# ADDENDUM NO. 1
# JULY 2, 2025

PREPARED BY SCHMIDT ASSOCIATES FOR:

## 20231242 - BL212 BRADFORD WOODS AQUATIC FACILITY - LILLY POOL
## INDIANA UNIVERSITY

This Addendum consists of 1 Addendum page and 37 attachment pages totaling 38 pages.

Acknowledge receipt of this Addendum by inserting its number on the Bid Form. Failure to do so may subject the Bid to disqualification. This Addendum is part of the Contract Documents.

Bidder is encouraged to verify with reprographer of record all Addenda issued (do not rely exclusively on third party plan room services).

**PART 1 - CHANGES TO PRIOR ADDENDA (NOT APPLICABLE)**

**PART 2 - CHANGES TO THE PROJECT MANUAL**

Modifications described herein shall be incorporated in the Project Manual. All other Work shall remain unchanged.

**2.1 DIVISION 01 – GENERAL REQUIREMENTS**

A. **Subsurface Investigation & Geotechnical Recommendations**

1. ADD Document in its entirety.

**PART 3 - CHANGES TO THE DRAWINGS (NOT APPLICABLE)**

**END OF ADDENDUM 1**

**PRE-BID ATTENDANCE**

The following Pre-Bid Sign-In Sheet is being made available to Bidders for informational purposes only and is not a part of the Addendum.

# Subsurface Investigation & Geotechnical Recommendations

## Bradford Woods Swimming Pool
## Martinsville, Indiana
## A&W Project No: 24IN0561

**Prepared For:**
**Schmidt Associates**
**Indianapolis, Indiana**

**Prepared By:**
**Alt & Witzig Engineering, Inc.**
**Geotechnical Division**

**October 24, 2024**

***Alt & Witzig Engineering, Inc.***
4105 West 99th Street • Carmel, Indiana • 46032
Ph (317) 875-7000 • Fax (800) 875-6028

October 24, 2024

Schmidt Associates
415 Massachusetts Avenue
Indianapolis, Indiana 46204
Attn.: Mr. Brad Brutout, AIA

**Subsurface Investigation & Geotechnical Recommendations**

**RE**: Bradford Woods Swimming Pool
5040 North State Road 67
Martinsville, Indiana
Alt & Witzig File: **24IN0561**

Dear Mr. Brutout:

In compliance with the recent request of Mr. Rob Dee of Lynch, Harrison & Brumleve, Inc., we have completed a subsurface investigation and geotechnical evaluation for the above referenced project. It is our pleasure to transmit herewith an electronic copy of our report.

The purpose of this subsurface investigation was to determine the various soils profile components and the engineering characteristics of the subsurface materials encountered in order to provide information regarding the proposed building and pool construction at this site.

The scope of this investigation included a review of geological maps of the area and related literature, a reconnaissance of the project site, subsurface exploration, field and laboratory testing, and an engineering analysis and evaluation of the encountered subsurface materials.

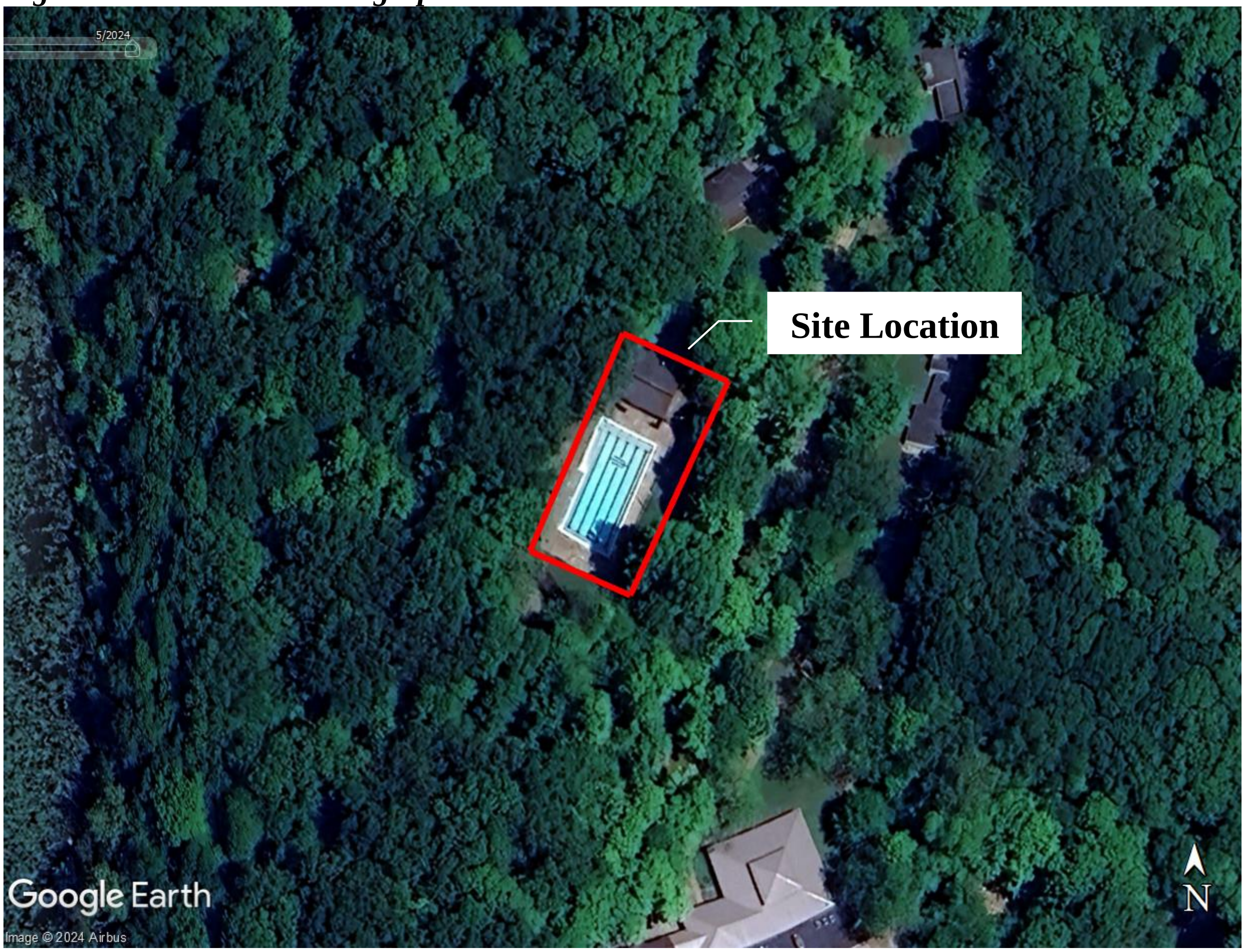
The scope or purpose of this geotechnical investigation did not, either specifically or by implication, provide any environmental assessment of the site. This investigation was performed for Schmidt Associates of Indianapolis, Indiana. Authorization to perform this investigation was in the form of a proposal by Alt & Witzig, Engineering, Inc. (Alt & Witzig Proposal: *2409G003*) that was accepted by Brad Brutout of Schmidt Associates.

Based on provided information from the client, it is understood that the pool will be approximately five (5) feet deep. Also, it is anticipated that a new restroom building will be constructed as well. It is anticipated that the existing pool and restroom structure will be demolished and replaced with the new facilities.

## ***Site Location***

The site is located in the IU Bradford Woods property, at the street address of 5040 North State Road 67 of Martinsville, Indiana. *Figure 1*, on the following page, presents a 2024 aerial photograph of the site courtesy of Google Earth.

***Figure 1: 2024 Aerial Photograph***




The proposed location of the pool and restroom facility is generally sloping down from east to west, with an estimated elevation difference of four (4) feet. The approximate elevation of the site ranges between 746 feet and 750 feet, per Google Earth. Ground cover across the site during drilling operations consisted of grass, trees, and concrete. The site is currently occupied by the existing pool facility, while the surrounding areas are developed with Bradford Woods facilities and infrastructure. Also, Old Swimming Hole Lake is located approximately 400 feet west of the site.

## ***Boring Locations***

Alt & Witzig Engineering, Inc. staked the locations of the borings using the provided site plan. The site plan was projected onto aerials provided by the Google Earth website allowing for the correlation of the approximate latitude and longitude coordinates with each location. These coordinates were then assigned as waypoints and uploaded into a handheld GPS unit. The locations referred to on our boring logs and presented on the Boring Location Plan below (Figure 2).

***Figure 2: 2024 Aerial Photograph***


## ***Field Services***

The field investigation included a reconnaissance of the project site, drilling three (3) soil borings for the proposed pool at locations selected by the client, performing standard penetration tests, and obtaining soil samples retained in the standard split-spoon sampler. The apparent groundwater level at the boring locations were also determined.

The soil borings were performed with a track-mounted drilling rig equipped with a rotary head. Conventional hollow-stem augers were used to advance the holes. Representative samples of the soil were obtained employing split-spoon sampling procedures in accordance with ASTM Procedure D-1586. The advancement of the borings was temporarily stopped at regular intervals in order to perform standard penetration tests in accordance with ASTM Procedure D-1586. The standard penetration test involves driving a split spoon soil sampler into the ground by dropping a 140-pound hammer, thirty (30) inches. The number of hammer drops required to advance the split-spoon sampler one (1) foot into the soil is defined as the standard penetration value. The soil samples retained in the split-spoon sampling device as a result of the penetration tests were obtained, classified, and labeled for further laboratory investigation.

***Laboratory Testing***

In addition to field investigations, a supplemental laboratory investigation was conducted to ascertain additional pertinent engineering characteristics of the subsurface materials. The laboratory-testing program included:

- Classification of soils in general accordance with ASTM D-2488
- Moisture content tests in general accordance with ASTM D-2216
- Atterberg Limits determination in general accordance with ASTM D-4318
- Samples of the cohesive soil were frequently tested in unconfined compression by use of a calibrated spring testing machine.
- A soil Penetrometer was used as an aid in determining the strength of the soil.

The values of the unconfined compressive strength as determined on soil samples from the split-spoon sampling must be considered, recognizing the manner in which they were obtained since the split-spoon sampling techniques provide a representative but somewhat disturbed soil sample.

***Ground Surface Elevations***

Ground surface elevations were not available at the time of this report. However, available topographic information provided by Google Earth indicates that the site varies in elevation from approximately 746 to 750 feet.

***Generalized Subsurface Conditions***

At the ground surface, the borings encountered approximately six (6) to eight (8) inches of topsoil. Beneath the topsoil, the borings encountered stiff to very stiff cohesive soils to depths of nine (9) to ten (10) feet. It should be noted that borings B-02 and B-03 encountered auger refusal due to bedrock. Boring B-01 encountered shale bedrock at a depth of ten (10) to fourteen and one-half (14½) feet, where auger refusal was encountered. The cohesive soils exhibited moisture contents ranging between eleven (11) and twenty-six (26) percent.

Detailed soil descriptions at the boring location have been included on the *Boring Logs* in the Appendix of this report.

According to the *Soil Survey of Morgan County, Indiana* published by the United States Department of Agriculture Soil Conservation Service, the majority of the soil covering this site is classified as Parke silt loam (PkC2) and Pike silt loam (PpB2). The *Custom Soil Resource Report for Morgan County, Indiana* has been included in the Appendix.

***Classification Testing***

As requested, we have conducted Atterberg Limits testing on the predominant soil type across the site. *Table 1* below depicts the results of our testing.

***Table 1: Atterberg Limits Testing Results***

| Boring ID | Sample Depth | Soil Description | LL | PL | PI | In-Situ Moisture Content |
|---|---|---|---|---|---|---|
| B-02 | 3.5-5.0 feet | Silty Clay | 59 | 25 | 34 | 25.6% |

## ***Groundwater***

Groundwater levels taken during and upon completion of the boring operations yielded dry boreholes. The exact location of the water table may fluctuate somewhat depending upon normal seasonal variations in precipitation and surface runoff.

The *Soil Survey of Morgan County, Indiana* indicates a seasonal high groundwater table greater than eighty (80) inches below the ground surface. Again, it should be noted that the groundwater level measurements recorded on the individual *Boring Logs* included in the Appendix of this report, are accurate **only** for the dates on which the measurements were performed.

## ***Seismic Consideration***

Geologic maps published by the Indiana Geological Survey indicate the bedrock at this site consists of the Borden Group, which is characterized by siltstone, limestone, and dolomite of the Mississippian age. The approximate elevation of this bedrock is mapped to be between 650 and 700 feet.

Based on the field and laboratory tests performed on the subsurface materials and the encountered bedrock surface within twenty (20) feet below the existing ground surface, this site should be considered a Site Class C in accordance with the current Indiana Building Code.

The location of the site was entered into the website www.seismicmaps.org to determine seismic parameters. Maximum spectral response acceleration values of $S_s$=0.190 and $S_1$=0.096 g were generated by the program. Additional parameters are included in the printout in the Appendix.

## ***Existing Structures/Utility Concerns***

As previously mentioned, the existing pool and restroom structures currently occupy the site. Shallow, uncontrolled fills may be evident from activities associated with past construction. Care should be taken to properly abandon the existing utilities and buildings located in the area. At no time should new foundations be placed on or above abandoned utilities, old floor slabs, or old foundations. Upon completion of the demolition process, it is recommended that Alt & Witzig Engineering, Inc. evaluate the soil conditions in the area of the previous structures prior to backfilling. Some loose fill materials should be anticipated in areas of the utilities and former structures. It is further recommended that if backfilling is required, a representative of Alt & Witzig Engineering, Inc. be present to assure that proper compaction is achieved.

***Geotechnical Discussion and Recommendations***

Based on provided information from the client, it is understood that the pool will be approximately five (5) feet deep. Also, it is anticipated that a new restroom building will be constructed as a slab-on-grade structure. It is understood that the footings will experience maximum column loads of 150 kips and wall loads of 5 klf.

Based on the encountered soil conditions at the anticipated footings depth, a net allowable soil bearing pressure of **2,500 psf** is recommended for design of conventional foundations on the native cohesive soils at this site. Isolated undercuts may be necessary in the areas of soft or unsuitable materials.

It is recommended that a representative of Alt & Witzig Engineering, Inc. inspect all foundation excavations prior to the placement of concrete. At the time of this inspection, Housel penetrometer or other approved tests may be performed in order to confirm that suitable materials are present.

The above recommended bearing pressure will help reduce differential settlements associated with footings founded on soil with varying stiffness across the pool and footing areas. Using the above-mentioned bearing pressure and recommendations, total settlements of less than one (1) inch and differential settlements of one half (½) inch or less can be anticipated. In utilizing the above-mentioned net allowable pressures for dimensioning footings, it is necessary to consider only those loads applied above the finished floor elevation.

In order to alleviate the effects of seasonal variation in moisture content on the behavior of the footings and eliminate the effects of frost action, all exterior foundations should be founded a minimum of three (3) feet below the final grade.

Some modifications to the recommendations provided in this report may be necessary based on potential complications or modifications to the design plan. The modifications may influence the overall cost of the project and construction sequence. If complications become apparent to the design team or owner, this information should be provided to Alt & Witzig Engineering, Inc. at the earliest possible date.

***Floor Slab and Pool Deck Recommendations***

It is typically desirable to place the floor slab as a slab-on-grade supported by the soil. In the areas where the existing grade is above the final floor elevation, the building area should be undercut and a well-draining granular material placed beneath the slab. In those areas where the existing grade is below the final floor elevation, a well-compacted structural fill will be necessary to raise the site to the desired grade. All fill materials may consist of approved materials if proper moisture content and compaction procedures are maintained.

Prior to elevating the site, where existing slopes are steeper than 5H:1V the existing slope should be benched to incorporate the new fill into the slope. INDOT benching procedures should be employed. The existing subgrade soils must be proofrolled with approved equipment prior to placing new fill. It is recommended that a representative of Alt & Witzig Engineering, Inc. be present to determine the exact depth of undercutting and to monitor backfilling operations if necessary. Also, areas of shallow unstable materials may be encountered due to elevated moisture contents in the shallow soils. The exact remediation method used will be dependent upon the size of the area and the types of materials encountered, as well as the project schedule.

After the building area has been raised to the proper elevation, a well-draining layer of granular material should be placed immediately beneath all floor slabs. It is recommended that the materials within the subgrade area, above footing elevation, be compacted to a minimum density of 93 percent of maximum density in accordance with ASTM D-1557.

A modulus of subgrade reaction, $k_{30}$, of 75 pci is recommended for the shallow cohesive soils.

***Pool Bottom and Drainage Recommendations***

To prevent the formation of excessive hydraulic uplift forces and hydrostatic lateral forces, a well-draining granular material is recommended below the pool bottom. A minimum four (4) inch thick granular mat should be placed immediately beneath the pool slab. Granular fill at least one (1) foot in thickness should also be placed against the exterior walls to allow drainage to the subdrain system. All backfill materials must consist of clean, well-graded, sand and gravel containing less than five (5) percent fines by weight. It is recommended that a sample of the material to be used for backfill of these structures be submitted to Alt & Witzig Engineering, Inc. for approval prior to placement. The granular fill should extend up to approximately two (2) feet from the ground surface.

Lateral hydrostatic pressure against the pool walls will be offset by the pool water when the pool is filled. However, before draining the pool or lowering the water, it will be important that the groundwater around the perimeter and below the bottom of the pool will not exert excess hydrostatic pressure against the pool walls and bottom. It is suggested that a monitoring well be installed within the pool backfill. Before lowering the water level within the pool, the monitoring well should be checked to assure that the water level against and below the pool is acceptable. Pumping of the groundwater will be necessary if the pool water must be lowered and the groundwater level is high. As mentioned, groundwater was not encountered during our soil boring operations.

***Lateral Earth Pressures on Pool Walls***

The amount of pressure exerted by the backfill on the lower-level walls depends upon the height of the wall, drainage provisions, type of backfill, and method of placing the backfill.

The lateral earth pressure will be minimized if the backfill is a clean granular material, and if the backfill is placed with a minimal amount of tamping. For design purposes, it is recommended that a coefficient of earth pressure at rest ($k_o$) of 0.40 be used for structurally designing the pool walls.

Assuming the unit weight of the backfill is 125 pcf, a $k_o = 0.40$ would correspond to an equivalent fluid pressure of 50 pcf per foot of wall height. This equivalent fluid pressure would increase linearly from 0 psf at ground surface to a maximum of 250 psf at the base of a five (5) foot high wall. The above pressures are assuming a fully drained condition.

Along the pool walls, a concrete pool deck will be constructed. In these areas it will be necessary to compact the materials along the wall as a structural fill. With this increase of densities the lateral earth pressures will also be increased. It is recommended that a $k_o$ of 0.60 be used for designing those portions of the walls where the backfill is placed as a structural fill. It is recommended that all backfill material be granular soil.

***Excavation Considerations***

Excavations at this site will penetrate depths of up to five (5) feet below the existing ground surface. Based on the United States Department of Agriculture, the groundwater is greater than eighty (80) inches below the ground surface. As mentioned, we did not encounter groundwater during our boring operations. It is recommended that the water level surrounding the excavation remains a minimum of two (2) feet below the bottom of the excavation if necessary. It is recommended that the contractor performing the excavation be responsible for the method of excavation and design of necessary shoring systems for the excavations if necessary.

***Statement of Limitations***

An inherent limitation of any geotechnical engineering study is that conclusions must be drawn on the basis of data collected at a limited number of discrete locations. The geotechnical parameters provided in this report were developed from the information obtained from the test boring that depict subsurface conditions only at the specific location and on the particular date indicated on the boring logs. Soil conditions at other locations may differ from conditions encountered at this boring location and groundwater levels shall be expected to vary with time.

Often, because of design and construction details that occur on a project, questions rise concerning the soil conditions. If we can give further service in these matters, please contact us at your convenience.

Sincerely,
***Alt & Witzig Engineering, Inc.***

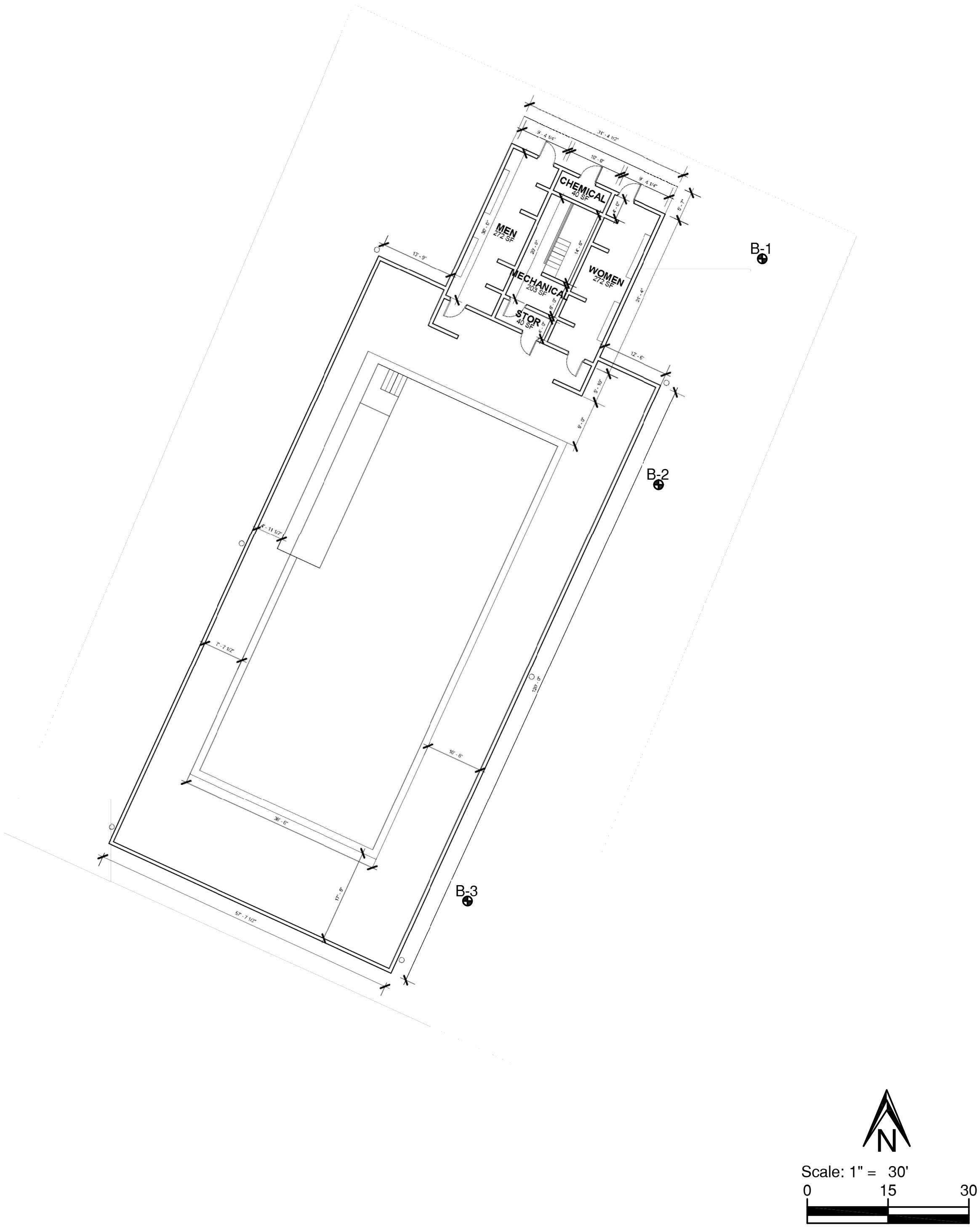

Nicholas Hayes

Nicholas K. Hayes, P.E.

Thomas J. Coffey, P.E.

**APPENDIX**

Boring Location Plan
Boring Logs
General Notes
Seismic Design Summary
Custom Soil Resource Report for Morgan County, Indiana




# BORING LOCATION PLAN

| | |
|---|---|
| PROJECT NAME: Bradford Woods Swimming Pool | Project Manager: NH |
| LOCATION: Martinsville, IN | Checked By: TC |
| PREPARED FOR: Schmidt Associates | Drawn By: JT |
| PROJECT NO: 24IN0561 | Date: 09/24 |

Alt & Witzig Engineering, Inc.
4105 West 99th Street • Carmel, IN 46032
Telephone: (317) 875-7000 • Fax (800) 875-6028

# BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Schmidt Associates** | BORING # **B-01**

PROJECT NAME **Bradford Woods Swimming Pool** | ALT & WITZIG FILE # **24IN0561**

PROJECT LOCATION **Martinsville, IN**

DRILLING and SAMPLING INFORMATION

| | | | |
|---|---|---|---|
| Date Started | 10/15/24 | Hammer Wt. | 140 lbs. |
| Date Completed | 10/15/24 | Hammer Drop | 30 in. |
| Boring Method | HSA | Spoon Sampler OD | 2 in. |
| Driller | Geo Logic | Rig Type | 6712DT |

TEST DATA

| STRATA ELEV. | SOIL CLASSIFICATION / SURFACE ELEVATION | Strata Depth | Depth Scale | Sample No. | Sample Type | Sampler Graphics / Recovery Graphics | Ground Water | Standard Penetration Test, N - blows/foot | Qu-tsf Unconfined Compressive Strength | PP-tsf Pocket Penetrometer | Moisture Content % / *Dry Unit Weight (pcf)* | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TOPSOIL | 0.6 | | | | | | | | | | |
| | Brown Clayey SILT | | | 1 | SS | | | 12 | | 4.5 | 19.5 | |
| | | | | 2 | SS | | | 17 | | 3.0 | 15.7 | |
| | | | 5 | 3 | SS | | | 18 | | 4.0 | 11.5 | |
| | | 7.5 | | | | | | | | | | |
| | Brown Sandy Silty CLAY with Rock Fragments | | | 4 | SS | | | 16 | | 4.5 | 20.5 | |
| | | 10.0 | 10 | | | | | | | | | |
| | Brown Shale | | | 5 | SS | | | 50/3" | | 1.5 | 15.2 | |
| | | 14.5 | | | | | | | | | | |
| | Auger Refusal at 14.5 Feet<br>End of Boring at 14.5 feet | | | | | | | | | | | |

**Sample Type**
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

**Groundwater**
○ During Drilling *Dry ft.*
▽ At Completion *Dry ft.*

**Boring Method**
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

# BORING LOG

Alt & Witzig Engineering, Inc.

CLIENT **Schmidt Associates**
PROJECT NAME **Bradford Woods Swimming Pool**
PROJECT LOCATION **Martinsville, IN**

BORING # **B-02**
ALT & WITZIG FILE # **24IN0561**

DRILLING and SAMPLING INFORMATION

| | | | |
|---|---|---|---|
| Date Started | **10/15/24** | Hammer Wt. | **140** lbs. |
| Date Completed | **10/15/24** | Hammer Drop | **30** in. |
| Boring Method | **HSA** | Spoon Sampler OD | **2** in. |
| Driller | **Geo Logic** | Rig Type | **6712DT** |

TEST DATA

| STRATA ELEV. | SOIL CLASSIFICATION / SURFACE ELEVATION | Strata Depth | Depth Scale | Sample No. | Sample Type | Sampler Graphics / Recovery Graphics | Ground Water | Standard Penetration Test, N - blows/foot | Qu-tsf Unconfined Compressive Strength | PP-tsf Pocket Penetrometer | Moisture Content % / *Dry Unit Weight (pcf)* | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TOPSOIL | 0.8 | | | | | | | | | | |
| | Brown Silty CLAY with Rock Fragments | | | 1 | SS | | | 14 | | 4.5 | 18.5 | |
| | | | | 2 | SS | | | 19 | 3.6 | 4.5 | 25.6 | |
| | | | 5 | | | | | | | | | |
| | | 7.5 | | 3 | SS | | | 13 | | 1.0 | 19.7 | |
| | Brown Silty CLAY with Shale | 9.5 | | 4 | SS | | | 50/3" | | 1.8 | 14.8 | |
| | Auger Refusal at 9.5 Feet<br>End of Boring at 9.5 feet | | | | | | | | | | | |

**Sample Type**
SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

**Groundwater**
○ During Drilling *Dry ft.*
∇ At Completion *Dry ft.*

**Boring Method**
HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

# BORING LOG

*Alt & Witzig Engineering, Inc.*

CLIENT **Schmidt Associates**

PROJECT NAME **Bradford Woods Swimming Pool**

PROJECT LOCATION **Martinsville, IN**

BORING # **B-03**

ALT & WITZIG FILE # **24IN0561**

DRILLING and SAMPLING INFORMATION

| | | | |
|---|---|---|---|
| Date Started | **10/15/24** | Hammer Wt. | **140** lbs. |
| Date Completed | **10/15/24** | Hammer Drop | **30** in. |
| Boring Method | **HSA** | Spoon Sampler OD | **2** in. |
| Driller | **Geo Logic** | Rig Type | **6712DT** |

TEST DATA

| STRATA ELEV. | SOIL CLASSIFICATION / SURFACE ELEVATION | Strata Depth | Depth Scale | Sample No. | Sample Type | Sampler Graphics / Recovery Graphics | Ground Water | Standard Penetration Test, N - blows/foot | Qu-tsf Unconfined Compressive Strength | PP-tsf Pocket Penetrometer | Moisture Content % / *Dry Unit Weight (pcf)* | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | TOPSOIL | 0.7 | | | | | | | | | | |
| | Brown Silty CLAY with Rock Fragments | | | 1 | SS | | | 15 | | 4.5 | 16.5 | |
| | | | | 2 | SS | | | 18 | | 4.3 | 22.6 | |
| | | | 5 | | | | | | | | | |
| | | 7.5 | | 3 | SS | | | 14 | | 2.0 | 20.1 | |
| | Brown Silty CLAY with Shale | 9.3 | | 4 | SS | | | 50/3" | | 2.3 | 18.7 | |
| | Auger Refusal at 9.25 Feet<br>End of Boring at 9.25 feet | | | | | | | | | | | |

**Sample Type**

SS - Driven Split Spoon
ST - Pressed Shelby Tube
CA - Continuous Flight Auger
RC - Rock Core
CU - Cuttings
CT - Continuous Tube

**Groundwater**

○ During Drilling *Dry ft.*
▽ At Completion *Dry ft.*

**Boring Method**

HSA - Hollow Stem Augers
CFA - Continuous Flight Augers
DC - Driving Casing
MD - Mud Drilling

## MATERIAL GRAPHICS LEGEND

| | |
|---|---|
| CL-ML: USCS Low Plasticity Silty Clay | ML: USCS Silt |
| SHALE: Shale | TOPSOIL |

## SOIL PROPERTY SYMBOLS

N: *Standard "N" penetration value. Blows per foot of a 140-lb hammer falling 30" on a 2" O.D. split-spoon.*

Qu: *Unconfined Compressive Strength, tsf*

PP: *Pocket Penetrometer, tsf*

LL: *Liquid Limit, %*

PL: *Plastic Limit, %*

PI: *Plasticity Index, %*

## DRILLING AND SAMPLING SYMBOLS

### *GROUNDWATER SYMBOLS*

○ *Apparent water level noted while drilling.*

▽ *Apparent water level noted upon completion.*

▼ *Apparent water level noted upon delayed time.*

### *SAMPLER SYMBOLS*

☒ SS: Split Spoon

## RELATIVE DENSITY & CONSISTANCY CLASSIFICATION (NON-COHESIVE SOILS)

| *TERM* | *BLOWS PER FOOT* |
|---|---|
| Very Loose | 0 - 5 |
| Loose | 6 - 10 |
| Medium Dense | 11 - 30 |
| Dense | 31 - 50 |
| Very Dense | >51 |

## RELATIVE DENSITY & CONSISTANCY CLASSIFICATION (COHESIVE SOILS)

| *TERM* | *BLOWS PER FOOT* |
|---|---|
| Very Soft | 0 - 3 |
| Soft | 4 - 5 |
| Medium Stiff | 6 - 10 |
| Stiff | 11 - 15 |
| Very Stiff | 16 - 30 |
| Hard | >31 |

Alt & Witzig

Telephone:
Fax:

## GENERAL NOTES

Project: Bradford Woods Swimming Pool

Location: Martinsville, IN

Number: 24IN0561

# 24IN0561

## Latitude, Longitude: 39.505880, -86.433498


| | |
|---|---|
| **Date** | 10/22/2024, 10:22:09 AM |
| **Design Code Reference Document** | IBC-2015 |
| **Risk Category** | II |
| **Site Class** | C - Very Dense Soil and Soft Rock |

| Type | Value | Description |
|---|---|---|
| $S_S$ | 0.19 | $MCE_R$ ground motion. (for 0.2 second period) |
| $S_1$ | 0.096 | $MCE_R$ ground motion. (for 1.0s period) |
| $S_{MS}$ | 0.228 | Site-modified spectral acceleration value |
| $S_{M1}$ | 0.163 | Site-modified spectral acceleration value |
| $S_{DS}$ | 0.152 | Numeric seismic design value at 0.2 second SA |
| $S_{D1}$ | 0.108 | Numeric seismic design value at 1.0 second SA |

| Type | Value | Description |
|---|---|---|
| SDC | B | Seismic design category |
| $F_a$ | 1.2 | Site amplification factor at 0.2 second |
| $F_v$ | 1.7 | Site amplification factor at 1.0 second |
| PGA | 0.089 | $MCE_G$ peak ground acceleration |
| $F_{PGA}$ | 1.2 | Site amplification factor at PGA |
| $PGA_M$ | 0.107 | Site modified peak ground acceleration |
| $T_L$ | 12 | Long-period transition period in seconds |
| SsRT | 0.19 | Probabilistic risk-targeted ground motion. (0.2 second) |
| SsUH | 0.211 | Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration |
| SsD | 1.5 | Factored deterministic acceleration value. (0.2 second) |
| S1RT | 0.096 | Probabilistic risk-targeted ground motion. (1.0 second) |
| S1UH | 0.111 | Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration. |
| S1D | 0.6 | Factored deterministic acceleration value. (1.0 second) |
| PGAd | 0.6 | Factored deterministic acceleration value. (Peak Ground Acceleration) |

| Type | Value | Description |
|---|---|---|
| $PGA_{UH}$ | 0.089 | Uniform-hazard (2% probability of exceedance in 50 years) Peak Ground Acceleration |
| $C_{RS}$ | 0.9 | Mapped value of the risk coefficient at short periods |
| $C_{R1}$ | 0.86 | Mapped value of the risk coefficient at a period of 1 s |
| $C_V$ | | Vertical coefficient |

DISCLAIMER

While the information presented on this website is believed to be correct, SEAOC /OSHPD and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in this web application should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. SEAOC / OSHPD do not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the seismic data provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the search results of this website.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

# Custom Soil Resource Report for

# Morgan County, Indiana

**24IN0561**


September 11, 2024

# Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

# Contents

# How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

## Soil Map


Map Scale: 1:827 if printed on A portrait (8.5" x 11") sheet.

Meters: 0, 10, 20, 40, 60

Feet: 0, 40, 80, 160, 240

N

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

## MAP LEGEND

**Area of Interest (AOI)**

- Area of Interest (AOI)

**Soils**

- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

**Special Point Features**

- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

**Water Features**

- Streams and Canals

**Transportation**

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

**Background**

- Aerial Photography

## MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Morgan County, Indiana
Survey Area Data: Version 29, Sep 1, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 15, 2022—Jun 21, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

# Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|---|---|---|---|
| PkC2 | Parke silt loam, 6 to 12 percent slopes, eroded | 0.8 | 25.8% |
| PpB2 | Pike silt loam, 2 to 6 percent slopes, eroded | 2.4 | 74.2% |
| **Totals for Area of Interest** | | **3.2** | **100.0%** |

# Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

# Morgan County, Indiana

## PkC2—Parke silt loam, 6 to 12 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* 5gvq
*Elevation:* 350 to 1,250 feet
*Mean annual precipitation:* 36 to 46 inches
*Mean annual air temperature:* 49 to 56 degrees F
*Frost-free period:* 170 to 200 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Parke and similar soils:* 100 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Parke

#### Setting

*Landform:* Outwash plains
*Landform position (two-dimensional):* Shoulder, backslope
*Landform position (three-dimensional):* Side slope
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Parent material:* Loess over loamy outwash

#### Typical profile

*H1 - 0 to 7 inches:* silt loam
*H2 - 7 to 30 inches:* silt loam
*H3 - 30 to 80 inches:* sandy clay loam

#### Properties and qualities

*Slope:* 6 to 12 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Available water supply, 0 to 60 inches:* High (about 11.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* B
*Ecological site:* F114XA404IN - Outwash Upland Forest, F111XA015IN - Dry Outwash Upland
*Other vegetative classification:* Trees/Timber (Woody Vegetation)
*Hydric soil rating:* No

## PpB2—Pike silt loam, 2 to 6 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* 2w0vn
*Elevation:* 480 to 890 feet
*Mean annual precipitation:* 40 to 45 inches
*Mean annual air temperature:* 52 to 55 degrees F
*Frost-free period:* 170 to 200 days
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Pike, eroded, and similar soils:* 87 percent
*Minor components:* 13 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Pike, Eroded

#### Setting

*Landform:* Outwash plains, crevasse fillings, eskers
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Interfluve
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Parent material:* Loess over loamy outwash over paleosol loamy outwash

#### Typical profile

*Ap - 0 to 9 inches:* silt loam
*Bt - 9 to 39 inches:* silty clay loam
*2Bt - 39 to 53 inches:* silt loam
*3Btb - 53 to 79 inches:* sandy loam

#### Properties and qualities

*Slope:* 2 to 6 percent
*Depth to restrictive feature:* More than 80 inches
*Drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.60 to 2.00 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Available water supply, 0 to 60 inches:* High (about 11.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 2e
*Hydrologic Soil Group:* B
*Ecological site:* F114XA404IN - Outwash Upland Forest
*Hydric soil rating:* No

### Minor Components

#### Ava, eroded

*Percent of map unit:* 5 percent
*Landform:* Till plains
*Landform position (two-dimensional):* Summit, shoulder
*Landform position (three-dimensional):* Interfluve
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Hydric soil rating:* No

#### Chetwynd

*Percent of map unit:* 5 percent
*Landform:* Outwash plains
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Side slope
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Hydric soil rating:* No

#### Parke, eroded

*Percent of map unit:* 3 percent
*Landform:* Crevasse fillings, eskers, outwash plains
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Interfluve
*Down-slope shape:* Convex
*Across-slope shape:* Linear
*Hydric soil rating:* No

# References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

SCHMIDT ASSOCIATES

Pre-Bid Meeting
20231242 - BL212 Bradford Woods Aquatic Facility - Lilly Pool
2023-194.BWA
July 1, 2025

# Meeting Sign-In Sheet

| NAME (COMPANY) | JOB TITLE (ROLE ON PROJECT) | EMAIL | OFFICE PHONE MOBILE PHONE |
|---|---|---|---|
| Brad Brutout (Schmidt Associates) | Project Manager / Associate | bbrutout@schmidt-arch.com | O: (317) 275-1866 |
| Wes Kost | Schmidt | wkost@schmidt-arch.com | 317 618 2051 |
| Joe Townsend | IU CPF | dantowns@iu.edu | 812 855 6489 |
| Daniel Aros | IU CPF | DAROS@IU.EDU | 812.856.5906 |
| Tim Zimmerman | HFI | TZimmerman@Hannell-Fisher... | 317-341-0370 |
| Steve Pruitt | Cunningham Const Group | STEVE@THECCG.BIZ | 317.902.5493 |
| Charlie Whitlow/C-CAT | Sr. Sales Engineer | cwhitlow@c-cat.com | 317-696-7574 |
| TSC | Wayne Fishburn | W.fishburn@PCC.Build | 317-509-0312 |
| Mattcon | Don Murphy | donm@mattcongc.com | 317-752-0936 |
| | | | |
| | | | |
| | | | |
| | | | |