



Cabarrus County Government

Cabarrus County Planning and Zoning Commission
Tuesday, November 9, 2021 @ 6:30 p.m.
Board of Commissioners Meeting Room
Cabarrus County Governmental Center

Agenda

1. Roll Call
2. Oath of Office to Re-Appointed Member
3. Approval of September 14, 2021, PZ Meeting Minutes
4. Approval of the Granting Order with Finding of Facts for VARN2021-00001, Jerry and Cheryl Baxter – Request for relief from front setback for proposed residence in LDR district.
5. New Business Board of Adjustment Function:
 - A. Petition RZON2021-00004 – Request to apply Mobile Home Overlay (MH-2) to CR zoned property. Bonnie Vivian is the owner and Amy Vivian is the applicant. The address is 2424 Buffalo Hills Dr (PIN: 5549-78-9030).
6. Old Business Board of Adjustment Function:
 - A. Petition CUSE2018-00004 - Close out documents for the amendment to CUSE2017-00001, Conditional Use Permit for Public Service Facility (Solar Farm). Applicant is Canadian Solar Solutions, Inc.
7. Legal Update
8. Director's Report
9. Adjourn

Planning and Zoning Commission Minutes

September 14, 2021

Mr. Jeff Corley, Chair, called the meeting to order at 6:33 p.m. Members present, in addition to the Chair, were Mr. Adam Dagenhart, Ms. Holly Grimsley, Mr. Andrew Nance, Ms. Ingrid Nurse, Mr. Charles Paxton, Mr. Chris Pinto, Mr. Brent Rockett, and Mr. Stephen Wise. Attending from the Planning and Zoning Division were, Ms. Susie Morris, Planning and Zoning Manager, Mr. Phillip Collins, Sr. Planner, Ms. Arlena Roberts, Clerk to the Board, Mr. Richard Koch, County Attorney and Mr. David Goldberg, Deputy County Attorney.

The Chair stated that we are moving the selection of the Chair, Vice-Chair and second Vice-Chair to the end of the meeting.

The Oath of Office was administered to reappointed members, Ms. Holly Grimsley, Mr. Stephen Wise and Mr. Adam Dagenhart.

Roll Call

Approval of June 15, 2021 Planning and Zoning Commission Meeting Minutes

There being no corrections or additions to the minutes, Ms. Holly Grimsley **MOTIONED, SECONDED** by Mr. Andrew Nance to **APPROVE** the June 15, 2021, meeting minutes. The vote was unanimous.

Approval of Granting Order with Findings of Facts for RZON2021-00001, Vulcan Lands, Inc.

There being no corrections or additions to the minutes, Mr. Brent Rockett **MOTIONED, SECONDED** by Ms. Ingrid Nurse to **APPROVE** the Granting Order with Findings of Fact for RZON2021-00001. The vote was unanimous.

The Chair stated that anyone wishing to speak tonight will need to complete a blue card. The Chair asked those planning to speak to stand, and he administered the Oath to the speakers.

New Business – Board of Adjustment Function:

The Chair introduced Petition VARN2021-00001 – Request for relief from front setback for proposed residence in LDR district. Property owners are Jerry and Cheryl Baxter, 2422 Miami Church Road (PIN: 5549107589000).

The Chair asked if there was anyone who had a conflict of interest or any information that needs to be shared at this time. There being none, the Chair called on Mr. Phillip Collins to present the staff report.

Mr. Phillip Collins, Sr. Planner, addressed the Board presenting the Staff report for VARN2021-00001 – Request for relief from front setback for proposed residence in LDR district. Property owners are Jerry and Cheryl Baxter, 2422 Miami Church Road (PIN: 5549107589000).

The applicants and owners of the subject property are Jerry & Cheryl Baxter. The subject property is 2422 Miami Church Rd (PIN5549-10-7589) and is approximately 1.71 acres in size.

The purpose of this request is to seek relief from the 75-foot front setback requirement for the LDR Zoning District outlined in Chapter 5, District Development Standards, Section 5-5.B, Dimensional Standards.

- The applicants are proposing to place a new residence on the site where a residential structure was previously located. The old structure was removed earlier this year.
- The applicants are requesting to place the new residence approximately 55 feet from the centerline of Miami Church Road.
- The right-of-way for Miami Church Road, per NCDOT, is 50 feet wide (25 feet from centerline). Therefore, the applicants are requesting 45 feet of relief from the front setback requirement to locate the new home approximately 30 feet from the edge of the right-of-way.

Along with the older home that previously occupied the subject property there were two accessory structures and a barn. These structures remain on the subject property. The barn is located to the rear of the subject property. The two accessory structures are located closer to the front of the property. One is in the middle of the subject property and the other is close to the western property line.

Adjacent land uses consist of Residential and Vacant properties

The subject property is currently surrounded by LDR zoned properties.

- The subject property is currently zoned LDR and has been used for residential purposes in the past.
- The subject property is approximately 1.71 acres in size
- The applicants are requesting 45 feet of relief from the front setback requirement for LDR to locate the new home approximately 30 feet from the existing edge of the right-of-way.

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- Miami Church Road is not listed on the Cabarrus-Rowan Metropolitan Planning Organization's (CRMPO) Comprehensive Transportation Plan (CTP). Therefore, the facility is not anticipated to be widened within the foreseeable future
- It is the applicant's contention that the size of the lot, the existing topography and the location of the existing septic system are all related to why the request for the variance is needed.
- The applicant states that if the residence is shifted backwards to meet the 75-foot setback, it would be over the existing septic lines.
- The applicant also states that if the house were moved back behind the septic lines that there is a 20 foot drop off at the rear of the lot.

Mr. Collins said there is a contour map included in the packet that shows that. He wants to point out that in the comments section of the staff report, the Cabarrus Health Alliance commented on the request and stated that it is their preference a variance be granted due to the existing septic system. They mentioned that if the house were moved back it would encroach on the existing system rendering it unusable. They also confirmed that the soil of the subject property is of poor quality and if the house were moved, it is unlikely that there would be any suitable areas for the system to be replaced.

- The application further states that the house cannot be turned sideways because of the detached garage on the property and an existing right of way prevents the house from being built anywhere other than the previous site.
- The applicants wish to build a small residential dwelling in the same location as the previous residence, which the application states was there for almost 100 years.
- The proposed home will be very similar on the outside, comparable in size and will not be any closer to the road than the previous home.

Should the Board of Adjustment grant approval of the variances, the following conditions should be considered as part of the approval and case record:

- The Granting Order, stating restrictions and applicable conditions of approval, shall be recorded with the deed of the property.

Mr. Collins is happy to answer any questions the Board may have.

The Chair asked if there were any questions for Staff, there being none, he called on the applicant.

Ms. Baxter thinks Mr. Collins did a good job and she has nothing to add.

The Chair asked if there were any questions for the applicant at this time. There being none, the Chair opened the Public Hearing. There being no one speaking for or against the case the Chair closed the Public hearing.

The Chair said the Board will discuss the case and as a reminder we will walk through these four specific items to make sure that we are accommodating all of those and ultimately that will bring us to a motion to approve or deny the request.

We will start with number one. He will state each and then we can have discussion.

1. Unnecessary hardship would result from the strict application of the ordinance. It shall not be necessary to demonstrate that, in the absence of the variance, no reasonable use can be made of the property.

Mr. Brent Rockett believes the septic situation clearly falls into number one.

The Chair said poor soils for a new septic field on the property would probably not be successful on the site.

There were no more comments on number one.

2. The hardship results from conditions that are peculiar to the property, such as location, size, or topography. Hardships resulting from personal circumstances, as well as hardships resulting from conditions that are common to the neighborhood or the general public, may not be the basis for granting a variance.

The Chair thinks we heard there are some topography issues if the home was pushed behind the septic field. There is a good bit of elevation change that could create quite a problem.

Mr. Paxton said and the inability to build over the septic line.

There were no more comments on number two.

3. The hardship did not result from actions taken by the applicant or the property owner. The act of purchasing property with knowledge that circumstances exist that may justify the granting of a variance shall not be regarded as a self-created hardship.

Mr. Rockett said it is clear to him that with the previous structure being there for 100 years, this is far predating the current owner of the property.

There were no more comments on number three.

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4. The requested variance is consistent with the spirit, purpose, and intent of the ordinance, such that public safety is secured, and substantial justice is achieved.

Mr. Rockett believes all of that to be the case, in this particular scenario.

The Chair said the fact that they are rebuilding in the exact same location, should not have any detrimental effect on the community.

There being no further comments on the standards, the Chair said what we are doing is setting a relief from the 75-foot front setback requirement with one condition that it be recorded.

The Chair said we have some reasonable items on those four things. There is the poor soil conditions that really need to utilize the existing septic field. Moving the building to the rear of the septic field runs into all sort of topography issues and obviously they cannot build on top of the existing septic field. They are rebuilding in the same location as the previous structure that was removed, so there is no detriment to the neighbors or the community.

There being no further comments Mr. Brent Rockett, **MOTIONED, SECONDED** by Ms. Holly Grimsley to **APPROVE** VARN2021-00001 - Request for relief from front setback for proposed residence in LDR district, with one condition, that the Granting Order, stating restrictions and applicable conditions of approval, shall be recorded with the deed of the property. The vote was unanimous.

The Chair said we will move back to item number two, the selection of the Chair, Vice-Chair and second Vice-Chair. He turned the meeting over to Ms. Susie Morris, Planning and Zoning Manager.

Ms. Morris will take nominations for the Chair for the 2021- 2022 year. She said typically it is September through September the next year

Mr. Corley encourages everybody, and he knows sometime this is weird because sometimes he gets caught up in the process as to where we are, and you are trying to participate in the cases. He encourages everyone to try to get themselves to where they are interested in these positions. He thinks it is a sign of a healthy board, when we have a lot of folks talking and a lot of folks cycling through the leadership positions.

He just wanted to say that for next time. He hopes we have a lot of folks interested and he knows traditionally we do not. But he would love to work the Board toward where we have a lot of people who are comfortable in those rolls.

Ms. Morris asked if there were any nominations for the Chair.

Mr. Brent Rockett, **nominated** Mr. Adam Dagenhart, as Chair of the Planning and Zoning

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Commission. There being no other nominations, Ms. Holly Grimsley **SECONDED** the nomination. The vote was unanimous.

Ms. Morris turned the meeting over to the Chair, Mr. Adam Dagenhart.

The Chair asked if there were any nominations for Vice Chair.

Mr. Jeff Corley, **nominated** Mr. Charles Paxton, as Vice-Chair of the Planning and Zoning Commission. There being no other nominations, Ms. Holly Grimsley, **SECONDED** the nomination. The vote was unanimous.

Mr. Jeff Corley, **nominated** Mr. Andrew Nance, as second Vice Chair of the Planning and Zoning Commission. There being no other nominations, Ms. Holly Grimsley **SECONDED** the nomination. The vote was unanimous.

Legal Update

Mr. David Goldberg, Deputy County Attorney, addressed the Board stating that last week the Governor signed Senate Bill 300, Criminal Justice Reform. If you look down at Title 13, there is an interesting oddity in there that attempts to partially decriminalize municipal and county ordinances.

There is a list of certain ordinances that can no longer be attached to a criminal penalty; one of them being land use, any kind of zoning, stormwater protections and tree ordinances. All of those are now going to be decriminalized. He thinks it is effective December 1, 2021. There will need to be some clean up down the road for our Development Ordinance to get that online.

There are some bigger headaches for other ordinances in the County that we kind of have to sort out; there are some other triggers that we have to go through. That is what is happening in the General Assembly. He has not seen any other big legislative moves this term, still trying to work through the changes with 160D.

Mr. Goldberg said we have had an ongoing case involving Connie Arstark who owns a ten-acre lot. This person has an ongoing dispute and has taken the dispute to the property tax side of things and has tried to get it to be a part of the Present Use Value Deferment program by virtue of being a farm and that has been an ongoing basis. The Board of Equalization and Review heard the appeal on it a week or so ago and tabled it for further discussions. He said it has some interesting intrigues, as far as how it will apply to any further zoning issues that may come down the road.

Mr. Goldberg said the McClain RV case on Joyner Road, outside the solar farm. Mr. McClain was not responsive to any of our violation notices and various outreaches. We filed suit against him seeking injunction to enforce the violations, collect the sums amount and get a court order to

remove the RV. He has not responded in any way; except we did get service on him.

Mr. Goldberg said it has been more than two weeks now since he appeared before the Superior Court Judge for a default judgment. Essentially, saying that Mr. McClain has not defended the case and he has not appeared. The Judge entered the judgment of default; so, we won. He is still waiting on the Judge, who was from Chatham County and was here for that week to sign the order, he has been on vacation. Once that gets signed, at that point, essentially, we will have the immediate right to collect the couple thousand dollars that he owes in civil penalties.

The other aspect of it is, Mr. McClain has 14 days from the day that order is signed, to bring the RV into compliance, which means to stop using it as a residence and bring it into a storage capacity as our Ordinance allows. If he does not do that, then we have an automatic order of abatement that says that the County can fix the situation for him and the cost will be attached as a lien on the property.

Mr. Goldberg said that is not ideal; we would like for him to come into voluntary compliance. He knows we are out there. He has had his employer's attorney approach him asking what is going on. Mr. McClain talked to the deputies a little bit when they tried to serve the lawsuit. He knows this is out there and he just thinks that if he ignores it that it will go away.

Mr. Goldberg is going to try to communicate with him. Mr. McClain has a court date in Lee County for failure to register as a sex offender at the location of the RV. He is going to see if they can drop a message, so he knows that order is coming. Mr. McClain also has some outstanding taxes. He has not paid taxes since 2018. We may be able to sort this all out through a combination of all that.

Mr. Goldberg said for his first litigation case for the County, this has been a good starter case, you have to go through all the intrigues.

Mr. Koch said the Board might get the Arstark case later and that is why we did not want to say a whole lot about it. We just wanted you to be aware of it and know it is out there.

Directors Report

Ms. Susie Morris said the reason that case is important is because this is somewhat of a different approach to what we normally take, because we typically do not go the abatement route. Since the items are not necessarily fixed to the property; you all saw it when you went to the solar farm. That is something that we may look at in the future. We are going through this test case to see how things work out and see what our options are, because that is an option that is available to us.

She said the training was last night, and Ms. Nurse did try to attend that training but was not successful. She now has the video, and she can let us know if there is anything in that that we need to know about.

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It is her understanding that Robert Joyce did the training. He is the new person at the School of Government. He came pre-pandemic or during the pandemic. He has a different approach to things from what we normally see from the School of Government folks.

That training might be in there when we re-up our subscription to the standard ones that we do, if there is benefit in it then we may bring it to you for a training session.

She said a quick reminder that we are currently down our Midland position and the north or western area position; she thinks it is western area. If you know anybody in those areas that might be a good fit for the Board let her know. She is happy to talk with them about the Board, what you all do and what the obligations are, so if you know of anyone let us know.

We also currently have a Senior Planner position open and a County Engineer position open, that is new. If you know of anyone wanting to make change in either of those areas. We also have a Paralegal open.

Mr. Goldberg said the Paralegal position is closed.

Ms. Morris said if you know of anybody in the other fields that are looking to make a change tell them to submit their application.

Ms. Morris is sure by now the Board has heard some rumblings about what is happening with WSACC. The short of that is that there is a capacity issue at the Rocky River Treatment Plant. There is some capacity potentially available. They need to figure out how that capacity is going to be divvied out. Right now, everything is kind of on a first come first serve basis. That is a decision that their Board of Directors will make.

Our phones were absolutely crazy today, because there is a rumor out there that there is a moratorium on development in the Cabarrus County, as a whole. She said that is not true, so if you hear that, just let people know that there is a capacity issue depending on where the property is located, but they are trying to work through that.

She said the Board can recall from your School of Government trainings, if we were going to enact a moratorium, there are steps that have to be taken legally. Currently, there is no moratorium in place. There are challenges with capacity, and they are working on it. It may require that people end up being asked to phase development or maybe delay development until that capacity is available.

She said it is very similar to our school situation and how we used to use the APF Ordinance, to where either the developer paid to advance those things or phased or delayed development, very similar to those situations; working on it and working through it, but we do not have a moratorium on development in Cabarrus County.

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If the municipalities, choose to do something, that is up to them. But the general rumor seems to be that it is all of Cabarrus County and that is not the case.

There being no further discussion, Mr. Holly Grimsley **MOTIONED, SECONDED** by Mr. Brent Rockett, to adjourn the meeting. The vote was unanimous.

APPROVED BY:

Mr. Jeff Corley, Chair

SUBMITTED BY:

Arlena B. Roberts

ATTEST BY:

Susie Morris, Planning and Zoning Manager

STATE OF NORTH CAROLINA
COUNTY OF CABARRUS

CABARRUS COUNTY PLANNING
AND ZONING COMMISSION
BOARD OF ADJUSTMENT
VARN 2021-00001
PIN 5549107589

In re

JERRY and CHERYL BAXTER
VARIANCE APPLICATION

) ORDER GRANTING
) VARIANCE
)

THIS MATTER came before the Cabarrus County Planning and Zoning Commission, sitting as the Board of Adjustment, on September 14, 2021 on the application of Jerry and Cheryl Baxter (collectively “Baxter”) for one variance on the “Property” of Baxter located at 2422 Miami Church Rd., Concord, NC 28025 (PIN 5549107589) .

Notice was given to Baxter and to adjacent property owners as required by law.

A full complement of nine board members was present to hear this variance application. All of the witnesses were duly sworn and documents were received in evidence. There were no witnesses in opposition to the variance application.

FINDINGS OF FACT

After hearing and receiving the evidence, the Board makes the following Findings of Fact:

1. The Property is in the Low Density Residential (LDR) zoning district and is 1.71 acres in size. The Property has been used for residential purposes previously, possible for close to 100 years prior.
2. An older home previously occupied the Property along with two accessory structures and a barn. The older home has since been removed but the barn and accessory structures remain.

The barn is located to the rear of the Property. The two accessory structures are located closer to the front of the Property. One is in the middle of the Property and the other is close to the western property line.

3. All neighboring lots are zoned LDR and are used for residential purposes or left vacant.
4. Pursuant to section 5-5.B of the Cabarrus County Development Ordinance, single-family detached building in LDR must be setback in the front at least 75 feet from a minor collector right-of-way.
5. On August 9, 2021, Baxter submitted a Variance Application to the Cabarrus County Planning Division. The application requests relief from section 5-5.B of the Cabarrus County Development Ordinance.
6. The application requested 45 feet of relief from the front setback requirement for LDR to locate a new home approximately 30 feet from the existing edge of the right-of-way.
7. Representatives of the Cabarrus Health Alliance (CHA) examined the Property and found that shifting the location of the building would result in encroachment of the existing septic system, prohibiting its use. A CHA inspection indicated the property's soil cannot support a higher capacity septic system than the three-bedroom system currently in place, nor can a system be placed elsewhere on the property. As a result, the CHA recommended granting the variance.
8. The steep slope over a portion of the lot, the existing septic system, and existing structures prevent the applicant from building a home in any location other than the site of the previous building, which does not comply with setback requirements. As such, Baxter will not be able to build a home on the property without a variance.
9. The proposed site plan indicates that the proposed building will have a similar size, appearance, and location relative to the road to the prior home.
10. Owners of the adjoining properties received written notice of variance application and a sign was posted on the property on August 24, 2021. None of the neighbors have expressed any opposition to this variance.
11. Representatives of Cabarrus County EMS, the North Carolina Department of Transportation, the Cabarrus Soil and Water Conservation District, and the Cabarrus County Sheriff's Office reviewed the variance application. None of said agencies objected to the application.

CONCLUSIONS OF LAW

Based on the foregoing Findings of Fact, the Board makes the following Conclusions of Law:

1. Baxter provided substantial, material, and competent evidence to the official record to support the variance application.
2. Unnecessary hardship would result from the strict application of the Ordinance because it would prevent Baxter from constructing a single-family residential building on the Property, as well as any other reasonable use.
3. The hardship results from conditions that are peculiar to the property because property has a steep slope over a substantial portion of its area that prevents construction. Further, the existing septic system precludes building a house on other parts of the Property and the septic system cannot be located to other areas of the Property due to poor soil conditions.
4. The hardship did not result from actions taken by the applicant or the property owner because the inherent attributes of the property have created the hardship.
5. The requested variance is consistent with the spirit, purpose, and intent of the, Ordinance, such that public safety is secured, and substantial justice is achieved because the proposed house will have a similar appearance, size, and location to a house located on the property for decades prior to submission of the variance request. There were also no objections from neighbors and the proposed house aligns with the general character of the area.

Based on the foregoing Findings of Fact and Conclusions of Law, the Cabarrus County Planning and Zoning Commission, sitting as the Board of Adjustment, hereby grants the variance consistent with the site plan presented at the hearing, pursuant to section 12-20 of the Cabarrus County Development Ordinance. The special conditions for approval of the variance is attached as Exhibit A and incorporated by reference. This variance Order shall run with the land with reference to the Property and shall be recorded in the Cabarrus County Public Registry.

This ____ day of _____, 2021, *nunc pro tunc* to September 14, 2021.

Jeff Corley
Chair, Cabarrus County Planning and Zoning Commission
Sitting as the Board of Adjustment

ATTEST:

Arlena Roberts,
Clerk to the Cabarrus County Planning and Zoning Commission

STATE OF NORTH CAROLINA
COUNTY OF CABARRUS

I, _____, a Notary Public in and for the said State and County do hereby

certify that Jeff Corley, as Chair of the Cabarrus County Planning and Zoning Commission, sitting as the Board of Adjustment, personally appeared before me this day and acknowledged the due execution of the foregoing Order.

Witness my hand and notarial seal, this _____ day of _____, 2021.

_____, Notary Public

My Commission Expires: _____

EXHIBIT A
CONDITIONS

The granting order, stating restrictions and applicable conditions of approval, shall be recorded with the deed of the property.

PLANNING STAFF REPORT
CABARRUS COUNTY PLANNING AND ZONING COMMISSION
11/9/2021

Staff Use Only:
Approved: _____
Denied: _____
Tabled: _____

Petition: RZON2021-00004 Rezoning

Applicant Information: Amy Vivian
646 Lancashire Way
Concord, NC 28025

Owner Information: Bonnie Vivian
646 Lancashire Way
Concord, NC 28025

Existing Zoning: CR (Countryside Residential)

Proposed Zoning: CR with Mobile Home 2 Overlay (MH-2)

Permitted Uses: Double-wide manufactured homes and all uses permitted in the underlying CR zoning district would be permitted on the subject property.

Parcel ID Numbers: 5549-78-9030

Property Addresses: 2424 Buffalo Hills Drive

Area in Acres: ± 1.15 ac

Site Description: The subject property is currently vacant. There was a single-wide manufactured home located on the subject property until earlier this year.

Adjacent Land Use: North: Residential & Vacant
East: Residential
South: Residential
West: Residential & Vacant

Surrounding Zoning: North: LDR
East: CR
South: CR
West: CR

Utility Service Provider: Currently, the subject property is served by private well and septic.

Exhibits

A. Staff Report

- B. Application
- C. Staff Maps
- D. Adjacent Property Owner & Property Owner Letters
- E. Neighborhood Meeting Minutes
- F. Cabarrus Health Alliance Letter

Intent of Zoning Districts

PROPOSED DISTRICT: Mobile Home Overlay 2 District (MH-2)

The purpose of the MH-2 district is to provide for the principal use of land developed in harmony with the Underlying Zoning District regulations; however, permitting the substitution of a Manufactured Home as a Principal Building, provided the specific design and/or installation regulations appearing in section 4-28 are met.

EXISTING DISTRICT: COUNTRYSIDE RESIDENTIAL

Lands in this district have a strong rural, pastoral feel. Natural environmental elements such as tree lines, small ponds, rock formations, and manmade elements such as pasture fencing are to be retained, if possible. Although the area is capable of handling higher densities of development, development is kept at very low overall densities. Development includes only the standard single family detached dwelling.

RATIONALE

This land use district was created as a direct result of the County's systematic area planning process. As a reaction to the growth of the past decade (as much as 80% in some townships) many residents are anxious to see their areas retain the appeal that inspired the resident to make his or her original investment. This district helps implement a growth management philosophy before the fact, rather than after. In summary, the principal purpose of this district is to provide some land area in the County for a permanent country, rural residential lifestyle.

Agency Review Comments

Planning Review:

Staff Report, Phillip Collins, Senior Planner Cabarrus County

NCDOT Review:

No comments, Marc Morgan, District Engineer NCDOT

NCDEQ Review:

No comments, Christopher Graybeal, Assistant Regional Engineer NCDEQ

Fire Marshal Review:

No comments, Jacob Thompson, County Fire Marshal

EMS Review:

No comments. Justin Brines, Cabarrus County Assistant EMS Director

Sheriff's Office Review:

No comments. Lieutenant Ray Gilleland, Cabarrus County Sheriff's Department

Soil and Water Review:

No comments. Tammi Remsburg, Cabarrus County Resource Conservation Manager

Cabarrus Health Alliance:

Approved – but must be a two bedroom mobile home. Chrystal Swinger, CHA Environmental Health Program Director

Land Use Plan Analysis

The subject property is located within the boundary of the Central Area Future Land Use Plan (Plan) and is planned for Very Low Density Residential (VLDR) uses. The Plan states that areas planned for VLDR uses are intended to remain predominately rural in character while allowing residential uses to occur at very low to low densities. The Plan further recommends that the density for these areas be at one unit per two acres up to two units per acre provided additional development standards are met.

While the Plan recommends a certain density for VLDR areas, this request is intended to allow the applicant to place a manufactured home on an existing lot where it currently is not permitted. Therefore, this request would not have any effect on the application of the established densities in the Plan for this area. The area is already developed within the range that is recommended by the plan.

Conclusions

- The subject property is an existing lot of record with CR zoning.
- The proposed request does not allow for any further increases to density. The request is for the MH-2 overlay district to voluntarily be added to the subject property, which allows a double wide manufactured home to be substituted on the property as the principal building versus a modular home or stick built home.
- There are existing manufactured homes within the vicinity of this proposal. Manufactured homes have existed in this area for quite some time (at least since 1995).
- A single-wide manufactured home was previously located on the subject property and could have been replaced with a like or larger manufactured home. However, it was removed from the property and the 6-month time frame for it to be replaced has expired.

- Pursuant to Chapter 14, Section 14-8 Manufactured homes on individual lots of record that do not have the Manufactured Home Overlay may be removed and replaced provided that the replacement manufactured home is equal to, or greater than, the size of the manufactured home being replaced and meets the design and installation standards for individual manufactured homes in Chapter 4.
- Pursuant to Chapter 14, Section 14-6, B, if the existing non-conforming use ceases for more than 6 months, subsequent use or development of the land must conform to district regulations.

This is a conventional rezoning request; therefore, all uses permitted within the underlying CR zoning district and in the proposed MH-2 Overlay district would be allowed on the subject property if approved. The Planning and Zoning Commission should consider all the information provided and determine if the proposed rezoning is consistent with the Commission's vision for this area of Cabarrus County.



CABARRUS COUNTY REZONING APPLICATION

STAFF USE ONLY:

Application/Accela#: _____

Reviewed by: _____

Date: _____

Amount Paid: _____

INSTRUCTIONS/PROCEDURES:

1. Schedule a pre-application meeting with Staff to discuss the procedures and requirements for a zoning map amendment request.
2. Submit a complete application for an amendment to the official zoning map to the Planning Division. All applications must include the following:
 - Cabarrus County Land Records printout of all adjacent property owners. This includes properties located across the right-of-way and all on-site easement holders. The list must include owner name, address, and Parcel Identification Number.
 - A recent survey or legal description of the property or area of the property to be considered for rezoning.
 - Any additional documents essential for the application to be considered complete. (Determined as part of the pre-application meeting)
3. Submit cash, check, or money order made payable to Cabarrus County.

Fees: Residential rezoning request 1 acre or less = \$400.00
 Residential rezoning request greater than 1 acre = \$400.00 *plus* \$15 per acre
 Non-residential rezoning request = \$650.00 *plus* \$15 acre
 (Plus, cost of advertising and engineering fees if applicable)
 (if a 3rd submittal is required, an additional review fee will be assessed)

The deadline for submittal is always the same day as the Planning and Zoning Commission Meeting which is the second Tuesday of the month. Applications must be submitted before 2:00 PM that day for consideration on the next available agenda.

Incomplete applications will be returned to the applicant and will not be processed.

PROCESS SUMMARY:

1. Hold a pre-application meeting with Staff to discuss your rezoning request and the map amendment process.
2. Submit a complete application with the appropriate fees to the Cabarrus County Planning Division.

Staff will review your complete application, prepare a staff report, schedule a public meeting date and notify adjacent property owners of the public meeting/public hearing date. A sign advertising the public hearing will also be placed on the property being considered for rezoning.

Meeting Information: Meetings are held the second Tuesday of each month at 6:30 PM in the Cabarrus County Governmental Center located in downtown Concord at 65 Church Street, SE.

Expedited Vote: A vote of $\frac{3}{4}$ or more of the members of the Planning and Zoning Commission is considered an Expedited Vote and will constitute a final decision. If approval or denial of a rezoning request is by a vote of less than $\frac{3}{4}$ of the members, or if an appeal of the decision is filed within 15 days of the date of the decision, the application will automatically be forwarded to the Board of Commissioners for final consideration at a *de novo* hearing.

Questions: Any questions related to rezoning your property or to the rezoning process may be directed to the Planning Division at 704-920-2141, between 8 AM and 5 PM, Monday through Friday.

SUBJECT PROPERTY INFORMATION:

Street Address 2424 Buffalo Hills Drive Concord, NC 28025

PIN(s) (10 digit #) 5549 -- 78 -- 9030 ; -- --

Deed Reference Book 14074 Page 111

Township # 11

DESCRIPTION OF SUBJECT PROPERTY:

Size (square feet or acres) 1.15 AC

Street Frontage (feet) 440 FT

Current Land Use of Property Vacant

Surrounding Land Use North Residential and Vacant

South Residential

East Residential

West Residential

REQUEST:

Change Zoning From Countryside Residential To Countryside Residential WMH-2 Overlay

Purpose for Request:

I Purchased this property March 23rd, 2020 there was a singlewide already on the property
and was part of the sale. I purchased this property to become my primary residence and to replace
the single wide with a newer double wide. In order to place the new doublewide on the
property, the MH-2 Overlay is required.

LAND USE PLAN CONSISTENCY STATEMENT

Describe how the proposed rezoning meets the land use plan(s) for the subject parcel(s):

[illegible]

Water Supply X Well or Service Provider _____

Wastewater Treatment X Septic Tank(s) or Service Provider _____

PROPERTY OWNER/AGENT/APPLICANT INFORMATION:

It is understood by all parties hereto including owner, petitioner, and/or agents that while this application will be carefully considered and reviewed, the burden of proving its need rests with the below named petitioner(s)

I do hereby certify that the information that I have provided for this application is, to the best of my knowledge, true and correct.

PROPERTY OWNER

AGENT/APPLICANT

Bonnie Vivian/Amy Vivian

NAME

Amy Vivian

NAME

646 Lancashire Way

ADDRESS

646 Lancashire Way

ADDRESS

Concord, NC 28025

CITY, STATE, ZIP CODE

Concord, NC 28025

CITY, STATE, ZIP CODE

802-279-9761

PHONE NUMBER

802-505-8375

PHONE NUMBER

FAX NUMBER

FAX NUMBER

Bonnievivian@aol.com

E-MAIL ADDRESS

Smiley37984@aol.com

E-MAIL ADDRESS

Signature of Property Owner:

Bonnie Vivian
Amy Vivian

Date:

10/15/2021

Signature of Property Agent/Applicant:

Amy Vivian

Date:

10/15/2021

10/14/2021

Re-Zoning Request

To whom it may concern;

We purchased this property with a closing date of 03/23/2020, the septic company we were working with unfortunately was not reputable and the septic company never returned our calls, so the process was very delayed right off. We started working with Factory Select homes on 03/13/2020 to look at homes and to get things going. We signed a contract on 3/18/2020 for a double wide through Factory Select homes, then COVID happened. They were closed down and not allowing anyone in their office, and the contractor we selected from the list they gave us ended up very ill with COVID, and some other major health issues and in the hospital for several months. During this time I had worked diligently with Tyler Robertson at Cabarrus County health & Environmental trying to get the septic permit issued, and it was quite delayed because the soil scientist was booking 3 months out due to the demand & how COVID had put him behind. After Factory Select opened back up, and we were trying to get the permit still, our sales rep from there had informed us that the price for the home we signed the contract on had increased significantly to the point of not being able to afford it. So, we ultimately had to back out of that contract in December of 2020. Around that time I had posted an ad on Craigslist & Facebook for someone to come and tear down the singlewide or just remove it(they were required to obtain the permits and whatever else was required) At the beginning of the year(Jan 2021) We went back to VT to visit and unfortunately had given the address out without my mom(Bonnie) or anyone being there to meet the people who were interested and when we got back we went up to check on the property, etc and the single wide was gone. We were blown away at first but just kind of said well one less thing we have to deal with!

In the interim, we ended up finding another mobile home retailer in Lexington (Clayton homes of Lexington). I still was working with Tyler in Health & Environmental whom lost our file and wasn't able to find it for some time, he finally issued the septic permit which was required to order our home and that permit was issued on 05/19/2021.

We are trying to make sure that after our home is delivered and here we will not have ANY issues. While expressing my concerns with running into any more issues with Jordan Wagner (Our Sales Rep at Clayton homes of Lexington) we came across this bump in the road and must get it taken care of as soon as possible, as our closing for our new home is set for December 15th 2021.

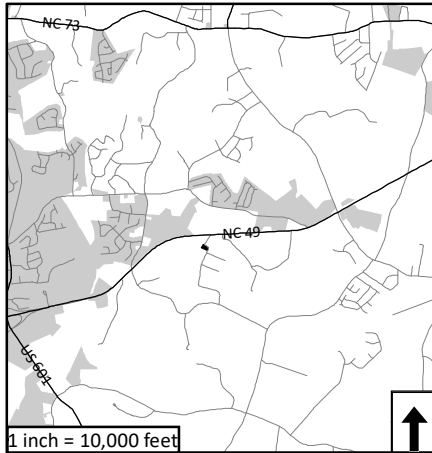
Thank you for your time & consideration.

Amy & Bonnie Vivian

Central Planning Area Existing Zoning

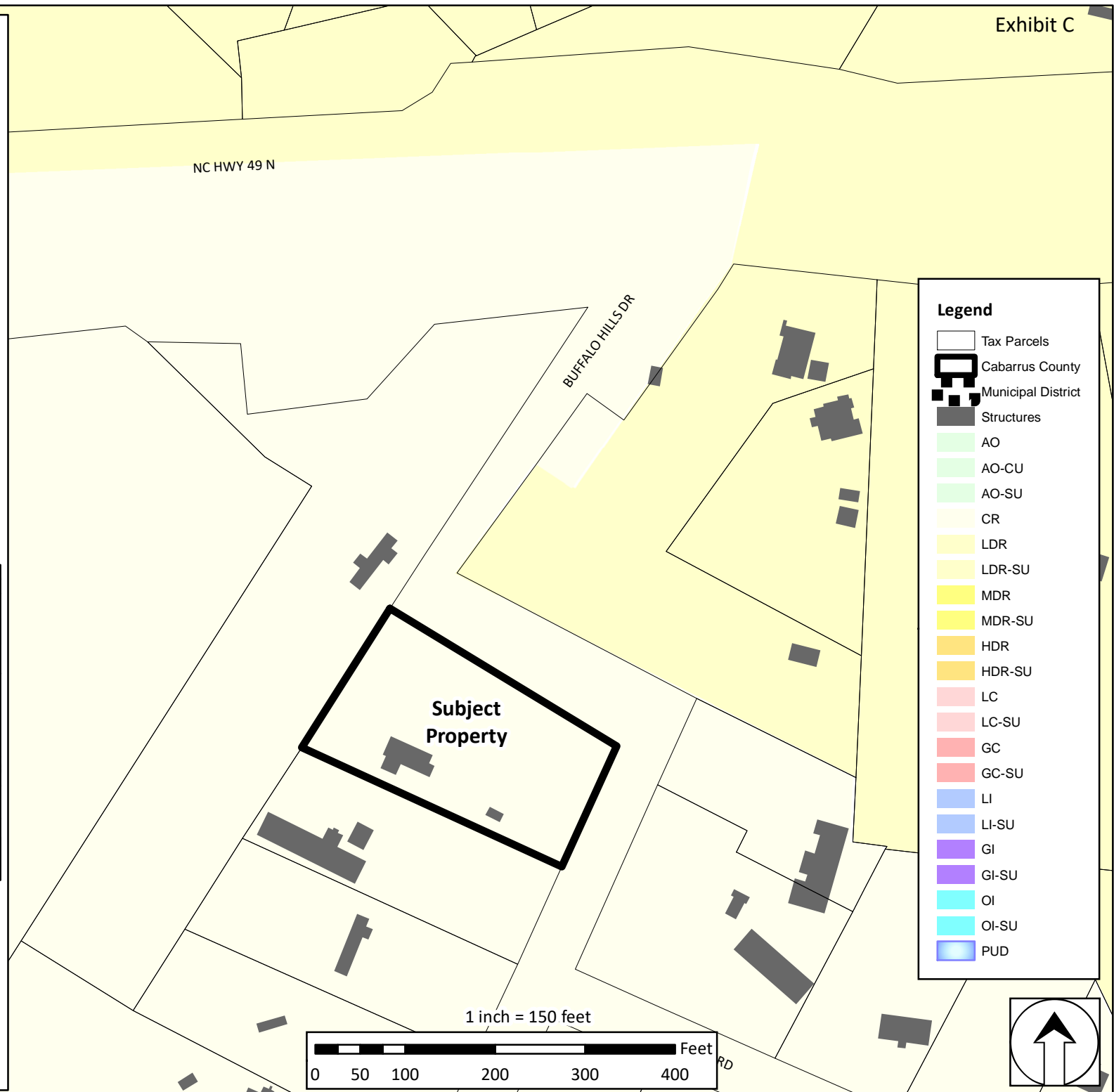


Applicant: Amy Vivian
Owner: Bonnie Vivian
Case: RZON2021-00004
Address: 2424 Buffalo Hills Drive
Purpose: Rezone to apply MH-2
Overlay to current CR zoning
PIN: 5549-78-9030



Cabarrus County shall not be held liable for any errors in this data. This includes errors of omission, commission, errors concerning the content of the data, and relative and positional accuracy of the data. These data cannot be construed to be a legal document. Primary sources from which these data were compiled must be consulted for verification of information contained within the data.

Map Prepared by Cabarrus County Planning & Development - November 2021






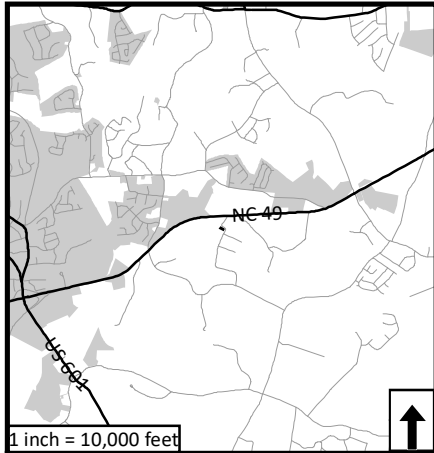
- ### Legend
- Tax Parcels
 - Cabarrus County
 - Municipal District
 - Structures
 - AO
 - AO-CU
 - AO-SU
 - CR
 - LDR
 - LDR-SU
 - MDR
 - MDR-SU
 - HDR
 - HDR-SU
 - LC
 - LC-SU
 - GC
 - GC-SU
 - LI
 - LI-SU
 - GI
 - GI-SU
 - OI
 - OI-SU
 - PUD

Central Planning Area Aerial Map



Applicant: Amy Vivian
Owner: Bonnie Vivian
Case: RZON2021-00004
Address: 2424 Buffalo Hills Drive
Purpose: Rezone to apply MH-2
Overlay to current CR zoning
PIN: 5549-78-9030

-  Cabarrus County
-  Municipal District
-  Tax Parcels



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Map Prepared by Cabarrus County Planning & Development - November 2021



Central Planning Area Future Land Use

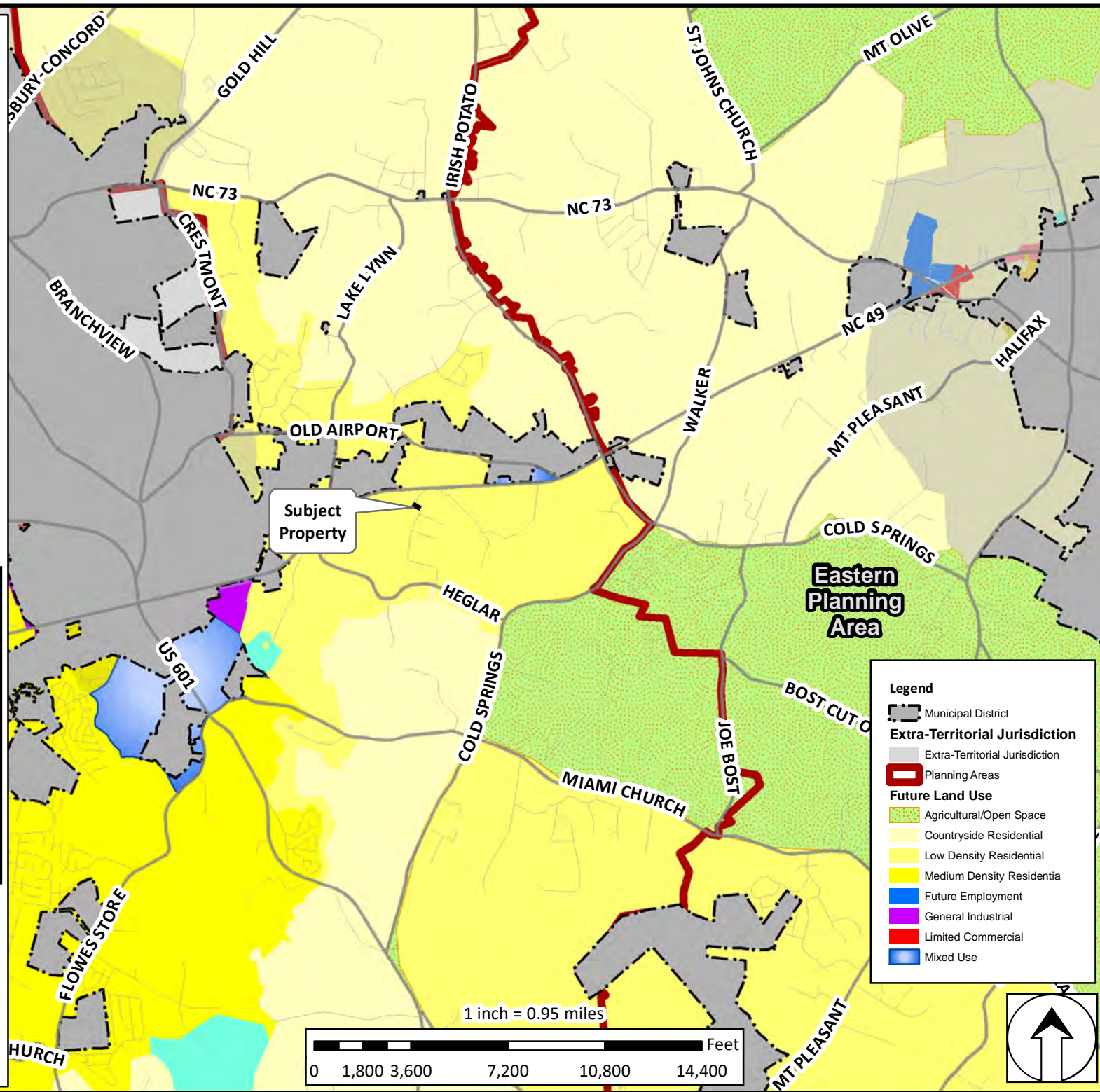


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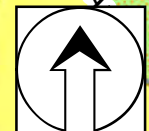
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Map Prepared by Cabarrus County Planning & Development - November 2021



Legend

- Municipal District
- Extra-Territorial Jurisdiction
- Planning Areas
- Future Land Use**
 - Agricultural/Open Space
 - Countryside Residential
 - Low Density Residential
 - Medium Density Residential
 - Future Employment
 - General Industrial
 - Limited Commercial
 - Mixed Use



PROPERTY OWNER
5549-78-9030
Bonnie Vivian
646 Lancashire Way
CONCORD, NC 28025

5549-78-8955 RAMON A MERCEDES 2400 BUFFALO HILLS DR CONCORD, NC 28025	5549-88-1173 SCOTT & ASHLEIGH ROBERTSON 113 CABARRUS AVE E CONCORD, NC 28025	5549-87-2994 & 5549-87-2841 MARK & TAMARA WOHLTMANN 2423 BUFFALO HILLS DR CONCORD, NC 28025
5549-77-8887 MARK CAIN 2446 BUFFALO HILLS DR CONCORD, NC 28025		



Cabarrus County Government – Planning and Development Department

October 18, 2021

Dear Property Owner:

A Zoning Map Amendment Petition has been filed in our office for property **adjacent** to yours. The specifics of the request are listed below. The Cabarrus County Planning and Zoning Board will consider this petition on Tuesday, November 9, 2021 at 6:30 PM in the 2nd floor Commissioner's Chambers of the Cabarrus County Governmental Center, located at 65 Church Street S Concord, NC 28025. A Public Hearing will be conducted and public input will be allowed during that time. If you have any comments about the rezoning, I encourage you to attend this meeting.

Petitioner	Amy Vivian
Petition Number	RZON2021-00004
Property Location	2424 Buffalo Hills Drive
Parcel ID Number	5549-78-9030
Existing Zoning	Countryside Residential (CR)
Proposed Zoning Map Change	CR with MH-2 Overlay

If you have any questions regarding this petition, or the hearing process, please contact me at Cabarrus County Planning and Development at 704.920.2181.

Sincerely,

A handwritten signature in cursive script that reads "Phillip Collins".

Phillip Collins, AICP
Senior Planner
Cabarrus County Planning and Development
704.920.2181



Cabarrus County Government – Planning and Development Department

October 18, 2021

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• Petitioner	Amy Vivian
• Petition Number	RZON2021-00004
• Property Location	2424 Buffalo Hills Drive
• Parcel ID Number	5549-78-9030
• Existing Zoning	Countryside Residential (CR)
• Proposed Zoning Map Change	CR with MH-2 Overlay

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Sincerely,

A handwritten signature in cursive script that reads "Phillip Collins".

Phillip Collins, AICP
Senior Planner
Cabarrus County Planning and Development
704.920.2181

Oct 18, 2021 at 10:06:31 AM
2424 Buffalo Hills Dr
Cabarrus County



11/01/2021

10/22/2021 – Spoke to Mark Cain via Text/Phone. He doesn't have any questions/Comments/Concerns. He is ok with the re-zoning and he advised he will try and be at the meeting however, work hours may interfere with his ability to attend.

10/22/2021 spoke to Ramon & Jackie at 2400 Buffalo Hills via phone call – The only question Jackie had was if the Re-zoning applied to ALL of Buffalo hills Drive, I advised no just for our property. She had no other questions, no concerns. She commented about how she didn't understand why we have to go through this as there are nothing but mobile homes and double wides all around our property. She stated she is all for the re-zoning and she will be at the meeting.

10/30/2021 – Stopped and spoke to Josh & Sara which ends up their address is actually "Wilder Road" however they are directly across from our property. I had a good conversation with Sara, she was wondering what the Zoning sign was for and was happy that I stopped and talked to her about it. She has no questions or concerns. She also commented on the fact that there are nothing but mobile homes in the area so she didn't understand why we were having to go through all of this. She also advised she will be at the meeting.

10/30/2021 – Stopped and spoke to Mark at 2423 Buffalo Hills Dr, his wife Tamara(Tammy) was not home at the time, she was at work. I had a very good conversation with Mark. He advised he was planning on going to the meeting before even talking to me, he said because he thought they were looking to re-zone the area for a mobile home park as he thought our property and the other property (2400 Buffalo hills) both sold together, he would have fought it tooth and nail if it were for a mobile home park. Now he understands its only to allow our double wide there he has absolutely no problem with it and is excited to have someone living across the way now again. He did ask why it was Re-zoned in the first place to not allow mobile homes there, since this area is full of mobile homes. I wasn't able to answer that for him, so he may ask this question at the meeting or call. However, he has no problem with this re-zoning to allow our double wide there. Mark had no other questions, and no other concerns. He did make the comment about the grass being a bit out of control at times, which I reassured him it would be better maintained once we get this settled and can hopefully get moved in, as I work full time and have my current home to maintain, etc. He also just wanted to make sure the double wide isn't like the single wide that was there before (Trashy) He just requested that it has a nice skirting around it to make it look nice. Mark also stated that Scott & Ashley Robertson own the 2 lots below him and he doesn't believe they live there they rent out the buildings, he then thought maybe they own one and rent the other but he was not certain. Mark is planning on coming to the meeting.

I was not able to connect with Scott & Ashleigh Robertson. I do not feel comfortable calling Scott at his place of work to talk about this.



CABARRUS
HEALTH
ALLIANCE

at NC Research Campus

Date: 5/19/21

File # 21-176

Bonnie Vivian

2424 Buffalo Hills Dr.

Concord, NC 28025

Dear Ms. Vivian

On May 19, 2021 an existing septic inspection was performed at 2424 Buffalo Hills Dr. The proposed 2 bedroom residence appears to meet 15A NCAC 18A .1950. And permission is granted to construct 2 bedroom residence and use the 2 bedroom existing system.

The structure must be located a minimum of five feet away from any part of the existing septic tank system and twenty five feet away from the well.

You may call or write the local health department if you need any additional information or assistance.
7049201261

Sincerely,

Tyler W. Robertson, R.E.H.S.

Planning

Memo

To: Planning and Zoning Commission, Acting as Board of Adjustment

From: Susie Morris, Planning and Zoning Manager

cc: File

Date: October 27, 2021

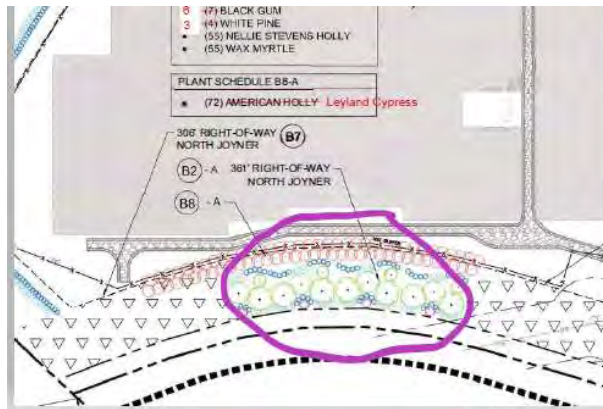
Re: NC102 Project, LLC Close Out Update

At the November 10, 2020 meeting of the Planning and Zoning Commission, the Commission, acting as Board of Adjustment, voted to table consideration of the NC102 Project, LLC close-out documents pending a site visit by a member committee to view the landscape installation and overall site conditions.

Staff and the Committee visited the site on December 2, 2020. The resultant observations, comments and concerns expressed by the Committee were shared with the applicant and with the Planning and Zoning Commission, acting as Board of Adjustment. Since that time, the applicant has been working to address the items outlined in the memo.

County and NCDEQ Staff visited the site in October. This memo provides a status update on the items outlined in the original memo. The original communication text is black, updates are in blue.

Comment #1: The gap area along Joyner Road needs to be planted. The Committee is willing to allow plantings that are consistent with the existing Loblolly Pine buffer to be substituted for the plantings shown on the plan. CCSWCD Staff recommends these be planted at 8 x 10 spacing.



Status: This item has been addressed. The applicant planted this area with Leyland Cypress and additional Hollies.

Photos of area from October 29, 2021



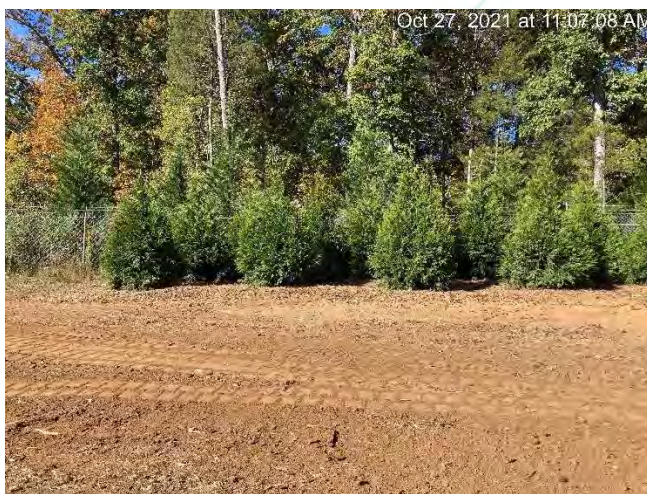
Left side of access road where house is adjacent to fence



Comment #2: This area needs to be planted a minimum of 60 feet on either side of the corner post. The Committee is willing to allow additional Leyland Cypress to be used in this area to create an evergreen buffer for the residential property. Plantings should be installed interior to the fence on the solar farm side to allow appropriate room for growth.

Status: Leyland Cypress have been installed in this area.

Photos from October 27, 2021



Stream/Wetland and Floodplain Restoration Areas – Green areas shown on plan below



Comment #3: Additional evidence needs to be provided that the pine seedlings were planted in accordance with the planting schedule throughout the entire restoration area. Plantings should be flagged, and a series of photos provided for the green areas shown on the plan above. The Committee would like for county staff members to visit the site once the plants are flagged in all the stream/floodplain restoration areas to confirm planting at the proper density and per the approved CCSWCD Restoration Plan.

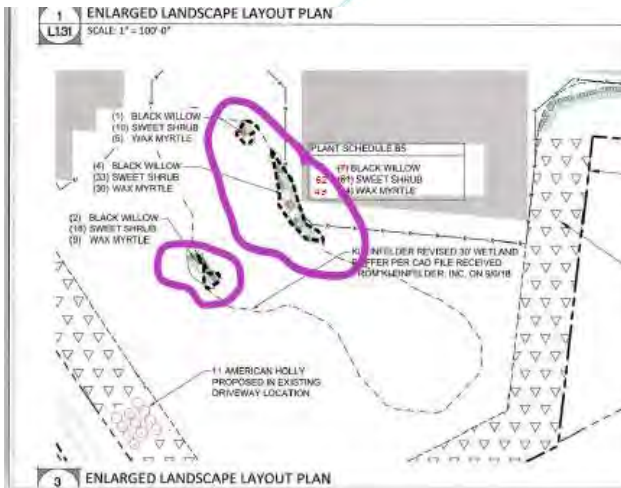
Status: Cabarrus SWCD Staff confirmed during the site visit that the pine seedlings have generally been installed per the remediation plan.

Photos from October 12, 2021





Comment #4: The plantings located in the wetland restoration areas have been run over by some type of equipment. Several of them are dead or dying due to damage. Applicant should limit vehicular access in this area. Areas near the wetlands should be undisturbed areas.



Status: There was no evidence of disturbance in this area during this site visit. The landscape appears to be growing.

Comment #5: Landscape buffers located along Mount Pleasant Road South and Joyner Road should be maintained with mulch.

Status: The buffers along these roads are not being maintained.

Comment #6: The entire site, including drainage basin areas, need to be seeded and stabilized. Pictures below are of the basin in South America where excessive mulch has been installed. CCSWCD Staff suggests using Kentucky 31 Fescue covered with straw to prevent washout. Mulch needs to be removed from these areas prior to seeding.





Status: The basin areas have been reworked and the State provided a report related to the most recent site inspection for Stormwater Permit #SW3170403 (see attached). The basins will be considered stormwater features because they are conveying water and will be inspected periodically by the State. The site, overall, was considered non-compliant. The repaired area and other areas throughout the site will need to be maintained and monitored until the area is fully stabilized and vegetation is established.

Photos from October 12 and October 27







Comment #7: Strapping connecting plants to the stakes (like the ones shown below) should be removed as they may now be hindering growth and health of established plants.



Status: The strapping has served its intended purpose and is no longer needed. It must be removed as it is now restricting growth, hindering translocation and causing mortality.

Comment #8: Dead or dying plants were observed in the Joyner Road buffers (either side of the road).

Status: There was limited dead vegetation during this site visit.

Requested action:

- The Board of Adjustment will need to review all the evidence and information provided and decide if the applicant has satisfied the conditions of approval placed on the Public Service Facility (Solar Farm) project.
- The Board of Adjustment will also need to review and consider accepting the as-built landscape plan as the approved landscape plan for the project. Should the Board decide to accept the as-built landscape plan, the Board will need to consider accepting the revised glare study as well as since these two documents are directly related.
- If the Board of Adjustment finds that the applicant has met the conditions of approval and accepts the referenced documents, the Board of Adjustment will need to consider allowing the Zoning Certificate of Compliance (COC) to be issued for the overall site as it relates to terms of approval established by the Board of Adjustment as part of case CUSE2018-00004, NC102 Project, LLC (See attached Granting Order). The ZCOC document provides official verification that the project is complete and complies with the applicable standards of the Cabarrus County Development Ordinance.

The Chair asked if the Board had any of other questions for staff or any other questions on this case before opening the floor for discussion.

There being no other comments, the Chair said the Board will need to discuss the factors that will lead us down the road of approval or denial here.

We have heard some things already; that there are no collocations that are available to serve this area, which is why they are pursuing another tower. It appears that based on the site plan, egress and ingress to the site is appropriate. They are proposing some landscape buffer around the site using the existing vegetation. It does not appear to detract from the neighboring properties.

There being no further comments, Mr. Brent Rockett **MOTIONED, SECONDED** by Mr. Andrew Lance to **APPROVE** CUSE2020-00004, Conditional Use Permit for Wireless Telecommunications Tower with the conditions proposed by Staff. The vote was unanimous.

BREAK TO CLEAR OUT THE ROOM AND CLEAN

The Chair introduced Petition CUSE2018-00004 - Close out documents for the amendment to CUSE2017-00001, Conditional Use Permit for Public Service Facility (Solar Farm). Applicant is Canadian Solar Solutions, Inc.

The Chair asked if any of the Board members had a conflict or any information that needs to be shared at this time related to the case. There being none, the Chair called on Ms. Susie Morris, Planning and Zoning Manager to present staff report.

Ms. Susie Morris addressed the Board stating that before the Board this evening are the closeout documents for Canadian Solar. The Board may recall there was an amendment to the conditional use permit that was issued from McBride Solar. They were before the Board several times before they negotiated a plan that was amenable to the Board and to the Applicant. That plan was finally approved in May 2019, and if the Board remembers there was a laundry list of conditions that went along with that approval.

The Applicant now feels like they have completed those conditions of approval, and they submitted documents stating such. They finally have their approval from the Fire Marshal's Office. They have their closeout documents from NCDEQ, the sedimentation basins have been removed, graded and reseeded. They have their information from NCDOT for all the driveways that had to be put in. They finally straighten that out with them, pipes are in like they are supposed to be, width is appropriate; all of that has been taken care of.

The majority of our time is going to be spent on the landscape plan and the glare study they submitted. The last site visit was July 2020. Ms. Morris and Mr. Brett Hicks have been to the site two different times since the Board last looked at the plans.

She is going to walk through some of these pictures to show how our comments came about and then the photos that the applicant provided to say that they feel like they have addressed the last set of comments that we gave them and how they feel like they are addressing them.

The applicant is not here this evening because the border is closed and if they flew in, they would have to quarantine for 14 days when returning to Canada. Mr. Jansen who has been participating in the meetings with us, in his region, there are only 12 cases of Covid so, like the rest of us he would prefer to stay put.

She showed where they walked around the site. If the Board remembers, when you are down on Highway 601 coming into South America, this is that area that was directly to the right. You can see that it has been planted, it is kind of hard to see, but here is the row of pines that have been installed. That was the lay down yard that you saw.

This is the buffer on the left side coming in on the entrance road moving towards where the house was with the horses. Essentially, the fence was installed and some of the landscape is back behind this fence. If you remember there was some discussion about them installing interior to the fence.

This is the area right in front of the house. This is one of the areas that staff gave back to them and is somewhere that needs to be addressed because landscape is not visible to staff like it should have been.

This is an example of a buffer next to the stream. Staff was unable to find the pine seedlings that were supposed to be planted there. That was another comment that they received back from staff.

This is an example of a stream buffer; this was in South America. Those of you that were on the visit where we walked, if you remember, we came in off Highway 601, and went way to the back where the cul-de-sac was and then we exited the van. This is that particular area, so you can see there are still some bare spots, and some of this was related to erosion control occurring on the site.

This is an example of looking back towards South America. This is the first row of the arrays. This was the condition of the basins at the time that we visited the site. As you can see, they were not mowing the site because they were trying to let the weeds stabilize the site.

This an example of the condition of the basin that we saw, and their erosion control measures.

This kind of shows you what the natural grow pattern is on the site. We had Soil and Water Conservation staff go with us on our visit, because the first day we were out there we could not find the pine seedlings, so we wanted them to confirm.

All of this green vegetation is invasive, it is something called Dog Fennel, and something else called Sea Myrtle, all of that will die off. They are just weeds that pop up in the summer time.

This is another example of the stream buffer; it is all green now, but these are weeds.

This is an example of the growth inside the fence. This is the Dog Fennel and it was taller than me and Brent.

This is an example of again, the street buffer and the sediment to where it still had not been stabilized, partially stabilized, but not all of it.

Again, this is stabilization efforts, all of this is South America, and she showed more stabilization efforts.

This is an example of the buffer, if you remember the cul-de-sac area where the houses were next to in South America. The Board had some concerns about that area. It is planted like it should be but there is also this undergrowth.

This is some of the natural growth occurring on the site. It is starting to see some habitat reforming on the site now.

This is the buffer southside of South America coming up toward the wetland. That area was planted, and all this green is temporary, but they did put the buffer in this area like it was supposed to be.

This is the wetland areas. This is one of the comments that we sent back to them; we could not find the plantings here.

This is another picture of the wetlands area; we could not find the pine seedlings that were supposed to be here and again, all of this is temporary, invasive plants that came up on their own. She showed another example of that area.

This is by where the construction trailer was looking towards Mount Pleasant Road South.

This is in Mexico; this is the stream buffer; this is where the area that was not to be graded was graded. It is starting to grow back.

This is the natural growth along the trail coming down the west side of the property to Bost Creek.

This is an example of the Sea Myrtle; you can see that it is very green, and it is not part of the required plantings.

This is the area where the road was, they flagged the small seedlings for us in that area.

This is Bost Creek, looking North and you see the water looks a little clearer. But this was not a rain condition site visit. This is looking South of Bost Creek and this is the crossing area.

This is the area right next to where the construction trailer was.

This is an example of the pine that we were supposed to be able to determine through the other growth.

This is looking out toward the site from the entrance road. This is the buffer coming down the western side of the property and along Joyner. This is near the corner of Joyner and Mount Pleasant Road. You can see they have had some issues with erosion and plantings not staying.

This is the northern area, Canada, this area on the plan was shown to be planted but it was not. This is that same area, this is the primary entrance.

This is the buffer interior to the west side of the property, and you cannot see this from the road.

This is the buffer at Canada, this is the property to the east that has been logged and this is looking south on to Mount Pleasant. That gives you an idea of what is out there.

Ms. Morris said essentially, we went out there and we gave them the comments back to address. We told them it was the burden of the applicant to show that they had met the Ordinance. The pictures that are further along in your packet are the photos that they submitted saying that they had met the standards.

For example, this is there landscape contractor showing where the pines were. This is the plantings by the house we were talking about. They are saying that the plantings were there and then these are in South American, this was that area around the wetlands.

They contend that they have met all the requirements that staff gave back to them related to the landscape. One of the things that you will see in your packet is that the landscape plan that they negotiated with the Board is not what is exactly on site. You have an as built plan that is marked up with red text. (She will get to that in a minute)

As we walked the site, there were areas that were under planted, areas that were over planted and there were areas where they did not plant it at all. There were also a lot of substitutions that were made on the site. The Board talked a lot about Leyland Cypress and not using Leyland Cypress and Leyland Cypress is now all over the site. They did substitutions for the American Hollies.

As part of the discussion that we had with them, where we provided the comments back, we wanted to know what kind of impact those substitutions had on the glare study. So, in the Board packet you had initially, a letter from Burns McDonald, that letter was addressing the plant substitutions. Then you had an addendum to the glare study; that was addressing the vantage points in relation to the property to the east, up in Canada that have now been logged. It is visible now from Mount Pleasant Road, South.

It looked like the logging company went into their buffer because the buffer on the eastern side is very scant after that happened. In those two exhibits they are contending that the substitutions did not do anything to impact the glare study, and the conclusion is that the removal of the trees on the east side of Canada had no impact as far as glare

Ms. Morris said what they are asking the Board to decide this evening is to accept the documents. The Fire Marshal and NCDOT, those things are pretty cut and dry. They are asking the Board to accept the marked-up landscape plan, the as-built plan as the new plan for this project and to also accept the revised glare studies as official documents for the conditional use permit.

She will be happy to answer any questions the Board may have. Mr. Brett Hicks is also here if there are any questions about what we saw on site or what we observed.

She said this kind of took you in a trip around the site starting in South America, making your way north and then coming back down Mount Pleasant Road South.

The Chair said do we know when the second set of photos were taken.

Ms. Morris said they submitted that information to her Monday or Tuesday, she assumes that is when they were out there.

The Chair said staff has not responded to that information?

Ms. Morris said we have not been back to the site since receiving these photos.

She said this is the overall landscape plan. This is South America, and this is the wetland area where we could not identify the plantings. This is the cul-de-sac that she talked about where the river stream buffer was; this is the cu-de-sac where the houses are.

She said it is almost like when they went out there, there were different crews, because some of them immediately picked up on the patterns and they were there like they were supposed to be; others were not. This area right here is the area where they just did not install but they showed it on the plan.

If the Board remembers, we had multiple conversations with Kimley-Horn about not showing something on the plan if they could not install it. In this area there just is no room, in this area they went through the woods and put in trees. This is the area that the new glare study informs. This was the area with gaps, that the picture was taken of, and where nothing was planted. This is the area that I said you cannot see. This is everything that is visible from Mount Pleasant Road South. This is the Stewart property which we are not addressing as part of this, they negotiated a deal with Canadian Solar. This is where those rows of trees were, and this is the big open area that is now green mainly due to the evasive weeds.

Mr. Paxton said if you were a teacher grading this, they have not done what you told them to do. On a scale of one to ten what have they done, is it a five or an eight?

Ms. Morris does not know, because in some places they did what they were supposed to do and some places they did not. They made the substitutions, which were not preapproved. It was a surprise with the changes, when we went to the site the first time, we could not match the plan up with what was on the ground. We were like what is going on and then we figured out they substituted XYZ for ABC. They get an E for effort.

She does not know how many times they have been out there at this point.

They hired Metrolina, and one of the things you see in your packet is an eighteen-month maintenance contract. Each time we went out we would say you have all this stuff that is dead, they did come back and replace it. That is also part of the reasons why we had to do multiple site inspections.

You can see here, where they start talking about where they substituted and then in this area this is what is actually there. One of the comments we gave them back was that this was supposed to be planted and it is not; these trees were not here. There were some things that we could pick up on very easily based on the initial plan; but it just was not there.

The second iteration, this is the plan that we used when we went out to try to verify the as-built. This is the as-built plan, this is what is on the ground and then that study corresponds to that.

The last time we went out, we were focusing on the areas adjacent to residential properties, the wetlands, the stream buffers and the areas that were visible from the road. That is what we were really focusing on to see is anything close, do they still need to put plants in; what do they need to do.

She said the spreadsheet that is on the front there, the first iteration of that, is what staff did. They hired three different consultants to go out and check what was out there because those consultants could not even come up with the same numbers that staff did based on what was on the approved plan.

The last information that you have in these numbers were done by Stantec. Kimley-Horn was back out there, DEPCOM was back out there. This is what corresponds to that Stantec memo.

Ms. Holly Grimsley does not see where they gave reasons why they made the substitutions.

Ms. Morris said they really have not. It is kind of pointing the finger at the contractor and saying it is on your list, so it is fine. The other thing that we heard, not so much as it is on your list, is due to the size of the project they were having trouble sourcing things; the different plantings.

Ms. Grimsley said that is the reasoning? Do you feel like that is legitimate?

Ms. Morris feels like the contractor had a plan and they did not follow the plan. But they were consistent with the substitutions that they did make. So, where we see the Leyland Cypress now, is where the American Hollies were supposed to be. That is the most egregious substitution that they made was the Leyland Cypress for the American Hollies.

Ms. Grimsley said what percentage would you say that they made that substitution with?

Ms. Morris said they are all over the site. If you drive past you will see, they are everywhere; she does not know. The only thing that we kind of came to a number on was the first time when we were out there, we thought at least ten percent of it was dead. The second time when we went out it was about one percent. The maintenance and the health of the plantings increased; it was better, but as far as the plantings; they are where they are at this point.

Ms. Grimsley asked if Ms. Morris had direct contact with the contractor?

Ms. Morris said we have talked to the contractor, but we did not ask that question of the contractor.

Mr. Grimsley thinks we need to know what his reasoning is; he is ultimately responsible for the explanation.

Ms. Morris said when we went out there the first time, Canadian Solar was not even aware that those substitutions had been done. DEPCOM is in charge of the contractor, and they have the contract with them. The maintenance agreement was actually executed by DEPCOM.

Mr. Andrew Nance asked if they planted any American Holly or has it all substituted?

Ms. Morris said there are some American Hollies. She showed the areas that have hollies. We started at Canada first and this is where we first noticed the cypress. She showed where the hollies were supposed to be and said a lot of that now is cypress. In the woods they planted hollies. She said along the road; the cypress is everywhere; the hollies are there. There was an American holly plus there was another holly (she does not remember what it was). The American Holly was supposed to function sort of like a small tree. There are hollies, but they are not American Hollies.

This pattern that is here, these were hollies and black spruce. There was not a lot of substitutions for the shrubs. There were some substitutions on the trees but if it was supposed to be like a white birch, it was another tree that was on their list that they had already set.

Mr. Paxton asked why is it so bad that they put Leyland's instead of the hollies? Is it because of the height the width?

Ms. Morris said they did the substitution and it is on the list. They were not following the plan that the Board approved. Typically, if a contractor needs to do a substitution, they will talk to us first. In this case they did not talk with us.

The Board had conversations about not wanting to have Leyland Cypress out there because they do not do well; but that was never made a condition of the approval. The cypress is on the list and they said it is on the list, so they substituted like for like. Some people may think they are similar, some people may not, which is why we asked them to check in on the glare-study.

The glare-study was looking at the approved landscape plan and how it functioned in relation to those panels and where they were at during a specific time of the day.

Mr. Nance said just to make sure that he understands, staff has not had a chance to confirm that this as-built is correct. We are currently just trusting the three outside consultants.

Ms. Morris said no, we used this plan the last time that we did a site visit, but those areas that I pointed out that we were not able to identify as planted, those are the pictures that they provided in their information to say no, it is planted; the pine trees are there, here are the plantings around the wetlands.

Ms. Morris said you can see we are trying to walk through stuff that is this tall, to find something is difficult at best.

The Chair asked Mr. Richard Koch, County Attorney, if we deny this, their course of action is to comply? Is there any enforcement?

Mr. Koch said you have already approved the amendment to the permit. He supposes we would have to approach it from the point of view as getting them to comply with what was approved, and that would become an enforcement action. He thinks a couple of things that bear on this is, there is a warranty concerning the landscape that they have. We also negotiated a bond for anything that is dead or needs to be replaced. There are those issues that help to make sure that we still have a buffer out there.

When she talks about the width, she is talking about the Cabarrus County Ordinance width. They did do substitutions without the County's knowledge. He said what was talked about in the meeting was never made a requirement of the permit. He guesses they felt like they could be successful choosing from our list without asking because it was kind of approved in the Ordinance. It was not discussed and is what they found when they went out there and looked at it.

Where we are right now, we have a couple of problems to deal with; one is that they could not come here tonight to defend what they have done and to say what is actually out there, because the last time staff was out there was July, right?

Ms. Morris said the staff pictures are from July and they were working to try to address staff's comments since July.

Mr. Koch said from the point of view of just enforcement it would be a nightmare to deal with. Then you have to decide whether it is really worth it; whether the substitutions make that much difference and whether you believe that they have filled in those areas where there was no landscaping in those areas that Ms. Morris pointed out.

He said they are not here to able to defend what they have done since. Ms. Morris and I and other staff have been dealing with this every month since it was last before the Board, trying to get this thing in a shape where we can just be finished with it.

He said if the Board does not feel that we are finished with it, if that is not the way you look at it, as it has been presented to you. What he would say and what you might want to do is, continue this matter until we can get them down here to defend what they have done. He thinks that might be the most appropriate and fair thing for them.

He is not trying to take their side in this. He is trying to look at it from the point of view of the County. Do we really want to take on some substitutions on the landscape plan, particularly things that are actually on our approved list? Whether they really made a difference out there or not he cannot tell you. Whether they affected the glare-study in a way that makes a problem out there, he cannot tell you that either. He said that comes back to this Board for you to decide.

He said if the Board's feelings are that they have not complied well enough with the permit amendment that you did, then you may want to deal with those issues. He thinks the appropriate thing to do is to continue it and let them come in and defend it. He does not think the County is in a position to do that and that is not our job to do that. He thinks that would be the only fair thing, plus he thinks it would be better for the County to see where that is rather than staff having to take this thing on as an enforcement matter on these issues.

He said some of the stuff that we were really concerned about it looks like they have done. He said like the roads, the driveway permit, the stuff in the stream, a lot of those things which were issues, it seems like they have come through on most of that, at least from what he can see and from what Ms. Morris is describing.

Obviously, the landscape plan is not exactly what they presented to you and how that affects the glare is the other part of the issue. As Ms. Morris pointed out, the original permit dealt with the Stewart's because of the way their property cuts into the site and of course they went out and negotiated their own deal as Ms. Morris pointed out. He does not think we need to be worried about that. He thinks they have taken care of their own issues, so it is just what is left in the other areas.

Mr. Koch said to sum it all up, we do not want to have this thing become a big enforcement problem for the County. We have already invested plenty of time in it from the staff point of view. We would like to see it come to an end. But, if the Board does not think that you can do that tonight, the thing to do would be to continue it until we can get Mr. Al Jansen in here or whoever else that is needed in order to be able to deal with the issues that you still feel exist on this.

Mr. Stephen Wise said Mr. Koch mentioned a bond, is that a maintenance bond or do they have performance bond where they are trying to get their money back.

Mr. Koch negotiated that with their attorney. It is a bond concerning the landscape, basically to make sure that it catches, and that it grows. What we negotiated was 10 percent of the original price of doing all the landscaping which is \$350,000.00. It is a like a performance bond, it would work like that.

That is on the other side of the maintenance contract they have. It was to make sure that we have some sort of a way to deal with making sure we still had the buffer and the plantings that we are supposed to. We have that for the future that we have worked out; but now, we are dealing really with the present.

Mr. Wise said they still have some skin in the game in the future to get that bond back. Right now, they do not need what he calls a CO from the County. They are selling energy right now so, there really is no heat for them to get this resolved is it?

Ms. Morris said because of the way that this was permitted through Building Inspections, they were able to get power. If the Board remembers, we put a hold on Canada, and it was not electrified until the Board approved the conditional use permit. The rest of the site was up and running, if you remember when we were out there, you could hear the inverters running. It was up and running and one small section in Canada was not. They have not to this point, been able to satisfy the conditions of the conditional use permit or obtain a certificate of compliance from zoning.

Like Mr. Koch said, the maintenance contract goes through September 2021. That is what is left on the maintenance contract. There are two conditions of approval that are proposed, one is that staff can visit the site to check for landscaping. The second is that they get that bond to us within 30 days of the Board saying that the closeout documents are fine.

If the Board remembers, back last May, they were supposed to have a bond in place. We still have not seen that bond. Their bond expired in February, the million-dollar bond that they gave us, and they never gave us anything else. The bond was supposed to be in place for the duration of the project to make sure it was installed.

Because we never received that, Mr. Koch has negotiated for that to happen at the end. When the closeout documents happen, they have to provide it within 30 days, and they have agreed that it will be good for two years. The bond will extend a little bit past the maintenance agreement.

Mr. Wise said that is \$350,000?

Mr. Koch said it is ten percent of the total cost of the plantings which seemed like a fair amount at this point. Obviously, the bond would not need to be for the full amount.

Mr. Paxton said if we defer any action tonight what happens in the interim, it just sits there, and nothing happens?

Ms. Morris said there is no staff action required at this point unless we want to go and verify the pictures that they sent. But knowing the site as well as we do, we know where the pictures were taken. She feels like those pictures are an adequate representation at that point in time when they submitted them. She that is one of the owners of Metrolina that is out there on that site and who is in that picture.

Ms. Holly Grimsley asked Mr. Koch if it is okay that the bond has expired. She understands that they are going to reinforce it, but she is thinking that is a problem.

Mr. Koch said that bond was actually a part of a stop gap interim thing that they proposed when the Board still had not approved anything. They came in after and sort of volunteered to give that to us. That is where that came from and as Ms. Morris said, it did expire. He said it really does not matter until we get the things to a point where we are going to be dealing with it as an approved project, then we do need to have a new bond in place. Until we get to that point, he does not think it really matters because they do not have the final approvals.

He said the bond that Mr. James Gittens, their attorney, and I have been talking about would go into place at the same time as the final approval.

Ms. Morris does not know if the Board remembers us talking about it before, but one day Phil and I got in the mail a bond for a million dollars, and we said what is this for? They said that is a good faith effort to show that we intend to complete the project. We did not ask for that bond, it just showed up, but then it did expire. So, that is the bond that we were talking about as part of CUP conditions of approval

The Chair asked if we continue this tonight, do we still need to go through the public hearing?

Mr. Koch said yes.

The Chair opened the public hearing for Petition CUSE2018-00004 - Close out documents for the amendment to CUSE2017-00001, Conditional Use Permit for Public Service Facility (Solar Farm). There being no one present to speak for or against the petition, the Chair closed the public hearing and opened the floor for open discussion.

The Chair feels like we cared about one thing on this site and that was the landscaping. We talked about existing vegetation and then within a short period of time we bulldozed the existing vegetation and then we negotiated this seemingly comparable plan to put this replacement vegetation in and it feels like now, we still are not there.

It troubles him that indeed some of these areas that are missing, right; we can talk about replacement and he thinks we will, but some of these areas that are apparently still missing. He thinks the Board, multiple times sent a message loud and clear on what we expected. He thinks the Board was more than accommodating under the situation that we were put in as well as alarming, to allow those repairs to occur and the idea that here we are potentially; they are asking us to say it is all good.

What do we think about replacements and substitutions, is that a big deal to you as well?

Mr. Pinto said does not know about their placements, he was just thinking about Adam would say. He knows that he cannot stand the cypress, that they do fail, they grow too fast, they are weak. He does not like then either and he would rather stick with the holly.

He does not know what you do about the stuff that has not been planted, but it needs to be taken care of; that is his opinion. How do you ask somebody else to do something, and you do not ask the person who is supposed to do it and has not done it? How do you expect that somebody else will; they have to finish.

Mr. Koch said usually, in these situations there is a direct connection between the landscaper and the person who owns the property so that you do not run into any issues about who is supposed to be doing what.

He is not trying to defend them, but here we had a situation where Canadian Solar bought this project from McBride. McBride already had the contract to build the thing with DEPCOM, and so, it was DEPCOM who took down the landscaping around the Stewart property that kind of brought this thing to a head in the early days. They are the ones who messed that up, and of course they are blaming it on everybody else.

He said Kimley Horn and Metrolina work for DEPCOM. They do not work for Canadian Solar, so they have very little control over what they do. That is not what we usually run into and he thinks is part of what has created some of the problems on this project, is that there wasn't a straight contractual relationship to get all this stuff down and done.

We ran into that in a number of situations where we were trying to get Kimley Horn to do this or that or trying to get other things done. We would go to Canadian Solar and say why can't this be done, and they would say we do not have any control over them, and Kimberly Horn and DEPCOM would not do anything. So, they did have some of those issues.

He said DEPCOM and Canadian Solar are in litigation over this project. We are not involved in that and he does not know all of the details and really does not want to know. Part of it comes from what happened in the course of the history of the project and what DEPCOM did particularly in the very beginning, when they did not pay any attention to the original conditional use permit, which had the provisions in it to look out for the Stewart property, if you recall. He said that was specifically mentioned in the original permit, and they just kind of ignored it and just moved out all that buffer that was supposed to be there.

Mr. Koch is not trying to take a side, but it is a factor in this situation that does affect just being able to get stuff done. The bottom line is, maybe it has not been done. Ms. Morris looked at the pictures and she knows this project much better on the ground than he does. Whether those pictures really show what they have done or what they were supposed to do, he has no idea.

Ms. Morris said just for the record we did re-advertise and re-notice this. We had three people call. One was a new adjacent property owner, adjacent to South America and was not even aware that there was solar farm located behind her property.

The other one was part of Vanderbilt Estates, and his question was more about whether the property could be used for anything else. When Ms. Morris said there was a 20-year contract, he wanted to know if there was any chance that something could potentially happen to the contract. Ms. Morris told him based on the financial investment, probably not and that solar may be around and it may not be around. Currently, in other countries they maintain the arrays and replace it with the most updated technology at the time and that it could be there longer than 20 years.

The other call was from Tal McBride, who is the property owner and one of the original applicants; Five M's. He wanted to know what was going on. This goes back to what Mr. Koch was talking about. As the property owner, he did not even know that anything was going on with the property until he got the letter from us and then he wanted to know what was going on.

She said there does not seem to be a lot of communication, there seems to be a lot of moving parts, a lot of different owners/representatives. He also mentioned ongoing litigation with multiple parties related to this site.

Mr. Paxton said if we do not want it to be an enforcement issue for the County, then we really have no choice but to wait; to defer the answer tonight and see how long it takes.

The Chair said what would it take to get to the point where you could stand up and say, Staff feels that what they have done is complete? What would it take to get there? Do you think one more site visit to verify what they sent us?

He personally would feel much more comfortable, with all that we have been through to know that Staff is comfortable that they are close enough.

Ms. Morris said based on our visits and being at the site, yes, they did the substitutions but, in the areas where there is residential, if the cypress remains healthy, right now it is providing some screening for the residential properties.

Initially, she does know if the Board remembers driving by the site. They put down wood chips, so it looked much more like a commercial site. If they do not maintain those exterior buffers, there are going to be volunteer plants and trees and different things that come up, and eventually it will go back to be a wooded buffer.

She said based on the condition of the property when we were out there, she does not think they intend to maintain those exterior buffers. They have O&M, but they are mainly mowing interior to the site.

It is kind of a double edge sword; they follow the ordinance they do the pretty patterns because they had a landscape architect. If you drive down Mount Pleasant Road South, you cannot see a bit of it. The only thing you see is what is sticking up above all those weeds that are out there.

As far as, are they compliant, she thinks it gets back to or not they are meeting the intent, even though they did the substitutions. This is a 700-acre site; when we get out there, we have to get our bearings, then we have to figure out which plants are which.

The one area on the west side where they did not plant the plants, it is woods. But, Kimley Horn showed plantings on the edge of the woods and they just did not install them because they said this does not make sense. We asked repeatedly for them to go back and fix the plan to say where it was installed and where it was not.

It is like Mr. Koch said, we get the we cannot do that, we do not have the contract with Kimley Horn. That is when they got Stantec and Kimley Horn to go out to count; after we counted and told them what was missing, to go back and count what was there. Because the first attempt to go back, we thought from the get-go it was not right.

Ms. Morris said she does not know; short of the Board telling them to do the substitutions, to go plant trees in the woods, what else happens?

The Canada piece, where they planted them in the woods, that made sense because there were adjacent property owners very close, including someone that had a swimming pool. On the western side it is woods, there is nobody right there; it is not impacting anybody but that is what Kimley Horn shows on the plan.

We do not have any plan that represents where those areas were not planted. They just provided that Table. You see on that table, there are some notes that says plantings not in this area. But it is like the whole entire western buffer; not saying in this specific area. That is something we have to figure out on site. She does not know if that answers the question or not.

The Chair said it does, he is just frustrated of the length of time they have made this last; presumably could get them off the hook because everything they cleared is now six-foot weeds; that is his heartburn. But, does it meet the intent, that is a valid question.

Ms. Morris said if the Board wants to put eyes on it, we could always ask to do a site visit or something like that if that is something the Board would want to do. Or, if you want to have a conversation with Canadian Solar about how or what happened.

From a staff level, short of going out to verify the pictures, she does not know that there is much more that we can do because we are bumping up against this DEPCOM owns the plan and control the plans and I am going to fix the plans. This is it; this is what is there, this is what we have and this is what they want to be considered as the drawings and plans for the project.

Mr. Wise said you mentioned there is a part that has no COC, right? They cannot use the arrays at this time.

Ms. Morris said no, they have CO's from building, they have final inspections and power on everything. What they do not have is their Zoning Certificate of Compliance. They cannot get that until all this is worked out.

Mr. Wise said they are using the all the arrays and everything.

Ms. Morris said absolutely, and they have been.

Mr. Wise said 750 acres is in full operation, what skin in the game do they have that is hurting them right now? Everything is good except for the maintenance bond. They do not really have to have anything from the County at this time; like a business would have to have a CO to open up. They are open in my mind, so this could go on even if we do make a field trip

Ms. Morris said they have been open per se, and they were open last year.

Mr. Wise said it is a little different situation than a business, where plants were planted in an easier fashion and handicap spaces; that is the world he lives in. You all are counting 700 acres of plants, it is almost impossible if you are relying on consultants to say that it has been done, but nobody is giving you the full story.

Ms. Morris said no we are not. She said we counted all plants.

Mr. Wise said you counted all 750 acres.

Ms. Morris said we counted all these plants. She said they did not even know that there was substitutes. They called us for their final, we gave them comments back; that it was not planted per the plan and there is stuff that is not planted. Canadian Solar did not even know that, and Canadian Solar has been working since that visit, December of last year, to try to figure out what is out there and make corrections as needed. They did go back and do some plantings, since our visit in December, but all of the plantings are not there.

She said we physically spent over three days out there counting trees. She cannot begin to tell how much time we have spent in the field, at the project, on the phone, in meetings on this project. This has been going on for five years now.

Ms. Grimsley feels like they deal with this world a lot with building inspections. If they truly are, as Mr. Wise said open, there is nothing that is impacting them in a negative capacity because they are operating, they are moving, they are doing what they need to do.

If we are moving toward final documents, she feels like we need to say you are in final documents, and this is what you need to do to comply now. If you know how many or a percentage or whatever piece of that landscape; they are either there or they are not there. If they are there, they either there in the number or they are not. If they made substitutions and they are acceptable then fine, if they are not then we need to tell them what that is.

Her thought would be if the wooded area is okay, then fine, if it is not, then we will have to say so. The areas that are not in compliance that are bare or needs some plants, we just need to tell them that. She feels like we have to make a pick list and say this is where you are, and this is where you need to be, and this is what you have to have, and that bond is one of them. Normally, they do not let bonds expire; people just do not do that. That bothers her just with the statement being made. Is that a priority now Mr. Koch, probably not? She said them making a statement that they have done that and not thinking to renew it.

She said so, where are we? We just need to make a pick list that says this is where you comply, this is where you don't, this is what we expect and here is where you are in your final documents; because they are in operation, and usually we do not get to do that.

Ms. Morris said we have done that seven or eight times.

Ms. Grimsley thinks we are at a lull here of what we need to say. This is a mess, really.

Ms. Morris said they are asking for the Board to approve this as built document, that shows the plantings that are out there. But for the ones that are on the west side that are not there, she has shown the area on Joyner where it is not there. She does not know if they are going to do anything else.

Ms. Grimsley thinks it is time for this Board to decide if we are okay with that.

The Chair said if we continue this, is there a subset of us that would be willing to go out there with the idea of not counting plants (because he does not have three days) but looking at it from an intent standpoint. We know what we were trying to do, and we know exactly what we were out to get

He wants this done too, but at the same time he feels like they agreed to play by the rules and then they rewrote the rules, so we agreed to change the rules and here again, we are being asked to change the rules again. Are they really going to do anything, do they have too; to them this all over?

As stupid as this may sound, he thinks the integrity of this Board is what we are talking about. Do we really mean what we said? He knows there is a lot of ramifications to that, but it just really troubles him. Maybe the intent is that, but he does not think a picture pointing in one direction of a guy pointing to a tree necessarily satisfies the intent.

Mr. Stephen Wise said when was our last trip out there.

Ms. Morris said it was January 2019. The Fire Marshal's office had not been back to this site until September 2020, from our initial visit.

She said Canadian Solar has already flipped this project. They do not own this project anymore. They are simply trying to do what they need to do to close out the project. They will be taking over O & M which was supposed to happen in October. DEPCOM will not be on site anymore. There is a new company called NEK.

Mr. Andrew Nance said to Mr. Pinto and Mr. Corley's point early, he thinks it is going to be tough for us to enforce this in the future on other projects, if we do not hold their feet to the fire on this.

Mr. Paxton said how are we going to hold their feet to the fire.

Mr. Nance said that is a great question.

The Chair said if this had been a five-acre site they would have planted the bushes and they would have been done. He gets the challenges of this scale, from a staff standpoint and a contract and the complexities of who owns what and who is doing what, he gets that, but he frankly does not know that he cares. He does not care what the challenges were. We told them what they had to do, and they agreed to what they had to do in order for this Board to issue a permit for them to even build this thing.

He feels much better about his vote, just me, if he could go and see some of those spots and know in his mind that the intent of what we voted on last time was indeed met. That is his personal feeling and where is at.

Mr. Brett Rockett understands the complexity of this project and he understand it adds to the difficulty, but it is not a reasonable enough excuse to him because ultimately, anybody who is the owner or operator of a property, it is ultimately your responsibility who you let on that site. So, to say that so and so hired so and so that hired so and so, it is still your property, your project, your responsibility, and your name on the line.

He said the specificity of this plan was intentional because of the hardiness and density of those things that were chosen. So, that is frustrating, but maybe there is some potential for leeway there. But to just

totally back off of areas because they made an internal decision or a vendor of a vendor of a vendor made a decision that it was not necessary, he thinks is falling short of the intent of what was decided from this Board.

At this point the excuses of the difficulty of the site, they bit it off and so now they have to chew it. It is their responsibility to get this to a point that suffices. He will understand the decision of the Board either way, but it would be awfully difficult with as little as we see and know right now.

He agrees with the comment that Mr. Koch made earlier about this little problem that we are facing called COVID, and how quickly they would be able to come here to present to us and talk to us.

He hates to keep kicking this can down the preverbal road here, but he thinks at some point it would be worthwhile to have their representative standing in front of us again, explaining why they have made changes to the plan that they made changes to, that they changed to begin with, because they did not comply from the very beginning.

One hiccup is one thing but for this to continually go on over and over again and for us to stand here again with the specificity that was provide to them. He said hire a contractor that can meet it or go find someone else. He does not know another way to say that, and he does not know all the parties involved and he does not intend to hurt anyone's feelings, but if you cannot do the work do not take it.

Ms. Grimsley said as a person who has to comply with a lot of permits and the State and requirements here, she agrees with Mr. Corley. She thinks some of us or whoever feels comfortable need to go out there and put our eyes on this. She trusts the staff when they say that there are parts and pieces that are not in the plan; that is just not acceptable. What we do with that may be different but just to hear staff say that there are some pieces that are not even acceptable, that is a problem.

The Chair agrees with what Ms. Grimsley said earlier, about getting to a tangible list. Should it be up to us to get to that list, probably not. But he thinks that for some of us, if not all of us, we are at the point where we are willing to put in a little work to get to that list. It may be just one little stretch that we may be concerned about and it may not be a big deal or maybe that it is all good.

Ms. Grimsley said them having a representative here is not going to happen for a while, that is not going to take place, with their location, that is not going to be. She is not so sure it will make a whole lot of difference; they are either in compliance or they are not, and their excuses are going to be what they are; fix it. She has to fix stuff that is not in compliance when it happens. If they cannot fix it then what their substitution may be, if that is acceptable to us that is great, but we need to know what that is and if we are okay with it.

She does not want to set a precedence here that we treated them one way and let something happen and that get out there and then all of a sudden, we have everybody out there going you don't comply with this one and you don't comply with that one and now we have all these substitutions. She does not like to start that, and she feels like that list was pretty vast on movement that we made for them.

She is more than willing to go out there and look at it, to at least get the ball rolling because she does not feel like they are going to be able to come any time soon.

Mr. Nance does site plans all the time where the owner does not necessarily want to do the required landscaping, but that does not alleviate them from having to do so. He thinks Ms. Grimsley makes a good point to where we are probably beyond trying to gather quantitative data and just qualitative at this point. He would also be comfortable with going out there to look.

Ms. Holly asked if the Chair could assign a portion of us or all of us and set a time frame with Staff for us to do that?

The Chair what we are talking about then is continuing until the Board, or a subset there of, can have a chance to visit the site.

He said to Mr. Rockett that he would love to have them standing here too, but maybe this is a good first step, knowing the challenges that they have right now, maybe we make a good faith effort on our own to try to get us to a manageable set of things or maybe it is all good; that is certainly out there, and then reconsider maybe in January and hopefully that visit has taken place.

Ms. Morris said some of that growth that we experienced in July may not be there now. We do have Canadian Solar and the new company; we have representatives, we can still access the site. She is sure if the Board wants to do a site visit, they would accommodate that.

Canadian Solar has other representatives in the states, it just is not the people that have been working on this particular project. Mr. Jansen can enter the US if he fly's in. He currently just cannot drive across the border into Michigan to fly in and then when he goes back, he would have to quarantine. But, with the current circumstances, if that is what the Board chooses to do, then it is their choice whether they have a representative here for that site visit.

She feels like Staff can get the Board around on the site and show you the particular areas where it wasn't installed and where the plan is different or where the plantings and the as-built is different from what you actually see in front of you, because that is not necessarily representative of what is in ground.

The Chair said what he is hearing is a general willingness of a handful of us to do that. He thinks that will get us a little further down the road and closer to something. He said that may be all that we need, is to get that comfort level.

He said not to state the obvious, but he feels they put us in this situation, to where we doubt a lot and we question a lot. So, we will go out there and look at it and see for ourselves and if we are happy, then let's move forward.

The Chair asked if they were any other discussion or comments. There being none he asked Mr. Koch if the motion would be to continue until January?

Mr. Koch said yes, continue to the January meeting and the other part would be if you are going to have the whole Board go out there or maybe just a committee. He said you would need to have that on the record also.

The Chair asked if everyone was interested. We can do four without any trouble, right?

Ms. Morris said remember last time we had to advertise and notice and all of that; so, four or less volunteers.

The Chair asked the Board what they thought about four. Do we want to try multiple groups of four? The complexity of organizing that is a little heavier. He asked who was interested in going.

All Board members raised their hands.

He said Mr. Pinto you are going no matter what.

Ms. Grimsley said she will back out if you want to leave it at four.

The Chair assumes Mr. Dagenhart would want to go. He said maybe two groups of four; that would give us eight. He said let's plan on that and we will coordinate who will go on which day.

The Chair said the motion would be to continue this case until the January 2021, pending a site visit by the Board.

Mr. Chris Pinto **MOTIONED, SECONDED** by Andrew Nance to **CONTINUE** the meeting for CUSE2018-00004 – Close out documents for amendment to CUSE2017-00001, Conditional Use Permit for Public Service Facility (Solar Farm) until January 2021, pending a site visit by the Board. The vote was unanimous.

New Business – Planning Board Function:

The Chair introduced TEXT2020-00001 – Proposed text amendments to comply with the Statutory requirements of 160D.

Ms. Morris said she knows that this looks like a lot if you look at the number of pages; there are 273 pages. That does not mean that we are not amending 273 pages of the text. She put together a memo to walk the Board through this and we will go through the memo.

The majority of these changes are required by 160D, which we have been discussing for probably the last year. But there was a surprise thrown our way in the last session with the legislators. Initially, the original deadline for local governments to implement the changes was January 1, 2021; then it was amended to July 2020. At that time, the legislation extended the implementation date to July 1, 2021, due to the pandemic, but then they also made it effective immediately.

She said if that sounds a little confusing, that is because it is. They gave us a directive to update our ordinances, make sure we are meeting the statutory changes, update land use plans by 2022, everything that had to happen, and then they decided to go ahead and make it effective now.

She said 160D is in effective now, so if somebody were to come in and wanted to do something that was in 160D that was not addressed in our Ordinance we would have the statute to look back to. However, we are required to go through an update our ordinance.

She will explain what is happening with the chapters. Again, most of it is related to 106D; it looks like a lot, it is not really a lot because we keep up with court cases and decisions and react to them as the

Compliance Inspection Report

Permit: SW3170403 **Effective:** 07/25/18 **Expiration:**

Project: NC 102 Project LLC Solar Farm

Owner: NC 102 Project LLC

County: Cabarrus

Address: 9375 US Hwy 601 S

Region: Mooresville

City/State/Zip: Midland NC 28107

Contact Person: Greg Patzer

Title:

Phone: 602-739-0590

Directions to Project:

entrance to breaker station (entrance #2) is on mt. pleasant rd, 2.12 miles north of its intersection with route 601 and 0.70 miles south of its intersection with route 1190, joyner road, entrance #1 is on route 601, opposite its intersection

Type of Project: State Stormwater - Low Density

Drain Areas:

On-Site Representative(s):

Related Permits:

Inspection Date: 10/12/2021

Entry Time 01:00PM

Exit Time: 02:30PM

Primary Inspector: Kenny Llywelyn

Phone:

Secondary Inspector(s):

Reason for Inspection: Other

Inspection Type: Compliance Evaluation

Permit Inspection Type: State Stormwater

Facility Status: ☐ Compliant ☒ Not Compliant

Question Areas:

☒ State Stormwater

(See attachment summary)

Permit: SW3170403

Owner - Project: NC 102 Project LLC

Inspection Date: 10/12/2021

Inspection Type Compliance Evaluation

Reason for Visit: Other

Inspection Summary:

Site inspection performed per the request of Cabarrus County. The site has recently repaired some outfalls located to the south of the site that discharges into a perennial stream. The areas have been seeded and mulched with straw. This repaired area and other areas throughout the site will need to be maintained and monitored until the area is fully stabilized and vegetation is established.

SW Measures**Yes No NA NE**

Are the SW measures constructed as per the approved plans?

☐ ☒ ☐ ☐

Are the inlets located per the approved plans?

☒ ☐ ☐ ☐

Are the outlet structures located per the approved plans?

☒ ☐ ☐ ☐Comment: Vegetated channels are not stabilized per the approved plan.**File Review****Yes No NA NE**

Is the permit active?

☐ ☐ ☐ ☒

Signed copy of the Engineer's certification is in the file?

☐ ☐ ☐ ☒

Signed copy of the Operation & Maintenance Agreement is in the file?

☐ ☐ ☐ ☒

Copy of the recorded deed restrictions is in the file?

☐ ☐ ☐ ☒

Comment:

Built Upon Area**Yes No NA NE**

Is the site BUA constructed as per the permit and approval plans?

☒ ☐ ☐ ☐

Is the drainage area as per the permit and approved plans?

☒ ☐ ☐ ☐

Is the BUA (as permitted) graded such that the runoff drains to the system?

☒ ☐ ☐ ☐

Comment:

Other WQ Issues**Yes No NA NE**

Is the site compliant with other water quality issues as noted during the inspection?

☒ ☐ ☐ ☐

Comment:

Operation and Maintenance**Yes No NA NE**

Are the SW measures being maintained and operated as per the permit requirements?

☐ ☒ ☐ ☐

Are the SW BMP inspection and maintenance records complete and available for review or provided to DWQ upon request?

☐ ☐ ☐ ☒Comment: There are many areas throughout the site that are bare with little no vegetation. Vegetation is to be maintained per the approved plan.**Other Permit Conditions****Yes No NA NE**

Is the site compliant with other conditions of the permit?

☐ ☐ ☐ ☒

Comment:

NC 102 Solar Facility Update Report

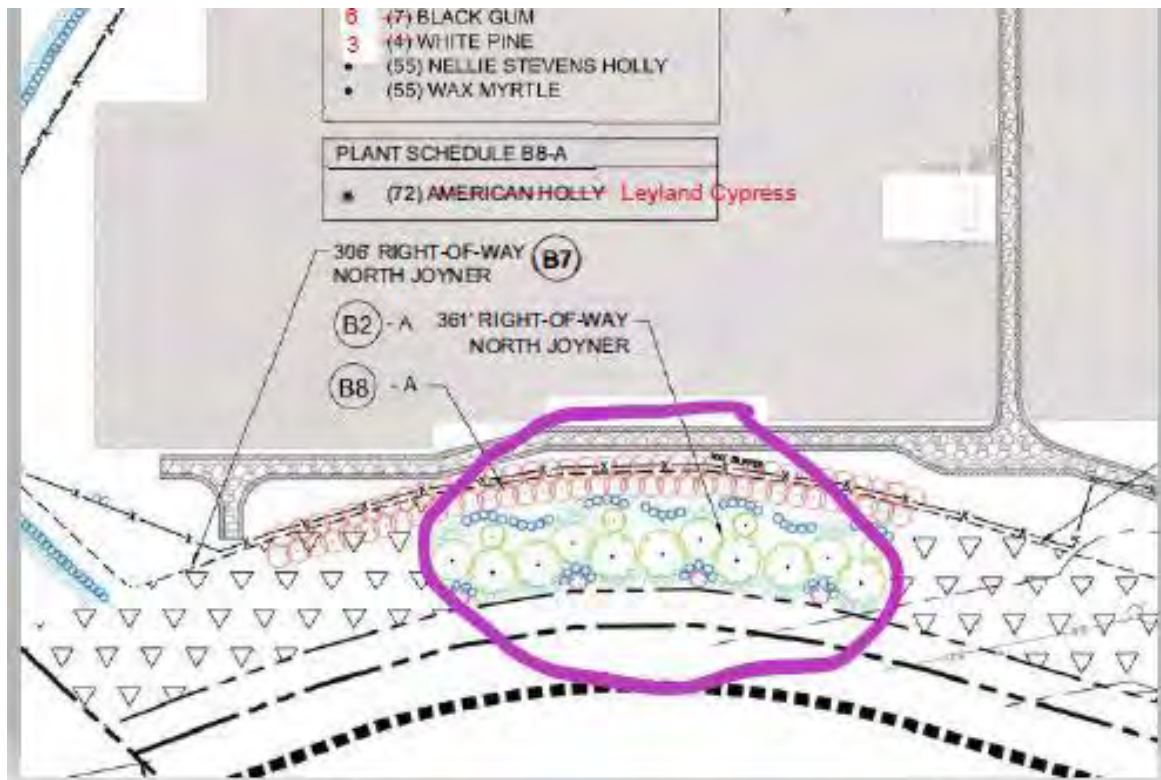
May 29, 2021

At this time the NC 102 Solar Facility continues to work towards closing out the remaining Landscaping and site stabilization items which were presented in a memo dated December 14, 2020, titled "Planning and Zoning Commission Committee Member Site Visit- December 2, 2020". The project has completed the replanting and flagging of seedlings within the Stream/Wetland Body Buffers. The additional planting along Joyner Road and at the Horse Corral will be completed in the week of June 7, 2021. The site stabilization work is scheduled to be completed the week of June 21, 2021.

This memo suggested the following action items:

1. B2-A Supplemental Buffer

The gap area along Joyner Road needs to be planted. The Committee is willing to allow plantings that are consistent with the existing Loblolly Pine buffer to be substituted for the plantings shown on the plan. CCSWCD Staff recommends these be planted at 8 x 10 spacing.



NC 102 will plant 30 additional American Holly at a height of 10 feet in this gap area. This will supplement the previous planting done against the fence line. To be completed week of June 7, 2021

2. B8-J Elective Understory Tree Buffer

Left side of access road where house is adjacent to fence. This area needs to be planted a minimum of 60 feet on either side of the corner post. The Committee is willing to allow additional Leyland Cypress to be used in this area to create an evergreen buffer for the residential property. Plantings should be installed interior to the fence on the solar farm side to allow appropriate room for growth.



NC 102 will plant 32 additional Leyland Cypress at a height of 8 to 10 feet along the interior of the fence line. To be completed week of June 7, 2021.

3. Stream/Wetland and Floodplain Restoration Areas – Green areas on plan

Additional evidence needs to be provided that the pine seedlings were planted in accordance with the planting schedule throughout the entire restoration area. Plantings should be flagged, and a series of photos provided for the green areas shown on the plan above. The Committee would like for county staff members to visit the site once the plants are flagged in all the stream/floodplain restoration areas to confirm planting at the proper density and per the approved CCSWCD Restoration Plan.



NC 102 has replanted 1725 Loblolly Seedlings these areas and has flagged all replanted trees plus added flags to previously planted seedlings. In total approximately 2500 flags have been deployed. Evidence of this work is provided in the series of photographs attached.

Stream/Wetland Buffer Restoration.









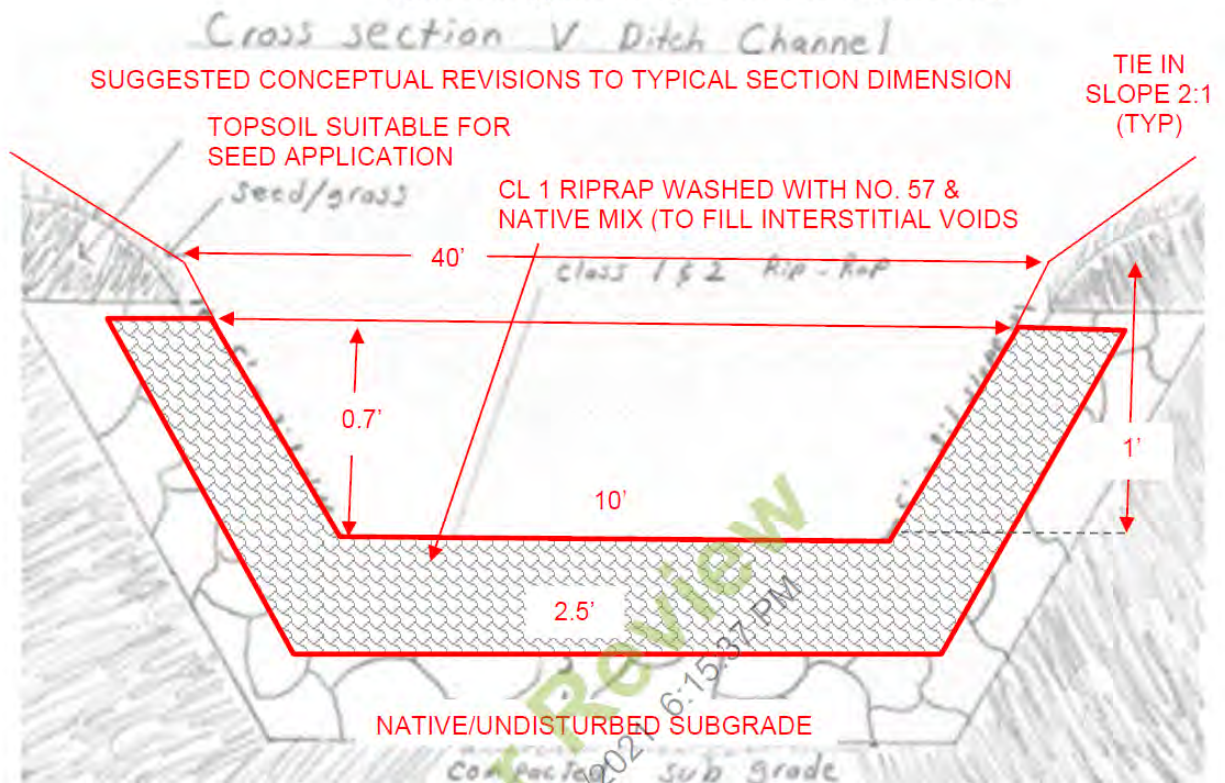
4. South America Drainage Basins

Drainage basin areas, need to be seeded and stabilized. Pictures below are of the basin in South America where excessive mulch has been installed. CCSWCD Staff suggests using Kentucky 31 Fescue covered with straw to prevent washout. Mulch needs to be removed from these areas prior to seeding.



In follow up dialogue it was indicated that there were 2 primary areas of concern. The NC 102 project intends to clean up these areas and install RipRap lined V Ditch Channels in these locations, see detail below. Additionally, a Technical Memorandum has been provided by Stantec to further detail this work.

Figure 2 – Suggested design considerations (dimension)



To: Al Jansen
Canadian Solar Solutions Inc.
545 Speedvale Ave. West
Guelph, ON N1K 1E6

From: Joshua B. Gilman, PE, D.WRE
2127 Ayrley Town Boulevard, Ste. 300
Charlotte, NC 28273

File: 172610032 NC102 ADM 3 - Technical Closeout Assistance

Date: May 28, 2021

Reference: Technical Memorandum – Design Review Summary

J. Gilman (Stantec engineer) attended the project site to collect existing conditions data (topographic, alignment, slope, etc.) Using this data, Stantec then developed an approximate existing conditions surface, Stantec then reviewed the currently proposed concept design (by others, refer to Attachment A), herein referred to as “modified conveyances”, specifically those carrying flows into and out of former sediment basins “#11” and “#12”, per previous Grading and EC Plan Sheet C5.9 (also by others).

Stantec performed **hydrology calculations** of peak flow events of interest (2-, 10-, 25-, 50-, and 100-yr) using the standard Rational Method (Attachment C). Results are summarized in Table 1 and are consistent with that performed by others (Blackwell Engineering dated February 27, 2018).

Table 1 - Calculated Peak Flow

Q (cfs) = C _r CIA	SB11	SB12
Q _{2-year}	82	105
Q _{5-year}	107	137
Q _{10-year}	122	159
Q _{25-year}	157	204
Q _{50-year}	188	245
Q _{100-year}	216	280

Stantec then evaluated **hydraulic performance** of the provided modified conveyances using Manning's equation and assumed normal depth of flow for the proposed concept for the range of calculated peak flows. Based on sketched planform data (horizontal alignment) provided in Attachment A and collected field data, Stantec approximated the proposed profile (vertical alignment) from which corresponding slopes were estimated, ranging up to 12%. Based on experience, it is probable that the proposed conveyance will not require armor (riprap) for slopes less than 2.5%. Stantec evaluated the hydraulic performance of the provided typical section only for slopes between 5% - 12% (Attachment D).

Following review of the results, Stantec offers the following evaluation of appropriateness (hydraulic stability) of the proposed modified conveyances:

- Overall, the dimension of **the proposed modified conveyance is oversized**. The range of peak flows remains confined within the channel and overtopping of the banks is not likely. That said, the depth of the proposed modified conveyance (currently 5') **could be reduced** to less than 2', pending other modifications to geometry, and the **depth of the placed material could be reduced from 3' down to 2.5'**.
- For conveyance slopes of **< 3% natural channel functions can be introduced/restored, and the use of rip rap eliminated**.
- For slopes of 5% or less, the hydraulic performance output indicates an average shear stress between 2.25 lbs/ft² and 3.65 lbs/ft². Based on the Grain Diameter vs. Shear Stress curve

(Attachment D, Rosgen 1996), the Shields' data (flume studies, uniform gradation) predicts larger material than the Rosgen data (empirical field data, varying/diverse gradation). This difference is

- largely due to "hiding" function associated with a good bed matrix (more evenly graded). Based on the non-uniform nature of Rip Rap and construction experience, **the proposed modified conveyance bed material (CL 1 RIPRAP WASHED WITH NO. 57 & NATIVE MIX TO FILL INTERSTITIAL VOIDS) is acceptable for slopes < 5%.**
- For slopes up to 12%, the hydraulic performance output indicates an average shear stress between 4.12 lbs/ft² to 7.11 lbs/ft². Because only data are available from the Rosgen data set, we can only predict stone size without considering Shields' data. Again, based on the non-uniform nature of Rip Rap and construction experience, **the suggested modified conveyance bed material (CL 1 RIPRAP WASHED WITH NO. 57 & NATIVE MIX TO FILL INTERSTITIAL VOIDS) is acceptable for slopes between 5% - 12%, but additional measures, such as boulder sills may be considered for location specific placement.**

Suggested revisions to the currently proposed modified conveyance include the above suggestions (modify section, modify extent of placement, introduce natural channel functions) and the below schematic (Figures 1A, 1B, and 2). If elected, some or all of these suggestions could be implemented in the field, possibly reducing stone/earthwork costs.

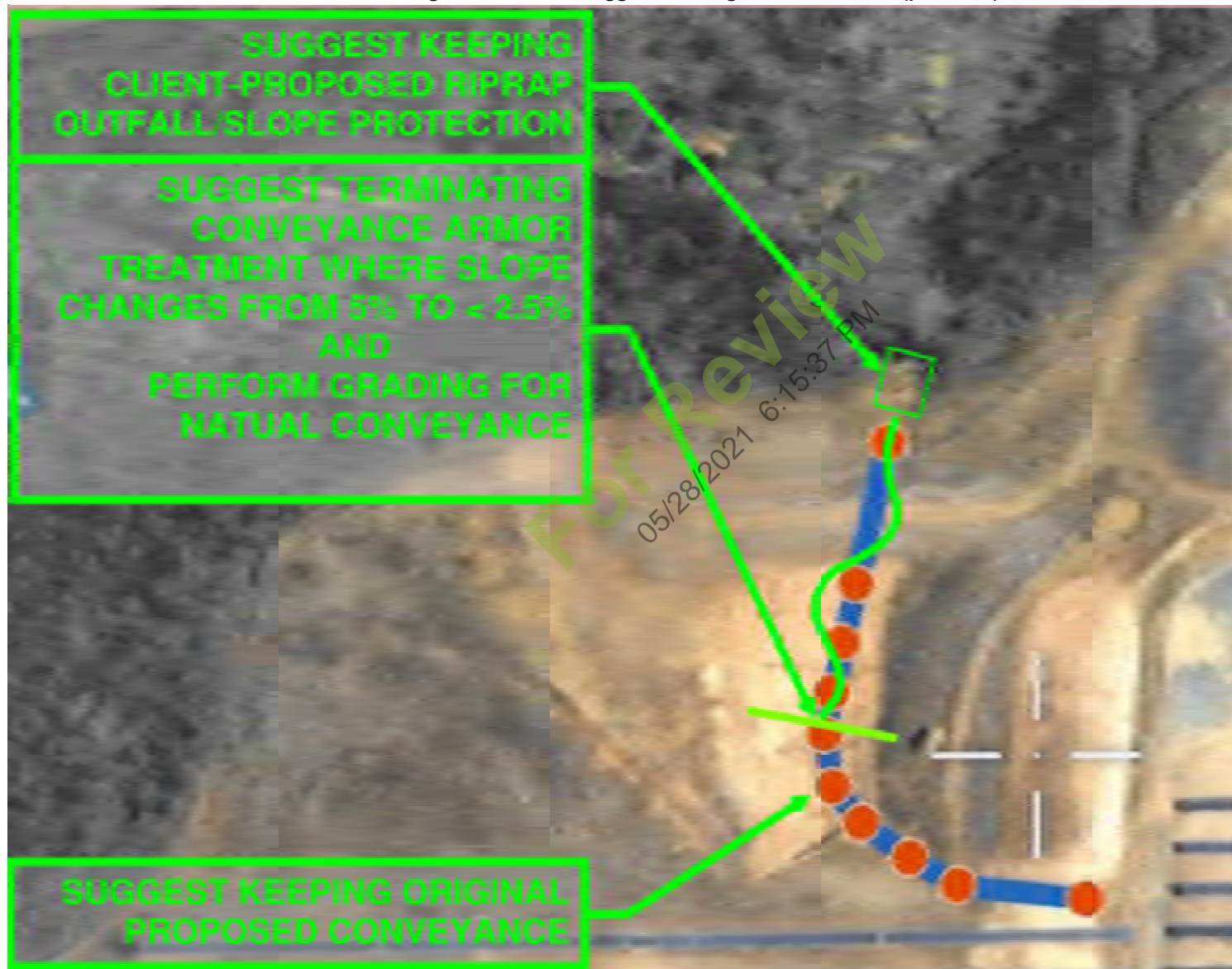
May 28, 2021

Al Jansen

Page 3 of 5

Reference: Technical Memorandum – Design Review Summary

Figure 1A – SB11 Suggested design considerations (planform)



May 28, 2021

Al Jansen

Page 4 of 5

Reference: Technical Memorandum – Design Review Summary

Figure 1B – SB12Suggested design considerations (planform)

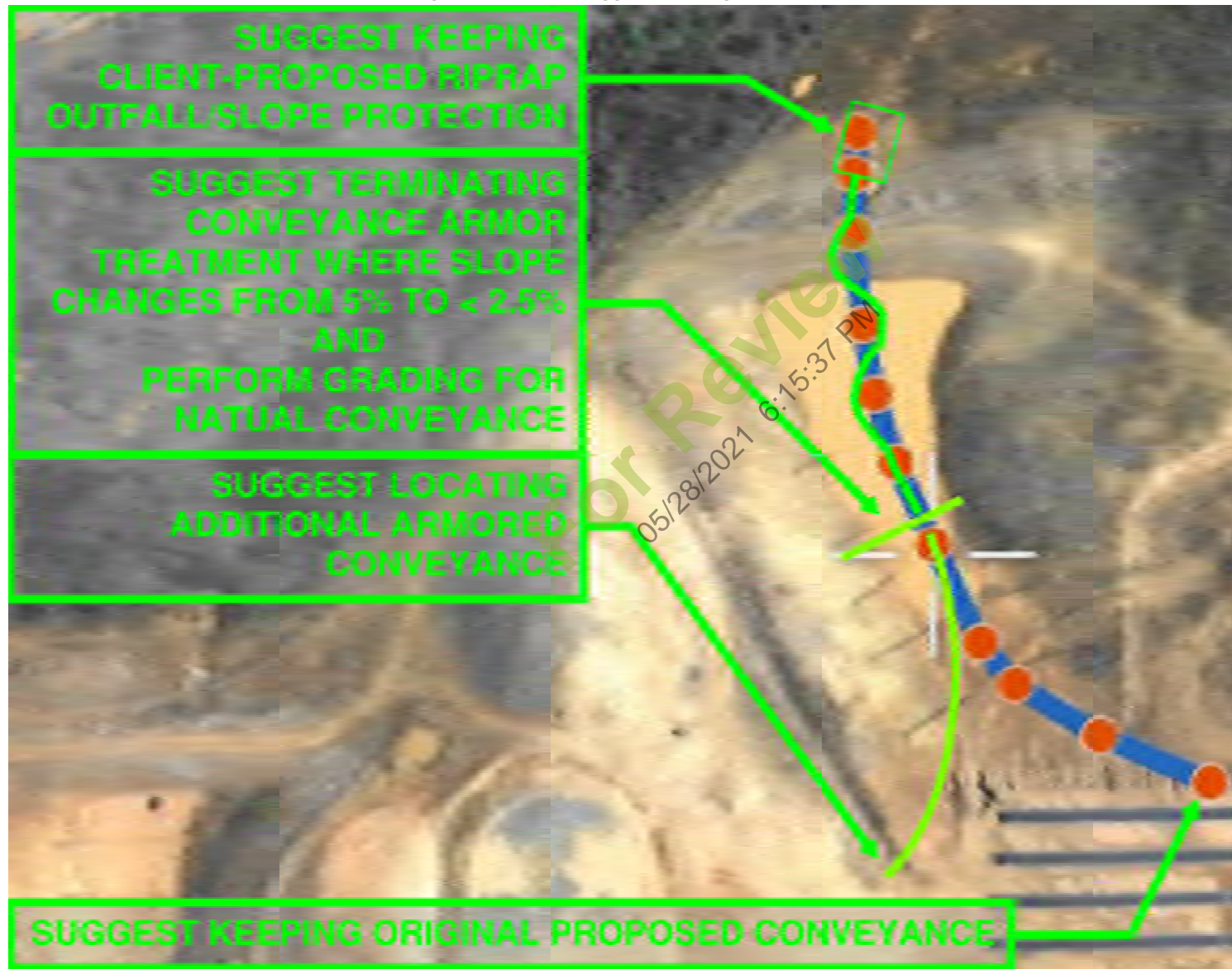
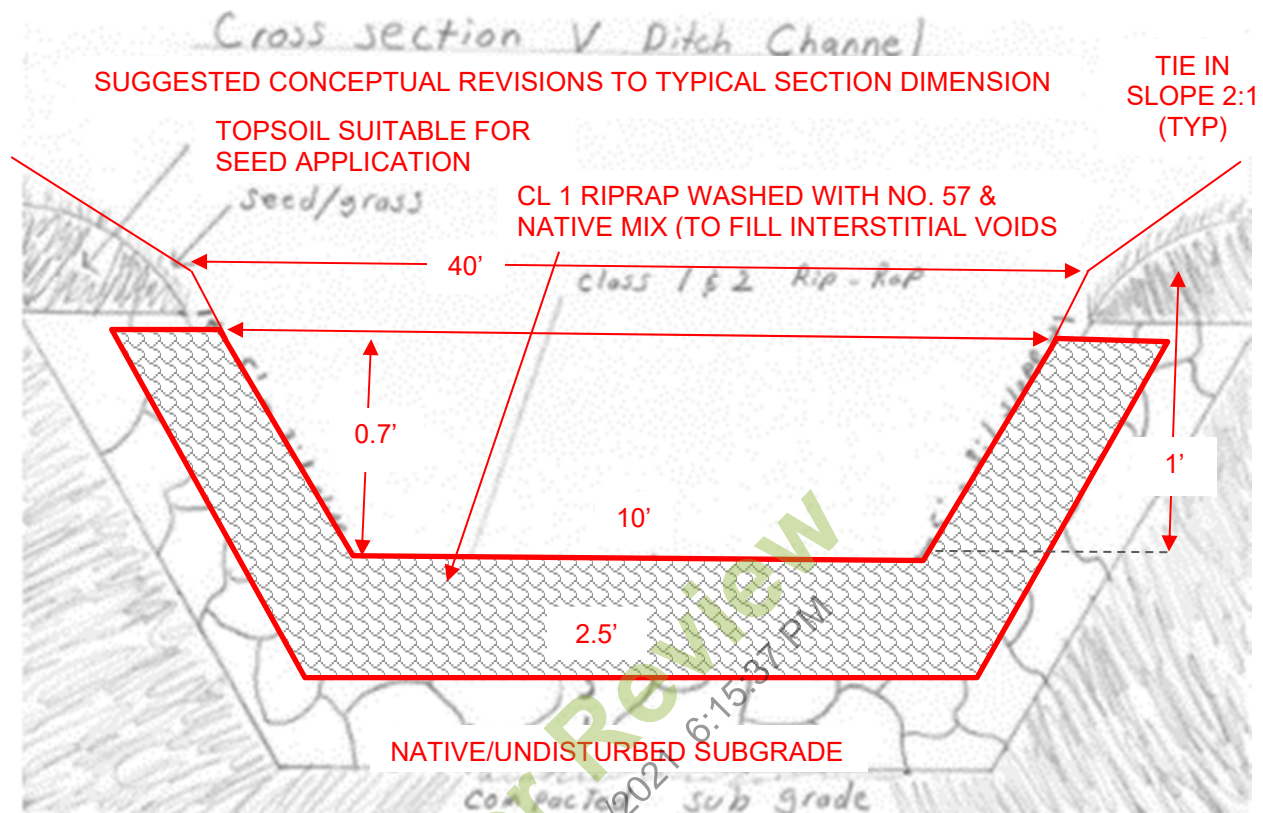


Figure 2 – Suggested design considerations (dimension)



The next steps include:

1. Owner to evaluate the suggested design considerations (contacting Stantec as needed), coordinate desired changes between the owner and the contractor, and establish an agreement between the owner and the contractor of work elected to be performed.
2. Stantec to attend a site preconstruction meeting to discuss directly with the owner and contractor scope of work to be performed.
3. During construction, Stantec to: 1) intermittently (up to 4 site visits) attend the site, 2) provide technical support of field adjustments, as determined by the owner (refer to step 1.), and 3) provide closeout communication, following completion/approval of work by owner.

As always, please feel free to contact us anytime for any reason.

Stantec Consulting Services

Joshua B. Gilman PE, D.WRE

Email: josh.gilman@stantec.com

Phone: 704 808 0116

Attachment: Attachments A – D (18 pages)

c. Amber Coleman, PWS & Nick Ronan, PE (Stantec)

ATTACHMENT A - PROPOSED
CONCEPT CONVEYANCE DESIGN (BY
OTHERS)

For Review
05/28/2021 6:15:37 PM

Gilman, Josh

From: Al Jansen <Al.Jansen@canadiansolar.com>
Sent: Wednesday, March 10, 2021 11:26 AM
To: Gilman, Josh; Coleman, Amber
Subject: RE: NC102 Close out tracking
Attachments: NC 102 V DITCH.pdf

Amber,

In regard to the NC102 project – do you have any funds remaining in the task order? If so are you able to support a small civil engineering exercise? We have 2 locations in the South America portion of the project where the Count is still requiring some work. In discussion with Bost Contracting we have come up with a stabilized “V” ditch approach, we are seeking an opinion and some high level design support.

Al Jansen
Senior Construction Manager, Construction Management, EPC



Canadian Solar Solutions Inc.
545 Speedvale Ave. West, Guelph, ON, N1K 1E6
Tel: +1 519 837 1881 | Mobile: +1 925 394 6564

This message is directed in confidence solely to the addressee(s) named above. This message contains privileged and/or confidential information, which is not to be disclosed to any third party. If you are not an intended recipient of this message or an authorized representative thereof, please contact the undersigned and then destroy this message as well as all existing copies. Any utilization of this message by a person other than an intended recipient hereof is strictly forbidden.

From: Gilman, Josh <Josh.Gilman@stantec.com>
Sent: October 9, 2020 10:50 AM
To: Don Ling <don.ling@canadiansolar.com>; Al Jansen <Al.Jansen@canadiansolar.com>
Cc: Coleman, Amber <amber.coleman@stantec.com>; Ebner, Derek <Derek.Ebner@stantec.com>
Subject: RE: NC102 Close out tracking - 09/22/2020 ESC observation (NCDEQ)

Caution: External Mail

This email originated from outside the organization. Do not click on links or open attachments unless you recognize the sender and know the content is safe

Don and Al,

I'm VERY glad to "see" that we're out of the woods. Keep us posted with any **follow-up actions**, as needed. I hope that we can **stay in touch** regarding this and any other potential **current/future opportunities** to serve.

Stay well,

Josh Gilman, PE, D.WRE
Associate
Senior Water Resources Engineer

NOTE: THE FOLLOWING FIGURES (WITHIN ATTACHMENT A) WERE SOURCED FROM ATTACHMENTS TO THE ORIGINAL ABOVE-REFERENCED EMAIL, AND ARE INCLUDED HEREIN, AS BASIS FOR REVIEW .

NC 102 V DITCH CHANNEL CONSTRUCTION

CONFIRM ORIGINAL DESIGN
WITH CLIENT/CONTRACTOR

JOB DESCRIPTION

ESTIMATED 1'000 LF X 20' W DEFINED CHANNEL

EXCAVATE WELL DEFINED CHANNEL TO MINUM 5' DEPTH

INSTALL CLASS 2 RIP-RAP (150lb 200lb) MIXED WITH CLASS B

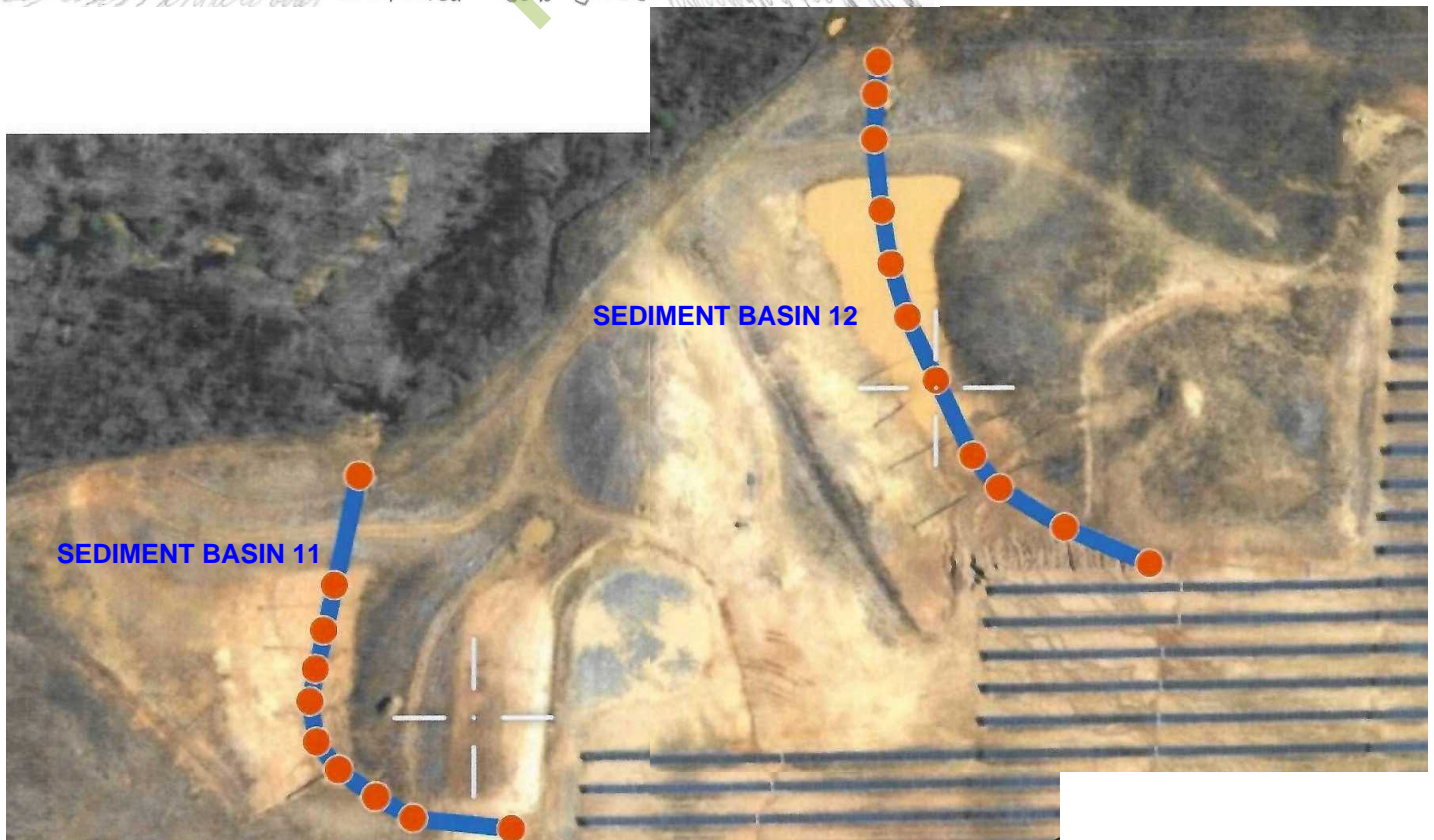
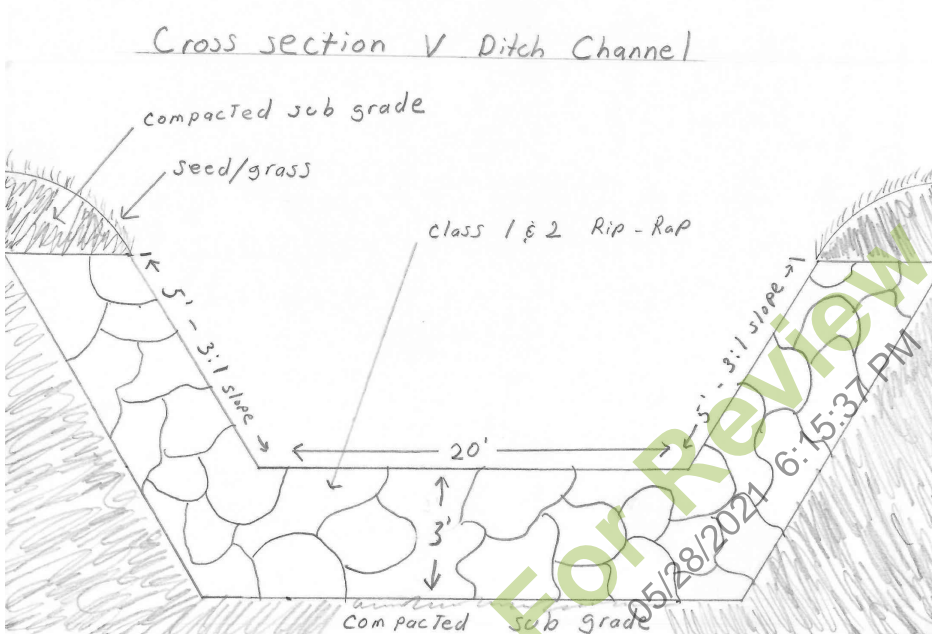
RIP-RAP (football size) TO FILL VOIDS

FINE GRADE EARTH WORK TO BEST FIT EXSITING CONTOURS

SEED AND MULCH DISTURBED AREAS WITHIN CONSTRUCTION AREAS

TOTAL JOB

\$273,000.00



ATTACHMENT B - ORIGINAL DESIGN HYDROLOGY (BY OTHERS)

For Review
05/28/2021 6:15:37 PM

Carabbus County North Carolina

Engineering Manual
For
McBride Place Energy, LLC Solar Farm
Erosion Control & Drainage Calcs

Revised February 22, 2018



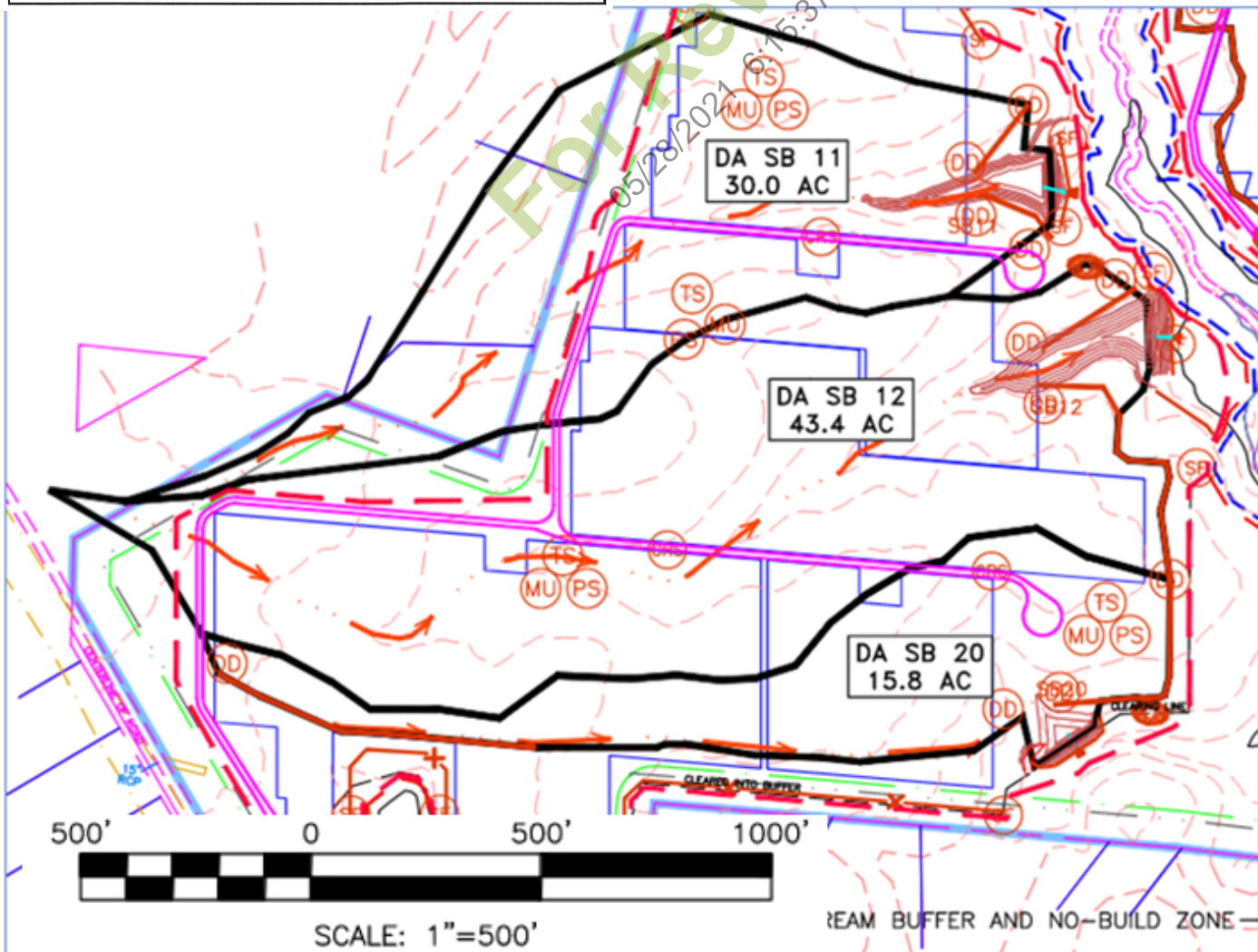
Blackwell Engineering PLC



566 East Market Street
Harrisonburg, VA 22801
Ph. (540) 432-9555 Fax (540) 434-7604
Blackwellengineering.com

BE # 2377

NOTE: THE FOLLOWING INFORMATION WAS ACQUIRED FROM
PREVIOUS WORK, BY OTHERS (BLACKWELL ENGINEERING, 2018)



Revision Dates
4-25-17 COUNTY
5-10-17 COUNTY
1-8-18 NCSDG
2-7-18 CEMCON
2-20-18 EIR MISC
2-20-18 EIR MISC

Drawing No.
6
of 12 Sheets

Job No. 2377

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Friday, 01 / 5 / 2018

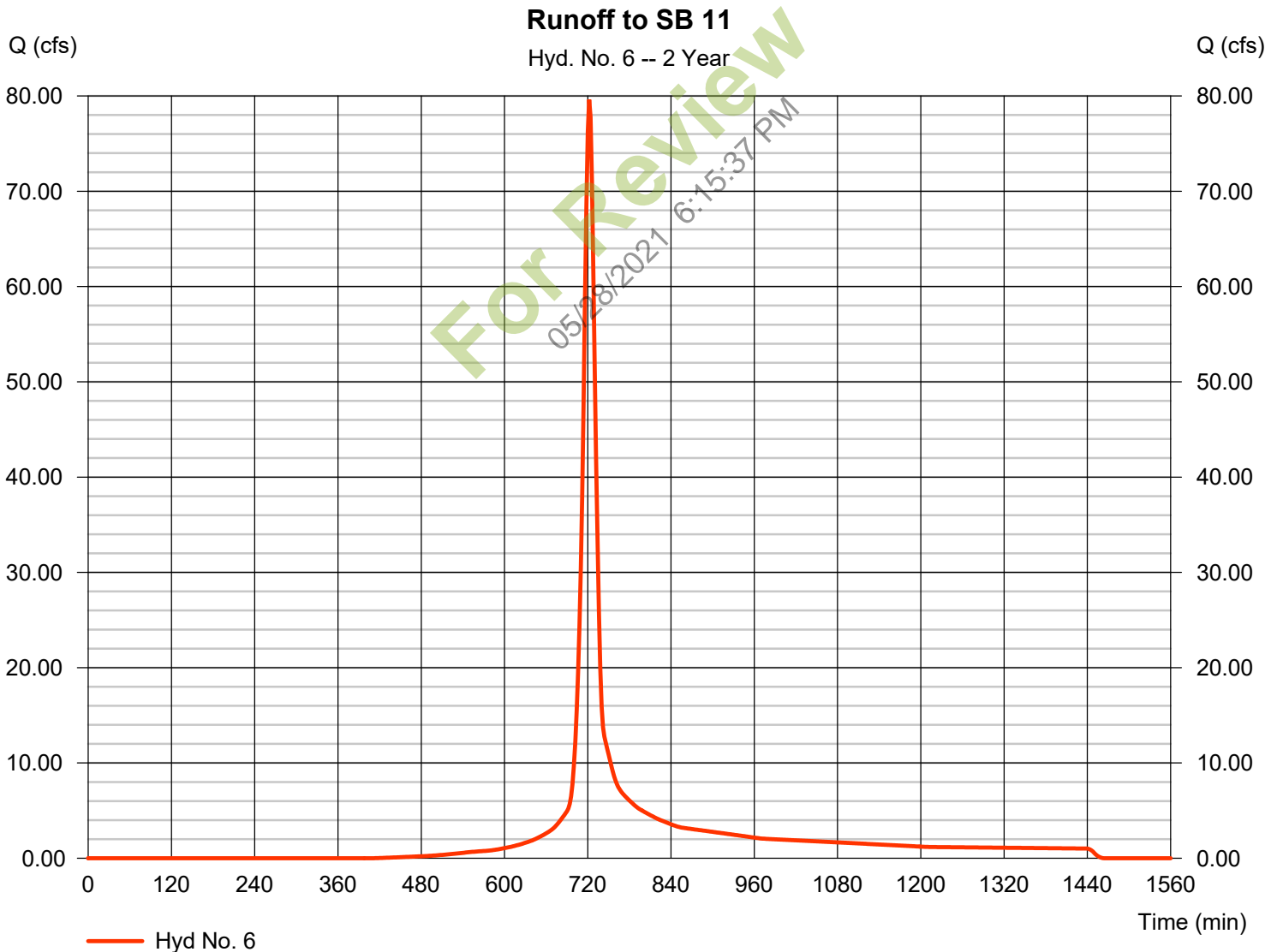
Hyd. No. 6

Runoff to SB 11

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 30.000 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.51 in
 Storm duration = 24 hrs

Peak discharge = 79.62 cfs
 Time to peak = 722 min
 Hyd. volume = 223,737 cuft
 Curve number = 86*
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 14.60 min
 Distribution = Type II
 Shape factor = 484

* Composite (Area/CN) = $[(11.400 \times 80) + (18.600 \times 90)] / 30.000$



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

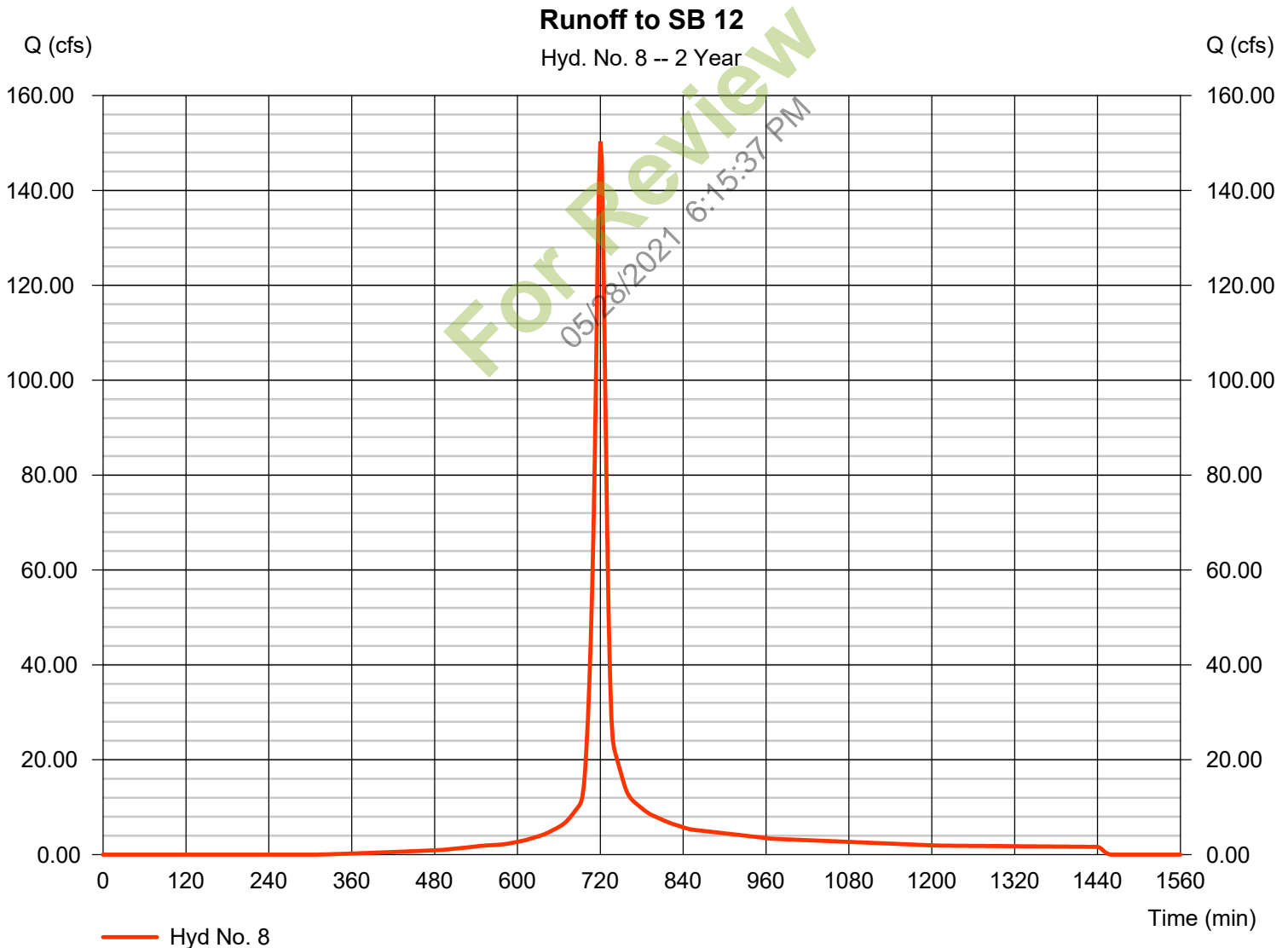
Friday, 01 / 5 / 2018

Hyd. No. 8

Runoff to SB 12

Hydrograph type = SCS Runoff
 Storm frequency = 2 yrs
 Time interval = 2 min
 Drainage area = 43.200 ac
 Basin Slope = 0.0 %
 Tc method = TR55
 Total precip. = 3.51 in
 Storm duration = 24 hrs

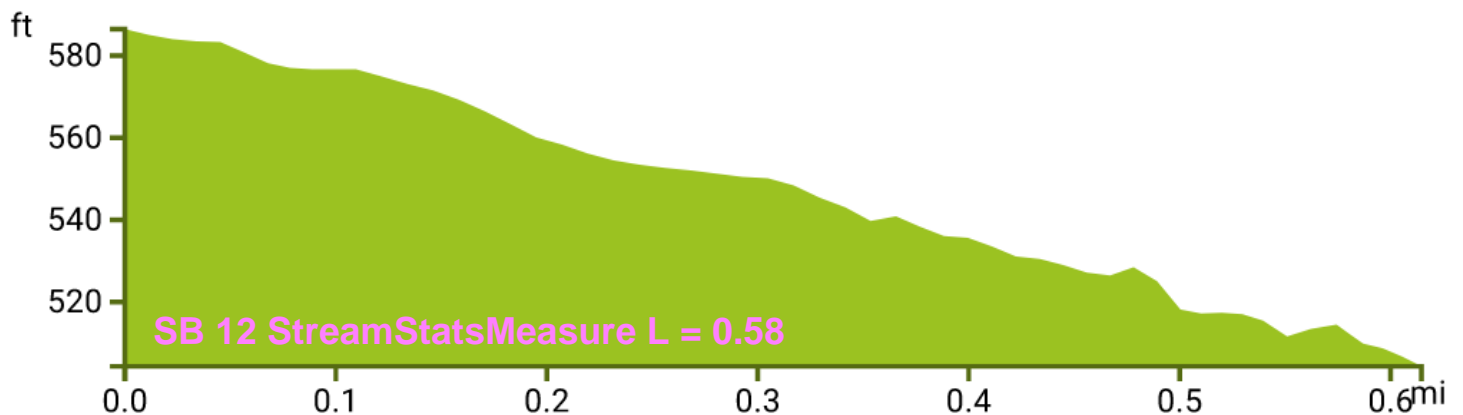
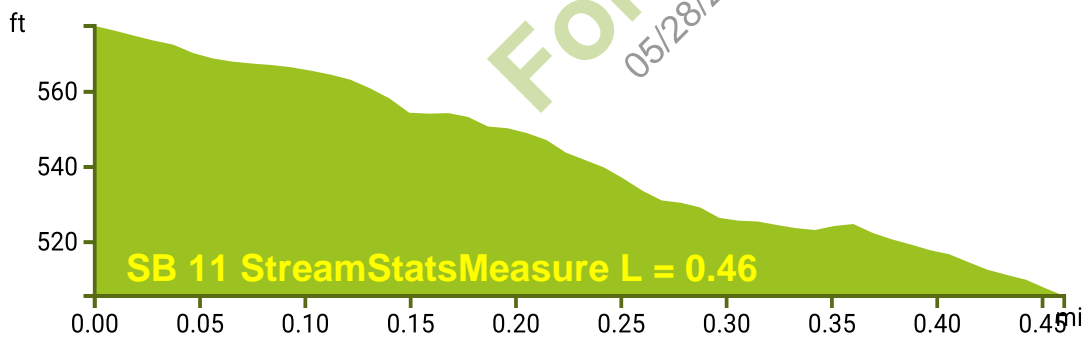
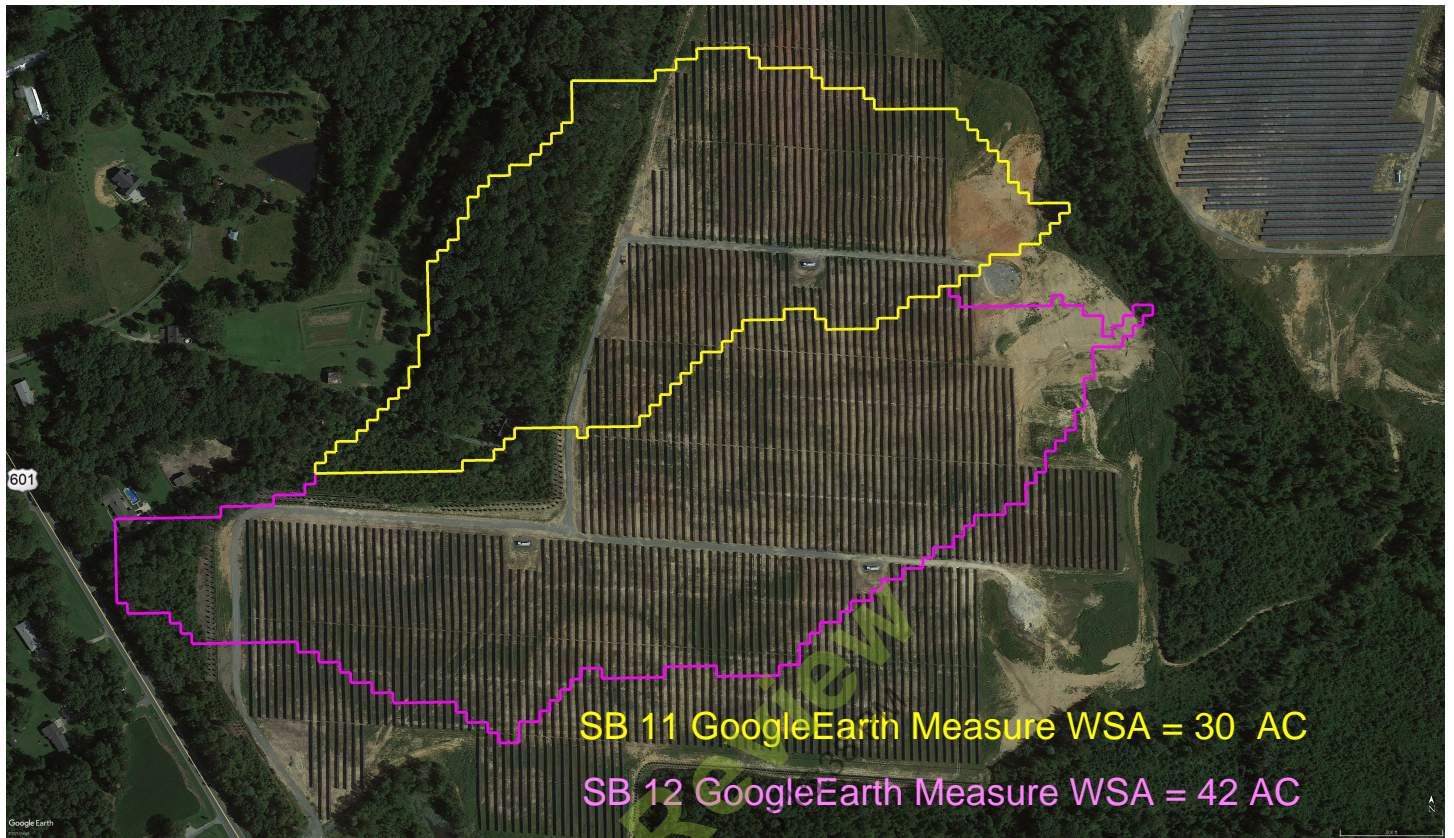
Peak discharge = 150.34 cfs
 Time to peak = 720 min
 Hyd. volume = 397,389 cuft
 Curve number = 90
 Hydraulic length = 0 ft
 Time of conc. (Tc) = 13.30 min
 Distribution = Type II
 Shape factor = 484



ATTACHMENT C - SUGGESTED
CONVEYANCE MODIFICATION PEAK
FLOW HYDROLOGY CALCULATIONS

For Review
05/28/2021 6:15:37 PM

**SB 11 AND SB 12 WATERSHED AREA AND LENGTH MEASUREMENTS FOR USE IN FOLLOWING
PEAK FLOW DISCHARGE CALCULATIONS**



SB 11 PEAK FLOW DISCHARGE CALCULATIONS USING THE RATIONAL METHOD (CHARLOTTE-MECKLENBURG STORWATER DESIGN MANUAL, 2014)

$Q = C_f CIA$	
$Q_{2\text{-year}}$	82
$Q_{5\text{-year}}$	107
$Q_{10\text{-year}}$	122
$Q_{25\text{-year}}$	157
$Q_{50\text{-year}}$	188
$Q_{100\text{-year}}$	216

Measured using StreamStats *.shp file

A (acres) = 30 0.0465

Table 2-3 Frequency Factors for Rational Formula	
Recurrence Interval (years)	C_f
2	1
10	1
25	1.1
50	1.2
100	1.25

~ I values

C_f values (interpolated Table 2-2, for corresponding T_c)

C values
(Table 2-4, F2)

$C_{2\text{-year}}$	1.00	0.75	$I_{2\text{-year}}$	3.695
$C_{5\text{-year}}$	1.00	0.75	$I_{5\text{-year}}$	4.776
$C_{10\text{-year}}$	1.00	0.75	$I_{10\text{-year}}$	5.478
$C_{25\text{-year}}$	1.10	0.75	$I_{25\text{-year}}$	6.401
$C_{50\text{-year}}$	1.20	0.75	$I_{50\text{-year}}$	7.036
$C_{100\text{-year}}$	1.25	0.75	$I_{100\text{-year}}$	7.747

NOTE: VARIOUS C-VALUES WERE CONSIDERED (TABLE 2-4 AND F-2), USE OF $C = 0.75$ BASED ON SITE-SPECIFIC ACTUAL RUNOFF RESPONSE OBSERVED OVER TIME

Table 2-4
Recommended Runoff Coefficient Values

Description of Area	Runoff Coefficient (C)
Lawns	0.30
Wooded	0.25
Streets	0.95
Gravel Areas	0.55
Drives, walks, roofs	0.95
Bare soils	0.45
Residential (including streets):	
Single-Family (Lot < 20,000 square feet - SF)	0.60
Single-Family (Lot > 20,000 square feet - SF)	0.50
Multi-family, Attached	0.70
Industrial:	
Light areas	0.70
Heavy areas	0.80
Office Parks	0.75
Shopping Centers	0.80

Note: The above runoff coefficients are valid for 2-year to 10-year storm frequencies only. Coefficients must be accompanied with a C_f factor when used for less frequent, higher intensity storms.

SB 11 PEAK FLOW DISCHARGE CALCULATIONS USING THE RATIONAL METHOD
(CHARLOTTE-MECKLENBURG STORWATER DESIGN MANUAL, 2014)

TABLE F-2
RATIONAL RUNOFF COEFFICIENTS

LAND USE DESCRIPTION	HYDROLOGIC SOIL GROUP			
	A	B	C	D
Cultivated land : without conservation treatment	.49	.67	.81	.88
: with conservation treatment	.27	.43	.61	.67
Pasture or range land: poor condition	.38	.63	.78	.84
: good condition	---	.25	.51	.65
Meadow: good condition	---	---	.44	.61
Woods: thin stand, poor cover, no mulch	---	.34	.59	.70
: good cover	---	---	.45	.59
Open spaces, lawns, parks, golf courses, cemeteries				
Good condition: grass cover on 75% or more of the area	---	.25	.51	.65
Fair condition: grass cover on 50% to 75% of the area	---	.45	.63	.74
Commercial and business areas (85% impervious)	.84	.90	.93	.96
Industrial districts (72% impervious)	.67	.81	.88	.92
Residential:				
Average lot size Average % impervious				
1/8 acre or less 65	.59	.76	.86	.90
1/4 acre 38	.25	.49	.67	.78
1/3 acre 30	---	.49	.67	.78
1/2 acre 25	---	.45	.65	.76
1 acre 20	---	.41	.63	.74
Paved parking lots, roofs, driveways, etc.	.99	.99	.99	.99
Streets and roads:				
Paved with curbs and storm sewers	.99	.99	.99	.99
Gravel	.57	.76	.84	.88
Dirt	.49	.69	.80	.84

Notes: Values are based on SCS definitions and are average values.

Values indicated by ---* should be determined by the design engineer based on site characteristics.

Source : New Jersey Department of Environmental Protection, Technical Manual for Stream Encroachment, August 1984

SB 11 PEAK FLOW DISCHARGE CALCULATIONS USING THE RATIONAL METHOD (CHARLOTTE-MECKLENBURG STORWATER DESIGN MANUAL, 2014)

Although not commonly used, the Kirpich Equation is an acceptable method for calculating time of concentration.

$$t_c = 0.0078 \times \frac{L^{0.77}}{S^{0.385}} \quad (2.3)$$

Where: t_c = Time of Concentration (min)

L = Longest hydraulic flow length (foot - ft)

S = Surface slope (foot/foot - ft/ft)

Measured using StreamStats *.shp file and GE

L = 2428.8 (ft) **0.46** miles **reference profile figure above**

S = 0.0296 (ft/ft) **577.53** begin watershed

t_c = **12.2320** (min) **505.68** end watershed

2.3.2 Rainfall Intensity

The following rainfall intensities (Table 2-2) shall be used for all hydrologic analysis.

Table 2-2 Rainfall Intensities - Charlotte, North Carolina							
IDF variables for equation:							
Intensity (I) = $\frac{a}{(t + b)^n}$ (2.3)							
t = duration of rainfall (minutes - min)							
I = intensity (inches/hour - in/hr)							
a, b, n = storm fitting parameters							
a		44.7516	61.3997	83.3331	97.3148	104.2990	116.4790
b		10	12	15	15	15	15
n		0.8070	0.8035	0.8256	0.8254	0.8179	0.8223
Time		Recurrence interval (years)					
Hours	Minutes	2	5	10	25	50	100
0	5	5.03	6.30	7.03	8.21	9.00	9.92
	6	4.78	6.02	6.75	7.89	8.65	9.53
	7	4.55	5.76	6.49	7.59	8.32	9.17
	8	4.34	5.53	6.26	7.31	8.03	8.84
	9	4.16	5.32	6.04	7.06	7.75	8.54
	10	3.99	5.12	5.84	6.83	7.50	8.26
	15	3.33	4.35	5.03	5.87	6.46	7.11
	16	3.23	4.22	4.89	5.72	6.29	6.92
	17	3.13	4.10	4.77	5.57	6.13	6.74
	18	3.04	3.99	4.65	5.43	5.97	6.57
	19	2.96	3.89	4.53	5.30	5.83	6.41
	20	2.88	3.79	4.43	5.17	5.69	6.26
	21	2.80	3.70	4.32	5.05	5.56	6.12
	22	2.73	3.61	4.23	4.94	5.44	5.98
	23	2.66	3.53	4.14	4.83	5.32	5.85
	24	2.60	3.45	4.05	4.73	5.21	5.73
	25	2.54	3.37	3.96	4.63	5.10	5.61
	26	2.48	3.30	3.88	4.54	5.00	5.50
	27	2.43	3.23	3.81	4.45	4.90	5.39
	28	2.38	3.17	3.73	4.36	4.81	5.29
	29	2.33	3.11	3.66	4.28	4.72	5.19
	30	2.28	3.05	3.60	4.20	4.64	5.09
	40	1.90	2.57	3.05	3.56	3.93	4.32
	50	1.64	2.23	2.66	3.10	3.43	3.76

SB 12 PEAK FLOW DISCHARGE CALCULATIONS USING THE RATIONAL METHOD (CHARLOTTE-MECKLENBURG STORWATER DESIGN MANUAL, 2014)

$Q = C_f CIA$	
$Q_{2\text{-year}}$	105
$Q_{5\text{-year}}$	137
$Q_{10\text{-year}}$	159
$Q_{25\text{-year}}$	204
$Q_{50\text{-year}}$	245
$Q_{100\text{-year}}$	280

Measured using StreamStats *.shp file

A (acres) = 42 0.0661

Table 2-3 Frequency Factors for Rational Formula	
Recurrence Interval (years)	C_r
2	1
10	1
25	1.1
50	1.2
100	1.25

~ I values

C_f values (interpolated Table 2-2, for corresponding T_r)

C values
(Table 2-4, F2)

$C_{2\text{-year}}$	1.00	0.75	$I_{2\text{-year}}$	3.309
$C_{5\text{-year}}$	1.00	0.75	$I_{5\text{-year}}$	4.323
$C_{10\text{-year}}$	1.00	0.75	$I_{10\text{-year}}$	5.001
$C_{25\text{-year}}$	1.10	0.75	$I_{25\text{-year}}$	5.838
$C_{50\text{-year}}$	1.20	0.75	$I_{50\text{-year}}$	6.424
$C_{100\text{-year}}$	1.25	0.75	$I_{100\text{-year}}$	7.070

NOTE: VARIOUS C-VALUES WERE CONSIDERED (TABLE 2-4 AND F-2), USE OF $C = 0.75$ BASED ON SITE-SPECIFIC ACTUAL RUNOFF RESPONSE OBSERVED OVER TIME

Table 2-4
Recommended Runoff Coefficient Values

Description of Area	Runoff Coefficient (C)
Lawns	0.30
Wooded	0.25
Streets	0.95
Gravel Areas	0.55
Drives, walks, roofs	0.95
Bare soils	0.45
Residential (including streets):	
Single-Family (Lot < 20,000 square feet - SF)	0.60
Single-Family (Lot > 20,000 square feet - SF)	0.50
Multi-family, Attached	0.70
Industrial:	
Light areas	0.70
Heavy areas	0.80
Office Parks	0.75
Shopping Centers	0.80

Note: The above runoff coefficients are valid for 2-year to 10-year storm frequencies only. Coefficients must be accompanied with a C_f factor when used for less frequent, higher intensity storms.

SB 12 PEAK FLOW DISCHARGE CALCULATIONS USING THE RATIONAL METHOD
(CHARLOTTE-MECKLENBURG STORWATER DESIGN MANUAL, 2014)

TABLE F-2

RATIONAL RUNOFF COEFFICIENTS

		HYDROLOGIC SOIL GROUP			
LAND USE DESCRIPTION		A	B	C	D
Cultivated land : without conservation treatment		.49	.67	.81	.88
: with conservation treatment		.27	.43	.61	.67
Pasture or range land: poor condition		.38	.63	.78	.84
: good condition		---*	.25	.51	.65
Meadow: good condition		---*	---*	.44	.61
Woods: thin stand, poor cover, no mulch		---*	.34	.59	.70
: good cover		---*	---*	.45	.59
Open spaces, lawns, parks, golf courses, cemeteries					
Good condition: grass cover on 75% or more of the area		---*	.25	.51	.65
Fair condition: grass cover on 50% to 75% of the area		---*	.45	.63	.74
Commercial and business areas (85% impervious)		.84	.90	.93	.96
Industrial districts (72% impervious)		.67	.81	.88	.92
Residential:					
Average lot size	Average % impervious				
1/8 acre or less	65	.59	.76	.86	.90
1/4 acre	38	.25	.49	.67	.78
1/3 acre	30	---*	.49	.67	.78
1/2 acre	25	---*	.45	.65	.76
1 acre	20	---*	.41	.63	.74
Paved parking lots, roofs, driveways, etc.		.99	.99	.99	.99
Streets and roads:					
Paved with curbs and storm sewers		.99	.99	.99	.99
Gravel		.57	.76	.84	.88
Dirt		.49	.69	.80	.84

Notes: Values are based on SCS definitions and are average values.

Values indicated by ---* should be determined by the design engineer based on site characteristics.

Source : New Jersey Department of Environmental Protection, Technical Manual for Stream Encroachment, August 1984

SB 12 PEAK FLOW DISCHARGE CALCULATIONS USING THE RATIONAL METHOD (CHARLOTTE-MECKLENBURG STORWATER DESIGN MANUAL, 2014)

Although not commonly used, the Kirpich Equation is an acceptable method for calculating time of concentration.

$$t_c = 0.0078 \times \frac{L^{0.77}}{S^{0.385}} \quad (2.3)$$

Where: t_c = Time of Concentration (min)

L = Longest hydraulic flow length (foot - ft)

S = Surface slope (foot/foot - ft/ft)

Measured using StreamStats *.shp file and GE

$L = 3062.4$ (ft)

0.58 miles reference profile figure above

$S = 0.026701$ (ft/ft)

586.68 begin watershed

$t_c = 15.21064$ (min)

504.91 end watershed

2.3.2 Rainfall Intensity

The following rainfall intensities (Table 2-2) shall be used for all hydrologic analysis.

Table 2-2 Rainfall Intensities - Charlotte, North Carolina							
IDF variables for equation:							
Intensity (I) = $\frac{a}{(t + b)^n}$ (2.1)							
t = duration of rainfall (minutes - min)							
I = intensity (inches/hour - in/hr)							
a, b, n = storm fitting parameters							
a	44.7516	61.3997	83.3331	97.3148	104.2990	116.4790	
b	10	12	15	15	15	15	
n	0.8070	0.8035	0.8256	0.8254	0.8179	0.8223	
Time		Recurrence interval (years)					
Hours	Minutes	2	5	10	25	50	100
0	5	5.03	6.30	7.03	8.21	9.00	9.92
	6	4.78	6.02	6.75	7.89	8.65	9.53
	7	4.55	5.76	6.49	7.59	8.32	9.17
	8	4.34	5.53	6.26	7.31	8.03	8.84
	9	4.16	5.32	6.04	7.06	7.75	8.54
	10	3.99	5.12	5.84	6.83	7.50	8.26
	15	3.33	4.35	5.03	5.87	6.46	7.11
	16	3.23	4.22	4.89	5.72	6.29	6.92
	17	3.13	4.10	4.77	5.57	6.13	6.74
	18	3.04	3.99	4.65	5.43	5.97	6.57
	19	2.96	3.89	4.53	5.30	5.83	6.41
	20	2.88	3.79	4.43	5.17	5.69	6.26
	21	2.80	3.70	4.32	5.05	5.56	6.12
	22	2.73	3.61	4.23	4.94	5.44	5.98
	23	2.66	3.53	4.14	4.83	5.32	5.85
	24	2.60	3.45	4.05	4.73	5.21	5.73
	25	2.54	3.37	3.96	4.63	5.10	5.61
	26	2.48	3.30	3.88	4.54	5.00	5.50
	27	2.43	3.23	3.81	4.45	4.90	5.39
	28	2.38	3.17	3.73	4.36	4.81	5.29
	29	2.33	3.11	3.66	4.28	4.72	5.19
	30	2.28	3.05	3.60	4.20	4.64	5.09
	40	1.90	2.57	3.05	3.56	3.93	4.32
	50	1.64	2.23	2.66	3.10	3.43	3.76

ATTACHMENT D - SUGGESTED
CONVEYANCE MODIFICATION DESIGN
HYDRAULICS & MATERIAL SIZING

For Review
05/28/2021 6:15:38 PM

SB 11, 5% HYDRAULIC PERFORMANCE CALCULATIONS (82 - 216 cfs)

ELEV (ft)	DEPTH (ft)	AREA (sq ft)	WET PER (ft)	WIDTH (ft)	HYD RAD (ft)	MEAN D (ft)	SLOPE (ft/ft)	ROUGH [n] (ft ^{1/6} /1.49)	VELOCITY (fps)	U/U*	U ² /2g (ft)	DISCHARGE (cfs)	SHEAR (psf)	POWER (lb/s)	POWER/W (lb/ft/s)	FROUDE	TRANSPORT (lb/s)
95.1	0.1	2.03	20.63	20.6	0.1	0.1	0.05	0.056	1.28	3.19	0.03	2.6	0.31	8.1	0.39	0.71	0.01
95.2	0.2	4.12	21.26	21.2	0.19	0.19	0.05	0.056	1.96	3.55	0.06	8.08	0.59	25.22	1.19	0.79	11.66
95.3	0.3	6.27	21.9	21.8	0.29	0.29	0.05	0.056	2.6	3.81	0.1	16.31	0.9	50.87	2.33	0.85	61.19
95.4	0.4	8.48	22.53	22.4	0.38	0.38	0.05	0.056	3.11	3.98	0.15	26.41	1.19	82.39	3.68	0.89	138.59
95.5	0.5	10.75	23.16	23	0.46	0.47	0.05	0.056	3.54	4.11	0.19	38.02	1.44	118.63	5.16	0.91	231.99
95.6	0.6	13.08	23.79	23.6	0.55	0.55	0.05	0.056	3.98	4.23	0.25	52.12	1.72	162.6	6.89	0.95	361.97
95.7	0.7	15.47	24.43	24.2	0.63	0.64	0.05	0.056	4.36	4.33	0.3	67.48	1.97	210.54	8.7	0.96	500.59
95.8	0.8	17.92	25.06	24.8	0.72	0.72	0.05	0.056	4.77	4.43	0.35	85.45	2.25	266.59	10.75	0.99	679.24
95.9	0.9	20.43	25.69	25.4	0.8	0.8	0.05	0.056	5.12	4.51	0.41	104.5	2.5	326.05	12.84	1.01	861.23
96	1	23	26.32	26	0.87	0.88	0.05	0.056	5.41	4.57	0.45	124.41	2.71	388.17	14.93	1.02	1040.29
96.1	1.1	25.63	26.96	26.6	0.95	0.96	0.05	0.056	5.74	4.64	0.51	147.01	2.96	458.68	17.24	1.03	1261.33
96.2	1.2	28.32	27.59	27.2	1.03	1.04	0.05	0.056	6.05	4.7	0.57	171.44	3.21	534.89	19.67	1.05	1503.08
96.3	1.3	31.07	28.22	27.8	1.1	1.12	0.05	0.056	6.32	4.75	0.62	196.52	3.43	613.13	22.06	1.05	1736.42
96.4	1.4	33.88	28.85	28.4	1.17	1.19	0.05	0.056	6.59	4.8	0.67	223.29	3.65	696.65	24.53	1.06	1986.98
96.5	1.5	36.75	29.49	29	1.25	1.27	0.05	0.056	6.89	4.86	0.74	253.12	3.9	789.73	27.23	1.08	2287.94
96.6	1.6	39.68	30.12	29.6	1.32	1.34	0.05	0.056	7.14	4.9	0.79	283.41	4.12	884.24	29.87	1.09	2575.45
96.7	1.7	42.67	30.75	30.2	1.39	1.41	0.05	0.056	7.39	4.94	0.85	315.45	4.34	984.2	32.59	1.1	2880.84
96.8	1.8	45.72	31.38	30.8	1.46	1.48	0.05	0.056	7.64	4.98	0.91	349.25	4.56	1089.66	35.38	1.11	3204.34
96.9	1.9	48.83	32.02	31.4	1.53	1.56	0.05	0.056	7.88	5.02	0.96	384.84	4.77	1200.69	38.24	1.11	3546.19
97	2	52	32.65	32	1.59	1.63	0.05	0.056	8.09	5.05	1.02	420.47	4.96	1311.85	41	1.12	3864.33
98	3	87	38.97	38	2.23	2.29	0.05	0.056	10.13	5.35	1.59	881.42	6.96	2750.04	72.37	1.18	8153.3
99	4	128	45.3	44	2.83	2.91	0.05	0.056	11.88	5.56	2.19	1520.07	8.83	4742.61	107.79	1.23	13978.63

SB 11, 12% HYDRAULIC PERFORMANCE CALCULATIONS (82 - 216 cfs)

ELEV (ft)	DEPTH (ft)	AREA (sq ft)	WET PER (ft)	WIDTH (ft)	HYD RAD (ft)	MEAN D (ft)	SLOPE (ft/ft)	ROUGH [n] (ft ^{1/6} /1.49)	VELOCITY (fps)	U/U*	U ² /2g (ft)	DISCHARGE (cfs)	SHEAR (psf)	POWER (lb/s)	POWER/W (lb/ft/s)	FROUDE	TRANSPORT (lb/s)
95.1	0.1	2.03	20.63	20.6	0.1	0.1	0.12	0.057	1.95	3.13	0.06	3.95	0.75	29.59	1.44	1.08	30.13
95.2	0.2	4.12	21.26	21.2	0.19	0.19	0.12	0.057	2.99	3.48	0.14	12.3	1.42	92.11	4.34	1.21	209.32
95.3	0.3	6.27	21.9	21.8	0.29	0.29	0.12	0.057	3.96	3.74	0.24	24.82	2.17	185.83	8.52	1.3	556.63
95.4	0.4	8.48	22.53	22.4	0.38	0.38	0.12	0.057	4.74	3.91	0.35	40.19	2.85	300.95	13.44	1.35	982.11
95.5	0.5	10.75	23.16	23	0.46	0.47	0.12	0.057	5.38	4.04	0.45	57.87	3.44	433.34	18.84	1.38	1446.28
95.6	0.6	13.08	23.79	23.6	0.55	0.55	0.12	0.057	6.06	4.16	0.57	79.32	4.12	593.97	25.17	1.44	2053.4
95.7	0.7	15.47	24.43	24.2	0.63	0.64	0.12	0.057	6.64	4.26	0.68	102.71	4.72	769.07	31.78	1.46	2677.1
95.8	0.8	17.92	25.06	24.8	0.72	0.72	0.12	0.057	7.26	4.35	0.82	130.05	5.39	973.81	39.27	1.51	3457.66
95.9	0.9	20.43	25.69	25.4	0.8	0.8	0.12	0.057	7.79	4.43	0.94	159.05	5.99	1190.99	46.89	1.53	4238.3
96	1	23	26.32	26	0.87	0.88	0.12	0.057	8.23	4.49	1.05	189.36	6.51	1417.93	54.54	1.55	4997.44
96.1	1.1	25.63	26.96	26.6	0.95	0.96	0.12	0.057	8.73	4.56	1.18	223.76	7.11	1675.5	62.99	1.57	5921.86
96.2	1.2	28.32	27.59	27.2	1.03	1.04	0.12	0.057	9.21	4.62	1.32	260.93	7.71	1953.88	71.83	1.59	6922.86
96.3	1.3	31.07	28.22	27.8	1.1	1.12	0.12	0.057	9.68	4.67	1.44	299.1	8.24	2239.66	80.56	1.6	7883.48
96.4	1.4	33.88	28.85	28.4	1.17	1.19	0.12	0.057	10.03	4.72	1.56	339.85	8.76	2544.76	89.6	1.62	8908.49
96.5	1.5	36.75	29.49	29	1.25	1.27	0.12	0.057	10.48	4.77	1.71	385.25	9.36	2884.77	99.47	1.64	10129.93
96.6	1.6	39.68	30.12	29.6	1.32	1.34	0.12	0.057	10.87	4.81	1.83	431.36	9.88	3229.99	109.12	1.65	11293.07
96.7	1.7	42.67	30.75	30.2	1.39	1.41	0.12	0.057	11.25	4.86	1.97	480.12	10.41	3595.11	119.04	1.67	12523.26
96.8	1.8	45.72	31.38	30.8	1.46	1.48	0.12	0.057	11.63	4.9	2.1	531.56	10.93	3980.35	129.23	1.68	13821.39
96.9	1.9	48.83	32.02	31.4	1.53	1.56	0.12	0.057	12	4.93	2.23	585.73	11.46	4385.92	139.68	1.69	15188.35
97	2	52	32.65	32	1.59	1.63	0.12	0.057	12.31	4.97	2.35	639.95	11.91	4791.98	149.75	1.7	16459.59
98	3	87	38.97	38	2.23	2.29	0.12	0.057	15.42	5.25	3.69	1341.54	16.7	10045.44	264.35	1.8	33365.5
99	4	128	45.3	44	2.83	2.91	0.12	0.057	18.07	5.47	5.07	2313.56	21.19	17323.97	393.73	1.87	56029.86

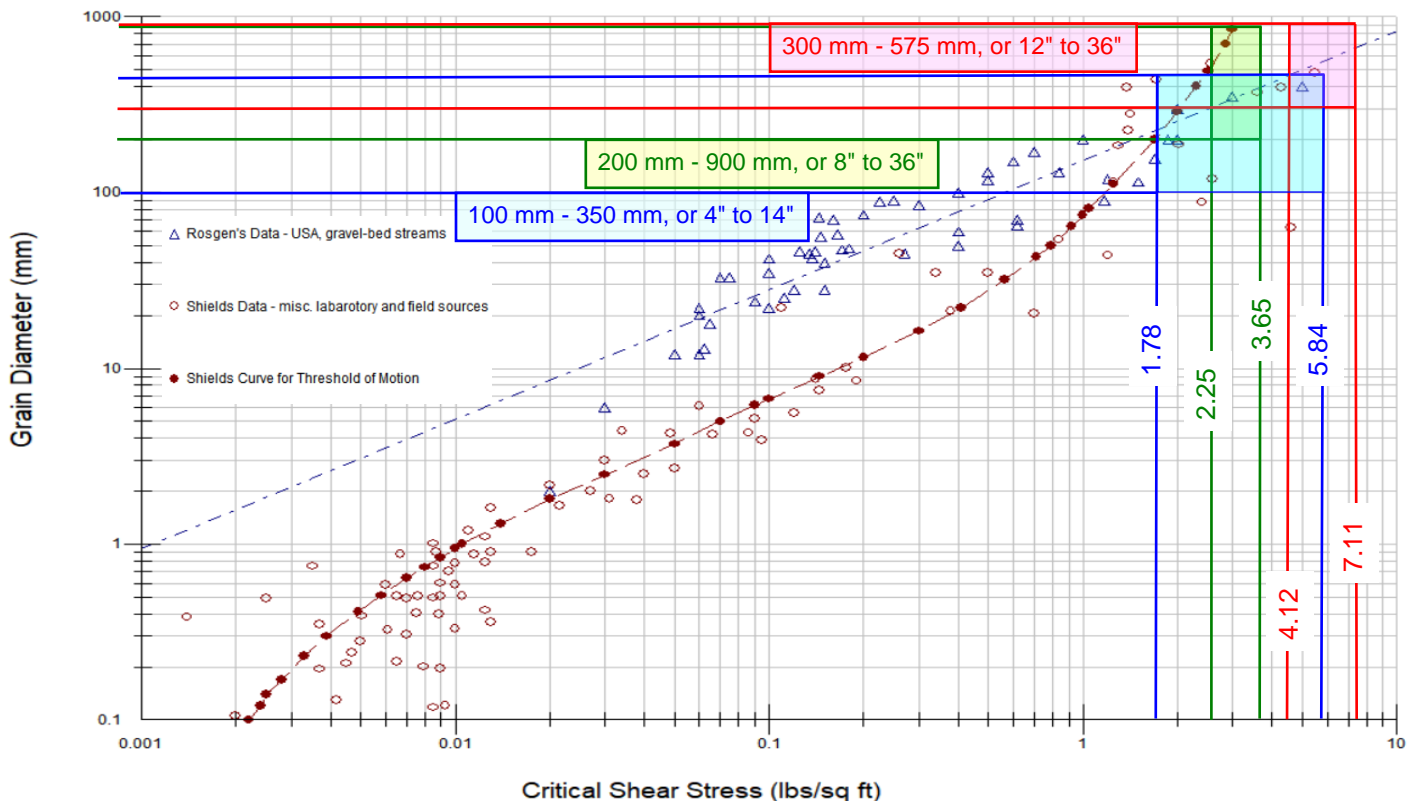
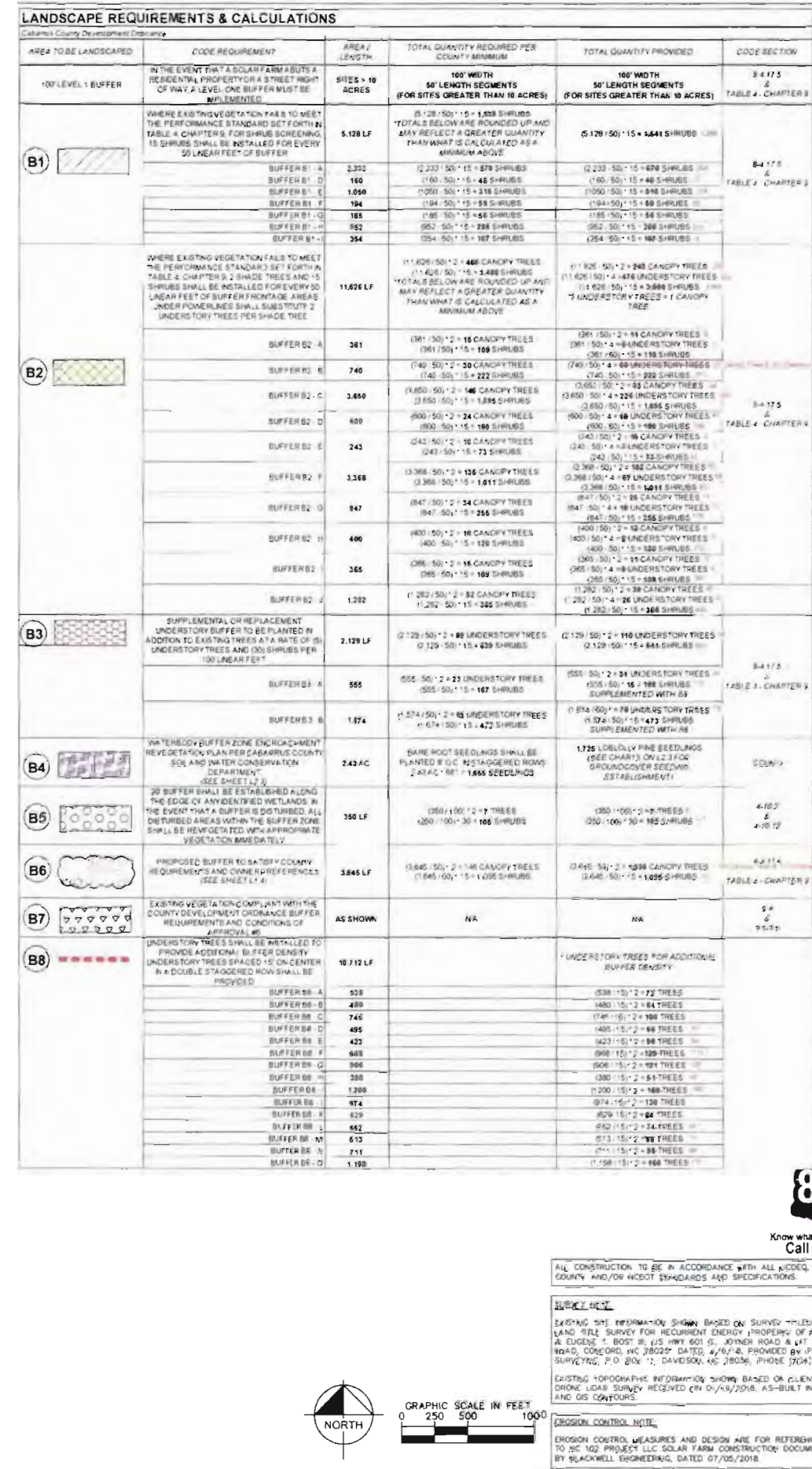


TABLE 1042-1			
ACCEPTANCE CRITERIA FOR RIP RAP AND STONE FOR EROSION CONTROL			
Class	Required Stone Sizes, inches		
	Minimum	Midrange	Maximum
A	2	4	6
B	5	8	12
1	5	10	17
2	9	14	23

No more than 5.0% of the material furnished can be less than the minimum size specified nor no more than 10.0% of the material can exceed the maximum size specified.

For Review
05/28/2021 6:15:38 PM

NC102 Landscaping As-Built Survey Results	Buffer Area	Drawing Reference Overall Counts	Drawing Reference Species Counts	Source & Common Name→ Botanical Name→ Type→	Species Counts										Species Quantities				Total Quantity (Trees & Shrubs)	Overall Buffer Area Analysis	Field Notes			
					Shrubs					Trees														
					Nellie Stevens Holly (NSH)	Wax Myrtle (WM)	Sweet Shrub (SS)	Blackgum (BG)	White Pine (WP)	Black Willow (BW)	Eastern Red Cedar	American Holly (AH)	Leyland Cypress (LC)	Crape myrtle (CM)										
					Illex x Nellie St. Stevens	Morella cerifera	Calycanthus floridus	Nyssa sylvatica	Pinus strobus	Salix nigra	Juniperus virginiana	Ilex opaca	Taxioidiaphora bryonoides	Liquidambar indica	Canopy Trees	Understory Trees	Total Trees	Total Shrubs						
B1 Buffer Area																								
B1	B1-A	L1.1	L1.11	Plan		335	335	0	0	0	0	0	0	0	0	0	0	670	670	●	Shrubs only. Planted woodline to woodline per required spacing - could not achieve quantity requirements.			
				As-Built		286	278	0	0	0	0	0	0	0	0	0	0	564	564	●				
	B1-D	L1.1	L1.12	Plan		25	25	0	0	0	0	0	0	0	0	0	0	50	50	●	Shrubs only. Meets requirements.			
				As-Built		25	25	0	0	0	0	0	0	0	0	0	0	50	50	●				
	B1-E	L1.3	L1.31	Plan		158	158	0	0	0	0	0	0	0	0	0	0	316	316	●	Shrubs only. Exceeds requirements.			
				As-Built		155	151	0	0	0	0	0	0	0	0	0	0	319	319	●				
	B1-F	L1.3	L1.31	Plan		30	30	0	0	0	0	0	0	0	0	0	0	60	60	●	Shrubs only. Meets requirements.			
				As-Built		20	36	0	0	0	0	0	0	0	0	0	0	40	40	●				
	B1-G	L1.3	L1.31	Plan		28	28	0	0	0	0	0	0	0	0	0	0	56	56	●	Shrubs only. Meets requirements.			
			As-Built		28	28	0	0	0	0	0	0	0	0	0	0	56	56	●					
B1-H	L1.2	L1.21	Plan		143	143	0	0	0	0	0	0	0	0	0	0	0	286	286	●	Shrubs only. Spacing maintained through this area - existing structures and vegetation prevented total counts.			
			As-Built		126	125	0	0	0	0	0	0	0	0	0	0	0	250	250	●				
B1-I	L1.3	L1.12	Plan		54	54	0	0	0	0	0	0	0	0	0	0	0	108	108	●	Shrubs only. Buffer unable to be planted due to existing tree line extending to fence line.			
			As-Built		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	●				
B1 Buffer Area Plan Totals→																0	0	0	1546	0				
B1 Buffer Area As-Built Totals→																0	0	0	1289	0				
B2 Buffer Area																								
B2	B2-A	L1.1	L1.11	Plan		55	55	0	7	2	0	0	4	0	4	11	8	19	110	129	●	Trees. Spacing maintained through this area. Shrubs. Meets requirements.		
				As-Built		55	55	0	8	3	0	0	3	0	4	9	7	16	110	128	●			
	B2-B	L1.1	L1.11	Plan		111	111	0	0	0	0	0	8	0	52	0	60	60	272	282	●	Trees & Shrubs. Needed to plant around patches of existing vegetation preventing achieving plan quantities.		
				As-Built		83	87	0	15	6	0	0	6	0	11	27	20	47	170	217	●			
	B2-C	L1.2	L1.12	Plan		248	248	0	22	11	0	0	53	0	173	43	226	259	1096	1355	●	Trees & Shrubs. Exceeds requirements.		
				As-Built		248	248	0	0	28	0	10	30	0	217	88	247	334	1096	1432	●			
	B2-D	L1.2	L1.22	Plan		90	90	0	0	0	0	0	6	0	42	0	48	48	180	218	●	Trees & Shrubs. Existing vegetation precluded tree and shrub plan count installation.		
				As-Built		84	84	0	0	0	0	0	5	0	36	0	41	41	168	209	●			
	B2-E	L1.2	L1.21	Plan		37	37	0	7	3	0	0	4	0	8	10	7	17	24	91	●	Trees. Avoided high flow areas where storm water leaves the site. Shrubs. Exceeds requirements - additional Nellie Stevens Holly for Wax Myrtle.		
				As-Built		34	30	0	2	0	0	0	1	0	2	2	3	5	34	89	●			
	B2-F	L1.2	L1.21	Plan		506	506	0	67	35	0	0	34	0	33	102	67	189	1012	1181	●	Trees. Planted woodline to woodline with spacing maintained. Shrubs. Shrubs were not planted under drip line of existing vegetation.		
				As-Built		482	489	0	60	0	0	0	33	0	31	60	64	124	971	1095	●			
	B2-G	L1.1	L1.12	Plan		128	128	0	17	8	0	0	9	0	9	25	18	43	256	299	●	Trees & Shrubs. Buffer was not planted in one section due to existing wetland conditions within buffer, but still acts as a visual screen.		
				As-Built		91	84	0	9	5	0	0	5	0	8	14	13	27	175	202	●			
B2-H	L1.1	L1.11	Plan		60	60	0	8	4	0	0	4	0	4	12	8	20	120	140	●	Trees. Planted woodline to woodline - but drainage/standing water area precluded additional vegetation planting - Landscaper maintains that plants will not survive in the wet location. Shrubs. Exceeds requirements.			
			As-Built		280	182	0	2	2	0	0	0	0	3	4	3	7	202	208	●				
B2-I	L1.1	L1.11	Plan		55	55	0	7	4	0	0	4	0	4	11	8	19	110	129	●	Trees. Exceeds requirements with tree species substitutions. Shrubs. Exceeds requirements.			
			As-Built		84	88	0	18	9	0	0	0	0	5	15	5	20	183	203	●				
B2-J	L1.1	L1.12	Plan		193	193	0	26	13	0	0	14	0	12	39	26	65	386	451	●	Trees. Exceeds requirements with tree species substitutions. Shrubs. Exceeds requirements.			
			As-Built		258	245	0	24	16	0	0	16	0	17	48	33	71	415	566	●				
B2 Buffer Area Plan Totals→																242	476	719	3065	0				
B2 Buffer Area As-Built Totals→																250	436	686	3482	0				
B3 Buffer Area																								
B3	B3-A	L1.1	L1.12	Plan		84	84	0	0	0	0	0	22	0	5	0	27	27	168	195	●	Trees. Exceeds requirements with tree species substitutions. Shrubs. Exceeds requirements.		
				As-Built		83	83	0	0	0	0	0	24	0	0	0	34	34	170	204	●			
	B3-B	L1.2	L1.22	Plan		237	237	0	0	0	0	0	63	0	16	0	75	75	474	553	●	Trees & Shrubs. Concentrated flow from drainage areas needed to be avoided.		
			As-Built		236	237	0	0	0	0	0	60	0	13	0	73	73	473	546	●				
B3 Buffer Area Plan Totals→																0	52	52	642	0				
B3 Buffer Area As-Built Totals→																0	39	39	643	0				
B4 Buffer Area																								
B4	B4	L1.3	L1.3	Plan		1,726 Loblolly Pine Seedlings												1,726	0	●	Exact numbers for the seedlings not verified - only verified that the spacing of the plantings was correct and that they were planted in the correct areas.			
				As-Built														See Notes	0	●				
B5 Buffer Area																								
B5	B5	L1.3	L1.31	Plan		0	44	61	0	0	7	0	0	0	7	0	7	105	112	●	Trees & Shrubs. Exceeds requirements.			
				As-Built		0	48	62	0	0	8	0	0	0	8	0	8	111	119	●				
B5 Buffer Area Plan Totals→																7	0	7	105	0				
B5 Buffer Area As-Built Totals→																8	0	8	111	0				
B6 Buffer Area																								
B6	B6	L1.2	L1.4	Plan											1338		1338	1089		●	Meets Stewart requirements.			
				As-Built		131				1190					1190	715	1905	131		●				
B7 Buffer Area																								
B7	B7	L1.2	N/A	Plan		N/A																Existing vegetation compliant with County Development Ordinance Buffer Requirements		
				As-Built																				
B8 Buffer Area																								
B8	B8-A	L1.1	L1.11	Plan		0	0	0	0	0	0	72	0	0	0	72	72	0	72	●	Trees only. Meets requirements - Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	72	0	0	72	72	0	72	●				
	B8-B	L1.1	L1.12	Plan		0	0	0	0	0	0	64	0	0	0	64	64	0	64	●	Trees only. Meets requirements - Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	64	0	0	64	64	0	64	●				
	B8-C	L1.1	L1.11	Plan		0	0	0	0	0	0	100	0	0	0	100	100	0	100	●	Trees only. Meets requirements - Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	100	0	0	100	100	0	100	●				
	B8-D	L1.1	L1.12	Plan		0	0	0	0	0	0	66	0	0	0	66	66	0	66	●	Trees only. Area was planted (B2-C) prior to addition of B8 Buffer - the combination of B8-D and B2-C in this area creates a fully cohesive buffer in this area. Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	53	0	0	53	53	0	53	●				
	B8-E	L1.2	L1.11	Plan		0	0	0	0	0	0	56	0	0	0	56	56	0	56	●	Trees only. Exceeds requirements - Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	58	0	0	58	58	0	58	●				
	B8-F	L1.2	L1.22	Plan		0	0	0	0	0	0	129	0	0	0	129	129	0	129	●	Trees only. Driveway entrance interference; actual driveway is wider than shown on plans. Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	113	0	0	113	113	0	113	●				
	B8-G	L1.2	L1.22	Plan		0	0	0	0	0	0	121	0	0	0	121	121	0	121	●	Trees only. Exceeds requirements - Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	125	0	0	125	125	0	125	●				
	B8-H	L1.2	L1.22	Plan		0	0	0	0	0	0	51	0	0	0	51	51	0	51	●	Trees only. Driveway entrance interference - buffer length in field is a little shorter than what is shown in the drawings. Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	58	0	0	58	58	0	58	●				
	B8-I	L1.2	L1.22	Plan		0	0	0	0	0	0	160	0	0	0	160	160	0	160	●	Trees only. Avoided high flow areas where storm water leaves the site. Leyland Cypress substituted for American Holly.			
				As-Built		0	0	0	0	0	0	0	140	0	0	140	140	0	140	●				
B8-J	L1.3	L1.31	Plan		0	0	0	0	0	0	130	0	0	0	130	130	0	130	●	Trees only. Meets requirements - Leyland Cypress substituted for American Holly. Field survey retained in 125 trees counted. Post survey, landscaper has provided verification of additional 5 Leyland Cypress plantings for 130 total.				
			As-Built		0	0	0	0	0	0	0	130	0	0	130	130	0	130	●					
B8-K	L1.3	L1.31	Plan		0	0	0	0	0	0	84	0	0	0	84	84	0	84	●	Trees only. Meets requirements - Leyland Cypress substituted for American Holly. Field survey retained in 76 trees counted. Post survey, landscaper has provided verification of additional 8 Leyland Cypress plantings for 84 total.				
			As-Built		0	0	0	0	0	0	0	74	0	0	74	74	0	74	●					
B8-L	L1.3	L1.31	Plan		0	0	0	0	0	0	84	0	0	0	84	84	0	84	●	Trees only. Exceeds requirements - Leyland Cypress substituted for American Holly.				
			As-Built		0	0	0	0	0	0	0	84	0	0	84	84	0	84	●					
B8-M	L1.2	L1.31	Plan		0	0	0	0	0	0	68	0	0	0	68	68	0	68	●	Trees only. Exceeds requirements - Leyland Cypress substituted for American Holly.				
			As-Built		0	0	0	0	0	0	0	71	0	0	71	71	0	71	●					
B8-N	L1.2	L1.21	Plan		0	0	0	0	0	0	95	0	0	0	95	95	0	95	●	Trees only. Exceeds requirements - Leyland Cypress substituted for American Holly.				
			As-Built		0	0	0	0	0	0	0	98	0	0	98	98	0	98	●					
B8-O	L1.2	L1.21	Plan		0	0	0	0	0	0	160	0	0	0	160	160	0	160	●	Trees only. Exceeds requirements - Leyland Cypress substituted for American Holly.				
			As-Built		0	0	0	0	0	0	0	0	0	0	170	170	0	170	●					
B8 Buffer Area Plan Totals→																0	1316	1316	0	0				
B8 Buffer Area As-Built Totals→																0	1330	1330	0	0				



LANDSCAPE REQUIREMENTS & CALCULATIONS

Calaveras County Development Ordinance

AREA TO BE LANDSCAPED	CODE REQUIREMENT	AREA / LENGTH	TOTAL QUANTITY REQUIRED PER COUNTY MINIMUM	TOTAL QUANTITY PROVIDED	CODE SECTION
100' LEVEL 1 BUFFER	IN THE EVENT THAT A SOLAR FARM ACQUISITS A RESIDENTIAL PROPERTY FOR A STREET RIGHT-OF-WAY, A LEVEL 1 BUFFER MUST BE IMPLEMENTED.	SITES > 10 ACRES	100' WIDTH 50' LENGTH SEGMENTS (FOR SITES GREATER THAN 10 ACRES)	100' WIDTH 50' LENGTH SEGMENTS (FOR SITES GREATER THAN 10 ACRES)	8-11.5 & TABLE 4 - CHAPTER 8
B1	WHERE EXISTING VEGETATION FAILS TO MEET THE PERFORMANCE STANDARD SET FORTH IN TABLE 4, CHAPTER 8, FOR SHRUB SCREENING, 15 SHRUBS SHALL BE INSTALLED EVERY 50' LINEAR FEET OF BUFFER.	5,128 LF	(5,128 / 50)' * 15 = 1,538 SHRUBS TOTALS BELOW ARE ROUNDED UP AND MAY REFLECT A GREATER QUANTITY THAN WHAT IS CALCULATED AS A MINIMUM ABOVE.	(5,128 / 50)' * 15 = 1,541 SHRUBS	8-11.5 & TABLE 4 - CHAPTER 8
	BUFFER B1-A	2,322	(2,322 / 50)' * 15 = 878 SHRUBS	(2,322 / 50)' * 15 = 878 SHRUBS	
	BUFFER B1-B	160	(160 / 50)' * 15 = 48 SHRUBS	(160 / 50)' * 15 = 48 SHRUBS	
	BUFFER B1-C	1,050	(1,050 / 50)' * 15 = 315 SHRUBS	(1,050 / 50)' * 15 = 315 SHRUBS	
	BUFFER B1-D	194	(194 / 50)' * 15 = 58 SHRUBS	(194 / 50)' * 15 = 58 SHRUBS	
	BUFFER B1-E	185	(185 / 50)' * 15 = 56 SHRUBS	(185 / 50)' * 15 = 56 SHRUBS	
B2	WHERE EXISTING VEGETATION FAILS TO MEET THE PERFORMANCE STANDARD SET FORTH IN TABLE 4, CHAPTER 8, 2 SHADE TREES AND 15 SHRUBS SHALL BE INSTALLED FOR EVERY 50' LINEAR FEET OF BUFFER. HORIZONTAL AREAS UNDER POWERLINES SHALL SUBSTITUTED 2 UNDERSTORY TREES PER SHADE TREE.	11,626 LF	(11,626 / 50)' * 2 = 465 CANOPY TREES (11,626 / 50)' * 15 = 3,488 SHRUBS TOTALS BELOW ARE ROUNDED UP AND MAY REFLECT A GREATER QUANTITY THAN WHAT IS CALCULATED AS A MINIMUM ABOVE.	(11,626 / 50)' * 2 = 468 CANOPY TREES (11,626 / 50)' * 15 = 3,488 SHRUBS 3 UNDERSTORY TREES = 1 CANOPY TREE	8-11.5 & TABLE 4 - CHAPTER 8
	BUFFER B2-A	381	(381 / 50)' * 2 = 15 CANOPY TREES (381 / 50)' * 15 = 109 SHRUBS	(381 / 50)' * 2 = 15 CANOPY TREES (381 / 50)' * 15 = 109 SHRUBS	
	BUFFER B2-B	740	(740 / 50)' * 2 = 30 CANOPY TREES (740 / 50)' * 15 = 222 SHRUBS	(740 / 50)' * 2 = 30 CANOPY TREES (740 / 50)' * 15 = 222 SHRUBS	
	BUFFER B2-C	3,650	(3,650 / 50)' * 2 = 146 CANOPY TREES (3,650 / 50)' * 15 = 1,095 SHRUBS	(3,650 / 50)' * 2 = 146 CANOPY TREES (3,650 / 50)' * 15 = 1,095 SHRUBS	
	BUFFER B2-D	600	(600 / 50)' * 2 = 24 CANOPY TREES (600 / 50)' * 15 = 180 SHRUBS	(600 / 50)' * 2 = 24 CANOPY TREES (600 / 50)' * 15 = 180 SHRUBS	
	BUFFER B2-E	243	(243 / 50)' * 2 = 10 CANOPY TREES (243 / 50)' * 15 = 73 SHRUBS	(243 / 50)' * 2 = 10 CANOPY TREES (243 / 50)' * 15 = 73 SHRUBS	
	BUFFER B2-F	3,368	(3,368 / 50)' * 2 = 135 CANOPY TREES (3,368 / 50)' * 15 = 1,011 SHRUBS	(3,368 / 50)' * 2 = 135 CANOPY TREES (3,368 / 50)' * 15 = 1,011 SHRUBS	
	BUFFER B2-G	847	(847 / 50)' * 2 = 34 CANOPY TREES (847 / 50)' * 15 = 255 SHRUBS	(847 / 50)' * 2 = 34 CANOPY TREES (847 / 50)' * 15 = 255 SHRUBS	
	BUFFER B2-H	490	(490 / 50)' * 2 = 19 CANOPY TREES (490 / 50)' * 15 = 129 SHRUBS	(490 / 50)' * 2 = 19 CANOPY TREES (490 / 50)' * 15 = 129 SHRUBS	
	BUFFER B2-I	365	(365 / 50)' * 2 = 14 CANOPY TREES (365 / 50)' * 15 = 109 SHRUBS	(365 / 50)' * 2 = 14 CANOPY TREES (365 / 50)' * 15 = 109 SHRUBS	
	BUFFER B2-J	1,282	(1,282 / 50)' * 2 = 51 CANOPY TREES (1,282 / 50)' * 15 = 385 SHRUBS	(1,282 / 50)' * 2 = 51 CANOPY TREES (1,282 / 50)' * 15 = 385 SHRUBS	
B3	SUPPLEMENTAL OR REPLACEMENT UNDERSTORY BUFFER TO BE PLANTED IN ADDITION TO EXISTING TREES AT A RATE OF (5) UNDERSTORY TREES AND (30) SHRUBS PER 100' LINEAR FEET.	2,128 LF	(2,128 / 50)' * 5 = 21 UNDERSTORY TREES (2,128 / 50)' * 30 = 438 SHRUBS	(2,128 / 50)' * 5 = 21 UNDERSTORY TREES (2,128 / 50)' * 30 = 438 SHRUBS	8-11.5 & TABLE 4 - CHAPTER 8
	BUFFER B3-A	555	(555 / 50)' * 5 = 23 UNDERSTORY TREES (555 / 50)' * 30 = 167 SHRUBS	(555 / 50)' * 5 = 23 UNDERSTORY TREES (555 / 50)' * 30 = 167 SHRUBS	
B3	BUFFER B3-B	1,574	(1,574 / 50)' * 5 = 63 UNDERSTORY TREES (1,574 / 50)' * 30 = 472 SHRUBS	(1,574 / 50)' * 5 = 63 UNDERSTORY TREES (1,574 / 50)' * 30 = 472 SHRUBS SUPPLEMENTED WITH #6	
B4	WATERBODY BUFFER ZONE ESTABLISHMENT/ REVEGETATION PLAN PER CALAVERAS COUNTY SOIL AND WATER CONSERVATION DEPARTMENT (SEE SHEET L2.3)	243 AC	BAKE ROOT SEEDLINGS SHALL BE PLANTED @ 0.2' STAGGERED ROWS 2' x 2' x 10" - 1,655 SEEDLINGS	1,735 LOGGABLE PINE SEEDLINGS (SEE CHART ON L2.3 FOR GROUND COVER SEEDING ESTABLISHMENT)	COUNTY
B5	20' BUFFER SHALL BE ESTABLISHED ALONG THE EDGE OF ANY IDENTIFIED WETLANDS. IN THE EVENT THAT A BUFFER IS DISTURBED, ALL DISTURBED AREAS WITHIN THE BUFFER ZONE SHALL BE REVEGETATED WITH APPROPRIATE VEGETATION IMMEDIATELY.	350 LF	(350 / 100)' * 2 = 7 TREES (350 / 100)' * 30 = 105 SHRUBS	(350 / 100)' * 2 = 7 TREES (350 / 100)' * 30 = 105 SHRUBS	8-10.5 & 8-10.12
B6	PROPOSED BUFFER TO SATISFY COUNTY REQUIREMENTS AND OWNER PREFERENCES (SEE SHEET L1.4)	3,845 LF	(3,845 / 50)' * 2 = 154 CANOPY TREES (3,845 / 50)' * 15 = 1,035 SHRUBS	(3,845 / 50)' * 2 = 158 CANOPY TREES (3,845 / 50)' * 15 = 1,035 SHRUBS	8-11.4 & TABLE 4 - CHAPTER 8
B7	EXISTING VEGETATION COMPLIANT WITH THE COUNTY DEVELOPMENT ORDINANCE BUFFER REQUIREMENTS AND CONDITIONS OF APPROVAL #6	AS SHOWN	NA	NA	8-11.5 & 8-10.12
B8	UNDERSTORY TREES SHALL BE INSTALLED TO PROVIDE ADDITIONAL BUFFER DENSITY. UNDERSTORY TREES SPACED 15' ON-CENTER IN A DOUBLE STAGGERED ROW SHALL BE PROVIDED.	10,712 LF	1 UNDERSTORY TREES FOR ADDITIONAL BUFFER DENSITY.	1 UNDERSTORY TREES FOR ADDITIONAL BUFFER DENSITY.	8-11.5 & TABLE 4 - CHAPTER 8
	BUFFER B8-A	538	(538 / 50)' * 2 = 22 TREES	(538 / 50)' * 2 = 22 TREES	
	BUFFER B8-B	480	(480 / 50)' * 2 = 19 TREES	(480 / 50)' * 2 = 19 TREES	
	BUFFER B8-C	740	(740 / 50)' * 2 = 30 TREES	(740 / 50)' * 2 = 30 TREES	
	BUFFER B8-D	495	(495 / 50)' * 2 = 19 TREES	(495 / 50)' * 2 = 19 TREES	
	BUFFER B8-E	425	(425 / 50)' * 2 = 17 TREES	(425 / 50)' * 2 = 17 TREES	
	BUFFER B8-F	908	(908 / 50)' * 2 = 36 TREES	(908 / 50)' * 2 = 36 TREES	
	BUFFER B8-G	306	(306 / 50)' * 2 = 12 TREES	(306 / 50)' * 2 = 12 TREES	
	BUFFER B8-H	330	(330 / 50)' * 2 = 13 TREES	(330 / 50)' * 2 = 13 TREES	
	BUFFER B8-I	1,200	(1,200 / 50)' * 2 = 48 TREES	(1,200 / 50)' * 2 = 48 TREES	
	BUFFER B8-J	974	(974 / 50)' * 2 = 39 TREES	(974 / 50)' * 2 = 39 TREES	
	BUFFER B8-K	609	(609 / 50)' * 2 = 24 TREES	(609 / 50)' * 2 = 24 TREES	
	BUFFER B8-L	452	(452 / 50)' * 2 = 18 TREES	(452 / 50)' * 2 = 18 TREES	
	BUFFER B8-M	673	(673 / 50)' * 2 = 27 TREES	(673 / 50)' * 2 = 27 TREES	
BUFFER B8-N	711	(711 / 50)' * 2 = 28 TREES	(711 / 50)' * 2 = 28 TREES		
BUFFER B8-O	1,198	(1,198 / 50)' * 2 = 48 TREES	(1,198 / 50)' * 2 = 48 TREES		

Know what
Call

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL NCCDC, COUNTY AND/OR NCOT STANDARDS AND SPECIFICATIONS.

SURVEY NOTE

EXISTING SITE INFORMATION SHOWN BASED ON SURVEY FILED LAND 9/12 SURVEY FOR RECURRENT EROSION PROPERTY OF A/E EUGENE J. BOST JR., US HWY 601 S., JOINER ROAD & LT. ROAD, CORONADO, CA 92026, 4/6/4, PROVIDED BY P. SURVEYING, P.O. BOX 11, DAVIDSON, NC 28036, PHONE (704) 896-1111.

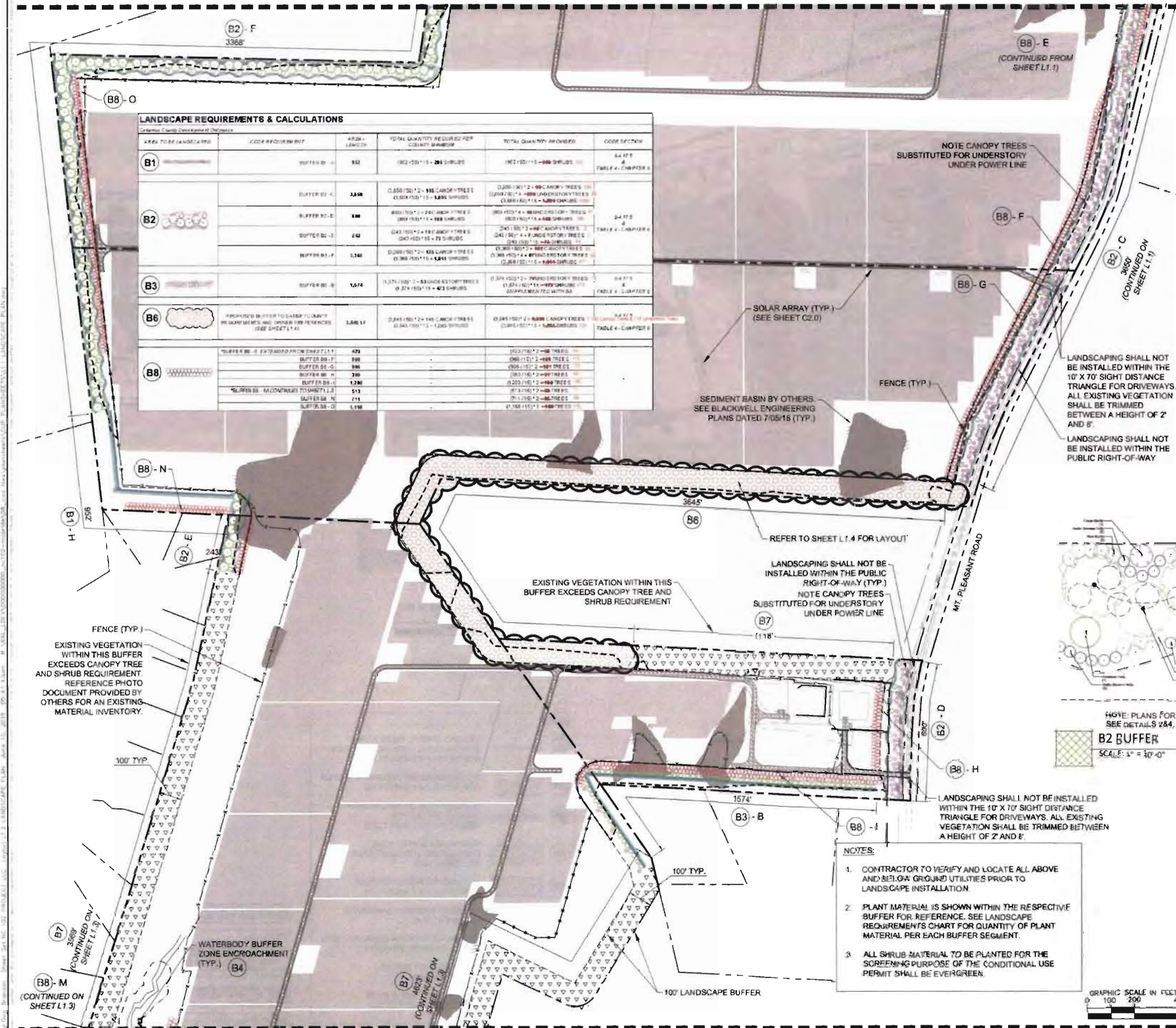
EXISTING TOPOGRAPHIC INFORMATION SHOWN BASED ON GLEN DRONE LOAD SURVEY RECEIVED ON 6/24/2016, AS-BUILT IN AND OUT CONTOURS.

EROSION CONTROL NOTE

EROSION CONTROL MEASURES AND DESIGN ARE FOR REFERENCE TO NC 102 PROJECT LLC SOLAR FARM CONSTRUCTION DOCUMENT BY BLACKWELL ENGINEERING, DATED 07/05/2018.

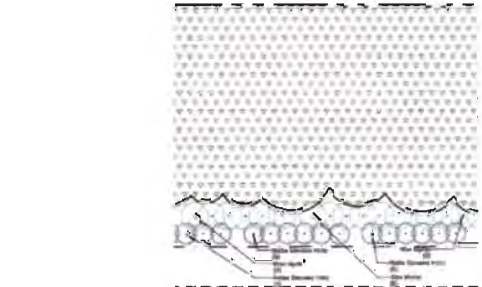
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MATCHLINE: SEE L1.1 - LANDSCAPE PLAN

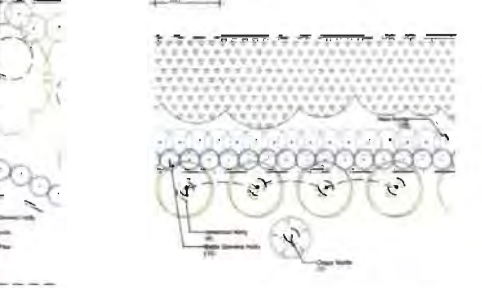


LEGEND

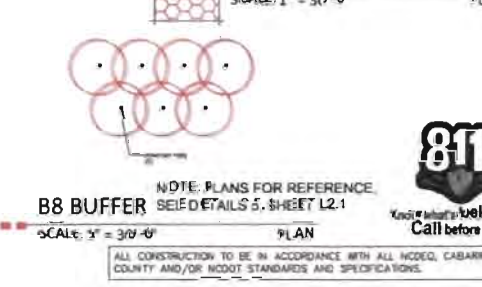
- (B1) EXISTING CANOPY TREES WITH SUPPLEMENTAL EVERGREEN SCREEN (SEE DETAIL 1 & 3 SHEET L2.0)
- (B2) CDO REQUIRED SUPPLEMENTAL BUFFER (SEE DETAIL 2 & 4 SHEET L2.0)
- (B3) SUPPLEMENTAL OR REPLACEMENT UNDERSTORY BUFFER (SEE DETAIL 1 & 3 SHEET L2.1)
- (B4) WATERBODY BUFFER ZONE ENCROACHMENT REVEGETATION PLAN (SEE SHEET L2.3)
- (B5) WETLAND REVEGETATION PLAN (SEE DETAIL 2 & 4 SHEET L2.1)
- (B6) ADJACENT PROPERTY LANDSCAPE (SEE SHEET L1.4)
- (B7) EXISTING VEGETATION COMPLIANT WITH CDO BUFFER REQUIREMENTS
- (B8) FIELD SURVEYED BUFFER ENCROACHMENT
- (B9) UNDERSTORY TREE BUFFER (SEE DETAIL 5 SHEET L2.1)



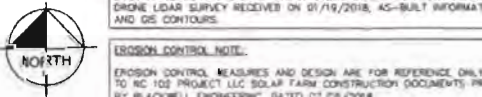
NOTE: PLANS FOR REFERENCE. SEE DETAILS 1&3, SHEET L2.0
B1 BUFFER
SCALE: 1" = 30'-0"



NOTE: PLANS FOR REFERENCE. SEE DETAILS 2&4, SHEET L2.0
B2 BUFFER
SCALE: 1" = 30'-0"



NOTE: PLANS FOR REFERENCE. SEE DETAILS 1&3, SHEET L2.1
B3 BUFFER
SCALE: 1" = 30'-0"



NOTE: PLANS FOR REFERENCE. SEE DETAILS 5, SHEET L2.1
B8 BUFFER
SCALE: 1" = 30'-0"

MATCHLINE: SEE L1.3 - LANDSCAPE PLAN

Kimley-Horn

RECURRENT ENERGY

LANDSCAPE PLAN

NC 102 PROJECT LLC

PREPARED FOR DEPCOM POWER

811

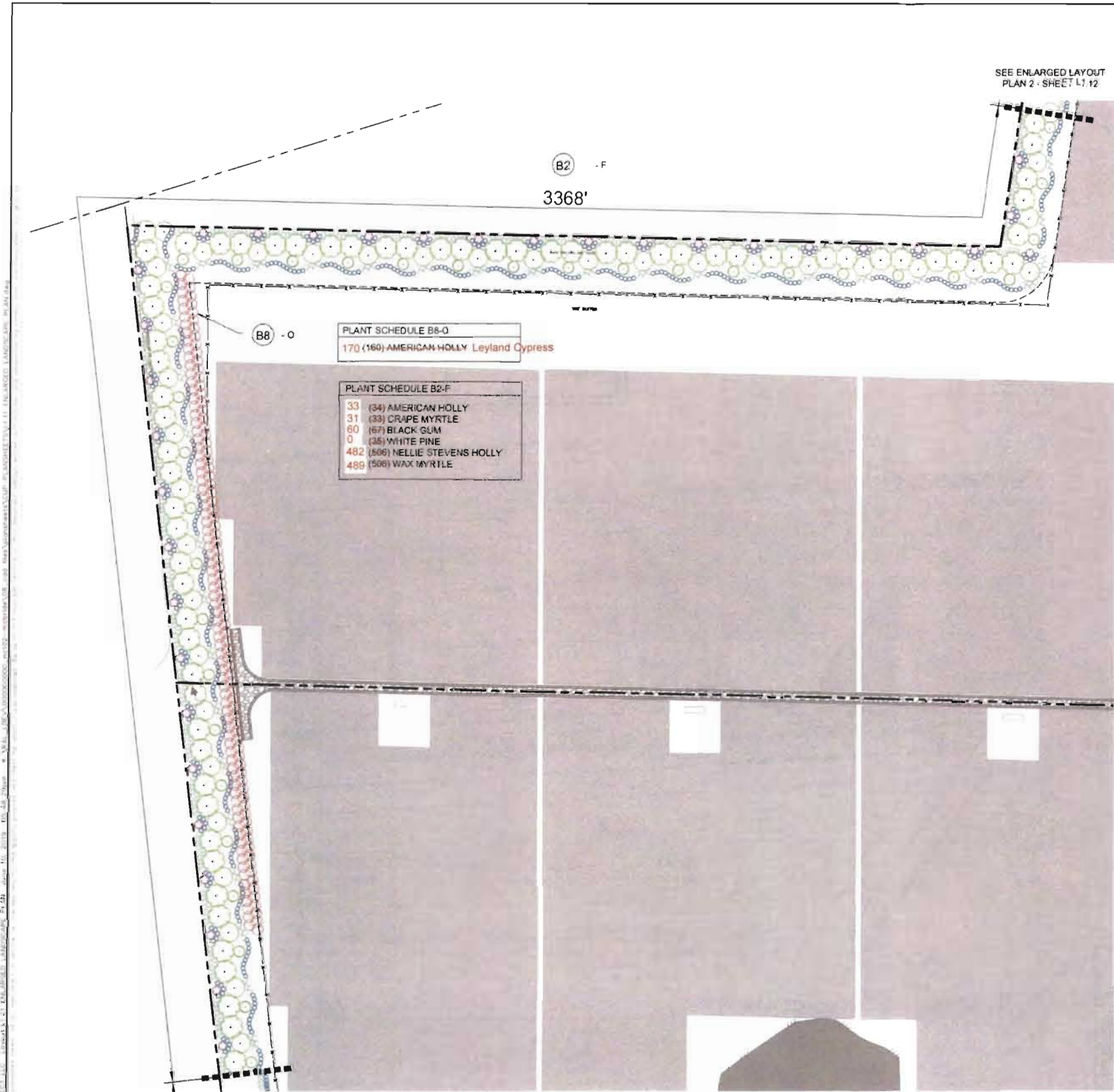
Call before you dig.

NOTES:

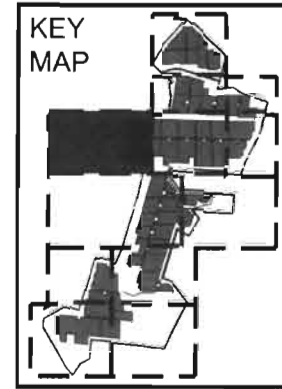
- ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL NCDDOT, CARBORUS COUNTY AND/OR NCDDOT STANDARDS AND SPECIFICATIONS.
- SURVEY NOTE:** EXISTING SITE INFORMATION SHOWN BASED ON SURVEY FILED: ALTA/NSPS LAND TITLE SURVEY FOR RECURRENT ENERGY, PROPERTY OF FIVE M'S, L.L.C. & EUGENE T. BOST III, US HWY 401 S. JOYNER ROAD & M1 PLEASANT ROAD, CONCORD, NC 28027 DATED: 4/8/18, PROVIDED BY PYRAMID LAND SURVEYING, P.O. BOX 15, DARTMOUTH, NC 28039, PHONE (704) 892-4248.
- EXISTING TOPOGRAPHIC INFORMATION SHOWN BASED ON CLIENT PROVIDED. GROUND LINE SURVEY RECEIVED ON 07/19/2018, AS-BUILT INFORMATION, AND GIS CONTOURS.
- EROSION CONTROL NOTE:** EROSION CONTROL, MEASURES AND DESIGN ARE FOR REFERENCE ONLY. REFER TO NC 102 PROJECT LLC SOLAR FARM CONSTRUCTION DOCUMENTS PREPARED BY BLACKWELL ENGINEERING, DATED 07/05/2018.

DATE

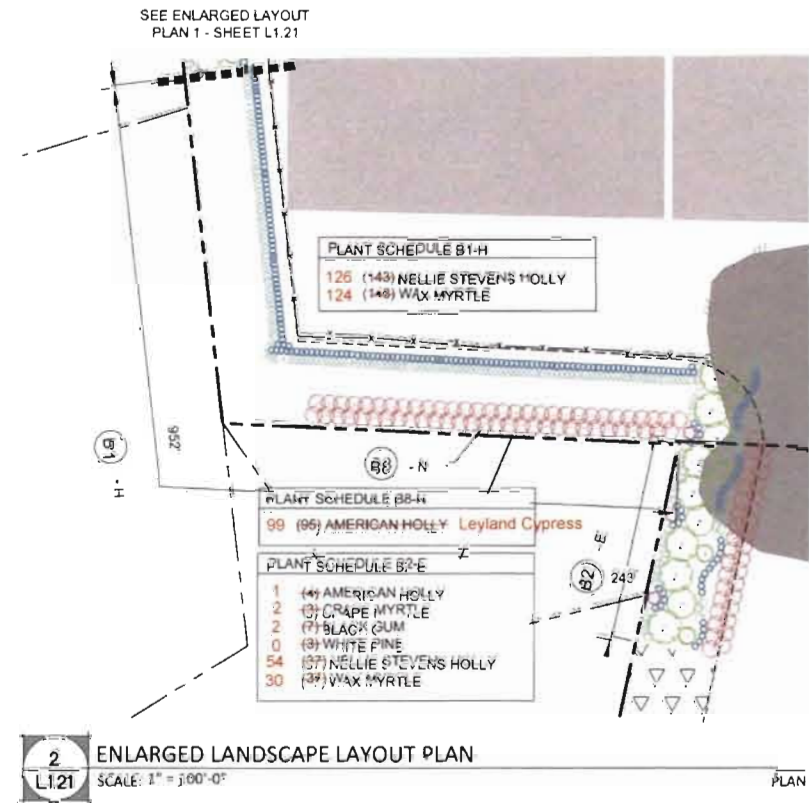
DATE	REVISION
05/30/19	1.0
04/09/19	2.0
02/20/19	3.0
02/07/19	4.0
11/26/18	5.0
10/05/18	6.0
10/04/18	7.0



1
L121
ENLARGED LANDSCAPE LAYOUT PLAN
SCALE: 1" = 100'-0"



LEGEND	
B1	EXISTING CANOPY TREES WITH SUPPLEMENTAL EVERGREEN SCREEN (SEE DETAIL 1 & 3 SHEET L2.0)
B2	CDD REQUIRED SUPPLEMENTAL BUFFER (SEE DETAIL 2 & 4 SHEET L2.0)
B3	SUPPLEMENTAL OR REPLACEMENT UNDERSTORY BUFFER (SEE DETAIL 1 & 3 SHEET L2.1)
B4	WATERBODY BUFFER ZONE ENCROACHMENT REVEGETATION PLAN (SEE SHEET L2.3)
B5	WETLAND REVEGETATION PLAN (SEE DETAIL 2 & 4 SHEET L2.1)
B6	ADJACENT PROPERTY LANDSCAPE (SEE SHEET L1.4)
B7	EXISTING VEGETATION COMPLIANT WITH CDD BUFFER REQUIREMENTS
B8	FIELD SURVEYED BUFFER ENCROACHMENT
B8	UNDERSTORY TREE BUFFER (SEE DETAIL 5 SHEET L2.1)



2
L121
ENLARGED LANDSCAPE LAYOUT PLAN
SCALE: 1" = 100'-0"

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL NCDDC, CABARRUS COUNTY AND/OR NCDDC STANDARDS AND SPECIFICATIONS.

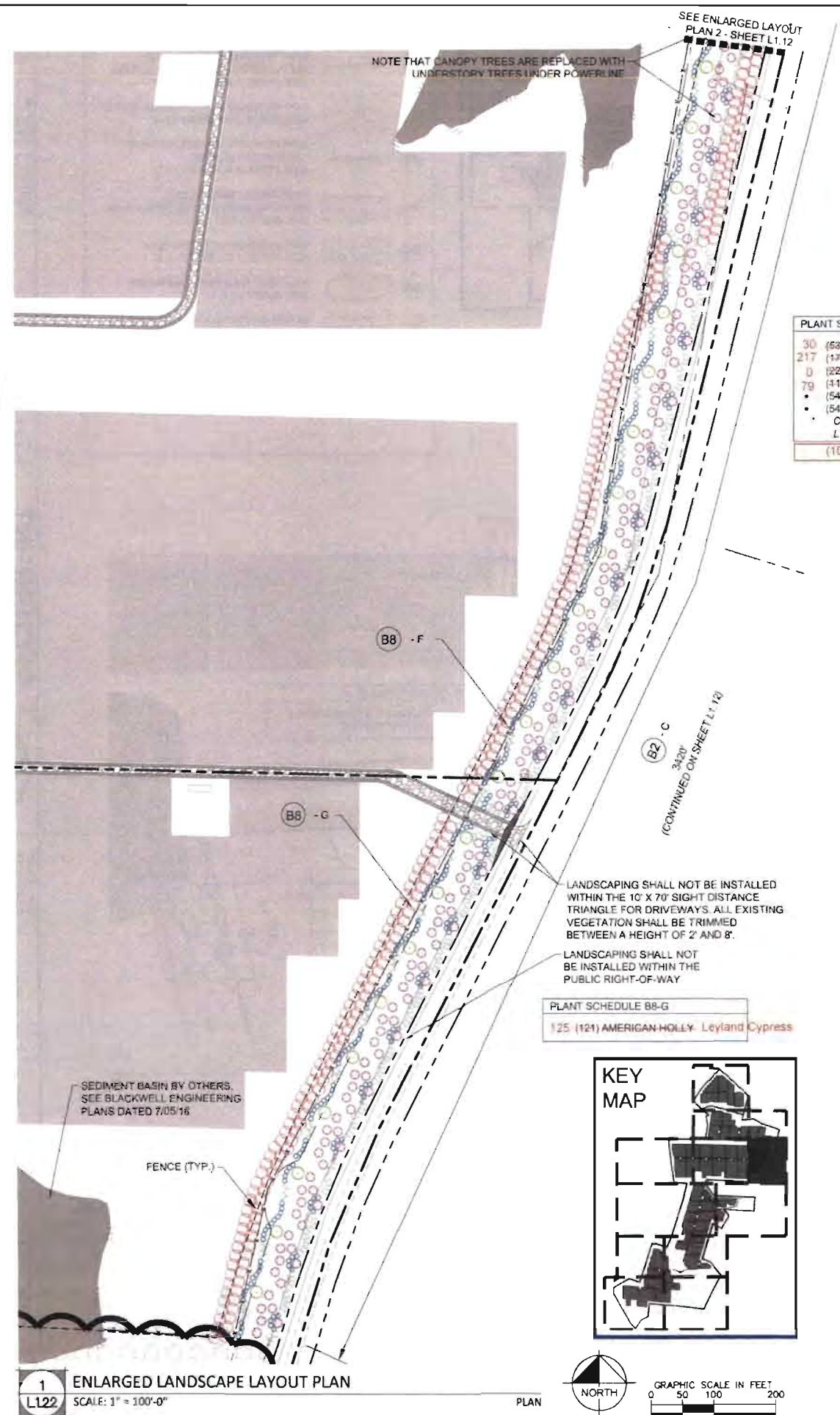
SURVEY NOTE:
EXISTING SITE INFORMATION SHOWN BASED ON SURVEY TITLED: ALTA/NSPS LAND TITLE SURVEY FOR RECURRENT ENERGY PROPERTY OF FIVE L'S, LLC & EUGENE T. BOST JR. US HWY 601 S. JOYNER ROAD & W. PLEASANT ROAD, CONCORD, NC 28027 DATED 4/16/18, PROVIDED BY PYRAMID LAND SURVEYING, P.O. BOX 11, DAVIDSON, NC 28036; PHONE (704) 892-4248.

EXISTING TOPOGRAPHIC INFORMATION SHOWN BASED ON CLIENT PROVIDED ORDNCE LEASER SURVEY RECEIVED ON 01/19/2018, AS-BUILT INFORMATION, AND GIS CONTOURS.

EROSION CONTROL NOTE:
EROSION CONTROL MEASURES AND DESIGN ARE FOR REFERENCE ONLY. REFER TO NC 102 PROJECT LLC SOLAR FARM CONSTRUCTION DOCUMENTS PREPARED BY BLACKWELL ENGINEERING, DATED 07/09/2018.

9/5/2019	08/09/19	02/20/19	02/07/19	11/26/19	10/05/19	10/04/19	DATE
COUNTY SUBMITTAL	COUNTY SUBMITTAL	CDD COMMENTS	CDD COMMENTS	CDD COMMENTS	CDD COMMENTS	CDD COMMENTS	
Kimley-Horn							
© 2019 KIMLEY-HORN AND ASSOCIATES, INC. 421 LANTANA DRIVE, SUITE 100 WALTON, FL 32687							
RECURRENT ENERGY							
NORTH CAROLINA Professional Engineer BRADON G. WILSON 06 JUL 19							
NO. PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY		
014555104	07/10/18	1" = 100'-0"	BRG	AMF	BRG		
ENLARGED LANDSCAPE LAYOUT PLAN							
NC 102 PROJECT LLC							
PREPARED FOR DEPCOM POWER							
CABARRUS COUNTY							
SHEET NUMBER							
L1.21							

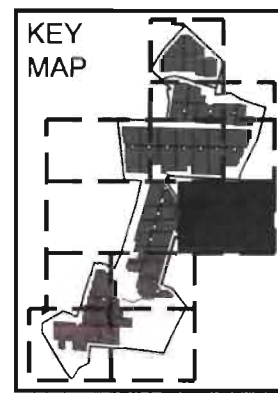
Project: NC 102 Project LLC Solar Farm Construction Documents, Prepared by Blackwell Engineering, Inc. (BPG) for Project LLC. Date: 07/05/2018. Scale: 1" = 100'-0".



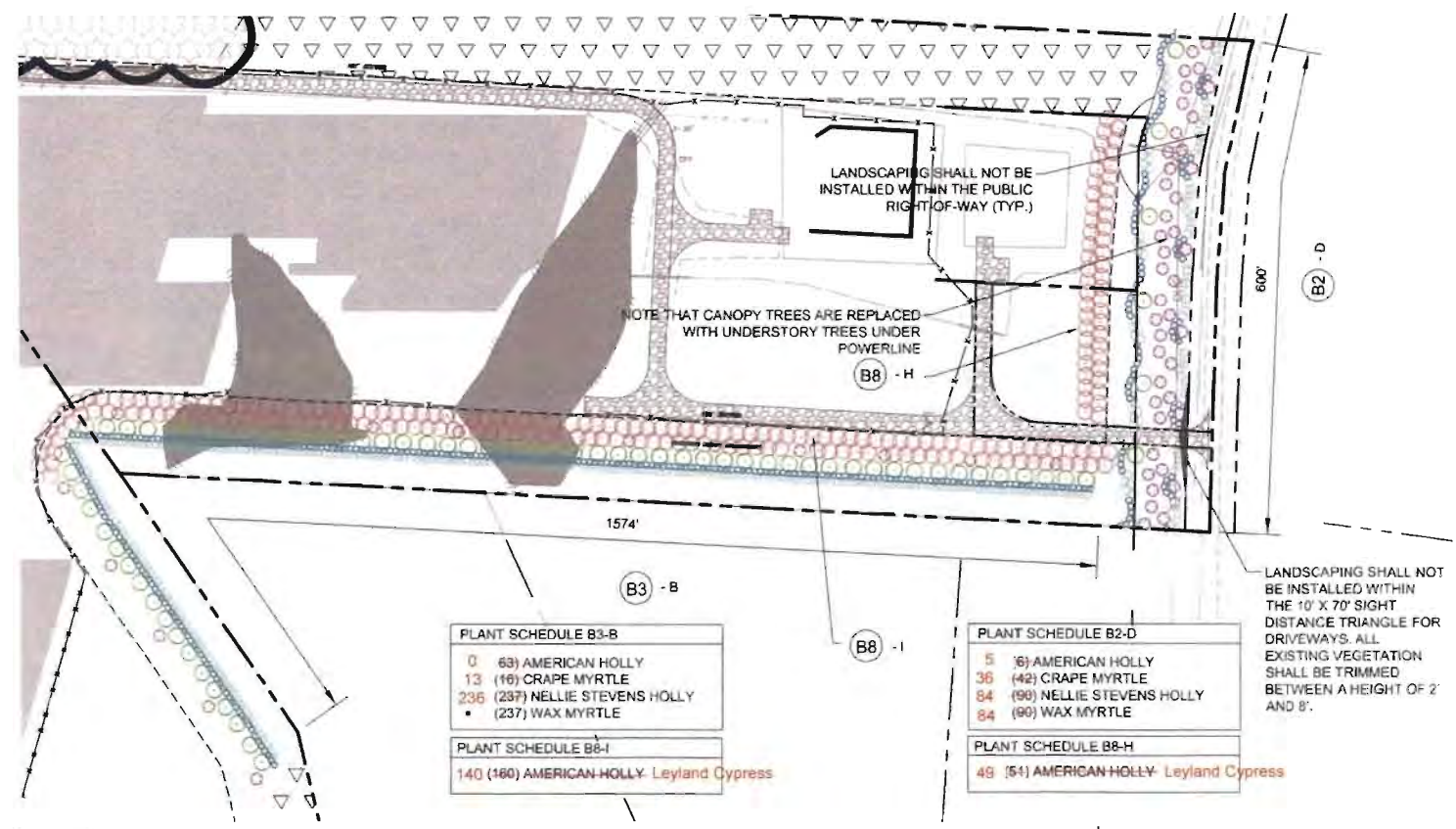
PLANT SCHEDULE B8-E	
58	(56) AMERICAN HOLLY - Leyland Cypress
(CONTINUED FROM L1.12)	

PLANT SCHEDULE B8-F	
113	(129) AMERICAN HOLLY - Leyland Cypress

PLANT SCHEDULE B2-C	
30	(63) AMERICAN HOLLY
217	(173) CRAPE MYRTLE
0	(22) BLACK GUM
79	(41) WHITE PINE
	(548) NELLIE STEVENS HOLLY
	(548) WAX MYRTLE
CONTINUED FROM SHEET L1.12	
(10)	Cedar



LEGEND	
B1	EXISTING CANOPY TREES WITH SUPPLEMENTAL EVERGREEN SCREEN (SEE DETAIL 1 & 3 SHEET L2.0)
B2	CDO REQUIRED SUPPLEMENTAL BUFFER (SEE DETAIL 2 & 4 SHEET L2.0)
B3	SUPPLEMENTAL OR REPLACEMENT UNDERSTORY BUFFER (SEE DETAIL 1 & 3 SHEET L2.1)
B4	WATERBODY BUFFER ZONE ENCROACHMENT REVEGETATION PLAN (SEE SHEET L2.3)
B5	WETLAND REVEGETATION PLAN (SEE DETAIL 2 & 4 SHEET L2.1)
B6	ADJACENT PROPERTY LANDSCAPE (SEE SHEET L1.4)
B7	EXISTING VEGETATION COMPLIANT WITH CDO BUFFER REQUIREMENTS
	FIELD SURVEYED BUFFER ENCROACHMENT
B8	UNDERSTORY TREE BUFFER (SEE DETAIL 5 SHEET L2.1)



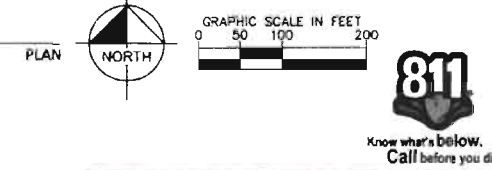
PLANT SCHEDULE B3-B	
0	(63) AMERICAN HOLLY
13	(16) CRAPE MYRTLE
236	(237) NELLIE STEVENS HOLLY
	(237) WAX MYRTLE

PLANT SCHEDULE B8-I	
140	(160) AMERICAN HOLLY - Leyland Cypress

PLANT SCHEDULE B2-D	
5	(6) AMERICAN HOLLY
36	(42) CRAPE MYRTLE
84	(90) NELLIE STEVENS HOLLY
84	(90) WAX MYRTLE

PLANT SCHEDULE B8-H	
49	(54) AMERICAN HOLLY - Leyland Cypress

2 ENLARGED LANDSCAPE LAYOUT PLAN
SCALE: 1" = 100'-0"



ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL NCDD, CARARRUS COUNTY AND/OR NCDD STANDARDS AND SPECIFICATIONS.

SURVEY NOTE:
EXISTING SITE INFORMATION SHOWN BASED ON SURVEY TITLED: ALTA/NGPS LAND TITLE SURVEY FOR RECURRENT ENERGY, PROPERTY OF FIVE M'S, LLC & EUGENE T. BOST JR. US HWY 801 S., JOYNER ROAD & MT PLEASANT ROAD, CONCORD, NC 28025 DATED 4/6/18, PROVIDED BY PYRAMID LAND SURVEYING, P.O. BOX 11, DAVENPORT, NC 28038, PHONE (704) 892-1424.

EXISTING TOPOGRAPHIC INFORMATION SHOWN BASED ON CLIENT PROVIDED DRONE LIDAR SURVEY RECEIVED ON 01/19/2018, AS-BUILT INFORMATION, AND GIS CONTOURS.

EROSION CONTROL NOTE:
EROSION CONTROL MEASURES AND DESIGN ARE FOR REFERENCE ONLY. REFER TO NC 102 PROJECT LLC SOLAR FARM CONSTRUCTION DOCUMENTS PREPARED BY BLACKWELL ENGINEERING DATED 07/05/2018.

05/30/18	COUNTY SUBMITTAL	04/06/18	COUNTY SUBMITTAL	02/20/18	3RD COUNTY COMMENTS	11/26/17	CLIENT COMMENTS	10/03/17	CLIENT COMMENTS	10/04/17	REVISIONS	DATE
											No	

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WWW.KIMLEY-HORN.COM
431 FAYETTEVILLE STREET, SUITE 300
FAYETTEVILLE, NC 28404
TALLOP, W. JAMES

3000 OAK ROAD, SUITE 300
FAYETTEVILLE, NC 28404
TALLOP, W. JAMES

BRANDON GUY
COUNTY ENGINEER

WHA PROJECT	DATE	SCALE	DESIGNED BY	DRAWN BY	CHECKED BY
NC 102 PROJECT LLC	07/05/18	AS SHOWN	BPG	AWF	BPG

ENLARGED LANDSCAPE PLAN

NC 102 PROJECT LLC
PREPARED FOR
DEPCOM POWER

CABARRUS COUNTY

SHEET NUMBER
L1.22

MATCHLINE: SEE L1.2 - LANDSCAPE PLAN

NOTES:

1. CONTRACTOR TO VERIFY AND LOCATE ALL ABOVE AND BELOW GROUND UTILITIES PRIOR TO LANDSCAPE INSTALLATION.
2. PLANT MATERIAL IS SHOWN WITHIN THE RESPECTIVE BUFFER FOR REFERENCE. SEE LANDSCAPE REQUIREMENTS CHART FOR QUANTITY OF PLANT MATERIAL PER EACH BUFFER SEGMENT.
3. ALL SHRUB MATERIAL TO BE PLANTED FOR THE SCREENING PURPOSE OF THE CONDITIONAL USE PERMIT SHALL BE EVERGREEN.

BUFFER ENCROACHMENT DOES NOT IMPACT COMPLIANCE OF EXISTING BUFFER. EXISTING LANDSCAPING IS USED TO MEET THE BUFFER REQUIREMENTS PER CONDITION #6. EXISTING BUFFER CONTAINS A MINIMUM OF (2) CANOPY TREES AND (15) UNDERSTORY SHRUBS PER 50 LINEAR FEET. REFERENCE PHOTO DOCUMENT PROVIDED BY OTHERS FOR AN EXISTING MATERIAL INVENTORY.

SEED ALL DISTURBED AREAS WITHIN THE BUFFER PER TABLE - SHEET L2.2

EXISTING VEGETATION WITHIN THIS BUFFER EXCEEDS CANOPY TREE AND SHRUB REQUIREMENT

LANDSCAPING SHALL NOT BE INSTALLED WITHIN THE 10' X 70' SIGHT DISTANCE TRIANGLE FOR DRIVEWAYS. ALL EXISTING VEGETATION SHALL BE TRIMMED BETWEEN A HEIGHT OF 2' AND 8'.

KLEINFELDER REVISED 30' WETLAND BUFFER PER CAD FILE RECEIVED FROM KLEINFELDER, INC. ON 8/6/18

PROPOSED PLANTING SHALL NOT BE INSTALLED WITHIN CRZ OF EXISTING VEGETATION

SOLAR ARRAY (TYP.) (SEE SHEET C2.0)

SEDIMENT BASIN BY OTHERS. SEE BLACKWELL ENGINEERING PLANS DATED 7/05/18

WATERBODY BUFFER ZONE ENCROACHMENT (TYP.)

BOST CREEK FLOODPLAIN

WATERBODY BUFFER ZONE (TYP.)

WATERBODY BUFFER ZONE ENCROACHMENT (TYP.) NO PLANTINGS SHALL BE INSTALLED WITHIN LIMITS OF BOST CREEK AND FLOODWAY

FENCE (TYP.) 100' TYP.

BUFFER ENCROACHMENT DOES NOT IMPACT COMPLIANCE OF EXISTING BUFFER. EXISTING LANDSCAPING IS USED TO MEET THE BUFFER REQUIREMENTS PER CONDITION #6. EXISTING BUFFER CONTAINS A MINIMUM OF (2) CANOPY TREES AND (15) UNDERSTORY SHRUBS PER 50 LINEAR FEET. REFERENCE PHOTO DOCUMENT PROVIDED BY OTHERS FOR AN EXISTING MATERIAL INVENTORY

SEED ALL DISTURBED AREAS WITHIN THE BUFFER PER TABLE - SHEET L2.2



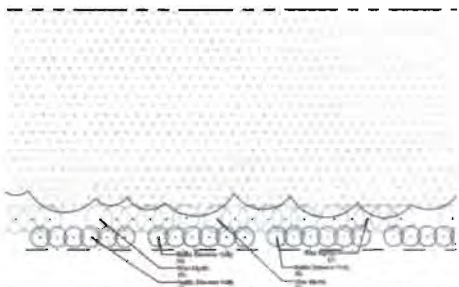
GRAPHIC SCALE IN FEET
0 100 200 400

LANDSCAPE REQUIREMENTS & CALCULATIONS

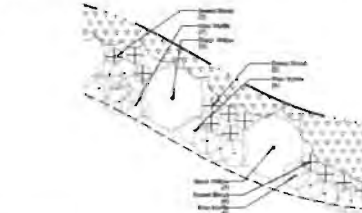
CABARRUS COUNTY DEVELOPMENT ORDINANCE				
AREA TO BE LANDSCAPED	CODE REQUIREMENT	AREA, LENGTH	TOTAL QUANTITY REQUIRED PER CODE WITH MINIMUM	TOTAL QUANTITY PROVIDED
(B1)	BUFFER B1 - E BUFFER B1 - F BUFFER B1 - G	1,080 194 185	(1000/50) * 15 = 375 SHRUBS (194/50) * 15 = 58 SHRUBS (185/50) * 15 = 55 SHRUBS	800/50 * 15 = 240 SHRUBS (194/50) * 15 = 58 SHRUBS (185/50) * 15 = 55 SHRUBS
(B4)	WATERBODY BUFFER ZONE ENCROACHMENT REVEGETATION PLAN PER CABARRUS COUNTY NOL AND WATER CONSERVATION DEPARTMENT (SEE SHEET L2.3)	2.43 AC	DAKE ROOF SEEDINGS SHALL BE PLANTED @ 10' X 10' IN STAGGERED ROWS @ 2' X 1' X 1' = 1,000 SEEDINGS	1,725 CORNUS FLORIDA SEEDS (10' X 10' X 1' = 100 SEEDS PER 10' X 10' X 1' AREA)
(B5)	30' BUFFER SHALL BE ESTABLISHED ALONG THE EDGE OF ANY DISTURBED WETLANDS IN THE EVENT THAT A BUFFER IS DISTURBED. ALL DISTURBED AREAS WITHIN THE BUFFER SHALL BE REVEGETATED WITH APPROPRIATE VEGETATION IMMEDIATELY	380 LF	(1000/100) * 2 = 20 TREES (380/100) * 2 = 8 TREES	(1000/100) * 2 = 20 TREES (380/100) * 2 = 8 TREES
(B6)	BUFFER B6 - E BUFFER B6 - K BUFFER B6 - L *BUFFER B6 - M CONTINUED FROM SHEET L1.2	874 628 662 643	(1000/150) * 2 = 133 TREES (874/150) * 2 = 117 TREES (628/150) * 2 = 84 TREES (662/150) * 2 = 88 TREES	(1000/150) * 2 = 133 TREES (874/150) * 2 = 117 TREES (628/150) * 2 = 84 TREES (662/150) * 2 = 88 TREES

LEGEND

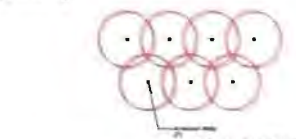
- (B1) EXISTING CANOPY TREES WITH SUPPLEMENTAL EVERGREEN SCREEN (SEE DETAIL 1 & 3 SHEET L2.0)
- (B2) CDO REQUIRED SUPPLEMENTAL BUFFER (SEE DETAIL 2 & 4 SHEET L2.0)
- (B3) SUPPLEMENTAL OR REPLACEMENT UNDERSTORY BUFFER (SEE DETAIL 1 & 3 SHEET L2.1)
- (B4) WATERBODY BUFFER ZONE ENCROACHMENT REVEGETATION PLAN (SEE SHEET L2.3)
- (B5) WETLAND REVEGETATION PLAN (SEE DETAIL 2 & 4 SHEET L2.1)
- (B6) ADJACENT PROPERTY LANDSCAPE (SEE SHEET L1.4)
- (B7) EXISTING VEGETATION COMPLIANT WITH CDO BUFFER REQUIREMENTS
- FIELD SURVEYED BUFFER ENCROACHMENT
- (B8) UNDERSTORY TREE BUFFER (SEE DETAIL 5 SHEET L2.1)



B1 BUFFER NOTE: PLANS FOR REFERENCE. SEE DETAILS 1&3, SHEET L2.0
SCALE: 1" = 30'-0"



B5 BUFFER NOTE: PLANS FOR REFERENCE. SEE DETAILS 2&4, SHEET L2.1
SCALE: 1" = 30'-0"



B8 BUFFER NOTE: PLANS FOR REFERENCE. SEE DETAILS 5, SHEET L2.1
SCALE: 1" = 30'-0"



ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL NCEQ, CABARRUS COUNTY AND/OR NCOT STANDARDS AND SPECIFICATIONS.

SURVEY NOTE:
EXISTING SITE INFORMATION SHOWN BASED ON SURVEY TITLED: ALTA/NSPS LAND TITLE SURVEY FOR RECURRENT ENERGY PROPERTY OF FIVE MTS L.L.C. & SUGENE F. BOST JR. US HRY 801 S., JOYNER ROAD & W. PLEASANT ROAD, CONCORD, NC 28025 DATED 4/6/18, PROVIDED BY PYRAMID LAND SURVEYING, P.O. BOX 11, DAVENPORT, NC 28036, PHONE (704) 892-4240.
EXISTING TOPOGRAPHIC INFORMATION SHOWN BASED ON CLIENT PROVIDED DRONE LIDAR SURVEY RECEIVED ON 01/19/2018, AS-BUILT INFORMATION, AND GIS CONTOURS.

EROSION CONTROL NOTE:
EROSION CONTROL MEASURES AND DESIGN ARE FOR REFERENCE ONLY. REFER TO NC 102 PROJECT LLC SOLAR FARM CONSTRUCTION DOCUMENTS PREPARED BY BLACKWELL ENGINEERING, DATED 07/05/2018.

Kimley»Horn

RECURRENT ENERGY

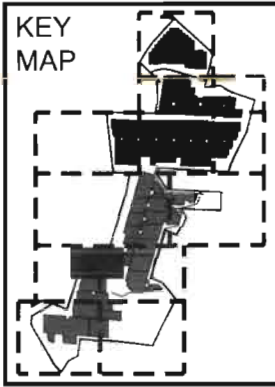


DATE	SCALE	AS SHOWN	DESIGNED BY	DRAWN BY	CHECKED BY
07/09/18	1" = 30'-0"	BPG	BPG	AWF	BPG

LANDSCAPE PLAN

NC 102 PROJECT LLC PREPARED FOR DEPCOM POWER

SHEET NUMBER L1.3



- PLANT SCHEDULE B1-G
- (28) NELLIE STEVENS HOLLY
 - (28) WAX MYRTLE

- PLANT SCHEDULE B8-M
- 71 (68) AMERICAN HOLLY Leyland Cypress

- PLANT SCHEDULE B8-L
- 84 (74) AMERICAN HOLLY Leyland Cypress

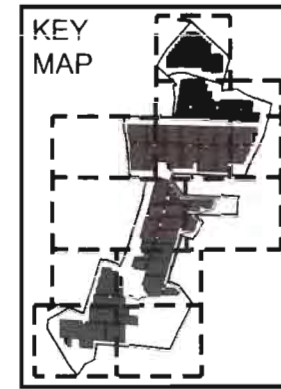
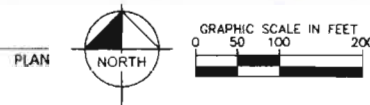
- PLANT SCHEDULE B8-L
- 84 (74) AMERICAN HOLLY Leyland Cypress

WATERBODY BUFFER
ZONE ENCROACHMENT
(TYP.)

NO PLANTING WITHIN
LIMITS OF THE
INTERMITTENT STREAM
BUFFER (TYP.)

WATER BODY BUFFER ZONE
SEE SHEET L1.32

1 ENLARGED LANDSCAPE LAYOUT PLAN
SCALE: 1" = 100'-0"



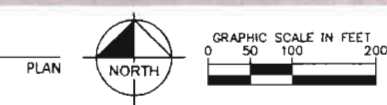
- PLANT SCHEDULE B8-J
- (130) AMERICAN HOLLY Leyland Cypress

- PLANT SCHEDULE B1-F
- (30) NELLIE STEVENS HOLLY
 - (30) WAX MYRTLE

- PLANT SCHEDULE B8-K
- (84) AMERICAN HOLLY Leyland Cypress

PROPOSED PLANTING
SHALL NOT
BE INSTALLED WITHIN
CRZ OF EXISTING
VEGETATION

2 ENLARGED LANDSCAPE LAYOUT PLAN
SCALE: 1" = 100'-0"



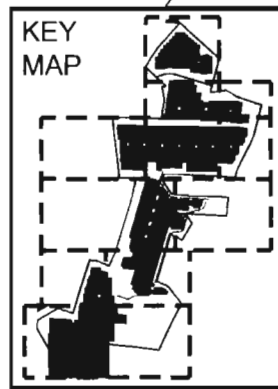
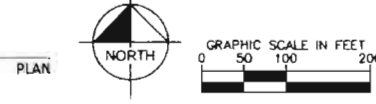
- (1) BLACK WILLOW
(10) SWEET SHRUB
(5) WAX MYRTLE
- (4) BLACK WILLOW
(33) SWEET SHRUB
(30) WAX MYRTLE
- (2) BLACK WILLOW
(18) SWEET SHRUB
(9) WAX MYRTLE
- 11 AMERICAN HOLLY
PROPOSED IN EXISTING
DRIVEWAY LOCATION
- PLANT SCHEDULE B5
- 8 (7) BLACK WILLOW
 - 62 (61) SWEET SHRUB
 - 49 (44) WAX MYRTLE

KLEINFELDER REVISED 30' WETLAND
BUFFER PER CAD FILE RECEIVED
FROM KLEINFELDER, INC. ON 9/6/18

BUFFER ENCROACHMENT DOES NOT IMPACT COMPLIANCE
OF EXISTING BUFFER. EXISTING LANDSCAPING IS USED TO
MEET THE BUFFER REQUIREMENTS PER CONDITION OF
APPROVAL #6. EXISTING BUFFER CONTAINS A MINIMUM OF (2)
CANOPY TREES AND (15) UNDERSTORY SHRUBS PER 50
LINEAR FEET. REFERENCE PHOTO DOCUMENT PROVIDED BY
OTHERS FOR AN EXISTING MATERIAL INVENTORY.

SEED ALL DISTURBED AREAS WITHIN THE BUFFER PER TABLE
- SHEET L2.2

3 ENLARGED LANDSCAPE LAYOUT PLAN
SCALE: 1" = 100'-0"



ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL NCDC, CABARRUS
COUNTY AND/OR NCDC STANDARDS AND SPECIFICATIONS.

SURVEY NOTE:

EXISTING SITE INFORMATION SHOWN BASED ON SURVEY TITLED: ALTA/NGPS
LAND TITLE SURVEY FOR RECURRENT ENERGY, PROPERTY OF FIVE M'S LLC,
6 EUGENE T. WOOD RD., LOT 100, JOYNER ROAD & MT. PLEASANT
ROAD, CONCORD, NC 28027, DATED 4/6/18, PROVIDED BY PYRAMID LAND
SURVEYING, P.O. BOX 11, DAVENPORT, NC 28038; PHONE (704) 892-4248.

EXISTING TOPOGRAPHIC INFORMATION SHOWN BASED ON CLIENT PROVIDED
DRONE LIDAR SURVEY RECEIVED ON 01/19/2018, AS-BUILT INFORMATION,
AND GIS CONTOURS.

EROSION CONTROL NOTE:

EROSION CONTROL MEASURES AND DESIGN ARE FOR REFERENCE ONLY. REFER
TO NC 103 PROJECT LLC SOLAR FARM CONSTRUCTION DOCUMENTS PREPARED
BY BLACKWELL ENGINEERING, DATED 07/05/2018.

NO.	REVISIONS	DATE
1	COUNTY SUBMITTAL	05/30/19
2	COUNTY SUBMITTAL	04/09/19
3	COUNTY SUBMITTAL	02/26/19
4	SITE VISIT COMMENTS	02/07/19
5	3RD COUNTY COMMENTS	11/26/18
6	CLIENT COMMENTS	10/05/18
7	CLIENT COMMENTS	10/04/18

Kimley-Horn

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WWW.KIMLEY-HORN.COM (PHONE: 919-333-4444)
431 EASTVILLE STREET, SUITE 300
RALEIGH, NC 27601

RECURRENT ENERGY

PHONE: 410-675-1500
3000 SAK ROAD, SUITE 300
WALNOT CREEK, CA 94597

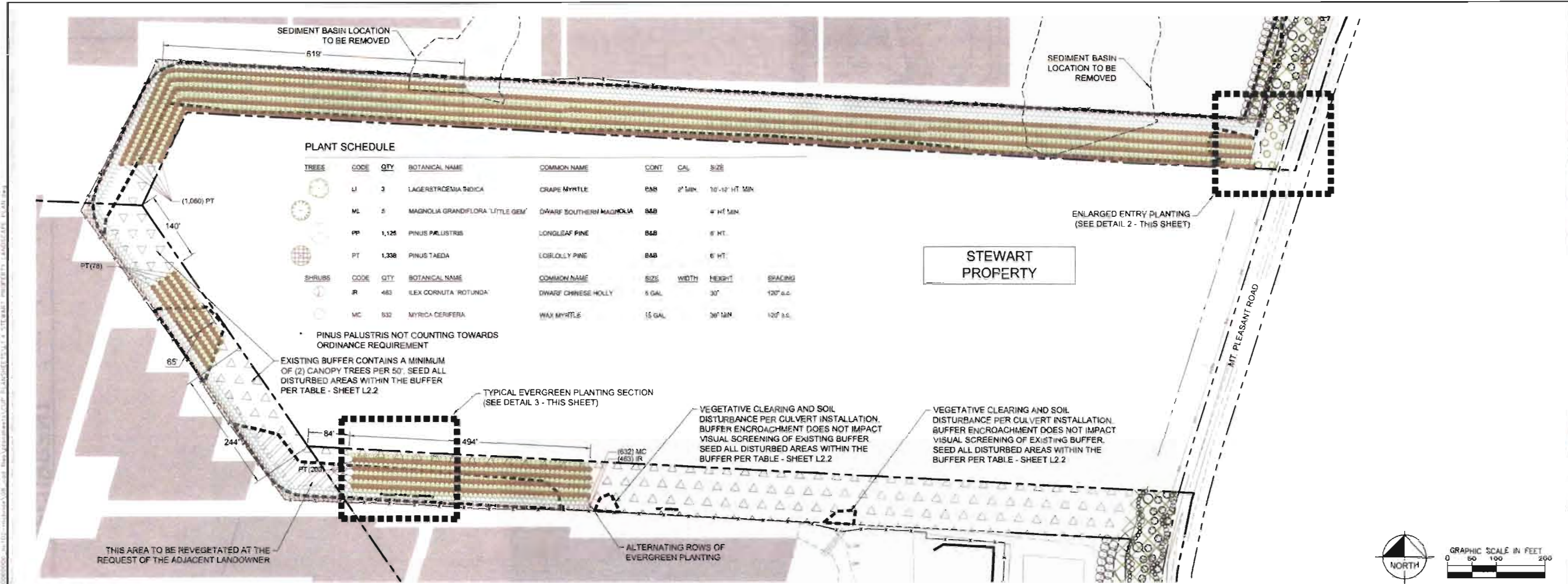


DATE	07/05/18
SCALE	AS SHOWN
DESIGNED BY	BPG
DRAWN BY	AWF
CHECKED BY	BPG

ENLARGED
LANDSCAPE
PLAN

NC 102
PROJECT LLC
PREPARED FOR
DEPCOM POWER

SHEET NUMBER
L1.31



PLANT SCHEDULE							
TREES	CODE	QTY	BOTANICAL NAME	COMMON NAME	CONT.	CAL.	S/ZE
LI	3		LAGERSTROEMIA INDICA	GRAPE MYRTLE	PAN	2" MIN.	10'-12' HT. MIN.
ML	5		MAGNOLIA GRANDIFLORA 'LITTLE GEM'	DWARF SOUTHERN MAGNOLIA	B&B		4" HT. MIN.
PP	1,125		PINUS PAULSTRIS	LONGLEAF PINE	B&B		6" HT.
PT	1,338		PINUS TAEDA	LOBLOLLY PINE	B&B		6" HT.
SHRUBS	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WIDTH	HEIGHT
IR	463		ILEX CORNUTA 'ROTUNDA'	DWARF CHINESE HOLLY	5 GAL.	30"	120" S.C.
MC	932		MYRTICA CERIFERA	WAX MYRTLE	15 GAL.	36" MIN.	120" S.C.

NO.	REVISIONS	DATE
1	05/20/19	COUNTY SUBMITTAL
2	04/09/19	COUNTY SUBMITTAL
3	02/20/19	COUNTY SUBMITTAL
4	02/07/19	COUNTY COMMENTS
5	02/07/19	COUNTY COMMENTS
6	11/26/18	COUNTY COMMENTS
7	10/05/18	COUNTY COMMENTS
8	10/04/18	COUNTY COMMENTS

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4400 KIMLEY-HORN DRIVE, SUITE 200
DURHAM, NC 27705

RECURRENT ENERGY
RECURRENT ENERGY, LLC
3000 GOLF ROAD, SUITE 300
WALTON, FL 32785

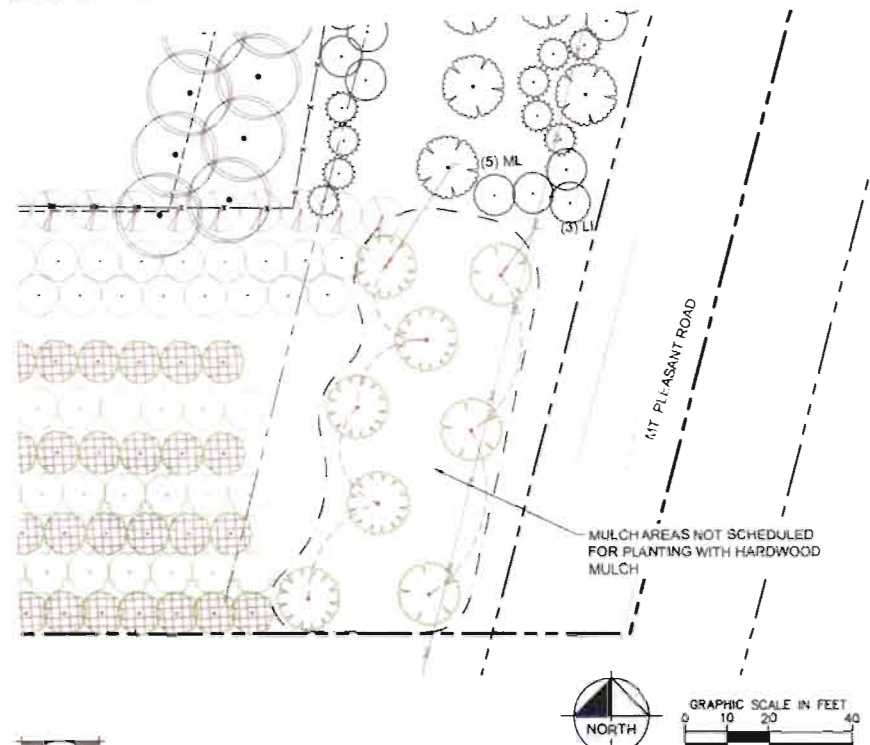


KHA PROJECT	DATE	DATE AS SHOWN	DESIGNED BY	DRAWN BY	CHECKED BY
101010101	07/09/19	07/09/19	BPG	AWF	BPG

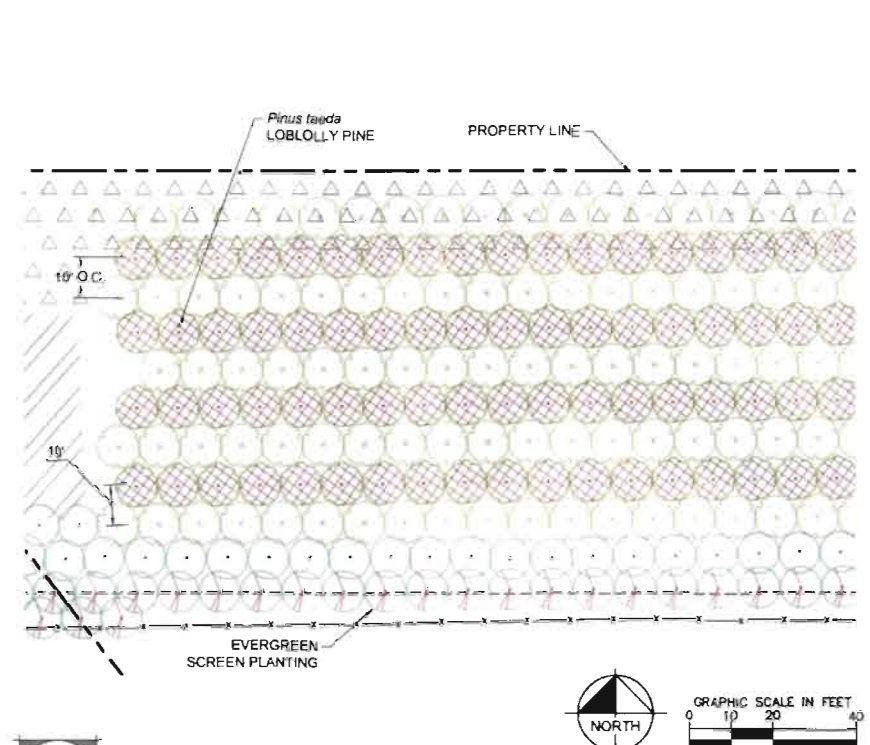
STEWART PROPERTY
LANDSCAPE PLAN

NC 102
PROJECT LLC
PREPARED FOR
DEPCOM POWER
SHEET NUMBER
L1.4

1 STEWART PROPERTY LANDSCAPE PLAN
SCALE: 1" = 100' - 0"



2 ENLARGED ENTRY PLANTING
SCALE: 1" = 20' - 0"

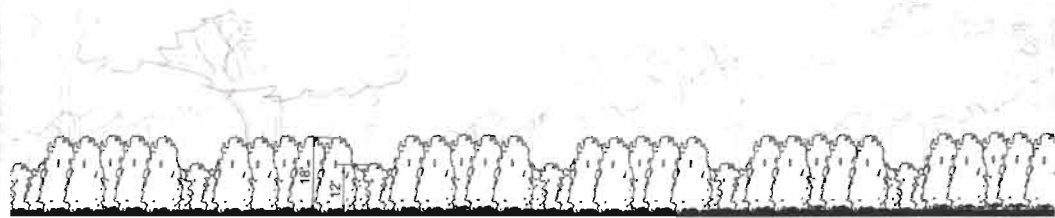


3 TYPICAL EVERGREEN PLANTING SECTION
SCALE: 1" = 20' - 0"

ALL CONSTRUCTION TO BE IN ACCORDANCE WITH ALL NCDCS, CABARRUS COUNTY AND/OR NCDOT STANDARDS AND SPECIFICATIONS.

SURVEY NOTE:
EXISTING SITE INFORMATION SHOWN BASED ON SURVEY TITLED: ALTA/NSPS LAND TITLE SURVEY FOR RECURRENT ENERGY, PROPERTY OF FIVE M'S LLC, & EUGENE T. BOST III, US HWY 601 S., JOYNER ROAD & M.T. PLEASANT ROAD, CONCORD, NC 28025 DATED, 4/6/18, PROVIDED BY PYRAMID LAND SURVEYING, P.O. BOX 11, DAVIDSON, NC 28036; PHONE (704) 892-4249.
EXISTING TOPOGRAPHIC INFORMATION SHOWN BASED ON CLIENT PROVIDED DRONE LIDAR SURVEY RECEIVED ON 07/19/2018. AS-BUILT INFORMATION, AND IRS CONTOURS.

EROSION CONTROL NOTE:
EROSION CONTROL MEASURES AND DESIGN ARE FOR REFERENCE ONLY. REFER TO NC 102 PROJECT LLC SOLAR FARM CONSTRUCTION DOCUMENTS PREPARED BY BLACKWELL ENGINEERING, DATED 07/05/2018.



1
L20

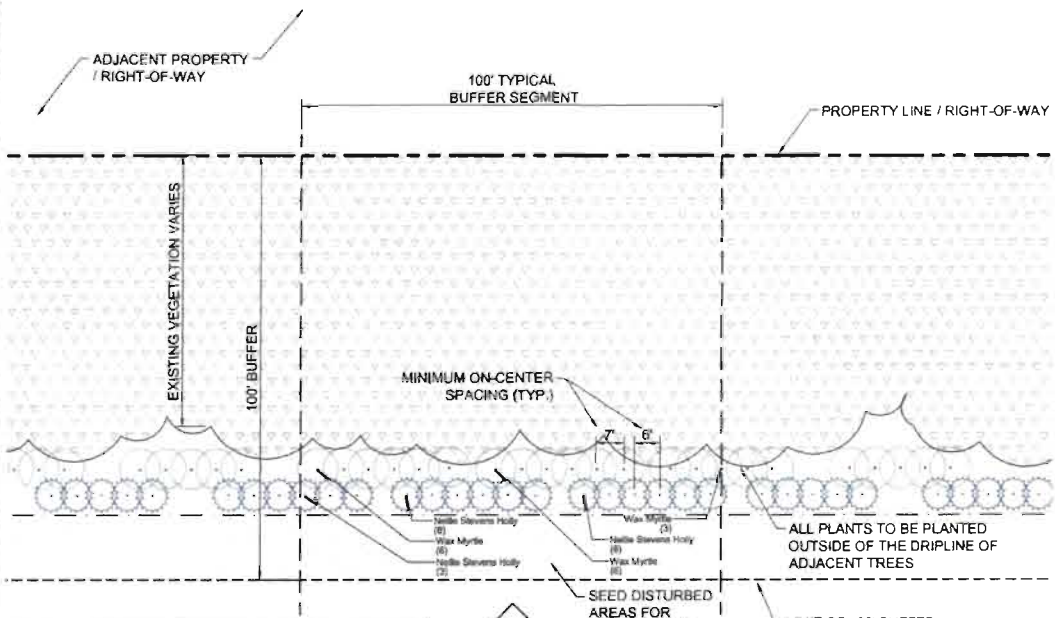
SUPPLEMENTAL EVERGREEN SCREENING (BUFFER B1)

SCALE: 1" = 20'-0"

ELEVATION

PLANT SCHEDULE SUPPLEMENTAL EVERGREEN SCREENING

SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WIDTH	HEIGHT	SPACING	REMARKS
	15	ILEX X 'NELLIE R STEVENS'	NELLIE STEVENS HOLLY	B&B		6' MIN.	96" o.c.	
	15	MYRICA CERIFERA	WAX MYRTLE	15 GAL		36" MIN.	120" o.c.	



NOTES:
1. SAMPLE 100' BUFFER SEGMENT IN THIS DETAIL IS SHOWN FOR DESIGN INTENT AND GRAPHIC CLARITY. COUNTY REQUIREMENTS ARE CALCULATED IN 50' SEGMENTS.

3
L20

SUPPLEMENTAL EVERGREEN SCREENING (BUFFER B1)

SCALE: 1" = 20'-0"

PLAN









2
L20

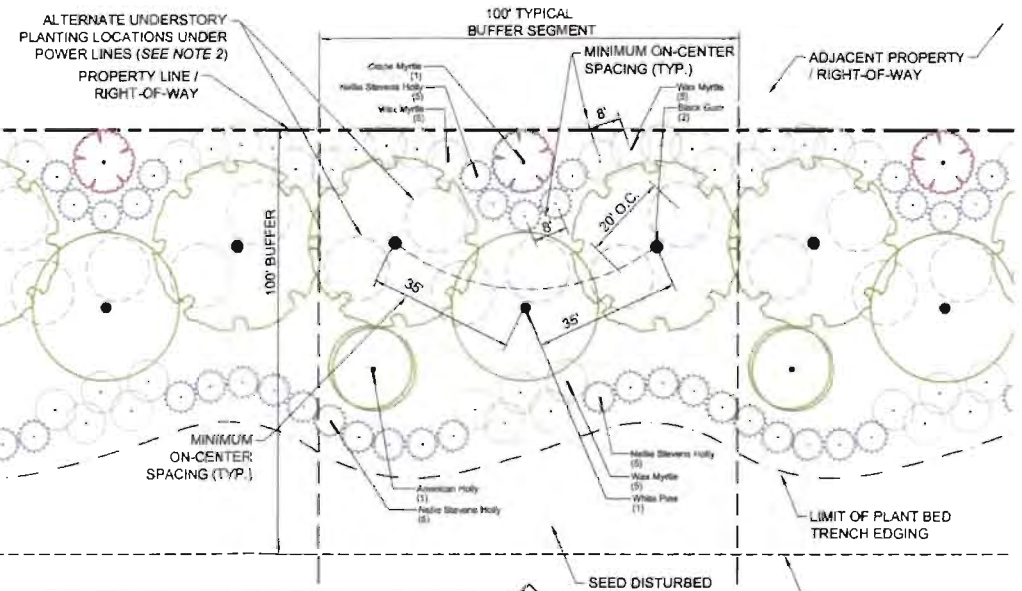
CDO REQUIRED SUPPLEMENTAL BUFFER (BUFFER B2)

SCALE: 1" = 20'-0"

ELEVATION

PLANT SCHEDULE SUPPLEMENTAL CDO REQUIRED BUFFER

TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE	
	1	ILEX OPACA	AMERICAN HOLLY	B&B	2" MIN.	6' HT. MIN.	
	1	LAGERSTROEMIA INDICA	CRAPE MYRTLE	B&B	2" MIN.	10'-12' HT. MIN.	
	2	NYSSA SYLVATICA	BLACK GUM	B&B	2 1/2" MIN.	12'-14' HT. MIN.	
	1	PINUS STROBUS	WHITE PINE	B&B	2 1/2" MIN.	12'-14' HT. MIN.	
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WIDTH	HEIGHT	SPACING
	15	ILEX X 'NELLIE R STEVENS'	NELLIE STEVENS HOLLY	B&B		6' MIN.	96" o.c.
	15	MYRICA CERIFERA	WAX MYRTLE	15 GAL		36" MIN.	120" o.c.



NOTES:
1. SAMPLE 100' BUFFER SEGMENT IN THIS DETAIL IS SHOWN FOR DESIGN INTENT AND GRAPHIC CLARITY. COUNTY REQUIREMENTS ARE CALCULATED IN 50' SEGMENTS.
2. WHERE OVERHEAD POWER LINES EXIST, UNDERSTORY TREES TO BE SUBSTITUTED IN PLACE OF CANOPY TREES AT A RATE OF (2) UNDERSTORY TREES PER CANOPY TREE. *Lagerstroemia indica*, *Crape Myrtle*, SHALL BE USED IN THIS SUBSTITUTION

4
L20

CDO REQUIRED SUPPLEMENTAL BUFFER (BUFFER B2)

SCALE: 1" = 20'-0"

PLAN

Kimley»Horn

RECURRENT ENERGY

NC 102 PROJECT LLC
PREPARED FOR
DEPCOM POWER

SHEET NUMBER
L2.0





05/30/19	COUNTY SUBMITTAL	05/30/19
04/09/19	COUNTY SUBMITTAL	04/09/19
02/20/19	SITE VISIT COMMENTS	02/20/19
02/07/19	SITE VISIT COMMENTS	02/07/19
11/26/18	3RD COUNTY COMMENTS	11/26/18
10/05/18	CLIENT COMMENTS	10/05/18
10/04/18	CLIENT COMMENTS	10/04/18
No.	REVISIONS	DATE

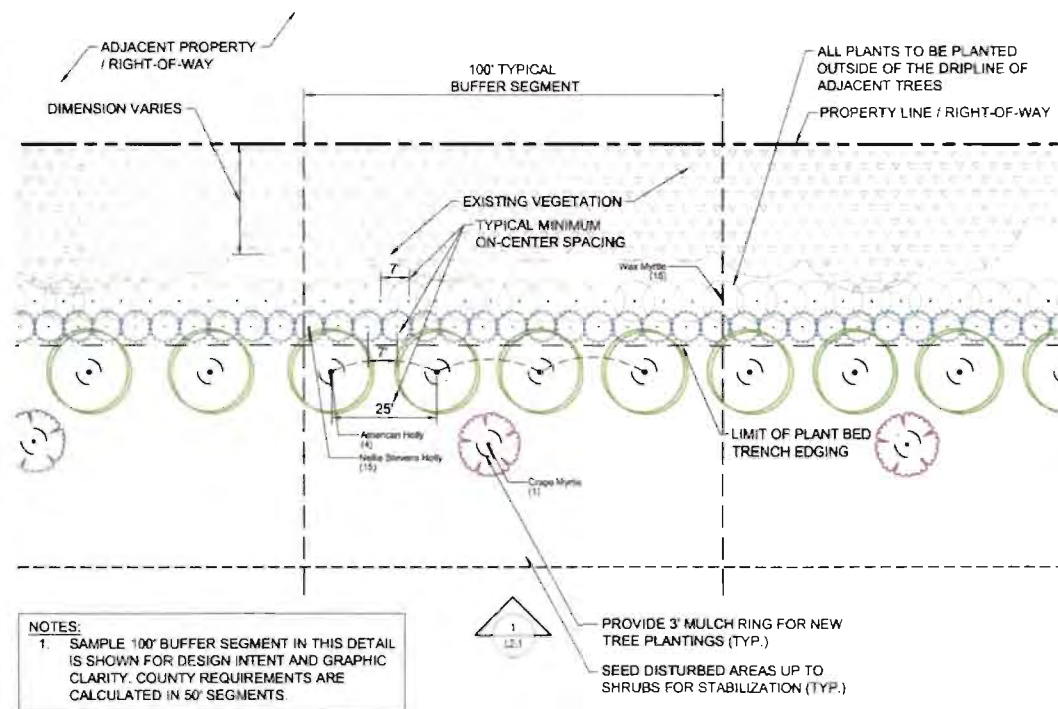
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421 LAURELLE STREET, SUITE 300
WALTON, NC 27887



1 L21 SUPPLEMENTAL OR REPLACEMENT UNDERSTORY BUFFER (BUFFER B3)
SCALE: 1" = 20'-0" ELEVATION

PLANT SCHEDULE SUPPLEMENTAL OR REPLACEMENT UNDERSTORY BUFFER

TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE	
	4	ILEX OPACA	AMERICAN HOLLY	B&B	2" MIN	6' HT MIN.	
	1	LAGERSTROEMIA INDICA	CRAPE MYRTLE	B&B	2" MIN.	10'-12' HT. MIN.	
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WIDTH	HEIGHT	SPACING
	15	ILEX X 'NELLIE R STEVENS'	NELLIE STEVENS HOLLY	B&B		6" MIN.	96" o.c.
	15	MYRICA CERIFERA	WAX MYRTLE	15 GAL		36" MIN.	120" o.c.



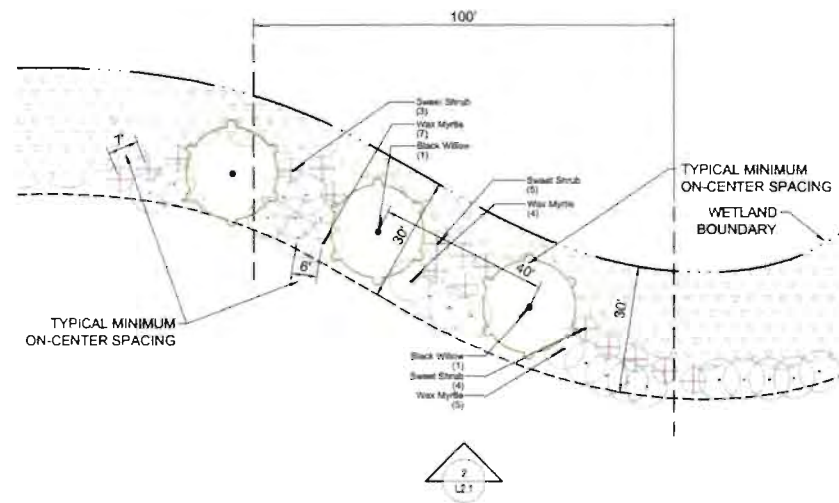
3 L21 SUPPLEMENTAL OR REPLACEMENT UNDERSTORY BUFFER (BUFFER B3)
SCALE: 1" = 20'-0" PLAN



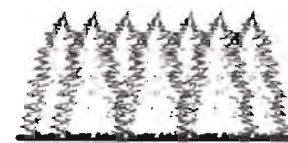
2 L21 WETLAND REVEGETATION PLAN (BUFFER B5)
SCALE: 1" = 20'-0" ELEVATION

PLANT SCHEDULE WETLAND REVEGETATION PLAN

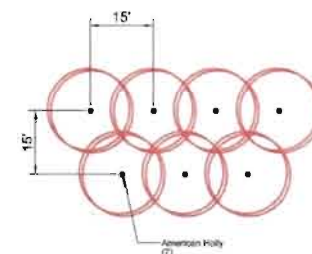
TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	SIZE	
	2	SALIX NIGRA	BLACK WILLOW	B&B	2 1/2" MIN.	12 -14' HT. MIN.	
SHRUBS	QTY	BOTANICAL NAME	COMMON NAME	SIZE	WIDTH	HEIGHT	SPACING
	12	CALYCANTHUS FLORIDUS	SWEET SHRUB	10 GAL		36" MIN.	72" o.c.
	16	MYRICA CERIFERA	WAX MYRTLE	15 GAL		36" MIN.	120" o.c.



4 L21 WETLAND REVEGETATION PLAN (BUFFER B5)
SCALE: 1" = 20'-0" PLAN



ELEVATION



- NOTES:
- AMERICAN HOLLY, OR OTHER APPROVED CABARRUS COUNTY UNDERSTORY TREE EQUIVALENT, ARE TO BE 8-10' HT. AT INSTALL.
 - UNDERSTORY TREES TO BE SPACED 15' ON-CENTER IN A DOUBLE STAGGERED ROW (SEE LAYOUT ABOVE).
 - UNDERSTORY TREES SHALL NOT BE PLANTED IN A WAY THAT CONFLICTS WITH COUNTY REQUIRED BUFFERS OR CRITICAL ROOT ZONE OF EXISTING TREES. UNDERSTORY TREES SHOULD NOT BE PLANTED WITHIN PUBLIC RIGHT-OF-WAY OR ANY ASSOCIATED SIGHT DISTANCE TRIANGLES.

5 L21 UNDERSTORY TREE BUFFER (BUFFER B8)
SCALE: 1" = 20'-0"

05/10/19
COUNTY SUBMITTAL

04/09/19
COUNTY SUBMITTAL

02/20/19
COUNTY COMMENTS

02/07/19
SITE VISIT COMMENTS

11/26/18
3RD COUNTY COMMENTS

10/05/18
CLIENT COMMENTS

10/04/18
CLIENT COMMENTS

No.

REVISIONS

DATE

Kimley»Horn

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421 EASTTOWN STREET, SUITE 200
RALEIGH, NC 27601

RECURRENT ENERGY

PHASE: 415-615-1500
2000 CHAM ROAD, SUITE 200
WALTON, ORIGIN, CA 94597

BRANDON GUY

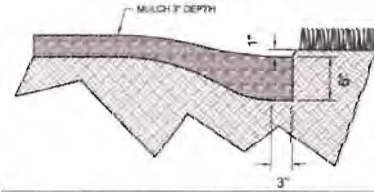
09.11.19

DESIGNED BY BPG
DRAWN BY AWF
CHECKED BY BPG

LANDSCAPE DETAILS

NC 102 PROJECT LLC
PREPARED FOR DEPCOM POWER
CABARRUS COUNTY

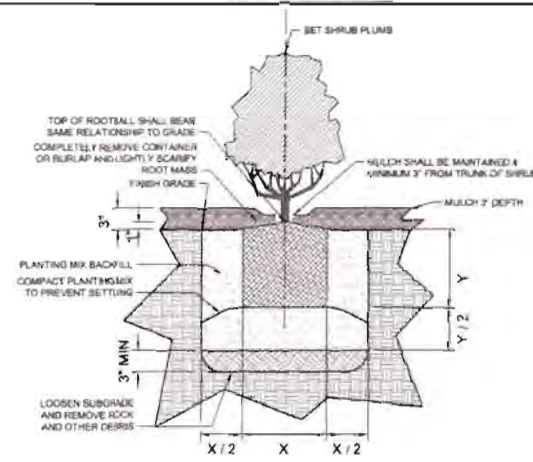
SHEET NUMBER
L2.1



- PLANTING BED TRENCH EDGING NOTE:
1. TRENCH EDGE SHALL BE LOCATED AT THE EDGE OF PLANTING BED AND ALL TURF OR NATIVE GRASS AREAS.
 2. MAINTAIN POSITIVE DRAINAGE IN ALL PLANTING BEDS
 3. SEE GENERAL LANDSCAPE NOTES FOR TYPE OF MULCH

1
L2.2 PLANT BED TRENCH EDGING
SCALE: NTS

SECTION

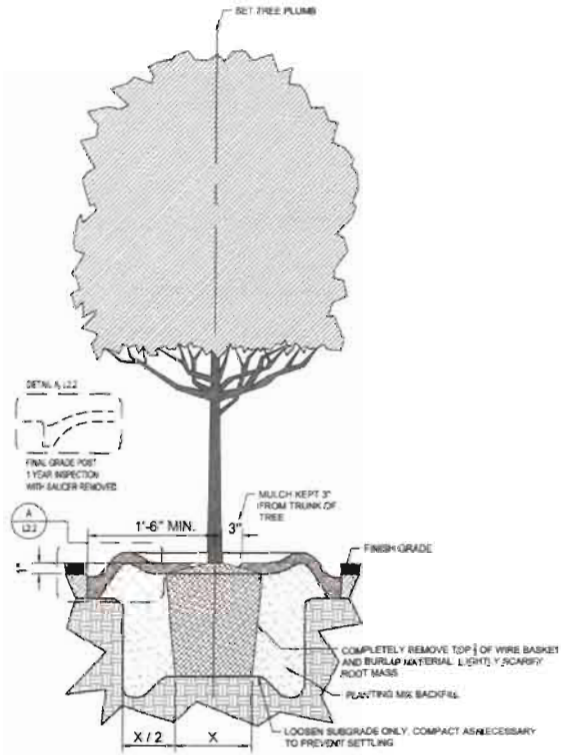


NOTES

1. ALL PLANT MATERIAL PRICING SHALL INCLUDE MULCH, BED PREPARATION, AND STAKING.
2. ALL PLANTING BEDS SHALL RECEIVE 3" (THREE INCHES) OF MULCH.
MULCH TYPE FOR PROJECT: DOUBLE GROUND HARDWOOD MULCH OR CURRENT COUNTY STANDARD
3. PLANT MATERIAL SPACING SHOWN ON LANDSCAPE PLANS SHALL OVERRIDE TYPICAL PLANT SPACING INDICATED ON PLANT SCHEDULE. LANDSCAPE CONTRACTOR RESPONSIBLE FOR VERIFYING ALL PLANT SPACING AND MAKING MINOR FIELD ADJUSTMENTS DUE TO UTILITY CONFLICTS.

2
L2.2 TYPICAL SHRUB PLANTING
SCALE: NTS

SECTION

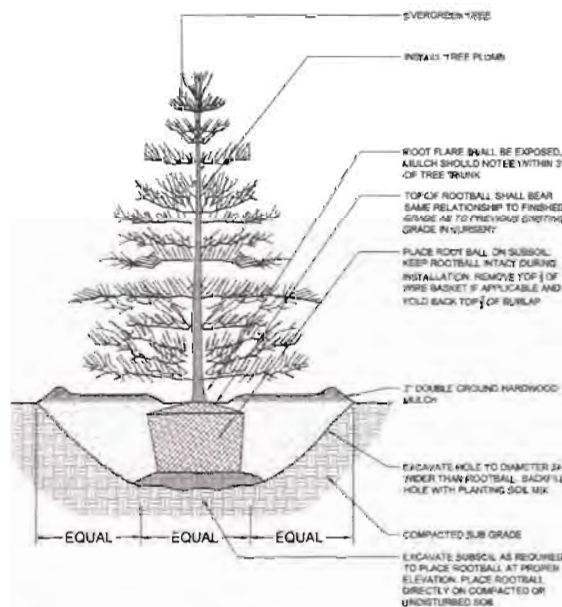


TREE PLANTING NOTES:

1. SET TREE MIN. 3" ABOVE SURROUNDING FINISH GRADE, MEASURED AT BASE OF TRUNK.
2. MAINTAIN 3" RADIUS CLEAR AREA SURROUNDING WOODY TRUNK FOR MULCH

3
L2.2 TYPICAL TREE PLANTING
SCALE: NTS

SECTION



NOTE:

1. ROOT SYSTEM SHALL BE WRAPPED AS SOLID UNITS WITH BALLS OF EARTH FIRMLY INTACT USING UNTREATED 8 OUNCE NATURAL BIODEGRADABLE FABRIC BURLAP, FIRMLY LACED WITH STOUT NATURAL BIODEGRADABLE CORD OR TWINE.

4
L2.2 EVERGREEN SHRUB PLANTING
SCALE: NTS

SECTION

5
L2.2 PERMANENT SEEDING SCHEDULE

SEEDING SCHEDULE			
SEEDING PERIOD	SEEDING TYPE	APPLICATION RATE (LBS./ACRE)	
AUGUST 15 - NOVEMBER 01	TALL FESCUE	300	
NOVEMBER 01 - MARCH 01	TALL FESCUE AND ARIZONA RYE	300	
MARCH 01 - APRIL 15	TALL FESCUE	300	
APRIL 15 - JUNE 01	MULLED COMMON BERMUDAGRASS	25	
JUNE 01 - AUGUST 15	TALL FESCUE AND ARIZONA RYE OR BERMUDAGRASS	30	
MARCH 01 - JUNE 01	GRASS SET TO 3"		
MARCH 01 - APRIL 15	GRASS LOPPED (3" DEBRIS)	50	
MARCH 01 - APRIL 15	TALL FESCUE OR BERMUDAGRASS OR MULLED COMMON BERMUDAGRASS	125	
MARCH 01 - JUNE 01	TALL FESCUE AND ARIZONA RYE OR BERMUDAGRASS	125	
JUNE 01 - SEPTEMBER 01	BERMUDAGRASS (DEBRIS) AND TALL FESCUE OR	75	
SEPTEMBER 01 - MARCH 01	TALL FESCUE OR	125	
NOVEMBER 01 - MARCH 01	ARIZONA RYE	25	

*TEMPORARY - BASED ACCORDING TO OFFICIAL SEASON FOR PERMANENT PLANTING. SET TO 3" OR TEMPORARY COVER IS 1" SHOW EACH 12" IN HEIGHT BEFORE PLANTING. OTHERWISE, PLANTING MAY BE BASED ON OFFICIAL SEASON FOR PERMANENT PLANTING. (SEE PLANTING SCHEDULE FOR ADDITIONAL INFORMATION CONCERNING OTHER PLANTING METHODS FOR VARIATION OF COVER) (LOCAL - SEE HOME WEBSITE FOR ADDITIONAL INFORMATION ON LOCAL PLANTING METHODS) (OTHER SEEDING RATE USES PLANTING AND AVERAGE)

GROUND COVER - WHENEVER LAND DETERMINING NECESSITY OF UNDERLAY ON A TRACT COVERING MORE THAN ONE (1) ACRE, A GROUND COVER SUFFICIENT TO RESTRAIN EROSION MUST BE PLANTED OR PROVIDED WITHIN 15 DAYS OF THE CALENDAR DATE.

GRASS, SLOPE AND FILL - WITHIN 15 WORKING DAYS OF 30 CALENDAR DAYS OF COMPLETION OF ANY PHASE OF GRADING, SLOPE PROTECTION SHALL BE PLANTED OR PROVIDED WITHIN 15 WORKING DAYS OF COMPLETION OF ANY PHASE OF GRADING.

GENERAL LANDSCAPE NOTES:

1. ALL PLANTS MUST BE HEALTHY, VIGOROUS MATERIAL, FREE OF PESTS AND DISEASE.
2. ALL PLANTS MUST BE CONTAINER GROWN OR BALL AND BURLAP AS INDICATED IN THE PLANT SCHEDULE.
3. ALL TREES MUST HAVE A STRAIGHT TRUNK AND BE FULL HEADED AND MEET ALL REQUIREMENTS SPECIFIED IN THE PLANT SCHEDULE.
4. ANY SHADE TREES LOCATED ADJACENT TO VEHICLE SIGHT TRIANGLES SHALL BE LIMBED MIN. 8' (MEASURED FROM ADJACENT PROJECTED CURB/EDGE-OF-PAVEMENT LINE ELEVATION) PER ANSI Z30.1 STANDARDS FOR HEIGHT OF BRANCHING - STREET TREES.
5. ANY PLANT MATERIAL WHICH DIES, TURNS BROWN, OR DEFOOLIATES (PRIOR TO COMPLETED INSTALLATION OF ALL PLANT MATERIAL) SHALL BE PROMPTLY REMOVED FROM THE SITE AND REPLACED WITH MATERIAL OF THE SAME SPECIES, QUANTITY, AND SIZE MEETING ALL PLANT LIST SPECIFICATIONS.
6. STANDARDS SET FORTH IN "AMERICAN STANDARD FOR NURSERY STOCK" REPRESENT GUIDELINE SPECIFICATIONS ONLY AND SHALL CONSTITUTE MINIMUM QUALITY REQUIREMENTS FOR PLANT MATERIAL.
7. ALL SHRUB AND TREE PLANTING BEDS, AND TREE RINGS, ARE TO BE COMPLETELY COVERED WITH DOUBLE GROUND HARDWOOD MULCH TO A MINIMUM DEPTH OF THREE (3) INCHES.
8. LOCATIONS OF EXISTING BURIED UTILITY LINES SHOWN WITHIN THE PLANS ARE BASED UPON BEST AVAILABLE INFORMATION AND ARE TO BE CONSIDERED APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATIONS OF UTILITY LINES AND ADJACENT TO THE WORK AREA. THE CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF ALL UTILITY LINES DURING THE CONSTRUCTION PERIOD.
9. SAFE, CLEARLY MARKED PEDESTRIAN AND VEHICULAR ACCESS TO ALL ADJACENT PROPERTIES MUST BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.
10. ALL PLANT MATERIAL QUANTITIES ARE CALCULATED ACCORDING TO LINEAR FEET OF FRONTAGE REQUIRED FOR SCREENING BASED UPON FIELD LOCATED VEGETATION LIMITS. ACTUAL NUMBERS MAY VARY BASED ON DIFFERENT SITE CONDITIONS. FULL PERIMETER IS TO MEET REQUIRED SCREENING PARAMETERS. IF A DISCREPANCY IS FOUND, CONTRACTOR SHALL CONTACT THE LANDSCAPE ARCHITECT FOR CLARIFICATION.
11. THE TOP OF ALL SHRUB ROOT BALLS SHALL BEAR THE SAME RELATIONSHIP TO FINISHED GRADE, AS BORN TO PREVIOUS GRADE AND GROWING CONDITIONS. ALL TREES SHALL BE PLANTED MINIMUM 3" ABOVE SURROUNDING FINISH GRADE, MEASURED AT BASE OF TRUNK.
12. ALL ROOT BALLS REMOVED FROM CONTAINERS SHALL BE SCARIFIED PRIOR TO BACKFILLING.
13. ALL STRAPPING AND TOP 20% OF WIRE BASKET MUST BE CUT AWAY AND REMOVED FROM ROOT BALL PRIOR TO BACKFILLING PLANTING PIT. REMOVE TOP 1/3 OF THE BURLAP FROM ROOT BALL.
14. FOR NEW PLANTING AREAS: REMOVE ALL HAY/STRAW, GRAVEL, SUB-BASE AND CONSTRUCTION DEBRIS. REMOVE COMPACTED SOIL, AND ADD 24" NEW TOPSOIL OR UNCOMPACT AND AMEND THE TOP 24" OF EXISTING SOIL, TO MEET TOPSOIL PLANTING MIX STANDARDS FOR TREES.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING TREES AND SHRUBS THAT WILL MEET BOTH MINIMUM SIZE AND SPACING FOR TREE AND ZONING ORDINANCE COMPLIANCE. FAILURE TO INSTALL PLANT MATERIAL PER THIS PLAN WILL JEOPARDIZE ISSUANCE OF FINAL PROJECT ACCEPTANCE. CONTRACTOR SHALL BE RESPONSIBLE FOR SCHEDULING INSPECTIONS OF PLANT MATERIAL.
16. CONTRACTOR SHALL MAINTAIN LANDSCAPING FOR AT LEAST 30 DAYS AFTER ALL PLANTS HAVE BEEN INSTALLED, AND 90 DAYS AFTER SEEDING, OR AS LONG AS IS NECESSARY TO ESTABLISH UNIFORM STAND OF THE SPECIFIED GRASSES OR UNTIL SUBSTANTIAL COMPLETION OF THE PROJECT, OR UNTIL ACCEPTANCE OF THE LIVING AND SHRUBS, WHICHEVER IS LATER.
17. NO PLANT SUBSTITUTIONS SHALL BE MADE WITHOUT WRITTEN AUTHORIZATION FROM THE LANDSCAPE ARCHITECT. ALL PLANT MATERIAL SHALL MEET THE CASABRUS COUNTY MINIMUM ORDINANCE STANDARD FOR PLANT SIZES.
18. NONE OF THE FOLLOWING SHALL OCCUR WITHIN THE ROOT ZONE OF AN EXISTING TREE WITHOUT PERMISSION OF THE LANDSCAPE ARCHITECT: STAGING OR STORAGE OF CONSTRUCTION MATERIALS, EQUIPMENT, SOIL OR DEBRIS, TRENCHING OR DISPOSAL OF ANY LIQUIDS.

PLANT SCHEDULE

TREES	COMMON NAME	CONT.	CAL.	SIZE	REMARKS
LEX ORNATA	COMMON LAUREL	BAW	2' MIN	8" HT. MIN.	
LAGERSTROEMIA WEDD.	GRAPE HYDRATE	BAW	2' MIN	10-12" HT. MIN.	
NYSSA SYLVATICA	BLACK OAK	BAW	2' MIN	12-14" HT. MIN.	
FRAXINUS VIRGINICA	WHITE PINE	BAW	2' MIN	12-14" HT. MIN.	
SALIX NIGRA	BLACK WILLOW	BAW	2' MIN	12-14" HT. MIN.	
SHRUBS					
	COMMON NAME	SIZE	WIDTH	HEIGHT	SPACING
CALYCANTHUS FLORIDUS	SWEETSHRUB	10 GAL.	4' MIN.	4' MIN.	SEE PLAN
ILEX X. HENRI R. STEVENS	HELLIE STEVENS HOLLY	8 & 8	8' MIN.	8' MIN.	SEE PLAN
MYRTUS QUERCIFOLIA	WAX MYRTLE	15 GAL.	30' MIN.	30' MIN.	SEE PLAN

06/20/23
COUNTY SUBMITTAL

06/20/23
COUNTY SUBMITTAL

02/20/24
COUNTY COMMENTS

02/20/24
COUNTY COMMENTS

11/26/24
CLIENT COMMENTS

11/26/24
CLIENT COMMENTS

10/05/24
CLIENT COMMENTS

10/05/24
CLIENT COMMENTS

10/04/24
REVISIONS

DATE

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WALNUT CREEK, CA 94597

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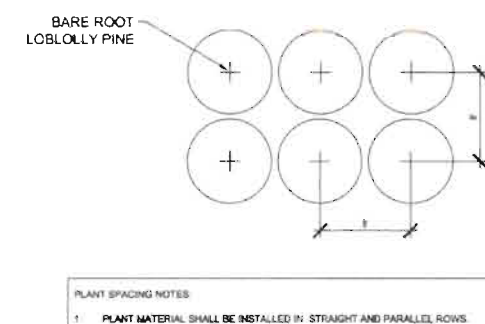
BRANDON OUT

LANDSCAPE DETAILS

NC 102
PROJECT LLC
PREPARED FOR
DEPCOM POWER

CASABRUS COUNTY

SHEET NUMBER
L2.2

[illegible]

TREE AND SHRUB ESTABLISHMENT SPECIFICATIONS

CABARRUS COUNTY SOIL AND WATER CONSERVATION DEPARTMENT

342-B Short-Term Seeding Specification Guide

When temporary vegetation is desirable to minimize erosion and pollution and permanent vegetation cannot be established due to season of the year, and where a temporary seeding is needed to control erosion and water pollution prior to the establishment of seeded grade or permanent vegetation. The temporary measures should be coordinated with the permanent erosion control measures planned, to assure economical and effective control.

- 1. Site Preparation**
 - Excessive water runoff must be controlled by planning and installed needed erosion control practices, such as ditch drains, ditches, dikes, diversion, contouring, riprap, sediment basins or other erosion control methods.
 - Grade where practical and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application and anchoring.
- 2. Materials**
 - Lime and fertilizer treatments specified will be affected by site conditions, length of time short-term seedlings are expected to be on the site, and the stated treatment to follow.
 - If seeds are reasonably uniform, lime and fertilizer according to soil test recommendations. Otherwise, apply 100 pounds of ground limestone and fertilizer per 1,000 sq. ft. or 5 tons per acre and every 12 to 18 months or 10-15 lb. of similar fertilizer per 1,000 sq. ft. or 500-700 pounds per acre. On some sites, seeding may be done without liming or fertilizing. Nitrogen top dressing may be applied after grass is up if needed for vigorous growth. Lime and fertilizer should be spread uniformly over the area to be planted.
 - Where a permanent seeding is to follow the temporary cover, optimum land preparation should be done. When further grading is to be done before the permanent seeding or where site conditions are favorable, minimal preparation may be satisfactory for establishing temporary cover. For optimum results, work lime and fertilizer into the soil to a depth of 3-4 inches, using chain hoes, rock blower equipment or other suitable equipment. On sloping land, the final tillage operation should be on the general contour. The adequacy of minimum preparation is dependent upon site conditions. In general, if the soil surface is such that the seeds of plants with high seeding vigor can be placed so as to remain in contact with moist soil, no preparation is required.

<u>Late Winter-Spring</u>	<u>Per 1,000 Sq. Ft.</u>	<u>Per Acre</u>
Buckwheat	3 bu.	80 bu.
Oats	2 bu.	5 bu.
Rye	3 bu.	2-3 bu.
Ryegrass	1 bu.	30-40 bu.
Grass	1 bu.	1 bu.
---Ryegrass	1-2 bu.	20 bu.
Clay and	1 bu.	1 bu.
Kansan Levees	1/2 bu.	20 bu.

<u>Summer</u>	<u>Per 1,000 Sq. Ft.</u>	<u>Per Acre</u>
Grass	1 bu.	3-4 bu.
---Rye	1 bu.	20-25 bu.
Wheat	2 bu.	2-3 bu.

<u>Late Summer/Early Winter</u>	<u>Per 1,000 Sq. Ft.</u>	<u>Per Acre</u>
Rye	3 bu.	2-3 bu.
Ryegrass	1 bu.	30-40 bu.
Clay (Before Oct. 1)	2 bu.	1 bu.
Barley (Before Oct. 1)	1 bu.	2-3 bu.
Wheat (After Oct. 1)	3 bu.	1 bu.
Rye and Ryegrass mixture	1 bu.	20-25 bu.
Little barley	1 bu.	75-80 bu.

NOTE: All seed used in contracts shall have been tested not more than six (6) months prior to date of seeding. The specifications shall state the acceptable percent purity, germination and number of noxious weed seed per pound.

IV. Mulching (See CPS 844 Mulching for additional information)

Mulching should usually be applied to reduce damage from water run-off and improve moisture conditions for seedlings. Temporary vegetation can in some cases be satisfactorily established without the use of mulch. The use of mulch is a judgment decision based on time of seeding and conditions of individual sites.

V. Mulching Materials

- A. Dry untopped, unweathered small grain straw or hay free of seeds of competing plants – Sprinkled at the rate of 1 to 2 tons per acre, depending upon the site and season. Evenly spread mulch over the area by hand or blower-type spreading equipment. Apply much so that about 25% of the ground surface is visible.
- B. Local materials such as burlap and pine boughs – Cover entire area, secure in place if blowing water is involved.
- C. Barnyard manure and bedding – Apply uniformly so that about 25% of the ground surface is visible. Do not apply within 50 feet of surface waters.
- D. Jute matting may be used in the place of mulch or sod and has the strength to withstand waterflow. It is an accepted practice to sow half the seed before placing the matting. Save the remaining half after the matting is laid. See the manufacturer's specifications for handling.
- E. Wood fiber (secondary) – Available as much material to be blown on after seeding or as a matting to be placed on steep slopes, waterways, etc. See the manufacturer's specifications for matting.
- F. Wood cellulose fiber mulch is mixed with seed, fertilizer, and water. The resulting slurry is sprayed on with hydraulic seeding equipment. Use at the rate of 500 lbs. per acre where straw or hay is to be applied. The rate of 1,000 to 1,500 lbs. per acre without other mulch materials. Applied in a slurry, wood cellulose fiber mulch is self-anchoring.
- G. Other commercial products, as fiberglass shreds or hammer milled hardwood bark and various kinds of nettings, are available. Manufacturer's directions should be followed for applying and securing in place.

VI. Mulch Anchoring Methods

Anchor mulch immediately after placement to minimize loss by wind and water. Consider size of area, type of site, and cost and select one of the following:

* If planting in summer, browntop millet should be used. **NOTE:** Annual Ryegrass shall not be part of any mixture used for seeding and stabilization.

- A. Much anchoring soil will aerify if left (notified disks that punch and anchor much material into the soil. A regular firm disk weighted and set nearly shallowly may be substituted but will not perform as well as a mulch anchoring tool. The disk should not be sharp enough to cut up the mulch).
- B. The soil should be moist, free of stones or rocks, and loose enough to permit penetration to a depth of 3 inches. Operate on the downwind where practical.
- C. Mulch settings – Stake depth will vary. Jaw, crank, passer or wire settings to the soil surface according to manufacturer's specifications. These settings are usually in rows 3 to 4 feet wide and up to 300 feet long.
- D. Twig and twine – Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a cross-cross within 4 square paces. Secure here instead each peg with twine or more round twine. Rows and stakes may also be used to secure brush in place.
- E. 28" – With a square pointed spade, cut mulch into the surface soil in contour rows 18 inches apart.
- F. Apply mulch downwind – Asphalt sprayed uniformly on the mulch as it is scattered from the blower is more effective than applied as a separate operation. Apply so snow free surface exposures. Rates of application will vary with conditions. The higher the grade number assigned each type of asphalt, the higher the percentage of asphalt retained. Asphalt should not be used in freezing weather, and should not be applied within 50 feet of surface waters.
- G. Emulsified asphalt – Apply uniformly 0.34 to 0.68 gallons per square yard or 200 to 400 gallons per acre of applied (MS-1, MS-2, or CMS-2) slow setting (SS-1 or CSS-1).

1. Rapic setting (RS or CR5) is formulated for curing in less than 24 hours even during periods of high humidity. Best for spring and fall.
2. Medium setting (MS or CMS) is formulated for curing within 24 to 48 hours.
3. Slow setting (SS or CSS) is formulated for use during hot, dry weather with 48 hours or more curing time.

NOTE – In areas of playing childrens or pedestrian traffic, asphalt application could cause problems of "tracking in" on cars, damage shoes, clothing, etc. Use types RS or CR5 to minimize problem.

4. Water should be applied as soon as the mulch is applied at a rate that does not cause runoff and erosion. If fertilizer/irrigation equipment cannot be used and water is applied from a tank truck, use a nozzle that will produce a spray that will not dislodge the mulch. A second application should be made in 10 days, if no rainfall has occurred.

SHORT TERM SEEDING SPECIFICATIONS GUIDE

CABARRUS COUNTY SOIL AND WATER CONSERVATION DEPARTMENT

CRITICAL AREA PLANTING IMPLEMENTATION REQUIREMENTS
CABARRUS COUNTY SOIL AND WATER CONSERVATION
DEPARTMENT

**342 – Critical Area Planting
Implementation Requirements**

The Practice Purpose(s): (check all that apply)

☒ Stabilize areas with existing or expected high rates of soil erosion by wind or water.

☒ Stabilize stream and channel banks, pond and other shorelines, earthen features of structural conservation practices.

☒ Stabilize areas such as sand dunes and riparian areas.

Site Conditions

Slope range	pH range	Soil type/s and texture	Soil drainage class	Current vegetation on site condition
1:1 to 1:2	6.0 to 6.5	loam fine to coarse	drainage class	any erosion / soil condition

Permanent Seed and/or Plant Requirements

Site preparation earthmoving (if applicable), etc.:
N/A

Seedbed preparation:
Level and ensure the seedbed is prepared for the planting of warm season annuals

Topsoiling requirements (if applicable):
N/A

Seeding time:
See NCDEQ permanent seeding chart 2 sheet 1.2.2 for appropriate species per time of year proposed

Permanent Seed/Plant Species Mixture	Acres	Lbs/ac PLS, Or plants spacing in feet	Total lbs needed or total plants needed
See NCDEQ permanent seeding chart 2 sheet 1.2.2 for appropriate species per time of year proposed. Note species mix and ensure one of the approved NCDEQ permanent groundcover is included within the mixture.	0.0228	120 LBS	
	0.0228	120 LBS	
	0.0228	120 LBS	
	0.0228	120 LBS	
	0.0228	120 LBS	

Amendments

Fertilizer requirements	Source	Lbs./acre	Total	Notes
Nitrogen	urea	100 LBS	100 LBS	100 LBS @ 10-10-10
Phosphate (P2O5)	0-0-20	100 LBS	100 LBS	100 LBS @ 10-10-10
Potash (K2O)	0-0-20	100 LBS	100 LBS	100 LBS @ 10-10-10

342 – Critical Area Planting Implementation Requirements				
Live requirements	Source	Yield/acre	Total	Notes
Time	1 hour			1 hour total
Method of seedling preparation	Use standard growing and seedling			
Method of seeding/planting/seedling	Handplant			
Mulch requirements (type, rate/ac)	White mulch			
Other notes (e.g., inoculants, irrigating, management, plant protection, etc.)	None at present			

SHEET NUMBER L2.3	NC 102 PROJECT LLC PREPARED FOR DEPCOM POWER CARROLL COUNTY NC	WATERBODY BUFFER ZONE REVEGETATION PLAN	NHA PROJECT 04/09/2014		RECURRENT ENERGY PHONE: 415.461.1500 3000 RAY ROAD, SUITE 200 WALNUT CREEK, CA 94597	Kimley»Horn © 2019 KIMLEY-HORN AND ASSOCIATES, INC. WWW.KIMLEY-HORN.COM PHONE: 919.936.1499 1421 FAYETTEVILLE TRAIL, SUITE 200 RALPH, NC 27159	05/30/19 04/09/19 02/20/18 02/07/19 11/26/16 10/05/18 10/04/18
			DATE 07/19/15 SCALE AS SHOWN DESIGNED BY BPG DRAWN BY AMF CHECKED BY BPG	COUNTY SUBMITTAL COUNTY SUBMITTAL COUNTY SUBMITTAL SITE VISIT COMMENTS 3RD COUNTY COMMENTS CLIENT COMMENTS CLIENT COMMENTS			



February 28, 2020

Don Ling
Director of Projects
Recurrent Energy Group, Inc.
3000 Oak Road, Suite 300
Walnut Creek, CA 94597

Re: Effect of Landscaping Change on Potential Glare at Project NC-102

Dear Mr. Ling:

Burns & McDonnell was informed that a landscaping change has been made to Project NC102 and was requested to determine if the landscaping change would impact the glare study results for the project.

The original landscaping plan included the installation of American Holly trees; however, the American Holly tree type was substituted with the Leyland Cypress tree type. Upon review of the attached USDA fact sheets, the Leyland Cypress trees grow taller than the American Holly, they have a fast growth rate, and have a 15- to 25-foot spread upon maturity.

Based on the fact sheets, it was determined that the substitution would not change the results or recommendations as described in the submitted Solar Glare Ocular Impact Analysis report.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert E. Healy", with a large, stylized flourish extending from the end of the signature.

Robert Healy
Managing Director

Attachment:
Plant Fact Sheet—American Holly
Fact Sheet ST-671—Leyland Cypress

Plant Fact Sheet

AMERICAN HOLLY

Ilex opaca Ait.

Plant Symbol = ILOP

Contributed by: USDA NRCS Plant Materials Program



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Smithsonian Institution
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Uses

The attractive evergreen foliage and bright red fruit of this small tree make it a very popular for landscaping. The same attributes that allow this tree to be a desirable ornamental make it one of the most sought after greens for Christmas decoration. The firm bright red berries are consumed by white-tail deer and 18 species of birds. The dense foliage also provides cover and nesting habitat for various songbirds.

Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

Description

American holly normally grows to heights of 15 to 30 feet tall, but records indicate mature heights of up to 100 feet. On the poor soils of coastal beaches, this holly may never exceed shrub size. The bark of it is smooth, and grayish to grayish-brown. The dense branches of this holly grow nearly horizontal in a spreading crown, which takes on a pyramidal silhouette.

The evergreen foliage is stiff and leathery in texture, with large, remotely spined teeth. The leaves are arranged alternately. They are 2 to 4 inches long, satin green and smooth above, and yellowish-green below.

Small, axillary, greenish-white flowers bloom from April to June. Like most others in the holly genus, American holly is dioecious. Pistillate flowers emerge in small clusters from one plant, while staminate flower clusters develop on another. Newly established plants will not flower for 4 to 7 years; prior to flowering there is no practical means of determining the gender of a plant. Bright red, rarely orange or yellow, globular fruit mature from September to October, but may be retained on the plant into the following spring. The berry-like fruit is about 1/3 inch in diameter, and contains 4 to 9 small nutlets. There are an average of 28,430 seeds per pound.

Adaptation and Distribution

American holly grows from Massachusetts to Florida, west to Texas and Missouri, and is adapted to a wide range of site conditions. It grows best on well drained, sandy soils, but will tolerate those which are somewhat poorly drained. This small tree has good shade tolerance, but does well in direct sun. Although this species is often found growing on coastal sand dunes, it is not very salt spray tolerant.

For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Website.

Establishment

Utilize standard tree and shrub planting procedures to establish containerized or balled and burlapped plants. Bare rooted transplants usually have marginal success.

When establishing American holly, it is important to plant males as well as females if berry production is desired. In a nursery situation the gender ratio should be 1:10, males to females. Establish American holly only where surrounding vegetation or physical barriers protect the plants from harsh winds. Holly plants prefer partial shade, with some full sun exposure during the day.

Cultivars, Improved, and Selected Materials (and area of origin)

There are many ornamental varieties, available from commercial nurseries, selected for berry and leaf color. There are also commercial sources of locally and regionally collected material available from native plant nurseries.

Prepared By & Species Coordinator:

USDA NRCS Plant Materials Program

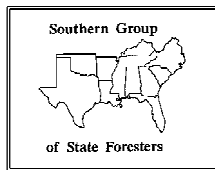
Edited: 05Feb2002 JLK; 060801 jsp

For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS Web site <<http://plants.usda.gov>> or the Plant Materials Program Web site <<http://Plant-Materials.nrcs.usda.gov>>

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To file a complaint of discrimination write USDA, Director, Office of Civil Rights, Room 326-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice or TDD). USDA is an equal opportunity provider and employer.

Read about [Civil Rights at the Natural Resources Conservation Service](#).



x Cupressocyparis leylandii Leyland Cypress¹

Edward F. Gilman and Dennis G. Watson²

INTRODUCTION

A rapidly-growing evergreen when young, Leyland Cypress will easily grow three to four feet per year, even on poor soils, and will ultimately attain a majestic height of 50 feet or more in the west, perhaps somewhat shorter in the east (Fig. 1). Leyland Cypress forms a dense, oval or pyramidal outline when left unpruned, but the graceful, slightly pendulous branches will tolerate severe trimming to create a formal hedge, screen or windbreak. The fine, feathery foliage is composed of soft, pointed leaves on flattened branchlets and are dark blue-green when mature, soft green when young. Leyland Cypress quickly outgrows its space in small landscapes and is too big for most residential landscapes unless it will be regularly trimmed. Although it can be sheared into a tall screen on small lots, Leyland Cypress should probably be saved for large-scale landscapes where it can be allowed to develop into its natural shape.

GENERAL INFORMATION

Scientific name: *x Cupressocyparis leylandii*

Pronunciation: x koo-press-so-SIP-air-iss
lay-LAN-dee-eye

Common name(s): Leyland Cypress

Family: *Cupressaceae*

USDA hardiness zones: 6 through 10A (Fig. 2)

Origin: not native to North America

Uses: hedge; recommended for buffer strips around parking lots or for median strip plantings in the highway; screen; specimen; Christmas tree

Availability: generally available in many areas within its hardiness range

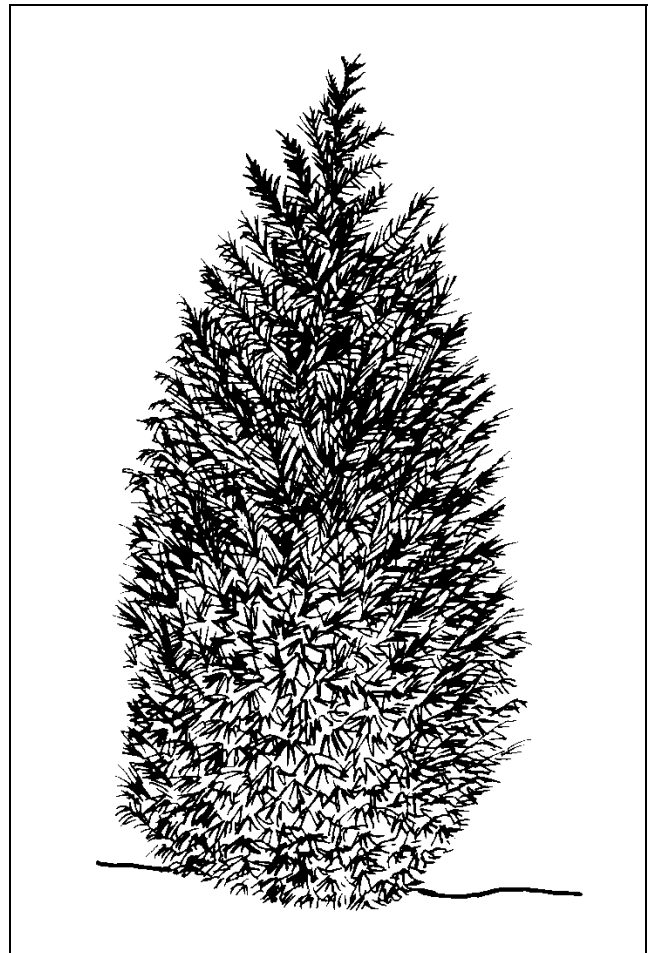


Figure 1. Middle-aged Leyland Cypress.

1. This document is adapted from Fact Sheet ST-671, a series of the Environmental Horticulture Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Publication date: October 1994.
2. Edward F. Gilman, associate professor, Environmental Horticulture Department; Dennis G. Watson, associate professor, Agricultural Engineering Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville FL 32611.



Figure 2. Shaded area represents potential planting range.

DESCRIPTION

Height: 35 to 50 feet

Spread: 15 to 25 feet

Crown uniformity: symmetrical canopy with a regular (or smooth) outline, and individuals have more or less identical crown forms

Crown shape: columnar; oval; pyramidal

Crown density: dense

Growth rate: fast

Texture: fine

Foliage

Leaf arrangement: opposite/subopposite

Leaf type: simple

Leaf margin: entire

Leaf shape: scale-like

Leaf venation: none, or difficult to see

Leaf type and persistence: evergreen

Leaf blade length: less than 2 inches

Leaf color: blue or blue-green; green

Fall color: no fall color change

Fall characteristic: not showy

Flower

Flower color: no flowers

Flower characteristics: no flowers

Fruit

Fruit shape: round

Fruit length: < .5 inch

Fruit covering: dry or hard

Fruit color: brown

Fruit characteristics: does not attract wildlife; inconspicuous and not showy; no significant litter problem

Trunk and Branches

Trunk/bark/branches: grow mostly upright and will not droop; not particularly showy; should be grown with a single leader; no thorns

Pruning requirement: needs little pruning to develop a strong structure

Breakage: resistant

Current year twig color: green

Current year twig thickness: thin

Culture

Light requirement: tree grows in part shade/part sun; tree grows in full sun

Soil tolerances: clay; loam; sand; acidic; alkaline; well-drained

Drought tolerance: high

Aerosol salt tolerance: moderate

Soil salt tolerance: moderate

Other

Roots: surface roots are usually not a problem

Winter interest: no special winter interest

Outstanding tree: tree has outstanding ornamental features and could be planted more

Invasive potential: little, if any, potential at this time

Verticillium wilt susceptibility: not known to be susceptible

Pest resistance: very sensitive to one or more pests or diseases which can affect tree health or aesthetics

Diseases

A canker affects the tree following drought; a foliage fungus occasionally infects foliage. This plant is not recommended for planting in California due to the severity of this canker disease. Perhaps the disease will stay in the western United States.

USE AND MANAGEMENT

Leyland Cypress grows in full sun on a wide range of soils, from acid to alkaline, but looks its best on moderately fertile soil with sufficient moisture. It is surprisingly tolerant of severe pruning, recovering nicely from even severe topping (although this is not recommended), even when half the top is removed. It grows well in clay soil and tolerates poor drainage for a short period of time. It also is very tolerant of salt spray.

Some available cultivars include: 'Castlewellan', a more compact form with gold-tipped leaves, excellent for hedges in cool climates; 'Leighton Green', dense branching with dark green foliage, columnar form; 'Haggerston Gray', loose branches, columnar-pyramidal, upturned at ends, sage-green color; 'Naylor's Blue', blue-grey foliage, columnar form; 'Silver Dust', wide-spreading form with blue-green foliage marked with white variegations.

Propagation is by cuttings from side growths.

Pests

Bagworm can defoliate a tree in a week or two, and can be quite serious.

NC102 Project Solar Glare Ocular Impact Analysis Addendum 2



Recurrent Energy Group, Inc.

**NC102 Project
Project No. 105172**

**Revision 0
8/31/2020**

NC102 Project Solar Glare Ocular Impact Analysis Addendum 2

prepared for

**Recurrent Energy Group, Inc.
NC102 Project
Cabarrus County, North Carolina**

Project No. 105172

**Revision 0
8/31/2020**

prepared by

**Burns & McDonnell Consultants, Inc.
Raleigh, North Carolina**

INDEX AND CERTIFICATION

**Recurrent Energy Group, Inc.
NC102 Project
Solar Glare Ocular Impact Analysis Addendum 2
Project No. 105172**

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2.0	Methodology	2
3.0	Results	7
4.0	Conclusion	1
Attachment 1	Photo Log	N/A

Certification

I hereby certify, as a Professional Engineer in the state of North Carolina that the information in this document was assembled under my direct personal charge. This report is not intended or represented to be suitable for reuse by the Recurrent Energy Group, Inc. or others without specific verification or adaptation by the Engineer.

Thad Wingo, PE, North Carolina #032018
Insert Engineer's Name, P.E., state, & license

Date: September 9, 2020

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LIST OF ABBREVIATIONS

<u>Abbreviation</u>	<u>Term/Phrase/Name</u>
Burns & McDonnell	Burns & McDonnell Consultants, Inc.
FAA	Federal Aviation Administration
LOS	Line-of-sight
MPE	Major Part of Energy Generating Facility
OP	Observation Point
Project	NC-102 Solar PV Project located in Cabarrus County, North Carolina
PV	Photovoltaic
SGHAT	Solar Glare Hazard Analysis Tool

1.0 EXECUTIVE SUMMARY

1.1 Background

Burns & McDonnell Consultants, Inc. (Burns & McDonnell) evaluated the potential ocular hazard for the NC-102 solar photovoltaic (PV) project (Project) located in Cabarrus County, North Carolina and issued this Addendum to the latest revision of the “NC102 Project Solar Glare Ocular Impact Analysis” report dated May 31st, 2019. Burns & McDonnell was retained to evaluate and opine on the effect of the clearing of the trees located northwest of the intersection of Joyner Road and Mount Pleasant Road to determine if the clearing would affect the results and conclusions within the “NC102 Project Solar Glare Ocular Impact Analysis” report.

1.2 Summary

Burns & McDonnell evaluated the changes to project visibility at OP1, OP2, OP17, and OP37 following concerns the forest clearing performed northwest of the intersection of Joyner Road and Mount Pleasant Road would remove vegetation that screened the Project and mitigated the potential glare from the Project. Four observation points were evaluated, due to their proximity to the cleared forest and potential to receive glare from MPE 6 as identified by the May 31st, 2019 report. Burns & McDonnell conducted a site visit on August 18th, 2020 and photographed the visibility from those locations. From those photos, Burns & McDonnell assessed whether line of sight (LOS) from the observation points to the Project remained sufficiently obstructed to mitigate the potential for glare. The photo log containing all images captured during the site visit can be found in Attachment 1.

1.3 Results

Burns & McDonnell concluded that the site clearing performed does not change the LOS results from the report issued May 31st, 2019. Therefore, the conclusions from that report remain the same.

Table 1-1: Forest Clearing Line of Sight Results

Observation Point	MPE 5 Visibility	MPE 6 Visibility
OP1	Not Visible	Not Visible
OP2	Visible	Marginally Visible
OP17	Not Visible	Not Visible
OP37	Visible	Marginally Visible

2.0 METHODOLOGY

2.1 Observation Point Identification

Observation points around the Project were identified and included several points along Mt. Pleasant Road, Joyner Road, nearby residences, and other recommendations from the County for the report issued May 31st, 2019. These OPs were chosen based on their proximity to the Project and the potential for glare to occur. This Addendum evaluated four of the OPs initially evaluated as potentially being affected by the forest clearing, which were OP1, OP2, OP17, and OP37, due to their proximity to the cleared region and the potential for glare identified in the May 31st, 2019 report.

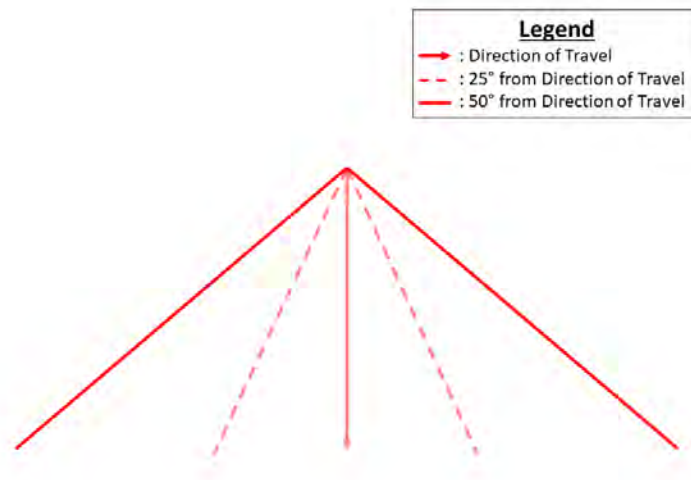
2.2 Line-of-Sight Analysis

A field visit was conducted to review the updated line of sight from the four OPs to MPE 5 and MPE 6 as they were determined to be most affected by the tree clearing. The line of sight was evaluated while on site and from the photos, and the LOS from each OP to the array sections was put into one of three categories:

- (V) visible, i.e. one had a mostly unobstructed view of the arrays,
- (NV) not visible, i.e. one could not see the arrays due to obstructions, and
- (M) marginally visible, i.e. one could see some of the arrays, but the view was partially obstructed.

2.3 View-Angle Analysis

These OPs, since they were located on major roadways, were further reviewed to determine if the glare would be within a 25-degree view angle of a vehicle traveling in either direction. This analysis was conducted by applying a view angle from the OP in the potential directions of a vehicle operating in the right of way near the OP. See Figure 2-1 for an illustration of the view angle.

Figure 2-1: View Angle

The vertex of the view angle was placed at the OP on a Google Earth view of the OP. The view angle was adjusted so the straight-ahead view was in the direction of the right of way (i.e. roadway) with a 25-degree (dashed line) and 50-degree (solid line) angle shown on either side of the straight-ahead view.

The diagram was reviewed to determine if any potential glare would originate from within the 25-degree angle from the direction of travel for each OP. Potential glare originating outside of the 25-degree angle was determined to not adversely impact a vehicle traveling on the right of way per the study performed by the Federal Aviation Administration (FAA) in 2015 and further detailed in Section 2.5 of the May 31st, 2019 report.

3.0 RESULTS

3.1 Line-of-Sight Analysis

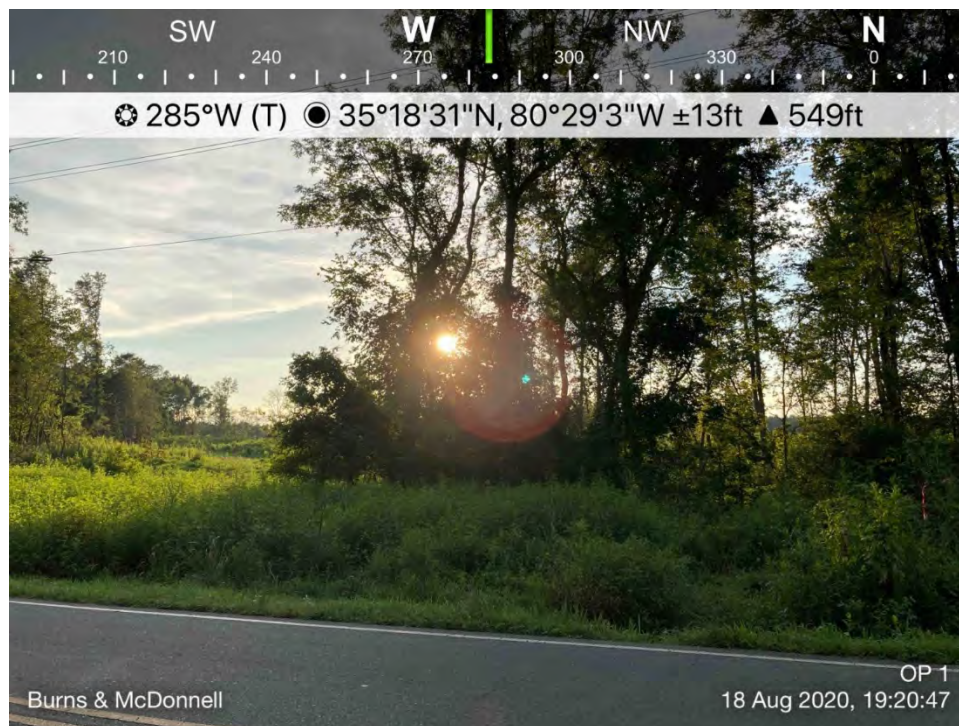
Burns & McDonnell evaluated the line of sight from photos taken during a site visit. The photos were taken in specific directions of concern with details of the exact location, direction, elevation, and time indicated on the photos. In addition to this, panoramic photos were taken to show a more complete field of view from those observation points. It should be noted that the stitching of images to generate a panoramic photo does cause some distortion of straight lines in the images. However, they are representative of the visible region from the location the photo is taken.

3.1.1 Observation Point 1

Burns & McDonnell visited the site on August 18th, 2020 in which the perspective from OP1 to MPE 5 and MPE 6 were photographed. MPE 5 was not visible as was verified in the panoramic photo taken from OP1 shown in Figure 3-1 and MPE 6 was not visible as is shown in Figure 3-2.

Figure 3-1: OP1 Panoramic Photo, Facing West



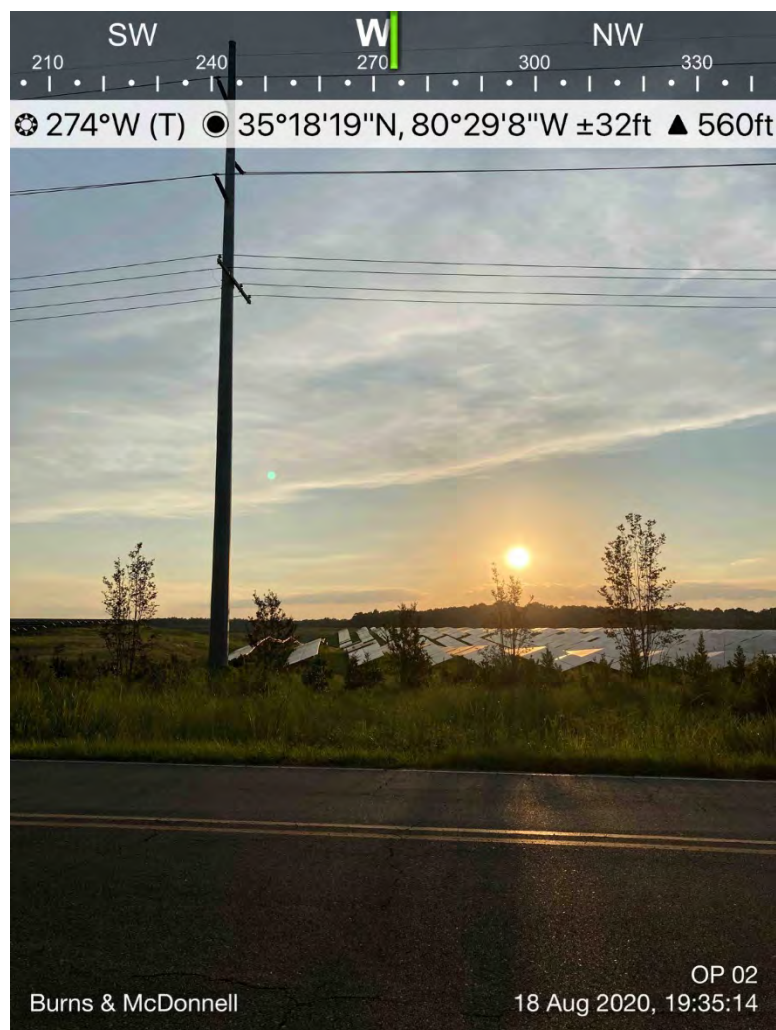
Figure 3-2: OP1 Facing West

As such, the findings of Section 4.3 of the May 31st, 2019 report from Burns & McDonnell remain the same.

3.1.2 Observation Point 2

Burns & McDonnell visited the site on August 18th, 2020 in which the perspective from OP2 to MPE 5 and MPE 6 were photographed. MPE 6 was not visible through the tree line as is observed in the panoramic photo taken from OP2 as shown in Figure 3-3 and MPE 5 was visible as is observed in Figure 3-3 and Figure 3-4.

Figure 3-3: OP2 Panoramic Photo, Facing West

Figure 3-4: OP2 Facing West

As such, the findings of Section 4.5.1 of the May 31st, 2019 report from Burns & McDonnell remain the same.

3.1.3 Observation Point 17

Burns & McDonnell visited the site on August 18th, 2020 in which the perspective from OP17 to MPE 5 and MPE 6 were photographed. MPE 5 and MPE 6 were not visible as can be seen in Figure 3-5 and Figure 3-6.

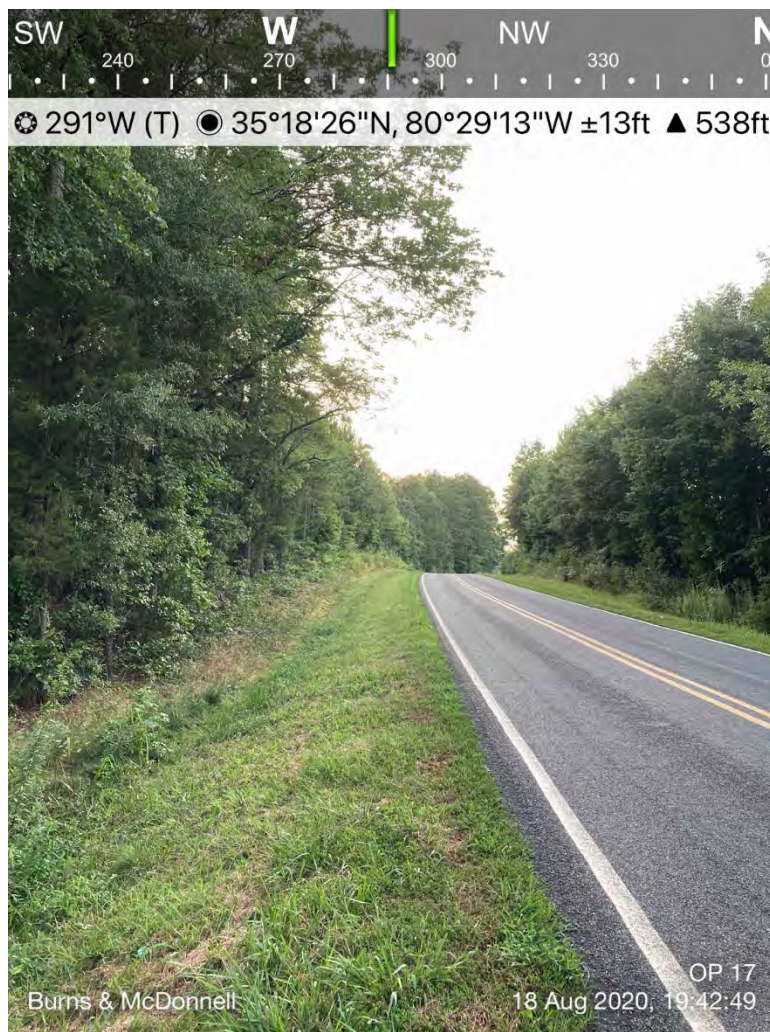
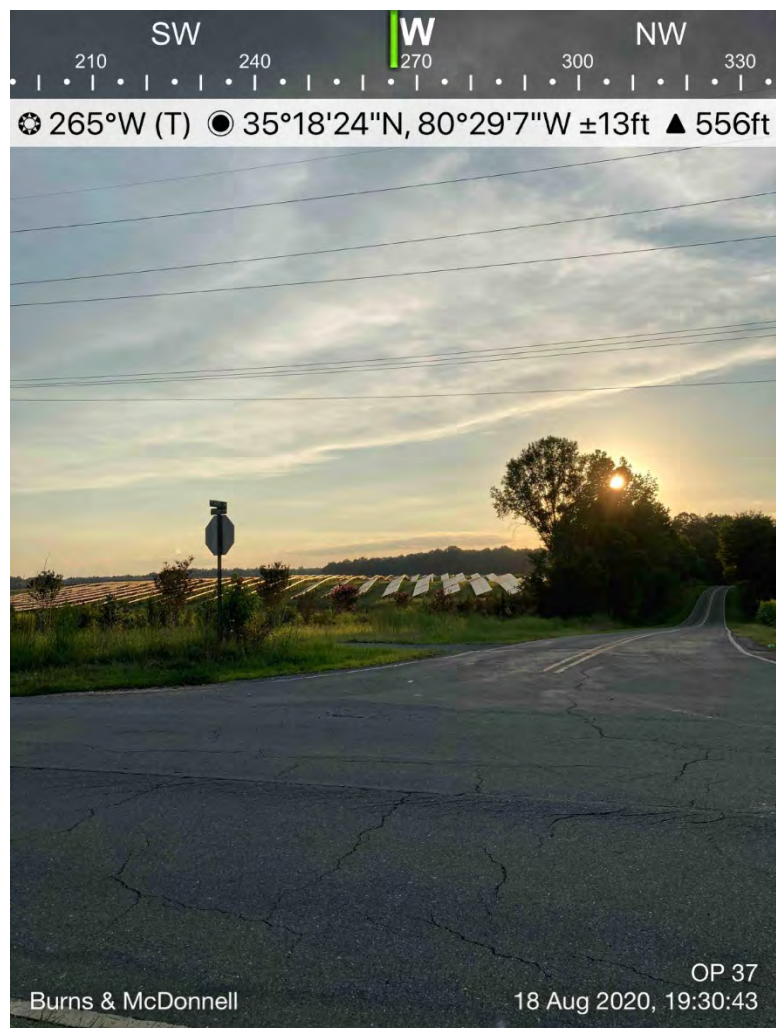
Figure 3-5: OP 17 Facing West

Figure 3-6: OP17 Facing South

As such, the findings of Section 4.3 of the May 31st, 2019 report from Burns & McDonnell remain the same.

3.1.4 Observation Point 37

Burns & McDonnell visited the site on August 18th, 2020 in which the perspective from OP37 to MPE 5 and MPE 6 were photographed. MPE 5 is visible and MPE 6 is only marginally visible through the tree line as seen in Figure 3-7 and Figure 3-8.

Figure 3-7: OP37 Panoramic View, Facing West**Figure 3-8: OP37 Facing West**

As such, the findings of Section 4.5.11 of the May 31st, 2019 report from Burns & McDonnell remain the same.

3.2 View-Angle Analysis

As the line-of-sight visibility was observed to have not been affected by the clearing of trees near the intersection of Joyner Road and Mount Pleasant Road, the results of the view-angle analysis done in the May 31st, 2019 report by Burns & McDonnell remain the same.

4.0 CONCLUSION

Burns & McDonnell concluded that the line of sight and view-angle analysis conclusions provided in the May 31st, 2019 report by Burns & McDonnell were not affected by the clearing of trees northwest of the intersection of Joyner Road and Mount Pleasant Road. As such, the findings within the May 31st, 2019 report remain the same.

ATTACHMENT 1 - PHOTO LOG



CREATE AMAZING.

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