Skye Canyon North Arroyo Storm Drain

Technical Drainage Study Addendum #2 Supplement

City of Las Vegas, NV

Prepared For:
Century Communities of Nevada, LLC
6345 South Jones Boulevard
Las Vegas, NV 89118
Phone: 702-873-5338

Prepared By:
Westwood Professional Services
5725 w. Badura Avenue, Suite 100
Las Vegas, NV 89118
Phone: (702) 284-5300
Fax: (702) 284-5339

Project Number: CEN2018.000
Date: November 2022

Lant Leavitt, P.E.
NV Professional Engineer No. 18287

Assisted by: Phil Koerschner

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Supplement to the Skye Canyon North Arroyo Storm Drain TDS Addendum 2 Date: November 2022

Location of Development:
a) Descriptive (Cross Streets): North/South: Shaumber Road
East/West: Skye Canyon Park Drive
b) Section: 12 Township: 19 South Range: 59 East
c) APN: 126-12-515-101, 516-117, 610-009, 611-010, 613-014, 614-120, 616-082, 617-114

Name of Owner: Century Communities Nevada, LLC
Telephone No.: 702-220-6565 Fax No.: 702-220-6566 E-mail Address: Paulo.Chavez@centurycommur
Address: 6345 South Jones Boulevard Las Vegas NV 89118

Contact Person – Name: Lant Leavitt, P.E. Telephone No.: (702) 284-5300
*E-mail Address: Lant.Leavitt@westwoodps.com Fax No.: (702) 284-5399
Firm: Westwood Professional Services
Address: 5725 W. Badura Av Las Vegas NV 89118

Type of Land Development/Land Disturbance Process:

☐	Rezoning	☐	Subdivison Map	☐	Clearing and grading Only
☐	Parcel Map	☐	Planned Unit Development	☐	Other (Please specify below)
☐	Large Parcel Map	☐	Building Permit	☒	Storm Drain Infrastructure

1. Total Owned Land Area: At Site: 4 AC Being Developed/Disturbed: 4 AC

2. Is a portion or all of the subject property located in a FEMA Flood Hazard Area? ☐ Yes** ☒ No

3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☐ Yes** ☒ No

4. Proposed type of development (Residential, Commercial, Etc.): Storm Drain Infrastructure to support future/existing Residential Development

5. Approximate upstream land area which drains to the subject site: Approx 0.14 sqmi

6. Has the site drainage been evaluated in the past? ☒ Yes** ☐ No If yes, please identify documentation:
Master Drainage Study Update #7 for Skye Canyon (DS 4420) & Technical Drainage Study for Skye Canyon Infrastructure Phase 3B/3C (DS 4953)

7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Existing storm drain in Skye Canyon 2.31 Park

8. Briefly describe your proposed schedule for the subject project: ASAP

Engineer's Seal

Submit this form as part of the required drainage study to the local entity which has jurisdiction over The subject property. This form may provide sufficient information to serve as the Conceptual Drainage Study.

*Newly Required Field

**Review and concurrence of the Clark County Regional Flood Control District is required

Revision	Date

Local Entity File No.

REFERENCE: STANDARD FORM 1

Updated 05/01/2008

Westwood

5740 S. Arville St., Suite 216
Las Vegas, NV 89118

Main (702) 284-5300

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(888) 937-5150

CEN2018.000

November 9, 2022

Albert Sung, P.E.
City of Las Vegas
495 S. Main Street, 5th Floor
Las Vegas, NV 89101

Subject: Supplement to the Technical Drainage Study Addendum #2 for Skye Canyon North Arroyo Storm Drain

Mr. Sung:

This letter certifies that all items provided on electronic submittal CD matches 100% of the Supplement to the *Technical Drainage Study Addendum 2 for Skye Canyon North Arroyo Storm Drain* bound paper version.

Respectfully Submitted,
WESTWOOD PROFESSIONAL SERVICES

Lant Leavitt, P.E.
Project Manager – Water Resources Department

Westwood

5725 W. Badura Ave, Suite 100
Las Vegas, NV 89118

main (702) 284-5300

CEN2018.000

November 9, 2022

City of Las Vegas
Department of Public Works – Flood Control
495 S. Main Street
Las Vegas, Nevada 89101

Subject: Skye Canyon North Arroyo Storm Drain
Supplement to the Technical Drainage Study Addendum #2
(CLV #DS5598)

Dear Ms. Alcantara:

This supplemental letter and attachments are provided to update calculations and improvement plans per the comments received by email on November 8th, 2022, see Appendix A. The comments are addressed as follows:

Comment: ***Sheet PP-7:*** *The downstream invert to SDDI#1/GI#1 in the improvement plans does not match in the lateral loss computation and improvement plans. Review and revise accordingly.*

Response: The SDDI#1/GI#1 downstream invert is revised in the lateral loss computation to match the improvement plans, see storm drain hydraulic calculations in Appendix B.

Comment: ***Sheet PP-9:*** *The referenced profile for SDDI#6, Storm Drain Lateral #7, has a downstream invert higher than the upstream invert. Revise the computation accordingly.*

Response: This facility was added to the North Arroyo plan set from the Skye Canyon Parks 5.13/2.36 project and the hydraulic analysis was referenced. To correct the invert elevations, this lateral has been added to the storm drain hydraulics for this project, and the upstream invert revised to match the improvement plans, see storm drain hydraulic calculations in Appendix B.

Comment: ***Sheet PP-7:*** *The flow to lateral to SDDI#3 is 3 cfs and to lateral SDDI#4 is 1.5 cfs according to the lateral loss computation, however in Storm Drain Lateral #6, they are switched around. Revise the improvement plans.*

Response: Improvement plans are revised to correct the flow rates for Facilities NA7 and NA8 on sheet PP-9, see Appendix C.

All computations continue to meet the WSE criteria of being more than 1-ft below the ground.

If you have any questions or require additional information, please contact us at 702-284-5300.

Westwood

5725 W. Badura Ave, Suite 100
Las Vegas, NV 89118

main (702) 284-5300

Respectfully Submitted,
WESTWOOD PROFESSIONAL SERVICES

Lant Leavitt, P.E.
Project Manager – Water Resources Services

CC: Todd J. Steadham, P.E.
Mark Failla, P.E., CFM

Westwood

5725 W. Badura Ave, Suite 100
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List of Appendices

APPENDIX A

City of Las Vegas Email Correspondence

Caitlyn Alcantara, P.E.
Engineer Associate
Department of Public Works
495 S Main St, 1st Floor
Las Vegas, NV 89101
P: (702)-229-6733

lasvegasnevada.gov

Your opinion is important! Click here to take a short survey.

From: Caitlyn Alcantara
Sent: Tuesday, November 8, 2022 5:55 PM
To: Lant Leavitt <Lant.Leavitt@westwoodps.com>
Cc: Peter Jackson <pjackson@LasVegasNevada.GOV>
Subject: Skye Canyon North Arroyo Storm Drain

Heya Lant,

I had a couple comments on North Arroyo and wanted to give you a chance to knock them out instead of issuing another comment letter.

1. **Sheet PP-7:** The downstream invert to SDDI#1/GI#1 in the improvement plans does not match in the lateral loss computation and improvement plans. Review and revise accordingly.
2. **Sheet PP-9:** The referenced profile for SDDI#6, Storm Drain Lateral #7, has a downstream invert higher than the upstream invert. Revise the computation accordingly.

Since you're editing the sheet, add one small comment

1. **Sheet PP-7:** The flow to lateral to SDDI#3 is 3 cfs and to lateral SDDI#4 is 1.5 cfs according to the lateral loss computation, however in Storm Drain Lateral #6, they are switched around. Revise the improvement plans.

Let me know if you have any problems or want me to just issue the comment letter.

Thanks,

Caitlyn Alcantara, P.E.
Engineer Associate
Department of Public Works
495 S Main St, 1st Floor
Las Vegas, NV 89101
P: (702)-229-6733

lasvegasnevada.gov

Your opinion is important! Click here to take a short survey.

APPENDIX B

Revised Hydraulic Analysis

Project Name:	SKYE CANYON NORTH ARROYO Addendum
Project Number:	CEN2018
Date:	11/9/2022
By:	PK

Westwood

STORM DRAIN HYDRAULIC CALCULATIONS

CONDUIT DATA							FLOW DATA							LOSS	HGL		COMMENTS	
STATION		SIZE / TYPE	n	INVERTS		LENGTH	A	R	Φ	Q	V	H_V =	S_f	PIPE	PIPE		PRESS. FLOW?	OTHER
FROM	TO		Manning's Roughness	D / S ELEV.	U / S ELEV.		(FT^2)	(FT)		(CFS)	(FPS)	$V^2/2g$ (FT)	(FT/FT)	H_f (FT)	D/S HGL ELEV.	U/S HGL ELEV.		
1000	1029.53	ROUND 36" RCP	0.013	2892.55	2892.96	29.53	7.068583	0.75	0.004925	49.5	7.002818	0.761482	0.005498049	0.162	2898.16	2898.322	Yes	Facility 5.01L (GI#1)
1000	1019.39	ROUND 18" RCP	0.013	2852.57	2857.22	19.39	1.767146	0.375	0.004925	3	1.697653	0.044752	0.000812326	0.016	2854.31	2854.326	No	Facility NA7 (GI#4)
1000	1017.17	ROUND 18" RCP	0.013	2852.57	2856.69	17.17	1.767146	0.375	0.004925	1.5	0.848826	0.011188	0.000203082	0.003	2854.31	2854.313	No	Facility NA8 (GI#3)
1000	1040.72	ROUND 24" RCP	0.013	2862.04	2867.52	40.72	3.141593	0.5	0.004925	15	4.774648	0.353995	0.004382754	0.178	2862.05	2862.228	No	Storm Drain Lateral #5 (2.08-L2)
1000	1008.76	ROUND 18" RCP	0.013	2932.96	2934.28	8.76	1.767146	0.375	0.004925	2	1.131769	0.01989	0.000361034	0.003163	2932.2	2932.2032	No	Facility NA9 (GI#6)

$Sf = \Phi Hv / R^{1.33}$

$\Phi = 2g (n^2) / 2.21$

1 - Where pipes are not under pressure, assume U/S HGL is at top of pipe

APPENDIX C

Revised Improvement Plans