MONROE COUNTY DRAINAGE BOARD
Wednesday December 6, 2023, at 8:30 AM
Location: Showers Building Room 106D
Hybrid Meeting with Virtual Attendance via Zoom

AGENDA

1. Call to Order
2. Approval of Minutes for: November 1, 2023 +* Page 2
3. Public Input for Items not on the Agenda
4. Business
   a. PUD-23-6 Preliminary Drainage Plan: North Park II Area B-9 Fill Site +* Page 8
   ~~b. SPP-23-3 Preliminary Drainage Plan: North Park Area B-3 Lot 3 – Stone Carver Drive Extension +*~~
   c. SPP-23-4 Preliminary Drainage Plan: Spring Woods Major Subdivision +* Page 73
   d. Drainage Easement Violation (after-the-fact): 404 W Irie Ct. (Southern Meadows Lot 58) (discussion only)
   e. Drainage Easement Waiver Request (after-the-fact): 408 W Irie Ct. (Southern Meadows Lot 60) (discussion only)
   f. Upcoming Drainage Plan Reviews:
      i. PUO-23-7 Preliminary Drainage Plan: The Trails at Robertson Farm
      ii. SIT-23-15 Preliminary Drainage Plan: Clear Creek Homes New Office
5. Staff Reports/Discussion
   - Link to DRAFT Stormwater Management Ordinance (August 2022): https://www.co.monroe.in.us/egov/documents/1669831347_72535.pdf
   - Link to DRAFT Stormwater Technical Standards Manual (August 2022): https://www.co.monroe.in.us/egov/documents/1669831403_93922.pdf
6. Adjournment
   a. Date of Next Meeting: Thursday January 4, 2024, at 8:30 AM

+ Attachment Included
* Board Action Requested

Zoom Meeting Information:
https://monroecounty-in.zoom.us/j/81406336371?pwd=WWxYd240SGpGdG0yR2Vra3BRSVpYUT09
Meeting ID: 814 0633 6371
Password: 663262

Dial by your location:
+1 312 626 6799 US (Chicago)

Anyone who requires an auxiliary aid or service for effective communication, or a modification of policies or procedures to participate in a program, service, or activity of Monroe County, should contact Monroe County Title VI Coordinator Angie Purdie, (812)349-2550, apurdie@co.monroe.in.us, as soon as possible but no later than forty-eight (48) hours before the scheduled event.

Individuals requiring special language services should, if possible, contact the Monroe County Government Title VI Coordinator at least seventy-two (72) hours prior to the date on which the services will be needed.

The meeting is open to the public.

MINUTES
MONROE COUNTY DRAINAGE BOARD
Wednesday November 1, 2023, at 8:30 AM
Location: Showers Building Room 106D
Hybrid Meeting with Virtual Attendance via Zoom

MEMBERS PRESENT: Bob Autio, Trohn Enright-Randolph *(ex officio)*, Lee Jones, James Faber
MEMBERS ABSENT: Ginger Davis, Bill Riggert
STAFF: Kelsey Thetonia (MS4 Coordinator), (attending remotely) Donna Barbrick (Secretary), Anne Crecelius (Planning), Jackie Nester Jelen (Planning), TSD

1. Call to Order. Meeting called to order by Bob Autio.
2. Approval of Minutes for: October 4, 2023, Motion to approve by Autio; second by Faber. VOTE: Jones, Faber, Autio YES (unanimous). Minutes approved.
3. Public input: (Donuts were enjoyed by those present in honor of Mr. Faber's years of service to Drainage Board since his term expires 12/31/2023 and he will step off the board.) Thetonia spoke about finding another candidate for the board. Mr. Faber read a thank-you from the commissioners:

> We wish to thank you for your 25 years of service to the community. During this time, the Drainage Board has become increasingly important for the future of Monroe County and your contributions have made both the Board and the community more prepared and proactive in overcoming the many drainage problems our community will be facing. Your efforts have been greatly appreciated. Once again, thank you for your 25 years of service.

Faber expressed interest in attending future meetings on Zoom. He spoke about wanting a white line on North Maple Road since there is a ditch so close to the road.

4. Business

a. Drainage Easement Waiver Request – 427 W That Road (Southern Meadows Lot 75) +*

Kelsey Thetonia explained where the site is located and outlined what the development included. She said the entire site drains to the west and there is a storm sewer collecting runoff from the roads and there are swales to convey water to detention ponds. She showed a 20-foot-wide drainage easement behind some of the homes. She said Lot 75 is proposing a deck inside a 10-foot-wide drainage easement. She said Lot 80 has not been built out yet, but she had some concerns. She said it was too close to the drainage easement. She said my general recommendation is not to approve this because we haven't seen the rest of the development built out. She displayed a letter from property owners of Lot 75 concerning a deck that they would like to expand. Thetonia said the proposed deck would expand six feet into the drainage easement. She displayed pictures of the current site. Autio asked if the current deck was right up against the easement now. Thetonia showed a map with proposed grading compared with what there is now. She said the current deck is very close to the easement now. She said with the elevation changes on the site, it could be conveying large amounts of water during a significant rain event. Thetonia said I recommend denying this petition for a variance based on the planned development on the other side of this drainage easement.

Autio asked do they have an opportunity to appeal if we deny. Thetonia said yes, they have the opportunity to appeal. **Motion by Autio to DENY the variance; second by Faber. Trohn said everyone would have to be in agreeance. VOTE: JONES YES, FABER YES, and AUTIO YES.**

Thetonia said she would notify the property owner and could work with them on an appeals process if they would like to appeal.

b. Violation of Drainage Easements Lot 60 Southern Meadows

Thetonia projected site plans on the screen and talked about the site. She said the property owners were here today. She said Lot 60 drains to a common area detention pond. She showed the plot plan for Lot 60. She talked about the drainage from the cul-de-sac going into a manhole and then to a 24-inch HDPE pipe that discharges to the detention pond. She said the homeowners built a fence up to their property line that happens to be directly over the plastic drainpipe that drains the cul-de-sac. She showed flood plain to the west. She showed a map of the side yard of Lot 60 and where a fence had been built. She brought up a couple of photos for DB to see the storm pipe and the fence. She said the fence post is directly over the drainpipe. She said I inspected the pipe as best as I could and saw some potential damage. She said without televising it to get a clearer view, it is hard to see. She said there is about six inches of cover for the pipe. She said at the last DB meeting, Ginger Davis brought up the possibility of soils settling. She said the bottom of the pipe is on original material but everything around it has been filled in so there is the possibility of settling. Autio asked about the request for a variance. Thetonia said it is a request for the fence to remain in place. She said my current concern is that the post is directly on top of the pipe with less than a foot of cover. She said we have granted variances in the past where the fence posts straddled the pipe, but this is different.

Trohn said it is more about the compound effect of what may occur. He said everything we are looking at today is in the subdivision today and the last one we made a motion to deny. He asked how we are going to apply a level of fairness as well as try to mitigate any stormwater impact or flash flooding. He said we will probably see more development occur in the region and so we need to make sure that things are adequate. He said if you look at Clear Creek and all the things we have heard about that area, and we go through more of these, how are we going to get folks to follow the ordinance when we have a variance here, no variance there. He said I understand that some people are not aware. He said this subdivision is not even fully developed yet and people will be coming in and seeing the fences that have been put up. He said this is more of a compound situation of variances and after-the-fact builds. He said we want to make sure that this is done in line with our ordinance. He said it is unfortunate that we must address this after there have been dollars put into it. He said we are looking at four different things going on in this subdivision today. He said if we start piecemealing yes or no, what does that do with other potential homeowners in the future. Jones said when I got training for the Plan Commission, we were told to consider each one on its own merits without worrying about how other people feel about it. She said I agree that the fact that it is not built out makes it particularly sensitive. Faber said DB does not have the capability of imposing a fine for doing something that should not have been done. Thetonia said I think you do, but it has not been exercised. She said Chapter 761 does have enforcement capability through Chapter 115 of Monroe County code. Jones said it would have to go through Monroe County Legal. Thetonia said for any work in a drainage easement we have a lot of power to maintain what is there through several different means.

Motion by Faber to remove the fence.

The property owners (Don and Julie Grinstead) spoke. Julie Grinstead said we purchased this lot and moved here from Georgia; we had no idea about the easement. She said there is a common area behind us for the drainage area. She said we have two little dogs and six grandchildren, and we put up a fence and had no idea that there was any issue at all. She said then someone was walking around and said there might be an issue with the fence and the next day we got a letter about the violation. Don Grinstead asked

about having an inspection before the conclusion. He said we want to do the right thing with the fence, but we also want to look out for our financial and lawful space issues. He said as we have gone through this process, we want to make sure that DB knows we are doing this in good faith.

Thetonia said if the fence were not directly on top of the pipe and we had it televised to show it was not damaged, I would be more agreeable to maybe allow some leniency there. She said but it's location would still be an issue. She said it is clearly directly over the pipe. She said the county will not pay for televising it, so it would be the responsibility of the property owner and then, regardless, the DB could still say it cannot be allowed. She said it could cost upwards of $1,000 to have it televised. She said this is regarding the east side of the fence, specifically.

Julie Grinstead said the house is built all the way up to the easement so I am not sure where the fence could start on that side of the house. Trohn said there are two issues there, the easement and then the discussion of if the pipe has been damaged. He said those are two separate matters. He said knowing that the pipe is functioning adequately, then that might allow the DB to lean toward allowing the obstruction in the drainage area. He said I sympathize with you; this is not an easy role for us or for you as property owners.

Jones said if they do move the fence and we still do not know if the pipe has been damaged, what do we do from there. Thetonia said when the developer goes to the county to take in the roads, we have, in Chapter 761, we can require them to televise the pipe and before we take it in, we can require them to fix issues. She said that is why it is complicated, on who is responsible for what. Don Grinstead asked about distances required for any structures. Thetonia said drainage easement sizing is in our ordinance. She said we have specific sizes for drainage easements based on the size of the pipe and how deep it is. She said when we go to excavate it, if the pipe is small and shallow, we don't need too big of a trench but if it is really deep and a large pipe, we need to excavate a wider trench. She said typically we allow ten feet on either side of the pipe, or larger for larger pipes. Julie Grinstead spoke about not knowing about the drainage easement. She said if we had known, we would have never done this. Don Grinstead said the area is still being developed; there are likely other homeowners contemplating fences or other structures.

Tom Wininger spoke. He said on a new build, we give them a plot plan and it shows [easements] on that. He said I can work with the homeowners to televise [the pipe]. He said I give everybody a plot plan. He said you do not have to get a building permit to get a fence. He said I read your suggestion in the minutes about televising it and then if later down the road there is a problem, they understand the responsibilities.

Faber commented that the City of Bloomington requires permission to even put up a fence. Autio said my position is, if the pipe is functional both now and when the inspection is done, then allowing that variance. He said if it is not functional, then a repair needs to be made and the fence needs to be moved. Trohn said we need a unanimous decision on this. He asked would it just continue to move forward. He said DB could table it; maybe we could ask for an inspection to be done and then maybe we would have that information next time we look at this.

Autio suggested a motion to table this until there is more data on this. Jones asked if we are requiring it to be televised. **Autio said a motion to table until December and require the pipe be televised. Seconded by Faber. VOTE: JONES YES; FABER YES; and AUTIO YES. Motion to TABLE carried. Thetonia said the next meeting was scheduled for December 6.**

c. Drainage Easement Violation (after-the-fact) – 404 W Irie Ct. (Southern Meadows Lot 58) +*

Thetonia talked about the site, a rear yard drainage swale, and a common area detention pond. She said there is supposed to be a drainage swale here and then there is a large deck that the property owners constructed within the drainage easement. She said basically the swale was moved over, I think. She said the drainage could not be completed because the deck had been built. She said I worked with Tom's drainage engineer to make sure this had capacity to convey runoff from a flood event to the pond. She said there is a lot of elevation change in this area so that helps. She said my concern is that upstream from this has not been fully developed, but based on the engineer's calculations, they are comfortable signing off on the grading that the developer did. She said if we do have a big flood and it turns out that we do need to re-grade some of this, then the deck would most certainly be in the way. She said also they are required to apply for an after-the-fact building permit since it is over 30 inches tall, so they received another violation letter from Planning/Building departments.

Santiago Sotomayor spoke via Zoom. He said good morning, my name is Santiago, and I am filling in for my parents who have very limited English. He said I talked on the phone with you a couple weeks ago. He said I think the biggest issue was that there was not a lot of transparency when these lots were being purchased because there were conversations about decks and fences being built and didn't hear about easements. He said there were multiple conversations. He said my dad was unaware that a permit was needed for the deck. He said I know the structure is pretty sound; we sent some pictures from the other side. He said the top is closest to the easement; he said the bottom is close to the ten feet from the property line. He said I heard the concern about needing to remove the deck and I think it's worth crossing that bridge if we ever have to. He said they just added a whole bunch of pipes in the neighbor's yard, and I do not think there will be any issues with the deck.

Trohn asked to see the plat on Elevate. He said it is unfortunate that we are here for after-the-fact builds. He said I just wanted to highlight that there is an official process; the easements are platted. He said there is a procedure that the county follows; we are not selecting these sites randomly. Jones commented I agree, but I also think asking buyers to look at a plat map and understand all of that is not reasonable. Trohn said I just wanted to indicate that there is a process that we follow. Thetonia said I would recommend to anyone who is building to contact the county planning department because they can help you determine if there are easements on your property.

Tom Wininger said I do give plot plans to everyone, and I will probably put out a flyer from here on out, that all homeowners need to contact county planning. He said the other thing is, Kate Stein (Smith Design) re-did the swales in there and I believe that the criteria that we had to live up to was that all the inlets in the neighborhood were 100% for a 100-year flood. He said that is the criteria that she signed off on. He said I know a deck built after the fact has nothing to do with that, but she said that the deck did not impede the water flow that day.

Thetonia said I am not comfortable with it being there because if we do need to move it in the future it is going to make it that much harder. Autio said to get the full easement how far would it be. Thetonia said it goes 10 feet into the easement. Wininger said we had more than one attempt and we did it and Smith Design came out and site checked it, and it did not make it, so then I came back and talked to the homeowner about cutting the downspout. He said Smith re-shot it and then Katie Stein certified it. He said with it in place, it still meets those criteria.

Trohn said the easement is a 20 foot total span, so they are going completely into the easement on their property but it does not look like it is impeding. Trohn said I think Planning should weigh in on this one.

Autio said I am leaning toward having the deck removed to clear out the easement issue, even with the engineering.

Jones had to leave the meeting.

Thetonia said we have lost our DB quorum.

d. Drainage Easement Floodplain Violations (after-the-fact) – Southern Meadows Lots 60, 61, and 62 +*
Thetonia spoke concerning Southern Meadows Lots 60, 61, and 62, which all abut the floodplain for Clear Creek. She said the floodplain is within the drainage easement on the west side. She said the lots were graded in a way where fill was placed in the floodplain. She said all the grading was supposed to be in the lots and the floodplain was not supposed to be touched. She said Tammy Behrman (Planning) has been leading the enforcement of Chapter 808 Floodplain Management, working with them on compliance. She said DB does have some say on this because it's also in Chapter 761. She talked about plot plans in the packet. She said options given were to remove the fill from the floodplain or to provide compensatory storage and a No-rise certification, meaning that you are not contributing to any vertical change in that floodplain. She said that is a Federal FEMA requirement for zero rise. She said previously the State had 0.14 feet of acceptable rise and that is no longer in place due to changes at the Federal level. She said our current ordinance allows DB to dictate that zero-rise requirement as well. She said DB has a say in this. She said to be consistent with what Tammy is doing, we have asked the developer to comply with the Federal No-rise requirement. She said Tom Wininger (developer) has chosen to hire an engineer to do the modeling and to design compensatory storage to be in compliance. She said we will review this next month.

Autio asked where the compensatory storage would be. Thetonia said it would be, I assume, in the floodplain just west of these properties. Tom Wininger said Katie Stein with Smith Design is working on that. Thetonia said I also have contracts with local engineering firms for third party review so I can contract out review of this, just to make sure it is meeting the requirements. Autio said that sounds like a good solution.

e. Future Drainage Plan Reviews for DB approval:
i. K&S Rolloff – New Fill Area (determining if drainage plan is required)
ii. North Park II Area B-9 – large fill site
iii. North Park Area B-3 Lot 3 – Stone Carver Drive Extension
iv. Monroe County Airport Drainage Improvements Project – pipe lining and replacement
Thetonia said I have four things that are most likely going to be on the December agenda. She said one is K&S Rolloff. She said they are modifying the fill area. She said we did modeling to see if the fill placed in the sinkhole would impact the neighboring property and they were able to demonstrate that the 48-hour 100-year event would still be contained in the sinkhole area. She said we gave them the go-ahead to allow the fill to remain because we felt that removing it would disturb the sinkhole. She said now they are proposing to add an additional seven feet of fill and then put the dumpsters on top of what they have been doing now. She said my main concern is water quality. She said they are proposing check dams and other things. She said we may need to bring this back to DB to look at the additional seven feet of fill. She said the new fill should not be in the sinkhole.

She talked about activity in the North Park area. She showed Hunter Valley Road and the North Park area. She said there is an old quarry site which they plan as a long-term fill site for possible future development. She said they have some sediment basins.

She said the other one is an extension of Stone Carver Drive. She said I have received preliminary plans and will bring this to DB in the future.

She said the last one is regarding a request from the airport. She said the general proposal is showing repair/replacement of almost every single storm pipe on the property, excluding the main pipes under the runway. She said they are looking for remediation of some significant issues with older pipes. She said my first comment was about detention. She said they have existing ponds on site that are fairly large, and we have had preliminary discussions about adding more storage on the property. She said there were discussions of underground detention, as well, but that would require significant geotech work. She said they are open to whatever help they can get. She spoke about gullies forming and said you don't want gullies along the runways. She said they are required to have 250 feet of basically flat lawn on the sides of the runways in case a plane goes off the side. She said preliminary plans are just asking approval of the design. She said in time that will develop into a drainage master plan. She said in 2002, an airport evaluation was completed, and all the sinkholes were noted on the property and modeling was done. She said that expired in 2007, so we are working with Planning to determine whether another evaluation is needed. Autio asked if there was an evaluation of the condition of the pipes that are under the runway. She said I know in 2013, a sinkhole formed next to a runway and there was an emergency grant from the FAA to help fix it.

Trohn noted a comment from Jackie Nester Jelen in the meeting chat (concerning a previous agenda item). She had commented that the owners will be required to apply for a variance through the Planning Department for construction within the platted building setback or revise the deck location (Lot 58).

5. Staff Reports/Discussion
6. Adjournment
a. Date of Next Meeting: Wednesday December 6, 2023, at 8:30 AM

The meeting adjourned at approximately 10:05 a.m.

Minutes approved: _____

_____ **_____**

President **Secretary**

Project Name:	North Park Area B-9	**Watershed**:	Stouts Creek
Engineer/Design Firm:	Daniel Butler, Bynum Fanyo	**Karst Report**:	Completed
Address:	SW of SR 46 and I-69	**Wetland Delineation**:	Not Completed
Acres:	28 acres disturbed/98.6 acres		

Project Summary

The North Park Area B-9 Fill Site is located in the Stouts Creek watershed at the SW corner of SR 46 and I-69. The project site is surrounded by the North Park PUD to the north, and commercial/PUD/industrial/quarry to the south. This property is the former Bennett's quarry superfund site. The project is not located within a mapped floodplain, but thekarst study has identified karst features within and around the project area, including springs and one sinking stream.

Project Drainage
This property drains northwest towards a former quarry area (restricted development-free zone). As a vacant quarry, there are existing quarry ponds and piles of rock throughout the site.

North Park Area B-9 Fill Site – Drainage Comments

Sinkholes, Sinking Streams, and Karst Springs:

- I have concerns about the fill area over identified karst features:
  - Driveway crosses SP-04, a karst spring.
  - Fill area covers SP-03, a karst spring.
  - Fill area covers SS-01, a sinking stream.
- SCAs noted on the plans should specify the types of karst features where there are proposed impacts. This information is available in your karst report.
- No karst features should be impacted as part of these fill operations.
  - Please revise plans to show that SS-01 and SP-03 are avoided and their drainage areas protected.
  - If SP-04 will be impacted due to its proximity to the existing driveway, please show plans for mitigation (what will you do with the water from the spring?) and ideally, this should be communicated to Jason Krothe so he can provide input on appropriate mitigation strategies.

Environmental:

- Is there an environmental report describing the 'development free zone' where the runoff from this project will be discharging to? What are the restrictions?

Adequacy of outlets/receiving infrastructure:

- Need more information on how/if water flows north under SR 46?

Overall Grading Plan:

- The proposed temporary sediment basin is shown roughly 40 feet above existing grade. This is fine for later fill operations, but I need to see a plan for temporary sediment traps to be installed prior to any fill operations beginning. Since this will be a large long-term operation, there should be sediment traps along the toe of the slope to capture erosion from the fill area during different phases of the project.
- Provide benches along the slope in the final grading plan.
- Silt fence is not an adequate practice to capture runoff from a 30-40 ft 3:1 slope. Pipe slope drains may be a good practice to convey water from the top of the pile to sediment traps at the toe of the slope.
- Provide drainage calculations showing the capacity/adequacy of the sediment traps.

Final Stabilization:

- Provide a final stabilization plan including topsoil/seed (specify depth of topsoil), wattles along the slopes, and description of the phasing/sequencing.

Some of these specific comments can be addressed during the development plan review. However, I'd like to have the issues with karst impacts figured out before I complete my review of this outline plan.

I would like the Drainage Board to provide their input for any additional considerations for this project.

NP AREA B-9
PROJECT NO. 402231

PROPOSED:

North Park Area B-9

N HUNTER LN
BLOOMINGTON, INDIANA 47401

VICINITY/LOCATION MAP
NOT TO SCALE

SHEET INDEX

UTILITY CONTACT INFORMATION

GAS	SEWER AND WATER	ELECTRIC
VECTREN	CITY OF BLOOMINGTON UTILITIES	DUKE ENERGY
205 S. MADISON ST,	600 E. MILLER DR.	1619 W. DEFFENBAUGH ROAD
BLOOMINGTON, IN 47401	BLOOMINGTON, IN 47402	KOKOMO, INDIANA 46902
DOUG ANDERSON (812)330-4009	NANCY AXSOM (812)349-3689	JIM SHIELDS (317)375-2071
TELEPHONE	**CABLE TELEVISION**	**UNDERGROUND UTILITY LOCATION**
AT&T	COMCAST	INDIANA UNDERGROUND
P.O. BOX 56	2450 SOUTH HENDERSON STREET	PLANT PROTECTION
BLOOMINGTON, IN 47402	BLOOMINGTON, IN 47404	1-(800)382-5544
BRENT McCABE (812)334-4521	SCOTT TEMPLETON (812)355-7822	

DIAL '811' BEFORE YOU DIG
PER INDIANA STATE LAW IC8-1-26.
IT IS AGAINST THE LAW TO EXCAVATE WITHOUT NOTIFYING THE UNDERGROUND LOCATION SERVICE TWO (2) WORKING DAYS BEFORE COMMENCING WORK.

BYNUM FANYO & ASSOCIATES, INC.
528 North Walnut Street
Bloomington, Indiana 47404 (812) 332-8030

architecture
civil engineering
planning

OWNER/DEVELOPER:
PACKING HOUSE ROAD LLC
5400 W 86TH STREET
INDIANAPOLIS, IN 46278

THE CURRENT EDITION OF THE INDIANA DEPARTMENT OF TRANSPORATION, MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES & CITY OF BLOOMINGTON UTILITIES STANDARD SPECIFICATIONS IS TO BE USED WITH THESE PLANS

Certified By:

JEFFREY S. FANYO, P.E.
IND. REG. NO. 60018283

Revisions

NORTH PARK AREA B-9
PROJECT NO. 402231

STATE ROAD 46

STATE OF INDIANA
INST. NO. 2002017453

STATE OF INDIANA
INST. NO. 2002018518

NT, LLC
'74

CHUMLEY LLC
ZONING: IL
USE: VACANT

POINT OF BEGINNING
N.W. CORNER, SE 1/4,
SECTION 30, T 9 N, R 1 W
MONROE COUNTY, INDIANA
PK NAIL IN FENCE POST

JOE LLC
USE: INDUSTRIAL

LOT 4 – 20.93 Acres

Development Fee Zone

LEDGE WALL QUARRY LLC
INST. NO. 2010019974
ZONING: PUD
USE: QUARRY

BEDFORD RECYCLING INC
INST. NO. 2007001467

STATE OF INDIANA
INST. NO. 2002017453

STATE OF INDIANA
INST. NO. 2002018518

PROPOSED FUTURE
RIGHT-OF-WAY

H2R LLC
ZONING: LI
USE: SINGLE FAMILY RES.

LOT 3 – 23.84 Acres

LOT 2 – 23.82 Acres

STATE ROAD 37

HAINA PROPERTIES LLC
USE: VACANT

SEE SITE PLAN - C301

CROSS, JONATHAN
ZONING: Q
USE: SINGLE FAMILY RES.

PRINCE, ANCIL & THELMA
ZONING: Q
USE: SINGLE FAMILY RES.

HOLDEN RENTALS III, LLC
ZONING: Q
USE: SINGLE FAMILY RES.

BUNCH, TERRY & GLENDA
ZONING: Q
USE: SINGLE FAMILY RES.

BARNES, DWIGHT & MABEL
ZONING: Q
USE: SINGLE FAMILY RES.

W. GRIFFITH CT.

Development Fee Zone

LOT 1 – 20.17 Acres

STATE OF INDIANA
ZONING: IL
USE: STATE FACILITY

STITZEL, RAYMOND
ZONING: IL
USE: BUSINESS

R/W MON. 4.1' E OF LINE

R/W MON.

PIPE FOUND

IRON ROD FOUND

6x6 STONE 2.1' E OF LINE

LEDGE WALL QUARRY LLC
INST. NO. 2010019974
ZONING: PUD
USE: QUARRY

BOARD OF COMMISSIONERS
OF MONROE COUNTY
INST NO. 2009004154
RIGHT-OF-WAY

SEE DETAIL BELOW LIP

K & S ROLLOFF HOLDINGS LLC
ZONING: IL
USE: BUSINESS

RR SPIKE FOUND

R/W MON.

REBAR FOUND

Development Fee Zone

CASSADY, RANDY
ZONING: IL
USE: VACANT

STATE OF INDIANA
INST. NO. 2015008194

STATE OF INDIANA
INST. NO. 2015008194

VERNAL PIKE

SOUTH LINE E 1/2 SECTION 30

S.W. CORNER, E 1/2,
SECTION 30, T 9 N, R 1 W
MONROE COUNTY, INDIANA
IRON ROD IN BOX FOUND

BOARD OF COMMISSIONERS
OF MONROE COUNTY
INST NO. 2009004154
RIGHT-OF-WAY

BOARD OF COMMISSIONERS
OF MONROE COUNTY
INST NO. 2009004154

SOUTHEAST CORNER
SECTION 30, T 9 N, R 1 W
MONROE COUNTY, INDIANA
IRON ROD FOUND

SCALE: 1"=150'

NOTE TO CONTRACTOR

CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & DEPTHS AND NOTIFY ENGINEER OF ANY INACCURACIES IN LOCATION OR ELEVATION OR ANY CONFLICTS PRIOR TO & AFTER ANY EXCAVATION. NO PAYMENT SHALL BE MADE TO CONTRACTOR FOR UTILITY DESTRUCTION OR UNDERGROUND CHANGES REQUIRED DUE TO CONFLICTING ELEVATIONS.

revisions:

certified by:

BYNUM FANYO & ASSOCIATES, INC.
ARCHITECTURE
CIVIL ENGINEERING
PLANNING
528 north walnut street
bloomington, indiana
(812) 332-8030
(812) 339-2990 (Fax)

PROPOSED
NORTH PARK AREA B-9 MASS GRADING
N HUNTER LN
BLOOMINGTON, IN 47401

title: Overall Grading Plan

designed by: AJW
drawn by: AJW
checked by: JSF
sheet no: C201
project no.: 402231

GRADING/DRAINAGE LEGEND

EXISTING CONTOUR	---XXX---
PROPOSED CONTOUR	(XXX)
PROPOSED INTENDED FLOWLINE DIRECTION	FL>

NOTE: CONTRACTOR TO PERFORM GRADING AND EXCAVATION OF THIS PROJECT BY WORKING IN PHASES. ONCE A SCHEDULED AREA OF GRADING AND EXCAVATION HAS BEEN BROUGHT TO FINAL CONTOURS AS SHOWN ON THE PLAN, THEN THAT AREA SHALL RECEIVE 4" TO 6" OF THE STOCKPILED TOPSOIL AND SEEDED PER DETAILS BEFORE MOVING ONTO ANOTHER AREA. EACH AREA/PHASE SHALL NOT EXCEED 5 ACRES.

NOTE: EXISTING ELEVATION CONTOURS DEPICTED ARE FROM AN AERIAL SURVEY. ACTUAL EXISTING CONDITIONS CONTOURS MAY DIFFER WHEN CONSTRUCTION HAS COMMENCED. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES THAT WOULD INHIBIT GRADING THE PROPOSED CONTOURS AS INDICATED.

GRADING & GENERAL NOTES

1. PROPOSED CONTOURS SHOWN ARE MAXIMUM TOP OF FILL IN AREAS TO BE MULCHED AND SEEDED.
2. ALL DISTURBED AREAS SHALL RECEIVE 4" TO 6" OF SOIL/DIRT AFTER FILL OF THE SITE. THIS SOIL IS TO BE PLACED AND LEVELED BY THE CONTRACTOR. DURING CONSTRUCTION THE TOP 4" TO 6" OF EXISTING SOIL SHALL BE STOCKPILED BY THE CONTRACTOR IN AREA DESIGNATED ON PLAN TO THEN BE REDISTRIBUTED THROUGHOUT THE DISTURBED SITE IN ORDER TO ESTABLISH MATURE AND HEALTHY VEGETATION AFTER CONSTRUCTION HAS COMMENCED. ANY AREAS FOUND TO NOT BE COVERED BY SOIL AND MATURE VEGETATION AFTER CONSTRUCTION SHALL BE RE-COVERED, RE-LEVELED AND SEEDED/MULCHED AGAIN.
3. CONTRACTOR SHALL NOTIFY AND COOPERATE WITH ALL UTILITY COMPANIES OR FIRMS HAVING FACILITIES ON OR ADJACENT TO THE SITE BEFORE DISTURBING, ALTERING, REMOVING, RELOCATING, ADJUSTING, OR CONNECTING TO SAID FACILITIES. CONTRACTOR SHALL PAY ALL COSTS IN CONNECTION WITH ALTERATION OF OR RELOCATION OF THE FACILITY.
4. ALL WORK IS TO BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.
5. ALL PERMITS ARE TO BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION.
6. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL UNDERGROUND UTILITIES AND SHALL AVOID DAMAGE TO ALL UTILITIES DURING THE COURSE OF THE WORK. THE CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY AND ALL DAMAGE TO UTILITIES, STRUCTURES, SITE APPURTENANCES, ETC. WHICH OCCURS AS A RESULT OF THE LANDSCAPE CONSTRUCTION. PLANTING LOCATIONS MAY REQUIRE ADJUSTMENTS IN FIELD TO AVOID OVERHEAD AND UNDERGROUND UTILITIES.
7. UNUSABLE EXCAVATED MATERIALS AND ALL WASTE RESULTING FROM CLEARING AND GRUBBING SHALL BE DISPOSED OF OFF SITE BY CONTRACTOR.
8. BEFORE ANY MACHINE WORK IS DONE, CONTRACTOR SHALL STAKE OUT AND MARK THE ITEMS ESTABLISHED BY THIS GRADING PLAN. CONTROL POINTS SHALL BE PRESERVED AT ALL TIMES DURING THE COURSE OF CONSTRUCTION. THE LACK OF PROPER WORKING POINTS AND GRADE STAKES MAY REQUIRE CESSATION OF OPERATIONS UNTIL SUCH POINTS AND GRADES HAVE BEEN PLACED TO THE OWNER'S SATISFACTION.
9. ANY FILL AREAS SHALL BE FREE OF VEGETABLE MATTER, RUBBISH, LARGE ROCK, AND OTHER DELETERIOUS MATERIAL. THE FILL MATERIAL SHOULD BE PLACED IN LAYERS NOT TO EXCEED SIX (6) INCHES IN LOOSE THICKNESS AND SHOULD BE SPRINKLED WITH WATER AS REQUIRED TO SECURE SPECIFIED COMPACTION. EACH LAYER SHOULD BE UNIFORMLY COMPACTED BY MEANS OF SUITABLE EQUIPMENT AS DICTATED BY THE TYPE OF FILL MATERIAL. UNDER NO CIRCUMSTANCES SHOULD A BULLDOZER OR SIMILARLY TRACKED VEHICLE BE USED AS COMPACTING EQUIPMENT. MATERIAL CONTAINING AN EXCESS OF WATER SHOULD BE SPREAD AND DRIED TO A MOISTURE CONTENT THAT WILL PERMIT PROPER COMPACTION. ALL FILL SHOULD BE COMPACTED TO THE SPECIFIED PERCENTAGE OF THE MAXIMUM DENSITY OBTAINED IN ACCORDANCE WITH ASTM DENSITY TEST D-698 (95 PERCENT OF MAXIMUM DRY DENSITY). IF THE SPECIFIED COMPACTION LIMITS ARE NOT MET, SUCH AREAS SHOULD BE REWORKED AND RETESTED AS REQUIRED UNTIL THE SPECIFIED LIMITS ARE REACHED.
10. SAFE, CLEARLY MARKED PEDESTRIAN AND VEHICULAR ACCESS TO ALL ADJACENT PUBLIC ROADS AND PROPERTIES MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.

EROSION CONTROL LEGEND

DB	TEMPORARY EARTHEN DIVERSION BERM – REFER TO DETAIL. BERM SHALL BE A MINIMUM OF 2' HIGH, 2' WIDE FLAT TOP AND A MAXIMUM OF 3:1 SIDE SLOPES
TD>	TEMPORARY EARTHEN DIVERSION SWALE – REFER TO DETAIL. BERM SHALL BE A MINIMUM OF 2' DEEP, 2' WIDE FLAT BOTTOM AND A MAXIMUM OF 3:1 SIDE SLOPES
CD	ROCK CHECK DAM (TEMPORARY DURING CONSTRUCTION) – REFER TO DETAIL
TEMPORARY SILTATION FENCE, REFER TO DETAIL	SF
CONSRUCTION LIMITS: DELINEATED BY PROPERTY LINE UNLESS OTHERWISE SPECIFIED	CL
TEMPORARY MULCH SEEDING – REFER TO DETAILS	MS
30' X 800' STONE PAD, 6" DEEP TO KEEP FROM TRACKING MUD OFF SITE – REFER TO DETAIL (TEMPORARY DURING CONSTRUCTION)	SP
PERMANENT EROSION CONTROL BLANKET – CURLEX NET-FREE BRAND 100% BIO-DEGRADABLE EROSION CONTROL BLANKET OR APPROVED EQUAL – REFER TO DETAIL	ECB
D-50 RIP-RAP STORM OUTLET PROTECTION – REFER TO DETAIL AND PLAN FOR MIN. QUANTITY (PERMANENT)	RR

EARTHWORK QUANTITIES

NORTH PARK AREA 'B-9' TOTAL ACREAGE = 99.6 ACRES

NORTH PARK AREA 'B-9' CONSTRUCTION LIMITS = 27.5 ACRES

TOTAL NET SITE VOLUME = 164,000 CU. YD. FILL

SCALE: 1"=100'

NOTE TO CONTRACTOR

CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS & DEPTHS AND NOTIFY ENGINEER OF ANY INACCURACIES IN LOCATION OR ELEVATION OR ANY CONFLICTS PRIOR TO & AFTER ANY EXCAVATION. NO PAYMENT SHALL BE MADE TO CONTRACTOR FOR UTILITY DESTRUCTION OR UNDERGROUND CHANGES REQUIRED DUE TO CONFLICTING ELEVATIONS.

revisions:

ARCHITECTURE
CIVIL ENGINEERING
PLANNING
BYNUM FANYO & ASSOCIATES, INC.
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bloomington, indiana
(812) 332-8030
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certified by:

PROPOSED
NORTH PARK AREA B-9 MASS GRADING
N HUNTER LN
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sheet no: C301
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hydrogeology inc.
1211 S Walnut St
Bloomington, IN 47401

DRAFT

Mark Nagle, P.E.,
Milestone
4755 W. Arlington Road
Bloomington 47404

Date: July 7, 2022

Contact:
Jason Krothe

Phone:
812-219-0210

Email: jnkrothe@hydrogeologyinc.com

Subject:
Old Ledge Quarry – Karst Survey
Bloomington, IN

Dear Mr. Nagle:

Hydrogeology Inc. (Hydrogeology) respectfully submits this karst report for multiple parcels located on N Packinghouse Road in Bloomington, IN. The combined parcels are approximately 99-acres (Figure 1).

1 – Overview

The Site is located on N Packinghouse Road in Bloomington, Indiana and is approximately 99-acres (Figure 2). The property currently consists of mostly dense vegetation and an abandoned quarry.

2 - Geology / Physiography

The Site is in the Mitchell Plateau physiographic region, which is one of the primary karst forming areas in Indiana. The bedrock at the Site includes the St Louis and Salem Limestones (Hasenmueller, Estell, Keith, and Thompson, 2008) (Figure 3). The St Louis Limestone is the primary karst forming bedrock unit in Indiana. It is primarily thinly bedded limestone with smaller layers of shale, chert, and dolomite (Carr, 1986). The Salem Limestone is primarily limestone and known for exceptionally thick beds (Carr, Rexroad, and Gray, 1986).

3 – Sinkholes & Springs

Sinkholes are surface depressions that form in a variety of ways in karst areas (Figure 4). Sinkholes can have a swallow hole, which is an opening in the ground where water infiltrates. Groundwater flow in karst areas is predominantly fracture flow, meaning the bedrock itself has low permeability while the fractures in the bedrock are

open conduits that allow water, soil, and other materials to travel quickly through the subsurface. Water that drains into a sinkhole can eventually discharge at a karst spring (Figure 5).

4 – Karst Desktop Review

A review of available karst resources was conducted prior to the field survey. Those resources include United State Geological Survey (USGS) topographic maps, Indiana Map 1-ft LIDAR topographic, karst spring maps, and private cave databases.

5 – Karst Field Survey

Hydrogeology conducted a karst field survey at the Site on June 13 and 29, 2022. Where possible, the Site was walked at 10-foot transects to locate any karst features. Seventeen sinkholes, five springs and one sinking stream were identified during the field survey and are described below (Figure 6, Appendix A). All sinkholes were flagged and should be surveyed prior to development at the Site.

Sinkholes

SH-01 – Sinkhole SH-1 is approximately 3 feet in diameter and 2 feet deep (Photo 4). No bedrock or opening was observed within the sinkhole.

Mitigation Measures: SH-01 should receive a 25-foot Sinkhole Conservancy Area (SCA) based on the Monroe County zoning guidelines. Additionally, erosion and sediment control measures should be installed around the rim of SH-01 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-02 – Sinkhole SH-02 is 20 feet long, 10 feet wide, and 4 feet deep (Photo 5). The sinkhole is soil filled with no apparent opening or bedrock.

Mitigation Measures: SH-02 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-02 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-03 – Sinkhole SH-03 is 20 feet in diameter and 2 feet deep. No bedrock or opening were observed within the sinkhole (Photo 6).

Mitigation Measures: SH-03 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-03 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-04 – Sinkhole SH-04 is 20 feet long, 15 feet wide, and 5 feet deep (Photo 10). Some amounts of bedrock are present within the sinkhole, but no surface opening was observed.

Mitigation Measures: SH-04 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-04 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-05 – Sinkhole SH-05 is 2 feet in diameter and 8 feet deep (Photos 11 and 12). Bedrock is exposed within the sinkhole.

Mitigation Measures: SH-05 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-05 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-06 – Sinkhole SH-06 is 15 feet long, 10 feet wide, and 4 feet deep (Photo 15). Bedrock is exposed within the sinkhole.

Mitigation Measures: SH-06 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-06 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-07 – Sinkhole SH-07 is 75 feet long, 15 feet wide, and 4 feet deep (Photos 16, 17, and 18). The sinkhole consists of three surface depressions with exposed bedrock.

Mitigation Measures: SH-07 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-07 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-08 – Sinkhole SH-08 is 10 feet wide and unknown depth (Photo 20). The sinkhole is filled with remnant quarry blocks.

Mitigation Measures: SH-08 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-08 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-09 – Sinkhole SH-09 is 2 feet wide and 3 feet deep (Photos 44 and 45). Exposed bedrock is present within the sinkhole.

Mitigation Measures: SH-09 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-09 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-10 – Sinkhole SH-10 is 7 feet long, 4 feet wide, and 2 feet deep (Photos 46 and 47). Bedrock is exposed within the sinkhole.

Mitigation Measures: SH-10 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-10 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-11 – Sinkhole SH-11 is 15 feet wide and 5 feet deep (Photos 49). The sinkhole is soil filled with no obvious opening or bedrock.

Mitigation Measures: SH-11 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-11 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-12 – Sinkhole SH-12 is 1 feet wide and 10 feet deep (Photos 50 and 51). The sinkhole is soil filled with no obvious opening or bedrock.

Mitigation Measures: SH-12 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-12 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-13 – Sinkhole SH-13 is 12 feet long, 8 feet wide, and 4 feet deep (Photo 52 and 53). The sinkhole is exposed within the sinkhole.

Mitigation Measures: SH-13 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-13 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-14 – Sinkhole SH-14 is 2.5 feet in diameter and 20 feet deep (Photo 54). The sinkhole has bedrock within the surface opening.

Mitigation Measures: SH-14 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-14 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-15 – Sinkhole SH-14 is 10 feet wide and 3 feet deep (Photo 55). The sinkhole is soil filled.

Mitigation Measures: SH-15 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-15 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-16 – Sinkhole SH-16 is 15 feet in diameter and 10 feet deep (Photo 56 and 57). The sinkhole has steep sides and appears to have collapsed into a possible cave passage. Bedrock is present in the sinkhole.

Mitigation Measures: SH-16 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-14 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SH-17 – Sinkhole SH-17 is 10 feet wide and 4 feet deep (Photo 55). The sinkhole is soil filled.

Mitigation Measures: SH-17 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SH-17 prior to land clearing operations and until revegetation has occurred at the Site after construction.

Springs

SP-01 – Spring SP-01 has a flow of approximately 1 gallon per minute (gpm) and flows out of a bedrock opening (Photo 1).

Mitigation Measures: SP-01 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SP-01 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SP-02 – Spring SP-02 has a flow of approximately 1 gpm and flows out of a bedrock opening (Photo 14).

Mitigation Measures: SP-02 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SP-02 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SP-03 – Spring SP-03 is a historically documented spring but no water flow was observed at the time of the field survey (Photo 29).

Mitigation Measures: SP-03 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SP-03 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SP-04 – Spring SP-04 is a historically documented spring but no water flow was observed at the time of the field survey (Photo 91).

Mitigation Measures: SP-04 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SP-04 prior to land clearing operations and until revegetation has occurred at the Site after construction.

SP-05 – Spring SP-05 is a historically documented spring with a flow of approximately 3 gpm at the time of the field survey (Photo 92).

Mitigation Measures: SP-05 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SP-05 prior to land clearing operations and until revegetation has occurred at the Site after construction.

Sinking Streams

SS-01 – Sinking stream SS-01 is an approximately 6-inch opening in limestone bedrock that was draining approximately 3 gpm at the time of field survey.

Mitigation Measures: SS-01 should receive a 25-foot SCA. Additionally, erosion and sediment control measures should be installed around the rim of SS-01 prior to land clearing operations and until revegetation has occurred at the Site after construction.

6 – Study Limitations

Dense vegetation and remnant quarry blocks covers most of the Site. Identification of karst surface features can be difficult in areas with dense vegetation and quarry blocks. Clearing of ground vegetation was not within the scope of work for this survey. The identification of karst features at the Site was limited to surface inspection. No subsurface investigations were conducted for this study. Undocumented karst features are possible in the subsurface. Dense vegetation covers most of the Site.

7 – Karst Best Management Practices

The following are karst management practices that should be considered for the Site:

Water Quality

Groundwater recharge in karst areas predominately occurs through sinkholes. Water infiltrates into a sinkhole, then flows along karst conduits and typically discharges to a karst spring. There is minimal filtration of the water throughout this shallow groundwater cycle. Therefore, it is critical to maintain or improve water quality at the Site.

Impacts to water quality at the Site are most likely to occur due to erosion and sediment mobilization during construction. Erosion and sediment control will be critical to preventing water quality impacts. All sinkholes should be protected with appropriate erosion and sediment controls for the duration of construction at the Site.
In addition to these measures a low salt no herbicide/pesticide spray policy should be implemented for the Site.

Drainage Alteration

Alteration of natural drainage patterns can result in the development of new sinkholes, particularly when run-off is concentrated. The drainage plan for the Site should maintain the existing drainage patterns wherever possible and prevent concentrated run-off. To prevent development of new sinkholes, detention basins should be lined with an impervious material.

Unknown Karst Features

Previously unknown karst features are possibly present in the subsurface at the Site. If any previously unknown karst feature is identified during development of the Site, the features should be protected with erosion and sediment control measures and inspected by a karst specialist.

8 – Summary

A desktop review and field survey were conducted at the Site to identify any karst features. Seventeen sinkholes, five springs, and one sinking stream were identified at the Site. All sinkholes should have a 25-ft SCA and be protected with erosion and sediment control measures throughout the entire construction process. The karst field survey was limited to surface inspection with no subsurface investigation. Unknown karst features are possibly present in the subsurface at the Site. Dense vegetation and remnant quarry blocks were present over most of the Site, which prevented close ground inspection in those areas. If a previously unknown karst feature is discovered during construction activities the feature should be protected with erosion and sediment control measures and inspected by a karst specialist.

hydrogeology inc.
1211 S Walnut St
Bloomington, IN 47401

Hydrogeology appreciates the opportunity to provide this summary report. If you have any questions, concerns, or comments please do not hesitate to contact me directly at (812) 219-0210.

Sincerely,

Hydrogeology Inc.

Jason N. Krothe, LPG IN-2511
President

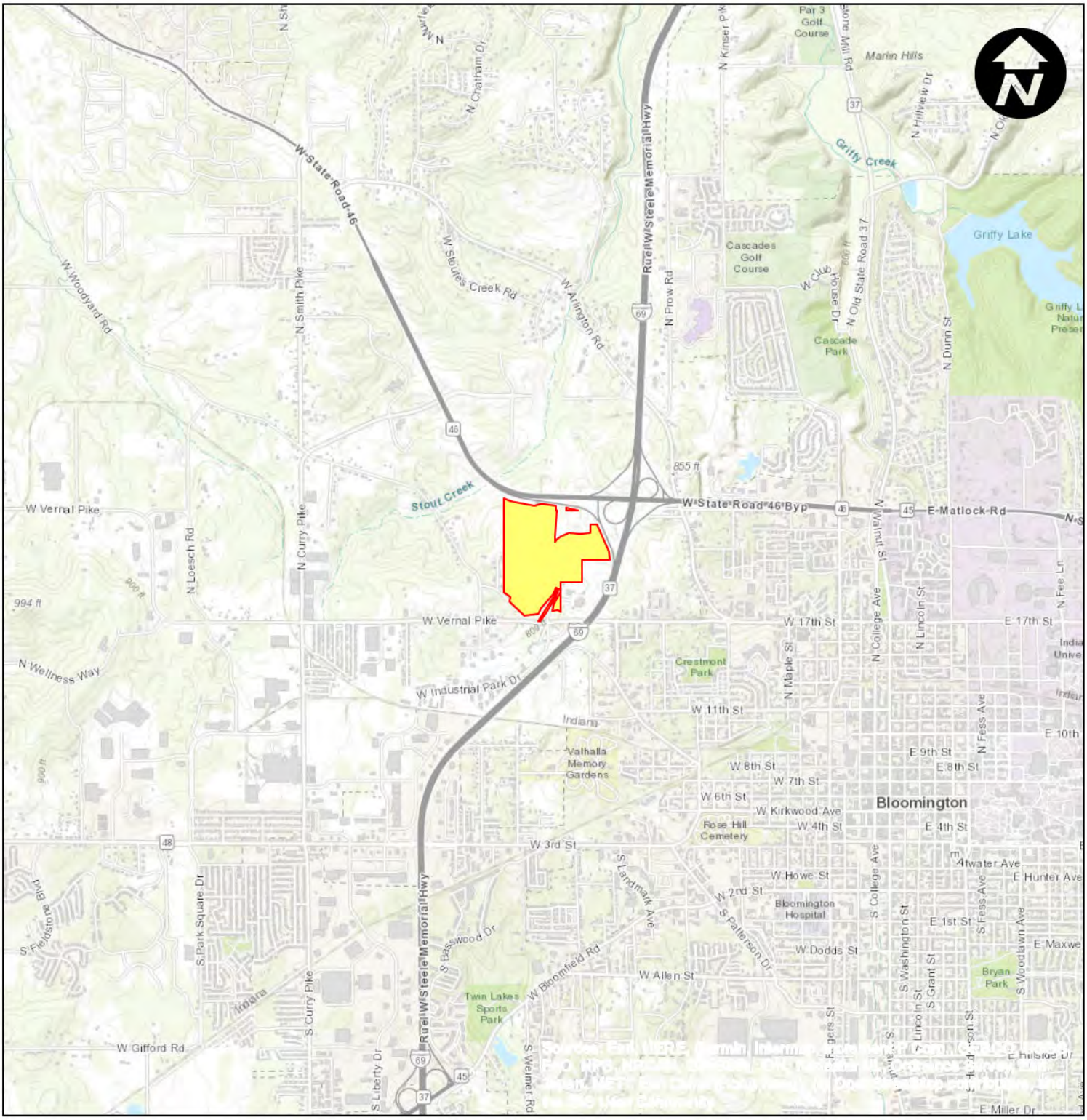
hydrogeology inc.
1211 S Walnut St
Bloomington, IN 47401

References

Carr, D. D., 1986, St Louis Limestone, in Shaver, R. H., Ault, C. H., Burger, A. M., Carr, D. D., Droste, J. B., Eggert, D. L., Gray, H. H., Harper, Denver, Hasenmueller, N. R., Hasenmueller, W. A., Horowitz, A. S., Hutchison, H. C., Keith, B. D., Keller, S. J., Patton, J. B., Rexroad, C. B., and Wier, C. E., Compendium of Paleozoic rock-unit stratigraphy in Indiana–a revision: Indiana Geological Survey Bulletin 59, p. 108–109.

Hasenmueller, W. A., Estell, C. M., Keith, B., and Thompson, T. A., 2009, Bedrock geologic map of Monroe County, Indiana: Indiana Geological Survey Miscellaneous Map 73, scale 1:48,000.

Rexroad, C. B., 1986, Harrodsburg Limestone, in Shaver, R. H., Ault, C. H., Burger, A. M., Carr, D. D., Droste, J. B., Eggert, D. L., Gray, H. H., Harper, Denver, Hasenmueller, N. R., Hasenmueller, W. A., Horowitz, A. S., Hutchison, H. C., Keith, B. D., Keller, S. J., Patton, J. B., Rexroad, C. B., and Wier, C. E., Compendium of Paleozoic rock-unit stratigraphy in Indiana–a revision: Indiana Geological Survey Bulletin 59, p. 57-59.



LEGEND

Property Boundary

0 0.25 0.5 1 Mile

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

KARST SURVEY
OLD LEDGE WALL QUARRY
BLOOMINGTON, IN

SITE LOCATION

hydrogeology inc.

FIGURE
1

LEGEND

Property Boundary

0 250 500 Feet

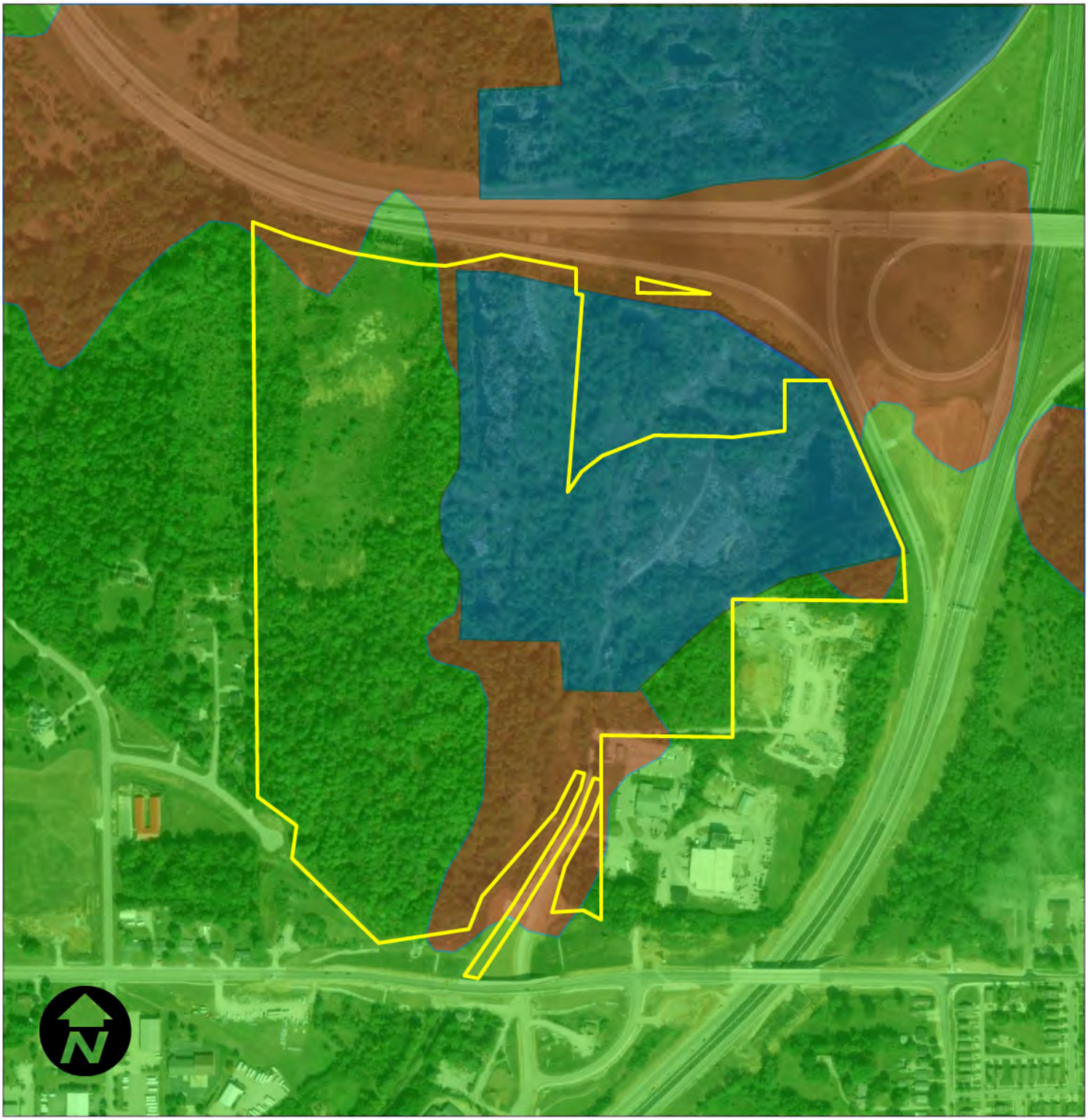
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

KARST SURVEY
OLD LEDGE WALL QUARRY
BLOOMINGTON, IN

SITE

hydrogeology inc.

FIGURE
2



LEGEND

- Property Boundary
- Salem Limestone
- St. Louis Limestone
- Quarry

0 250 500 Feet

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community, Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

KARST SURVEY
OLD LEDGE WALL QUARRY
BLOOMINGTON, IN

BEDROCK

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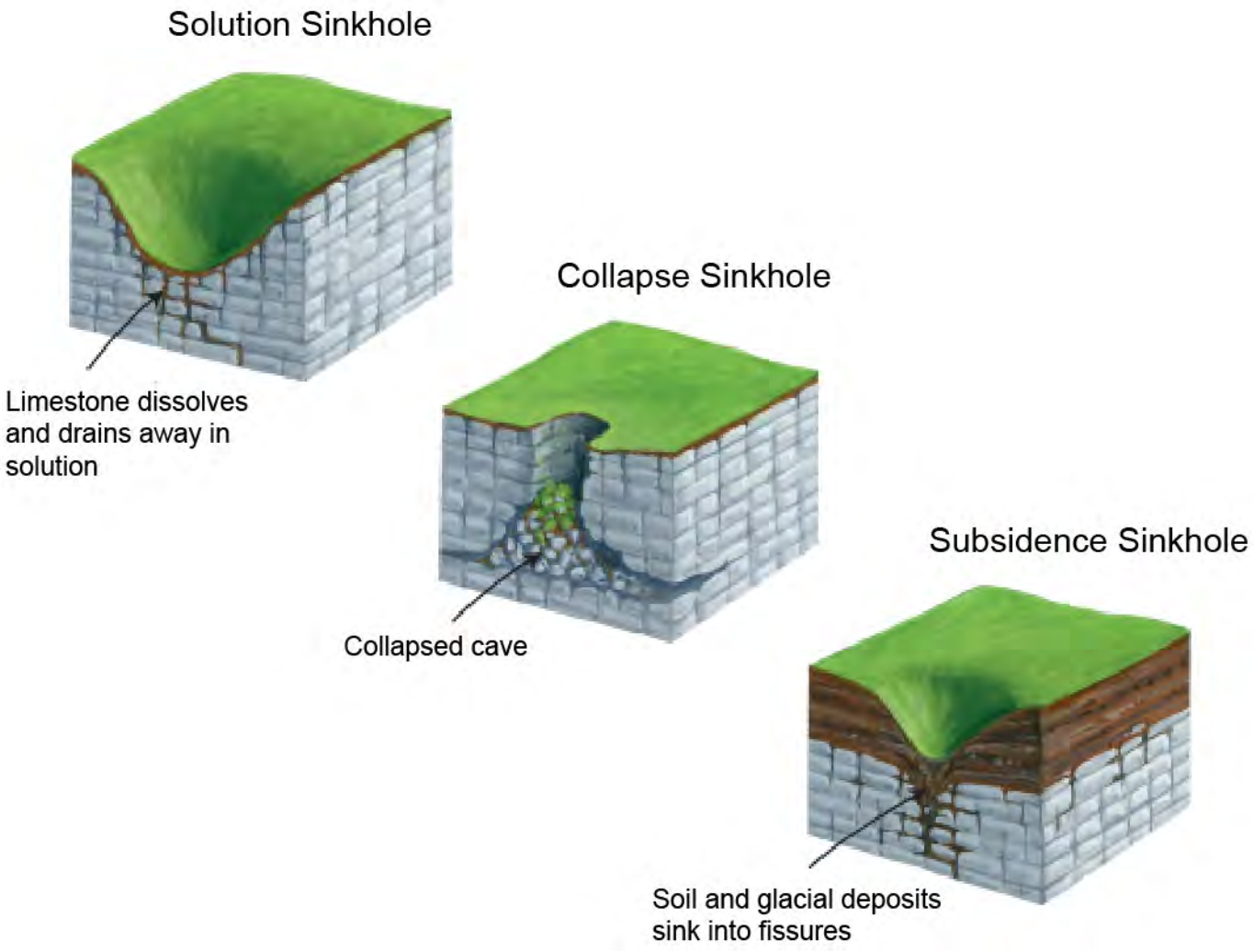
FIGURE
3



KARST SURVEY
OLD LEDGE WALL QUARRY
BLOOMINGTON, IN

SINKHOLE TYPES

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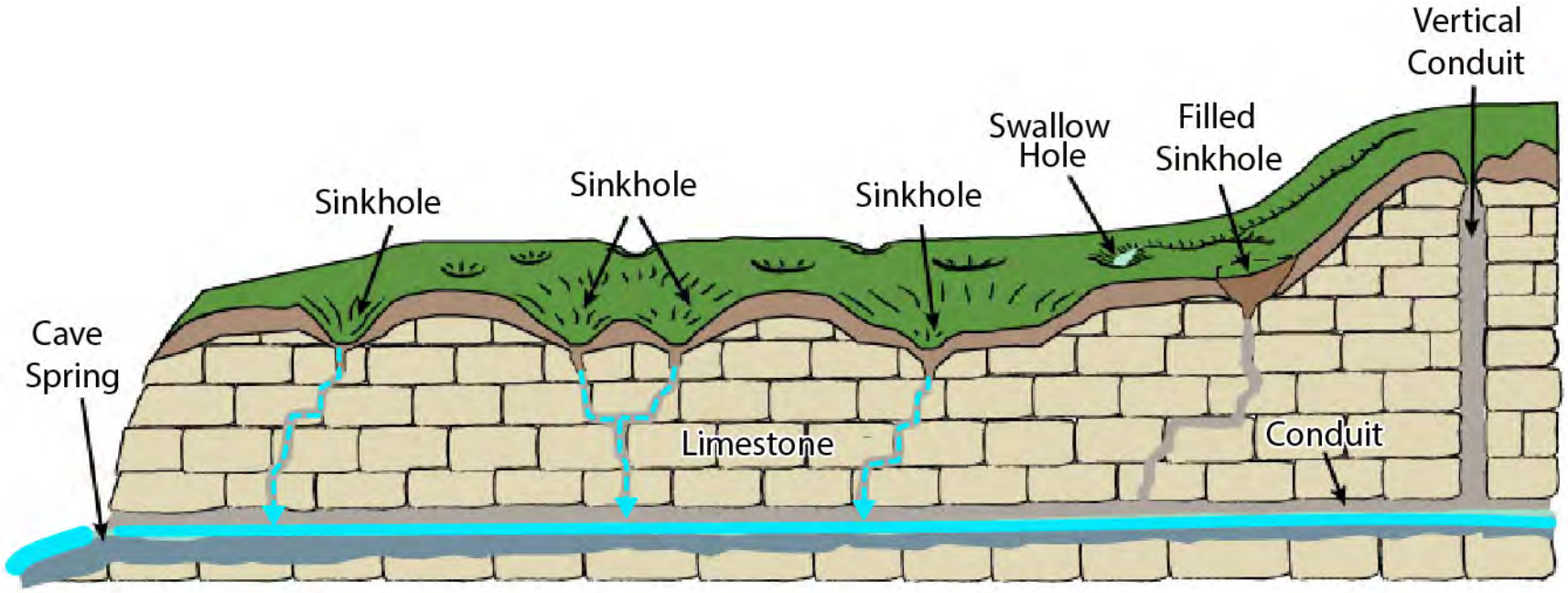
FIGURE
4



KARST SURVEY
OLD LEDGE WALL QUARRY
BLOOMINGTON, IN

CONCEPTUAL KARST CROSS SECTION

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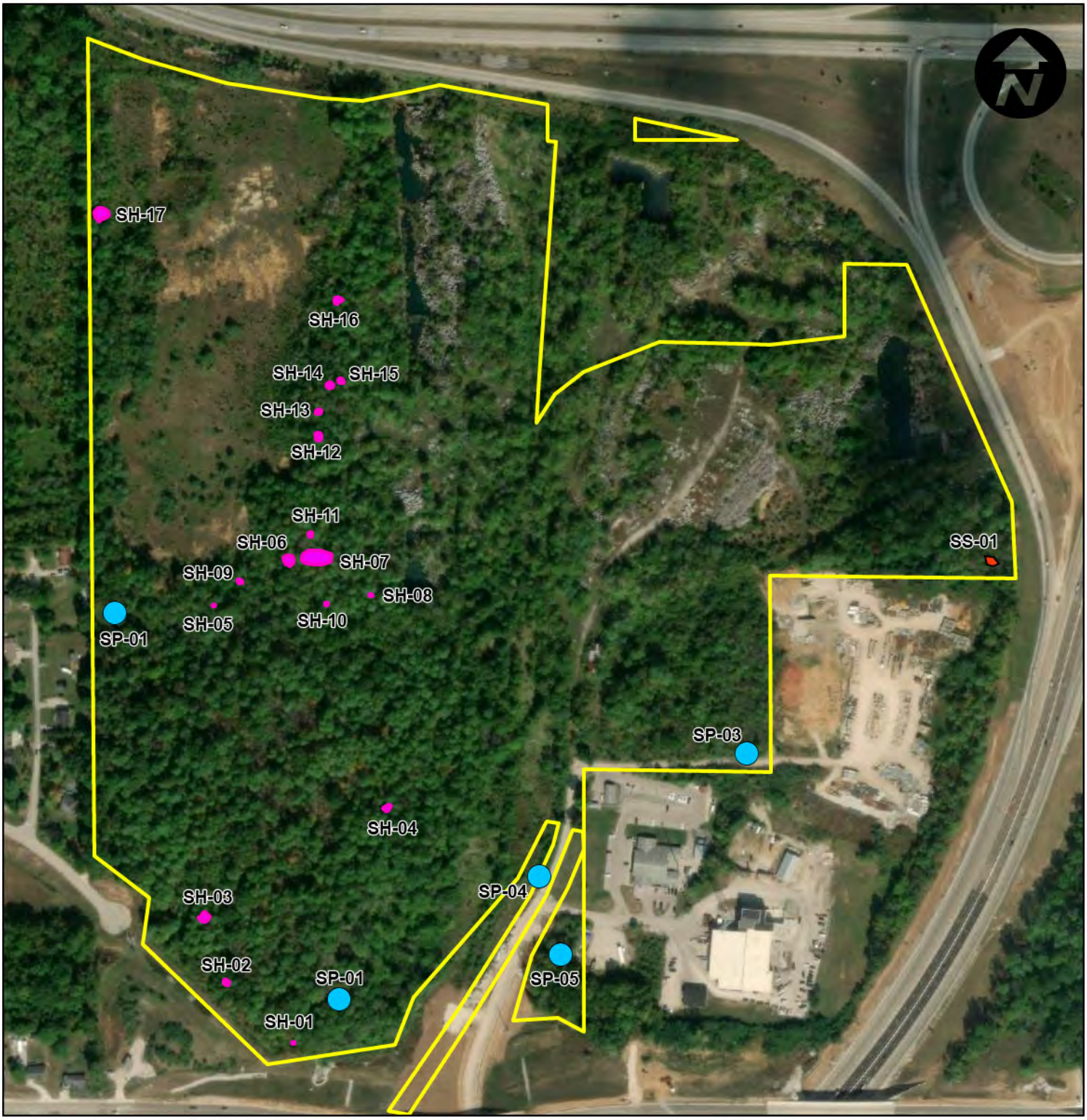
FIGURE
5



LEGEND

- Property Boundary
- Sinkhole
- Sinking Stream
- Spring

0 125 250 500 Feet

Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

KARST SURVEY
OLD LEDGE WALL QUARRY
BLOOMINGTON, IN

KARST FEATURES

hydrogeology inc.

FIGURE
6

Photograph Number: 1 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** Spring SP-01. Recommended treatment: 25-foot SCA	

Photograph Number: 2 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** South side of the property looking southeast. Recommended treatment: NA	

Photograph Number: 3 **Coordinates (UTM Meters)** NA **Photograph Date:6**-13-22 **Comments:** South side of the property looking north. Recommended treatment: NA	

Photograph Number: 4 **Coordinates (UTM Meters)** NA **Photograph Date:6**-13-22 **Comments:** Sinkhole SH-01. Recommended treatment: 25-foot SCA	

Photograph Number: 5 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** Sinkhole SH-02. Recommended treatment: NA	

Photograph Number: 6 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** Sinkhole SH-03. Recommended treatment: 25-foot SCA	

Photograph Number: 7 **Coordinates (UTM Meters)** NA **Photograph Date:6**-13-22 **Comments:** West side of the property looking east. Recommended treatment: NA	

Photograph Number: 8 **Coordinates (UTM Meters)** NA **Photograph Date:**6-13-22 **Comments:** West side of the property looking east. Recommended treatment: NA	

Photograph Number:
9

Coordinates (UTM Meters)
NA

Photograph Date:6-13-22

Comments:
West side of the property looking east.

Recommended treatment:
NA

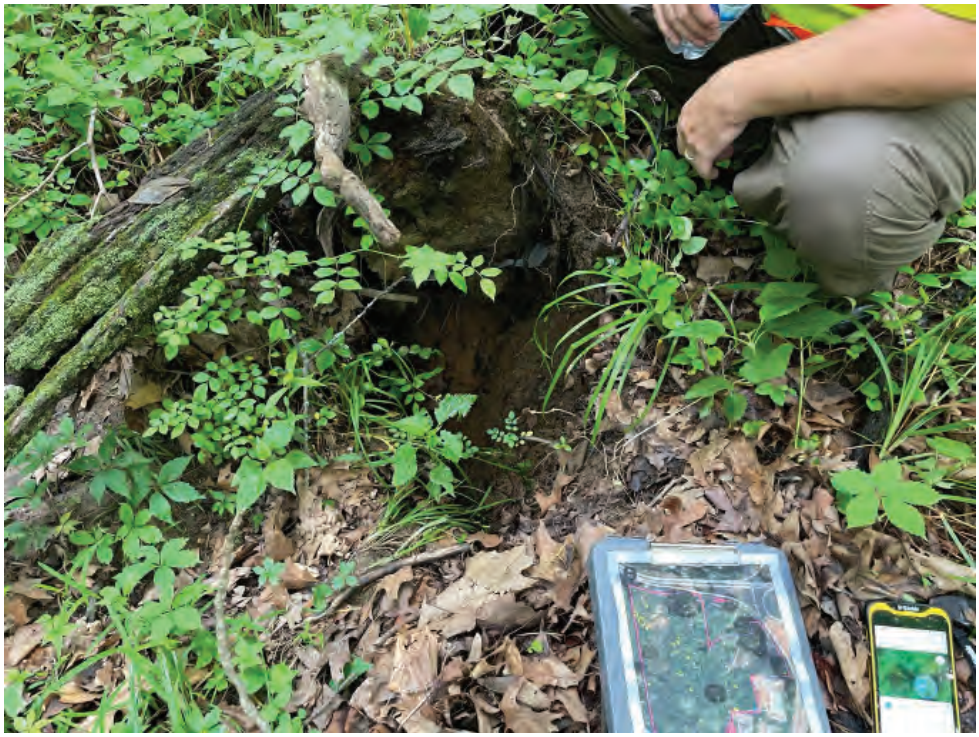
Photograph Number:
10

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
Sinkhole SH-04.

Recommended treatment:
25-foot SCA

Photograph Number: 11 **Coordinates (UTM Meters)** NA **Photograph Date:6**-13-22 **Comments:** Sinkhole SH-05. Recommended treatment: 25-foot SCA	

Photograph Number: 12 **Coordinates (UTM Meters)** NA **Photograph Date:**6-13-22 **Comments:** Sinkhole SH-05. Recommended treatment: 25-foot SCA	

Photograph Number:
13

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
West side of the property looking west.

Recommended treatment:
NA

Photograph Number:
14

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
Spring SP-02.

Recommended treatment:
NA

Photograph Number: 15 **Coordinates (UTM Meters)** NA **Photograph Date:6**-13-22 **Comments:** Sinkhole SH-06. Recommended treatment: 25-foot SCA	

Photograph Number: 16 **Coordinates (UTM Meters)** NA **Photograph Date:**6-13-22 **Comments:** Sinkhole SH-07. Recommended treatment: 25-foot SCA	

Photograph Number: 17 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** Sinkhole SH-07. Recommended treatment: 25-foot SCA	

Photograph Number: 18 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-13-22 **Comments:** Sinkhole SH-07. Recommended treatment: 25-foot SCA	

Photograph Number:
19

Coordinates (UTM Meters)
NA

Photograph Date:6-13-22

Comments:
Sinkhole SH-08.

Recommended treatment:
25-foot SCA

Photograph Number:
20

Coordinates (UTM Meters)
NA

Photograph Date:6-13-22

Comments:
Center of the property looking south.

Recommended treatment:
NA

Photograph Number: 21 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** North side of property looking north. Recommended treatment: NA	

Photograph Number: 22 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-13-22 **Comments:** North side of property looking south. Recommended treatment: NA	

Photograph Number:
23

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
North side of property.

Recommended treatment:
NA

Photograph Number:
24

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
North side of property.

Recommended treatment:
NA

Photograph Number: 25 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** North side of property. Recommended treatment: NA	

Photograph Number: 26 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-13-22 **Comments:** North side of property. Recommended treatment: NA	

Photograph Number:
27

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
North side of property.

Recommended treatment:
NA

Photograph Number:
28

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
North side of property.

Recommended treatment:
NA

Photograph Number:
29

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
Spring SP-03. No water flowing at the time of field survey.

Recommended treatment:
25-foot SCA

Photograph Number:
30

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
Drainage pipe on east side of property.

Recommended treatment:
NA

Photograph Number:
31

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
Center of the property looking north.

Recommended treatment:
NA

Photograph Number:
32

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
East side of the property looking west.

Recommended treatment:
NA

Photograph Number: 33 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** East side of the property looking west. Recommended treatment: NA	

Photograph Number: 34 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-13-22 **Comments:** East side of the property looking west. Recommended treatment: NA	

Photograph Number:
35

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
East side of the property looking west.

Recommended treatment:
NA

Photograph Number:
36

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
East side of the property looking west.

Recommended treatment:
NA

Photograph Number: 37 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** East side of the property looking west. Recommended treatment: NA	

Photograph Number: 38 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-13-22 **Comments:** East side of the property looking west. Recommended treatment: NA	

Photograph Number:
39

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
Middle of the property looking south.

Recommended treatment:
NA

Photograph Number:
40

Coordinates (UTM Meters)
NA

Photograph Date: 6-13-22

Comments:
Middle of the property looking south.

Recommended treatment:
NA

Photograph Number: 41 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-13-22 **Comments:** Middle of the property looking south. Recommended treatment: NA	

Photograph Number: 42 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** Middle of the property looking south. Recommended treatment: NA	

Photograph Number:
43

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Center of the property looking south.

Recommended treatment:
NA

Photograph Number:
44

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinkhole SH-09.

Recommended treatment:
25-foot SCA

Photograph Number: 45 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-29-22 **Comments:** Sinkhole SH-09. Recommended treatment: 25-foot SCA	

Photograph Number: 46 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** Sinkhole SH-10. Recommended treatment: 25-foot SCA	

Photograph Number:
47

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinkhole SH-10.

Recommended treatment:
NA

Photograph Number:
48

Coordinates (UTM Meters)
NA

Photograph Date: 6--22

Comments:
Center of the property looking south.

Recommended treatment:
NA

Photograph Number: 49 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-29-22 **Comments:** Sinkhole SH-11. Recommended treatment: 25-foot SCA	

Photograph Number: 50 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** Sinkhole SH-12. Recommended treatment: 25-foot SCA	

Photograph Number:
51

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinkhole SH-12.

Recommended treatment:
25-foot SCA

Photograph Number:
52

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinkhole SH-13.

Recommended treatment:
25-foot SCA

Photograph Number:
53

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinkhole SH-13.

Recommended treatment:
25-foot SCA

Photograph Number:
54

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinkhole SH-14.

Recommended treatment:
25-foot SCA

Photograph Number:
55

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinkhole SH-15.

Recommended treatment:
25-foot SCA

Photograph Number:
56

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinkhole SH-16.

Recommended treatment:
25-foot SCA

Photograph Number: 57 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-29-22 **Comments:** Sinkhole SH-16. Recommended treatment: 25-foot SCA	

Photograph Number: 58 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** North side of property looking north. Recommended treatment: NA	

Photograph Number:
59

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking southwest.

Recommended treatment:
NA

Photograph Number:
60

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking southwest.

Recommended treatment:
NA

Photograph Number: 61 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-29-22 **Comments:** North side of the property looking southwest. Recommended treatment: NA	

Photograph Number: 62 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** North side of property looking north. Recommended treatment: NA	

Photograph Number:
63

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking southwest.

Recommended treatment:
NA

Photograph Number:
64

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking southwest.

Recommended treatment:
NA

Photograph Number: 65 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-29-22 **Comments:** North side of the property looking southwest. Recommended treatment: NA	

Photograph Number: 66 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** North side of property looking north. Recommended treatment: NA	

Photograph Number:
67

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking southwest.

Recommended treatment:
NA

Photograph Number:
68

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking northwest.

Recommended treatment:
NA

Photograph Number: 69 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-29-22 **Comments:** Sinkhole SH-17 Recommended treatment: 25-foot SCA	

Photograph Number: 70 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** West side of the property looking southeast. Recommended treatment: NA	

Photograph Number:
71

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
East side of the property looking southwest at pond overflow pipe.

Recommended treatment:
NA

Photograph Number:
72

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
East side of the property looking northeast.

Recommended treatment:
NA

Photograph Number: 73 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-29-22 **Comments:** East side of the property looking northeast. Recommended treatment: NA	

Photograph Number: 74 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** East side of the property looking northwest. Recommended treatment: NA	

Photograph Number:
75

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
East side of the property looking northeast.

Recommended treatment:
NA

Photograph Number:
76

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
East side of the property looking south.

Recommended treatment:
NA

Photograph Number: 77 **Coordinates (UTM Meters)** NA **Photograph Date: 6**-29-22 **Comments:** East side of the property looking south. Recommended treatment: NA	

Photograph Number: 78 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** East side of the property looking west. Recommended treatment: NA	

Photograph Number:
79

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
East side of the property looking east.

Recommended treatment:
NA

Photograph Number:
80

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking south.

Recommended treatment:
NA

Photograph Number:
81

Coordinates (UTM Meters)
NA

Photograph Date:6-29-22

Comments:
North side of the property looking northwest.

Recommended treatment:
NA

Photograph Number:
82

Coordinates (UTM Meters)
NA

Photograph Date:6-29-22

Comments:
North side of the property looking north.

Recommended treatment:
NA

Photograph Number:
83

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking north.

Recommended treatment:
NA

Photograph Number:
84

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
Sinking stream SS-01.

Recommended treatment:
25-foot SCA

Photograph Number: 85 **Coordinates (UTM Meters)** NA **Photograph Date:6**-29-22 **Comments:** Sinking stream SS-01. Recommended treatment: 25-foot SCA	

Photograph Number: 86 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** North side of the property looking south. Recommended treatment: NA	

Photograph Number:
87

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
North side of the property looking south.

Recommended treatment:
NA

Photograph Number:
88

Coordinates (UTM Meters)
NA

Photograph Date: 6-29-22

Comments:
East side of the property looking west.

Recommended treatment:
NA

Photograph Number: 89 **Coordinates (UTM Meters)** NA **Photograph Date:** 6-29-22 **Comments:** East side of the property looking southwest. Recommended treatment: NA	

Photograph Number: 90 **Coordinates (UTM Meters)** NA **Photograph Date:**6-29-22 **Comments:** East side of the property looking west. Recommended treatment: NA	

Project Name:	Spring Woods Maj Subdivision	**Watershed**:	Jacks Defeat Creek
Engineer/Design Firm:	Katie Stein, Smith Design	**Karst Report**:	Not Completed
Address:	4050 W Carmola Dr.	**Wetland Delineation**:	Not Completed
Acres:	2.61 acres		

Project Summary

The Spring Woods Major Subdivision is located in the Jacks Defeat Creek Critical Watershed. The project site is surrounded by single family residential. The site is not located within a mapped floodplain. There will be six (6) single-family lots with frontage on Carmola Drive, so no new roadways are proposed. There will be a detention pond on a common area lot to the north of the homes.

Project Drainage

This property drains northwest towards an open existing 18" HDPE storm pipe in the Glen Meadows Subdivision Section Two (note: Glen Meadows is not currently in the County's road inventory). Offsite runoff primarily comes from the Hoosier Aloha Addition, as well as a detention pond from the Glen Meadows Subdivision.

Spring Woods Subdivision – Drainage Comments

Critical Watershed:

- This project is in the Jacks Defeat Creek critical watershed and the pond is designed using critical watershed release rates.

Adequacy of outlets/receiving infrastructure:

- 18" storm pipe – verify adequacy of receiving channel between pond outlet and 18" pipe.

Water Quality:

- WQ Volume calculated for 0.5" rain and two 4" orifices are shown on the outlet structure.

Tree Removal:

- Verify number of trees to be removed for the detention area. Recommend 1:1 tree replanting.

Drainage Easements:

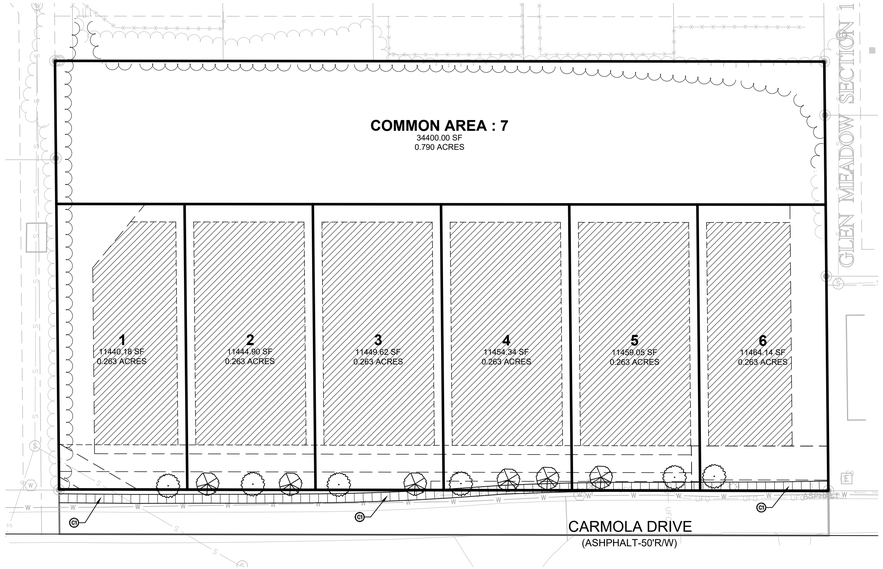
- Two 20 ft. Drainage Easements on the east and west sides of the property will convey runoff to the detention pond.
- The detention pond is located on a Common Area lot.

SPRING WOODS MAJOR SUBDIVISION

4050 W CARMOLA DRIVE BLOOMINGTON, INDIANA 47404

SECTION 24, T-9-N, R-2-W

Sheet List Table	
Sheet Number	Sheet Title
1	Title Sheet
2	EXISTING CONDITION & DEMOLITION
3	Site Plan
4	Grading Plan
5	UTILITY PLAN
6	PRELIMINARY PLAT
7	PROFILES
8	DETAILS SHEET 1
9	SWPP PLAN
10	SWPPP INDEX
11	SWPPP Specs
12	SWPP Details

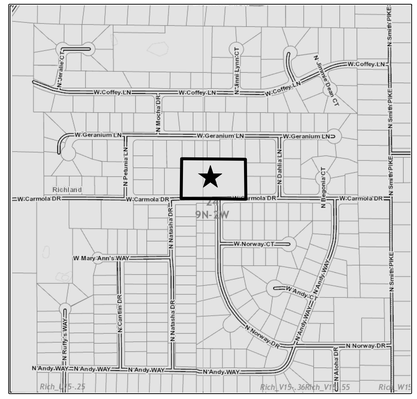


RICHLAND TOWNSHIP
SECTION 24
TOWNSHIP 9 NORTH
RANGE 2 WEST

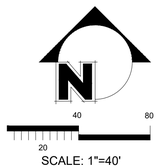
OWNER(S)
BLACKWELL CONTRACTORS INC
PO BOX 3400
BLOOMINGTON, IN 47402
INST 2020014812

DESIGNER(S) & SURVEYOR(S)
SMITH DESIGN GROUP, INC.
1467 W ARLINGTON ROAD
Bloomington, IN. 47404
(812) 336-6536

DEVELOPER(S)
BLACKWELL CONTRACTORS INC
PO BOX 3400
BLOOMINGTON, IN 47402
(812)360-5110



VICINITY MAP
★ PROJECT LOCATION
N
N.T.S.



SCALE: 1"=40'

LEGAL DESCRIPTION

A PART OF THE NORTHWEST QUARTER OF SECTION 24, TOWNSHIP 9 NORTH, RANGE 2 WEST, IN MONROE COUNTY, INDIANA, DESCRIBED AS FOLLOWS, TO-WIT; BEGINNING AT A POINT THAT IS 1395 FEET WEST AND 18.7 FEET SOUTH OF THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 24; THENCE EAST FOR A DISTANCE OF 430.00 FEET; THENCE NORTH FOR A DISTANCE OF 265 FEET; THENCE WEST FOR A DISTANCE OF 430.0 FEET; THENCE SOUTH FOR A DISTANCE OF 265 FEET AND TO THE PLACE OF BEGINNING. CONTAINING 2.61 ACRES, MORE OR LESS.

SHEET NO.	REVISIONS	BY	DATE

NOT FOR CONSTRUCTION

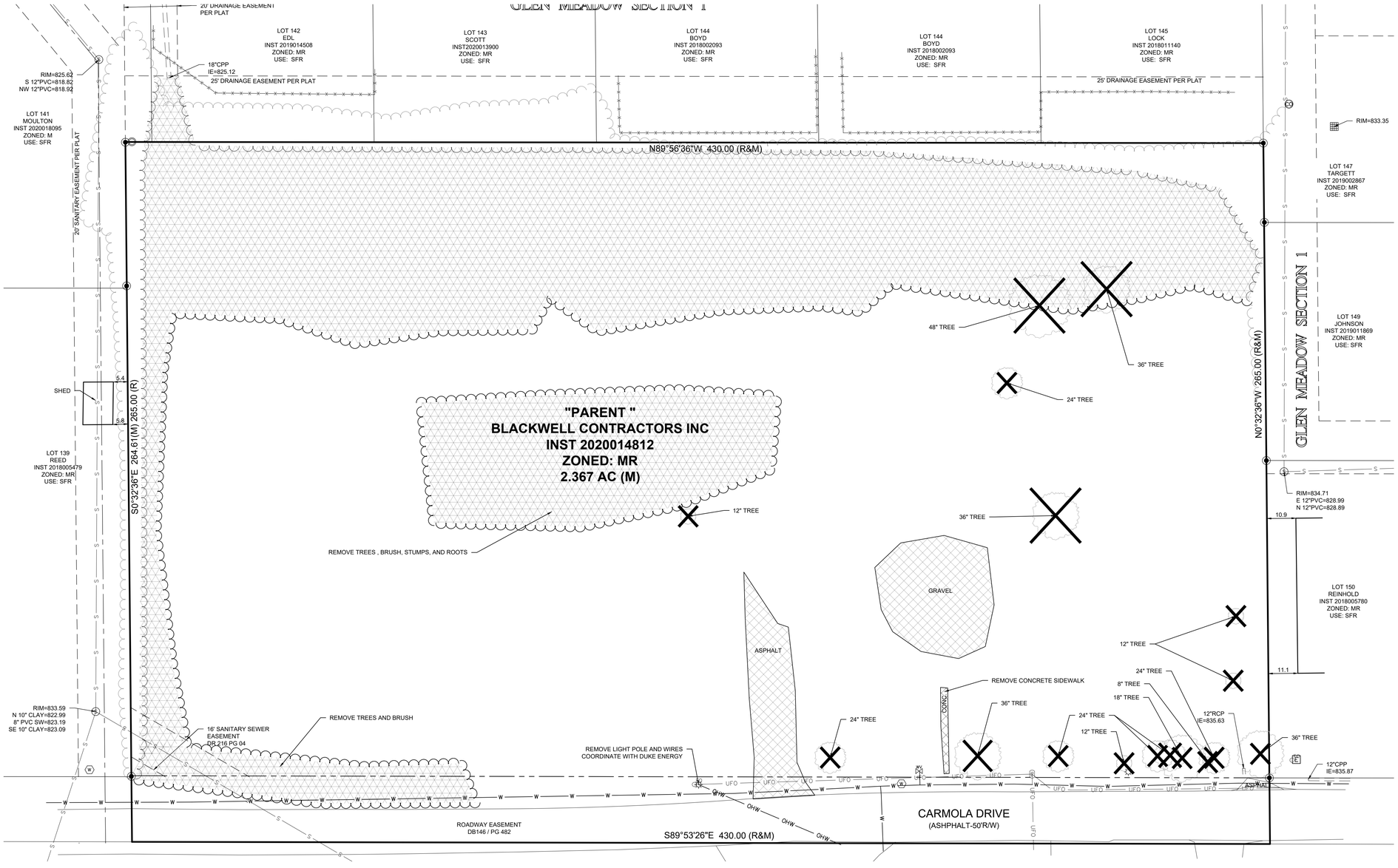
CERTIFICATION DATE
10-31-2023

NOTE : WATER, AND SANITARY SEWER ITEMS SHALL BE IN ACCORDANCE WITH THE TOWN OF ELLETTSVILLE UTILITIES AND EASTERN RICHLAND SEWER CORPORATION CONSTRUCTION SPECIFICATIONS. ALL OTHER WORK SHALL BE IN ACCORDANCE WITH THE 2021 SMITH DESIGN GROUP, INCORPORATED STANDARD SPECIFICATIONS.

SMITH DESIGN GROUP
CIVIL ENGINEERING - LAND SURVEYING
1467 W Arlington Road Bloomington, IN 47404
(812) 336-6536 - smithdginc.com

GRADING PERMIT

JOB NUMBER: 6293



DEMOLITION NOTES

- REMOVE EXISTING PAVEMENT.
- REMOVE EXISTING TREE, STUMP, AND ROOTS
- REMOVE TREES, BRUSH, STUMPS, AND ROOTS

LEGEND

RR SPIKE	M	MEASURED
STONE	P	PLATTED
REBAR	R	RECORD
IRON PIPE	FRB	FOUND REBAR
MAG NAIL	SRB	SET REBAR
UTILITY POLE	FIP	FOUND IRON PIPE
FENCE	FRS	FOUND RAILROAD SPIKE
	FMAG	FOUND MAG NAIL
	SMAG	SET MAG NAIL
	B/C	BUILDING CORNER
	FND	FOUND

BASIS OF BEARINGS:
INDIANA STATE PLANE,
WEST ZONE

DEMOLITION NOTES

1) PRIOR TO COMMENCEMENT OF DEMOLITION ACTIVITY, CONTRACTOR SHALL COORDINATE AND ON-SITE MEETING WITH MONROE COUNTY PLANNING TO REVIEW SCOPE OF WORK.
2) CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF DISCONNECTION OF PRIVATE UTILITIES WITH RESPECTIVE UTILITY SERVICE PROVIDERS.
3) ANY SIGNS REQUIRING REMOVAL TO EXECUTE THE WORK SHALL BE REMOVED, STORED AND RE-SET UPON COMPLETION OF CONSTRUCTION.
4) USE OF THE PUBLIC R/W REQUIRES PRIOR APPROVAL FROM MONROE COUNTY HIGHWAY DEPARTMENT.
5) WORK WITHIN THE R/W REQUIRES A CITY R/W EXCAVATION PERMIT AND BOND.
6) TREES AND STUMPS SHALL BE REMOVED COMPLETELY AND THE RESULTING EXCAVATION BACKFILLED WITH COMPACTED WITH COMPACTED GRANULAR MATERIAL IF LOCATED WITHIN AN AREA OF PROPOSED FILL PLACEMENT.
7) BURYING OF DEMOLITION MATERIALS ON SITE IS NOT PERMITTED.
8) THOUGH AN IDEM NPDES STORM WATER NOI IS NOT REQUIRED FOR THIS SITE, THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING, MAINTAINING AND MONITORING ON SITE EROSION CONTROL DEVICES DURING CONSTRUCTION.
9) TRACKING OF MATERIAL ONTO ADJACENT PUBLIC ROADWAYS IS NOT PERMITTED.
10) THE BOUNDARY & TOPOGRAPHIC SURVEY WAS COMPLETED IN MARCH 2021. ADDITIONAL IMPROVEMENTS OR DEMOLITION ON OR ADJACENT TO THE SITE MAY HAVE BEEN COMPLETED. CONTACT ENGINEER IF ADDITIONAL IMPROVEMENTS RESULTING IN A CHANGE OF PLAN ARE DISCOVERED.
11) EXISTING SANITARY SEWER LATERALS BEYOND THOSE SHOWN ON THE TOPOGRAPHIC SURVEY MAY BE UNCOVERED DURING CONSTRUCTION. ANY SUCH LATERAL FOUND THAT WILL NOT BE RE-USED MUST BE CAPPED. COORDINATE WORK WITH EASTERN RICHLAND SEWER CORPORATION INSPECTOR.
12) ITEMS NOT SPECIFICALLY NOTED FOR REMOVAL SUCH AS EXISTING LANDSCAPING BUT NECESSARY TO BE REMOVED TO COMPLETE THE WORK SHALL BE REMOVED.
13) CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES PRIOR TO BEGINNING WORK.

SMITH DESIGN GROUP
CIVIL ENGINEERING - LAND SURVEYING
1407 W ARLINGTON ROAD Bloomington, IN 47404
(812) 336-6536 • smithdginc.com

NOT FOR CONSTRUCTION

10/31/2023

SPRING WOODS MAJOR SUBDIVISION
4050 W CARMOLA DRIVE
BLOOMINGTON IN

REVISIONS	BY	DATE

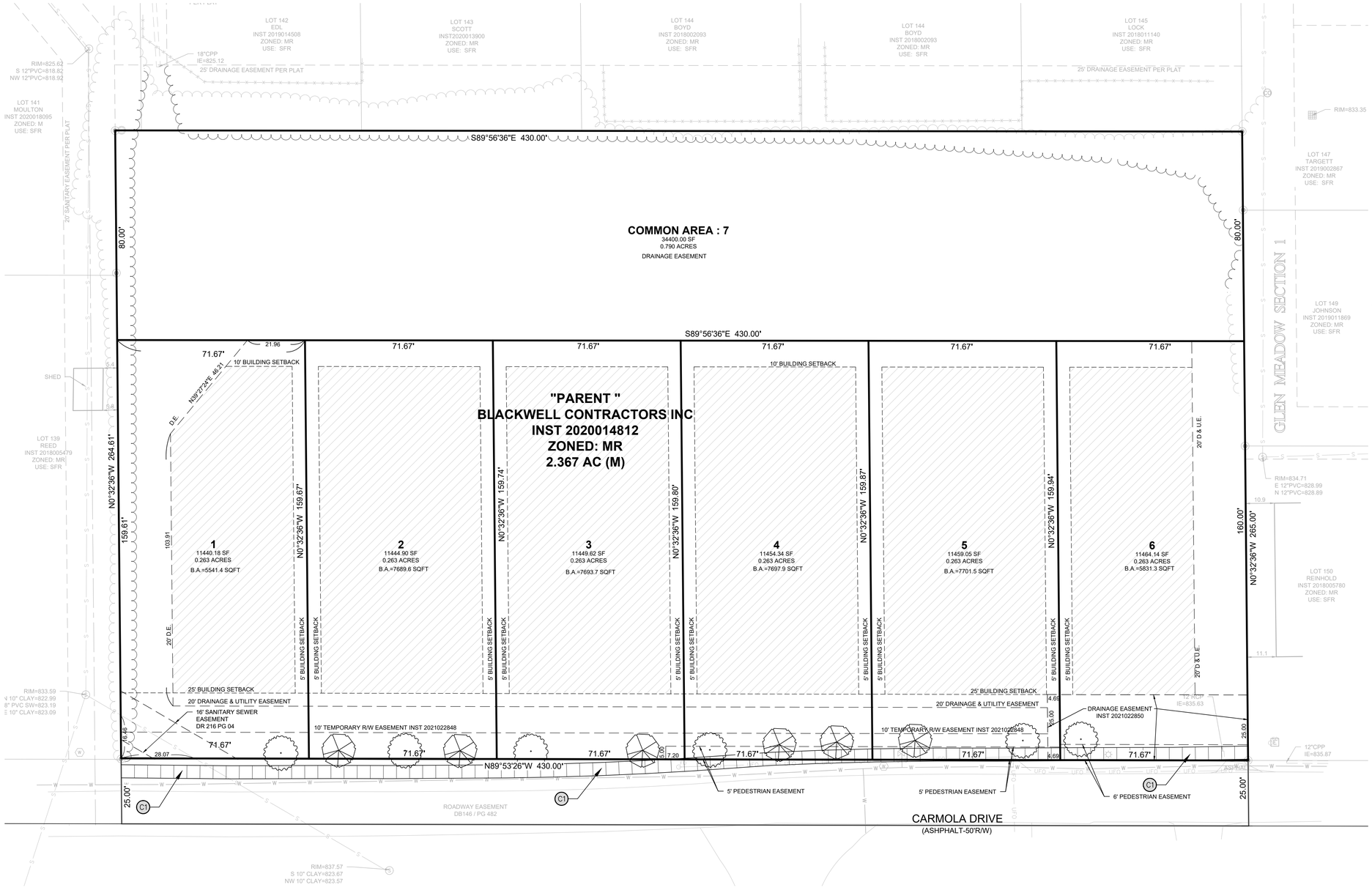
DESIGNED	DRAFTED	CHECKED	DATE
SPP/KES	SPP	KES	

JOB NUMBER 6293

SHEET 2 OF 12

DATE 10/31/2023

EXISTING CONDITION & DEMOLITION



SITE PLAN NOTES

1. CONTRACTOR IS RESPONSIBLE FOR OBTAINING A MONROE COUNTY HIGHWAY R/W EXCAVATION PERMIT IF WORK WITHIN THE PUBLIC R/W IS NECESSARY FOR THE PROJECT COMPLETION.
2. SEE SMITH DESIGN GROUP 2021 STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.
3. STREET TREES ALONG W. CARMOLA DRIVE SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF CHAPTER 830 AND SHALL BE AN EQUAL NUMBER OF THE FOLLOWING SPECIES:RED MAPLE
   HONEY LOCUST
   TULIP TREE / YELLOW POPLAR
   PIN OAK
4. ALL DISTURBED TOP SOIL TO BE REUSED ONSITE.

REQUIREMENTS (ZONE MR)

BUILDING SETBACKS
FRONT: 25' FROM ROW (LOCAL)
REAR: 10' FROM PROPERTY LINE
SIDE: 5' FROM PROPERTY LINE

BUILDING HEIGHT: 35' MAXIMUM.

MINIMUM LOT SIZE: 0.21 ACRES
MINIMUM LOT WIDTH AT BUILDING LINE: 60'
MINUMUM OPEN SPACE: 60%

STATEMENT OF COMPLIANCE

THE PLANS SATISFY THE PERFORMANCE STANDARDS OF CHAPTER 802 AS FOLLOWS:

A. FIRE PROTECTION – FIRE FIGHTING EQUIPMENT AND PREVENTION MEASURES ACCEPTABLE TO THE LOCAL FIRE DEPARTMENT SHALL BE READILY AVAILABLE AND APPARENT WHEN ANY ACTIVITY INVOLVING THE HANDLING OF STORAGE OF FLAMMABLE OR EXPLOSIVE MATERIALS IS CONDUCTED.
B. ELECTRICAL DISTURBANCE – NO USE SHALL CAUSE ELECTRICAL DISTURBANCE ADVERSELY AFFECTING RADIO, TELEVISION, OR OTHER EQUIPMENT IN THE VICINITY OF THE USE.
C. NOISE – NO USE SHALL PRODUCE NOISE IN SUCH A MANNER AS TO BE OBJECTIONABLE BECAUSE OF VOLUME, FREQUENCY, INTERMITTENCE, HEAT, SHRILLNESS, OR VIBRATION. SUCH NOISE SHALL BE MUFFLED OR OTHERWISE CONTROLLED SO AS NOT TO BECOME DETRIMENTAL, PROVIDED HOWEVER, THAT PUBLIC SAFETY SIRENS AND RELATED APPARATUS USED SOLELY FOR PUBLIC PURPOSES SHALL BE EXEMPT FROM THIS STANDARD.
D. VIBRATION – NO USE SHALL CAUSE VIBRATIONS OR CONCUSSIONS DETECTABLE BEYOND LOT LINES WITHOUT THE AID OF INSTRUMENTS.
E. AIR POLLUTION – NO USE SHALL DISCHARGE ACROSS LOT LINES FLY ASH, DUST, SMOKE, VAPORS, NOXIOUS, TOXIC, OR CORROSIVE MATTER, OR OTHER AIR POLLUTANTS IN SUCH CONCENTRATION AS TO BE DETRIMENTAL TO HEALTH, ANIMALS, VEGETATION OR PROPERTY AND/OR IN CONFLICT WITH RELEVANT AIR QUALITY STANDARDS ESTABLISHED BY STATE AND/OR FEDERAL AGENCIES.
F. HEAT AND GLARE – NO USE SHALL PRODUCE HEAT OR GLARE IN SUCH A MANNER AS TO CREATE A NUISANCE PERCEPTIBLE FROM ANY POINT BEYOND THE LOT LINES OF THE PROPERTY ON WHICH THE USE IS CONDUCTED. IN NONRESIDENTIAL AREAS, ANY LIGHTING USED TO ILLUMINATE AN OFF–STREET PARKING AREA, LOADING AREA, DRIVEWAY, OR SERVICE DRIVE SHALL BE SHIELDED WITH APPROPRIATE LIGHT FIXTURES DIRECTING THE LIGHT DOWN AND AWAY FROM ADJACENT PROPERTIES IN ORDER THAT THE ILLUMINATION AT ANY PROPERTY LINE SHALL NOT EXCEED ONE (1) FOOT CANDLE. ALL EXTERIOR LIGHTING SHALL BE HOODED AND SHIELDED SO THAT THE LIGHT SOURCE IS NOT DIRECTLY VISIBLE FROM THE RESIDENTIAL PROPERTY LINES. IN RESIDENTIAL AREAS, EXTERIOR LIGHTING AT AT ANY PROPERTY LINE SHALL NOT EXCEED ONE (1) FOOT CANDLE.
G. WATER POLLUTION – NO USE SHALL PRODUCE EROSION OR OTHER POLLUTANTS IN SUCH QUANTITY AS TO BE DETRIMENTAL TO ADJACENT PROPERTIES AND CONFLICT WITH RELEVANT WATER POLLUTION STANDARDS ESTABLISHED BY STATE AND/OR FEDERAL AGENCIES.
H. WASTE MATTER – NO USE SHALL ACCUMULATE WITHIN THE LOT, OR DISCHARGE BEYOND THE THE BOUNDARY LINES OF THE LOT ON WHICH THE USE IS LOCATED, ANY WASTE MATTER, WEATHER LIQUID OR SOLID, IN VIOLATION OF APPLICABLE PUBLIC HEALTH, SAFETY AND WELFARE STANDARDS AND REGULATIONS.

SITE MATERIALS

C1 CONCRETE PAVEMENT
4" THICK CONCRETE, 4000 PSI
8" INDOT #53 COMPACTED AGGREGATE BASE

SITE LEGEND

BUILDABLE AREA

BUILDING SETBACK LINE

EASEMENT

STREET TREES NOTES

1. STREET TREES ARE TO BE SELECTED FROM CHAPTER 830 TABLE 30-5 AND SHALL BE APPROVED BY MONROE COUNTY PLANNING DEPARTMENT PRIOR TO INSTALLATION.
2. LOCATIONS OF STREET TREES CAN VARY TO AVOID UTILITY CONFLICTS, BUT MUST BE BEHIND THE RIGHT OF WAY LINE, AND WITHIN 5 FT OF THE RIGHT OF WAY LINE.

N

20 40
10
SCALE: 1"=20'

SMITH DESIGN GROUP
CIVIL ENGINEERING - LAND SURVEYING
1467 W ARLINGTON ROAD Bloomington, IN 47404
(812) 336-6536 - smithdgllc.com

NOT FOR CONSTRUCTION

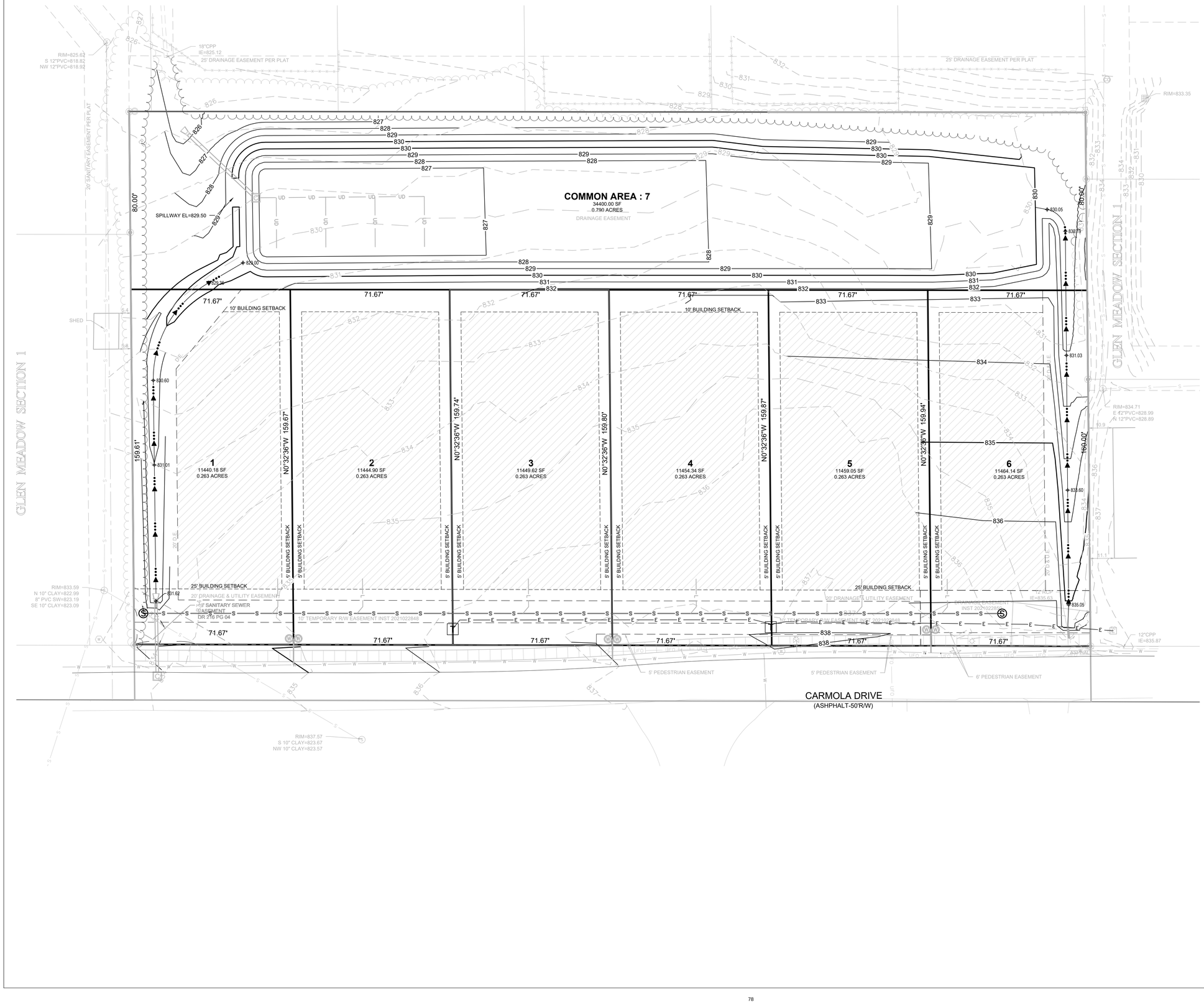
10/31/2023

SPRING WOODS MAJOR SUBDIVISION
4050 W CARMOLA DRIVE
BLOOMINGTON IN

REVISIONS	BY	DATE

DESIGNED	DRAFTED	CHECKED	DATE
SPP/KES	SPP	KES	

JOB NUMBER 6293
SHEET 3 OF 12
DATE 10/31/2023
SITE PLAN



GRADING LEGEND

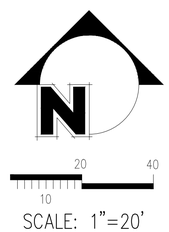
EXISTING MINOR CONTOUR	XXX
EXISTING MAJOR CONTOUR	XXX
PROPOSED MINOR CONTOUR	XXX
PROPOSED MAJOR CONTOUR	XXX
EXISTING ELEVATION	EX XXX.XX
PROPOSED ELEVATION	XXX.XX
EDGE OF PAVEMENT ELEVATION	EP = XXX.XX
TOP OF CURB ELEVATION	TC = XXX.XX
HIGH POINT	XXX.XX HP
LOW POINT	XXX.XX LP
FINISH FLOOR ELEVATION	FF = XXX.XX
TOP OF RETAINING WALL	TW=XXX.XX
BOTTOM OF RETAINING WALL	BW=XXX.XX
TOP OF RAMP	TR=XXX.XX
BOTTOM OF RAMP	BR=XXX.XX
PROPOSED DITCH/SWALE FLOWLINE	

GENERAL NOTES

1. CONTOURS AND BOUNDARY DATA OBTAINED FROM SURVEY DATED 05/18/21. BASIS OF BEARING IS NAD 83, INDIANA STATE PLANE WEST ZONE. VERTICAL DATUM IS NAVD 88.
2. LOCATION OF EXISTING UTILITIES ARE TO BE VERIFIED IN THE FIELD BY THE CONTRACTOR. PLEASE NOTIFY ENGINEER IF FIELD ADJUSTMENTS ARE NECESSARY.
3. POURED IN PLACE CONCRETE CURBS SHALL BE INSTALLED TO SEPARATE OFF-STREET PARKING AREAS FROM THE FRONT AND SIDES OF ANY ABUTTING BUILDING OR STRUCTURE, OTHERWISE BARRIER CURBS MAY BE INSTALLED AS NECESSARY TO SAFELY AND EFFICIENTLY DIRECT THE MOVEMENT AND PARKING OF MOTOR VEHICLES.
4. SEE SMITH DESIGN GROUP, INC 2021 STANDARD SPECIFICATIONS FOR CONSTRUCTION REQUIREMENTS.
5. CONTACT THE CITY OF BLOOMINGTON PLANNING DEPARTMENT AT (812)349-3423 AND THE CITY OF BLOOMINGTON PUBLIC WORKS DEPARTMENT STORMWATER INSPECTOR AT (812)349-3410 TO SCHEDULE A PRECONSTRUCTION MEETING PRIOR TO EARTH DISTURBING ACTIVITIES.
6. TOP OF CASTING ELEVATIONS ARE GIVEN IN THE FOLLOWING LOCATIONS:
   MANHOLES: RIM ELEVATION
   INLETS: GUTTER ELEVATION

LEGEND

S	SANITARY SEWER MANHOLE
S	SANITARY SEWER LINE
L	SANITARY LATERAL
CO	SANITARY CLEANOUT
	WATER VALVE
	FIRE HYDRANT
	WATER AIR RELEASE VALVE
W	WATER METER
W	WATER LINE
C	STORM INLET
D	STORM MANHOLE
Y	STORM YARD INLET



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SHEET 4 OF 12
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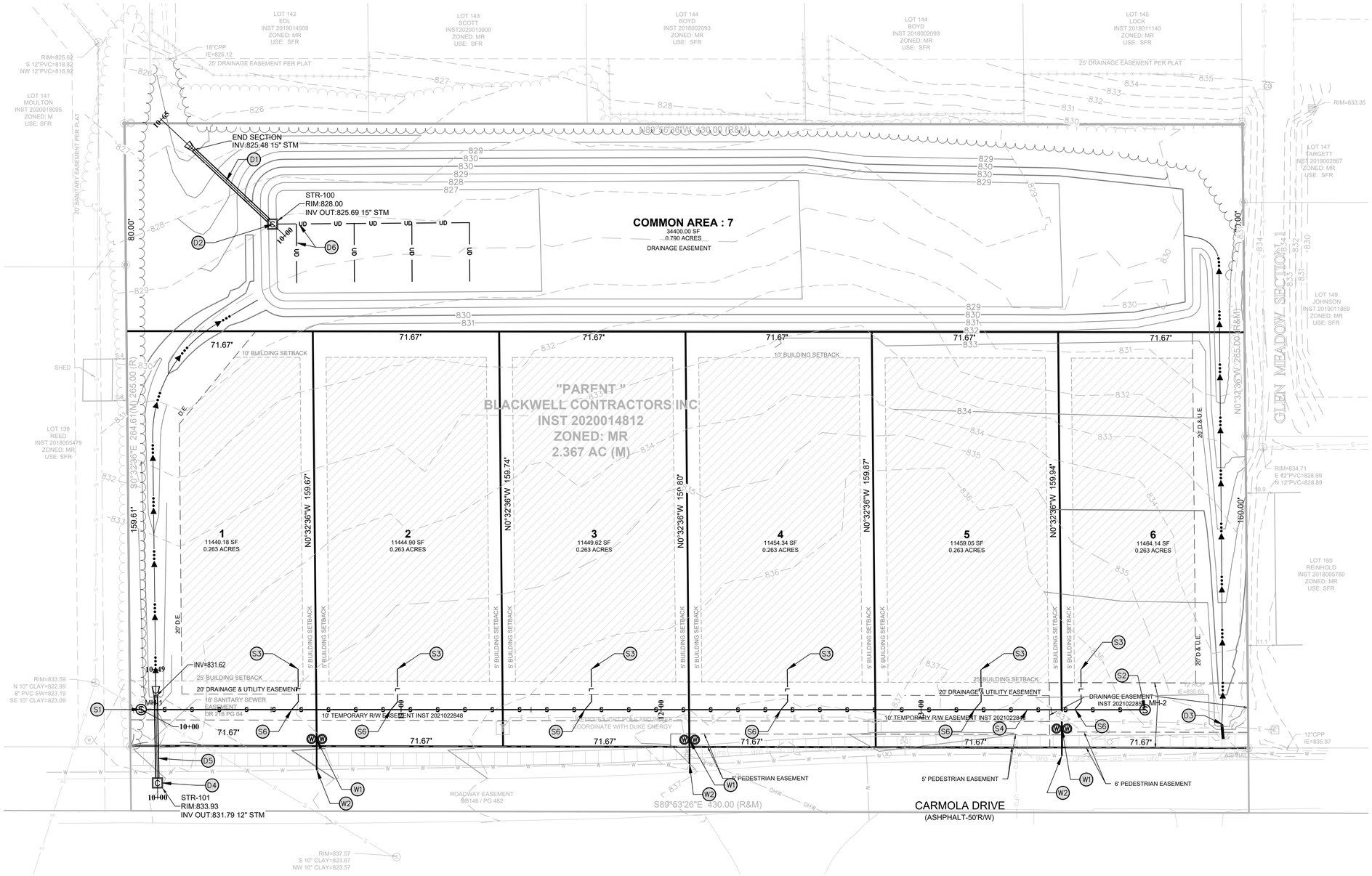
GRADING PLAN



UTILITY KEY NOTES

WATER LINE NOTES (W)

1. DOUBLE WATER METER SET
2. TAP EXISTING WATER MAIN PER THE TOWN OF ELLETSVILLE REQUIREMENTS. CONTRACTOR TO PROVIDE ALL NECESSARY EXCAVATION, SHORING, BACKFILL, SURFACE REPAIR, TAP SADDLE, AND TAP VALVE FOR THE TAP. CBU PERSONNEL MUST PERFORM THE TAP AND WILL PROVIDE THE NECESSARY TAPPING EQUIPMENT AND LABOR FOR THE TAP. SCHEDULE THE TAP WITH THE CBU INSPECTOR THAT IS ASSIGNED TO THIS JOB.
3. 2" C900 PVC DR-14 WATER LINE WITH LOCATE WIRE. BACKFILL PER CBU DETAIL 11 (SEE DETAIL ON DETAILS SHEET). 48" OF COVER MIN. PROVIDE 18" SEPARATION BETWEEN WATER LINE AND OTHER UTILITIES.

SANITARY SEWER NOTES (S)

1. PLACE NEW MANHOLE OVER EXISTING 10" SANITARY PIPE. CONTRACTOR TO VERIFY INVERTS OF PIPES AT NEW MANHOLE LOCATION.
2. SANITARY MANHOLE. (SEE PROFILE SHEET)
3. 6" SDR-35 PVC SANITARY SEWER LATERAL (SLOPE @ 1.00% MIN). BACKFILL PER CBU DETAIL 11 (SEE DETAIL ON DETAILS SHEET).
4. 8" SDR-35 PVC PRIVATE SANITARY SEWER MAIN. (SEE PROFILE SHEET)
5. SANITARY CLEANOUT PER DETAIL (SEE DETAIL ON DETAILS SHEET).
6. CONNECT SANITARY LATERAL TO 8" SANITARY MAIN WITH WYE.

STORM SEWER NOTES (D)

1. 15" HDPE STORM (SLOPE @ 0.50% MIN) WITH END SECTION
2. OUTLET STRUCTURE
3. EXTEND 12" CMP 6' AND ADD END SECTION
4. CATCH BASIN - EJ 5340
5. 12" HDPE STORM (SLOPE @ 0.50% MIN) WITH END SECTION
6. 4" UNDERDRAIN TYPE S DUAL WALL PIPE SET AT MIN. 0.5% SLOPE

UTILITY LEGEND

- FIRE HYDRANT SINGLE
- WATER METER PIT (W)
- FIRE DEPARTMENT CONNECTION (F)
- WATER VALVE
- WATER AIR RELEASE VALVE (AR)
- STORM SEWER MANHOLE (D)
- STORM SEWER INLET (C)
- STORM YARD INLET (Y)
- STORM SEWER END SECTION (E)
- SANITARY MANHOLE (S)
- SANITARY CLEANOUT (co)
- WATER LINE — W —
- SEWER LINE — S —
- SEWER LATERAL — L — L —
- ROOF DRAIN — E —
- UNDERGROUND ELECTRIC — RD —

UTILITY NOTES

1. ALL PROJECTS WILL REQUIRE A PRE-CONSTRUCTION MEETING WITH THE TOWN OF ELLETTSVILLE UTILITIES AND ERSC PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR AND/OR DEVELOPER MUST CONTACT UTILITY COMPANIES TO SCHEDULE THE MEETING.
2. CONTRACTOR SHALL NOTIFY THE TOWN OF ELLETTSVILLE UTILITIES AND ERSC AT LEAST ONE (1) WORKING DAY PRIOR TO CONSTRUCTION OF ANY WATER, OR SANITARY SEWER UTILITY WORK. THE INSPECTOR MUST HAVE NOTICE SO WORK CAN BE INSPECTED, DOCUMENTED, AND A PROPER AS-BUILT MADE. COMPENSATION FOR OVERTIME INSPECTION MAY BE REQUIRED.
3. SEE SPECIFICATIONS FOR SIZES OF WATER SERVICE LINES AND SEWER LATERALS NOT SPECIFICALLY NOTED ON THE PLANS.
4. MS.=: IF SHOWN ON THE PLANS, = MINIMUM SEWER ELEVATION. IT INDICATES THE LOWEST FLOOR ELEVATION THAT WILL ALLOW GRAVITY SEWER SERVICE WITHOUT A SPECIAL BACKWATER VALVE. ANY FLOOR ELEVATION THAT WILL BE SERVED BY GRAVITY SEWER MUST BE ABOVE THE RIM ELEVATION OF THE UPSTREAM SANITARY MANHOLE. IF NOT A BACKWATER VALVE MUST BE INSTALLED ACCORDING TO SEC. 409(A) OF THE UNIFORM PLUMBING CODE. SEE SPECIFICATIONS PACKET FOR MORE DETAIL.
5. ON ALL EXISTING SANITARY MAINS, WYES SHALL BE CUT AND SLEEVED IN PLACE BY THE CONTRACTOR AND INSPECTED BY ERSC.
6. WHEN CONNECTING A NEW PIPE TO AN EXISTING MANHOLE, THE MANHOLE SHALL BE CORE-DRILLED. PIPE SHALL BE CONNECTED TO THE MANHOLE BY EITHER A FLEXIBLE BOOT KOR-N-SEAL 1 OR 2 FLEXIBLE CONNECTOR OR APPROVED EQUAL. TABLE AND TROUGH SHALL BE MODIFIED AS NECESSARY TO DIRECT THE FLOW FROM THE NEW PIPE. INVERT OF CONNECTION SHALL BE NO MORE THAN ONE FOOT HIGHER THAN THE INVERT OUT FOR THIS STRUCTURE.
7. ALL SANITARY SEWER LATERALS SHALL HAVE A CLEAN-OUT AT LEAST EVERY 90 FEET. ALL CLEAN-OUTS, WEATHER IN GRASSY AREAS OR IN PAVEMENT, SHALL BE SUB-SURFACE AND PROTECTED BY A SUITABLE METAL CASTING SUCH AS EAST JORDAN CATALOGUE NO. 2975 OR NEENAH CATALOGUE NO. R-1974-A. IN GRASSY AREAS, THE CASTING SHALL BE PROVIDED WITH A CIRCULAR CONCRETE COLLAR FLUSH WITH THE TOP OF THE CASTING AND THE GROUND SURFACE. THE COLLAR SHALL BE MINIMUM 6" THICK AND SHALL EXTEND AT LEAST 8" BEYOND THE OUTSIDE OF THE CASTING ON ALL SIDES. IN PAVEMENT, THE TOP OF THE CASTING SHALL BE FLUSH WITH THE SURROUNDING PAVEMENT. TOP OF CLEAN-OUT SHALL BE NO MORE THAN 3" BELOW THE TOP OF THE CASTING. A #10 INSULATED SOLID COPPER LOCATOR WIRE SHALL BE WRAPPED AROUND ALL NON-METALLIC PIPES SO THAT ONE REVOLUTION IS MADE AT LEAST EVERY PIPE JOINT. SPLICES ARE TO BE MADE WITH AN APPROVED CONNECTOR, AND ARE TO BE SUITABLY PROTECTED AGAINST CORROSION. THE WIRE IS TO BE BROUGHT TO THE SURFACE WITH A CLEAN-OUT IN A CASTING.
8. WHEREVER C900 PIPE IS USED FOR SEWER, ALL WYES SHALL BE HARCO, SIZED FOR C900 ON THE RUN AND SDR-35 ON THE BRANCH. TRANSITION FROM C900 TO SDR-35 PIPE SHALL BE MADE BY USE OF A HARCO C900 TO SDR-35 ADAPTER WYES.
9. ALL D.I.P. USED FOR SANITARY SEWER SHALL HAVE CERAMIC EPOXY LINING, MINIMUM THICKNESS 40 MILS, AND SHALL BE PROTECTO 401, AS MANUFACTURED BY INDURON PROTECTIVE COATINGS. WYES FOR D.I.P. SHALL BE HARCO D.I.P. TO SDR-35 ADAPTER WYES.
10. TRACER WIRE SHALL BE INSTALLED ON ALL NEW UTILITY LINES.
11. ALL GRATES AND CASTINGS WITHIN THE PUBLIC RIGHT OF WAY MUST BE EJ (FORMERLY EAST JORDAN IRON WORKS).
12. ALL DRAINS MUST HAVE THE PHRASE "DUMP NO WASTE - DRAINS TO STREAM" OR SIMILAR STAMPED ON THEM.

20 40
10
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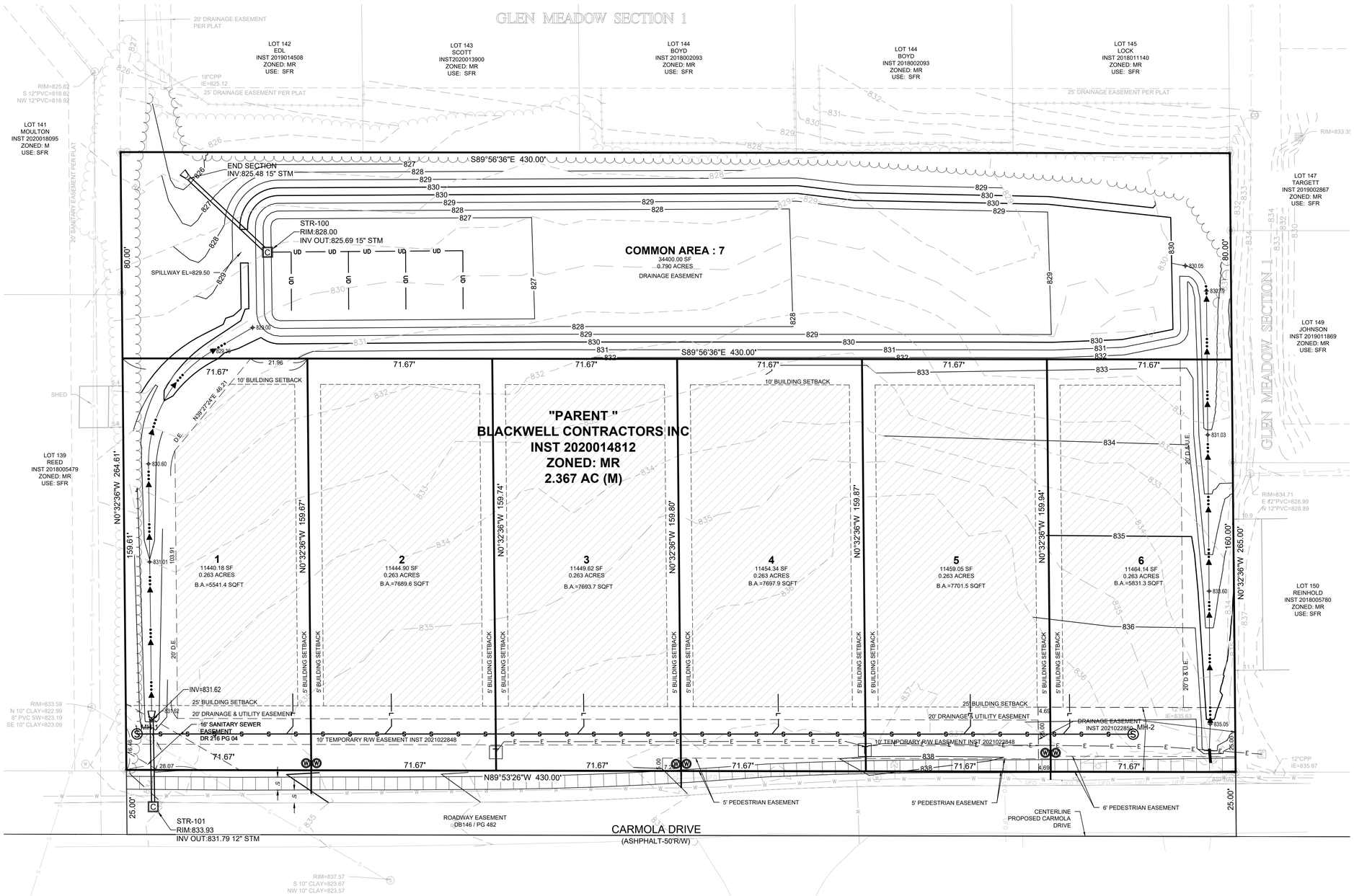
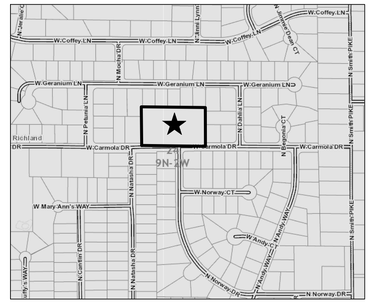
JOB NUMBER 6293

SHEET 5 OF 12

DATE 10/31/2023

UTILITY PLAN





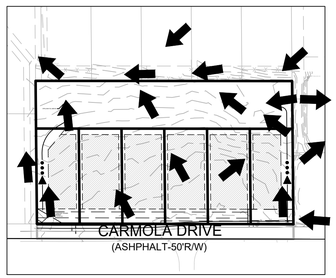
VICINITY MAP

★ PROJECT LOCATION

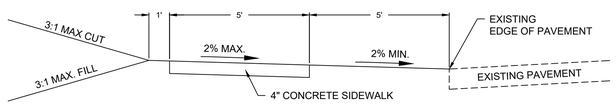
SCALE: 1"=20'

LEGEND

BUILDABLE AREA		RR SPIKE	
BUILDING SETBACK LINE		STONE	
EASEMENT		REBAR	
WATER METER PIT	W	IRON PIPE	
WATER VALVE		MAG NAIL	
STORM SEWER INLET	C	UTILITY POLE	
STORM SEWER END SECTION		FENCE	
SANITARY MANHOLE	S	M	MEASURED
SANITARY CLEANOUT	CO	P	PLATTED
ELECTRIC TRANSFORMER	T	R	RECORD
WATER LINE	W	FRB	FOUND REBAR
SEWER LINE	S	SRB	SET REBAR
SEWER LATERAL	L	FIP	FOUND IRON PIPE
UNDER DRAIN	UD	FRS	FOUND RAILROAD SPIKE
UNDERGROUND ELECTRIC	E	FMAG	FOUND MAG NAIL
		SMAG	SET MAG NAIL
		B/C	BUILDING CORNER
		FND	FOUND
		SFR	SINGLE FAMILY RESIDENTIAL



DRAINAGE MAP



TYPICAL CROSS SECTION

N.T.S.

LEGAL DESCRIPTION

A PART OF THE NORTHWEST QUARTER OF SECTION 24, TOWNSHIP 9 NORTH, RANGE 2 WEST, IN MONROE COUNTY, INDIANA, DESCRIBED AS FOLLOWS, TO-WIT: BEGINNING AT A POINT THAT IS 1395 FEET WEST AND 18.7 FEET SOUTH OF THE SOUTHEAST CORNER OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 24; THENCE EAST FOR A DISTANCE OF 430.00 FEET; THENCE NORTH FOR A DISTANCE OF 265 FEET; THENCE WEST FOR A DISTANCE OF 430.0 FEET; THENCE SOUTH FOR A DISTANCE OF 265 FEET AND TO THE PLACE OF BEGINNING. CONTAINING 2.61 ACRES, MORE OR LESS.

BASIS OF BEARINGS:
INDIANA STATE PLANE,
WEST ZONE

SITE ZONING / LOT STANDARDS

SITE AREA = 2.62 ACRES
ZONING = MR
DENSITY = 4.80 UNITS PER ACRE
MINIUM LOT AREA = 0.21 ACRES
MINIUM LOT WIDTH = 60 FT
FRONT YARD SETBACK = 25 FT
REAR YARD SETBACK = 10 FT
SIDE YARD SETBACK = 5 FT
ALL LOTS ARE FOR SINGLE FAMILY USE.

SCHOOLS
RICHLAND BEANBLOSSOM COMMUNITY SCHOOL DISTRICT:
EDGEWOOD PRIMARY/INTERMEDIATE
EDGEWOOD JUNIOR HIGH
EDGEWOOD HIGH SCHOOL

FIRE DEPARTMENT
ELLETTSVILLE FIRE DEPARTMENT

WATER
TOWN OF ELLETTSVILLE UTILITIES

SEWER
EASTERN RICHLAND SEWER CORPORATION

RICHLAND TOWNSHIP
SECTION 24
TOWNSHIP 9 NORTH
RANGE 2 WEST

DESIGNER(S) & SURVEYOR(S)
SMITH DESIGN GROUP, INC.
2755 E. CANADA DRIVE SUITE 101
BLOOMINGTON, IN. 47401
(812) 336-6536

DEVELOPER(S) & APPLICANT(S)
BLACKWELL CONTRACTORS INC
PO BOX 3400
BLOOMINGTON, IN 47402
KENNY BLACKWELL
812.331.9999

OWNER(S)
BLACKWELL CONTRACTORS
INC PO BOX 3400
BLOOMINGTON, IN 47402
INST 2020014812

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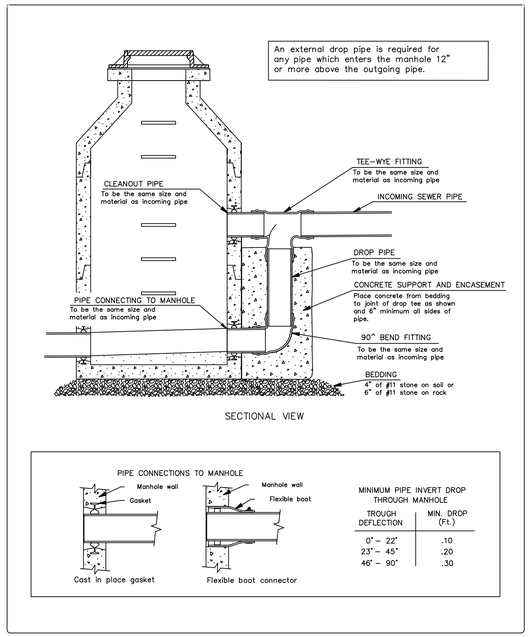
SHEET 6 OF 12

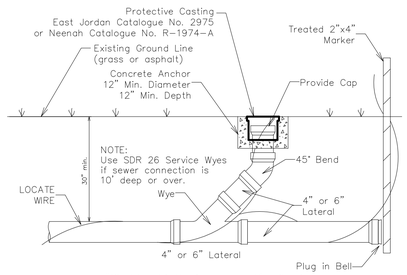
DATE 10/31/2023

PRELIMINARY PLAT



DROP SANITARY SEWER MANHOLE DETAIL

NO SCALE

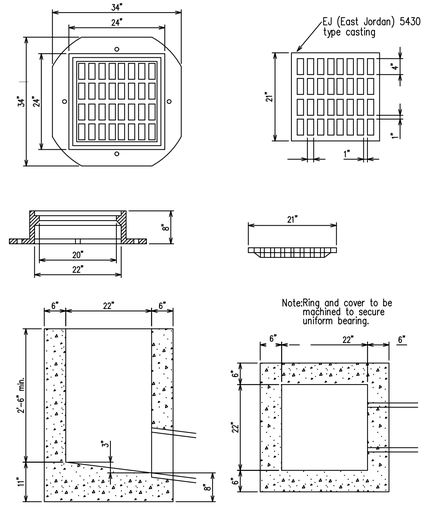


#10 solid insulated locate wire required from the city main to the clean-out at the property line.

PROFILE

SANITARY SEWER CLEAN OUT

NO SCALE



GRATE INLET DETAIL

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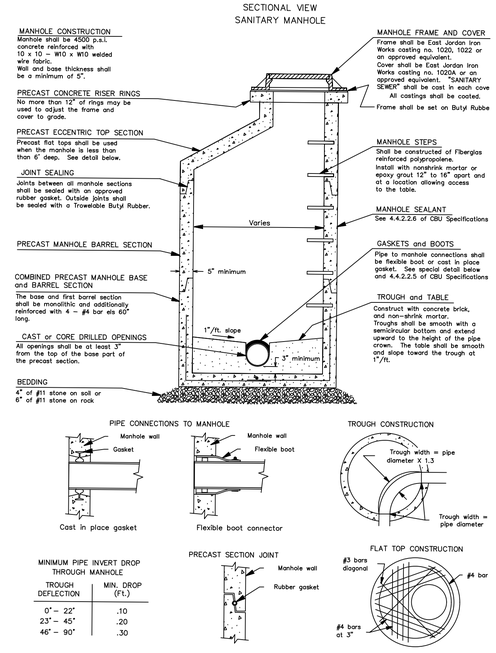
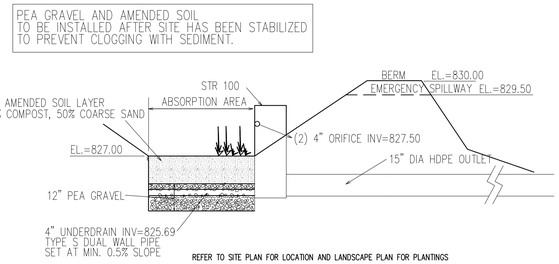


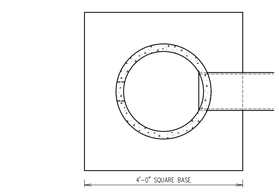
SANITARY SEWER MANHOLE DETAIL

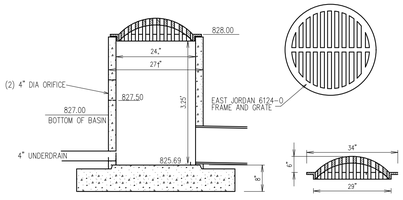
NO SCALE



DETENTION POND DETAIL

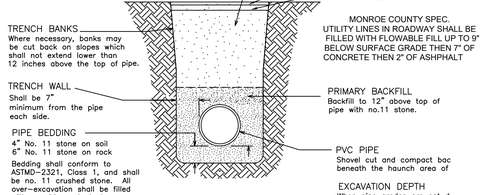
NO SCALE





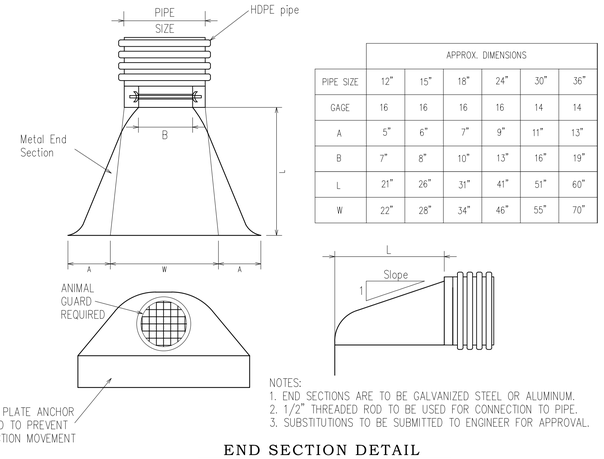
STR 101 DETAIL

NO SCALE



TRENCH DETAIL FOR PVC, HDPE, AND RIGID PIPE

NO SCALE

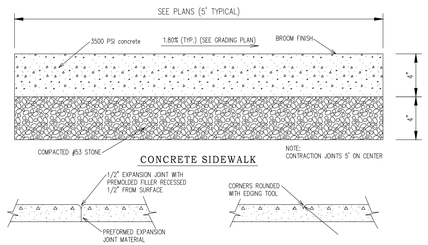


	APPROX. DIMENSIONS					
PIPE SIZE	12"	15"	18"	24"	30"	36"
GAGE	16	16	16	16	14	14
A	5"	6"	7"	9"	11"	13"
B	7"	8"	10"	13"	16"	19"
L	21"	26"	31"	41"	51"	60"
W	22"	28"	34"	46"	55"	70"

NOTES:
1. END SECTIONS ARE TO BE GALVANIZED STEEL OR ALUMINUM.
2. 1/2" THREADED ROD TO BE USED FOR CONNECTION TO PIPE.
3. SUBSTITUTIONS TO BE SUBMITTED TO ENGINEER FOR APPROVAL.

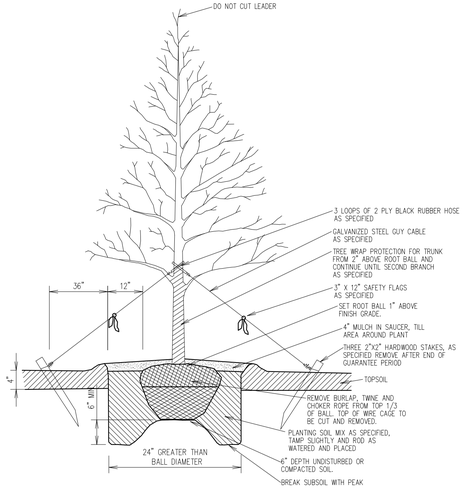
END SECTION DETAIL

NO SCALE



SIDEWALK & JOINT DETAIL

NO SCALE



TREE PLANTING & GUYING DETAIL

NO SCALE

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SHEET 8 OF 12

DATE 10/31/2023

DETAILS SHEET 1

GENERAL CONSTRUCTION SEQUENCE

GENERAL CONSTRUCTION SEQUENCE

1. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL COORDINATE AN ON SITE MEETING WITH MONROE COUNTY MS4
2. CONTRACTOR TO POST THE NOI APPLICATION LETTER PUBLIC NOTICE, PROPERTY OWNER CONTACT INFORMATION, IDEM SPILL EMERGENCY REPORTING LINE AND SPILL KIT LOCATION.
3. INSTALL TEMPORARY CONSTRUCTION ENTRANCE
4. INSTALL SILT FENCE
5. INSTALL DITCH CHECK AT EXISTING 18 IN. PIPE
6. CLEAR EXISTING TREES WITHIN THE GRADING LIMITS FOR PROJECT.
7. CLEAR AND GRUB AREAS AS NEEDED.
8. COMPLETE SITE EARTHWORK FOR TEMPORARY SEDIMENT TRAP
9. STOCKPILE TOPSOIL
10. INSTALL DIVERSION DITCHES
11. INSTALL UTILITY INFRASTRUCTURE
12. INSTALL CONCRETE WASHOU, IF CONCRETE IS USED. T. LOCATION MAY VARY BASED ON CONTRACTOR PREFERENCE, HOWEVER ENSURE COMPLIANCE WITH THE INDIANA STORM WATER QUALITY MANUAL.
13. INSTALL PERMANENT LAWNS. ALL DISTURBED AREAS TO BE MULCH SEEDED.
14. ONCE LAWNS ARE ESTABLISHED AT 70% COVERAGE, REMOVE SILT AND SEDIMENT FROM SEDIMENT TRAP AND REMOVE SILT FENCE AND OTHER EROSION CONTROL MEASURES AND PATCH ANY BARE SPOTS.
15. AFTER STABILIZATION, CONTACT MONROE COUNTY STORMWATER PROGRAM FOR FINAL NOTICE OF TERMINATION (NOT) INSPECTION.
16. FILE NOTICE OF TERMINATION (NOT).

SWPP GENERAL REQUIREMENTS

1. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL EROSION CONTROL MEASURES ON SITE AND SUPPLEMENTING AS NECESSARY TO KEEP THE SITE IN FULL COMPLIANCE FOR THE FULL DURATION OF CONSTRUCTION.
2. DUMPSTER OR TRASH RECEPTACLES TO BE COVERED AT THE END OF EACH WORK DAY. ALL TRASH SHALL BE PLACED IN PROPER RECEPTACLE AT THE END OF EACH WORK DAY.
3. ANY BARE EARTH AREAS TO REMAIN IDLE FOR MORE THAN 10 DAYS SHALL BE TEMPORARY MULCH SEEDED IN ACCORDANCE WITH TABLE BELOW. INITIATE STABILIZATION BY THE 7TH DAY OF ANY AREAS TO REMAIN IDLE.
4. CONTRACTOR IS RESPONSIBLE FOR INSTALLING AND MAINTAINING ALL EROSION CONTROL DEVICES THROUGH OUT THE DURATION OF CONSTRUCTION THROUGH PROJECT STABILIZATION..
5. CONTRACTOR IS RESPONSIBLE FOR INSPECTING EROSION CONTROL DEVICES WEEKLY AND BEFORE AND AFTER EACH ½" RAIN EVENT BY A QUALIFIED INDIVIDUAL. A LOG BOOK SHALL BE MAINTAINED OF ALL RAIN EVENTS, INSPECTIONS, REPAIRS AND MAINTENANCE OF EROSION CONTROL DEVICES AND SHALL BE MADE AVAILABLE WITH 48 HOURS UPON REQUEST BY LOCAL MS4 OR IDEM.
6. IF FUELING ON-SITE IS NECESSARY, NOTIFY ENGINEER TO UPDATE SWPPP.
7. CONTRACTOR SHALL INSPECT AND REPAIR, AS NECESSARY, ALL EROSION CONTROL DEVICES PRIOR TO AND IMMEDIATELY FOLLOWING ANY RAIN EVENT. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING A LOG BOOK OF ALL RAIN EVENTS, INSPECTIONS, LOG BOOK SHALL BE MADE AVAILABLE WITHIN 48 HOURS OF REQUEST BY INSPECTOR. REPAIR AND MAINTENANCE WORK ON SITE. LOG BOOK SHALL BE MADE AVAILABLE FOR REVIEW UPON REQUEST FOR THE LOCAL MS4 AND ASSISTANT WITHIN 48 HOURS.
8. ALL EROSION CONTROL BMP's ARE TO REMAIN IN PLACE UNTIL SITE HAS BEEN PROPERLY STABILIZED AT THE END OF CONSTRUCTION.
9. ALL DISTURBED AREAS ARE TO BE SEEDED AND TO BE FULLY STABILIZED.
10. EQUIPMENT FUELING AND MAINTENANCE, OIL CHANGING, ETC., SHALL BE PERFORMED AWAY FROM WATERCOURSES, DITCHES OR STORM DRAINS IN AN AREA DESIGNATED FOR THAT PURPOSE. THE DESIGNATED AREA SHALL BE EQUIPPED FOR RECYCLING OIL AND CATCHING SPILLS. SECONDARY CONTAINMENT SHALL BE PROVIDED FOR ALL FUEL OIL STORAGE TANKS. THESE AREAS MUST BE INSPECTED EVERY SEVEN DAYS AND WITHIN 24 HRS. OF A 0.5 INCH OR GREATER RAIN EVENT TO ENSURE THERE ARE NO EXPOSED MATERIALS WHICH WOULD CONTAMINATE STORM WATER.

TEMPORARY SEEDING RECOMMENDATIONS

SEED SPECIES *	RATE/ACRE	PLANTING DEPTH	OPTIMUM DATES **
WHEAT OR RYE	150 LBS	1 TO 1.5 IN.	9/5 TO 10/30
SPRING OATS	100 LBS	1 IN.	3/1 TO 4/15
ANNUAL RYEGRASS	40 LBS	1/4 IN	3/1 TO 5/1 8/1 TO 9/1
GERMAN MILLET	40 LBS	1 TO 2 IN.	5/1 TO 6/1

* PERENNIAL SPECIES MAY BE USED AS A TEMPORARY COVER, ESPECIALLY IF THE AREA TO BE SEEDED WILL REMAIN IDLE FOR MORE THAN A YEAR (PRACTICE 3.12).
* * SEEDING DONE OUTSIDE THE OPTIMUM DATES INCREASES THE CHANCES OF SEEDING FAILURE.

EROSION CONTROL LEGEND

SILT FENCE —SF— —SF—

DIVERSION DITCH → DD → DD

TREE PROTECTION FENCE —TPF— —TPF—

ROCK CHECK DAM

ROCK CHECK DAM

TEMPORARY CONSTRUCTION ENTRANCE

CONCRETE WASHOUT

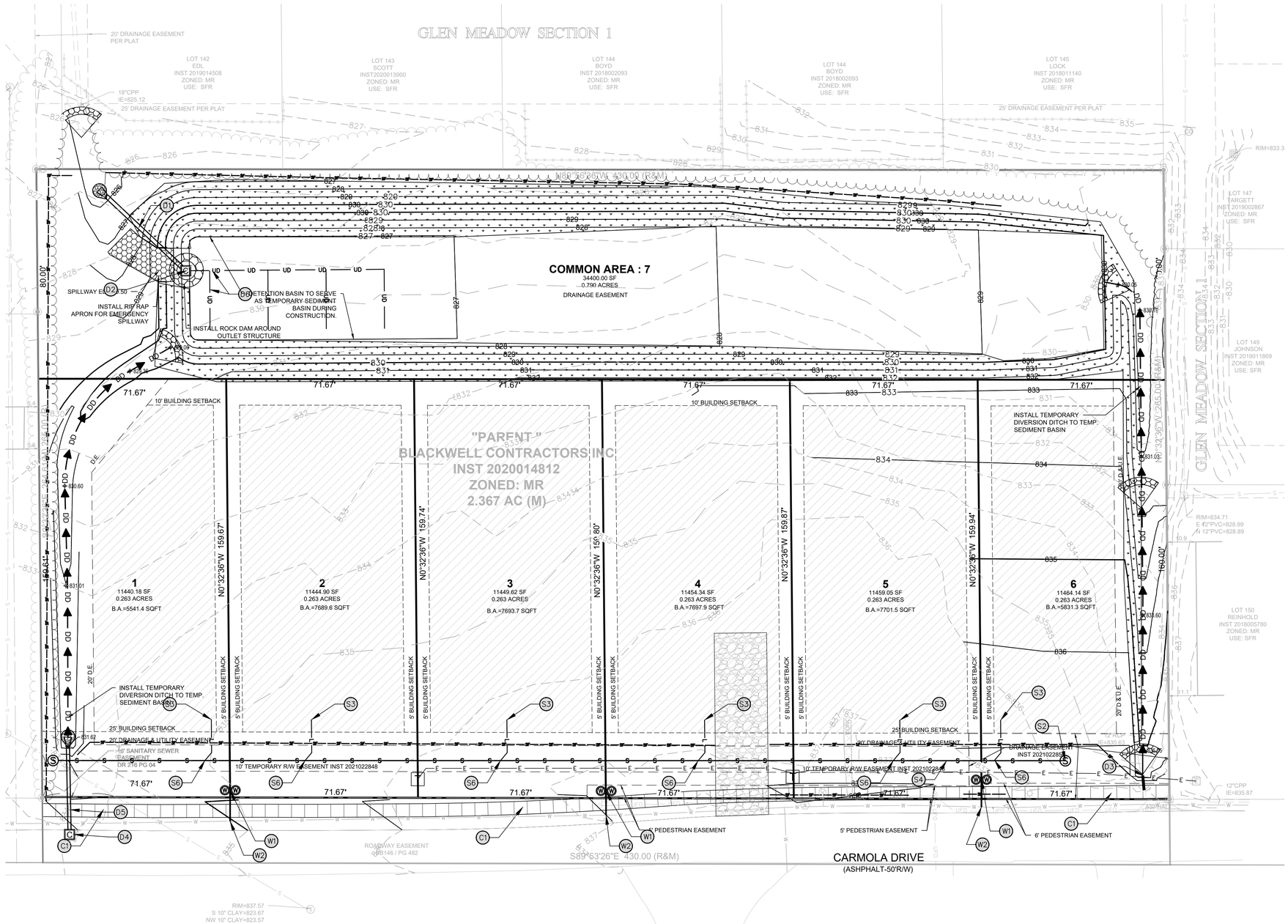
ROCK CHUTE

EROSION CONTROL BLANKET,
NORTH ANERICAN GREEN # SC150BN OR EQUAL.

CURB INLET PROTECTION

YARD INLET PROTECTION

RIP RAP APRON



SCALE: 1"=20'

SMITH DESIGN GROUP
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1467 W ARLINGTON ROAD Bloomington, IN 47404
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NOT FOR CONSTRUCTION

10/31/2023

SPRING WOODS MAJOR SUBDIVISION
4050 W CARMOLA DRIVE
BLOOMINGTON IN

REVISIONS	BY	DATE

DESIGNED SPP/KES
DRAFTED SPP
CHECKED KES
DATE

JOB NUMBER 6293

SHEET 9 OF 12

DATE 10/31/2023

SWPP PLAN

SPRING WOODS MAJOR SUBDIVISION

4050 W CARMOLA DRIVE
Bloomington, Indiana

Section 24, Township 9 North, Range 2 West

Drainage Report
Project No. 6293
October 30th , 2023

Smith Design Group
1467 W Arlington Road
Bloomington, IN 47404
(812) 336-6536

Table of Contents

Summary

This project is located at 4050 W Carmola Drive, Monroe County, Indiana and will be developed into a 7 lot single family residential subdivision with 1 lot will be a Common Area Lot. The entire site is 2.61 acres which includes to the south side of Carmola.

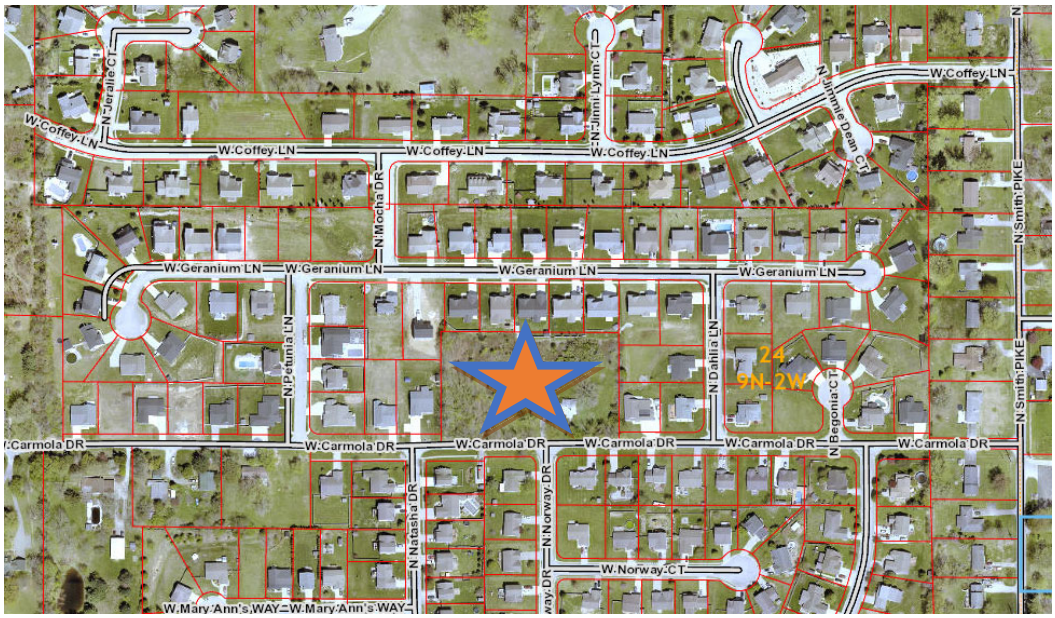


Figure 1: Project Location Map N.T.S

Existing Conditions

The site is undeveloped and consists of open grass and wooded areas. The overall slope of the site is about 4%. The drainage flows from South to the Northwest. Runoff from the site is conveyed through an existing 18 in. HDPE culvert at the Northwest corner of the site.

Post Construction Conditions

Offsite Area

There is approximately 10.6 acres of off-site area from the southeast that drains to the site. This runoff will be conveyed by a ditch along the east and west side of the property. The offsite runoff will be directed to the proposed detention pond on the north side of the property.

Detention

A detention pond is proposed on the north side of the project. Approximately 2.14 acres on-site will drain to the detention pond. Runoff from the detention pond will discharge to the existing 18 in. dia. HDPE culvert that connects to the storm sewer system along W Geranium Lane. Detention release rates were calculated using the Critical Watershed Stormwater Allowable Release Rates as described below:

Storm	Allowable Release
(yr)	(cfs)
0-10	0.5 x acre of development
11-100	0.9 x acre of development

Figure 2: Allowable Release Rates

Bypass

Approximately 0.26 acres of the site will bypass detention. Bypass runoff will be conveyed to the existing 18" HDPE pipe that connects to W Geranium Lane.

Calculations

Autocad Civil 3D 2023 Hydraflow Hydrographs was used to determine detention calculations. Drainage area and *Hydraflow* results are attached.

Results

Since there is a substantial amount of off-site flow, the detention pond was modeled to ensure the allowable release rates for the Critical Watershed area are being met for the on-site runoff.

Below is a summary table of the post construction on-site runoff rates:

DRAFT Stormwater Technical Standards Manual				
Storm	Factor	Development Area	**Allowable Release Rate**	**Actual Release Rate**
(yr)		(ac.)	**(cfs)**	**(cfs)**
0-10	0.25	2.40	**0.60**	**0.21-0.30**
11-100	0.45	2.40	**1.08**	**0.30-0.43**

Figure 3: Hydraflow Results

Pond Design

The pond is located on the north side of the project within a Common Area Lot. This pond will provide approximately 36,000 cft. Of storage. The detention pond was sized to store the off-site runoff draining to the site.

Outlet

The outlet for the pond will consist of a 2 ft. DIA standpipe with two low flow 4 in. orifices 0.50 ft. above the bottom of the pond. A 15 in. DIA HDPE pipe will outlet from the standpipe. A detail of the outlet structure is shown on the plans.

Water Quality

The site is more than 1 acre; therefore, water quality and IDEM CSGP are required. The pond will provide water quality for ½ in. runoff from the on-site area. Below the bottom of the pond will be an amended soil layer and gravel with a perforated underdrain. The equivalent water quality elevation is 0.50 ft. above the bottom of the pond. Two 4" dia orifices are to be installed in the outlet control structure at the equivalent water quality elevation of 827.50.

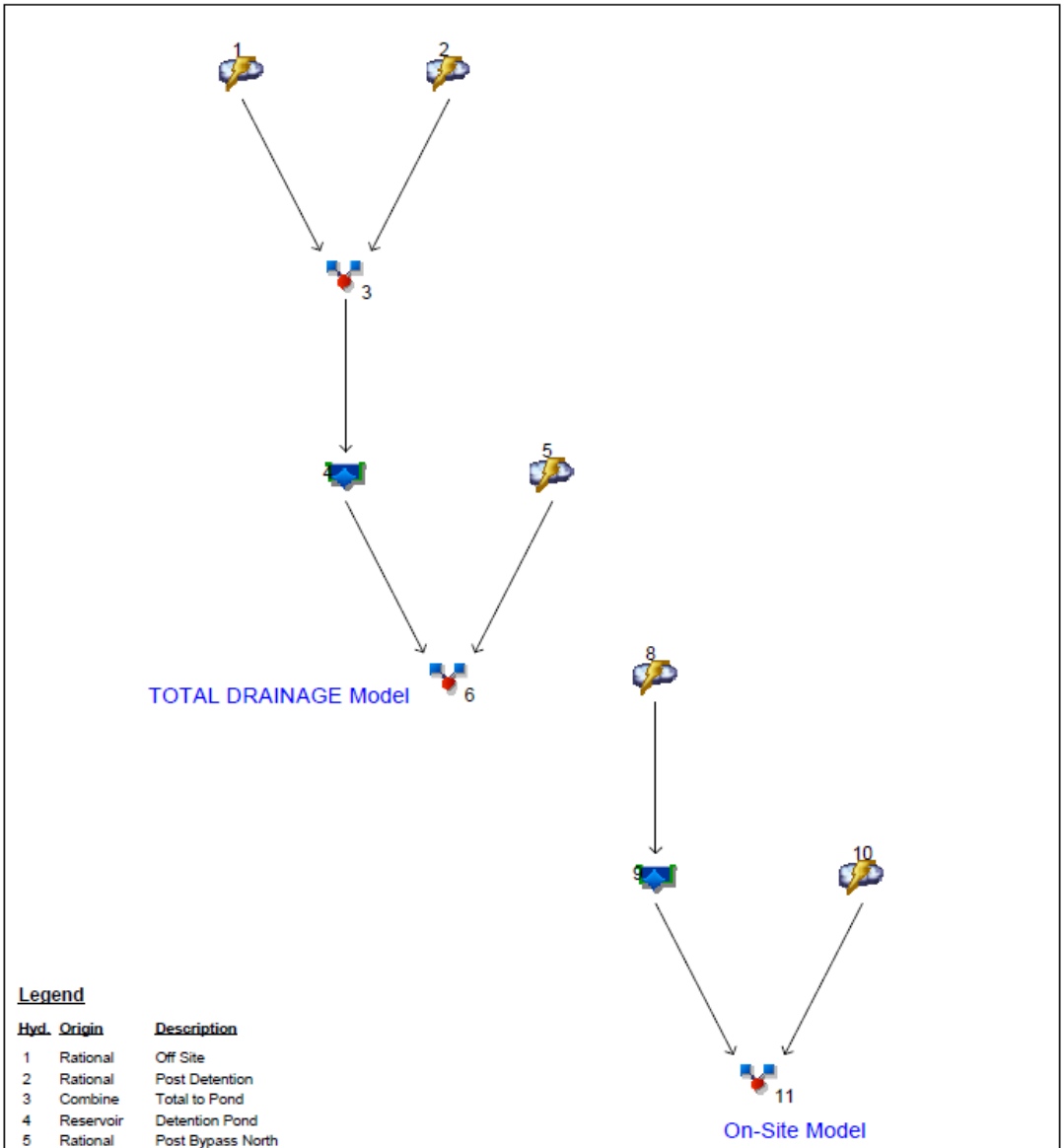
Figure 12: Off Site Drainage Area Map

Hydraflow Model

1

Watershed Model Schematic

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023



Legend

Hyd.	Origin	Description
1	Rational	Off Site
2	Rational	Post Detention
3	Combine	Total to Pond
4	Reservoir	Detention Pond
5	Rational	Post Bypass North
6	Combine	Total Post Construction
8	Rational	Post Detention
9	Reservoir	Detention Pond
10	Rational	Post Bypass North
11	Combine	On Site Total Discharge

Project: 6293 Drainage.gpw | Friday, 10 / 27 / 2023

Hydraflow Hydrograph Results

1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	8.353	1	29	14,534	-----	-----	-----	Off Site TOTAL DRAINAGE
2	Rational	2.947	1	5	884	-----	-----	-----	Post Detention
3	Combine	8.353	1	29	15,419	1, 2	-----	-----	Total to Pond
4	Reservoir	4.401	1	43	12,225	3	828.33	10,379	Detention Pond
5	Rational	0.210	1	5	63	-----	-----	-----	Post Bypass North
6	Combine	4.401	1	43	12,288	4, 5	-----	-----	Total Post Construction
8	Rational	2.947	1	5	884	-----	-----	-----	Post Detention On-Site Drainage
9	Reservoir	0.000	1	n/a	0	8	827.14	884	Detention Pond
10	Rational	0.210	1	5	63	-----	-----	-----	Post Bypass North
11	Combine	0.210	1	5	63	9, 10	-----	-----	On Site Total Discharge

6293 Drainage.gpw | Return Period: 2 Year | Thursday, 10 / 26 / 2023

Figure 18: 2 YR Results

1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	13.03	1	29	22,671	-----	-----	-----	Off Site
2	Rational	4.334	1	5	1,300	-----	-----	-----	Post Detention
3	Combine	13.03	1	29	23,971	1, 2	-----	-----	Total to Pond
4	Reservoir	8.079	1	40	20,777	3	828.56	13,142	Detention Pond
5	Rational	0.309	1	5	93	-----	-----	-----	Post Bypass North
6	Combine	8.079	1	40	20,869	4, 5	-----	-----	Total Post Construction
8	Rational	4.334	1	5	1,300	-----	-----	-----	Post Detention
9	Reservoir	0.000	1	n/a	0	8	827.20	1,300	Detention Pond
10	Rational	0.309	1	5	93	-----	-----	-----	Post Bypass North
11	Combine	0.309	1	5	93	9, 10	-----	-----	On Site Total Discharge

6293 Drainage.gpw	Return Period: 10 Year	Thursday, 10 / 26 / 2023

Figure 19: 10 YR Results

1

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2023

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	23.82	1	29	41,455	-----	-----	-----	Off Site
2	Rational	7.461	1	5	2,238	-----	-----	-----	Post Detention
3	Combine	23.82	1	29	43,693	1, 2	-----	-----	Total to Pond
4	Reservoir	10.20	1	46	40,499	3	829.34	24,547	Detention Pond
5	Rational	0.428	1	5	128	-----	-----	-----	Post Bypass North
6	Combine	10.20	1	46	40,627	4, 5	-----	-----	Total Post Construction
8	Rational	7.461	1	5	2,238	-----	-----	-----	Post Detention
9	Reservoir	0.000	1	n/a	0	8	827.35	2,238	Detention Pond
10	Rational	0.428	1	5	128	-----	-----	-----	Post Bypass North
11	Combine	0.428	1	5	128	9, 10	-----	-----	On Site Total Discharge

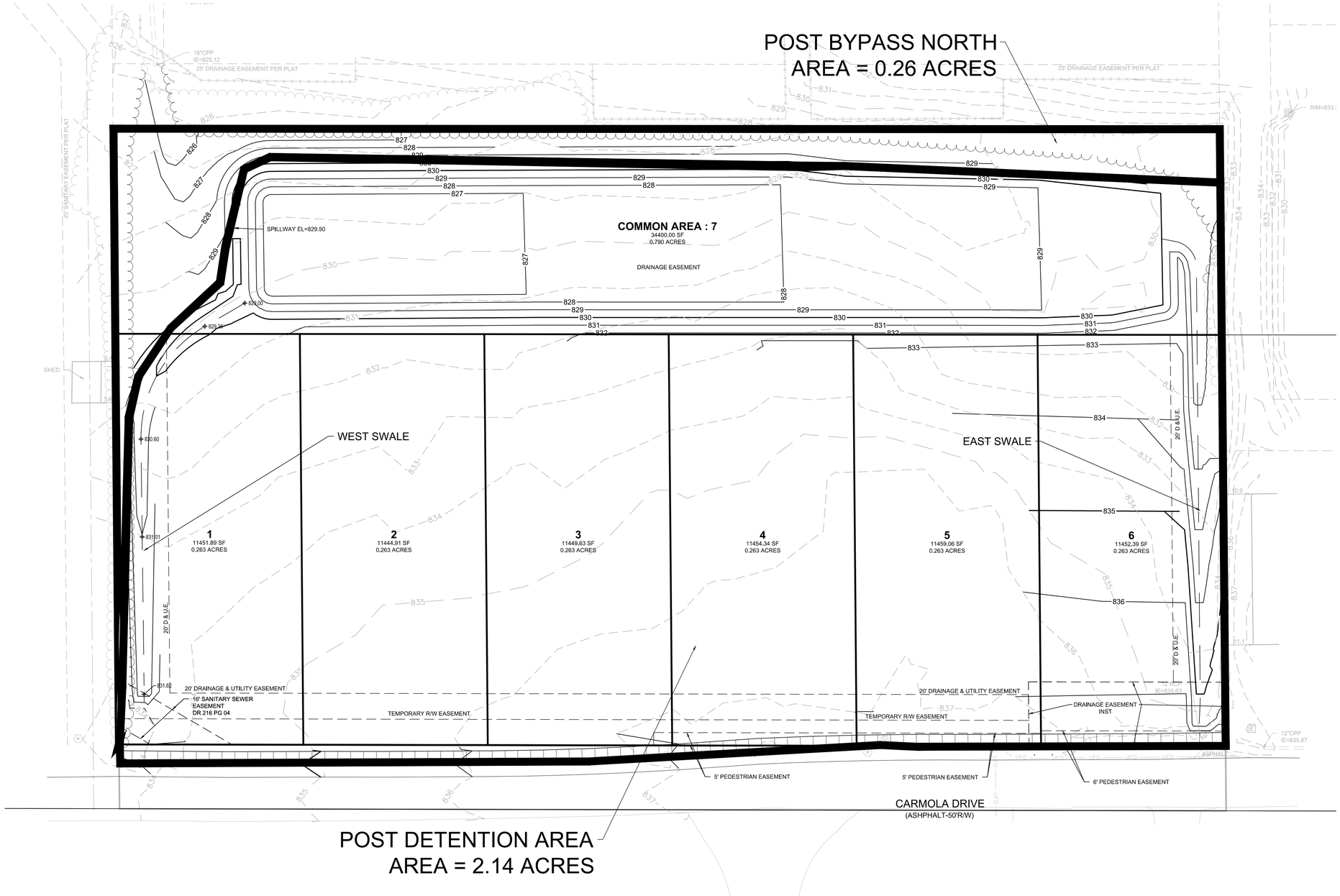
6293 Drainage.gpw	Return Period: 100 Year	Thursday, 10 / 26 / 2023

Figure 20: 100 YR Results

Water Quality Calculations

Water Quality Calculations							
Biofiltration Area							
Total Above Ground Pond Vol. =	36,000	CF					
Depth of Soil=	1.00	FT					
Depth of Stone=	1.00	FT					
Bottom Area of Pond=	3,907	SF					
Volume of Soil	1.0	FT X		3907	SF=	3,907	CF
Water Volume within Soil=	0.2	X		3907	CF=	781	CF
Volume of Stone=	1	FT X		3907	SF =	3,907	CF
Water Volume within Stone=	0.25	X		3907	CF =	977	CF
Total Water Volume in Soil and Stone=						1,758	CF
Total Drainage Area =						93,076	SF
1/2" water Volume 93,076	SF X	0.5	IN/	12	IN/FT=	3,878	CF
Volume needed above ground:	3,878	CF	-	1,758	CF	2,120	CF
Total Volume Required Above Ground:						2,120	CF
Total Volume Provided Above Ground:						36,000	CF
Total Volume Provided :						37,758	CF

Figure 22: Water Quality Calculations



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BLOOMINGTON IN

REVISIONS	BY	DATE

DESIGNED KES
DRAFTED SPP
CHECKED KES
DATE

JOB NUMBER 6295

SHEET 1 OF 1

DATE 10/25/2023

DRAINAGE MAP

20 40
10
SCALE: 1"=20'