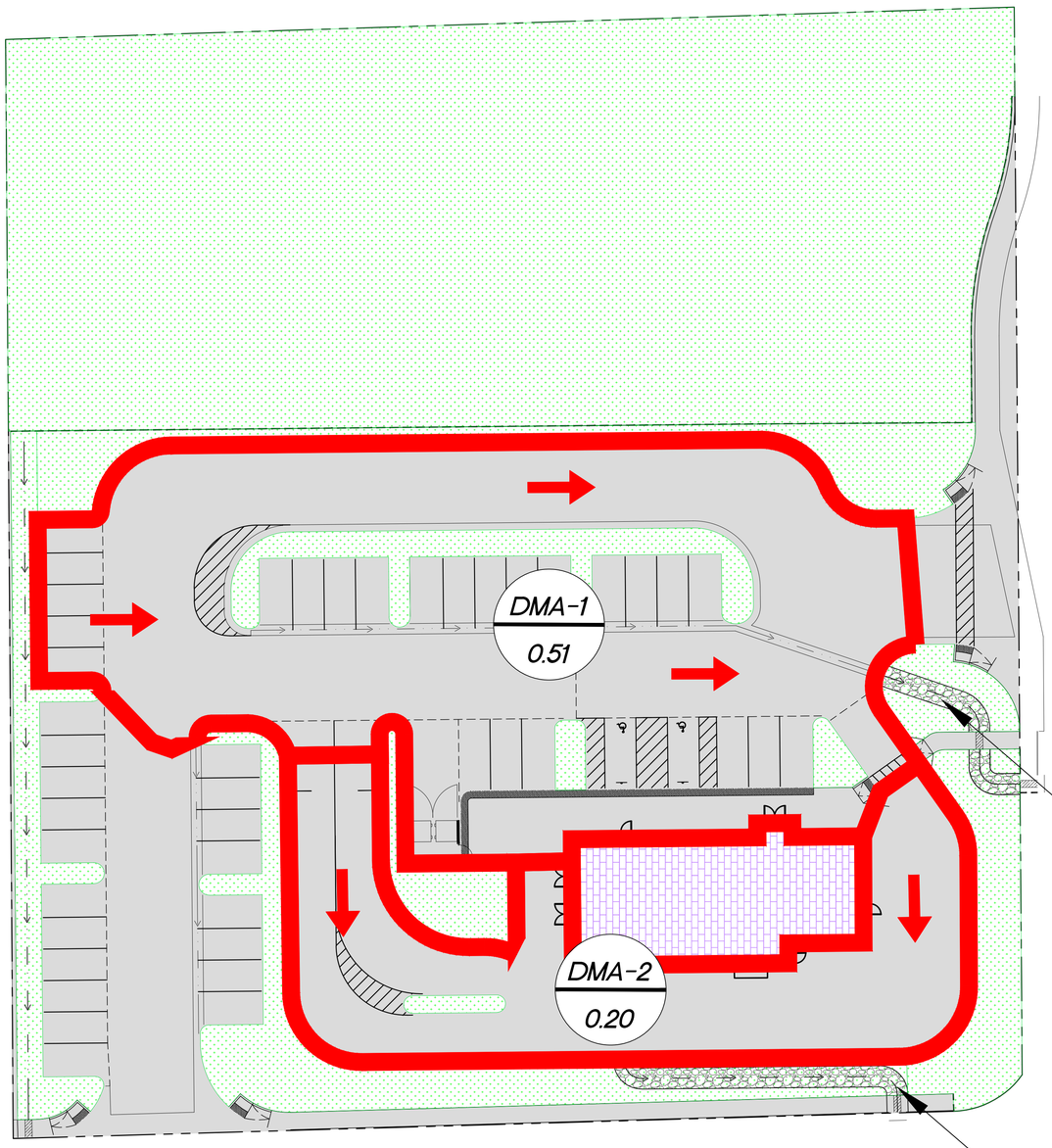
Appendix D – Parking Lot LID Calculations

- Parking Lot LID Map & Calculations



NELLIS BOULEVARD

OASIS SRINGS

SWALE DMA-1
L=60'
S=0.5%
QBMP = 0.26 CFS

SWALE DMA-2
L=80'
S=0.9%
QBMP = 0.10 CFS

NORTH

GRAPHIC SCALE IN FEET
0 ## ## ###

LEGEND

DMA-1 / 0.98 — DRAINAGE MANAGEMENT AREA

AREA

ON-SITE FLOW ARROW

TREATED IMPERVIOUS AREA

PERVIOUS AREA

BUILDING AREA

PARKING LOT DATA CALCULATIONS

Note: Stormwater Quality Design Volume calculated using steps from Section 1500 Figures 1501-1503 of the CCRFCD HCDDM, Revised 2013

GIVEN:

Parking Lot Data		Acreage	
Property Size (PS)	=	2.08	
Building Area (BA)	=	0.07	
Total Pervious Area (TPA)	=	1.07	
Parking Lot Area (PLA) = (PLA = PS-BA-TPA)	=	0.94	
Minimum PLA to be treated = (PLA * 0.75)	=	**0.71**	acres

Impervious Area to be treated by the proposed LID BMPs

Drainage Area DMA1	=	0.51	
Drainage Area DMA2	=	0.20	
Total	=	**0.71**	acres

Since 0.71 ac >= 0.71 ac then site satisfies Parking Lot LID criteria

No.	REVISIONS	DATE	BY

Kimley»Horn
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12/13/2024

KHA PROJECT 192496002	DATE 12/13/2024	SCALE AS SHOWN	DESIGNED BY MS	DRAWN BY TL	CHECKED BY MS

LID BASIN MAP

WHATABURGER
NELLIS AND WALNUT
CIVIL IMPROVEMENTS
PREPARED FOR
GWA

CITY OF LAS VEGAS NEVADA

LID

PROJECT NAME:	Whataburger Warm Springs and Gagnier				
CALC'D BY:	DM		CHECKED BY:	MS	
DATE:	Jan 2025		KH No.	192496002	

PARKING LOT DATA CALCULATIONS

Note: Stormwater Quality Design Volume calculated using steps from Section 1500 Figures 1501-1503 of the CCRFCD HCDDM, Revised 2013

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Since 0.71 ac >= 0.71 ac then site satisfies Parking Lot LID criteria

PROJECT NAME: Whataburger Warm Springs and Gagnier
CALC'D BY: SS CHECKED BY: MS
DATE: Jan 2025 KH No. 192496002

PARKING LOT LID CALCULATIONS - Peak QBMP FOR DRAINAGE AREA DMA1

Note: Stormwater Quality Design Volume calculated using steps from Section 1502.3 of the CCRFCD HCDDM, Revised 2013

GIVEN:

Drainage Area	=	**0.51**	acres
Avg % Impervious	=	**100**	%

Determine BMP Design Precipitation - 85th Percentile Rainfall Depth

Is site located within McCarran Airport Rainfall Area? (Yes/No?) **YES**

If yes, use Table 505 to obtain 2-year 6-hour rainfall depth; this is your **D2**

If no, use Figure 501 to obtain 2-year 6-hour rainfall depth; this is your **D2**

D2 = **0.72**

Compute ratio of D2 of site to D2 for the McCarran Area

$\mathbf{D2_{site}/D2_{McCarran}}$ = **1.00**

Compute 85th Percentile Rainfal depth $\mathbf{D_{85}}$ using following equation

$\mathbf{D_{85}}$ = $0.32 * D2_{site}/D2_{McCarran}$

= **0.32**

Calculate BMP Design Peak Discharge, **QBMP**

Page 1 of 2 Use the following regression equation to calculate the unit discharge (**Qp/A**) for the 90 percent average percent impervious area condition based on $\mathbf{D_{85}}$ value

Y = 1.5042**X** - 0.0066

where, **Y** = Average **Qp/A** in cfs/ac

X = $\mathbf{D_{85}}$ in inches

Qp/A = **0.47** cfs/ac

Adjust the **Qp/A** for site based on actual percent impervious using the following regression equation

Y = 0.0059**X** +0.4688

where, **Y** = Ratio **Qp/A** to 90% Impervious Value (unitless)

X = Percent Impervious

Y = **1.06**

Qp/A (adjusted) = **0.50** cfs/ac

QBMP = **Qp/A (adjusted) * Area**

= **0.26 cfs**

PROJECT NAME: Whataburger Warm Springs and Gagnier
CALC'D BY: SS CHECKED BY: MS
DATE: Jan 2025 KH No. 192496002

PARKING LOT LID CALCULATIONS - Peak QBMP FOR DRAINAGE AREA DMA1

Note: Stormwater Quality Design Volume calculated using steps from Section 1502.3 of the CCRFCD HCDDM, Revised 2013

GIVEN:

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