CITY OF ALBUQUERQUE

August 19, 2005

Ms. Genny Donart, PE
ISAACSON & ARFMAN, PA
120 Monroe St. NE
Albuquerque, NM 87108

RE: VISTA DEL AGUILA SUBDIVISION, UNIT 3 (C-19/D34)
Engineers Certification for Release of Financial Guaranty
Engineers Stamp dated 12/17/2003
Engineers Certification dated 08/19/2005

Dear Genny:

Based upon the information provided in your Engineer's Certification Submittal dated 08/19/2005, the above referenced plan is adequate to satisfy the Grading and Drainage Certification for Release of Financial Guaranty.

If you have any questions, you can contact me at 924-3982.

Sincerely,

Arlene V. Portillo

Arlene V. Portillo
Plan Checker, Planning Dept.- Hydrology
Development and Building Services

C: Marilyn Maldonado, COA# 702481
File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

April 22, 2004

Genevieve Donart, PE
Isaacson & Arfman
128 Monroe NE
Albuquerque, NM 87108

Re: Vista del Aguila, Unit 3 Subdivision Revised Grading Plan
Engineer's Stamp dated 12-17-03, (C19/D34)

Dear Ms. Donart,

Based upon the information provided in your submittal dated 2-4-03, the above referenced plan is approved for Grading Permit. This is now the plan that must be certified for Release of Financial Guarantees.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: file

ADDENDUM TO THE DRAINAGE REPORT

FOR

VISTA DEL AGUILA UNIT THREE

A 74-LOT SINGLE FAMILY RESIDENTIAL SUBDIVISION

ALBUQUERQUE, NEW MEXICO JULY 2003

Prepared by:

ISAACSON & ARFMAN, P.A.
128 Monroe Street NE
Albuquerque, NM 87108
(505) 268-8828

RECEIVED
JUL 07 2003
HYDROLOGY SECTION

GENEVIEVE L. DONART
NEW MEXICO
15088
REGISTERED PROFESSIONAL ENGINEER

Genevieve L. Donart 7/6/03

Genevieve L. Donart, PE **Date**

II. INTRODUCTION

The Vista del Aguila Unit Three Subdivision is a 74 lot, single-family residential subdivision in the North Albuquerque Acres adjacent to the north side of Alameda Blvd between Louisiana and Wyoming. This drainage report was covered previously under the combined Drainage Report for Vista del Aguila Unit Three and Trementina Subdivisions, but the layout of Vista del Aguila Unit Three has been revised. This addendum revises the Grading & Drainage Plan and storm drain layout, and refers back to the previous report for other items.

This area is covered under the Final North Albuquerque Acres Drainage Master Plan (NAA MDP) dated October 1998, and falls within drainage basins 117.4 and 934.1 as defined in the NAA MDP.

The previous report references the Drainage Report for Eagle Springs Subdivision dated January 9, 2001 (ES Report) and the LOMR for Quail Springs Subdivision dated March 4, 1997. Eagle Springs is the existing subdivision adjacent to the south boundary of Trementina. Flows from the NAA MDP basin 934.1 will be diverted into a storm drain which runs through Eagle Springs. A LOMR for Quail Springs Subdivision removed portions of a former floodplain on the site, the remainder of which will be removed by Vista del Aguila Unit Three.

III. EXISTING CONDITIONS

The proposed site is a total of 11 undeveloped North Albuquerque Acres lots, with native grasses and scrub brush. The natural ground slopes downhill to the west at approximately a 3% grade. To the north is the Quail Springs Subdivision and to the south is the Alameda Blvd right-of-way. Vista del Aguila Unit Three is bordered by Louisiana Blvd to the west, and there are five undeveloped lots upstream of the subdivision, between the east boundary and Wyoming Blvd.

There is an abandoned arroyo within the project that used to carry flows discharged from La Cueva High School. Those former offsite flows are now captured by a storm drain system in Wyoming Blvd and no longer affect the site, but portions of that floodplain still exist. This floodplain will be removed by LOMR prior to financial guarantee release.

The only existing storm drain facilities in the project area are an asphalt tailings swale along the south side of Alameda, and a storm drain connection through an HOA tract in Eagle Springs to the south. According to the ES Report, the downstream storm drain was under-designed for the fully-developed flows designated in the NAA MDP for Basin 934.1, and the amount of storm water entering the system must be reduced by 21.99 cfs. (See the previous report.)

Existing storm water flows from Basins 100, 101, and 110 totaling 64.1 cfs travel west towards Louisiana, where small storms pond on Lot 32, block 3 and Lot 1, block 4. (See the Existing Basin Map in the pockets and calculations in Appendix A) Larger storms overtop Louisiana and water continues west in the asphalt swale along Alameda.

IV. PROPOSED CONDITIONS

The Grading & Drainage Plan for the subdivision is in the pockets at the back of this report. It has been modified from the previously approved plan to reflect a continuous street from the west end of the project to the east end, rather than having that street broken up by a hammerhead. Eagle Feather Rd became part of Dancing Eagle Ave, Eagle Feather Ct became Dancing Eagle Ct, and Via Feliz was renamed to become Eagle Feather Dr.

Drainage basin boundaries remain the same as in the previous Plan, but flows from Basin 302c are now captured by inlets on grade in Dancing Eagle Ave, instead of in sump inlets at the old Dancing Eagle Ct, and the storm drain connects to the Alameda drain at Eagle Talon Dr. (See the Proposed Basin Map in the pockets.) The same flows are captured in the storm drain as were previously calculated.

Land treatments, proposed storm water volumes, and individual basin flows are all the same as were calculated in the previous report. (See calculations in Appendix A.) Basins 201, 202, 321 and 322 are offsite and considered undeveloped in the proposed condition. Basins 210a, 210b, 310, and 311 include Alameda Blvd. All others are to be developed by this project.

Vista del Aguila Unit Three has only mountable curb inside the projects due to a reduced distance from the back of curb to the right-of-way line. Street flow capacities are therefore reduced compared with a similar project that uses standard curb, and storm inlets are required more frequently. Street Flow Capacity Calculations can be found in Appendix B and HydraFlow Storm Sewer Calculations are in Appendix C.

There are two main outlet points from Vista Del Aguila Unit Three: at the south ends of Eagle Talon Dr (just west of AP30) and Dancing Eagle Ct (AP32). All upstream flows are captured in storm inlets prior to the Analysis Points, and empty to the west Alameda storm drain.

Contributing basins for the combined flows at AP30 are Basins 302a, 302b, and 302c. Basin boundaries for 302a and 302b are located where storm inlets in Dancing Eagle Ave are required because street flow capacities are exceeded. Inlets at the west end of Basin 302c collect the remaining water in Dancing Eagle Ave prior to reaching Eagle Talon Dr. Minor flows from Basin 303 exit Eagle Talon Dr as surface flow.

Contributing basins for the combined flows at AP32 are Basins 304a and 304b. No storm inlets are required in this portion of Dancing Eagle Ave, but a sump inlet collects the water at the end of Dancing Eagle Ct.

Basins 301 and 303 direct about 1.7 cfs each to Alameda Blvd.

No offsite storm water enters the subdivision. Basin 201 slopes down towards Alameda, preventing ponding along the eastern perimeter wall. All flows from Quail Springs are directed north into that subdivision.

ALAMEDA BLVD:

Portions of Alameda Blvd adjacent to the proposed subdivisions will be developed to half the final width. As required in the COA DPM, one lane in each direction must remain free of storm water in the 10-year, 6-hour storm. Street flow capacities are designed so that only 20 feet of the 30 feet of paving in each direction carries water.

Undeveloped flows from Basins 202 and 210A enters Alameda from the east end. Inlets at AP10 capture water from this basin. These flows combine with Basin 203 and 320a, and divert to the Eagle Springs storm drain. (Please see Calculations for the Trementina Subdivision in the previous report.)

Developed flows from the subdivisions enter the west Alameda storm drain at AP20, AP30, AP32, and minor flows enter Alameda from Basin 301 and 303. Inlets at AP11, AP21 and AP31 capture flows generated in the right-of-way and undeveloped flows from Basins 201 and 321.

Inlets in Alameda will only be installed where there is curb proposed at this time. Future development will be responsible for inlets in adjacent portions of Alameda as they are constructed.

The NAA MDP requires that storm drain eventually be constructed downstream in Alameda from Louisiana to San Pedro, and then connect with the La Cueva Channel to the north. Because this connection has not yet been built, flows that enter the west Alameda storm drain are routed to a retention pond at the southeast corner of the intersection of Alameda and Louisiana (Basin 322). This pond is sized for the 100-year, 10-day developed volumes from Vista del Aguila Unit Three, Trementina, and Alameda Blvd, and the undeveloped volumes from all other basins.

V. FUTURE CONDITIONS

In the future, as lots designated as undeveloped in the proposed condition develop, the flows in the system will increase. This report assumes that Basins 201a, 201b, 202, and 321 will have similar land treatments to the basins within the proposed subdivisions. Basin 322 is zoned as SU-2/C-1, so it was assumed that the land treatments will be different from the residential areas. Land treatments,

proposed storm water volumes, and individual basin flows are all the same as were calculated in the previous report. (See Runoff Calculations for Future Conditions in Appendix A.)

The storm drain in Alameda is sized for the fully-developed condition, but the pond is sized only for the proposed condition. Offsite lots will be required to retain all developed stormwater on their properties.

Once future expansion of the downstream storm drain in Alameda allows for free discharge to the La Cueva Channel, the retention ponds can be removed by a separate grading plan. The City of Albuquerque and AMAFCA will determine the when the system is approved for free discharge.

VI. SUMMARY & CONCLUSIONS

Based on information in previous sections, it is recommended that the following items be constructed with each of the noted developments:

Vista del Aguila Unit Three:

1. Mountable curb on all interior streets
2. Standard curb on Alameda Blvd.
3. Storm drain in Dancing Eagle Ave with 2 single-grate inlets at Lot 14, Blk C, another 2 single-grate inlets at Lot 8, Blk D, and another 2 single-grate inlets at Lot 13, Blk D. The storm drain outlets through Eagle Talon Dr.
4. Storm drain with a triple-grate sump inlet at the south end of Dancing Eagle Ct. The storm drain outlets through the Dancing Eagle Ct.
5. All Alameda Blvd drainage improvements up to the east edge of the subdivision.
6. A minimum of 5.4454 Ac-ft of retention pond and 1 foot of freeboard on the two lots at the southeast corner of Alameda and Louisiana. A blanket public drainage easement and a Covenant & Agreement shall be provided for these lots.
7. A LOMR will remove the floodplain prior to financial guarantee release.

Alameda Blvd:

1. Standard curb on all portions of the street adjacent to the proposed subdivisions.
2. Storm drain from Eagle Feather Dr to Louisiana Blvd with a double-grate inlet on the north side of Alameda upstream of Via de Paz, and a single-grate inlet on the north side of Alameda adjacent to the end of Dancing Eagle Ct . This system will empty to the retention pond.

In the future, the following items shall be constructed by offsite development:

Future Conditions:

1. Temporary retention ponds on offsite properties to retain the developed volumes for that property.
2. A single-grate inlet on the north side of Alameda between Lots 18 & 19, NAA, Unit 3, Tract 2, Block 4 to capture developed flows from Basin 201A.
3. The first lot within Basin 321 must construct inlets to capture the flows from that basin.

4. Once completion of future expansion of the downstream storm drain in Alameda allows for free discharge to the La Cueva Channel, the retention pond on Basin 322 and any individual lot retention ponds can be removed by separate grading plans. Free discharge and pond removals are subject to City of Albuquerque and AMAFCA approval.
5. When Basin 322 is available to develop, the blanket drainage easement shall be vacated, and an inlet shall be constructed to capture flows from that basin.

RUNOFF CALCULATIONS FOR PROPOSED CONDITIONS (Q_{100})

100-YEAR, 6-HOUR STORM

Per the City of Albuquerque D.P.M. Section 22.2

PROJECT NAME: **VISTA DEL AGUILA UNIT 3**

JOB NUMBER: 1257

PRECIP ZONE	Q_{100} RUNOFF RATES (cfs/Ac)			
	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.70
3	1.87	2.60	3.45	5.02
4	2.20	2.92	3.73	5.25

% LAND TREATMENTS				
	TREAT TYPE 1	TREAT TYPE 2	TREAT TYPE 3	TREAT TYPE 4
A	0	100	0	
B	14.6	0	21	
C	14.5	0	21	
D	70.9	0	58	
Σ% =	100	100	100	0

PRECIPITATION ZONE: 3

TREATMENT TYPE 1 (PROPOSED SUBDIVISION)							
BASIN #	LAND TREATMENT AREAS (Ac)					Q_{100} (cfs)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D		
203	1.472	0	0.21	0.21	1.04	**6.5343**	Trementina-Via Contenta east of 11+50
301	0.385	0	0.06	0.06	0.27	**1.7090**	Vista 3 - Eagle Feather
302a	1.917	0	0.28	0.28	1.36	**8.5096**	Vista 3 - Dancing Eagle Ave
302b	2.143	0	0.31	0.31	1.52	**9.5128**	Vista 3 - Dancing Eagle Ave
302c	1.079	0	0.16	0.16	0.77	**4.7897**	Vista 3 - Dancing Eagle Ave
303	0.388	0	0.06	0.06	0.28	**1.7223**	Vista 3 - Eagle Talon Dr
304a	1.704	0	0.25	0.25	1.21	**7.5641**	Vista 3 - Dancing Eagle Ave
304b	0.66	0	0.10	0.10	0.47	**2.9298**	Vista 3 - Dancing Eagle Ct
320a	2.052	0	0.30	0.30	1.45	**9.1089**	Trementina-Via Contenta (sta 7+00-11+50)
320b	1.81	0	0.26	0.26	1.28	**8.0346**	Trementina-Via Contenta (sta 3+00-7+00)
320c	1.497	0	0.22	0.22	1.06	**6.6452**	Trementina-Via de Paz

RUNOFF CALCULATIONS FOR PROPOSED CONDITIONS (Q_{100})

100-YEAR, 6-HOUR STORM

Per the City of Albuquerque D.P.M. Section 22.2

TREATMENT TYPE 2 (UNDEVELOPED LAND)							
BASIN #	LAND TREATMENT AREAS (Ac)					Q_{100} (cfs)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D		
201	4.282	4.28	0	0	0	**8.0073**	N. of Alameda, e. of Via Feliz
202	1.617	1.62	0	0	0	**3.0238**	S. of Alameda, e. of Trementina
321	2.665	2.67	0	0	0	**4.9836**	S. of Alameda, w. of Trementina
322	1.612	1.61	0	0	0	**3.0144**	Pond Lots

TREATMENT TYPE 3 (ALAMEDA BLVD)							
BASIN #	LAND TREATMENT AREAS (Ac)					Q_{100} (cfs)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D		
210a	1.025	0	0.22	0.22	0.59	**4.2867**	Alameda R/W, e. of Via Feliz, n. side
210b	0.661	0	0.14	0.14	0.38	**2.7644**	Alameda R/W, e. of Via Feliz, s. side
310	2.655	0	0.56	0.56	1.54	**11.1035**	Alameda R/W, middle section
311	1.678	0	0.35	0.35	0.97	**7.0176**	Alameda R/W,Louisiana to Trementina

VOLUME CALCULATIONS FOR PROPOSED CONDITIONS (V_{100})

100-YEAR, 6-HOUR STORM

Per the City of Albuquerque D.P.M. Section 22.2

PROJECT NAME: **VISTA DEL AGUILA UNIT 3**

JOB NUMBER: 1257

PRECIP ZONE	E_{360} EXCESS PRECIPITATION (in.)			
	A	B	C	D
1	0.44	0.67	0.99	1.97
2	0.53	0.78	1.13	2.12
3	0.66	0.92	1.29	2.36
4	0.80	1.08	1.46	2.64

% LAND TREATMENTS				
	TREAT TYPE 1	TREAT TYPE 2	TREAT TYPE 3	TREAT TYPE 4
A	0	100	0	0
B	14.6	0	21	0
C	14.5	0	21	0
D	70.9	0	58	0
Σ% =	100	100	100	0

PRECIPITATION ZONE: 3

TREATMENT TYPE 1								
BASIN #	LAND TREATMENT AREAS (Ac)					V_{100} (Ac-ft)	V_{100} (cu.ft.)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D			
203	1.472	0	0.21	0.21	1.04	**0.2447**	**10657.9**	
301	0.385	0	0.06	0.06	0.27	**0.0640**	**2787.6**	
302a	1.917	0	0.28	0.28	1.36	**0.3186**	**13879.9**	
302b	2.143	0	0.31	0.31	1.52	**0.3562**	**15516.3**	
302c	1.079	0	0.16	0.16	0.77	**0.1793**	**7812.4**	
303	0.388	0	0.06	0.06	0.28	**0.0645**	**2809.3**	
304a	1.704	0	0.25	0.25	1.21	**0.2832**	**12337.7**	
304b	0.66	0	0.10	0.10	0.47	**0.1097**	**4778.7**	
320a	2.052	0	0.30	0.30	1.45	**0.3411**	**14857.4**	
320b	1.81	0	0.26	0.26	1.28	**0.3009**	**13105.2**	
320c	1.497	0	0.22	0.22	1.06	**0.2488**	**10838.9**	

VOLUME CALCULATIONS FOR PROPOSED CONDITIONS (V_{100})

100-YEAR, 6-HOUR STORM

Per the City of Albuquerque D.P.M. Section 22.2

TREATMENT TYPE 2								
BASIN #	LAND TREATMENT AREAS (Ac)					V_{100} (Ac-ft)	V_{100} (cu.ft.)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D			
201	4.282	4.28	0	0	0	**0.2355**	**10258.8**	
202	1.617	1.62	0	0	0	**0.0889**	**3874.0**	
321	2.665	2.67	0	0	0	**0.1466**	**6384.8**	
322	1.612	1.61	0	0	0	**0.0887**	**3862.0**	

TREATMENT TYPE 3								
BASIN #	LAND TREATMENT AREAS (Ac)					V_{100} (Ac-ft)	V_{100} (cu.ft.)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D			
210a	1.025	0	0.22	0.22	0.59	**0.1566**	**6819.8**	
210b	0.661	0	0.14	0.14	0.38	**0.1010**	**4397.9**	
310	2.655	0	0.56	0.56	1.54	**0.4055**	**17664.8**	
311	1.678	0	0.35	0.35	0.97	**0.2563**	**11164.5**	

RUNOFF CALCULATIONS FOR FUTURE, FULLY-DEVELOPED CONDITIONS (Q_{100})

100-YEAR, 6-HOUR STORM

Per the City of Albuquerque D.P.M. Section 22.2

PROJECT NAME: **VISTA DEL AGUILA UNIT 3**

JOB NUMBER: 1257

PRECIP ZONE	Q_{100} RUNOFF RATES (cfs/Ac)			
	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.70
3	1.87	2.60	3.45	5.02
4	2.20	2.92	3.73	5.25

% LAND TREATMENTS				
	TREAT TYPE 1	TREAT TYPE 2	TREAT TYPE 3	TREAT TYPE 4
A	0	0	0	
B	14.6	21	5	
C	14.5	21	5	
D	70.9	58	90	
Σ% =	100	100	100	0

PRECIPITATION ZONE: 3

TREATMENT TYPE 1 (DEVELOPED RESIDENTIAL)							
BASIN #	LAND TREATMENT AREAS (Ac)					Q_{100} (cfs)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D		
201	4.282	0	0.63	0.62	3.04	**19.0**	N. of Alameda, e. of Trementina
202	1.617	0	0.24	0.23	1.15	**7.2**	S. of Alameda, e. of Trementina
203	1.472	0	0.21	0.21	1.04	**6.5**	Trementina-Via Contenta east of 11+50
301	0.385	0	0.06	0.06	0.27	**1.7**	Vista 3 - Eagle Feather
302a	1.917	0	0.28	0.28	1.36	**8.5**	Vista 3 - Dancing Eagle Ave
302b	2.143	0	0.31	0.31	1.52	**9.5**	Vista 3 - Dancing Eagle Ave
302c	1.078	0	0.16	0.16	0.76	**4.8**	Vista 3 - Dancing Eagle Ave
303	0.388	0	0.06	0.06	0.28	**1.7**	Vista 3 - Eagle Talon Dr
304a	1.704	0	0.25	0.25	1.21	**7.6**	Vista 3 - Dancing Eagle Ave
304b	0.66	0	0.10	0.10	0.47	**2.9**	Vista 3 - Dancing Eagle Ct
320a	2.052	0	0.30	0.30	1.45	**9.1**	Trementina-Via Contenta (sta 7+00-11+50)
320b	1.81	0	0.26	0.26	1.28	**8.0**	Trementina-Via Contenta (sta 3+00-7+00)
320c	1.497	0	0.22	0.22	1.06	**6.6**	Trementina-Via de Paz
321	2.665	0	0.39	0.39	1.89	**11.8**	S. of Alameda, w. of Trementina

RUNOFF CALCULATIONS FOR FUTURE, FULLY-DEVELOPED CONDITIONS (Q_{100})

100-YEAR, 6-HOUR STORM

Per the City of Albuquerque D.P.M. Section 22.2

TREATMENT TYPE 2 (ALAMEDA BLVD)							
BASIN #	LAND TREATMENT AREAS (Ac)					Q_{100} (cfs)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D		
210a	1.025	0	0.22	0.22	0.59	**4.3**	Alameda R/W, e. of Via Feliz
210b	0.661	0	0.14	0.14	0.38	**2.8**	Alameda R/W, e. of Via Feliz
310	2.655	0	0.56	0.56	1.54	**11.1**	Alameda R/W, middle section
311	1.678	0	0.35	0.35	0.97	**7.0**	Alameda R/W,Louisiana to Trementina

TREATMENT TYPE 3 (COMMERCIAL)							
BASIN #	LAND TREATMENT AREAS (Ac)					Q_{100} (cfs)	REMARKS
	A_{TOTAL}	A_A	A_B	A_C	A_D		
322	1.612	0	0.08	0.08	1.45	**7.8**	Future commercial - SE cor of Alameda
		0	0.00	0.00	0.00	**0.0**	and Louisiana

RETENTION POND VOLUMES

FOR 100-YEAR, 10-DAY STORM

P_{360} = 2.54 in (from Fig. C-2, COA DPM)

P_{1440} = 2.93 in (from Fig. C-3, COA DPM)

V_{360} = 3.1588 Ac-ft (from Volume calcs)

A_D = 14.2042 Ac

$P_{10day} = 10 - [24.9/(P_{1440})^{1.4}]$

P_{10day} = 4.471788 in

$V_{10day} = V_{360} + A_D(P_{10day} - P_{360})/12$

V_{10day} = 5.4454 Ac-ft => 237203 cu. ft.

TABLE 3

STREET FLOW DEPTH SUMMARY - VISTA DEL AGUILA 3

STREET	LOCATION	STREET WIDTH	CURB TYPE	SLOPE (ft/ft)	Q_{100} (cfs)	DEPTH (ft)	EGL DEPTH (ft)
Dancing Eagle Ave	Sta 10+05 to Eagle Feather	28' F-F	mtbl	0.0373	9.11	0.22	0.44
Dancing Eagle Ave	Sta 8+40 to 10+05	28' F-F	mtbl	0.0262	11.03	0.25	0.44
Dancing Eagle Ave	Sta 3+95 to 8+40	28' F-F	mtbl	0.0264	11.22	0.25	0.44
Dancing Eagle Ave	Sta 1+72 to 3+95	28' F-F	mtbl	0.0332	9.87	0.23	0.44
Dancing Eagle Ct	0	24' F-F	mtbl	0.0175	10.49	0.26	0.41
Eagle Feather (X2)	Dancing Eagle to Alameda	56' F-F	mtbl	0.0050	3.42	0.22	0.25
Eagle Talon Dr (X2)	Eagle Feather to Alameda	56' F-F	mtbl	0.0111	3.44	0.19	0.25

STREET FLOW CAPACITY CALCULATIONS

STREET NAME: **Dancing Eagle Ave** 1
LOCATION: **Sta 10+05 to Eagle Feather**

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0.0373	Road Width/2	14
Q_{100}	9.11	Curb Height	0.33
Right-of-way Width	40	1/2 Wetted Perimeter (P)	11.220
Road Width	28	1/2 Area(STD)	----
Curb Type	mtbl	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	1.210
Manning's N	0.017	Discharge (1/2 Q)	4.594

Depth: 0.220

RESULTS

HGL

Q_{100} FLOW CAPACITY = 9.19 cfs OK
at an HGL Depth= 0.22 ft < Curb height = 0.33
OK

EGL

Velocity 3.80 fps
$V^2/2g$ 0.22 ft
EGL Depth = 0.44 ft < Right-of-way height = 0.44
OK

STREET NAME: **Dancing Eagle Ave** 2
LOCATION: **Sta 8+40 to 10+05**

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0.0262	Road Width/2	14
Q_{100}	11.03	Curb Height	0.33
Right-of-way Width	40	1/2 Wetted Perimeter (P)	12.954
Road Width	28	1/2 Area(STD)	----
Curb Type	mtbl	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	1.613
Manning's N	0.017	Discharge (1/2 Q)	5.651

Depth: 0.254

RESULTS

HGL

Q_{100} FLOW CAPACITY = 11.30 cfs OK
at an HGL Depth= 0.25 ft < Curb height = 0.33
OK

EGL

Velocity 3.50 fps
$V^2/2g$ 0.19 ft
EGL Depth = 0.44 ft < Right-of-way height = 0.44
OK

STREET NAME: **Dancing Eagle Ave** 3
LOCATION: **Sta 3+95 to 8+40**

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0.0264	Road Width/2	14
Q_{100}	11.22	Curb Height	0.33
Right-of-way Width	40	1/2 Wetted Perimeter (P)	12.903
Road Width	28	1/2 Area(STD)	----
Curb Type	mtbl	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	1.600
Manning's N	0.017	Discharge (1/2 Q)	5.613

Depth: 0.253

RESULTS

HGL

Q_{100} FLOW CAPACITY = 11.23 cfs OK
at an HGL Depth= 0.25 ft < Curb height = 0.33
OK

EGL

Velocity 3.51 fps
$V^2/2g$ 0.19 ft
EGL Depth = 0.44 ft < Right-of-way height = 0.44
OK

STREET FLOW CAPACITY CALCULATIONS

STREET NAME: **Dancing Eagle Ave** 4
LOCATION: **Sta 1+72 to 3+95**

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0.0332	Road Width/2	14
Q_{100}	9.87	Curb Height	0.33
Right-of-way Width	40	1/2 Wetted Perimeter (P)	11.781
Road Width	28	1/2 Area(STD)	----
Curb Type	mtbl	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	1.334
Manning's N	0.017	Discharge (1/2 Q)	4.937

Depth: 0.231

RESULTS

HGL

Q_{100} FLOW CAPACITY = **9.87 cfs** OK
at an HGL Depth= **0.23 ft** < Curb height = 0.33
OK

EGL

Velocity 3.70 fps
$V^2/2g$ 0.21 ft
EGL Depth = **0.44 ft** < Right-of-way height = 0.44
OK

STREET NAME: **Dancing Eagle Ct** 5
LOCATION:

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0.0175	Road Width/2	12
Q_{100}	10.49	Curb Height	0.33
Right-of-way Width	44	1/2 Wetted Perimeter (P)	12.262
Road Width	24	1/2 Area(STD)	----
Curb Type	mtbl	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	1.704
Manning's N	0.017	Discharge (1/2 Q)	5.252

Depth: 0.262

RESULTS

HGL

Q_{100} FLOW CAPACITY = **10.50 cfs** OK
at an HGL Depth= **0.26 ft** < Curb height = 0.33
OK

EGL

Velocity 3.08 fps
$V^2/2g$ 0.15 ft
EGL Depth = **0.41 ft** < Right-of-way height = 0.52
OK

STREET NAME: **Eagle Feather (X2)** 6
LOCATION: **Dancing Eagle to Alameda**

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0.005	Road Width/2	28
Q_{100}	3.42	Curb Height	0.33
Right-of-way Width	74	1/2 Wetted Perimeter (P)	11.322
Road Width	56	1/2 Area(STD)	----
Curb Type	mtbl	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	1.232
Manning's N	0.017	Discharge (1/2 Q)	1.723

Depth: 0.222

RESULTS

HGL

Q_{100} FLOW CAPACITY = **3.45 cfs** OK
at an HGL Depth= **0.22 ft** < Curb height = 0.33
OK

EGL

Velocity 1.40 fps
$V^2/2g$ 0.03 ft
EGL Depth = **0.25 ft** < Right-of-way height = 0.50
OK

STREET FLOW CAPACITY CALCULATIONS

STREET NAME: **Eagle Talon Dr (X2)** 7
LOCATION: **Eagle Feather to Alameda**

STREET INFORMATION		HALF STREET CALCULATIONS	
Slope	0 0111	Road Width/2	28
Q_{100}	3.44	Curb Height	0.33
Right-of-way Width	74	1/2 Wetted Perimeter (P)	9.792
Road Width	56	1/2 Area(STD)	----
Curb Type	mtbl	1/2 Area(MDN)	----
Road Cross Slope	0.02	1/2 Area(MTBL)	0.922
Manning's N	0 017	Discharge (1/2 Q)	1.742

Depth 0.192

RESULTS

HGL

Q_{100} FLOW CAPACITY = **3.48 cfs** OK
at an HGL Depth= **0.19 ft** < Curb height = 0.33
OK

EGL

Velocity 1.89 fps
$V^2/2g$ 0.06 ft
EGL Depth = **0.25 ft** < Right-of-way height = 0.50
OK

Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	73.0	0.00	0.00	0.00	0.00	0.00	0.0	5.2	0.0	83.41	232.1	11.80	36	12.11	5300.10	5291.26	5303.64	5302.50	5308.06	5303.50	Alameda & Louisi
2	1	345.0	0.00	0.00	0.00	0.00	0.00	0.0	4.6	0.0	68.55	78.67	10.05	36	1.39	5305.00	5300.20	5307.64	5303.64	5313.05	5308.06	Alameda
3	2	446.0	0.00	0.00	0.00	0.00	0.00	0.0	3.8	0.0	45.71	77.44	9.58	30	3.57	5321.00	5305.10	5323.24	5307.64	5329.30	5313.05	Alameda
4	3	62.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.55	23.93	4.39	18	5.19	5325.29	5322.07	5326.19	5323.24	5331.06	5329.30	Alameda connect
5	3	43.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.55	34.79	4.39	18	10.98	5326.79	5322.07	5327.69	5323.24	5331.06	5329.30	Alameda connect
6	3	148.0	0.00	0.00	0.00	0.00	0.00	0.0	2.9	0.0	23.81	26.88	8.88	24	1.41	5324.11	5322.02	5325.84	5323.50	5329.11	5329.30	Via de Paz
7	6	52.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.65	9.44	3.89	18	0.81	5324.68	5324.26	5326.01	5325.84	5327.77	5329.11	Via de Paz conne
8	6	173.0	0.00	0.00	0.00	0.00	0.00	0.0	2.4	0.0	17.16	34.69	6.69	24	2.35	5328.33	5324.26	5329.80	5325.84	5336.70	5329.11	Via Contenta
9	8	36.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.02	19.65	3.44	18	3.50	5329.74	5328.48	5330.51	5329.80	5338.03	5336.70	Via Contenta con
10	8	11.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.02	22.62	3.44	18	4.64	5328.99	5328.48	5329.76	5329.80	5336.95	5336.70	Via Contenta con
11	8	396.0	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	9.12	44.53	4.66	24	3.88	5343.78	5328.43	5344.85	5329.80	5351.63	5336.70	Via Contenta
12	11	18.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.56	32.93	4.33	18	9.83	5345.70	5343.93	5346.52	5344.85	5351.81	5351.63	Via Contenta con
13	11	20.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.56	31.24	4.33	18	8.85	5345.70	5343.93	5346.52	5344.85	5352.26	5351.63	Via Contenta con
14	1	61.0	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	14.86	16.13	4.73	24	0.51	5300.56	5300.25	5303.91	5303.64	5307.83	5308.06	Dancing Eagle Ct
15	14	39.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	10.49	18.72	5.94	18	3.18	5302.30	5301.06	5304.30	5303.91	5307.07	5307.83	Dancing Eagle Ct
16	2	178.0	0.00	0.00	0.00	0.00	0.00	0.0	3.9	0.0	22.84	35.96	9.96	24	2.53	5312.00	5307.50	5313.69	5308.68	5319.43	5313.05	Eagle Talon
17	16	117.0	0.00	0.00	0.00	0.00	0.00	0.0	3.6	0.0	22.84	24.74	8.28	24	1.20	5313.50	5312.10	5315.19	5313.69	5327.10	5319.43	Dancing Eagle Av
18	17	19.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.40	38.09	7.41	18	13.16	5317.50	5315.00	5318.10	5315.27	5322.67	5327.10	Dancing Eagle co
19	17	7.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.40	62.76	9.17	18	35.71	5317.50	5315.00	5320.89	5315.20	5322.69	5327.10	Dancing Eaglle c
20	17	230.0	0.00	0.00	0.00	0.00	0.00	0.0	3.0	0.0	18.04	39.46	6.92	24	3.04	5320.60	5313.60	5322.10	5315.19	5328.61	5327.10	Dancing Eagle Av
21	20	29.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.76	8.71	4.87	18	0.69	5322.80	5322.60	5323.64	5323.39	5328.78	5328.61	Dancing Eagle co

Project File: 1257-Louis prop.stm | IDF File: sampleFHA.IDF | Total number of lines: 27 | Run Date: 07-02-2003

NOTES: Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; Initial tailwater elevation = 5302.50 (ft)

Hydraflow Storm Sewer Tabulation

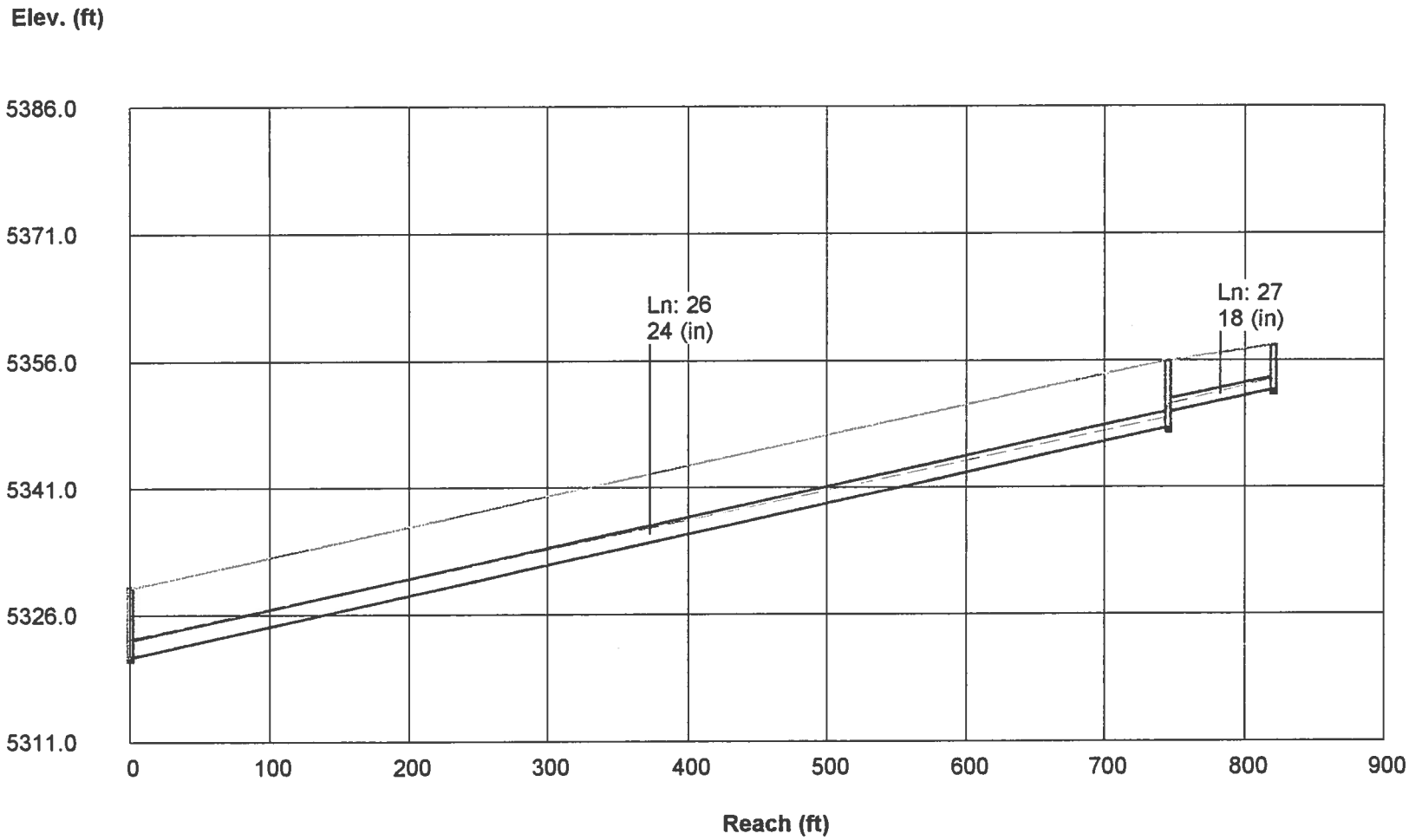
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
22	20	11.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.76	14.15	5.23	18	1.82	5322.80	5322.60	5323.94	5323.20	5328.70	5328.61	Dancing Eagle co
23	20	450.0	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	8.52	40.46	4.41	24	3.20	5335.10	5320.70	5336.13	5322.10	5343.14	5328.61	Dancing Eagle Av
24	23	31.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.26	26.00	7.39	18	6.13	5339.00	5337.10	5339.79	5337.53	5344.05	5343.14	Dancing Eagle co
25	23	7.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.26	46.80	9.14	18	19.86	5338.49	5337.10	5341.87	5337.41	5343.26	5343.14	Dancing Eagle co
26	3	745.0	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	10.80	42.98	4.57	24	3.61	5348.00	5321.10	5349.16	5323.24	5355.98	5329.30	Alameda
27	26	75.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	10.80	19.17	8.97	18	3.33	5352.50	5350.00	5353.75	5350.81	5357.82	5355.98	Alameda connect

Project File: 1257-Louis prop.stm | IDF File: sampleFHA.IDF | Total number of lines: 27 | Run Date: 07-02-2003

NOTES: Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; Initial tailwater elevation = 5302.50 (ft)

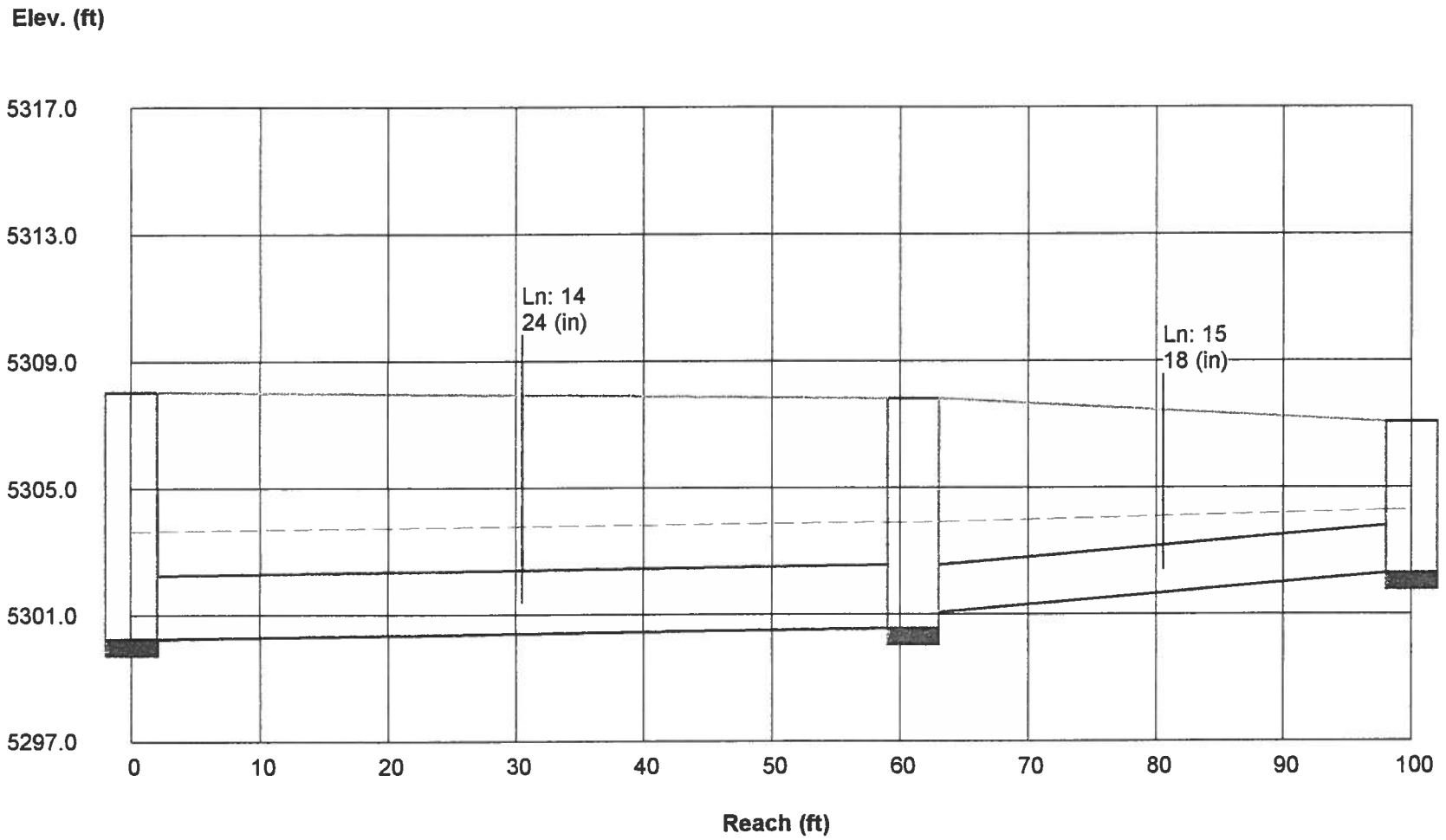
Storm Sewer Profile

Proj. file: 1257-Louis prop.stm



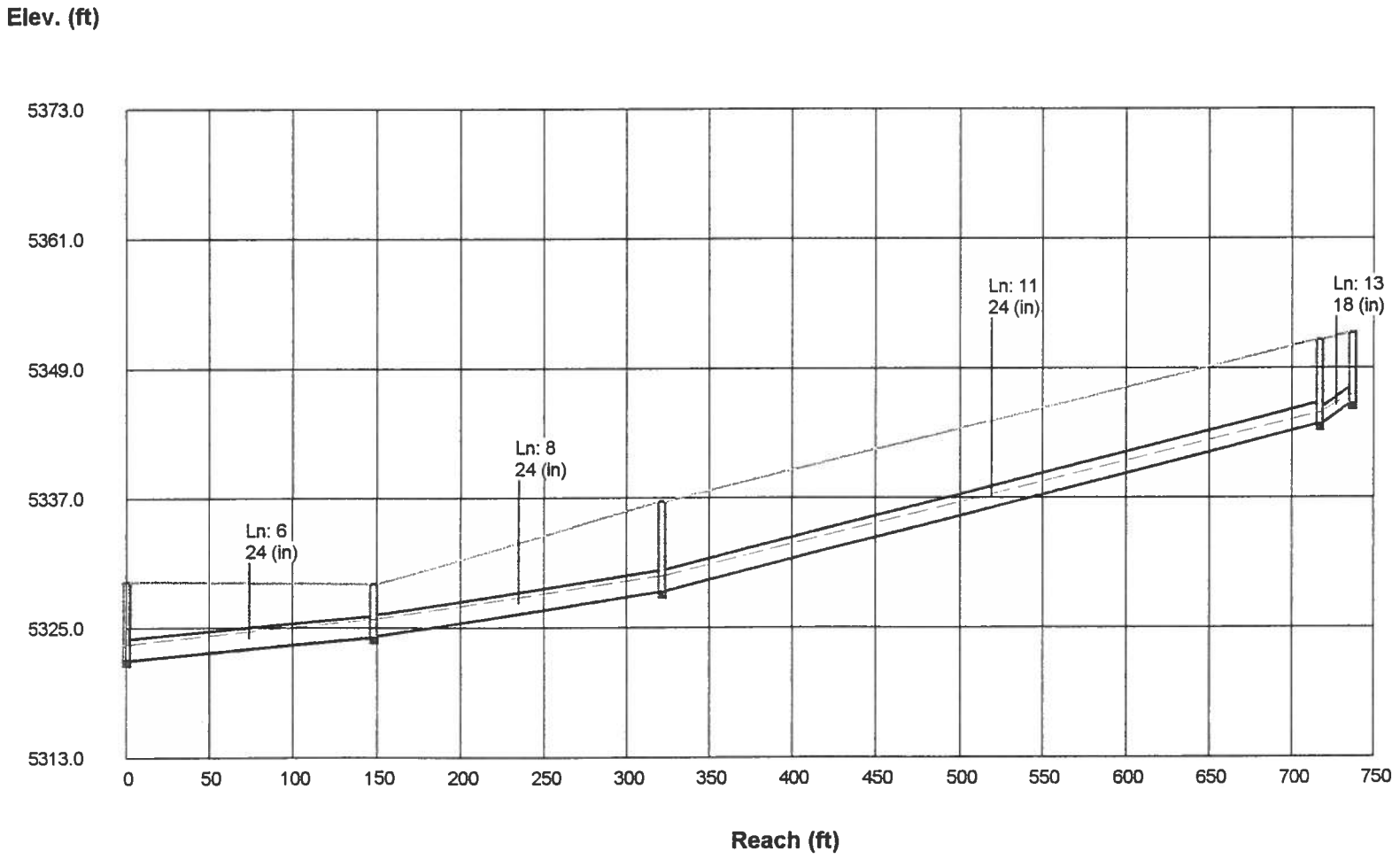
Storm Sewer Profile

Proj. file: 1257-Louis prop.stm



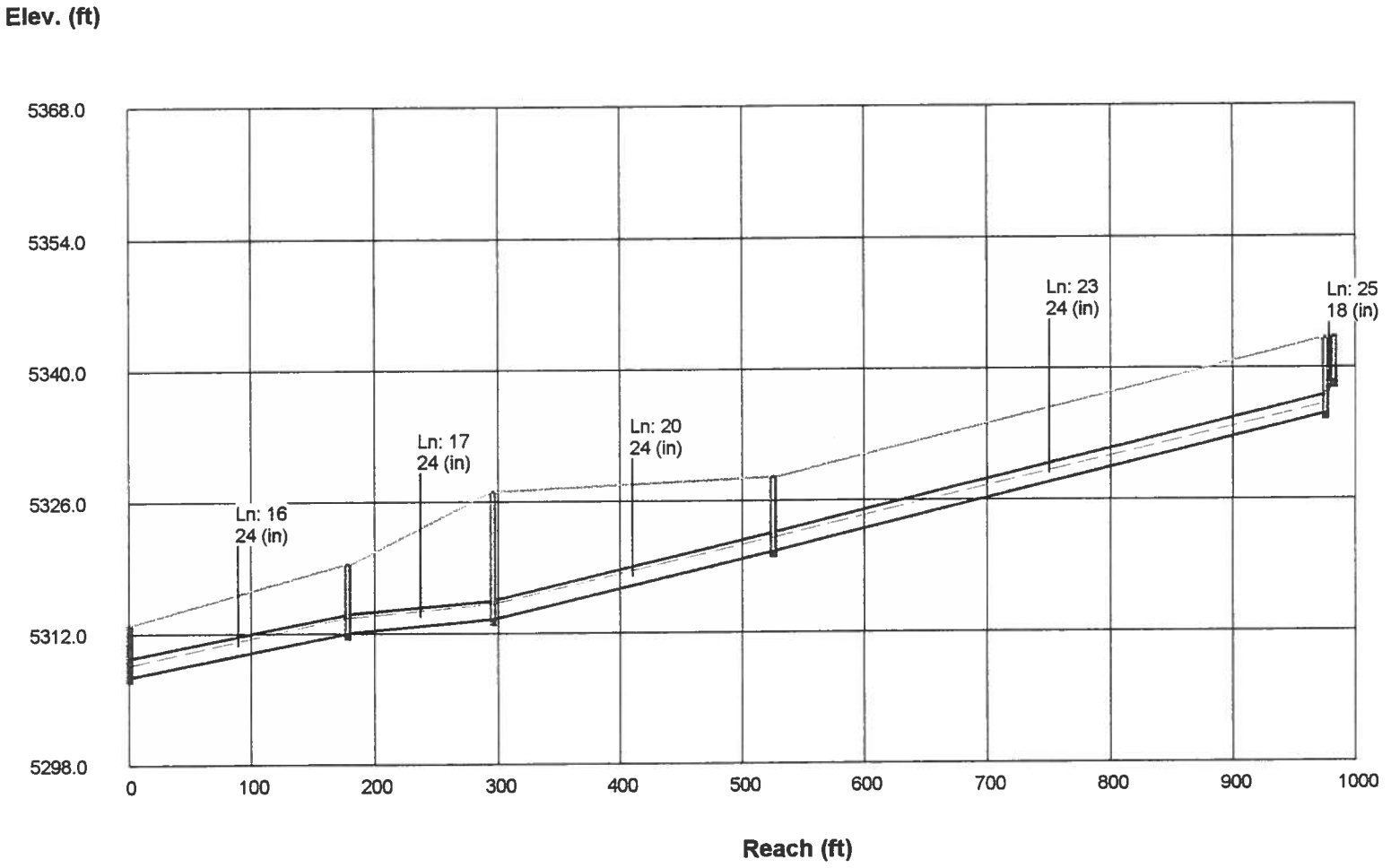
Storm Sewer Profile

Proj. file: 1257-Louis prop.stm



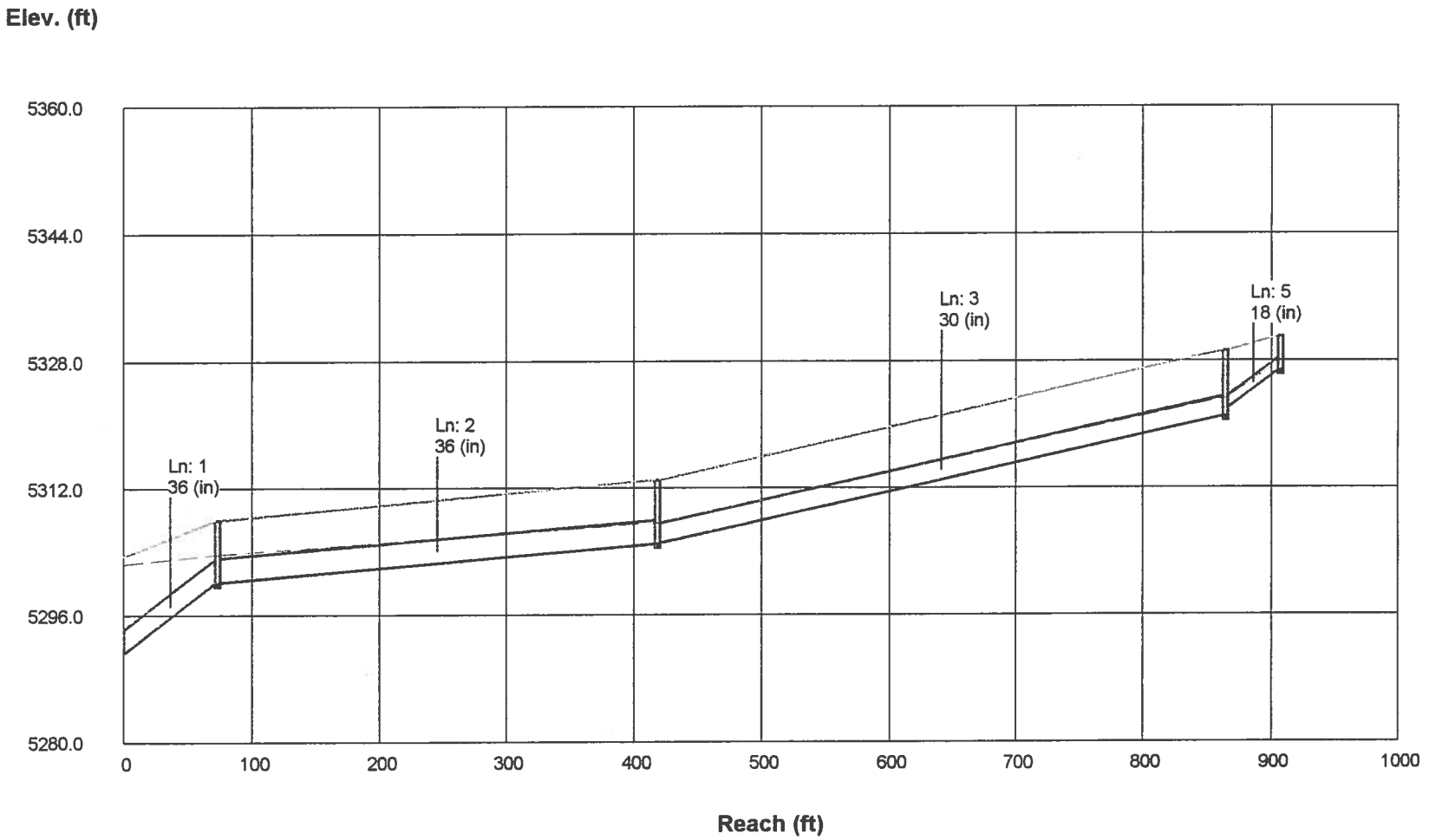
Storm Sewer Profile

Proj. file: 1257-Louis prop.stm



Storm Sewer Profile

Proj. file: 1257-Louis prop.stm



Hydraflow Storm Sewer Tabulation

Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
1	End	153.0	0.00	0.00	0.00	0.00	0.00	0.0	4.8	0.0	111.2	160.3	15.73	36	5.78	5300.10	5291.26	5306.75	5302.50	5308.06	5303.50	Alameda & Louisi
2	1	345.0	0.00	0.00	0.00	0.00	0.00	0.0	4.3	0.0	84.18	78.67	11.91	36	1.39	5305.00	5300.20	5312.25	5306.75	5313.05	5308.06	Alameda
3	2	446.0	0.00	0.00	0.00	0.00	0.00	0.0	3.3	0.0	49.51	77.44	10.29	30	3.57	5321.00	5305.10	5323.30	5312.25	5329.30	5313.05	Alameda
4	3	62.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.55	23.93	4.30	18	5.19	5325.29	5322.07	5326.19	5323.30	5331.06	5329.30	Alameda connect
5	3	43.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	5.55	34.79	4.30	18	10.98	5326.79	5322.07	5327.69	5323.30	5331.06	5329.30	Alameda connect
6	3	148.0	0.00	0.00	0.00	0.00	0.00	0.0	2.9	0.0	23.81	26.88	8.88	24	1.41	5324.11	5322.02	5325.84	5323.50	5329.11	5329.30	Via de Paz
7	6	52.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	6.65	9.44	3.89	18	0.81	5324.68	5324.26	5326.01	5325.84	5327.77	5329.11	Via de Paz conne
8	6	173.0	0.00	0.00	0.00	0.00	0.00	0.0	2.4	0.0	17.16	34.69	6.69	24	2.35	5328.33	5324.26	5329.80	5325.84	5336.70	5329.11	Via Contenta
9	8	36.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.02	19.65	3.44	18	3.50	5329.74	5328.48	5330.51	5329.80	5338.03	5336.70	Via Contenta con
10	8	11.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.02	22.62	3.44	18	4.64	5328.99	5328.48	5329.76	5329.80	5336.95	5336.70	Via Contenta con
11	8	396.0	0.00	0.00	0.00	0.00	0.00	0.0	0.1	0.0	9.12	44.53	4.66	24	3.88	5343.78	5328.43	5344.85	5329.80	5351.63	5336.70	Via Contenta
12	11	18.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.56	32.93	4.33	18	9.83	5345.70	5343.93	5346.52	5344.85	5351.81	5351.63	Via Contenta con
13	11	20.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.56	31.24	4.33	18	8.85	5345.70	5343.93	5346.52	5344.85	5352.26	5351.63	Via Contenta con
14	1	61.0	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	14.86	16.13	4.73	24	0.51	5300.56	5300.25	5307.02	5306.75	5307.83	5308.06	Dancing Eagle Ct
15	14	39.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	10.49	40.33	3.34	24	3.18	5302.30	5301.06	5307.10	5307.02	5307.07	5307.83	Dancing Eagle Ct
16	1	23.0	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	12.14	36.71	6.87	18	12.22	5303.06	5300.25	5307.06	5306.75	5308.06	5308.06	Alameda connect
17	2	178.0	0.00	0.00	0.00	0.00	0.00	0.0	3.9	0.0	22.84	35.96	7.30	24	2.53	5312.00	5307.50	5313.95	5312.25	5319.43	5313.05	Eagle Talon
18	17	117.0	0.00	0.00	0.00	0.00	0.00	0.0	3.6	0.0	22.84	24.74	7.79	24	1.20	5313.50	5312.10	5315.19	5313.95	5327.10	5319.43	Dancing Eagle Av
19	18	19.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.40	38.09	7.41	18	13.16	5317.50	5315.00	5318.10	5315.27	5322.67	5327.10	Dancing Eagle co
20	18	7.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	2.40	62.76	9.17	18	35.71	5317.50	5315.00	5320.89	5315.20	5322.69	5327.10	Dancing Eagle c
21	18	230.0	0.00	0.00	0.00	0.00	0.00	0.0	3.0	0.0	18.04	39.46	6.92	24	3.04	5320.60	5313.60	5322.10	5315.19	5328.61	5327.10	Dancing Eagle Av

Project File: 1257-Louis future.stm | IDF File: sampleFHA.IDF | Total number of lines: 30 | Run Date: 07-02-2003

NOTES: Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; Initial tailwater elevation = 5302.50 (ft)

Hydraflow Storm Sewer Tabulation

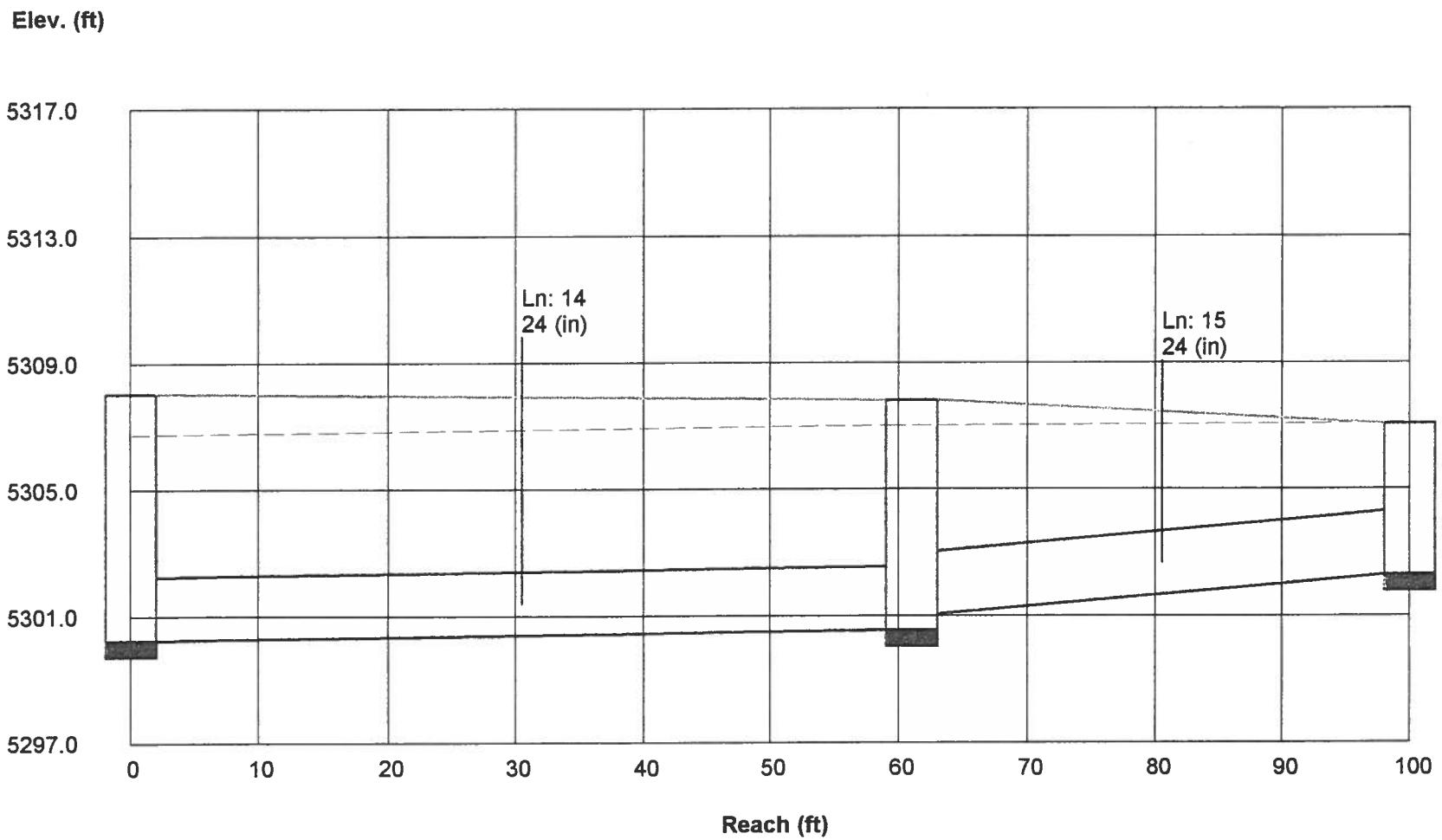
Station		Len	Drng Area		Rnoff coeff	Area x C		Tc		Rain (I)	Total flow	Cap full	Vel	Pipe		Invert Elev		HGL Elev		Grnd / Rim Elev		Line ID
Line	To Line	(ft)	Incr (ac)	Total (ac)	(C)	Incr	Total	Inlet (min)	Syst (min)	(in/hr)	(cfs)	(cfs)	(ft/s)	Size (in)	Slope (%)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	Up (ft)	Dn (ft)	
22	21	29.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.76	8.71	4.87	18	0.69	5322.80	5322.60	5323.64	5323.39	5328.78	5328.61	Dancing Eagle co
23	21	11.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.76	14.15	5.23	18	1.82	5322.80	5322.60	5323.94	5323.20	5328.70	5328.61	Dancing Eagle co
24	21	450.0	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	8.52	40.46	4.41	24	3.20	5335.10	5320.70	5336.13	5322.10	5343.14	5328.61	Dancing Eagle Av
25	24	31.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.26	26.00	7.39	18	6.13	5339.00	5337.10	5339.79	5337.53	5344.05	5343.14	Dancing Eagle co
26	24	7.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	4.26	46.80	9.14	18	19.86	5338.49	5337.10	5341.87	5337.41	5343.26	5343.14	Dancing Eagle co
27	16	50.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	7.77	21.00	4.40	18	4.00	5305.60	5303.60	5307.34	5307.06	5309.00	5308.06	Future Lots 1&2 c
28	2	23.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	11.83	42.96	6.70	18	16.74	5309.00	5305.15	5312.54	5312.25	5313.05	5313.05	Future Lots 3-5 c
29	3	745.0	0.00	0.00	0.00	0.00	0.00	0.0	0.2	0.0	14.60	42.98	5.55	24	3.61	5348.00	5321.10	5349.35	5323.30	5355.98	5329.30	Alameda
30	29	75.0	0.00	0.00	0.00	0.00	0.00	0.0	0.0	0.0	14.60	19.17	10.01	18	3.33	5352.50	5350.00	5354.00	5350.99	5357.82	5355.98	Alameda connect

Project File: 1257-Louis future.stm | IDF File: sampleFHA.IDF | Total number of lines: 30 | Run Date: 07-02-2003

NOTES: Intensity = 127.16 / (Inlet time + 17.80) ^ 0.82; Return period = 100 Yrs. ; Initial tailwater elevation = 5302.50 (ft)

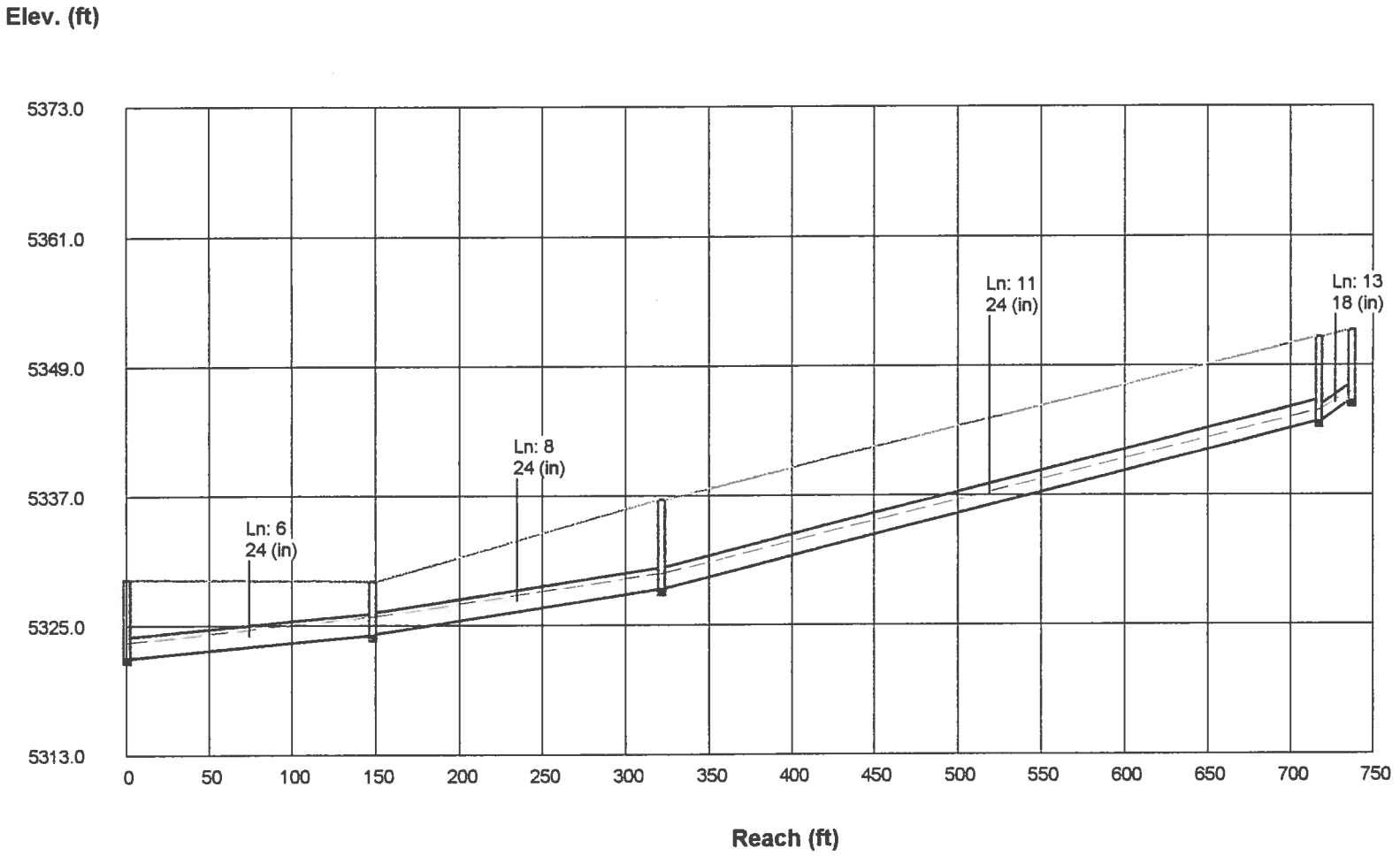
Storm Sewer Profile

Proj. file: 1257-Louis future.s



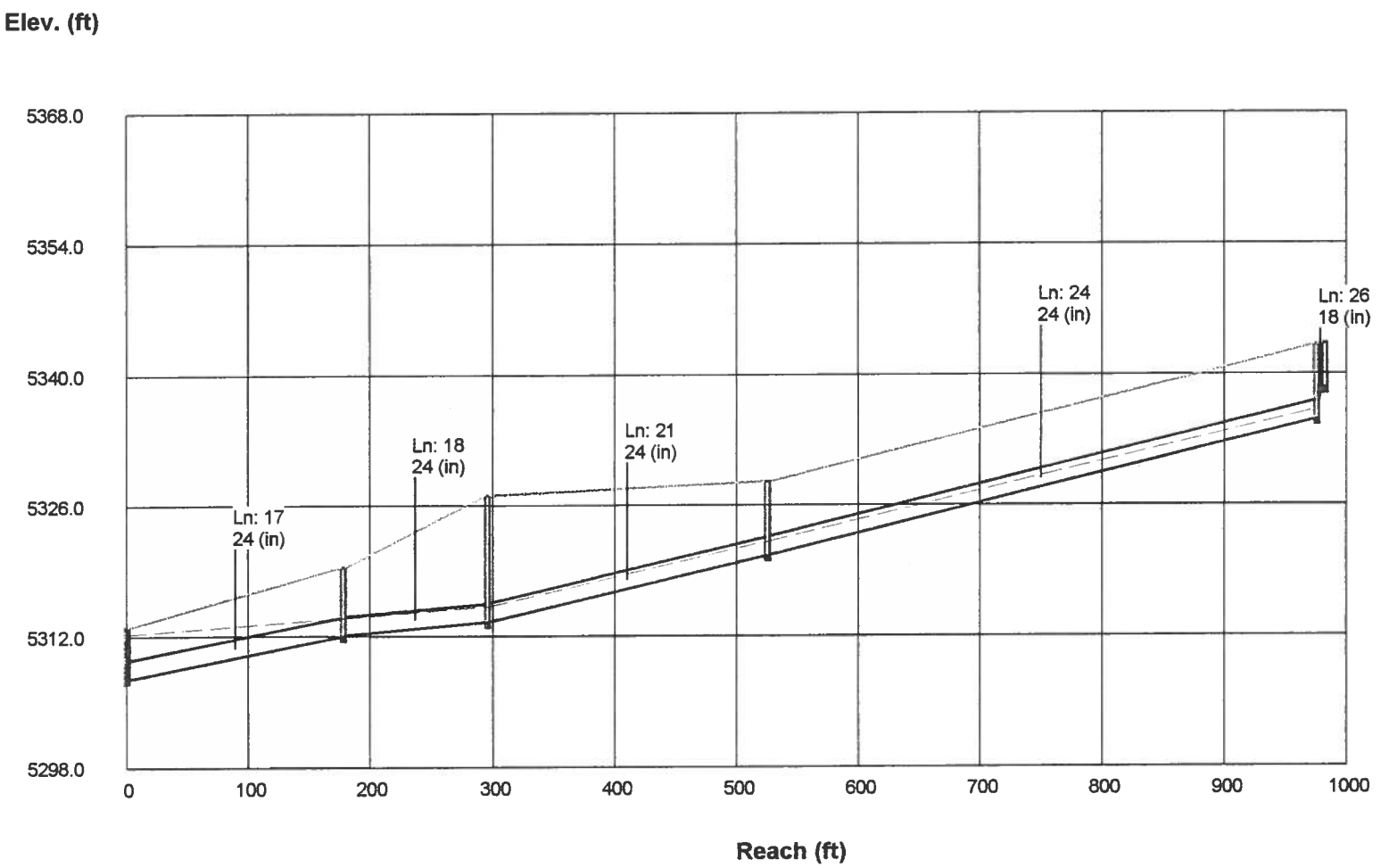
Storm Sewer Profile

Proj. file: 1257-Louis future.stm



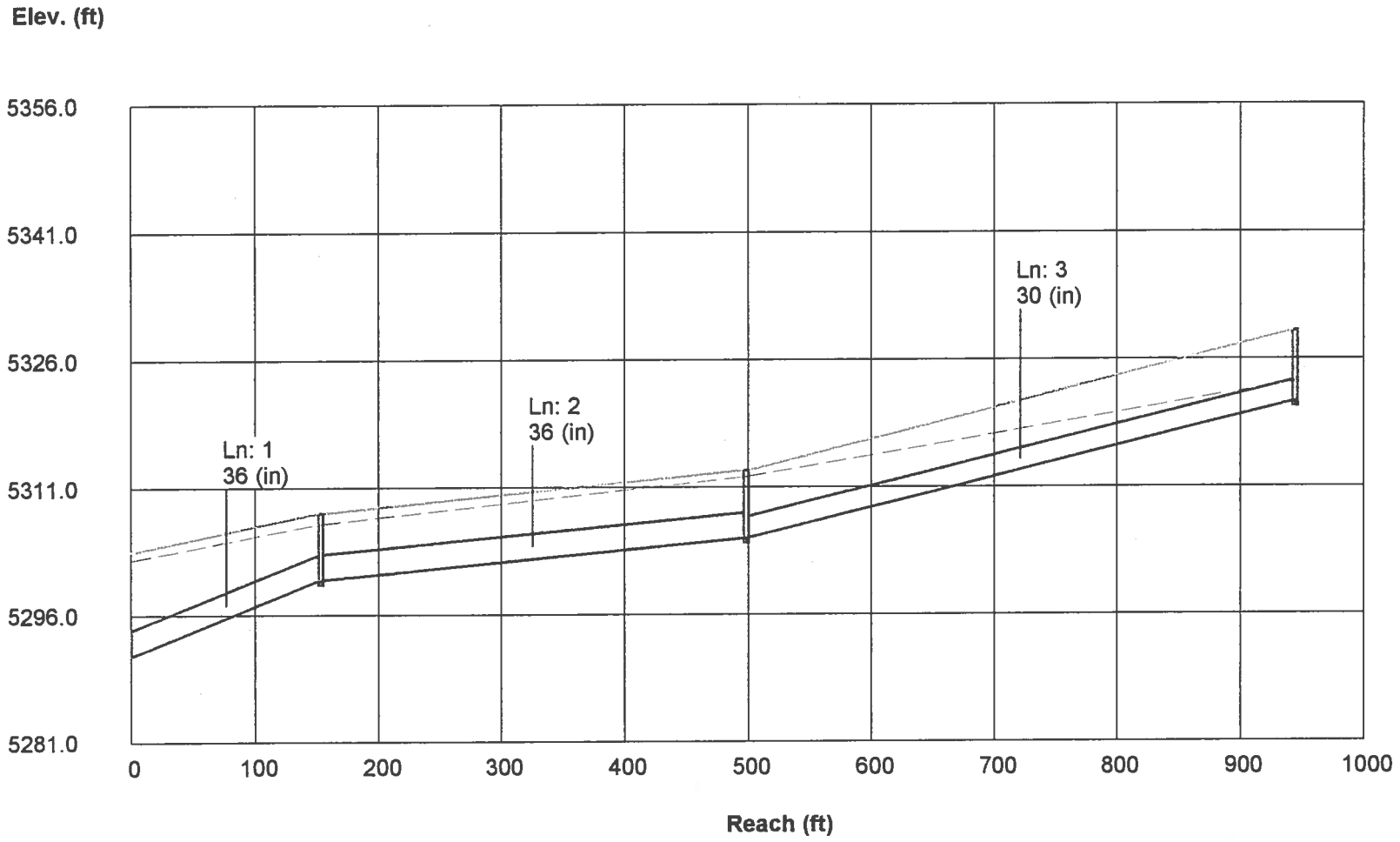
Storm Sewer Profile

Proj. file: 1257-Louis future.stm



Storm Sewer Profile

Proj. file: 1257-Louis future.stm



Storm Sewer Profile

Proj. file: 1257-Louis future.stm