewing the job we feel the 180 days for substantial completion is adequate. However one additional month for final completion would be appreciated to allow us time to get any bugs worked out, the site cleaned up, the project punched out and ready for final payment without having to worry about \$700 per day liquidated damages for final completion.

The engineer/owner are considering request for addition of time for contract performance.

3. The soils report has a few different recommendations to prepare the subgrade for the new Waste Settling Tank (undercutting, surcharging, etc). Please confirm the intent is to excavate the tank subgrade to the elevations shown on the drawings and to place a geotextile and 12” stone base as shown and that any surcharge or undercutting should not be included in our base bid price.

Yes, the intent is to excavate the tank subgrade to the elevations shown on the drawings and to place a geotextile and 12” stone base as shown. Surcharge is not a requirement and any required undercut shall be paid by unit price. The five (5) page Report of Subsurface Investigation (January 19, 2016) was written prior to establishing final elevations for the waste settling tank.

The five (5) page Report of Subsurface Investigation (dated July 18, 2016) is being added to appendices by Addendum 02.

4. For unit price items #13-17 (erosion control items), are these meant to cover these items which are shown on the drawings or are these to be used for additional erosion control that is not shown on the drawings? (ie- include silt fence, check dams, rip rap that is shown in the base bid and the unit prices are for additional items if needed?)

The unit prices are to cover the erosion sediment control installation(s) shown by the drawings and any additional installations required by direction of the engineer.

5. Please confirm all building and or electrical permit fees will be waived by the City of Havelock.

Yes, the City of Havelock is waiving building and electrical permit fees for this project, however, the contractor must make application and secure the permits.

6. Paragraph 22.01 of Instructions to Bidders says “Sales taxes shall not be included in the bid”. Supplementary Conditions SC 7.09 instructs contractor to submit documents showing sales taxes paid by contractors and subcontractors.

The contractor is to follow direction in Supplementary Conditions SC 7.09; clarification is made by Addendum 01.

7. Please clarify the point on the piping plans where the 4” Filtrate force main to the Waste Settling Basin becomes 6” as shown sheets CS-3 and C-8.

The entire length of filtrate line is to have diameter equal to 4-inch as stated by Addendum 02.

8. Please clarify whether concrete blocking as shown on sheet D-2 is required along with the direction to use joint restraint pipe and fittings on all DI lines.

The intent is to use restrained joint pipe; the blocking Detail 2 shown on Sheet D2 is to be used where restraint is necessary and it is not possible to utilize restrained joint pipe and then only upon approval by the engineer. clarification is made to Section 15060 by Addendum 02.

9. When does the new perimeter fence need to be installed after the existing is removed for electrical demo and drying bed construction, etc? Are there security issues the contractor will have to address?

The existing WTP must be kept secure. The plan and schedule for removing existing fence and installing new fence or utilizing temporary fence or other to secure the existing WTP and the construction site is a responsibility of the contractor.

10. On sheet C-7 in Section 1, there is a note to “drill and tap all flanges flush with the wall.....”. Is there a detail that explains this note, or can you tell where it will be used in this job?

Typically, flange by flange wall pipes placed in walls of cast-in-place concrete tanks would utilize tapped flanges to facilitate formwork assembly/disassembly and testing of the pipe. There are not any cast-in-place concrete tanks scheduled for the project and note is deleted by Addendum No. 2.

11. On sheet D-3, is detail #2 used anywhere on the piping connections through walls?

See Sheet C2 covering the pre-stressed concrete tank with direction to Detail 2/D3.

12. On sheet C-7, Section 1, are the fittings shown at each end of the 6”gravity line on the North side of the drying beds, cleanouts? Is there a detail for their construction?

Yes, these are cleanouts as noted on CS3 and detail is added by Addendum 02.

13. Specification section 11361, page 6 states the design needs to follow “a horizontal wind load of 100 pounds per square foot.” With a determined wind speed of 155 miles/hour (ASCE 7, 2012) for the North Carolina coastal region of Havelock, a maximum wind design load of only 56 lbs./ft. sq. is needed. Furthermore, to our knowledge, North Carolina still follows the 2009 version of ASCE 7, which provides information listing a wind loading of 100 miles/hour for the Havelock region, this would result in a maximum wind loading of much lower than 100 lbs./sq. ft. Would you consider an addendum specification clarification to read “a horizontal wind loading of 100 miles per hour.”?

The wind load is being stated in terms of wind speed miles per hour – “horizontal wind speed of 130 miles per hour.” in revised specification Section 11361 by Addendum 02.

14. Plans and specs call for all pressure piping to be restrained joint. I also see where spec section 15060, page 13 says we are to provide concrete thrust blocking on all plugs, caps, tees, and bends. Are we to provide both? Please consider removing the requirement for concrete thrust blocking and allowing the use of MJ fittings with megalugs for all restrained joints.

The intent is to use restrained joint pipe; the blocking Detail 2 shown on Sheet D2 is to be used where restraint is necessary and it is not possible to utilize restrained joint pipe and then only upon approval by the engineer. Clarification is made to Section 15060 by Addendum 02.

QUESTIONS AND ANSWERS FOR CLARIFICATION AND REFERENCE TO ADDENDA

15. Spec section 13215 for the drying beds specifies one type the sand material for the drying beds. Section views of the drying beds on plan sheet C7 show 3 different layers of sand with the middle one being referred to as '6" Cellular Confinement and Sand – Infill as required by specifications'. Please clarify what this layer needs to be, did not find it in the specifications.

The 24" deep layer of sand, infill sand for cellular confinement (6") and top layer (2") of sand shall be as specified in Section 13215 PART 2 – MATERIALS of revised specification Section 13215 by Addendum 02.

16. On the FRP stop logs Golden Harvest is a listed manufacturer but they only make aluminum or stainless ones. I told them I would ask if that would be acceptable?

The engineer could approve alternative Stainless or Aluminum material for the Stop Gate used in Sand Drying Beds; however, whether, FRP, Stainless or Aluminum, the gate must adhere to various other requirements and note applicable to Sections 6 and Section 7 on Sheet C7 – "Note: Provide Watertight Seal for Stop Gate".

17. For the Proposed NPW Meter called for on sheet CS3 near the existing Elevated Storage Tank is this to be provided by the owner? If not please provide specification on it.

The note is being changed to state, "NPW Connection with Backflow Prevention" and detail added by ADDENDUM 02. Note: The backflow preventer is specified on page 15100-9 of Section 15100 – VALVES.

18. Filter Fabric under tank and for erosion control:

- a. Spec 02210, page 6, lists Spun Synthetic Fiber cloth, 20 oz/sy. To their knowledge there is no such thing as 20 oz spun synthetic cloth on the market.

See Addendum 02

- b. Spec 02910, page 3, lists Spun Synthetic Fiber cloth, 10 oz/sy. But names Mirafi 140, which is a 4 oz/sy non-woven fabric.

See Addendum 02

- c. They suggested a Mirafi 180 filter fabric for this application which is an 8 oz/sy non-woven filter fabric. Please approve if acceptable.

See Addendum 02

19. Will a waterstop be required at the base of the walls in the Sand Drying Beds? It is not shown on sheet C7, only a keyway at the base of the walls. And the liner inside the basins should stop water before it reaches the base of these walls anyway. However detail B on S1 calls for a ribbed waterstop at walls with keyway. Please advise if waterstop will be required at the base of these walls.

NO. Waterstop is not required and it is as shown by drawings for very reason cited in your question.

QUESTIONS AND ANSWERS FOR CLARIFICATION AND REFERENCE TO ADDENDA

20. I am concerned that with the length of the delivery dates after approval of shop drawings, as well as the number of items of work that cannot be performed concurrently, that 180 day completion date is not adequate to perform the work. Will the owner consider a longer performance period?

The engineer/owner are considering request for addition of time for contract performance.

21. Will the owner consider extending the date to open bids to allow more time to gather quotes for the work?

Addendum No. 1 changed the Bid Opening date to February 17, 2017.

22. Is the schedule known for completion of work by Carteret-Craven EMC and removal of existing electric lines and poles plus electric service entrance and will the work be completed prior to the Contractor's Notice of Proceed?

The schedule is not known; however, the engineer/owner are continuing consideration and conversation with Carteret-Craven Electrical Cooperative to provide appropriate information for the contractor.

23. Will the contract time be extended because of the unknown for electrical removal, submittal times, and equipment delivery times?

The engineer/owner are considering request for addition of time for contract performance.

24. At pre-bid, there was talk of permits being waived, can this be confirmed?

The building and electrical permit fees are being waived; however, the contracotor must make application and secure the building and electrical permit.

25. Regarding the existing building to be demolished, do you know if it contains asbestos?

YES; results of the inspection was received on February 8, 2017 and it is included with Appendices added by ADDENDUM 02. The City is now waiting on statement from the inspector regarding any specific requirement for demolition of the building.

26. Are the wall pipes shown by Section 2, Sheet D-3 shown through the walls of the new clarifier required for wall and footing pipe penetrations on the drying beds.

The penetrations for the sand beds do not require wall pipes.

27. On sheets CS-3 & C-8, the 6" drain pipe to the Underdrain Pump Station is noted on the plans as restrained joint ductile iron. None of the 4" and 6" drain piping to this pump station

QUESTIONS AND ANSWERS FOR CLARIFICATION AND REFERENCE TO ADDENDA

has that indication. Is it the intent of the plans that all the drain piping from the drying beds be restrained joint as well?

Yes; unless specifically noted otherwise piping is to be restrained joint as specified in Section 15060 – Pipe and Pipe Fittings.

28. Sheet CS-3 beside the existing elevated water storage tank indicates a proposed meter on the Non Potable Waterline. Are there any specs on this item as I cannot find a detail?

The note is being changed to state, "NPW Connection with Backflow Prevention" and detail added by ADDENDUM 02. Note: The backflow preventer is specified on page 15100-9 of Section 15100 – VALVES.

29. For the portion of the project that covers modifications to the existing concrete basin for installation of the piping and floating decanter equipment, will any sludge in the basin be cleared out and disposed of by the City before the contractor takes over the modifications?

NO, the contractor will be responsible for removing the solids from bottom of the proposed polishing basin.

30. If the contractor has to clear the contents of the basin, what are the State regulations the City has to meet to dispose of the contents, or any disposal and testing requirements the contractor will have to meet?

The contractor may convey the solids to the sand drying beds as stated by addendum.

31. Is there an estimate of the amount of material requiring disposal?

NO; however; the City removes solids from the basin periodically and 3600 gallons was removed during the last removal.