Town of Berthoud Planning Commission
Town Hall
807 Mountain Avenue
Thursday, April 27, 2023, at 6:00 p.m.

Join Zoom Meeting
https://us02web.zoom.us/j/86049631362
Meeting ID: 860 4963 1362
One tap mobile
+17193594580,,86049631362# US
+16694449171,,86049631362# US

1. Call Meeting To Order
2. Roll Call
3. Approval Of Minutes

3.I. 2023.03.09 Planning Commission Meeting Minutes

Documents:

2023.03.09 PLANNING COMMISSION MINUTES.PDF

3.II. 2023.03.23 Planning Commission Meeting Minutes

Documents:

2023.03.23 PLANNING COMMISSION MEETING MINUTES.PDF

4. Request For Continuance Of Bader Minor Subdivision

Documents:

2023.04.27 REQUEST FOR CONTINUANCE OF BADER MINOR SUBDIVISION.PDF

5. 2023.04.27 Request For Continuance Bader Planned Unit Development Amendment
Request for the continuance of Bader Planned Unit Development Amendment including an Amendment to the Overall Development Plan and the Final Development Plan to a date certain of May 11, 2023.

Documents:

2023.04.27 REQUEST FOR CONTINUANCE OF BADER PLANNED UNIT DEVELOPMENT AMENDMENT.PDF

6. Harvest 47 Preliminary Plat-Public Hearing

   Public Hearing for a Preliminary Plat known as Harvest 47, continued from March 23 to April 27.

   Documents:

   01 PC INFORMATION FORM.PDF
   02 STAFF REPORT.PDF
   03 APPLICATION ATTACHMENTS.PDF
   04 STAFF PRESENTATION.PDF

7. Report By Staff

8. Adjourn

Individuals needing special accommodation may request assistance by contacting the Town Clerk at 807 Mountain Avenue, Berthoud, Colorado 80513, or by calling 970-532-2643 at least 24 hours in advance.

807 Mountain Avenue | PO Box 1229 | Berthoud, CO 80513 | O: 970.532.2643 | F: 970.532.0640 | **Berthoud.org**

Planning Commission Minutes – March 09, 2023

1. **Call to Order** – The Planning Commission convened a regular meeting on March 09, 2023. Chairwoman Dowker called the meeting to order at 6:00 p.m.

2. Roll Call –

Members present:	Jan Dowker	(Chairwoman)
	Karen Anderson	(Vice Chairwoman)
	Chris Kurtz	(Secretary)
	Melissa Feldbush	(Commissioner)
	Abigail Smith	(Commissioner)
	Brett Wing	(Commissioner)
Staff present:	Anne Johnson	(Community Development Director)
	Will Charles	(Baseline Engineering – Principal Planner)
	Michelle Tovar	(Deputy Town Clerk)
	Jonathan Mitchell	(Permit Technician)

3. Consent Agenda – Minutes from the February 23, 2023 Planning Commission Meeting.

MOTION made by Commissioner Anderson to APPROVE the Minutes for February 23, 2022.

SECONDED by Commissioner Wing.

Abstained by Commissioner Feldbush due to not attending the meeting.

With those all in favor, THE MOTION CARRIED.

4. Public Hearing: Farmstead Acres Minor Subdivision (Terra Forma Solutions, Todd Johnson agent)

Director Johnson introduced the Applicant's request for a minor subdivision to separate the existing parcel into four (4) lots.

Presented by Will Charles of Baseline Engineering.

Public Comment was opened at 6:14 p.m.

Public Comment was closed at 6:14 p.m.

MOTION made by Commissioner Kurtz to VACATE the Minor Subdivision Approval on February 23, 2023 relating to this case because a Public Hearing was not held prior to the MOTION and VOTE.

SECONDED by Commissioner Anderson.

With all in favor, THE MOTION CARRIED.

MOTION made by Commissioner Kurtz to APPROVE the Minor Subdivision with the following condition:

01. The Applicant shall provide an updated title commitment dated no more than thirty (30) days from the date of conditional approval.

SECONDED by Commissioner Anderson.

With all in favor, THE MOTION CARRIED

5. Public Hearing: Heron Lakes 17th Filing (Three Lakes Development Inc., Jim Birdsall - agent)

Director Johnson introduced the request for a preliminary plat for the creation of 132 lots intended for single family residential. Additionally, as part of the preliminary plat, the applicant is requesting a waiver to curb and gutter requirements along County Road 14.

Presented by Will Charles of Baseline Engineering.

Public Comment was opened at 6:32 p.m.

John Baker shared his concerns about the added traffic to County Road 14. He would like to see improvements on Country Road 14 such as shoulders and sidewalks.

Public Comment was closed at 6:35 p.m.

MOTION made by Commissioner Anderson to DENY the waiver of the requirement that the applicant not construct a curb and gutter along County Road 14 for the reasons stated in the attached memo from the Town's Development Review Engineer dated February 28, 2023.

MOTION made by Commissioner Anderson to AMEND her MOTION to DENY the waiver of the requirement that the applicant construct a curb and gutter along County Road 14 for the reasons stated in the attached memo from the Town's Development Review Engineer dated February 28, 2023.

SECONDED by Commissioner Kurtz.

With all in favor, THE MOTION CARRIED.

MOTION made by Commissioner Wing to RECOMMEND APPROVAL of the Preliminary Plat to the Board of Trustees, subject to the following conditions:

01. The Applicant shall revise their plan to include a curb and gutter along County Road 14 which shall be constructed in the future by the Applicant for their proportionate share of the improvements when the Town makes such improvements on adjacent properties.
02. The Applicant shall apply for or receive approval of Rezoning prior to approval of Final Plat.

SECONDED by Commissioner Anderson.

With all in favor, THE MOTION CARRIED.

6. Public Hearing: Ludlow Farms NMP and Rezoning (Ludlow Farms, LLC – Don Hinson, Manager)

Director Johnson introduced the request of rezoning to Suburban Residential (SR) and Urban Residential (UR) from the Ludlow Farms Planned Unit Development (PUD) and a Neighborhood Master Plan.

Presented by Will Charles of Baseline Engineering.

Public Comment (Rezoning) was opened at 8:04 p.m.

Public Comment (Rezoning) was closed at 8:05 p.m.

MOTION made by Commissioner Anderson to RECOMMEND APPROVAL of the Rezoning to the Town Board with the following condition:

01. The rezoning will be approved only upon approval of the Neighborhood Master Plan.

SECONDED by Commissioner Wing.

With all in favor, THE MOTION CARRIED.

Public Comment (Neighborhood Master Plan) was opened at 8:15 p.m.

George Garmany was concerned about the traffic along Berthoud Parkway. He would like to see one additional access point onto Highway 287.

Kaitlin Shepherd was concerned about gentrification and high home prices.

Carl Tabor agreed with previous statements regarding traffic.

Aron Erickson agreed with previous comments made. He expressed concern about schools and noise and light pollution created from construction.

Derrik Johnson agreed with previous statements. His biggest concern was about schools, and was concerned about traffic increases.

Dianne Michael was concerned about Berthoud losing its small-town feel, the increase in population, and the general character of the town.

Jay Mueller was concerned about the population growth and would like to see the growth to stop.

Christine Torres addressed the concerns about the schools and the importance of the funding from the growth.

Chris Shepherd was concerned about traffic access to Interstate 25.

Anita Conner expressed her concern about the added growth.

Public Comment (Neighborhood Master Plan) was closed at 8:35 p.m.

Chairwoman Dowker asked Applicant about the affordable housing in the development.

Applicant Hinson expressed the desire to work with Mission Homes and David Gregg and to provide for the community.

Commissioner Feldbush and Commissioner Smith both appreciate the use of affordable housing and expressed its importance.

MOTION made by Commissioner Wing to RECOMMEND APPROVAL of the Neighborhood Master Plan to the Board of Trustees.

SECONDED by Commissioner Anderson.

With all in favor, THE MOTION CARRIED.

7. Reports –

Commissioner Anderson, Commissioner Dowker, and Commissioner Smith wanted to thank the commissioners for all their work and support.

Director Johnson:

- She shall be preparing a Planning Commissioner electronic notebook with links for commissioners to helpful information, maps, and more.
- She has reached out to DOLA for commissioner training and information.
- She is currently developing an Active Projects list for the Town of Berthoud website.
- All future participation for Planning Commission meetings shall be in-person.

8. Adjourn –

The meeting was adjourned at 10:33 p.m.

_____ _____

CHAIRPERSON SECRETARY

807 Mountain Avenue | PO Box 1229 | Berthoud, CO 80513 | O: 970.532.2643 | F: 970.532.0640 | **Berthoud.org**

Planning Commission Minutes – March 23, 2023

1. **Call to Order** – The Planning Commission convened a regular meeting on March 23, 2023. Commissioner Wing called the meeting to order at 6:01 p.m.

2. Roll Call –

Members present:	Melissa Feldbush	(Commissioner)
	Brett Wing	(Commissioner)
Members Absent:	Jan Dowker	(Chairwoman)
	Karen Anderson	(Vice Chairwoman)
	Chris Kurtz	(Secretary)
	Abigail Smith	(Commissioner)
	John Van Benthem	(Commissioner)
Staff present:	Anne Johnson	(Community Development Director)
	Will Charles	(Baseline Engineering – Principal Planner)
	Michelle Tovar	(Deputy Town Clerk)
	Jonathan Mitchell	(Permit Technician)

2. Due to a lack of Planning Commission quorum no action was taken. The following agenda items will be heard at the April 27, 2023 Planning Commission Meeting:
   a. Bader Amended PUD
   b. Bader Minor Subdivision
   c. Harvest 47 Preliminary Plat

7. Reports –

April 13 – Planning Commission Work Session (Tami Tanoue (Executive Director of CIRSA))

8. Adjourn –

The meeting was adjourned at 6:04 p.m.

_____
COMMISSIONER
(Brett Wing)

_____
COMMISSIONER
(Melissa Feldbush)

PLANNING COMMISSION INFORMATION

COMMUNITY DEVELOPMENT DEPARTMENT

Meeting Date:	**April 27, 2023**
Agenda Title/Subject:	**Request for continuance of Bader Minor Subdivision to a date certain of May 11, 2023**
Type of Item:	**Regular Item**
Purpose:	**Request of applicant to continue the Planning Commission public hearing scheduled for March April 27, 2023 to May 11, 2023**
Presented by:	**Anne Johnson, Community Development Director**

BACKGROUND:
The continuance is due to notification requirements.

RECOMMENDED ACTION(S):
Staff recommends that the Planning Commission approve the request to continue this land use matter to the May 11, 2023 public hearing. Suggested motions are below:

Approval: *I move to approve the request to continue the public hearing to consider amending the Minor Subdivision from April 27, 2023 to May 11, 2023.*

Denial: *I move to deny the request to continue the public hearing to consider amending the Minor Subdivision from April 27, 2023 to May 11, 2023 for the following reasons:* _____.

PLANNING COMMISSION INFORMATION

COMMUNITY DEVELOPMENT DEPARTMENT

Meeting Date:	**April 27, 2023**
Agenda Title/Subject:	**Request for continuance of Bader Planned Unit Development Amendment including an Amendment to the Overall Development Plan and the Final Development Plan to a date certain of May 11, 2023**
Type of Item:	**Regular Item**
Purpose:	**Request to continue the Planning Commission public hearing scheduled for April 27, 2023 to May 11, 2023 due to notice requirements**
Presented by:	**Anne Johnson, Community Development Director**

BACKGROUND:
The continuance is due to notification requirements.

RECOMMENDED ACTION(S):
Staff recommends that the Planning Commission approve the request to continue this land use matter to the May 11, 2023 public hearing. Suggested motions are below:

Approval: *I move to approve the request to continue the public hearing to consider amending the Planned Unit Development from April 27, 2023 to May 11, 2023.*

Denial: *I move to deny the request to continue the public hearing to consider amending the Planned Unit Development from April 27, 2023 to May 11, 2023 for the following reasons: _____.*

PLANNING COMMISSION INFORMATION

COMMUNITY DEVELOPMENT DEPARTMENT

Meeting Date:	**April 27, 2023**
Agenda Title/Subject:	**Public Hearing for a Preliminary Plat known as Harvest 47, continued from March 23 to April 27**
Type of Item:	**Public Hearing**
Purpose:	**Request for approval of a Preliminary Plat for Harvest 47**
Presented by:	**Anne Johnson, Community Development Director**

ATTACHMENTS:

- Staff Report
- Application materials, public comments and referral responses
- Staff Presentation

BACKGROUND:

The applicant proposes to subdivide the 5.98 +/- acre parcel into 29 lots for single-family residential purposes.

UPDATE/NEXT STEPS:

The Planning Commission recommendation will be heard by the Town Board at their public hearing on May 9, 2023. If approved, the next step will include finalizing the conditions of approval to record the Preliminary Plat and then the applicant will be able to file their Final Plat application.

FISCAL IMPACT AND FUND SOURCE:

There is no negative impact to the Town in consideration of this request to approve the proposed Preliminary Plat.

COMMUNITY TOUCHSTONES:

Consideration of this request does not negatively impact community touchstones and in fact is supportive of the 2021 Comprehensive Plan update. The Future Land Use Map envisions this property for Urban Residential uses.

RECOMMENDED ACTION(S):

Staff recommends that the Planning Commission approve the Preliminary Plat as the applicant has met the Criteria for Approval as outlined in the attached Staff Report in the "Preliminary Plat Review Criteria" section starting on page 3.

There are suggested motions in the Staff Report found on page 4.

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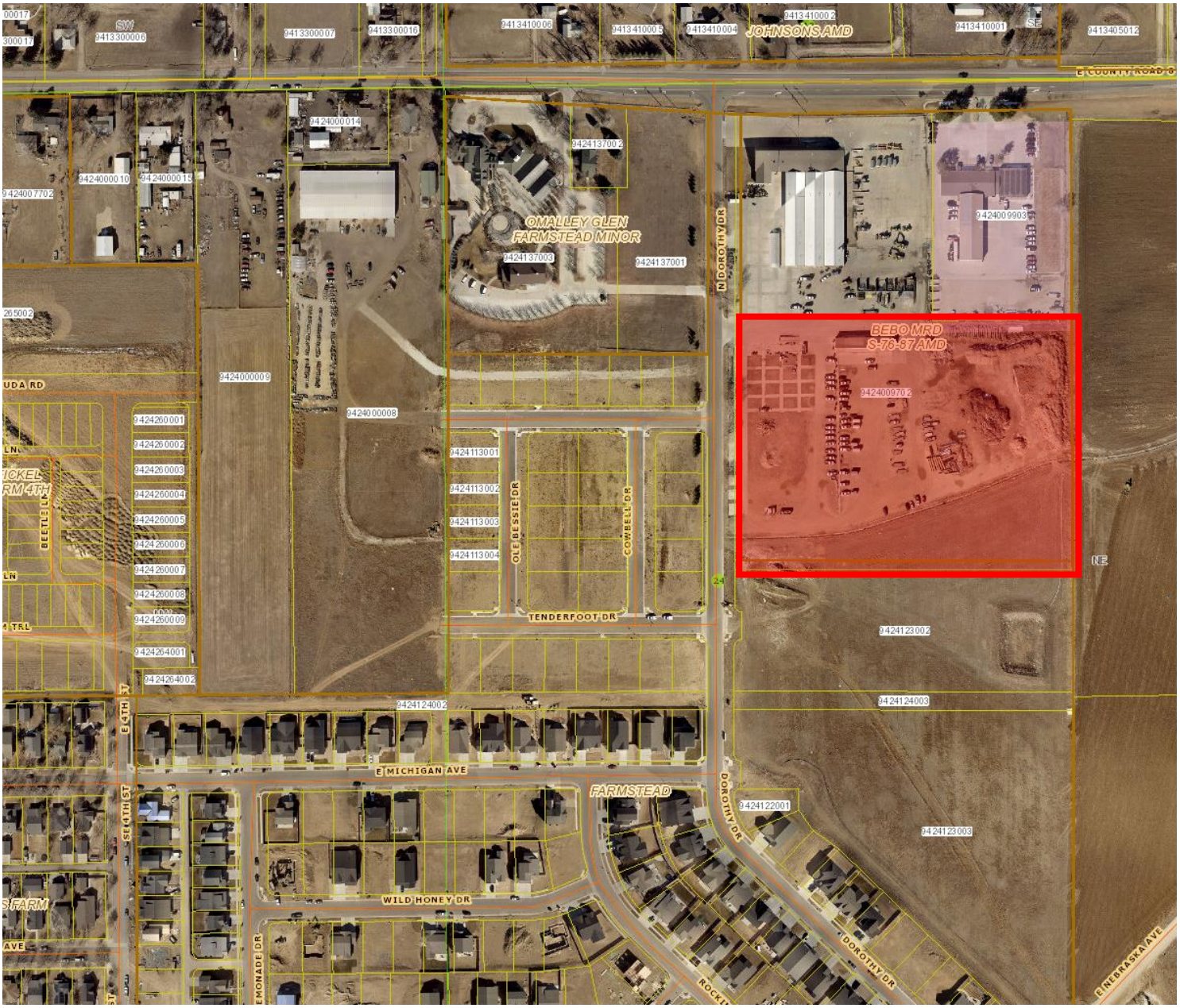
STAFF REPORT: HARVEST 47 PRELIMINARY PLAT

DATE: March 23, 2023

GENERAL INFORMATION		
Applicant	**Larry Bebbo**	**Size: 5.98 acres**
Site Location	**The property is located near the intersection of Dorothy Drive and Remuda Road. This project is located on the southern portion of the property at 735 State Highway 56 (Parcel 94-24-009702)**	
Applicant's Request	**The Applicant is requesting a preliminary plat to subdivide the subject property into 29 lots intended for single family residential.**	
Current Zoning	**UR – Urban Residential**	
UR ZONING DISTRICT INFORMATION		
Max Density	**N/A**	
Min. Lot Area	**2,500 sq.ft.**	
Min. Lot Width	**25'**	
Front Setback	**10'**	
Side Setback	**5'**	
Rear Setback	**5-8'**	
Building Height	**30'**	

SURROUNDING ZONING, LAND USE AND REQUIRED BUFFERS			
	Adjacent Zoning	**Adjacent Land Use**	**Setbacks for Adjacent Zoning/ Buffer required if rezoned**
North	**PUD**	**Garden Center**	**N/A**
South	**R2**	**Single Family/ Low-Density Multifamily**	**N/A**
East	**R2**	**Single Family/ Low-Density Multifamily**	**N/A**
West	**R1**	**Single-Family**	**N/A**

The project site is illustrated below. In an earlier stage of the process the southern portion of the property was subdivided from the garden center and is where the residential development is proposed. The source of this image is the Larimer County Land Information Locator/GIS.



Proposal

The applicant proposes to subdivide the existing 5.98-acre parcel into 29 lots for single-family residential purposes. The preliminary plat, if approved, would allow the applicant to apply for a final plat that would formally subdivide the lots.

Background

In July 2022, a Neighborhood Master Plan, Rezoning, and Minor Subdivision were approved by Planning Commission and the Board of Trustees for this property. The minor subdivision split this lot from the neighboring garden center to the north, and the Rezoning changed this parcel from Planned Unit Development (PUD) to Urban Residential (UR). Additionally, the neighborhood master plan proposed a single-family residential neighborhood consistent with the proposed preliminary plat.

Preliminary Plat Review Criteria

In addition to all provisions of the Code, the Town shall use the following criteria to evaluate the applicant's request:

30-6-107(B) Review Criteria	Finding	Rationale
1. The preliminary plat represents a functional system of land use and is consistent with the rationale and criteria set forth in this Code.	Yes	The preliminary plat is a functional system of land use that connects with existing and proposed roadways/alleys of neighboring developments. Additionally, the bulk requirements such as setbacks and building heights are consistent with the standards of the zone district found in the Land Use Code.
2. The application is consistent with the approved concept plan and incorporates the Town's recommendations and any conditions of approval.	Yes	The plan is consistent with the approved neighborhood master plan. The neighborhood master plan calls out single family residential in this area consistent with what is proposed.
3. The land use mix within the project conforms to Berthoud's Zoning District Map and Preferred Land Use Map and furthers the goals and policies of the Comprehensive Plan and PORT Plan.	Yes	The land use mix conforms with the Urban Residential (UR) Zone District. The future land use map lists this area as urban residential which allows for developments similar to this one. The project is also consistent with the Comprehensive Plan and PORT Plan.
4. The utility and transportation design is adequate, given existing and planned capacities of those systems.	Yes	Plans were reviewed by Town Staff as well as outside referral agencies. The applicant has provided adequate plans for utilities and transportation design.
5. Negative impacts on adjacent land uses including, but not limited to: solar access, heat, dust, glare, traffic and noise have been identified and satisfactorily mitigated.	Yes	The application is consistent with the overall plan for the area. The plat would allow for similar densities to existing development in the area. During construction, best management practices are required to control stormwater, dust mitigation and tracking onto paved streets by construction equipment. After construction, residential development does generate additional traffic. A Traffic Letter was reviewed and the existing road network was found to be adequate to encompass this development.
6. There is a need or desirability within the community for the applicant's development and the development will help achieve a balance of land use and/or housing types within Berthoud.	Yes	The future land use map anticipates this area to be developed as urban residential. This development is consistent with the goals of the Comprehensive Plan. A key strategy of the comprehensive plan is to provide a mix

		of housing, goods and services, that meet the varying needs, budges, and life stages of residents.
7. How the applicant has addressed comments received from the public, during the Public Comment portion of the process.	Yes	No public comments were received during the notice period for the preliminary plat.

PUBLIC NOTICE AND COMMENT

Notice of the Planning Commission Public Hearing has been mailed to property owners within 500 feet of the subject property on March 14, a legal ad published on March 9, and the property was posted prior to March 16 as required by the Development Code. In addition, when the project was submitted, the application was sent out to all property owners within 500 feet, with an invitation to comment on the request within three weeks of receipt. No comments were received during this initial notice period.

FINDINGS AND RECOMMENDATIONS

- **Staff recommends that Planning Commission find the application meets the intent of the Master Plans affecting the project, the Comprehensive Plan and Future Land Use Map, and the Land Use Code.**

- **Two suggested motions are below:**
  - ***Approval: I move to approve the Harvest 47 Preliminary Plat and ask staff to forward our recommendation of approval to the Town Board of Trustees, subject to the following condition:***
    - ***The applicant shall revise drawings to meet final outstanding staff comments.***
  - ***Denial: I move to deny the Harvest 47 Preliminary Plat for the following reasons _____ _____ and ask staff to forward our recommendation of denial to the Town Board of Trustees.***

Attachments

1. Application Form
2. Cover Letter
3. Preliminary Plat
4. Traffic Letter
5. Preliminary Drainage Report
6. Staff Comment Response Letter from Applicant
7. Presentation from Staff

Town of Berthoud
807 Mountain Ave.
P.O. Box 1229
Berthoud, CO 80513
970.532.2643

DEVELOPMENT REVIEW APPLICATION

All required information must be provided before submittal will be accepted and deemed complete.
To be complete, the application must include all items identified on the submittal checklist.
Please complete both sides of application form.

Parcel Number(s): 9424009702 and 9424123006

Site Address: 735 E. Hwy 56 Berthoud CO 80513

Project Name: Harvest 47

Brief description of project:
small rsidential subdivision

APPLICATION TYPE ***(Check as appropriate)*****:**

☐ Annexation	☑ Preliminary Subdivision Plat	☐ Final Site Plan
☐ Rezoning	☐ Final Subdivision Plat	☐ PUD Amendment
☐ Concept Plan	☐ Plat Amendment	☐ PUD Preliminary Development Plan
☐ Minor Subdivision	☐ Oil and Gas	☐ PUD Final Development Plan
☐ Special Use Review	☐ ROW Vacation	☐ Other _____

APPLICANT

Name: larry Bebbo

E-mail: mbebo@lmenterprisesinc.com
Phone: 970 532-3706
Mailing Address: 735 E. Hwy 56
City/State/Zip: Berthoud CO 80513

CONTACT PERSON ***(will receive correspondence from Town Staff/Referral Agencies)***

Name: Michael T. Cook P.E.

E-mail: mtcookpe@msn.com
Phone: 970 310-9332
Mailing Address: 970 East County Road 8
City/State/Zip: Berthoud CO 80513

OWNER(S) ***(If different than applicant)***

Name:

E-mail:
Phone:
Mailing Address:
City/State/Zip:

CONSULTANT ***(Engineer, Surveyor, or Planner)***

Name: Troy Campbell

E-mail: troy@i2-consultants.com
Phone: 970 2179148
Mailing Address: 16911 Potts Place
City/State/Zip: Mead CO 80542

LAND USE INFORMATION

Existing Use: commercial / Agriculture

Proposed Use: Residential

Existing Zoning: PUD

Proposed Zoning: (if applicable): R2-Urban Residential

Number of acres: 5.98

Proposed Access: Dorothy Drive

Adjacent zoning / land use:

East Side: R-3	North Side: PUD
West Side: R-!	South Side: R-2

UTILITY SERVICE INFORMATION

Water: TOB

Sewer: TOB

PROJECT INFORMATION

Number of proposed units:
29

Number of phases:
1

Number of Units per phase:
29

Number of lots proposed:
29

Lot size minimum:
4,212 S.F. (Lot 3, Block 1)

Lot size maximum:
9,508 S.F. (Lot 6, Block 2)

Lot size average:
Average: 6,532.7 S.F.

Gross density (units/acre):
4.85 units/acre

Net density (units/acre):
6.84 units/acre

Area and percent open space:
0.0 0%

Non-Residential Building Area (Sq. Ft.) Proposed:
0.0

Non-Residential Construction Floor Area Ratio Proposed:

Total Number of Parking Spaces:

Acreage of Site:

a. Gross: 5.98 acres
b. Right-of-Way: 1.74 acres
c. Net (a-b) 4.24 acres

Type of Housing Proposed (*please check*):

- ☐ Future Single Family
- ☐ Duplex
- ☐ Multi-family (# of units: 29)
- ☐ Townhouse
- ☐ Condominium

Signatures are required for ALL Property Owners and the Applicant

I hereby certify that I am the lawful owner of the parcel(s) of land that this application concerns and consent to the action. I hereby permit Town of Berthoud staff to enter upon the property for the purposes of inspection relating to the application. Building Permits will not be accepted while this application is in process.

Property Owner(s): _____ Date: 12-8-22

Property Owner(s): _____ Date: 12-8-22

In submitting the application materials and signing this application agreement, I acknowledge and agree that the application is subject to the applicable processing and public hearing requirements set forth in the Development Code.

Applicant: _____ Date: 12-8-22

FOR OFFICE USE ONLY	*Received By:*	*Date:*

February 16th, 2023

Michael T. Cook P.E.
Construction Superintendent
Berthoud Habitat for Humanity
970 East County Road 8
Berthoud, CO 80513
(970) 310-9332
mtcookpe@msn.com

Mr. Will Charles AICP
Principal Planner
will.charles@baselinecorp.com
Baseline Engineering Corporation
112 N. Rubey Drive, #210, Golden, CO 80403

RE: Harvest 47 Subdivision, preliminary plat resubmittal

Dear Will:

Thank you for your prompt response to our submittal of the preliminary plat documents for the Harvest 47 project. This cover letter/narrative along with the attached files is our Resubmittal for the Preliminary Plat for the Harvest 47 subdivision.

In general you will find that we have corrected any deficiencies, made changes as recommended, and have resolved any conflicts identified.

TRC comments: Compliance with section 31-2-116 of the code:

We understand and agree that diversity in the architecture and design elements of the individual residences is both important and required by the Town Code. This project is not being built by a larger production builder that might want to market only 4-6 house designs. As we have reviewed the several updates to this section of the code over the last few years we have always planned that due to the smaller size (number of lots, and number of acres) of our project we would not be required to submit an overall lot and block diversity plan. We expected that we would submit our diversity information as a part of our individual building permit submittal. This project is planned to be very similar to the existing Mary's Farm with the tree lined streets, alley loaded lots with brick and masonry being the prominent architectural design element on each house.

TRC comments: Neighboring properties zoning:

This was a part of the neighborhood master plan documents. We have added the current zoning to our preliminary plat documents.

TRC comments: Remuda Road:

Name of the road is now shown correctly as Remuda Road.

Comments of survey / plat drawings:

February 13, 2023 Response To Comments Regarding The Harvest 47 Subdivision Plat Dated 01.16.2023.

Minor Subdivision Plat

Sheet 1 of 2

1. This document will be recorded with the county, so please include the County Certificate as previously shown. (RESPONSE: The certificate has been added.)

2. The Basis of Bearing Statement should be able to be a standalone statement and therefore must include the bearing and not just a reference to a recorded plat. (RESPONSE: The Basis of Bearings Statement has been corrected.)

Sheet 2 of 2

1. Check/verify the southerly plat boundary dimension. The "Farmstead Second Filing" (under current review has this line listed as 720.38'. (RESPONSE: Both plats (Harvest 47 & Farmstead Second Filing) indicate that the West property pin on that line is to be set. Both distances appear to be calculated. Our field crew has gathered additional right of way control information. We have revised the distance on the South line of the Harvest 47 Subdivision to 720.43'. That distance differs from the Farmstead Second Filing distance by 0.05'. We feel that difference is within acceptable tolerance.)

Site /Landscape plan page:

We have updated the selection of street trees to include 3 different varieties, an Oak, Maple, and Honey Locust. We have reduced the tree count to 25 total to provide appropriate sight triangles at intersections as well as room for proposed street lighting. The location and distribution of the trees are shown on the plan sheet. The exact location of each tree will be adjusted to fit the as-built field conditions at the site as developed and utilities are installed.

Overall utility plan page:

The updated plan sheet shows changes to the proposed sewer connections as requested. **These are not construction plans.** The future construction plans will show water and sewer services in the proper locations for separation and serviceability.

The preliminary storm drain layout has been redone to comply with your direction for inlet locations. **These are not construction plans.** The future construction plans will show the storm drainage system in the proper locations.

Show Farmstead site plan:

We have included the latest design we have for the Farmstead project. We have included the adjacent design along our South border (where we are sharing the alley) as well as along our East border where we adjoin the apartments and also share an alley to the south where they have townhomes planned. We have worked diligently to keep up with the Farmstead project design to ensure that our projects connect well and fit together as they should.

Site landscape plan:

We have added aprons on the street and alley intersections as requested. **These are not construction plans.** The future construction plans will show roadway details with aprons.

We have modified the layout of the lots at intersections as requested to provide for a 10' x 10' setback (with a diagonal line at the corner. We based the layout on the Loveland alley intersection design as well the design used in the adjacent Farmstead project.

We have verified and adjusted side walk widths and Road R.O.W. widths as requested.

Preliminary drainage and erosion control report:

We have adjusted the assumptions and calculations to reflect your suggestions in your review of the preliminary report. The updated report is attached.

Attached you will find:

Harvest 47 resubmittal cover letter. (this document)
Prelim plat resub cover letter.PDF
Harvest 47 updated survey plat drawings.
Harvest 47 updated survey plat drawings.PDF
Harvest 47 preliminary plat drawings with your comments.
i2 Responses Baseline Review_11.0 HarvestPrePlat_2022-12-19.PDF
Harvest 47 updated preliminary plat drawings.
HarvestPrePlat_2023-02-15.PDF
Harvest 47 preliminary drainage and erosion control report with your comments
i2 Baseline Review_13.0 Preliminary drainage report 2022-12-19.PDF
Harvest 47 updated preliminary drainage and erosion control report
Harvest47 PreDrRpt_2023-02-15.PDF

Thank you for your help to bring this unique opportunity for the development of affordable housing to Berthoud. We look forward to working with the Town of Berthoud on moving this project forward to construction.

Michael T. Cook P.E.
Berthoud Habitat for Humanity

PRELIMINARY PLAT FOR

HARVEST 47 SUBDIVISION

BEING A SUBDIVISION OF LOT 2, O'MALLEY GLEN MINOR SUBDIVISION, SITUATE IN THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 24, TOWNSHIP 4 NORTH, RANGE 69 WEST OF THE 6TH P.M., TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO.

GENERAL NOTES:

1. This Minor Subdivision was prepared with the benefit of a TBD Title Commitment prepared by Land Title Guarantee Company (Old Republic National Title Insurance Company) Order No. FCIF25194885, effective date December 15, 2022. No further easement and/or right of way research, other than shown on this Plat, was requested by the client or performed by Intermill Land Surveying, Inc. for the preparation of this survey.
2. **RIGHT TO FARM STATEMENT:** The Town of Berthoud has adopted a "Right to Farm" policy. All new and existing residents are expected to read and understand the policy. For a copy of the policy, please contact the Town of Berthoud.
3. **SITE SPECIFIC DEVELOPMENT PLAN:** This plan constitutes a site specific development plan as defined in Article 68 of Title 24, C.R.S., as amended, and Chapter 30 of the Berthoud Development Code available at the Berthoud Tow Hall, 807 Mountain Ave., Berthoud, Colorado 80513.
4. According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event, may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.
5. **FLOOD ZONE NOTE:** Per the Federal Emergency Management Agency (FEMA) Flood Zone Mapping (Map 08069C1387H, effective 01/15/2021, panel 1387 of 1420), the property appears to be located in an "area of minimal flood hazard", Zone X.

BASIS OF BEARINGS STATEMENT:

Basis of Bearings for this Plat are based on the record bearing of N89°42'45"E on the North line of the Northeast Quarter of Section 24, Township 4 North, Range 69 West of the 6th P.M., County of Larimer, State of Colorado. Record bearing derived from the Final Plat of The Farmstead, Town of Berthoud, County of Larimer, State of Colorado as filed for record April 1, 2019 in the real property records of the Office of the Clerk and Recorder of Larimer County, Colorado at Reception Number 20190016179. Note: Monumentation of said line as shown hereon.

APPROVAL CERTIFICATES:

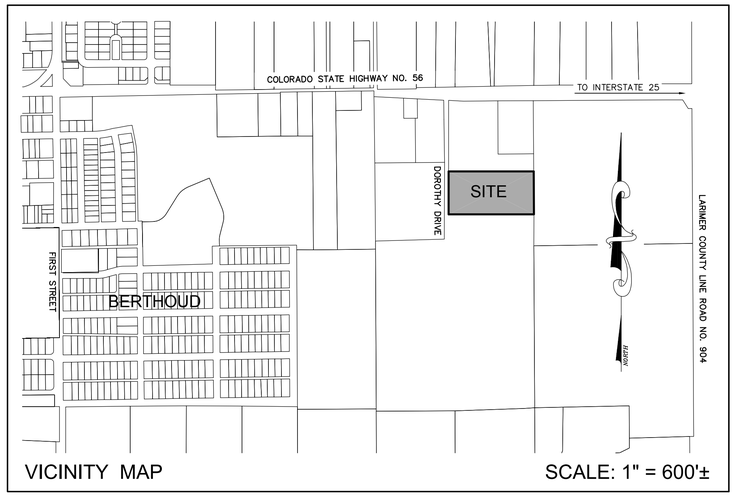
Approved by the Town of Berthoud, Colorado, this _____ day of _____, A.D., 20____.

_____
Mayor

The foregoing plat is approved for filing and accepted by the Town of Berthoud, Colorado, this _____ day of _____, A.D., 20____.

ATTEST:

_____
Town Clerk



VICINITY MAP SCALE: 1" = 600'±

LEGAL DESCRIPTION AND DEDICATION:

KNOW ALL MEN BY THESE PRESENTS: That the undersigned, being the owners those portions of the Northwest Quarter of the Northeast Quarter of Section 24, Township 4 North, Range 69 West of the 6th Principal Meridian, Town of Berthoud, County of Larimer, State of Colorado, more particularly described as follows:

That portion of O'MALLEY GLEN ANNEXATION, Town of Berthoud, County of Larimer, State of Colorado; and Tract 6, THE FARMSTEAD, Town of Berthoud, County of Larimer, State of Colorado situate in the Northwest Quarter of the Northeast Quarter of Section 24, Township 4 North, Range 69 West of the 6th Principal Meridian, Town of Berthoud, County of Larimer, State of Colorado being more particularly described as follows:

Considering the North line of the Northeast Quarter of Section 24, Township 4 North, Range 69 West of the 6th P.M., County of Larimer, State of Colorado as bearing North 89°42'45" East and with all bearings contained herein relative thereto:

Beginning at the North One-Quarter corner of said Section 24; thence along the West line of the Northwest Quarter of the Northeast Quarter of said Section 24, South 00°03'24" East 48.46 feet, more or less, to the Northwest corner of the O'MALLEY GLEN SECOND ANNEXATION to the said Town of Berthoud; said point also being a point on the Southerly Right-of-Way line for Colorado State Highway No. 56; thence departing said West line of the Northwest Quarter of the Northeast Quarter of said Section 24 and along the North line of said O'MALLEY GLEN SECOND ANNEXATION and along the North line of the O'MALLEY GLEN ANNEXATION, to the Town of Berthoud, Colorado and along the North line of THE FARMSTEAD to the Town of Berthoud, Colorado and along said Southerly Right-of-Way line for Colorado State Highway No. 56, South 86°35'48" East 749.34 feet; thence continuing along said North line of said O'MALLEY GLEN ANNEXATION and continuing along said Southerly Right-of-Way line for Colorado State Highway No. 56, North 89°38'35" East 285.56 feet, more or less, to the Northwest corner of Lot 3, AMENDED PLAT OF BEBO M.R.D. NO. S-76-87 to Larimer County, Colorado; thence departing said North line of said O'MALLEY GLEN ANNEXATION and departing said Southerly Right-of-Way line for Colorado State Highway No. 56 and along West line of said Lot 3, AMENDED PLAT OF BEBO M.R.D. NO S-76-87, South 00°05'41" East 442.95 feet, more or less, to the Southwest corner of said Lot 3, AMENDED PLAT OF BEBO M.R.D. NO. S-76-87; thence along the South line of said Lot 3, AMENDED PLAT OF BEBO M.R.D. NO. S-76-87 North 89°38'35" East 295.01 feet, more or less, to the Southeast corner of said Lot 3, AMENDED PLAT OF BEBO M.R.D. NO. S-76-87; said point also being a point on the East line of the West Half of the Northeast Quarter of said Section 24; thence along said East line of the West Half of the Northeast Quarter of said Section 24, South 00°05'41" East 141.43 feet to the TRUE POINT OF BEGINNING; thence continuing along said East line of the West Half of the Northeast Quarter of said Section 24, South 00°05'41" East 362.00 feet, more or less, to the Northeast corner of Tract 5, of said THE FARMSTEAD; thence along the North line of said Tract 5, of said THE FARMSTEAD, North 89°50'08" West 720.43 feet, more or less, to the Southwest corner of Tract 6, of said THE FARMSTEAD said point also being on the East Right-of-Way line of Dorothy Drive; thence along the West line of said Tract 6, of said THE FARMSTEAD and along the East Right-of-Way line of said Dorothy Drive, North 00°10'08" East 362.00 feet; thence departing the West line of said Tract 6, of said THE FARMSTEAD and departing the East Right-of-Way line of said Dorothy Drive, South 89°50'08" East 718.76 feet, more or less, to a point on the East line of the West Half of the Northeast Quarter of said Section 24 and the TRUE POINT OF BEGINNING.

Containing an area of 260,490.5 Square Feet or 5.98 Acres, more or less.

Have laid out, platted, and subdivided the above described land, under the name and style of **HARVEST 47 SUBDIVISION**, and by these presents do dedicate to the Town of Berthoud in fee simple the street and public rights-of-way as shown on the plat, and grants to the Town of Berthoud such easements as are created hereby and depicted or, by note, referenced hereon, along with the right to install, maintain, replace and operate mains, transmission lines, service lines, and appurtenances, either directly or through the various public utilities, as may be necessary to provide such utility, cable television, water , electric, natural gas and sanitary services within this subdivision or property contiguous thereto, though, over, under, and across streets, utility and other easements, and other public places as shown on the plat.

OWNER(S): LAWRENCE L. BEBO and JACQUELYN D. BEBO

_____ _____
Lawrence L. Bebo Jacquelyn D. Bebo

STATE OF COLORADO)
)SS
COUNTY OF LARIMER)

The foregoing certificate of ownership was acknowledged before me this _____ day of _____, 20____, by Lawrence L. Bebo and Jacquelyn D. Bebo.

Witness my hand and official seal.

My commission expires _____

_____
Notary Public

LAND SURVEYOR'S CERTIFICATE:

I, Steven John Stencel, a Registered Land Surveyor in the State of Colorado, do hereby certify that the survey of **HARVEST 47 SUBDIVISION** was made under my supervision and the accompanying plat accurately and properly shows said subdivision and is in compliance with the Subdivision Regulations of the Town of Berthoud.

PREPARED BY AND ON BEHALF OF:

INTERMILL LAND SURVEYING, INC.
1301 North Cleveland Avenue
Loveland, Colorado 80537
P: (970) 669-0516

Steven John Stencel
Colorado PLS No. 30462

Date: _____

COLORADO REGISTERED STEVEN J. STENCEL 30462 LAND SURVEYOR
REVIEW FINAL DOCUMENT NOT A FINALIZED DOCUMENT UNTIL MAP CONTAINS AN ORIGINAL DATE AND SIGNATURE

LARIMER COUNTY CLERK AND RECORDER CERTIFICATE:

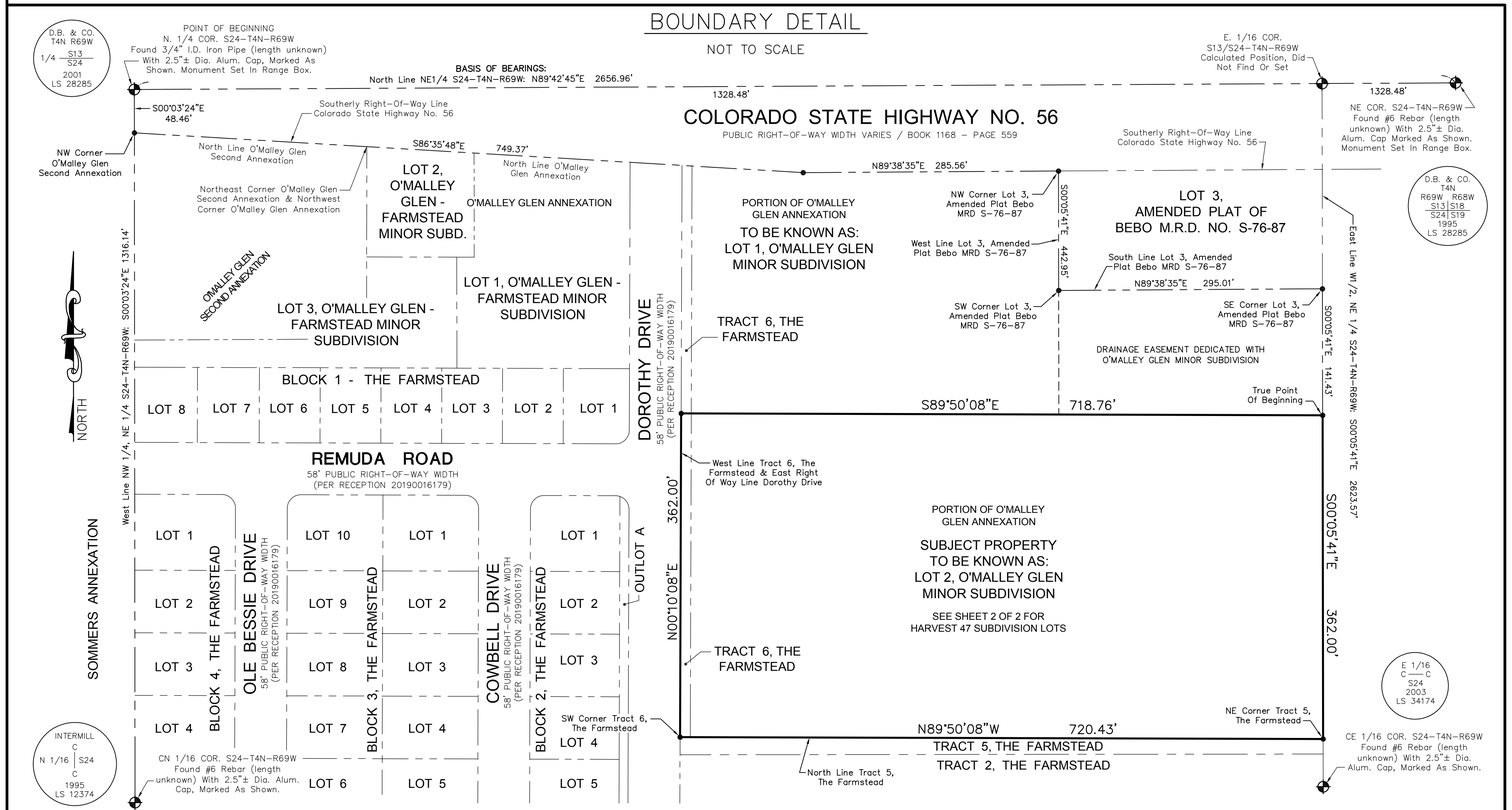
The foregoing plat is approved for filing and accepted by the County of Larimer, Colorado, this _____ day of _____ A.D., 20____.

ATTEST:

_____
County Clerk

BOUNDARY DETAIL

NOT TO SCALE



REVISIONS:	BY:	DATE:
1. Per Town of Berthoud Comments Dated 01/16/2023.	JEB	02/10/2023

INTERMILL LAND SURVEYING, INC.
1301 NORTH CLEVELAND AVENUE LOVELAND, COLORADO 80537 BUS. (970)-669-0516 / FAX (970)-635-9775

CLIENT: LARRY and JACKIE BEBO

TITLE: PRELIMINARY PLAT FOR HARVEST 47 SUBDIVISION
TO THE TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO

DRAWN BY: JEB
CHECKED BY:
APPROVED BY:
DATE: 12/23/2022
SCALE: 1" = 30'

PROJECT NO.: P-08-6486

SHEET 1 OF 2

\\Intel\Vp\P-6486-Bebo-Harvest47\Dwg\Harvest-47-Plat.dwg

PRELIMINARY PLAT FOR

HARVEST 47 SUBDIVISION

BEING A SUBDIVISION OF LOT 2, O'MALLEY GLEN MINOR SUBDIVISION, SITUATE IN THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 24, TOWNSHIP 4 NORTH, RANGE 69 WEST OF THE 6TH P.M., TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO.

NORTH / WEST / EAST / SOUTH

30 22.5 15 7.5 0 15 30 60

ORIGINAL SCALE: 1" = 30'
LINEAL UNITS USED:
U.S. SURVEY FEET

LOT 3, AMENDED PLAT OF BEBO M.R.D. NO. S-76-87

SW Corner Lot 3, Amended Plat Bebo M.R.D. S-76-87, Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

SE Corner Lot 3, Amended Plat Bebo M.R.D. S-76-87, Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

N89°38'35"E 295.01'

S00°05'41"E 138.75'

S00°05'41"E 141.43'

The East Line Of The W1/2 Of The NE1/4 Of S24-T4N-R69W

DRAINAGE EASEMENT DEDICATED WITH O'MALLEY GLEN MINOR SUBDIVISION

TRUE POINT OF BEGINNING Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

BLOCK 1, THE FARMSTEAD

LOT 1

58' ROW

Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

LOT 1, O'MALLEY GLEN MINOR SUBDIVISION

S89°50'08"E 718.76'

423.76' 295.01' 547.76'

S89°50'08"E 451.76'

REMUDA ROAD
58' PUBLIC RIGHT-OF-WAY
(PER RECEPTION 20190016179)

DOROTHY DRIVE
58' PUBLIC RIGHT-OF-WAY
(PER RECEPTION 20190016179)

BLOCK ONE

LOT 1 ±5420 S.F.
LOT 2 ±4827 S.F.
LOT 3 ±4212 S.F.
LOT 4 ±7545 S.F.
LOT 5 ±7671 S.F.
LOT 6 ±7671 S.F.
LOT 7 ±4823 S.F.
LOT 8 ±4823 S.F.
LOT 9 ±4823 S.F.
LOT 10 ±7771 S.F.
LOT 11 ±4773 S.F.
LOT 12 ±4773 S.F.
LOT 13 ±5487 S.F.

BLOCK TWO

LOT 1 ±8318 S.F.
LOT 2 ±6445 S.F.
LOT 3 ±6444 S.F.
LOT 4 ±6443 S.F.
LOT 5 ±6392 S.F.
LOT 6 ±9458 S.F.
LOT 7 ±7636 S.F.
LOT 8 ±7065 S.F.
LOT 9 ±7000 S.F.
LOT 10 ±7000 S.F.
LOT 11 ±7000 S.F.
LOT 12 ±7000 S.F.
LOT 13 ±7000 S.F.
LOT 14 ±7000 S.F.
LOT 15 ±7000 S.F.
LOT 16 ±7235 S.F.

20' ALLEY

10' HALF ALLEY

10' Utility Easement

5' Utility Easement

REMUDA ROAD
58' PUBLIC RIGHT-OF-WAY
DEDICATED WITH THIS PLAT

S89°50'08"E 419.18'

S89°50'08"E 409.31'

S89°50'08"E 327.03'

S89°50'08"E 72.02'

S89°50'08"E 534.78'

S89°50'08"E 125.60'

N89°50'08"W 720.43'

Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 38469

TRACT 5, THE FARMSTEAD

TRACT 2, THE FARMSTEAD

BLOCK 2, THE FARMSTEAD OUTLOT A

LOT 2

LOT 3

LOT 4

LOT 5

58' ROW

LINE TABLE		
LINE	BEARING	LENGTH
L1	N45°10'47"E	14.15'
L2	N44°49'13"W	14.14'
L3	N45°10'47"E	14.15'
L4	S89°50'08"E	26.00'
L5	N45°02'05"E	14.11'
L6	N44°49'13"W	14.14'
L7	N45°10'47"E	14.15'

CURVE TABLE					
CURVE	DELTA	RADIUS	LENGTH	BEARING	CHORD
C1	42°02'28"	165.00'	121.07'	N68°48'32"W	118.37'
C2	42°02'50"	165.00'	121.09'	S68°48'43"E	118.39'
C3	29°15'58"	194.00'	99.09'	N75°11'47"W	98.02'
C4	05°44'49"	194.00'	19.46'	N50°39'42"W	19.45'
C5	42°02'28"	136.00'	99.79'	N68°48'32"W	97.57'
C6	42°02'50"	136.00'	99.81'	S68°48'43"E	97.58'
C7	42°02'50"	194.00'	142.37'	S68°48'43"E	139.20'
C8	04°35'16"	136.00'	10.89'	S50°04'56"E	10.89'
C9	17°21'53"	136.00'	41.22'	S61°03'31"E	41.06'
C10	20°05'40"	136.00'	47.70'	S79°47'18"E	47.45'
C11	13°37'04"	194.00'	46.11'	S54°35'50"E	46.00'
C12	15°48'53"	194.00'	53.55'	S69°18'49"E	53.38'
C13	12°36'53"	194.00'	42.71'	S83°31'42"E	42.63'

PREPARED BY AND ON BEHALF OF:

INTERMILL LAND SURVEYING, INC.
1301 North Cleveland Avenue
Loveland, Colorado 80537
P: (970) 669-0516

Steven John Stencel
Colorado PLS No. 30462

Date: _____

REVIEW PRINT ONLY
NOT A FINALIZED DOCUMENT
UNTIL MAP CONTAINS AN
ORIGINAL DATE AND SIGNATURE
COLORADO REG. LAND SURVEYOR
STEVEN JOHN STENCEL
30462
STATE OF COLORADO

According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event, may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

REVISIONS:	BY:	DATE:
1. Per Town of Berthoud Comments Dated 01/16/2023.	JEB	02/10/2023

INTERMILL LAND SURVEYING, INC.
1301 NORTH CLEVELAND AVENUE LOVELAND, COLORADO 80537
BUS. (970)-669-0516 / FAX (970)-635-9775

TITLE: PRELIMINARY PLAT FOR HARVEST 47 SUBDIVISION
TO THE TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO

CLIENT: LARRY and JACKIE BEBO

DRAWN BY: JEB
CHECKED BY:
APPROVED BY:
DATE: 12/23/2022
SCALE: 1" = 30'

PROJECT NO.: P-08-6486

SHEET	OF
2	2

\Visl\Vf\P-08-6486-Bebo-Harvest47\Dwg\Harvest-47-Plat.dwg

Harvest 47
735 E. Highway 56, Berthoud, CO

Traffic Letter

KE Job #2021-056

Prepared for:

i2 Consultants
16911 Potts Place
Mead, CO

Prepared by:

KELLAR ENGINEERING

skellar@kellarengineering.com
970.219.1602 phone

December 3, 2021
Sean K. Kellar, PE, PTOE

This document, together with the concepts and recommendations presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization from Kellar Engineering LLC shall be without liability to Kellar Engineering LLC.

1.0 Introduction

The purpose of this Traffic Generation Letter (Traffic Letter) is to evaluate the traffic generated by the proposed project located at 735 E. Highway 56 in Berthoud, CO.

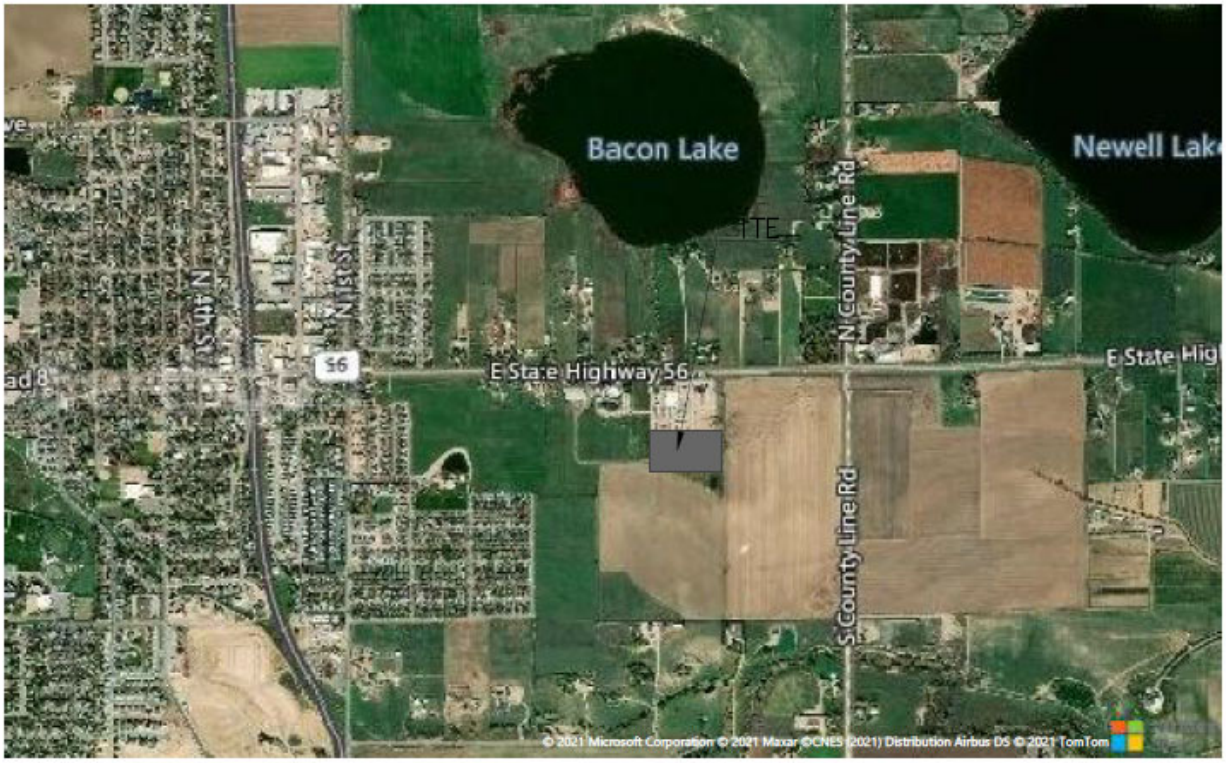
2.0 Proposed Development

The proposed project consists of 28 single-family homes. See Table 1: Trip Generation and Figure 2: Site Plan.

3.0 Trip Generation

Site generated traffic estimates are determined through a process known as trip generation. Rates and equations are applied to the proposed land use to estimate traffic generated by the development during a specific time interval. The acknowledged source for trip generation rates is the *Trip Generation Report* published by the Institute of Transportation Engineers (ITE). ITE has established trip generation rates in nationwide studies of similar land uses. For this study, Kellar Engineering LLC (KE) used the *ITE 10th Edition Trip Generation Report* average trip rates. Per the ITE, the proposed project is anticipated to generate approximately 264 daily trips, 21 AM total peak hour trips, and 28 PM total peak hour trips. See Table 1: Trip Generation.

Figure 1: Vicinity Map



VICINITY MAP

Figure 2: Site Plan

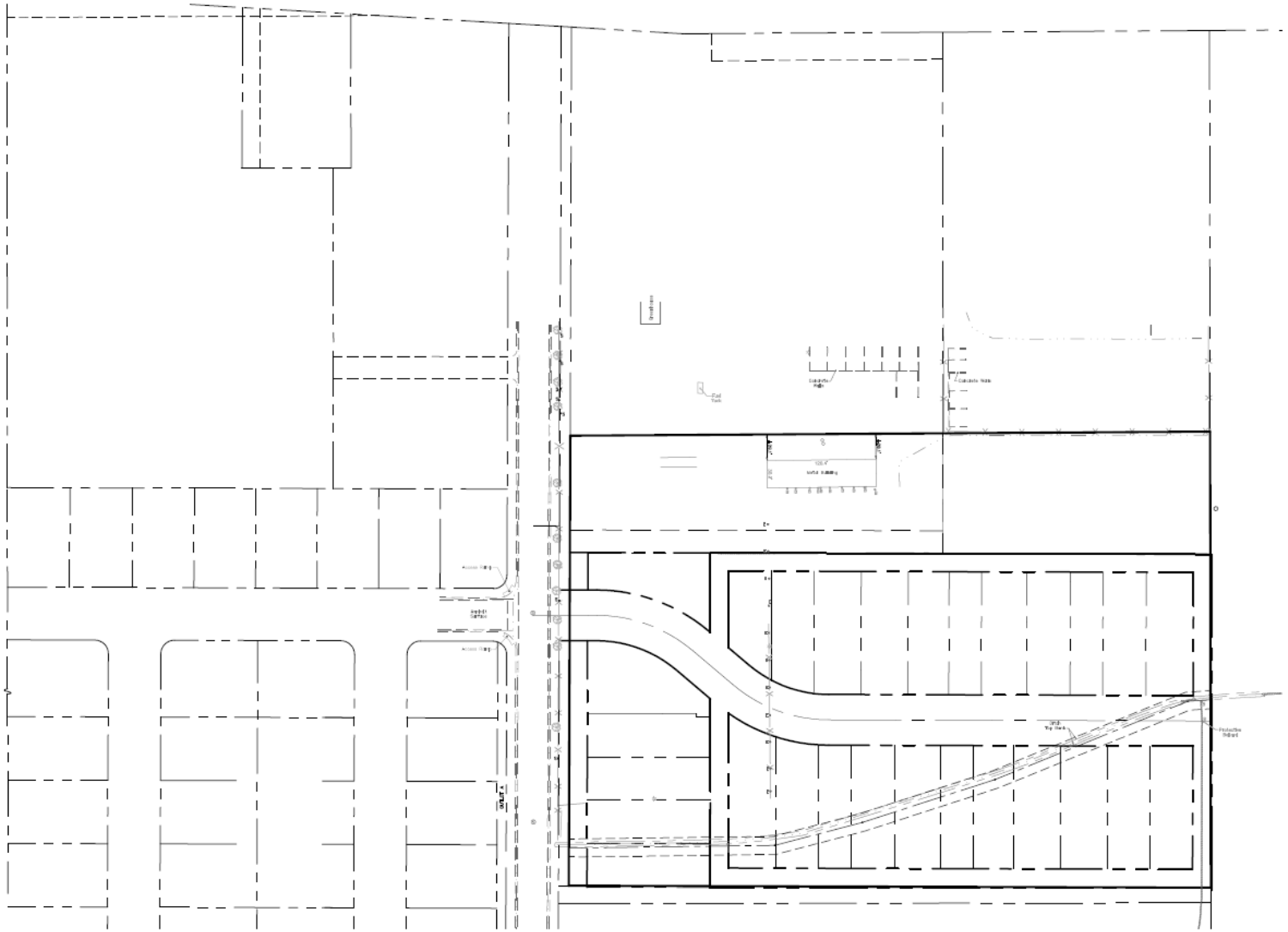


Table 1: Trip Generation (ITE Trip Generation, 10th Edition)

ITE Code	Land Use		Average Daily Trips		AM Peak Hour Trips						PM Peak Hour Trips					
		Size	Rate	Total	Rate	% In	In	% Out	Out	Total	Rate	% In	In	% Out	Out	Total
210	Single Family	28 DU	9.44	264	0.74	25%	5	75%	16	21	0.99	63%	18	37%	10	28
Total				**264**			**5**		**16**	**21**			**18**		**10**	**28**

DU = Dwelling Units

4.0 Appropriateness

Access to the project site is proposed from a local street internal to a subdivision and not from an arterial roadway. Site access should be taken, when available, on the road of lower classification as proposed with the current project. Therefore, the access to the project site is appropriate based upon the existing road network and location of the project site. The proposed project consists of 28 single-family homes. The adjacent neighborhood also consists of single-family residential homes. The project's site generated traffic is low and the existing transportation network is appropriate to accommodate the proposed project's traffic.

5.0 Conclusions

Based upon the review of the project's low trip generation and location, it can be determined that the proposed use is appropriate from a traffic engineering perspective. The trip generation, site location, land use, and size is appropriate from a traffic engineering perspective.

- Per the ITE, the proposed project generates 264 daily trips, 21 AM total peak hour trips, and 28 PM total peak hour trips. See Table 1: Trip Generation.
- The project's proposed access is appropriate from a traffic engineering standpoint.
- The existing roadway improvements are appropriate to accommodate the proposed project's traffic.

APPENDIX:

Single-Family Detached Housing
(210)

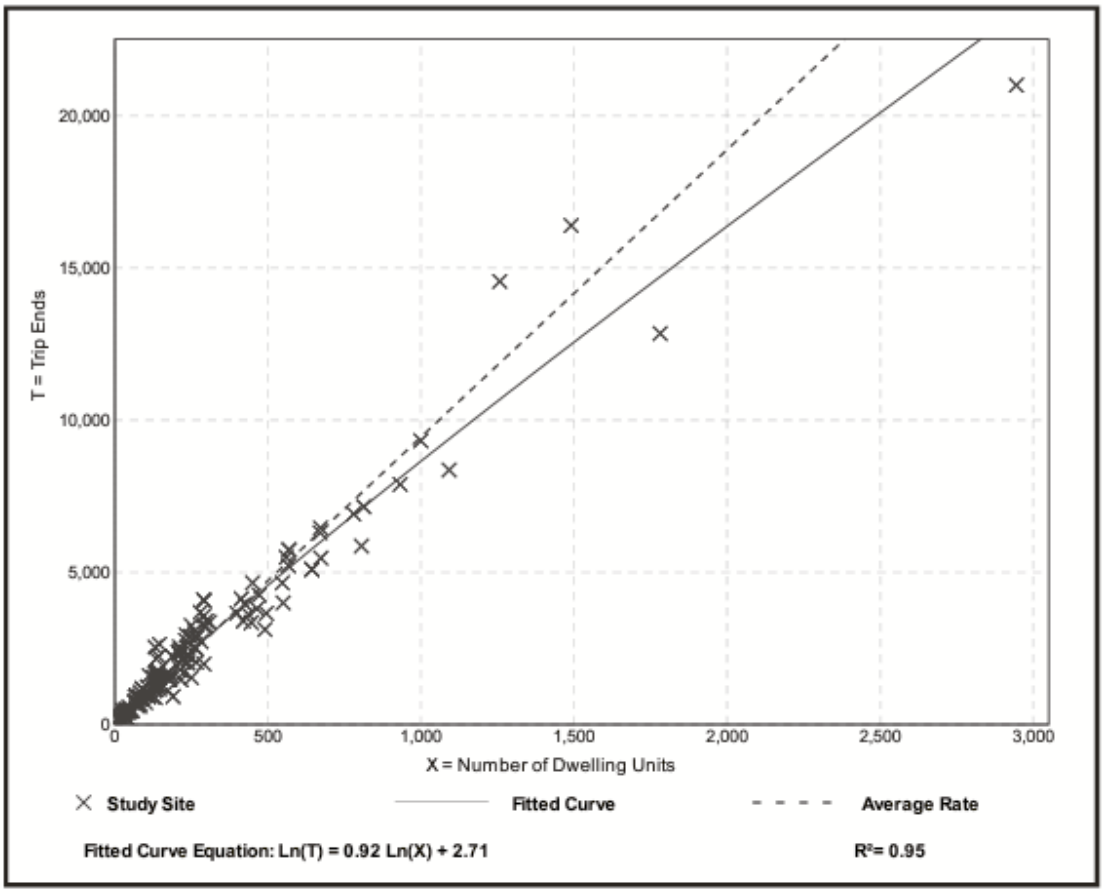
Vehicle Trip Ends vs: **Dwelling Units**
On a: **Weekday**

Setting/Location: **General Urban/Suburban**
Number of Studies: 159
Avg. Num. of Dwelling Units: 264
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
9.44	4.81 - 19.39	2.10

Data Plot and Equation



Trip Generation Manual 10th Edition • Volume 2: Data • Residential (Land Uses 200–299)

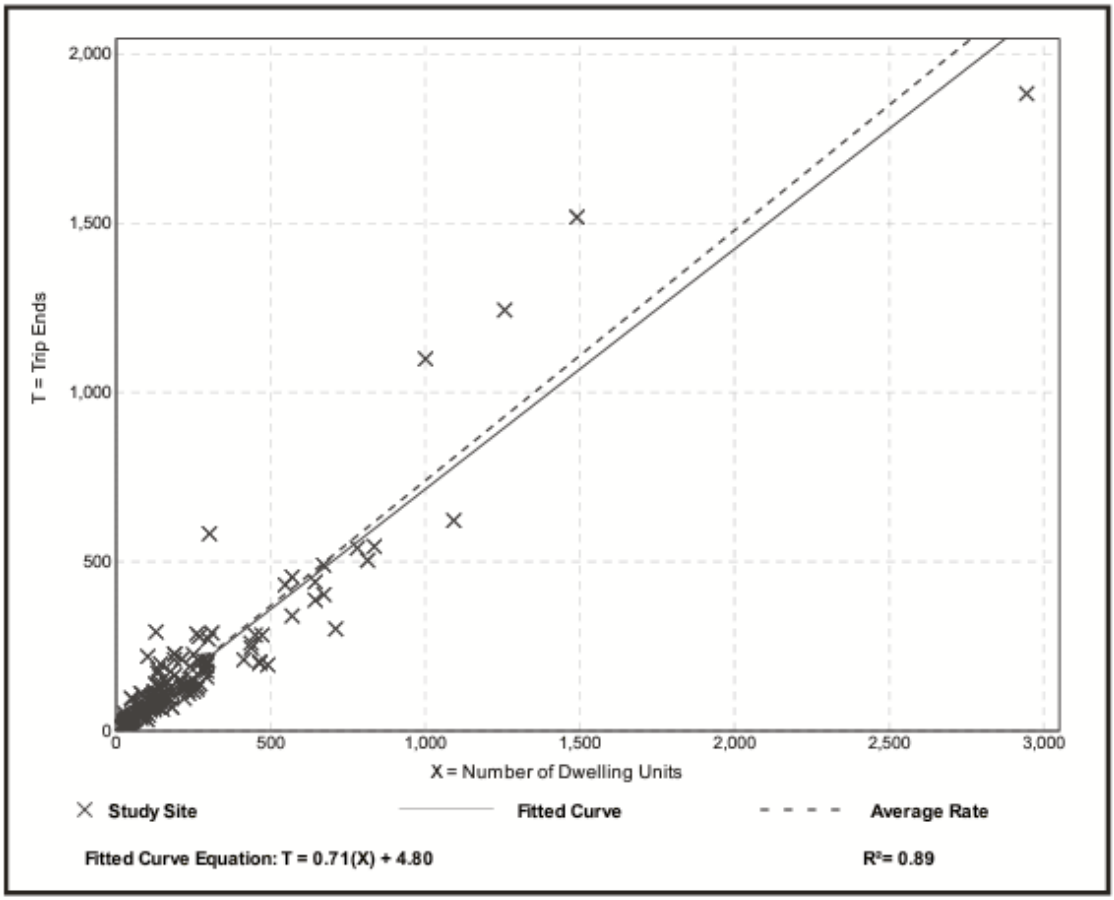
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	173
Avg. Num. of Dwelling Units:	219
Directional Distribution:	25% entering, 75% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.74	0.33 - 2.27	0.27

Data Plot and Equation



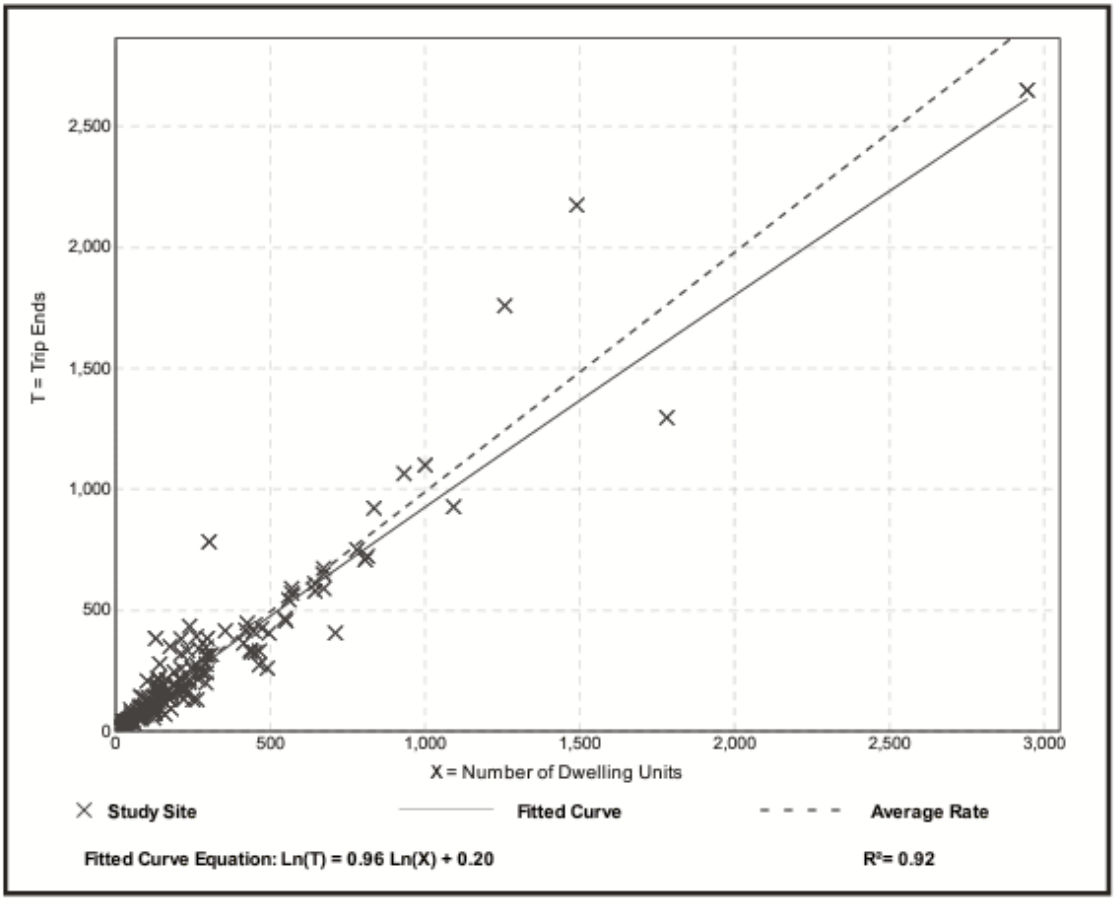
Single-Family Detached Housing
(210)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 4 and 6 p.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	190
Avg. Num. of Dwelling Units:	242
Directional Distribution:	63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

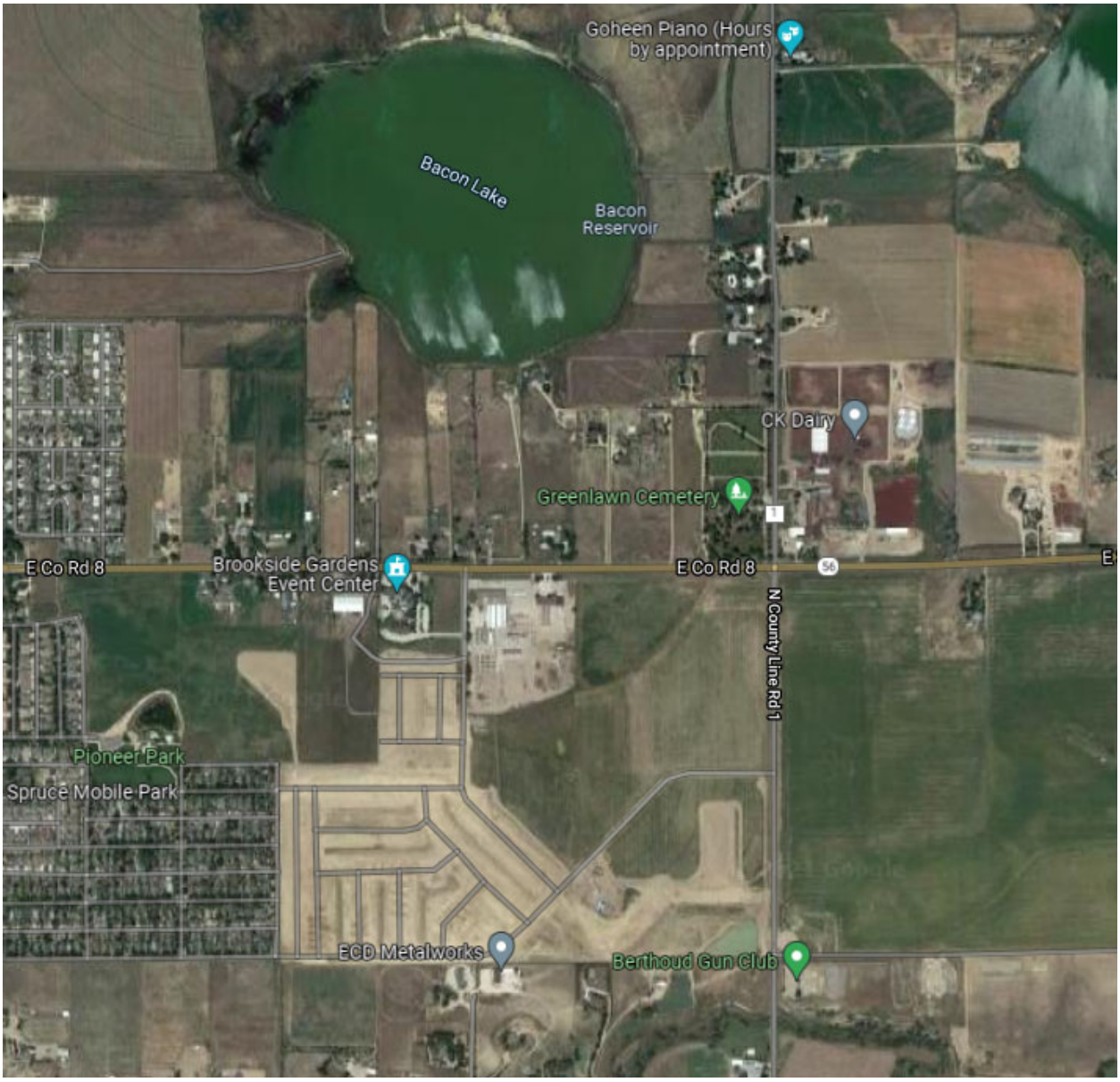
Average Rate	Range of Rates	Standard Deviation
0.99	0.44 - 2.98	0.31

Data Plot and Equation



Trip Generation Manual 10th Edition • Volume 2: Data • Residential (Land Uses 200–299)

Aerial Photo



KELLAR ENGINEERING

Sean Kellar, PE, PTOE

Principal Engineer

Education
B.S., Civil Engineering, Arizona State University – Tempe, AZ

Registration
Colorado, Professional Engineer (PE)
Wyoming, Professional Engineer (PE)
Arizona, Professional Engineer (PE)
Kansas, Professional Engineer (PE)
Missouri, Professional Engineer (PE)
Professional Traffic Operations Engineer (PTOE)

Professional Memberships
Institute of Transportation Engineers (ITE)

Industry Tenure
22 Years

Sean's wide range of expertise includes: transportation planning, traffic modeling roadway design, bike and pedestrian facilities, traffic impact studies, traffic signal warrant analysis, parking studies, corridor planning and access management. Sean's experience in both the private and public sectors; passion for safety and excellence; and strong communication and collaboration skills can bring great value to any project. Prior to starting Kellar Engineering, Sean was employed at the Missouri Department of Transportation (MoDOT) as the District Traffic Engineer for the Kansas City District. Sean also worked for the City of Loveland, CO for over 10 years as a Senior Civil Engineer supervising a division of transportation/traffic engineers. While at the City of Loveland, Sean managed several capital improvement projects, presented several projects to the City Council and Planning Commission in public hearings, and managed the revisions to the City's Street Standards. Sean is also proficient in Highway Capacity Software, Synchro, PT Vissim, Rodel, GIS, and AutoCAD.

WORK EXPERIENCE:

Kellar Engineering, Principal Engineer/President – January 2016 – Present

Missouri Department of Transportation, District Traffic Engineer, Kansas City District – June 2015 – January 2016

City of Loveland, Colorado, Senior Civil Engineer, Public Works Department – February 2005 – June 2015

Kirkham Michael Consulting Engineers, Project Manager - February 2004 – February 2005

Dibble and Associates Consulting Engineers, Project Engineer – August 1999 – February 2004

PRELIMINARY DRAINAGE & EROSION CONTROL REPORT

HARVEST 47

Berthoud, CO

February 20, 2023

Prepared for:

L & J Bebo
PO Box W
Berthoud, CO 80513

Prepared by:

i2 Consultants, Inc.
16911 Potts Place
Mead, CO 80542
Phone: 970.217.9148

Project Number: 1053-1

i2 Consultants, Inc.

16911 Potts Place, Mead, CO
970.217.9148
troy@i2-consultants.com

February 20, 2023

Mr. Noah Nemmers, PE
Baseline Engineering Corporation
112 N. Rubey Drive, #210
Golden, CO 80403
c/o Town of Berthoud

RE: Preliminary Drainage & Erosion Control Report for Harvest 47
Berthoud, CO

Dear Mr. Nemmers:

We are pleased to present this Preliminary Drainage & Erosion Control Report for Harvest 47 for your review and approval. This report has been prepared in general accordance with the *Town of Berthoud Engineering and Infrastructure Design Standards and Construction Specifications, dated October 2021* (Design Standards) and Larimer County Storm Drainage Standards.

We look forward to your favorable review of this project and report. Please do not hesitate to contact our office if you have any questions.

Sincerely,

i2 Consultants, Inc.

Troy W. Campbell, PE
Senior Project Engineer

RESPONSIBLE PARTY CERTIFICATION

L. & J. Bebo, hereby certifies that the drainage facilities for Harvest 47, Berthoud, CO will be constructed according to the design presented in this report. I understand that the Town of Berthoud does not and shall not assume liability for the drainage facilities designed and/or certified by my engineer. I understand that the Town of Berthoud reviews drainage plans but cannot, on behalf of Harvest 47, Berthoud, CO, guarantee that the final drainage design review will absolve L. & J. Bebo and/or their successors and/or assigns of future liability for improper design. I further understand that approval of the Plat and/or Development Permit does not imply approval of my engineer's drainage design.

Attest:

_____
L. Bebo

_____
Authorized Signature

ENGINEER'S CERTIFICATION

I, Troy W. Campbell, hereby certify that this report (plan) for the drainage design of Harvest 47, Berthoud, CO was prepared by me (or under my direct supervision) in accordance with the provisions of the Town of Berthoud Standards and Specifications for the Design and Construction of Public and Private Improvements for the Responsible Parties thereof. I understand that the Town of Berthoud does not and shall not assume liability for drainage facilities designed by others.

_____
Registered Professional Engineer
State of Colorado No. 41159
(Seal)

Preliminary Drainage & Erosion Control Report

Harvest 47
Located within the Northwest Quarter of Section 24,
Township 4 North, Range 69 West of the 6th P.M.
Town of Berthoud, County of Larimer, State of Colorado

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I. GENERAL LOCATION AND DESCRIPTION

A. Site Location:

The subject site is located in the northwest quarter of Section 24, Township 4 North, Range 69 West, of the 6th Principal Meridian, Town of Berthoud, County of Larimer, State of Colorado. Furthermore, the project is located south of Highway 56, east of Dorothy Drive and west of County Line Road.

B. Site Description:

The subject site is roughly 6.0 acres and is currently undeveloped.

The proposed development will consist of single-family lots, roadway, alleys, sidewalks and landscaping.

Detention and water quality for the subject site will be to the north of the subject site.

The site to the west has been developed and contains single family lots. The area to the south and east is currently being developed as multi-family and single-family lots.

According to the Natural Resources Conversation Service (NRCS) Web Soil Survey, the native soils in this area are:

- Nunn Clay Loam, 0 to 1 percent slopes (Map Unit Symbol #73), which is a Type C soil.
- Wiley Silt Loam, 1 to 3 percent slopes (Map Unit Symbol #118), which is a Type B soil.

Please refer to the NRCS soils information in the Appendix.

There are no irrigation facilities within the subject property boundary. An abandoned irrigation ditch has been removed from the property.

C. Proposed Project Description:

The subject site consists of roughly 6.0 acres and the subject development will be constructed in one phase. The subject project will consist of single-family lots, roadway section, alley and landscaping.

D. Flood Hazard and Relevant Drainage Studies:

The site is shown on FEMA panel 08069C1391H, effective 01/15/2021. The subject site is located with Zone X of the FEMA panel.

Relevant drainage studies for this area include the *Drainage Investigation for L&M Enterprises – MRD,* prepared by Messner Engineering Associates, dated October 11, 1990, as well as the *Preliminary Drainage Report for The Farmstead Third Filing,* prepared by Northern Engineering, dated August 10, 2022.

II. DRAINAGE BASIN

A. Overall Drainage Basin:

Related documents for the subject site are provided below:

- *Drainage Investigation for L&M Enterprises – MRD,* prepared by Messner Engineering Associates, dated October 11, 1990;
- *Preliminary Drainage Report for The Farmstead Third Filing,* prepared by Northern Engineering, dated August 10, 2022.

B. Sub-basin and Site Drainage:

The proposed site is currently undeveloped and the site runoff currently flows from west to northeast and west to southeast.

The subject site has previously been studied in the report prepared by Messner Engineering Associates and has also been included in previous drainage reports for The Farmstead development.

There is no off-site runoff that reaches the subject site.

III. DRAINAGE DESIGN CRITERIA

A. Regulations:

This report has been prepared in general accordance with the Town of Berthoud Design Standards, Larimer County Storm Drainage Standards, the Mile High Flood Control District/*Urban Storm Drainage Criteria Manual (USDCM)* and the *Drainage Investigation for L&M Enterprises – MRD,* prepared by Messner Engineering Associates, dated October 11, 1990.

B. Development Criteria Reference and Constraints:

The study area is currently undeveloped and vacant land.

The increase in runoff from the proposed development will be routed through the onsite and off-site detention facilities.

C. Hydrological Criteria:

Drainage design is in accordance with the Town of Berthoud Design Standards, Larimer County Stormwater Design Standards criteria, as well as the USDCM.

The design storms for this project are the 2-year and the 100-year recurrence intervals. Runoff is calculated using the Rational Method since all basins are smaller than 160 acres. The Rational Method calculations are computed by the following:

Q = ciA	where:	Q	=	Runoff in cubic feet per second
		c	=	Calculated runoff coefficient for design event
		i	=	Storm intensity in inches/hour
		A	=	Basin area in acres

Rational calculations were prepared using *Peak Runoff Prediction by the Rational Method*, *Version 2.00,* released May 2017, Urban Drainage and Flood Control District.

D. Hydraulic Criteria:

Proposed hydraulic calculations were prepared using *Hydraflow Express Extension for AutoDesk Civil 3D* as well as the *Detention Basin Volume Estimating Workbook, Version 2.35, Released January 2015,* by Urban Drainage and Flood Control District. Refer to the Appendix, Hydraulic Calculations for additional information as well as the Drainage Plan.

E. Variances from Criteria:

No variances are requested with the subject development.

IV. DRAINAGE FACILITY DESIGN

A. General Concept:

The drainage patterns associated with the proposed improvements are generally consistent, to the extent practical and reasonable, with the existing topography, adjacent development and previous drainage investigation for the subject property.

The estimated runoff for the site was determined using the Rational Method, as detailed above. Based on the direction of flow and existing drainage features the subject site has been divided into three (3) onsite drainage basins.

B. Specific Details:

The drainage analysis for the subject area and the layout of the basins corresponds with the proposed drainage conditions to the extent practical. Due to the proposed development, there are some differences between the previously designed basins and proposed basins due to the required layout, surrounding development and grading of the site.

Basin A
Basin A is the western portion of the site and will contain the front portion of residential lots. The proposed drainage pattern for this basin is generally from east to west and then south along Dorothy Drive. Runoff will be conveyed via curb & gutter to the south in Dorothy Drive.

Basin B
Basin B is in the southern portion of the site and will contain the rear/back portion of residential lots. The proposed drainage pattern for this basin is generally from north to south and then east in the alley along the common lot line for Harvest 47 and The Farmstead. Runoff will be conveyed to The Farmstead storm system and detained off-site.

Basin C
Basin C contains the majority of the subject site and consists of roughly 6 acres. Runoff will drain from the southwest to northeast to the proposed detention pond. Runoff will be detained and then released to The Farmstead storm system to the east of the subject site.

The proposed drainage from the subject site is not anticipated to have a negative impact on existing or proposed downstream facilities. Detention and water quality for Basin C will be provided onsite.

Basin C will be detained in the proposed detention pond and will be released to The Farmstead storm system at a 100-year flow of roughly 6 cfs. The release rate was previously determined in the *Drainage Investigation for L&M Enterprises – MRD,* prepared by Messner Engineering Associates, dated October 11, 1990. The proposed 100-year detention volume is roughly 0.51 ac-ft; water quality of 0.15 ac-ft is included within this 100-year volume. The detention pond will include an emergency overflow weir on the east side of the pond. The emergency overflow will be graded to convey flows to the east towards The Farmstead development.

C. Open Channel Flow

Common lot line swales between the single family lots will be necessary to convey developed runoff from the lots.

D. Storm Drainage Pipes

Storm drainage pipes will be utilized to convey runoff from the subject site to the proposed detention pond. The pipes will be sized to convey the 100-year event.

E. Sediment and Erosion Control

Several sediment and erosion control measures will be incorporated into the construction. The initial sediment and erosion control measures to be installed shall include silt fence, as well as vehicle tracking control. After the initial grading operations, sediment control logs shall be installed in onsite swales and rock socks within the curb and gutter adjacent to the subject site.

As construction progresses, there will be a location designated for a concrete washout area. After the onsite roadway has final surface stabilization, rock socks shall be installed along onsite the curb and gutter and remain until final overall development landscaping has been completed.

Inlet protection shall be installed around any onsite inlets and inlets immediately downstream of the subject site.

Additionally, any area that has been disturbed by construction activities and left exposed for more than fourteen (14) days, shall receive drilled seeding and straw mulch at 2 tons/acre, until permanent landscaping or ground cover has been provided.

All stormwater quality and sediment/erosion control measures shall be regularly inspected and maintained during and after the completion of construction. Furthermore, sufficient care shall be taken by the contractor with materials handling and storage.

The proposed measures for sediment and erosion control shall be updated as necessary during construction, as warranted by site conditions.

F. Maintenance of Drainage Facilities

The onsite drainage facilities shall be regularly inspected and maintained by the property owner or homeowner's association. The inspections should include a log for the date, items inspected, maintenance actions and any updates to the drainage system.

The facilities shall be maintained at any time that erosion occurs in order to mitigate possible future erosion and to mitigate material leaving the subject site. Furthermore, items such as onsite culverts and chases shall be cleaned and inspected on a regular basis.

Onsite vegetation shall be maintained and replanted if necessary to establish vegetated groundcover.

V. CONCLUSIONS

A. Compliance with Standards:

The drainage design is in general compliance with the Town of Berthoud Design Standards, Larimer County Storm Drainage Standards, the Mile High Flood Control District/*Urban Storm Drainage Criteria Manual (USDCM)* and the *Drainage Investigation for L&M Enterprises – MRD,* prepared by Messner Engineering Associates, dated October 11, 1990.

B. Drainage Concept:

The drainage patterns associated with the proposed improvements are generally consistent, to the extent practical and reasonable, with the design in the *Drainage Investigation for L&M Enterprises – MRD,* prepared by Messner Engineering Associates, dated October 11, 1990.

The drainage design for this project should not negatively impact improvements downstream or the existing storm system.

VI.REFERENCES

1. *Town of Berthoud Engineering and Infrastructure Design Standards and Construction Specifications, dated October 2021.*

2. *Larimer County Stormwater Design Standards (Addendum to the Urban Storm Drainage Criteria Manuals – Volumes 1, 2 and 3), adopted June 20, 2005.*

3. Urban Drainage and Flood Control District, Drainage Criteria Manual Volumes 1, Revised August 2018, Volume 2, Revised September 2017 and the Volume 3, dated November 2010 and Updated October 2019.

4. *Drainage Investigation for L&M Enterprises – MRD,* prepared by Messner Engineering Associates, dated October 11, 1990.

5. *Preliminary Drainage Report for The Farmstead Third Filing,* prepared by Northern Engineering, dated August 10, 2022.

VII.APPENDICIES

- Vicinity Map
- FEMA & Existing Geotechnical Information
- Hydrologic Calculations
- Hydraulic Calculations
- Excerpts from Previous Report
- Charts and Figures

Vicinity Map

VICINITY MAP

SCALE: 1" = 1,000'

i2 Consultants, Inc.
16911 Potts Place
Mead, Colorado
970.217.9148

HARVEST 47

BERTHOUD, CO

CLIENT:	BEBO
PROJECT NO:	1053-1
DATE:	12/19/2022
REVISED:	-

SHEET: 1 OF 1

C:\Users\troy\Dropbox\I2\Projects\1053-1 Harvest47\DWG\Sheets\HarvestPrePlat_CV.dwg, 12/18/2022 1:48:41 PM

FEMA & Existing Geotechnical Information

National Flood Hazard Layer FIRMette

FEMA

105°4'W 40°18'26"N

105°3'22"W 40°17'59"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 12/18/2022 at 1:11 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

Soil Map—Larimer County Area, Colorado
(Harvest 47)

Map Scale: 1:1,420 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

B-3

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

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

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

Water Features
- Streams and Canals

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

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Larimer County Area, Colorado
Survey Area Data: Version 17, Sep 7, 2022

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

Date(s) aerial images were photographed: Jul 2, 2021—Aug 25, 2021

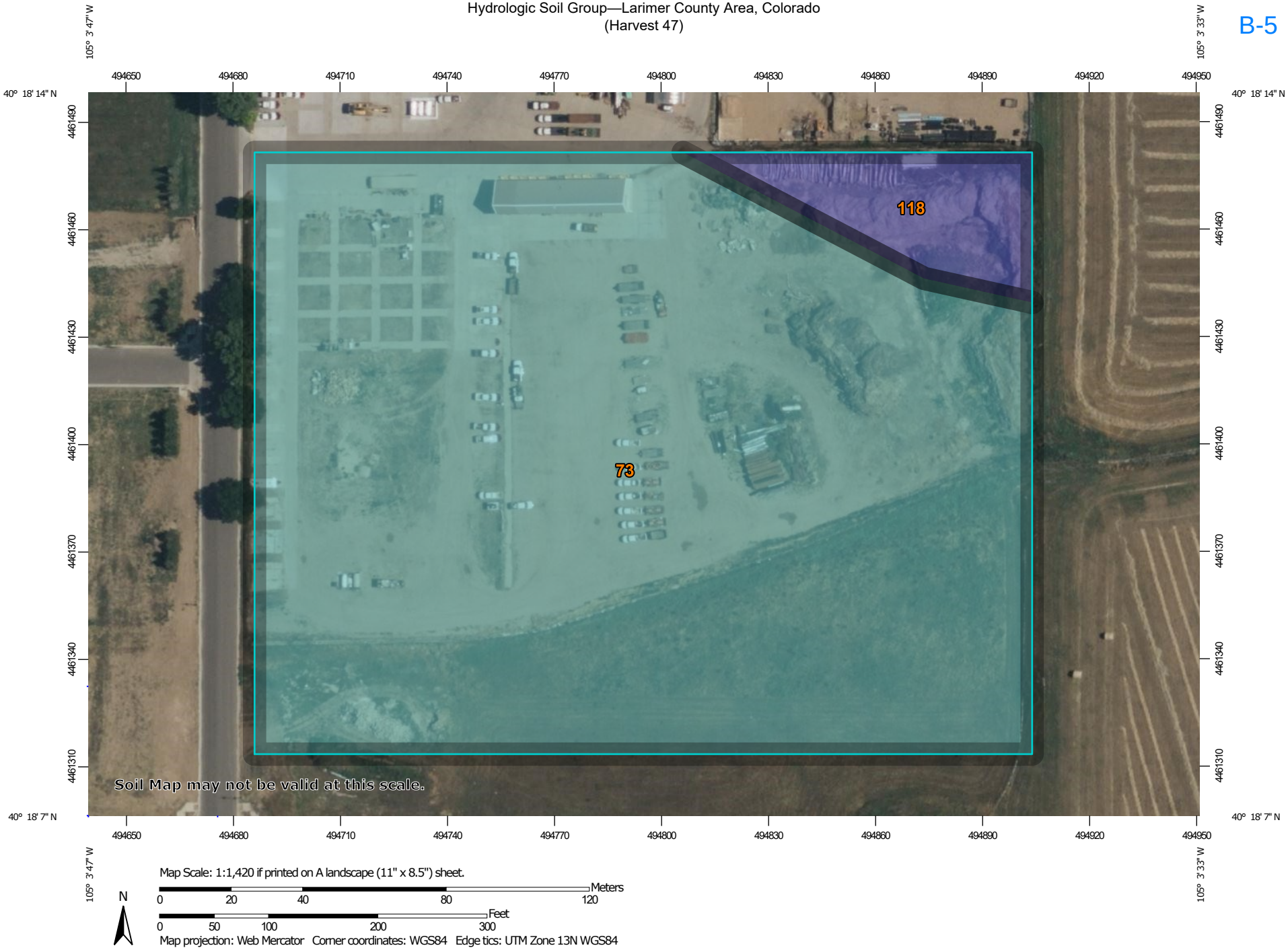
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

B-4

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
73	Nunn clay loam, 0 to 1 percent slopes	8.5	93.6%
118	Wiley silt loam, 1 to 3 percent slopes	0.6	6.4%
Totals for Area of Interest		**9.1**	**100.0%**

Hydrologic Soil Group—Larimer County Area, Colorado
(Harvest 47)



Map Scale: 1:1,420 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

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

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

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

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

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

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

Soil Survey Area: Larimer County Area, Colorado
Survey Area Data: Version 17, Sep 7, 2022

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

Date(s) aerial images were photographed: Jul 2, 2021—Aug 25, 2021

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
73	Nunn clay loam, 0 to 1 percent slopes	C	8.5	93.6%
118	Wiley silt loam, 1 to 3 percent slopes	B	0.6	6.4%
Totals for Area of Interest			**9.1**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

B-8

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Hydrologic Calculations

i2 Consultants, Inc.

Calculation of Peak Runoff using Rational Method

Designer: twc
Company: i2 Consultants, Inc.
Date: 2/15/2023
Project: Harvest 47
Location: Berthoud, CO

Version 2.00 released May 2017

Cells of this color are for required user-input
Cells of this color are for optional override values
Cells of this color are for calculated results based on overrides

$$t_i = \frac{0.395(1.1 - C_5)\sqrt{L_i}}{S_i^{0.33}}$$

$$t_t = \frac{L_t}{60K\sqrt{S_t}} = \frac{L_t}{60V_t}$$

$$\text{Computed } t_c = t_i + t_t$$

$$\text{Regional } t_c = (26 - 17i) + \frac{L_t}{60(14i + 9)\sqrt{S_t}}$$

$t_{minimum}$ = 5 (urban)
$t_{minimum}$ = 10 (non-urban)

$$\text{Selected } t_c = \max\{t_{minimum}, \min(\text{Computed } t_c, \text{Regional } t_c)\}$$

Select UDFCD location for NOAA Atlas 14 Rainfall Depths from the pulldown list OR enter your own depths obtained from the NOAA website (click this link)

	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
1-hour rainfall depth, P1 (in) =	0.81	1.08	1.38	1.87	2.32	2.84	4.32
	a	b	c				
Rainfall Intensity Equation Coefficients =	28.50	10.00	0.786				

$$I(in/hr) = \frac{a * P_1}{(b + t_c)^c}$$

$$Q(cfs) = CIA$$

Subcatchment Name	Area (ac)	NRCS Hydrologic Soil Group	Percent Imperviousness	Runoff Coefficient, C							Overland (Initial) Flow Time					Channelized (Travel) Flow Time							Time of Concentration			Rainfall Intensity, I (in/hr)							Peak Flow, Q (cfs)						
				2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	Overland Flow Length L_i (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Overland Flow Slope S_i (ft/ft)	Overland Flow Time t_i (min)	Channelized Flow Length L_t (ft)	U/S Elevation (ft) (Optional)	D/S Elevation (ft) (Optional)	Channelized Flow Slope S_t (ft/ft)	NRCS Conveyance Factor K	Channelized Flow Velocity V_t (ft/sec)	Channelized Flow Time t_t (min)	Computed t_c (min)	Regional t_c (min)	Selected t_c (min)	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr	500-yr
A	0.20	C	45.0	0.34	0.40	0.46	0.57	0.62	0.67	0.73	25.00			0.020	5.01	250.00			0.010	20	2.00	2.08	7.10	21.07	7.10	2.48	3.31	4.22	5.72	7.10	8.69	13.22	0.17	0.27	0.39	0.65	0.87	1.16	1.93
B	0.65	C	45.0	0.34	0.40	0.46	0.57	0.62	0.67	0.73	25.00			0.020	5.01	380.00			0.010	20	2.00	3.17	8.18	22.49	8.18	2.36	3.15	4.02	5.45	6.77	8.28	12.60	0.52	0.82	1.21	2.02	2.71	3.60	5.98
C	6.10	C	45.0	0.34	0.40	0.46	0.57	0.62	0.67	0.73	150.00			0.020	12.28	750.00			0.010	20	2.00	6.25	18.53	26.52	18.53	1.66	2.21	2.82	3.83	4.75	5.81	8.84	3.45	5.42	7.97	13.33	17.82	23.68	39.35

Hydraulic Calculations

DETENTION VOLUME BY THE MODIFIED FAA METHOD

Project: Harvest 47

Basin ID: Site Detention (Basin C)

(For catchments less than 160 acres only. For larger catchments, use hydrograph routing method)
(NOTE: for catchments larger than 90 acres, CUHP hydrograph and routing are recommended)

Determination of MINOR Detention Volume Using Modified FAA Method

Design Information (Input):

Catchment Drainage Imperviousness	I_a =	45.00	percent
Catchment Drainage Area	A =	6.100	acres
Predevelopment NRCS Soil Group	Type =	C	A, B, C, or D
Return Period for Detention Control	T =	2	years (2, 5, 10, 25, 50, or 100)
Time of Concentration of Watershed	Tc =	19	minutes
Allowable Unit Release Rate	q =	0.04	cfs/acre
One-hour Precipitation	P_1 =	0.81	inches
Design Rainfall IDF Formula $i = C_1 * P_1/(C_2+T_c)^{C_3}$			
Coefficient One	C_1 =	28.50	
Coefficient Two	C_2 =	10	
Coefficient Three	C_3 =	0.789	

Determination of Average Outflow from the Basin (Calculated):

Runoff Coefficient	C =	0.31	
Inflow Peak Runoff	Qp-in =	3.11	cfs
Allowable Peak Outflow Rate	Qp-out =	**0.24**	cfs
Mod. FAA Minor Storage Volume =		6,182	**cubic feet**
Mod. FAA Minor Storage Volume =		**0.142**	**acre-ft**

5 <- Enter Rainfall Duration Incremental Increase Value Here (e.g. 5 for 5-Minutes)

Rainfall Duration minutes (input)	Rainfall Intensity inches / hr (output)	Inflow Volume acre-feet (output)	Adjustment Factor "m" (output)	Average Outflow cfs (output)	Outflow Volume acre-feet (output)	Storage Volume acre-feet (output)
0	0.00	0.000	0.00	0.00	0.000	0.000
5	2.73	0.035	1.00	0.24	0.002	0.034
10	2.17	0.057	1.00	0.24	0.003	0.053
15	1.82	0.071	1.00	0.24	0.005	0.066
20	1.58	0.082	0.96	0.23	0.006	0.076
25	1.40	0.091	0.87	0.21	0.007	0.084
30	1.26	0.098	0.81	0.20	0.008	0.090
35	1.15	0.104	0.76	0.19	0.009	0.095
40	1.05	0.110	0.73	0.18	0.010	0.100
45	0.98	0.115	0.71	0.17	0.011	0.104
50	0.91	0.119	0.69	0.17	0.012	0.107
55	0.86	0.123	0.67	0.16	0.012	0.110
60	0.81	0.126	0.65	0.16	0.013	0.113
65	0.77	0.130	0.64	0.16	0.014	0.116
70	0.73	0.133	0.63	0.15	0.015	0.118
75	0.69	0.135	0.62	0.15	0.016	0.120
80	0.66	0.138	0.62	0.15	0.017	0.122
85	0.64	0.141	0.61	0.15	0.017	0.123
90	0.61	0.143	0.60	0.15	0.018	0.125
95	0.59	0.145	0.60	0.15	0.019	0.126
100	0.57	0.147	0.59	0.14	0.020	0.127
105	0.55	0.149	0.59	0.14	0.021	0.129
110	0.53	0.151	0.58	0.14	0.022	0.130
115	0.51	0.153	0.58	0.14	0.022	0.131
120	0.50	0.155	0.58	0.14	0.023	0.132
125	0.48	0.157	0.57	0.14	0.024	0.133
130	0.47	0.158	0.57	0.14	0.025	0.133
135	0.45	0.160	0.57	0.14	0.026	0.134
140	0.44	0.162	0.57	0.14	0.027	0.135
145	0.43	0.163	0.56	0.14	0.027	0.136
150	0.42	0.164	0.56	0.14	0.028	0.136
155	0.41	0.166	0.56	0.14	0.029	0.137
160	0.40	0.167	0.56	0.14	0.030	0.137
165	0.39	0.169	0.56	0.14	0.031	0.138
170	0.38	0.170	0.55	0.14	0.032	0.138
175	0.38	0.171	0.55	0.13	0.033	0.139
180	0.37	0.172	0.55	0.13	0.033	0.139
185	0.36	0.174	0.55	0.13	0.034	0.139
190	0.35	0.175	0.55	0.13	0.035	0.140
195	0.35	0.176	0.55	0.13	0.036	0.140
200	0.34	0.177	0.55	0.13	0.037	0.140
205	0.33	0.178	0.55	0.13	0.038	0.140
210	0.33	0.179	0.54	0.13	0.038	0.141
215	0.32	0.180	0.54	0.13	0.039	0.141
220	0.32	0.181	0.54	0.13	0.040	0.141
225	0.31	0.182	0.54	0.13	0.041	0.141
230	0.31	0.183	0.54	0.13	0.042	0.141
235	0.30	0.184	0.54	0.13	0.043	0.142
240	0.30	0.185	0.54	0.13	0.043	0.142
245	0.29	0.186	0.54	0.13	0.044	0.142
250	0.29	0.187	0.54	0.13	0.045	0.142
255	0.28	0.188	0.54	0.13	0.046	0.142
260	0.28	0.189	0.54	0.13	0.047	0.142
265	0.27	0.190	0.53	0.13	0.048	0.142
270	0.27	0.190	0.53	0.13	0.048	0.142
275	0.27	0.191	0.53	0.13	0.049	0.142
280	0.26	0.192	0.53	0.13	0.050	0.142
285	0.26	0.193	0.53	0.13	0.051	0.142
290	0.26	0.194	0.53	0.13	0.052	0.142
295	0.25	0.194	0.53	0.13	0.053	0.142
300	0.25	0.195	0.53	0.13	0.054	0.142

Mod. FAA Minor Storage Volume (cubic ft.) = 6,182
Mod. FAA Minor Storage Volume (acre-ft.) = 0.1419

Determination of MAJOR Detention Volume Using Modified FAA Method

Design Information (Input):

Catchment Drainage Imperviousness	I_a =	45.00	percent
Catchment Drainage Area	A =	6.100	acres
Predevelopment NRCS Soil Group	Type =	C	A, B, C, or D
Return Period for Detention Control	T =	100	years (2, 5, 10, 25, 50, or 100)
Time of Concentration of Watershed	Tc =	19	minutes
Allowable Unit Release Rate	q =	1.00	cfs/acre
One-hour Precipitation	P_1 =	2.84	inches
Design Rainfall IDF Formula $i = C_1 * P_1/(C_2+T_c)^{C_3}$			
Coefficient One	C_1 =	28.50	
Coefficient Two	C_2 =	10	
Coefficient Three	C_3 =	0.789	

Determination of Average Outflow from the Basin (Calculated):

Runoff Coefficient	C =	0.59	
Inflow Peak Runoff	Qp-in =	20.72	cfs
Allowable Peak Outflow Rate	Qp-out =	**6.10**	cfs
Mod. FAA Major Storage Volume =		22,389	**cubic feet**
Mod. FAA Major Storage Volume =		**0.514**	**acre-ft**

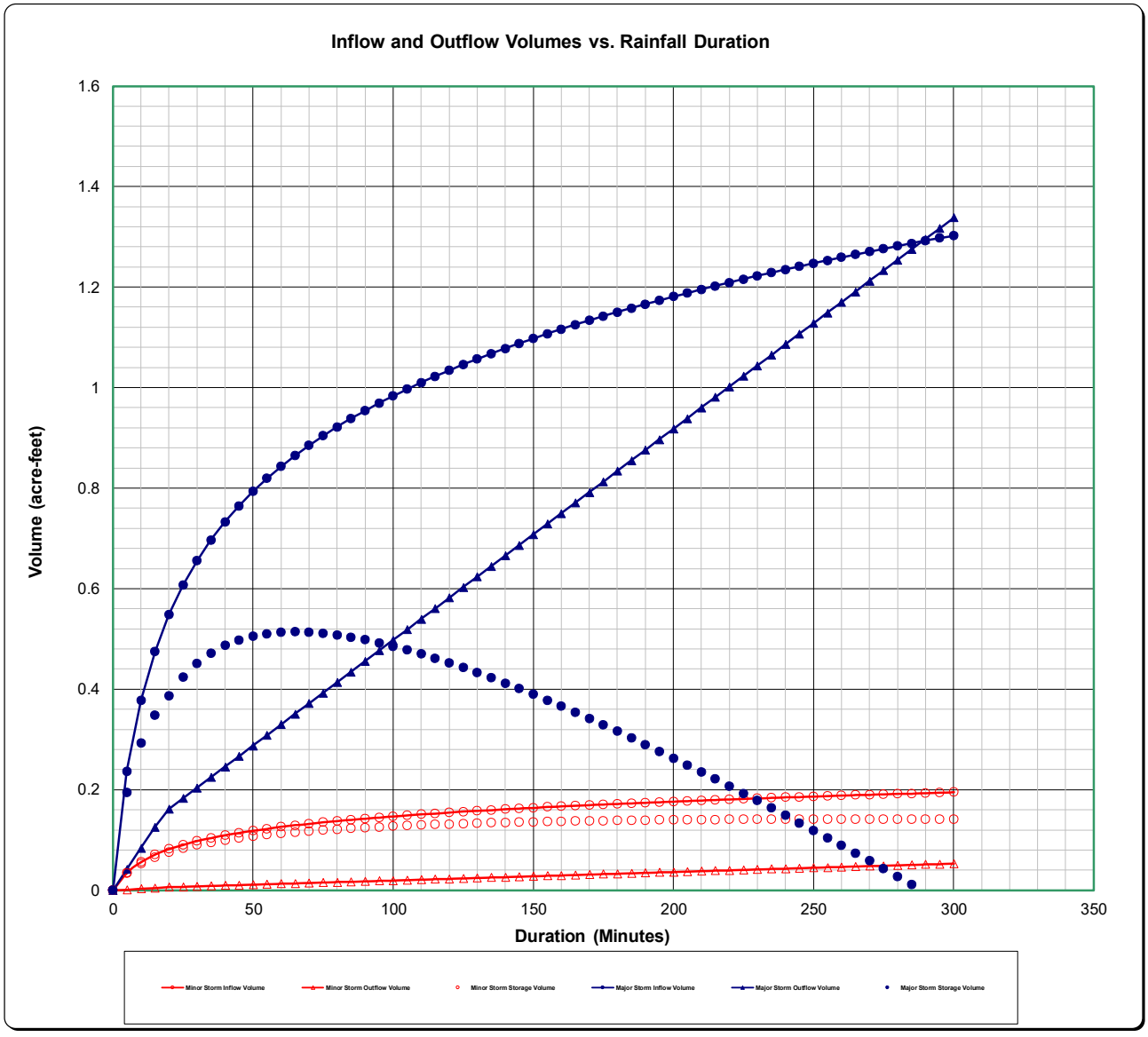
Rainfall Duration minutes (input)	Rainfall Intensity inches / hr (output)	Inflow Volume acre-feet (output)	Adjustment Factor "m" (output)	Average Outflow cfs (output)	Outflow Volume acre-feet (output)	Storage Volume acre-feet (output)
0	0.00	0.000	0.00	0.00	0.000	0.000
5	9.55	0.237	1.00	6.10	0.042	0.195
10	7.61	0.377	1.00	6.10	0.084	0.293
15	6.39	0.475	1.00	6.10	0.126	0.349
20	5.53	0.548	0.96	5.87	0.162	0.387
25	4.90	0.607	0.87	5.31	0.183	0.424
30	4.41	0.655	0.81	4.93	0.204	0.452
35	4.02	0.697	0.76	4.66	0.225	0.472
40	3.70	0.733	0.73	4.46	0.246	0.487
45	3.43	0.765	0.71	4.30	0.267	0.498
50	3.20	0.793	0.69	4.18	0.288	0.505
55	3.00	0.819	0.67	4.08	0.309	0.510
60	2.83	0.843	0.65	3.99	0.330	0.513
65	2.68	0.865	0.64	3.92	0.351	0.514
70	2.55	0.885	0.63	3.86	0.372	0.513
75	2.43	0.904	0.62	3.80	0.393	0.511
80	2.32	0.922	0.62	3.76	0.414	0.508
85	2.23	0.938	0.61	3.71	0.435	0.504
90	2.14	0.954	0.60	3.68	0.456	0.498
95	2.06	0.969	0.60	3.64	0.477	0.492
100	1.98	0.983	0.59	3.61	0.498	0.486
105	1.92	0.997	0.59	3.59	0.519	0.478
110	1.85	1.010	0.58	3.56	0.540	0.470
115	1.79	1.022	0.58	3.54	0.561	0.462
120	1.74	1.034	0.58	3.52	0.582	0.453
125	1.69	1.046	0.57	3.50	0.603	0.443
130	1.64	1.057	0.57	3.48	0.624	0.433
135	1.60	1.068	0.57	3.47	0.645	0.423
140	1.55	1.078	0.57	3.45	0.666	0.412
145	1.51	1.088	0.56	3.44	0.687	0.401
150	1.48	1.098	0.56	3.43	0.708	0.390
155	1.44	1.107	0.56	3.41	0.729	0.378
160	1.41	1.116	0.56	3.40	0.750	0.366
165	1.38	1.125	0.56	3.39	0.771	0.354
170	1.35	1.134	0.55	3.38	0.792	0.342
175	1.32	1.142	0.55	3.37	0.813	0.329
180	1.29	1.150	0.55	3.36	0.834	0.316
185	1.26	1.158	0.55	3.36	0.855	0.303
190	1.24	1.166	0.55	3.35	0.876	0.290
195	1.21	1.173	0.55	3.34	0.897	0.277
200	1.19	1.181	0.55	3.33	0.918	0.263
205	1.17	1.188	0.55	3.33	0.939	0.249
210	1.15	1.195	0.54	3.32	0.960	0.235
215	1.13	1.202	0.54	3.31	0.981	0.221
220	1.11	1.209	0.54	3.31	1.002	0.207
225	1.09	1.216	0.54	3.30	1.023	0.193
230	1.07	1.222	0.54	3.30	1.044	0.178
235	1.05	1.229	0.54	3.29	1.065	0.164
240	1.04	1.235	0.54	3.29	1.086	0.149
245	1.02	1.241	0.54	3.28	1.107	0.134
250	1.01	1.247	0.54	3.28	1.128	0.119
255	0.99	1.253	0.54	3.27	1.149	0.104
260	0.98	1.259	0.54	3.27	1.170	0.089
265	0.96	1.265	0.53	3.26	1.191	0.074
270	0.95	1.270	0.53	3.26	1.212	0.058
275	0.94	1.276	0.53	3.26	1.233	0.043
280	0.92	1.282	0.53	3.25	1.254	0.028
285	0.91	1.287	0.53	3.25	1.275	0.012
290	0.90	1.292	0.53	3.24	1.296	-0.004
295	0.89	1.298	0.53	3.24	1.317	-0.020
300	0.88	1.303	0.53	3.24	1.338	-0.035

Mod. FAA Major Storage Volume (cubic ft.) = 22,389
Mod. FAA Major Storage Volume (acre-ft.) = 0.5140

DETENTION VOLUME BY THE MODIFIED FAA METHOD

Project: Harvest 47

Basin ID: Site Detention (Basin C)



STAGE-DISCHARGE SIZING OF THE WATER QUALITY CAPTURE VOLUME (WQCV) OUTLET

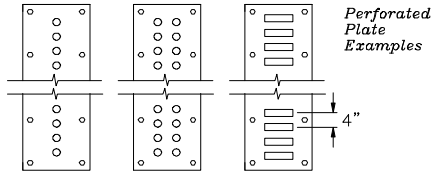
Project: Harvest 47
Basin ID: Basin C Water Quality

WQCV Design Volume (Input):

Catchment Imperviousness, I_a =	45.0	percent			
Catchment Area, A =	6.10	acres	Diameter of holes, D =	0.801	inches
Depth at WQCV outlet above lowest perforation, H =	1	feet	Number of holes per row, N =	1	
Vertical distance between rows, h =	4.00	inches	**OR**		
Number of rows, NL =	1.00				
Orifice discharge coefficient, C_o =	0.65		Height of slot, H =		inches
Time to Drain the Pond =	40	hours			

Watershed Design Information (Input):

Percent Soil Type A =		%
Percent Soil Type B =		%
Percent Soil Type C/D =	100	%



Perforated Plate Examples

Outlet Design Information (Output):

Water Quality Capture Volume, WQCV =	0.252	watershed inches
Water Quality Capture Volume (WQCV) =	0.128	acre-feet
Design Volume (WQCV / 12 * Area * 1.2) Vol =	**0.154**	**acre-feet**
Outlet area per row, Ao =	0.50	square inches
Total opening area at each row based on user-input above, Ao =	0.50	square inches
Total opening area at each row based on user-input above, Ao =	0.003	square feet

3

	Central Elevations of Rows of Holes in feet																								
	Row 1	Row 2	Row 3	Row 4	Row 5	Row 6	Row 7	Row 8	Row 9	Row 10	Row 11	Row 12	Row 13	Row 14	Row 15	Row 16	Row 17	Row 18	Row 19	Row 20	Row 21	Row 22	Row 23	Row 23	Σ Flow
	4986.50																								
	Collection Capacity for Each Row of Holes in cfs																								
4986.50	0.0000																								0.00
4986.75	0.0091																								0.01
4987.00	0.0129																								0.01
4987.25	0.0158																								0.02
4987.50	0.0182																								0.02
4987.75	0.0204																								0.02
4988.00	0.0223																								0.02
4988.25	0.0241																								0.02
4988.50	0.0258																								0.03
4988.75	0.0274																								0.03
4989.00	0.0288																								0.03
4989.25	0.0303																								0.03
4989.50	0.0316																								0.03
4989.75	0.0329																								0.03
4990.00	0.0341																								0.03
4990.25	0.0353																								0.04
4990.50	0.0365																								0.04
4990.75	0.0376																								0.04
4991.00	0.0387																								0.04
4991.25	0.0398																								0.04
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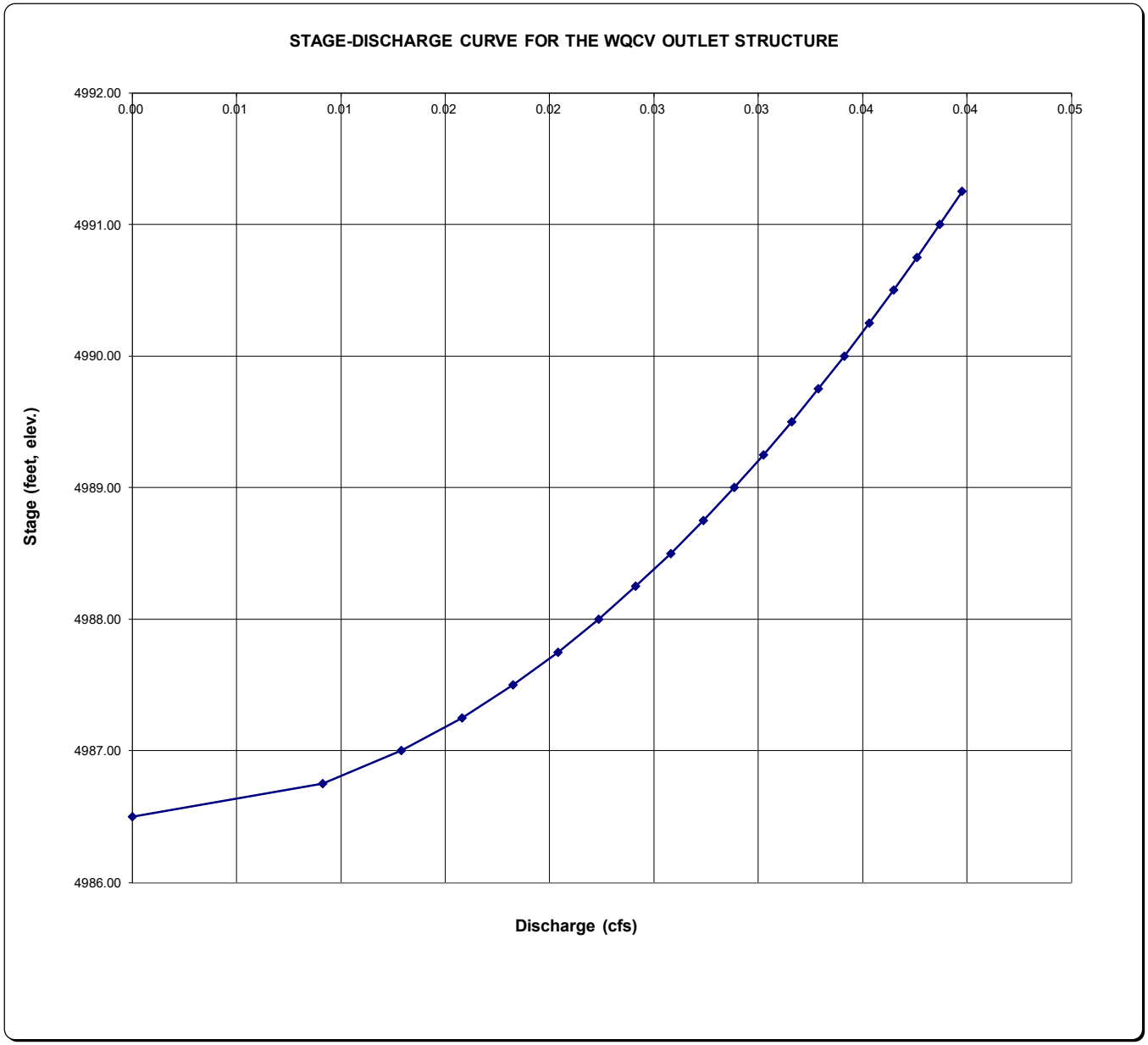
	Override Area Row 1	Override Area Row 2	Override Area Row 3	Override Area Row 4	Override Area Row 5	Override Area Row 6	Override Area Row 7	Override Area Row 8	Override Area Row 9	Override Area Row 10	Override Area Row 11	Override Area Row 12	Override Area Row 13	Override Area Row 14	Override Area Row 15	Override Area Row 16	Override Area Row 17	Override Area Row 18	Override Area Row 19	Override Area Row 20	Override Area Row 21	Override Area Row 22	Override Area Row 23	Override Area Row 24	

STAGE-DISCHARGE SIZING OF THE WATER QUALITY CAPTURE VOLUME (WQCV) OUTLET

Worksheet Protected

Project: Harvest 47
Basin ID: Basin C Water Quality



Excerpts from Previous Report

1053.1

DRAINAGE INVESTIGATION
FOR
L & M ENTERPRISES - M.R.D.
LARIMER, COUNTY, COLORADO

Prepared for

L & M Enterprises, Inc.
835 East Highway No. 56
Berthoud, Colorado 80513

October 11, 1990
Project No.PLA-017-89

CONSULTING ENGINEER

MESSNER Engineering Associates
150 East 29th Street, Suite 225
Loveland, Colorado 80538

Civil and Environmental Engineering Consultants

MESSNER
Engineering Associates

Project No. PLA-017-89
October 11, 1990

Mr. Larry Bebo
L & M Enterprises, Inc.
835 E. Hwy. 56
Berthoud, Colorado 80513

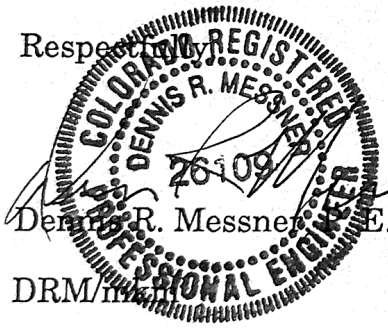
Dear Mr. Bebo,

The enclosed report represents the results of a drainage investigation for the L & M ENTERPRISES - M.R.D. as applies to the proposed and existing accesses to L& M Enterprises, Inc. and the L & M Greenhouse located in Larimer County, Colorado.

This investigation was based upon the M.R.D. site development plan; on-site observations; and available topographic information. The investigation was performed in accordance with the criteria established in the Larimer County -"Storm Drainage Criteria Manual".

Enclosed you will find the results of this investigation. If you should have any questions or desire additional information, please feel free to contact this office.

Respectfully,



Dennis R. Messner, P.E.

DRM/mm

Enclosure

150 East 29th Street, Suite 225
Civil & Environmental Engineering Consultants
Loveland, Colorado 80538
Telephone: (303) 663-2221

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Proposed Development	2
Conclusions and Recommendations	2

EXHIBITS

Vicinity Map	Exhibit A
Calculations	Exhibit B
Drainage Details	Exhibit C

SCOPE

The following report represents the results of a drainage investigation for existing and future development to be known as the L & M ENTERPRISES - M.R.D., Larimer County, Colorado. The investigation was performed for L & M Enterprises, Inc. The purpose of this investigation is to determine the effects of the development on the areas existing drainage conditions and to determine the improvements, if any, and the appropriate sizing for proposed improvements so that it may be incorporated with the construction of access drives for the project. The conclusions and recommendations presented in this report are based upon the M.R.D. site development plan; proposed access construction plans; on-site observations; and the available topographic information. The analysis was performed in accordance with the Larimer County "Storm Drainage Criteria Manual".

SITE DESCRIPITION

The site is generally rectangular in shape and is 77.6± acres in area. The sites East-West dimension is approximately 1,329 feet and its North-South dimension varies from approximately 2,583 feet at the westerly boundary to approximately 2,527 feet at the easterly boundary. The site is situated approximately one-half mile east of the Town of Berthoud and abuts the southerly right-of-way of Colorado Highway 56. The site is not located within a designated floodway.

EXISTING CONDITIONS

The site is presently comprised of four distinct uses. A contracting business, L & M Enterprises, Inc.,is situated on the 5± acre tract located at the northeast corner of the site. This tract is identified as Lot 3 on the attached exhibits. The existing retail greenhouse and landscaping materials business, L & M Greenhouse, is located on the 7.5± acre tract located immediately west of the contracting business. The greenhouse and associated landscaping materials business is located on Lot 4. Lot 2 is the largest of the parcels and comprises approximately 62.7 acres. This tract is currently being used for agricultural purposes. It is expected to be developed into service related retail uses along the Highway frontage with single-family residential to be situated on the balance of the tract. No near term development of this tract is anticipated. Lot 1 is a single-family residential lot with the existing Bebo residence. Lot 1 contains approximately 2.3 acres.

The site does not receive runoff from any other properties. The irrigation ditch which forms the southerly boundaries of Lots 3 and 4 is situated along the crest of a ridge traversing the site from west to east. The natural slope away from this ridge crest is 1% to 1.5%. The direction of fall away from the crest is towards the south and the north. The portion of the properties located to the west of the site on the northerly side of the ditch drain toward the north and eventually into the curb and gutter section of Highway 56. The runoff flows easterly along the gutter until the curb and gutter ends at a point on the easterly boundary of Lot 1. The runoff is then carried easterly in a roadside drainage swale. The swale is discharged into a inlet that is situated over the outlet pipe from Bacon Lake. This ultimately discharges into the little Thompson River.

PROPOSED DEVELOPMENT

The proposed construction is to consist of a new access to serve the existing greenhouse and landscaping business located on Lot 4 as well as the future development that is anticipated for Lot 2. The access is to be a dedicated public street. The existing accesses serving Lot 1 and Lot 3 are to remain.

The drainage considerations made for the existing and proposed accesses are:
1.) Only the area situated to the north of the existing irrigation ditch has been considered.
2.) The existing useage and development on Lot 3 has been considered in order to determine the volume of detention and rate of release to conform with the existing access permit requirements.
3.) Additional consideration was made for the ultimate paving of the greenhouse parking lot located on Lot 4 in order to determine the volume of detention and rate of release.
4.) No determination was made for the volume of detention and rate of release to be established on Lot 2. Due to the unknown nature of development that may occur on this lot, it is not possible to adequately project these requirements. The design and construction of these drainage improvements will be performed at the time that the property is considered for development.

CONCLUSIONS AND RECOMMENDATIONS

1. The construction as proposed will improve the existing drainage pattern to the benefit of the existing development in the vicinity.

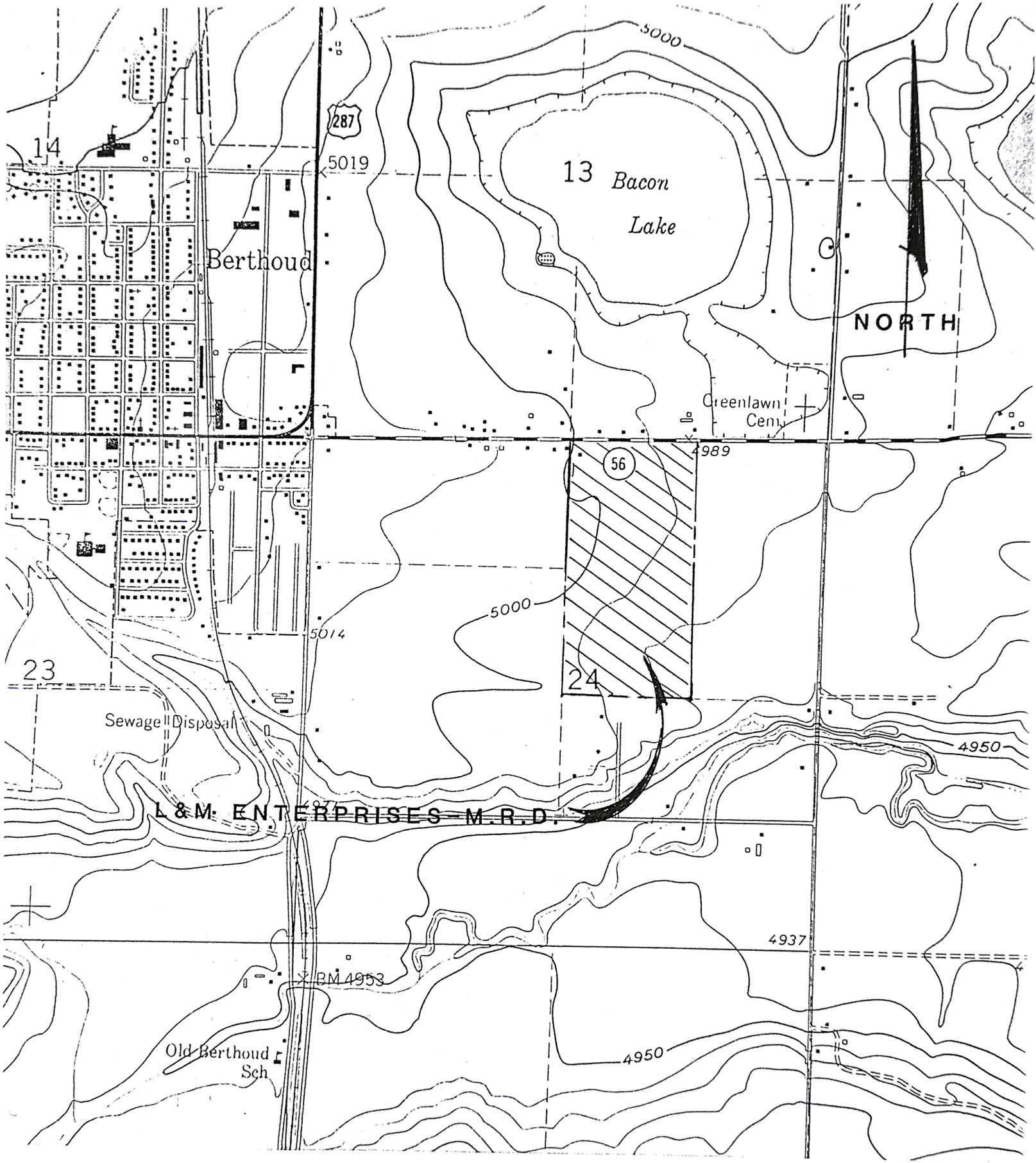
2. Onsite detention of storm water is required by the Colorado State Department of Highways in order to discharge runoff from the site onto the existing Highway right-of-way.

3. All construction is recommended to be performed in accordance with the State of Colorado State Department of Highways-Standards and Specifications.

4. The site is not located within the designated floodway or flood plain.

VICINITY MAP

EXHIBIT "A"



VICINITY MAP

EXHIBIT "B"

L & M Enterprises, Inc.
By: DRM

Project No. PLA-017-89
Date: Oct. 4, 1990

Calculations for Drainage Investigation for L & M Enterprises - M.R.D.

Total Area = 77.6 acres ±
Area Considered = 26.75 acres ±

NOTE, only the area of the site that is situated north of the irrigation ditch traversing the site is considered to drain toward Highway 56.

Area "A" - located at the Northwest portion of the site that includes all of Lot 1 and all of Lot 2 that lies North of the irrigation ditch. No change from the existing conditions anticipated at this time.

Area = 15.3 acres ±

C_{10} = 0.20 C_{100} = 0.35

T_c = 25 minutes ±

Rainfall Intensities:
I_{10} @ 25 min. = 2.85 in./hr **I_{100} @ 25 min. = 4.6 in./hr.**

Runoff, Q = CIA
Therefore, the Estimated Drainage Flow from the site concentrating at Point "A"
Q_{10} = 8.7 c.f.s. **Q_{100} = 24.6 c.f.s.**

Area "B" - includes existing greenhouse and approximately one-half of the L & M Enterprises building and surrounding concrete pavement.

Area = 5.25 acres ±

Area of Impervious Coverage (Building and Concrete Pavement) = 2.15 acres ±
Therefore, Impervious Coverage = 41%
C_{10} = 0.26 C_{100} = 0.40

T_c = 15 minutes

Rainfall Intensities:
I_{10} @ 15 min. = 3.65 in./hr **I_{100} @ 15 min. = 6.0 in./hr.**

Therefore, the Estimated Drainage Flow Concentrating at "B"
Q_{10} = 8.6 c.f.s. **Q_{100} = 17.3 c.f.s.**

Area "C" - includes approximately one-half of the L & M Enterprises building and surrounding concrete pavement and the undeveloped portion to the South and West.

Area = 6.2 acres ±

Area of Impervious Coverage (Building and Concrete Pavement) = 1.4 acres ±
Therefore, Impervious Coverage = 23%
C_{10} = 0.30 C_{100} = 0.45

(Area "C" calculations cont.)

T_c = 20 minutes

Rainfall Intensities:
I_{10} @ 20 min. = **3.25 in./hr** **I_{100}** @ 20 min. = **5.2 in./hr.**

Therefore, the Estimated Drainage Flow Concentrating at "C"
Q_{10} = 6.05 c.f.s. **Q_{100} = 14.5 c.f.s.**

Total Area draining to Northeast corner of site.

Area = 26.75 acres ±

Area of Impervious Coverage (Building and Concrete Pavement) = 3.55 acres ±
Therefore, Impervious Coverage = 15%
C_{10} = 0.27 **C_{100} = 0.41**

T_c = 30 minutes

Rainfall Intensities:
I_{10} @ 30 min. = **2.55 in./hr** **I_{100}** @ 30 min. = **4.2 in./hr.**

Therefore, the Estimated Drainage Flow Concentrating at the Northeast Corner
Q_{10} = 18.4 c.f.s. **Q_{100} = 46.1 c.f.s.**

DETENTION SIZING

Onsite Detention is to be required by the Colorado State Department of Highways.

The Urban Drainage and Flood Control District's criteria has been used. This is an imperical formula method, where:

V = KA

K100 = (1.78 x I - 0.002 x I^2 - 3.56) / 1000
K10 = (0.95 x I - 1.90) / 1000

I = Developed Basin imperviousness (%)
A = Basin Area (Acres)
V = Volume (Acre-Feet)

Q100 = 1.00 x A
Q10 = 0.24 x A

Q = Release Rate (Cubic-Feet-Per-Second)

Area "B"
Detention Sizing

I= 41% Area = 5.25 Acres

$K_{10} = (0.95x41 - 1.90) /1000 = 0.037$
$K_{100} = (1.78x41 - 0.002x41^2 - 3.56) / 1000 = 0.066$

$V_{10} = K_{10} A = 0.037 \times 5.25 = 0.195$ Ac-Ft = 8,473 cu. ft.
$V_{100} = K_{100} A = 0.066 \times 5.25 = 0.347$ Ac-Ft = 15,107 cu.ft.

$Q_{10} = 0.24 \times 5.25 = 1.26$ c.f.s.
$Q_{100} = 1.00 \times 5.25 = 5.25$ c.f.s.

Outlet Sizing
Weir Equation $Q = CLH^{3/2}$

Q = Discharge (c.f.s.)
C = Weir Coefficient
L = Length (feet)
H = Total Energy Head (feet)

$L = Q / CH^{3/2}$
$L_{10} = 1.26 / (2.85 \times 0.50^{3/2}) = 1.25$ ft. = 1ft. - 3in.
$L_{100} = 5.25 / (2.85 \times 0.22^{3/2}) = 17.85$ ft. = 17ft. - 10-1/4 in.

Area "C"
Detention Sizing

I = 23% Area = 6.2 Acres

$K_{10} = (0.95x23 - 1.90) /1000 = 0.02$
$K_{100} = (1.78x23 - 0.002x23^2 - 3.56) / 1000 = 0.04$

$V_{10} = K_{10} A = 0.02 \times 6.2 = 0.124$ Ac-Ft = 5,388 cu. ft.
$V_{100} = K_{100} A = 0.04x\ 6.2 = 0.225$ Ac-Ft = 9,809 cu.ft.

$Q_{10} = 0.24 \times 6.2 = 1.5$ c.f.s.
$Q_{100} = 1.00 \times 6.2 = 6.2$ c.f.s.

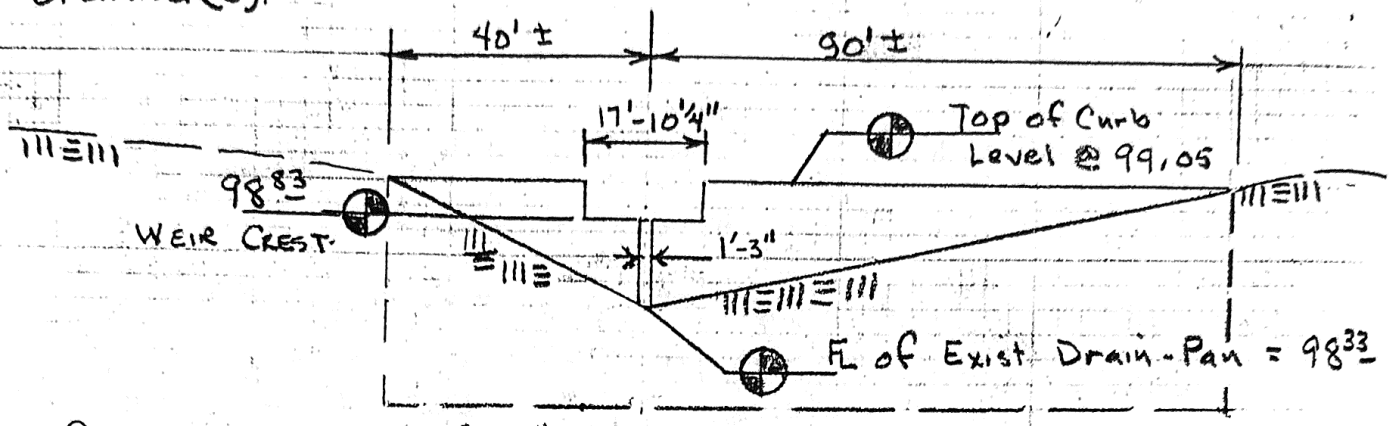
Outlet Sizing
$L = Q / CH^{3/2}$

$L_{10} = 1.5 / (2.85 \times 1.0^{3/2}) = 0.53$ ft. = 0ft. - 6-5/16 in.
$L_{100} = 6.2 / (2.85 \times 0.5^{3/2}) = 6.15$ ft. = 6 ft.- 1-13/16 in.

DRAINAGE DETAILS

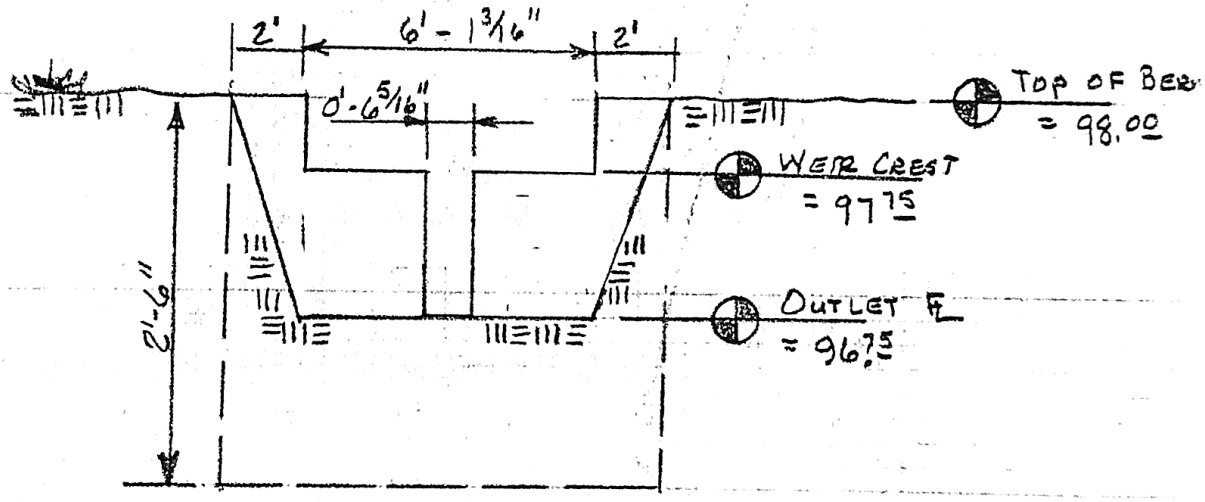
EXHIBIT "C"

CURB @ Pt. "B" w/ OUTLET CONTROL OPENING(S).



Curb Minimum of 6" wide & 18" high

CONCRETE CONTROL STR. @ Pt. "C"



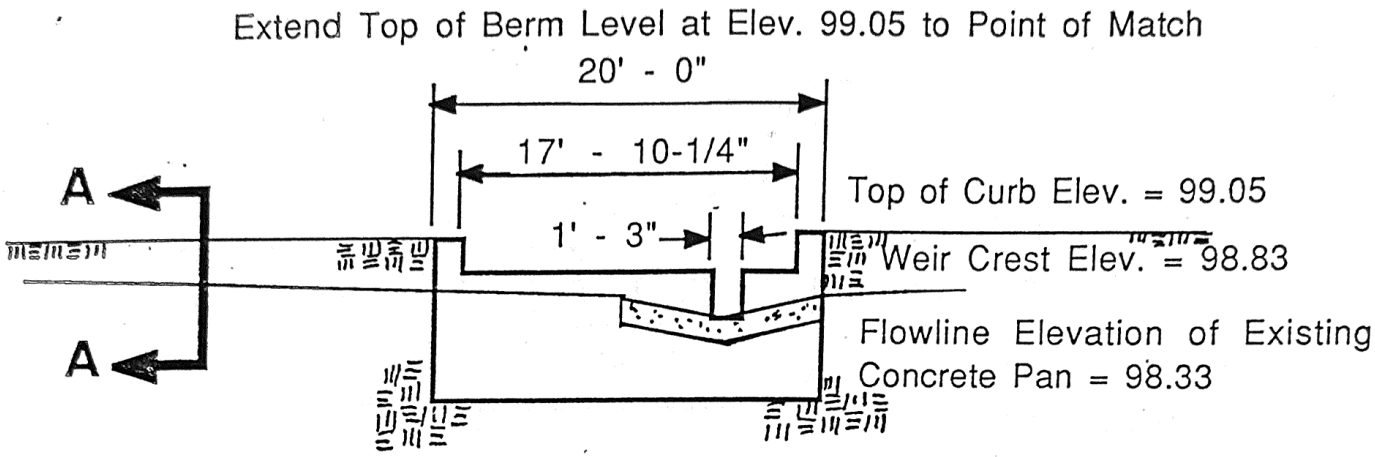
CONCRETE TO BE MINIMUM OF 6" thick.

10-7-90
dlm.

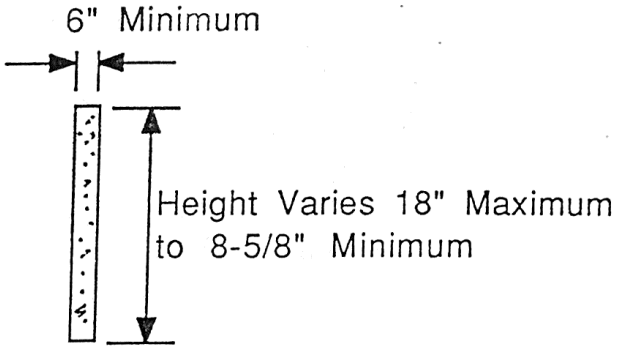
L&M ENTERPRISES
#HYD-017-89.

DRAINAGE DETAILS

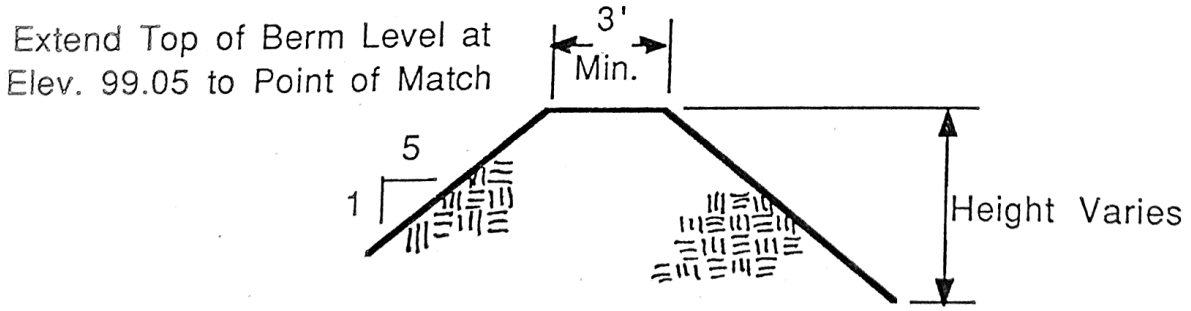
DISCHARGE CONTROL OPENING @ DESIGN PT. "B"



CONCRETE CURB / CONTROL OPENING



SECTION THRU CONCRETE CURB



SECTION A - A
(Earth Berm)

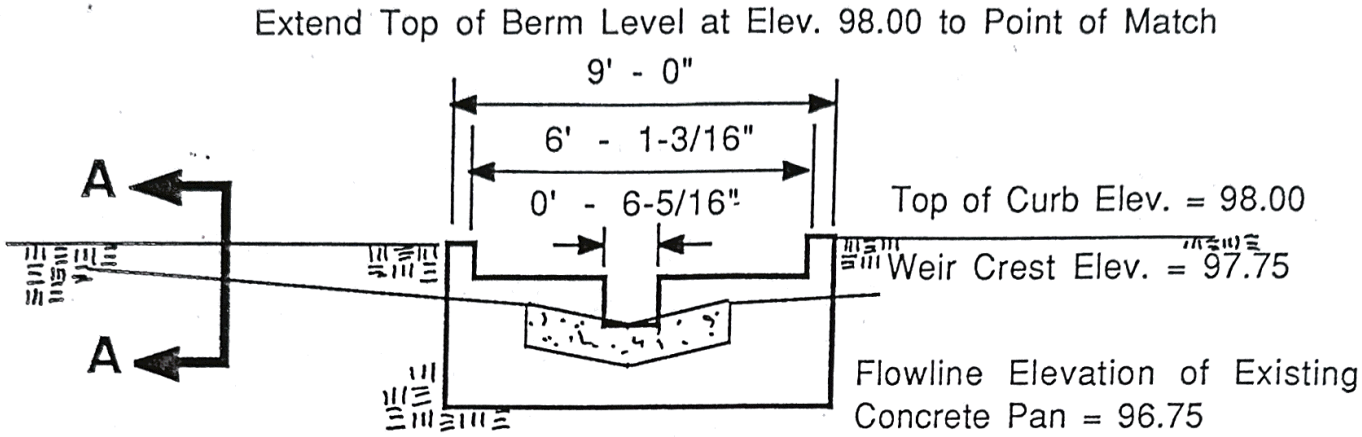
Note that berm may be widened and side slopes flattened to match existing conditions

Revised: Sept. 24, 1991
By: DRM

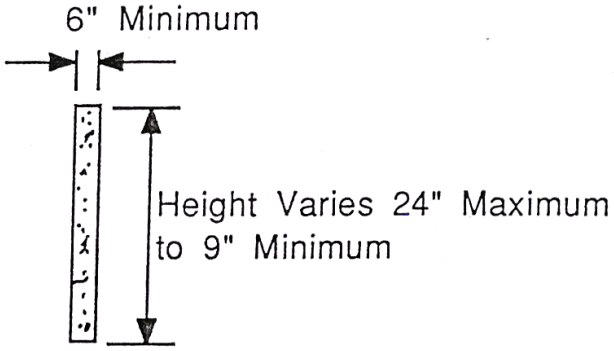
L & M ENTERPRISES, INC.
HYD - 017 - 89

DRAINAGE DETAIL
SHEET 1 of 2

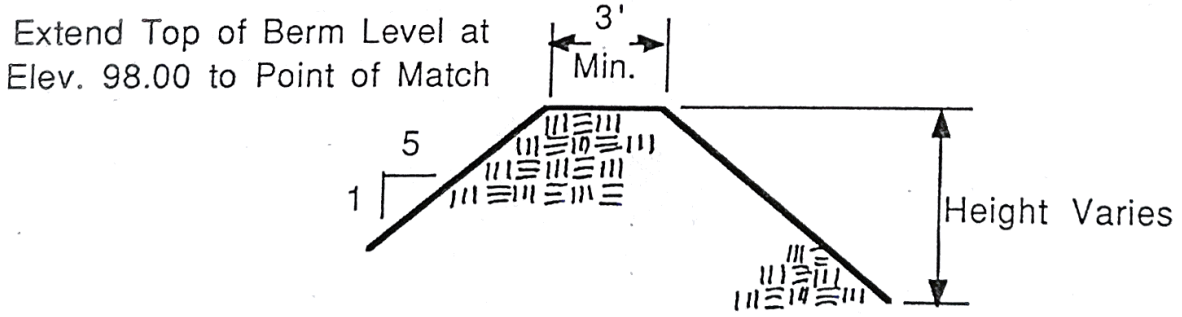
DISCHARGE CONTROL OPENING @ DESIGN PT. "C"



CONCRETE CURB / CONTROL OPENING



SECTION THRU CONCRETE CURB



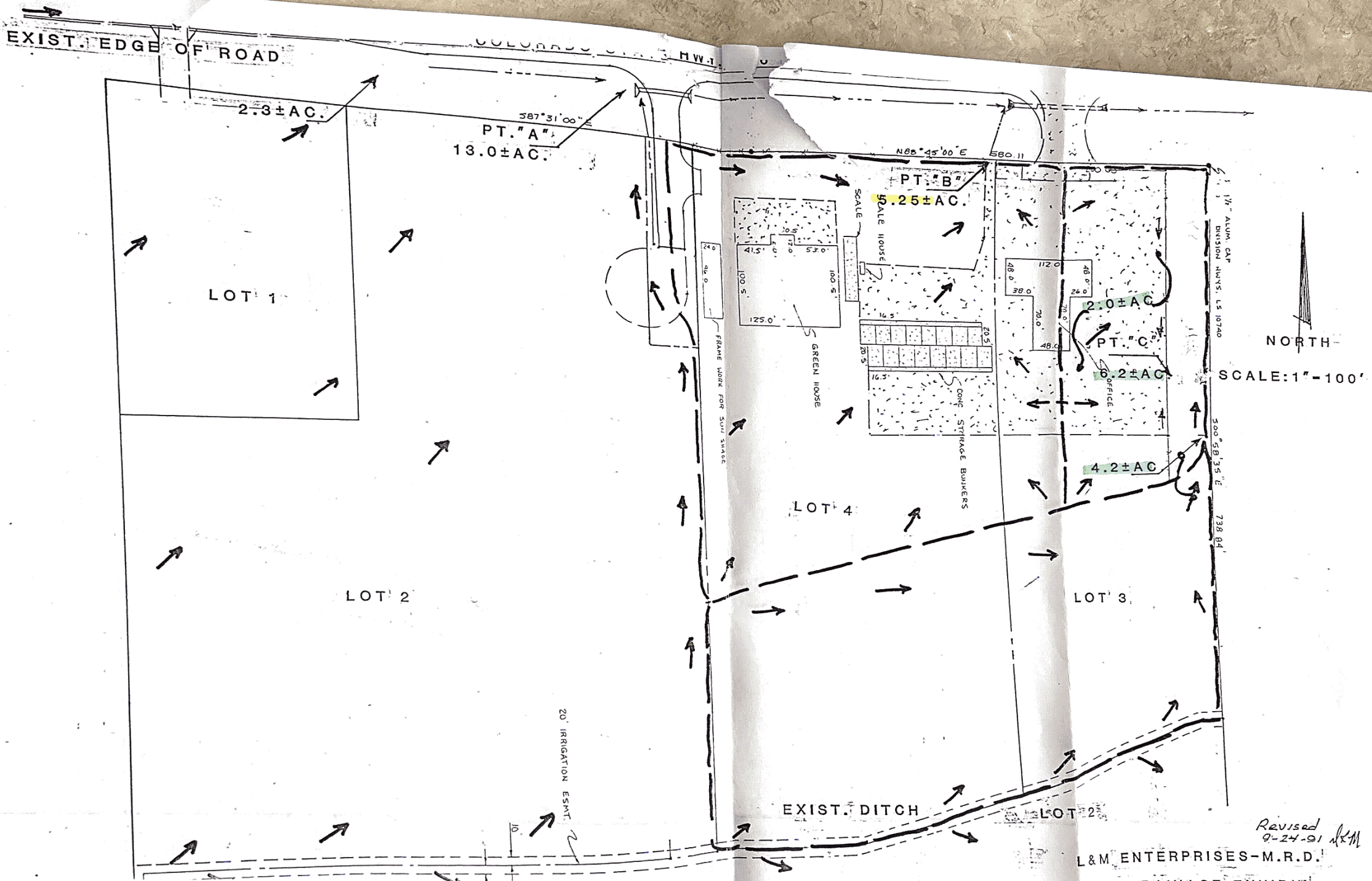
SECTION A - A
(Earth Berm)

Note that berm may be widened and side slopes flattened to match existing conditions

Revised: Sept. 24, 1991
By: DRM

L & M ENTERPRISES, INC.
HYD - 017 - 89

DRAINAGE DETAIL
SHEET 2 of 2


EXIST. EDGE OF ROAD
COLORADO STATE HWY. 1
2.3±AC.
PT. "A"
13.0±AC.
S87°31'08"E
N88°45'00"E 580.11
PT. "B"
5.25±AC.
SCALE HOUSE
GREEN HOUSE
FRAME WORK FOR SUN SHADE
CONC. STORAGE BUNKERS
2.0±AC.
PT. "C"
6.2±AC.
OFFICE
4.2±AC.
1½" ALUM. CAP DIVISION HWYS. LS 10740
NORTH
SCALE: 1" = 100'
LOT 1
LOT 2
LOT 3
LOT 4
S00°58'35"E 738.84'
20' IRRIGATION ESMT.
EXIST. DITCH
LOT 2
Revised 9-24-91 MKM
L&M ENTERPRISES-M.R.D.

Charts and Figures

1. Drainage designs for areas in and around the Town of Berthoud should use the depth-duration frequency information provided in the Precipitation-Frequency Atlas of the Western United States (Volume 2 - Colorado), published by NOAA. The NOAA Atlas can be accessed on the NOAA website.

   Table 600-1, shall be used but may be superseded if more recent NOAA data is published for the Town. The table below is based on NOAA Atlas 14, Volume 8, Version 2 for Berthoud, Colorado.

   Table 600- 1: Point Precipitation Frequency Estimates in Inches

Estimated Rainfall Depth in Inches									
	Average Return Interval (ARI) (Years)								
Duration	1	2	5	10	25	50	100	200	500
5-minutes	0.233	0.277	0.37	0.469	0.635	0.787	0.961	1.16	1.45
10-minutes	0.341	0.405	0.542	0.686	0.93	1.15	1.41	1.7	2.13
15-minutes	0.416	0.494	0.661	0.837	1.13	1.41	1.72	2.07	2.6
30-minutes	0.553	0.658	0.881	1.12	1.51	1.87	2.28	2.74	3.44
60-minutes	0.684	0.811	1.08	1.38	1.87	2.32	2.84	3.44	4.32
2-hours	0.816	0.963	1.29	1.63	2.23	2.78	3.41	4.13	5.21
3-hours	0.899	1.06	1.41	1.79	2.44	3.04	3.73	4.52	5.71
6-hours	1.07	1.26	1.66	2.09	2.81	3.48	4.24	5.11	6.4
24-hours	1.56	1.84	2.37	2.88	3.68	4.37	5.14	5.98	7.2

C. The Rational Method

1. The Rational Method is one method for determining runoff from a proposed development or road construction project. Note that it should not be used for basins greater than 160 acres. The MHFD spreadsheets can also be used for basins that are no greater than 160 acres. Refer to the rainfall chapter of the MHFD USDCM for more information regarding the rainfall parameters required to use the Rational Method.

D. Larger Basin Rainfall Methods (Basins sizes 160 acres and greater)

1. As noted above, the Rational Method should not be used to determine runoff for basins larger than 160 acres. Where areas are larger than 160 acres that have drainage characteristics similar to an urban area, the Colorado Urban Hydrograph Procedure (CUHP) is an acceptable model for determining runoff amounts. The CUHP model can be used for basins from 0 to 3,000 acres. The parameter adjustments provided in the runoff chapter of the MHFD USDCM Manual (Volume 1) should be used when dealing with basins that are larger than 160 acres.

2. The CUHP model is not applicable in non-urban areas, including those areas in Larimer County that are outside of the Denver metropolitan area. The U.S. Army Corps of Engineers (USACE) HEC-HMS model is more applicable for mixed suburban-agricultural areas. The HEC-HMS model can be used on watersheds and drainage basins larger than 160 acres provided the modeling follows the parameters in the HEC- HMS User's Manual, the HEC-HMS Technical Reference Manual, the HEC-HMS Application's Guide.

D. Differences between the Town of Berthoud and the MHFD

1. The Town of Berthoud will allow the use of other modeling methodologies on a case-by-case basis when complete documentation of all assumptions is provided. The Town of Berthoud reserves the right to review alternative methods and compare with other commonly used approaches, including those discussed in the MHFD USDCM Manual.

Table 600- 2: Recommended Percentage Imperviousness Values

Land Use or Surface Characteristics	Percentage of Imperviousness
Business:	
Commercial Areas	95
Neighborhood Area	85
Residential Lots: (lot area only)	
Single-Family, 0.25 acres or less	45
Single-Family, 0.25 - 0.75 acres	30
Single Family, 0.75 acres or larger	20
Multi-Family (attached)	60
Multi-Family (detached)	75
Apartments	80
Industrial:	
Light Areas	80
Heavy Areas	90
Parks and Cemeteries	10
Playgrounds	25
Schools	55
Railroad Yard Areas	50
Undeveloped Areas	
Historic Flow Analysis	2
Greenbelts, Agricultural	2
Off-site flow analysis (when land use not defined)	45
Streets:	
Paved	100
Gravel (packed)	40
Drive and Walks	90
Roofs	90
Lawns, sandy soil	2
Lawns, clayey soil	2

602.4 Roadway and Street Drainage

A. General Criteria

1. When runoff in the street exceeds allowable limits, a storm sewer system or open channel is required to convey the excess flows.

2. Design Criteria Based on Frequency and Magnitude: The design criteria for the collection and conveyance of storm water runoff on public streets are based on an allowable frequency and magnitude of traffic interference. The primary design objective shall be to keep the depth and spread (encroachment) of stormwater on the street below an acceptable value for a given storm event.

PRELIMINARY
NOT FOR CONSTRUCTION
02/20/2023

Know what's below. Call before you dig.

i2 Consultants, Inc.
16911 Potts Place
Mead, Colorado
970.217.9148

LOT 1 O'MALLEY GLEN
MINOR SUBDIVISION
L&M ENTERPRISES

LOT 3 AMENDED
BEBO MRD S-76-87
LITTLE THOMPSON
WATER DISTRICT

PROPOSED
DETENTION AREA

PROPOSED INV. = 4986.5
WQCV = 0.18 AC-FT
100-YR WSEL = 4989.0
100-YR VOLUME = 0.54 AC-FT
POND TOP = 4990.0

PROPOSED ±20' EMERGENCY SPILLWAY

4991.00 SPILLWAY
4991.00 SPILLWAY

PROPOSED STORM DRAIN OUTFALL PIPE TO BE INSTALLED WITH THE FARMSTEAD

PROPOSED STORM DRAIN

EXISTING PROPERTY LINE

REMUDA ROAD

DOROTHY DRIVE

THE FARMSTEAD

BLOCK ONE

LOT 1 ±5720 S.F.
LOT 2 ±4877 S.F.
LOT 3 ±4212 S.F.
LOT 4 ±7545 S.F.
LOT 5 ±7671 S.F.
LOT 6 ±7671 S.F.
LOT 7 ±4823 S.F.
LOT 8 ±4823 S.F.
LOT 9 ±4823 S.F.
LOT 10 ±7771 S.F.
LOT 11 ±4823 S.F.
LOT 12 ±4823 S.F.
LOT 13 ±5487 S.F.

BLOCK TWO

LOT 1 ±8318 S.F.
LOT 2 ±6445 S.F.
LOT 3 ±6444 S.F.
LOT 4 ±6443 S.F.
LOT 5 ±6362 S.F.
LOT 6 ±9458 S.F.
LOT 7 ±7636 S.F.
LOT 8 ±7065 S.F.
LOT 9 ±7000 S.F.
LOT 10 ±7000 S.F.
LOT 11 ±7000 S.F.
LOT 12 ±7000 S.F.
LOT 13 ±7000 S.F.
LOT 14 ±7000 S.F.
LOT 15 ±7000 S.F.
LOT 16 ±7225 S.F.

20' ALLEY

PROPOSED INLET

Ditch Top Bank

EXISTING PROPERTY LINE

THE FARMSTEAD

THE FARMSTEAD

LEGEND OF SYMBOLS

	EXISTING	PROPOSED
CONTOURS (1')	4995	4995
FLOW DIRECTION		
EXISTING ASPHALT		
EXISTING CONCRETE		
PROPOSED CONCRETE		
PROPOSED ASPHALT		

PROPOSED

DESIGN POINT

MAJOR SITE DRAINAGE BASIN

BASIN
AREA (Ac.)
C5 AND C100

BASIN BOUNDARY

EMERGENCY OVERFLOW DIRECTION

Scale 1 inch = 40 feet
40 0 20 40 80

HARVEST 47 SUBDIVISION
PRELIMINARY PLANS
PRELIMINARY GRADING & DRAINAGE PLAN

LOCATED IN THE NE 1/4, SECTION 24, TOWNSHIP 4 NORTH, RANGE 69 WEST
TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO

DATE	BY	REVISION/ISSUE	APPV	DATE

©i2 CONSULTANTS, INC.

Design	Drawn
Checked TWC	Checked TWC
Date	FEBRUARY 20, 2023
Job No.	1053-1
D-	HarvestPrePlat_GR

SHEET
C-4

4 OF 4 SHEETS

C:\Users\twc\Dropbox\ZProjects\1053-1 Harvest\TOWS\Sheets\Harvest\PrePlat_GR.dwg, 2/15/2023 1:42:09 PM

Harvest 47 Preliminary Plat Submittal

Comments and responses

March 13, 2023

Planning, Community Development Department:

1. Charles; A monument sign is indicated on the plans, but not identified where it will go.

The proposed sign is a part of the subdivision identification requirements for the project. It is planned to be installed on Lot #1 adjacent to the entrance to the subdivision off Dorothy Dr. The final location will be included in the construction plans for the development.

Baseline Engineering:

1. Lancaster; Berthoud, Colorado - Code of Ordinances Chapter 30 - BERTHOUD DEVELOPMENT CODE SECTION 6 - SUBDIVISION REGULATIONS 30-6-107 - Preliminary plat, B, 2, c. Requires that a title commitment must be current and dated no more than 30 days from the date of preliminary plat application submittal. No commitment was provided with this submittal.

A current title commitment was provided along with the original submittal of the preliminary plat documents (dated 12/15/2022). A new and current title commitment will be provided at the time of approval by the Town Board.

2. Nemmers; Discuss the proposed storm sewer conveyance as it will need to convey the 100 yr to the pond.
3. Nemmers; In final design be sure to size the inlets to capture the 100-year storm and the pipes to convey it to the pond.

The preliminary drainage documents provided as apart of the preliminary plat submittal included the comments" Basin C will be detained in the proposed detention pond and will be released to The Farmstead storm system at a 100-year flow of roughly 6 cfs." And "Storm drainage pipes will be utilized to convey runoff from the subject site to the proposed detention pond. The pipes will be sized to convey the 100-year event."

The preliminary layout of the storm drainage system and connection to the Farmstead were done with this in mind. The final construction plans for the storm water system will be designed to convey the required 100 yr event.

4. Nemmers; (In reference to the North alley) Is this proposed to be curb and gutter here?

The North alley is being planned to utilize a center drainage alignment consistent with Figure 7-9L alley option (a) (drainage to center) in the current adopted Lcuass standards.

5. Iseeber; Is this MH needed? Frontage of lot2.

Final details will be adjusted as required with submittal of construction drawings.

6. Iseeber; Question on the location of the water tap for block 2, lot1;

The tap was shown off Ramuda Road to eliminate another road cut on Dorothy dr. Final details will be adjusted as required with submittal of construction drawings.

7. Iseeber; Pond top of bank note.

Final details of the detention pond will be a part of the construction documents.

Planning Commission Meeting
April 27, 2023

Harvest 47

PROJECT:	Harvest 47
APPLICANT:	Larry Bebbo
LOCATION:	Near the intersection of Dorothy Drive and Remuda Road.
CURRENT ZONING:	UR
SIZE:	5.98 acres
APPLICANT'S REQUEST:	Preliminary Plat

PRELIMINARY PLAT FOR

HARVEST 47 SUBDIVISION

BEING A SUBDIVISION OF LOT 2, O'MALLEY GLEN MINOR SUBDIVISION, SITUATE IN THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 24, TOWNSHIP 4 NORTH, RANGE 69 WEST OF THE 6TH P.M., TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO.

NORTH
WEST EAST
SOUTH

ORIGINAL SCALE: 1" = 30'
LINEAL UNITS USED:
U.S. SURVEY FEET

LOT 3, AMENDED PLAT OF
BEBO M.R.D. NO. S-76-87

SW Corner Lot 3, Amended Plat Bebo M.R.D. Sec.Sec.87, Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

SE Corner Lot 3, Amended Plat Bebo M.R.D. Sec.Sec.87, Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

N89°58'35"E 295.01'

S00°05'41"E

The East Line Of The W1/2 Of The NE1/4 Of Sec.24,T4N,R69W

DRAINAGE EASEMENT DEDICATED WITH O'MALLEY GLEN MINOR SUBDIVISION

BLOCK 1, THE FARMSTEAD

LOT 1

58' ROW

Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

LOT 1, O'MALLEY GLEN MINOR SUBDIVISION

S89°50'08"E 718.76'

S47.76'

295.01'

423.76'

THE POINT OF BEGINNING
Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

BLOCK ONE
LOT 1 ±6420 S.F.

10' Utility Easement

5' Utility Easement

20' ALLEY

S89°50'08"E 451.76'

20' ALLEY

BLOCK ONE
LOT 2 ±4827 S.F.
LOT 3 ±4823 S.F.
LOT 4 ±7643 S.F.
LOT 5 ±7671 S.F.
LOT 6 ±7671 S.F.
LOT 7 ±4823 S.F.
LOT 8 ±4823 S.F.
LOT 9 ±4823 S.F.

BLOCK ONE
LOT 10 ±7771 S.F.
LOT 11 ±4773 S.F.

BLOCK ONE
LOT 12 ±4773 S.F.
LOT 13 ±5487 S.F.

REMUDA ROAD
50' PUBLIC RIGHT-OF-WAY WIDTH
(PER RECEPTION 20190016179)

BLOCK TWO
LOT 1 ±3318 S.F.
LOT 2 ±4481 S.F.
LOT 3 ±4444 S.F.
LOT 4 ±4443 S.F.
LOT 5 ±5392 S.F.

DOROTHY DRIVE
(PER RECEPTION 20190016179)

N00°10'08"E 362.00'

S89°50'08"E 135.69'

S89°50'08"E 135.65'

S89°50'08"E 135.62'

S89°50'08"E 125.60'

10' HALF ALLEY

S89°50'08"E 327.03'

S89°50'08"E 72.02'

S89°50'08"E 419.18'

REMUDA ROAD
50' PUBLIC RIGHT-OF-WAY
DEDICATED WITH THIS PLAT

S89°50'08"E 409.31'

BLOCK TWO
LOT 6 ±4496 S.F.
LOT 7 ±7636 S.F.
LOT 8 ±7065 S.F.
LOT 9 ±7000 S.F.
LOT 10 ±7000 S.F.
LOT 11 ±7000 S.F.
LOT 12 ±7000 S.F.
LOT 13 ±7000 S.F.
LOT 14 ±7000 S.F.
LOT 15 ±7000 S.F.
LOT 16 ±7235 S.F.

BLOCK TWO

S00°05'41"E 362.00'

10' HALF ALLEY

S89°50'08"E 534.78'

N89°50'08"W 720.43'

TRACT 5, THE FARMSTEAD

Found No. 4 Rebar (length unknown) With 1" Diameter Red Plastic Cap Marked LS 30462

BLOCK 2, THE FARMSTEAD

OUTLOT A

LOT 1
LOT 2
LOT 3
LOT 4
LOT 5

TRACT 2, THE FARMSTEAD

LINE TABLE

LINE	BEARING	LENGTH
L1	N89°50'08"W	14.10'
L2	N89°50'08"W	14.10'
L3	N89°50'08"W	14.10'
L4	S89°50'08"E	28.00'
L5	N89°50'08"E	14.10'
L6	N89°50'08"W	14.10'
L7	N89°50'08"W	14.10'

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH	BEARING	CHORD
C1	4°02'28"	164.00'	11.57'	N89°48'52"W	11.57'
C2	4°02'56"	164.00'	11.59'	S89°48'51"E	11.59'
C3	22°13'58"	164.00'	63.66'	S78°43'47"E	63.25'
C4	68°44'49"	164.00'	196.80'	N55°07'32"W	185.18'
C5	4°02'28"	136.00'	9.59'	N89°48'52"E	9.57'
C6	4°02'56"	136.00'	9.60'	S89°48'51"E	9.58'
C7	4°02'56"	164.00'	11.59'	S89°48'51"E	11.59'
C8	4°02'56"	136.00'	9.60'	S89°48'51"E	9.58'
C9	17°51'53"	136.00'	41.62'	S81°03'53"E	41.46'
C10	22°03'40"	136.00'	47.70'	S79°47'35"E	47.42'
C11	18°47'04"	164.00'	53.77'	S84°29'56"E	53.52'
C12	18°46'53"	164.00'	53.76'	S65°41'43"E	53.50'
C13	12°36'53"	164.00'	42.21'	S52°31'16"E	42.10'

PREPARED BY AND ON BEHALF OF:
INTERMILL LAND SURVEYING, INC.
1301 North Cleveland Avenue
Loveland, Colorado 80537
Ph. (970) 669-0916

Steven John Shetrod
Colorado PLS No. 30462

Date: _____

PRELIMINARY PLAT
NOT A FINALIZED DOCUMENT
UNTIL MYLAR CONTAINS
ORIGINAL SURVEYOR'S SIGNATURE

According to Colorado law you must commence any legal action based upon any defect in this survey within three years after you first discover such defect. In no event may any action based upon any defect in this survey be commenced more than ten years from the date of the certification shown hereon.

TOWN of BERTHOUD
Est. 1888

Comprehensive Plan & PORT Plan

2-9 Housing Needs

- A range of housing for older adults/seniors
- Smaller homes (1,200 square feet or less)

3-1 Key Strategies

- Provide a mix of housing, goods and services that meet the varying needs, budgets, and life stages of residents.

PORT Plan

- This plan features detached sidewalks behind tree lawns, connecting to existing sidewalk/trail networks.

Preliminary Plat Criteria

30-6-109.C REVIEW CRITERIA	FINDINGS
1. The preliminary plat represents a functional system of land use and is consistent with the rationale and criteria set forth in this Code.	YES
2. The application is consistent with the approved concept plan and incorporates the Town's recommendations and any conditions of approval.	YES
3. The land use mix within the project conforms to Berthoud's Zoning District Map and Preferred Land Use Map and furthers the goals and policies of the Comprehensive Plan and PORT Plan.	YES
4. The utility and transportation design is adequate, given existing and planned capacities of those systems.	YES
5. Negative impacts on adjacent land uses including, but not limited to: solar access, heat, dust, glare, traffic and noise have been identified and satisfactorily mitigated.	YES
6. There is a need or desirability within the community for the applicant's development and the development will help achieve a balance of land use and/or housing types within Berthoud.	YES
7. How the applicant has addressed comments received from the public, during the Public Comment portion of the process.	YES

Preliminary Plat Recommendation

Findings and Recommendations

PRELIMINARY PLAT

- **Staff recommends that Planning Commission find the application meets the intent of the Master Plans affecting the project, the Comprehensive Plan and Future Land Use Map, and the Land Use Code.**
- **Two suggested motions are below:**
  - **Approval: I move to approve the Harvest 47 Preliminary Plat and ask staff to forward our recommendation of approval to the Town Board of Trustees, subject to the following condition.**
    - **The applicant shall revise drawings to meet final outstanding staff comments.**
  - **Denial: I move to deny the Harvest 47 Preliminary Plat for the following reasons _____ _____ and ask staff to forward our recommendation of denial to the Town Board of Trustees.**

Planning Commission Meeting
April 27, 2023

Planning Commission Meeting
April 27, 2023

Harvest 47

PROJECT:	Harvest 47
APPLICANT:	Larry Bebbo
LOCATION:	Near the intersection of Dorothy Drive and Remuda Road.
CURRENT ZONING:	UR
SIZE:	5.98 acres
APPLICANT'S REQUEST:	Preliminary Plat

PRELIMINARY PLAT FOR

HARVEST 47 SUBDIVISION

BEING A SUBDIVISION OF LOT 2, O'MALLEY GLEN MINOR SUBDIVISION, SITUATE IN THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 24, TOWNSHIP 4 NORTH, RANGE 69 WEST OF THE 6TH P.M., TOWN OF BERTHOUD, COUNTY OF LARIMER, STATE OF COLORADO.

NORTH
WEST EAST
SOUTH

ORIGINAL SCALE: 1" = 30'
LINEAL UNITS USED:
U.S. SURVEY FEET

LOT 3, AMENDED PLAT OF
BEBO M.R.D. NO. S-76-87

BLOCK 1, THE FARMSTEAD

LOT 1, O'MALLEY GLEN MINOR SUBDIVISION

REMUDA ROAD
56' PUBLIC RIGHT-OF-WAY WIDTH
(PER RECEPTION 20190016179)

DOROTHY DRIVE
(PER RECEPTION 20190016179)

BLOCK ONE
LOT 1 ±6420 S.F.
LOT 2 ±6827 S.F.
LOT 3 ±4823 S.F.
LOT 4 ±7545 S.F.
LOT 5 ±7671 S.F.
LOT 6 ±7671 S.F.
LOT 7 ±4823 S.F.
LOT 8 ±4823 S.F.
LOT 9 ±4823 S.F.
LOT 10 ±7771 S.F.
LOT 11 ±4773 S.F.
LOT 12 ±4773 S.F.
LOT 13 ±5487 S.F.

BLOCK TWO
LOT 1 ±3318 S.F.
LOT 2 ±4481 S.F.
LOT 3 ±5444 S.F.
LOT 4 ±5443 S.F.
LOT 5 ±5392 S.F.
LOT 6 ±9456 S.F.
LOT 7 ±7636 S.F.
LOT 8 ±7065 S.F.
LOT 9 ±7000 S.F.
LOT 10 ±7000 S.F.
LOT 11 ±7000 S.F.
LOT 12 ±7000 S.F.
LOT 13 ±7000 S.F.
LOT 14 ±7000 S.F.
LOT 15 ±7000 S.F.
LOT 16 ±7235 S.F.

20' ALLEY
10' HALF ALLEY

BLOCK 2, THE FARMSTEAD
OUTLOT A

TRACT 2, THE FARMSTEAD
TRACT 5, THE FARMSTEAD

PREPARED BY AND ON BEHALF OF:
INTERMILL LAND SURVEYING, INC.
1301 North Cleveland Avenue
Loveland, Colorado 80537
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Steven John Shanaut
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LINE TABLE

LINE	BEARING	LENGTH
L1	N89°50'08"W	14.16'
L2	N89°50'08"W	14.16'
L3	N89°50'08"W	14.16'
L4	S89°50'08"E	28.00'
L5	N89°50'08"W	14.16'
L6	N89°50'08"W	14.16'
L7	N89°50'08"W	14.16'

CURVE TABLE

CURVE	DELTA	RADIUS	LENGTH	BEARING	CHORD
C1	4°00'28"	169.00'	11.83'	N87°49'52"E	11.83'
C2	12°09'56"	169.00'	121.39'	S83°45'41"E	118.99'
C3	22°13'58"	154.00'	59.75'	S87°49'52"E	59.37'
C4	6°44'49"	154.00'	18.46'	N80°01'32"W	18.45'
C5	4°02'28"	136.00'	9.59'	N87°49'52"W	9.57'
C6	4°00'28"	136.00'	9.51'	N87°49'52"E	9.50'
C7	12°09'56"	154.00'	142.37'	S83°45'41"E	139.07'
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C12	12°09'56"	154.00'	32.70'	S89°45'41"E	32.63'
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