

**PROJECT MANUAL**

**FOR**

**WAYNE TOWNSHIP SANITARY SEWER  
INTERCEPTOR – PHASE I**

FOR THE

HAMILTON SOUTHEASTERN UTILITIES, INC.

WESSLER ENGINEERING, INC.  
INDIANAPOLIS, INDIANA

APRIL 2023



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INDIANAPOLIS, INDIANA

Certified By:



A handwritten signature in black ink that reads "Kathryn Rose Castro Jackson". The signature is written in a cursive style with a large initial "K".

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Kathryn Rose Castro Jackson  
Professional Engineer No. 11900860

April 2023





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-END-

## BID ATTACHMENT

### ARTICLE 1 – BID RECIPIENT

- 1.01 This Bid of \_\_\_\_\_ (Bidder) is submitted to Hamilton Southeastern Utilities, Inc. (HSEU) (Owner) for construction of Wayne Township Sanitary Sewer Interceptor – Phase 1 (Inclusive of Parts A and B)
- 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 60 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 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 anything 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):

### UNIT PRICE BASE BID – PART A

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	27" SS PVC (14'-15.9' depth)	LFT	479	\$ _____	\$ _____
2	27" SS PVC (16'-17.9' depth)	LFT	21	\$ _____	\$ _____
3	27" SS PVC (18'-19.9' depth)	LFT	400	\$ _____	\$ _____
4	27" SS PVC (20'-21.9' depth)	LFT	1,086	\$ _____	\$ _____
5	27" SS PVC (22'- 23.9' depth)	LFT	516	\$ _____	\$ _____
6	27" SS PVC (24'- 25.9' depth)	LFT	527	\$ _____	\$ _____
7	27" SS PVC (26'-27.9' depth)	LFT	646	\$ _____	\$ _____
8	27" SS PVC (28'-29.9' depth)	LFT	0	\$ _____	\$ _____
9	Manhole, 60" dia. (12'-13.9' depth)	EACH	1	\$ _____	\$ _____
10	Manhole, 60" dia. (14'-15.9' depth)	EACH	1	\$ _____	\$ _____
11	Manhole, 60" dia. (16'-17.9' depth)	EACH	1	\$ _____	\$ _____
12	Manhole, 60" dia. (18'-19.9' depth)	EACH	2	\$ _____	\$ _____
13	Manhole, 60" dia. (20'-21.9' depth)	EACH	1	\$ _____	\$ _____
14	Manhole, 60" dia. (22'- 23.9' depth)	EACH	2	\$ _____	\$ _____
15	Manhole, 60" dia. (24'- 25.9' depth)	EACH	3	\$ _____	\$ _____
16	Manhole, 60" dia. (26'-27.9' depth)	EACH	1	\$ _____	\$ _____
17	Manhole, 60" dia. (28'-29.9' depth)	EACH	0	\$ _____	\$ _____
18	Outside Drop Manhole, 60" dia.	EACH	1	\$ _____	\$ _____
19	Steel Casing Pipe w/Carrier Pipe (Jack and Bore)	LFT	184	\$ _____	\$ _____
20	Junction Structure A0	LSUM	1	\$ _____	\$ _____

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
21	Over-Excavation of Poor Soils w/Granular Backfill (undistributed)	CYS	560	\$ _____	\$ _____
22	Erosion and Sediment Control	LSUM	1	\$ _____	\$ _____
23	Final Clean-Up and Restoration	LSUM	1	\$ _____	\$ _____
24	Maintenance of Traffic	LSUM	1	\$ _____	\$ _____
25	Mobilization, Demobilization, Bonds and Insurance	LSUM	1	\$ _____	\$ _____

### **TOTAL UNIT PRICE BASE BID – PART A**

Total Unit Price Base Bid (in figures) \$ \_\_\_\_\_

Total Unit Price Base Bid (in words) \_\_\_\_\_

\_\_\_\_\_ Dollars

### **UNIT PRICE BASE BID – PARTS A and B**

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
1	27" SS PVC (14'-15.9' depth)	LFT	479	\$ _____	\$ _____
2	27" SS PVC (16'-17.9' depth)	LFT	21	\$ _____	\$ _____
3	27" SS PVC (18'-19.9' depth)	LFT	400	\$ _____	\$ _____
4	27" SS PVC (20'-21.9' depth)	LFT	1,086	\$ _____	\$ _____
5	27" SS PVC (22'- 23.9' depth)	LFT	4,575	\$ _____	\$ _____
6	27" SS PVC (24'- 25.9' depth)	LFT	1,002	\$ _____	\$ _____
7	27" SS PVC (26'-27.9' depth)	LFT	646	\$ _____	\$ _____
8	27" SS PVC (28'-29.9' depth)	LFT	1,082	\$ _____	\$ _____
9	Manhole, 60" dia. (12'-13.9' depth)	EACH	1	\$ _____	\$ _____
10	Manhole, 60" dia. (14'-15.9' depth)	EACH	1	\$ _____	\$ _____
11	Manhole, 60" dia. (16'-17.9' depth)	EACH	1	\$ _____	\$ _____
12	Manhole, 60" dia. (18'-19.9' depth)	EACH	2	\$ _____	\$ _____
13	Manhole, 60" dia. (20'-21.9' depth)	EACH	2	\$ _____	\$ _____
14	Manhole, 60" dia. (22'- 23.9' depth)	EACH	9	\$ _____	\$ _____
15	Manhole, 60" dia. (24'- 25.9' depth)	EACH	5	\$ _____	\$ _____
16	Manhole, 60" dia. (26'-27.9' depth)	EACH	3	\$ _____	\$ _____
17	Manhole, 60" dia. (28'-29.9' depth)	EACH	1	\$ _____	\$ _____
18	Outside Drop Manhole, 60" dia.	EACH	1	\$ _____	\$ _____
19	Steel Casing Pipe w/Carrier Pipe (Jack and Bore)	LFT	184	\$ _____	\$ _____
20	Junction Structure A0	LSUM	1	\$ _____	\$ _____
21	Over-Excavation of Poor Soils w/Granular Backfill (undistributed)	CYS	1,400	\$ _____	\$ _____
22	Erosion and Sediment Control	LSUM	1	\$ _____	\$ _____

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
23	Final Clean-Up and Restoration	LSUM	1	\$_____	\$_____
24	Maintenance of Traffic	LSUM	1	\$_____	\$_____
25	Mobilization, Demobilization, Bonds and Insurance	LSUM	1	\$_____	\$_____

#### **TOTAL UNIT PRICE BASE BID – PARTS A and B**

Total Unit Price Base Bid (in figures) \$\_\_\_\_\_

Total Unit Price Base Bid (in words) \_\_\_\_\_

\_\_\_\_\_ Dollars

Bidder acknowledges that 1) 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, and 2) 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.

All other Work, shown and specified but not described under the unit price items herein, necessary for a complete project shall be considered incidental. The cost for that incidental Work shall be included in the cost of lump sum and unit price items herein.

#### **MANDATORY DEDUCT ALTERNATE BID NO. 1**

The undersigned proposes to perform all of the Work necessary to construct the interceptor under Boden Road via open cut in lieu of Jack and Bore (Pay Item #19), including the furnishing of all labor, materials, supplies, equipment, and other items in the Drawings and Specifications for the following UNIT PRICE:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Price
MA-26	Open Cut across Boden Road	LSUM	1	\$_____	\$_____

Total Mandatory Deduct Alternate Bid No. 1 Price (in figures) \$\_\_\_\_\_

Total Mandatory Add Alternate Bid No. 1 Price (in words) \_\_\_\_\_

\_\_\_\_\_ Dollars

## **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 General Requirements on or before the dates or within the number of calendar days indicated in the "Sample Form" Agreement.
- 6.02 Bidder accepts the provisions of the "Sample Form" Agreement as to liquidated damages.

## **ARTICLE 7 - ATTACHMENTS TO THIS BID**

- 7.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Attachment, and if requested by Bidder, the Bid Bond Form. The unbound copy of the Bid Attachment is to be completed, signed, and submitted with the following:
- A. Bid Form (Indiana State Board of Accounts Form 96)
  - B. Bid Bond, bank money order, or certified check payable to the Owner in the amount of not less than 5% of the Total Bid Price, or the properly completed and signed Bid Bond form.
  - C. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such license prior to Notice-to-Proceed;
  - D. Financial Statement
  - E. Employee Drug Testing Plan mandated by IC 5-16-13-11 and that complies with IC 4-13-18.
  - F. Drug Testing Plan Certification form

## **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.



## 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: \_\_\_\_\_

\_\_\_\_\_

Bidder's License No: \_\_\_\_\_



## BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

### BID

Bid Due Date:

Description (*Project Name— Include Location*):

### BOND

Bond Number:

Date:

Penal sum \_\_\_\_\_ \$ \_\_\_\_\_  
(Words) (Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

#### BIDDER

#### SURETY

\_\_\_\_\_  
Bidder's Name and Corporate Seal

(Seal)

\_\_\_\_\_  
Surety's Name and Corporate Seal

(Seal)

By: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

By: \_\_\_\_\_  
Signature (Attach Power of Attorney)

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

*Note: Addresses are to be used for giving any required notice.*

*Provide execution by any additional parties, such as joint venturers, if necessary.*

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
  - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
  - 3.2 All Bids are rejected by Owner, or
  - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from the Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after the Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

## DRUG TESTING PLAN CERTIFICATION

I, \_\_\_\_\_, the duly authorized representative of  
(name of representative)

\_\_\_\_\_, certify under penalty of perjury that the  
(name of firm)

Employee Drug Testing Plan submitted with this Bid complies with the requirements set forth in  
IC 4-13-18.

NAME OF FIRM

By: \_\_\_\_\_

Printed Name: \_\_\_\_\_

Title: \_\_\_\_\_

STATE OF \_\_\_\_\_ )  
COUNTY OF \_\_\_\_\_ ) SS:

Before me, a Notary Public for said County and State personally appeared \_\_\_\_\_  
\_\_\_\_\_, who acknowledged the truth of the statements in the  
foregoing affidavit on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_.

\_\_\_\_\_, Notary Public  
Resident of \_\_\_\_\_ County

My Commission Expires:

\_\_\_\_\_

DRUG TESTING PLAN CERTIFICATION

00260-1



## NOTICE OF AWARD

---

Date of Issuance:

Owner:

Owner's Contract No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name:

Bidder:

Bidder's Address:

### TO BIDDER:

You are notified that Owner has accepted your Bid dated [ ] for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is: \$ [ ] [note if subject to unit prices, or cost-plus]

[ ] unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically. [revise if multiple copies accompany the Notice of Award]

☐ a set of the Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to Owner [ ] counterparts of the Agreement, fully executed by Bidder.
2. Deliver with the executed Agreement(s) the Contract security [e.g., performance and payment bonds] and insurance documentation as specified in the Instructions to Bidders, Article 20, and General Conditions, Articles 2 and 6.
3. Other conditions precedent (as applicable):
  - a. Enroll in and verify the work eligibility status of all its newly hired employees through the E-Verify Program. Submit completed E-Verify Affidavit form to Owner.
  - b. Submit E-Verify case verification numbers for each individual required to be verified under IC 22-5-1.7 that will be working on this project.
  - c. Submit completed Indiana Iran Investment Certification to Owner.

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

---

Owner:

Authorized Signature

By:

Title:

Copy: Engineer





## PERFORMANCE BOND

CONTRACTOR *(name and address):*

SURETY *(name and address of principal place of business):*

OWNER *(name and address):*

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location):*

### BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract):*

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 16

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

### CONTRACTOR AS PRINCIPAL

### SURETY

\_\_\_\_\_  
Contractor's Name and Corporate Seal *(seal)*

\_\_\_\_\_  
Surety's Name and Corporate Seal *(seal)*

By: \_\_\_\_\_  
Signature

By: \_\_\_\_\_  
Signature *(attach power of attorney)*

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_  
Signature

Attest: \_\_\_\_\_  
Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
Title

**Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.**

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.

3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after:

3.1 The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

3.2 The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

3.3 The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract,

arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:

7.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

7.2 additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and

7.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.

9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced

or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.

10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.

11. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

#### 14. Definitions

14.1 Balance of the Contract Price: The total amount payable by the Owner to the Contractor under the Construction

Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

14.2 Construction Contract: The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

14.3 Contractor Default: Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

14.4 Owner Default: Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

14.5 Contract Documents: All the documents that comprise the agreement between the Owner and Contractor.

15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

16. Modifications to this Bond are as follows:



## PAYMENT BOND

CONTRACTOR *(name and address)*:

SURETY *(name and address of principal place of business)*:

OWNER *(name and address)*:

### CONSTRUCTION CONTRACT

Effective Date of the Agreement:

Amount:

Description *(name and location)*:

### BOND

Bond Number:

Date *(not earlier than the Effective Date of the Agreement of the Construction Contract)*:

Amount:

Modifications to this Bond Form: ☐ None ☐ See Paragraph 18

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

### CONTRACTOR AS PRINCIPAL

### SURETY

\_\_\_\_\_  
*(seal)*

Contractor's Name and Corporate Seal

By: \_\_\_\_\_

Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_

Signature

\_\_\_\_\_  
Title

\_\_\_\_\_  
*(seal)*

Surety's Name and Corporate Seal

By: \_\_\_\_\_

Signature *(attach power of attorney)*

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

Attest: \_\_\_\_\_

Signature

\_\_\_\_\_  
Title

*Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.*

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond shall arise after the following:
  - 5.1 Claimants who do not have a direct contract with the Contractor,
    - 5.1.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
    - 5.1.2 have sent a Claim to the Surety (at the address described in Paragraph 13).
  - 5.2 Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
  - 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
  - 7.2 Pay or arrange for payment of any undisputed amounts.
  - 7.3 The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.
8. The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.

11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. **Definitions**
  - 16.1 **Claim:** A written statement by the Claimant including at a minimum:
    1. The name of the Claimant;
    2. The name of the person for whom the labor was done, or materials or equipment furnished;
    3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
    4. A brief description of the labor, materials, or equipment furnished;
    5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
  - 16.2 **Claimant:** An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms of "labor, materials, or equipment" that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
  - 16.3 **Construction Contract:** The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
  - 16.4 **Owner Default:** Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
  - 16.5 **Contract Documents:** All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.
18. Modifications to this Bond are as follows:
6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
7. The total amount of previous payments received by the Claimant; and
8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.





MAINTENANCE BOND  
HAMILTON SOUTHEASTERN UTILITIES, INC.

Instructions:

Successful Bidder must use this form or other form containing the same material conditions and provisions as approved in advance by Engineer.

Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute bond.

Surety company executing this bond shall appear on the most current list of "Surety Companies Acceptable on Federal Bonds," as specified in the U.S. Treasury Department Circular 570, as amended, and be authorized to transact business in the State of Indiana.

KNOW ALL MEN BY THESE PRESENTS: that

"Contractor" \_\_\_\_\_

and

"Surety": [name] \_\_\_\_\_  
[address] \_\_\_\_\_

a corporation chartered and existing under the laws of the State of \_\_\_\_\_, and authorized to do business in the State of Indiana,

are held and firmly bound unto Hamilton Southeastern Utilities, Inc. hereinafter called OWNER, in the penal sum of \_\_\_\_\_ Dollars, (\$\_\_\_\_\_) in lawful money of the United States, for the payment of which sum well and truly to be made, together with interest at the maximum legal rate from date of demand and any attorney fees and court costs incurred by Obligee to enforce this instrument, we bind ourselves, successors, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Contractor has entered into a certain Agreement with the OWNER, dated as of the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by which Contractor has agreed to perform and furnish certain work for or in furtherance of construction of public improvements described generally as \_\_\_\_\_, which Agreement, and the "Contract Documents" as referred to therein, are hereby incorporated herein by reference;

WHEREAS, the Contractor has installed and completed and met all improvements, installations and requirements applicable to the above described work, but said improvements and installations have not yet been accepted for public maintenance; and

WHEREAS, the Owner requires a guarantee from the Contractor against defective materials and workmanship in connection with such maintenances.

NOW, THEREFORE, Contractor warrants the workmanship and all materials used in the construction, installation and completion of said Work, to be of good quality and completed in a workmanlike manner in accordance with the Agreement and Contract Documents and all laws, ordinances, rules, standards and regulations applicable to said Work;

FURTHERMORE, the conditions of the Surety's obligation hereunder are such that if Contractor at his own expense, for a period of three years after said Work, improvements and installations are accepted for public maintenance by the Owner, shall make all repairs or replacements thereto which may become necessary by reason of improper or defective workmanship or materials, or any failure thereof to conform to the provisions of the Agreement or Contract Documents, then Surety's obligation is to be null and void; otherwise such obligation shall remain in full force and effect. Any repairs or replacements made under this Bond shall in like manner be subject to the terms and conditions hereof.

Contractor and Surety covenant that all action required by law to be taken by them to authorize the execution and delivery of this bond have been previously been taken, that the officers whose signatures appear below have been fully empowered to execute and deliver this instrument and that once executed and delivered, it shall represent the lawful and binding obligation of the parties.

IN WITNESS WHEREOF, this instrument is executed in duplicate counterparts, each one of which shall be deemed an original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

CONTRACTOR:\_\_\_\_\_

By:\_\_\_\_\_ [signature] \_\_\_\_\_ [printed name]

ATTEST:

\_\_\_\_\_, Secretary  
[signature]

SURETY:\_\_\_\_\_

By:\_\_\_\_\_, Attorney-in-Fact  
[signature]

\_\_\_\_\_ [printed name] \_\_\_\_\_ [address]

\_\_\_\_\_

**"SAMPLE FORM"**

**AGREEMENT**

THIS AGREEMENT is dated this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, by  
and between \_\_\_\_\_ ("Owner") and \_\_\_\_\_  
\_\_\_\_\_ ("Contractor").

Owner and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:  
owner

**ARTICLE 1 – WORK**

- 1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

**WAYNE TOWNSHIP SANITARY SEWER INTERCEPTOR – PHASE I**

**ARTICLE 2 – ENGINEER**

- 2.01 The Project has been designed by Wessler Engineering, Inc. The Owner has retained the following firms to act as Owner's representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

Engineer (Design): Wessler Engineering, Inc.

Engineer (Construction): Wessler Engineering, Inc.

Resident Project Representative: SAMCO, Inc.

**ARTICLE 3 – CONTRACT TIMES**

- 3.01 All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.
- 3.02 The Work, should Parts A and B be performed in continuum, will be substantially completed within 270 days after the date when the Contract Times commence to run, and completed and ready for final payment in accordance with the General Requirements within 360 days after the date when the Contract Times commence to run. Material supply shortages or delays identified prior to construction can be considered for revisions or extensions to the contract dates stated above.

### 3.03 Liquidated Damages

- A. Contractor and Owner recognize that time is of the essence of this Agreement and that Owner will suffer financial and other losses if the Work is not completed within the times specified in Paragraph 3.02 above, plus any extensions thereof allowed in accordance with the Contract Documents. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty), the Owner, in the form of a Change Order, shall deduct from the monies due the Contractor \$1,400.00 for each calendar day that expires after the time specified in Paragraph 3.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by Owner, the Owner, in the form of a Change Order, shall deduct from the monies due the Contractor \$1,400.00 for each day that expires after the time specified in Paragraph 3.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

## ARTICLE 4 – CONTRACT PRICE

- 4.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds as follows:

_____	(\$ _____)
(words)	(figure)

For all Work, at the prices stated in Contractor's Bid, assuming Parts A and B completed in continuum.

The Bid prices for Unit Price Work set forth as of the Effective Date of the Agreement are based on estimated quantities. Estimated quantities are not guaranteed, and Engineer will determinate the actual quantities and classifications of Unit Price Work performed by the Contractor.

## ARTICLE 5 – PAYMENT PROCEDURES

### 5.01 Submittal and Processing of Payments

- A. Contractor shall submit Applications for Payment in accordance with Part 2 of the General Requirements. Applications for Payment will be processed by Engineer as provided in the General Requirements.

### 5.02 Progress Payments; Retainage

- A. Owner shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment as recommended by Engineer on a monthly basis during performance of the Work as provided in Paragraph 5.02.A.1 below. All such payments will be measured by the schedule of values established as provided in the

General Requirements (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided elsewhere in the Contract Documents.

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract Documents.
  2. The Owner shall withhold five percent (5%) of the dollar value for all Work for the project. The retainage to be withheld will be either five percent (5%) of all Work satisfactorily completed until. When the Work is substantially complete (operational or beneficial occupancy), the retained amount may be reduced below five percent (5%) to only that amount necessary to assure completion. On completion and acceptance on a part of the Work on which the price is stated separately in the Contract Documents, payment may be made in full, including retained percentages, less authorized deductions.
- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to one hundred percent (100%) of the Work completed, less such amounts set off by Owner, and less two hundred percent (200%) of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

#### 5.03 Final Payment

- A. Upon final completion and acceptance of the Work in accordance with the General Requirements, Owner shall pay the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph.

### ARTICLE 6 – CONTRACTOR'S REPRESENTATIONS

- 6.01 In order to induce Owner to enter into this Contract, Contractor makes the following representations:
- A. Contractor has examined and carefully studied the Contract Documents and any data and reference items identified in the Contract Documents.
  - B. Contractor has visited the Site, conducted a thorough, alert visual examination of the Site and adjacent areas, and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
  - C. Contractor is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.
  - D. Contractor 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 subsurface structures at the Site, 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, especially with respect to Technical Data in such reports and drawings.

- E. Contractor has considered the information known to Contractor itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Contract Documents; and the Site-related reports and drawings identified in the Contract 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 Contractor; and (3) Contractor's safety precautions and programs.
- F. Based on the information and observations referred to in the preceding paragraph, Contractor agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
- G. Contractor 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 Contract Documents.
- H. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
- I. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
- J. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

## **ARTICLE 7 – CONTRACT DOCUMENTS**

### **7.01 Contents**

- A. The Contract Documents consist of the following:
  - 1. Contractor's Bid
  - 2. Bid Bond
  - 3. Drug Testing Plan Certification
  - 4. Agreement
  - 5. E-Verify Affidavit
  - 6. Performance Bond
  - 7. Payment Bond
  - 8. Maintenance Bond

9. General Requirements

10. Specifications as contained in Project Manual dated January 2023.

11. Drawings consisting of 20 sheets dated January 2023.

12. Addenda

a. No. \_\_\_\_\_ dated \_\_\_\_\_

b. No. \_\_\_\_\_ dated \_\_\_\_\_

c. No. \_\_\_\_\_ dated \_\_\_\_\_

d. No. \_\_\_\_\_ dated \_\_\_\_\_

13. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:

a. Notice to Proceed

b. Change Order(s).

c. Certificate of Substantial Completion

B. There are no Contract Documents other than those listed above in this Article 7.

C. The Contract Documents may only be amended, modified, or supplemented as provided in the General Requirements.

**ARTICLE 8 – MISCELLANEOUS**

8.01 Terms

A. Terms used in this Agreement will have the meanings stated in the General Requirements.

8.02 Assignment of Contract

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

8.03 Successors and Assigns

A. Owner and Contractor each binds itself, its successors, assigns, and legal representatives to the other party hereto, its successors, assigns, and legal

representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

#### 8.04 Severability

- A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon Owner and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.

#### 8.05 Contractor's Certifications

- A. Contractor certifies that is has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.05:
  - 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
  - 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract 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.



IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement. This Agreement may be executed in counterparts, each of which shall be deemed to be an original, and all such counterparts together shall constitute one and the same Agreement. An electronic, telecopied, or facsimile signature shall be equivalent to and as binding as an original signature.

This Agreement will be effective on \_\_\_\_\_ (which is the Effective Date of the Agreement).

OWNER:

CONTRACTOR:

By: \_\_\_\_\_

By: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

[CORPORATE SEAL]

[CORPORATE SEAL]

Attest: \_\_\_\_\_

Attest: \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Address for giving notices:

Address for giving notices:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

License No.:

\_\_\_\_\_  
(Where applicable)

(If Contractor is a corporation or a partnership or a joint venture, attach evidence of authority to sign.)



**E-Verify Affidavit**

Pursuant to Indiana Code 22-5-1.7-11, the Contractor entering into a contract with the Owner is required to enroll in and verify the work eligibility status of all its newly hired employees through the E-Verify program. The Contractor is not required to verify the work eligibility status of all its newly hired employees through the E-Verify program if the E-Verify program no longer exists.

The undersigned, on behalf of the Contractor, being first duly sworn, deposes and states that the Contractor does not knowingly employ an unauthorized alien. The undersigned further affirms that, prior to entering into its contract with the Owner, the undersigned Contractor will enroll in and agrees to verify the work eligibility status of all its new hired employees through the E-Verify program.

(Contractor)\_\_\_\_\_

By (Written Signature)\_\_\_\_\_

(Printed Name)\_\_\_\_\_

(Title)\_\_\_\_\_

*Important – Notary Signature and Seal Required in the Space Below*

STATE OF \_\_\_\_\_

SS:

COUNTY OF \_\_\_\_\_

Subscribed and sworn to before me this \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_.

My commission expires: \_\_\_\_\_ (Signed)\_\_\_\_\_

Residing in \_\_\_\_\_ County, State of \_\_\_\_\_



## NOTICE TO PROCEED

---

Owner:	Owner's Contract No.:
Contractor:	Contractor's Project No.:
Engineer:	Engineer's Project No.:
Project:	Contract Name:
	Effective Date of Contract:

---

### TO CONTRACTOR:

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on [ ], 20[ ]. *[see Paragraph 4.01 of the General Conditions]*

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Agreement, [the date of Substantial Completion is \_\_\_\_\_, and the date of readiness for final payment is \_\_\_\_\_] **or** [the number of days to achieve Substantial Completion is \_\_\_\_\_, and the number of days to achieve readiness for final payment is \_\_\_\_\_].

Before starting any Work at the Site, Contractor must comply with the following:

*[Note any access limitations, security procedures, or other restrictions]*

---

Owner:

Authorized Signature

By:

Title:

Date Issued:

Copy: Engineer



WESSLER ENGINEERING, INC.  
WAYNE TOWNSHIP SANITARY SEWER INTERCEPTOR - PHASE I  
FIELD TRANSMITTAL MEMORANDUM

CONTRACTOR

MONTH	DAY	YEAR

**SUBJECT:**

**REFERENCE:**

---

---

cc: Owner  
SAMCO RPR

Wessler Project Manager  
Wessler File

WESSLER ENGINEERING, INC.

By
Name: Title:





Change Order No. \_\_\_\_\_

Date of Issuance:

Effective Date:

Owner:

Owner's Contract No.:

Contractor:

Contractor's Project No.:

Engineer:

Engineer's Project No.:

Project:

Contract Name:

The Contract is modified as follows upon execution of this Change Order:

Description:

Attachments: *[List documents supporting change]*

CHANGE IN CONTRACT PRICE	CHANGE IN CONTRACT TIMES <i>[note changes in Milestones if applicable]</i>
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] from previously approved Change Orders No. ____ to No. ____: \$ _____	[Increase] [Decrease] from previously approved Change Orders No. ____ to No. ____: Substantial Completion: _____ Ready for Final Payment: _____ days
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
[Increase] [Decrease] of this Change Order: \$ _____	[Increase] [Decrease] of this Change Order: Substantial Completion: _____ Ready for Final Payment: _____ days or dates
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for Final Payment: _____ days or dates

RECOMMENDED:	ACCEPTED:	ACCEPTED:
By: _____ Engineer (if required)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____

Approved by Funding Agency (if applicable)

By: \_\_\_\_\_ Date: \_\_\_\_\_  
Title: \_\_\_\_\_



## CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: Contractor: Engineer: Project:	Owner's Contract No.: Contractor's Project No.: Engineer's Project No.: Contract Name:
--	---

**This [preliminary] [final] Certificate of Substantial Completion applies to:**

☐ All Work
 ☐ The following specified portions of the Work:

### Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

A punch list of items to be completed or corrected is attached to this Certificate. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work shall be as provided in the Contract, except as amended as follows: *[Note: Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.]*

Amendments to Owner's responsibilities: ☐ None  
☐ As follows

Amendments to Contractor's responsibilities: ☐ None  
☐ As follows:

The following documents are attached to and made a part of this Certificate: *[punch list; others]*

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract.

EXECUTED BY ENGINEER:	RECEIVED:	RECEIVED:
By: _____ (Authorized signature)	By: _____ Owner (Authorized Signature)	By: _____ Contractor (Authorized Signature)
Title: _____	Title: _____	Title: _____
Date: _____	Date: _____	Date: _____



# EXHIBIT "A"

## DUTIES, RESPONSIBILITIES AND LIMITATIONS OF AUTHORITY OF RESIDENT PROJECT REPRESENTATIVE

*Prepared by*

ENGINEERS' JOINT CONTRACT DOCUMENTS COMMITTEE

and

*Issued and Published Jointly by*

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE  
*A practice division of the*  
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

*and by*

AMERICAN CONSULTING ENGINEERS COUNCIL

*and by*

AMERICAN SOCIETY OF CIVIL ENGINEERS

A LISTING OF THE DUTIES, RESPONSIBILITIES AND  
LIMITATIONS OF AUTHORITY OF THE RESIDENT PROJECT  
REPRESENTATIVE\*\*

\*\*unless otherwise noted

---

ENGINEER shall furnish a Resident Project Representative (RPR), assistants and other field staff to assist ENGINEER in observing performance of the Work of the CONTRACTOR.

Through more extensive on-site observations of the Work in progress and field checks of materials and equipment by the RPR and assistants, ENGINEER shall endeavor to provide further protection for OWNER against defects and deficiencies in the Work; but, the furnishing of such services will not make ENGINEER responsible for or give ENGINEER control over construction means, methods, techniques, sequences or procedures or for safety precautions or programs, or responsibility for CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

The duties and responsibilities of the RPR are limited to those of ENGINEER in ENGINEER's agreement with the OWNER and in the construction Contract Documents, and are further limited and described as follows:

A. General

RPR will be ENGINEER's employee or agent at the Site, will act as directed by and under the supervision of ENGINEER, and will confer with ENGINEER regarding RPR's actions. RPR's dealings in matters pertaining to the Work in general shall be with ENGINEER and CONTRACTOR. RPR's dealings with Subcontractors shall be through or with the full knowledge and approval of CONTRACTOR.

B. Duties and Responsibilities of RPR

1. *Schedules* – Review the Progress Schedule, Schedule of Shop Drawing and Sample submittals, and Schedule of Values prepared by CONTRACTOR and consult with ENGINEER concerning acceptability.
2. *Conferences and Meetings* – Attend meetings with CONTRACTOR, such as preconstruction conferences, progress meetings, job conferences and other project related meetings and prepare and circulate copies of minutes thereof.

3. *Liaison –*
  - a. Serve as ENGINEER's liaison with CONTRACTOR; working principally through CONTRACTOR's authorized representative and assist in providing information regarding the intent of the Contract Documents.
  - b. Assist ENGINEER in serving as OWNER's liaison with CONTRACTOR when CONTRACTOR's operations affect OWNER's on-Site operations.
  - c. Assist in obtaining from OWNER additional details or information, when required for proper execution of the Work.
4. *Interpretation of Contract Documents –*

Report to ENGINEER when clarifications and interpretations of the Contract Documents are needed and transmit to CONTRACTOR clarifications and interpretations as issued by ENGINEER.
5. *Shop Drawings and Samples –*
  - a. Record date of receipt of Samples and approved Shop Drawings.
  - b. Receive samples, which are furnished at the Site by CONTRACTOR, and notify ENGINEER of availability of Samples for examination.
6. *Modifications –*

Consider and evaluate CONTRACTOR'S suggestions for modifications in Drawings or Specifications and report such suggestions, together with RPR's recommendations, to ENGINEER. Transmit to CONTRACTOR in writing decisions as issued by ENGINEER.
7. *Review of Work, Rejection of Defective Work –*
  - a. Conduct on-site observations of CONTRACTOR's Work in progress to assist ENGINEER in determining if the Work is in general proceeding in accordance with the Contract Documents.
  - b. Report to ENGINEER whenever RPR believes that any part of CONTRACTOR's work in progress will not produce a completed Project that conforms generally to the Contract Documents or will imperil the integrity of the design concept of the completed Project as a functioning whole as indicated in the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise ENGINEER of that part of work in progress that RPR believes should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
8. *Inspections, Tests, and System Startups-*
  - a. Verify that tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate OWNER's personnel, and that CONTRACTOR maintains adequate records thereof.

- b. Observe, record and report to ENGINEER appropriate details relative to the test procedures and systems startups.
- 9. *Records –*
  - a. Record names, addresses, fax numbers, e-mail addresses, web site locations, and telephone numbers of all CONTRACTORS, Subcontractors and major Suppliers of materials and equipment.
  - b. Maintain records for use in preparing Project documentation.
- 10. *Reports -*
  - a. Furnish to ENGINEER periodic reports as required of progress of the Work and of CONTRACTOR's compliance with the progress schedule and schedule of Shop Drawings and Sample submittals.
  - b. Draft and recommend to ENGINEER proposed Change Orders, Work Change Directives, and Field Orders. Obtain backup material from CONTRACTOR.
  - c. Immediately notify ENGINEER of the occurrence of any Site accidents, emergencies, acts of God endangering the Work, damage to property by fire or other causes, or the discovery of any Hazardous Environmental Condition.
- 11. *Payment Requests –*

Review Applications for Payment with CONTRACTOR for compliance with the established procedure for their submission and forward with recommendations to ENGINEER, noting particularly the relationship of the payment requested to the Schedule of Values, Work completed, and materials and equipment delivered at the Site but not incorporated in the Work.
- 12. *Certificates, Maintenance and Operation Manuals –*

During the course of the Work, verify that certificates, maintenance and operation manuals and other data required by the Specifications to be assembled and furnished by CONTRACTOR are applicable to the items actually installed and in accordance with Contract Documents, and have these documents delivered to ENGINEER for review and forwarding to OWNER prior to payment for that part of the Work.
- 13. *Completion –*
  - a. Participate in a Substantial Completion inspection, assist in the determination of Substantial Completion and the preparation of lists of items to be completed or corrected.
  - b. Participate in a final inspection in the company of ENGINEER, OWNER, and CONTRACTOR and prepare a final list of items to be completed and deficiencies to be remedied.



- c. Observe whether all items on final list have been completed or corrected and make recommendations to ENGINEER concerning acceptance and issuance of the Notice of Acceptability of the Work.

#### C. Limitations of Authority

Resident Project Representative shall not:

1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
2. Exceed limitations of ENGINEER's authority as set forth in the Contract Documents.
3. Undertake any of the responsibilities of CONTRACTOR, Subcontractors, Suppliers, or CONTRACTOR's superintendent.
4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of CONTRACTOR's work unless such advice or directions are specifically required by the Contract Documents.
5. Advise on, issue directions regarding, or assume control over safety practices, precautions, and programs in connection with the activities or operations of OWNER or CONTRACTOR.
6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by ENGINEER.
7. Accept Shop Drawing or Sample submittals from anyone other than CONTRACTOR.
8. Authorize OWNER to occupy the Project in whole or in part.



## SECTION 00 – GENERAL REQUIREMENTS

### PART 1 - GENERAL OVERVIEW

#### 1.01 Definitions

For the purposes of these Gravity Sanitary Sewer Specifications ("Specifications"), the following definitions shall apply:

- A. "HSE" shall mean Hamilton Southeastern Utilities, Inc., the public utility that provides sanitary sewer service in the Project (as hereafter defined) area. HSE's address is 11901 Lakeside Drive, Fishers, Indiana 46038, and HSE's phone number is (317)577-2300.
- B. "Engineer" shall mean the engineer for HSE, which is Sanitary Management & Engineering Company, Inc. ("SAMCO") or SAMCO's engineers. SAMCO's inspector shall be Engineer's representative during construction of the Project. SAMCO's address is 11905 Lakeside Drive, Fishers, Indiana 46038, and SAMCO's phone number is (317)577-1150.
- C. "Subscriber" shall mean those signatories identified as Subscribers under a Special Contract for extension of Sewer Mains and Facilities with HSE through which the Project is being undertaken. Subscriber is generally the Owner under a construction contract. This definition is intended to include all employees and/or agents acting in the interest of Subscriber.
- D. "Contractor" shall mean any construction contractor approved by HSE to construct, install, maintain, repair, and remove public or Private sanitary sewer facilities within the HSE service area. This definition is intended to include all employees, sub-contractors and/or agents acting for or on behalf of Contractor's company.
- E. "Design Engineer" shall mean the engineer sealing the Construction Plans, as opposed to Engineer for HSE who is also defined under these Specifications. This definition is intended to include all employees, sub-contractors and/or agents acting for or on behalf of Design Engineer's company.
- F. "Project" shall mean any sanitary sewer facilities constructed under a distinct set of contract documents and shall include all work necessary for the Complete (as hereafter defined) and operable installation of all sanitary sewer infrastructure and appurtenances in conformity with the HSE approved Construction Plans and the standards, specifications, and details of HSE.
- G. "Sanitary Sewer Facilities" shall mean any pipes, manholes, flow monitoring/metering manholes, clean-outs, grease traps, grit traps, oil/water separators, neutralization tanks, wyes, laterals, and any other appurtenances which convey or process sanitary sewage.
- H. "Conveyed", with regards to sanitary sewer facilities, means Projects for which HSE has received title.

- I. "Private", with regards to Projects, shall mean Projects from which sewage flows into HSE's sanitary sewer facilities, but for which title for the sanitary sewer facilities is not to be Conveyed to HSE.
- J. "Completed", with regards to Projects, shall mean any Projects which are acceptably constructed, tested, and through which customer service has been authorized by HSE, but for which HSE has not received title. All applicable fees must be paid to HSE prior to a Project being deemed Completed.
- K. "Construction Plans" shall mean primary plats, secondary plats, sets of construction drawings, architectural plans, shop drawings, landscaping plans, record drawings, easements, deeds, covenants and restrictions, and any other documentation to be submitted under these Specifications and HSE's "Design Specifications for Sanitary Sewer facilities". Construction Plans must meet the applicable standards in effect at the time documents are submitted.

#### 1.02 Purpose

- A. The purpose of these Specifications is to define the standards for engineering design, construction specifications and construction practices related to the Project which will allow for the orderly and proper installation of sanitary sewer facilities constructed within HSE's service area.

#### 1.03 Applicability

- A. These Specifications are applicable for all Public and Private sanitary sewer facilities which will be connected to HSE's sanitary sewer system. This includes Private Projects which will not initially be connected to HSE's sanitary sewer system but at some future date may be connected to the system.

#### 1.04 Liability and Costs for Project

- A. No direction, field directive or other instruction contemplated by these Specifications and/or conducted by others shall accrue any liability, charge, or cost to HSE, Engineer or Engineer's inspectors.

#### 1.05 Standards, Specifications and Details

- A. HSE's Gravity Sanitary Sewer Details sheet, Lift Station and Force Main Details sheet, Lift Station and Force Main Specifications sheets, Standards for Design and Construction of Laterals, Rules and Regulations, Master Plan, and Design Specifications for Sanitary Sewer Facilities are integral parts of these Specifications. Contractor should become familiar with these documents prior to construction of any sanitary sewer facilities within HSE's service area.
- B. These Specifications, HSE's Gravity Sanitary Sewer Details sheet and HSE's Design Specifications for Sanitary Sewer Facilities are complementary in nature and should not be interpreted individually.
- C. These Specifications and HSE's Gravity Sanitary Sewer Details sheets, Master Plan, and other standards, specifications and details are subject to revision at any

time prior to the start of construction of the Project. These documents are also subject to revision at any time during construction when, in Engineer's opinion, those revisions materially affect the maintenance, operation or life of the Project. All such revised documents must replace the corresponding documents in the Construction Plans at the time when provided to Contractor.

- D. HSE reserves the right to modify or waive any of these Specifications and/or its Master Plan and other standards, specifications, and details in its best interest.
- E. These Specifications are intended to define the construction requirements of sanitary sewer facilities which are constructed and operated under typical conditions in HSE's service area. Depending on field conditions and the composition and characteristics of the sanitary sewer flow, different or unusual conditions may occur which cannot be anticipated in a document of this nature. Engineer may impose additional or special construction requirements under these circumstances.

#### 1.06 Drawing Discrepancies and Omissions

- A. Prior to the start of construction, Contractor must notify Engineer of any conflicts between the Construction Plans, any supplemental information supplied by HSE, and/or these Specifications. Resolution of any such conflict will be at Engineer's sole discretion.
- B. Any items which are not covered in these Specifications, the Construction Plans or HSE's other standards, specifications, and details, but are required for construction of this Project, must be approved by Engineer prior to installation and must be made part of this contract.
- C. In the event construction practices are not described, but in Engineer's opinion, will affect the quality of construction or long-term maintainability of the sanitary sewer facilities, Engineer must approve any construction practices proposed by Contractor.

#### 1.07 Governing Laws, Codes, and Regulations

- A. Construction practices must meet all applicable laws, codes, or regulations and be in accordance with the requirements of all governmental agencies and public entities having jurisdiction.
- B. These Specifications shall not be considered as a substitute, nor shall supersede any state or federal law, code, or regulation related to the Project. In the event of a conflict between any state or federal law, code, or regulation governing the Project and these Specifications, the more stringent requirement will apply.
- C. All persons on site must abide by all Indiana Occupational Safety and Health Administration (IOSHA) standards including but not limited to "General Construction Practices" and "Trench Safety Standards".

1.08 Notices

- A. All notices required by these Specifications must be given to both HSE and Engineer at their respective business offices.

PART 2 - GENERAL CONSTRUCTION REQUIREMENTS

2.01 General

- A. These Specifications cover all work necessary for the installation of Sanitary Sewer Facilities, access drives and other appurtenances to convey sewage to the receiving sewer in an acceptable and operable manner.
- B. Contractor must provide all necessary work to install sanitary sewer facilities in a Complete manner in accordance with the Construction Plans.
- C. All pipe, fittings, and appurtenances must be the size, type, classification, and grade shown on the Construction Plans and must meet all requirements of these Specifications.
- D. Contractor must not substitute materials which differ from the approved Construction Plans unless approved by Engineer.
- E. All pipe and fittings sizes, and all references to pipe diameter on the Construction Plans or in these Specifications are intended to be nominal size or diameter and must be interpreted as such.
- F. If a material type is shown on the Construction Plans, the material type must describe a general category of materials meeting these Specifications.

2.02 Submittals

- A. Contractor must submit only one model number or type per item for approval. Multiple submittals of model number or type for a single item will be cause for rejection of the shop drawing.
- B. Before delivery of products to the site (for standard yard stocked items) or before fabrication (for items which are not standard yard stocked items), Contractor must provide submittals to, and obtain acceptance from Engineer. Submittals must be thoroughly reviewed by Contractor and certified to meet these Specifications (with all exceptions explicitly indicated) prior to submission to Engineer.
- C. Certified copies of test reports on factory tests.
  - 1. Where required by the applicable manufacturing standards provide a copy of the manufacturer's inspection or test report and a certified statement by the manufacturer that the material has been sampled, tested, and inspected in accordance with the applicable manufacturing standards.
  - 2. All factory inspections, tests and record keeping identified as mandatory or required under the applicable standards for each product are required under

these Specifications. Factory inspections and tests which are identified as optional under the applicable manufacturing standards, are not required unless otherwise specifically indicated in the Construction Plans or these Specifications.

3. An authorized agent of the manufacturer or distributor must sign each certification and report.

D. Catalog cuts with product data, including details of manufacture, for all manufactured items.

E. Manufacturer's recommendations on all materials and methods of installation.

F. Form of warranty.

G. Operation and maintenance instructions for all mechanical and electrical equipment.

## 2.03 Initiation of Construction

A. Plan approval will be an authorization to proceed with construction of the Project, however, it shall not be construed as authority to violate, cancel, or set aside any of HSE's requirements or the laws, codes, regulations, and permit processes of governmental agencies or public entities. Approval will be evidenced by an "Approved Hamilton Southeastern Utilities, Inc." stamp on the Construction Plans.

B. Plan approvals will be valid for a period of six (6) months from the date of the approval stamp. Extensions of this time limit may be requested from Engineer if extenuating circumstances exist. Engineer's decision regarding time extensions will be final.

C. Prior to the start of construction, Design Engineer must receive formal written approval from Engineer. At this time, Design Engineer must supply Engineer with PDF and AutoCAD file of complete set of Construction Plans.

D. Contractor will not be permitted to initiate construction until the Construction Plans are formally approved, and Subscriber has entered into all necessary agreements and authorizations with, and all required fees have been paid to HSE.

E. Contractor will not be permitted to initiate construction until all applicable permits have been approved by and obtained from all affected governmental agencies and public entities. Copies of the permits must be submitted to Engineer for review.

F. Contractor will not be permitted to initiate construction until all off-site easements have been reviewed, approved, and recorded by Engineer.

G. Pipe layers and foreman (superintendent) assigned to the Project must be approved by HSE prior to the start of construction.

H. Notice must be provided to Engineer twenty-one (21) days prior to the initiation of construction.

- I. A pre-construction meeting is required between Engineer and Contractor prior to the initiation of construction. The pre-construction meeting must be completed no more than fourteen (14) days prior to the start of construction.
- J. All rough grading (on and off site) must be finished to within one (1) foot of final grade and verified by Engineer prior to the start of construction of Sanitary Sewer Facilities.

#### 2.04 Continuity of Construction

- A. Once construction has commenced, the Project must be Completed promptly as directed by Engineer.
- B. Contractor cannot discontinue work on the Project, except for weather delays, without written approval from Engineer and in this case no sanitary sewer structures including manholes, clean-outs, flow monitoring/metering manholes, grease traps, grit traps, oil/water separators, neutralization tanks, etc. (Manholes) can be left open and incomplete.

#### 2.05 Stop Work Order

- A. Engineer has the authority to direct the issuance of an order requiring suspension of the pertinent construction activity (Stop Work Order) whenever it is determined that construction activity:
  - 1. Is proceeding in an unsafe manner.
  - 2. Is proceeding in violation of a requirement or specification of HSE.
  - 3. Is proceeding in a manner which is materially different from the application, plans, or supporting documents; or
  - 4. For which a permit is required, and work is proceeding without such permit being in force. In such an instance, Stop Work Order shall indicate the effect of the order is terminated when required permit is issued.
  - 5. Stop Work Order shall be in writing by HSE and shall state to what construction it is applicable and the reason for its issuance.
  - 6. One (1) copy of Stop Work Order shall be conspicuously posted on the property, and one (1) copy shall be delivered via mail to the Owner of the property or their agent.
  - 7. Stop Work Order shall state the conditions under which construction may be resumed.
  - 8. If a Stop Work Order is issued, Contractor shall restore site to a safe condition prior to stopping work pursuant to the order.
  - 9. The sanctions provided in this section shall in no way limit the imposition of penalties provided elsewhere in these Specifications.

#### 2.06 Confined Space Entry

- A. All persons, including but not limited to Subscribers, Contractors, sub-contractors, Design Engineers, and surveyors must abide by HSE's "General Procedures for Manhole Opening and Entry" or the most recent IOSHA confined space entry standards, whichever is more stringent.



- 2.07 Cleanliness
- A. The Project site must at all-time be kept free of trash, rubbish, unsightly materials, and other nuisances associated with sanitary infrastructure installation.
- 2.08 Product Delivery, Handling, and Storage
- A. Contractor is responsible for the delivery, handling, and storage of products.
- B. Deliver products with manufacturer's tags and labels intact.
- C. Handle products in accordance with manufacturer's recommendations and with extreme care to not damage or shock. Load and unload all products by hoists or skidding. Do not drop products. Do not skid or roll products on or against other products. Slings, hooks, and pipe tongs must be padded.
- D. Keep stored products safe from damage or deterioration in accordance with manufacturer's recommendations. Keep interior of products free from dirt or foreign matter. Drain and store products in a manner that will protect them from freezing. Store electronic and electrical products in a manner that will protect them from freezing and weather. Do not stack products unless allowed by the manufacturer's requirements. Store gaskets and other products affected by sunlight in a cool location out of direct sunlight. Gaskets must not come in contact with petroleum products. Use gaskets on a first-in/first-out basis.
- E. Promptly remove damaged or defective products from the Project site. Replace damaged or defective products with acceptable products.
- F. Contractor is responsible for verifying that the materials are free of defects and are the proper type, classification, grade, etc. complying with the Construction Plans and/or HSE's standards, Specifications, and details.
- 2.09 Quality Assurance
- A. Contractor must test and perform quality assurance requirements on all Sanitary Sewer Facilities in accordance with these Specifications.
- B. Execute work in conformance with applicable sections of the latest published editions of American National Standards Institute (ANSI), American Society of Mechanical Engineers (ASME), American Society for Testing and Materials (ASTM), American Water Works Association (AWWA), and American Association of State Highway and Transportation Officials (AASHTO) standards or as indicated in these Specifications and/or the Construction Plans, whichever is more stringent.
- C. All sanitary sewer facilities must be new and unused.
- D. Line and grade requirements
1. Contractor must provide assurance to Engineer that the sewer is laid accurately to the required line and grade as shown on the Construction Plans. Contractor must constantly check horizontal and vertical alignment of the

gravity sewer. Contractor may install either main line pipe between three (3) manhole structures or to a manhole structure which is one thousand (1,000) linear feet of main line pipe from an as-built manhole structure associated with an adjoining project Section or sanitary sewer interceptor which has been verified and reflected as complete on the HSE GIS infrastructure map, whichever is of the greater distance.

2. Contractor must coordinate verification of Sanitary Sewer Facilities installation with Engineer to provide an as-built record, as described later in these Specifications, with the completion of every three manholes. Verification is defined as certification by Contractor's representative as to actual invert elevation, length of pipe, and slope. Construction is not permitted to continue until the above stated verification conditions are satisfied. Variations from uniform line and grade, as shown on the Construction Plans and as described below, are cause for the pipe to be rejected and re-laid in compliance with the Construction Plans.
3. The variance from design line and grade between manhole structures cannot be greater one-half (1/2) inch total, provided that such variation does not result in a level or reverse sloping of the pipe between joints.
4. Contractor's survey equipment (level, transit, GPS, etc) shall bear calibration certification documentation by the manufacturers approved service facility within six (6) months of it being in use.
5. Engineer will not accept gravity sanitary sewers below minimum slope. Reconstruction of sanitary sewers may be required at the utility's discretion.

## 2.10 Inspection and Rejection of Materials

- A. The quality of all materials, process of manufacture, and finished product are subject to inspection and acceptance by Engineer. Such inspection may be made at the place of manufacture and/or on the work site after delivery. Products are subject to rejection at any time for failure to meet any of the manufacturer's specifications, even though samples may have otherwise been accepted as satisfactory.
- B. Immediately prior to being incorporated into the Project, each product must be carefully inspected, and those not meeting these Specifications and HSE's Gravity Sanitary Sewer Details sheets must be rejected, immediately removed from the site, and replaced at Contractor's sole expense.
- C. Contractor must not repair, or permit manufacturer to repair, any pre-cast concrete structures with exposed steel or welded wire fabric reinforcement.
- D. Pre-cast reinforced concrete structures, adjustment rings, and tops are subject to rejection for failure to conform with, but not limited to, any of the following requirements:
  1. Fractures or cracks passing through the shell with a depth greater than or equal to one (1) inch.
  2. Defects that indicate imperfect proportioning, mixing, or molding.
  3. Surface defects indicating honeycombing or open texture.
  4. Damaged ends where such damage would prevent making a satisfactory joint.

5. Infiltration into the structure.
6. The internal diameter of the structure must not vary by more than one (1) percent from the nominal diameter.
7. Not clearly marked with date of manufacture, trade name, size designation, ASTM number, etc.
8. Having any visible steel bars or wire mesh along inside or outside surfaces of the structure.
9. Evidence of patching.

#### 2.11 Relation to Wells and Water Supplies

- A. Sewers must be laid at least ten (10) feet horizontally from any existing or proposed water main. The distance is to be measured edge to edge. Should specific conditions prevent this separation, Contractor must notify Engineer for specific instructions.
- B. Whenever the sewer crosses a water main, the sewer should be laid at least eighteen (18) inches below the water main.
- C. When the above conditions cannot be obtained, the sewer must be constructed of ANSI/AWWA C905 waterworks grade PVC pipe, SDR 21 PVC (ASTM D2241) pressure sewer pipe, or ANSI/AWWA C900 with compression fittings. The joints must be located equidistant in both directions from the water main. The sewer must be the type of pipe described above for a minimum of ten (10) feet beyond the cross point. Special structural support for the water main and sewer may be required.
- D. Sewer/water supply separations and pipe classifications must conform with the latest edition of the Ten States Standards, Indiana State Board of Health's (ISBH) "On-site Water Supply and Wastewater Disposal for Public and Commercial Establishments – Bulletin S.E. 13" and Indiana Department of Environmental Management (IDEM).

#### 2.12 Utilities

- A. All existing utility systems which conflict with the construction of the Project, which can be temporarily removed and replaced, must be accomplished at the expense of Subscriber. Work must be done by the respective utility unless the utility approves in writing that Contractor can do the work.
- B. Permanent relocation of Utilities
  1. Except as otherwise noted on the Construction Plans, it is the responsibility of Subscriber to move or pay for moving all utility appurtenances, including but not limited to, water mains, storm sewer inlets, gas lines, electrical lines, service connections, water and gas meter boxes, water and gas valve boxes, light and traffic standards, cable ways, signals, etc. located in the public right-of-way or private easement which would permanently interfere with the Project.
  2. It is understood and agreed that Contractor has considered in his bid all the permanent and temporary utility appurtenances shown or otherwise indicated

on the Construction Plans. It is also understood and agreed that when contracted by HSE, no additional compensation will be allowed for any delays, inconvenience, or damage sustained by Contractor due to any interference from said utility appurtenances or the operation of moving them. Costs incurred due to the respective utility company moving the utilities shall be that of the Subscriber.

- C. Contractor must provide, at Contractor's expense, all electrical and gas energy, water service (including water for flushing and testing) and telephone service required for the Project until the Project is Complete.

#### 2.13 Installation Service

- A. The service of an experienced installation representative of the manufacturer must be provided when Engineer deems it necessary. The representative must be available when installation problems arise, when requested by Engineer to resolve installation problems, and during testing of the Sanitary Sewer Facilities having equipment installed.
- B. The manufacturer of any Sanitary Sewer Facilities may be required to provide installation advice to Contractor's workforce. Engineer will determine the need for these services based on job site conditions encountered during construction.

#### 2.14 Product Installation

- A. Install all products in strict accordance with manufacturer's recommendations and these Specifications in a neat and workmanlike manner.
- B. Bring all conflicts between the manufacturer's recommendations and these Specifications to the attention of Engineer and obtain direction from Engineer as to the resolution of any conflict in installation directives.

#### 2.15 As-Built Record Set

- A. Contractor must maintain, during the course of the Project, an up-to-date plan set which accurately reflects the actual: as-built dimensions (horizontal location and vertical elevation), materials of construction, and other relevant information necessary to develop a set of as-built record drawings.
- B. As-built horizontal locations are required on all manholes, wyes, lateral markers, and end of stubs (if greater than 20 feet). As-built vertical elevations are required on all manhole top of casting and inverts, clean-out top of castings, and upstream inverts of stubs greater than 20 feet. Engineer will schedule the as-built survey of completed new infrastructure construction and bill Subscriber for the as-built costs.

#### 2.16 Completion Documentation

- A. Contractor must provide to HSE and Engineer, in Subscriber's name, the necessary Completion Documentation for the Project. Costs associated with the final as-built documentation review by Engineer and its inclusion to update HSE's GIS infrastructure database shall be at Subscriber's expense. Any Field Changes

made which, in Engineer's opinion, materially affect the project are to be made by Design Engineer and amended digital plan sheets provided prior to completion of sanitary sewer infrastructure installation and operation.

- B. On a daily basis, Utility inspector and Contractor shall submit a HSE Lateral Location form to Engineer detailing all wye connections, pipe type, stationing, and pipe grade. Prior to being submitted, Utility Inspector and Contractor must digitally sign the Lateral Location Form. The as-built location of the wye station can be supplied by measuring along the pipe section and assigning a station to each connection from the nearest downstream manhole structure. An accuracy of two (2) +/- feet is required.
- C. Contractor must complete all outstanding items detailed in Engineer's correspondence and supply all necessary information (including construction cost documentation, with all applicable change orders). Sanitary Sewer Inventory form, Lateral Location forms, television logs, etc. are the responsibility of Inspector who shall provide them to Engineer.
- D. If a manhole top of casting is adjusted after as-built drawings are complete, Contractor must supply Engineer with a new measure down to the flow line from the top of casting. If new measure down is not provided to Engineer, Contractor must pay Engineer, at their current rate, for all time required obtaining this information.
- E. Contractor must provide to HSE copies of all contracts, invoices, statements, material lists, payment requests, and all other related documents pertaining to the construction cost of Project. The above documents must be provided monthly, unless otherwise determined by HSE.
- F. Submit any other items required by Engineer.

## 2.17 Inspection and Reimbursement

- A. Full time inspection by Engineer is required for all repairs and maintenance, to Sanitary Sewer Facilities prior to acceptance of the facilities by HSE as owner. Engineer must approve, in writing, all methods of repair to Sanitary Sewer Facilities as recommended by Contractor and manufacturer. Failure to comply will be grounds for removal from HSE Approved Contractor List.
- B. If, for any reason, construction work is delayed or canceled, Contractor shall notify Engineer's inspector assigned to the Project and Engineer's chief inspector at least one hour (1) prior to the normal scheduled start time on the day the work is delayed or canceled. Contractor will be charged the prevailing rate for failure to notify Engineer's inspector and/or inspector's supervisor per occurrence.
- C. Contractor must pay Engineer for all inspector's overtime cost. Contractors will be charged overtime costs at the prevailing rate per hour outside of SAMCO's normal business hours. The hourly rate for Sundays and holidays will be twice the hourly rate. The hourly rates are subject to change without notice, contact Engineer prior to starting construction for current rates.

- D. If, at the sole discretion of Engineer, construction volume is less than what is deemed acceptable, Contractor may be required to pay for additional inspection services.
- E. Engineer's decision on field changes or construction practices is final. Failure to comply is grounds for removal from the HSE Approved Contractor List.

## PART 3 - TESTING, PUNCH LISTS, AND CLEANING

### 3.01 General Testing Requirements (Except Pump Factory Test)

- A. Notification must be provided at least three (3) days prior to any testing. All lines must be clean and free of any debris.
- B. At HSE's option, all testing within the HSE service area may be performed by HSE or their agent. Contractor shall reimburse HSE or its agent at HSE's current rate for all testing related services.
- C. All testing (except manhole vacuum testing) must be conducted after the backfill has been in place for at least thirty (30) days and after all other in ground utilities have been installed.
- D. At Engineer's discretion, testing may be delayed, or additional testing may be required, based upon weather conditions (inadequate precipitation to allow for adequate settlement, temperature variance between mandrel and pipe, etc.). Testing may also be delayed, or additional testing may be required due to the installation of site improvements (including but not limited to fencing, signage, landscaping, site lighting, and other sub-surface improvements).
- E. If Subscriber requires sanitary sewer service prior to final testing, a preliminary test may be performed, however, Subscriber must provide, in writing, a guarantee that all cleaning and testing will be performed per the Construction Plans and HSE's then current standards, specifications, and details.

### 3.02 Deflection Testing

- A. If testing is delayed per Section 3.01-E above, due to the lack of precipitation and, in the opinion of Engineer, the densification of the backfill is inadequate, Contractor may perform a mandrel test utilizing a mandrel sized to measure a deflection limit of three (3) percent. This may only be done with permission of Engineer, in writing, after all requirements of Section 3.01-D have been met.
- B. All PVC (non-lateral) pipe must be tested for deflection with an acceptable go-no-go mandrel. No pipe can exceed a deflection of five (5) percent. The deflection test must be conducted using a mandrel having a diameter equal to ninety-five (95) percent of the inside diameter of the pipe. The test must be performed without a mechanical pulling device and the rope used to pull the mandrel must be no stronger than one hundred-fifty (150) pound test. Tag/trail rope may be of any size to allow removal of mandrel. A single individual of average size, weight, and

strength, without the use of tools to gain leverage, must pull the mandrel. All pipe exceeding the allowable deflection must be replaced or repaired and re-tested.

- C. Engineer reserves the right to require an additional mandrel test on sections of flexible pipe which are crossed by storm sewers any time prior to conveyance to HSE.
- D. Engineer will not accept sewers with “sags” greater than one thirty-second (1/32) of an inch per inch of pipe diameter, not to exceed one-half (1/2) inch total.

### 3.03 Sewer Water Tightness Testing

#### A. Acceptability Limits

- 1. Maximum infiltration/exfiltration limits for all new sanitary sewers will be fifty (50) gallons per inch of diameter per mile of pipe per twenty-four (24) hours. This standard is applicable to each discrete section of the Project and includes all manholes and lateral service connections. All sections of the sewer must be tested and any sections not meeting these limits must be repaired and re-tested.
- 2. In the presence of groundwater or poor soil conditions, and if required by Engineer, the sewer may be required to successfully complete a water tightness test before proceeding with any additional construction.

#### B. Test for water tightness must be conducted on all sewers in the Project.

- C. Where test results exceed allowable limits, Contractor must correct the construction of the sewer and retest so that the section tested is within allowable limits. All methods and materials used in the repair must be accepted by Engineer in writing. Grouting of joints is not an acceptable repair method.
- D. If groundwater is present during installation of the sanitary sewer mainline, Contractor shall maintain a dewatering management operation to keep water out of the pipe and not incur any floatation issues. As with all aspects of construction, it is Contractor's responsibility to ensure all materials and modes of operation are properly secured and safe.

#### E. At Engineer's discretion, the following tests may be required:

- 1. Air Test for Leakage per ASTM F1417
  - a. The ends of the pipe being tested must be sealed and properly braced for developed end thrust to prevent displacement while the line is under pressure and potential safety concerns. The air supply line will have an on/off valve and a pressure gauge (calibrated within the past 6-months) having a range from zero (0) to fifteen (15) psi. The gauge must have minimum divisions of five-hundredths (0.05) psi and an accuracy of +/- five hundredths (0.05) psi.
  - b. The pipe to be tested must be clean.
  - c. The groundwater level surrounding the section of pipe under testing must be determined from static dewatering well or prior observation. If the

groundwater table is above the pipe, test pressures must be increased forty-three hundredths (0.43) psi for each foot of water over the lowest invert.

- d. The air must be introduced slowly to the section of pipe under evaluation to enable equalization in the pipe section. Air pressure should be increased in small steps until the internal air pressure is five (5) psi greater than the hydrostatic pressure head created by the groundwater over the pipe section.
- e. A minimum of two (2) minutes must be provided for the air pressure to stabilize to conditions within the pipe. Engineer shall determine the stabilization time based on field conditions and weather. The stabilization period is necessary for variations in temperature to adjust to the interior pipe conditions. Air can be added slowly during the stabilization period to maintain a minimum pressure of five (5) psi greater than the hydrostatic pressure created by groundwater.
- f. After the stabilization period, when the pressure reaches exactly five (5) psi greater than the hydrostatic pressure created by groundwater, the stopwatch must be started; and when the pressure reaches three and half (3 ½) psi greater than the hydrostatic pressure created by groundwater, the watch must be stopped. The portion of the line being tested will be acceptable if the time for the air pressure to decrease within the stated range is greater than the time shown below. If the pipe length is between the specified lengths below, the time must be based on the next greater length.
- g. Safety precautions during Air Test
  - 1) The air test may be dangerous if, because of ignorance or carelessness, a line is improperly prepared. It is extremely important that the various plugs be installed and braced in such a way to prevent blowouts. Contractor should realize the sudden expulsion of a poorly installed plug could be dangerous. Likewise, a plug that is partially deflated before the pipe pressure is released can be equally dangerous.
  - 2) As a safety precaution, pressurizing equipment should include a regulator set at ten (10) psi to avoid over pressurizing and damaging an otherwise acceptable line.
  - 3) No one is allowed in the manholes during testing.

#### 3.04 Manhole Testing

- A. All sanitary sewer manholes and flow monitoring/metering manholes must be vacuum tested per ASTM C1244 after installation, repair, or modification. Test to be performed by Contractor or HSE appointed agent and witnessed by Field Inspector prior to adjustment ring(s) and casting placement.
- B. Installation and operation of vacuum equipment and indicating devices must be in accordance with ASTM C1244.
- C. With the vacuum tester in place, draw a vacuum of ten (10) inches of mercury and close the valve.



- D. Acceptance standards for leakage will be established from the elapsed time for a negative pressure change from ten (10) inches to nine (9) inches of mercury. The maximum allowable leakage rate for a four (4) foot diameter manhole must be in accordance with the following:

1. Minimum Elapsed time for a

Manhole Depth	Pressure Change of 1-inch Mercury
10ft or less	60 sec
>10ft but <15ft	75 sec
>15ft but <25ft	90 sec
>25ft but <30ft	105 sec
>30ft but <35ft	120 sec

For manholes five (5) feet in diameter, add an additional fifteen (15) seconds and for manholes six (6) feet in diameter, add an additional thirty (30) seconds to the time requirements for four (4) foot diameter manholes.

- E. Manholes will be subject to visual inspection with all visible leaks being repaired.

3.05 Punch Lists

- A. After all tests have been successfully completed, Engineer will perform inspection of Sanitary Sewer Facilities and provide Contractor a written summary of items, or punch list, which require corrective action.
- B. Contractor must complete all punch list items within twenty-one (21) days of issuance. If, in opinion of Engineer, punch list has not been completed, Contractor must pay HSE additional inspection fees per re-inspection (inclusive of associated management costs) until Engineer deems punch list complete.

3.06 Video Inspection

- A. Sections of sewer will be inspected at Engineer's discretion and in coordination with Contractor. This work shall be at the expense of HSE prior to approving sanitary sewer availability for service.
- B. Prior to conveyance of the infrastructure to the Utility, HSE will furnish all equipment and personnel to perform all work required in the inspection and video recording operation at Contractor's expense.
- C. All new sewers must be cleaned by Contractor prior to any testing or video inspection of mainline sewers. Failure to adequately perform this task will delay work completion. The Inspection staff shall exercise reasonable effort to not introduce debris into otherwise clean manhole structures.

## PART 4 – OPERATION, CLEANING, AND FINAL INSPECTION PRIOR TO CONVEYANCE

### 4.01 Operation

- A. No person, including but not limited to, Subscribers, maintenance workers, Contractors, sub-contractors, and engineers shall, directly or indirectly, allow flow to occur from any Project which is not Complete to a Completed Project status.

### 4.02 Cleaning

- A. The Project must be cleaned, as directed by Engineer at Subscriber's expense at least once prior to conveyance.

### 4.03 Final Inspection

- A. Within six (6) months prior to conveyance, Engineer will conduct an inspection (Final Inspection) at Subscriber's expense. The Final Inspection will consist of a walk-through and video inspection of the Project to identify any defects. The Final Inspection may also consist of flow monitoring, smoke, infiltration, deflection tests as determined by Engineer.
- B. After Final Inspection has been performed, Engineer will provide a written summary, or punch list, of items which require corrective action. Subscriber must complete all punch list items within sixty (60) days from the date of issuance of the punch list. If, after the sixty (60) day period, and in sole opinion of Engineer, the punch list items have not been corrected in entirety, Contractor and/or Subscriber may be required to pay HSE additional inspection fees until the items are corrected.
- C. Subscriber must rectify all defects identified during the Final Inspection in a manner acceptable to Engineer prior to Sanitary Sewer Facilities being conveyed to HSE.

- END-

## SECTION 01 - PAY ITEMS

### PART 1 - GENERAL

#### 1.01 Summary

##### A. Section Includes

1. Measurement and payment for unit price Work. Payments will be made to the Contractor for the actual quantities of Work performed or materials furnished in accordance with the Drawings and Specifications.
2. The scheduled quantities of Work to be completed and materials to be furnished may each be increased or decreased without invalidating the unit price bid.

#### 1.02 Unit Prices

##### A. Measurement and Payment

1. Make all measurements and check all dimensions necessary for the proper construction of the Work called for by the Drawings and Specifications. During the execution of the Work, make all necessary measurements to prevent nonconformity in said Work and record such accurate measurements to the construction on a set of construction drawings to be submitted to the Engineer.
2. The method of measuring the Work for payment under the various pay items shall be as indicated in Pay Items below. In any event, the unit or lump sum price stated in the Contract to be paid for the respective item shall include, and be payment in full for, the installation complete in all details and ready for use and operation as specified and as indicated on the Drawings. Payment will be made under each item only for such Work that is not specifically included under other items.
3. All items paid for on a price per linear foot basis will be measured and paid for to the nearest foot unless noted otherwise.

##### B. Incidental Work

1. The following Incidental Work shall be included in the unit price of each applicable pay item in this Section. No extra payment will be made for Incidental Work, which shall include the furnishing of all labor, material, and equipment necessary to complete the Work, including:
  - a. construction engineering; utility locating; supporting and protecting utility poles, conduits, and lines;
  - b. clearing and grubbing including tree and stump removal;
  - c. excavating; rock excavation; sheeting; shoring; dewatering, including treatment and disposal; bypass piping and pumping;
  - d. hauling; placing; spreading; compacting; testing of materials; and placing, maintaining, removing, and disposing of any temporary materials;

- e. pipe bedding; installation; jointing; haunching; initial backfilling; trench and final backfilling;
- f. core drilling; connecting piping to existing and new structures or pipes; locating, extending, providing fittings, and connecting existing pipes into the new drainage system; grouting and sealing pipe penetrations; installing tops and castings; abandoning existing structures and pipes;
- g. repairing/replacing existing sewers, laterals, drainage structures, water mains, service lines, irrigation system components, curbs and gutters, sidewalks, pavement, field tiles, and other items damaged or affected by the Work;
- h. flushing and cleaning pipes, appurtenances, and structures; pipe and structure testing;
- i. testing of pipes and structures, including but not limited to, hydrostatic testing; leakage testing; bacteriological tests; mandrel testing; vacuum testing; etc. as specified;
- j. removing and disposing of excess and demolished structures, piping, material, and debris;
- k. preparing concrete and asphalt surfaces; saw cutting; formwork; forming; reinforcing; doweling; placing materials; finishing, tooling, and jointing; curing; protecting; slump tests; compression tests; other specified testing; pavement markings;
- l. permitting; safety; maintenance of traffic; street cleaning;
- m. installing erosion control measures prior to and during construction; providing on-going maintenance of erosion control measures until seeding and paving are established; bank restoration at stream crossings;
- n. initial clean-up and restoration;
- o. installing and removing temporary structures, signs, and fencing; removing and replacing signs, mailboxes, fencing, landscaping, and other items; and
- p. other Incidental Work necessary to complete the Work as specified and as indicated on the Drawings.

### 1.03 Pay Items

#### **Items 1– 8 Sanitary Sewer Pipe (Varying Depths) (LFT)**

Payment for Sanitary Sewer Pipe will be made at the applicable Contract unit price per linear foot for the size, material type, and bury depth of each pipe segment as listed in the itemized Bid Attachment, which price shall include the furnishing of all labor, material, and equipment necessary to complete the Work, including excavation, clearing and grubbing, dewatering, pipe bedding, haunching, and initial backfill, pipe laying, jointing, backfilling (including granular backfill within any pavement loading zone), removing and disposing of excess material, supporting and protecting utility poles and lines, initial clean-up and restoration, connecting to new structures or pipes, cleaning and testing sewers, and incidental Work necessary to complete the sewers as specified and as indicated on the Drawings.

The cost of repair and/or replacement of existing drainage structures, water mains and service lines, power pole bracing, fence removal and replacement, mailbox relocation, and other miscellaneous items of construction shall be included in the unit

price per lineal foot of sewer, and no additional payment shall be made for these items.

The length of each pipe segment will be measured on a per linear foot basis horizontally along the centerline of the pipe from center of the upstream manhole to center of the downstream manhole. The depth of each pipe segment will be based on the average depth of the segment calculated by measuring the depth from the top of manhole casting to the pipe invert at the upstream and downstream ends of the pipe segment and dividing by 2. Pipe inverts for drop manholes shall be based on the upper pipe and not the drop pipe.

**Items 9 – 17 Standard Manhole, 60-inch DIA (Various Depths) (EACH)**

Payment for Manholes will be made at the applicable Contract unit price per each manhole for the diameter, type, and depth range as listed in the itemized Bid Attachment, which price shall include structure sections; sewer pipe stubs (if shown); adjusting rings; frame and casting; flexible watertight seals; non-shrink grout; joint materials; installation of and modification to flow channels and benchwalls; crushed stone base; granular backfill; and all Incidental Work necessary for a complete installation as specified and as indicated on the Drawings.

The depth of each manhole shall be measured from the invert elevation of the manhole effluent line to the top of casting or ground surface, whichever is greater.

**Items 18 Standard Manhole w/ Outside Drop, 60-inch DIA (EACH)**

Payment for Manholes will be made at the applicable Contract unit price per each manhole for the diameter, type, and depth range as listed in the itemized Bid Attachment, which price shall include structure sections; sewer pipe stubs (if shown); adjusting rings; frame and casting; flexible watertight seals; non-shrink grout; joint materials; installation of and modification to flow channels and benchwalls; crushed stone base; granular backfill; and all Incidental Work necessary for a complete installation as specified and as indicated on the Drawings.

The depth of each manhole shall be measured from the invert elevation of the manhole effluent line to the top of casting or ground surface, whichever is greater.

**Item 19 Steel Casing Pipe w/Carrier Pipe (LFT) (Jack and Bore)**

Payment for Steel Casing Pipe w/Carrier Pipe will be made at the applicable Contract unit price per linear foot for the size of steel casing pipe as listed in the itemized Bid Attachment, which price shall include steel casing pipe installed by auger bore; carrier pipe; casing spacers; casing end seals; bore and receiving pit excavation and backfilling; sheeting; dewatering; and all Incidental Work necessary for a complete installation as specified and as indicated on the Drawings.

**Item 20 Junction Structure A0 (LSUM)**

Payment for Junction Structure A0 will be made at the applicable Contract unit price the dimensions, material, and depth range as shown on the plans, which price shall

include structure sections; sewer pipe stubs (if shown); hatches; ladders; gates; vent pipes; flexible watertight seals; non-shrink grout; joint materials; installation of and modification to flow channels and benchwalls; crushed stone base; granular backfill; and all Incidental Work necessary for a complete installation as specified and as indicated on the Drawings.

**Item 21 Over-Excavation of Poor Soils w/Granular Backfill (Undistributed) (SYS)**

Payment for Over-Excavation of Poor Soils w/Granular Backfill will be made at the applicable Contract unit price per cubic yard (CYS) of actual material removed (below the depth specified for pipe bedding), as measured in the field during construction, and as listed in the itemized Bid Attachment, which price shall include excavation, removal, and disposal of existing poor soils as identified by the Owner or their designated representative; replacement of excavated material with granular backfill; and all Incidental Work necessary for complete removal and replacement as specified and as indicated on the Drawings.

Compensation will not be made for unauthorized work not agreed upon by the Owner prior to removal.

**Item 22 Erosion and Sediment Control (LSUM)**

Payment for Erosion and Sediment Control will be made at the applicable Contract lump sum price as listed in the itemized Bid Attachment, which price shall include preparation of areas to receive temporary erosion control measures including grading and removing undesirable debris such as construction materials, rocks, silt, etc.; temporary seeding; temporary erosion control measures including silt fence, straw bales, mulched seeding, check dams, inlet protection, erosion control blanket, construction entrances, concrete washout, etc.; installation and on-going maintenance of the erosion control measures until seeding or paving has been established; removing any temporary erosion control measures at the completion of the Work; and all Incidental Work necessary for a complete installation as specified and as shown on the Drawings. Payment will be based on the percentage of Work completed for this specific pay item in the opinion of the Engineer.

**Item 23 Final Clean-up and Restoration (LSUM)**

Include an amount equal to not less than 3% of the total bid price for Final Clean-up and Restoration. This pay item shall include the removal of excess material and debris; finish grading; topsoil; seed; fertilizer; mulch; permanent erosion control measures; and all Incidental Work necessary to restore disturbed areas; repair damage to and clean the project site as specified and as indicated on the Drawings. Payment will not be made until such time as the site restoration and clean-up are 100% complete in the opinion of the Engineer.

**Item 24 Maintenance of Traffic (LSUM)**

Payment for Maintenance of Traffic will be made at the applicable Contract lump sum price as listed in the itemized Bid Attachment, which price shall include signage, flaggers, barrels, barricades, and other temporary traffic control facilities; developing

detailed traffic control plans and detour plans (if required); and all Incidental Work necessary to maintaining traffic throughout the construction of the project in accordance with the Drawings, the Specifications, and the requirements of local, county, and state agencies having jurisdiction. Payment will be based on the percentage of Work completed for this specific pay item in the opinion of the Engineer.

**Item 25 Mobilization, Demobilization, Bonds, and Insurance (LSUM)**

Include an amount not to exceed 5% of the total bid price for mobilization, demobilization, bonds, and insurance. The costs associated with mobilization, demobilization, payment and performance bonds, and insurance as specified in the contract documents are included in this pay item. Not more than 60% of this pay item will be paid after the Contractor has mobilized and started the Work. The remaining 40% will be paid after the project has reached final completion and all equipment and materials have been demobilized.

**Items MA-26 Open Cut across Boden Road (LSUM)**

Payment for Open Cut across Boden Road will be made at the applicable Contract unit price in the itemized Bid Attachment, which price shall include the furnishing of all labor, material, and equipment necessary to complete the Work, including excavation, clearing and grubbing, dewatering, pipe bedding, haunching, and initial backfill, pipe laying, jointing, backfilling (including granular backfill or flowable fill as required by the City of Noblesville within any pavement loading zone), removing and disposing of excess material, supporting and protecting utility poles and lines, initial clean-up and restoration, connecting to new structures or pipes, cleaning and testing sewers, and incidental Work necessary to complete the sewers as specified and as indicated on the Drawings.

The cost of repair and/or replacement of existing drainage structures, water mains and service lines, power pole bracing, fence removal and replacement, mailbox relocation, and other miscellaneous items of construction shall be included in the unit price, and no additional payment shall be made for these items.

**PART 2 - PRODUCTS**

Not Used.

**PART 3 - EXECUTION**

Not Used.

-END-





## SECTION 02 – MANHOLES, PIPING, VALVES, AND FITTINGS

### PART 1 - GENERAL

#### 1.01 General Requirements

- A. Under general laying conditions, sewer pipe can be any one of the pipe materials specified in these Specifications provided, the material is that pipe type and standard indicated on the Construction Plans.
- B. Markings
  - 1. All pipe and fittings must be clearly marked in accordance with the various standards under which they are manufactured. All pipe must be marked with durable printing according to ASTM/AWWA standards.
  - 2. A marking must be provided on the spigot of each pipe utilizing bell joints to indicate when the pipe is driven home.

#### 1.02 Polyvinyl Chloride ("PVC") Pipe

- A. PVC pipe and fittings must be smooth wall inside and out and must conform to ASTM D3034 and ASTM F1336 (SDR 26 or SDR 21), Type PSM or CAN/CSA-B182.2.M90, the more stringent must apply for sizes up to 15 inches; ASTM F679 (T-1; T-2 as approved by Engineer) or AASHTO M278 or CAN/CSA-B182.2.M90, the more stringent must apply for sizes greater than 15 inches; ASTM D2241 (SDR 21) for sizes up to 24 inches; ANSI/AWWA C900 (DR 18) for sizes 4 – 12 inches; ANSI/AWWA C905 (DR25 or DR 18) for sizes 14 – 24 inches.
- B. Joints, on PVC sewer pipe, must be the integral bell type gasketed joint designed so when assembled, the elastomeric gasket inside the bell is compressed radially on the pipe spigot to form a positive seal. The joint must be designed to avoid displacement of the gasket when installed in accordance with manufacturer's recommendations. The joint must comply with ASTM F477 and ASTM F913 and the physical requirements of ASTM D3212 and Uni-Bell PVC Pipe Association's UNI-B-1 "Recommended Specifications for Thermoplastic Pipe Joints, Pressure and Non-Pressure Applications", the more stringent must apply. The gasket must be the only element depended upon to make the joint flexible and watertight.
- C. PVC pipe type ASTM D3034 (SDR 26) can be used to thirty (30) feet.

### 1.03 Fittings

- A. Fittings such as wyes, tees, and bends must be made in a manner that will provide strength and water tightness at least equal to the class of the adjacent mainline pipe to which they are joined. Fittings must conform to all other requirements specified for pipe of the corresponding class and diameter. Joints must be of the same type as used on the adjoining pipe. All fittings must be bell by bell. Bell by spigot fittings will not be permitted except at Engineer's discretion.
- B. Fabricated fittings (not molded as a single integral unit) and saddles will not be allowed. Plastic Trends, Inc. fittings are recognized as an acceptable alternate to this standard.
- C. If necessary, due to material shortage, water grade fittings may be substituted provided the application is clearly marked as sanitary sewer.

### 1.04 Manholes and Other Structures

- A. Manholes must be constructed of monolithic concrete or pre-cast manhole sections. Pre-cast manhole sections must conform to the requirements of ASTM C478 and manhole joints to the requirements of ASTM C443.
- B. Materials for manholes and miscellaneous concrete structures must comply with the following:
  - 1. Concrete for pre-cast manhole sections and monolithic manholes must use four thousand (4000) psi concrete. Ready-mix concrete must conform to ASTM C94, Alternate 2. Maximum size aggregate must be one and a half (1.5) inches. Water/cement ratio must be no more than 0.53 by weight. Mix design to include Penetron concrete admix by Penetron USA.
  - 2. Reinforcing steel must conform to ASTM A615, grade 40 deformed bars or ASTM A616, grade 40 deformed bars.
  - 3. Mortar materials:
    - A. Sand – ASTM C144, passing a #8 sieve.
    - B. Cement – ASTM C150, Type 1.
    - C. Water – must be potable.
  - 4. Joints on pre-cast manhole sections must utilize rubber gaskets meeting the requirements of ASTM C443 and these specifications, the more stringent will apply. The joint must be further sealed as noted on HSE's gravity sanitary sewer details sheet.
  - 5. Manufacturer of pre-cast manholes must provide factory cut openings to produce a smooth, uniform, cylindrical hole of the proper size to accommodate the resilient connector. Resilient connectors can alternately be embedded by the manufacturer. All pipes entering and leaving manholes must have a resilient connector meeting the requirements of ASTM C923 firmly clamped around the pipe. The resilient connectors must be PSX gasket or Press Wedge II as manufactured by Press-Seal Gasket Corp., or similar flexible manhole sleeves as manufactured by Kor-N-Seal or equal.

6. Without prior written consent of engineer, pre-cast manhole sections must be steam cured and cannot be shipped from point of manufacture for at least five (5) days after having been cast. Upon written consent of engineer, pre-cast manhole sections can be shipped prior to five (5) days if they were manufactured of high-early strength concrete and are verified through testing to have achieved a strength acceptable to engineer.
7. Manhole sections are to have a waterproof exterior asphaltic coating applied prior to installation as approved by engineer.
8. Manhole castings must be of good quality cast iron conforming to ASTM A48 or ductile iron conforming to ASTM A536, grade 65-45-12 with concealed rectangular pick-hole. Refer to HSE's gravity sanitary sewer details sheet for detailed information. Unless specifically designated otherwise, manhole castings must be the non-locking type. East Jordan Durostreet frame and composite cover are to be installed where there is a potential of flooding or corrosive gases (i.e. Force main outfall).
9. Manhole steps must be made from a steel reinforcing encapsulated in a copolymer polypropylene resin. The manhole steps must equal or exceed IOSHA and ASTM C478 requirements. Manhole steps manufactured by M.A. Industries, Inc., American Step Company, Inc., or equal are acceptable.
10. Any special manhole or miscellaneous concrete structures must be constructed as detailed on the construction plans.
11. Manhole bases must be combination pre-cast concrete base and first section as a single unit. Detailed drawings must be submitted to engineer prior to casting or manufacture.
12. No interior surface applied materials can be used.
13. Exterior concrete manhole joints including adjustment rings are to be sealed by butyl and shrink-wrap.
14. Fiber mesh reinforcement for type 2 cleanouts: application per cubic yard must equal a minimum of one and a half (1 ½) pounds. Fibers are for the control of cracking due to dry shrinkage and thermal expansion/contraction, to lower concrete permeability and to increase impact capacity, shatter resistance and abrasion resistance. Fiber mesh reinforcement must be manufactured by Fibermesh, 4019 Industry Drive, Chattanooga, TN 37416, or equal as approved by Engineer on a case-by-case basis.

## PART 2 - EXECUTION

### 2.01 Handling and Cutting Pipe

- A. Each product to be incorporated into the Project must be handled into its position, placed, and supported only in such manner and by such means as Engineer accepts as satisfactory.
- B. Pipe and fittings must be handled carefully to avoid cracking or abrasion of the coating. Handle in a manner to ensure installation in sound and undamaged condition. Do not drop or bump. Use slings, lifting lugs, hooks, and other devices designed to protect pipe, joint elements, and coatings. Ship, move, and store with provisions to prevent movement or shock contact with adjacent units. Handle with

equipment capable of performing the work with an adequate factor of safety against overturning or other unsafe procedures.

- C. Any fitting or pipe showing a distinct crack, or which received a severe blow which could have caused an incipient fracture, even though no such fracture can be seen, must be marked as rejected and removed at once from the site.
- D. All field cutting of pipe must be done in a neat, trim manner. Field cut pipe will only be allowed at manholes, tees, wyes, and at the connection of a new sanitary sewer to an existing sanitary sewer. The cut end must be beveled using a file or a wheel to produce a smooth bevel of approximately fifteen (15) degrees and a minimum depth of 1/3 of the pipe wall thickness.
  - 1. PVC Pipe
    - a. PVC pipe must be cut with either a hand saw or power saw.
    - b. Smooth cut by power grinding to remove burrs, and sharp edges and smoothly tapered to not damage socket gasket.

## 2.02 Construction Staking

- A. Contractor shall contract with a Land Surveyor, registered in the State of Indiana, to furnish and set all line and grade stakes (HUB). Land Surveyor will be required to set, or oversee the setting, all benchmark stakes necessary for the installation of any sanitary sewer facility being constructed. Temporary construction benchmarks shall be set in strategic locations, but no more than one thousand (1,000) feet from the Project, to facilitate the installation of grade stakes and elevation control in the area of active sanitary sewer pipe installation. A permanent Benchmark shall be installed by Contractor at the entrance of a new development.

## 2.03 Laying Pipe

- A. Unless approved by Engineer, Contractor must not install different sizes, types, classifications, and grades of pipe between Manholes.
- B. No construction work will be permitted after 8:00 PM or dusk, whichever is earlier. Manhole installation must be planned to be stacked out through cone prior to the end of the day and not subject to potential flooding by stormwater.
- C. All rough grading of development projects (on-site and off-site) must be finished to within one (1) foot of final grade prior to the start of construction of the Sanitary Sewer Facilities. Contractor must provide and protect survey grade stakes that enable Engineer to verify compliance with the rough grading requirement at least 5-days prior to a scheduled preconstruction meeting for sanitary sewer related work.
- D. Contractor must install all off-site laterals with a minimum cover of six (6) feet from top of pipe to grade. Laterals will be considered off-site if they are constructed in an area that will not be platted immediately upon completion.

- E. The point of commencement for laying pipe is to be the lowest point in the proposed line. Provisions for beginning construction at other than the lowest point in the proposed line shall require approval by Engineer. All bell and spigot pipe shall be laid with bell end pointing up grade.
- F. The existing sewer segment downstream from any connection must be inspected for potential debris prior to plug removal and connection to the existing sanitary sewer. Engineer may require the downstream pipe to be cleaned by a vacuum truck, pending inspection findings.
- G. If, for any reason, live or in-service Sanitary Sewer Facilities must be plugged, the accumulated wastewater must be pumped out at the location of the plug and either conveyed to an available manhole with sufficient capacity or transported to a proper disposal site. Additionally, the upstream lines and manholes must be cleaned and flushed to the location of the plug on completion of the work.
- H. All pipe must be bedded as described in these Specifications under Pipe Bedding and Haunching and on HSE's Gravity Sanitary Sewer Details sheet. Bell recesses must be excavated in advance of pipe laying so the entire pipe barrel will bear uniformly on the prepared sub-grade.
- I. The supporting of pipe on block will be permitted only where the pipe is to receive total concrete encasement. Encased pipe must be accurately and effectively supported and secured on crossing "X" rebar.
- J. All pipe must be laid accurately to the required line and grade in the manner prescribed by the pipe manufacturer and appropriate ASTM/AWWA standards. Each section of pipe must be laid to form a close, concentric joint with the adjoining pipe at an elevation conforming to the required grade. PVC gravity sewer pipe and fittings must, at a minimum, be installed in accordance with the directions contained in ASTM D2321.
- K. Obtain approval of Engineer of method proposed for transfer of line and grade from control of work.
- L. At a minimum, Contractor must use laser beam equipment to maintain accurate line and grade. Before proceeding to the next joint, the last joint must be checked for proper line and grade. Survey instruments bearing proof of calibration within prior six (6) months and capable of third order accuracy must be used for checking alignment and grade throughout the Project. It is the Contractor's responsibility to regularly test all equipment to assure compliance with manufacturer's specifications.
- M. Clean interior of all pipe and fittings prior to installation.
- N. When bell and spigot pipe is laid, the bell of the pipe must be cleaned of mud, sand, and other obstructions before the clean spigot of the next pipe is inserted. The joint must be made in a satisfactory manner in accordance with the recommendations of the manufacturer and the direction of Engineer. The new

pipe must be shoved “home” firmly against the back of the bell. Experienced personnel must perform all joint work.

- O. Locate pipe joint to provide for differential movement at changes in type of pipe embedment or at changes in trench bottom material. Do not locate joint within eight (8) feet of Manhole walls, use full length pipe from up-stream connection. Clean and lubricate all joint and gasket surfaces with lubricant recommended by manufacturer. Check joint deflection for specified limits.
- P. No water in an excavation shall be permitted to enter the pipe. Contractor to have water under control prior to installing pipe and protect pipe interior from groundwater.
- Q. Perform pipe installation only when weather and trench conditions are suitable. Allow pipe to reach trench air temperature prior to installation. Contractor must discontinue pipe installation when there is a danger of the quality of work being impaired because of cold weather. Contractor is responsible for heating the pipe and jointing material to prevent freezing of joints. Pipe must not be laid on frozen ground. Pipe must not be installed unless the outside temperature is greater than thirty-two (32) degrees Fahrenheit.
- R. Install a temporary watertight plug at the end of the sewer when installed pipe is left unattended. Contractor must prevent all water, earth, or other material from entering Sanitary Sewer Facilities. An airtight, watertight plug must always be maintained in the Project at the point of connection with the existing sewer from the initiation of construction to the Completion of the Project. At least once a day, Contractor must inspect the plug for water tightness and pump out all accumulated water in excess of six (6) inches from the invert of the outgoing pipe. Contractor is to hold HSE harmless in the event any water, earth, or other material enters the downstream sewer. Contractor is responsible to HSE for the costs of sewage treatment, electrical power, equipment repairs, incidental damages, cleaning, and any other costs or expenses related to such entry, including legal fees, IDEM action response and fines imposed. Contractor shall pay HSE damages per occurrence and all imposed fines and remediation costs.
- S. Pipe must be installed to cross storm sewers and other utilities at approximately ninety (90) degrees and must maintain a minimum horizontal separation (measured from outer spring line of each pipe) of ten (10) feet from all storm and utility structures.

#### 2.04 Bores

- A. Casing wall thickness as per Section 716 – Trenchless Pipe Installation of the “Indiana Department of Transportation Standard Specifications” latest edition.
- B. All work within rights-of-way must be in accordance with the requirements of the governmental agency having jurisdiction. Where no procedures for a particular portion of the work are given, the recommendations of the “Indiana Department of Transportation Standard Specifications,” latest edition, must be followed.

- C. The gravity-flow carrier pipe shall be shimmed to proper line and grade with stainless steel casing spacers. Verify line and grade upon completion.
- D. Contractor shall perform low-pressure air and mandrel testing of the carrier pipe prior to grouting or attachment of end seals.
- E. After successful testing, use cellular grout to fill void between the two pipes or attach end seals per manufacture's recommendations.
- F. Upon completion of the bore, Contractor must coordinate with Engineer to verify that the carrier pipe is on line and grade. Contractor must submit invert elevations to Engineer.
- G. For further information refer to HSE's Gravity Sanitary Sewer Detail sheet.
- H. Contractor may request alternate methods or materials such as the use of directional boring and/or PE pipe. In this case, Engineer must approve in writing, the use of alternate methods or materials and Contractor performing the bore.

## 2.05 Pipe Bedding and Haunching

- A. Each pipe section must be laid on a firm foundation of bedding material, haunched, and backfilled with care. These materials must be placed and compacted in accordance with ASTM D2321- Underground Installation of Thermoplastic Pipe for Gravity Sewers.
- B. INDOT washed #8 crushed stone, as indicated on HSE's Gravity Sanitary Sewer Details sheet, must be shovel sliced or otherwise carefully placed and "walked" or hand tamped in to ensure compaction of the haunch area and complete filling of all voids. Material must be added in six (6) inch lifts.
- C. Prior to pipe installation, carefully bring bedding material to grade along the entire length of pipe. If, in opinion of Engineer, soil conditions are unstable, the trench must be undercut until stable soil is encountered and #2 stone must be placed below the bedding zone sufficiently deep enough to demonstrate compacted base support.
- D. When the bedding material is placed in a "fill" area, "fill" must be compacted to 95% standard proctor density prior to installing the sewer.
- E. For flexible pipe, such as PVC, the placement of embedment material or haunching around pipe must be done with care. The ability of the pipe to withstand loading in a trench depends upon the method employed in its installation.
  - 1. Objects that may cause point loading on the pipe must be removed.
  - 2. Care should be taken to not compact directly over the top of the pipe or displace alignment.

- F. Where excavation occurs in rock or hard shale, the trench bottom must be undercut and a minimum of six (6) inches of #8 crushed stone must be placed below the bedding zone prior to pipe installation.
- G. All stone bedding above and below Sanitary Sewer Facilities must be free of dirt, organic matter, and frozen material.

2.06 Concrete, Concrete Caps, and Concrete Cradles.

- A. The strength of concrete indicated on all drawings, details, and specifications is twenty-eight (28) day compressive strength.
- B. Concrete caps, cradles, and encasement must be provided at all locations indicated on the Construction Plans. When so ordered by Engineer, concrete caps, cradles, and encasement not shown on the Construction Plans must be installed. When storm sewers cross Sanitary Sewer Facilities with less than eighteen (18) inches of vertical separation (from the outer edge of each pipe), the Sanitary Sewer Facilities must be supported with a concrete cradle.
- C. At Engineer's discretion, Contractor must take four (4) cylinders per five (5) cubic yards of concrete and provide certified test results to Engineer.
- D. If the outside temperature is between twenty (20) and thirty-two (32) degrees Fahrenheit and rising, Contractor must use a fifty (50) percent ethylene-glycol/water mixture. If the outside temperature is forecasted to be below thirty-two (32) degrees Fahrenheit during the curing of any concrete or grout application, the concrete must be protected from freezing with insulation blankets acceptable to Engineer. All concrete work must be performed at an outside temperature of over twenty (20) degrees Fahrenheit and rising.

2.07 Manholes and Other Structures

- A. All manhole structures to be coated on exterior with asphaltic coating.
- B. All manholes, flow monitoring/metering manholes and cleanouts must be constructed in accordance with HSE's Gravity Sanitary Sewer Details sheet.
- C. In manholes with multiple influent pipes, Contractor must install all pipe from lowest to highest elevation. The lower elevation pipe must be extended to the next upstream manhole before commencing installation on the next higher sewer.
- D. Unless otherwise approved by Engineer in writing, all flow monitoring/metering manholes must be at least five (5) feet in diameter.
- E. Manhole channels must be formed and poured with concrete to the crown of the connecting pipe. The finished invert must be a semi-circular shaped, smooth channel directing flow to the downstream sewer. Changes in direction in base channels must be accomplished by smooth, constant radius turns in the channel joining the downstream channel tangentially.



- F. Where approved by Engineer, manholes can be added to an existing sanitary sewer. No “doghouse” or “saddle” structures will be permitted. The upstream and downstream sanitary sewers between the new manhole and the existing manholes must be low-pressure air tested and deflection tested. The new manhole must also be vacuum tested while maintaining continuous service.
- G. Manholes must be placed and aligned to provide vertical sides within a tolerance not exceeding one (1) inch up to ten (10) feet in depth and two (2) inches up to twenty (20) feet in depth, plus one-eighth (1/8) inch per foot over twenty (20) feet in depth. Tolerance to be checked with a plumb line.
- H. All cored holes, penetrations, and/or other openings into a manhole or other sanitary structure must have a minimum separation of eight (8) inches from any joint.
  - 1. Any holes cut in the field must be smoothly and cleanly drilled with a core-drill or in a manner acceptable to Engineer. All pipes entering and exiting manholes must utilize a resilient connector as previously described in these Specifications.
  - 2. For cored holes, penetrations, and/or other openings through manholes, an internal separation of greater than eighteen (18) inches between the outer edges of the openings is recommended. If a separation of less than eighteen (18) inches exists, a larger diameter manhole may be required.
  - 3. All cored holes, penetrations, and/or other openings through manholes must have a minimum internal separation of eight (8) inches from the outer edge of the openings.
- I. Contractor must install steps with a minimum horizontal separation of twelve (12) inches from all pipes entering and exiting manholes.
- J. Finished grade around manholes and castings must be set at an elevation to prevent surface water runoff from running over or ponding on top of the manhole.
- K. Manhole frames must be securely anchored to the cone with bolts and concrete anchors adequate in length to penetrate the structure.
- L. Flat top structures are generally not permitted. If a flat top structure is permitted, Contractor must receive written approval from Engineer. No more than eight (8) inches of adjustment rings can be installed on flat top structures.
- M. Engineer may, for inspection or testing purposes, take samples of concrete after it has been mixed or as it is being placed in the forms or molds.
- N. All grout used to seal or join structures must be non-shrink grout.

2.08 Laterals, Stubs, Connections, Bulkheads, and Miscellaneous Items

- A. Where existing sewers carrying sanitary sewage are encountered, Contractor must provide and maintain temporary or redundant pumping systems.

- B. Where called for on the Construction Plans, lateral connections and stubs for future sewer connections must be provided. Lateral locations must be recorded on a HSE digital Lateral Locate Form. The upstream end of lateral connections and mainline stubs must be field marked with a two by four (2" X 4"), wrapped with #10 tracer wire. The depth of the lateral must be indicated on the marker.
- C. Without written permission from Engineer, Contractor cannot connect any existing sewers or house service into the Project prior to the Project being deemed Complete by HSE.
- D. Laterals must be installed to cross storm sewers and other utilities at approximately ninety (90) degrees and must maintain a minimum horizontal separation of ten (10) feet from exterior surface of all water lines, storm structures and utilities.
- E. Contractor must notify Engineer at least seventy-two (72) hours prior to any construction of storm sewers that may affect previously constructed Sanitary Sewer Facilities.
- F. All laterals must be installed with an insulated #10 tracer wire along the top of pipe from the wye to the terminus. The mainline Contractor shall install the wire from the wye to the cap and wrap wire around the cap. The lateral Contractor shall extend the wire from the terminus to the cleanout adjacent to the building.
- G. All lateral tracer wire connections shall use a DryConn Direct Bury Lug electrical insulating, corrosion resistant, wire splice kit.

2.09 Existing Utilities, Structures, Property, Etc.

- A. Prior to proceeding, all improvements, including but not limited to, poles, trees, fences, sewer, gas, water or other pipes, wires, conduits, manholes, railroad tracks, buildings, structures, property, etc. along the route of Sanitary Sewer Facilities must not be disturbed without the approval of the responsible representative. Following authorization by the associated owner's representative, the contractor is to support and protect from damage all potentially affected property.
- B. Moveable item such as mailboxes can be temporarily relocated during construction, provided their function is maintained. Place movable items back in their original location immediately after backfilling is finished, unless otherwise shown on the Construction Plans. Any movable items damaged during construction must be replaced by an item of equal or better quality.
- C. Contractor must proceed with caution in the excavation and preparation of trenches so the exact location of underground utilities and structures can be determined. Contractor is responsible for repair of utilities and structures when broken or otherwise damaged due to construction activity.
- D. Contractor must make explorations and excavations when, in the opinion of Engineer, it is necessary to determine the location of underground structures pursuant to locate services having previously marked the area.

- E. Where pipes or conduits cross the trench, Contractor must support said pipes and conduits without damage to them and without interrupting their service. The manner of supporting such pipes, etc. is subject to approval by owner of the pipe or conduit.
- F. When utility lines must be removed or relocated for the Project, Contractor must notify Engineer and utility line owner in ample time for necessary measures to be taken to prevent interruption of the utility's service.
- G. Contractor must conduct the work so that no equipment, material, or debris will be placed or allowed to fall upon private property in the vicinity of the Project, unless Contractor has first obtained the property owner's written consent and provided a copy to Engineer.
- H. All excavated material must be piled in a manner that will avoid obstructing sidewalks, driveways, and thoroughfares. Hydrants under pressure, valve pit covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls must be left unobstructed and accessible during the Project. Contractor must prevent runoff from stored piles of excavated material from entering ditches, waterways, gutters, or storm sewers.

#### 2.10 Right-of-Way Guidelines/Restrictions

- A. All sanitary sewer related activity planned to transgress or potentially be located within the rights-of-way of any public governing body or utility located in same shall be reviewed by any and all utilities for potential concerns or conflicts in addition to an Asset Protection specialist to obtain prior written approval.

#### 2.11 Excavating

##### A. De-watering

1. Contractor must provide, install, and operate sufficient trenches, sumps, pumps, hoses, piping, well points, etc. to depress and maintain the groundwater level below the base of the excavation until all Sanitary Sewer Facilities are Completed. Provide sufficient dikes and de-watering equipment and make satisfactory arrangements for the disposal of the water without undue interference with other work, damage to property, or damage to the environment. Water disposal must comply with the regulations of the Environmental Protection Agency (EPA), Indiana Department of Environmental Management (IDEM), Soil Conservation Service (SCS), and all other applicable agencies.
2. Contractor must prevent all water from entering Sanitary Sewer Facilities. In the event any water enters Completed Sanitary Sewer Facilities, Contractor is responsible to HSE for the costs of sewage treatment, electrical power, equipment repairs, incidental damages, cleaning, and any other costs or expenses related to such entry. In addition, Contractor shall pay HSE damages per occurrence. Failure to comply with HSE within 60 days may (at

the discretion of HSE) result in the suspension or termination from performing work in the utility's service area.

3. Operate de-watering equipment ahead of pipe laying to keep the water level below the excavation until structures are secured by backfill.
4. Contractor must provide de-watering equipment, shoring, or other construction practices to maintain dewatered excavations and safe construction conditions.
5. To measure the static water level; wells must be accessible until successful completion of the low-pressure air test. All wells (potable, non-potable, and de-watering) must be drilled, capped, and abandoned in accordance with the requirements of Engineer, the Indiana Administrative Code, Indiana Department of Natural Resources – Groundwater Section, Hamilton County Health Department, and all other governmental agencies and public entities having jurisdiction. When possible, removal is recommended.
6. Contractor may maintain the well casing in-place for all Sanitary Sewer Facilities which will be extended in the future.

#### B. Trenching

1. All excavation work must incorporate safety measures that comply with all applicable IOSHA regulations and these Specifications. In the event of a conflict, the more stringent requirement will apply.
2. Trees, boulders, and other surface encumbrances, located to create a hazard to employees involved in excavation work or in the vicinity thereof at any time during operations, must be removed or made safe before excavation begins.
3. Do not open more trench than necessary for the installation of each pipe section while complying with the manufacturer's requirements for optimum installation and performance.
4. Contractor must provide sloped side walls (provided that the bottom four (4) feet of trench will not be sloped), sheeting, shoring, or trench boxes as safety measures for all excavations in accordance with all applicable IOSHA regulations. Contractor is responsible for the determination of the angle of repose of the soil in which the trenching is to be done. Except for areas where solid rock allows for line drilling or pre-slitting or where sheeting, shoring, or trench boxes are to be used, excavate all slopes to beyond the angle of repose, but not steeper than a one (1) foot rise to each half (1/2) foot horizontally.
5. Sides, slopes, and faces of all excavations must meet accepted engineering requirements by scaling, benching, barricading, rock bolting, wire meshing, or other equally effective means. Give special attention to slopes that could be adversely affected by weather or moisture content.
6. Flatten the excavation sides when an excavation has water conditions, silty materials, loose boulders, and areas where erosion, deep frost action, and slide planes appear.
7. A competent Contractor's representative, as defined under IOSHA regulations, must inspect excavations, and approve trench safety measures for the excavation after every rain event or other hazard increasing occurrence.
8. Do not store excavated or other material nearer than four (4) feet from the edge of any excavation. Store and retain materials to prevent materials from falling or sliding back into excavation. Install substantial stop logs or barricades when mobile equipment is utilized or allowed adjacent to excavations.

9. Minimize the amount of excavation around Manholes.
10. The width of the trench is predicated upon the diameter of the pipe and depth the pipe is to be installed. If, when performing work for HSE, the specified trench width is exceeded, Contractor is responsible for the provision and installation, at his own expense, of all remedial measures required to return site to clean near original conditions. Any requested remediation beyond the preconstruction conditions is the responsibility of HSE.
11. Test air in excavations where oxygen deficiency or gaseous conditions are possible. Establish controls to assure acceptable atmospheric conditions. Provide adequate ventilation and eliminate sources of ignition when flammable gases may be present. Emergency rescue equipment, such as a breathing apparatus, a safety harness, and line and basket stretcher must be readily available where adverse atmospheric conditions may exist or develop in an excavation.
12. Provide walkways or bridges with guardrails where employees or equipment are required or permitted to cross over excavations.
13. Provide ladders where employees are required to be in excavations four (4) feet deep or more. Ladders must extend from floor of excavation to at least three (3) feet above the top of the excavation. Locate ladders to provide means of exit without more than twenty-five (25) feet of lateral travel.
14. Provide adequate barriers and physically protect all excavations. Barricade or cover all wells, pits, shafts, and similar excavations. Backfill temporary wells, pits, shafts, and similar excavations upon termination of exploration and similar operations.

#### C. Backfilling

1. Backfilling must meet the requirements of ANSI/AWWA C605 unless otherwise specified in these Specifications.
2. Engineer retains the right to delay an excavation backfill to inspect workmanship if he deems necessary.
3. Place and tamp bedding and backfill in a manner that will not damage the pipe.
4. Excess dry replacement material without visible fines will not be acceptable.
5. When used in these Specifications and performing work for HSE, the term "clean backfill" shall mean backfill material of any type which is free of roots, brush, sticks, debris, junk, rocks, cinders, broken concrete or brick, large lumps of clay, frozen material, stones, etc. greater than three (3) inches in their largest dimension. Not more than fifteen (15) percent of the rocks or lumps can be larger than two and a half (2 1/2) inches in their largest diameter.
6. All job excavated materials which are used for trench backfill above pipe embedment and which are to be compacted by any method except settlement by water, must be "clean backfill".
7. When performing excavation work for HSE in areas which will require topsoil restoration, Material excavated from an open trench can be used for backfilling, from the pipe to six (6) inches below finished grade, providing it meets the requirements of "clean backfill" and providing a different type of backfill material has not been specified or shown on the Construction Plans. Where excavated material is used for backfilling and there is a deficiency due to the rejection of a part thereof, Contractor, upon direction of Engineer, must remove the

rejected material from the site and furnish an additional quantity of "clean backfill" at his own expense. Should the native spoil be deemed unsuitable by either Engineer or Contractor and conditions could not be anticipated, HSE shall be responsible for the cost.

8. Excavated material must be placed immediately after the hand backfill in such a manner to prevent the formation of voids and potential damage to pipe. The earth backfill must be mounded six (6) inches for settlement.
9. In no case must backfill be dropped from such height or in such volume that its impact damages Sanitary Sewer Facilities. Engineer reserves the right to regulate and control the manner of depositing such backfill. Contractor will be held liable for damage to the Sanitary Sewer Facilities.
10. Settling of backfill by flooding or puddling will not be permitted.
11. Excess trench material must be roughly graded over the trench in a timely manner soon after the pipe is installed. This material must be mounded over the trench with a crown height of no more than six (6) inches, feathered to existing grade, until final settlement has occurred, and the trench is ready for rough grading and cleanup. An exception to this would be trenches in traveled pathways and established lawn areas. Any excess must be hauled off and disposed of or stored by Contractor.
12. In established vegetated areas associated with excavation work performed for HSE, after settlement of backfill, and immediately before restoration of vegetated areas, grade and remove excess earth in unpaved areas. Remove to a depth of six (6) inches below finished grade. Place six (6) inches of topsoil over entire area to be restored.

## 2.12 Restoration Related to Work Performed for HSE

- A. This section pertains to the restoration of the Project site upon Completion of the work.
- B. Restoration of improvements on public and private property must be in-kind and acceptable to the owner.
- C. Restoration of road surfaces, drainage ways and other similar improvements within the public right-of-way or acquired easements must be in accordance with the directions of the government agency or public entity having jurisdiction.
- D. All vegetated areas disturbed or damaged during construction must be re-vegetated with a stand of grass. Agricultural areas and areas purchased for planned development or under construction do not require re-vegetation.
  1. Backfills, fills, and embankments must be brought to a sub-grade level six (6) inches below finished grade. When sub-grades have settled, deposit and spread fine raked topsoil, ready for seeding, to a finished depth of at least six (6) inches.
  2. Commercial fertilizer, 6-12-12 or equal, must be uniformly spread at the rate of thirty-five (35) pounds per one thousand (1,000) square feet over the topsoil by a mechanical spreader at least forty-eight (48) hours before seeding and mixed into the soil for a depth of two (2) inches.

3. A grass seed mixture comprised of thirty-five (35) parts Kentucky Blue Grass, thirty (30) parts Perennial Rye, thirty (30) parts Kentucky 31 Fescue and no more than five (5) parts inert matter must be sown on the disturbed areas at a rate of three (3) pounds per one thousand (1,000) square feet. Seeding must be done only between April 1 and June 1 or August 15 and October 15.
  4. Seeded areas must be mulched with straw, hay, wood cellulose fiber, or cane fiber. Straw or hay must be applied at a rate of two and a half (2 ½) tons per acre. Wood cellulose or cane fiber mulch must be applied at a rate of one thousand (1,000) pounds per acre. On special areas of high-water concentration, unstable soils, or sloped surfaces, manufactured mulch materials such as soil retention blankets, erosion control netting or others may be required by Engineer. Manufactured mulch materials must be installed according to the manufacturer's recommendations.
  5. The seeded areas must be thoroughly watered with a fine spray to prevent wash out of the seed. Areas shall be maintained and patched as directed by Engineer. A satisfactory stand of grass at least one (1) inch in height, without bare spots, will be required.
- E. Within three (3) months after Project Completion, Contractor must correct defective work, such as settled areas, uneven road surfaces, bare spots in grass coverage, erosion, and gullies.

-END-





## SECTION 03 – STORMWATER POLLUTION PREVENTION AND EROSION CONTROL

### PART 1 - GENERAL

#### 1.01 Summary

##### A. Section Includes

1. Temporary and permanent control measures used during the life of the contract to control water pollution, soil erosion, and siltation using berms, dams, dikes, gravel, mulches, grasses, and other erosion control devices or methods.
2. Temporary erosion control may include Work outside the construction limits such as borrow pit operations, equipment and material storage sites, waste areas.

##### B. Related Sections

1. Section 04 – Material Handling and Spill Prevention Plan

#### 1.02 References

- A. Construction Stormwater General Permit (CSGP), INRA00000.
- B. INDOT Standard Specifications, latest edition - Section 918.02.

#### 1.03 Submittals

- A. Authorization under the CSGP is effective 48-hours after submittal of the Notice of Intent to IDEM by the OWNER.
- B. Prior to the start of construction, review the Erosion Control Schedule on the Drawings and revise as needed to phase construction activities to minimize the footprint of disturbed unstable areas. Submit a revised erosion control schedule as needed for temporary and permanent erosion control Work as applicable for clearing and grubbing, grading, construction, paving and structures at watercourses. Maintain revisions with the Project Management Log.
- C. Submit and maintain a plan for erosion and dust control on haul roads.
- D. Maintain a Project Management Log that contains information related to all off-site borrow areas, disposal areas, and staging areas. Submit a plan for disposal of waste materials. Refer to Specification 04 for practices for solid waste management.
- E. Complete soil testing when vegetation does not establish to determine nutrients needed. Refer to Paragraph 1.06.
- F. Provide the Owner all Project Management Log documentation per Part 3 of this Section including inspection forms and corrective actions at project closeout.

Maintain documentation during construction and for 3 years following approval of final payment.

- G. Provide notification to the Owner when land disturbing activities have been completed, the entire site has been stabilized (permanent vegetation established at 70% density of coverage), all temporary erosion control measures have been removed, all discharges of potential pollutants from construction activities have ceased, and all construction materials, wastes, and equipment have been removed. Refer to the CSGP for exceptions (Section 3.4).
- H. Once the notification in item G (above) has been received, Owner shall submit a Notice of Termination (NOT) to IDEM and the Hamilton County Surveyor's Office to terminate coverage under the CSGP.

#### 1.04 Quality Assurance

##### A. Regulatory Requirements

- 1. Comply with CSGP requirements and conditions until a NOT is submitted to close out the permit.
  - 2. Provide grass seed containers bearing a seed label tag in accordance with the requirements of the Indiana Seed Law.
  - 3. Provide fertilizer conforming to federal and state regulations and to the standards of the Association of Official Agricultural Chemists.
  - 4. Comply with all federal, state, and local erosion control and pollution prevention laws.
  - 5. Post the following information near the main entrance of the project site or at a publicly accessible location:
    - a. Notice of Intent (NOI) document
    - b. Copy of the public notice
    - c. National Pollution Discharge Elimination System (NPDES) permit number
    - d. Name, Address, and phone number of the local contact person
    - e. Location of a copy of the construction Drawings and Stormwater Pollution Prevention Plan (SWP3).
- B. Authority of Owner: The Owner has the authority to limit the surface area of erodible earth material exposed by clearing and grubbing, excavation, borrow and fill operations, and to direct the Contractor to provide immediate permanent or temporary control measures to minimize contamination of adjacent streams or other watercourses, lakes, ponds, and areas of water impoundment.

#### 1.05 Delivery, Storage and Handling

- A. Deliver grass seed in new and unopened containers or bags.

1.06 Project Site Conditions

A. Field Measurements

1. Test the soil to determine the need for fertilizer, lime, or other soil amendments. Coordinate soil testing services and implement the resulting recommendations.

PART 2 - PRODUCTS

2.01 Materials

A. General: Provide materials in accordance with the requirements specified herein.

B. Temporary Grass Seed

1. Quick-growing species such as ryegrass, Italian ryegrass, or cereal grasses suitable to the area
2. Use grass species that will not compete with the grasses sown later for permanent cover
3. Application: temporary or permanent stabilization must be initiated by the end of the seventh day the area is left idle. The stabilization activity must be completed within fourteen (14) days after initiation. Apply temporary seeding to all disturbed areas to be left idle for 7-15 days or more during the growing season unless other erosion control measures are indicated on the Drawings.

C. Permanent Grass Seed

1. Type, mixture, and quantity to meet the application rate, as shown on the Drawings.
2. Contains no more than 5 percent inert matter.
3. Contains no objectionable weeds.

D. Sod

1. Type shown on the Drawings
2. Free of weeds
3. Use within 1 week of its cutting - do not allow to dry out
4. Strongly rooted sod, a minimum of 2 years old
5. Capable of growth upon planting
6. Water routinely to promote growth

E. Mulch

1. Hay, straw, fiber mats, netting, bark, or wood fiber
2. Straw mulch shall consist of threshed straw of cereal grain such as oats, wheat, barley, rye, and rice.
3. Free of objectionable weeds, seeds, or other material that may be detrimental to the planting being established.
4. Application: temporary or permanent stabilization must be initiated by the end of the seventh day the area is left idle. The stabilization activity must be

completed within fourteen (14) days after initiation. Apply mulch to all areas that have been seeded and to disturbed areas to be left idle for 7 days or more outside of the growing season unless other measures are indicated on the Drawings.

5. Application rates:
  - a. Straw/hay mulch: 92 pounds per 1,000 square feet (2 ton/acre)
  - b. Wood fiber mulch: 46 pounds per 1,000 square feet (1 ton/acre)
  - c. Wood chips: 230 pounds per 1,000 square feet (5 ton/acre)

#### F. Fertilizer

1. Contains the minimum percentage of available nutrients (Nitrogen, Phosphorus, and Potash) based on soil content, seed mix and local conditions.
2. If local conditions do not indicate otherwise and soil testing is not required, provide 12-12-12 analysis fertilizer.
3. Application rate: as specified by the supplier

#### G. Lime

1. When soil testing results require pH levels to be increased, apply agricultural lime to the soils. Produce a slightly acid soil (pH 6.5).
2. Other available forms of liming materials may be applied depending on their potential to neutralize soil acidity.
3. Provide agricultural lime from a dealer or manufacturer whose brands and grades are registered or licensed by the State of Indiana Department of Agriculture.
4. Changes to the lime requirements will be determined by the pH test, as indicated on soil analysis results.

#### H. Topsoil

1. Preserve and reuse topsoil.
2. Topsoil shall meet the following requirements:
  - a. Natural, fertile, agricultural soil, capable of sustaining vigorous plant and lawn growth.
  - b. Of uniform composition throughout without admixture of subsoil.
  - c. Free of stones, lumps, clods, sticks larger than one inch, sod, live plants and roots, and other extraneous matter.
  - d. Free of pollutant contamination.

#### I. Erosion Control Blanket: Provide North American Green SC150 or approved equal.

#### J. Fiber Filtration Tubes

1. Natural or man-made fiber filter media encased within cylindrical tubes composed of a photodegradable mesh.
2. Performance: slowing and filtering of suspended particles in stormwater runoff. The tubes shall allow water to flow freely while providing filtration of suspended particles.

K. Geotextile Fabric for Use Under Riprap, Crushed Stone or Aggregate

1. Provide non-woven needle punched or heat bonded geotextile fabric consisting of strong, rot resistant, chemically stable long-chain synthetic polymer materials which are dimensionally stable relative to each other. The geotextile plastic yarn or fibers shall consist of at least 85 percent by weight of polyolefins, polyesters, or polyamides and resist deterioration from ultraviolet and heat exposure.
2. Provide geotextile meeting or exceeding the following requirements (Source: INDOT Standard Specifications 2022, Section 918.02)

Test	Method, ASTM	Requirements				
		Type 1A	Type 1B	Type 2A	Type 2B	Type 3
Grab Tensile Strength, min.	D4632	200 lbs.	200 lbs.	250 lbs.	300 lbs.	250 lbs.
Grab Elongation	D4632	> 50%	< 50%	> 50%	< 50%	< 50%
CBR Puncture Strength, min.	D6241	500 lbs.	600 lbs.	625 lbs.	1,000 lbs.	875 lbs.
Trapezoid Tearing Strength, min.	D4533	80 lbs.	75 lbs.	100 lbs.	150 lbs.	60 lbs.
Deterioration in Tensile Strength due to UV degradation 500 hrs., min.	D4355 D6637	70% strength retained	70% strength retained	70% strength retained	70% strength retained	90% strength retained
Apparent Opening Size, AOS	D4751	≤ No. 80 sieve, for soils ≥ 40% passing the No. 200 sieve	≤ No. 40 sieve, for soils < 40% passing the No. 200 sieve	≤ No. 100 sieve, for soils ≥ 40% passing the No. 200 sieve	≤ No. 40 sieve, for soils < 40% passing the No. 200 sieve	≤ No. 70 sieve
Permittivity	D4491	≥ 1.2 sec <sup>-1</sup>	≥ 2.1 sec <sup>-1</sup>	≥ 0.80 sec <sup>-1</sup>	≥ 0.90 sec <sup>-1</sup>	0.28 sec <sup>-1</sup>
Note: 1) All values are minimum average roll values (MARV) as determined in accordance with ASTM D4354 in the weaker direction, except AOS size is based on maximum average roll value.						

L. Silt Fence: Use materials specified on the Drawings.

M. Other: All other materials shall meet commercial grade standards and be approved by the Engineer before being incorporated into the project.

1. Anionic polymers are not to be used for stormwater runoff treatment unless approved by IDEM.
2. Cationic polymers are prohibited.

### PART 3 - EXECUTION

#### 3.01 Examination

##### A. Site Verification of Conditions

1. Coordinate soil testing services
2. Implement resulting recommendations

#### 3.02 Preparation

- ##### A. Do not start Work until the erosion and sediment control schedule and methods of operations for the applicable construction activities have been accepted by the Engineer.

- B. Coordinate and/or phase temporary erosion and sediment control measures contained herein with the permanent erosion control measures and soil stabilization methods as specified as part of this contract to assure economical, effective, and continuous erosion and sediment control throughout the construction and warranty period.
- C. Inform or train personnel associated with the project of the terms and conditions of the CSGP and the SWP3 requirements.
  - 1. Personnel include all contractors, management firms, chemical applicators, inspectors, and those responsible for management and maintenance of erosion and sediment control measures.
  - 2. Training may include written notification, contracts, pre-construction meetings, or other means.
  - 3. Document the training in the Project Management Log.

### 3.03 Protection

- A. Manage sediment-laden water with appropriate sediment control measures to minimize sedimentation to receiving waters and adjacent properties. Refer to Specification 04.
- B. Protect natural features (e.g., wetlands, sinkholes, karst features, floodways, etc.) with stormwater management or treatment measures to address pollutants that may discharge to these features.
- C. Minimize soil compaction in areas where permanent vegetation will be re-established and/or areas that are designated to infiltrate stormwater for the post-construction phase.
- D. Preserve existing natural buffers that are adjacent to waters of the state to promote infiltration and provide protection of the water resource as established on the Drawings, unless infeasible.
- E. Do not discharge pollutants such as sediments, fuels, lubricants, bitumen, raw sewage, or wash water from concrete mixing operations (concrete washout), water from trench or pit dewatering, and other harmful materials into or near stormwater conveyances, wetlands, rivers, streams, and impoundments or into natural or manmade channels leading thereto.
- F. Do not apply pesticides when working in or adjacent to a floodway, river, stream, ditch, or other stormwater conveyance.
- G. Properly dispose of all waste materials. Refer to Specification 04.
- H. Establish vegetation in accordance with the Seasonal Soil Protection Chart on the Drawings.
- I. Temporarily or permanently stabilize unvegetated areas that are scheduled or likely to be left inactive for 7 days or more with measures appropriate for the

season to minimize erosion potential. Initiate stabilization activities by the end of the seventh day the area is inactive. Complete stabilization activities within 14 days.

- J. Final stabilization for construction projects within agricultural land is accomplished by temporarily or permanently seeding as land disturbance progresses unless the agricultural landowner prefers to leave disturbed land un-stabilized for crop production. If agricultural land is left un-stabilized, coordinate within 7 days with the local authority when construction is completed for an inspection. Request that the area be deemed to not pose a threat of discharging sediment. When agreement and documentation is received by the local authority, maintain in the Project Management Log and proceed with construction.

#### 3.04 Installation - General

- A. Incorporate all permanent erosion control features into the project at the earliest practical time. Except where future construction operations will damage slopes, perform the permanent seeding, mulching and other slope protection Work in stages as soon as substantial areas of exposed slopes can be made available.
- B. Use temporary erosion and pollution control measures to correct conditions that develop during construction, that are needed prior to installation of permanent control features, or that are needed temporarily to control erosion that develops during normal construction practices.
- C. Schedule and perform clearing and grubbing operations so that grading operations and permanent erosion control features can follow immediately thereafter if the project conditions permit; otherwise, install temporary erosion control measures between successive construction stages.
- D. Limit the area of clearing and grubbing, excavation, borrow, and embankment operations in progress, commensurate with progress in completing the finish grading, seeding, mulching and other such permanent control measures in accordance with the accepted schedule. Should seasonal limitations make such coordination unrealistic, install temporary erosion control measures.
- E. In the event temporary erosion and pollution control measures are required due to the Contractor's negligence, carelessness, or failure to install permanent controls as a part of the Work as scheduled or as ordered by the Engineer, perform such Work at Contractor's expense.
- F. Maintain all erosion and sediment control practices during the construction period.
- G. Whenever construction equipment must cross waterways at frequent intervals, and such crossings will adversely affect water quality in the waterway, provide temporary structures. Coordinate with Engineer regarding and prior to constructing such crossings. Comply with all regulations and permits for waterway crossings.

### 3.05 Installation - Erosion and Sediment Control Measures

#### A. Temporary Construction Entrance

1. Construct temporary construction entrances where needed to prevent tracking of soil or mud onto publicly or privately owned paved surfaces.
2. Place temporary construction entrances at locations where construction vehicles will repeatedly access a disturbed or unpaved area from a paved roadway.
3. Not all locations of construction entrances may be shown on the Drawings. The contractor is responsible for locating and placing construction entrances at all points of construction traffic ingress and egress to prevent tracking and to avoid disturbance to existing waterways.
4. Should tracking of soil occur, clear accumulated sediment from public and private driveways by the end of the day, as instructed by a regulatory authority, and/or more frequently as sediment is tracked onto roadways.
5. Redistribute or properly dispose of collected sediments in a manner that is in accordance with all applicable statutes and regulations.
6. Do not rinse tracked material with water unless water is collected and disposed of properly.
7. Do not clear sediment using mechanical methods that will mobilize dust off the project site.

#### B. Silt Fence

1. Install silt fence as shown on the Drawings to provide sediment control at the top of slopes, at the down-gradient project limits, as periodic filter breaks on down slopes, at project limits and other locations indicated.
2. Provide additional silt fence where the extents of land disturbance extend beyond the lengths of silt fence shown on the Drawings.

#### C. Fiber Filtration Tubes

1. Install in accordance with manufacturer's instructions.
2. Use fiber filtration tubes for the slowing and filtering of stormwater.
3. Use the appropriate tube size for the slope and the distance between tubes as specified by the manufacturer.
4. The tubes shall allow water to flow freely and provide filtration of suspended particles.

#### D. Dust Control

1. Use water to dampen surfaces to minimize dust and prevent wind erosion.
2. Do not rinse surfaces with water unless water is collected and disposed of properly.
3. Implement dust control methods on a routine basis where conditions warrant.
4. Provide water and dust suppression when requested by the Engineer.



E. Pumping Bags

1. Install pumping bags according to the Drawings.
2. Provide pumping bags to filter sediment from dewatering operations.
3. Properly dispose of used pumping bags.
4. Appropriately size the bags for the amount of flow.
5. Use pumping bags on an erosion resistant surface.
6. Do not discharge sediment-laden water from dewatering operations into or near stormwater conveyances, wetlands, rivers, streams, and impoundments or into natural or manmade channels leading thereto. Refer also to Section 04 for the disposal of sediment-laden water.

F. Concrete Washout Area: Refer to Section 04 for Concrete Washout requirements.

G. Grass

1. Restore all non-paved surfaces that were disturbed during construction with permanent seeding or sod unless shown otherwise on the Drawings.
2. Prior to seeding disturbed areas must be graded and receive a minimum of 6 inches of topsoil. Use excavated material which meets the specified requirements for topsoil, or if the quantity of suitable topsoil is not sufficient, use topsoil obtained from another source.
3. Scarify the planting area to a minimum depth of 6 inches. Mix soil amendments such as fertilizer and lime if required, in the top 2 to 4 inches of topsoil with a disk or rake operated across the slope.
4. Apply seed uniformly with a drill or cultipacker seeder, or by broadcasting. Cover seed with topsoil a minimum of 1/2 inch. Cover newly seeded areas with anchored mulch or erosion control blanket.
5. Keep seeded and fertilized areas adequately watered to a minimum of 1-inch depth per week until germination of all seed is complete and uniform grass cover is accomplished.
6. Immediately prior to installing sod, water the planting area with a fine spray to a minimum penetration of 1 inch.
7. Do not place frozen sod, and do not place sod on frozen or dry soil. Do not place sod when the air temperature is less than 32 degrees Fahrenheit.
8. Lay sod with closely fitted abutting joints without stretching and overlapping and stagger the ends of the strips. Trim and fit sod into irregular areas to eliminate gaps.
9. On slope areas, lay sod starting from the bottom of the slope and lay sod horizontal to the contour. Where slopes are greater than a horizontal to vertical ratio of 3 to 1, staple or stake each sod strip at the corners and in the middle.
10. After initial watering, tamp or roll sod with a roller to eliminate irregularities. Repeat watering at regular intervals to keep sod moist until it is rooted and to maintain growth until final acceptance.

H. Mulch: Anchor mulch unless held in place by a tackifier or netting.

I. Erosion Control Blanket

1. Where construction disturbs slopes equal or steeper than 3 to 1 or within drainage channels, protect bare slopes with an erosion control blanket as shown on the Drawings.
2. When vegetation is to be established, place erosion control blanket over the seed and anchor according to manufacturer's instructions to prevent the seed from washing away.
3. Place erosion control blankets on seedbeds free of sticks, rocks, and other objects larger than 1 inch.

3.06 Soil Stockpiles

- A. Manage soil stockpiles for wind erosion, stormwater erosion, and sediment control.
- B. Provide soil stockpiles with perimeter protection measures (silt fence, fiber filtration tube, etc.).
- C. Temporarily or permanently stabilize stockpiled soil that is scheduled or likely to be left inactive for 7 days or more with measures appropriate for the season to minimize erosion potential. Initiate stabilization activities by the end of the seventh day the area is inactive. Complete stabilization activities within 14 days.
- D. Position stockpiles away from any ditch, stream, wetland, or stormwater conveyance.
- E. Properly dispose of soil that will not be used for the project.

3.07 Trench Excavation

- A. Pile material from trench excavations in an area away from any ditch, stream, wetland, or stormwater conveyance and install silt fence around the material for sediment control.
- B. Install inlet protection within the project area when excavated material is placed on a paved surface.
- C. Following pipe installation, backfill trenches and temporarily or permanently stabilized all bare areas to prevent soil erosion.

3.08 Directional Drilling or Horizontal Boring Erosion and Sediment Control

- A. Install erosion and sediment control measures in accordance with the Drawings.
- B. Install silt fence around all Work areas at bore and receiving pits to control sediments.
- C. Pile materials from ditch excavation away from ditches, streams, wetlands, or stormwater conveyances.
- D. Properly dispose of material that is not used to back fill pits.

E. Filter pit dewatering discharge in accordance with Section 04 for the Disposal of Sediment-Laden Water

F. Seed and mulch disturbed soil surfaces

3.09 Work within a Waterway (Stream Crossing) or Floodway

A. Minimize tree removal and brush clearing within floodways and near waterways. When possible, maintain a 50-foot vegetated buffer from the top of bank of all waterways.

B. Avoid disturbing the ground within the drip line of any tree.

C. Install erosion and sediment control practices during and after construction to minimize impacts to a waterway or floodway.

D. Stabilize bare areas immediately following construction activities.

E. Reclaim all disturbed areas within a waterway or floodway that are to be revegetated, with native species.

F. Do not use tall fescue.

G. Install erosion control blanket to cover bare areas and seedbeds and to prevent erosion until vegetated species are established.

H. Stockpiling of soil, excavated materials, or stone is not permitted within or near a ditch, waterway, or floodway.

I. When installing pipe by open cutting a trench across a waterway, if the Work cannot be completed during dry conditions, bypass pump stream flows using the dam and pump method as shown on the Drawings.

J. Utilize existing roads to move equipment and materials from one side of the waterway to the other.

K. Do not exceed two (2) calendar days of construction activities within the waterway from April 1 through June 30 to minimize impacts during fish spawning season.

L. Do not exceed 30 feet of total length of waterway disturbance (parallel to the flow of the stream).

3.10 Working Near Karst Features or Water Wells

Karst features are underground geological formations that range from sinkholes, vertical shafts, and springs to complex underground drainage systems and caves. Underground karst features and water well aquifers are to be protected from construction activities and potential pollution sources.

A. Identify water wells and known karst features on the Drawings.

- B. Implement erosion and sediment control practices to reduce sedimentation introduction into karst features and groundwater.
- C. Position construction materials and equipment so that the area slopes away from karst features and wells.
- D. Provide secondary containment for all chemicals, fuels, or other liquids to capture spills or leaks.
- E. Clean up spills with absorbents or dry methods. Do not allow spills to soak into the ground and do not wash off with water or detergents.
- F. Properly dispose of waste materials.

### 3.11 Field Quality Control

#### A. Self-Monitoring Program – Inspections

1. Inspections are to be performed by a trained individual. One who is trained and experienced in the principles of stormwater management, including erosion and sediment control as is demonstrated by completion of coursework, state registration, professional certification or annual training that enables them to make judgments regarding stormwater management, treatment, and monitoring.
2. Conduct an inspection of the construction site to identify areas contributing to stormwater discharges from construction activity at the following frequency:
  - a. At least weekly if no qualifying precipitation event (greater than 0.5 inches) occurs.
  - b. 24-hours prior to a qualifying precipitation event or by the end of the next business day after a qualifying precipitation event.
  - c. No more than three inspections are required per week for multiple qualifying precipitations events occurring in one work week.
  - d. Monthly for areas stabilized with permanent vegetative cover at 70% density and/or where erosion resistant armoring is installed.
3. Inspect disturbed areas, material storage areas, and equipment storage areas that are exposed to precipitation for evidence of, or the potential for, pollutants leaving the project site or entering a storm drainage conveyance.
4. Inspect stormwater discharge locations and/or outfalls to determine if control measures are effective in preventing adverse impacts to receiving waters.
5. Observe erosion and sediment control devices to ensure that they are operating properly.
6. Inspect haul routes and construction entrance(s) daily for evidence of off-site vehicle tracking of sediments.
7. Inspect staging area to ensure that solid and liquid wastes are being properly disposed of and are not allowed to be discharged into stormwater runoff.

#### B. Self-Monitoring Program – Reports

1. Document and summarize the results of each inspection.

2. Include the following:
    - a. Name(s), title, signature, and qualifications of the trained individual completing the inspection.
    - b. Date(s) of the inspection.
    - c. Amount of precipitation when the inspection is completed after a qualifying precipitation event.
    - d. Implementation of the SWP3
    - e. Major observations relating to the implementation of the erosion and sediment control measures.
    - f. Identification of maintenance, repairs, sediment removal, failure of measures, erosion, debris, spills, or any incidents of noncompliance.
  3. Document an actual discharge visible during the inspection including the location, description, color, odor, floatables, settles/suspended solids, foam, oil sheen, and any other visible sign of pollution
  4. Provide a corrective action and implementation schedule for all identified issues and document completion on the inspection report.
  5. Implement corrective action(s) on the day of discovery, no later than 48 hours if temporary measures must be installed, and/or within 7 days for installation of new measures.
  6. Retain inspection reports for the project duration and submit to Owner at project close out.
  7. Make reports available to inspecting authority within 48 hours of a request.
- C. Project Management Log – Maintain the following documents at the project site office or by on-site individual(s) responsible for project management:
1. Permit documentation - Notice of Intent, public notice, IDEM submission, and Notice of Sufficiency.
  2. Revisions to Erosion Control Schedule.
  3. Plan for erosion and dust control on haul roads
  4. Plan for disposal of waste materials
  5. Self-Monitoring Program inspection reports and regulatory inspections
  6. Drawings
  7. SWP3 and dates of modifications
  8. Documentation of CSGP and SWPPP review with site personnel.
  9. Information related to off-site borrow sites, disposal areas, and staging areas.
  10. Retain Project Management Log for the project duration and submit to Owner at project close out.

### 3.12 Maintenance

- A. Maintain all erosion and sediment control measures and perform the following maintenance procedures throughout the project and until such time as the disturbed area has been completely stabilized or other provisions have altered the need for these measures.
1. Implement maintenance practices as specified in the Drawings.
  2. Replace mulch materials to their original level when the level has been substantially reduced due to decomposition of the organic mulches and displacement or disappearance of both the organic and inorganic mulches.

3. Remove rubbish and channel obstructions from bare and vegetated channels within the project limits. Repair damage from scour or bank failure, rodent holes, and breaching of diversion structures. Remove deposits of sediment.
4. Immediately repair excessive wear, movement, or failure of erosion control blankets.
5. Repair any damage to silt fence barriers immediately and monitor barriers daily during prolonged rainfall.
6. Repair or replace any filter fabric which has decomposed or become ineffective prior to its expected usable life.
7. Remove sediment deposits after each storm event. Remove sediment when deposits reach approximately half the height of a silt fence barrier.
8. Till and smooth to conform to the existing grade and reseed any sediment deposits remaining in place after erosion and sediment control measures are no longer required and have been removed.
9. Maintain construction entrances in a condition to prevent tracking or flowing of sediment onto roads. This could require periodic top dressing of the construction entrance with additional surface materials as conditions demand. Repair and clean out any features used to trap sediment and remove all sediment spilled, dropped, washed, or tracked onto road surfaces and dispose of properly.
10. Periodically remove concrete and residual liquid from the concrete washout area, as needed to maintain available space for the future washout and rainwater. Dispose of in accordance with Section 04.
11. Repair all rills that may appear. Re-grade to eliminate rill and stabilize ground by seeding or other approved methods.
12. Stabilize the site and reapply seed and mulch to achieve 70 percent density of cover on vegetated areas.
13. Remove and dispose of all temporary erosion and sediment control practices within 30 days after site stabilization is achieved or after the temporary practices are no longer needed.

3.13 Payment: Stormwater Pollution Prevention and Erosion Control Work will not be measured and paid for directly but be considered as a subsidiary obligation of the Contractor with costs included in the contract prices bid for the items to which they apply unless otherwise shown in the Itemized Bid Attachment.

-END-

## SECTION 04 – MATERIAL HANDLING AND SPILL PREVENTION PLAN

### PART 1 - GENERAL

#### 1.01 Summary

##### A. Section Includes: providing a plan outlining procedures to:

1. Help protect the health and safety of those working at the project site as well as the environment
2. Prevent the contamination of stormwater runoff by onsite pollutants
3. Help prevent fuel and chemical spills
4. Provide a response procedure should a spill occur

##### B. Related Sections

1. Section 03 – Stormwater Pollution Prevention and Erosion Control

#### 1.02 References

- A. 327 IAC 2-6.1 – Spills; Reporting, Containment, and Response
- B. 327 IAC 2-10 – Secondary Containment of Aboveground Storage Tanks Containing Hazardous Materials
- C. INRA00000 – Construction Stormwater General Permit (CSGP)

#### 1.03 Definitions

- A. Minor Spill: Approximately 10 gallons or less of pollutant with no contamination of ground or surface waters. Minor spills can generally be controlled by the first responder with help from other site personnel.
- B. Major or Hazardous Spill: More than 10 gallons with the potential for death, injury, or illness to humans or animals or has the potential for surface or groundwater pollution.
- C. Pollutants generated onsite may include gasoline, diesel fuel, oils, grease, paints, pesticides, nutrients, concrete and cementitious washout, soil, solvents, paper, plastic, Styrofoam, metals, glass, and other forms of liquid or solid wastes.

#### 1.04 Quality Assurance

##### A. Regulatory Requirements

1. Ensure material handling and storage associated with construction activity complies with the spill prevention and spill response requirements in Indiana Administrative Code 327 IAC 2-6.1.

2. Ensure aboveground storage tanks containing hazardous materials are stored appropriately according to the requirements in Indiana Administrative Code 327 IAC 2-10.
3. Dispose of contaminated soils, absorbents, and spill cleanup materials in accordance with all Federal, State, and local regulations.
4. Do not use water to flush spilled material unless authorized by a Federal, State, or local agency.
5. Additional regulation or requirements may be required. Consult a spill response professional to ensure all appropriate and required steps have been taken.
6. Do not remove contaminated material from the site until approval is given by Indiana Department of Environmental Management (IDEM), Office of Emergency Response (when emergency response is required).
7. Construction waste must be managed to prevent the discharge of pollutants and windblown materials. Waste containers (trash receptacles), when selected to manage waste, must be managed to reduce the discharge of pollutants and windblown debris.
8. Comply with CSGP requirements and conditions until a Notice of Termination is submitted to terminate the permit.

## PART 2 - PRODUCTS

Not Used.

## PART 3 - EXECUTION

### 3.01 Preparedness

- A. Prepare a contact list of First Responders and the chain of command in the event of a spill on the site. Include names, contact numbers, local agency contact numbers, and information on circumstances requiring the initiation of the contact list and chain of command. Include IDEM Emergency Spill Line (888) 233-7745 or (317) 233-7745.
- B. Maintain a list of qualified contractors, vacuum trucks, tank pumpers, and other equipment and businesses qualified to perform cleanup operations.
- C. Provide a list and quantity of absorbent materials and supplies the Contractor will make available onsite in sufficient quantities to address minor spills.
- D. Train construction personnel, equipment operators, subcontractors, and other employees on proper fueling procedures, prevention of spills, spill response procedures, and communication procedures.



### 3.02 Spill Response

#### A. Minor Spills

1. Contain the spill to prevent material from entering the waterways and the storm or groundwater systems. Immediately clean up the spill with absorbent materials.
2. Do not flush with water, bury, or allow soaking into the ground.
3. Tarps can be used to cover spilled material during rain events on land.
4. Use absorbent material to cleanup spills on land.
  - a. Contain spills on impervious surfaces with a dry absorbent.
  - b. Contain spills on clayey soils by constructing an earthen dike and dispose of spilled material as soon as possible to prevent migration deeper into the soil and groundwater. Remove contaminated soils.
5. Use containment booms to prevent the migration of spills on water.
  - a. Contain spills on water with a containment boom and absorb with an oil-only boom, mechanical skimmer, or other similar device.
  - b. Outside agencies will determine additional cleanup measures.
  - c. Report oil spills that cause a sheen upon the waters.
6. Gather contaminated materials and/or soils. Place contaminated absorbents and soils into a container for later disposal. Ensure the lid is closed and mark or label the container for identification purposes.
7. Contact 911 if the spill could be a safety issue.
8. Contact supervisors and designated inspectors immediately.
9. Dispose of waste appropriately.

#### B. Major or Hazardous Spills

1. Control or contain the spill without risking bodily harm.
2. Temporarily plug or cover storm drains if possible, to prevent migration of the spill into the stormwater system.
3. Use containment booms to prevent the migration of spills on water.
  - a. Contain spills on water with a containment boom and absorb with an oil-only boom, mechanical skimmer, or other similar device.
  - b. Outside agencies will determine additional cleanup measures.
  - c. Report oil spills that cause a sheen upon the waters.
4. Immediately contact the local Fire Department at 911 to report any hazardous material spill.
5. Contact supervisors and designated inspectors immediately. Contact county or municipal officials responsible for stormwater facilities. The Contractor is responsible for having these contact numbers available at the job site. Submit a written report to the Owner as soon as possible.
6. Contact IDEM, Office of Emergency Response as soon as possible, but within 2 hours of discovery at 1-888-233-7745. Note the following information for future reports to the IDEM or the National Response Center (1-800-424-8802):
  - a. Name, address, and phone number of person making the spill report
  - b. The location of the spill
  - c. The date and time of the spill
  - d. Identification of the spilled substance
  - e. Cause of the spill

- f. Approximate quantity of the substance that has been spilled or may be further spilled and the amount recovered
- g. The duration and source of the spill
- h. Name and location of the damaged waters
- i. Name of spill response organization
- j. Measures taken in the spill response
- k. Other pertinent information

### 3.03 Spill Prevention and Material Handling Practices

#### A. Vehicle and Equipment Fueling

1. Purpose: To prevent fuel spills and leaks and to reduce or eliminate contamination of stormwater and waterways.
2. Implementation
  - a. Use offsite commercial fueling stations when possible. Use onsite vehicle and equipment fueling only where it is impractical to send vehicles and equipment offsite to a commercial fueling station.
  - b. When performing fueling onsite, provide a designated fueling area.
  - c. Do not "top-off" fuel tanks.
  - d. Keep available absorbent spill cleanup materials and spill kits in fueling areas and on fueling trucks.
  - e. Inspect vehicles and equipment daily for leaks. Repair leaks immediately or remove them from the project site.
  - f. Use drip pans or absorbent pads during vehicle and equipment fueling, unless the fueling is performed over an impermeable surface in a dedicated fueling area.
  - g. Protect dedicated fueling areas from stormwater run-on and runoff and locate them at least 50 feet away from the downstream drainage facilities, stormwater conveyances or waterways.
  - h. Perform fueling on level-grade areas.
  - i. Protect fueling areas with berms and dikes to contain spills.
  - j. Equip nozzles used in vehicle and equipment fueling with an automatic shut off.
  - k. Do not leave fueling operations unattended.
  - l. Avoid mobile refueling of construction equipment; rather transport the equipment to the designated fueling area.
  - m. Store all petroleum products in tightly sealed containers which are clearly labeled.
  - n. Observe Federal, State, and local regulations for any stationary above ground storage tanks.

#### B. Vehicle Maintenance Areas

1. Purpose: To prevent stormwater exposure and spills during the normal maintenance of construction machinery.
2. Implementation:
  - a. As feasible, perform maintenance offsite in a covered facility with an impervious floor.
  - b. Use a dedicated site for machinery maintenance.

- c. Locate maintenance areas at least 50 feet from stormwater inlets or water bodies.
- d. Maintain spill kits and absorbent materials in close proximity to maintenance areas. Utilize drip pans and absorbent pads to prevent oils or other maintenance fluids from reaching the soil surfaces.
- e. Inspect equipment daily for leaks or worn hoses. Repair or replace as needed to prevent onsite spills.
- f. Properly dispose of all spilled fluids and fluids removed from machinery.

#### C. Equipment and Vehicle Washing

- 1. Purpose: To prevent or reduce the discharge of pollutants to waterways or stormwater from construction equipment and vehicle washing.
- 2. Implementation:
  - a. As feasible, perform washing offsite in a covered facility with an impervious floor and drains connected to the sanitary sewer.
  - b. Use a dedicated site for washing.
  - c. Locate wash areas at least 50 feet from stormwater inlets or water bodies.
  - d. Do not discharge wash water if using soaps, solvents, or detergents. Only non-contaminated wash water may be discharged to stormwater.
  - e. Inspect equipment and vehicles for leaks or worn hoses prior to washing.
  - f. Properly dispose of contaminated wash water.

#### D. Solid Waste Management

- 1. Purpose: To prevent or reduce the discharge of pollutants to waterways or stormwater from construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.
- 2. Suitable Applications: Suitable for construction sites where the following wastes are generated or stored:
  - a. Solid waste generated from trees and shrubs removed during land clearing, demolition of existing structures (rubble), and building construction.
  - b. Packaging materials including wood, paper, and plastic.
  - c. Scrap or surplus building materials including scrap metals, rubber, plastic, glass pieces, and masonry products.
  - d. Domestic wastes including food containers such as beverage cans, coffee cups, paper bags, plastic wrappers, and cigarettes.
  - e. Construction waste including brick, mortar, timber, steel and metal scraps, pipe and electrical cuttings, non-hazardous equipment parts, Styrofoam, plastic, and other packaging for construction materials.
  - f. Sediments and other materials collected in erosion and sediment control measures (silt fence, inlet protection, catch basin sumps, etc.).
  - g. Natural debris such as excess soil, stone, sand, leaves, branches, brush, or wood.
- 3. Implementation
  - a. Develop a plan for proper waste disposal including the disposal of excess soil and excavated material. If a commercial disposal facility will not be utilized for soil disposal, then develop a Stormwater Pollution Prevention Plan for the selected disposal area.

- b. Select designated waste collection areas onsite.
- c. Inform trash-hauling contractors that only watertight dumpsters are acceptable for onsite use.
- d. Inspect dumpsters for leaks, and repair dumpsters that are not watertight.
- e. Provide an adequate number of containers with lids or covers to prevent loss of wastes from wind and to prevent the collection of rainwater.
- f. Waste that is not disposed of in trash receptacles must be protected from exposure to the weather and/or removed at the end of the day from the site and disposed of properly.
- g. Collect site trash daily or more frequent if needed during demolition Work. Do not allow containers to overflow. Clean up immediately if a container spills, leaks, or overflows.
- h. Remove solid waste promptly from erosion and sediment control devices.
- i. Ensure that toxic liquid wastes (used oils, solvents, and paints) and chemicals (acid, pesticides, additives, curing compounds) are not disposed of in dumpsters designed for construction debris.
- j. Do not hose out dumpsters on the construction site. Ensure that dumpster cleaning is conducted by the trash hauling contractor off site.
- k. Make sure that construction waste is collected, removed, and disposed of only at authorized disposal areas. Do not locate solid waste storage areas in areas prone to flooding or ponding.
- l. Locate solid waste dumpsters a minimum of 50 feet away from waterways, stormwater inlets or other drainage facilities.
- m. Minimize the potential for spills or leaks to drain immediately into a waterway or drainage facility.
- n. Do not bury construction waste onsite.
- o. Cover construction material hauled from the site in dump trucks with a tarpaulin.
- p. Inspect construction waste areas regularly.

#### E. Fluids, Paints, Solvents and Other Chemicals Storage and Use

- 1. Purpose: To prevent stormwater exposure and spills during the use and storage of the materials.
- 2. Implementation
  - a. Store materials in manufacturer's containers.
  - b. Maintain Safety Data Sheets (SDS) on all products.
  - c. Store materials in a weatherproof/vandal resistant locker or building.
  - d. Keep materials away from flammable sources.
  - e. Follow manufacturer's instructions for the proper use and storage of all materials.
  - f. Do not perform washing of applicators or containers of solvent, paint, grout, stucco, or other materials near or into a waterway or stormwater inlet. Wash water is to be disposed offsite as wastewater.
  - g. Tightly seal and store paint containers and curing compounds when not required for use.
  - h. Do not discharge excess paint to a waterway or storm system. Properly dispose of excess paint according to the manufacturer's instructions and in accordance with all Federal, State, and local regulations.

#### F. Secondary Containment

1. Provide secondary containment for aboveground storage tanks or storage areas containing hazardous materials that are located outside.
2. Provide secondary containment consistent with good engineering standards.
3. Provide secondary containment that is compatible with the hazardous materials being stored.
4. Provide secondary containment that will prevent a release from entering waters for a 72-hour period.
5. Secondary containment must meet one of the following:
  - a. Double-walled tank,
  - b. Dikes, berms, retaining walls, trenches, or
  - c. Diversionary system
6. Provide secondary containment with a capacity to contain at least 110% of the volume of the largest aboveground tank or the volume of the largest aboveground tank plus enough freeboard to contain precipitation generated by a 25 year/24-hour rain event.
7. Provide secondary containment with a minimum 120-gallon capacity for storage area holding only drums.
8. Maintain the secondary containment to protect the integrity and capacity of the area.
9. Remove collected liquid in the secondary containment area within 72 hours of its discovery to maintain the capacity. Remove ice as soon as weather permits. Liquid that collects within the secondary containment area must meet all applicable requirements of the Water Quality Standards if discharged to waters of the state.

#### G. Disposal of Sediment-Laden Water

1. Purpose: To prevent the purposeful discharge of sediment-laden water from the project site.
2. Implementation
  - a. Do not discharge sediment-laden water from pumping operations into or near stormwater conveyances, wetlands, rivers, streams, waterways, and impoundments or into natural or manmade channels leading thereto.
  - b. Discharge sediment-laden water from dewatering of trenches, or other excavations by means of a pump or similar means into a manufactured pumping bag for filtering in accordance with the manufacturer's instructions unless the pumped water is routed through another erosion control measure such as a sediment trap or outlets onto a well-established vegetated area without eroding.
  - c. Pumping operations moving clean water through a site are not required to have a pumping bag or similar device at the outlet.
  - d. Protect the point of discharge to prevent soil erosion.
  - e. Do not discharge water with a visible sheen and/or pollutants at a level that requires additional or alternate treatment.

#### H. Concrete Washout Area

1. Discuss the concrete management techniques (such as handling of concrete waste and washout) with the ready-mix concrete supplier before any deliveries are made.
2. Incorporate requirements for concrete waste management into material supplier and subcontractors' agreements. Inspect construction activities on a regular basis to ensure suppliers, contractors, and others are utilizing designated washout areas. If concrete waste is being disposed of improperly, identify the violators and take appropriate action.
3. Perform washout of concrete trucks either offsite or in designated areas only. Never dispose of washout from concrete trucks in a ditch, stream, wetland, waterway, or stormwater conveyance.
4. Provide a designated concrete washout area for use of washing out concrete trucks to contain potential stormwater pollutants. Use one of the following methods:
  - a. Construct a minimum 10-feet by 10-feet by 3-feet deep area (or larger as required to contain liquid and solid waste from concrete washout operations) with a polyethylene lining. Construct and prepare the base of the system so that it is free of rocks and other debris that may cause tears or punctures in the polyethylene lining.
  - b. Install and maintain a pre-fabricated containment system in accordance with the manufacturer's instructions.
  - c. Use a polyethylene-lined roll-off dumpster when other methods are not practicable.
  - d. Subcontract with a concrete supplier that collects all washout water and pumps it back into the mixer drum for proper disposal off-site. In this instance, a concrete washout area would not be required.
5. Install orange safety fencing around concrete washout area perimeter. Post signage directing contractors and suppliers to the designated concrete washout location.
6. Locate washout areas at least 50 feet from storm drains, open ditches, or water bodies.
7. Inspect concrete washout area daily and after each storm event.
  - a. Check to ensure that the washout has not reached or exceeded maximum capacity.
  - b. Inspect the integrity of the overall structure.
  - c. Inspect the polyethylene liner for failure. The liner may need to be replaced after every cleaning if removal of material has damaged the liner.
  - d. Repair the concrete washout structure, as needed, or construct a new system.
8. Concrete wastewater liquid shall be fully evaporated prior to the planned capacity of the washout structure capacity being exceeded. Liquid that collects in the washout area could be high in alkalinity and could contain pollutants. Liquid must be disposed of offsite as wastewater.
  - a. Concrete wastewater liquid that has not solidified may be pumped out into a secondary lined container or into a tanker and taken to an approved disposal facility.
  - b. Concrete wastewater shall not be allowed to leak onto the ground, run into storm drains, or into any body of water. Where washout wastewater leaks

onto the ground, all contaminated soils shall be excavated and disposed of properly.

9. Allow concrete wastes to set. Break up and properly dispose of hardened wastes. Upon removal of waste, inspect the structure.
10. Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile or dispose of in the trash.
11. Do not dump excess concrete onsite, except in designated areas.
12. Provide a secondary concrete washout system onsite to be used in an emergency and that is of sufficient size to handle concrete washout wastewater from a minimum of one truck.
13. When concrete washout areas are no longer required, close the concrete washout systems. Dispose of all hardened concrete and other materials used to construct the system. Backfill, grade, and stabilize any holes, depressions, and other land disturbances associated with the system.

#### I. Fertilizers

1. Apply fertilizers only in the minimum amounts recommended by the manufacturer, as indicated from a soil test, or per the Indiana Stormwater Quality Manual.
2. Work fertilizers into the soil to limit exposure to stormwater.
3. Do not apply immediately prior to precipitation events.
4. Store fertilizers in a covered area and transfer partially used bags to a sealable container to avoid spills.

-END-





## SECTION 05 – SLIDE GATES

### PART 1 - GENERAL

#### 1.01 Description

A. Scope: Furnish and install slide gates and appurtenances in accordance with the latest version of AWWA C561 as modified herein and as necessary to complete the work shown or specified.

1. Each unit shall be complete with gate, frame, rising stem, manual operator, and appurtenances. All components shall be furnished by one manufacturer.

B. Codes, specifications, and standards referred to by number or title shall form a part of this specification to the extent required by the references thereto. Latest revisions shall apply, unless otherwise shown or specified.

#### 1.02 Quality Assurance

Upon installation, manufacturer shall inspect the slide gates for mechanical and structural correctness and actuators for electrical correctness.

#### 1.03 Performance

A. Slide Gates: Leakage shall not exceed 0.05 U.S. gallons per minute per foot of seal periphery under the design seating and unseating heads.

#### 1.04 Submittals

A. Submittals shall include information and materials specified in this Section, and the General Requirements.

B. Submit the following for the Engineer's review and approval:

1. Shop drawings with performance data, descriptive literature, weights and dimensions, and other physical characteristics verifying compliance with this Section. When numerous options and sizes are shown, the shop drawings shall be marked to clearly indicate the sizes and types specific to this Section and project;
2. Manufacturer's installation instructions and recommended testing procedures;
3. Manufacturer's operation and maintenance (O&M) manuals and materials. When numerous types and sizes are shown, the manuals shall be marked to clearly indicate the sizes and types specific to this project. Provide four (4) bound hard copy sets and two (2) CD's with complete electronic copy in pdf format.

#### 1.05 Product Delivery, Storage, and Handling

A. The Contractor shall be responsible for the delivery, storage, and handling of products.

- B. Promptly remove damaged products from the job site. Replace damaged products with undamaged products.

## PART 2 - PRODUCTS

### 2.01 Slide Gates

- A. Gate and Frame: The gates shall be rising stem with the guides designed to mount on the face of the concrete where indicated on the Drawings. Slide gates frame configuration shall be of the flush-bottom type.
  - 1. Guides and Seals: The guides shall be made of UHMWPE (ultra-high molecular weight polyethylene) and be of such length as to retain and support at least 2/3 of the vertical height of the slide in the fully open position. The vertical face of the seal shall be in contact with the seating surface of the guide to provide a proper seal at the corners. Gate, frame, and sealing shall be designed for seating and unseating head conditions as noted in the schedule.
    - a. Slide Gates: Side seals shall be made of UHMWPE of the self-adjusting type. A continuous compression cord shall ensure contact between the UHMWPE guide and the gate in all positions. The sealing system shall maintain efficient sealing in any position of the slide and let the water flow only in the open part of the gate.

The bottom seal shall be made of resilient neoprene set into the bottom member of the frame and shall form a flush-bottom.
  - 2. Guides: The guides shall be of 316L stainless steel incorporating a one-piece frame with gussets to transfer the load from unseating head conditions. The guides shall be equipped with a self-adjusting UHMWPE seal system. Upward opening gates shall be provided with an EPDM flush bottom invert seal. Top seals shall be self-adjusting UHMWPE. Downward-opening weir gates shall be provided with self-adjusting UHMWPE seals along the invert. The seal system shall be self-adjusting by means of a compression cord. All seals, including the invert seal, shall be bolted with stainless steel fasteners and shall be field replaceable without the need to remove the frame from the wall or remove concrete or grout. The guide slot shall accept the plate of the disc and the outermost portion of the reinforcing ribs of the disc. The guides shall be designed for maximum rigidity, shall have a weight of not less than 13 pounds per foot for wall-mounted gates and 6.5 lbs per foot for embedded and in-channel mounted gates, and shall be provided with holes for anchor bolts a minimum of every 18 inches. Where the guides extend above the mounting surface, they shall be sufficiently strong so that no further reinforcing will be required. Guide extensions shall have a weight of not less than 6.5 pounds per foot and shall be constructed of C-shaped or Z-shaped plate for rigidity.
  - 3. The yoke to support the operating bench stand shall be formed by two C-channels welded at the top of the guides to provide a one-piece rigid frame. The arrangement of the yoke shall be such that the disc and stem can be removed without disconnecting the yoke.
  - 4. The disc or sliding member shall be 316L stainless steel and consist of a flat plate reinforced with formed plates or structural members to limit deflection to 1/720 of the gate's span under the design head.

5. The portion of the disc that engages the frame shall have a minimum thickness of 1/2-inch.
6. All parts of the gate shall have a minimum thickness of 1/4-inch.
7. All necessary attaching bolts and anchor bolts shall be 316 stainless steel and shall be furnished by the slide gate manufacturer.

B. Operating Stem

1. The operating stem shall be Type 316 stainless steel designed to have an L/r of less than 200 and be designed to transmit in compression at least two times the rated output of the operating manual mechanism with a 40 lbs. effort on the lever crank or hand wheel.
2. The stem shall have a minimum diameter of 1-1/2 inches.
3. Stem guides shall be constructed of 316L stainless steel and shall be outfitted with adjustable UHMWPE bushings.
4. Bronze stop collars shall be provided on gates with manual actuators. Stop collars shall be internally threaded and mounted on the stem, secured by a stainless-steel set screw.
5. A clear butyrate or lexan weather-proof stem cover with position indication shall be provided. Vent holes shall be provided to prevent condensation
6. Lubrication fittings shall be provided for all bearings.
7. Stems in more than one piece and a diameter equal to or greater than 1 3/4 inches are to be joined together by solid bronze couplings. Stems with a diameter smaller than 1 3/4 inches shall be pinned to an extension tube.

2.02 Manual Actuators

- A. All bearings and gears shall be totally enclosed in a weather tight ductile iron housing. The pinion shaft of crank-operated mechanisms shall be constructed of stainless steel and supported by roller or needle bearings.
- B. Each manual operator shall be designed to operate the gate under the maximum specified seating and unseating heads by using a maximum force of 40 lbs on the crank or hand wheel and be able to withstand without damage an effort of 80 lbs.
- C. The crank shall be removable and fitted with a corrosion resistant rotating handle. The maximum crank radius shall be 15 inches and the maximum hand wheel diameter shall be 24 inches.
- D. The actuators shall be pedestal mounted on non-self-contained gates. Pedestals shall be constructed of 316L stainless steel. The base plate and adaptor shall have a minimum thickness of 1/2 inch. The pedestal tube shall have a minimum diameter of 4 inches.

## PART 3 - EXECUTION

### 3.01 Installation

- A. Install gates in accordance with manufacturer's recommendations and as specified in this Section.
- B. Gates shall operate smoothly, not binding while operating in either direction. Leakage on gates shall meet the requirements of AWWA C-561 after installation. Gates which leak shall be adjusted, removed, reinstalled, or replaced until leakage is no longer present.

### 3.02 Manufacturer's Service and Start-Up Certification Report

- A. The Contractor shall provide the services of a qualified representative of the pump manufacturer for a minimum of one day per pump station to perform the following tasks:
  - 1. Inspect the installation of the equipment.
  - 2. Place the equipment in operation and make any necessary adjustments.
  - 3. Perform Field Tests specified above.
  - 4. Perform tests specified in this Section and recommended by the equipment manufacturer.
  - 5. Instruct Owner's personnel in the proper operation and maintenance (O & M) of the equipment (training).
- B. If equipment is not completed for proper start-up and training procedures, the representative shall reschedule another visit at no additional cost to the Owner. Training will not be permitted without proper start-up and testing tasks. An abstract or outline of the start-up, testing, and training procedures shall be provided to the Engineer at least five days prior to the scheduled visit. Manufacturer's operation and maintenance manuals and materials and audio-video cassette, when included under submittal requirements, shall be incorporated in the training procedures, with emphasis on items or materials of greatest importance.
- C. A typed, bound report covering the manufacturer's representative's findings shall be submitted to the Engineer for review and approval. The report shall (1) describe the start-up procedures taken; (2) include any inspections performed; (3) outline in detail any deficiencies observed along with the corrective measures taken; and (4) include the results of all field tests, including necessary graphs, charts, tables, etc., specified in this Section or required by the referenced standards. The report shall certify that the equipment is properly installed and functioning for the purpose intended. The report must be received and reviewed by the Engineer prior to the equipment being put into permanent operation.
- D. The Contractor shall bear all expenses associated with the start-up, testing, and training procedures and report described above, including labor, transportation, lodging, and material costs.

3.03 Warranty

- A. The Contractor shall guarantee the equipment to be free from defective material and workmanship for a period of two years from the date of acceptance of the equipment by the Owner. The Contractor shall replace any defective materials, components, or workmanship during this time, including but not limited to all materials, labor, shipping, and transportation, at no additional cost to the Owner. Any repair work performed during this two-year period shall also be guaranteed to be free from defective material or workmanship for a period of one year from the date the work is complete and shall be addressed in the same manner at no additional cost to the Owner.

3.04 Cleaning

- A. Clean excess grease, oil, or any other debris from exterior surfaces of the gates.

## SLIDE GATE SCHEDULE

1. Slide Gate No. 1
  - a. Location: Structure A0
  - b. Nominal Gate Size: 36" W x 36" H
  - c. Nominal Frame Size: 36" W x 60" H
  - d. Opening Direction: Upward
  - e. Frame Mounting: Flush Wall Mounted
  - f. Minimum Vertical Movement of Gate: 30"
  - g. Head Condition: Seating (14" measured from CL of gate)
  - h. Operator: Pedestal with Handwheel or Lever Crank
2. Slide Gate No. 2
  - a. Location: Structure A0
  - b. Nominal Gate Size: 50" W x 50" H
  - c. Nominal Frame Size: 50" W x 90" H
  - d. Opening Direction: Upward
  - e. Frame Mounting: Flush Wall Mounted
  - f. Minimum Vertical Movement of Gate: 45"
  - g. Head Condition: Seating (23" measured from CL of gate)
  - h. Operator: Pedestal with Handwheel or Lever Crank
3. Acceptable Manufacturers: RW Gate, Whipps, or WACO

-END-

## APPENDIX A

### GEOTECHNICAL EVALUATIONS

Boden Road Borings  
Boden Road Sewer Line Borings  
American Drilling Services Boden Logs  
Noblesville Geotechnical Report  
Noblesville Sanitary Geotechnical Report





**AMERICAN DRILLING SERVICES, INC.**  
**FOR**  
**HAMILTON SOUTHEASTERN UTILITIES, INC.**  
**Boden Rd. Borings - 2014**

<b>Project:</b> Sanitary Interceptor Evaluation - Wayne Twshp CTA <b>Project Location:</b> Boden Road (SR-38 to E. 166th St.) <b>Project Number:</b> SR-38	<b>Log of Boring</b> <u>B-9</u> Sheet 1 of <u>1</u>
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Date(s) Drilled: 7/2014	Logged By:	Checked By:
Drilling Method: 6" Hallow stem auger	Drill Bit Size/Type:	Total Depth Drilled: 18 ft
Drill Rig Type:	Drilled By:	Hammer Weight/ Drop: Stnd.
Apparent Groundwater Depth: <u>6</u> ft ATD <u>    </u> ft after <u>    </u> hrs <u>    </u> ft after <u>    </u> hrs		Surface Elevation: 794.00 ft
Comments: Offset 150' south / Boring caved to 7' depth		Borehole Backfill: Auger spoil
		Elevation Datum:

Depth, ft.	SAMPLES				MATERIAL DESCRIPTION and other remarks	Elevation, ft.	Pocket Pen., kPa	Water Content, %	Liquid Limit	Plasticity Index	Other Tests
	Location	Type	Number	Sampling Resistance							
0					0 - 3" Topsoil						
		SS	1	7	3" - 4' Brown Gray silty sandy clay						
		SS	2	6	4' - 6' Brown Gray wet sandy clay						
		SS	3	37	6' - 12.5' Brown Gray wet fine to coarse sand & Gravel with cobbles or broken limestone						
10		SS	4	50/4							
		SS	5	60	12.5' - 18.0' Brown Gray weathered limestone						
20			6		18.0' Auger Refusal (two attempts to recover rock)						
30											
40											



**AMERICAN DRILLING SERVICES, INC.**  
**FOR**  
**HAMILTON SOUTHEASTERN UTILITIES, INC.**  
**Boden Rd. Borings - 2014**

**Project:** Sanitary Interceptor Evaluation - Wayne Twshp CTA  
**Project Location:** Boden Road (SR-38 to E. 166th St.)  
**Project Number:** SR-38

**Log of Boring** B-11

Sheet 1 of 1

Date(s) Drilled	7 / 2014	Logged By	Checked By
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	Total Depth Drilled 23.0 ft
Drill Rig Type		Drilled By	Hammer Weight/ Drop Stnd.
Apparent Groundwater Depth	14.0 ft ATD	ft after hrs	ft after hrs
Comments	Boring cave depth 13.0 ft	Borehole Backfill Auger spoils	Surface Elevation 809.22 ft
			Elevation Datum

Depth, ft.	SAMPLES				Elevation, ft.	Pocket Pen., kPa	Water Content, %	Liquid Limit	Plasticity Index	Other Tests
	Location	Type	Number	Sampling Resistance						
0										
		ss	1	6						
		ss	2	5						
		ss	3	5						
		ss	4	5						
10										
		ss	5	26						
20		ss	6	40						
			7							
30			8							
			9							
40			10							



**AMERICAN DRILLING SERVICES, INC.**  
**FOR**  
**HAMILTON SOUTHEASTERN UTILITIES, INC.**  
**Boden Rd. Borings - 2014**

**Project:** Sanitary Interceptor Evaluation - Wayne Twshp CTA  
**Project Location:** Boden Road (SR-38 to E. 166th St.)  
**Project Number:** SR-38

**Log of Boring** B-13

Sheet 1 of 1

Date(s) Drilled	7 / 2014	Logged By	Checked By
Drilling Method	Hollow Stem Auger	Drill Bit Size/Type	Total Depth Drilled 27.5 ft
Drill Rig Type		Drilled By	Hammer Weight/ Drop Stnd.
Apparent Groundwater Depth	20.5 ft ATD	ft after hrs	ft after hrs
Comments	Boring cave depth 13.0 ft	Borehole Backfill	Auger spoils
		Elevation Datum	810.82

Depth, ft.	SAMPLES				Elevation, ft.	Pocket Pen., kPa	Water Content, %	Liquid Limit	Plasticity Index	Other Tests
	Location	Type	Number	Sampling Resistance						
0										
		SS	1	7	0 - 7" Topsoil					
		SS	2	12	7" - 3.0' Brown gray silty sandy clay					
		SS	3	15						
10		SS	4	38	8.0' - 12.0' Brown gray silty clay with coarse gravel (glacial till)					
		SS	5	10	12.0' - 20.5' Gray silty clay with coarse gravel (glacial till) with sand seams					
20		SS	6	15	20.5' - 27.5' Gray wet fine to coarse sand					
			7	6						
30			8	25	27.5' - 30.0' Gray wet fine to coarse sand and gravel					
					Bottom of the boring - 30.0 ft					
			9							
40			10							



# LOG OF BORING A-3

(Page 1 of 1)

Boden Road Sewer Line  
Boden Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 23-0310-01G  
Logged By : I. Grafe  
Start Date : 3/21/2023  
Drilling Method : HSA

Driller : M. Wagner  
Sampling : Splitspoon  
Approx. Elevation : +/- 800 feet  
Latitude : 40° 2'4.86"N  
Longitude : 85°56'18.14"W

Depth (Feet)	Elevation (Feet) 800	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 8 feet ▽ After Completion - 4 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0	800				TOPSOIL (8")						
					Brown, slightly moist to moist, medium stiff to stiff, SILTY CLAY with trace gravel and sand	1	100	2/3/4	1.5	20	
		▽	CL			2	89	3/3/2	1.5	13	
5	795				Brown, slightly moist, medium dense to very dense, fine to medium grained, SAND with some gravel	3	89	16/11/13			
		▼	SP-SM			4	78	11/16/46			
10	790				Brown, saturated, medium dense to very dense, fine to medium grained, SAND with some gravel	5	11	50/2"			
			GP-GM		Gray, saturated, very dense, GRAVEL with some sand and clay	6	11	50/2"			
15	785				Auger refusal was encountered at 15 feet.						
20	780										
25	775										
30	770										
35											



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## LOG OF BORING A-4

(Page 1 of 1)

Boden Road Sewer Line  
Boden Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 23-0310-01G  
Logged By : I. Grafe  
Start Date : 3/21/2023  
Drilling Method : HSA

Driller : M. Wagner  
Sampling : Splitspoon  
Approx. Elevation : +/- 804 feet  
Latitude : 40° 2'0.84"N  
Longitude : 85°56'18.14"W

Depth (Feet)	Elevation (Feet) 804	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 14 feet ▽ After Completion - 4 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9")						
					Brown, slightly moist to moist, stiff to very stiff, SANDY CLAY with trace gravel	1	89	3/4/7		18	
	800	▽	CL			2	100	7/6/6	3.5	11	
5											
					Gray, slightly moist, medium dense to dense, SILTY SAND with trace gravel	3	100	10/16/27			
	795		SM			4	78	10/14/7			
10											
	790	▼			Gray, saturated, very dense, GRAVEL with some sand and clay	5	83	20/24/50/31			
15			GP-GM								
	785					6	6	50/1"			
20					Auger refusal was encountered at 18.6 feet.						
	780										
25											
	775										
30											
	770										
35											





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## LOG OF BORING A-5

(Page 1 of 1)

Boden Road Sewer Line  
Boden Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 23-0310-01G  
Logged By : I. Grafe  
Start Date : 3/20/2023  
Drilling Method : HSA

Driller : M. Wagner  
Sampling : Splitspoon  
Approx. Elevation : +/- 808 feet  
Latitude : 40° 1'56.81"N  
Longitude : 85°56'18.13"W

Depth (Feet)	Elevation (Feet) 808	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 13 feet ▽ After Completion - 4 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (7")						
			CL		Brown, moist, medium stiff, SILTY CLAY with trace gravel	1	89	4/3/3		20	
805		▽									
5			CL		Brown, slightly moist, medium stiff to very stiff, SANDY CLAY with trace gravel	2	100	2/3/2		13	
						3	100	5/5/6		14	
800						4	100	4/9/17		12	
10			ML		Brown, slightly moist, medium dense, fine to medium grain, SAND with trace gravel						
795		▼				5	6	10/8/12			
15			SP-SM		Brown, saturated, medium dense, fine to medium grain, SAND with trace gravel						Boring caved to 14 feet upon auger removal.
790						6	82	16/28/50/3"			
20			GP-GM		Gray, saturated, very dense, GRAVEL with some sand and clay						
785						7	28	50/5"			
25					Auger refusal was encountered at 24 feet.						
780											
30											
775											
35											



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## LOG OF BORING A-6

(Page 1 of 1)

Boden Road Sewer Line  
Boden Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 23-0310-01G  
Logged By : I. Grafe  
Start Date : 3/20/2023  
Drilling Method : HSA

Driller : M. Wagner  
Sampling : Splitspoon  
Approx. Elevation : +/- 807 feet  
Latitude : 40° 1'54.55"N  
Longitude : 85°56'18.11"W

Depth (Feet)	Elevation (Feet) 807	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 16 feet ▽ After Completion - 5 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (8")						
805			CL		Brown, moist, medium stiff to very stiff, SILTY CLAY with trace gravel	1	89	3/4/4		25	
5		▽				2	100	3/12/5	1.5	17	
800			CH		Gray, slightly moist, medium stiff to stiff, CLAY with trace gravel	3	100	2/4/5	0.75	10	
10			SP-SM		Gray, slightly moist, medium dense, fine to medium grained, SAND with trace gravel	4	100	3/5/8			
795											
15			GP-GM		Gray, slightly moist, very dense, GRAVEL with some sand and clay	5	6	10/14/18			
790		▼	GP-GM		Gray, saturated, very dense, GRAVEL with some sand and clay						
20			GP-GM		Brown, saturated, very dense, GRAVEL with some sand and clay	6	82	50/5"			
785											
25											
780											
30											
775											
35											

Auger refusal was encountered at 21 feet.

Boring caved to 13 feet upon  
auger removal.



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# LOG OF BORING A-7

(Page 1 of 1)

Boden Road Sewer Line  
Boden Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 23-0310-01G  
Logged By : I. Grafe  
Start Date : 3/21/2023  
Drilling Method : HSA

Driller : M. Wagner  
Sampling : Splitspoon  
Approx. Elevation : +/- 811 feet  
Latitude : 40° 1'52.43"N  
Longitude : 85°56'15.67"W

Depth (Feet)	Elevation (Feet) 811	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 12 feet ▽ After Completion - 5 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0	810				TOPSOIL (9")						
			CL		Brown, moist, medium stiff to stiff, SILTY CLAY with trace gravel	1	89	3/3/5		14	
5		▽	CL		Brown, slightly moist, medium stiff, SILTY CLAY with trace gravel	2	100	4/5/5	2.25	12	
	805		CL		Brown, slightly moist, very stiff, SANDY CLAY with trace gravel	3	100	6/10/7	3.25	10	
10			CL		Brown, slightly moist, stiff to very stiff, SILTY CLAY with trace gravel	4	100	6/7/6	2.5	12	
	800	▼									
15					Gray, slightly moist, stiff to hard, SILTY CLAY with trace gravel	5	100	3/4/6	3.5	12	
	795		CL			6	89	13/16/22	3.5	12	Boring caved to 16 feet upon auger removal.
20											
	790										
25			SP-SM		Gray, saturated, dense to very dense, fine to medium grained, SAND with some gravel	7	100	27/26/22			
	785					8	22	50/4"			
30					Auger refusal was encountered at 29 feet.						
	780										
35											



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## LOG OF BORING A-8

(Page 1 of 1)

Boden Road Sewer Line  
Boden Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 23-0310-01G  
Logged By : I. Grafe  
Start Date : 3/21/2023  
Drilling Method : HSA

Driller : M. Wagner  
Sampling : Splitspoon  
Approx. Elevation : +/- 813 feet  
Latitude : 40° 1'51.18"N  
Longitude : 85°56'14.22"W

Depth (Feet)	Elevation (Feet) 800	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 15 feet ▽ After Completion - 4 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0	800				TOPSOIL (8")						
			CL		Brown, moist, medium stiff to stiff, SILTY CLAY with trace gravel	1	78	3/4/4	1.75	24	
		▽			Brown, moist, medium stiff to stiff, SILTY CLAY with trace gravel	2	100	3/3/6	2.0	24	
5	795					3	100	2/3/3	1.75	23	
			CL			4	100	2/3/4	1.25	23	
10	790										
		▼			Gray, slightly moist, medium stiff to very stiff, SILTY CLAY with trace gravel	5	100	2/2/4	1.5	17	
15	785										Boring caved to 15 feet upon auger removal.
			CL			6	89	10/11/16	2.0	12	
20	780										
						7	100	11/17/18		12	
25	775										
			SP-SM		Gray, saturated, dense to very dense, fine to medium grained, SAND with some gravel	8	100	22/25/45			
30	770				The boring was terminated at 30 feet.						
35											



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## LOG OF BORING A-9

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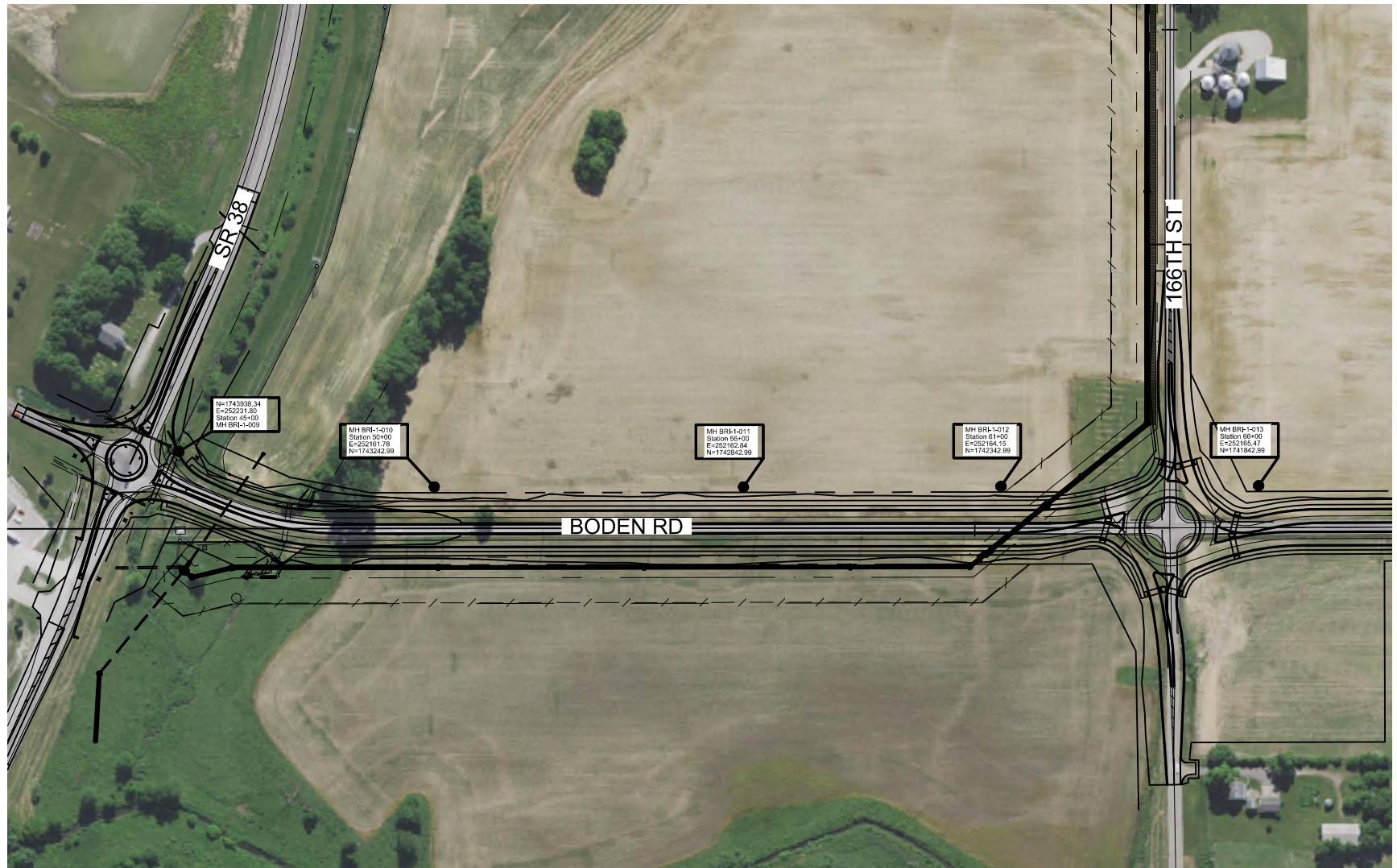
Boden Road Sewer Line  
Boden Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 23-0310-01G  
Logged By : I. Grafe  
Start Date : 3/21/2023  
Drilling Method : HSA

Driller : M. Wagner  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet) 800	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 8 feet ▽ After Completion - 4 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0	800				TOPSOIL (8")						
			CL		Brown, moist, medium stiff to stiff, SILTY CLAY with trace gravel	1	100	3/4/4	1.75	22	
5	795	▽				2	100	3/2/3		20	
			CL		Brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	3	100	8/10/11		11	
10	790					4	89	15/12/9	4.0	20	
			ML		Gray, slightly moist, loose, SILT With trace gravel	5	100	2/3/2			
15	785	▼				6	100	7/9/11			
20	780		ML		Gray, saturated, loose, SILT With trace gravel						
25	775					7	89	3/8/13			
30	770		SP-SM		Gray, saturated, very dense, fine to medium grained, SAND with some gravel	8	100	14/18/13			
					Boring was terminated at 30 feet.						
35											





## PLAN - BORING LOCATION

SCALE: N/A'







# Geotechnical Engineering Report

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**Boden Road Gravity Interceptor Sewer  
Noblesville, Indiana**

April 16, 2021

Terracon Project No. CJ215026

**Prepared for:**

CHA Consulting, Inc.  
Indianapolis, Indiana

**Prepared by:**

Terracon Consultants, Inc.  
Indianapolis, Indiana



April 16, 2021

CHA Consulting, Inc.  
300 South Meridian Street, Union Station  
Indianapolis, Indiana 46225



Attn: Mr. Jonathan Mirgeaux, P.E.  
P: (317) 780 7264  
E: jmirgeaux@chacompanies.com

Re: Geotechnical Engineering Report  
Boden Road Gravity Interceptor Sewer  
Noblesville, Indiana  
Terracon Project No. CJ215026

Dear Mr. Mirgeaux:

In accordance with your request, we have completed our Geotechnical Engineering evaluation for the referenced project. This evaluation was performed in general accordance with Terracon Proposal No. PCJ215026. This report presents the results of our subsurface exploratory and laboratory testing programs and provides geotechnical recommendations concerning earthwork and the design and construction of the sewer.

We have enjoyed working with you on this project. If you have any questions concerning this report or require further assistance, feel free to contact us.

Sincerely,  
**Terracon Consultants, Inc.**

  
Tanner Hill, P.E.  
Project Engineer



Richard D. Olson, P.E.  
Principal Engineer

## REPORT TOPICS

INTRODUCTION.....	1
SITE CONDITIONS.....	1
PROJECT DESCRIPTION.....	2
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DEWATERING AND EXCAVATION.....	5
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LATERAL EARTH PRESSURES.....	8
GENERAL COMMENTS.....	9
FIGURES.....	10

**Note:** This report was originally delivered in a web-based format. For more interactive features, please view your project online at [client.terracon.com](http://client.terracon.com).

## ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES  
SITE LOCATION AND EXPLORATION PLANS  
EXPLORATION RESULTS  
SUPPORTING INFORMATION

**Note:** Refer to each individual Attachment for a listing of contents.

**Geotechnical Engineering Report**  
**Boden Road Gravity Interceptor Sewer**  
**Noblesville, Indiana**  
**Terracon Project No. CJ215026**  
**April 16, 2021**

## **INTRODUCTION**

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed gravity interceptor sewer to be located in Noblesville, Indiana. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface conditions
- Groundwater conditions
- Site preparation and earthwork
- Sewer construction considerations
- Excavation considerations
- Dewatering considerations

The geotechnical engineering Scope of Services for this project included the advancement of:

- Eighteen test borings to depths ranging from approximately 14 to 20 ft below existing site grades.
- Thirteen soundings to depths ranging from approximately 5½ to 14 ft below existing site grades.

Maps showing the site and boring and sounding locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil and rock samples obtained from the site during the field exploration are included on the boring logs in the **Exploration Results** section.

## **SITE CONDITIONS**

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



Item	Description
<b>Parcel Information</b>	<ul style="list-style-type: none"><li>■ The project is located along State Road 38 in Noblesville, Indiana. The sewer line is proposed to extend westward along State Road 38 from the intersection of Boden Road for about <math>\frac{3}{4}</math> miles. The sewer line then extends south for about 0.2 miles.</li><li>■ Approximate center of project alignment is located near:<ul style="list-style-type: none"><li>○ Latitude: 40.0379</li><li>○ Longitude: -85.9430</li></ul></li><li>■ See Site Location.</li></ul>
<b>Current Ground Cover</b>	Grass, crushed stone, pavement, and wooded areas.
<b>Existing Topography</b> (Based on topographic information provided by CHA Consulting, Inc. (CHA))	Ground surface elevations at the exploratory locations ranged from about Elevation 770 to 799.
<b>Geology<sup>1</sup></b>	The project area is located in the western portion of the New Castle Till Plains and Drainageways physiographic region. The New Castle Till Plains and Drainageways consists of flat to gently rolling surface topography shaped by continental glaciation that is dissected in some areas by tunnel valley features. The sediments of the New Castle Till Plains and Drainageways are comprised of sand, silt, clay, glacial outwash, and glacial till deposits. The bedrock near the project area consists predominantly of limestone of the Bainbridge Formation. A review of publicly available water well information indicated the bedrock is typically about 16 to 80 ft below the surface at Indiana Department of Natural Resources (IDNR) well sites within $\frac{1}{4}$ miles of the project area.

1. Based on information obtained from the Indiana Geological and Water Survey (IGWS).

## PROJECT DESCRIPTION

Our understanding of the project is as follows:

Item	Description
<b>Information Provided</b>	<p>Information for the project was provided by Jonathan Mirgeaux of CHA</p> <ul style="list-style-type: none"><li>■ Scope of Work</li><li>■ Gravity Sewer and Force Main Profile Drawings dated December 10, 2020 (Sheets C-101 through C-103)</li><li>■ Field Logs performed by American Drilling Services</li><li>■ Boring Logs performed by Alt &amp; Witzig Engineering, Inc. (dated November 2018)</li><li>■ Topographic information at the exploratory locations</li></ul>

Item	Description
<b>Project Description</b>	<p>We understand that the project is in the preliminary stages and the final sewer alignment is not known at the time of this report. Based on the information provided, we understand the sewer improvements are anticipated to include:</p> <ul style="list-style-type: none"> <li>■ The installation of about 4,800 lineal-ft of gravity sewer pipe. The gravity sewer pipe is preliminarily planned with inverts in the range of about 7 to 22 ft below the existing ground surface (Elevation 756 to 785) and will be 36 to 48 in. in diameter.</li> <li>■ The installation of about 4,800 lineal-ft of a sanitary force main. The majority of the force main pipe is preliminarily planned with inverts generally in the range of 7 to 12 ft, but as deep as 17 ft below the existing ground surface beneath SR 38 and will be 30 in. in diameter.</li> <li>■ The sewer lines are planned to be constructed utilizing conventional cut-and-cover techniques and trenchless excavation. Specifically, the trenchless excavations are planned near Borings B-4 and B-5 (at SR 38) and Boring B-11 (at SR 38).</li> </ul>
<b>Below-Grade Structures</b>	We understand that the sewer improvements will include below grade vertical walls for utility vaults.
<b>Estimated Start of Construction</b>	The construction schedule was not available at the time of this report.

## GEOTECHNICAL CHARACTERIZATION

### Test Borings

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	<b>Cohesive Soils</b>	Mixtures of lean clay, silt, and fat clay with varying amounts of sand; soft to hard; brown, gray, red
2	<b>Granular Soils</b>	Mixtures of sand with varying amounts of silt, clay, and gravel; loose to very dense; gray and brown
3	<b>Weathered Rock</b>	Limestone, dolomite, sandstone; soft to moderately hard; gray and brown

Groundwater level observations were made during, at completion of, and up to 72 hrs after the sampling process. The observed groundwater levels are noted on the borings logs and GeoModel. Groundwater was typically observed near depths of 2 to 10½ ft below existing grades at the boring locations.

A review of the *Soil Survey of Hamilton County, Indiana* indicates that the soils in the project area are prone to a seasonal high water level (i.e., perched) within about 1 to 4½ ft below the surface. As additional input, a review of publicly available water well information from the Indiana Map GIS system (<https://maps.indiana.edu>) indicated the groundwater level is typically near 17 to 40 ft below the surface at Indiana Department of Natural Resources (IDNR) monitored well sites (Well Reference Nos.: 15629, 149201, 149216, and 387503) located within about ½-mile of the project area.

It should be recognized that groundwater levels will fluctuate due to changes in precipitation, infiltration, surface run-off, and other hydrogeological factors. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

## Summary of Soundings

A summary of the top of rock depths and elevations observed at the sounding locations is shown below. For more detailed information at the sounding locations, refer to the Summary of Soundings in the **Exploration Results** section

Sounding Designation	Approximate Depth to Top of Rock (ft) <sup>1</sup>	Approximate Top of Rock Elevation (ft)	Approximate Depth to Auger Refusal (ft) <sup>1</sup>	Approximate Elevation to Auger Refusal (ft)
S-1	20 or below <sup>2</sup>	n/a	n/a	n/a
S-2	4½	770½	5½	769½
S-3	6½	771½	7	771
S-4	9½	777½	11	776
S-5	4	783	7½	779½
S-6	14	784	14	784
S-7	13	784	13	784
S-8	11	778	11	778
S-9	9½	782½	9½	782½
S-10	6½	766½	11	762
S-11	9	772	9½	771½
S-12	14	781	14	781
S-13	9	785	9	785

1. Below the existing ground surface.

2. Rock was not observed within the maximum depth explored (i.e., 20 ft below the existing grade).

## **GEOTECHNICAL OVERVIEW**

Based on our review of the information obtained from the exploratory locations, the subsurface conditions are suitable for support of the proposed elements provided the subgrade is prepared as discussed herein. It is understood that the gravity sewer and force main are planned to be installed using conventional cut-and-cover techniques and trenchless excavations with inverts established near Elevations 756 to 788. Based on information obtained at the boring locations, the subgrade at the invert is anticipated to be variable and consist of cohesive soils, granular soils, or rock. As such, rock excavation should be anticipated during construction of the sewer elements. In addition, groundwater is present near or above the planned inverts along a majority of the sewer alignment. Therefore, dewatering will be necessary to facilitate construction and prepare the subgrade of the proposed sewer elements.

The condition of the subgrade and performance of the sewer will be, in part, a function of the care and workmanship of the contractor in protecting the subgrade from water. Additional discussion and recommendations regarding design and construction are provided in the following paragraphs.

The **General Comments** section provides an understanding of the report limitations.

## **DEWATERING AND EXCAVATION**

Based on the groundwater conditions and soil types observed at the boring locations, dewatering will be necessary during the construction of the sewers. It should be noted that the soil conditions varied along the alignment. As such the dewatering requirements will vary. Within the cohesive soils, dewatering is anticipated to consist of multiple pumps and filtered sumps possibly in combination with collection trenches. However, when excavations extend into the wet granular soils, the use of multiple deep wells, well points, and/or sump pits outside the limits of the excavation will likely be required. It should be noted that the sands observed at the test borings will flow if excavated in the wet. This will cause poor subgrade conditions for support of the sewer. We recommend that the groundwater level be lowered a depth of 2 ft below the planned invert prior to the excavation activities. Note that groundwater if present in the rock, will enter the excavation via fractures and open joints.

The intent of our evaluation was to provide geotechnical-related recommendations for the new sewer elements. The scope of this evaluation was not to provide dewatering recommendations for contractors. Dewatering is a responsibility of the contractor based on their means and methods and considers the requirements of subgrade preparation discussed herein. It may be necessary for the dewatering contractor to obtain additional subsurface information to assist with the design of their dewatering plan. The effectiveness of the subgrade preparation activities discussed below will be directly dependent on the adequacy of the contractor's dewatering efforts.



Based on our understanding of the existing grades and the proposed invert elevation, rock excavation should be anticipated to a depth of approximately 10 ft below the rock surface during construction of both the gravity sewer and force main. It should be noted that this depth may vary rather significantly. More specifically, we anticipate rock excavation to be needed starting near the intersection of State Road 38 and Long Creek Drive to the intersection of Boden Road and State Road 38. Where our field exploration equipment and hollow-stem augers were able to penetrate the rock, the rock may be rippable and/or could possibly be broken with a hydraulic hammer or with conventional earthwork equipment with ripper teeth. From our experience with similar projects, methods have also included hydraulic hammers and heavier mechanical equipment. The actual method of rock removal to be used cannot be speculated with certainty. We recommend that the contractor be prepared to perform rock excavation.

Considering the anticipated inverts and pending the final sewer alignment, the use of excavation support may be needed in some areas. Where excavations are performed near existing structures, we recommend that the structures be observed prior to the excavation activities to document their condition. The type of excavation support utilized will be based on the contractor's means and methods. Excavation support typically includes trench boxes or temporary sheeting. The ability to drive sheeting at a majority of the alignment will be limited due to the presence of rock. In our opinion, boxes and sheeting should be placed in a manner not to disturb the embedment material. Our scope of work did not include excavation support design, however, we would be pleased to assist with designing a temporary excavation support system, if requested.

All excavations should comply with OSHA standards. Stockpiled soil should not be placed adjacent to the excavation. In addition, proper site drainage is recommended to help minimize unwanted surface water runoff into excavations during the construction process.

## **CONVENTIONAL CUT-AND-COVER CONSIDERATIONS**

As previously mentioned, the condition of the subgrade will be a function of the care and workmanship of the contractor in protecting the subgrade from water. The following subgrade preparation recommendations are provided assuming the subgrade has been dewatered prior to excavation, where necessary. The rock is anticipated to provide a suitable subgrade for sewer pipe support where encountered. Where granular soils are encountered at the subgrade, we recommend that the granular soils be compacted via several passes with a vibratory plate compactor. Where soft cohesive soil is present at the pipe inverts or if stiff conditions degrade due to exposure to moisture, we recommend that the sewer subgrades be undercut a maximum of 2 ft and grade be reestablished by placing an open-graded crushed aggregate such as INDOT No. 8 stone, possibly in conjunction with a geotextile. Undercutting in areas of poor subgrade conditions will require judgement in the field during construction. To reduce the potential for softening of the subgrade soils and additional undercutting, it is recommended that the construction activities be scheduled such that the sewer subgrade is undercut, then reestablished

as soon as practical. This will require having all backfill materials present during the excavation activities.

## Bedding and Backfill

In areas where the pipe crosses beneath or is adjacent to pavement or other utilities (settlement sensitive areas), granular fill is recommended for backfill. This is because of their ease of compaction as compared to cohesive soils which reduces the risk of settlement. In addition, periodic field density tests and observations by the Geotechnical Engineer are recommended during backfill placement to verify the adequacy of compactive effort. We recommend the following material properties and compaction requirements for the bedding material and soils used for structural backfill surrounding the pipe elements:

Item	Recommendation
Soil Type <sup>1</sup>	Granular soil satisfying a USCS symbol of SP, SW, SW-SM, SP-SM <sup>2</sup>
Maximum Lift Thickness	4 to 6 in. in loose thickness
Minimum Compaction Requirements	95 percent of the modified Proctor density (ASMT D 1557) at the base of the excavation, for bedding material, and soils used for structural backfill surrounding the pipe elements.
	90 percent of the modified Proctor density (ASMT D 1557) in other areas, provided some settlement of the backfill is tolerable.

1. The use of cohesive soils for backfill above the pipe, if considered, should be limited to areas outside of the pavement, other utilities, and non-settlement sensitive areas.

2. The soils classified using these designations at the test borings are anticipated to be suitable for this purpose. However, we recommend imported granular fill be planned. A significant quantity of backfill could be required if the excavation slopes are laid back.

In addition, we recommend that the pipe manufacturer be contacted to discuss special bedding and backfill requirements.

## TRENCHLESS METHOD CONSIDERATIONS

### Subgrade Preparation

As stated previously, we anticipate that trenchless excavations will be utilized near Borings B-4 and B-5 and B-11. The depths of the launch and receiver pits were not available at the time of this report. We recommend that the Geotechnical Engineer be retained to review our recommendations when this information is available.

However, based on our understanding of the preliminary sewer inverts, we anticipate the subgrade at the receiver pits to consist of granular soils and rock. Groundwater is anticipated to be present above the receiver pit subgrade. Dewatering on a continuous basis will be required

through the trenchless excavation activities and backfill of the trenchless pits. We recommend the groundwater level be lowered to a depth of at least 2 ft below the planned pit subgrade elevations prior to the excavation activities. Where granular soils are observed at the pit subgrades, we recommend that the pits be undercut 4 in. to accommodate a mud mat consisting of lean concrete to provide a working platform.

## Trenchless Excavation Considerations

We anticipate the trenchless activities will potentially encounter granular soils near Borings B-4 and B-5 and rock near Boring B-11. Due to the presence of rock, it may be necessary to increase the diameter of the bore to allow the carrier pipe to be installed and to reduce the risk of point loads on the utility due to rock fragments. If a carrier pipe is utilized, the annular space should be grouted.

As you are aware, trenchless methods require a specialty contractor, and we recommend details of the methods and techniques be selected by the contractor based on the subsurface conditions and project requirements (i.e., performance-based contract language that includes settlement monitoring). These methods and techniques may also be influenced by the requirements of 3<sup>rd</sup> parties (e.g., regulators). As such, we recommend that our exploratory information be provided to the prospective contractors for their interpretation and use in preparing an installation plan and developing their means and methods. The previous discussion about soil and rock conditions is from a geotechnical perspective for the benefit of you and the owner. Additional test borings by the contractor may be warranted, including rock coring. We recommend the trenchless excavation pits be backfilled in accordance with the bedding and backfill section of this report.

## LATERAL EARTH PRESSURES

We understand that the sewer improvements will include below grade vertical walls for utility vaults. The walls for the below grade structures should be designed to resist both hydrostatic and lateral earth pressures. Based on the nature of the structure, relatively rigid conditions are anticipated such that an at-rest condition will develop. For these conditions, we recommend the parameters provided in the table below.

Earth Pressure Condition	Backfill Type <sup>1</sup>	Maximum Unit Weight (pcf)	Angle of Internal Friction ( $\phi'$ ) (deg.)	Equivalent Fluid Pressure (pcf) <sup>2</sup>
At-Rest ( $K_0$ )	Clean well-graded granular soil	125	30	90

1. These values assume uniform horizontal backfill, compacted to at least 90 percent of the modified Proctor density (ASTM D 1557) in non-structural areas and 95 percent of the modified Proctor density in areas where the backfill will be required to support structures (i.e., drives, foundations, etc.). We recommend backfill behind walls be placed in loose lift thickness not exceeding 6 in.
2. No factor of safety is included in this value.

In addition to the lateral earth pressures, surcharges from temporary loads during construction (if any) or adjacent foundation should be taken into account in the wall design. Additionally, for the equivalent fluid pressure value provided in the table above to be valid, we recommend that clean well-graded granular backfill extend horizontally behind the wall a distance of at least  $\frac{1}{2}$  of the depth of the wall below grade. Compaction of backfill within 3 ft of the walls should be performed with a hand guided compactor to avoid over-stressing the walls.

## **GENERAL COMMENTS**

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

## FIGURES

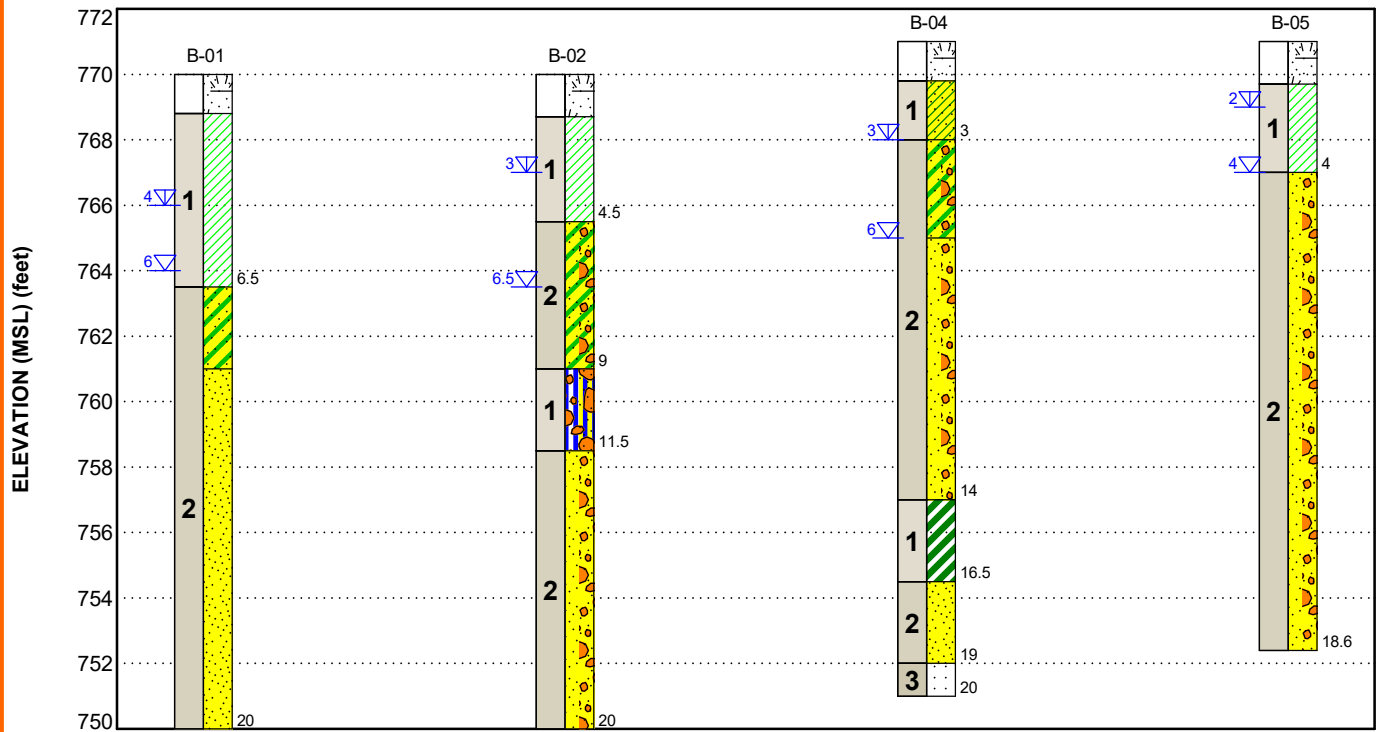
### Contents:

GeoModel

# GEOMODEL

Boden Road Gravity Interceptor Sewer ■ Noblesville, IN  
Terracon Project No. CJ215026

## SOUTH SIDE OF SR 38



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Cohesive Soils	Mixtures of lean clay, silt, and fat clay with varying amounts of sand; soft to hard; brown, gray, red
2	Granular Soils	Mixtures of sand with varying amounts of silt, clay, and gravel; loose to very dense; gray and brown
3	Weathered Rock	Limestone, dolomite, sandstone; soft to moderately hard; gray and brown

### LEGEND

Topsoil	Poorly-graded Sand	Poorly-graded Sand with Gravel	Sandstone
Lean Clay	Clayey Sand with Gravel	Sandy Lean Clay	
Clayey Sand	Gravelly Silt with Sand	Fat Clay	

- ▽ First Water Observation
- ▽ Second Water Observation
- ▽ Third Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

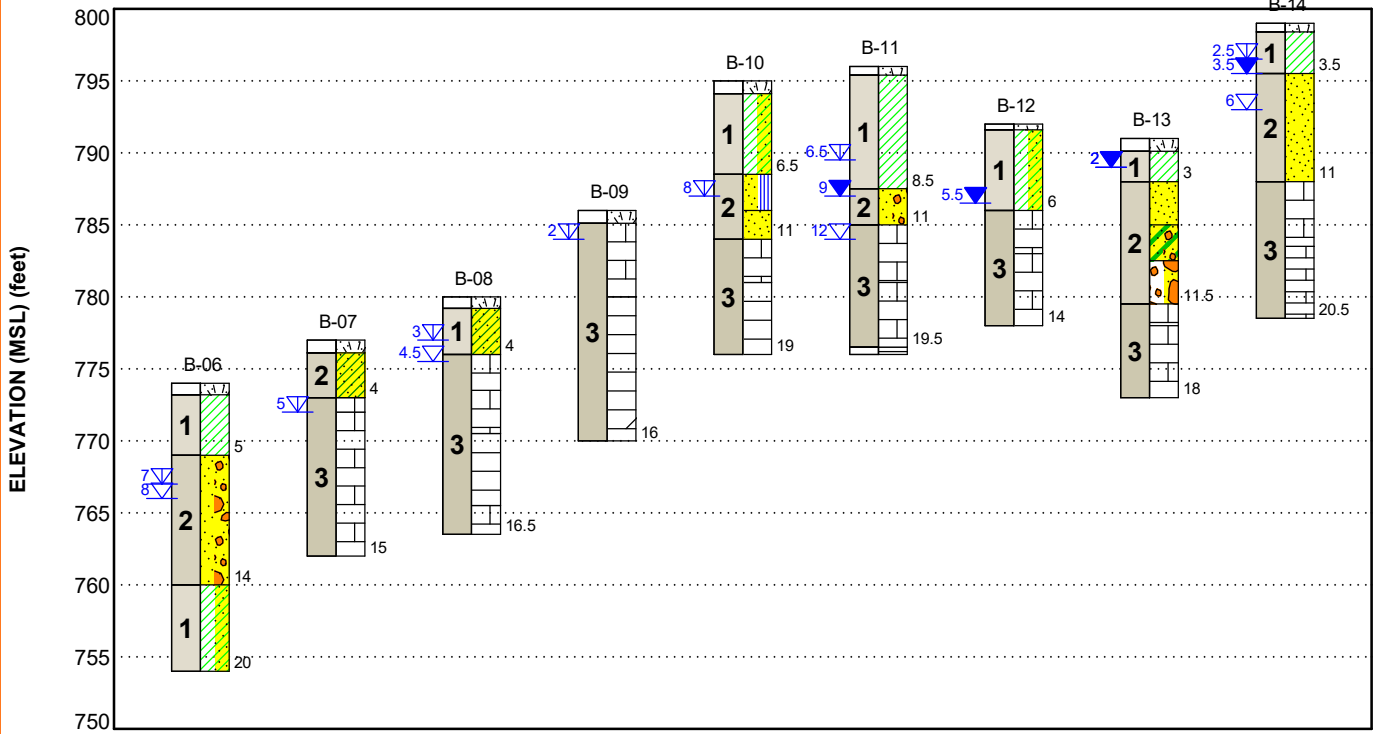
### NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

## GEOMODEL

Boden Road Gravity Interceptor Sewer ■ Noblesville, IN  
Terracon Project No. CJ215026

### SOUTH SIDE OF SR 38



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

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1	Cohesive Soils	Mixtures of lean clay, silt, and fat clay with varying amounts of sand; soft to hard; brown, gray, red
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3	Weathered Rock	Limestone, dolomite, sandstone; soft to moderately hard; gray and brown

### LEGEND

Topsoil	Lean Clay with Sand	Dolomite	Shale	Indiana DOT: Limestone
Lean Clay	Sandy Lean Clay	Poorly-graded Sand with Silt	Clayey Sand with Gravel	
Poorly-graded Sand with Gravel	Limestone	Poorly-graded Sand	Poorly-graded Gravel with Sand	

- ▽ First Water Observation
- ▽ Second Water Observation
- ▽ Third Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

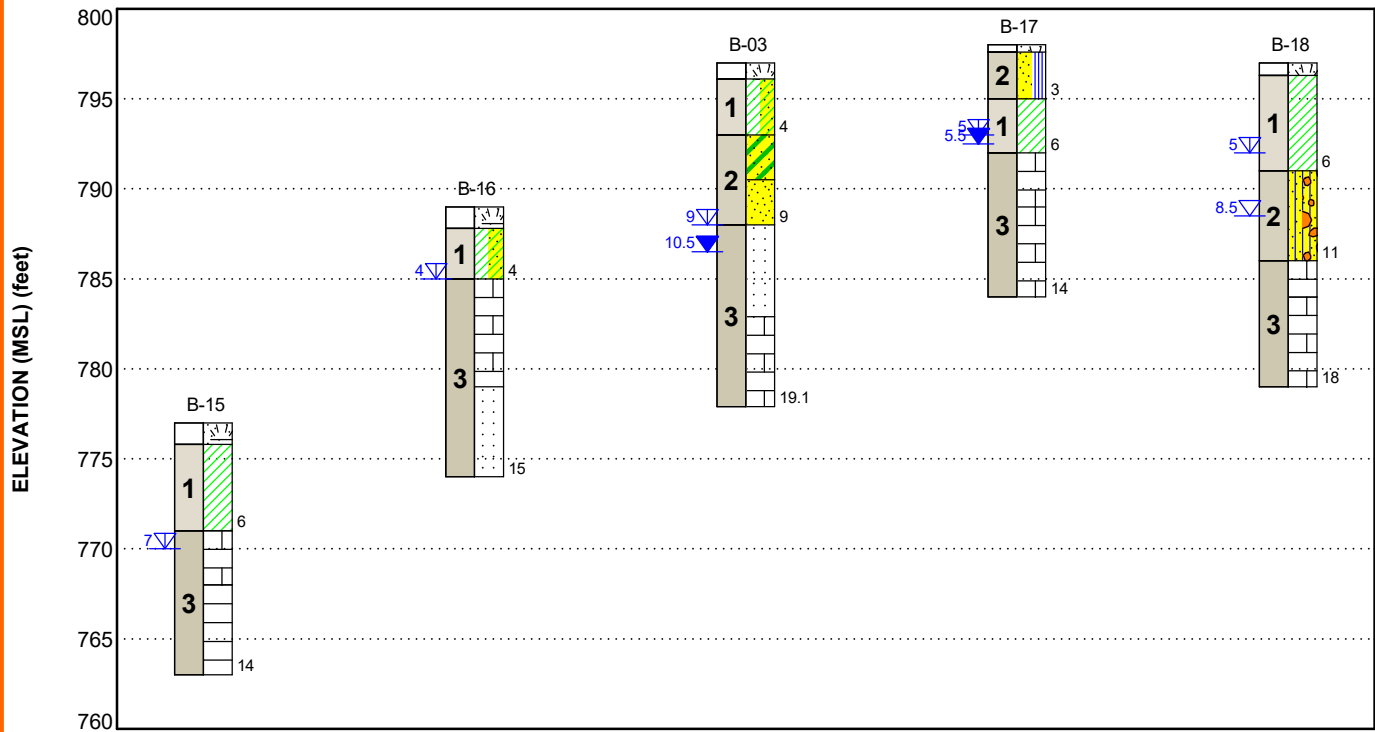
#### NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

## GEOMODEL

Boden Road Gravity Interceptor Sewer ■ Noblesville, IN  
Terracon Project No. CJ215026

### NORTH SIDE OF SR 38



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Cohesive Soils	Mixtures of lean clay, silt, and fat clay with varying amounts of sand; soft to hard; brown, gray, red
2	Granular Soils	Mixtures of sand with varying amounts of silt, clay, and gravel; loose to very dense; gray and brown
3	Weathered Rock	Limestone, dolomite, sandstone; soft to moderately hard; gray and brown

### LEGEND

Topsoil	Poorly-graded Sand	Lean Clay	Silty Sand with Gravel
Lean Clay with Sand	Sandstone	Dolomite	
Clayey Sand	Limestone	Poorly-graded Sand with Silt	

- First Water Observation
- Second Water Observation
- Third Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

### NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.



## ATTACHMENTS

## EXPLORATION AND TESTING PROCEDURES

### Field Exploration

Number of Explorations	Type of Exploration	Depth
18	SPT Boring	14 to 20 ft
13	Sounding	5½ to 14 ft

The number, location, and proposed depth of the borings and soundings were selected by Terracon and sent to CHA for concurrence.

**Boring Layout and Elevations:** The exploratory locations were staked in the field by Terracon personnel using hand held GPS equipment referencing coordinates obtained by overlaying the preliminary sewer alignment shown on an electronic drawing provided by CHA in Google Earth. Furthermore, ground surface elevations at the exploratory locations were estimated using topographic information provided by CHA.

**Subsurface Exploration Procedures:** We advanced the borings and soundings using ATV- and track-mounted equipment and hollow stem augers to advance the boreholes. Relatively disturbed samples of the soil strata were obtained at 2½-ft intervals within the soil strata with a split-spoon sampler. In the split-spoon sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. In addition, rock samples were obtained using N-sized diamond core drilling methods. Following the completion of our exploratory activities, the boreholes were backfilled with auger cuttings and a bentonite chip plug with the exception of Borings B-4, B-15, and B-16, and Soundings S-10 and S-11 (performed in a cow pasture) which were backfilled with bentonite chips and a concrete plug near the surface.

The sampling depths, penetration distances, and other sampling information were recorded on the field logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification. Our exploration team prepares field logs as part of the drilling operations. These field logs include visual classifications of the soil and rock encountered during drilling and our interpretation of the subsurface conditions between samples.

### Laboratory Testing

Soil samples were reviewed by a geotechnical engineer who assigned laboratory tests. Soil classifications on the boring logs are according to the Unified Soil Classification System (USCS).

## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



Further details regarding the classification system are provided in **Supporting Information**. After classifying the samples, the following laboratory testing program was performed:

- Hand penetrometer readings (i.e.,  $q_p$ , which provide an indication of the shear strength characteristics of cohesive-type soils);
- Natural moisture content tests (W%);

Applicable ASTM standard procedures were followed in laboratory testing of the soil and rock samples. Upon completion of our laboratory testing program, boring logs were prepared and are provided in the attachments. The results of these tests are included on the test boring logs and/or laboratory test reports. It should be mentioned that the boring logs represent the approximate boundary between soil types; although the transitions may actually be gradual.

Rock classification was conducted using locally accepted practices for engineering purposes; petrographic analysis may reveal other rock types. Rock core samples typically provide an improved specimen for this classification. Boring log rock classification was determined using the Description of Rock Properties.

## **SITE LOCATION AND EXPLORATION PLANS**

### **Contents:**

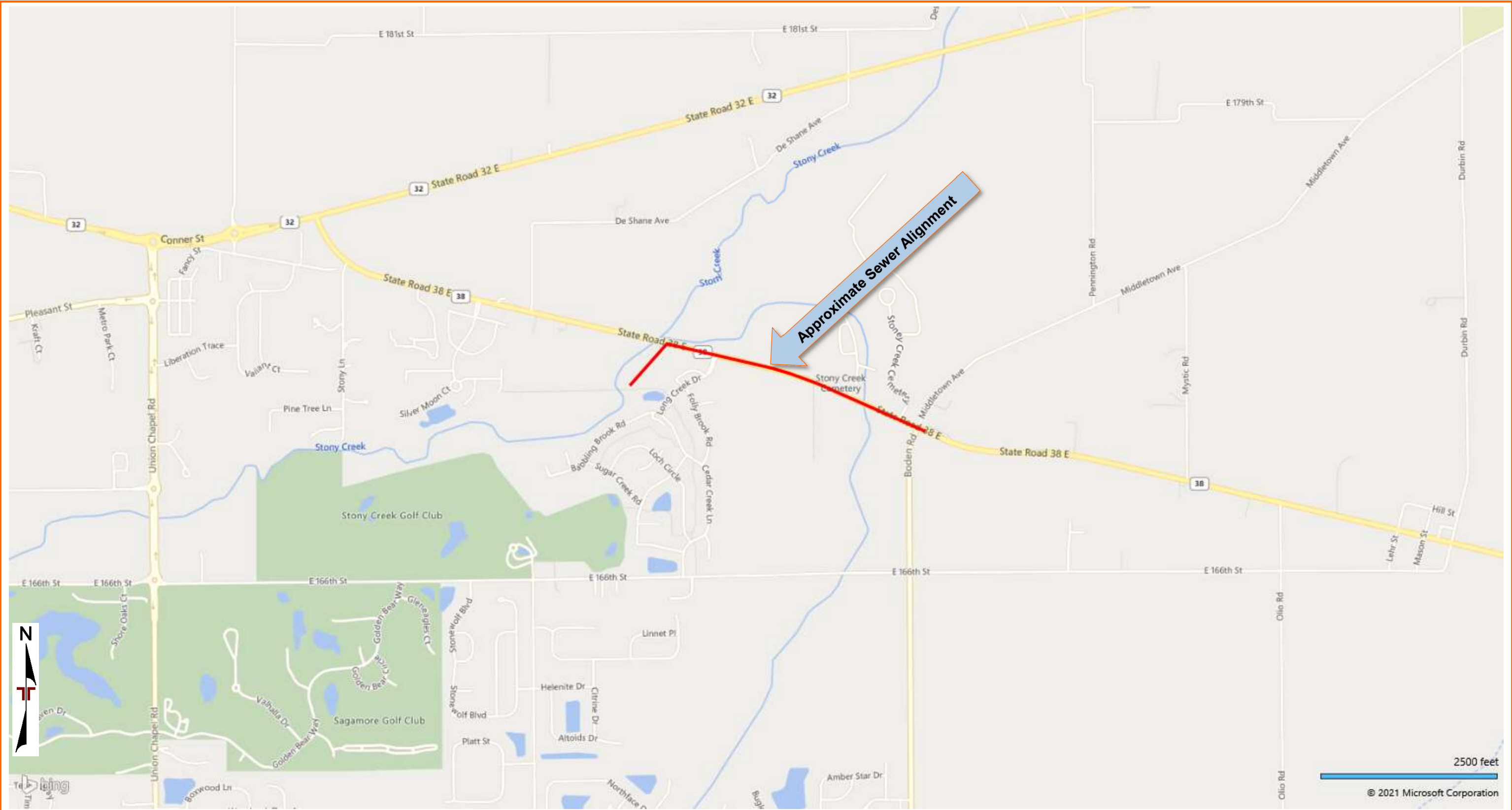
Site Location

Exploration Plan

Note: All attachments are one page unless noted above.

SITE LOCATION PLAN

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana  
April 16, 2021 ■ Terracon Project No. CJ215026





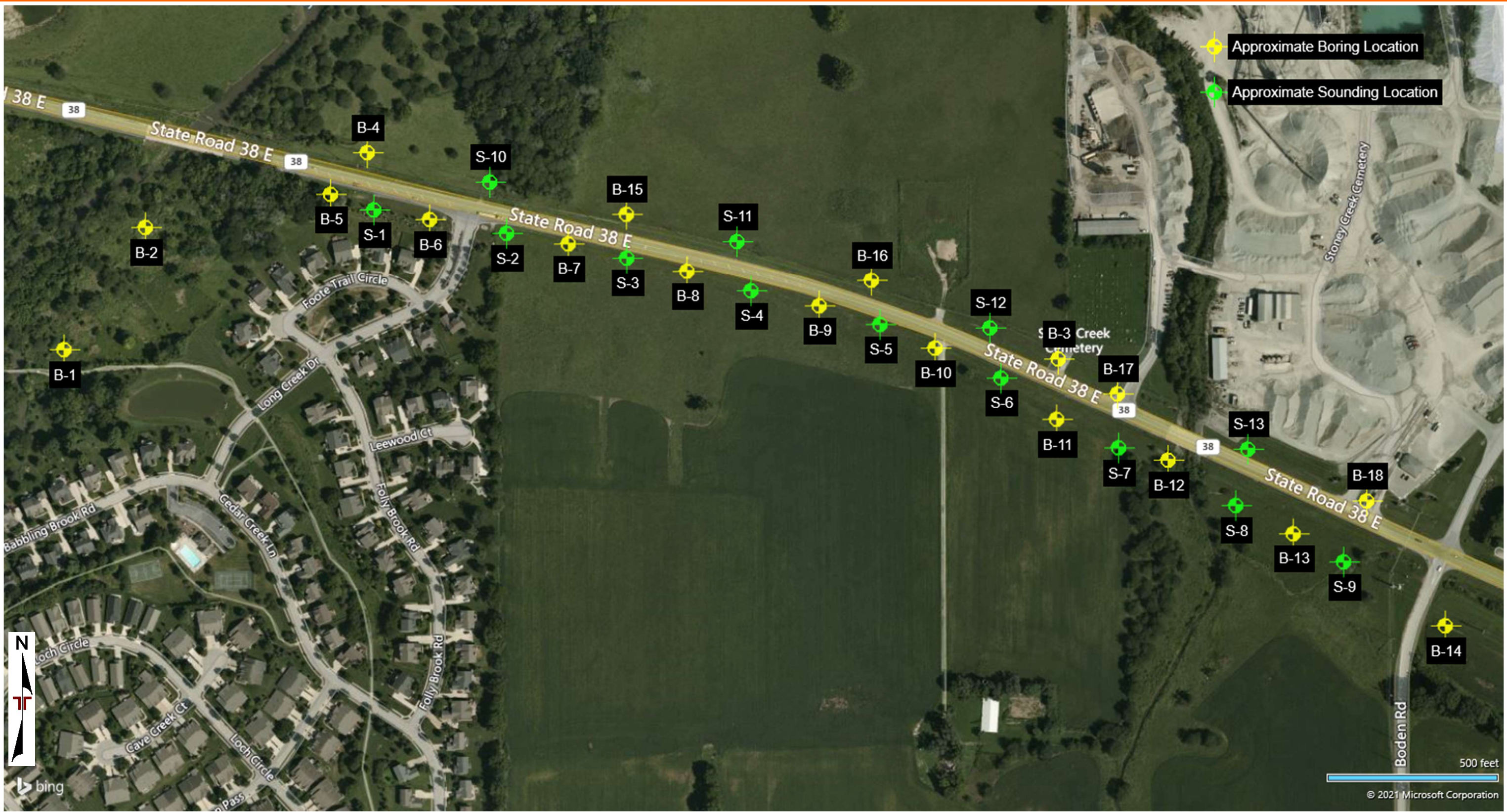


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS



## **EXPLORATION RESULTS**

### **Contents:**

Boring Logs (B-1 through B-18)

Rock Core Photography Log (7 pages)

Summary of Soundings

Note: All attachments are one page unless noted above.


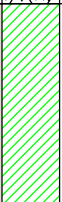



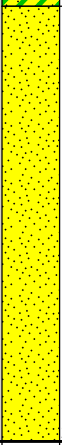
# BORING LOG NO. B-01

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0379° Longitude: -85.9521°  Approximate Surface Elev.: 770 (Ft.) +/-	DEPTH DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		<b>TOPSOIL</b>	1.2	769+/-								
1		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, gray, soft to stiff						12	2-2-2 N=4		1.25 (HP)	37.8
			6.5	763.5+/-	5			12	2-2-2 N=4		0.25 (HP)	32.8
		<b>CLAYEY SAND (SC)</b> , trace gravel, fine to medium grained, gray, wet, loose						6	1-1-5 N=6			
2		<b>SAND (SP)</b> , fine to medium grained, gray, wet, medium dense, poorly graded, with limestone fragments near 11 ft to 20 ft	9.0	761+/-	10			6	5-6-6 N=12			
								12	7-12-7 N=19			
					15			12	8-12-13 N=25			
								12	13-11-12 N=23			
								12	10-11-13 N=24			
		<b>Boring Terminated at 20 Feet</b>	20.0	750+/-	20							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA



See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).


Notes:

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Supporting Information](#) for explanation of symbols and abbreviations.

## WATER LEVEL OBSERVATIONS

 While drilling  
 At completion of drilling

 Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-07-2021

Boring Completed: 04-07-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21



# BORING LOG NO. B-02

Page 1 of 1

PROJECT: Boden Road Gravity Interceptor Sewer

CLIENT: CHA Consulting Inc  
Indianapolis, IN

SITE: SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0389° Longitude: -85.9512° Approximate Surface Elev.: 770 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		<b>TOPSOIL</b> 1.3 768.5+/-								
1		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, gray, soft to stiff, with organic matter near 4 ft 4.5 765.5+/-				16	2-3-3 N=6		1.25 (HP)	32.1
2		<b>CLAYEY SAND WITH GRAVEL (SC)</b> , fine to medium grained, gray, moist to wet below 6.5 ft, loose to medium dense 9.0 761+/-	5			4	2-2-2 N=4		<0.25	63.4
1		<b>SILT WITH SAND (ML)</b> , trace gravel, gray, very stiff 11.5 758.5+/-	10			12	4-7-8 N=15			
2		<b>SAND WITH GRAVEL (SP)</b> , medium to coarse grained, gray, wet, medium dense, poorly graded 20.0 750+/-	15			16	6-6-8 N=14		3.25 (HP)	13.7
		<b>Boring Terminated at 20 Feet</b>	20			16	13-13-13 N=26			
						16	13-14-15 N=29			
						16	15-13-13 N=26			
						16	13-13-9 N=22			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Supporting Information](#) for explanation of symbols and abbreviations.

## WATER LEVEL OBSERVATIONS

While drilling  
 At completion of drilling

Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-07-2021

Boring Completed: 04-07-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-03

Page 1 of 1

PROJECT: Boden Road Gravity Interceptor Sewer

CLIENT: CHA Consulting Inc  
Indianapolis, IN

SITE: SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0379° Longitude: -85.9417° Approximate Surface Elev.: 797 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
			0.9	796+/-								
		<b>TOPSOIL</b>										
1		<b>LEAN CLAY WITH SAND (CL)</b> , trace gravel, brown, hard						16	5-5-7 N=12		4.25 (HP)	18.1
			4.0	793+/-								
		<b>CLAYEY SAND (SC)</b> , trace gravel, fine to medium grained, brown, moist, medium dense			5			16	4-5-5 N=10			
2			6.5	790.5+/-								
		<b>SAND (SP)</b> , fine to medium grained, brown, moist, medium dense, poorly graded						16	10-9-8 N=17			
			9.0	788+/-								
		<b>WEATHERED SANDSTONE</b> , brown, soft			10			16	9-9-9 N=18			
								4	50/4"			
3			14.1	783+/-								
		<b>WEATHERED LIMESTONE</b> , brown, soft to moderately hard, very low bedding planes, with pitting throughout			15			6	44-50/1"			
								23		0		
			19.1	778+/-								
		<b>Boring Terminated at 19.1 Feet</b>										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 14 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling

At completion of drilling

72 hours

Cave-in

**Terracon**

7770 W New York St  
Indianapolis, IN

Boring Started: 04-01-2021

Boring Completed: 04-01-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-04

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0395° Longitude: -85.9489°  Approximate Surface Elev.: 771 (Ft.) +/-	DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		<b>TOPSOIL</b>	1.2 770+/-								
1		<b>SANDY LEAN CLAY (CL)</b> , trace gravel, brown, soft	3.0 768+/-				12	1-2-2 N=4		0.25 (HP)	24.0
		<b>CLAYEY SAND WITH GRAVEL (SC)</b> , fine to medium grained, brown, moist, medium dense	6.0 765+/-	5			5	4-5-7 N=12			
2		<b>SAND WITH GRAVEL (SP)</b> , fine to medium grained, brown, wet, loose to medium dense, poorly graded	14.0 757+/-				12	5-3-3 N=6			
				10			12	5-4-4 N=8			
							12	12-16-10 N=26			
1		<b>FAT CLAY (CH)</b> , trace gravel, trace sand, red, very stiff	16.5 754.5+/-	15			16	7-7-8 N=15		2.5 (HP)	32.1
2		<b>SAND (SP)</b> , trace gravel, fine to medium grained, brown, wet, very dense, poorly graded	19.0 752+/-				12	22-22-35 N=57			
3		<b>WEATHERED SANDSTONE</b> , gray, soft	20.0 751+/-	20			16	19-19-19 N=38			
		<b>Boring Terminated at 20 Feet</b>									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

See [Exploration and Testing Procedures](#) for a  
description of field and laboratory procedures  
used and additional data (if any).

Notes:

Abandonment Method:  
Boring backfilled with bentonite chips and concrete cap.

See [Supporting Information](#) for explanation of  
symbols and abbreviations.

## WATER LEVEL OBSERVATIONS

While drilling  
At completion of drilling

Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-06-2021

Boring Completed: 04-06-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21


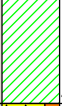




# BORING LOG NO. B-05

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0392° Longitude: -85.9493°  Approximate Surface Elev.: 771 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		<b>TOPSOIL</b> 1.3 769.5+/-								
1		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, stiff 4.0 767+/-			X	12	1-2-2 N=4		1.0 (HP)	31.0
2		<b>SAND WITH GRAVEL (SP)</b> , fine to medium grained, brown, wet, medium dense to very dense, poorly graded, with possible cobbles below 14.5 ft 18.6 752.5+/-	5 10 15	 	X X X X X X	16 12 6 16 12	4-5-8 N=13 8-8-8 N=16 9-10-11 N=21 9-6-6 N=12 9-9-50 N=59			
		<b>Boring Terminated at 18.6 Feet</b>					50/0" 50/1"			

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA



See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).


Notes:

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Supporting Information](#) for explanation of symbols and abbreviations.

## WATER LEVEL OBSERVATIONS

 While drilling  
 At completion of drilling

 Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-05-2021

Boring Completed: 04-05-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-06

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0390° Longitude: -85.9483°  Approximate Surface Elev.: 774 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		0.8 <b>TOPSOIL</b> 773+/-								
1		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, stiff to very stiff				12	2-3-4 N=7		2.0 (HP)	16.9
		5.0 769+/-	5			16	4-4-5 N=9		3.5 (HP)	29.8
2		<b>SAND WITH GRAVEL (SP)</b> , fine to medium grained, gray, moist to wet below 8 ft, medium dense to very dense, poorly graded, with cobbles near 6 ft and 11 ft				0	50/0"			
		14.0 760+/-	10			16	11-11-11 N=22			
						0	50/0"			
1		<b>LEAN CLAY WITH SAND (CL)</b> , trace gravel, brown, stiff to very stiff, with sand seam near 17 ft				16	5-7-7 N=14		2.75 (HP)	22.9
		20.0 754+/-	15			16	13-14-14 N=28			
			20			16	11-11-14 N=25		1.5 (HP)	21.1
		<b>Boring Terminated at 20 Feet</b>								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

Notes:

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Supporting Information](#) for explanation of symbols and abbreviations.

## WATER LEVEL OBSERVATIONS

While drilling  
 At completion of drilling

Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-05-2021

Boring Completed: 04-05-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21







# BORING LOG NO. B-07

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0388° Longitude: -85.9468°  Approximate Surface Elev.: 777 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		<b>TOPSOIL</b>	0.9	776+/-								
2		<b>SANDY LEAN CLAY (CL)</b> , trace gravel, brown, stiff						16	3-4-5 N=9		1.25 (HP)	18.3
		<b>WEATHERED LIMESTONE</b> , gray, soft	4.0	773+/-				16	3-8-14 N=22			
		<b>WEATHERED LIMESTONE</b> , gray and brown, soft to moderately hard, very low bedding planes, with pitting near 14 ft	5.0	772+/-	5							
3								8		0		
					10			55		0		
			15.0	762+/-	15							
<b>Boring Terminated at 15 Feet</b>												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 5 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling



At completion of drilling



Cave-in

**Terracon**

7770 W New York St  
Indianapolis, IN

Boring Started: 04-05-2021

Boring Completed: 04-05-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-08

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0386° Longitude: -85.9456°  Approximate Surface Elev.: 780 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		0.8 <b>TOPSOIL</b> 779+/-								
1		<b>SANDY LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, stiff 776+/-				16	7-5-4 N=9		0.75 (HP)	22.3
		4.0 <b>WEATHERED LIMESTONE</b> , gray, soft 773.5+/-	5			10	5-7-8 N=15			
		6.5 <b>WEATHERED LIMESTONE</b> , brown, soft to moderately hard, very low bedding planes 770.5+/-				0	50/1"			
3		9.5 <b>WEATHERED DOLOMITE</b> , gray, moderately hard, very low bedding planes 765.5+/-	10			60		0		
		14.5 <b>WEATHERED LIMESTONE</b> , brown, moderately hard, very low bedding planes 763.5+/-	15			60		23		
		16.5 <b>Boring Terminated at 16.5 Feet</b> 763.5+/-								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 6.5 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

While drilling  
 At completion of drilling

Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-02-2021

Boring Completed: 04-02-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21




















































# BORING LOG NO. B-09

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0383° Longitude: -85.9442°  Approximate Surface Elev.: 786 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		0.9 <b>TOPSOIL</b> 785+/-								
		<b>WEATHERED LIMESTONE</b> , gray, soft				12	5-7-10 N=17			
						5	50/5"			
		6.0 <b>WEATHERED DOLOMITE</b> , gray and brown, soft to moderately hard, very low bedding planes, interbedded shale near 15 ft, with pitting near 13 ft and 14.5 ft 780+/-	5							
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										
										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 6 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling

 At completion of drilling

 Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-02-2021

Boring Completed: 04-02-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21



# BORING LOG NO. B-10

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0379° Longitude: -85.9430°  Approximate Surface Elev.: 795 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
			0.9	794+/-								
		<b>TOPSOIL</b>										
		<b>LEAN CLAY WITH SAND (CL)</b> , trace gravel, brown, stiff to very stiff						16	4-4-5 N=9		2.0 (HP)	21.8
1					5			16	3-4-3 N=7		1.75 (HP)	18.3
			6.5	788.5+/-				16	3-2-3 N=5			
		<b>SAND WITH SILT (SP-SM)</b> , trace gravel, fine to medium grained, brown, moist, loose, poorly graded										
2			9.0	786+/-				16	4-4-6 N=10			
		<b>SAND (SP)</b> , trace gravel, fine to medium grained, brown, moist, medium dense, poorly graded			10							
			11.0	784+/-				6	50-50/1"			
		<b>WEATHERED LIMESTONE</b> , gray, soft										
			14.0	781+/-				1	50/1"			
3					15			28		0		
		<b>WEATHERED DOLOMITE</b> , brown, soft to moderately hard, very low bedding planes, with pitting throughout										
			19.0	776+/-								
		<b>Boring Terminated at 19 Feet</b>										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 14 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling  
At completion of drilling

Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-01-2021

Boring Completed: 04-01-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. CJ215026 BODEN ROAD GRAVITY.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-11

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0374° Longitude: -85.9417°  Approximate Surface Elev.: 796 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
			0.6	795.5+/-								
		<b>TOPSOIL</b>										
		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, medium stiff to very stiff						7	2-4-3 N=7		2.25 (HP)	21.2
1					5			8	1-2-4 N=6		1.0 (HP)	18.2
								7	4-3-2 N=5		0.5 (HP)	23.8
			8.5	787.5+/-								
2		<b>SAND WITH GRAVEL (SP)</b> , fine to medium grained, brown, moist, medium dense, poorly graded			10			9	3-6-7 N=13			
		<b>WEATHERED LIMESTONE</b> , gray, soft						5	37-50/2"			
								5	50/5"			
3		<b>WEATHERED LIMESTONE</b> , brown, soft to moderately hard, low bedding planes, with pitting near 17 ft and 19.5 ft	15.0	781+/-	15			58		0		
		<b>SHALE</b> , gray, soft to moderately hard, low bedding planes	19.5	776.5+/-	20							
		<b>Boring Terminated at 20 Feet</b>	20.0	776+/-								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 15 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

- While drilling
- At completion of drilling
- 24 hours
- Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 03-30-2021

Boring Completed: 03-30-2021

Drill Rig: D-50

Driller: J.W.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL. CJ215026 BODEN ROAD GRAVITY.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-12

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0370° Longitude: -85.9405°  Approximate Surface Elev.: 792 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
			0.4	791.5+/-								
		<b>TOPSOIL</b>										
1		<b>LEAN CLAY WITH SAND (CL)</b> , trace gravel, brown, very stiff						8	4-7-6 N=13		2.25 (HP)	16.3
					5			9	2-4-5 N=9		2.0 (HP)	19.3
			6.0	786+/-				12	20-40-26 N=66			
		<b>WEATHERED LIMESTONE</b> , gray, soft						5	50/5"			
3		<b>LIMESTONE</b> , gray, moderately hard to hard, moderate weathering	9.0	783+/-	10			60		0		
			14.0	778+/-								
		<b>Boring Terminated at 14 Feet</b>										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 9 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling

No water observed at completion

24 hours

Cave-in

**Terracon**

7770 W New York St  
Indianapolis, IN

Boring Started: 03-30-2021

Boring Completed: 03-30-2021

Drill Rig: D-50

Driller: J.W.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-13

Page 1 of 1

PROJECT: Boden Road Gravity Interceptor Sewer

CLIENT: CHA Consulting Inc  
Indianapolis, IN

SITE: SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0365° Longitude: -85.9392°  Approximate Surface Elev.: 791 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		0.9 <b>TOPSOIL</b> 790+/-								
1		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, medium stiff 788+/-		▼	X	8	2-2-4 N=6		0.75 (HP)	32.9
		3.0 <b>SAND (SP)</b> , trace gravel, fine grained, brown, moist, medium dense, poorly graded 785+/-			X	8	2-4-7 N=11			
2		<b>CLAYEY SAND WITH GRAVEL (SC)</b> , fine to medium grained, brown, moist, dense 782.5+/-	5		X	10	14-19-18 N=37			
		8.5 <b>GRAVEL WITH SAND (GP)</b> , gray, moist, dense to very dense 779.5+/-			X	18	8-15-19 N=34			
		11.5 <b>WEATHERED LIMESTONE</b> , gray, soft 778+/-	10		X	9	40-50/2"			
3		<b>WEATHERED LIMESTONE</b> , brown, moderately hard, very low bedding planes 773+/-	15			60		0		
		18.0 <b>Boring Terminated at 18 Feet</b>								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 13 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling

At completion of drilling

24 hours

Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 03-29-2021

Boring Completed: 03-29-2021

Drill Rig: D-50

Driller: J.W.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVITY GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21



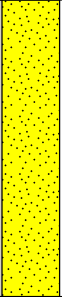


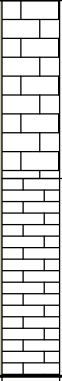

# BORING LOG NO. B-14

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**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0357° Longitude: -85.9376°  Approximate Surface Elev.: 799 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
			0.6	798.5+/-								
1		<b>TOPSOIL</b> <b>LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, very stiff	3.5	795.5+/-				10	2-3-4 N=7		2.0 (HP)	22.4
2		<b>SAND (SP)</b> , trace gravel, fine to medium grained, gray, moist to wet below 6 ft, medium dense	11.0	788+/-	5			9	4-2-3 N=5			
								10	11-14-12 N=26			
					10			9	11-13-14 N=27			
3		<b>WEATHERED LIMESTONE</b> , gray, soft	15.5	783.5+/-	15			12	50/3"			
								8	50/3"			
		<b>WEATHERED LIMESTONE WITH INTERBEDDED SHALE</b> , brown to gray below 17.5 ft, soft to moderately hard, very low bedding planes, with pitting near 20 ft and 20.5 ft	20.5	778.5+/-	20			60		0		
		<b>Boring Terminated at 20.5 Feet</b>										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.





See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 15.5 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

-  While drilling
-  At completion of drilling
-  24 hours
-  Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 03-29-2021

Boring Completed: 03-29-2021

Drill Rig: D-50

Driller: J.W.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-15

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0390° Longitude: -85.9462°  Approximate Surface Elev.: 777 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		<b>TOPSOIL</b>	1.2	776+/-								
1		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, very stiff						12	2-3-4 N=7		3.0 (HP)	23.1
					5			12	3-3-3 N=6		2.0 (HP)	23.9
		<b>WEATHERED LIMESTONE</b> , brown, soft	6.0	771+/-				0	50/0"			
3		<b>WEATHERED DOLOMITE</b> , brown and gray, soft to moderately hard, very low bedding planes	9.0	768+/-	10			1	50/1"			
								23		0		
		<b>Boring Terminated at 14 Feet</b>	14.0	763+/-								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with bentonite chip plugs and capped with concrete.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 9 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling

At completion of drilling

Cave-in

**Terracon**

7770 W New York St  
Indianapolis, IN

Boring Started: 04-06-2021

Boring Completed: 04-06-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-16

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0385° Longitude: -85.9436°  Approximate Surface Elev.: 789 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		<b>TOPSOIL</b>	1.2	788+/-								
1		<b>LEAN CLAY WITH SAND (CL)</b> , trace gravel, brown, stiff	4.0	785+/-				12	7-6-6 N=12		1.0 (HP)	21.7
		<b>WEATHERED LIMESTONE</b> , brown, soft			5			12	47-42-20 N=62			
								3	50/3"			
3		<b>WEATHERED DOLOMITE WITH INTERBEDDED SANDSTONE</b> , brown, soft to moderately hard, very low bedding planes, interbedded limestone near 15 ft	10.0	779+/-	10			2	50/2"			
			15.0	774+/-	15			60		0		
		<b>Boring Terminated at 15 Feet</b>										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with bentonite chip plugs and capped with concrete.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 10 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling  
 At completion of drilling

Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-06-2021

Boring Completed: 04-06-2021

Drill Rig: CME 750X

Driller: B.N.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVITY GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

# BORING LOG NO. B-17

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0376° Longitude: -85.9411°  Approximate Surface Elev.: 798 (Ft.) +/-	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (in.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
			0.4	797.5+/-								
2		<b>TOPSOIL</b> <b>SAND WITH SILT AND GRAVEL (SP-SM)</b> , fine to medium grained, brown, moist, medium dense, poorly graded	3.0	795+/-				10	4-9-6 N=15			
1		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, medium stiff	6.0	792+/-	5			10	2-3-2 N=5		0.75 (HP)	27.4
		<b>WEATHERED LIMESTONE</b> , gray, soft	9.0	789+/-				12	6-21-17 N=38			
3		<b>WEATHERED LIMESTONE</b> , brown, soft to moderately hard, very low bedding planes	14.0	784+/-	10			5	50/5"			
								40		0		
		<b>Boring Terminated at 14 Feet</b>										

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 9 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

No water observed during drilling

At completion of drilling

24 hours

Cave-in

**Terracon**

7770 W New York St  
Indianapolis, IN

Boring Started: 03-31-2021

Boring Completed: 03-31-2021

Drill Rig: D-50

Driller: J.W.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21





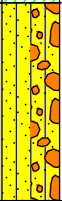


# BORING LOG NO. B-18

Page 1 of 1

**PROJECT:** Boden Road Gravity Interceptor Sewer

**CLIENT:** CHA Consulting Inc  
Indianapolis, IN

**SITE:** SR 38 and Boden Road  
Noblesville, IN

MODEL LAYER	GRAPHIC LOG	LOCATION See <a href="#">Exploration Plan</a> Latitude: 40.0367° Longitude: -85.9384°  Approximate Surface Elev.: 797 (Ft.) +/- DEPTH ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD%	LABORATORY HP (tsf)	WATER CONTENT (%)
		0.7 <b>TOPSOIL</b> 796.5+/-								
1		<b>LEAN CLAY (CL)</b> , trace sand, trace gravel, brown, stiff to hard, with sand seams near 2 ft and 4 ft				8	4-4-3 N=7		1.75 (HP)	19.6
		6.0 791+/-	5			11	15-16-6 N=22		4.5 (HP)	10.8
2		<b>SILTY SAND WITH GRAVEL (SM)</b> , fine to medium grained, brown, moist to wet below 8.5 ft, loose to dense				10	2-3-2 N=5			
		11.0 786+/-	10			8	2-8-31 N=39			
		<b>WEATHERED LIMESTONE</b> , gray, soft					50/5"			
3		<b>WEATHERED LIMESTONE</b> , brown, soft to moderately hard, very low bedding planes, with interbedded sandstone near 13.5 ft				30		0		
		13.0 784+/-	15							
		18.0 779+/-								
		<b>Boring Terminated at 18 Feet</b>								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:  
3 1/4" HSA

NX CORE

Abandonment Method:  
Boring backfilled with auger cuttings and bentonite chip plug.



See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (if any).


See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

Auger refusal at 13 ft  
Water introduced during rock coring

## WATER LEVEL OBSERVATIONS

 While drilling  
 At completion of drilling

 Cave-in

**Terracon**  
7770 W New York St  
Indianapolis, IN

Boring Started: 04-01-2021

Boring Completed: 04-01-2021

Drill Rig: D-50

Driller: J.W.

Project No.: CJ215026

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL CJ215026 BODEN ROAD GRAVIT.GPJ TERRACON\_DATATEMPLATE.GDT 4/16/21

## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



## ROCK CORE PHOTOGRAPHY LOG



Boring B-3, Rock Core No. RC-1, Depth 14.1 – 19.1 ft



Boring B-7, Rock Core No. RC-1 & 2, Depth 5 – 15 ft



## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



Boring B-8, Rock Core No. RC-1 & 2, Depth 6.5 – 16.5 ft



Boring B-9, Rock Core No. RC-1 & 2, Depth 6 to 16 ft



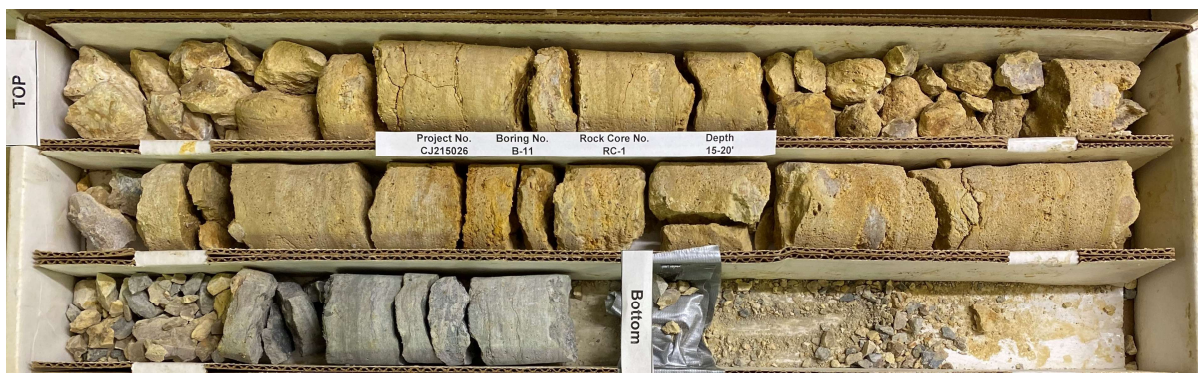
## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



Boring B-10, Rock Core No. RC-1, Depth 14 to 19 ft



Boring B-11, Rock Core No. RC-1, Depth 15 to 20 ft

## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



Boring B-12, Rock Core No. RC-1, Depth 9 to 14 ft



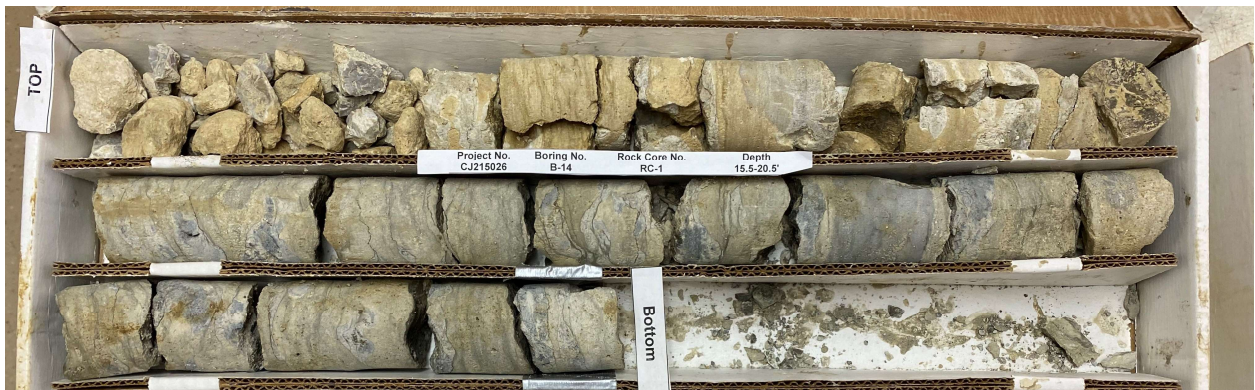
Boring B-13, Rock Core No. RC-1, Depth 13 to 18 ft



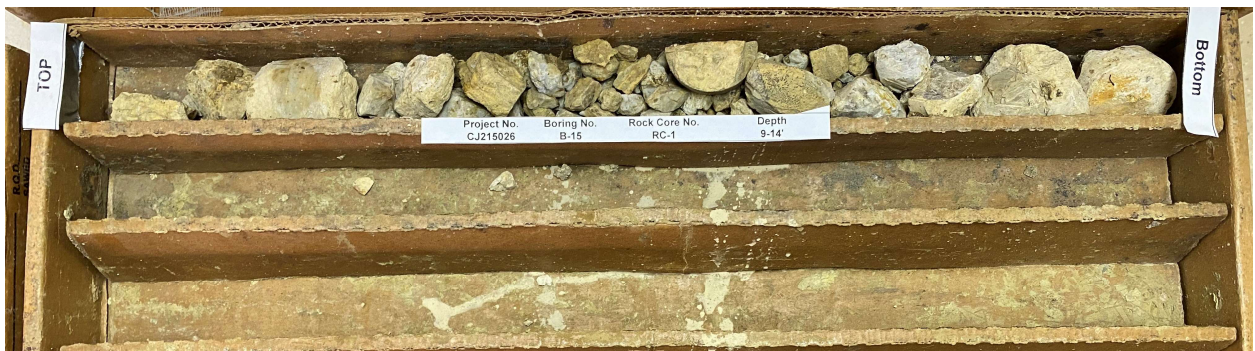
## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



Boring B-14, Rock Core No. RC-1, Depth 15.5 to 20.5 ft



Boring B-15, Rock Core No. RC-1, Depth 9 to 14 ft

## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



Boring B-16, Rock Core No. RC-1, Depth 10 to 15 ft



Boring B-17, Rock Core No. RC-1, Depth 9 to 14 ft



## Geotechnical Engineering Report

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026



Boring B-18, Rock Core No. RC-1, Depth 13 to 18 ft



**Geotechnical Engineering Report**

Boden Road Gravity Interceptor Sewer ■ Noblesville, Indiana

April 16, 2021 ■ Terracon Project No. CJ215026

**SUMMARY OF SOUNDINGS**

Sounding Designation	Latitude	Longitude	Approximate Depth to Top of Rock <sup>1</sup> (ft)	Approximate Top of Rock Elevation (ft)	Approximate Depth to Auger Refusal <sup>1</sup> (ft)	Approximate Elevation to Auger Refusal (ft)	Approximate Groundwater Depth (ft) <sup>1</sup>	
							During Drilling	Up to 24 hrs After Drilling
S-1	40.0391	-85.9488	20 or below <sup>2</sup>	n/a	n/a	n/a	3	4
S-2	40.0389	-85.9475	4½	770½	5½	769½	No water encountered	No water encountered
S-3	40.0387	-85.9462	6½	771½	7	771	No water encountered	No water encountered
S-4	40.0384	-85.9449	9½	777½	11	776	No water encountered	No water encountered
S-5	40.0381	-85.9435	4	783	7½	779½	No water encountered	3
S-6	40.0377	-85.9423	14	784	14	784	No water encountered	No water encountered
S-7	40.0371	-85.9410	13	784	13	784	No water encountered	No water encountered
S-8	40.0367	-85.9398	11	778	11	778	3½	-
S-9	40.0362	-85.9397	9½	782½	9½	782½	2½	2
S-10	40.0393	-85.9476	6½	766½	11	762	3	-
S-11	40.0388	-85.9450	9	772	9½	771½	No water encountered	-
S-12	40.0381	-85.9424	14	781	14	781	No water encountered	No water encountered
S-13	40.0371	-85.9397	9	785	9	785	No water encountered	No water encountered

<sup>1.</sup> Below the existing ground surface.<sup>2.</sup> Rock was not observed within the maximum depth explored (i.e., 20 ft below the existing grade).

## **SUPPORTING INFORMATION**

### **Contents:**

General Notes






Unified Soil Classification System

Description of Rock Properties

Note: All attachments are one page unless noted above.

# GENERAL NOTES

## DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING	 Shelby Tube  Split Spoon	WATER LEVEL	 Water Initially Encountered  Water Level After a Specified Period of Time  Water Level After a Specified Period of Time	FIELD TESTS	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer
			Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.		

## DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

## LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength Qu, (tsf)	Standard Penetration or N-Value Blows/Ft.
	Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
	Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
	Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
	Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
	Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
			Hard	> 4.00	> 30

## RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 15
With	15 - 29
Modifier	> 30

## GRAIN SIZE TERMINOLOGY

Major Component of Sample	Particle Size
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

## RELATIVE PROPORTIONS OF FINES

Descriptive Term(s) of other constituents	Percent of Dry Weight
Trace	< 5
With	5 - 12
Modifier	> 12

## PLASTICITY DESCRIPTION

Term	Plasticity Index
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests <sup>A</sup>					Soil Classification	
					Group Symbol	Group Name <sup>B</sup>
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines <sup>C</sup>	$Cu \geq 4$ and $1 \leq Cc \leq 3$ <sup>E</sup>	GW	Well-graded gravel <sup>F</sup>	
			$Cu < 4$ and/or $[Cc < 1$ or $Cc > 3.0]$ <sup>E</sup>	GP	Poorly graded gravel <sup>F</sup>	
		Gravels with Fines: More than 12% fines <sup>C</sup>	Fines classify as ML or MH	GM	Silty gravel <sup>F, G, H</sup>	
			Fines classify as CL or CH	GC	Clayey gravel <sup>F, G, H</sup>	
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines <sup>D</sup>	$Cu \geq 6$ and $1 \leq Cc \leq 3$ <sup>E</sup>	SW	Well-graded sand <sup>I</sup>	
			$Cu < 6$ and/or $[Cc < 1$ or $Cc > 3.0]$ <sup>E</sup>	SP	Poorly graded sand <sup>I</sup>	
		Sands with Fines: More than 12% fines <sup>D</sup>	Fines classify as ML or MH	SM	Silty sand <sup>G, H, I</sup>	
			Fines classify as CL or CH	SC	Clayey sand <sup>G, H, I</sup>	
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	$PI > 7$ and plots on or above “A”	CL	Lean clay <sup>K, L, M</sup>	
			$PI < 4$ or plots below “A” line <sup>J</sup>	ML	Silt <sup>K, L, M</sup>	
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay <sup>K, L, M, N</sup>
			Liquid limit - not dried		Organic silt <sup>K, L, M, O</sup>	
	Silts and Clays: Liquid limit 50 or more	Inorganic:	$PI$ plots on or above “A” line	CH	Fat clay <sup>K, L, M</sup>	
			$PI$ plots below “A” line	MH	Elastic Silt <sup>K, L, M</sup>	
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay <sup>K, L, M, P</sup>
			Liquid limit - not dried		Organic silt <sup>K, L, M, Q</sup>	
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat	

<sup>A</sup> Based on the material passing the 3-inch (75-mm) sieve.

<sup>B</sup> If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

<sup>C</sup> Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

<sup>D</sup> Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

$$E \quad Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

<sup>F</sup> If soil contains  $\geq 15\%$  sand, add "with sand" to group name.

<sup>G</sup> If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

<sup>H</sup> If fines are organic, add "with organic fines" to group name.

<sup>I</sup> If soil contains  $\geq 15\%$  gravel, add "with gravel" to group name.

<sup>J</sup> If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

<sup>K</sup> If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

<sup>L</sup> If soil contains  $\geq 30\%$  plus No. 200 predominantly sand, add "sandy" to group name.

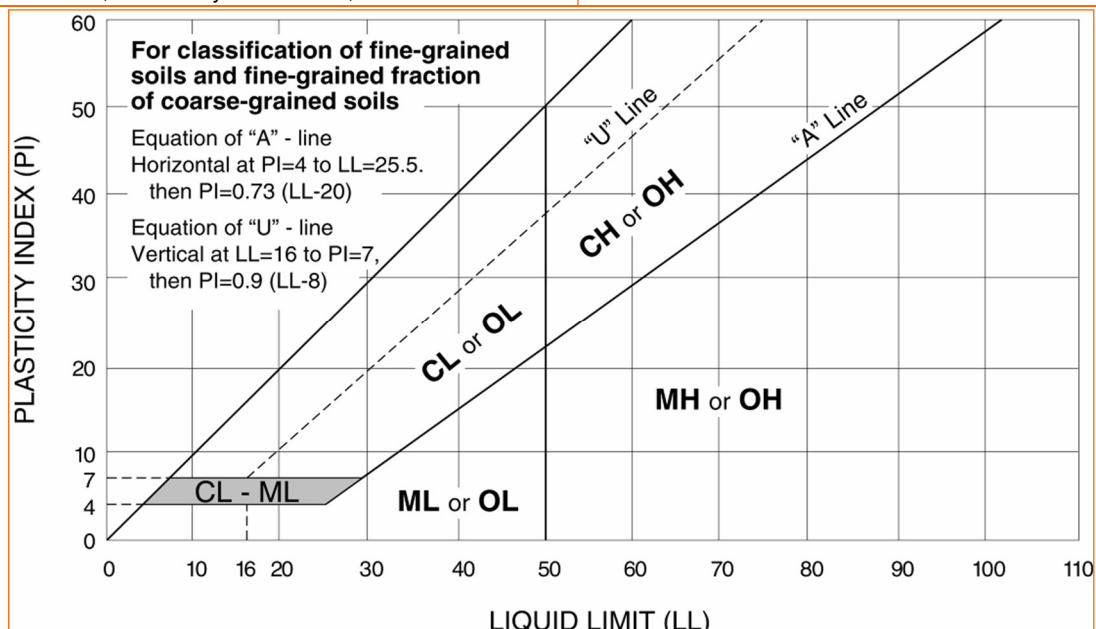
<sup>M</sup> If soil contains  $\geq 30\%$  plus No. 200, predominantly gravel, add "gravelly" to group name.

<sup>N</sup>  $PI \geq 4$  and plots on or above "A" line.

<sup>O</sup>  $PI < 4$  or plots below "A" line.

<sup>P</sup> PI plots on or above "A" line.

<sup>Q</sup> PI plots below "A" line.



WEATHERING	
Term	Description
<b>Unweathered</b>	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
<b>Slightly weathered</b>	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
<b>Moderately weathered</b>	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
<b>Highly weathered</b>	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
<b>Completely weathered</b>	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
<b>Residual soil</b>	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	Field Identification	Uniaxial Compressive Strength, psi (MPa)
<b>Extremely weak</b>	Indented by thumbnail	40-150 (0.3-1)
<b>Very weak</b>	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
<b>Weak rock</b>	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
<b>Medium strong</b>	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
<b>Strong rock</b>	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
<b>Very strong</b>	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
<b>Extremely strong</b>	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		Bedding Spacing (May Include Foliation or Banding)	
Description	Spacing	Description	Spacing
<b>Extremely close</b>	< ¾ in (<19 mm)	<b>Laminated</b>	< ½ in (<12 mm)
<b>Very close</b>	¾ in – 2-1/2 in (19 - 60 mm)	<b>Very thin</b>	½ in – 2 in (12 – 50 mm)
<b>Close</b>	2-1/2 in – 8 in (60 – 200 mm)	<b>Thin</b>	2 in – 1 ft. (50 – 300 mm)
<b>Moderate</b>	8 in – 2 ft. (200 – 600 mm)	<b>Medium</b>	1 ft. – 3 ft. (300 – 900 mm)
<b>Wide</b>	2 ft. – 6 ft. (600 mm – 2.0 m)	<b>Thick</b>	3 ft. – 10 ft. (900 mm – 3 m)
<b>Very Wide</b>	6 ft. – 20 ft. (2.0 – 6 m)	<b>Massive</b>	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

ROCK QUALITY DESIGNATION (RQD) <sup>1</sup>	
Description	RQD Value (%)
<b>Very Poor</b>	0 - 25
<b>Poor</b>	25 – 50
<b>Fair</b>	50 – 75
<b>Good</b>	75 – 90
<b>Excellent</b>	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009  
Technical Manual for Design and Construction of Road Tunnels – Civil Elements



# **REPORT OF GEOTECHNICAL ENGINEERING INVESTIGATION**

**NOBLESVILLE SANITARY  
NOBLESVILLE, INDIANA**

**PREPARED FOR:**

**SAMCO, INC.  
11905 LAKESIDE DRIVE  
FISHERS, INDIANA 46038**

**Patriot Engineering and Environmental, Inc.  
6150 East 75<sup>th</sup> Street  
Indianapolis, Indiana 46250**

**August 15, 2022**





**PATRIOT ENGINEERING  
and ENVIRONMENTAL, Inc.**

*Engineering Value for Project Success*

August 15, 2022

Mr. Tom Kallio  
Samco, Inc.  
11905 Lakeside Drive  
Fishers, Indiana 46038

Re: Report of Geotechnical Engineering Exploration  
**Noblesville Sanitary**  
**East 166<sup>th</sup> Street**  
**Noblesville, Indiana**  
Patriot Project No.: 22-1017-01G

Dear Tom:

Attached is the report of our geotechnical engineering exploration for the above referenced project. This exploration was completed in general accordance with our Proposal No. P22-1148-01G dated June 14, 2022.

This report includes graphic logs of sixteen (16) soil borings drilled at the proposed project site. Also included in the report are the results of laboratory tests performed on samples obtained from the site, and geotechnical recommendations pertinent to the site development, foundation design, and construction.

We appreciate the opportunity to perform this geotechnical engineering exploration and are looking forward to working with you during the construction phase of the project. If you have any questions regarding this report or if we may be of any additional assistance regarding any geotechnical aspect of the project, please do not hesitate to contact our office.

Respectfully submitted,  
**Patriot Engineering and Environmental, Inc.**

**Ian Grafe, E.I.**  
Geotechnical Engineer



**William D. Dubois, P.E.**  
Senior Principal Engineer



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## **REPORT OF GEOTECHNICAL ENGINEERING EXPLORATION**

**Noblesville Sanitary  
East 166<sup>th</sup> Street  
Noblesville, Indiana  
Patriot Project No.: 22-1017-01G**

### **1.0 INTRODUCTION**

#### **1.1 General**

Samco, Inc. is planning the construction of a sanitary line to be located along East 166<sup>th</sup> Street and Olio Road in Noblesville, Indiana. The results of our geotechnical engineering exploration for the project are presented in this report.

#### **1.2 Purpose and Scope**

The purpose of this exploration is to determine the general near surface and subsurface conditions within the project area and to develop the geotechnical engineering recommendations necessary for the design and construction of the proposed sewer line. This was achieved by drilling soil borings, and by conducting laboratory tests on samples taken from the borings. This report contains the results of our findings, geotechnical engineering interpretation of these results with respect to the available project information, and recommendations to aid in the design and construction of the proposed sewer line.

### **2.0 PROJECT INFORMATION**

The proposed project is located along east 166<sup>th</sup> Street and Olio Road in Noblesville, Indiana. The project consists of a sewer line running along East 166<sup>th</sup> Street and Olio Road and a lift station located at the southeast corner of the Olio Road and East 156<sup>th</sup> Street intersection.

Based on information provided by Samco, Inc., we understand that the proposed lift station will bear at approximately 30 feet below the existing ground surface. No structural loading information is available to us at the time of this report.

## 3.0 SITE AND SUBSURFACE CONDITIONS

### 3.1 Site Conditions

The project site is presently the right of way along multiple county roads outside the city of Noblesville. The surrounding area is generally an area of residential development and agricultural fields. The topography in the area proposed for construction is generally flat.

### 3.2 General Subsurface Conditions

Our interpretation of the subsurface conditions is based upon sixteen (16) soil borings drilled at the approximate locations shown on the Boring Location Map (Figure No. 2) in Appendix "A". All depths discussed below refer to depths below the existing ground surface. Based on the results of the soil borings completed at the site, the following subsurface profile is presented. A description of each general soil unit has been identified and is described below:

Topsoil – Topsoil, a surficial layer of material that is a blend of silts, sands, and clays, with varying amounts of organic matter, was encountered at the ground surface at the boring locations. The topsoil layer was about 7 to 9 inches thick in the borings.

Silty and/or Sandy Clay (CL) - The topsoil layer is generally underlain by soft to hard silty and/or sandy clay. The silty and/or sandy clay layers typically extends to depths of 8.5 to the termination of the borings at 26 feet below the existing ground surface. The natural moisture content of this material ranging from 7 to 29 percent (%). The silty and/or sandy clay layers have hand penetrometer values of 1.0 to greater than 4.5 tons per square foot (tsf). Standard Penetration Test N-values (blow counts) in this material varied from 3 to more than 50 blows per foot (bpf).

Sand (SP-SM) – Within the clay layers, loose to dense sand was encountered from 6 to 13.5 feet below existing grade at three (3) boring locations (B-6, B-11, and B-14). Standard Penetration Test N-values in this sand varied from 6 to 36 bpf.

The clay layers are generally underlain by loose to very dense sand was encountered from 8.5 to 30 feet below existing grade. Standard Penetration Test N-values in this sand varied from 2 to more than 50 bpf.

Clayey Sand (SC) - Below the silty and/or sandy clay layers in Boring B-9, very dense clayey sand was encountered from 28.5 to 29 feet below existing grade. The Standard Penetration Test N-value in this clayey sand was more than 50 bpf.

Gravel (GP-GM) - Below the silty and/or sandy clay layers, very dense gravel was encountered from 18.5 to 28.5 feet below existing grade in Borings B-10 and B-16. Standard Penetration Test N-values in this gravel were more than 50 bpf.

***As previously mentioned, unsuitable soft clays were encountered in five (5) of the sixteen (16) borings, at depths up to 6 feet below the existing ground surface.*** The following table presents the extent of the unsuitable soils encountered in the borings:

**Table No. 1: Summary of Unsuitable Soils Encountered in Borings**

<b>Boring Number</b>	<b>Soil Classification</b>	<b>Approximate Depth of Unsuitable Soils (feet)<sup>(1)</sup></b>
B-3	Soft Sandy Clay (CL)	3.5 to 6
B-6	Soft Sandy Clay (CL)	3.5 to 6
B-8	Soft Sandy Clay (CL)	3.5 to 6
B-11	Soft Sandy Clay (CL)	3.5 to 6
B-14	Soft Sandy Clay (CL)	3.5 to 6

<sup>(1)</sup> Represents depth below existing ground surface.

The soil conditions described above are general, and some variations in the descriptions should be expected; for more specific information, please refer to the boring logs presented in Appendix "A". It should be noted that the dashed stratification lines shown on the soil boring logs indicate approximate transitions between soil types. In-situ stratification changes could occur gradually or at different depths.

### **3.3 Groundwater Conditions**

The term groundwater pertains to any water that percolates through the soil found on site. This includes any overland flow that permeates through a given depth of soil, perched water, and water that occurs below the "water table", a zone that remains saturated and water-bearing year-round.

Groundwater was observed during drilling in fifteen (15) of the sixteen (16) soil borings performed at the site at depths between 3.5 and 23.5 feet below the existing ground

surface. Groundwater was not observed in the remaining boring during drilling. Immediately after the borings were completed and the augers were removed from the boreholes, groundwater was observed at depths between 7 and 25 feet below the existing ground surface in fifteen (15) of the sixteen (16) soil borings. The remaining boring was dry at the cave-in depths shown on the boring logs.

It should be recognized that fluctuations in the groundwater level should be expected over time due to variations in rainfall and other environmental or physical factors. ***The true static groundwater level can only be determined through observations made in cased holes over a long period of time, the installation of which was beyond the scope of this exploration.***

## 4.0 DESIGN RECOMMENDATIONS

### 4.1 Basis

Our recommendations are based on data presented in this report, which include soil borings, laboratory testing, and our experience with similar projects. Subsurface variations that may not be indicated by a dispersive exploratory boring program can exist on any site. If such variations or unexpected conditions are encountered during construction, or if the project information is incorrect or changed, we should be informed immediately since the validity of our recommendations may be affected.

### 4.2 Foundations

We understand that the proposed lift station will bear at approximately 30 feet below existing grade. Based on the above assumption and the soil conditions encountered at the borings, the proposed structure can be supported on spread footings bearing on the natural very dense sands or on new well-compacted structural fills overlying the same. These footings should be proportioned using a net allowable soil bearing pressure not exceeding 3,500 pounds per square foot (psf). ***The depth of the lift station was provided after the borings were completed. For higher soil pressures, we recommend that borings be extended beyond 30 feet.***

In using the above net allowable soil bearing pressures, the weight of the foundation and backfill over the foundation need not be considered. Hence, only loads applied at or above the minimum finished grade adjacent to the footing need to be used for dimensioning the foundations. Each new foundation should be positioned so it does not induce significant

pressure on adjacent foundations; otherwise the stress overlap must be considered in the design.

We estimate that the total foundation settlement should not exceed approximately 1 inch and that differential settlement should not exceed about  $\frac{3}{4}$  inch. Careful field control during construction is necessary to minimize the actual settlement that will occur.

*Positive drainage of surface water should be maintained away from structure foundations to avoid wetting and weakening of the foundation soils both during construction and after construction is complete.*

### **Below Grade Slabs and Hydrostatic Uplift Pressures**

Groundwater was encountered at depths of 3.5 to 23.5 feet below the existing ground surface. Therefore, the structure should be designed for appropriate uplift pressures (for periods when these structures will be empty) if no drainage or relief valves are provided to relieve the hydrostatic pressures from groundwater table. Uplift forces can be resisted by the weight of the foundation as well as the soils and other loads that are placed directly over the foundation elements. We recommend using a factor of safety of 1.25 for uplift resistance provided that the weight of the foundation, soil directly above the foundation and other resisting loads are used to resist the uplift pressure considering the empty condition of the tanks. If the uplift forces are too great to be resisted by the above components, it may necessary to enlarge the foundation.

For structures which can be flooded, pressure relief valves can be considered to relieve the hydrostatic pressures. When structures are empty during periods of high-water table levels, the valves open, allowing the water to enter the structure and increasing the forces resisting the uplift forces. It is recommended that these relief valves be automatically activated by excessive hydrostatic pressures when the groundwater table rises above certain level. The relief valves should be installed at an elevation which will prevent uplift of the structures when the total uplift forces are greater than the resisting force or weight of the structure, but will not flood the structure when the uplift forces are less than resisting force or weight of the structure. For the relief valves to be effective, the backfill around the units must be free draining enough to allow rapid adjustment of groundwater table. It is recommended a minimum of 9 inches thick granular blanket of clean, free-draining gravel material be used beneath the entire slab and up to the top of relief valve level.

We recommend that a perimeter drainage system be provided around the below grade walls unless the walls are designed to resist the hydrostatic forces and water proofed. These drains may flow by gravity to a storm sewer (if possible). The perimeter drains should consist of a 6-inch slotted, corrugated pipe surrounded by at least 6 inches of INDOT No. 5 or No. 8 stone. The stone should be completely wrapped in a drainage geotextile consisting of Mirafi 140N or an equivalent.

The below grade ground supported slab should be underlain by a 9-inch layer of open graded INDOT No. 5 or No. 8 stone that will serve as a drainage blanket beneath the entire slab, if the mat/slab system is not designed to resist hydrostatic pressures. A system of perforated drainpipes could also be installed into the granular fill if the hydrostatic pressure relieve valves are not installed. The drains should consist of 4 inch slotted corrugated pipes surrounded by at least 6 inches of No. 5 or No. 8 stone. The stone should be completely wrapped in a drainage geotextile consisting of Mirafi 140N or equivalent. Geotextile filter fabric should be placed between the drainage layer and native sandy soils to prevent clogging of the drainage layer.

We recommend that Patriot review the subgrade conditions prior to slab construction. Any unsuitable conditions encountered should be corrected prior to slab construction under the guidance of Patriot.

Provided that a minimum of 9 inches of granular base course is placed below the tank and floor slab, a modulus of subgrade reaction, "K<sub>30</sub>" value of 125 pounds per cubic inch (pci), is recommended for the design of ground supported floor slabs. It should be noted that the "K<sub>30</sub>" modulus is based on a 30-inch diameter plate load.

#### **4.3 Lateral Earth Pressures (Retaining Walls)**

For the design of retaining walls, lift station walls, the magnitude of the lateral earth pressure on the walls is dependent on the method of backfill placement behind the walls, the type of backfill soil, drainage provisions and whether or not the wall is permitted to yield during and/or after placement of the backfill. When a retaining wall is held rigidly against horizontal movement, the lateral pressure against the wall is greater than the "active" earth pressure that is typically used in the design of free-standing retaining walls. Therefore, rigid walls should be designed for higher "at-rest" pressures (using an at-rest lateral earth pressure coefficient, K<sub>o</sub>), while yielding walls can be designed for active pressures (using an active lateral earth pressure coefficient, K<sub>a</sub>).

The lift station walls proposed for the project are expected to be rigid walls. ***It should be noted that the on-site clayey soils are not suitable for use as backfill immediately against the walls.*** Therefore, provided ***a clean well-graded granular material is used for backfill***, a total soil unit weight ( $\gamma_t$ ) of 125 pounds per cubic foot (pcf), an at-rest lateral earth pressure coefficient ( $K_o$ ) of 0.45, an active lateral earth pressure coefficient ( $K_a$ ) of 0.30, and a passive lateral earth pressure coefficient ( $K_p$ ) of 3.4 can be used for calculating the lateral earth pressures. An equivalent fluid active pressure of 38 psf per foot of wall height is recommended for design purposes in conditions where the top of the wall is allowed to yield during backfilling. However, if the top of the wall will be fixed, an equivalent fluid at-rest pressure of 57 psf per foot of wall height is recommended for design purposes. This equivalent fluid pressure would increase linearly from zero (0) psf at the ground surface, to a maximum at the base of the wall.

When calculating passive earth pressure, the upper 3 feet of soil should be neglected due to the potential for frost disturbance or otherwise insufficiently compacted soil to appropriately generate the specified passive pressure. Additionally for design purposes, it should be recognized that in order for passive earth pressures to be fully developed, the wall must move laterally about 0.04H (where "H" equals the wall height). ***In most cases, passive earth pressures behind walls should not be considered in design.***

If hydrostatic pressure due to water build-up against the lift station walls is anticipated, the equivalent fluid pressure method will be changed for the soil. Rather, the lateral earth pressure should be computed using a total soil unit weight of 125 pcf above the highest anticipated water level, and a buoyant soil unit weight of 63 pcf below the highest anticipated water level. The earth pressure coefficient indicated above should be used above and below the water level to compute the lateral earth pressure. The hydrostatic pressure should be computed using the highest anticipated water level. The lateral earth pressure and hydrostatic pressure should be added to obtain the total lateral pressure on the wall.

Furthermore, in conjunction with and as a direct result of the lateral earth pressures defined above, the shear resistance against base sliding can be computed by multiplying the minimum normal force on the base of the footing times a coefficient of friction ( $\mu$ ) of 0.3. We recommend that for evaluation of sliding stability that a minimum factor of safety ( $F_s$ ) of 1.5 is utilized for design purposes. Additionally for design, the toe pressure for the lift station wall footings should not exceed the maximum allowable bearing pressure provided in Section 4.2 "*Foundations*".



**Table No. 1 Summary of Lateral Earth Design Pressures for Retaining Walls**

Soil Unit Weight ( $\gamma_t$ )	At-Rest Coefficient ( $K_o$ )	Active Coefficient ( $K_a$ )	Passive Coefficient ( $K_p$ )	Coefficient of Friction ( $\mu$ )	Minimum Factor of Safety ( $F_s$ )
125 pcf	0.45	0.30	3.4	0.3	1.5

#### 4.5 Excavation Slopes

Excavations for the proposed pump station will generally be through highly variable soils, including stiff to hard clay and medium dense sands. Based upon the high degree of variability, we recommend that all soils be treated as Type C soils based on OSHA criteria where pipe trench excavations will be performed. Therefore, as a preliminary assessment we recommend temporary unsupported slopes in these materials be no steeper than 1.5 (Hor.) to 1 (Vert.). **It should be noted that significant sloughing may occur in areas where excavation through native soft silty clay or loose sand occurs, particularly where excavations extend below the groundwater table. Utilization of temporary shoring will be required. It should be noted that excavations deeper than 20 feet require special consideration and should be designed by a registered professional (structural) engineer.**

We recommend that soils encountered during excavation of shallow trenches be inspected by a qualified competent person to determine the soil type and in-situ strength. Such evaluation should consist of visual evaluation of subgrade conditions and estimation of in-situ soil strength utilizing a torvane or hand penetrometer.

#### 4.6 Excavation Support System

Due to the proximity of public and private properties to the excavation, an excavation support system may be required to facilitate the excavation for foundations extending below the streets. The excavation support system should be designed with lateral earth pressures, hydrostatic pressures, traffic loads, and surcharge loads within a 1:1 (H:V) zone from the base of the excavation. In addition, it may be necessary to underpin any adjacent structures (such as utilities in the roads) to avoid any settlement associated with excavation and construction activities. The retention system should be designed by a

Registered Professional Engineer and should be installed by an experienced specialty contractor.

#### 4.7 Subsurface Utilities

We understand that the proposed sewer line will be installed using horizontal directional drilling. The invert elevation for the majority of the project will be between 10 and 20 feet below the existing ground surface.

In regards to bearing and support of the subsurface utilities, the soil conditions encountered in our borings generally consist of medium stiff to hard clays and loose to very dense sands. These soils are generally suitable for support of utilities; however, additional effort may be required to bore through very stiff to hard clays. **Unsuitable soft clays were encountered in five (5) of the soil borings.** These soft clays may expand or contract depending on the water content. The pipe should be flexible in order to prevent cracking and damage.

Groundwater was encountered as shallow as 3.5 feet below the existing ground surface. This is above the anticipated pipe invert elevation. While no excavations are planned for the majority of this project, groundwater flowing around the pipe could cause erosion issues after installation.

## 5.0 CONSTRUCTION CONSIDERATIONS

### 5.1 Site Preparation

All areas that will support foundations, floors, pavements, or newly placed structural fill must be properly prepared. All loose surficial soil or "topsoil" and other unsuitable materials must be removed. Unsuitable materials include frozen soil, relatively soft material, relatively wet soils, deleterious material, or soils that exhibit a high organic content.

Approximately seven (7) to nine (9) inches of loose surficial topsoil was encountered in the borings. The topsoil was measured at discrete locations as shown on the Boring Location Map (Figure No. 2) in Appendix "A". The topsoil thickness measured at the boring locations may or may not be representative of the overall average topsoil thickness at the site. Therefore, it is possible that the actual stripping depth could significantly vary from this data. The data presented should be viewed only as a guide to the minimum stripping depth that will be required to remove organic material at the surface. Additional field exploration by *Patriot* would be required to provide an accurate estimate of the stripping

depth. This limited data indicates that a minimum stripping depth will be required to remove the organic material at the surface, followed by the potential for additional stripping and/or scarification and recompaction as may be required to achieve suitable subgrade support. ***Additionally, if saturated conditions exist with the surface soils, light tracked equipment could be required to avoid pushing organics deeper into the suitable subgrade soils.*** A *Patriot* representative should verify the stripping depth at the time grading operations occur.

Care must be exercised during grading and fill placement operations. ***The combination of heavy construction equipment traffic and excess surface moisture can cause pumping and deterioration of the near surface soils. The severity of this potential problem depends to a great extent on the weather conditions prevailing during construction.*** The contractor must exercise discretion when selecting equipment sizes and also make a concerted effort to control construction traffic and surface water while the subgrade soils are exposed. We recommend that heavy construction equipment (i.e. dump trucks, scrapers, etc.) be rerouted away from the building and pavement areas. If such problems do arise, the operations in the affected area should be halted and the *Patriot* representative contacted to evaluate the condition.

## 5.2 Foundation Excavations

***Excavation will be performed on sandy soils that can be easily disturbed. If the subgrade soil is disturbed, it should be re-compacted or a crushed stone layer should be placed at the subgrade level.***

Upon completion of the foundation excavations and prior to the placement of reinforcing steel, a *Patriot* representative should check the exposed subgrade to confirm that a bearing surface of adequate strength has been reached. Any localized soft soil zones encountered at the bearing elevations should be further excavated until adequate support soils are encountered. The cavity should be backfilled with structural fill as defined below, or the footing can be poured at the excavated depth. Structural fill used as backfill beneath footings should be limited to lean concrete, well-graded sand and gravel, or crushed stone placed and compacted in accordance with Section 5.3 “*Structural Fill and Fill Placement Control*”.

If it is necessary to support spread footings on structural fill, the fill pad must extend laterally a minimum distance beyond the edge of the footing. The minimum structural pad width would correspond with a point at which an imaginary line extending downward from

the outside edge of the footing at a 1H:2V (horizontal: vertical) slope intersects the surface of the natural soils. For example, if the depth to the bottom of excavation is 4 feet below the bottom of the foundation, the excavation would need to extend laterally beyond the edge of the footing at least 2 feet, as shown in Illustration "A" found at the conclusion of this report.

Excavation slopes should be maintained within all requirements set-forth by the Occupational Safety and Health Standards (OSHA), but specifically Section 1926 Subpart "P" – "Excavations". We recommend that any surcharge fill or heavy equipment be kept at least 5 feet away from the edge of the excavation.

Construction traffic on the exposed surface of the bearing soil will potentially cause some disturbance of the subgrade and consequently loss of bearing capacity. However, the degree of disturbance can be minimized by proper protection of the exposed surface.

### 5.3 Structural Fill and Fill Placement Control

Structural fill, defined as any fill which will support structural loads, should be clean and free of organic material, debris, deleterious materials, and frozen soils. Samples of the proposed fill materials should be tested prior to initiating the earthwork and backfilling operations to determine the classification, the natural and optimum moisture contents and maximum dry density and overall suitability as a structural fill. ***Structural fill should have a liquid limit less than 40 and a plasticity index less than 20.***

All structural fill adjacent to foundations and over foundations, should be compacted to at least 95 percent (%) of its maximum Standard Proctor dry density (ASTM D-698). This minimum compaction requirement should be increased to 100 percent (%) of the maximum Standard Proctor dry density for fill supporting footings, provided these are designed as outlined Section 4.0 "Design Recommendations".

Structural fill supporting, around and over utilities should be compacted to at least 95 percent (%) of its maximum Standard Proctor dry density (ASTM D-698) for utilities underlying structural areas (i.e. buildings, pavements, sidewalks, etc.). However, the minimum compaction requirement can be reduced for backfill around and over the utilities to 90 percent (%) of the maximum Standard Proctor dry density where utilities underlie greenbelt areas (i.e. grassy lawns, landscaping, etc.). It is recommended that a clean well-graded granular material be utilized as the bedding material, as well as the backfill material around and over the utility lines.

To achieve the recommended compaction of the structural fill, we suggest that the fill be placed and compacted in layers not exceeding 8 inches in loose thickness (the loose lift thickness should be reduced to 6 inches when utilizing small hand compactors) and within the range of 2 percentage (%) points below or above the optimum moisture content value. All fill placement should be monitored by a *Patriot* representative. ***Each lift should be tested for proper compaction at a frequency of at least one (1) test every 2,500 square feet (ft<sup>2</sup>) per lift for the building areas, at least one (1) test every 10,000 square feet (ft<sup>2</sup>) per lift for the parking and roadway areas, and at a frequency of at least one (1) test for every 50 lineal feet of utility installation.***

## 5.5 Groundwater Considerations

Groundwater was observed during our field activities at depths between about 3.5 and 23.5 feet below the existing ground surface; which is expected to be below the anticipated foundation excavation depths, though the groundwater observations could potentially be within trench excavation depths for subsurface utilities. Therefore, groundwater infiltration should be expected into the subsurface utility excavations, and depending on seasonal conditions, localized and sporadic groundwater infiltration may occur into the building foundation excavations on this site.

Groundwater inflow into shallow excavations **above** the groundwater table is expected to be adequately controlled by conventional methods such as gravity drainage and/or pumping from sumps. More significant inflow can be expected in deeper excavations **below** the groundwater table requiring more aggressive dewatering techniques, such as well or wellpoint systems. For groundwater to have minimal effects on the construction, foundation excavations should be constructed and poured in the same day, if possible.

## 6.0 EXPLORATIONAL PROCEDURES

### 6.1 Field Work

A total of sixteen (16) soil borings were drilled, sampled, and tested at the project site between July 20 and 22, 2022 at the approximate locations shown on the Boring Location Map (Figure No. 2) in Appendix "A". The depths that the soil borings were advanced to are shown on the Boring Logs in Appendix "A". All depths are given as feet below the existing ground surface.

The borings were advanced using 3¼ inch inside diameter hollow-stem augers. Samples were recovered in the undisturbed material below the bottom of the augers using the standard drive sample technique in accordance with ASTM D 1586-74. A 2 inch outside diameter by 1⅜ inch inside diameter split-spoon sampler was driven a total of 18 inches with the number of blows of a 140-pound hammer falling 30 inches recorded for each 6 inches of penetration. The sum of blows for the final 12 inches of penetration is the Standard Penetration Test result commonly referred to as the N-value (or blow-count). Split-spoon samples were recovered at 2.5 feet intervals, beginning at a depth of 1 foot below the existing surface grade, extending to a depth of 10 feet, and at 5 feet intervals thereafter to the termination of the boring.

Water levels were monitored at each borehole location during drilling and upon completion of the boring. The boreholes were backfilled with auger cuttings prior to demobilization for safety considerations.

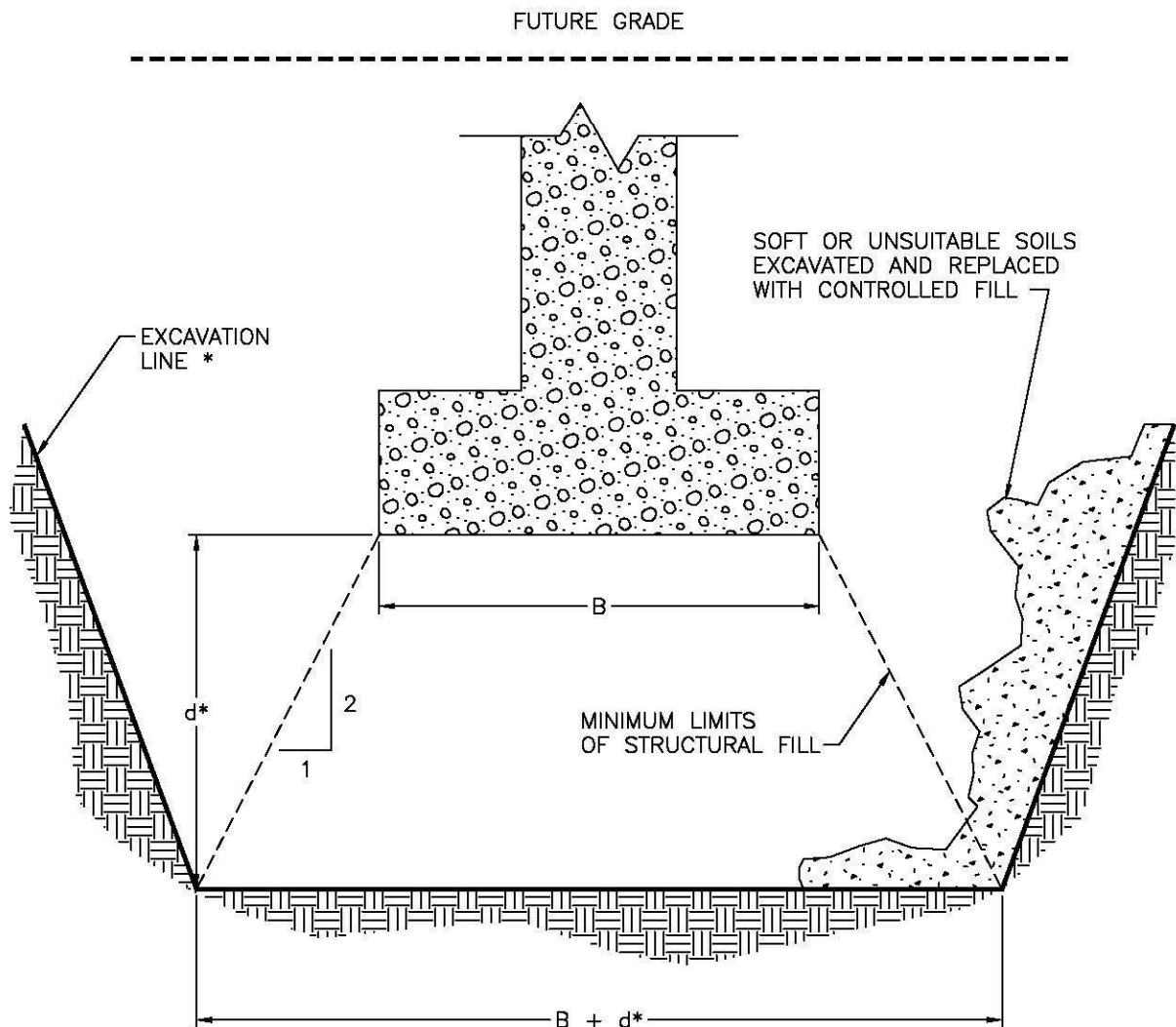
Upon completion of the boring program, of the samples retrieved during drilling were returned to *Patriot's* soil testing laboratory where they were visually examined and classified. A laboratory-generated log of each boring was prepared based upon the driller's field log, laboratory test results, and our visual examination. Test boring logs and a description of the classification system are included in Appendix "A" in this report. Indicated on each log are the primary strata encountered, the depth of each stratum change, the depth of each sample, the Standard Penetration Test results, groundwater conditions, and selected laboratory test data. The laboratory logs were prepared for each boring giving the appropriate sample data and the textural description and classification.

## 6.2 Laboratory Testing

Representative samples recovered in the borings were selected for testing in the laboratory to evaluate their physical properties and engineering characteristics. Laboratory analysis included natural moisture content determinations (ASTM D 2216) and an estimate of the cohesive soil strength was determined utilizing a hand penetrometer ( $q_p$ ). The results of laboratory tests are summarized in Section 3.2 "*General Subsurface Conditions*". Soil descriptions on the boring logs are in accordance with the Unified Soil Classification System (USCS).

## **7.0 ILLUSTRATIONS**

See Illustrations “A” and “B” on the following pages. These illustrations are presented to further visually clarify several of the construction considerations presented in Section 5.2 “*Foundation Excavations*”.



\*d IS DEPTH TO SUITABLE SOILS

\* IN COMPLIANCE WITH OSHA STANDARDS

## Excavation for Footings In an Area of Fill ILLUSTRATION A

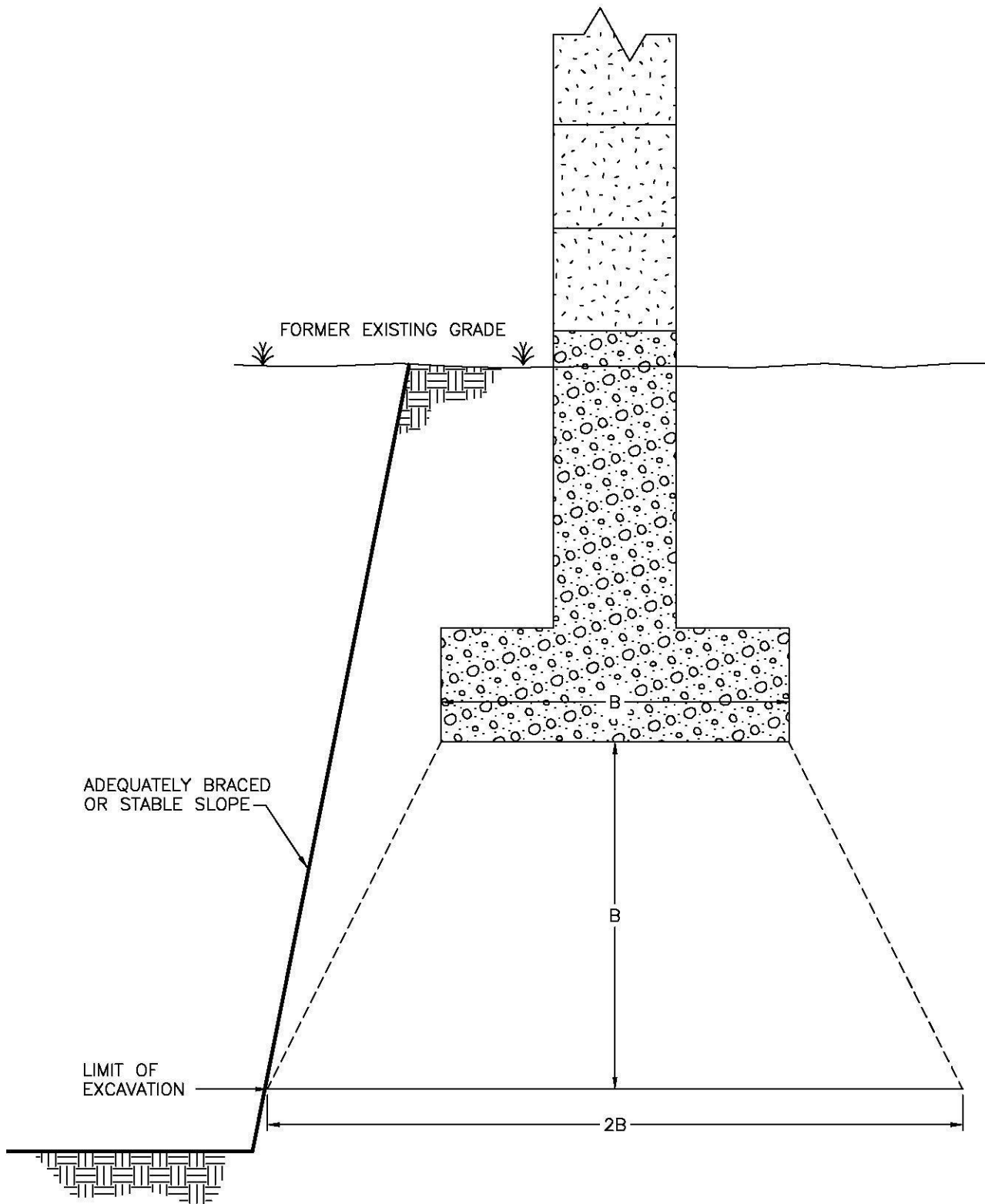
job. no.:

figure:



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and Materials Engineers

## Excavation Near Existing In Use Foundations ILLUSTRATION B

job. no.:

figure:

**APPENDIX A**

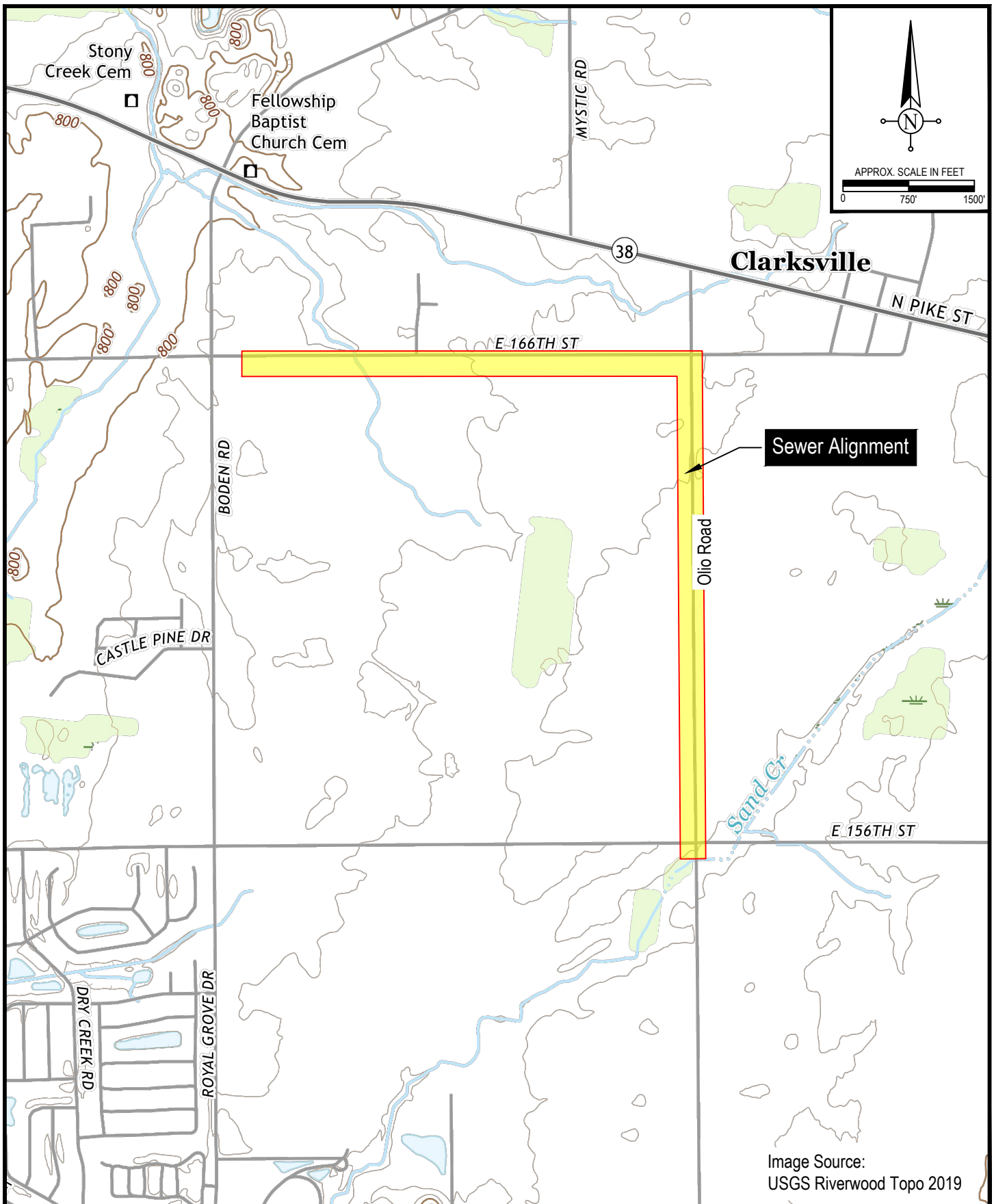
**SITE VICINITY MAP (FIGURE NO. 1)**

**BORING LOCATION MAP (FIGURE NO. 2)**

**BORING LOGS**

**BORING LOG KEY**

**UNIFIED SOIL CLASSIFICATION SYSTEM  
(USCS)**



Patriot Engineering &  
Environmental, Inc.

Project: Noblesville Sanitary  
East 166th Street & Olio Road  
Noblesville, Indiana

Project Number: 22-1017-01  
Date: August 15, 2022

Drawn By: J. DuMond  
Approved: I. Grafe  
DWG: 22-1017-01\_geo

Figure 1

Sewer Alignment Map



**LEGEND**  
● PATRIOT Soil Boring  
B-1 Soil Boring ID

- NOTES:**
- 1. Boring locations were staked by PATRIOT. All locations are shown as approximate.
  - 2. All locations were determined in the field with references to existing landmarks.
  - 3. Image Source: Google Earth
  - 4. Scale as shown.

Project: Noblesville Sanitary East 166th Street & Olio Road Noblesville, Indiana	
	Drawn By: J. DuMond
Project Number:22-1017-01	Approved: I. Grafe
Date: August 15, 2022	DWG: 22-1017-01_geo

**Figure 2**  
**Soil Boring Location Map**



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**LEGEND**  
● PATRIOT Soil Boring  
B-1 Soil Boring ID

**NOTES:**  
1. Boring locations were staked by PATRIOT.  
All locations are shown as approximate.  
2. All locations were determined in the field  
with references to existing landmarks.  
3. Image Source: Google Earth  
4. Scale as shown.

Project: Noblesville Sanitary East 166th Street & Olio Road Noblesville, Indiana	
Project Number:22-1017-01	Drawn By: J. DuMond
Date: August 15, 2022	Approved: I. Grafe
	DWG: 22-1017-01_geo

**Figure 3**  
**Soil Boring Location Map**



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**LOG OF BORING B-1**

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/20/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- 710 feet  
Latitude : 39°48'12.21"N  
Longitude : 86° 9'12.48"W

Depth (Feet)	Elevation (Feet) 710	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 13.5 feet ▽ After Completion - 10.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (8")						
			CL		Brown, very moist, medium stiff to stiff, SANDY CLAY with trace gravel	1	100	3/3/3	1.5	26	
			CL		Brown and gray, slightly moist, medium stiff, SANDY CLAY with trace gravel	2	100	2/3/4		14	
5	705					3	100	2/2/5		13	
		▽	CL		Brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	4	100	3/7/10	>4.5	11	
10	700										
		▼									
					Brown, saturated, medium dense to dense, fine to medium grained, SAND with trace silt and trace to little gravel	5	100	5/6/7			
15	695		SP-SM								
						6	100	9/21/20			
20	690										
					Gray, saturated, medium dense to dense, fine to medium grained, SAND with trace silt and little gravel	7	89	14/14/15			
25	685		SP-SM								
						8	89	19/16/15			
30	680										
					Boring terminated at 30 feet.						
35	675										



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**LOG OF BORING B-2**

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/20/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- 710 feet  
Latitude : 39°48'12.40"N  
Longitude : 86° 9'11.63"W

Depth (Feet)	Elevation (Feet) 710	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 13.5 feet ▽ After Completion - 10.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (8")						
			CL		Brown, moist, very stiff to hard, SILTY CLAY with trace sand	1	89	8/9/7	>4.5	20	
			CL		Brown and gray, moist, medium stiff, SILTY CLAY with trace sand	2	100	3/3/4		20	
5	705		CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	3	89	3/4/5	3.75	15	
		▽	CL		Brown and gray, very moist, medium stiff to stiff, SANDY CLAY with trace gravel	4	100	3/2/4	1.25	27	
10	700										
		▼									
15	695				Brown, saturated, medium dense, fine to medium grained, SAND with trace silt and trace to little gravel	5	89	11/14/15			
			SP-SM			6	78	9/13/11			
20	690										
			SP-SM		Gray, saturated, medium dense, fine to medium grained, SAND with trace silt and little gravel	7	100	8/9/13			
25	685										
					Auger refusal encountered at 25.5 feet.						
30	680										
35	675										





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## LOG OF BORING B-3

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/20/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- 711 feet  
Latitude : 39°48'11.76"N  
Longitude : 39°48'11.76"N

Depth (Feet)	Elevation (Feet) 711	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 13.5 feet ▽ After Completion - 9.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0	710				TOPSOIL (7")						
			CL		Brown and gray, moist, medium stiff, SANDY CLAY with trace gravel	1	100	4/4/4		23	
5			CL		Brown and gray, moist, soft, SANDY CLAY with trace gravel	2	100	2/2/2		22	
705			CL		Brown and gray, slightly moist, very stiff, SANDY CLAY with trace gravel	3	100	4/7/9	3.5	13	
10		▽	CL		Gray and brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	4	100	5/8/9	>4.5	11	
700			CL								Boring caved to 10 feet upon auger removal.
15		▼			Brown, saturated, dense to very dense, fine to medium grained, SAND with trace silt and gravel	5	100	5/19/25			
695			SP-SM								
20						6	56	32/50-3"			
690					Auger refusal encountered at 20 feet.						
25											
685											
30											
680											
35											





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**LOG OF BORING B-4**

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/20/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- 710 feet  
Latitude : 39°48'10.96"N  
Longitude : 86° 9'11.57"W

Depth (Feet)	Elevation (Feet) 710	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 18.5 feet ▽ After Completion - 14.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9")						
			CL		Brown and gray, slightly moist, stiff, SANDY CLAY with trace gravel	1	100	3/5/6		12	
5	705		CL		Brown, slightly moist, medium stiff, SANDY CLAY with trace gravel	2	100	3/4/4		14	
					Gray, slightly moist, medium stiff to very stiff, SANDY CLAY with trace gravel	3	100	3/4/6	3.5	11	
10	700		CL			4	67	3/4/6		13	
		▽				5	67	3/3/4	1.75	14	
15	695										
		▼				6	78	1/1/4			
20	690				Gray, saturated, loose to medium dense, fine to medium grained, SAND with trace silt and trace gravel						
			SP-SM			7	89	11/11/17			
25	685										
						8	100	11/15/21			
30	680										
					Boring terminated at 30 feet.						
35	675										



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**LOG OF BORING B-5**

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/20/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- 710 feet  
Latitude : 39°48'10.93"N  
Longitude : 86° 9'12.44"W

Depth (Feet)	Elevation (Feet) 710	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 18.5 feet ▽ After Completion - 14.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (8")						
			CL		Brown and gray, very moist, stiff to very stiff, SILTY CLAY with trace sand	1	67	3/5/7	3.5	26	
5	705		CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with some gravel	2	56	6/6/6	3.5	16	
					Gray, slightly moist, hard, SANDY CLAY with trace gravel	3	100	10/18/24	>4.5	8	
10	700		CL			4	100	7/14/17	>4.5	9	
		▽			Gray, slightly moist, stiff, SANDY CLAY with trace gravel	5	100	5/7/8		11	
15	695		CL								Boring caved to 16 feet upon auger removal.
		▼			Gray, saturated, very loose, fine to medium grained, SAND with trace silt and trace gravel	6	100	WOH/WOH/2			WOH- Weight of Hammer
20	690		SP-SM			7	89	10/22/35			
			SP-SM		Gray, saturated, very dense, fine to medium grained, SAND with trace silt and trace to little gravel						
25	685				Gray, saturated, very dense, fine to medium grained, SAND with trace silt and gravel	8	83	16/20/25			
			SP-SM								Sample No. 9: Two attempts were made to obtain a splitspoon sample. Classification is based on field observations.
30	680					9	0	50-5"			
					Boring terminated at 30 feet.						
35	675										



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**LOG OF BORING B-6**

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/20/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- 711 feet  
Latitude : 39°48'11.73"N  
Longitude : 86° 9'12.51"W

Depth (Feet)	Elevation (Feet) 711	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 6.0 feet ▽ After Completion - 8.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0	710				TOPSOIL (8")						
			CL		Brown and gray, moist, medium stiff, SILTY CLAY with trace sand	1	100	3/3/4		24	
5			CL		Brown, moist, soft, SANDY CLAY with trace gravel	2	100	1/2/2		19	
	705	▼			Brown, saturated, loose to medium dense, fine to medium grained, SAND with trace silt and trace gravel	3	89	2/2/4			
		▽				4	78	5/9/12			Boring caved to 9 feet upon auger removal.
10	700		SP-SM								
					Gray, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	5	100	9/12/15	>4.5	9	
15	695		CL								
					Brown and gray, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	6	56	9/6/28	2.0	14	
20	690		CL								Auger refusal encountered at 23.5 feet.
						7	17	50-1"			
25	685				Splitspoon refusal encountered at 23.6 feet.						
30	680										
35											



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**LOG OF BORING B-7**

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/21/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 18.5 feet ▽ After Completion - 16.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9") Brown, moist to slightly moist, medium stiff to hard, SANDY CLAY with trace gravel	1	67	24/4		19	Sample No's.4 & 7: Two attempts were made to obtain splitspoon samples. Classifications are based on field observations.
						2	100	5/5/7		14	
5			CL			3	89	4/3/3	2.5	12	
						4	0	5/20/12			
10											Boring caved to 18 feet upon auger removal.
15		▽	CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	5	100	15/21/23		7	
											Auger refusal encountered at 23.5 feet.
20		▼			Gray, saturated, very dense, fine to medium grained, SAND with trace silt and little gravel	6	56	34/24/27			
			SP-SM			7	0	50-1"			
25					Splitspoon refusal encountered at 23.6 feet.						
30											
35											



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**LOG OF BORING B-8**

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/21/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 3.5 feet ▽ After Completion - 13.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (8")						
			CL		Brown, moist, medium stiff, SANDY CLAY with trace gravel	1	78	3/4/4		17	
		▼	CL		Brown, moist, soft, SANDY CLAY with trace gravel	2	78	1/2/2		19	
5			CL		Brown, slightly moist, stiff, SANDY CLAY with trace gravel	3	100	7/5/9		11	
			CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	4	100	13/22/25	>4.5	10	
10		▽	CL		Gray and brown, very moist, stiff to very stiff, SANDY CLAY with trace gravel	5	56	8/11/12	1.75	26	
15			CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	6	100	11/15/28	>4.5	11	Boring caved to 16 feet upon auger removal.
20			CL		Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace to little gravel	7	100	47/20/19			
25						8	6	50 1"			Auger refusal encountered at 26 feet.
					Splitspoon refusal encountered at 26.1 feet.						
30											
35											



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**LOG OF BORING B-9**

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Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/21/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - Dry ▽ After Completion - 25.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9")						
			CL		Brown and gray, moist, stiff to very stiff, SILTY CLAY with trace sand	1	89	4/5/4	2.25	22	
			CL		Brown, slightly moist, stiff, SANDY CLAY with trace gravel	2	100	3/6/8		11	
5			CL		Gray, slightly moist, hard, SANDY CLAY and gravel	3	56	8/15/17		10	
			CL		Gray, slightly moist to moist, very stiff to hard, SANDY CLAY with trace gravel	4	78	9/21/18	>4.5	8	
10											
			CL			5	100	9/12/14	>4.5	11	
15											
			CL			6	100	7/10/13	>4.5	16	
20											
						7	100	8/11/13		20	
25		▽									
			SC		Brown, slightly moist, very dense, CLAYEY SAND with trace gravel	8	28	50-5"			
30											Boring caved to 27 feet upon auger removal.
					Boring terminated at 28.9 feet.						
35											



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**LOG OF BORING B-10**

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Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/21/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 3.5 feet ▽ After Completion - 7.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9")						
			CL		Brown and gray, moist, stiff, SILTY CLAY with trace sand	1	78	6/6/8		21	
		▼	CL		Brown, very moist, soft, SANDY CLAY with trace gravel	2	100	2/2/2		26	
5		▽	CL		Brown, slightly moist, stiff to very stiff, SANDY CLAY with trace gravel	3	67	3/5/6	3.0	13	
			CL			4	89	2/7/8		11	
			CL		Gray, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	5	100	7/10/12	4.0	10	
15			GP-GM		Brown, saturated, very dense, poorly-graded, GRAVEL with trace silt and trace sand	6	44	50-5"			
20											
25					Auger refusal encountered at 23.5 feet.						
30											
35											

Boring caved to 8 feet upon  
auger removal.



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**LOG OF BORING B-11**

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Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/22/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 8.5 feet ▽ After Completion - 7.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (8")						
			CL		Brown and gray, very moist, medium stiff to stiff, SILTY CLAY with trace sand	1	100	4/4/4	1.75	29	
			CL		Gray and brown, very moist, soft, SANDY CLAY with trace gravel	2	100	2/2/1		28	
5		▽	CL		Gray and brown, moist, very stiff to hard, SANDY CLAY with trace gravel	3	89	9/11/24	2.5	17	
		▼									Boring caved to 8 feet upon auger removal.
10			SP-SM		Gray, saturated, very stiff, fine to medium grained, SAND with trace silt and trace gravel	4	89	11/15/15			
15			CL		Gray, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	5	78	8/9/7	>4.5	15	
20			CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	6	100	2/7/31	>4.5	8	Sample No. 7: Two attempts were made to obtain a splitspoon sample. Classification is based on field observations.
						7	0	50-5"			Auger refusal encountered at 23.5 feet.
25			Boring terminated at 23.9 feet.								
30											
35											





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**LOG OF BORING B-12**

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Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/22/2022  
Drilling Method : HSA








Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 8.5 feet ▽ After Completion - 8.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9")						
			CL		Brown and gray, moist, medium stiff to stiff, SILTY CLAY with trace sand and trace gravel	1	56	2/2/3		21	
						2	78	3/2/3	1.5	19	
5			CL		Gray, slightly moist, very stiff, SANDY CLAY with trace gravel	3	100	6/9/8	3.5	12	
			CL		Brown, slightly moist, very stiff, SANDY CLAY with trace gravel and interbedded sand seams	4	78	3/10/8	1.5	12	
10											Boring caved to 10 feet upon auger removal.
			SP-SM		Brown, saturated, medium dense to dense, fine to medium grained, SAND with trace silt and trace gravel	5	89	10/12/18			
15						6	100	10/16/23			
20			SP-SM		Gray, saturated, very dense, fine to medium grained, SAND with trace silt and trace gravel	7	22	50-3"			
25											Auger refusal encountered at 23.5 feet.
					Boring terminated at 23.8 feet.						
30											
35											



(Page 1 of 1)

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					▼ During Drilling - 13.5 feet ▽ After Completion - 9.0 feet ◆ After 24 Hours - N/A						
0					TOPSOIL (8")						
			CL		Brown and gray, moist, stiff to very stiff, SILTY CLAY with trace sand	1	100	4/4/5	2.75	24	
			CL		Brown and gray, slightly moist, medium stiff, SANDY CLAY with trace gravel	2	100	2/2/3		14	
			CL		Brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	3	89	10/22/15	3.5	8	
		▽			Brown, slightly moist, medium dense, fine to medium grained, SAND with trace silt and trace gravel	4	78	6/13/15			
		▼	SP-SM		Brown, saturated, dense, fine to medium grained, SAND with trace silt and trace gravel	5	89	14/21/17			
			SP-SM			6	67	13/17/31			
20			Auger refusal encountered at 20.5 feet.								
25											
30											
35											

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**LOG OF BORING B-14**

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Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/22/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 18.5 feet ▽ After Completion - 14.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9")						
			CL		Brown and gray, moist, very stiff, SANDY CLAY with trace gravel	1	100	6/7/9	2.5	20	
			CL		Brown, very moist, soft, SANDY CLAY with trace gravel and interbedded sand seams	2	100	2/2/2		26	
5			CL		Brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	3	100	5/9/10	4.25	13	
			SP-SM		Brown, slightly moist, dense, fine to medium grained, SAND with trace silt and trace gravel	4	89	9/15/21			
10											
		▽			Brown, moist to slightly moist, very stiff to hard, SANDY CLAY with trace gravel	5	67	24/31/34	2.5	16	
15			CL			6	67	WOH/9/25		13	WOH - Weight of Hammer
20		▼									
			CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	7	78	5/19/22	>4.5	10	Boring caved to 23 feet upon auger removal.
25			CL								
			SP-SM		Brown, saturated, very dense, fine to medium grained, SAND with trace silt and gravel	8	28	50-2"			
30											
					Boring terminated at 28.7 feet.						
35											



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**LOG OF BORING B-15**

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/21/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 23.5 feet ▽ After Completion - 13.0 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9")						
					Brown, moist to slightly moist, stiff to hard, SANDY CLAY with trace gravel	1	67	3/4/6		19	
						2	89	3/10/12	>4.5	11	
5			CL			3	89	13/10/10	>4.5	9	
						4	89	6/10/12	>4.5	9	
		▽									
			CL		Brown, slightly moist, hard, SANDY CLAY with trace gravel	5	100	18/24/37		13	
15											
			CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	6	100	20/25/25		7	
20											
		▼									
			SP-SM		Brown, saturated, very dense, fine to medium grained, SAND with trace silt and little gravel	7	100	15/19/29			
25											
						8	67	24/50-5"			
30					Boring terminated at 29.4 feet. Splitspoon Refusal						Boring caved to 22 feet upon auger removal.
35											



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## LOG OF BORING B-16

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Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/21/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 3.5 feet ▽ After Completion - Dry ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					TOPSOIL (9") Brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	1	100	5/7/11	>4.5	11	
5		▼	CL			2	100	6/12/13	>4.5	10	
					Auger refusal encountered at 6 feet.						
10											
15											
20											
25											
30											
35											



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## LOG OF BORING B-16A

(Page 1 of 1)

Noblesville Sanitary  
East 166th Street and Olio Road  
Fishers, Indiana

Client Name : Samco, Inc.  
Project Number : 22-1017-01G  
Logged By : E. Bergel  
Start Date : 07/21/2022  
Drilling Method : HSA

Driller : J. Boeche  
Sampling : Splitspoon  
Approx. Elevation : +/- feet  
Latitude :  
Longitude :

Depth (Feet)	Elevation (Feet)	Water Level	USCS	GRAPHIC	Water Levels ▼ During Drilling - 3.5 feet ▽ After Completion - 8.5 feet ◆ After 24 Hours - N/A	Samples	Rec %	SPT Results	qp tsf	w %	REMARKS
					DESCRIPTION						
0					Blank drilled from 0 to 6 feet.  Refer to Boring B-16 for a description of soil strata.						
5						3	100	9/12/16	>4.5	9	
10			CL		Brown, slightly moist, very stiff to hard, SANDY CLAY with trace gravel	4	100	6/11/26	>4.5	10	Boring caved to 9 feet upon auger removal.
15						5	100	18/35/41	>4.5	10	
20			CL		Gray, slightly moist, hard, SANDY CLAY with trace gravel	6	100	11/18/24	>4.5	7	
25			GP-GM		Brown, saturated, very dense, poorly-graded, GRAVEL with trace silt and trace sand	7	56	6/19/50			
30			SP-SM		Brown, saturated, very dense, fine to medium grained, SAND with trace silt and trace gravel	8	17	50-5"			
35					Boring terminated at 28.9 feet. Splitspoon refusal.						Boring Offset 5 feet southwest of Boring B-6

## BORING LOG KEY

### UNIFIED SOIL CLASSIFICATION SYSTEM FIELD CLASSIFICATION SYSTEM FOR SOIL EXPLORATION

#### NON COHESIVE SOILS

(Silt, Sand, Gravel and Combinations)

Density		Grain Size Terminology		
		<u>Soil Fraction</u>	<u>Particle Size</u>	<u>US Standard Sieve Size</u>
Very Loose	-4 blows/ft. or less			
Loose	-5 to 10 blows/ft.			
Medium Dense	-11 to 30 blows/ft.	Boulders	Larger than 12"	Larger than 12"
Dense	-31 to 50 blows/ft.	Cobbles	3" to 12"	3" to 12"
Very Dense	-51 blows/ft. or more	Gravel: Coarse	¾" to 3"	¾" to 3"
		Small	4.76mm to ¾"	#4 to ¾"
		Sand: Coarse	2.00mm to 4.76mm	#10 to #4
		Medium	0.42mm to 2.00mm	#40 to #10
		Fine	0.074mm to 0.42mm	#200 to #40
		Silt	0.005mm to 0.074 mm	Smaller than #200
		Clay	Smaller than 0.005mm	Smaller than #200

#### RELATIVE PROPORTIONS FOR SOILS

<u>Descriptive Term</u>	<u>Percent</u>
Trace	1 - 10
Little	11 - 20
Some	21 - 35
And	36 - 50

#### COHESIVE SOILS

(Clay, Silt and Combinations)

<u>Consistency</u>	<u>Unconfined Compressive Strength (tons/sq. ft.)</u>	<u>Field Identification (Approx.) SPT Blows/ft.</u>
Very Soft	Less than 0.25	0 - 2
Soft	0.25 - < 0.5	3 - 4
Medium Stiff	0.5 - < 1.0	5 - 8
Stiff	1.0 - < 2.0	9 - 15
Very Stiff	2.0 - < 4.0	16 - 30
Hard	Over 4.0	> 30

**Classification** on logs are made by visual inspection.

**Standard Penetration Test** - Driving a 2.0" O.D., 1<sup>3/8</sup>" I.D., sampler a distance of 1.0 foot into undisturbed soil with a 140 pound hammer free falling a distance of 30.0 inches. It is customary for **Patriot** to drive the spoon 6.0 inches to seat into undisturbed soil, then perform the test. The number of hammer blows for seating the spoon and making the tests are recorded for each 6.0 inches of penetration on the drill log (Example - 6/8/9). The standard penetration test results can be obtained by adding the last two figures (i.e. 8 + 9 = 17 blows/ft.).

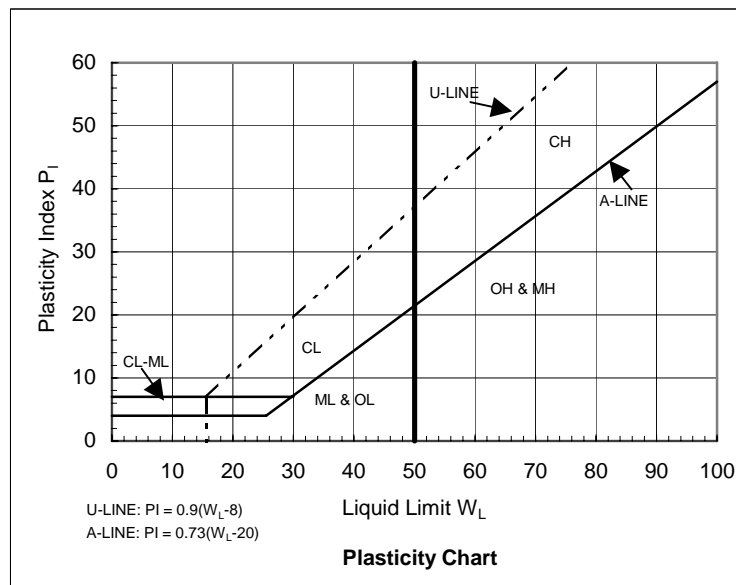
**Strata Changes** - In the column "Soil Descriptions" on the drill log the horizontal lines represent strata changes. A solid line (——) represents an actually observed change, a dashed line (- - - -) represents an estimated change.

**Groundwater** observations were made at the times indicated. Porosity of soil strata, weather conditions, site topography, etc., may cause changes in the water levels indicated on the logs.

**Groundwater symbols:** ▼-observed groundwater elevation, encountered during drilling; ∇-observed groundwater elevation upon completion of boring.

# Unified Soil Classification System

Major Divisions			Group Symbol		Typical Names	Classification Criteria for Coarse-Grained Soils		
Coarse-grained soils (more than half of material is larger than No. 200)	Gravels (more than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (little or no fines)	GW		Well-graded gravels, gravel-sand mixtures, little or no fines	$C_U \geq 4$ $1 \leq C_C \leq 3$	$C_U = \frac{D_{60}}{D_{10}}$	$C_C = \frac{D_{30}^2}{D_{10} D_{60}}$
			GP		Poorly graded gravels, gravel-sand mixtures, little or no fines	Not meeting all gradation requirements for GW ( $C_U < 4$ or $1 > C_C > 3$ )		
		Gravels with fines (appreciable amount of fines)	GM	$\frac{d_u}{u}$	Silty gravels, gravel-sand-silt mixtures	Atterberg limits below A line or $P_L < 4$		Above A line with $4 < P_L < 7$ are borderline cases requiring use of dual symbols
			GC		Clayey gravels, gravel-sand-clay mixtures	Atterberg limits above A line or $P_L > 7$		
	Sands (more than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (little or no fines)	SW		Well-graded sands, gravelly sands, little or no fines	$C_U \geq 6$ $1 \leq C_C \leq 3$	$C_U = \frac{D_{60}}{D_{10}}$	$C_C = \frac{(D_{30})^2}{D_{10} D_{60}}$
			SP		Poorly graded sands, gravelly sands, little or no fines	Not meeting all gradation requirements for SW ( $C_U < 6$ or $1 > C_C > 3$ )		
		Sands with fines (appreciable amount of fines)	SM	$\frac{d_u}{u}$	Silty sands, sand-silt mixtures	Atterberg limits below A line or $P_L < 4$		Limits plotting in hatched zone with $4 \leq P_L \leq 7$ are borderline cases requiring use of dual symbols
			SC		Clayey sands, sand-clay mixtures	Atterberg limits above A line with $P_L > 7$		
Fine-grained soils (more than half of material is smaller than No. 200)	Silt and clays (liquid limit <50)	ML		Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity	<div>1. Determine percentages of sand and gravel from grain size curve.</div> <div>2. Depending on percentages of fines (fraction smaller than 200 sieve size), coarse-grained soils are classified as follows: Less than 5% - GW, GP, SW, SP More than 12% - GM, GC, SM, SC 5-12% - Borderline cases requiring dual symbols</div>			
		CL		Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays				
		OL		Organic silts and organic silty clays of low plasticity				
	Silt and clays (liquid limit >50)	MH		Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts				
		CH		Inorganic clays or high plasticity, fat clays				
		OH		Organic clays of medium to high plasticity, organic silts				
	Highly organic soils	PT		Peat and other highly organic soils				





**APPENDIX B**

**GENERAL QUALIFICATIONS**

**STANDARD CLAUSE FOR UNANTICIPATED  
SUBSURFACE CONDITIONS**

**GENERAL QUALIFICATIONS**  
**of Patriot Engineering's Geotechnical Engineering Investigation**

This report has been prepared at the request of our client for his use on this project. Our professional services have been performed, findings obtained, and recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties either expressed or implied.

The scope of our services did not include any environmental assessment or investigation for the presence or absence of wetlands, hazardous or toxic materials in the soil, groundwater, or surface water within or beyond the site studied. Any statements in this report or on the test borings logs regarding vegetation types, odors or staining of soils, or other unusual conditions observed are strictly for the information of our client and the owner.

This report may not contain sufficient information for purposes of other parties or other uses. This company is not responsible for the independent conclusions, opinions or recommendations made by others based on the field and laboratory data presented in this report. Should there be any significant differences in structural arrangement, loading or location of the structure, our analysis should be reviewed.

The recommendations provided herein were developed from the information obtained in the test borings, which depict subsurface conditions only at specific locations. The analysis, conclusions, and recommendations contained in our report are based on site conditions as they existed at the time of our exploration. Subsurface conditions at other locations may differ from those occurring at the specific drill sites. The nature and extent of variations between borings may not become evident until the time of construction. If, after performing on-site observations during construction and noting the characteristics of any variation, substantially different subsurface conditions from those encountered during our explorations are observed or appear to be present beneath excavations, we must be advised promptly so that we can review these conditions and reconsider our recommendations where necessary.

If there is a substantial lapse of time between the submission of our report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, we urge that our report be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

We urge that Patriot be retained to review those portions of the plans and specifications that pertain to earthwork and foundations to determine whether they are consistent with our recommendations. In addition, we are available to observe construction, particularly the compaction of structural backfill and preparation of the foundations, and such other field observations as may be necessary.

In order to fairly consider changed or unexpected conditions that might arise during construction, we recommend the following verbiage (Standard Clause for Unanticipated Subsurface Conditions) be included in the project contract.

## **STANDARD CLAUSE FOR UNANTICIPATED SUBSURFACE CONDITIONS**

"The owner has had a subsurface exploration performed by a soils consultant, the results of which are contained in the consultant's report. The consultant's report presents his conclusions on the subsurface conditions based on his interpretation of the data obtained in the exploration. The contractor acknowledges that he has reviewed the consultant's report and any addenda thereto, and that his bid for earthwork operations is based on the subsurface conditions as described in that report. It is recognized that a subsurface exploration may not disclose all conditions as they actually exist and further, conditions may change, particularly groundwater conditions, between the time of a subsurface exploration and the time of earthwork operations. In recognition of these facts, this clause is entered in the contract to provide a means of equitable additional compensation for the contractor if adverse unanticipated conditions are encountered and to provide a means of rebate to the owner if the conditions are more favorable than anticipated.

At any time during construction operations that the contractor encounters conditions that are different than those anticipated by the soils consultant's report, he shall immediately (within 24 hours) bring this fact to the owner's attention. If the owner's representative on the construction site observes subsurface conditions which are different than those anticipated by the consultant's report, he shall immediately (within 24 hours) bring this fact to the contractor's attention. Once a fact of unanticipated conditions has been brought to the attention of either the owner or the contractor, and the consultant has concurred, immediate negotiations will be undertaken between the owner and the contractor to arrive at a change in contract price for additional work or reduction in work because of the unanticipated conditions. The contract agrees that the following unit prices would apply for additional or reduced work under the contract. For changed conditions for which unit prices are not provided, the additional work shall be paid for on a time and materials basis."

Another example of a changed conditions clause can be found in paper No. 4035 by Robert F. Borg, published in ASCE Construction Division Journal, No. CO2, September 1964, page 37.



## APPENDIX B

### PERMITS

IDEM Regional General Permit (RGP)

IDEM Water Quality Certification (QQC)

IDEM Construction General Permit (CSGP)

Hamilton County Surveyor's Office Legal Drain Crossing  
Requests

Stormwater Pollution Prevention Plan

Section 401 General Water Quality Certification

US ACE 33 CFR 330 Nationwide Permit (NWP) 58





## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

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(800) 451-6027 • (317) 232-8603 • [www.idem.IN.gov](http://www.idem.IN.gov)

**Eric J. Holcomb**  
*Governor*

**Brian C. Rockensuess**  
*Commissioner*

January 3, 2023

### VIA ELECTRONIC MAIL

Mr. Thomas A. Kallio, Director  
Hamilton Southeastern Utilities, Inc. (HSEU)  
11901 Lakeside Drive  
Fishers, Indiana 46038

Dear Mr. Kallio:

Re: Variance Request for Construction Permit  
Sanitary Sewer  
Wayne Township Interceptor – Phase 1  
Project No. M-25631  
Noblesville, Indiana  
Hamilton, County

You are hereby notified that your request for a variance, received by this office on October 25, 2022, pursuant to IC 13-14-8-8, from portions of 327 IAC 3-6-4 and 327 IAC 3-6-7, is granted in accordance with the provisions set forth in this letter. IDEM has determined that imposition of these rules at this time on Hamilton Southeastern Utilities, Inc., would cause an undue hardship or burden. Hamilton Southeastern Utilities, Inc. proposes to install sanitary sewers and interceptor for Wayne Township Interceptor – Phase I.

The variance being requested is to approve the construction of the proposed new sewer and interceptor prior to the completion of the downstream facilities, which is currently being constructed under IDEM Construction Permit # 24309. Representatives of Hamilton Southeastern Utilities, Inc. have confirmed that the estimated completion of The Silo Ridge Offsite is January 2023. This is assuming no issues bar the progression of construction.

The variance is to allow construction to commence on the gravity sewer and interceptor that will connect to the Silo Ridge Offsite. Prior to any development occurring in this area, the utility needs to have a sanitary sewer collection system in place to receive and convey flows to their downstream network and onto the Noblesville sanitary utility for treatment. In addition, road improvement projects along Boden Road are anticipated in the near future. If the interceptor project can be completed prior to road construction, it will lessen or eliminate the coordination between contractors for both projects. With rising lead times for material, the Utility would like to have a design and permit in hand to begin construction on Wayne Township Interceptor once the downstream connection point is constructed.

## Part A. Scope of Variance

1. This variance only applies to the following project:

### Development Granted

### Submitter

### Connections

Wayne Township Interceptor  
Phase 1

Hamilton Southeastern  
Utilities Inc.

9,573 Single Family  
Homes

2. This variance applies to 327 IAC 3-6-4, 327 IAC 3-6-7, and the following provisions of the certification statements in the wastewater facility construction permit rules:
  - a. 327 IAC 3-6-4(b) "Certification of Registered Professional Engineer or Land Surveyor":

"The sewer at the point of connection is physically in existence and operational. Based upon information provided by the owner of the Wastewater System, the ability for this collection system to comply with 327 IAC 3 is not contingent on downstream water pollution/control facility construction that has not been completed and put into operation."
  - b. 327 IAC 3-6-4(c) "Capacity Certification":

"I certify that the ability for this collection system to comply with 327 IAC 3 is not contingent on water pollution/control facility construction that has not been completed and put into operation"

## Part B. Conditions of Variance

1. Hamilton Southeastern Utilities must comply with all requirements of 327 IAC 3 other than those listed in Part A above.
2. Violation of any of the above conditions is grounds for revocation of the variance and may subject Hamilton Southeastern Utilities, Inc., and City of Noblesville to enforcement action.

## Notice of Right to Administrative Review

Anyone wishing to challenge this action must do so by filing a Petition for Administrative Review with the Office of Environmental Adjudication (OEA); and serving a copy of the petition upon IDEM. The requirements for filing a Petition for Administrative Review are found in IC 4-21.5-3-7 and 315 IAC 1-3-2. A summary of the requirements of these laws is provided below.



A Petition for Administrative Review must be filed with the Office of Environmental Adjudication (OEA) within fifteen (15) days of the issuance this notice (eighteen (18) days if notice was received by U.S. Mail), and a copy must be served upon IDEM. Addresses are:

Director  
Office of Environmental Adjudication  
Indiana Government Center North  
Room N103  
100 North Senate Avenue  
Indianapolis, Indiana 46204

Commissioner  
Indiana Department of Environmental  
Management  
Indiana Government Center North  
Room 1301  
100 North Senate Avenue  
Indianapolis, Indiana 46204

The petition must contain the following information:

1. The name, address and telephone number of each petitioner.
2. An identification of each petitioner's interest in the subject of the petition.
3. A statement of facts demonstrating that each petitioner is:
  - a. a person to whom the order is directed;
  - b. aggrieved or adversely affected by the determination; or
  - c. entitled to administrative review under any law.
4. The reasons for the request for administrative review.
5. The particular legal issues proposed for review.
6. The facts, terms or conditions of the action for which the petitioner requests review.
7. The identity of any persons represented by the petitioner.
8. The identity of the person against whom administrative review is sought.
9. A copy of the action that is the basis of the petition.
10. A statement identifying petitioner's attorney or other representative, if any.

Failure to meet the requirements of the law with respect to a Petition for Administrative Review may result in a waiver of the Petitioner's right to seek administrative review. Examples are:

1. Failure to file a Petition by the applicable deadline;
2. Failure to serve a copy of the Petition upon IDEM when it is filed; or
3. Failure to include the information required by law.

If Petitioner seeks to have an action stayed during the administrative review, he or she may need to file a Petition for a Stay of Effectiveness. The specific requirements for such a Petition can be found in 315 IAC 1-3-2 and 315 IAC 1-3-2.1.

Pursuant to IC 4-21.5-3-17, OEA will provide all parties with notice of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders disposing of the review of this action. Those who are entitled to notice under IC 4-21.5-3-5(b) and would like to obtain notices of any pre-hearing conferences, preliminary hearings, hearings, stays, or

orders disposing of the review of this action without intervening in the proceeding must submit a written request to OEA at the address above.

More information on the review process is available at the website for the Office of Environmental Adjudication at <http://www.in.gov/oea>.

Granting of this variance does not relieve the applicant from the responsibility of obtaining any other permits or authorizations that may be required for this project or related activities from IDEM or any other agency or person. Granting of this variance does not represent a determination that subsequent requests will be considered an undue hardship under the situation, rules and orders that may exist at that time.

If you have any questions regarding this variance decision, please contact Missy Nunnery at 317-232-5579 or by e-mail at [munnery@idem.in.gov](mailto:munnery@idem.in.gov).

Sincerely,

A handwritten signature in black ink that reads "Kevin D. Czerniakowski". The signature is written in a cursive, slightly slanted style.

Kevin D. Czerniakowski, P.E.  
Section Chief  
Facility Construction and  
Engineering Support Section  
Office of Water Quality

cc: Ms. Kathryn Castro Jackson, P.E., Wessler Engineering, Inc.



## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

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Eric J. Holcomb  
*Governor*

Brian C. Rockensuess  
*Commissioner*

January 3, 2023

### VIA ELECTRONIC MAIL

Mr. Thomas A. Kallio, Director  
Hamilton Southeastern Utilities, Inc.  
11901 Lakeside Drive  
Fishers, Indiana 46038

Dear Mr. Kallio:

Re: 327 IAC 3 Construction  
Permit Application  
Wayne Township Interceptor – Phase 1  
Permit Approval No. 24845  
Noblesville, Indiana  
Hamilton County

The application, plans and specifications, and supporting documents for the above-referenced project have been reviewed and processed in accordance with rules adopted under 327 IAC 3. Enclosed is the Construction Permit (Approval No. 24845), which applies to the construction of the above-referenced proposed sanitary sewer system to be located along Boden Road between SR 38 and 166<sup>th</sup> Street, along 166<sup>th</sup> Street between Boden and Olio Road, and along Olio Road between 166<sup>th</sup> Street and 156<sup>th</sup> Street.

Please review the enclosed permit carefully and become familiar with its terms and conditions. In addition, it is imperative that the applicant, consulting architect/engineer (A/E), inspector, and contractor are aware of these terms, conditions, and reporting and testing requirements.

It should be noted that any person affected or aggrieved by the agency's decision in authorizing the construction of the above-referenced facility may, within fifteen (15) days from date of mailing, appeal this permit by filing a request with the Office of Environmental Adjudication for an adjudicatory hearing in accordance with IC 4-21.5-3-7 and IC 13-15-6. The procedure for appeal is outlined in more detail in Part III of the attached construction permit.

Plans and specifications were prepared by Wessler Engineering, certified by Kathryn Castro Jackson, P.E., and submitted for review on October 25, 2022 with additional information submitted on November 30, 2022.

Any questions concerning this permit may be addressed to Charity Dudley, P.E., of our staff, at 317/233-6683.

Sincerely,

A handwritten signature in dark ink, reading "Kevin D. Czerniakowski". The signature is written in a cursive style with a large, stylized 'K' and 'C'.

Kevin D. Czerniakowski, P.E.  
Section Chief  
Facility Construction and  
Engineering Support Section  
Office of Water Quality

Project No. M-25631

Enclosures

cc: Hamilton County Health Department

Jonathan Mirgeaux, Utilities Director, City of Noblesville

Kathryn Castro Jackson, P.E., Wessler Engineering

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
AUTHORIZATION FOR CONSTRUCTION OF  
SANITARY SEWER SYSTEM  
UNDER 327 IAC 3

DECISION OF APPROVAL

Hamilton Southeastern Utilities, Inc., in accordance with the provisions of IC 13-15 and 327 IAC 3 is hereby issued a permit to construct the sanitary sewer system to be located along Boden Road between SR 38 and 166<sup>th</sup> Street, along 166<sup>th</sup> Street between Boden Road and Olio Road, and along Olio Road between 166<sup>th</sup> Street and 156<sup>th</sup> Street. The permittee is required to comply with requirements set forth in Parts I, II and III hereof. The permit is effective pursuant to IC 4-21.5-3-4(d). If a petition for review and a petition for stay of effectiveness are filed pursuant to IC 13-15-6, an Environmental Law Judge may be appointed for an adjudicatory hearing. The force and effect of any contested permit provision may be stayed at that time.

NOTICE OF EXPIRATION DATE

Authorization to initiate construction of this sanitary sewer system shall expire at midnight one year from the date of issuance of this construction permit. In order to receive authorization to initiate construction beyond this date, the permittee shall submit such information and forms as required by the Indiana Department of Environmental Management. It is requested that this information be submitted sixty (60) days prior to the expiration date to initiate construction. This permit shall be valid for a period of five (5) years from the date below for full construction completion.

Issued on January 3, 2023, for the Indiana Department of Environmental Management.



---

Kevin D. Czerniakowski, P.E.  
Section Chief  
Facility Construction and  
Engineering Support Section  
Office of Water Quality

### SANITARY SEWER SYSTEM DESCRIPTION

The proposed project consists of approximately 9,282 feet of 27-inch PVC gravity sewer (ASTM F679, SDR-26) and approximately 180 feet of 27-inch PVC gravity sewer (ASTM F679, SDR-26) installed via jack and bore under 166<sup>th</sup> Street to provide sanitary service to 9,573 proposed single-family homes. The average design flow is 2,967,552 gallons per day, and the sewer will discharge to a proposed 27-inch sewer located approximately 150 feet south of SR 38 and approximately 125 feet west of Boden Road.

The proposed 27-inch sewer that the new interceptor will connect to is currently under construction as part of the Silo Ridge Offsite Sanitary Sewer project (IDEM Permit No. 24309) and expected to be completed in January 2023. The engineer requested and was granted a variance to 327 IAC 3-6-4 and 327 IAC 3-6-7 to proceed with the project before the downstream infrastructure is operational. With rising material lead times, the Utility would like to be able to start construction as soon as the downstream connection point is installed to facilitate development. In addition, road improvement projects along Boden Road are anticipated in the near future, and having the interceptor already installed will minimize or eliminate coordination between the contractors.

Inspection during construction and maintenance after completion will be provided by Sanitary Management & Engineering Company, Inc. (SAMCO). Flows generated by this project will be transported to the Noblesville WWTP for treatment.

### CONDITIONS AND LIMITATIONS TO THE AUTHORIZATION FOR CONSTRUCTION OF SANITARY SEWERS

During the period beginning on the effective date of this permit and extending until the expiration date, the permittee is authorized to construct the above-described sanitary sewer system. Such construction shall conform to all provisions of State Rule 327 IAC 3 and the following specific provisions:

#### PART I

#### SPECIFIC CONDITIONS AND LIMITATIONS TO THE CONSTRUCTION PERMIT

Unless specific authorization is otherwise provided under the permit, the permittee shall comply with the following conditions:

1. Any local permits required for this project, along with easement acquisition, shall be obtained before construction is initiated.
2. If pollution or nuisance conditions are created, immediate corrective action will be taken by the permittee.

3. The separation of sanitary sewers from water mains and drinking water wells must comply with 327 IAC 3-6-9.
4. All gravity sewer pipe must be leak tested using either a hydrostatic test or air test in accordance with 327 IAC 3-6-19(d). If using a hydrostatic test, the rate of exfiltration or infiltration shall not exceed 200 gallons per inch of pipe diameter per linear mile per day. Air test shall be as prescribed.
5. The results of the gravity sewer leakage test and/or force main leakage test on the completed sewer shall be submitted to this office within three months of completion of construction.
6. Deflection tests must be performed on all flexible\* pipe after the final backfill has been in place at least 30 days. No pipe shall exceed a vertical deflection of 5%. Deflection test results shall be submitted with the infiltration/exfiltration test results. (\*The following are considered nonflexible pipes: vitrified clay pipe, concrete pipe, ductile iron pipe, cast iron pipe, asbestos cement pipe.)
7. Manholes shall be air tested in accordance with ASTM C1244-93, Standard Test Method for Concrete Sewer Manholes by the Negative Air Pressure (Vacuum) Test. The manhole test results shall be submitted with the gravity sewer leakage test results.

Failure to submit test results within the allotted time period or failure to meet guidelines as set forth in the above conditions could be subject to enforcement proceedings as provided by 327 IAC 3-5-3.

PART II

GENERAL CONDITIONS

1. No significant or material changes in the scope of the plans or construction of this project shall be made unless the following provisions are met:
  - a. Request for permit modification is made 60 days in advance of the proposed significant or material changes in the scope of the plans or construction;
  - b. Submit a detailed statement of such proposed changes;
  - c. Submit revised plans and specifications including a revised design summary; and
  - d. Obtain a revised construction permit from this agency.
2. This permit may be modified, suspended, or revoked for cause including, but not limited to the following:
  - a. Violation of any term or conditions of this permit:
  - b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts.
3. Nothing herein shall be construed as guaranteeing that the proposed sanitary sewer system shall meet standards, limitations or requirements of this or any other agency of state or federal government, as this agency has no direct control over the actual construction and/or operation of the proposed project.



PART III

NOTICE OF RIGHT TO ADMINISTRATIVE REVIEW

Anyone wishing to challenge this construction permit must do so by filing a Petition for Administrative Review with the Office of Environmental Adjudication (OEA) and serving a copy of the petition upon IDEM. The requirements for filing a Petition for Administrative Review are found in IC 4-21.5-3-7, IC 13-15-6-1 and 315 IAC 1-3-2. A summary of the requirements of these laws is provided below.

A Petition for Administrative Review must be filed with the Office of Environmental Adjudication (OEA) within fifteen (15) days of the issuance of this notice (eighteen (18) days if notice was received by U.S. Mail), and a copy must be served upon IDEM. Addresses are:

Director  
Office of Environmental Adjudication  
Indiana Government Center North  
Room 103  
100 North Senate Avenue  
Indianapolis, Indiana 46204

Commissioner  
Indiana Department of Environmental  
Management  
Indiana Government Center North  
Room 1301  
100 North Senate Avenue  
Indianapolis, Indiana 46204

The petition must contain the following information:

1. The name, address and telephone number of each petitioner.
2. A description of each petitioner's interest in the permit.
3. A statement of facts demonstrating that each petitioner is:
  - a. a person to whom the order is directed;
  - b. aggrieved or adversely affected by the permit; or
  - c. entitled to administrative review under any law.
4. The reasons for the request for administrative review.
5. The particular legal issues proposed for review.
6. The alleged environmental concerns or technical deficiencies of the permit.
7. The permit terms and conditions that the petitioner believes would be appropriate and would comply with the law.
8. The identity of any persons represented by the petitioner.
9. The identity of the person against whom administrative review is sought.
10. A copy of the permit that is the basis of the petition.
11. A statement identifying petitioner's attorney or other representative, if any.

Failure to meet the requirements of the law with respect to a Petition for Administrative Review may result in a waiver of the Petitioner's right to seek administrative review of the permit. Examples are:

1. Failure to file a Petition by the applicable deadline;
2. Failure to serve a copy of the Petition upon IDEM when it is filed; or
3. Failure to include the information required by law.

If Petitioner seeks to have a permit stayed during the administrative review, he or she may need to file a Petition for a Stay of Effectiveness. The specific requirements for such a Petition can be found in 315 IAC 1-3-2 and 315 IAC 1-3-2.1.

Pursuant to IC 4-21.5-3-17, OEA will provide all parties with notice of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders disposing of the review of this action. Those who are entitled to notice under IC 4-21.5-3-5(b) and would like to obtain notices of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders disposing of the review of this action without intervening in the proceeding must submit a written request to OEA at the address above.

More information on the review process is available at the website for the Office of Environmental Adjudication at <http://www.in.gov/oea>.

## Michael Ellis

---

**From:** Boyd, Eva K <EBoyd@idem.IN.gov>  
**Sent:** Thursday, January 12, 2023 12:19 PM  
**To:** tkallio@samcoinc.us  
**Cc:** Michael Ellis; Katie Castro Jackson; Eubank, Christopher Todd (Todd) CIV USARMY CELRL (USA)  
**Subject:** 2022-1342-29-EKB-X - Wayne Township Sanitary Sewer

**\*\*WARNING: External email, verify sender before opening attachments or clicking on links.\*\***

Wayne Township Sanitary Sewer  
2022-1342-29-EKB-X

The information submitted regarding the above project has been verified as meeting the conditions of an IDEM Section 401 general Water Quality Certification.

Please let me know if you have any questions.

Thank you,



**Eva Boyd**, Wetland Project Manager  
Wetlands Section, Office of Water Quality  
100 North Senate Avenue, Room 1255  
Indianapolis Indiana 46204  
Phone: (317) 306-8995  
[EBoyd@idem.IN.gov](mailto:EBoyd@idem.IN.gov)

**Storm Water Program:** <http://www.in.gov/idem/stormwater>

**Indiana Storm Water Quality Manual:** <http://www.in.gov/idem/stormwater/2363.htm>

**Section 401 Water Quality Certification & Isolated Wetlands**

**Program:** <http://wetlands.IN.gov>

---

Indiana Department of Environmental Management



**IDEM values your feedback.**

Please take two minutes and complete this brief survey.







## Hamilton County Surveyor's Office

One Hamilton County Square, Suite 188

Noblesville, Indiana 46060

Office: (317) 776-8495 Fax: (317) 776-9628

## Crossing Permit

---

**Permit Number:** C-2022-00074    **Issue Date:** February 23, 2023    **Temporary:** N  
**Drain Name:** LEHR, WILLIAM - JOHN S. MCCARTY ARM    **Project Name:** Wayne Township Sanitary Sewer  
**Project Location:** Southwest corner of 166th & Olio Rd.  
**Crossing Type:** Open Cut    **# of Crossings:** 2    **Engineering Firm:** Wessler Engineering  
**Purpose:** Sanitary Sewer    **Plan Project Id:** 238221-04-003

---

### Applicant:

**Contact:** Tom Kallio, Hamilton Southeastern Util  
317-690-1573

---

### Conditions for Approval:

Call the Hamilton County Surveyor's Office at 317-776-8495 24 hours in advance to schedule inspection of crossing. Do not backfill before inspection.

---

### Parcels:

**Parcel No:** 12-11-11-00-00-004.001

Wayne

A handwritten signature in black ink, likely of the Surveyor, written over a horizontal line.

**Surveyor:**

02/23/2023

**Date:**







## Hamilton County Surveyor's Office

One Hamilton County Square, Suite 188

Noblesville, Indiana 46060

Office: (317) 776-8495 Fax: (317) 776-9628

## Crossing Permit

---

**Permit Number:** C-2022-00073      **Issue Date:** February 23, 2023      **Temporary:** N  
**Drain Name:** LEHR, WILLIAM - BOOTH-ZEIS ARM      **Project Name:** Wayne Township Sanitary Sewer  
**Project Location:** Northeast corner of 166th & Boden Rd.  
**Crossing Type:** Open Cut      **# of Crossings:** 1      **Engineering Firm:** Wessler Engineering  
**Purpose:** Sanitary Sewer      **Plan Project Id:** 238221-04-003

---

### Applicant:

**Contact:** Tom Kallio, Hamilton Southeastern Util  
317-690-1573

---

### Conditions for Approval:

Call the Hamilton County Surveyor's Office at 317-776-8495 24 hours in advance to schedule inspection of crossing. Do not backfill before inspection.

---

### Parcels:

**Parcel No:** 12-11-02-00-00-024.000

Wayne

A handwritten signature in black ink, appearing to read "H. C. W.", written over a horizontal line.

**Surveyor:**

02/23/2023

**Date:**

A large, rectangular, red ink stamp with the word "APPROVED" in bold, capital letters. The stamp has a slightly distressed or textured appearance.







## Hamilton County Surveyor's Office

One Hamilton County Square, Suite 188

Noblesville, Indiana 46060

Office: (317) 776-8495 Fax: (317) 776-9628

## Crossing Permit

**Permit Number:** C-2022-00072

**Issue Date:** March 15, 2023

**Temporary:** N

**Drain Name:** LEHR, WILLIAM - BOOTH-ZEIS ARM

**Project Name:** Wayne Township Sanitary Sewer

**Project Location:** Southwest of 166th & Olio Rd.

**Crossing Type:** Open Cut

**# of Crossings:** 1

**Engineering Firm:** Wessler Engineering

**Purpose:** Sanitary Sewer

**Plan Project Id:** 238221-04-003

### Applicant:

**Contact:** Tom Kallio, HamiltonSoutheasternUtil  
317-690-1573

### Conditions for Approval:

Call the Hamilton County Surveyor's Office at 317-776-8495 24 hours in advance to schedule inspection of crossing. Do not backfill before inspection.

### Parcels:

**Parcel No:** 12-11-10-00-09-002.000

Wayne

**APPROVED**

A handwritten signature in black ink, appearing to read "H. C. Wessler".

03/15/2023

**Surveyor:**

**Date:**





# Variance Application

HAMILTON COUNTY SURVEYORS OFFICE

One Hamilton County Square, Suite 188

Noblesville, Indiana 46060

317-776-8495 fax: 317-776-9628

2023006230 VARIANCE \$0.00

02/28/2023 11:48:09A 4 PGS

Trini Beaver

HAMILTON County Recorder IN

Recorded as Presented



OFFICE OF HAMILTON COUNTY SURVEYOR

Type of Variance: ☐ Deviation from Standards ☒ Deviation from Ordinance  
Standard Number: \_\_\_\_\_ Ordinance & Section: 3-25-02-A

William Lehr Drain

Drain Name: 'Booth Zels Arm (2004 Ext)' Township: Wayne

Project Name: Wayne Twp Sanitary Sewer Parcel Number: 12-11-10-00-09-002.000

Applicant's Name: Hamilton Southeastern Utilities Contact Person: Thomas A. Kallio

Address: 11901 Lakeside Drive, Fishers, IN 46038

Phone: (317) 690-1573 E-mail: tkallio@samcoinc.com

Variance Requested: Pipeline/utility installation, variance for separation requirements beneath a regulated drain.

Reason for Variance: Construction constraints. The proposed sanitary sewer is connecting to the Silo Ridge Sewer. Elevation to the connecting sewer does not provide 10-foot separation at the crossing.

*I hereby request permission to vary from the standards of the Hamilton County Surveyor's Office or an ordinance of Hamilton County. I request to be placed on the agenda of the Hamilton County Drainage Board for consideration of this variance request.*

Thomas A. Kallio Dir. of Eng. & Ops Nov. 18, 2022  
Applicant's Signature Title Date

## \*\*\*FOR BOARD USE ONLY\*\*\*

AGREEMENT WILL BECOME EFFECTIVE UPON APPROVAL. SIGNED THIS 27<sup>th</sup> DAY OF February 2023 BY THE HAMILTON COUNTY DRAINAGE BOARD.

[Signature]  
PRESIDENT OF DRAINAGE BOARD

MEMBER OF DRAINAGE BOARD

[Signature]  
MEMBER OF DRAINAGE BOARD

Permit #: DV-2022-00029 \*\*\*SURVEYOR'S OFFICE USE ONLY\*\*\*  
Check: \_\_\_\_\_ Review Date: \_\_\_\_\_ Hearing Date: \_\_\_\_\_  
Reviewed By: \_\_\_\_\_ Surveyor Reviewed: \_\_\_\_\_





## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

100 N. Senate Avenue • Indianapolis, IN 46204

### Construction Stormwater Permit Summary Report – Sufficiency Letter

March 14, 2023

Permit #: **INRA11318**

**Wayne Township Sanitary Sewer Project**

Hamilton County

#### SITE DETAILS:

Project Name: **Wayne Township Sanitary Sewer Project**

Physical Address: Boden Rd & Pendleton Ave Noblesville, IN 46060

Permit Status: **In Effect**

Permit Issued: **2/24/2023**

Latitude: 40.03564420501254

Permit Expiration: **2/23/2028**

Longitude: -85.93841484130391

MS4: Hamilton County

**Location Description:** Along Boden Road, E. 166th Street, and Olio Road, Hamilton County. Hamilton County/Noblesville IN 46060

#### CONTACTS:

Project Site Owner (Permittee): Thomas Kallio, Hamilton Southeastern Utilities, Inc. (HSEU) Phone: **317-690-1573**

Address: 11901 LAKESIDE DR FISHERS, IN, 46038 Email: tkallio@samcoinc.com

#### PROJECT DETAILS

Project Type: **Other**

Project County(s): Hamilton

Site Ownership Type: **Other**

Total Project

Acreage: **2.5**

Proposed Land

Disturbance (acres): **2.5**

Estimated Impervious

Area (sq ft): **0**

Est Start Date: **3/1/2023**

Est End Date: **3/1/2024**

Discharge Type: **Surface Water**

Storm System:

Receiving Stream: **William Lehr Ditch**

Waterbody 2:

This notice is acceptable to be posted at the project site to verify NPDES permit coverage. If the project is regulated by a Municipal Separate Storm Sewer System (MS4), you are required to post additional information as required by the MS4 that has jurisdiction (i.e. MS4 Permit, etc). NPDES permit coverage does not supersede local requirements that may be required to conduct activities associated with this project.

If the project is regulated by an MS4, direct inquiries to the local MS4.

If this project is outside an MS4 or owned/operated by an MS4, inquiries may be directed to the IDEM Stormwater Program at Stormwat@idem.IN.gov.

**IDEM Watermark**  
**INRA11318 v1.0**  
**Approved**  
**Issued On:02/24/2023**  
**Expires On:02/23/2028**

The Notice of Intent (NOI) submitted online is your certification that the project meets the requirements of the construction stormwater general permit (INRA00000). The NOI is submitted to obtain NPDES permit coverage for the proposed activities at the project site and does not constitute approval to conduct activities that are related to other local, state, or federal permits.

If information is not accurate it is the responsibility of the permittee to update the information. If it is determined that information is inaccurate or deficient you may be requested to address those items.

If the project is within a Municipal Separate Storm Sewer System (MS4) and regulated by the MS4, the Construction/Stormwater Pollution Prevention Plan (SWP3) review was completed by the MS4 or their representative and verification by the MS4 was part of the application submission. All MS4 stormwater approvals must be obtained prior to beginning land disturbance at the project site. Once construction begins, the MS4 has primary responsibility for compliance and enforcement of stormwater regulations within their local jurisdiction.

A National Pollutant Discharge Elimination System (NPDES) authorization number is assigned to each project for which an NOI has been submitted to obtain permit coverage. This number is used as a reference for the project and must be included with any future correspondence submitted to IDEM.

It is important that all activities associated with your project are in compliance with the requirements of the Construction Stormwater General Permit (CSGP) and where applicable all local MS4 ordinances/stormwater permits. In accordance with the CSGP, you are required, at a minimum to implement your SWP3, implement and maintain all stormwater management measures, monitor the effectiveness of the measures and take corrective actions until the project is complete and terminated. To maintain compliance, it may be necessary to modify the SWP3 as work progresses.

Upon completion of the project, you are required to terminate permit coverage. Criteria for termination eligibility can be found in Section 6.0 of the CSGP. If this project is permitted through an MS4, there may be local requirements/approvals that must be met prior to filing a notice of termination with IDEM. If an MS4 has adopted a requirement for termination, you are responsible to comply with all local provisions prior to submitting the Notice of Termination to IDEM. Failure to meet local MS4 requirements may constitute a violation of the local MS4 ordinance.

- **Construction Stormwater General Permit:** Accessed at <http://www.idem.IN.gov/2331.htm>
- **IDEM Regulatory ePortal:** Permittees are required to utilize this service to manage their IDEM Construction Stormwater General Permit activities (Renewals, Amendments, and Terminations). The service may be accessed at <https://stormwater.idem.in.gov>.

Questions regarding this notification may be directed to the program email account at [Stormwat@idem.IN.gov](mailto:Stormwat@idem.IN.gov).

### **Notice of Right to Administrative Review**

If you wish to challenge this authorization you must file a Petition for Administrative Review with the Office of Environmental Adjudication (OEA) within fifteen (15) days of the issuance of this notice (eighteen (18) days if you received this notice by U.S. Mail), and a copy must be served upon IDEM and all persons to whom the authorization is directed. The requirements for filing a Petition for Administrative Review are found in IC 4-21.5-3-7, IC 13-15-6-1, IC 13-15-6-2 and 315 IAC 1-3-2. Addresses for OEA and IDEM are:

Director  
Office of Environmental Adjudication  
Indiana Government Center North  
Room N103  
100 North Senate Avenue  
Indianapolis, Indiana 46204

Commissioner  
Indiana Department of Environmental Management  
Indiana Government Center North  
Room 1301  
100 North Senate Avenue  
Indianapolis, Indiana 46204

If you are entitled to notice under IC 4-21.5-3-5(b) and would like to obtain notices of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders disposing of the review of this action without intervening in the proceeding you must submit a written request to OEA at the address above.

More information on the review process is available at the OEA website at <http://www.in.gov/oea> and the IDEM website at <https://www.in.gov/idem/legal/2329.htm>.



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS, LOUISVILLE DISTRICT  
INDIANAPOLIS REGULATORY OFFICE  
8902 OTIS AVENUE, SUITE S106B  
INDIANAPOLIS, IN 46216

January 9, 2023

Regulatory Division  
North Branch  
ID No. LRL-2022-01053-cte

Mr. Thomas Kallio  
Hamilton Southeastern Utilities  
11901 Lakeside Drive  
Fishers, IN 46038

Dear Mr. Kallio:

This is regarding electronic correspondence dated December 2, 2022, from Wessler Engineering concerning the installation of a sanitary sewer line across William Lehr Drain-Booth Zeis Arm, located at Latitude: 40.035508, Longitude: -85.938327, in Hamilton County, Indiana. We have reviewed the submitted information pursuant to Section 404 of the Clean Water Act.

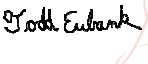
We have determined that the proposed work is authorized under the provisions of 33 CFR 330 Nationwide Permit (NWP) No. 58, Utility Line Activities for Water and Other Substances, as published in the Federal Register March 15, 2021. Under the provisions of this authorization, you must comply with the enclosed Terms and General Conditions for NWP No. 58, and the following Special Condition(s):

1. The Permittee shall comply with the enclosed General Water Quality Certification (WQC) and conditions for NWP No. 58 issued by the State 401 Water Quality Certification (WQC) from the Indiana Department of Environmental Management (IDEM), on December 14, 2020, which are incorporated herein by reference.

This verification is valid until March 14, 2026. The enclosed Compliance Certification should be signed and returned within 30 days of completion of the project.

If you have any questions, please contact me directly at 812-530-7374 or christopher.t.eubank@usace.army.mil. Any correspondence on this matter should refer to our ID Number LRL-2022-01053-cte.

Sincerely,

 2023.01.09  
15:27:23 -05'00'

Todd Eubank  
Biologist, North Branch  
Regulatory Division

Enclosures  
Copy Furnished: IDEM  
Hamilton Southeastern Utilities (Kallio)

**Compliance Certification**

**Permit Number:** LRL-2022-01053-cte

**Name of Permittee:** Hamilton Southeastern Utilities

**Agent:** Wessler Engineering

**Date of Issuance:** January 10, 2023

Within 30 days of completion of the authorized activity or implementation of any required compensatory mitigation (whichever occurs later), sign this certification and return it to the following address:

USACE - Louisville District  
Indianapolis Regulatory Office  
8902 Otis Avenue, Suite S106B  
Indianapolis, IN 46216

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit has been completed in accordance with the terms and conditions of the said permit and required mitigation (if applicable) was completed in accordance with the permit conditions.

---

Signature for Permittee  
(Thomas Kallio)

---

Date





# 2021 Nationwide Permit Summary

US Army Corps  
of Engineers  
Louisville District ®

Issued: March 15, 2021

Expires: March 14, 2026

## **No. 58. Utility Line Activities for Water and Other Substances**

(NWP Final Rule, 86 FR 2744)

Activities required for the construction, maintenance, repair, and removal of utility lines for water and other substances, excluding oil, natural gas, products derived from oil or natural gas, and electricity. Oil or natural gas pipeline activities or electric utility line and telecommunications activities may be authorized by NWPs 12 or 57, respectively. This NWP also authorizes associated utility line facilities in waters of the United States, provided the activity does not result in the loss of greater than 1/2-acre of waters of the United States for each single and complete project.

*Utility lines:* This NWP authorizes discharges of dredged or fill material into waters of the United States and structures or work in navigable waters for crossings of those waters associated with the construction, maintenance, or repair of utility lines for water and other substances, including outfall and intake structures. There must be no change in pre-construction contours of waters of the United States. A “utility line” is defined as any pipe or pipeline for the transportation of any gaseous, liquid, liquescent, or slurry substance, for any purpose that is not oil, natural gas, or petrochemicals. Examples of activities authorized by this NWP include utility lines that convey water, sewage, stormwater, wastewater, brine, irrigation water, and industrial products that are not petrochemicals. The term “utility line” does not include activities that drain a water of the United States, such as drainage tile or french drains, but it does apply to pipes conveying drainage from another area.

Material resulting from trench excavation may be temporarily sidecast into waters of the United States for no more than three months, provided the material is not placed

in such a manner that it is dispersed by currents or other forces. The district engineer may extend the period of temporary side casting for no more than a total of 180 days, where appropriate. In wetlands, the top 6 to 12 inches of the trench should normally be backfilled with topsoil from the trench. The trench cannot be constructed or backfilled in such a manner as to drain waters of the United States (e.g., backfilling with extensive gravel layers, creating a french drain effect). Any exposed slopes and stream banks must be stabilized immediately upon completion of the utility line crossing of each waterbody.

*Utility line substations:* This NWP authorizes the construction, maintenance, or expansion of substation facilities associated with a utility line in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not result in the loss of greater than 1/2-acre of waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters of the United States to construct, maintain, or expand substation facilities.

*Foundations for above-ground utility lines:* This NWP authorizes the construction or maintenance of foundations for above-ground utility lines in all waters of the United States, provided the foundations are the minimum size necessary.

*Access roads:* This NWP authorizes the construction of access roads for the construction and maintenance of utility lines, including utility line substations, in non-tidal waters of the United States, provided the activity, in combination with all other activities included in one single and complete project, does not cause the loss of greater than 1/2-acre of non-tidal

waters of the United States. This NWP does not authorize discharges of dredged or fill material into non-tidal wetlands adjacent to tidal waters for access roads. Access roads must be the minimum width necessary (see Note 2, below). Access roads must be constructed so that the length of the road minimizes any adverse effects on waters of the United States and must be as near as possible to pre-construction contours and elevations (e.g., at grade corduroy roads or geotextile/gravel roads). Access roads constructed above pre-construction contours and elevations in waters of the United States must be properly bridged or culverted to maintain surface flows.

This NWP may authorize utility lines in or affecting navigable waters of the United States even if there is no associated discharge of dredged or fill material (see 33 CFR part 322). Overhead utility lines constructed over section 10 waters and utility lines that are routed in or under section 10 waters without a discharge of dredged or fill material require a section 10 permit.

This NWP authorizes, to the extent that Department of the Army authorization is required, temporary structures, fills, and work necessary for the remediation of inadvertent returns of drilling fluids to waters of the United States through sub-soil fissures or fractures that might occur during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines. These remediation activities must be done as soon as practicable, to restore the affected waterbody. District engineers may add special conditions to this NWP to require a remediation plan for addressing inadvertent returns of drilling fluids to waters of the United States during horizontal directional drilling activities conducted for the purpose of installing or replacing utility lines.

This NWP also authorizes temporary structures, fills, and work, including the use of temporary mats, necessary to conduct the utility line activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges of dredged or fill material, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. After construction, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

**Notification:** The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) a section 10 permit is required; or (2) the discharge will result in the loss of greater than 1/10-acre of waters of the United States. (See general condition 32.) (Authorities: Sections 10 and 404)

**Note 1:** Where the utility line is constructed, installed, or maintained in navigable waters of the United States (i.e., section 10 waters) within the coastal United States, the Great Lakes, and United States territories, a copy of the NWP verification will be sent by the Corps to the National Oceanic and Atmospheric Administration (NOAA), National Ocean Service (NOS), for charting the utility line to protect navigation.

**Note 2:** For utility line activities crossing a single waterbody more than one time at separate and distant locations, or multiple waterbodies at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. Utility line activities must comply with 33 CFR 330.6(d).

**Note 3:** Access roads used for both construction and maintenance may be authorized, provided they meet the terms and conditions of this NWP. Access roads used solely for construction of the utility line must be removed upon completion of

the work, in accordance with the requirements for temporary fills.

**Note 4:** Pipes or pipelines used to transport gaseous, liquid, liquescent, or slurry substances over navigable waters of the United States are considered to be bridges, not utility lines, and may require a permit from the U.S. Coast Guard pursuant to the General Bridge Act of 1946. However, any discharges of dredged or fill material into waters of the United States associated with such pipelines will require a section 404 permit (see NWP 15).

**Note 5:** This NWP authorizes utility line maintenance and repair activities that do not qualify for the Clean Water Act section 404(f) exemption for maintenance of currently serviceable fills or fill structures.

**Note 6:** For activities that require pre-construction notification, the PCN must include any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings that require Department of the Army authorization but do not require pre-construction notification (see paragraph (b)(4) of general condition 32). The district engineer will evaluate the PCN in accordance with Section D, "District Engineer's Decision." The district engineer may require mitigation to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see general condition 23).

#### **Nationwide Permit General Conditions**

**Note:** To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification

and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. **Navigation.** (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his or her authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. **Aquatic Life Movements.** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species. If a bottomless culvert cannot be used, then the crossing should be designed

and constructed to minimize adverse effects to aquatic life movements.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization, storm water management activities, and temporary and permanent road crossings, except as provided below. The activity must be

constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow, or during low tides.

13. Removal of Temporary Structures and Fills. Temporary structures must be removed, to the maximum extent practicable, after their use has been discontinued. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used

more than once for the same single and complete project.

16. Wild and Scenic Rivers. (a) No NWP activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status.

(b) If a proposed NWP activity will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the permittee must submit a pre-construction notification (see general condition 32). The district engineer will coordinate the PCN with the Federal agency with direct management responsibility for that river. Permittees shall not begin the NWP activity until notified by the district engineer that the Federal agency with direct management responsibility for that river has determined in writing that the proposed NWP activity will not adversely affect the Wild and Scenic River designation or study status.

(c) Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service). Information on these rivers is also available at: <http://www.rivers.gov/>.

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed

for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify designated critical habitat or critical habitat proposed for such designation. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless ESA section 7 consultation addressing the consequences of the proposed activity on listed species or critical habitat has been completed. See 50 CFR 402.02 for the definition of "effects of the action" for the purposes of ESA section 7 consultation, as well as 50 CFR 402.17, which provides further explanation under ESA section 7 regarding "activities that are reasonably certain to occur" and "consequences caused by the proposed action."

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA (see 33 CFR 330.4(f)(1)). If pre-construction notification is required for the proposed activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation has not been submitted, additional ESA section 7 consultation may be necessary for the activity and the respective federal agency would be responsible for fulfilling its obligation under section 7 of the ESA.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat or critical habitat proposed for such designation, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation), the pre-construction notification must include

the name(s) of the endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or that utilize the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. For activities where the non-Federal applicant has identified listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) that might be affected or is in the vicinity of the activity, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification that the proposed activity will have "no effect" on listed species (or species proposed for listing or designated critical habitat (or critical habitat proposed for such designation), or until ESA section 7 consultation or conference has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation or conference with the FWS or NMFS the district engineer may add species-specific permit conditions to the NWPs.

(e) Authorization of an activity by an NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the FWS or the NMFS, the Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it

actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) If the non-federal permittee has a valid ESA section 10(a)(1)(B) incidental take permit with an approved Habitat Conservation Plan for a project or a group of projects that includes the proposed NWP activity, the non-federal applicant should provide a copy of that ESA section 10(a)(1)(B) permit with the PCN required by paragraph (c) of this general condition. The district engineer will coordinate with the agency that issued the ESA section 10(a)(1)(B) permit to determine whether the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation conducted for the ESA section 10(a)(1)(B) permit. If that coordination results in concurrence from the agency that the proposed NWP activity and the associated incidental take were considered in the internal ESA section 7 consultation for the ESA section 10(a)(1)(B) permit, the district engineer does not need to conduct a separate ESA section 7 consultation for the proposed NWP activity. The district engineer will notify the non-federal applicant within 45 days of receipt of a complete pre-construction notification whether the ESA section 10(a)(1)(B) permit covers the proposed NWP activity or whether additional ESA section 7 consultation is required.

(g) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.nmfs.noaa.gov/pr/species/esa/> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for ensuring that an action authorized by an NWP complies with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. The permittee is responsible for contacting the appropriate local office of the U.S. Fish and Wildlife Service to determine what measures, if any, are

necessary or appropriate to reduce adverse effects to migratory birds or eagles, including whether "incidental take" permits are necessary and available under the Migratory Bird Treaty Act or Bald and Golden Eagle Protection Act for a particular activity.

20. Historic Properties. (a) No activity is authorized under any NWP which may have the potential to cause effects to properties listed, or eligible for listing, in the National Register of Historic Places until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)(1)). If pre-construction notification is required for the proposed NWP activity, the Federal permittee must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will verify that the appropriate documentation has been submitted. If the appropriate documentation is not submitted, then additional consultation under section 106 may be necessary. The respective federal agency is responsible for fulfilling its obligation to comply with section 106.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the NWP activity might have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties might have the potential to be affected by the proposed NWP activity or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of, or potential for, the presence of historic properties can be sought from the State Historic Preservation Officer, Tribal Historic Preservation Officer, or designated tribal

representative, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts commensurate with potential impacts, which may include background research, consultation, oral history interviews, sample field investigation, and/or field survey. Based on the information submitted in the PCN and these identification efforts, the district engineer shall determine whether the proposed NWP activity has the potential to cause effects on the historic properties. Section 106 consultation is not required when the district engineer determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR 800.3(a)). Section 106 consultation is required when the district engineer determines that the activity has the potential to cause effects on historic properties. The district engineer will conduct consultation with consulting parties identified under 36 CFR 800.2(c) when he or she makes any of the following effect determinations for the purposes of section 106 of the NHPA: no historic properties affected, no adverse effect, or adverse effect.

(d) Where the non-Federal applicant has identified historic properties on which the proposed NWP activity might have the potential to cause effects and has so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects to historic properties or that NHPA section 106 consultation has been completed. For non-federal permittees, the district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA section 106 consultation is required. If NHPA section 106 consultation is required, the district engineer will notify the non-Federal applicant that he or she cannot begin the activity until section 106 consultation is completed. If the non-Federal applicant has not heard back from

the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (54 U.S.C. 306113) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. Permittees that discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by an NWP, they must immediately notify the district engineer of what they have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal, and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine

monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, 52, 57 and 58 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, 38, and 54, notification is required in accordance with general condition 32, for any activity proposed by permittees in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after she or he determines that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the individual and cumulative adverse environmental effects are no more than minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects.

(d) Compensatory mitigation at a minimum one-for-one ratio will be required for all losses of stream bed that exceed 3/100-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse environmental effects of the proposed activity are no more than minimal, and provides an activity-specific waiver of this requirement. This compensatory mitigation requirement may be satisfied through the restoration or enhancement of riparian areas next to streams in accordance with paragraph (e) of this general condition. For losses of stream bed of 3/100-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in only minimal adverse environmental effects. Compensatory mitigation for losses of streams should be provided, if practicable, through stream rehabilitation, enhancement, or preservation, since streams are difficult-to-replace resources (see 33 CFR 332.3(e)(3)).

(e) Compensatory mitigation plans for NWP activities in or near streams or other open waters will normally include a requirement for the restoration or enhancement, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, the restoration or maintenance/protection of riparian areas

may be the only compensatory mitigation required. If restoring riparian areas involves planting vegetation, only native species should be planted. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to restore or maintain/protect a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or maintaining/protecting a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of minimization or compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(f) Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in no more than minimal adverse environmental effects. For the NWPs, the preferred mechanism for providing compensatory mitigation is mitigation bank credits or in-lieu fee program credits (see 33 CFR 332.3(b)(2) and (3)). However, if an appropriate number and type of mitigation bank or in-lieu credits are not available at the time the PCN is submitted to the district engineer, the district engineer may approve the use of permittee-responsible mitigation.

(2) The amount of compensatory mitigation required by the district engineer must be

sufficient to ensure that the authorized activity results in no more than minimal individual and cumulative adverse environmental effects (see 33 CFR 330.1(e)(3)). (See also 33 CFR 332.3(f).)

(3) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, aquatic resource restoration should be the first compensatory mitigation option considered for permittee-responsible mitigation.

(4) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) through (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)). If permittee-responsible mitigation is the proposed option, and the proposed compensatory mitigation site is located on land in which another federal agency holds an easement, the district engineer will coordinate with that federal agency to determine if proposed compensatory mitigation project is compatible with the terms of the easement.

(5) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan needs to address only the baseline conditions at the impact site and the number of credits to be provided (see 33 CFR 332.4(c)(1)(ii)).

(6) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan (see 33 CFR 332.4(c)(1)(ii)).

(g) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any NWP activity resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that an NWP activity already meeting the established acreage limits also satisfies the no more than minimal impact requirement for the NWPs.

(h) Permittees may propose the use of mitigation banks, in-lieu fee programs, or permittee-responsible mitigation. When developing a compensatory mitigation proposal, the permittee must consider appropriate and practicable options consistent with the framework at 33 CFR 332.3(b). For activities resulting in the loss of marine or estuarine resources, permittee-responsible mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(i) Where certain functions and services of waters of the United States are permanently adversely affected by a regulated activity, such as discharges of dredged or fill material into waters of the United States that will convert a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse environmental effects of the activity to the no more than minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state or federal, dam safety

criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. (a) Where the certifying authority (state, authorized tribe, or EPA, as appropriate) has not previously certified compliance of an NWP with CWA section 401, a CWA section 401 water quality certification for the proposed discharge must be obtained or waived (see 33 CFR 330.4(c)). If the permittee cannot comply with all of the conditions of a water quality certification previously issued by certifying authority for the issuance of the NWP, then the permittee must obtain a water quality certification or waiver for the proposed discharge in order for the activity to be authorized by an NWP.

(b) If the NWP activity requires pre-construction notification and the certifying authority has not previously certified compliance of an NWP with CWA section 401, the proposed discharge is not authorized by an NWP until water quality certification is obtained or waived. If the certifying authority issues a water quality certification for the proposed discharge, the permittee must submit a copy of the certification to the district engineer. The discharge is not authorized by an NWP until the district engineer has notified the permittee that the water quality certification requirement has been satisfied by the issuance of a water quality certification or a waiver.

(c) The district engineer or certifying authority may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). If the permittee cannot comply with all of the conditions of

a coastal zone management consistency concurrence previously issued by the state, then the permittee must obtain an individual coastal zone management consistency concurrence or presumption of concurrence in order for the activity to be authorized by an NWP. The district engineer or a state may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its CWA section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is authorized, subject to the following restrictions:

(a) If only one of the NWPs used to authorize the single and complete project has a specified acreage limit, the acreage loss of waters of the United States cannot exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

(b) If one or more of the NWPs used to authorize the single and complete project has specified acreage limits, the acreage loss of waters of the United States authorized by those NWPs cannot exceed their respective specified acreage limits. For example, if a commercial development is constructed under NWP 39, and the single and complete project includes the filling of an upland ditch authorized by NWP 46, the maximum acreage loss of waters of the United States for the commercial development under NWP 39 cannot exceed 1/2-acre, and the total acreage loss of waters of United States due

to the NWP 39 and 46 activities cannot exceed 1 acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

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(Transferee)

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(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and implementation of any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized activity was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the activity and mitigation.

The completed certification document must be submitted to the district engineer within 30 days of completion of the authorized activity or the implementation of any required compensatory mitigation, whichever occurs later.

31. Activities Affecting Structures or Works Built by the United States. If an NWP activity also requires review by, or permission from, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers (USACE) federally authorized Civil Works project (a “USACE project”), the prospective permittee must submit a pre-construction notification. See paragraph (b)(10) of general condition 32. An activity that requires section 408 permission and/or review is not authorized by an NWP until the appropriate Corps office issues the section 408 permission or completes its review to alter, occupy, or use the USACE project, and the district engineer issues a written NWP verification.

32. Pre-Construction Notification. (a) *Timing.* Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the



information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or are in the vicinity of the activity, or to notify the Corps pursuant to general condition 20 that the activity might have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or section 106 of the National Historic Preservation Act (see 33 CFR 330.4(g)) has been completed. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) *Contents of Pre-Construction Notification:* The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed activity;

(3) Identify the specific NWP or NWP(s) the prospective permittee wants to use to authorize the proposed activity;

(4) (i) A description of the proposed activity; the activity's purpose; direct and indirect adverse environmental effects the activity would cause, including the anticipated amount of loss of wetlands, other special aquatic sites, and other waters expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; a description of any proposed mitigation measures intended to reduce the adverse environmental effects caused by the proposed activity; and any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity, including other separate and distant crossings for linear projects that require Department of the Army authorization but do not require pre-construction notification. The description of the proposed activity and any proposed mitigation measures should be sufficiently detailed to allow the district engineer to determine that the adverse environmental effects of the activity will be no more than minimal and to determine the need for compensatory mitigation or other mitigation measures.

(ii) For linear projects where one or more single and complete crossings require pre-construction notification, the PCN must include the quantity of anticipated losses of wetlands, other special aquatic sites, and other waters for each single and complete crossing of those wetlands, other special aquatic sites, and other waters (including those single and complete crossings authorized by an NWP but do not require PCNs). This information will be used by the district engineer to evaluate the cumulative adverse environmental effects of the proposed linear project, and does not

change those non-PCN NWP activities into NWP PCNs.

(iii) Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the activity and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(5) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial and intermittent streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many wetlands, other special aquatic sites, and other waters. Furthermore, the 45-day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(6) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse environmental effects are no more than minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(7) For non-federal permittees, if any listed species (or species proposed for listing) or designated critical habitat (or critical habitat proposed for such designation) might be affected or is in the vicinity of the activity, or if the activity is located in designated critical habitat (or critical habitat proposed for such designation), the PCN must include the name(s) of those endangered or threatened species (or species proposed for listing) that might be affected by the proposed activity or utilize

the designated critical habitat (or critical habitat proposed for such designation) that might be affected by the proposed activity. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with the Endangered Species Act;

(8) For non-federal permittees, if the NWP activity might have the potential to cause effects to a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, the PCN must state which historic property might have the potential to be affected by the proposed activity or include a vicinity map indicating the location of the historic property. For NWP activities that require pre-construction notification, Federal permittees must provide documentation demonstrating compliance with section 106 of the National Historic Preservation Act;

(9) For an activity that will occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, the PCN must identify the Wild and Scenic River or the “study river” (see general condition 16); and

(10) For an NWP activity that requires permission from, or review by, the Corps pursuant to 33 U.S.C. 408 because it will alter or temporarily or permanently occupy or use a U.S. Army Corps of Engineers federally authorized civil works project, the pre-construction notification must include a statement confirming that the project proponent has submitted a written request for section 408 permission from, or review by, the Corps office having jurisdiction over that USACE project.

*(c) Form of Pre-Construction Notification:* The nationwide permit pre-construction notification form (Form ENG 6082) should be used for NWP PCNs. A letter containing the required information may also be used. Applicants may provide electronic files of PCNs and supporting materials if the district engineer has established tools and procedures for electronic submittals.

*(d) Agency Coordination:* (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity’s compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the activity’s adverse environmental effects so that they are no more than minimal.

(2) Agency coordination is required for: (i) all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States; (ii) NWP 13 activities in excess of 500 linear feet, fills greater than one cubic yard per running foot, or involve discharges of dredged or fill material into special aquatic sites; and (iii) NWP 54 activities in excess of 500 linear feet, or that extend into the waterbody more than 30 feet from the mean low water line in tidal waters or the ordinary high water mark in the Great Lakes.

(3) When agency coordination is required, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (FWS, state natural resource or water quality agency, EPA, and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to notify the district engineer via telephone, facsimile transmission, or e-mail that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse environmental effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity’s compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure that the net adverse environmental effects of the proposed activity are no more than minimal. The district engineer will provide no response to the resource agency, except as provided

below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies’ concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(4) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(5) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

## **2021 District Engineer’s Decision**

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. If a project proponent requests authorization by a specific NWP, the district engineer should issue the NWP verification for that activity if it meets the terms and conditions of that NWP, unless he or she determines, after considering mitigation, that the proposed activity will result in more than minimal individual and cumulative adverse effects on the aquatic environment and other aspects of the public interest and exercises discretionary authority to require an individual permit for the proposed activity. For a linear project, this determination will include an evaluation of the single and complete crossings of waters of the United States that require PCNs to determine whether they

individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings of waters of the United States authorized by an NWP. If an applicant requests a waiver of an applicable limit, as provided for in NWPs 13, 36, or 54, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in only minimal individual and cumulative adverse environmental effects.

2. When making minimal adverse environmental effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. He or she will also consider the cumulative adverse environmental effects caused by activities authorized by an NWP and whether those cumulative adverse environmental effects are no more than minimal. The district engineer will also consider site specific factors, such as the environmental setting in the vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional or condition assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse environmental effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

3. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands or 3/100-acre of stream bed, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for NWP activities with smaller impacts, or for impacts to other types of

waters. The district engineer will consider any proposed compensatory mitigation or other mitigation measures the applicant has included in the proposal in determining whether the net adverse environmental effects of the proposed activity are no more than minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse environmental effects are no more than minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure that the NWP activity results in no more than minimal adverse environmental effects. If the net adverse environmental effects of the NWP activity (after consideration of the mitigation proposal) are determined by the district engineer to be no more than minimal, the district engineer will provide a timely written response to the applicant. The response will state that the NWP activity can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

4. If the district engineer determines that the adverse environmental effects of the proposed activity are more than minimal, then the district engineer will notify the applicant either: (a) that the activity does not qualify for authorization under the

NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the activity is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal; or (c) that the activity is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse environmental effects, the activity will be authorized within the 45-day PCN period (unless additional time is required to comply with general conditions 18, 20, and/or 31), with activity-specific conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation plan or a requirement that the applicant submit a mitigation plan that would reduce the adverse environmental effects so that they are no more than minimal. When compensatory mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

## **2021 Further Information**

1. District engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project (see general condition 31).

## **2021 Nationwide Permit Definitions**

**Best management practices (BMPs):** Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

**Compensatory mitigation:** The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

**Currently serviceable:** Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

**Direct effects:** Effects that are caused by the activity and occur at the same time and place.

**Discharge:** The term “discharge” means any discharge of dredged or fill material into waters of the United States.

**Ecological reference:** A model used to plan and design an aquatic habitat and riparian area restoration, enhancement, or establishment activity under NWP 27. An ecological reference may be based on the structure, functions, and dynamics of an aquatic habitat type or a riparian area type that currently exists in the region where the proposed NWP 27 activity is located. Alternatively, an ecological reference may be based on a conceptual model for the aquatic habitat type or riparian area type to be restored, enhanced, or established as a result of the proposed NWP 27 activity. An ecological reference takes into account the range of variation of the aquatic habitat type or riparian area type in the region.

**Enhancement:** The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource

function(s). Enhancement does not result in a gain in aquatic resource area.

**Establishment (creation):** The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

**High Tide Line:** The line of intersection of the land with the water’s surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

**Historic Property:** Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

**Independent utility:** A test to determine what constitutes a single and complete non-linear project in the Corps Regulatory Program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other

phases were not built can be considered as separate single and complete projects with independent utility.

**Indirect effects:** Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

**Loss of waters of the United States:** Waters of the United States that are permanently adversely affected by filling, flooding excavation, or drainage because of the regulated activity. The loss of stream bed includes the acres of stream bed that are permanently adversely affected by filling or excavation because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters or wetlands for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities that do not require Department of the Army authorization, such as activities eligible for exemptions under section 404(f) of the Clean Water Act, are not considered when calculating the loss of waters of the United States.

**Navigable waters:** Waters subject to section 10 of the Rivers and Harbors Act of 1899. These waters are defined at 33 CFR part 329.

**Non-tidal wetland:** A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

**Open water:** For purposes of the NWP, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of flowing or standing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of “open waters” include rivers, streams, lakes, and ponds.

**Ordinary High Water Mark:** The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

**Perennial stream:** A perennial stream has surface water flowing continuously year-round during a typical year.

**Practicable:** Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

**Pre-construction notification:** A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

**Preservation:** The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources

through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

**Re-establishment:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

**Rehabilitation:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

**Restoration:** The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

**Riffle and pool complex:** Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a coarse substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

**Riparian areas:** Riparian areas are lands next to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of

ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

**Shellfish seeding:** The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

**Single and complete linear project:** A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term “single and complete project” is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

**Single and complete non-linear project:** For non-linear projects, the term “single and complete project” is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of “independent utility”). Single and complete non-linear projects may not be “piecemealed” to avoid the limits in an NWP authorization.

**Stormwater management:** Stormwater management is the mechanism for controlling stormwater runoff for the

purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities:

Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized jurisdictional stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a jurisdictional wetland that is inundated by tidal waters. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line.

Tribal lands: Any lands title to which is either: 1) held in trust by the United States for the benefit of any Indian tribe or individual; or 2) held by any Indian tribe or individual subject to restrictions by the United States against alienation.

Tribal rights: Those rights legally accruing to a tribe or tribes by virtue of inherent sovereign authority, unextinguished aboriginal title, treaty, statute, judicial decisions, executive order or agreement, and that give rise to legally enforceable remedies.

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWP, a waterbody is a "water of the United States." If a wetland is adjacent to a waterbody determined to be a water of the United States, that waterbody and any adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)).



## INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We Protect Hoosiers and Our Environment.*

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Eric J. Holcomb  
Governor

Bruno Pigott  
Commissioner

**VIA ELECTRONIC MAIL:**

December 14, 2020

Mr. Michael Ricketts  
U.S. Army Corps of Engineers  
Louisville District  
P.O. Box 59  
Louisville, KY 40201-0059

Dear Mr. Ricketts:

Re: Section 401 Water Quality Certification  
Project: 2020 Reissuance of Nationwide  
Permits

The Office of Water Quality has reviewed the Federal Register Notice dated September 15, 2020, announcing the proposed reissuance of the Nationwide Permits (NWP's). We have also reviewed your correspondence dated October 16, 2020, stating the Federal Register Notice is the U.S. Army Corps of Engineers (Corps) application for water quality certification under Section 401 of the Clean Water Act for those NWP's that will result in a discharge of dredged and/or fill material into waters of the United States within the State of Indiana.

In electronic mail correspondence dated October 21, 2020, the Louisville District Corps of Engineers notified IDEM that the previously suspended NWP's 13, 14, 18, 29, 36, 39, 40, 41, 42, 43, and 44 would no longer be suspended and be in full force and effect in the state of Indiana.

Under Section 401 of the Clean Water Act (CWA), a federal agency may not issue a permit or license to conduct any activity that may result in any discharge into waters of the United States unless a Section 401 Water Quality Certification (WQC) is issued, verifying compliance with water quality requirements. In Indiana, the Indiana Department of Environmental Management (IDEM) is the certifying authority and certification decisions are based on Indiana's water quality standards (WQS) found at 327 IAC 2 [http://iac.iga.in.gov/iac/iac\\_title?iact=327](http://iac.iga.in.gov/iac/iac_title?iact=327)

Per 327 IAC 2.1, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Mitigation of dredge and fill impacts to Indiana's water resources is required to maintain water quality. To ensure WQS are met, IDEM conditions the NWP's as outlined in this 401 WQC. Additional information about the conditions is found in Attachment #3.



A State that Works

It is the judgment of this office that NWPs 12, 21, 29, 39, 40, 42, 44, 50, 51, 52, 57, and 58 will comply with applicable provisions of state law (including 327 IAC 2) and Sections 301, 302, 303, 306, and 307 of the Clean Water Act subject to the conditions set forth in this Certification. Therefore, subject to the following conditions, the Indiana Department of Environmental Management (IDEM) hereby grants Section 401 Water Quality Certification (WQC) for these NWPs. Any changes in language or scope of any NWP not detailed in the aforementioned Federal Register Notice, or as modified by the conditions below, are not authorized by this certification.

It is the judgement of this office that NWP 43 is denied in the state of Indiana and will require a site-specific Individual Section 401 Water Quality Certification. The denial is based on the agency's inability to determine if these activities will comply with Indiana's water quality standards found at 327 IAC 2.

It is the judgement of this office that NWP's 48, 55, and 56 are activities that do not occur in Indiana. Because of this no Section 401 Water Quality Certification is required.

*Section 401 Water Quality Certification decisions for NWPs in effect for the State of Indiana-2021*

<b>NWP</b>	<b>Activity</b>	<b>Decision</b>	<b>Conditions</b>
12	Oil or Natural Gas Pipeline Activities	Approve	General & Specific
21	Surface Coal Mining Activities	Approve	None
29	Residential Developments	Approve	General & Specific
39	Commercial and Institutional Developments	Approve	General & Specific
40	Agricultural Activities	Approve	General & Specific
42	Recreational Facilities	Approve	General & Specific
43	Stormwater Management Facilities	Deny	N/A
44	Mining Activities	Approve	General & Specific
50	Underground Coal Mining Activities	Approve	None
51	Land-Based Renewable Energy Generation Facilities	Approve	General & Specific
52	Water-Based Renewable Energy Generation Pilot Projects	Approve	General & Specific
57	Electric Utility Line and Telecommunication Activities	Approve	General & Specific
58	Utility Line Activities for Water and Other Substances	Approve	General & Specific

**GENERAL CONDITIONS:**

The following conditions shall apply to any permittee whose project qualifies under any NWP approved by this certification. All activities that do not meet these conditions require an individual Water Quality Certification from IDEM and are not authorized under this WQC.



- (1) The permittee must submit a complete Notification Form for any NWP that requires notification by this WQC. For those NWPs, the permittee must submit notification at least 30 days prior to the impacts or receive verification from the IDEM Office of Water Quality stating the proposed project meets the terms and conditions of this Section 401 WQC. The notification submitted to the IDEM Office of Water Quality must at a minimum provide applicant information, project location, existing project site conditions, project impacts, and a proposed plan. Failure to submit all required information will result in the project being considered out-of-scope and not authorized.
- (2) The permittee shall deposit any dredged material in a contained upland disposal area to prevent sediment run-off to any waterbody. An upland disposal area is defined as an area of dry land that does not contain any wetlands as defined by the 1987 Army Corps of Engineers Wetland Delineation Manual and the applicable Regional Supplements or any streams<sup>1</sup>.
- (3) The permittee shall install run-off and sediment control measures prior to any land disturbance to manage stormwater and to minimize sediment from leaving the project site or entering a waterbody. All operations must phase project activities to minimize the impact of sediment to the receiving waterbody(ies). Erosion and sediment control measures shall be implemented using an appropriate order of construction (sequencing) relative to the land-disturbing activities. Wetlands and/or waterbodies that are adjacent to land-disturbing activities must be protected with appropriate sediment control measures. As work progresses, all areas void of protective cover shall be re-vegetated or stabilized as described in the plan. Areas that are to be re-vegetated must utilize mulch that is anchored or, under more severe conditions, erosion control blankets. Erosion control blankets or other armament shall be used for all areas associated with concentrated flow. Standards and specifications for stormwater management, including erosion and sediment control can be obtained in the Indiana Stormwater Quality Manual or similar guidance documents.
- (4) The permittee shall allow the commissioner or an authorized representative of the commissioner (including an authorized contractor), upon the presentation of credentials to conduct the following activities:
  - (a) enter upon the permittee's property;
  - (b) have access to and copy at reasonable times any records that must be kept under the conditions of these permits or this certification;

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<sup>1</sup> Stream, for the purpose of this Water Quality Certification, means conveyance channels that have a defined bed and bank and an ordinary high water mark. This term includes natural streams, relocated streams, channelized streams, artificial channels, encapsulated channels and ditches.

- (c) inspect, at reasonable times, any monitoring or operational equipment or method; collection, treatment, pollution management or discharge facility or device; practices required by this certification; and any mitigation site; and
  - (d) sample or monitor any discharge of pollutants or any mitigation site.
- (5) This WQC does not authorize activities that result in a permanent secondary effect to waters of the U.S. (e.g., dredging, excavation, damming, creation of in-channel ponds) that when combined with the primary effect exceeds the area and length thresholds specified by this WQC.
- (6) This WQC does not:
  - (a) authorize impacts or activities outside the scope of this certification;
  - (b) authorize any injury to permittees or private property or invasion of other private rights, or any infringement of federal, state or local laws or regulations;
  - (c) convey any property rights of any sort, or any exclusive privileges;
  - (d) preempt any duty to obtain federal, state or local permits or authorizations required by law for the execution of the project or related activities; or
  - (e) authorize changes in the plan design detailed in the notice or application.
- (7) This WQC does not authorize point source discharges of pollutants other than clean fill<sup>2</sup> and uncontaminated dredged material.
- (8) This WQC does not authorize activities associated with the establishment of a mitigation bank.
- (9) This WQC does not authorize activities that will permanently change the sinuosity, flow path, velocity, the cross-sectional area under the Ordinary High Water Mark (OHWM), or the slope of a stream.
- (10) This WQC does not authorize activities on or in any of the State's waters that have been designated as salmonid waters (*see Attachment #1*), tributaries of salmonid waters within a two river mile reach upstream from the confluence with the salmonid water unless the activity meets one or more of the following conditions:
  - (a) Bank stabilization activities that:
    - (1) Are completed using bioengineered methods, riprap, and/or glacial stone, that conforms to the existing shoreline and does not project out into the channel, and
    - (2) Do not create a wall.

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<sup>2</sup> Clean fill, for the purpose of this Water Quality Certification, means uncontaminated rocks, bricks, concrete without rebar, road demolition waste materials other than asphalt, or earthen fill.

- (3) Do not include the installation of cofferdams, causeways, temporary access roads, or dewatering activities.
  - (b) Encapsulations that:
    - (1) Are installed to span the width of the ordinary high water mark (OHWM), and are embedded in accordance with Specific Condition 3(f)7 below, and
    - (2) Do not include the installation of cofferdams, causeways, temporary access roads, or dewatering activities.
    - (3) Are installed outside the salmonid fish spawning dates of March 15 through June 15 and from July 15 through November 30.
  - (c) Work is conducted outside the salmonid fish spawning dates of March 15 through June 15 and from July 15 through November 30.
- (11) This WQC does not authorize activities on or in any of the State's waters that have been designated as Outstanding State and/or National Resource Waters (see *Attachment #1*).
- (12) This WQC does not authorize activities on or in any critical wetland or critical special aquatic sites (see *Attachment #2*).
- (13) This WQC does not authorize activities that have a cumulative permanent impact of more than twenty-five hundredths (0.25) acre of waters of the U.S. Note: Activities that have a cumulative permanent impact to waters of the U.S. of more than one-tenth (0.10) acre must comply with the mitigation requirements listed in **General Condition 15** of this WQC.
- (14) This WQC does not authorize activities that will have a cumulative permanent impact of more than 500 linear feet of waters of the U.S. Note: Activities that have a cumulative permanent impact to waters of the U.S. of more than 300 linear feet must comply with the mitigation requirements listed in **General Condition 16** of this WQC.
- (15) Cumulative permanent impacts to waters of the U.S. greater than 0.10 acre up to and including 0.25 acre are authorized provided the following conditions are met:
  - (a) The impacts comply with all conditions of this Section 401 Water Quality Certification.
  - (b) Mitigation is provided for all impacts.
  - (c) Sufficient mitigation credits are available in the service area where the impacts occur. Note: Credits may not be available at all times. Failure to purchase credits before impacting water resources will require an individual 401 WQC and may result in additional mitigation requirements to compensate for temporal loss of water resource functions.
  - (d) Mitigation credits are purchased from an approved compensatory mitigation bank or through the Indiana Stream and Wetland Mitigation Program (in-lieu

- fee (ILF). Permittee responsible mitigation is not authorized under this 401 WQC.
- (e) The amount of mitigation credit purchased is 1:1 for streams, open water, and farmed wetlands, 2:1 for emergent wetland, 3:1 for scrub shrub wetland, 4:1 for forested wetland.
  - (f) The credits are purchased in the bank or ILF service area where the impacts occur.
  - (g) Proof of a finalized credit purchase is provided to IDEM:
    - (1) Before the impacts occur. Note: Banks and ILF programs may require 30 days or more to finalize a purchase.
    - (2) Within one (1) year of IDEM's receipt of the Notification form.
- (16) Cumulative permanent impacts to waters of the U.S. greater than 300 linear feet up to and including 500 linear feet are authorized provided the following conditions are met:
- (a) The impacts comply with all conditions of this Section 401 Water Quality Certification.
  - (b) Mitigation is provided for all impacts.
  - (c) Sufficient mitigation credits are available in the service area where the impacts occur. Note: Credits may not be available at all times. Failure to purchase credits before impacting water resources will require an individual 401 WQC and may result in additional mitigation requirements to compensate for temporal loss of water resource functions.
  - (d) Mitigation credits are purchased from an approved compensatory mitigation bank or through the Indiana Stream and Wetland Mitigation Program (in-lieu fee (ILF)). Permittee responsible mitigation is not authorized under this 401 WQC.
  - (e) The amount of mitigation credit purchased is 1:1 for streams.
  - (f) The credits are purchased in the bank or ILF service area where the impacts occur.
  - (g) Proof of a finalized credit purchase is provided to IDEM:
    - (1) Before the impacts occur. Note: Banks and ILF programs may require 30 days or more to finalize a purchase.
    - (2) Within one (1) year of IDEM's receipt of the Notification form.
- (17) The permittee must demonstrate, via letter from the Indiana Department of Natural Resources (IDNR), Division of Nature Preserves, that no state endangered, threatened, or rare species are documented on a permanent or seasonal basis within ½-mile radius of the proposed project site. If you have listed species, you must provide documentation from the IDNR that states your project will not impact the listed species. If IDNR recommends seasonal work restrictions or other avoidance and minimization measures, those restrictions or avoidance and minimization measures must be incorporated into your project plans and implemented during construction.

- (18) This WQC allows the use of multiple NWP's on the same project as long as the cumulative effect for the entire project is less than the specified impact thresholds in **General Conditions 13 & 14** or as specified in the **Specific Conditions** below. If a project exceeds the specified impact thresholds, the activities are not authorized by this WQC and an individual WQC is required. IDEM may certify several federal permits or licenses under one individual WQC.
- (19) Upon request, the applicant must submit additional information necessary to IDEM to determine if a project will qualify under the terms and conditions of this certification. If the applicant fails to provide any information requested by IDEM, then the project is not authorized.
- (20) All stream pump-around activities must be conducted in a manner that does not cause erosion at the outlet. Cofferdam dewatering activities must use filter bags, upland sediment basins/traps, or a combination of other appropriate sediment control measures to minimize the discharge of sediment-laden water into waters of the U.S. All sediment control measures must be installed and maintained in good working order. For stream pump-around activities, the in-stream material used to construct the dam must be constructed of non-sediment producing sources. Examples include sand bags and sheet pile walls.
- (21) The permittee must ensure all bridges and stream encapsulations meet the following requirements:
  - (a) The encapsulation must not result in the relocation of a stream. Minimal stream relocations may be authorized, provide the encapsulation:
    - (1) Results in a net benefit to the aquatic ecosystem and stream morphology;
    - (2) Does not reduce the cross-sectional area under the OHWM;
    - (3) Is accompanied by an acceptable restoration/stabilization plan; and
    - (4) Does not accelerate stream instability as demonstrated in the plans by a qualified engineer. Examples of instability include, but are not limited to, stream bank erosion, channel enlargement, channel incision, degradation, aggradation, meander migration (down-valley and lateral accretion), avulsion and base-level-shifts.
  - (b) New bridge piers, piles, shafts, or other support structures and their associated scour protection measures must not significantly reduce the cross-sectional area of the stream and be located outside the low flow channel of the stream.
  - (c) Permanent stream encapsulations must:
    - (1) Be installed for the purpose of constructing a road or pedestrian crossing.
    - (2) Allow the passage of aquatic organisms in the waterbody.
    - (3) Not exceed 150 linear feet of cumulative encapsulation.

- (4) Have at least one (1) opening with a cross-sectional area twenty percent (20%) larger than the area under the OHWM of the stream immediately upstream and downstream of the encapsulation. If multiple encapsulations are proposed, then the largest culvert meeting the cross-sectional area requirement must be positioned in the channel to align with the existing flow of the channel.
- (5) Have a streambed slope within the encapsulation that matches the slope of the bed both immediately upstream and downstream.
- (6) Not create or accelerate stream instability as demonstrated in the plans by a qualified engineer. Examples of stream instability include, but are not limited to head cutting, stream bank erosion, channel enlargement, channel incision, degradation, aggradation, meander migration, (down-valley and lateral accretion), avulsion, and base-level shifts.
- (7) Either have no bottom (e.g., three-sided culvert) or are embedded (sumped)<sup>3</sup> into the stream channel based on the following structure sizes and substrate types:
  - (a) Stream bed of sand
    - Structure <four (4) feet wide: Six (6) inch sump
    - Structure four (4) feet wide to 12 feet wide: 12 inch sump
    - Structure 12 feet to 20 feet wide: 18 inch sump
  - (b) Stream bed of other soil or unconsolidated till<sup>4</sup>
    - Structure < four (4) feet wide: Three (3) inch sump
    - Structure four (4) feet wide to 12 feet wide: Six (6) inch sump
    - Structure 12 feet wide to 20 feet wide: 12 inch sump
  - (c) Stream bed of bedrock or consolidated till<sup>5</sup>
    - Inside elevation of the structure bottom shall be a minimum of three (3) inches below the surface of the bedrock or consolidated till.
- (8) Meet the following requirements when installed in a perennial stream with an OHWM width of 12 feet or greater:
  - (a) Be sumped to a greater depth if needed for the design of the streambed inside the encapsulation.
  - (b) Have a width equal to or wider than the existing OHWM.
  - (c) Have a natural stream bottom. If the stream bottom will be disturbed during construction (e.g. four sided box culverts, pipe culverts, or because of footer work for three sided culverts), natural stream substrate must be placed in the encapsulation in accordance with the Federal Highway Administration Hydraulic Engineering Circular No. 26: Culvert Design for Aquatic Organism Passage.

<sup>3</sup> Sump, for the purpose of this Water Quality Certification, means the inside elevation of the bottom of the structure is placed at a specified depth below the grade of the stream.

<sup>4</sup> Other soil and unconsolidated till includes substrates that are more cohesive and less mobile (e.g clay, silt, gravel, and cobble substrates).

<sup>5</sup> Consolidated till includes dense hard materials such as hardpan.

- (d) Have a low flow channel constructed or restored through the encapsulation. The low flow channel shall have the same width, depth, and side slope as the natural upstream and downstream low flow channel. If the upstream and downstream channels are highly degraded, a V-shaped channel with 5:1 slopes within the structure may be substituted.
- (22) The permittee must ensure all placement of riprap or other bank stabilization materials are designed and installed flush with the upstream and downstream bank and stream channel/lake bed elevations and grades.
- (23) Notification to IDEM is required for any temporary impacts that exceed 0.10 acre for any proposed NWP. For emergency repair situations notification may take place after the emergency repair has begun.
- (24) After construction, temporary fill must be removed in their entirety and the affected areas returned to the pre-construction elevations. The areas affected by temporary fill must be revegetated, as appropriate.
- (25) The permittee will submit an application for an individual certification if IDEM determines the project would have more than minimal impacts to water quality, either viewed individually or collectively with other projects that may affect the same waterbody.

#### **NATIONWIDE PERMIT # 12, OIL AND NATURAL GAS PIPELINE ACTIVITIES, SPECIFIC CONDITIONS**

The following conditions apply to NWP #12. All activities that do not meet these conditions require an individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above unless the only regulated activity is the construction of a stream or wetland crossing where the crossing is constructed using directional boring or other related techniques that do not involve the placement of fill materials within a regulated waterbody. Other forms of crossings, such as trenching, pipeline armoring, etc., require notification to IDEM;
- (2) Notification to IDEM is required for any pipeline project that involves crossing wetlands. The applicant will be required to restore temporarily impacted wetlands to pre-construction grade, contours, and vegetative conditions. A copy of the restoration plan must be submitted with the Notification Form;
- (3) The activity must not permanently affect more than twenty-five hundredths (0.25) of an acre of waters of the United States. See **General Condition 13** of this WQC for additional impact and mitigation requirements. Conversions of forested and scrub shrub wetlands to emergent wetlands is a permanent effect and should be considered in the overall impact calculation;

- (4) The activity must not permanently change the sinuosity, flow path, velocity, cross sectional area under the bank full elevation or the slope of a stream;
- (5) The activity must not permanently affect more than 500 linear feet of streambank or lake shoreline. See **General Condition 14** of this WQC for additional impact and mitigation requirements;
- (6) The activity must not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above;
- (7) For maintenance activities involving the placement of riprap or other bank stabilization materials, the stabilization material must be installed flush with the upstream and downstream bank and stream channel/lake bed elevations and grades;
- (8) For in-stream utility line stabilization activities, the use of articulated or other matting is only authorized if the utility is only partially (<10%) exposed. Fully exposed utility stabilization activities are not authorized by this WQC;
- (9) Remediation of inadvertent returns of drilling fluids into waters of the U.S require the following actions:
  - (a) Immediately implement containment and clean up measures.
  - (b) Report the spill to IDEM's 24 Hour Emergency Spill Line at (888) 233-7745.
  - (c) Contact the IDEM Wetlands & Stormwater Section at (317) 233-8488.
  - (d) Submit the containment, clean up and restoration plan to IDEM for review and approval.
- (10) If a utility line is placed beneath the bed of a river or stream, the following conditions must be met:
  - (a) Cover of at least three (3) feet, measured perpendicularly to the line, between the lowest point of the stream bed and the top of the utility line or its encasement, whichever is higher, if the bed is composed of unconsolidated materials; and
  - (b) Cover of at least one (1) foot, measured perpendicularly to the line, between the lowest point of the bed and the top of the utility or its encasement, whichever is higher, if the bed is composed of consolidated materials.

## **NATIONWIDE PERMIT #29, RESIDENTIAL DEVELOPMENTS, SPECIFIC CONDITIONS**

The following conditions apply to NWP #29. All activities that do not meet these conditions require an Individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above;
- (2) This WQC does not authorize stream relocations associated with residential developments or their attendant features;



- (3) This WQC does not authorize discharges for the construction of stormwater management facilities;
- (4) Permanent stream encapsulations associated with residential developments must comply with **General Condition 21**;
- (5) The installation of utilities associated with residential developments must comply with the **Specific Conditions of NWP 12, NWP 57, and NWP 58** of this WQC;
- (6) The activity must not permanently affect more than twenty-five hundredths (0.25) of an acre of waters of the United States. See **General Condition 13** of this WQC for additional impact and mitigation requirements;
- (7) The activity must not permanently affect more than 500 linear feet of streambank or lake shoreline. See **General Condition 14** of this WQC for additional impact and mitigation requirements;
- (8) The placement of riprap or other bank stabilization material must be installed flush with the upstream and downstream bank and stream channel/lake bed elevations and grades; and
- (9) The activity must not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above.

#### **NATIONWIDE PERMIT # 39, COMMERCIAL AND INSTITUTIONAL DEVELOPEMNTS, SPECIFIC CONDITIONS**

The following conditions apply to NWP #39. All activities that do not meet these conditions require an individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above;
- (2) This WQC does not authorize stream relocations associated with commercial or institutional developments or their attendant features;
- (3) This WQC does not authorize discharges for the construction of stormwater management facilities;
- (4) Permanent stream encapsulations associated with commercial and institutional developments must comply with **General Condition 21**;
- (5) The installation of utilities associated with commercial or institutional developments must comply with the **Specific Conditions of NWP 12, NWP 57, and NWP 58** of this WQC;
- (6) The activity must not permanently affect more than twenty-five hundredths (0.25) of an acre of waters of the United States. See **General Condition 13** of this WQC for additional impact and mitigation requirements;
- (7) The activity must not permanently affect more than 500 linear feet of streambank or lake shoreline. See **General Condition 14** of this WQC for additional impact and mitigation requirements;

- (8) The placement of riprap or other bank stabilization material must be installed flush with the upstream and downstream bank and stream channel/lake bed elevations and grades; and
- (9) The activity must not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above.

#### **NATIONWIDE PERMIT #40, AGRICULTURAL ACTIVITIES, SPECIFIC CONDITIONS**

The following conditions apply to NWP #40. All activities that do not meet these conditions require an individual WQC from the IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above;
- (2) This WQC does not authorize stream relocations associated with activities eligible for this NWP;
- (3) This WQC does not authorize the construction of drainage ditches in a wetland;
- (4) This WQC does not authorize the construction of levees when the levee results in a loss of hydrology to a wetland;
- (5) The WQC only authorizes the installation solid field tile within a wetland;
- (6) The installation of tile riser pipes must be installed outside the boundary of a wetland or the inlet holes to the riser pipe must be set at an elevation to ensure it does not drain the wetland;
- (7) The activity must not permanently affect more than twenty-five hundredths (0.25) of an acre of waters of the United States. See **General Condition 13** of this WQC for additional impact and mitigation requirements; and
- (8) The activity must not result in a permanent secondary effect to waters of the United States (e.g dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above.

#### **NATIONWIDE PERMIT #42, RECREATION FACILITIES, SPECIFIC CONDITIONS**

The following conditions apply to NWP #42. All activities that do not meet these conditions require an individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above;
- (2) This WQC does not authorize stream relocations associated with activities eligible for this NWP;
- (3) This WQC does not authorize discharges for the construction of stormwater management facilities;

- (4) Permanent stream encapsulations associated with recreational facilities must comply with **General Condition 21**;
- (5) The installation of utilities associated with recreational developments must comply with the **Specific Conditions of NWP 12, NWP 57, and NWP 58** of this WQC;
- (6) Trails, bike paths, and golf cart paths constructed in wetlands must be constructed at grade, or have culverts installed to ensure hydrologic connectivity between wetlands;
- (7) The activity must not permanently affect more than twenty-five hundredths (0.25) of an acre of waters of the United States. See **General Condition 13** of this WQC for additional impact and mitigation requirements;
- (8) The activity must not permanently affect more than 500 linear feet of streambank or lake shoreline. See **General Condition 14** of this WQC for additional impact and mitigation requirements;
- (9) The placement of riprap or other bank stabilization material must be installed flush with the upstream and downstream bank and stream channel/lake bed elevations and grades; and
- (10) The activity must not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above.

#### **NATIONWIDE PERMIT #44, MINING ACTIVITIES, SPECIFIC CONDITIONS**

The following conditions applies to NWP #44. All activities that do not meet these conditions require an Individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above;
- (2) This WQC does not authorize discharges for the construction of stormwater management facilities;
- (3) This WQC does not authorize discharges associated with outfalls authorized by a National Pollutant Discharge Elimination System Permit;
- (4) Permanent stream encapsulations associated with mining activities must comply with **General Condition 21**;
- (5) The activity must not permanently affect more than twenty-five hundredths (0.25) of an acre of waters of the United States. See **General Condition 13** of this WQC for additional impact and mitigation requirements;
- (6) The activity must not permanently affect more than 500 linear feet of streambank or lake shoreline. See **General Condition 14** of this WQC for additional impact and mitigation requirements;
- (7) Dewatering activities must use filter bags, upland sediment basins/traps, or a combination of other appropriate sediment control measures to minimize the discharge of sediment-laden water into waters of the U.S.; and

- (8) The activity will not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above.

#### **NATIONWIDE PERMIT #51, LAND-BASED RENEWABLE ENERGY GENERATION FACILITIES, SPECIFIC CONDITIONS**

The following conditions apply to NWP #51. All activities that do not meet these conditions require an individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above;
- (2) The activity must not permanently affect more than one-tenth (0.1) of an acre of waters of the United States;
- (3) The activity must not permanently change the sinuosity, flow path, velocity, cross sectional area under the bank full elevation or the slope of a stream;
- (4) The activity must not permanently affect more than 300 linear feet of streambank or lake shoreline; and
- (5) The activity must not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above.

#### **NATIONWIDE PERMIT #52, WATER-BASED RENEWABLE ENERGY GENERATION PILOT PROJECTS, SPECIFIC CONDITIONS**

The following conditions apply to NWP #52. All activities that do not meet these conditions require an individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above;
- (2) The activity must not permanently affect more than one-tenth (0.1) of an acre of waters of the United States;
- (3) The activity must not permanently change the sinuosity, flow path, velocity, cross sectional area under the bank full elevation or the slope of a stream;
- (4) The activity must not permanently affect more than 300 linear feet of streambank or lake shoreline; and
- (5) The activity must not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above.

## **NATIONWIDE PERMIT 57, ELECTRIC UTILITY LINE AND TELECOMMUNICATIONS ACTIVITIES, SPECIFIC CONDITIONS**

The following conditions apply to NWP C. All activities that do not meet these conditions require an individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above unless the only regulated activity is the construction of a stream or wetland crossing where the crossing is constructed using directional boring or other related techniques that do not involve the placement of fill materials within a regulated waterbody. Other forms of crossings, such as trenching, pipeline armoring, etc., require notification to IDEM;
- (2) Notification to IDEM is required for any utility or telecommunication activities that involve crossing wetlands. The applicant will be required to restore temporarily impacted wetlands to pre-construction grade, contours, and vegetative conditions. A copy of the restoration plan must be submitted with the Notification Form;
- (3) The activity must not permanently affect more than twenty-five hundredths (0.25) of an acre of waters of the United States. See **General Condition 13** of this WQC for additional impact and mitigation requirements. Conversions of forested and scrub shrub wetlands to emergent wetlands is a permanent effect and should be considered in the overall impact calculation;
- (4) The activity must not permanently change the sinuosity, flow path, velocity, cross sectional area under the bank full elevation or the slope of a stream;
- (5) The activity must not permanently affect more than 500 linear feet of streambank or lake shoreline. See **General Condition 14** of this WQC for additional impact and mitigation requirements;
- (6) The activity must not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above;
- (7) For maintenance activities involving the placement of riprap or other bank stabilization materials, the stabilization material must be installed flush with the upstream and downstream bank and stream channel/lake bed elevations and grades;
- (8) For in-stream utility and telecommunication line stabilization activities, the use of articulated or other matting is only authorized if the utility is only partially (<10%) exposed. Fully exposed utility stabilization activities are not authorized by this WQC;
- (9) Remediation of inadvertent returns of drilling fluids into waters of the U.S require the following actions:
  - (a) Immediately implement containment and clean up measures.
  - (b) Report the spill to IDEM's 24 Hour Emergency Spill Line at (888) 233-7745.
  - (c) Contact IDEM Wetlands & Stormwater Section at (317) 233-8488.

- (d) Submit the containment, clean up and restoration plan to IDEM for review and approval.
- (10) If a utility or telecommunication line is placed beneath the bed of a river or stream, the following conditions must be met:
  - (a) Cover of at least three (3) feet, measured perpendicularly to the line, between the lowest point of the stream bed and the top of the utility line or its encasement, whichever is higher, if the bed is composed of unconsolidated materials; and
  - (b) Cover of at least one (1) foot, measured perpendicularly to the line, between the lowest point of the bed and the top of the utility or its encasement, whichever is higher, if the bed is composed of consolidated materials.

### **NATIONWIDE PERMIT 58, UTILITY LINE ACTIVITIES FOR WATER AND OTHER SUBSTANCES, SPECIFIC CONDITIONS**

The following conditions apply to NWP D. All activities that do not meet these conditions require an individual WQC from IDEM and are not authorized under this WQC.

- (1) The permittee must notify IDEM in accordance with **General Condition 1** listed above unless the only regulated activity is the construction of a stream or wetland crossing where the crossing is constructed using directional boring or other related techniques that do not involve the placement of fill materials within a regulated waterbody. Other forms of crossings, such as trenching, pipeline armoring, etc., require notification to IDEM;
- (2) Notification to IDEM is required for any utility or telecommunication activities that involve crossing wetlands. The applicant will be required to restore temporarily impacted wetlands to preconstruction grade, contours, and vegetative conditions. A copy of the restoration plan must be submitted with the Notification Form;
- (3) The activity must not permanently affect more than twenty-five hundredths (0.25) of an acre of waters of the United States. See **General Condition 13** of this WQC for additional impact and mitigation requirements. Conversions of forested and scrub shrub wetlands to emergent wetlands is a permanent effect and should be considered in the overall impact calculation;
- (4) The activity must not permanently change the sinuosity, flow path, velocity, cross sectional area under the bank full elevation or the slope of a stream;
- (5) The activity must not permanently affect more than 500 linear feet of streambank or lake shoreline. See **General Condition 14** of this WQC for additional impact and mitigation requirements;
- (6) The activity must not result in a permanent secondary effect to waters of the United States (e.g. dredging, excavation, damming, creation of in-channel ponds) that, when combined with the primary effect, exceeds the area and length thresholds specified above;

- (7) For maintenance activities involving the placement of riprap or other bank stabilization materials, the stabilization material must be installed flush with the upstream and downstream bank and stream channel/lake bed elevations and grades;
- (8) For in-stream utility and telecommunication line stabilization activities, the use of articulated or other matting is only authorized if the utility is only partially (<10%) exposed. Fully exposed utility stabilization activities are not authorized by this WQC;
- (9) Remediation of inadvertent returns of drilling fluids into waters of the U.S require the following actions:
  - (a) Immediately implement containment and clean up measures.
  - (b) Report the spill to IDEM's 24 Hour Emergency Spill Line at (888) 233-7745.
  - (c) Contact the IDEM Wetlands & Stormwater Section at (317) 233-8488.
  - (d) Submit the containment, clean up and restoration plan to IDEM for review and approval.
- (10) If a utility or telecommunication line is placed beneath the bed of a river or stream, the following conditions must be met:
  - (a) Cover of at least three (3) feet, measured perpendicularly to the line, between the lowest point of the stream bed and the top of the utility line or its encasement, whichever is higher, if the bed is composed of unconsolidated materials; and
  - (b) Cover of at least one (1) foot, measured perpendicularly to the line, between the lowest point of the bed and the top of the utility or its encasement, whichever is higher, if the bed is composed of consolidated materials.

Any changes in the language or scope of any NWP not detailed in the Federal Register notice dated September 15, 2020, are not authorized by this certification. In the absence of another action by IDEM that would alter the termination date of this certification, this certification shall expire with the expiration of the federal permits it certifies.

This certification does not relieve the recipient of the responsibility of obtaining any other permits or authorizations that may be required for this project or related activities from IDEM or any other agency or person. You may wish to contact the Indiana Department of Natural Resources at 317-232-4160 (toll free at 877-928-3755) concerning the possible requirement of natural freshwater lake or floodway permits. In addition, you may wish to contact IDEM's stormwater program at 317-233-1864 ([Stormwat@idem.IN.gov](mailto:Stormwat@idem.IN.gov)) concerning the possible need for construction stormwater permit coverage if you plan to disturb one (1) acre or more of land area.

Failure to comply with the terms and conditions of this Section 401 Water Quality Certification may result in enforcement action against you. You may also be subject to criminal liability if it is determined that the Section 401 Water Quality Certification was violated willfully or negligently.

### **Notice of Right to Administrative Review**

If you wish to challenge this permit, you must file a Petition for Administrative Review with the Office of Environmental Adjudication (OEA), and serve a copy of the petition upon IDEM. The requirements for filing a Petition for Administrative Review are found in IC 4-21.5-3-7, IC 13-15-6-1 and 315 IAC 1-3-2. A summary of the requirements of these laws is provided below.

A Petition for Administrative Review must be filed with the Office of Environmental Adjudication (OEA) within fifteen (15) days of the issuance of this notice (eighteen (18) days if you received this notice by U.S. Mail), and a copy must be served upon IDEM.

Addresses are:

Director	Commissioner
Office of Environmental Adjudication	Indiana Dept. of Environmental Management
Indiana Government Center North	Indiana Government Center North
100 North Senate Avenue, Room N103	100 North Senate Avenue, Room 1301
Indianapolis, Indiana 46204	Indianapolis, Indiana 46204

The petition must contain the following information:

- (a) The name, address and telephone number of each petitioner.
- (b) A description of each petitioner's interest in the permit.
- (c) A statement of facts demonstrating that each petitioner is:
  - (1) a person to whom the order is directed;
  - (2) aggrieved or adversely affected by the permit; or
  - (3) entitled to administrative review under any law.
- (d) The reasons for the request for administrative review.
- (e) The particular legal issues proposed for review.
- (f) The alleged environmental concerns or technical deficiencies of the denial.
- (g) The permit terms and conditions that the petitioner believes would be appropriate and would comply with the law.
- (h) The identity of any persons represented by the petitioner.
- (i) The identity of the person against whom administrative review is sought.
- (j) A copy of the permit that is the basis of the petition.
- (k) A statement identifying petitioner's attorney or other representative, if any.

Failure to meet the requirements of the law with respect to a Petition for Administrative Review may result in a waiver of your right to seek administrative review of the permit. Examples are:

- (a) Failure to file a Petition by the applicable deadline;
- (b) Failure to serve a copy of the Petition upon IDEM when it is filed; or
- (c) Failure to include the information required by law.



If you seek to have a permit stayed during the administrative review, you may need to file a Petition for a Stay of Effectiveness. The specific requirements for such a Petition can be found in 315 IAC 1-3-2 and 315 IAC 1-3-2.1.

Pursuant to IC 4-21.5-3-17, OEA will provide all parties with notice of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders disposing of the review of this action. If you are entitled to notice under IC 4-21.5-3-5(b) and would like to obtain notices of any pre-hearing conferences, preliminary hearings, hearings, stays, or orders disposing of the review of this action without intervening in the proceeding you must submit a written request to OEA at the address above.

If you have procedural or scheduling questions regarding your Petition for Administrative Review, additional information on the review process is available at the website of the Office of Environmental Adjudication at <http://www.in.gov/oea>.

If you have any questions about this certification, please contact Jason Randolph, Project Manager, of my staff by phone at 317-233-0467, or by e-mail at [jrandolp@idem.in.gov](mailto:jrandolp@idem.in.gov).

Sincerely,



Martha Clark Mettler  
Assistant Commissioner  
Office of Water Quality

cc: Kimberly Simpson, USACE-Louisville  
Aaron Damrill, USACE-Detroit, Michiana Branch  
Paul Leffler, USACE-Chicago  
Scott Pruitt, USFWS  
Matt Buffington, IDNR  
Randy Braun, IDEM

## **Attachment 1: Indiana Waters Designated for Special Protection**

### **Designated Salmonid Waters:**

**[327 IAC 2-1.5-5(a)(3)]**

- Trail Creek and its tributaries downstream to Lake Michigan, LaPorte County
- East Branch of the Little Calumet River and its tributaries downstream to Lake Michigan via Burns Ditch, Porter and LaPorte Counties
- Salt Creek above (upstream of) its confluence with the Little Calumet River, Porter County
- Kintzele Ditch (Black Ditch) from Beverly Drive downstream to Lake Michigan, Porter County
- The Galena River and its tributaries, LaPorte County
- The St. Joseph River and its tributaries in St. Joseph County from the Twin Branch Dam in Mishawaka downstream to the Indiana/Michigan state line, St. Joseph County
- The Indiana portion of the open waters of Lake Michigan
- Those waters designated by the Indiana Department of Natural Resources (IDNR) for put-and-take trout fishing<sup>1</sup>

### **Waterbodies which have been designated all or partially as Outstanding State Resource Waters: [327 IAC 2-1-11(b), 327 IAC 2-1.3-3(d), and 327 IAC 2-1.5-19(b)]**

- Big Pine Creek in Warren County downstream of the State Road 55 bridge near the town of Pine Village to its confluence with the Wabash River
- Mud Pine Creek in Warren County from the bridge on the County Road between Brisco and Rainsville to its confluence with Big Pine Creek
- Fall Creek in Warren County from the old C.R. 119 bridge in the NW quarter of Section 21, Township 22N, Range 8W downstream to its confluence with Big Pine Creek
- Indian Creek in Montgomery County from the County Road 650 West bridge downstream to its confluence with Sugar Creek
- Clifty Creek in Montgomery County within the boundaries of Pine Hills Nature Preserve
- Bear Creek in Fountain County from the bridge on County Road 450 North to its confluence with the Wabash River
- Rattlesnake Creek in Fountain County from the bridge on County Road 450 North to its confluence with Bear Creek
- The small tributary to Bear Creek in Fountain County within the Portland Arch Nature Preserve which enters Bear Creek at the sharpest bend and has formed the small natural bridge called Portland Arch
- Blue River from the confluence of the West and Middle Forks of the Blue River in Washington County downstream to its confluence with the Ohio River
- The South Fork of Blue River in Washington County from the Horner's Chapel Road bridge downstream to its confluence with Blue River.
- Lost River and all surface and underground tributaries upstream from the Orangeville Rise (T2N, R1W, Section 6) and the Rise of Lost River (T2N, R1W, Section 7) and the mainstem of the Lost River from the Orangeville Rise downstream to its confluence with the East Fork of White River.
- The Blue River in Washington, Crawford, and Harrison Counties, from river mile 57.0 to river mile 11.5
- The North Fork of Wildcat Creek in Carroll and Tippecanoe Counties, from river mile 43.11 to river mile 4.82

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<sup>1</sup> Available on the internet at: <http://www.in.gov/dnr/fishwild/5457.htm>

- The South Fork of Wildcat Creek in Tippecanoe County, from river mile 10.21 to river mile 0.00
- Cedar Creek in Allen and DeKalb counties, from river mile 13.7 to its confluence with the St. Joseph River
- The Indiana portion of the open waters of Lake Michigan
- All waters incorporated in the Indiana Dunes National Lakeshore.

## **Attachment 2: Critical Wetlands and Critical Special Aquatic Sites**

In the interest of maintaining consistency with the State Regulated (Isolated) Wetland program established at 327 IAC 17, IDEM defines Critical Wetlands and Critical Special Aquatic Sites to be synonymous with Rare and Ecologically Important Wetland Types under 327 IAC 17-1-3(3)(B):

- **Acid bog:** Acid bog is an acidic wetland of kettle holes in glacial terrain. Bogs can be graminoid (*Carex* spp. and *Sphagnum* spp.) or low shrub (*Chamaedaphne calyculata* and *Betula pumila*). The graminoid bog can be a floating, quaking mat. The soils in acid bogs are saturated and acidic peat. Bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. When a sphagnum mat floats, it rises and falls with the water table. Acid bogs can be found in northern Indiana.
- **Acid seep:** Acid seep is a bog-like wetland typically found in unglaciated hill regions. This community is a small groundwater-fed wetland located primarily in upland terrain. A thin layer of muck may lie over a mineral substrate. The soil reaction is acid. This seep community is characterized by flowing water during at least part of the year. Acid seeps are located primarily in southern Indiana.
- **Circumneutral bog:** Circumneutral bog is a bog-like wetland that receives groundwater. Circumneutral bogs can be a mosaic of tall shrub bog, graminoid bog, and other communities. The graminoid bog often occurs on a quaking or floating mat. Although a few bogs occur in unglaciated regions, most are found in glacial ice-block depressions. The soils in circumneutral bogs are usually peat, or other low nutrient organic substrates, which are saturated and circumneutral to slightly acid. Circumneutral bogs have non-flowing or very slow flowing water. The water level fluctuates seasonally. Circumneutral bogs are usually found in northern Indiana.
- **Circumneutral seep:** The circumneutral seep (or seep-spring) is a groundwater-fed wetland on organic soil. It is primarily herbaceous. Species typically include marsh marigold (*Caltha palustris*) and skunk cabbage (*Symplocarpus foetidus*) with a scattered tree canopy. Circumneutral seep is typically situated on or near the base of a slope. The soil is typically circumneutral muck. This seep community is characterized by slowly flowing water during at least part of the year. Circumneutral seeps can be found scattered throughout Indiana.
- **Cypress swamp:** Bald cypress swamps are seasonally to permanently inundated wetlands found in depressions and sloughs of large bottomlands associated with the Wabash/Ohio River system. Poorly to very poorly drained soils characterize this environment. Bald cypress (*Taxodium distichum*) is present, and green ash (*Fraxinus pennsylvanica*), silver maple (*Acer saccharinum*), and overcup oak (*Quercus lyrata*) are also usually present. This community is restricted to extreme southwest Indiana.
- **Dune and swale:** Dune and swale is an ecological system consisting of a mixture of upland (black oak sand savanna, dry to mesic sand prairie) and wetland (pond, panne, sedge meadow, marsh, wet prairie) natural communities. These communities occur in long, narrow, linear complexes, with the dry communities occupying sand ridges, and the wet communities occurring in the intervening swales. Black oak (*Quercus velutina*), paper birch (*Betula papyrifera*), jack pine (*Pinus banksiana*), and prairie vegetation typically occur on the ridges, and sedges, reeds, and marsh/aquatic vegetation line are found in the swales. Water levels are directly influenced by ground water, with the interdunal swales controlled

largely by lateral flow through porous beach ridges. Dune and swale is restricted to extreme northwest Indiana, near Lake Michigan.

- **Fen:** Fen is a calcareous, groundwater-fed wetland. Fens are often a mosaic of grassy areas, sedge areas, graminoid-shrubby cinquefoil, and tall shrub areas. The extent of the tall shrub component of fens may be determined by fire frequency and/or soil moisture. Drying of the soil increases the growth of shrubs. Fens typically occur in the vicinity of glacial moraines. Fens typically have a muck or peat substrate. The water level fluctuates seasonally and is fed by groundwater. Fens can be found in central and northern Indiana.
- **Forested fen:** Forested fen is a tree-dominated wetland on organic soil which receives groundwater. Forested fens are often a mosaic of treed areas, tall shrub areas, and herbaceous areas. A tall shrub layer is often well developed in forested fens. Indicative species typically include tamarack (*Larix laricina*), black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), poison sumac (*Toxicodendron vernix*), and red maple (*Acer rubrum*). Forested fens occur in wet lowlands, where moraines meet outwash features or depressions. Forested fens have saturated, poorly to very poorly drained soils that are often muck, but some seasonal flooding can occur in forested fens that are especially level. This community is a late successional stage of fen or circumneutral bog. Forested fens occur in northern Indiana.
- **Forested swamp:** Forested swamp is a seasonally inundated to intermittently exposed wetland of large river bottoms. Forested swamps do not receive direct flow from river flooding except under exceptional circumstances. Forested swamps occur in depressions, sloughs and large bottomlands, typically dominated by tree species such as swamp cottonwood (*Populus heterophylla*), green ash (*Fraxinus pennsylvanica*), and swamp white oak (*Quercus bicolor*). In northern Indiana important tree species include black ash (*Fraxinus nigra*), yellow birch (*Betula alleghaniensis*), and red maple (*Acer rubrum*). Poorly to very poorly drained and aerated soils characterize the swamp environment. Soils usually are mineral not muck or peat. This community type is found throughout Indiana.
- **Marl beach:** Marl beach is a fen-like community located on the marly muck shorelines of lakes. Marl precipitate is evident. A thin layer of water is present in spring, but dries down in summer. Draw-down of a lake creates additional area for this community to develop on. Marl beaches can be found in extreme northern Indiana, primarily in the northeast.
- **Muck flat:** Muck flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a peat substrate. The muck flats can float on the water surface, but during high water periods are usually inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Muck flats are found in northern Indiana.
- **Panne:** Panne is a groundwater fed herbaceous wetland occupying interdunal swales near Lake Michigan. Pannes are located on the lee side of the first or second line of dunes from the lakeshore. The soil is wet, calcareous sand. Pannes are located in counties bordering Lake Michigan.
- **Sand flat:** Sand flat is a shoreline and lake community possessing a unique flora of sedges and annual plants, many of which are also found on the Atlantic and Gulf Coastal Plains. This community is found at the margins of lakes or covering shallow basins. This community has a sand substrate. During high water periods sand flats at the margins of

lakes or ponds are inundated. The water level of a basin fluctuates during a season or from year to year in response to the amount of precipitation. This exposes bare substrate needed for germination by species of the community. Sand flats occur in northern Indiana, and in the Plainville Sand Section of southwest Indiana.

- **Sedge meadow:** Sedge meadow is an herbaceous wetland typically dominated by graminoid species such as flat sedge (*Cyperus* spp.), spike rush (*Eleocharis* spp.), rushes (*Juncus* spp.) and sedges (*Carex* spp.). Sedge meadow is an herbaceous wetland of stream margins and river floodplains, and lake margins or upland depressions. Streamside sedge meadows are frequently flooded in the spring and early summer. Sedge meadows of lake margins and depressions often contain standing water during wet months and after heavy rains; during dry periods, the water level is at or just below the substrate. Sedge meadow usually occupies the ground between a marsh and the uplands, or a shrub swamp or wet forest. Periodic high water can kill trees and shrubs invading sedge meadows. Sedge meadows can be found in the northern half of the state.
- **Shrub swamp:** Shrub swamp is a shrub-dominated wetland that is seasonally inundated to intermittently exposed. This community occurs in depressions and the substrate is either mineral soils or muck, as opposed to peat which is characteristic of bogs. Shrub swamp is characterized by non-flowing or very slowly flowing water with levels that fluctuate seasonally. Shrub swamps are persistent, though considered successional. Two opportunistic native shrubs, sandbar willow (*Salix exigua*) and gray dogwood (*Cornus racemosa*), by themselves, are not indicative of shrub swamps. This community type is found throughout Indiana.
- **Sinkhole pond:** Sinkhole ponds are water-containing depressions in karst topography. Sinkhole ponds are found in the Mitchell Karst Plain in south-central Indiana.
- **Sinkhole swamp:** Sinkhole swamps are depressions in karst topography dominated by tree or shrub species. Sinkhole swamps are found in the Mitchell Karst Plain in south-central Indiana.
- **Wet floodplain forest:** Wet floodplain forest is a broadleaf deciduous forest of river floodplains. Wet floodplain forests occur in depressions and flats on narrow to wide floodplains and also on recently exposed substrates that are frequently flooded. Wet floodplain forests are frequently flooded and may have standing water seasonally to permanently present. Wet floodplain forests occur statewide.
- **Wet prairie:** Wet prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet prairies occur in deep swales and the substrate ranges from very deep black mineral soils (which are high in organic matter) to muck. Ponding in spring lasts for several weeks prior to drainage. Wet prairies commonly occur in the Grand Prairie Natural Region, the Tipton Till Plain and the Bluffton Till Plain, with a few examples found in the Northern Lakes Natural Region.
- **Wet sand prairie:** Wet sand prairie is an herbaceous wetland typically dominated by graminoid species such as prairie cordgrass (*Spartina pectinata*), bluejoint (*Calamagrostis canadensis*), and sedges (*Carex* spp.). Vegetation height is often 2-3 m. The species diversity of wet prairies is lower than that of mesic prairies. Wet lowland prairies occur in deep swales and the substrate is sand, sometimes mixed with muck. Flooding is a regular springtime occurrence in wet sand prairie and may last several weeks. This community occurs in a mosaic with marsh and other wetlands, and with upland prairies and sand

savannas. Fire was frequent occurrence, but more common in the fall when waters had receded. This community occurs in northwest Indiana and in the Plainsville Sands area.

### **Attachment 3: 40 CFR 121.7 Citation and Justification**

#### **NWP Denial Citation and Justification**

It is the judgment of the Office of Water Quality that the proposed Nationwide Permit 43 may violate Indiana Code (IC) 13-18-4-5 and the water quality standards (WQS) set forth at 327 Indiana Administrative Code (IAC) 2-1-6(a)1, and 327 IAC 2-1.3-3.

1. Indiana Code 13-18-4-5 states in part:

A person may not:

- (1) throw, run, drain or otherwise dispose into any of the streams or waters of Indiana;
- or
- (2) cause, permit, or suffer to be thrown, run, drained, allowed to seep, or otherwise disposed into any waters; any organic or inorganic matter that causes or contributes to a polluted condition of any waters, as determined by a rule of the board adopted under Sections 1 and 3 of this chapter.

2. 327 Indiana Administrative Code 2-1-6(a)1 states in part:

All waters at all times and at all places meet the minimum conditions of being free from substances, materials, and discharges that form objectionable deposits, are unsightly or deleterious, and are toxic to plant, animal or aquatic life.

3. 327 Indiana Administrative Code 2-1.3-3 states in part:

For all surface waters of the state, existing uses and the level of water quality necessary to protect existing uses shall be maintained and protected.

Because the discharges associated with the activities specified in NWP 43 may, even as conditioned, violate Indiana's WQS, projects undertaking those activities will require a site-specific Section 401 Water Quality Certification to ensure compliance with the water quality requirements found in 327 IAC 2. For NWP 43 activities to receive a site-specific Section 401 Water Quality Certification, the applicant must provide information for the proper installation, monitoring and maintenance of adequate pre-treatment measures and appropriate mitigation to ensure measures installed in waters of the U.S do not violate the states water quality standards identified above.



## **General Condition (GC) Citation and Justification**

**To ensure projects completed under the Indiana certified NWP's comply with Indiana's WQS, the Indiana general conditions are required.**

- GC (1) For certain NWP's, IDEM has placed a notification requirement to ensure the discharges associated with the activities specified in those NWP's comply with 327 IAC 2. To appropriately evaluate impacts to water quality, including cumulative impacts, Indiana needs to be notified.
- GC (2) Several NWP's authorize minor dredging. This condition requiring the deposit any dredged material in a contained upland disposal area to prevent sediment run-off to any waterbody is necessary to ensure the discharges associated with the disposal of the dredged material complies with 327 IAC 2.
- GC (3) Per 40 CFR 122.26 and 327 IAC 15, the use of appropriate stormwater control measures and maintenance thereof will prevent any sediment laden water from migrating off site and entering waterways and wetlands, potentially impairing water quality.
- GC (4) Per IC 13-14-4-2, the department may inspect public or private property to inspect for and investigate possible violations of environmental management laws. Additionally, 40 CFR 121.11 allows the certifying authority the right to inspect a facility or activity prior to initial operation of a certified project.
- GC (5) This condition is necessary to ensure a projects permanent and secondary impacts fall within the designated minimal impact thresholds specified in GC 13 and GC 14. This condition is necessary to ensure authorized project comply with 327 IAC 2.
- GC (6) This condition is necessary to ensure projects are implemented in accordance with this Section 401 Water Quality Certification and only projects described in the notification are authorized. This ensures compliance with 327 IAC 2 and 327 IAC 5-2-8.
- GC (7) This condition is necessary to ensure only clean fill materials are proposed for discharge to ensure compliance with 327 IAC 2. Discharges of pollutants may require separate authorization under Section 402 of the Federal Clean Water Act.
- GC (8) This condition is necessary to ensure mitigation banking projects go through the procedures found in 33 CFR 332 and IDEM has the opportunity to appropriately review and condition any proposed mitigation bank to ensure it complies with 327 IAC 2.
- GC (9) Projects that will permanently change the sinuosity, flow path, velocity, cross-sectional area or the slope of a stream have more than a minimal impact. These activities can change the physical, chemical, and biological integrity of waters by impacting aquatic life movement, sediment transport, and changing the thalweg of a stream. These activities do not comply with 327 IAC 2.
- GC (10) Salmond streams are designated for special protection by 327 IAC 2-1.5-5(a)(3). Only those activities identified in GC (10) are authorized by this WQC. Compliance with these activities, conditions and work restrictions will ensure

the chemical, physical and biological integrity of the salmonid waters are maintained and protected in compliance with 327 IAC 2.

- GC (11) These waters are designated as Outstanding State Resource Waters by 327 IAC 2-1-11(b), 327 IAC 2-1.3-3(d), and 327 IAC 2-1.5-19(b). Individual Section 401 Water Quality Certifications are required for these waters to ensure there is no degradation and their water quality is protected and maintained in accordance with 327 IAC 2-1-1.5 and 327 IAC 2-1.5-3.
- GC (12) These wetlands and special aquatic sites are synonymous with Rare and Ecologically important wetland types under 327 IAC 17-1-2(3)(B). Individual Section 401 Water Quality Certifications are required for impacts to these waters to ensure there is no degradation and their water quality is protected and maintained in accordance with 327 IAC 2-1-1.5 and 327 IAC 2-1.5-3.
- GC (13) To ensure projects comply with the water quality standards found at 327 IAC 2, IDEM has established 0.10 acre as the minimal impact threshold for the state of Indiana. To ensure consistency with the policy established in 327 IAC 17-2-2(b), this is the threshold for which minimal impact projects are eligible for general permit authorizations. To allow more projects to fit under the NWP's, IDEM has increased this threshold to 0.25 acre if compensatory mitigation is conducted in accordance with GC 15. Compensatory mitigation ensures there is no permanent degradation to water quality in compliance with 327 IAC 2.
- GC (14) To ensure projects comply with the water quality standards found at 327 IAC 2, IDEM has established 300 linear feet as the minimal impact threshold for streams in the state of Indiana. To allow more projects to fit under the NWP's, IDEM has increased this threshold to 500 linear feet if compensatory mitigation is conducted in accordance with GC 16. Compensatory mitigation ensures there is no permanent degradation to water quality in compliance with 327 IAC 2.
- GC (15) 327 IAC 2-1.3-3 establishes anti-degradation standards for all waters of the State to include waters of the U.S. Proposed activities that exceed the minimal impact thresholds identified in GC 13 require compensatory mitigation to ensure there is no permanent degradation. IDEM is authorizing the use of mitigation banks and the Indiana Stream and Wetland Mitigation Program since the use of the NWP's does not allow for the placement of specific conditions on a permittee responsible mitigation proposal. IDEM is requiring proof of purchase and establishing a timeframe for submittal which is consistent with current Corps and IDEM procedures. To ensure aquatic resource functions and values are replaced, the compensatory mitigation ratios and service area requirements are based in part on the requirements found in IC 13-18-22 and 33 CFR 332.
- GC (16) 327 IAC 2-1.3-3 establishes anti-degradation standards for all waters of the State to include waters of the U.S. Proposed activities that exceed the minimal impact thresholds identified in GC 14 require compensatory mitigation to ensure there is no permanent degradation. IDEM is authorizing the use of mitigation banks and the Indiana Stream and Wetland Mitigation Program since the use of the NWP's does not allow for the placement of specific conditions on a permittee responsible mitigation proposal. IDEM is requiring proof of

purchase and establishing a timeframe for submittal which is consistent with current Corps and IDEM procedures. To ensure aquatic resource functions and values are replaced, the compensatory mitigation ratios and service area requirements are based in part on the requirements found in IC 13-18-22, 327 IAC 2 and 33 CFR 332.

- GC (17) The goal of 327 IAC 2 is to restore and maintain the chemical, physical, and biological integrity of waters of the state. This condition is required to ensure there are no state rare, threatened, or endangered water dependent species impacts authorized by the NWP.
- GC (18) This is a clarification condition to allow the use of multiple NWPs if they do not exceed specific impact thresholds. This condition is necessary to ensure compliance with 327 IAC 2.
- GC (19) This is a necessary condition to ensure an applicant submitted all required information with the notification required by GC 1. Without all necessary information, IDEM cannot determine if a project complies with 327 IAC 2.
- GC (20) Certain NWPs allow for temporary impacts. If these activities are poorly implemented, they result in discharges that would affect water quality. This condition is necessary to ensure projects comply with 327 IAC 2 and 327 IAC 15.
- GC (21) Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical, and biological integrity of the state's waters. Activities authorized by several NWPs allow for the installation of permanent stream encapsulations. If the encapsulations and associated fill are not properly installed, they can cause erosion and scour within stream channels, interfere with sediment transport and aquatic organism passage which alters the chemical, physical, and biological integrity of waters. The sumping requirements were developed by IDEM and the Indiana Department of Transportation and are part of their standards and specifications. The requirements for perennial streams greater than 12 feet were designed by the Federal Highway Administration to ensure aquatic organism passage is considered during culvert installations. These conditions are necessary to ensure compliance with 327 IAC 2.
- GC (22) Certain NWPs allow for the discharge of riprap or other bank stabilization material. This condition is necessary to ensure authorized activities do not interfere with sediment transport, create aquatic life barriers, or interfere with movement between aquatic and upland habitats and ensure compliance with 327 IAC 2.
- GC (23) Several NWPs allow temporary impacts. Since these activities exceed the minimal impact threshold specified in GC 13, IDEM is requiring notification to ensure they are properly restored. This will ensure compliance 327 IAC 2.
- GC (24) Several NWPs allow temporary impacts. This condition is necessary to ensure those temporary impacts are restored so there is no degradation and the project complies with 327 IAC 2.
- GC (25) This condition is necessary to ensure only projects that have a minimal impact to water quality and comply with 327 IAC 2 are authorized by the NWPs.

### **Nationwide Permit # 12 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justifications above for references to General Conditions. The conversion of forested and scrub shrub wetlands to emergent wetlands is a permanent impact and results in a degradation of the existing chemical, physical, and biological integrity of the wetlands. The depth requirements for utility lines installed within a river or stream can be found at 312 IAC 10-5-4. These depth requirements ensure utilities do not create a hydraulic jump within the stream channel which could interfere with sediment transport, aquatic life movements, and otherwise impact water quality. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #29 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justification above for references to General Conditions and NWP Specific Conditions. These conditions are necessary to ensure the existing beneficial uses of waters of the State are protected and there is no permanent degradation to water quality. Stream relocations are not authorized because these activities change the physical, chemical, and biological integrity of waters by impacting aquatic life movement, sediment transport, and changing the thalweg of a stream. Stormwater management facilities are not authorized because they convert waters of the state to a pollution prevent device or convert them to a differing use for water retention which degrades the existing beneficial uses and changes the chemical, physical, and biological integrity. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #39 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justification above for references to General Conditions and NWP Specific Conditions. These conditions are necessary to ensure the existing beneficial uses of waters of the State are protected and there is no permanent degradation to water quality. Stream relocations are not authorized because these activities change the physical, chemical, and biological integrity of waters by impacting aquatic life movement, sediment transport, and changing the thalweg of a stream. Stormwater management facilities are not authorized because they convert waters of the state to a pollution prevent device or convert them to a differing use for water retention which degrades the existing beneficial uses and changes the chemical, physical, and biological integrity. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #40 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justification above for references to General Conditions. Stream relocations are not authorized because these activities change the physical, chemical, and biological integrity of waters by impacting aquatic life movement, sediment transport, and changing the thalweg of a stream. The construction of drainage ditches and perforated tile within wetlands degrades the chemical, physical, and biological integrity by removing hydrology and changing the use. The requirements for riser pipes are necessary to ensure wetlands are not degraded by the removal of hydrology. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #42 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justification above for references to General Conditions and NWP Specific Conditions. These conditions are necessary to ensure the existing beneficial uses of waters of the State are protected and there is no permanent degradation to water quality. Stream relocations are not authorized because these activities change the physical, chemical, and biological integrity of waters by impacting aquatic life movement, sediment transport, and changing the thalweg of a stream. Stormwater management facilities are not authorized because they convert waters of the state to a pollution prevent device or convert them to a differing use for water retention which degrades the existing beneficial uses and changes the chemical, physical, and biological integrity. The condition for trails, bike paths, and golf cart paths is necessary to ensure hydrologic connectivity between wetlands to ensure there is no loss of hydrology which results in water quality degradation. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #44 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justification above for references to General Conditions and NWP Specific Conditions. Stormwater management facilities are not authorized because they convert waters of the state to a pollution prevent device or convert them to a differing use for water retention which degrades the existing beneficial uses and changes the chemical, physical, and biological integrity. The dewatering requirements are necessary to ensure no objectionable deposits occur from an authorized discharge. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #51 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justification above for references to General Conditions. These conditions are necessary to ensure only minimal impact projects are authorized by this NWP. These conditions ensure there are no permanent changes to the physical, chemical, and biological integrity of waters by impacting aquatic life movement, sediment transport, and changing the thalweg of a stream. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #52 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justification above for references to General Conditions. These conditions are necessary to ensure only minimal impact projects are authorized by this NWP. These conditions ensure there are no permanent changes to the physical, chemical, and biological integrity of waters by impacting aquatic life movement, sediment transport, and changing the thalweg of a stream. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #57 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justifications above for references to General Conditions. The conversion of forested and scrub shrub wetlands to emergent wetlands is a permanent impact and results in a degradation of the existing chemical, physical, and biological integrity of the wetlands. The depth requirements for utility lines installed within a river or stream can be found at 312 IAC 10-5-4. These depth requirements ensure utilities do not create a hydraulic jump within the stream channel which could interfere with sediment transport, aquatic life movements, and otherwise impact water quality. These conditions ensure compliance with 327 IAC 2.

### **Nationwide Permit #58 Citation and Justification**

Per 327 IAC 2-1-1.5, the goal of Indiana's water quality standards is to restore and maintain the chemical, physical and biological integrity of the state's waters. Please refer to the citations and justifications above for references to General Conditions. The conversion of forested and scrub shrub wetlands to emergent wetlands is a permanent impact and results in a permanent degradation of the existing chemical, physical, and biological integrity of the wetlands. The depth requirements for utility lines installed within a river or stream can be found at 312 IAC 10-5-4. These depth requirements ensure utilities do not create a hydraulic jump within the stream channel which could

interfere with sediment transport, aquatic life movements, and otherwise impact water quality. These conditions ensure compliance with 327 IAC 2.

