Section 1
City of McCall Stormwater Application

STORMWATER APPLICATION
City of McCall

Fill in all information. Submit one copy of signed application and three copies of Stormwater Management Plan/Report to the City Engineer.

1. Project Name: The Hardy
   Location: 1301 E Lake Street

2. Owner's Name: Lake Star Ventures LLC
   Street: PO Box 140798 City: Garden City
   State: ID Zip Code: 83714 Phone:

3. Project Description: the project consists of mixed used development within a vacant parcel of land

   a. Total property area, in acres. 18,263 SF
   b. Proposed impervious surface (asphalt, rooftop, concrete, sidewalk, etc.) in square feet.
      Paved areas: 7,935 SF; Roofed areas: 10,090 SF
   c. Describe existing vegetation present on site. Currently, the site is undeveloped with no descenrable vegetation
   d. Start date of construction. May /June 2024
   e. Estimated length of time to complete improvements.

4. Stormwater Management Plan/Report attached? Yes X No ____

5. Circle the section of the Stormwater Management Plan/Report Checklist which are applicable to project.

   A X B X C X D X E X F X

6. Party responsible for operation and maintenance of project, including maintenance of temporary and permanent Best Management Practices:

   TBD- The Homeowners Associat
   Name Title Signature Date

   WIll be established when Association is formed.
   Address Daytime Phone After Hours Phone

Do not write below this line.

This Stormwater Management Plan/Report is:

Approved: ____

Not Approved: ____

Approved, with conditions:

By The City of McCall

Representative Title Signature Date

Section 2
Stormwater Drainage Report

EXECUTIVE SUMMARY

The purpose of this report is to confirm that the storm water management system design for the construction of the proposed mixed use development is adequate for the specified design storms per the City of McCall and Idaho Department of Environmental Quality standards.

A. BASIN CHARACTERISTICS

The subject property is located at 1301 Lake Street, bound by Lake Street, Fir Street and Mill Street in McCall, ID. It consists of 2 mixed use buildings on 5 lots and auxiliary facilities in the McCall Townsite, McCall, Valley County, Idaho. The limits of construction are approximately acres, as shown on the attached preliminary plat. See Appendix A for a copy of the preliminary plat. Currently, the site consists of 0.42 acres of unimproved land that drains to the west, averaging 3.0% slope.

Proposed improvements consist of new townhouses and associated parking, utilities, and drainage facilities. Stormwater from the site will be allowed to continue to discharge at pre-development flows while the excess will be contained in the proposed storage tanks on the northeast side of the site.

Summary of the physical conditions onsite as well as for the upstream contributing area

The existing conditions within the property and upstream contributing area include the following:

- The predevelopment area is approximately 0.0% impervious.

- The pre-development flow path drainage length is approximately 160 feet.

- The average slope of the pre-development flow path is approximately 3.0%

- There are no known wetlands on the property.

Post Development land use and associated stormwater improvements are shown within the construction drawings found in the Appendix. Upon completion of the proposed project, the post development land use conditions will be as follows:

- The post development area will be 93% impervious

- The post development drainage flow path length will be 90 feet

- The average slope of the primary development flow path is approximately 2.0%

- There are no known wetlands on the property

Upstream contributing drainage area

- There are no upstream drainage areas contributing to the parcel.

Existing drainage facilities impacted by the proposed development on the site and downstream of the proposed development.

There are currently no existing drainage facilities on site. The offsite system will be protected and the post development runoff will be reduced.

B. Erosion and Sediment Control

Description of existing site prior to activity

A. Total property area = 0.42 acres (18,263 SF)

B. Road areas = 0.00 acres

C. Structure areas = 0.00 acres

D. Open space = 0.42 acres (18,263 SF)

E. No off-site runoff on the project site.

Description of proposed land improvement activity

A. Total property area = 0.42 acres (18,263 SF)

B. Paved areas = 0.16 acres (6,895 SF)

C. Structure/Roofed areas = 0.23 acres (10.090 SF)

D. Open space = 0.03 acres (1,278 SF)

E. Proposed site improvements will allow for onsite runoff to flow in the direction of regional drainage towards Payette Lake. The proposed detention structure is approximately 8'x15'x 3' deep and consists of RTanks or similar, located under the driving isle.

A plan which demonstrates the methods for sediment and erosion control. The plan should indicate the size, location and method for installation or implementation of the BMPs.

A. A stormwater management plan will be included at the time of completed construction drawings. Details and specifications for the proposed BMPs which describe their installation and maintenance procedures.

The following BMPs that are to be implemented as part of the project's construction are as listed in the Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices for Idaho Cities and Counties:

- Timing of construction is critical to reduce erosion potential. Schedule and sequence construction work and erosion control applications so that they occur under optimal conditions that is, during periods when the potential for erosion is lowest, such as dry weather (BMP 36).
- Protection of existing vegetation is prescribed for all areas outside of the grading and construction limits. If possible, existing weeds should be maintained to provide a vegetated buffer to filter runoff during construction (BMP 38).
- Establish clearing limits using standard construction fencing/staking or other means to help identify areas where construction activities (equipment, storage of materials, etc.) and existing vegetation can be preserved (BMP 39).

- Stabilize Construction Entrance/Exit, a stabilized construction access is defined point of entrance/exit to a construction site that is stabilized to reduce the tracking of mud and dirt onto public roads by construction vehicles. (BMP 41).
- Use good housekeeping practices, where applicable, during all aspects of the construction project.

o BMP 43 Dust Control

o BMP 44 Stockpile Management

o BMP 46 Spill Prevention and Control

o BMP 47 Vehicle/Equipment Washing and Maintenance

o BMP 49 Concrete Waste Management

o BMP 50 Sanitary/Septic Waste Management

- Revegetate and stabilization of all disturbed project areas shall be in accordance with the projects landscape design to prevent sediment transport after construction is completed. If a landscape design/plan is not available, disturbed areas shall be revegetated with a grass mixture native to the area.

o BMP 52 Mulching

o BMP 53 Geotextile

o BMP 54 Matting

o BMP 55 Soil Binders

o BMP 31 Topsoiling

o BMP 32 Seeding

o BMP 32 Sodding

o BMP 32 Planting

- Install fiber rolls and/or silt fence along property lines and at the edges of construction limits to prevent sediment and from leaving the site and filter runoff. Fiber rolls may be used in place of silt fence where determined appropriate. Fiber rolls/silt fence shall be used at the contractor's discretion if unforeseen stormwater runoff and erosion takes place at the proposed construction site.

o BMP 64 Fiber Rolls

o BMP 65 Silt Fence

A sequence and schedule of construction activities, including when erosion and sediment control devices and practices will be implemented. The sequence and schedule must include a timetable for project finish and a strategy for long term site stabilization and removal of temporary BMP's.

Temporary and permanent BMPs described above will be constructed as shown within the appendix, Stormwater Managements Plan and using guidance from the Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices for Idaho Cities and Counties and the City of McCall's Drainage Management Guidelines (DMGs) Chapters III and IV).

- Fiber rolls and/or silt fence shall be installed prior to the start of any project construction or earth disturbance and should remain in place until all disturbed/exposed areas have been revegetated or stabilized.
- Establish all clearing/construction limits with construction fencing or silt fence to protect on-site vegetation and all trees not identified for removal.
- Final stabilization and grading associated with the project shall take place once construction activities are nearing completion and when significant erosion impacts associated with the proposed improvements can be minimized.
- The project's construction timeline is Spring 2024 for the start of construction with final completion by Fall 2025. The owner and contractor will be responsible for long term stabilization and maintenance of the newly vegetated areas.

C. CONVEYANCE SYSTEM

Conveyance system calculations were done to ensure pipes could handle stormwater of improved area.

D. FIRST FLUSH TREATMENT

First Flush Treatment is required for the project as the proposed impervious surface is greater than 15,000 SF. The proposed project is not required to comply with First Flush Treatment since most of the impervious areas is contained within the roof lines.

E. PERMANENET BMP'S

Permanent BMP's for the project includes the following:

- Landscaping and re-vegetation of all disturbed areas, providing nutrient uptake and natural filtration.

F. OPERTION AND MAINTENANCE

During construction, operation and maintenance of the Stormwater Management Plan will be the responsibility of the associated Contractor(s). This plan should be implemented in accordance with the Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices for Idaho Cities and Counties and the City of McCall DMGs. All erosion and sediment controls including stormwater treatment facilities shall be inspected weekly during construction. Additional inspections should be completed in anticipation of, and immediately following event-based runoff events (spring snow melt/significant precipitation events). Construction areas with excess sediment build-up around the fiber rolls and/or silt fence should be cleaned at the time of inspections.

Section 3
Stormwater Calculations

PEAK FLOW

The proposed storm drainage conveyance facilities are sized to provide the necessary capacity to convey the design storm, as required. The following steps were taken to design the storm conveyance facilities.

1. Calculate the individual drainage basin areas (A), the Runoff Coefficient (C) and Time of Concentration (Tc) values for the developed basins. Combine basins, as appropriate, to determine flow at specific Design Points.
2. Determine the peak flow for each basin and Design Point using the Rational Equation (Q=CIA), utilizing the Rainfall Intensity (I) from the appropriate Intensity-Duration-Frequency curves based on the Tc value.
3. Verify capacity of the storm pipes and detention pond facilities to accommodate the peak flows.

The proposed storm drainage system has been sized to accommodate first flush storm volume. All facilities have been verified to adequately pass the peak flow and convey the stormwater to a facility for disposal by infiltration and off-site discharge at below pre-development conditions. See Appendix for detailed calculations.

DESIGN STORM RETENTION VOLUME

The proposed storm drainage retention facilities are sized to provide the necessary capacity to store the 10-year storm event, to provide treatment for the first flush. The following steps were taken to design the storm drain facility.

1. Calculate the individual drainage basin areas (A) and estimate the Runoff Coefficient (C) for the developed basins. Combine basins, as appropriate, to determine volume at specific Design Points.
2. Determine the Rainfall Intensity (I) from the appropriate Intensity-Duration-Frequency curves based on the design storm event and storm duration (T) of one hour.
3. Verify capacity of facilities for design volume and maximum drain time.

10 YEAR RETENTION

The proposed drainage facilities have been designed to adequately detain and dispose of the first flush 10-year design storm event for the additional post development flow. All additional runoff will be retained in underground RTanks with a metered discharge into the existing storm drain system.

PRE-DEVELOPMENT DRAINAGE BASIN

Using the rational method to calculate the pre-development runoff in the area impacted by the proposed development, we obtain 0.38 cfs.

The site area contains roughly 0.42 acres (18,264 SF) of unimproved area with a C = 0.50.

T_C is estimated at roughly 9.0 minutes based on a 200' distance of travel, 3.0% slope, and C = 0.50 per Figure 11-2. Overland Flow Time curve in McCall's Drainage Management Guidelines.

I_{10} is estimated at 1.8 in./hr. based on T_C and a 10-year event per Figure 11-1. Intensity-Duration-Frequency curve in McCall's Drainage Management Guidelines.

C = 0.50

I_{10} = 1.80

A = 0.42

T_c = 9.0

$Q_{Pre\text{-}Dev}$ = CIA = 0.38 cfs

Storage for onsite volumes for control of peak discharge rates

C = 0.50

i = (10-year storm with $T_{c = 60\ min}$) = 0.65 in./hr. = 0.0542 ft./hr.

T = 1 hr.

A = 18,264 sf

$V_{Pre\text{-}Dev}$ = CiTA = 495 cf

POST DEVELOPMENT DRAINAGE BASIN

For the post-development analysis, the drainage patterns for the proposed site can be connected to three (3) drainage basins. The selected runoff coefficient value was for Multi-Family, Attached (0.85) for Driange basin 1 and 2 and Building (1.0) for drainage Basin 3.

DRAINAGE BASIN 1

Drainage Basin 1 contains roughly 3,308 SF, which includes the commercial patio space facing Lake Street.

Sheet flow from the area will follow the existing drain patterns and go to Lake Street to be collected in the existing Storm Drain System

T_C is estimated at 7 minutes based on a 30' distance of travel, 2.0% slope, and C = 0.85 per Figure 11-2. Overland Flow Time curve in McCall's Drainage Management Guidelines.

I_{10} is estimated at 2.00 in./hr. based on T_C and a 10-year event per Figure 11-1. Intensity-Duration-Frequency curve in McCall's Drainage Management Guidelines.

Using the rational method to calculate the post-development runoff, we obtain 0.13 cfs

C = 0.85

I_{10} = 2.00

A = 0.076

T_c = 7

Q = CIA = 0.13 cfs

Storage for onsite volumes for control of peak discharge rates

C = 0.85

i = (10-year storm with $T_{c = 60\ min}$) = 0.65 in./hr. = 0.0542 ft./hr.

T = 1 hr.

A = 3,308 sf

V = CiTA = 152 cf

DRAINAGE BASIN 2

Drainage Basin 2 contains roughly 4,865 SF, which includes the driveways and landscaping facing Mill Street.

Sheet flow from the area will flow to Mill Street and collected into the existing storm drain system flowing to Lake Street.

T_C is estimated at 7 minutes based on a 60' distance of travel, 2.0% slope, and C = 0.85 per Figure 11-2. Overland Flow Time curve in McCall's Drainage Management Guidelines.

I_{10} is estimated at 2.00 in./hr. based on T_C and a 10-year event per Figure 11-1. Intensity-Duration-Frequency curve in McCall's Drainage Management Guidelines.

Using the rational method to calculate the post-development runoff, we obtain 0.19 cfs

C = 0.85

I_{10} = 2.00

A = 0.11

T_c = 7

Q = CIA = 0.19 cfs

Storage for onsite volumes for control of peak discharge rates

C = 0.85

i = (10-year storm with $T_{c = 60\ min}$) = 0.65 in./hr. = 0.0542 ft./hr.

T = 1 hr.

A = 4,865 sf

V = CiTA = 224 cf

Drainage areas 1 and 2 will both drain to the existing storm drain system on Lake Street. The combined runoff is Q=0.32 cfs which is less than the pre-development runoff of 0.38 cfs. The overall volume for a 1 Hour event is 376 CuFt post development which is less than the 495 CuFt pre development volume

DRAINAGE BASIN 3

Drainage Basin 3 contains roughly 10,090 SF, which includes the proposed Buildings.

The runoff dorm the building will be collected into an underground storage tank and slowly released at less than the predevelopment flow into the existing storm drain system. The storage tank will be located under the driveways along Mill Street.

T_C is estimated at 8 minutes based on a 90' distance of travel, 1.0% slope, and C = 1.0 per Figure 11-2. Overland Flow Time curve in McCall's Drainage Management Guidelines.

I_{10} is estimated at 2.00 in./hr. based on T_C and a 10-year event per Figure 11-1. Intensity-Duration-Frequency curve in McCall's Drainage Management Guidelines.

Using the rational method to calculate the post-development runoff, we obtain 0.19 cfs

C = 1.0

I_{10} = 2.00

A = 0.23

T_c = 8

Q = CIA = 0.46 cfs

Storage for onsite volumes for control of peak discharge rates

C = 1.0

i = (10-year storm with $T_{c = 60\ min}$) = 0.65 in./hr. = 0.0542 ft./hr.

T = 1 hr.

A = 10,090 sf

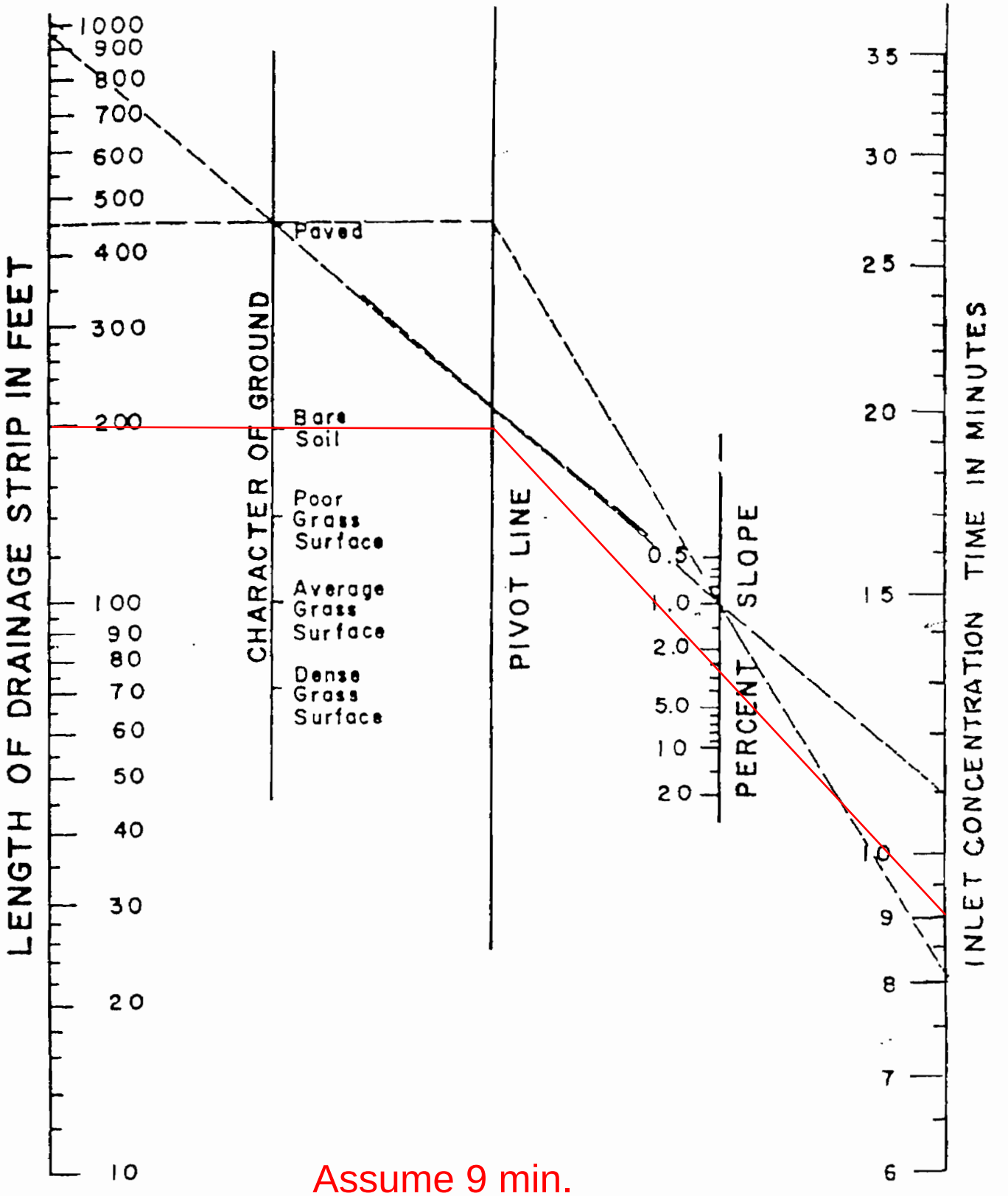
V = CiTA = 547 cf

We will assume an outflow of 0.05 cfs into the existing storm drain system. For the extent of the design we will expect to retain the full amount and to allow for percolation not the existing soil.

The proposed improvements will utilize an R-Tank Storage System to manage the runoff from the site.

Pre-Development

FIGURE II-2

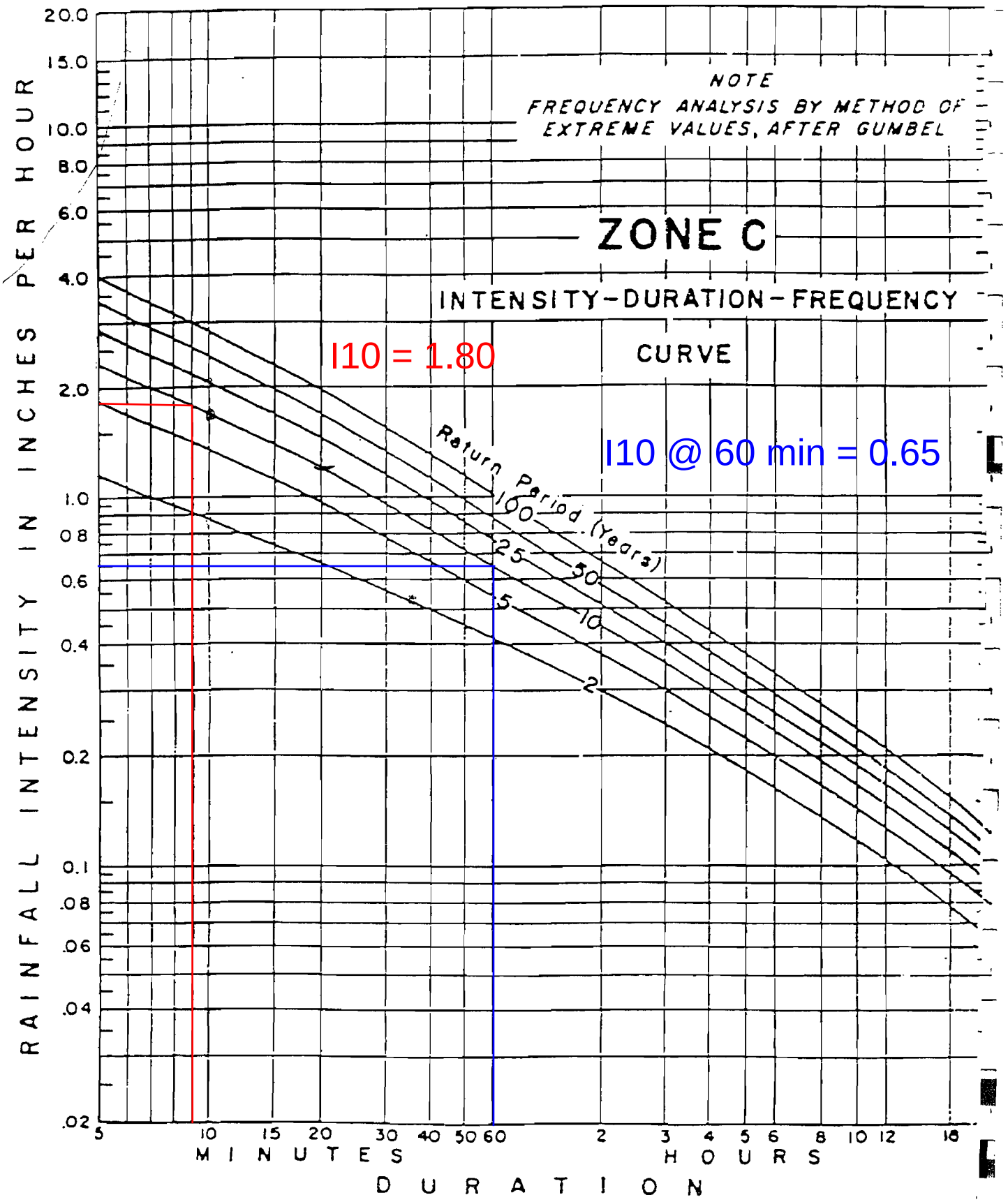


Assume 9 min.

OVERLAND FLOW TIME

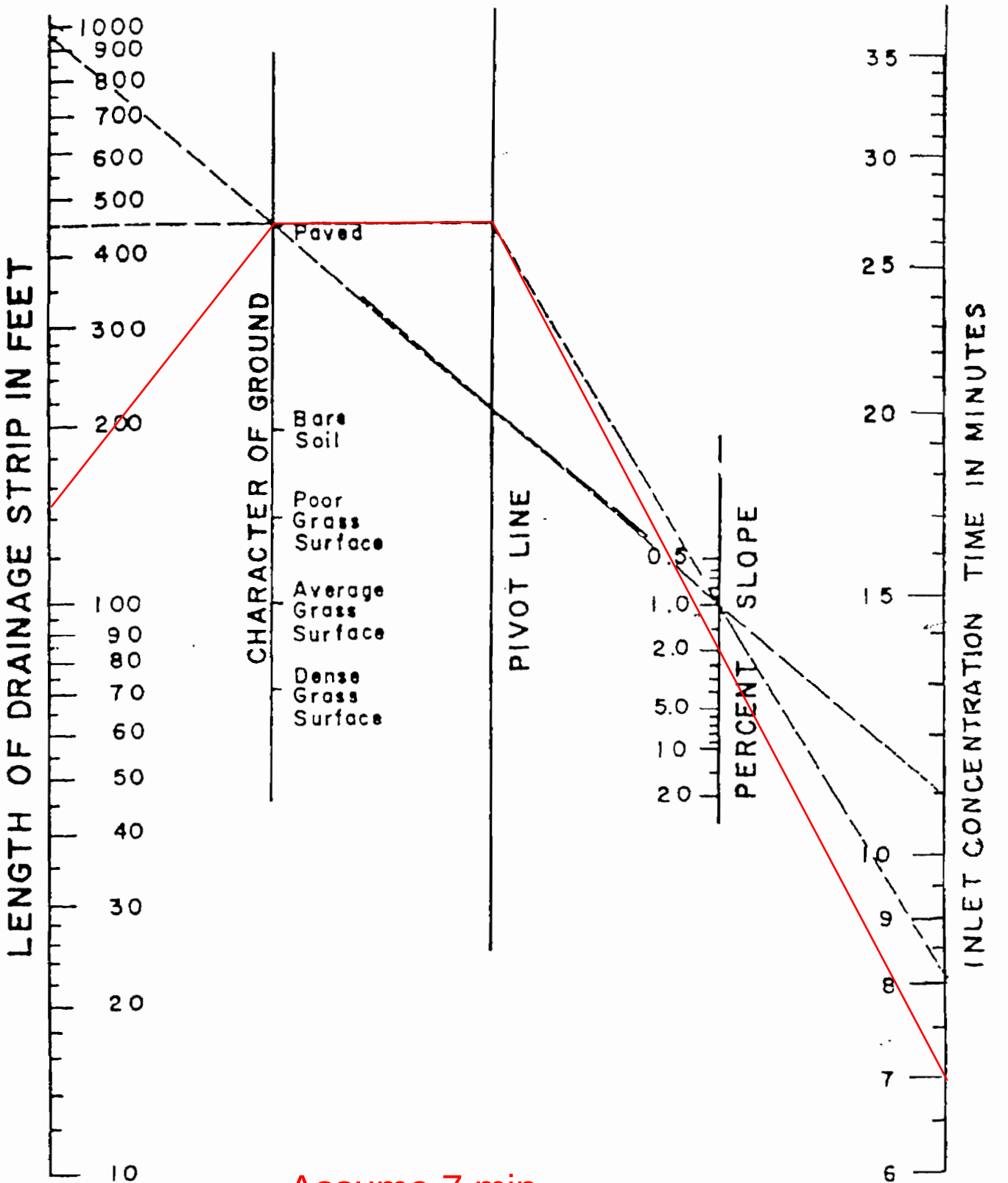
Pre-Development

FIGURE II-I



Post-Development

FIGURE II-2

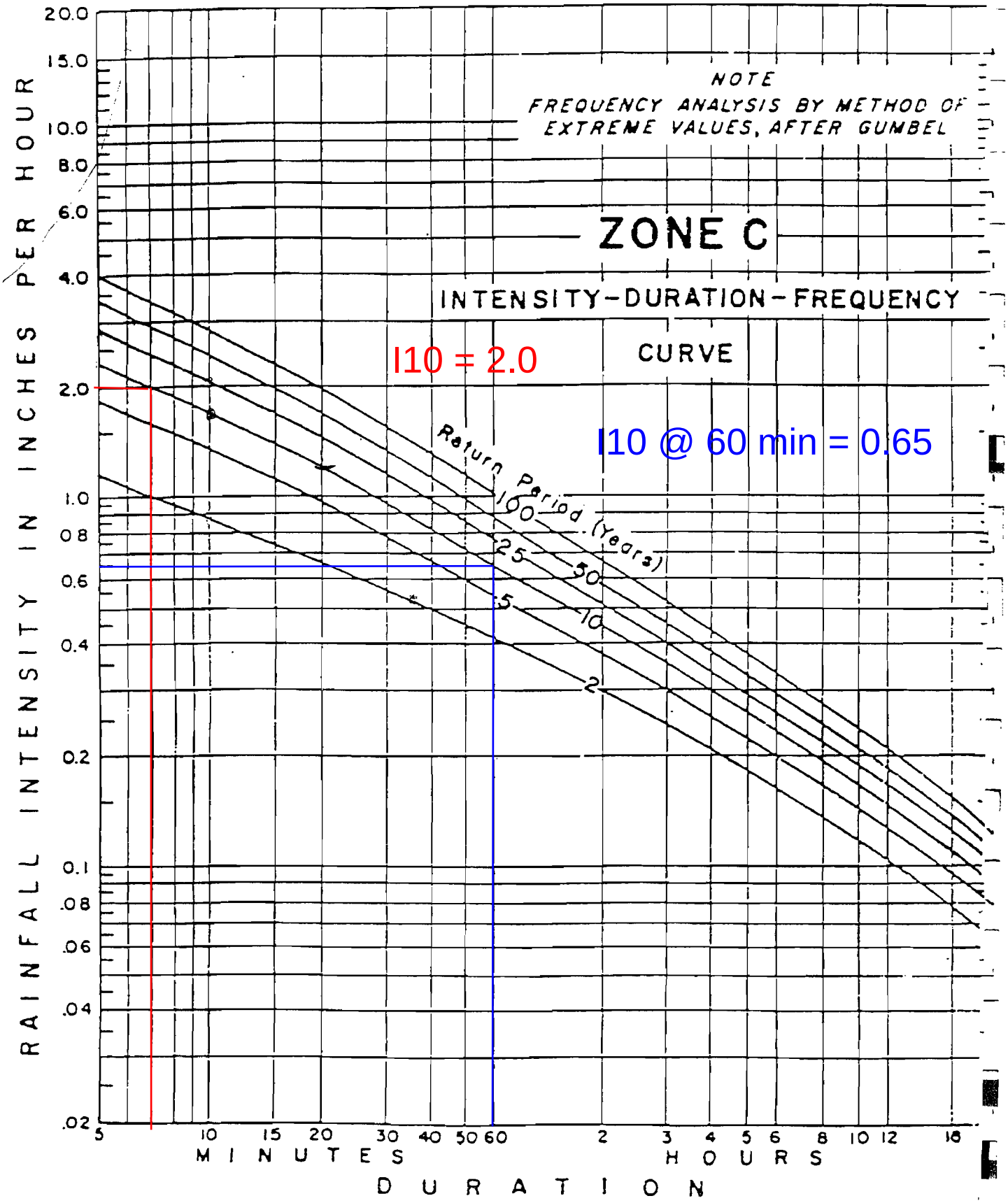


Assume 7 min.

OVERLAND FLOW TIME

Post-Development

FIGURE II-I



5 2.5 0 5 10

Graphic Scale:

Attention is Drawn to the Fact That Drawing Scales May be Altered During Reproduction Processes. Scales Shown Hereon are Based on a Full Scale Sheet Size of 24" x 36".

Scale: 1" = 10'

No.	Revisions	By	Date	Appr.

ACKERMAN ESTVOLD
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Minot, ND | Fargo, ND | Williston, ND | Boise, ID

SCALE (H): PER PLAN
SCALE(V): PER PLAN
DRAWN BY: TRA
DESIGNED BY: TRA
CHECKED BY: AMC
DATE: 2/20/24

THE HARDY TOWNHOMES
1301 E Lake Street, McCall, ID

PROJECT NO.
R24007

DRAINAGE
EXHIBIT

1

Appendix A
Site Drawings