DS #: 3420

APN: 137-22-000-015

PROJECT: Summerlin Village 23B - update

SUBMITTAL: 3rd

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: August 9, 2012
TO: **Land Development Services** Department of Public Works				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Conceptual Drainage Study for: **Summerlin Village 23B – Update**			**COPIES TO:** G.C. Wallace Inc.
Cross Streets:	NWC of Alta Drive & Desert Foothills Drive			Howard Hughes Corp.
File Number:	F:\Depot\DSMEMOS\DS3420D.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-015			CCRFCD
Zoning Action:	TMP-46270			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	9/15/2003	9/29/2003	Not Approved	$250.00	110938: $250
2nd Submittal	10/10/2003	10/24/2003	Conditionally Approved	$400.00	112511: $400
CCRFCD	11/25/2003	12/9/2003	Concurrence	N/C	N/C
3rd Submittal	7/26/2012	8/9/2012	See Comments Below	$100.00	291144: $100
			TOTAL FEES (LDDRS):	**$750.00**	**----**

REMARKS:

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Amendment and accepted by the City of Las Vegas Flood Control Section. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the City of Las Vegas reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

END OF REMARKS

B&H/ays

T/R/S: T20S/R59E/22

AREA K-22

UPDATE TO THE CONCEPTUAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B

62023B-100

July 2012

Prepared for:

The Howard Hughes Corporation
10000 W. Charleston Blvd., Suite 200
Las Vegas, Nevada 89135
Phone: (702) 791-4200
Fax: (702) 791-4450

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

62023B-100

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin Village 23B Date: July 2012

Location of Development a) Descriptive (Cross Streets) North/South: Sky Vista Drive / Desert Foothills Drive

East/West: Alta Drive / Far Hills Avenue

b) Section: 22 Township: 20 S Range: 59 E

c) APN: 137-22-000-015

Name of Owner: The Howard Hughes Corporation

Telephone No.: (702) 791-4200 Fax No. (702) 791-4450 E-Mail Address: Not available

Address: 10000 W. Charleston Blvd Ste. 200; Las Vegas, Nevada 89135

Contact Person-Name: Rachael Dennis **Telephone No.:** (702) 804-2248

* **E-Mail Address:** rdennis@gcwallace.com **Fax No.:** (702) 804-2299

Firm: G. C. WALLACE COMPANIES

Address: 1555 S. Rainbow Blvd; Las Vegas, NV 89146

Type of Land Development/Land Disturbance

☐	Rezoning	☐	Subdivision Map	☐	Clearing and Grading Only
☐	Parcel Map	☐	Planned Unit Development	☒	Other (Please specify below)
☐	Large Parcel Map	☐	Building Permit	Conceptual Drainage Study Update	

1. Total Owned Land Area: At Site: +/- 2,700 acres Being Developed/Disturbed: +/- 0 acres
2. Is a portion or all of the subject property located in a designated 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.): Residential
5. Approximate upstream land area which drains to the subject site: +/- 9 sq. mi.
6. Has the site drainage been evaluated in the past? ☒ **Yes** ☐ **No** If yes, please identify documentation: *Update #2 to the Technical Drainage Study for Summerlin Village 23A/23B Alta Drive Street Improvements (Alta Drive Interim Grading), 2012, GCW; Summerlin West Planning Area Flood Control Master Plan, 2006, GCW; Update to the Technical Drainage Study for Summerlin Village 23B Rough Grading, 2006, GCW; Technical Drainage Study for Summerlin Village 23A/23B Alta Drive RCB Regional Drainage Improvements, 2003, GCW; Conceptual Drainage Study for Summerlin Village 23B, 2003, GCW.*
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Existing CCRFCD 16' x 8' RCAP storm drain in Far Hills Avenue/Desert Foothills Drive; Existing CCRFCD 11' x 8' RCAP storm drain in Alta Drive/Desert Foothills Drive.
8. Briefly describe your proposed schedule for the subject project: ASAP

PROFESSIONAL ENGINEER · STATE OF NEVADA
RACHAEL R. DENNIS
EXP. 12-31-12
CIVIL
No. 019553
7/25/12

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.

*New Required Field

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

Local Entity File No.

Revision	Date

REFERENCE:

STANDARD FORM 1

CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA
STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 06/06/01)

The following checklist is intended as a supplemental **guide** for the engineer preparing a Technical Drainage Study submittal to the City of Las Vegas. This supplement focuses on requirements specific to the City of Las Vegas. The requirements presented are in addition to the Clark County Regional Flood Control District Manual Standard Form 2. The listed items are the minimum information required prior to the City performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the Clark County Regional Flood Control District (CCRFCD) Hydrologic Criteria and Drainage Design Manual (Design Manual).

If items are not applicable for the subject site, provide N/A.

I. GENERAL REQUIREMENT		
Yes	No	
	N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading. (A copy of the letter must be received prior to final acceptance of the drainage study.)
x		Copies of all conditions of approval for development related to this property. (e.g. zoning, use permit, tentative map, etc.) Verify compliance with conditions.

II. GRADING PLAN INFORMATION		
Yes	No	
x		(1) 24" X 36" copy of the Grading Plan, (including all Detail Sheets) sealed by the engineer.
x		Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street. Note: Proposed top of curb elevations must be provided for both sides of roadways even if only half street construction is required.
x		Label existing topography at a minimum 5 foot elevation interval including adjacent developments, finished floor elevations of existing buildings and top of existing curbs extending 100 feet* around the perimeter of the site. (*Measured from the centerline of the adjacent roadway.)
x		Proposed on-site and off-site storm drains and other flood control facilities with plan and profile sheets for public storm drains showing the class of pipe, (Class III, IV, V, etc.), design hydraulic grade line, (HGL) and 100 year storm flow. A public drainage easement must be provided over on-site storm drains conveying off-site flows. An overflow path must be provided over all storm drains.
	N/A	All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.
	N/A	Street slopes for both interior and perimeter streets. Note: The minimum slope for a roadway is 0.4 percent, a minimum 18-inch storm drain must be provided where minimum slopes cannot be met.

II. GRADING PLAN INFORMATION		
Yes	No	
	N/A	Back of lot elevations and lot drainage pattern for all lots including common lots.
	N/A	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
x		On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
	N/A	This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
	N/A	Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
	N/A	Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
	N/A	Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
	N/A	The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
	N/A	Minimum finish floor elevation is 6 inches above highest adjacent top of curb. Finish floor calculations must include allowances for super elevations on curves and velocity head for tee intersections.
	N/A	Finished floor elevations for buildings adjacent to public drainage easements must be a minimum of 18 inches above the Q100 weir of submerged weir elevation, whichever is greater.
	NA	Lots with "B and C Type Drainage" shall be required to install an underground nuisance drainage system or a 2-foot valley gutter through the lot. 16" x 24" minimum block wall openings are required for both options.
	NA	Bubblers are required across 80 foot and greater ROW streets. When flows exceed 10 cfs, bubblers larger than 18 inches will be required up to a maximum of 36". Inlets must be sized to match the pipe size provided.

- An appointment must be made to preview this checklist in conjunction with Clark County Regional Flood Control District Manual Standard Form 2 prior to the City accepting a new Drainage Study for review. The engineer may contact the Flood Control Section at 229-6541.

- Following the acceptance of the Drainage Study (meeting the minimum acceptable information above), there will be a charge of $250 for each Drainage Study review submittal. These fees are payable at the time the Grading Permit is obtained.
- The Drainage Study must be accepted prior to submitting grading plans to the Land Development Section for review.

This document is intended as an **aid** in preparing Technical Drainage Studies for the City of Las Vegas. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all-inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use.

F:\Depot\DOCS\Memos\CHKLIST7.doc
25-Jul-12

UPDATE TO THE CONCEPTUAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B

62023B-100

July 2012

Prepared for:

The Howard Hughes Corporation
10000 W. Charleston Blvd., Suite 200
Las Vegas, Nevada 89135
Phone: (702) 791-4200
Fax: (702) 791-4450

Prepared by:

G. C. Wallace Companies
1555 S. Rainbow Blvd.
Las Vegas, Nevada 89146
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G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

G. C. WALLACE, INC.
G. C. WALLACE HOLDINGS, INC.

Writer's Contact Information:

702.804.2248

62023B-100

July 25, 2012

Albert Y. Sung, PE
Flood Control Project Manager
City of Las Vegas - Land Development Services
Department of Public Works
333 N. Rancho Drive
Las Vegas, Nevada 89106

Re: Conceptual Drainage Study for Summerlin Village 23B

Dear Mr. Sung:

The purpose of this letter is to serve as the update to the Conceptual Drainage Study for the subject project. The *Conceptual Drainage Study for Summerlin Village 23B* (hereinafter referred to as the Conceptual Study), was originally approved by the City of Las Vegas Public Works Department (CLV) on October 24, 2003, with concurrence from the Clark County Regional Flood Control District (CCRFCD) on November 20, 2003. The approved Conceptual Study presented ultimate conditions onsite drainage patterns and proposed major storm drain facilities within the exterior and interior roadways. Since approval of the study, the site plan and drainage design flow patterns for the parcels and proposed storm drain facilities have been revised. The calculations provided herewith serve to provide an ultimate condition for Village 23B and will supersede those of the Conceptual Study and serve to update the previously approved study. Pertinent reference materials from the Conceptual Study have been included in Appendix C. The methodologies and calculations presented in this report are in compliance with the *CCRFCD Hydrologic Criteria and Drainage Design Manual* (Manual). Copies of the approval letters have been included in Appendix C.

Since this is a conceptual study, all that is addressed is the existing and ultimate conditions. The interim conditions will be addressed in individual technical studies. It is not known at this time in what order the area will be developed. However, upon development, each area will be properly protected in the interim and ultimate conditions. It should be noted that several individual technical studies for roadways within Village 23B have been approved and will be updated according to this proposed Conceptual Study.

Existing conditions for the site were addressed in the *Technical Drainage Study for Summerlin Village 23B Rough Grading* (hereinafter referred to as the Rough Grade Study) and the *Technical Drainage Study for Summerlin Village 23A/23B23B Alta Drive Street Improvements* (hereinafter referred to as the Alta Drive Street Study). A copy of Figure 6 from the Alta Drive Street Study showing the existing conditions drainage patterns has been included in Appendix C. Along the western boundary of the Village 23B site, the Sky Vista Collector Channel has been constructed as part of the Rough Grade Study and currently protects the site from offsite flows. Presently, onsite runoff from Village 23B is directed via existing berms to the existing graded channel in Desert Foothills Drive, discharging to the existing 7-foot wide by 7-foot high lateral off the 10-foot wide by 8-foot high RCB storm drain system in Alta Drive. Alta Drive has also been rough graded between the existing Sky Vista Drive Collector Channel and Desert Foothills Drive. The existing 10-foot wide by 8-foot high RCB storm drain facility was constructed within Alta Drive with the *Technical Drainage Study for Summerlin Villages 23A/23B, Alta Drive RCB Regional Drainage Improvements* (hereinafter referred to as the Alta Drive RCB Study). Per the Alta Drive Street Study, additional stubs were provided to collect existing conditions flows. As shown on the referenced Alta Drive Street Study Figure 6: 1) the exposed 60-inch RCP lateral at the intersection of Fox Hill Drive and Alta Drive collects existing conditions flows generated between the Sky Vista Drive collector channel and Fox Hill Drive; 2) the exposed 36-inch RCP lateral at the existing stockpile berm collects existing conditions flows generated between Fox Hill Drive and the stockpile berm; 3) the exposed 30-inch RCP lateral at the existing pedestrian underpass has not been designed to collect existing conditions flows; 4) an existing channel/berm west of Desert Foothills Drive conveys existing conditions flows generated east of the stockpile berm into the Desert Foothills Channel. Pertinent reference materials have been included in Appendix C.

The portion of the soils map containing Village 23B has been revised and has been included in Appendix A. The landuse and curve numbers for the onsite subbasins are consistent with the *2008 Las Vegas Valley Flood Control Master Plan Update* (hereinafter referred to as the 2008 MPU). The onsite ultimate conditions subbasins conservatively assume a landuse of Apartments/Condos/Commercial, Residential, Natural Desert Landscaping, Streets, and Open Space. Weighted curve numbers for ultimate conditions were calculated. Curve numbers ranging from 74 to 95.6 were determined for the ultimate conditions onsite subbasins. Curve number calculations for ultimate conditions as well as a curve number matrix of each soil type for each landuse is included in Appendix A.

The ultimate conditions for this project assumes fully developed parcels within Village 23B, full street improvements of the interior and exterior roadways, and offsites as fully developed. The 2008 MPU subbasins for the offsite drainage area west of Sky Vista Drive and north of Far Hills Avenue have been referenced; however the drainage patterns are generally consistent with the previously approved studies. Pertinent reference material has been included in Appendix C. Per the *2006 Summerlin West Planning Area Flood Control Master Plan (*hereinafter referred to as the 2006 Summerlin West MP), the area between the existing Detention Basin 5, Alta Drive and Sky Vista Drive will discharge into the Alta Drive storm drain system during ultimate conditions. The 2008 MPU references the 2006 Summerlin West MP subbasins, but did not include the area shown as Basin 5-9A1 on Figure 6U. Additionally, due to the site plan changes, concentration points have been relocated. Figure 6U depicts the overall subbasins and drainage patterns used in the ultimate conditions hydrologic analysis. Lag time calculations for the onsite drainage basin are included in Appendix A on Standard Form 4. The results of the HEC-1 model have been summarized in Table 1. A copy of the HEC-1 model has been included in Appendix A.

TABLE 1
SUMMARY OF ULTIMATE CONDITIONS HEC-1 MODEL

SB OR CP*	AREA (AC)	100 YR (CFS)	10 YR (CFS)
5-9A1	38.58	126	60
AA	18.52	63	31
BB	32.03	97	42
C-47	-	676	288
C-47A	-	2750	1699
CC	28.57	83	36
C-CR	-	2233	1602
CCSWFH-7	-	3477	1728
COS-5	8.79	13	3
CP-AL	-	2362	1630
CP-FH	-	765	339
CSWAA-1	-	2220	1593
CSWFH-5	-	679	290
ES-2	13.33	49	24
NP-2	12.54	21	5
P	24.03	67	29
PT0	-	139	61
PT1	-	211	93
PT10	-	409	176
PT11	-	169	70
PT12	-	578	244

TABLE 1
SUMMARY OF ULTIMATE CONDITIONS HEC-1 MODEL

SB OR CP*	AREA (AC)	100 YR (CFS)	10 YR (CFS)
PT13	-	645	273
PT2	-	282	123
PT3	-	309	136
PT3A	-	2298	1619
PT4	-	2328	1624
PT5	-	2334	1625
PT5A	-	2346	1627
PT6	-	149	66
PT7	-	166	73
PT9A	-	251	107
PT9B	-	107	47
PT9C	-	352	153
PT9D	-	393	170
Q1	14.87	45	19
Q2	13.34	40	17
R	25.54	77	33
S	19.69	60	26
ST1	8.00	26	13
ST2	4.25	17	8
ST3	4.12	17	9
ST4	5.98	21	10
ST-AL	13.03	43	21
ST-CR	16.43	48	24
ST-DF	12.14	33	16
ST-FH	13.14	44	22
SUM5OT	-	2149	1548
SWAA-1	-	326	134
T	29.70	87	38
U	25.15	75	33
V	25.45	77	33
W	23.78	74	32
X	23.31	70	30
Y	24.30	75	33
Z	25.01	80	36

*See Figure 6U.

All proposed flood control facilities have been shown on Figure 7U. Design of the proposed storm drain facilities have been based on normal depth calculations. All proposed facilities have been sized to convey ultimate conditions flowrates. Proposed mainline and lateral pipe sizes were calculated using normal depth and have been upsized by 6 inches in diameter to provide for losses and future design flexibility. Normal depth calculations for the recommended facilities have been included in Appendix B. Note that detailed hydraulic analysis for the proposed facilities will be provided in future technical drainage study submittals upon site development of this project. Drop inlets will be located and sized with individual technical studies for future roadway improvements. A total of six mainline systems

are existing or have been proposed with this project: 1) Proposed Sky Vista Drive System; 2) Proposed Far Hills System; 3) Proposed Fox Hill Drive System; 4) Existing Alta Drive System; 5) Proposed Antelope Ridge Drive System and 6) Proposed Desert Foothills Drive System. Please refer to Figure 7U for facility flows and sizes.

In general, the approved drainage patterns are consistent with the previously approved referenced drainage studies and the proposed site plan and storm drain facilities do not significantly alter existing peak flows or the character of flows downstream of the development and do not pose any negative impacts on downstream facilities and development.

If you have any questions or require additional information, please contact our office at 804-2000.

Cordially,

G. C. WALLACE, INC.

Rachael R. Dennis

Rachael R. Dennis, PE
Project Manager
Flood Control Division

rrd/vlr
c: Jerry Pruitt, GCW
Josh Johnson, GCW
Derick Yoro, GCW
Ryan Belsick, GCW
Daniel Kelley, GCW

UPDATE TO THE CONCEPTUAL DRAINAGE STUDY FOR
SUMMERLIN VILLAGE 23B
APPENDIX LAYOUT

Appendix A. Hydrologic Calculations and Information

1. Figure 6U – Ultimate Conditions Drainage Basin Map
2. Figure 7U – Drainage Facilities Map - Ultimate Conditions
3. Soils Exhibit
4. Table 602 1 of 4 from the CCRFCD Manual
5. Curve Number Calculations
6. Ultimate Conditions Standard Form 4
7. Ultimate Conditions HEC-1 Model

Appendix B. Hydraulic Calculations and Information

1. Storm Drain Normal Depth Calculations

Appendix C. Referenced Materials (On CD)

1. CLV Zoning and Planning Conditions

2. Summerlin Villages 23A/23B Alta Drive Street Improvements
   a) CLV Approval Letter
   b) Figure 6 – Interim Drainage Map
   c) Sheets C1, G1, G2 & GD2

3. 2008 Las Vegas Valley Flood Control Master Plan Update
   a) Figure F-24 – Flood Control Facilities/Facility Inventory
   b) Figure F-29 – Flood Control Facilities/Facility Inventory
   c) Figure H-24 – Hydrologic Summary (Offsite Basins)
   d) Figure H-29 – Hydrologic Summary
   e) Gowan Watershed Standard Form 4
   f) Gowan Watershed USBR
   g) Gowan Watershed HEC-1 Model

4. 2006 Summerlin West Planning Area Flood Control Master Plan
   a) CLV Approval Letter
   b) CN Calculations
   c) DB5/Alta Drive Standard Form 4
   d) Gowan Watershed HEC-1 Model
   e) Figure 5 – Overall Proposed Drainage Map
   f) Conceptual Land Use Plan

5. Summerlin Village 23B Rough Grading
   a) CLV Approval Letter
   b) CCRFCD Concurrence Letter
   c) Figure 5R – Proposed Drainage Plan
   d) Improvement Plans

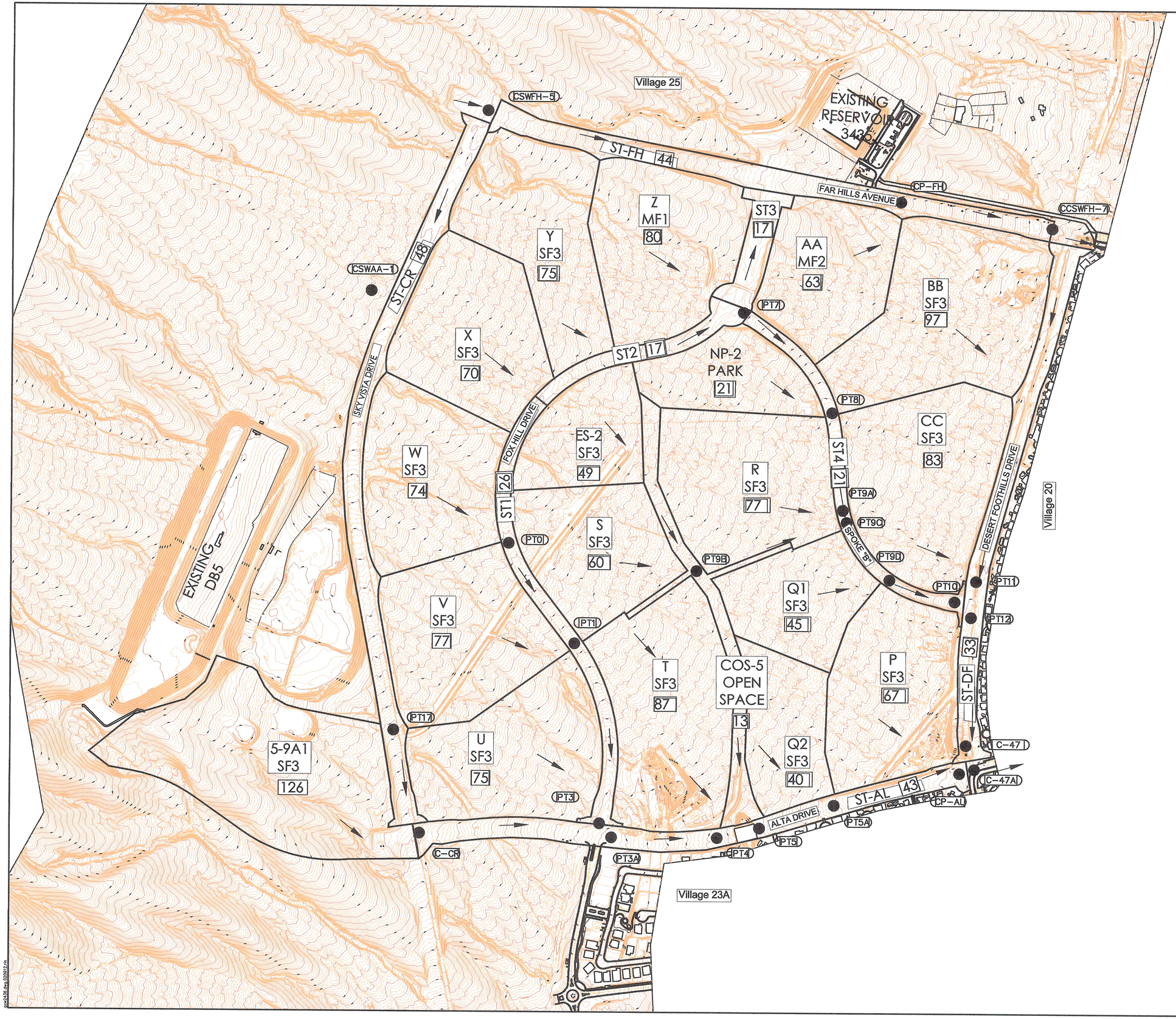
6. Summerlin Villages 23A/23B Alta Drive RCB Regional Drainage Improvements
   a) CLV Approval Letter
   b) CCRFCD Concurrence Letter

c) Sheets 1 & 5-12

7. Summerlin Village 23B (Conceptual)
    a) CLV Approval Letter
    b) CCRFCD Concurrence Letter
    c) Figure 6 – Interim Drainage Map
    d) Figure 7 – Interim Drainage Map
    e) Soil Exhibit
    f) CN Calculations
    g) Ultimate Conditions Standard Form 4
    h) Ultimate Conditions HEC-1 Model

APPENDIX A

Hydrologic Calculations



NORTH

SCALE 1" = 300'

GRAPHIC SCALE

300 0 150 300

(IN FEET)

1 inch = 300 ft.

SUMMARY OF ULTIMATE CONDITIONS HEC-1 MODEL

SB OR CP	AREA (AC)	100 YR (CFS)	10 YR (CFS)
5-9A1	38.58	126	60
AA	18.52	63	31
BB	32.03	97	42
C-47	-	676	288
C-47A	-	2750	1699
CC	28.57	83	36
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CCSWFH-7	-	3477	1728
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P	24.03	67	29
PT0	-	139	61
PT1	-	211	93
PT10	-	409	176
PT11	-	169	70
PT12	-	578	244
PT13	-	645	273
PT2	-	282	123
PT3	-	309	136
PT3A	-	2298	1619
PT4	-	2328	1624
PT5	-	2334	1625
PT5A	-	2346	1627
PT6	-	149	66
PT7	-	166	73
PT9A	-	251	107
PT9B	-	107	47
PT9C	-	352	153
PT9D	-	393	170
Q1	14.67	45	19
Q2	13.34	40	17
R	25.54	77	33
S	19.69	60	26
ST1	8.00	26	13
ST2	4.25	17	8
ST3	4.12	17	9
ST4	5.98	21	10
ST-AL	13.03	43	21
ST-CR	16.43	48	24
ST-DF	12.14	33	16
ST-FH	13.14	44	22
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SWAA-1	-	326	134
T	29.70	87	38
U	25.15	75	33
V	25.45	77	33
W	23.78	74	32
X	23.31	70	30
Y	24.30	75	33
Z	25.01	80	36

LEGEND

- A / SF3 — PARCEL NAME / PARCEL DENSITIES
- 13 — MAXIMUM DISCHARGE FROM PARCEL
- PT1 ● — CONCENTRATION POINT
- ——— SUBBASIN BOUNDARY

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE:07-25-12
PLOT TIME: 11:04:46

REV	DATE	DESCRIPTION	DATE	AGEN.	APP	DATE	GCW	APP

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
RDamitio
F:\Projects\600\602038-100 Division\Civil\Figures\fig6U.dwg

SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY
ULTIMATE CONDITIONS DRAINAGE BASIN MAP

SHEET
FIG 6U
1 OF 1 SHTS

gcw2436.dwg 020312-rh

Village 25

EXISTING RESERVOIR 3435

CSWFH-5

35 679 cfs 8'x6' RCB @ 2%

ST-FH 44

FAR HILLS AVENUE

CP-FH

36

CCSWFH-7

Ex. 16'x8' RCAP

765 cfs 8'x7' RCB @ 2%

1 326 cfs 60" @ 2%

CSWAA-1

ST-CR 48

SKY VISTA DRIVE

Y SF3 75

12 36" @ 3.3%

Z MF1 80

17 cfs 33 24" @ 3%

13 42" @ 3%

ST3 17

34 42" @ 2%

AA MF2 63

PT7

75 cfs @ 3.3%

36"

X SF3 70

2A 42" @ 2%

ST2 17

NP-2 PARK 21

166 cfs 48" @ 4.1%

14

BB SF3 97

28 54" @ 0.5%

PT8

HIGH POINT

ES-2 SF3 49

2

FOX HILL DRIVE

W SF3 74

3 42" @ 2%

70 cfs @ 2.4% 42"

26

ST1

18 49 cfs 36" @ 2%

49 cfs @ 4% 36"

19

S SF3 60

20 60 cfs 42" @ 2%

PT0

4

176 cfs @ 4.4% 48"

R SF3 77

17 77 cfs 42" @ 2%

21

15 21 cfs 30" @ 2%

ST4 121

16

179 cfs @ 2.1% 54"

PT9A

251 cfs 22 60" @ 2.1%

352 cfs 23 60" @ 3.8%

PT9C

SPOKE "B"

PT9B

107 cfs @ 2.9% 42"

45 cfs 24 36" @ 2%

Q1 SF3 45

PT9D

83 cfs 27 42" @ 2%

25

CC SF3 83

DESERT FOOTHILLS DRIVE

97 cfs @ 0.5% 54"

Village 20

PT10

PT11

169 cfs 29 66" @ 0.5%

PT12

393 cfs 60" @ 5.1%

26 409 cfs 60" @ 5.1%

P SF3 67

ST-DF 33

578 cfs 30 7'x6' RCB @ 1%

676 cfs 32 7'x7' RCB @ 1%

C-47

Ex. 11'x8' RCAP

C-47A

Ex. 10'x8' RCB

ST-AL 43

CP-AL

PT5A

ALTA DRIVE

PT5

PT4

V SF3 77

5 42" @ 2%

PT1

T SF3 87

6

211 54" @ 3%

COS-5 OPEN SPACE 13

10 13 cfs Ex. 30" @ 6.5%

Q2 SF3 40

U SF3 75

7 42" @ 2%

87 cfs 9 Ex. 36" @ 2%

309 cfs 8 Ex. 60" @ 2.5%

40 cfs 11 36" @ 1%

31 67 cfs 42" @ 2%

PT3

PT3A

C-CR

5-9A1 SF3 126

PT17

EXISTING DB5

326 cfs @ 2.6% 60"

Village 23A

NORTH

SCALE 1" = 300'

GRAPHIC SCALE

300 0 150 300

(IN FEET)

1 inch = 300 ft.

LEGEND

A SF3	PARCEL NAME PARCEL DENSITIES
13	MAXIMUM DISCHARGE FROM PARCEL
	PROPOSED STORM DRAIN
PT1	CONCENTRATION POINT
	EXISTING STORM DRAIN
	SUBBASIN BOUNDARY
8	FACILITY IDENTIFIER

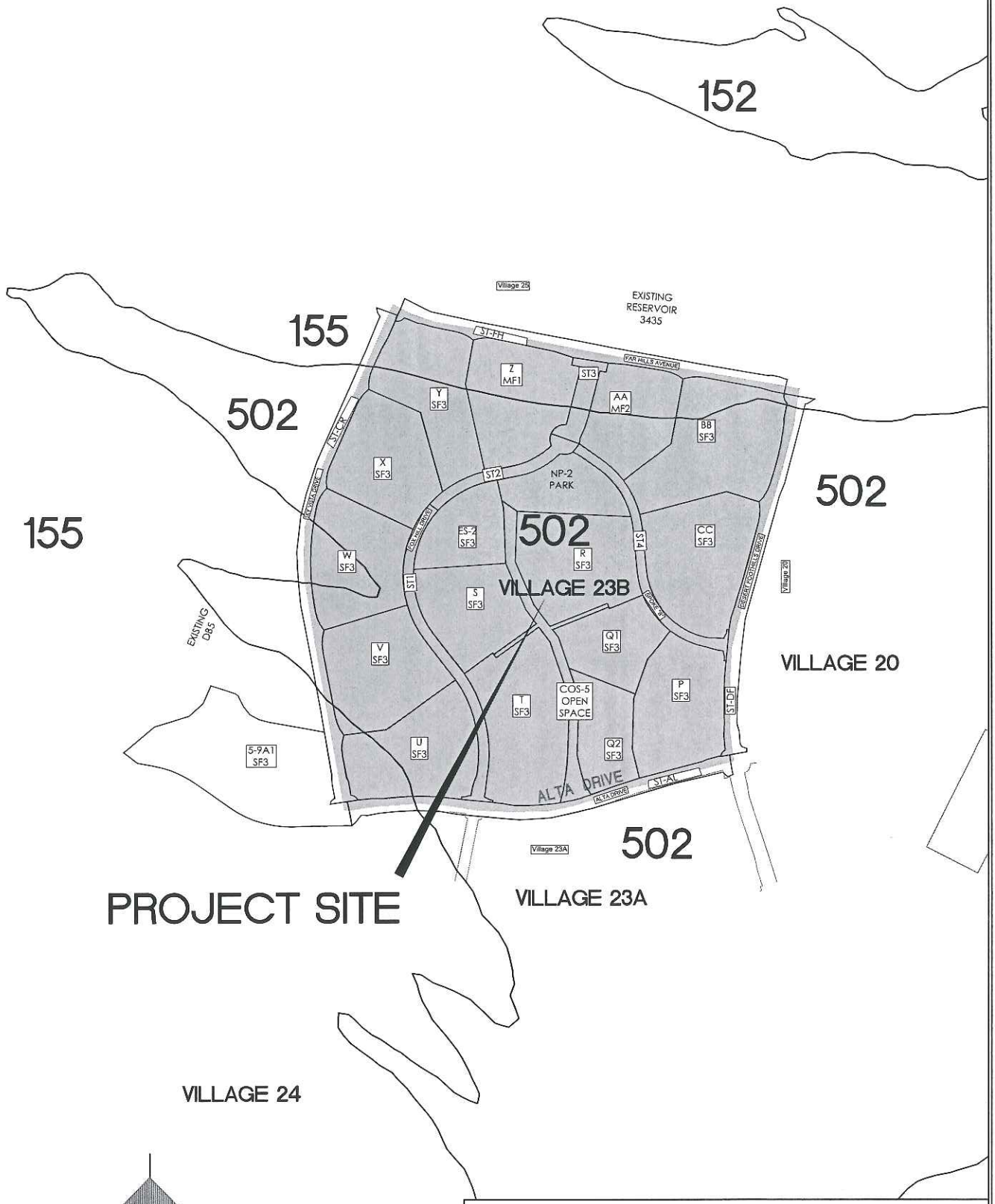
DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-24-12
PLOT TIME: 18:18:35

NO.	DESCRIPTION	DATE	AGEN. APP	DATE	DCW. APP	DATE

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 • FAX (702) 804-2299
F:\Projects\600\620239-100\Division Vol1\Figures\fig7-up.dwg RGarrels

SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY
DRAINAGE FACILITIES MAP - ULTIMATE CONDITIONS

SHEET
FIG 7U
1 OF 1 SHTS



NORTH

SCALE 1"=1500'

GRAPHIC SCALE

1500 0 750 1500

(IN FEET)

1 inch = 1500 ft.

SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY

SOIL

EXHIBIT

G.C. WALLACE, INC.
Engineers/Planning/Surveyors

F:\Projects\600\62023B-100\Division\Fctl\Figures\ExSoil-up07w24-12 11:13:01 RDennis

RUNOFF CURVE NUMBERS
(URBAN AREAS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
See Table 602A					
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

Summerlin Village 23B

Composite Curve Number Calculations

G.C. Wallace, Inc.
Date:6/30/12
File: CNcalcs.xls
By: rrd

Hydrologic Soil Group	Apartments/ Condos/ Commercial	Residential <6,000 ft2 lots**	Natural Desert Landscaping	Streets	Open Space (fair, grass 50-75%)
A	89	81	63	98	49
B	92	88	77	98	69
C	94	91	85	98	79
D	95	93	88	98	84

** - Average residential lots with <6,000 sq ft an industrial land use was used from Table 602 in the CCRFCD HCDDM
** - CN Values were referenced from Table 602A in the CCRFCD HCDDM

SOIL 502 Canutio-Cave (gravelly fine sandy loam)

Description	Type	%	Apartments/ Condos/ Commercial	Residential (6,000 sq ft lots or less	Natural Desert Landcaping	Streets (Paved)	Open Space (fair, grass 50-75%)
Arizo	A	5%	89	81	63	98	49
Canutio	B	55%	92	88	77	98	69
Cave	D	40%	95	93	88	98	84
Composite CN		100%	93.1	89.7	80.7	98.0	74.0

SOIL 155 Cave (gravelly fine sandy loam)

Description	Type	%	Apartments/ Condos/ Commercial	Residential (6,000 sq ft lots or less	Natural Desert Landcaping	Streets (Paved)	Open Space (fair, grass 50-75%)
Arizo	A	5%	89	81	63	98	49
Caliza	B	5%	92	88	77	98	69
Cave	D	90%	95	93	88	98	84
Composite CN		100%	94.6	92.2	86.2	98.0	81.5

Summerlin Village 23B						
WEIGHTED CURVE NUMBERS AND PRECIPITATION VALUES						
Ultimate Conditions						
Basin	Soil	Percent	CN	Land Use	WCN	PREC
AA	502	51.0%	93.1	Apt/Condo/Comm	**93.8**	3.29
	155	49.0%	94.6			
BB	502	81.4%	89.7	Residential <6,000 ft2 lots	**90.2**	3.29
	155	18.6%	92.2			
CC	502	100.0%	89.7	Residential <6,000 ft2 lots	**89.7**	3.29
COS-5	502	100.0%	74.0	Open Space	**74.0**	3.29
ES-2	502	100.0%	93.1	Commercial	**93.1**	3.29
NP-2	502	100.0%	74.0	Open Space	**74.0**	3.29
P	502	100.0%	89.7	Residential <6,000 ft2 lots	**89.7**	3.29
Q1	502	100.0%	89.7	Residential <6,000 ft2 lots	**89.7**	3.29
Q2	502	100.0%	89.7	Residential <6,000 ft2 lots	**89.7**	3.29
R	502	100.0%	89.7	Residential <6,000 ft2 lots	**89.7**	3.29
S	502	100.0%	89.7	Residential <6,000 ft2 lots	**89.7**	3.29
T	502	100.0%	89.7	Residential <6,000 ft2 lots	**89.7**	3.29
U	502	70.6%	89.7	Residential <6,000 ft2 lots	**90.4**	3.29
	155	29.4%	92.2			
X	502	100.0%	89.7	Residential <6,000 ft2 lots	**89.7**	3.29
ST1[1]	502	100.0%	98.0	Streets	98.0	3.29
[1]Streets						
ST1[2]	502	100.0%	80.7	Natural Desert Landscaping	80.7	3.29
[2]Natural Desert Landscaping						
ST1[2]	Streets	80.0%	98.0		**94.5**	3.29
	Lndscape	20.0%	80.7			
ST2[1]	502	100.0%	98.0	Streets	98.0	3.29
[1]Streets						
ST2[2]	502	100.0%	80.7	Natural Desert Landscaping	80.7	3.29
[2]Natural Desert Landscaping						
ST2	Streets	80.0%	98.0		**94.5**	3.29
	Lndscape	20.0%	80.7			
ST3[1]	502	30.7%	98.0	Streets	98.0	3.29
	155	69.3%	98.0			
[1]Streets						
ST3[2]	502	30.7%	80.7	Natural Desert Landscaping	84.5	3.29
	155	69.3%	86.2			
[2]Natural Desert Landscaping						
ST3[2]	Streets	80.0%	98.0		**95.3**	3.29
	Lndscape	20.0%	84.5			
ST4[1]	502	100.0%	98.0	Streets	98.0	3.29
[1]Streets						
ST4[2]	502	100.0%	80.7	Natural Desert Landscaping	80.7	3.29
[2]Natural Desert Landscaping						
ST4[2]	Streets	80.0%	98.0		**94.5**	3.29
	Lndscape	20.0%	80.7			

V	502	96.9%	89.7	Residential <6,000 ft2 lots	**89.8**	3.29
	155	3.1%	92.2			
W	502	74.4%	89.7	Residential <6,000 ft2 lots	**90.3**	3.29
	155	25.6%	92.2			
Y	502	58.1%	89.7	Residential <6,000 ft2 lots	**90.7**	3.29
	155	41.9%	92.2			
Z	502	47.5%	89.7	Residential <6,000 ft2 lots	**91.0**	3.29
	155	52.5%	92.2			
ST-AL[1]	502	83.0%	98.0	Streets	98.0	3.29
	155	17.0%	98.0			
[1]Streets						
ST-AL[2]	502	83.0%	80.7	Natural Desert Landscaping	81.6	3.29
	155	17.0%	86.2			
[2]Natural Desert Landscaping						
ST-AL[2]	Streets	80.0%	98.0		**94.7**	3.29
	Lndscape	20.0%	81.6			
ST-DF[1]	502	96.0%	98.0	Streets	98.0	3.29
	155	4.0%	98.0			
[1]Streets						
ST-DF[2]	502	96.0%	80.7	Natural Desert Landscaping	80.9	3.29
	155	4.0%	86.2			
[2]Natural Desert Landscaping						
ST-DF[2]	Streets	80.0%	98.0		**94.6**	3.29
	Lndscape	20.0%	80.9			
ST-CR[1]	502	55.0%	98.0	Streets	98.0	3.29
	155	45.0%	98.0			
[1]Streets						
ST-CR[2]	502	55.0%	80.7	Natural Desert Landscaping	83.2	3.29
	155	45.0%	86.2			
[2]Natural Desert Landscaping						
ST-CR[2]	Streets	80.0%	98.0		**95.0**	3.29
	Lndscape	20.0%	83.2			
ST-FH[1]	155	100.0%	98.0	Streets	98.0	3.29
[1]Streets						
ST-FH[2]	155	100.0%	86.2	Natural Desert Landscaping	86.2	3.29
[2]Natural Desert Landscaping						
ST-FH[2]	Streets	80.0%	98.0		**95.6**	3.29
	Lndscape	20.0%	86.2			
5-9A1	155	100.0%	92.2	Residential <6,000 ft2 lots	**92.2**	3.43

HYDROLOGIC CRITERIA AND DESIGN MANUAL

TIME OF CONCENTRATION

G. C. WALLACE COMPANIES
Engineers/Planners/Surveyors

SUMMERLIN VILLAGE 23B
ULTIMATE CONDITIONS

Project No: 62023B-100
Date: 28-Jun-12
Calculated by:

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc CHECK URBANIZED BASINS		Tc	Tlag	REMARKS
DESIG:	DEV./EX. (D or E)	CN	K	AREA Ac	AREA Sq Mi	INITIAL LENGTH Feet	SLOPE %	Ti Min	TRAVEL LENGTH Feet	SLOPE %	V1 VELOCITY fps	V2 VELOCITY fps	Tt Min	TOTAL LENGTH Feet	Tc = (L/180)+10 Min	Min	Tlag = 0.6Tc/60 Hours	Remarks:
(1)		(16)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9a)	(9b)	(10)	(11)	(12)	(13)	(14)	(15)	
U	D	90.4	0.8033	25.15	0.03929	100	1.0	5.3	1820	3.7	3.9	5.9	5.9	1920	20.7	11.2	0.112	
V	D	89.8	0.7954	25.45	0.03977	100	1.0	5.5	1535	3.8	3.9	5.9	5.0	1635	19.1	10.5	0.105	
W	D	90.3	0.8020	23.78	0.03716	100	1.0	5.4	1480	4.3	4.2	6.3	4.6	1580	18.8	9.9	0.099	
X	D	89.7	0.7940	23.31	0.03642	100	1.0	5.5	1500	3.7	3.9	5.9	5.0	1600	18.9	10.5	0.105	
Y	D	90.7	0.8072	24.30	0.03797	100	1.0	5.3	1715	4.0	4.1	6.1	5.4	1815	20.1	10.6	0.106	
Z	D	91.0	0.8112	25.01	0.03908	100	1.0	5.2	1365	3.7	3.9	5.9	4.6	1465	18.1	9.8	0.098	
AA	D	93.8	0.8482	18.52	0.02894	100	1.0	4.5	1375	2.6	3.3	5.0	5.5	1475	18.2	10.0	0.100	
BB	D	90.2	0.8006	32.03	0.05005	100	1.0	5.4	1550	3.6	3.8	5.8	5.2	1650	19.2	10.6	0.106	
CC	D	89.7	0.7940	28.57	0.04464	100	1.0	5.5	1915	2.9	3.5	5.2	6.9	2015	21.2	12.4	0.124	
ST1	D	94.5	0.8574	8.00	0.01250	21	2.0	1.6	3185	2.3	3.1	4.7	12.3	3206	27.8	13.9	0.139	
ST2	D	94.5	0.8574	4.25	0.00663	21	2.0	1.6	1500	3.6	3.8	5.8	5.0	1521	18.5	6.6	0.066	
ST3	D	95.3	0.8680	4.12	0.00643	21	2.0	1.5	830	3.6	3.8	5.8	3.1	851	14.7	4.6	0.050	
ST4	D	94.5	0.8574	5.98	0.00934	21	2.0	1.6	2840	4.2	4.1	6.3	8.2	2861	25.9	9.8	0.098	
NP-2	D	74.0	0.5868	12.54	0.01959	100	8.0	4.6	1340	4.9	4.4	6.7	4.0	1440	18.0	8.6	0.086	
ES-2	D	93.1	0.8389	13.33	0.02083	100	1.0	4.7	800	4.5	4.3	6.5	2.7	900	15.0	7.4	0.074	
S	D	89.7	0.7940	19.69	0.03077	100	1.0	5.5	1400	4.0	4.0	6.1	4.5	1500	18.3	10.0	0.100	
T	D	89.7	0.7940	29.70	0.04641	100	1.0	5.5	2015	3.3	3.7	5.6	6.8	2115	21.8	12.3	0.123	
R	D	89.7	0.7940	25.54	0.03991	100	1.0	5.5	1605	4.4	4.2	6.4	4.8	1705	19.5	10.4	0.104	
Q1	D	89.7	0.7940	14.87	0.02323	100	1.0	5.5	1265	3.4	3.7	5.6	4.5	1365	17.6	10.0	0.100	
Q2	D	89.7	0.7940	13.34	0.02084	100	1.0	5.5	1390	3.3	3.7	5.6	4.9	1490	18.3	10.4	0.104	
P	D	89.7	0.7940	24.03	0.03754	100	1.0	5.5	1382	2.8	3.4	5.1	5.3	1482	18.2	10.8	0.108	
COS-5	D	74.0	0.5868	8.79	0.01373	37	2.0	4.4	2925	3.5	3.8	5.7	9.2	2962	26.5	13.7	0.137	
ST-FH	D	95.6	0.8719	13.14	0.02052	80	2.0	2.9	3900	5.3	4.6	7.0	9.9	3980	32.1	12.8	0.128	
ST-AL	D	94.7	0.8600	13.03	0.02036	30	2.0	1.9	3745	3.6	3.8	5.8	11.5	3775	31.0	13.4	0.134	
ST-DF	D	94.6	0.8587	12.14	0.01897	40	2.0	2.2	3550	0.9	1.9	2.9	21.9	3590	29.9	24.0	0.240	
ST-CR	D	95.0	0.8640	16.43	0.02567	50	2.0	2.4	4930	2.1	2.9	4.4	19.5	4980	37.7	21.9	0.219	
5-9A1	D	92.2	0.8270	38.58	0.06028	100	1.0	4.9	2320	3.8	3.9	6.0	7.2	2420	23.4	12.1	0.121	

Tc = Ti + Tt Tlag = 0.6 Tc
Ti = 1.8 (1.1 - K) $L^{1/2}$ / $S^{1/3}$
K = 0.0132 (CN) - 0.39

For the travel time (Tt) calculations,
V1 applies to the first 500 feet of travel distance;
V2 applies to the remaining travel distance.

Existing: V1 = 14.8*(S/100)$^{1/2}$
V2 = 29.4*(S/100)$^{1/2}$

Developed: V1 = 20.2*(S/100)$^{1/2}$
V2 = 30.6*(S/100)$^{1/2}$

REFERENCE:

STANDARD FORM 4

```
1****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*              JUN  1998               *
*            VERSION 4.1               *
*                                      *
*  RUN DATE   24JUL12  TIME  14:42:18  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
          LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10
                    *DIAGRAM
*** FREE ***
               1    ID   ************************************************************
               2    ID   * ........................................................ *
               3    ID   * :                  SUMMERLIN VILLAGE 23B                 : *
               4    ID   * :                  CONCEPTUAL STUDY UPDATE               : *
               5    ID   * :                  DEVELOPED ONSITE                      : *
               6    ID   * :                  DEVELOPED OFFSITE                     : *
               7    ID   * :.....................................................: *
               8    ID   * :             RETURN PERIOD_ _ _ _10 & 100-YEAR        : *
               9    ID   * :             DISTRIBUTION_ _ _ _ 6-HOUR SDN3          : *
              10    ID   * :             PROJECT NO_ _ _ _ _ 620238.100           : *
              11    ID   * :             FILENAME_ _ _ _ _ _ V23B-ULT.H1          : *
              12    ID   * :             DATE_ _ _ _ _ _ _ _ 07/05/12             : *
              13    ID   * :             MODELED BY_ _ _ _ _ JAM/RRD              : *
              14    ID   * :.....................................................: *
              15    ID   * :                                                     : *
              16    ID   * :.....................................................: *
              17    ID   ************************************************************
              18    ID
              19    ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
              20    ID
              21    ID                          AREA      DARF
              22    ID                        SQ.MI.
              23    ID
              24    ID                       0.0 - 0.5    1.000
              25    ID                       0.5 - 1.0    0.975
              26    ID                       1.0 - 2.0    0.950
              27    ID                       2.0 - 3.0    0.925
              28    ID                       3.0 - 4.0    0.915
              29    ID                       4.0 - 5.0    0.908
              30    ID                       5.0 - 7.0    0.895
              31    ID                       7.0 - 8.0    0.885
              32    ID
              33    IT       5       0       0     200
              34    IO       5       0
              35    IN       5       0       0
              36    JR    PREC     1.0   0.975    0.95   0.925   0.915   0.908   0.895   0.885    0.55
                    *
                    * BASIN PARAMETERS FOR OFFSITE BASINS TAKEN
                    * DIRECTLY FROM 2008 MPU:
                    *
                    * THE FOLLOWING SECTION OF HYDROLOGY WAS DEVELOPED BASED ON G.C. WALLACE'S
                    * 2006 SUMMERLIN WEST: EXISTING OFFSITE/PROPOSED ONSITE DRAINAGE CONDITION
                    * HYDROLOGIC MODEL (11-20-06); THE HYDROLOGY WAS REVISEED IN ORDER TO
                    * INCORPORATE ALL EXISTING/PROPOSED MPU FACILITIES
                    *
              37    KK  DB54-1
              38    BA   2.222
              39    PB    3.72
              40    PC   0.000   .0200   .0570   .0700   .0870   .1080   .1240   .1300   .1300   .1300
              41    PC   .1300   .1300   .1300   .1330   .1400   .1420   .1480   .1580   .1720   .1810
              42    PC   .1900   .1970   .1990   .2000   .2010   .2040   .2140   .2290   .2410   .2490
              43    PC   .2510   .2560   .2700   .2780   .2810   .2830   .2950   .3220   .3520   .4090
```

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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  44      PC   .4990   .5900   .7100   .7440   .7810   .8120   .8190   .8350   .8510   .8560
  45      PC   .8600   .8680   .8760   .8880   .9100   .9260   .9370   .9500   .9700   .9760
  46      PC   .9820   .9850   .9870   .9890   .9900   .9930   .9930   .9940   .9950   .9980
  47      PC   .9980   .9990   1.000
  48      LS       0    87.2
  49      UD   0.495
          *

  50      KK RDB54-1
  51      KM  ROUTE DB54-1 TO CDB54-5
  52      KM  NATURAL WASH
  53      KM  TRAVEL LENGTH = 4,500
  54      KM  SLOPE = 3.7%
  55      KM  N = 0.040
  56      KM  HYDRAULIC RADIUS = 1.5
  57      KM  VELOCITY = 14.9
  58      RM       1   0.084    0.15
          *

  59      KK  DB54-5
  60      BA   0.226
  61      PB    3.67
  62      LS       0    85.2
  63      UD   0.089
          *

  64      KK CDB54-5
  65      KM  COMBINE DB54-5 AND RDB54-1
  66      HC       2
          *

  67      KKRCDB54-5
  68      KM  ROUTE CDB54-5 TO CRCDB544
  69      KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
  70      KM  FACILITY # = APM5 0059
  71      KM  LINING = CONCRETE
  72      RD    8923    0.07   0.015       0    TRAP     100       2
          *

  73      KK  DB54-2
  74      BA   0.288
  75      PB    3.66
  76      LS       0    86.9
  77      UD   0.076
          *

  78      KK RDB54-2
  79      KM  ROUTE DB54-2 TO CDB54-4
  80      KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
  81      KM  FACILITY # = APM5 0057
  82      KM  LINING = CONCRETE
  83      RD    4920   0.068   0.015       0    TRAP      50       2
          *
1                                   HEC-1 INPUT                                        PAGE  3

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

  84      KK  DB54-3
  85      BA   0.519
  86      PB    3.67
  87      LS       0    87.2
  88      UD   0.090
          *

  89      KK RDB54-3
  90      KM  ROUTE DB54-3 TO CDB54-4
  91      KM  NATURAL WASH
  92      KM  TRAVEL LENGTH = 5,200
  93      KM  SLOPE = 3.0%
  94      KM  N = 0.040
  95      KM  HYDRAULIC RADIUS = 1.5
  96      KM  VELOCITY = 13.5
  97      RM       1   0.107    0.15
          *

  98      KK  DB54-4
  99      BA   0.203
 100      PB    3.60
 101      LS       0    86.8
 102      UD   0.159
          *

 103      KK CDB54-4
 104      KM  COMBINE DB54-4, RDB54-3 AND RDB54-2
 105      HC       3
          *

 106      KKRCDB54-4
 107      KM  ROUTE CDB54-4 TO CRCDB544
 108      KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
 109      KM  FACILITY # = APM5 0057
 110      KM  LINING = CONCRETE
```

```
111          RD    5000   0.068   0.015       0    TRAP      50       2
             *

112          KKCRCDB544
113          KM  COMBINE RCDB54-4 AND CDB54-5
114          HC       2
             *

115          KKRCRCDB54
116          KM  ROUTE CRCDB544 TO CDB54-6R
117          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
118          KM  FACILITY # = APM5 0008, 0047, 0056
119          KM  LINING = CONCRETE
120          RD    3365   0.052   0.015       0    TRAP      50       2
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

121          KK DB54-6R
122          BA   0.841
123          PB    3.56
124          LS       0    85.3
125          UD   0.337
             *

126          KKCDB54-6R
127          KM  COMBINE RCRCDB54 AND DB54-6R
128          HC       2
             *

129          KK  DB55-1
130          BA   0.640
131          PB    3.68
132          LS       0    87.2
133          UD   0.185
             *

134          KK RDB55-1
135          KM  ROUTE DB55-1 TO CDB55-2
136          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
137          KM  FACILITY # = APM5 0212
138          KM  LINING = CONCRETE
139          RD    4350   0.075   0.015       0    TRAP      30       2
             *

140          KK  DB55-2
141          BA   0.099
142          PB    3.56
143          LS       0    88.3
144          UD   0.150
             *

145          KK CDB55-2
146          KM  COMBINE RDB55-1 AND DB55-2
147          HC       2
             *

148          KK RDB55-2
149          KM  ROUTE CDB55-2 TO CCDB55-5
150          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
151          KM  FACILITY # = APM5 0212
152          KM  LINING = CONCRETE
153          RD    2345   0.075   0.015       0    TRAP      30       2
             *

154          KK  DB55-3
155          BA   0.260
156          PB    3.61
157          LS       0    86.8
158          UD   0.057
             *
```



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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

159          KK RDB55-3
160          KM  ROUTE DB55-3 TO CDB55-4
161          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
162          KM  FACILITY # = APM5 0213
163          KM  LINING = CONCRETE
164          RD    1880   0.073   0.015       0    TRAP      50       2
             *

165          KK  DB55-4
166          BA   0.173
167          PB    3.58
168          LS       0    84.7
169          UD   0.132
             *

170          KK CDB55-4
171          KM  COMBINE RDB55-3 AND DB55-4
```

```
 172          HC       2
              *

 173          KK RDB55-4
 174          KM  ROUTE CDB55-4 TO CDB55-5
 175          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
 176          KM  FACILITY # = APM5 0213
 177          KM  LINING = CONCRETE
 178          RD    4640   0.073   0.015       0    TRAP      50       2
              *

 179          KK  DB55-5
 180          BA   0.189
 181          PB    3.54
 182          LS       0    86.4
 183          UD   0.149
              *

 184          KK CDB55-5
 185          KM  COMBINE DB55-5 AND RDB55-4
 186          HC       2
              *

 187          KKCCDB55-5
 188          KM  COMBINE CDB55-5 AND RCDB55-2
 189          HC       2
              *

 190          KK RDB55-5
 191          KM  ROUTE TO SUMMERLIN #5 DETENTION BASIN
 192          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
 193          KM  FACILITY # = APM5 0009
 194          KM  LINING = CONCRETE
 195          RD41800.05       8   0.015       0    TRAP      50       2
              *
1                                      HEC-1 INPUT                                          PAGE  6

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 196          KK  DB55-7
 197          BA   0.444
 198          PB    3.54
 199          LS       0    89.0
 200          UD   0.229
              *

 201          KK RDB55-7
 202          KM  ROUTE DB55-7 TO CDB55-8
 203          KM  NATURAL WASH
 204          KM  TRAVEL LENGTH = 5,300
 205          KM  SLOPE = 3.0%
 206          KM  N = 0.040
 207          KM  HYDRAULIC RADIUS = 1.5
 208          KM  VELOCITY = 13.5
 209          RM       1   0.109    0.15
              *

 210          KK  DB55-6
 211          BA   0.096
 212          PB    3.52
 213          LS       0    92.0
 214          UD   0.110
              *

 215          KK RDB55-6
 216          KM  ROUTE DB55-6 TO CDB55-8
 217          KM  NATURAL WASH
 218          KM  TRAVEL LENGTH = 10,000
 219          KM  SLOPE = 3.7%
 220          KM  N = 0.040
 221          KM  HYDRAULIC RADIUS = 1.5
 222          KM  VELOCITY = 14.9
 223          RM       2   0.186    0.15
              *

 224          KK  DB55-8
 225          BA   0.545
 226          PB    3.46
 227          LS       0    89.7
 228          UD   0.172
              *

 229          KK CDB55-8
 230          KM  COMBINE DB55-8, RDB55-6, RCDB55-5 AND RDB55-7
 231          HC       4
              *

 232          KK  SUM5IN
 233          KM  COMBINE CDB55-8 AND CDB54-7
 234          KM  TOTAL INFLOW TO SUMMERLIN #5 DETENTION BASIN
 235          KO       1
 236          HC       2
              *
1                                      HEC-1 INPUT                                          PAGE  7
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LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 237      KK  SUM5DB
 238      KM  SUMMERLIN DETENTION BASIN 5
 239      KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
 240      KM  FACILITY # = APM5 0000
 241      KM  STORAGE VOLUME = 384.1 ACRE-FEET
 242      KM  OUTLET = 2: 7' x 5.5' RCBS
 243      KM  100-YEAR DISCHARGE = 2,150 CFS
 244      KM  SPILLWAY LENGTH = 453.6'
 245      KM  SPILLWAY HEIGHT =
 246      KM  SPILLWAY CREST ELEVATION = 3563'
 247      KM  SPILLWAY TYPE = CONCRETE BROAD CRESTED WEIR
 248      KM  PMF DISCHARGE = 12,153 CFS
 249      KM  TOP OF EMBANKMENT ELEVATION = 3569'
 250      KM  DETENTION BASIN PARAMETERS REFERENCED FROM "DETENTION BASIN NO. 5
 251      KM  EXPANSION AND DIVERSION BERM" PLANS BY G.C. WALLACE (5-23-2001)
 252      KM  STAGE-STORAGE-DISCHARGE CURVE REFERENCED FROM "2006 SUMMERLIN WEST
 253      KM  CONCEPTUAL DRAINAGE STUDY MASTER PLAN AMENDMENT: EXISTING OFFSITE/PROPOSED
 254      KM  ONSITE DRAINAGE CONDITION" HYDROLOGIC MODEL DATED 8-7-2006 AND SUBMITTED
 255      KM  WITH THE SUPPLEMENT FOR THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD
 256      KM  CONTROL MASTER PLAN UPDATE BY G.C. WALLACE (08-2006)
 257      KO       1
 258      RS       1    STOR      -1
 259      SV       0    1.73    4.55    8.45   13.08    18.2   23.81   29.96    36.7   43.93
 260      SV   59.55   77.49   99.82  127.17  159.39  196.38  240.07  384.05  405.65  535.25
 261      SQ       0     192     276     391     505     616     725     813     900     982
 262      SQ    1176    1368    1534    1683    1804    1920    2033    2315    3725   23201
 263      SE  3532.5    3535    3536    3537    3538    3539    3540    3541    3542    3543
 264      SE    3543    3547    3549    3551    3553    3555    3557    3563    3564    3569
 265      SS    3563   435.6       3     1.5
          *

 266      KK  SUM5OT
 267      KM  ROUTE SUM5DB TO CSWAA-1
 268      KM  FACILITY = ANGEL PARK - ALTA DRIVE
 269      KM  FACILITY # = APAD 0203, 0225
 270      KM  LINING = RCB
 271      RD    1495  0.0528   0.015       0    TRAP      14       0
          *

 272      KK  SWAA-1
 273      BA   0.238
 274      PB    3.44
 275      LS       0    88.2
 276      UD   0.315
          *

 277      KK CSWAA-1
 278      KM  COMBINE SUM5OT AND SWAA-1
 279      HC       2
          *
1                                      HEC-1 INPUT                                      PAGE  8

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 280      KKRCSWAA-1
 281      KM  ROUTE CSWAA-1 TO CSWAA-2
 282      KM  FACILITY = ANGEL PARK - ALTA DRIVE
 283      KM  FACILITY # = APAD 0115, 0146
 284      KM  LINING = RCB
 285      RD    4640   0.044   0.015       0    TRAP      10       0
          *
          * REVISED VILLAGE 23B SUBBASINS PER NEW LAND PLAN
          *

 286      KK   ST-CR
 287      KM    SKY VISTA
 288      KM    COLLECTOR ROAD (NORTH)
 289      KM
 290      KM            AREA    16.4      AC
 291      KM            Tlag    21.9     MIN
 292      KM              CN      95
 293      PB    3.43
 294      BA  .02567
 295      LS       0    95.0
 296      UD    .219
          *

 297      KK   5-9A1
 298      KM    AREA REVISED FROM OFFSITE BASIN 5-9A 2006 SUMMERLIN WEST
 299      KM    RAINFALL REFERENCED FROM BASIN 5-9A 2006 SUMMERLIN WEST
 300      KM    PORTION OF REFERENCED FROM OFFSITE BASIN RD2 2008 MPU
 301      KM
 302      KM            AREA    38.6      AC
 303      KM            Tlag    12.1     MIN
 304      KM              CN    92.2
 305      PB    3.43
 306      BA  .06028
 307      LS       0    92.2
 308      UD    .121
          *
```

```
 309          KK    C-CR
 310          KM   COMBINE COLLECTOR ROAD,DETENTION BASIN OUTFLOW, AND 5-9A1
 311          HC       3
              *

 312          KK       X
 313          KM
 314          KM            AREA   23.31      AC
 315          KM            Tlag    10.5     MIN
 316          KM              CN    89.7
 317          BA  .03642
 318          PB   3.29
 319          LS       0    89.7
 320          UD    .105
              *
1                                    HEC-1 INPUT                                          PAGE  9

       LINE   ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 321          KK     R/X
 322          KM   ROUTE THROUGH ST1 (FOX HILL) TO PT0
 323          RD     850   0.029   0.016       0    TRAP       0      50
              *

 324          KK       W
 325          KM
 326          KM            AREA   23.78      AC
 327          KM            Tlag     9.9     MIN
 328          KM              CN    90.3
 329          BA  .03716
 330          LS       0    90.3
 331          UD    .099
              *

 332          KK     PT0
 333          KM   COMBINE X AND W
 334          HC       2
              *

 335          KK   R/PT0
 336          KM   ROUTE THROUGH ST1 (FOX HILL) TO PT1
 337          RD     880   0.029   0.016       0    TRAP       0      50
              *

 338          KK       V
 339          KM
 340          KM            AREA   25.45      AC
 341          KM            Tlag    10.5     MIN
 342          KM              CN    89.8
 343          BA  .03977
 344          LS       0    89.8
 345          UD    .105
              *

 346          KK     PT1
 347          KM   COMBINE PT0 AND V
 348          HC       2
              *

 349          KK   R/PT1
 350          KM   ROUTE THROUGH ST1 (FOX HILL) TO PT2
 351          RD    1270   0.035   0.016       0    TRAP       0      50
              *

 352          KK       U
 353          KM
 354          KM            AREA   25.15      AC
 355          KM            Tlag    11.2     MIN
 356          KM              CN    90.4
 357          BA  .03929
 358          LS       0    90.4
 359          UD    .112
              *
1                                    HEC-1 INPUT                                          PAGE 10

       LINE   ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 360          KK     PT2
 361          KM   COMBINE U AND PT1
 362          HC       2
              *

 363          KK     ST1
 364          KM   FOX HILL
 365          KM            AREA    8.00      AC
 366          KM            Tlag    13.9     MIN
 367          KM              CN    94.5
 368          BA  .01250
 369          LS       0    94.5
 370          UD    .139
              *
```

```
371          KK     PT3
372          KM   COMBINE PT2 AND ST1
373          HC       2
             *
374          KK    PT3A
375          KM   COMBINE PT3 WITH ALTA BOX
376          HC       2
             *
377          KK       T
378          KM
379          KM            AREA   29.70      AC
380          KM            Tlag    12.3     MIN
381          KM              CN    89.7
382          BA  .04641
383          LS       0    89.7
384          UD    .123
             *
385          KK     PT4
386          KM   COMBINE T AND PT3A
387          HC       2
             *
388          KK   COS-5
389          KM
390          KM            AREA    8.79      AC
391          KM            Tlag    13.7     MIN
392          KM              CN      74
393          BA  .01373
394          LS       0    74.0
395          UD    .137
             *
1                                        HEC-1 INPUT                                                    PAGE 11

        LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

396          KK     PT5
397          KM   COMBINE COS5 AND PT4
398          HC       2
             *
399          KK      Q2
400          KM
401          KM            AREA   13.34      AC
402          KM            Tlag    10.4     MIN
403          KM              CN    89.7
404          BA  .02084
405          LS       0    89.7
406          UD    .104
             *
407          KK    PT5A
408          KM   COMBINE PT5 AND Q2
409          HC       2
             *
410          KK   ST-AL
411          KM
412          KM    ALTA DRIVE
413          KM
414          KM            AREA    13.0      AC
415          KM            Tlag    13.4     MIN
416          KM              CN    94.7
417          BA  .02036
418          LS       0    94.7
419          UD    .134
             *
420          KK   CP-AL
421          KM   COMBINE PT5A AND ALTA DRIVE
422          HC       2
             *
423          KK       Y
424          KM
425          KM            AREA   24.30      AC
426          KM            Tlag    10.6     MIN
427          KM              CN    90.7
428          BA  .03797
429          LS       0    90.7
430          UD   0.106
             *
431          KK     R/Y
432          KM   ROUTE THROUGH ST2 (FOX HILL) TO ROUND-A-BOUT
433          RD     895   0.038   0.016       0    TRAP       0      50
             *
1                                        HEC-1 INPUT                                                    PAGE 12

        LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10
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```
434          KK       Z
435          KM
436          KM            AREA   25.01      AC
437          KM            Tlag     9.8     MIN
438          KM              CN      91
439          BA  .03908
440          LS       0    91.0
441          UD    .098
             *

442          KK     PT6
443          KM   COMBINE  Y AND Z
444          HC       2
             *

445          KK     ST2
446          KM   FOX HILL
447          KM            AREA    4.25      AC
448          KM            Tlag     6.6     MIN
449          KM              CN    94.5
450          BA  .00663
451          LS       0    94.5
452          UD    .066
             *

453          KK     PT7
454          KM   COMBINE PT6 AND ST2
455          HC       2
             *

456          KK   R/PT7
457          KM   ROUTE THROUGH ST4 (SPOKE ROAD) TO PT8
458          RD     870   0.046   0.016       0    TRAP       0      50
             *

459          KK    NP-2
460          KM
461          KM            AREA    12.5      AC
462          KM            Tlag     8.6     MIN
463          KM              CN      74
464          BA  .01959
465          LS       0    74.0
466          UD    .086
             *

467          KK     PT8
468          KM   COMBINE NP-2 AND PT7
469          HC       2
             *
```

1 HEC-1 INPUT PAGE 13

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LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

470          KK   R/PT8
471          KM   ROUTE THROUGH ST4 (SPOKE ROAD) TO PT8
472          RD     800   0.026   0.016       0    TRAP       0      50
             *

473          KK       R
474          KM
475          KM            AREA   25.54      AC
476          KM            Tlag    10.4     MIN
477          KM              CN    89.7
478          BA  .03991
479          LS       0    89.7
480          UD    .104
             *

481          KK    PT9A
482          KM   COMBINE R AND PT8
483          HC       2
             *

484          KK    ES-2
485          KM
486          KM            AREA   13.33      AC
487          KM            Tlag     7.4     MIN
488          KM              CN    93.1
489          BA  .02083
490          LS       0    93.1
491          UD    .074
             *

492          KK  R/ES-2
493          KM   ROUTE THROUGH COS-5 TO PT9B
494          RD     690   0.045   0.016       0    TRAP       0      50
             *

495          KK       S
496          KM
497          KM            AREA   19.69      AC
498          KM            Tlag    10.0     MIN
499          KM              CN    89.7
500          BA  .03077
```

```
 501          LS       0    89.7
 502          UD    .100
              *

 503          KK    PT9B
 504          KM   COMBINE ES-2 WITH S
 505          HC       2
              *
1                                        HEC-1 INPUT                                                    PAGE 14

 LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 506          KK  R/PT9B
 507          KM   ROUTE THROUGH EASEMENT TO PT9C
 508          RD    1180   0.034   0.016       0    TRAP       0      50
              *

 509          KK    PT9C
 510          KM   COMBINE PT9B AND PT9A
 511          HC       2
              *

 512          KK  R/PT9C
 513          KM   ROUTE THROUGH ST4 (SPOKE B ROAD) TO PT9D
 514          RD     440   0.043   0.016       0    TRAP       0      50
              *

 515          KK      Q1
 516          KM
 517          KM            AREA   14.87      AC
 518          KM            Tlag    10.0     MIN
 519          KM              CN    89.7
 520          BA  .02323
 521          LS       0    89.7
 522          UD    .100
              *

 523          KK    PT9D
 524          KM   COMBINE Q1 AND PT9C
 525          HC       2
              *

 526          KK  R/PT9D
 527          KM   ROUTE THROUGH ST4 (SPOKE ROAD) TO PT10
 528          RD     555   0.056   0.016       0    TRAP       0      50
              *

 529          KK     ST4
 530          KM
 531          KM            AREA    5.98      AC
 532          KM            Tlag     9.8     MIN
 533          KM              CN    94.5
 534          BA  .00934
 535          LS       0    94.5
 536          UD    .098
              *

 537          KK    PT10
 538          KM   COMBINE PT9 AND ST4
 539          HC       2
              *
1                                        HEC-1 INPUT                                                    PAGE 15

 LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 540          KK      BB
 541          KM
 542          KM            AREA   32.03      AC
 543          KM            Tlag    10.6     MIN
 544          KM              CN    90.2
 545          BA  .05005
 546          LS       0    90.2
 547          UD    .106
              *

 548          KK    R/BB
 549          KM   ROUTE THROUGH DESERT FOOTHILLS
 550          RD    2505   0.009   0.016       0    TRAP       0      50
              *

 551          KK      CC
 552          KM
 553          KM            AREA   28.57      AC
 554          KM            Tlag    12.4     MIN
 555          KM              CN    89.7
 556          BA  .04464
 557          LS       0    89.7
 558          UD    .124
              *

 559          KK    PT11
 560          KM   COMBINE BB AND CC
 561          HC       2
```

```
                *
          562   KK    PT12
          563   KM   COMBINE PT11 AND PT10
          564   HC       2
                *
          565   KK       P
          566   KM
          567   KM            AREA   24.03      AC
          568   KM            Tlag    16.0     MIN
          569   KM              CN    89.7
          570   BA  .03754
          571   LS       0    89.7
          572   UD    .160
                *
          573   KK    PT13
          574   KM   COMBINE P AND PT12
          575   HC       2
                *
1                                       HEC-1 INPUT                                                    PAGE 16

        LINE    ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          576   KK   ST-DF
          577   KM
          578   KM    DESERT FOOTHILLS DRIVE (NORTH)
          579   KM
          580   KM            AREA    12.1      AC
          581   KM            Tlag    24.0     MIN
          582   KM              CN    94.6
          583   BA  .01897
          584   LS       0    94.6
          585   UD    .240
                *
          586   KK    C-47
          587   KM   COMBINE PT13 AND ST-DF
          588   HC       2
                *
          589   KK   C-47A
          590   KM   COMBINE C-47 AND CP-AL
          591   HC       2
                *
                * BASIN PARAMETERS FOR OFFSITE BASINS TAKEN
                * DIRECTLY FROM 2008 MPU:
                *
          592   KK  SWFH-1
          593   BA   0.559
          594   PB    3.57
          595   LS       0    86.9
          596   UD   0.218
                *
          597   KK RSWFH-1
          598   KM  ROUTE SWFH-1 TO CSWFH-2
          599   KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
          600   KM  FACILITY # = APDF 0123
          601   KM  LINING = RCB
          602   RD    5355  0.0653   0.015       0    TRAP       5       0
                *
          603   KK  SWFH-2
          604   BA   0.534
          605   PB    3.49
          606   LS       0    91.9
          607   UD   0.245
                *
          608   KK CSWFH-2
          609   KM  COMBINE RSWFH-1 AND SWFH-2
          610   HC       2
                *
1                                       HEC-1 INPUT                                                    PAGE 17

        LINE    ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

          611   KKRCSWFH-2
          612   KM  ROUTE CSWFH-2 TO CSWFH-3
          613   KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
          614   KM  FACILITY # = APDF 0073
          615   KM  LINING = RCB
          616   RD    2070   0.041   0.015       0    TRAP      10       0
                *
          617   KK  SWFH-3
          618   BA   0.154
          619   PB    3.44
          620   LS       0    94.7
          621   UD   0.174
```

```
                *
      622       KK CSWFH-3
      623       KM  COMBINE RCSHFH-2 AND SWFH-3
      624       HC       2
                *
      625       KKRCSWFH-3
      626       KM  ROUTE CSWFH-3 TO CRSWFH-6
      627       KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
      628       KM  FACILITY # = APDF 0026, 0073
      629       KM  LINING = RCB
      630       RD    3100   0.041   0.015       0    TRAP      10       0
                *
      631       KK  SWFH-6
      632       BA   0.255
      633       PB    3.46
      634       LS       0    92.2
      635       UD   0.188
                *
      636       KK RSWFH-6
      637       KM  ROUTE SWFH-6 TO CSWFH-6
      638       KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS 6 BRANCH
      639       KM  FACILITY # = APD6 0000
      640       KM  LINING = RCB
      641       RD    2600  0.0615   0.015       0    TRAP       6       0
                *
      642       KK  SWFH-7
      643       BA   0.305
      644       PB    3.41
      645       LS       0    93.1
      646       UD   0.154
                *
1                                       HEC-1 INPUT                                          PAGE 18

     LINE       ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

      647       KK CSWFH-6
      648       KM  COMBINE RSWFH-6 AND SWFH-7
      649       HC       2
                *
      650       KK RCSWFH6
      651       KM  ROUTE CSWFH-6 TO CSWFH-7
      652       KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
      653       KM  FACILITY # = APDF 0000
      654       KM  LINING = RCB
      655       RD    1350   0.022   0.015       0    TRAP      12       0
                *
      656       KK CSWFH-7
      657       KM  COMBINE RCSWFH-3 AND RCSWFH6
      658       HC       2
                *
      659       KK  SWFH-4
      660       BA   0.117
      661       PB    3.55
      662       LS       0    84.7
      663       UD   0.162
                *
      664       KK RSWFH-4
      665       KM  ROUTE SWFH-4 TO CSWFH-5
      666       KM  FACILITY = ANGEL PARK - FAR HILLS DRIVE
      667       KM  FACILITY # = APFH 0144
      668       KM  LINING = RCB
      669       RD    4392   0.055   0.015       0    TRAP       7       0
                *
      670       KK  SWFH-5
      671       BA   0.259
      672       PB    3.50
      673       LS       0    91.4
      674       UD   0.188
                *
      675       KK CSWFH-5
      676       KM  COMBINE RSWFH-4 AND SWFH-5
      677       HC       2
                *
      678       KKRCSWFH-5
      679       KM  ROUTE CSWFH-5 TO CCSWFH-7
      680       KM  FACILITY = ANGEL PARK - FAR HILLS DRIVE
      681       KM  FACILITY # = APFH 0061, 0089
      682       KM  LINING = RCB
      683       RD    4120    0.02   0.015       0    TRAP       8       0
                *
1                                       HEC-1 INPUT                                          PAGE 19
```

```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 684          KK     ST3
 685          KM            FOX HILL
 686          KM            AREA    4.12      AC
 687          KM            Tlag     5.0     MIN (USE 5.0 MINUTES AS A MINIMUM)
 688          KM              CN    95.3
 689          BA  .00643
 690          PB    3.29
 691          LS       0    95.3
 692          UD    .050
              *

 693          KK   R/ST3
 694          KM   ROUTE THROUGH ST-FH (FAR HILLS) TO CP-FH
 695          RD    1905   0.053   0.016       0    TRAP       0      50
              *

 696          KK      AA
 697          KM
 698          KM            AREA   18.52      AC
 699          KM            Tlag    10.0     MIN
 700          KM              CN    93.8
 701          BA  .02894
 702          LS       0    93.8
 703          UD    .100
              *

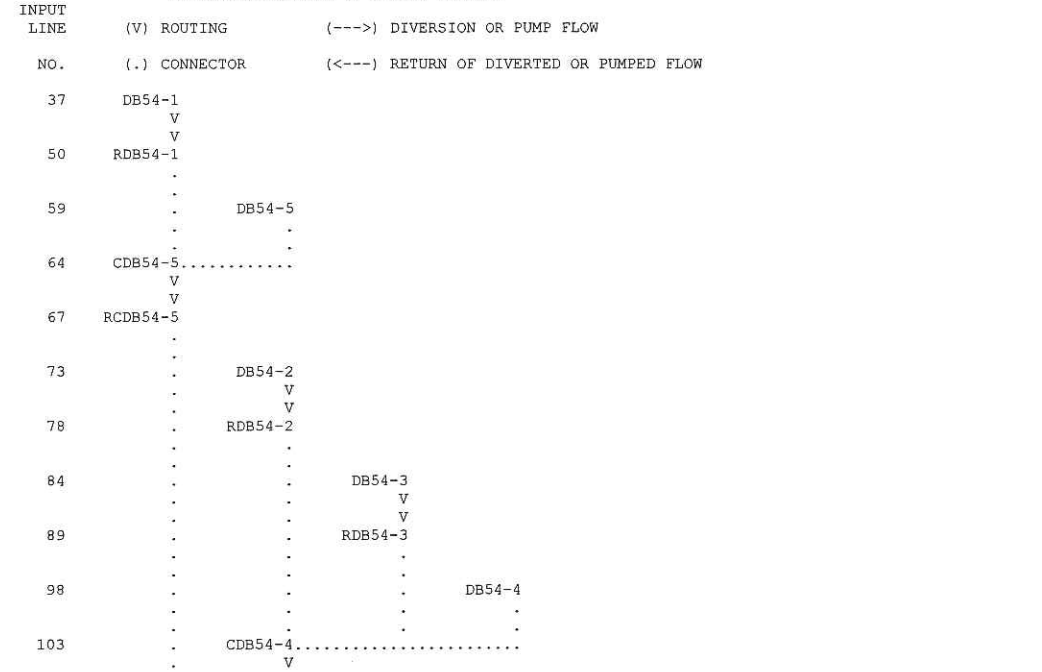
 704          KK    R/AA
 705          KM   ROUTE THROUGH STFH (FAR HILLS) TO CP-FH
 706          RD    1010   0.042   0.016       0    TRAP       0      50
              *

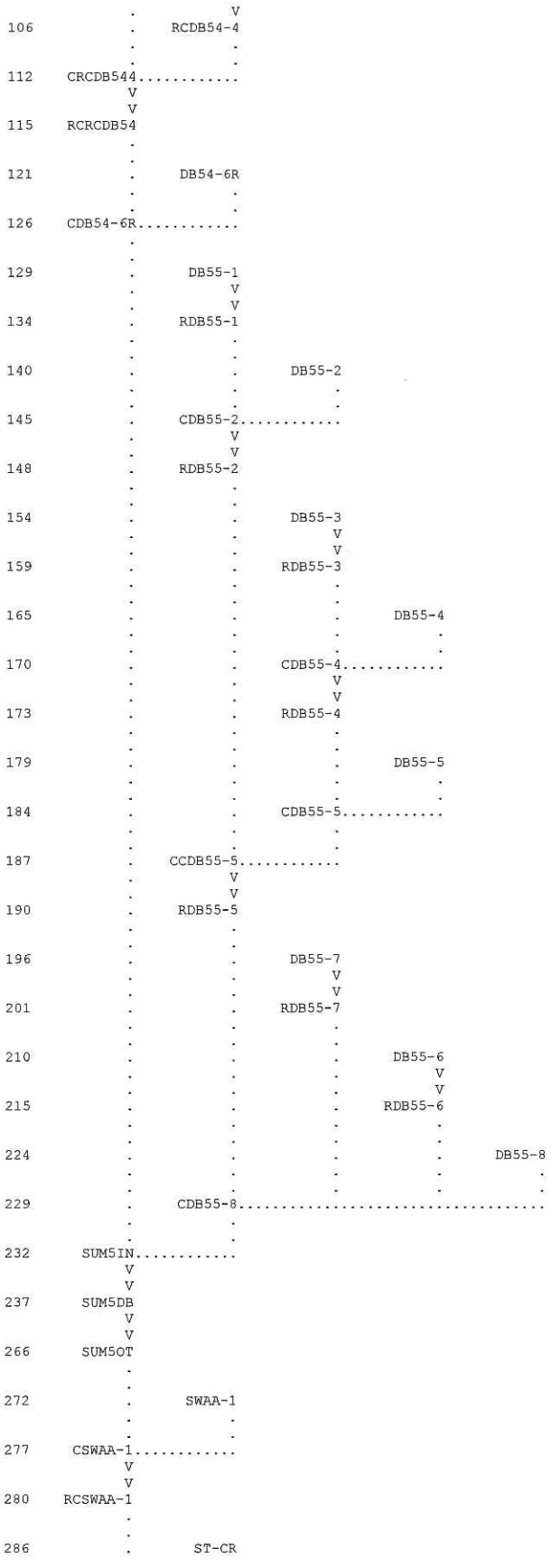
 707          KK   ST-FH
 708          KM
 709          KM    FAR HILLS AVENUE
 710          KM
 711          KM            AREA    13.1      AC
 712          KM            Tlag    12.8     MIN
 713          KM              CN    95.6
 714          BA  .02052
 715          LS       0    95.6
 716          UD    .128
              *

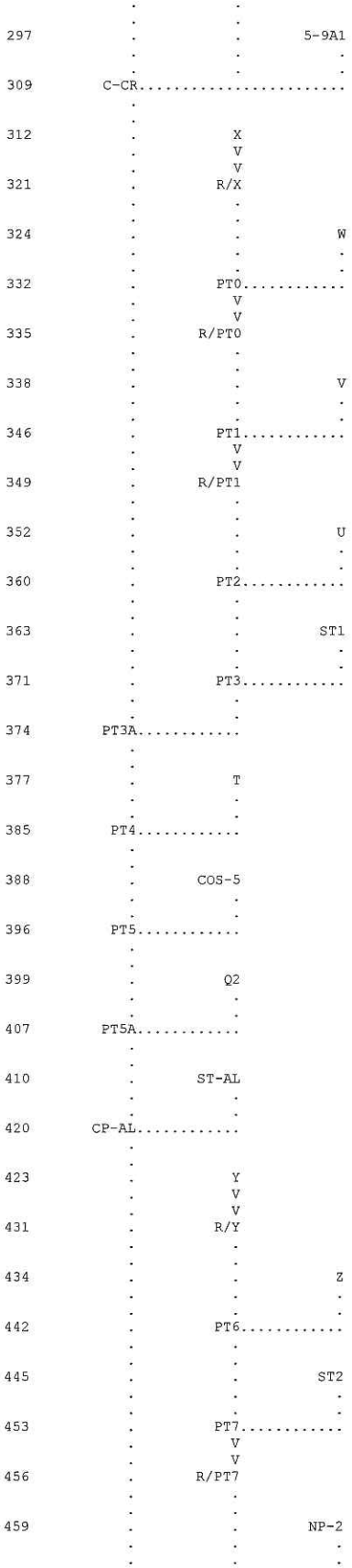
 717          KK   CP-FH
 718          KM   COMBINE CSWFH-5, ST3, F, AND ST5 (FAR HILLS DRIVE)
 719          HC       4
              *

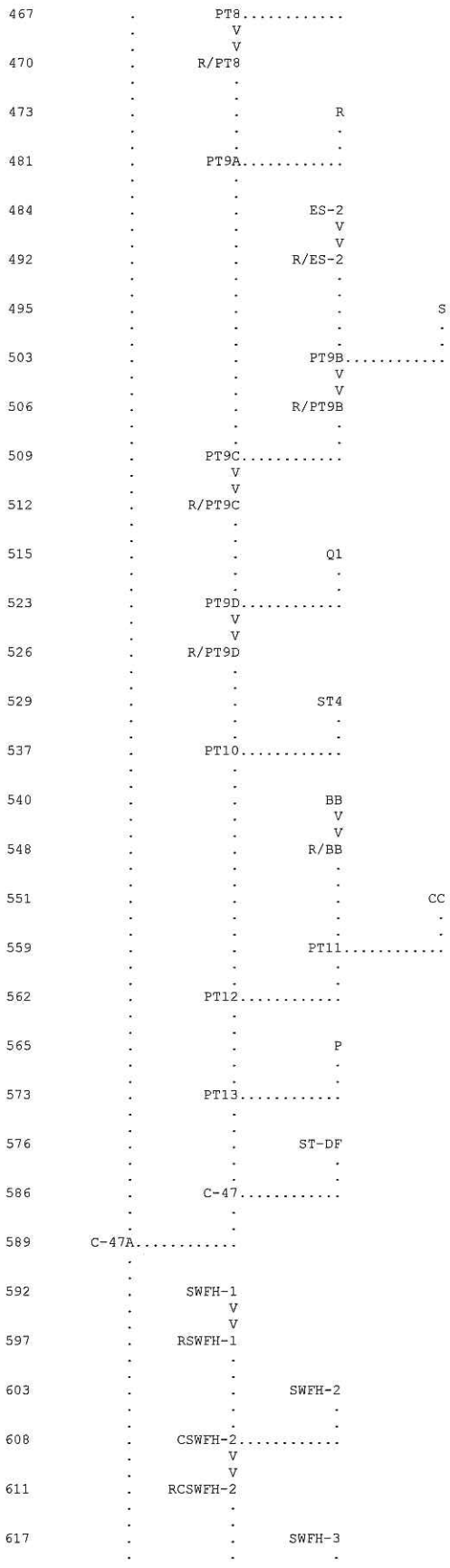
 720          KKCCSWFH-7
 721          KM  COMBINE CP-FH AND CSWFH-7
 722          HC       2
              *
 723          ZZ
1
```

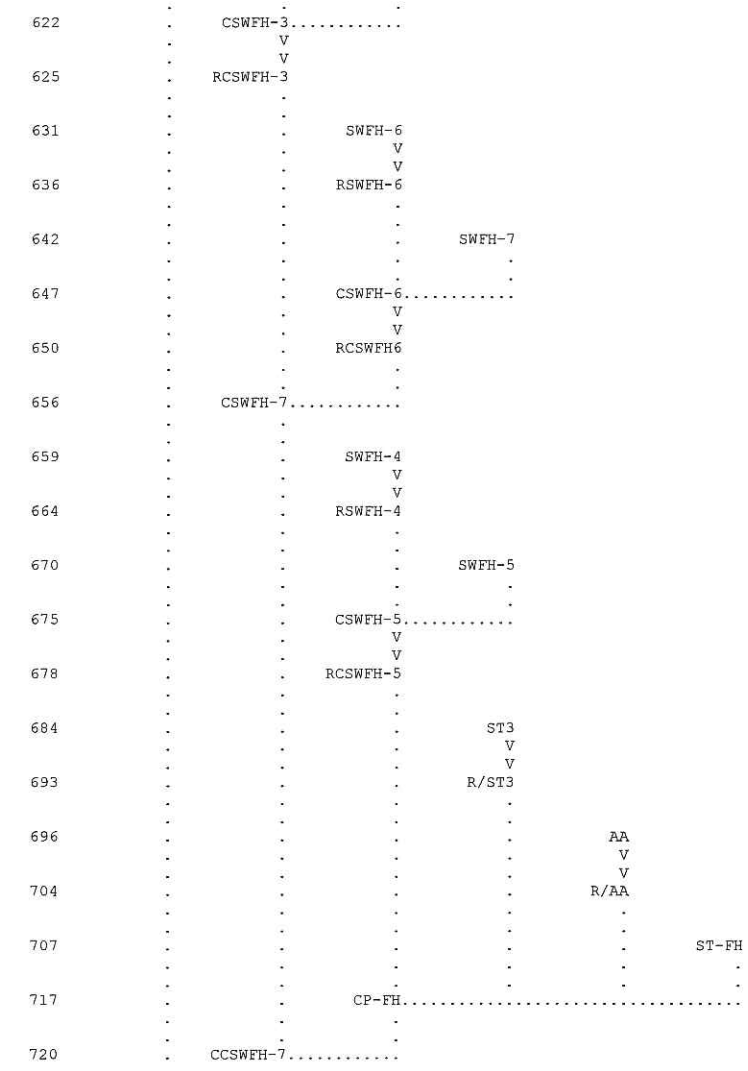
SCHEMATIC DIAGRAM OF STREAM NETWORK




106 RCDB54-4
112 CRCDB544
115 RCRCDB54
121 DB54-6R
126 CDB54-6R
129 DB55-1
134 RDB55-1
140 DB55-2
145 CDB55-2
148 RDB55-2
154 DB55-3
159 RDB55-3
165 DB55-4
170 CDB55-4
173 RDB55-4
179 DB55-5
184 CDB55-5
187 CCDB55-5
190 RDB55-5
196 DB55-7
201 RDB55-7
210 DB55-6
215 RDB55-6
224 DB55-8
229 CDB55-8
232 SUM5IN
237 SUM5DB
266 SUM5OT
272 SWAA-1
277 CSWAA-1
280 RCSWAA-1
286 ST-CR


297 5-9A1
309 C-CR
312 X
321 R/X
324 W
332 PT0
335 R/PT0
338 V
346 PT1
349 R/PT1
352 U
360 PT2
363 ST1
371 PT3
374 PT3A
377 T
385 PT4
388 COS-5
396 PT5
399 Q2
407 PT5A
410 ST-AL
420 CP-AL
423 Y
431 R/Y
434 Z
442 PT6
445 ST2
453 PT7
456 R/PT7
459 NP-2


467 PT8
V
V
470 R/PT8
473 R
481 PT9A
484 ES-2
V
V
492 R/ES-2
495 S
503 PT9B
V
V
506 R/PT9B
509 PT9C
V
V
512 R/PT9C
515 Q1
523 PT9D
V
V
526 R/PT9D
529 ST4
537 PT10
540 BB
V
V
548 R/BB
551 CC
559 PT11
562 PT12
565 P
573 PT13
576 ST-DF
586 C-47
589 C-47A
592 SWFH-1
V
V
597 RSWFH-1
603 SWFH-2
608 CSWFH-2
V
V
611 RCSWFH-2
617 SWFH-3



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN  1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   24JUL12  TIME  14:42:18   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*            (916) 756-1104             *
*                                       *
*****************************************
```

```
************************************************************
* ........................................................ *
* :                  SUMMERLIN VILLAGE 23B               : *
* :                  CONCEPTUAL STUDY UPDATE             : *
* :                  DEVELOPED ONSITE                    : *
* :                  DEVELOPED OFFSITE                   : *
* :......................................................: *
* :             RETURN PERIOD_ _ _ _10 & 100-YEAR        : *
* :             DISTRIBUTION_ _ _ _ 6-HOUR SDN3          : *
* :             PROJECT NO_ _ _ _ _ 620238.100           : *
* :             FILENAME_ _ _ _ _ _ V23B-ULT.H1          : *
* :             DATE_ _ _ _ _ _ _ _ 07/05/12             : *
* :             MODELED BY_ _ _ _ _ JAM/RRD              : *
* :......................................................: *
* :                                                      : *
* :......................................................: *
************************************************************
```

JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:

SQ.MI.	AREA	DARF
0.0 - 0.5		1.000
0.5 - 1.0		0.975
1.0 - 2.0		0.950
2.0 - 3.0		0.925
3.0 - 4.0		0.915
4.0 - 5.0		0.908
5.0 - 7.0		0.895
7.0 - 8.0		0.885

34 IO OUTPUT CONTROL VARIABLES

IPRNT	5	PRINT CONTROL
IPLOT	0	PLOT CONTROL
QSCAL	0.	HYDROGRAPH PLOT SCALE

IT HYDROGRAPH TIME DATA

NMIN		5	MINUTES IN COMPUTATION INTERVAL
IDATE	1	0	STARTING DATE
ITIME		0000	STARTING TIME
NQ		200	NUMBER OF HYDROGRAPH ORDINATES
NDDATE	1	0	ENDING DATE
NDTIME		1635	ENDING TIME
ICENT		19	CENTURY MARK

COMPUTATION INTERVAL .08 HOURS
TOTAL TIME BASE 16.58 HOURS

ENGLISH UNITS

DRAINAGE AREA	SQUARE MILES
PRECIPITATION DEPTH	INCHES
LENGTH, ELEVATION	FEET
FLOW	CUBIC FEET PER SECOND
STORAGE VOLUME	ACRE-FEET
SURFACE AREA	ACRES
TEMPERATURE	DEGREES FAHRENHEIT

JP MULTI-PLAN OPTION

NPLAN	1	NUMBER OF PLANS

JR MULTI-RATIO OPTION
RATIOS OF PRECIPITATION

1.00	.98	.95	.93	.92	.91	.89	.88	.55

*** *** *** *

1	0130	19	155.	*	1	0540	69	798.	*	1	0950	119	0.	*	1	1400	169	0.
1	0135	20	207.	*	1	0545	70	682.	*	1	0955	120	0.	*	1	1405	170	0.
1	0140	21	277.	*	1	0550	71	587.	*	1	1000	121	0.	*	1	1410	171	0.
1	0145	22	351.	*	1	0555	72	515.	*	1	1005	122	0.	*	1	1415	172	0.
1	0150	23	401.	*	1	0600	73	456.	*	1	1010	123	0.	*	1	1420	173	0.
1	0155	24	414.	*	1	0605	74	400.	*	1	1015	124	0.	*	1	1425	174	0.
1	0200	25	393.	*	1	0610	75	343.	*	1	1020	125	0.	*	1	1430	175	0.
1	0205	26	351.	*	1	0615	76	287.	*	1	1025	126	0.	*	1	1435	176	0.
1	0210	27	317.	*	1	0620	77	236.	*	1	1030	127	0.	*	1	1440	177	0.
1	0215	28	320.	*	1	0625	78	190.	*	1	1035	128	0.	*	1	1445	178	0.
1	0220	29	378.	*	1	0630	79	152.	*	1	1040	129	0.	*	1	1450	179	0.
1	0225	30	483.	*	1	0635	80	122.	*	1	1045	130	0.	*	1	1455	180	0.
1	0230	31	595.	*	1	0640	81	99.	*	1	1050	131	0.	*	1	1500	181	0.
1	0235	32	645.	*	1	0645	82	80.	*	1	1055	132	0.	*	1	1505	182	0.
1	0240	33	634.	*	1	0650	83	64.	*	1	1100	133	0.	*	1	1510	183	0.
1	0245	34	613.	*	1	0655	84	51.	*	1	1105	134	0.	*	1	1515	184	0.
1	0250	35	632.	*	1	0700	85	40.	*	1	1110	135	0.	*	1	1520	185	0.
1	0255	36	676.	*	1	0705	86	32.	*	1	1115	136	0.	*	1	1525	186	0.
1	0300	37	686.	*	1	0710	87	25.	*	1	1120	137	0.	*	1	1530	187	0.
1	0305	38	694.	*	1	0715	88	20.	*	1	1125	138	0.	*	1	1535	188	0.
1	0310	39	800.	*	1	0720	89	15.	*	1	1130	139	0.	*	1	1540	189	0.
1	0315	40	1168.	*	1	0725	90	12.	*	1	1135	140	0.	*	1	1545	190	0.
1	0320	41	2018.	*	1	0730	91	9.	*	1	1140	141	0.	*	1	1550	191	0.
1	0325	42	3517.	*	1	0735	92	7.	*	1	1145	142	0.	*	1	1555	192	0.
1	0330	43	5554.	*	1	0740	93	5.	*	1	1150	143	0.	*	1	1600	193	0.
1	0335	44	7416.	*	1	0745	94	4.	*	1	1155	144	0.	*	1	1605	194	0.
1	0340	45	8198.	*	1	0750	95	3.	*	1	1200	145	0.	*	1	1610	195	0.
1	0345	46	7953.	*	1	0755	96	2.	*	1	1205	146	0.	*	1	1615	196	0.
1	0350	47	7312.	*	1	0800	97	2.	*	1	1210	147	0.	*	1	1620	197	0.
1	0355	48	6606.	*	1	0805	98	1.	*	1	1215	148	0.	*	1	1625	198	0.
1	0400	49	5869.	*	1	0810	99	1.	*	1	1220	149	0.	*	1	1630	199	0.
1	0405	50	5240.	*	1	0815	100	1.	*	1	1225	150	0.	*	1	1635	200	0.

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)				
	(CFS)				
+ 8198.	3.67	1677.	610.	610.	610.
	(INCHES)	2.312	2.323	2.323	2.323
	(AC-FT)	832.	836.	836.	836.

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5IN
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .98

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0410	51	4489.	*	1		0820	101	1.	*	1		1230	151	0.
1		0005	2	0.	*	1		0415	52	3910.	*	1		0825	102	0.	*	1		1235	152	0.
1		0010	3	0.	*	1		0420	53	3356.	*	1		0830	103	0.	*	1		1240	153	0.
1		0015	4	0.	*	1		0425	54	2909.	*	1		0835	104	0.	*	1		1245	154	0.
1		0020	5	2.	*	1		0430	55	2618.	*	1		0840	105	0.	*	1		1250	155	0.
1		0025	6	10.	*	1		0435	56	2522.	*	1		0845	106	0.	*	1		1255	156	0.
1		0030	7	29.	*	1		0440	57	2569.	*	1		0850	107	0.	*	1		1300	157	0.
1		0035	8	54.	*	1		0445	58	2585.	*	1		0855	108	0.	*	1		1305	158	0.
1		0040	9	80.	*	1		0450	59	2510.	*	1		0900	109	0.	*	1		1310	159	0.
1		0045	10	102.	*	1		0455	60	2434.	*	1		0905	110	0.	*	1		1315	160	0.
1		0050	11	109.	*	1		0500	61	2371.	*	1		0910	111	0.	*	1		1320	161	0.
1		0055	12	98.	*	1		0505	62	2210.	*	1		0915	112	0.	*	1		1325	162	0.
1		0100	13	80.	*	1		0510	63	1960.	*	1		0920	113	0.	*	1		1330	163	0.
1		0105	14	66.	*	1		0515	64	1700.	*	1		0925	114	0.	*	1		1335	164	0.
1		0110	15	63.	*	1		0520	65	1456.	*	1		0930	115	0.	*	1		1340	165	0.
1		0115	16	70.	*	1		0525	66	1242.	*	1		0935	116	0.	*	1		1345	166	0.
1		0120	17	84.	*	1		0530	67	1062.	*	1		0940	117	0.	*	1		1350	167	0.
1		0125	18	107.	*	1		0535	68	909.	*	1		0945	118	0.	*	1		1355	168	0.
1		0130	19	142.	*	1		0540	69	777.	*	1		0950	119	0.	*	1		1400	169	0.
1		0135	20	191.	*	1		0545	70	664.	*	1		0955	120	0.	*	1		1405	170	0.
1		0140	21	256.	*	1		0550	71	571.	*	1		1000	121	0.	*	1		1410	171	0.
1		0145	22	325.	*	1		0555	72	501.	*	1		1005	122	0.	*	1		1415	172	0.
1		0150	23	373.	*	1		0600	73	444.	*	1		1010	123	0.	*	1		1420	173	0.
1		0155	24	386.	*	1		0605	74	390.	*	1		1015	124	0.	*	1		1425	174	0.
1		0200	25	369.	*	1		0610	75	334.	*	1		1020	125	0.	*	1		1430	175	0.
1		0205	26	332.	*	1		0615	76	280.	*	1		1025	126	0.	*	1		1435	176	0.
1		0210	27	299.	*	1		0620	77	230.	*	1		1030	127	0.	*	1		1440	177	0.
1		0215	28	302.	*	1		0625	78	185.	*	1		1035	128	0.	*	1		1445	178	0.
1		0220	29	355.	*	1		0630	79	149.	*	1		1040	129	0.	*	1		1450	179	0.
1		0225	30	454.	*	1		0635	80	120.	*	1		1045	130	0.	*	1		1455	180	0.
1		0230	31	561.	*	1		0640	81	97.	*	1		1050	131	0.	*	1		1500	181	0.
1		0235	32	612.	*	1		0645	82	78.	*	1		1055	132	0.	*	1		1505	182	0.
1		0240	33	603.	*	1		0650	83	62.	*	1		1100	133	0.	*	1		1510	183	0.
1		0245	34	587.	*	1		0655	84	50.	*	1		1105	134	0.	*	1		1515	184	0.
1		0250	35	603.	*	1		0700	85	39.	*	1		1110	135	0.	*	1		1520	185	0.
1		0255	36	640.	*	1		0705	86	31.	*	1		1115	136	0.	*	1		1525	186	0.
1		0300	37	653.	*	1		0710	87	24.	*	1		1120	137	0.	*	1		1530	187	0.
1		0305	38	661.	*	1		0715	88	19.	*	1		1125	138	0.	*	1		1535	188	0.
1		0310	39	763.	*	1		0720	89	15.	*	1		1130	139	0.	*	1		1540	189	0.

1	0315	40	1094.	*	1	0725	90	12.	*	1	1135	140	0.	*	1	1545	190	0.
1	0320	41	1900.	*	1	0730	91	9.	*	1	1140	141	0.	*	1	1550	191	0.
1	0325	42	3350.	*	1	0735	92	7.	*	1	1145	142	0.	*	1	1555	192	0.
1	0330	43	5318.	*	1	0740	93	5.	*	1	1150	143	0.	*	1	1600	193	0.
1	0335	44	7151.	*	1	0745	94	4.	*	1	1155	144	0.	*	1	1605	194	0.
1	0340	45	7992.	*	1	0750	95	3.	*	1	1200	145	0.	*	1	1610	195	0.
1	0345	46	7699.	*	1	0755	96	2.	*	1	1205	146	0.	*	1	1615	196	0.
1	0350	47	7072.	*	1	0800	97	2.	*	1	1210	147	0.	*	1	1620	197	0.
1	0355	48	6379.	*	1	0805	98	1.	*	1	1215	148	0.	*	1	1625	198	0.
1	0400	49	5657.	*	1	0810	99	1.	*	1	1220	149	0.	*	1	1630	199	0.
1	0405	50	5040.	*	1	0815	100	1.	*	1	1225	150	0.	*	1	1635	200	0.

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 7992.	3.67		1617.	588.	588.	588.
		(INCHES)	2.229	2.240	2.240	2.240
		(AC-FT)	802.	806.	806.	806.

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5IN
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .95

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0410	51	4350.	1		0820	101	1.	1		1230	151	0.
1		0005	2	0.	1		0415	52	3789.	1		0825	102	0.	1		1235	152	0.
1		0010	3	0.	1		0420	53	3249.	1		0830	103	0.	1		1240	153	0.
1		0015	4	0.	1		0425	54	2811.	1		0835	104	0.	1		1245	154	0.
1		0020	5	1.	1		0430	55	2530.	1		0840	105	0.	1		1250	155	0.
1		0025	6	8.	1		0435	56	2435.	1		0845	106	0.	1		1255	156	0.
1		0030	7	25.	1		0440	57	2483.	1		0850	107	0.	1		1300	157	0.
1		0035	8	47.	1		0445	58	2494.	1		0855	108	0.	1		1305	158	0.
1		0040	9	69.	1		0450	59	2426.	1		0900	109	0.	1		1310	159	0.
1		0045	10	87.	1		0455	60	2358.	1		0905	110	0.	1		1315	160	0.
1		0050	11	95.	1		0500	61	2296.	1		0910	111	0.	1		1320	161	0.
1		0055	12	86.	1		0505	62	2143.	1		0915	112	0.	1		1325	162	0.
1		0100	13	71.	1		0510	63	1903.	1		0920	113	0.	1		1330	163	0.
1		0105	14	59.	1		0515	64	1652.	1		0925	114	0.	1		1335	164	0.
1		0110	15	56.	1		0520	65	1415.	1		0930	115	0.	1		1340	165	0.
1		0115	16	63.	1		0525	66	1206.	1		0935	116	0.	1		1345	166	0.
1		0120	17	75.	1		0530	67	1032.	1		0940	117	0.	1		1350	167	0.
1		0125	18	97.	1		0535	68	884.	1		0945	118	0.	1		1355	168	0.
1		0130	19	130.	1		0540	69	756.	1		0950	119	0.	1		1400	169	0.
1		0135	20	176.	1		0545	70	646.	1		0955	120	0.	1		1405	170	0.
1		0140	21	236.	1		0550	71	557.	1		1000	121	0.	1		1410	171	0.
1		0145	22	301.	1		0555	72	487.	1		1005	122	0.	1		1415	172	0.
1		0150	23	348.	1		0600	73	432.	1		1010	123	0.	1		1420	173	0.
1		0155	24	362.	1		0605	74	379.	1		1015	124	0.	1		1425	174	0.
1		0200	25	346.	1		0610	75	325.	1		1020	125	0.	1		1430	175	0.
1		0205	26	311.	1		0615	76	273.	1		1025	126	0.	1		1435	176	0.
1		0210	27	281.	1		0620	77	225.	1		1030	127	0.	1		1440	177	0.
1		0215	28	283.	1		0625	78	181.	1		1035	128	0.	1		1445	178	0.
1		0220	29	333.	1		0630	79	145.	1		1040	129	0.	1		1450	179	0.
1		0225	30	427.	1		0635	80	117.	1		1045	130	0.	1		1455	180	0.
1		0230	31	528.	1		0640	81	95.	1		1050	131	0.	1		1500	181	0.
1		0235	32	576.	1		0645	82	76.	1		1055	132	0.	1		1505	182	0.
1		0240	33	573.	1		0650	83	61.	1		1100	133	0.	1		1510	183	0.
1		0245	34	557.	1		0655	84	49.	1		1105	134	0.	1		1515	184	0.
1		0250	35	571.	1		0700	85	39.	1		1110	135	0.	1		1520	185	0.
1		0255	36	609.	1		0705	86	30.	1		1115	136	0.	1		1525	186	0.
1		0300	37	621.	1		0710	87	24.	1		1120	137	0.	1		1530	187	0.
1		0305	38	632.	1		0715	88	19.	1		1125	138	0.	1		1535	188	0.
1		0310	39	726.	1		0720	89	15.	1		1130	139	0.	1		1540	189	0.
1		0315	40	1048.	1		0725	90	11.	1		1135	140	0.	1		1545	190	0.
1		0320	41	1830.	1		0730	91	9.	1		1140	141	0.	1		1550	191	0.
1		0325	42	3227.	1		0735	92	7.	1		1145	142	0.	1		1555	192	0.
1		0330	43	5109.	1		0740	93	5.	1		1150	143	0.	1		1600	193	0.
1		0335	44	6874.	1		0745	94	4.	1		1155	144	0.	1		1605	194	0.
1		0340	45	7640.	1		0750	95	3.	1		1200	145	0.	1		1610	195	0.
1		0345	46	7403.	1		0755	96	2.	1		1205	146	0.	1		1615	196	0.
1		0350	47	6834.	1		0800	97	2.	1		1210	147	0.	1		1620	197	0.
1		0355	48	6160.	1		0805	98	1.	1		1215	148	0.	1		1625	198	0.
1		0400	49	5468.	1		0810	99	1.	1		1220	149	0.	1		1630	199	0.
1		0405	50	4872.	1		0815	100	1.	1		1225	150	0.	1		1635	200	0.

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 7640.	3.67		1558.	566.	566.	566.
		(INCHES)	2.147	2.157	2.157	2.157
		(AC-FT)	772.	776.	776.	776.

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5IN
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .93

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0410	51	4225.	1		0820	101	1.	1		1230	151	0.
1		0005	2	0.	1		0415	52	3672.	1		0825	102	0.	1		1235	152	0.
1		0010	3	0.	1		0420	53	3146.	1		0830	103	0.	1		1240	153	0.
1		0015	4	0.	1		0425	54	2724.	1		0835	104	0.	1		1245	154	0.
1		0020	5	1.	1		0430	55	2450.	1		0840	105	0.	1		1250	155	0.
1		0025	6	7.	1		0435	56	2358.	1		0845	106	0.	1		1255	156	0.
1		0030	7	22.	1		0440	57	2402.	1		0850	107	0.	1		1300	157	0.
1		0035	8	41.	1		0445	58	2420.	1		0855	108	0.	1		1305	158	0.
1		0040	9	59.	1		0450	59	2359.	1		0900	109	0.	1		1310	159	0.
1		0045	10	75.	1		0455	60	2287.	1		0905	110	0.	1		1315	160	0.
1		0050	11	81.	1		0500	61	2227.	1		0910	111	0.	1		1320	161	0.
1		0055	12	75.	1		0505	62	2083.	1		0915	112	0.	1		1325	162	0.
1		0100	13	62.	1		0510	63	1848.	1		0920	113	0.	1		1330	163	0.
1		0105	14	51.	1		0515	64	1601.	1		0925	114	0.	1		1335	164	0.
1		0110	15	50.	1		0520	65	1371.	1		0930	115	0.	1		1340	165	0.
1		0115	16	56.	1		0525	66	1170.	1		0935	116	0.	1		1345	166	0.
1		0120	17	67.	1		0530	67	1001.	1		0940	117	0.	1		1350	167	0.
1		0125	18	87.	1		0535	68	858.	1		0945	118	0.	1		1355	168	0.
1		0130	19	118.	1		0540	69	735.	1		0950	119	0.	1		1400	169	0.
1		0135	20	161.	1		0545	70	628.	1		0955	120	0.	1		1405	170	0.
1		0140	21	217.	1		0550	71	541.	1		1000	121	0.	1		1410	171	0.
1		0145	22	277.	1		0555	72	473.	1		1005	122	0.	1		1415	172	0.
1		0150	23	321.	1		0600	73	419.	1		1010	123	0.	1		1420	173	0.
1		0155	24	336.	1		0605	74	368.	1		1015	124	0.	1		1425	174	0.
1		0200	25	322.	1		0610	75	316.	1		1020	125	0.	1		1430	175	0.
1		0205	26	291.	1		0615	76	266.	1		1025	126	0.	1		1435	176	0.
1		0210	27	264.	1		0620	77	219.	1		1030	127	0.	1		1440	177	0.
1		0215	28	268.	1		0625	78	177.	1		1035	128	0.	1		1445	178	0.
1		0220	29	315.	1		0630	79	142.	1		1040	129	0.	1		1450	179	0.
1		0225	30	400.	1		0635	80	114.	1		1045	130	0.	1		1455	180	0.
1		0230	31	493.	1		0640	81	92.	1		1050	131	0.	1		1500	181	0.
1		0235	32	543.	1		0645	82	75.	1		1055	132	0.	1		1505	182	0.
1		0240	33	540.	1		0650	83	60.	1		1100	133	0.	1		1510	183	0.
1		0245	34	529.	1		0655	84	48.	1		1105	134	0.	1		1515	184	0.
1		0250	35	542.	1		0700	85	38.	1		1110	135	0.	1		1520	185	0.
1		0255	36	574.	1		0705	86	30.	1		1115	136	0.	1		1525	186	0.
1		0300	37	590.	1		0710	87	23.	1		1120	137	0.	1		1530	187	0.
1		0305	38	601.	1		0715	88	18.	1		1125	138	0.	1		1535	188	0.
1		0310	39	691.	1		0720	89	14.	1		1130	139	0.	1		1540	189	0.
1		0315	40	991.	1		0725	90	11.	1		1135	140	0.	1		1545	190	0.
1		0320	41	1715.	1		0730	91	9.	1		1140	141	0.	1		1550	191	0.
1		0325	42	3033.	1		0735	92	7.	1		1145	142	0.	1		1555	192	0.
1		0330	43	4864.	1		0740	93	5.	1		1150	143	0.	1		1600	193	0.
1		0335	44	6576.	1		0745	94	4.	1		1155	144	0.	1		1605	194	0.
1		0340	45	7331.	1		0750	95	3.	1		1200	145	0.	1		1610	195	0.
1		0345	46	7137.	1		0755	96	2.	1		1205	146	0.	1		1615	196	0.
1		0350	47	6595.	1		0800	97	2.	1		1210	147	0.	1		1620	197	0.
1		0355	48	5969.	1		0805	98	1.	1		1215	148	0.	1		1625	198	0.
1		0400	49	5304.	1		0810	99	1.	1		1220	149	0.	1		1630	199	0.
1		0405	50	4742.	1		0815	100	1.	1		1225	150	0.	1		1635	200	0.

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)				
		(CFS)			
+ 7331.	3.67	1499.	545.	545.	545.
		(INCHES) 2.067	2.076	2.076	2.076
		(AC-FT) 743.	747.	747.	747.

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5IN
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .92

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0410	51	4145.	1		0820	101	1.	1		1230	151	0.
1		0005	2	0.	1		0415	52	3616.	1		0825	102	0.	1		1235	152	0.
1		0010	3	0.	1		0420	53	3107.	1		0830	103	0.	1		1240	153	0.
1		0015	4	0.	1		0425	54	2694.	1		0835	104	0.	1		1245	154	0.
1		0020	5	1.	1		0430	55	2422.	1		0840	105	0.	1		1250	155	0.
1		0025	6	6.	1		0435	56	2328.	1		0845	106	0.	1		1255	156	0.
1		0030	7	20.	1		0440	57	2364.	1		0850	107	0.	1		1300	157	0.

1	0035	8	38.	*	1	0445	58	2385.	*	1	0855	108	0.	*	1	1305	158	0.
1	0040	9	55.	*	1	0450	59	2320.	*	1	0900	109	0.	*	1	1310	159	0.
1	0045	10	70.	*	1	0455	60	2257.	*	1	0905	110	0.	*	1	1315	160	0.
1	0050	11	76.	*	1	0500	61	2195.	*	1	0910	111	0.	*	1	1320	161	0.
1	0055	12	70.	*	1	0505	62	2055.	*	1	0915	112	0.	*	1	1325	162	0.
1	0100	13	58.	*	1	0510	63	1826.	*	1	0920	113	0.	*	1	1330	163	0.
1	0105	14	48.	*	1	0515	64	1583.	*	1	0925	114	0.	*	1	1335	164	0.
1	0110	15	47.	*	1	0520	65	1358.	*	1	0930	115	0.	*	1	1340	165	0.
1	0115	16	53.	*	1	0525	66	1160.	*	1	0935	116	0.	*	1	1345	166	0.
1	0120	17	64.	*	1	0530	67	992.	*	1	0940	117	0.	*	1	1350	167	0.
1	0125	18	83.	*	1	0535	68	849.	*	1	0945	118	0.	*	1	1355	168	0.
1	0130	19	113.	*	1	0540	69	726.	*	1	0950	119	0.	*	1	1400	169	0.
1	0135	20	154.	*	1	0545	70	620.	*	1	0955	120	0.	*	1	1405	170	0.
1	0140	21	208.	*	1	0550	71	534.	*	1	1000	121	0.	*	1	1410	171	0.
1	0145	22	268.	*	1	0555	72	467.	*	1	1005	122	0.	*	1	1415	172	0.
1	0150	23	311.	*	1	0600	73	413.	*	1	1010	123	0.	*	1	1420	173	0.
1	0155	24	326.	*	1	0605	74	363.	*	1	1015	124	0.	*	1	1425	174	0.
1	0200	25	314.	*	1	0610	75	312.	*	1	1020	125	0.	*	1	1430	175	0.
1	0205	26	283.	*	1	0615	76	263.	*	1	1025	126	0.	*	1	1435	176	0.
1	0210	27	257.	*	1	0620	77	216.	*	1	1030	127	0.	*	1	1440	177	0.
1	0215	28	260.	*	1	0625	78	175.	*	1	1035	128	0.	*	1	1445	178	0.
1	0220	29	306.	*	1	0630	79	140.	*	1	1040	129	0.	*	1	1450	179	0.
1	0225	30	391.	*	1	0635	80	113.	*	1	1045	130	0.	*	1	1455	180	0.
1	0230	31	481.	*	1	0640	81	91.	*	1	1050	131	0.	*	1	1500	181	0.
1	0235	32	531.	*	1	0645	82	74.	*	1	1055	132	0.	*	1	1505	182	0.
1	0240	33	530.	*	1	0650	83	59.	*	1	1100	133	0.	*	1	1510	183	0.
1	0245	34	517.	*	1	0655	84	47.	*	1	1105	134	0.	*	1	1515	184	0.
1	0250	35	530.	*	1	0700	85	38.	*	1	1110	135	0.	*	1	1520	185	0.
1	0255	36	562.	*	1	0705	86	30.	*	1	1115	136	0.	*	1	1525	186	0.
1	0300	37	576.	*	1	0710	87	23.	*	1	1120	137	0.	*	1	1530	187	0.
1	0305	38	588.	*	1	0715	88	18.	*	1	1125	138	0.	*	1	1535	188	0.
1	0310	39	674.	*	1	0720	89	14.	*	1	1130	139	0.	*	1	1540	189	0.
1	0315	40	970.	*	1	0725	90	11.	*	1	1135	140	0.	*	1	1545	190	0.
1	0320	41	1691.	*	1	0730	91	9.	*	1	1140	141	0.	*	1	1550	191	0.
1	0325	42	2998.	*	1	0735	92	7.	*	1	1145	142	0.	*	1	1555	192	0.
1	0330	43	4791.	*	1	0740	93	5.	*	1	1150	143	0.	*	1	1600	193	0.
1	0335	44	6498.	*	1	0745	94	4.	*	1	1155	144	0.	*	1	1605	194	0.
1	0340	45	7250.	*	1	0750	95	3.	*	1	1200	145	0.	*	1	1610	195	0.
1	0345	46	7047.	*	1	0755	96	2.	*	1	1205	146	0.	*	1	1615	196	0.
1	0350	47	6505.	*	1	0800	97	2.	*	1	1210	147	0.	*	1	1620	197	0.
1	0355	48	5868.	*	1	0805	98	1.	*	1	1215	148	0.	*	1	1625	198	0.
1	0400	49	5210.	*	1	0810	99	1.	*	1	1220	149	0.	*	1	1630	199	0.
1	0405	50	4642.	*	1	0815	100	1.	*	1	1225	150	0.	*	1	1635	200	0.

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)				
		(CFS)			
+ 7250.	3.67	1477.	537.	537.	537.
		(INCHES) 2.035	2.044	2.044	2.044
		(AC-FT) 732.	735.	735.	735.

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5IN
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .91

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0410	51	4096.	*	1		0820	101	1.	*	1		1230	151	0.
1		0005	2	0.	*	1		0415	52	3577.	*	1		0825	102	0.	*	1		1235	152	0.
1		0010	3	0.	*	1		0420	53	3072.	*	1		0830	103	0.	*	1		1240	153	0.
1		0015	4	0.	*	1		0425	54	2667.	*	1		0835	104	0.	*	1		1245	154	0.
1		0020	5	1.	*	1		0430	55	2403.	*	1		0840	105	0.	*	1		1250	155	0.
1		0025	6	6.	*	1		0435	56	2307.	*	1		0845	106	0.	*	1		1255	156	0.
1		0030	7	20.	*	1		0440	57	2343.	*	1		0850	107	0.	*	1		1300	157	0.
1		0035	8	37.	*	1		0445	58	2371.	*	1		0855	108	0.	*	1		1305	158	0.
1		0040	9	53.	*	1		0450	59	2309.	*	1		0900	109	0.	*	1		1310	159	0.
1		0045	10	66.	*	1		0455	60	2240.	*	1		0905	110	0.	*	1		1315	160	0.
1		0050	11	73.	*	1		0500	61	2177.	*	1		0910	111	0.	*	1		1320	161	0.
1		0055	12	67.	*	1		0505	62	2036.	*	1		0915	112	0.	*	1		1325	162	0.
1		0100	13	56.	*	1		0510	63	1811.	*	1		0920	113	0.	*	1		1330	163	0.
1		0105	14	46.	*	1		0515	64	1568.	*	1		0925	114	0.	*	1		1335	164	0.
1		0110	15	45.	*	1		0520	65	1343.	*	1		0930	115	0.	*	1		1340	165	0.
1		0115	16	51.	*	1		0525	66	1148.	*	1		0935	116	0.	*	1		1345	166	0.
1		0120	17	62.	*	1		0530	67	983.	*	1		0940	117	0.	*	1		1350	167	0.
1		0125	18	81.	*	1		0535	68	842.	*	1		0945	118	0.	*	1		1355	168	0.
1		0130	19	109.	*	1		0540	69	720.	*	1		0950	119	0.	*	1		1400	169	0.
1		0135	20	150.	*	1		0545	70	615.	*	1		0955	120	0.	*	1		1405	170	0.
1		0140	21	203.	*	1		0550	71	530.	*	1		1000	121	0.	*	1		1410	171	0.
1		0145	22	262.	*	1		0555	72	464.	*	1		1005	122	0.	*	1		1415	172	0.
1		0150	23	305.	*	1		0600	73	411.	*	1		1010	123	0.	*	1		1420	173	0.
1		0155	24	319.	*	1		0605	74	361.	*	1		1015	124	0.	*	1		1425	174	0.
1		0200	25	307.	*	1		0610	75	310.	*	1		1020	125	0.	*	1		1430	175	0.
1		0205	26	278.	*	1		0615	76	261.	*	1		1025	126	0.	*	1		1435	176	0.
1		0210	27	252.	*	1		0620	77	215.	*	1		1030	127	0.	*	1		1440	177	0.
1		0215	28	254.	*	1		0625	78	173.	*	1		1035	128	0.	*	1		1445	178	0.

1	0220	29	299.	*	1	0630	79	139.	*	1	1040	129	0.	*	1	1450	179	0.
1	0225	30	383.	*	1	0635	80	112.	*	1	1045	130	0.	*	1	1455	180	0.
1	0230	31	474.	*	1	0640	81	91.	*	1	1050	131	0.	*	1	1500	181	0.
1	0235	32	523.	*	1	0645	82	73.	*	1	1055	132	0.	*	1	1505	182	0.
1	0240	33	523.	*	1	0650	83	59.	*	1	1100	133	0.	*	1	1510	183	0.
1	0245	34	509.	*	1	0655	84	47.	*	1	1105	134	0.	*	1	1515	184	0.
1	0250	35	520.	*	1	0700	85	37.	*	1	1110	135	0.	*	1	1520	185	0.
1	0255	36	553.	*	1	0705	86	29.	*	1	1115	136	0.	*	1	1525	186	0.
1	0300	37	567.	*	1	0710	87	23.	*	1	1120	137	0.	*	1	1530	187	0.
1	0305	38	578.	*	1	0715	88	18.	*	1	1125	138	0.	*	1	1535	188	0.
1	0310	39	661.	*	1	0720	89	14.	*	1	1130	139	0.	*	1	1540	189	0.
1	0315	40	945.	*	1	0725	90	11.	*	1	1135	140	0.	*	1	1545	190	0.
1	0320	41	1653.	*	1	0730	91	8.	*	1	1140	141	0.	*	1	1550	191	0.
1	0325	42	2956.	*	1	0735	92	7.	*	1	1145	142	0.	*	1	1555	192	0.
1	0330	43	4724.	*	1	0740	93	5.	*	1	1150	143	0.	*	1	1600	193	0.
1	0335	44	6415.	*	1	0745	94	4.	*	1	1155	144	0.	*	1	1605	194	0.
1	0340	45	7215.	*	1	0750	95	3.	*	1	1200	145	0.	*	1	1610	195	0.
1	0345	46	7001.	*	1	0755	96	2.	*	1	1205	146	0.	*	1	1615	196	0.
1	0350	47	6434.	*	1	0800	97	2.	*	1	1210	147	0.	*	1	1620	197	0.
1	0355	48	5807.	*	1	0805	98	1.	*	1	1215	148	0.	*	1	1625	198	0.
1	0400	49	5156.	*	1	0810	99	1.	*	1	1220	149	0.	*	1	1630	199	0.
1	0405	50	4594.	*	1	0815	100	1.	*	1	1225	150	0.	*	1	1635	200	0.
				*					*					*					

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)				
		(CFS)			
+ 7215.	3.67	1461.	531.	531.	531.
		(INCHES) 2.014	2.022	2.022	2.022
		(AC-FT) 724.	727.	727.	727.

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5IN
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .89

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0410	51	4039.	*	1		0820	101	1.	*	1		1230	151	0.
1		0005	2	0.	*	1		0415	52	3519.	*	1		0825	102	0.	*	1		1235	152	0.
1		0010	3	0.	*	1		0420	53	3021.	*	1		0830	103	0.	*	1		1240	153	0.
1		0015	4	0.	*	1		0425	54	2616.	*	1		0835	104	0.	*	1		1245	154	0.
1		0020	5	1.	*	1		0430	55	2353.	*	1		0840	105	0.	*	1		1250	155	0.
1		0025	6	6.	*	1		0435	56	2262.	*	1		0845	106	0.	*	1		1255	156	0.
1		0030	7	18.	*	1		0440	57	2303.	*	1		0850	107	0.	*	1		1300	157	0.
1		0035	8	34.	*	1		0445	58	2322.	*	1		0855	108	0.	*	1		1305	158	0.
1		0040	9	48.	*	1		0450	59	2262.	*	1		0900	109	0.	*	1		1310	159	0.
1		0045	10	60.	*	1		0455	60	2197.	*	1		0905	110	0.	*	1		1315	160	0.
1		0050	11	66.	*	1		0500	61	2139.	*	1		0910	111	0.	*	1		1320	161	0.
1		0055	12	61.	*	1		0505	62	2006.	*	1		0915	112	0.	*	1		1325	162	0.
1		0100	13	51.	*	1		0510	63	1780.	*	1		0920	113	0.	*	1		1330	163	0.
1		0105	14	43.	*	1		0515	64	1543.	*	1		0925	114	0.	*	1		1335	164	0.
1		0110	15	42.	*	1		0520	65	1323.	*	1		0930	115	0.	*	1		1340	165	0.
1		0115	16	48.	*	1		0525	66	1130.	*	1		0935	116	0.	*	1		1345	166	0.
1		0120	17	58.	*	1		0530	67	966.	*	1		0940	117	0.	*	1		1350	167	0.
1		0125	18	76.	*	1		0535	68	828.	*	1		0945	118	0.	*	1		1355	168	0.
1		0130	19	104.	*	1		0540	69	709.	*	1		0950	119	0.	*	1		1400	169	0.
1		0135	20	143.	*	1		0545	70	606.	*	1		0955	120	0.	*	1		1405	170	0.
1		0140	21	193.	*	1		0550	71	522.	*	1		1000	121	0.	*	1		1410	171	0.
1		0145	22	249.	*	1		0555	72	456.	*	1		1005	122	0.	*	1		1415	172	0.
1		0150	23	291.	*	1		0600	73	404.	*	1		1010	123	0.	*	1		1420	173	0.
1		0155	24	305.	*	1		0605	74	355.	*	1		1015	124	0.	*	1		1425	174	0.
1		0200	25	294.	*	1		0610	75	305.	*	1		1020	125	0.	*	1		1430	175	0.
1		0205	26	268.	*	1		0615	76	257.	*	1		1025	126	0.	*	1		1435	176	0.
1		0210	27	244.	*	1		0620	77	212.	*	1		1030	127	0.	*	1		1440	177	0.
1		0215	28	247.	*	1		0625	78	171.	*	1		1035	128	0.	*	1		1445	178	0.
1		0220	29	289.	*	1		0630	79	138.	*	1		1040	129	0.	*	1		1450	179	0.
1		0225	30	369.	*	1		0635	80	111.	*	1		1045	130	0.	*	1		1455	180	0.
1		0230	31	455.	*	1		0640	81	90.	*	1		1050	131	0.	*	1		1500	181	0.
1		0235	32	501.	*	1		0645	82	73.	*	1		1055	132	0.	*	1		1505	182	0.
1		0240	33	503.	*	1		0650	83	58.	*	1		1100	133	0.	*	1		1510	183	0.
1		0245	34	494.	*	1		0655	84	46.	*	1		1105	134	0.	*	1		1515	184	0.
1		0250	35	503.	*	1		0700	85	37.	*	1		1110	135	0.	*	1		1520	185	0.
1		0255	36	536.	*	1		0705	86	29.	*	1		1115	136	0.	*	1		1525	186	0.
1		0300	37	552.	*	1		0710	87	23.	*	1		1120	137	0.	*	1		1530	187	0.
1		0305	38	563.	*	1		0715	88	18.	*	1		1125	138	0.	*	1		1535	188	0.
1		0310	39	647.	*	1		0720	89	14.	*	1		1130	139	0.	*	1		1540	189	0.
1		0315	40	917.	*	1		0725	90	11.	*	1		1135	140	0.	*	1		1545	190	0.
1		0320	41	1587.	*	1		0730	91	8.	*	1		1140	141	0.	*	1		1550	191	0.
1		0325	42	2843.	*	1		0735	92	6.	*	1		1145	142	0.	*	1		1555	192	0.
1		0330	43	4600.	*	1		0740	93	5.	*	1		1150	143	0.	*	1		1600	193	0.
1		0335	44	6236.	*	1		0745	94	4.	*	1		1155	144	0.	*	1		1605	194	0.
1		0340	45	7001.	*	1		0750	95	3.	*	1		1200	145	0.	*	1		1610	195	0.
1		0345	46	6829.	*	1		0755	96	2.	*	1		1205	146	0.	*	1		1615	196	0.
1		0350	47	6312.	*	1		0800	97	2.	*	1		1210	147	0.	*	1		1620	197	0.
1		0355	48	5708.	*	1		0805	98	1.	*	1		1215	148	0.	*	1		1625	198	0.
1		0400	49	5070.	*	1		0810	99	1.	*	1		1220	149	0.	*	1		1630	199	0.

1	0405	50	4530.	*	1	0815	100	1.	*	1	1225	150	0.	*	1	1635	200	0.	

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 7001.	3.67		1428.	519.	519.	519.
		(INCHES)	1.969	1.977	1.977	1.977
		(AC-FT)	708.	711.	711.	711.

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5IN
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .88

DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW	*	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	*	1		0410	51	3992.	*	1		0820	101	1.	*	1		1230	151	0.
1		0005	2	0.	*	1		0415	52	3477.	*	1		0825	102	0.	*	1		1235	152	0.
1		0010	3	0.	*	1		0420	53	2984.	*	1		0830	103	0.	*	1		1240	153	0.
1		0015	4	0.	*	1		0425	54	2586.	*	1		0835	104	0.	*	1		1245	154	0.
1		0020	5	1.	*	1		0430	55	2321.	*	1		0840	105	0.	*	1		1250	155	0.
1		0025	6	5.	*	1		0435	56	2225.	*	1		0845	106	0.	*	1		1255	156	0.
1		0030	7	17.	*	1		0440	57	2262.	*	1		0850	107	0.	*	1		1300	157	0.
1		0035	8	32.	*	1		0445	58	2284.	*	1		0855	108	0.	*	1		1305	158	0.
1		0040	9	45.	*	1		0450	59	2225.	*	1		0900	109	0.	*	1		1310	159	0.
1		0045	10	56.	*	1		0455	60	2166.	*	1		0905	110	0.	*	1		1315	160	0.
1		0050	11	61.	*	1		0500	61	2110.	*	1		0910	111	0.	*	1		1320	161	0.
1		0055	12	57.	*	1		0505	62	1973.	*	1		0915	112	0.	*	1		1325	162	0.
1		0100	13	48.	*	1		0510	63	1758.	*	1		0920	113	0.	*	1		1330	163	0.
1		0105	14	40.	*	1		0515	64	1525.	*	1		0925	114	0.	*	1		1335	164	0.
1		0110	15	40.	*	1		0520	65	1308.	*	1		0930	115	0.	*	1		1340	165	0.
1		0115	16	45.	*	1		0525	66	1119.	*	1		0935	116	0.	*	1		1345	166	0.
1		0120	17	55.	*	1		0530	67	958.	*	1		0940	117	0.	*	1		1350	167	0.
1		0125	18	72.	*	1		0535	68	819.	*	1		0945	118	0.	*	1		1355	168	0.
1		0130	19	99.	*	1		0540	69	700.	*	1		0950	119	0.	*	1		1400	169	0.
1		0135	20	137.	*	1		0545	70	598.	*	1		0955	120	0.	*	1		1405	170	0.
1		0140	21	185.	*	1		0550	71	514.	*	1		1000	121	0.	*	1		1410	171	0.
1		0145	22	239.	*	1		0555	72	449.	*	1		1005	122	0.	*	1		1415	172	0.
1		0150	23	281.	*	1		0600	73	399.	*	1		1010	123	0.	*	1		1420	173	0.
1		0155	24	295.	*	1		0605	74	349.	*	1		1015	124	0.	*	1		1425	174	0.
1		0200	25	286.	*	1		0610	75	300.	*	1		1020	125	0.	*	1		1430	175	0.
1		0205	26	260.	*	1		0615	76	254.	*	1		1025	126	0.	*	1		1435	176	0.
1		0210	27	237.	*	1		0620	77	209.	*	1		1030	127	0.	*	1		1440	177	0.
1		0215	28	240.	*	1		0625	78	169.	*	1		1035	128	0.	*	1		1445	178	0.
1		0220	29	281.	*	1		0630	79	136.	*	1		1040	129	0.	*	1		1450	179	0.
1		0225	30	358.	*	1		0635	80	109.	*	1		1045	130	0.	*	1		1455	180	0.
1		0230	31	443.	*	1		0640	81	89.	*	1		1050	131	0.	*	1		1500	181	0.
1		0235	32	490.	*	1		0645	82	72.	*	1		1055	132	0.	*	1		1505	182	0.
1		0240	33	490.	*	1		0650	83	57.	*	1		1100	133	0.	*	1		1510	183	0.
1		0245	34	480.	*	1		0655	84	46.	*	1		1105	134	0.	*	1		1515	184	0.
1		0250	35	490.	*	1		0700	85	36.	*	1		1110	135	0.	*	1		1520	185	0.
1		0255	36	525.	*	1		0705	86	29.	*	1		1115	136	0.	*	1		1525	186	0.
1		0300	37	542.	*	1		0710	87	22.	*	1		1120	137	0.	*	1		1530	187	0.
1		0305	38	549.	*	1		0715	88	18.	*	1		1125	138	0.	*	1		1535	188	0.
1		0310	39	625.	*	1		0720	89	14.	*	1		1130	139	0.	*	1		1540	189	0.
1		0315	40	894.	*	1		0725	90	11.	*	1		1135	140	0.	*	1		1545	190	0.
1		0320	41	1551.	*	1		0730	91	8.	*	1		1140	141	0.	*	1		1550	191	0.
1		0325	42	2766.	*	1		0735	92	6.	*	1		1145	142	0.	*	1		1555	192	0.
1		0330	43	4496.	*	1		0740	93	5.	*	1		1150	143	0.	*	1		1600	193	0.
1		0335	44	6145.	*	1		0745	94	4.	*	1		1155	144	0.	*	1		1605	194	0.
1		0340	45	6898.	*	1		0750	95	3.	*	1		1200	145	0.	*	1		1610	195	0.
1		0345	46	6712.	*	1		0755	96	2.	*	1		1205	146	0.	*	1		1615	196	0.
1		0350	47	6215.	*	1		0800	97	2.	*	1		1210	147	0.	*	1		1620	197	0.
1		0355	48	5635.	*	1		0805	98	1.	*	1		1215	148	0.	*	1		1625	198	0.
1		0400	49	5002.	*	1		0810	99	1.	*	1		1220	149	0.	*	1		1630	199	0.
1		0405	50	4471.	*	1		0815	100	1.	*	1		1225	150	0.	*	1		1635	200	0.

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 6898.	3.67		1405.	511.	511.	511.
		(INCHES)	1.937	1.945	1.945	1.945
		(AC-FT)	697.	700.	700.	700.

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5IN
SUM OF 2 HYDROGRAPHS
PLAN 1, RATIO = .55

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1		0000	1	0.	1		0410	51	2044.	1		0820	101	1.	1		1230	151	0.
1		0005	2	0.	1		0415	52	1813.	1		0825	102	0.	1		1235	152	0.
1		0010	3	0.	1		0420	53	1579.	1		0830	103	0.	1		1240	153	0.
1		0015	4	0.	1		0425	54	1375.	1		0835	104	0.	1		1245	154	0.
1		0020	5	0.	1		0430	55	1231.	1		0840	105	0.	1		1250	155	0.
1		0025	6	0.	1		0435	56	1162.	1		0845	106	0.	1		1255	156	0.
1		0030	7	0.	1		0440	57	1165.	1		0850	107	0.	1		1300	157	0.
1		0035	8	1.	1		0445	58	1197.	1		0855	108	0.	1		1305	158	0.
1		0040	9	1.	1		0450	59	1201.	1		0900	109	0.	1		1310	159	0.
1		0045	10	1.	1		0455	60	1169.	1		0905	110	0.	1		1315	160	0.
1		0050	11	1.	1		0500	61	1130.	1		0910	111	0.	1		1320	161	0.
1		0055	12	1.	1		0505	62	1081.	1		0915	112	0.	1		1325	162	0.
1		0100	13	0.	1		0510	63	984.	1		0920	113	0.	1		1330	163	0.
1		0105	14	0.	1		0515	64	861.	1		0925	114	0.	1		1335	164	0.
1		0110	15	1.	1		0520	65	744.	1		0930	115	0.	1		1340	165	0.
1		0115	16	2.	1		0525	66	642.	1		0935	116	0.	1		1345	166	0.
1		0120	17	2.	1		0530	67	551.	1		0940	117	0.	1		1350	167	0.
1		0125	18	4.	1		0535	68	473.	1		0945	118	0.	1		1355	168	0.
1		0130	19	7.	1		0540	69	405.	1		0950	119	0.	1		1400	169	0.
1		0135	20	12.	1		0545	70	349.	1		0955	120	0.	1		1405	170	0.
1		0140	21	17.	1		0550	71	302.	1		1000	121	0.	1		1410	171	0.
1		0145	22	22.	1		0555	72	262.	1		1005	122	0.	1		1415	172	0.
1		0150	23	27.	1		0600	73	230.	1		1010	123	0.	1		1420	173	0.
1		0155	24	31.	1		0605	74	204.	1		1015	124	0.	1		1425	174	0.
1		0200	25	34.	1		0610	75	178.	1		1020	125	0.	1		1430	175	0.
1		0205	26	35.	1		0615	76	152.	1		1025	126	0.	1		1435	176	0.
1		0210	27	37.	1		0620	77	129.	1		1030	127	0.	1		1440	177	0.
1		0215	28	43.	1		0625	78	107.	1		1035	128	0.	1		1445	178	0.
1		0220	29	55.	1		0630	79	88.	1		1040	129	0.	1		1450	179	0.
1		0225	30	72.	1		0635	80	73.	1		1045	130	0.	1		1455	180	0.
1		0230	31	90.	1		0640	81	59.	1		1050	131	0.	1		1500	181	0.
1		0235	32	108.	1		0645	82	49.	1		1055	132	0.	1		1505	182	0.
1		0240	33	125.	1		0650	83	40.	1		1100	133	0.	1		1510	183	0.
1		0245	34	136.	1		0655	84	32.	1		1105	134	0.	1		1515	184	0.
1		0250	35	140.	1		0700	85	26.	1		1110	135	0.	1		1520	185	0.
1		0255	36	144.	1		0705	86	21.	1		1115	136	0.	1		1525	186	0.
1		0300	37	155.	1		0710	87	17.	1		1120	137	0.	1		1530	187	0.
1		0305	38	177.	1		0715	88	13.	1		1125	138	0.	1		1535	188	0.
1		0310	39	211.	1		0720	89	10.	1		1130	139	0.	1		1540	189	0.
1		0315	40	283.	1		0725	90	8.	1		1135	140	0.	1		1545	190	0.
1		0320	41	462.	1		0730	91	6.	1		1140	141	0.	1		1550	191	0.
1		0325	42	862.	1		0735	92	5.	1		1145	142	0.	1		1555	192	0.
1		0330	43	1656.	1		0740	93	4.	1		1150	143	0.	1		1600	193	0.
1		0335	44	2615.	1		0745	94	3.	1		1155	144	0.	1		1605	194	0.
1		0340	45	3237.	1		0750	95	2.	1		1200	145	0.	1		1610	195	0.
1		0345	46	3301.	1		0755	96	2.	1		1205	146	0.	1		1615	196	0.
1		0350	47	3046.	1		0800	97	1.	1		1210	147	0.	1		1620	197	0.
1		0355	48	2807.	1		0805	98	1.	1		1215	148	0.	1		1625	198	0.
1		0400	49	2533.	1		0810	99	1.	1		1220	149	0.	1		1630	199	0.
1		0405	50	2267.	1		0815	100	1.	1		1225	150	0.	1		1635	200	0.

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 3301.	3.75		665.	241.	241.	241.
		(INCHES)	.917	.918	.918	.918
		(AC-FT)	330.	330.	330.	330.

CUMULATIVE AREA = 6.74 SQ MI

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          **************
          *            *
237 KK    *    SUM5DB  *
          *            *
          **************

257 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          1  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL          0.  HYDROGRAPH PLOT SCALE

              HYDROGRAPH ROUTING DATA

258 RS          STORAGE ROUTING
                     NSTPS          1  NUMBER OF SUBREACHES
                      ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC      -1.00  INITIAL CONDITION
                         X         .00 WORKING R AND D COEFFICIENT

259 SV            STORAGE         .0       1.7       4.6       8.4      13.1      18.2      23.8      30.0      36.7      43.9
                                 59.5      77.5      99.8     127.2     159.4     196.4     240.1     384.0     405.6     535.3
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261 SQ          DISCHARGE          0.      192.      276.      391.      505.      616.      725.      813.      900.      982.
                                1176.     1368.     1534.     1683.     1804.     1920.     2033.     2315.     3725.    23201.

263 SE          ELEVATION       3532.50   3535.00   3536.00   3537.00   3538.00   3539.00   3540.00   3541.00   3542.00   3543.00
                                3543.00   3547.00   3549.00   3551.00   3553.00   3555.00   3557.00   3563.00   3564.00   3569.00

265 SS          SPILLWAY
                      CREL     3563.00  SPILLWAY CREST ELEVATION
                     SPWID      435.60  SPILLWAY WIDTH
                      COQW        3.00  WEIR COEFFICIENT
                      EXPW        1.50  EXPONENT OF HEAD
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COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

STORAGE	.00	1.73	4.55	8.45	13.08	18.20	23.81	29.96	36.70	59.55
OUTFLOW	.00	192.00	276.00	391.00	505.00	616.00	725.00	813.00	900.00	982.00
ELEVATION	3532.50	3535.00	3536.00	3537.00	3538.00	3539.00	3540.00	3541.00	3542.00	3543.00
STORAGE	77.49	99.82	127.17	159.39	196.38	240.07	384.05	405.65	535.25	
OUTFLOW	1368.00	1534.00	1683.00	1804.00	1920.00	2033.00	2315.00	3725.00	23201.00	
ELEVATION	3547.00	3549.00	3551.00	3553.00	3555.00	3557.00	3563.00	3564.00	3569.00	

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HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = 1.00

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	3532.5	1		0535	68	2242.	347.0	3561.5	1		1110	135	0.	.0	3532.5
1		0005	2	0.	.0	3532.5	1		0540	69	2224.	337.6	3561.1	1		1115	136	0.	.0	3532.5
1		0010	3	0.	.0	3532.5	1		0545	70	2204.	327.4	3560.6	1		1120	137	0.	.0	3532.5
1		0015	4	0.	.0	3532.5	1		0550	71	2183.	316.7	3560.2	1		1125	138	0.	.0	3532.5
1		0020	5	1.	.0	3532.5	1		0555	72	2161.	305.5	3559.7	1		1130	139	0.	.0	3532.5
1		0025	6	4.	.0	3532.6	1		0600	73	2139.	294.1	3559.3	1		1135	140	0.	.0	3532.5
1		0030	7	14.	.1	3532.7	1		0605	74	2116.	282.4	3558.8	1		1140	141	0.	.0	3532.5
1		0035	8	32.	.3	3532.9	1		0610	75	2092.	270.4	3558.3	1		1145	142	0.	.0	3532.5
1		0040	9	57.	.5	3533.2	1		0615	76	2069.	258.3	3557.8	1		1150	143	0.	.0	3532.5
1		0045	10	83.	.8	3533.6	1		0620	77	2044.	245.9	3557.2	1		1155	144	0.	.0	3532.5
1		0050	11	105.	.9	3533.9	1		0625	78	2016.	233.4	3556.7	1		1200	145	0.	.0	3532.5
1		0055	12	112.	1.0	3534.0	1		0630	79	1983.	220.8	3556.1	1		1205	146	0.	.0	3532.5
1		0100	13	106.	1.0	3533.9	1		0635	80	1951.	208.2	3555.5	1		1210	147	0.	.0	3532.5
1		0105	14	93.	.8	3533.7	1		0640	81	1918.	195.6	3555.0	1		1215	148	0.	.0	3532.5
1		0110	15	82.	.7	3533.6	1		0645	82	1879.	183.2	3554.3	1		1220	149	0.	.0	3532.5
1		0115	16	78.	.7	3533.5	1		0650	83	1840.	170.9	3553.6	1		1225	150	0.	.0	3532.5
1		0120	17	82.	.7	3533.6	1		0655	84	1802.	158.7	3553.0	1		1230	151	0.	.0	3532.5
1		0125	18	95.	.9	3533.7	1		0700	85	1757.	146.8	3552.2	1		1235	152	0.	.0	3532.5
1		0130	19	118.	1.1	3534.0	1		0705	86	1713.	135.1	3551.5	1		1240	153	0.	.0	3532.5
1		0135	20	153.	1.4	3534.5	1		0710	87	1664.	123.7	3550.7	1		1245	154	0.	.0	3532.5
1		0140	21	195.	1.8	3535.0	1		0715	88	1603.	112.6	3549.9	1		1250	155	0.	.0	3532.5
1		0145	22	218.	2.6	3535.3	1		0720	89	1545.	101.8	3549.1	1		1255	156	0.	.0	3532.5
1		0150	23	247.	3.6	3535.7	1		0725	90	1472.	91.5	3548.3	1		1300	157	0.	.0	3532.5
1		0155	24	277.	4.6	3536.0	1		0730	91	1399.	81.7	3547.4	1		1305	158	0.	.0	3532.5
1		0200	25	300.	5.4	3536.2	1		0735	92	1263.	72.6	3545.9	1		1310	159	0.	.0	3532.5
1		0205	26	314.	5.8	3536.3	1		0740	93	1090.	64.5	3544.1	1		1315	160	0.	.0	3532.5
1		0210	27	317.	6.0	3536.4	1		0745	94	975.	57.5	3542.9	1		1320	161	0.	.0	3532.5
1		0215	28	318.	6.0	3536.4	1		0750	95	951.	50.9	3542.6	1		1325	162	0.	.0	3532.5
1		0220	29	323.	6.2	3536.4	1		0755	96	928.	44.4	3542.3	1		1330	163	0.	.0	3532.5
1		0225	30	343.	6.8	3536.6	1		0800	97	905.	38.1	3542.1	1		1335	164	0.	.0	3532.5
1		0230	31	379.	8.1	3536.9	1		0805	98	841.	32.1	3541.3	1		1340	165	0.	.0	3532.5
1		0235	32	419.	9.6	3537.2	1		0810	99	765.	26.6	3540.5	1		1345	166	0.	.0	3532.5
1		0240	33	453.	11.0	3537.5	1		0815	100	682.	21.6	3539.6	1		1350	167	0.	.0	3532.5
1		0245	34	480.	12.1	3537.8	1		0820	101	595.	17.2	3538.8	1		1355	168	0.	.0	3532.5
1		0250	35	502.	13.0	3538.0	1		0825	102	512.	13.4	3538.1	1		1400	169	0.	.0	3532.5
1		0255	36	524.	13.9	3538.2	1		0830	103	433.	10.2	3537.4	1		1405	170	0.	.0	3532.5
1		0300	37	545.	14.9	3538.4	1		0835	104	361.	7.4	3536.7	1		1410	171	0.	.0	3532.5
1		0305	38	566.	15.9	3538.5	1		0840	105	294.	5.2	3536.2	1		1415	172	0.	.0	3532.5
1		0310	39	591.	17.0	3538.8	1		0845	106	240.	3.3	3535.6	1		1420	173	0.	.0	3532.5
1		0315	40	643.	19.6	3539.2	1		0850	107	195.	1.8	3535.0	1		1425	174	0.	.0	3532.5
1		0320	41	752.	25.7	3540.3	1		0855	108	94.	.8	3533.7	1		1430	175	0.	.0	3532.5
1		0325	42	909.	39.1	3542.1	1		0900	109	42.	.4	3533.0	1		1435	176	0.	.0	3532.5
1		0330	43	1067.	63.5	3543.9	1		0905	110	19.	.2	3532.7	1		1440	177	0.	.0	3532.5
1		0335	44	1530.	99.2	3548.9	1		0910	111	8.	.1	3532.6	1		1445	178	0.	.0	3532.5
1		0340	45	1738.	141.7	3551.9	1		0915	112	4.	.0	3532.5	1		1450	179	0.	.0	3532.5
1		0345	46	1884.	184.9	3554.4	1		0920	113	2.	.0	3532.5	1		1455	180	0.	.0	3532.5
1		0350	47	1992.	224.1	3556.3	1		0925	114	1.	.0	3532.5	1		1500	181	0.	.0	3532.5
1		0355	48	2068.	258.1	3557.7	1		0930	115	0.	.0	3532.5	1		1505	182	0.	.0	3532.5
1		0400	49	2124.	286.6	3558.9	1		0935	116	0.	.0	3532.5	1		1510	183	0.	.0	3532.5
1		0405	50	2170.	310.0	3559.9	1		0940	117	0.	.0	3532.5	1		1515	184	0.	.0	3532.5
1		0410	51	2207.	329.0	3560.7	1		0945	118	0.	.0	3532.5	1		1520	185	0.	.0	3532.5
1		0415	52	2236.	343.7	3561.3	1		0950	119	0.	.0	3532.5	1		1525	186	0.	.0	3532.5
1		0420	53	2256.	354.0	3561.7	1		0955	120	0.	.0	3532.5	1		1530	187	0.	.0	3532.5
1		0425	54	2269.	360.7	3562.0	1		1000	121	0.	.0	3532.5	1		1535	188	0.	.0	3532.5
1		0430	55	2277.	364.6	3562.2	1		1005	122	0.	.0	3532.5	1		1540	189	0.	.0	3532.5
1		0435	56	2282.	367.2	3562.3	1		1010	123	0.	.0	3532.5	1		1545	190	0.	.0	3532.5
1		0440	57	2287.	369.5	3562.4	1		1015	124	0.	.0	3532.5	1		1550	191	0.	.0	3532.5
1		0445	58	2291.	372.0	3562.5	1		1020	125	0.	.0	3532.5	1		1555	192	0.	.0	3532.5
1		0450	59	2296.	374.3	3562.6	1		1025	126	0.	.0	3532.5	1		1600	193	0.	.0	3532.5
1		0455	60	2299.	376.0	3562.7	1		1030	127	0.	.0	3532.5	1		1605	194	0.	.0	3532.5
1		0500	61	2302.	377.3	3562.7	1		1035	128	0.	.0	3532.5	1		1610	195	0.	.0	3532.5
1		0505	62	2303.	377.7	3562.7	1		1040	129	0.	.0	3532.5	1		1615	196	0.	.0	3532.5

1	0510	63	2300.	376.6	3562.7	*	1	1045	130	0.	.0	3532.5	*	1	1620	197	0.	.0	3532.5
1	0515	64	2295.	373.7	3562.6	*	1	1050	131	0.	.0	3532.5	*	1	1625	198	0.	.0	3532.5
1	0520	65	2286.	369.1	3562.4	*	1	1055	132	0.	.0	3532.5	*	1	1630	199	0.	.0	3532.5
1	0525	66	2274.	363.0	3562.1	*	1	1100	133	0.	.0	3532.5	*	1	1635	200	0.	.0	3532.5
1	0530	67	2259.	355.5	3561.8	*	1	1105	134	0.	.0	3532.5	*						

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PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)				
	(CFS)				
+ 2303.	5.08	1606.	610.	610.	610.
	(INCHES)	2.213	2.323	2.323	2.323
	(AC-FT)	796.	836.	836.	836.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
378.	5.08	188.	69.	69.	69.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3562.73	5.08	3551.93	3539.89	3539.89	3539.89

CUMULATIVE AREA = 6.74 SQ MI

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HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .98

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	3532.5	*	1		0535	68	2205.	328.0	3560.7	*	1		1110	135	0.	.0	3532.5
1		0005	2	0.	.0	3532.5	*	1		0540	69	2187.	318.7	3560.3	*	1		1115	136	0.	.0	3532.5
1		0010	3	0.	.0	3532.5	*	1		0545	70	2167.	308.7	3559.9	*	1		1120	137	0.	.0	3532.5
1		0015	4	0.	.0	3532.5	*	1		0550	71	2147.	298.1	3559.4	*	1		1125	138	0.	.0	3532.5
1		0020	5	1.	.0	3532.5	*	1		0555	72	2125.	287.0	3559.0	*	1		1130	139	0.	.0	3532.5
1		0025	6	4.	.0	3532.5	*	1		0600	73	2103.	275.7	3558.5	*	1		1135	140	0.	.0	3532.5
1		0030	7	12.	.1	3532.7	*	1		0605	74	2080.	264.2	3558.0	*	1		1140	141	0.	.0	3532.5
1		0035	8	28.	.3	3532.9	*	1		0610	75	2057.	252.5	3557.5	*	1		1145	142	0.	.0	3532.5
1		0040	9	50.	.4	3533.1	*	1		0615	76	2034.	240.5	3557.0	*	1		1150	143	0.	.0	3532.5
1		0045	10	72.	.7	3533.4	*	1		0620	77	2003.	228.3	3556.5	*	1		1155	144	0.	.0	3532.5
1		0050	11	91.	.8	3533.7	*	1		0625	78	1971.	216.1	3555.9	*	1		1200	145	0.	.0	3532.5
1		0055	12	98.	.9	3533.8	*	1		0630	79	1939.	203.8	3555.3	*	1		1205	146	0.	.0	3532.5
1		0100	13	93.	.8	3533.7	*	1		0635	80	1905.	191.5	3554.7	*	1		1210	147	0.	.0	3532.5
1		0105	14	82.	.7	3533.6	*	1		0640	81	1866.	179.2	3554.1	*	1		1215	148	0.	.0	3532.5
1		0110	15	73.	.7	3533.4	*	1		0645	82	1828.	167.1	3553.4	*	1		1220	149	0.	.0	3532.5
1		0115	16	69.	.6	3533.4	*	1		0650	83	1788.	155.1	3552.7	*	1		1225	150	0.	.0	3532.5
1		0120	17	74.	.7	3533.5	*	1		0655	84	1744.	143.4	3552.0	*	1		1230	151	0.	.0	3532.5
1		0125	18	86.	.8	3533.6	*	1		0700	85	1700.	131.8	3551.3	*	1		1235	152	0.	.0	3532.5
1		0130	19	107.	1.0	3533.9	*	1		0705	86	1647.	120.5	3550.5	*	1		1240	153	0.	.0	3532.5
1		0135	20	140.	1.3	3534.3	*	1		0710	87	1587.	109.6	3549.7	*	1		1245	154	0.	.0	3532.5
1		0140	21	186.	1.7	3534.9	*	1		0715	88	1528.	99.0	3548.9	*	1		1250	155	0.	.0	3532.5
1		0145	22	209.	2.3	3535.2	*	1		0720	89	1452.	88.8	3548.0	*	1		1255	156	0.	.0	3532.5
1		0150	23	236.	3.2	3535.5	*	1		0725	90	1381.	79.2	3547.2	*	1		1300	157	0.	.0	3532.5
1		0155	24	262.	4.1	3535.8	*	1		0730	91	1214.	70.3	3545.4	*	1		1305	158	0.	.0	3532.5
1		0200	25	284.	4.8	3536.1	*	1		0735	92	1047.	62.6	3543.7	*	1		1310	159	0.	.0	3532.5
1		0205	26	296.	5.2	3536.2	*	1		0740	93	968.	55.7	3542.8	*	1		1315	160	0.	.0	3532.5
1		0210	27	299.	5.3	3536.2	*	1		0745	94	945.	49.1	3542.5	*	1		1320	161	0.	.0	3532.5
1		0215	28	300.	5.4	3536.2	*	1		0750	95	922.	42.7	3542.3	*	1		1325	162	0.	.0	3532.5
1		0220	29	305.	5.5	3536.3	*	1		0755	96	897.	36.5	3542.0	*	1		1330	163	0.	.0	3532.5
1		0225	30	323.	6.2	3536.4	*	1		0800	97	821.	30.6	3541.1	*	1		1335	164	0.	.0	3532.5
1		0230	31	357.	7.3	3536.7	*	1		0805	98	745.	25.2	3540.2	*	1		1340	165	0.	.0	3532.5
1		0235	32	398.	8.7	3537.1	*	1		0810	99	658.	20.4	3539.4	*	1		1345	166	0.	.0	3532.5
1		0240	33	431.	10.1	3537.4	*	1		0815	100	572.	16.1	3538.6	*	1		1350	167	0.	.0	3532.5
1		0245	34	457.	11.1	3537.6	*	1		0820	101	491.	12.5	3537.9	*	1		1355	168	0.	.0	3532.5
1		0250	35	478.	12.0	3537.8	*	1		0825	102	414.	9.4	3537.2	*	1		1400	169	0.	.0	3532.5
1		0255	36	501.	12.9	3538.0	*	1		0830	103	342.	6.8	3536.6	*	1		1405	170	0.	.0	3532.5
1		0300	37	521.	13.8	3538.1	*	1		0835	104	279.	4.6	3536.0	*	1		1410	171	0.	.0	3532.5
1		0305	38	540.	14.7	3538.3	*	1		0840	105	227.	2.9	3535.4	*	1		1415	172	0.	.0	3532.5
1		0310	39	564.	15.8	3538.5	*	1		0845	106	171.	1.5	3534.7	*	1		1420	173	0.	.0	3532.5
1		0315	40	615.	18.1	3539.0	*	1		0850	107	76.	.7	3533.5	*	1		1425	174	0.	.0	3532.5
1		0320	41	725.	23.8	3540.0	*	1		0855	108	34.	.3	3532.9	*	1		1430	175	0.	.0	3532.5
1		0325	42	895.	36.3	3541.9	*	1		0900	109	15.	.1	3532.7	*	1		1435	176	0.	.0	3532.5
1		0330	43	985.	59.7	3543.0	*	1		0905	110	7.	.1	3532.6	*	1		1440	177	0.	.0	3532.5
1		0335	44	1492.	94.1	3548.5	*	1		0910	111	3.	.0	3532.5	*	1		1445	178	0.	.0	3532.5
1		0340	45	1713.	135.2	3551.5	*	1		0915	112	1.	.0	3532.5	*	1		1450	179	0.	.0	3532.5
1		0345	46	1859.	176.9	3553.9	*	1		0920	113	1.	.0	3532.5	*	1		1455	180	0.	.0	3532.5
1		0350	47	1967.	214.6	3555.8	*	1		0925	114	0.	.0	3532.5	*	1		1500	181	0.	.0	3532.5
1		0355	48	2047.	247.1	3557.3	*	1		0930	115	0.	.0	3532.5	*	1		1505	182	0.	.0	3532.5
1		0400	49	2100.	274.3	3558.4	*	1		0935	116	0.	.0	3532.5	*	1		1510	183	0.	.0	3532.5
1		0405	50	2144.	296.5	3559.4	*	1		0940	117	0.	.0	3532.5	*	1		1515	184	0.	.0	3532.5
1		0410	51	2179.	314.5	3560.1	*	1		0945	118	0.	.0	3532.5	*	1		1520	185	0.	.0	3532.5
1		0415	52	2206.	328.3	3560.7	*	1		0950	119	0.	.0	3532.5	*	1		1525	186	0.	.0	3532.5
1		0420	53	2225.	338.0	3561.1	*	1		0955	120	0.	.0	3532.5	*	1		1530	187	0.	.0	3532.5
1		0425	54	2237.	344.3	3561.3	*	1		1000	121	0.	.0	3532.5	*	1		1535	188	0.	.0	3532.5
1		0430	55	2244.	347.9	3561.5	*	1		1005	122	0.	.0	3532.5	*	1		1540	189	0.	.0	3532.5
1		0435	56	2248.	350.1	3561.6	*	1		1010	123	0.	.0	3532.5	*	1		1545	190	0.	.0	3532.5
1		0440	57	2252.	352.1	3561.7	*	1		1015	124	0.	.0	3532.5	*	1		1550	191	0.	.0	3532.5

1	0445	58	2257.	354.3	3561.8	*	1	1020	125	0.	.0	3532.5	*	1	1555	192	0.	.0	3532.5
1	0450	59	2261.	356.3	3561.8	*	1	1025	126	0.	.0	3532.5	*	1	1600	193	0.	.0	3532.5
1	0455	60	2264.	357.8	3561.9	*	1	1030	127	0.	.0	3532.5	*	1	1605	194	0.	.0	3532.5
1	0500	61	2265.	358.7	3561.9	*	1	1035	128	0.	.0	3532.5	*	1	1610	195	0.	.0	3532.5
1	0505	62	2266.	358.9	3562.0	*	1	1040	129	0.	.0	3532.5	*	1	1615	196	0.	.0	3532.5
1	0510	63	2263.	357.7	3561.9	*	1	1045	130	0.	.0	3532.5	*	1	1620	197	0.	.0	3532.5
1	0515	64	2257.	354.7	3561.8	*	1	1050	131	0.	.0	3532.5	*	1	1625	198	0.	.0	3532.5
1	0520	65	2248.	350.0	3561.6	*	1	1055	132	0.	.0	3532.5	*	1	1630	199	0.	.0	3532.5
1	0525	66	2236.	343.9	3561.3	*	1	1100	133	0.	.0	3532.5	*	1	1635	200	0.	.0	3532.5
1	0530	67	2222.	336.5	3561.0	*	1	1105	134	0.	.0	3532.5	*						
						*							*						

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)				
	(CFS)				
+ 2266.	5.08	1556.	588.	588.	588.
	(INCHES)	2.145	2.240	2.240	2.240
	(AC-FT)	772.	806.	806.	806.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
359.	5.08	176.	64.	64.	64.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3561.95	5.08	3551.20	3539.58	3539.58	3539.58

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .95

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	3532.5	1		0535	68	2167.	308.7	3559.9	1		1110	135	0.	.0	3532.5
1		0005	2	0.	.0	3532.5	1		0540	69	2149.	299.5	3559.5	1		1115	136	0.	.0	3532.5
1		0010	3	0.	.0	3532.5	1		0545	70	2130.	289.6	3559.1	1		1120	137	0.	.0	3532.5
1		0015	4	0.	.0	3532.5	1		0550	71	2109.	279.1	3558.6	1		1125	138	0.	.0	3532.5
1		0020	5	0.	.0	3532.5	1		0555	72	2088.	268.2	3558.2	1		1130	139	0.	.0	3532.5
1		0025	6	3.	.0	3532.5	1		0600	73	2066.	257.1	3557.7	1		1135	140	0.	.0	3532.5
1		0030	7	11.	.1	3532.6	1		0605	74	2044.	245.7	3557.2	1		1140	141	0.	.0	3532.5
1		0035	8	25.	.2	3532.8	1		0610	75	2018.	234.2	3556.7	1		1145	142	0.	.0	3532.5
1		0040	9	43.	.4	3533.1	1		0615	76	1987.	222.4	3556.2	1		1150	143	0.	.0	3532.5
1		0045	10	62.	.6	3533.3	1		0620	77	1957.	210.6	3555.6	1		1155	144	0.	.0	3532.5
1		0050	11	78.	.7	3533.5	1		0625	78	1926.	198.6	3555.1	1		1200	145	0.	.0	3532.5
1		0055	12	85.	.8	3533.6	1		0630	79	1889.	186.6	3554.5	1		1205	146	0.	.0	3532.5
1		0100	13	81.	.7	3533.6	1		0635	80	1852.	174.6	3553.8	1		1210	147	0.	.0	3532.5
1		0105	14	72.	.6	3533.4	1		0640	81	1814.	162.7	3553.2	1		1215	148	0.	.0	3532.5
1		0110	15	64.	.6	3533.3	1		0645	82	1772.	150.9	3552.5	1		1220	149	0.	.0	3532.5
1		0115	16	62.	.6	3533.3	1		0650	83	1729.	139.4	3551.8	1		1225	150	0.	.0	3532.5
1		0120	17	66.	.6	3533.4	1		0655	84	1686.	128.0	3551.1	1		1230	151	0.	.0	3532.5
1		0125	18	77.	.7	3533.5	1		0700	85	1627.	116.9	3550.2	1		1235	152	0.	.0	3532.5
1		0130	19	97.	.9	3533.8	1		0705	86	1568.	106.1	3549.5	1		1240	153	0.	.0	3532.5
1		0135	20	128.	1.2	3534.2	1		0710	87	1504.	95.7	3548.6	1		1245	154	0.	.0	3532.5
1		0140	21	171.	1.5	3534.7	1		0715	88	1430.	85.8	3547.7	1		1250	155	0.	.0	3532.5
1		0145	22	203.	2.1	3535.1	1		0720	89	1343.	76.3	3546.7	1		1255	156	0.	.0	3532.5
1		0150	23	226.	2.9	3535.4	1		0725	90	1160.	67.8	3544.8	1		1300	157	0.	.0	3532.5
1		0155	24	250.	3.7	3535.7	1		0730	91	1001.	60.4	3543.2	1		1305	158	0.	.0	3532.5
1		0200	25	269.	4.3	3535.9	1		0735	92	961.	53.7	3542.7	1		1310	159	0.	.0	3532.5
1		0205	26	280.	4.7	3536.0	1		0740	93	938.	47.2	3542.5	1		1315	160	0.	.0	3532.5
1		0210	27	283.	4.8	3536.1	1		0745	94	915.	40.9	3542.2	1		1320	161	0.	.0	3532.5
1		0215	28	283.	4.8	3536.1	1		0750	95	875.	34.7	3541.7	1		1325	162	0.	.0	3532.5
1		0220	29	287.	4.9	3536.1	1		0755	96	799.	29.0	3540.8	1		1330	163	0.	.0	3532.5
1		0225	30	305.	5.5	3536.2	1		0800	97	724.	23.8	3540.0	1		1335	164	0.	.0	3532.5
1		0230	31	336.	6.6	3536.5	1		0805	98	633.	19.1	3539.2	1		1340	165	0.	.0	3532.5
1		0235	32	376.	7.9	3536.9	1		0810	99	548.	15.0	3538.4	1		1345	166	0.	.0	3532.5
1		0240	33	409.	9.2	3537.2	1		0815	100	467.	11.6	3537.7	1		1350	167	0.	.0	3532.5
1		0245	34	434.	10.2	3537.4	1		0820	101	394.	8.6	3537.0	1		1355	168	0.	.0	3532.5
1		0250	35	454.	11.0	3537.6	1		0825	102	322.	6.1	3536.4	1		1400	169	0.	.0	3532.5
1		0255	36	475.	11.9	3537.7	1		0830	103	263.	4.1	3535.8	1		1405	170	0.	.0	3532.5
1		0300	37	497.	12.8	3537.9	1		0835	104	214.	2.5	3535.3	1		1410	171	0.	.0	3532.5
1		0305	38	516.	13.6	3538.1	1		0840	105	139.	1.3	3534.3	1		1415	172	0.	.0	3532.5
1		0310	39	539.	14.6	3538.3	1		0845	106	62.	.6	3533.3	1		1420	173	0.	.0	3532.5
1		0315	40	587.	16.9	3538.7	1		0850	107	28.	.3	3532.9	1		1425	174	0.	.0	3532.5
1		0320	41	697.	22.4	3539.7	1		0855	108	13.	.1	3532.7	1		1430	175	0.	.0	3532.5
1		0325	42	870.	34.4	3541.7	1		0900	109	6.	.1	3532.6	1		1435	176	0.	.0	3532.5
1		0330	43	972.	56.7	3542.9	1		0905	110	3.	.0	3532.5	1		1440	177	0.	.0	3532.5
1		0335	44	1458.	89.6	3548.1	1		0910	111	1.	.0	3532.5	1		1445	178	0.	.0	3532.5
1		0340	45	1689.	128.8	3551.1	1		0915	112	1.	.0	3532.5	1		1450	179	0.	.0	3532.5
1		0345	46	1832.	168.4	3553.5	1		0920	113	0.	.0	3532.5	1		1455	180	0.	.0	3532.5
1		0350	47	1941.	204.5	3555.4	1		0925	114	0.	.0	3532.5	1		1500	181	0.	.0	3532.5
1		0355	48	2021.	235.6	3556.8	1		0930	115	0.	.0	3532.5	1		1505	182	0.	.0	3532.5
1		0400	49	2075.	261.5	3557.9	1		0935	116	0.	.0	3532.5	1		1510	183	0.	.0	3532.5
1		0405	50	2116.	282.7	3558.8	1		0940	117	0.	.0	3532.5	1		1515	184	0.	.0	3532.5
1		0410	51	2150.	299.7	3559.5	1		0945	118	0.	.0	3532.5	1		1520	185	0.	.0	3532.5
1		0415	52	2176.	312.9	3560.0	1		0950	119	0.	.0	3532.5	1		1525	186	0.	.0	3532.5

1	0420	53	2194.	322.1	3560.4	*	1	0955	120	0.	.0	3532.5	*	1	1530	187	0.	.0	3532.5
1	0425	54	2205.	327.8	3560.7	*	1	1000	121	0.	.0	3532.5	*	1	1535	188	0.	.0	3532.5
1	0430	55	2211.	331.0	3560.8	*	1	1005	122	0.	.0	3532.5	*	1	1540	189	0.	.0	3532.5
1	0435	56	2215.	332.8	3560.9	*	1	1010	123	0.	.0	3532.5	*	1	1545	190	0.	.0	3532.5
1	0440	57	2218.	334.5	3560.9	*	1	1015	124	0.	.0	3532.5	*	1	1550	191	0.	.0	3532.5
1	0445	58	2222.	336.4	3561.0	*	1	1020	125	0.	.0	3532.5	*	1	1555	192	0.	.0	3532.5
1	0450	59	2225.	338.0	3561.1	*	1	1025	126	0.	.0	3532.5	*	1	1600	193	0.	.0	3532.5
1	0455	60	2227.	339.1	3561.1	*	1	1030	127	0.	.0	3532.5	*	1	1605	194	0.	.0	3532.5
1	0500	61	2228.	339.8	3561.2	*	1	1035	128	0.	.0	3532.5	*	1	1610	195	0.	.0	3532.5
1	0505	62	2228.	339.8	3561.2	*	1	1040	129	0.	.0	3532.5	*	1	1615	196	0.	.0	3532.5
1	0510	63	2225.	338.4	3561.1	*	1	1045	130	0.	.0	3532.5	*	1	1620	197	0.	.0	3532.5
1	0515	64	2219.	335.3	3561.0	*	1	1050	131	0.	.0	3532.5	*	1	1625	198	0.	.0	3532.5
1	0520	65	2210.	330.6	3560.8	*	1	1055	132	0.	.0	3532.5	*	1	1630	199	0.	.0	3532.5
1	0525	66	2198.	324.4	3560.5	*	1	1100	133	0.	.0	3532.5	*	1	1635	200	0.	.0	3532.5
1	0530	67	2184.	317.1	3560.2	*	1	1105	134	0.	.0	3532.5	*						

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PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)				
	(CFS)				
+ 2228.	5.00	1506.	566.	566.	566.
	(INCHES)	2.076	2.157	2.157	2.157
	(AC-FT)	747.	776.	776.	776.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
340.	5.00	165.	60.	60.	60.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3561.16	5.00	3550.48	3539.28	3539.28	3539.28

CUMULATIVE AREA = 6.74 SQ MI

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HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .93

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	3532.5	*	1		0535	68	2131.	290.1	3559.1	*	1		1110	135	0.	.0	3532.5
1		0005	2	0.	.0	3532.5	*	1		0540	69	2113.	281.0	3558.7	*	1		1115	136	0.	.0	3532.5
1		0010	3	0.	.0	3532.5	*	1		0545	70	2094.	271.2	3558.3	*	1		1120	137	0.	.0	3532.5
1		0015	4	0.	.0	3532.5	*	1		0550	71	2074.	260.8	3557.9	*	1		1125	138	0.	.0	3532.5
1		0020	5	0.	.0	3532.5	*	1		0555	72	2053.	250.1	3557.4	*	1		1130	139	0.	.0	3532.5
1		0025	6	2.	.0	3532.5	*	1		0600	73	2031.	239.1	3557.0	*	1		1135	140	0.	.0	3532.5
1		0030	7	9.	.1	3532.6	*	1		0605	74	2002.	228.0	3556.4	*	1		1140	141	0.	.0	3532.5
1		0035	8	21.	.2	3532.8	*	1		0610	75	1972.	216.6	3555.9	*	1		1145	142	0.	.0	3532.5
1		0040	9	37.	.3	3533.0	*	1		0615	76	1943.	205.1	3555.4	*	1		1150	143	0.	.0	3532.5
1		0045	10	53.	.5	3533.2	*	1		0620	77	1911.	193.5	3554.8	*	1		1155	144	0.	.0	3532.5
1		0050	11	67.	.6	3533.4	*	1		0625	78	1875.	181.9	3554.2	*	1		1200	145	0.	.0	3532.5
1		0055	12	73.	.7	3533.4	*	1		0630	79	1838.	170.2	3553.6	*	1		1205	146	0.	.0	3532.5
1		0100	13	70.	.6	3533.4	*	1		0635	80	1801.	158.5	3552.9	*	1		1210	147	0.	.0	3532.5
1		0105	14	63.	.6	3533.3	*	1		0640	81	1757.	147.0	3552.2	*	1		1215	148	0.	.0	3532.5
1		0110	15	56.	.5	3533.2	*	1		0645	82	1715.	135.6	3551.5	*	1		1220	149	0.	.0	3532.5
1		0115	16	54.	.5	3533.2	*	1		0650	83	1668.	124.4	3550.8	*	1		1225	150	0.	.0	3532.5
1		0120	17	58.	.5	3533.3	*	1		0655	84	1609.	113.5	3550.0	*	1		1230	151	0.	.0	3532.5
1		0125	18	69.	.6	3533.4	*	1		0700	85	1551.	102.9	3549.2	*	1		1235	152	0.	.0	3532.5
1		0130	19	87.	.8	3533.6	*	1		0705	86	1481.	92.7	3548.4	*	1		1240	153	0.	.0	3532.5
1		0135	20	116.	1.0	3534.0	*	1		0710	87	1409.	83.0	3547.5	*	1		1245	154	0.	.0	3532.5
1		0140	21	156.	1.4	3534.5	*	1		0715	88	1289.	73.8	3546.2	*	1		1250	155	0.	.0	3532.5
1		0145	22	197.	1.9	3535.1	*	1		0720	89	1113.	65.7	3544.4	*	1		1255	156	0.	.0	3532.5
1		0150	23	216.	2.5	3535.3	*	1		0725	90	978.	58.5	3543.0	*	1		1300	157	0.	.0	3532.5
1		0155	24	237.	3.2	3535.5	*	1		0730	91	955.	52.0	3542.7	*	1		1305	158	0.	.0	3532.5
1		0200	25	254.	3.8	3535.7	*	1		0735	92	932.	45.5	3542.4	*	1		1310	159	0.	.0	3532.5
1		0205	26	264.	4.1	3535.9	*	1		0740	93	909.	39.2	3542.1	*	1		1315	160	0.	.0	3532.5
1		0210	27	266.	4.2	3535.9	*	1		0745	94	854.	33.2	3541.5	*	1		1320	161	0.	.0	3532.5
1		0215	28	266.	4.2	3535.9	*	1		0750	95	779.	27.6	3540.6	*	1		1325	162	0.	.0	3532.5
1		0220	29	271.	4.4	3535.9	*	1		0755	96	699.	22.5	3539.8	*	1		1330	163	0.	.0	3532.5
1		0225	30	287.	4.9	3536.1	*	1		0800	97	612.	18.0	3539.0	*	1		1335	164	0.	.0	3532.5
1		0230	31	316.	5.9	3536.4	*	1		0805	98	527.	14.1	3538.2	*	1		1340	165	0.	.0	3532.5
1		0235	32	353.	7.2	3536.7	*	1		0810	99	447.	10.7	3537.5	*	1		1345	166	0.	.0	3532.5
1		0240	33	388.	8.4	3537.0	*	1		0815	100	375.	7.9	3536.9	*	1		1350	167	0.	.0	3532.5
1		0245	34	411.	9.3	3537.2	*	1		0820	101	306.	5.6	3536.3	*	1		1355	168	0.	.0	3532.5
1		0250	35	431.	10.1	3537.3	*	1		0825	102	250.	3.7	3535.7	*	1		1400	169	0.	.0	3532.5
1		0255	36	451.	10.9	3537.5	*	1		0830	103	203.	2.1	3535.1	*	1		1405	170	0.	.0	3532.5
1		0300	37	471.	11.7	3537.7	*	1		0835	104	113.	1.0	3534.0	*	1		1410	171	0.	.0	3532.5
1		0305	38	491.	12.5	3537.9	*	1		0840	105	51.	.5	3533.2	*	1		1415	172	0.	.0	3532.5
1		0310	39	514.	13.5	3538.1	*	1		0845	106	23.	.2	3532.8	*	1		1420	173	0.	.0	3532.5
1		0315	40	559.	15.6	3538.5	*	1		0850	107	10.	.1	3532.6	*	1		1425	174	0.	.0	3532.5
1		0320	41	664.	20.7	3539.4	*	1		0855	108	5.	.0	3532.6	*	1		1430	175	0.	.0	3532.5
1		0325	42	838.	31.9	3541.3	*	1		0900	109	2.	.0	3532.5	*	1		1435	176	0.	.0	3532.5
1		0330	43	958.	52.9	3542.7	*	1		0905	110	1.	.0	3532.5	*	1		1440	177	0.	.0	3532.5
1		0335	44	1417.	84.1	3547.6	*	1		0910	111	0.	.0	3532.5	*	1		1445	178	0.	.0	3532.5
1		0340	45	1652.	121.4	3550.6	*	1		0915	112	0.	.0	3532.5	*	1		1450	179	0.	.0	3532.5
1		0345	46	1804.	159.3	3553.0	*	1		0920	113	0.	.0	3532.5	*	1		1455	180	0.	.0	3532.5
1		0350	47	1912.	193.8	3554.9	*	1		0925	114	0.	.0	3532.5	*	1		1500	181	0.	.0	3532.5

1	0355	48	1991.	223.6	3556.2	*	1	0930	115	0.	.0	3532.5	*	1	1505	182	0.	.0	3532.5
1	0400	49	2050.	248.5	3557.4	*	1	0935	116	0.	.0	3532.5	*	1	1510	183	0.	.0	3532.5
1	0405	50	2089.	268.9	3558.2	*	1	0940	117	0.	.0	3532.5	*	1	1515	184	0.	.0	3532.5
1	0410	51	2122.	285.3	3558.9	*	1	0945	118	0.	.0	3532.5	*	1	1520	185	0.	.0	3532.5
1	0415	52	2146.	297.8	3559.4	*	1	0950	119	0.	.0	3532.5	*	1	1525	186	0.	.0	3532.5
1	0420	53	2163.	306.4	3559.8	*	1	0955	120	0.	.0	3532.5	*	1	1530	187	0.	.0	3532.5
1	0425	54	2173.	311.7	3560.0	*	1	1000	121	0.	.0	3532.5	*	1	1535	188	0.	.0	3532.5
1	0430	55	2179.	314.5	3560.1	*	1	1005	122	0.	.0	3532.5	*	1	1540	189	0.	.0	3532.5
1	0435	56	2182.	316.1	3560.2	*	1	1010	123	0.	.0	3532.5	*	1	1545	190	0.	.0	3532.5
1	0440	57	2184.	317.4	3560.2	*	1	1015	124	0.	.0	3532.5	*	1	1550	191	0.	.0	3532.5
1	0445	58	2188.	319.0	3560.3	*	1	1020	125	0.	.0	3532.5	*	1	1555	192	0.	.0	3532.5
1	0450	59	2190.	320.4	3560.3	*	1	1025	126	0.	.0	3532.5	*	1	1600	193	0.	.0	3532.5
1	0455	60	2192.	321.3	3560.4	*	1	1030	127	0.	.0	3532.5	*	1	1605	194	0.	.0	3532.5
1	0500	61	2193.	321.7	3560.4	*	1	1035	128	0.	.0	3532.5	*	1	1610	195	0.	.0	3532.5
1	0505	62	2192.	321.5	3560.4	*	1	1040	129	0.	.0	3532.5	*	1	1615	196	0.	.0	3532.5
1	0510	63	2189.	319.9	3560.3	*	1	1045	130	0.	.0	3532.5	*	1	1620	197	0.	.0	3532.5
1	0515	64	2183.	316.7	3560.2	*	1	1050	131	0.	.0	3532.5	*	1	1625	198	0.	.0	3532.5
1	0520	65	2174.	312.0	3560.0	*	1	1055	132	0.	.0	3532.5	*	1	1630	199	0.	.0	3532.5
1	0525	66	2162.	305.8	3559.7	*	1	1100	133	0.	.0	3532.5	*	1	1635	200	0.	.0	3532.5
1	0530	67	2147.	298.4	3559.4	*	1	1105	134	0.	.0	3532.5	*						
						*							*						

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR	
+ (CFS)	(HR)					
	(CFS)					
+ 2193.	5.00	1455.	545.	545.	545.	
	(INCHES)	2.006	2.076	2.076	2.076	
	(AC-FT)	722.	747.	747.	747.	

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
322.	5.00	153.	56.	56.	56.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3560.40	5.00	3549.76	3538.98	3538.98	3538.98

CUMULATIVE AREA = 6.74 SQ MI

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HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .92

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE		DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE		DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	0000		1	0.	.0	3532.5	*	1	0535		68	2117.	282.8	3558.8	*	1	1110		135	0.	.0	3532.5
1	0005		2	0.	.0	3532.5	*	1	0540		69	2099.	273.7	3558.4	*	1	1115		136	0.	.0	3532.5
1	0010		3	0.	.0	3532.5	*	1	0545		70	2080.	263.9	3558.0	*	1	1120		137	0.	.0	3532.5
1	0015		4	0.	.0	3532.5	*	1	0550		71	2060.	253.6	3557.6	*	1	1125		138	0.	.0	3532.5
1	0020		5	0.	.0	3532.5	*	1	0555		72	2039.	243.0	3557.1	*	1	1130		139	0.	.0	3532.5
1	0025		6	2.	.0	3532.5	*	1	0600		73	2012.	232.1	3556.6	*	1	1135		140	0.	.0	3532.5
1	0030		7	8.	.1	3532.6	*	1	0605		74	1984.	221.0	3556.1	*	1	1140		141	0.	.0	3532.5
1	0035		8	20.	.2	3532.8	*	1	0610		75	1955.	209.7	3555.6	*	1	1145		142	0.	.0	3532.5
1	0040		9	35.	.3	3533.0	*	1	0615		76	1925.	198.3	3555.1	*	1	1150		143	0.	.0	3532.5
1	0045		10	50.	.5	3533.2	*	1	0620		77	1890.	186.9	3554.5	*	1	1155		144	0.	.0	3532.5
1	0050		11	63.	.6	3533.3	*	1	0625		78	1854.	175.3	3553.9	*	1	1200		145	0.	.0	3532.5
1	0055		12	68.	.6	3533.4	*	1	0630		79	1818.	163.7	3553.2	*	1	1205		146	0.	.0	3532.5
1	0100		13	66.	.6	3533.4	*	1	0635		80	1777.	152.2	3552.6	*	1	1210		147	0.	.0	3532.5
1	0105		14	59.	.5	3533.3	*	1	0640		81	1734.	140.9	3551.8	*	1	1215		148	0.	.0	3532.5
1	0110		15	53.	.5	3533.2	*	1	0645		82	1692.	129.6	3551.2	*	1	1220		149	0.	.0	3532.5
1	0115		16	51.	.5	3533.2	*	1	0650		83	1636.	118.6	3550.4	*	1	1225		150	0.	.0	3532.5
1	0120		17	55.	.5	3533.2	*	1	0655		84	1578.	107.9	3549.6	*	1	1230		151	0.	.0	3532.5
1	0125		18	65.	.6	3533.4	*	1	0700		85	1517.	97.5	3548.8	*	1	1235		152	0.	.0	3532.5
1	0130		19	83.	.8	3533.6	*	1	0705		86	1443.	87.6	3547.9	*	1	1240		153	0.	.0	3532.5
1	0135		20	111.	1.0	3533.9	*	1	0710		87	1372.	78.1	3547.1	*	1	1245		154	0.	.0	3532.5
1	0140		21	150.	1.4	3534.5	*	1	0715		88	1194.	69.4	3545.2	*	1	1250		155	0.	.0	3532.5
1	0145		22	194.	1.8	3535.0	*	1	0720		89	1031.	61.8	3543.5	*	1	1255		156	0.	.0	3532.5
1	0150		23	212.	2.4	3535.2	*	1	0725		90	966.	55.0	3542.8	*	1	1300		157	0.	.0	3532.5
1	0155		24	232.	3.1	3535.5	*	1	0730		91	942.	48.5	3542.5	*	1	1305		158	0.	.0	3532.5
1	0200		25	248.	3.6	3535.7	*	1	0735		92	920.	42.2	3542.2	*	1	1310		159	0.	.0	3532.5
1	0205		26	258.	3.9	3535.8	*	1	0740		93	891.	36.0	3541.9	*	1	1315		160	0.	.0	3532.5
1	0210		27	260.	4.0	3535.8	*	1	0745		94	815.	30.1	3541.0	*	1	1320		161	0.	.0	3532.5
1	0215		28	260.	4.0	3535.8	*	1	0750		95	739.	24.8	3540.2	*	1	1325		162	0.	.0	3532.5
1	0220		29	264.	4.1	3535.9	*	1	0755		96	652.	20.0	3539.3	*	1	1330		163	0.	.0	3532.5
1	0225		30	280.	4.7	3536.0	*	1	0800		97	565.	15.9	3538.5	*	1	1335		164	0.	.0	3532.5
1	0230		31	308.	5.6	3536.3	*	1	0805		98	485.	12.3	3537.8	*	1	1340		165	0.	.0	3532.5
1	0235		32	345.	6.9	3536.6	*	1	0810		99	409.	9.2	3537.2	*	1	1345		166	0.	.0	3532.5
1	0240		33	379.	8.0	3536.9	*	1	0815		100	337.	6.6	3536.5	*	1	1350		167	0.	.0	3532.5
1	0245		34	404.	9.0	3537.1	*	1	0820		101	275.	4.5	3536.0	*	1	1355		168	0.	.0	3532.5
1	0250		35	422.	9.7	3537.3	*	1	0825		102	224.	2.8	3535.4	*	1	1400		169	0.	.0	3532.5
1	0255		36	442.	10.5	3537.4	*	1	0830		103	163.	1.5	3534.6	*	1	1405		170	0.	.0	3532.5
1	0300		37	462.	11.3	3537.6	*	1	0835		104	73.	.7	3533.5	*	1	1410		171	0.	.0	3532.5
1	0305		38	480.	12.1	3537.8	*	1	0840		105	33.	.3	3532.9	*	1	1415		172	0.	.0	3532.5
1	0310		39	504.	13.0	3538.0	*	1	0845		106	15.	.1	3532.7	*	1	1420		173	0.	.0	3532.5
1	0315		40	548.	15.1	3538.4	*	1	0850		107	7.	.1	3532.6	*	1	1425		174	0.	.0	3532.5
1	0320		41	653.	20.1	3539.3	*	1	0855		108	3.	.0	3532.5	*	1	1430		175	0.	.0	3532.5
1	0325		42	828.	31.1	3541.2	*	1	0900		109	1.	.0	3532.5	*	1	1435		176	0.	.0	3532.5

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	0330		43	954.	51.8	3542.7	1	0905		110	1.	.0	3532.5	1	1440		177	0.	.0	3532.5
1	0335		44	1406.	82.6	3547.5	1	0910		111	0.	.0	3532.5	1	1445		178	0.	.0	3532.5
1	0340		45	1641.	119.4	3550.4	1	0915		112	0.	.0	3532.5	1	1450		179	0.	.0	3532.5
1	0345		46	1794.	156.8	3552.8	1	0920		113	0.	.0	3532.5	1	1455		180	0.	.0	3532.5
1	0350		47	1902.	190.8	3554.7	1	0925		114	0.	.0	3532.5	1	1500		181	0.	.0	3532.5
1	0355		48	1981.	220.0	3556.1	1	0930		115	0.	.0	3532.5	1	1505		182	0.	.0	3532.5
1	0400		49	2041.	244.3	3557.2	1	0935		116	0.	.0	3532.5	1	1510		183	0.	.0	3532.5
1	0405		50	2080.	264.0	3558.0	1	0940		117	0.	.0	3532.5	1	1515		184	0.	.0	3532.5
1	0410		51	2111.	279.9	3558.7	1	0945		118	0.	.0	3532.5	1	1520		185	0.	.0	3532.5
1	0415		52	2135.	292.0	3559.2	1	0950		119	0.	.0	3532.5	1	1525		186	0.	.0	3532.5
1	0420		53	2151.	300.4	3559.5	1	0955		120	0.	.0	3532.5	1	1530		187	0.	.0	3532.5
1	0425		54	2161.	305.5	3559.7	1	1000		121	0.	.0	3532.5	1	1535		188	0.	.0	3532.5
1	0430		55	2166.	308.2	3559.8	1	1005		122	0.	.0	3532.5	1	1540		189	0.	.0	3532.5
1	0435		56	2169.	309.6	3559.9	1	1010		123	0.	.0	3532.5	1	1545		190	0.	.0	3532.5
1	0440		57	2172.	310.8	3559.9	1	1015		124	0.	.0	3532.5	1	1550		191	0.	.0	3532.5
1	0445		58	2174.	312.2	3560.0	1	1020		125	0.	.0	3532.5	1	1555		192	0.	.0	3532.5
1	0450		59	2177.	313.4	3560.1	1	1025		126	0.	.0	3532.5	1	1600		193	0.	.0	3532.5
1	0455		60	2178.	314.2	3560.1	1	1030		127	0.	.0	3532.5	1	1605		194	0.	.0	3532.5
1	0500		61	2179.	314.5	3560.1	1	1035		128	0.	.0	3532.5	1	1610		195	0.	.0	3532.5
1	0505		62	2178.	314.2	3560.1	1	1040		129	0.	.0	3532.5	1	1615		196	0.	.0	3532.5
1	0510		63	2175.	312.5	3560.0	1	1045		130	0.	.0	3532.5	1	1620		197	0.	.0	3532.5
1	0515		64	2169.	309.3	3559.9	1	1050		131	0.	.0	3532.5	1	1625		198	0.	.0	3532.5
1	0520		65	2159.	304.6	3559.7	1	1055		132	0.	.0	3532.5	1	1630		199	0.	.0	3532.5
1	0525		66	2147.	298.4	3559.4	1	1100		133	0.	.0	3532.5	1	1635		200	0.	.0	3532.5
1	0530		67	2133.	291.1	3559.1	1	1105		134	0.	.0	3532.5							

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
(CFS)	(HR)				
		(CFS)			
2179.	5.00	1436.	537.	537.	537.
		(INCHES) 1.979	2.044	2.044	2.044
		(AC-FT) 712.	735.	735.	735.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
(AC-FT)	(HR)				
315.	5.00	149.	54.	54.	54.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
(FEET)	(HR)				
3560.10	5.00	3549.49	3538.87	3538.87	3538.87

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .91

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	0000		1	0.	.0	3532.5	1	0535		68	2107.	277.7	3558.6	1	1110		135	0.	.0	3532.5
1	0005		2	0.	.0	3532.5	1	0540		69	2089.	268.7	3558.2	1	1115		136	0.	.0	3532.5
1	0010		3	0.	.0	3532.5	1	0545		70	2070.	258.9	3557.8	1	1120		137	0.	.0	3532.5
1	0015		4	0.	.0	3532.5	1	0550		71	2050.	248.7	3557.4	1	1125		138	0.	.0	3532.5
1	0020		5	0.	.0	3532.5	1	0555		72	2028.	238.1	3556.9	1	1130		139	0.	.0	3532.5
1	0025		6	2.	.0	3532.5	1	0600		73	2000.	227.2	3556.4	1	1135		140	0.	.0	3532.5
1	0030		7	8.	.1	3532.6	1	0605		74	1971.	216.2	3555.9	1	1140		141	0.	.0	3532.5
1	0035		8	19.	.2	3532.8	1	0610		75	1942.	205.0	3555.4	1	1145		142	0.	.0	3532.5
1	0040		9	33.	.3	3532.9	1	0615		76	1912.	193.7	3554.9	1	1150		143	0.	.0	3532.5
1	0045		10	48.	.4	3533.1	1	0620		77	1876.	182.3	3554.2	1	1155		144	0.	.0	3532.5
1	0050		11	60.	.5	3533.3	1	0625		78	1840.	170.9	3553.6	1	1200		145	0.	.0	3532.5
1	0055		12	65.	.6	3533.4	1	0630		79	1804.	159.4	3553.0	1	1205		146	0.	.0	3532.5
1	0100		13	63.	.6	3533.3	1	0635		80	1761.	148.0	3552.3	1	1210		147	0.	.0	3532.5
1	0105		14	56.	.5	3533.2	1	0640		81	1719.	136.7	3551.6	1	1215		148	0.	.0	3532.5
1	0110		15	50.	.5	3533.2	1	0645		82	1674.	125.6	3550.9	1	1220		149	0.	.0	3532.5
1	0115		16	49.	.4	3533.1	1	0650		83	1615.	114.7	3550.1	1	1225		150	0.	.0	3532.5
1	0120		17	53.	.5	3533.2	1	0655		84	1558.	104.1	3549.3	1	1230		151	0.	.0	3532.5
1	0125		18	63.	.6	3533.3	1	0700		85	1490.	93.9	3548.5	1	1235		152	0.	.0	3532.5
1	0130		19	81.	.7	3533.6	1	0705		86	1418.	84.2	3547.6	1	1240		153	0.	.0	3532.5
1	0135		20	108.	1.0	3533.9	1	0710		87	1313.	74.9	3546.4	1	1245		154	0.	.0	3532.5
1	0140		21	146.	1.3	3534.4	1	0715		88	1135.	66.6	3544.6	1	1250		155	0.	.0	3532.5
1	0145		22	193.	1.7	3535.0	1	0720		89	982.	59.5	3543.0	1	1255		156	0.	.0	3532.5
1	0150		23	209.	2.3	3535.2	1	0725		90	958.	52.9	3542.7	1	1300		157	0.	.0	3532.5
1	0155		24	228.	3.0	3535.4	1	0730		91	935.	46.4	3542.4	1	1305		158	0.	.0	3532.5
1	0200		25	244.	3.5	3535.6	1	0735		92	912.	40.1	3542.1	1	1310		159	0.	.0	3532.5
1	0205		26	253.	3.8	3535.7	1	0740		93	866.	34.0	3541.6	1	1315		160	0.	.0	3532.5
1	0210		27	255.	3.9	3535.8	1	0745		94	790.	28.4	3540.7	1	1320		161	0.	.0	3532.5
1	0215		28	255.	3.8	3535.7	1	0750		95	713.	23.2	3539.9	1	1325		162	0.	.0	3532.5
1	0220		29	259.	4.0	3535.8	1	0755		96	624.	18.6	3539.1	1	1330		163	0.	.0	3532.5
1	0225		30	274.	4.5	3536.0	1	0800		97	539.	14.6	3538.3	1	1335		164	0.	.0	3532.5
1	0230		31	303.	5.5	3536.2	1	0805		98	459.	11.2	3537.6	1	1340		165	0.	.0	3532.5
1	0235		32	339.	6.7	3536.5	1	0810		99	387.	8.3	3537.0	1	1345		166	0.	.0	3532.5
1	0240		33	373.	7.8	3536.8	1	0815		100	315.	5.9	3536.3	1	1350		167	0.	.0	3532.5
1	0245		34	398.	8.7	3537.1	1	0820		101	257.	3.9	3535.8	1	1355		168	0.	.0	3532.5
1	0250		35	416.	9.5	3537.2	1	0825		102	210.	2.3	3535.2	1	1400		169	0.	.0	3532.5
1	0255		36	435.	10.2	3537.4	1	0830		103	128.	1.2	3534.2	1	1405		170	0.	.0	3532.5
1	0300		37	454.	11.0	3537.6	1	0835		104	58.	.5	3533.2	1	1410		171	0.	.0	3532.5

1	0305	38	473.	11.8	3537.7	*	1	0840	105	26.	.2	3532.8	*	1	1415	172	0.	.0	3532.5
1	0310	39	496.	12.7	3537.9	*	1	0845	106	12.	.1	3532.7	*	1	1420	173	0.	.0	3532.5
1	0315	40	540.	14.7	3538.3	*	1	0850	107	5.	.0	3532.6	*	1	1425	174	0.	.0	3532.5
1	0320	41	642.	19.6	3539.2	*	1	0855	108	2.	.0	3532.5	*	1	1430	175	0.	.0	3532.5
1	0325	42	819.	30.4	3541.1	*	1	0900	109	1.	.0	3532.5	*	1	1435	176	0.	.0	3532.5
1	0330	43	950.	50.7	3542.6	*	1	0905	110	0.	.0	3532.5	*	1	1440	177	0.	.0	3532.5
1	0335	44	1394.	81.0	3547.3	*	1	0910	111	0.	.0	3532.5	*	1	1445	178	0.	.0	3532.5
1	0340	45	1631.	117.5	3550.3	*	1	0915	112	0.	.0	3532.5	*	1	1450	179	0.	.0	3532.5
1	0345	46	1787.	154.7	3552.7	*	1	0920	113	0.	.0	3532.5	*	1	1455	180	0.	.0	3532.5
1	0350	47	1895.	188.3	3554.6	*	1	0925	114	0.	.0	3532.5	*	1	1500	181	0.	.0	3532.5
1	0355	48	1974.	217.2	3556.0	*	1	0930	115	0.	.0	3532.5	*	1	1505	182	0.	.0	3532.5
1	0400	49	2035.	241.1	3557.0	*	1	0935	116	0.	.0	3532.5	*	1	1510	183	0.	.0	3532.5
1	0405	50	2073.	260.5	3557.9	*	1	0940	117	0.	.0	3532.5	*	1	1515	184	0.	.0	3532.5
1	0410	51	2104.	276.1	3558.5	*	1	0945	118	0.	.0	3532.5	*	1	1520	185	0.	.0	3532.5
1	0415	52	2127.	287.9	3559.0	*	1	0950	119	0.	.0	3532.5	*	1	1525	186	0.	.0	3532.5
1	0420	53	2143.	296.1	3559.3	*	1	0955	120	0.	.0	3532.5	*	1	1530	187	0.	.0	3532.5
1	0425	54	2153.	301.1	3559.5	*	1	1000	121	0.	.0	3532.5	*	1	1535	188	0.	.0	3532.5
1	0430	55	2158.	303.7	3559.7	*	1	1005	122	0.	.0	3532.5	*	1	1540	189	0.	.0	3532.5
1	0435	56	2160.	305.1	3559.7	*	1	1010	123	0.	.0	3532.5	*	1	1545	190	0.	.0	3532.5
1	0440	57	2162.	306.2	3559.8	*	1	1015	124	0.	.0	3532.5	*	1	1550	191	0.	.0	3532.5
1	0445	58	2165.	307.5	3559.8	*	1	1020	125	0.	.0	3532.5	*	1	1555	192	0.	.0	3532.5
1	0450	59	2167.	308.7	3559.9	*	1	1025	126	0.	.0	3532.5	*	1	1600	193	0.	.0	3532.5
1	0455	60	2169.	309.4	3559.9	*	1	1030	127	0.	.0	3532.5	*	1	1605	194	0.	.0	3532.5
1	0500	61	2169.	309.7	3559.9	*	1	1035	128	0.	.0	3532.5	*	1	1610	195	0.	.0	3532.5
1	0505	62	2169.	309.3	3559.9	*	1	1040	129	0.	.0	3532.5	*	1	1615	196	0.	.0	3532.5
1	0510	63	2165.	307.6	3559.8	*	1	1045	130	0.	.0	3532.5	*	1	1620	197	0.	.0	3532.5
1	0515	64	2159.	304.4	3559.7	*	1	1050	131	0.	.0	3532.5	*	1	1625	198	0.	.0	3532.5
1	0520	65	2149.	299.5	3559.5	*	1	1055	132	0.	.0	3532.5	*	1	1630	199	0.	.0	3532.5
1	0525	66	2137.	293.4	3559.2	*	1	1100	133	0.	.0	3532.5	*	1	1635	200	0.	.0	3532.5
1	0530	67	2123.	286.0	3558.9	*	1	1105	134	0.	.0	3532.5	*						
						*							*						

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR	
+ (CFS)	(HR)					
		(CFS)				
+ 2169.	5.00	1422.	531.	531.	531.	
		(INCHES)	1.960	2.022	2.022	2.022
		(AC-FT)	705.	727.	727.	727.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR	
+ (AC-FT)	(HR)					
310.	5.00	146.	53.	53.	53.	

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR	
+ (FEET)	(HR)					
3559.90	5.00	3549.30	3538.79	3538.79	3538.79	

CUMULATIVE AREA = 6.74 SQ MI

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HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .89

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	0000		1	0.	.0	3532.5	*	1	0535		68	2087.	267.4	3558.1	*	1	1110		135	0.	.0	3532.5
1	0005		2	0.	.0	3532.5	*	1	0540		69	2069.	258.4	3557.8	*	1	1115		136	0.	.0	3532.5
1	0010		3	0.	.0	3532.5	*	1	0545		70	2050.	248.7	3557.4	*	1	1120		137	0.	.0	3532.5
1	0015		4	0.	.0	3532.5	*	1	0550		71	2029.	238.5	3556.9	*	1	1125		138	0.	.0	3532.5
1	0020		5	0.	.0	3532.5	*	1	0555		72	2002.	228.0	3556.4	*	1	1130		139	0.	.0	3532.5
1	0025		6	2.	.0	3532.5	*	1	0600		73	1974.	217.3	3556.0	*	1	1135		140	0.	.0	3532.5
1	0030		7	7.	.1	3532.6	*	1	0605		74	1946.	206.4	3555.5	*	1	1140		141	0.	.0	3532.5
1	0035		8	18.	.2	3532.7	*	1	0610		75	1917.	195.4	3554.9	*	1	1145		142	0.	.0	3532.5
1	0040		9	31.	.3	3532.9	*	1	0615		76	1882.	184.3	3554.3	*	1	1150		143	0.	.0	3532.5
1	0045		10	44.	.4	3533.1	*	1	0620		77	1847.	173.0	3553.7	*	1	1155		144	0.	.0	3532.5
1	0050		11	54.	.5	3533.2	*	1	0625		78	1811.	161.7	3553.1	*	1	1200		145	0.	.0	3532.5
1	0055		12	59.	.5	3533.3	*	1	0630		79	1771.	150.5	3552.4	*	1	1205		146	0.	.0	3532.5
1	0100		13	58.	.5	3533.3	*	1	0635		80	1728.	139.3	3551.8	*	1	1210		147	0.	.0	3532.5
1	0105		14	52.	.5	3533.2	*	1	0640		81	1687.	128.2	3551.1	*	1	1215		148	0.	.0	3532.5
1	0110		15	47.	.4	3533.1	*	1	0645		82	1630.	117.4	3550.3	*	1	1220		149	0.	.0	3532.5
1	0115		16	46.	.4	3533.1	*	1	0650		83	1572.	106.8	3549.5	*	1	1225		150	0.	.0	3532.5
1	0120		17	50.	.4	3533.1	*	1	0655		84	1510.	96.5	3548.7	*	1	1230		151	0.	.0	3532.5
1	0125		18	59.	.5	3533.3	*	1	0700		85	1436.	86.7	3547.8	*	1	1235		152	0.	.0	3532.5
1	0130		19	76.	.7	3533.5	*	1	0705		86	1363.	77.3	3546.9	*	1	1240		153	0.	.0	3532.5
1	0135		20	102.	.9	3533.8	*	1	0710		87	1179.	68.7	3545.0	*	1	1245		154	0.	.0	3532.5
1	0140		21	138.	1.2	3534.3	*	1	0715		88	1019.	61.3	3543.4	*	1	1250		155	0.	.0	3532.5
1	0145		22	184.	1.7	3534.9	*	1	0720		89	964.	54.5	3542.8	*	1	1255		156	0.	.0	3532.5
1	0150		23	205.	2.2	3535.2	*	1	0725		90	941.	48.1	3542.5	*	1	1300		157	0.	.0	3532.5
1	0155		24	222.	2.8	3535.4	*	1	0730		91	918.	41.7	3542.2	*	1	1305		158	0.	.0	3532.5
1	0200		25	237.	3.2	3535.5	*	1	0735		92	885.	35.6	3541.8	*	1	1310		159	0.	.0	3532.5
1	0205		26	245.	3.5	3535.6	*	1	0740		93	810.	29.8	3541.0	*	1	1315		160	0.	.0	3532.5
1	0210		27	247.	3.6	3535.7	*	1	0745		94	735.	24.5	3540.1	*	1	1320		161	0.	.0	3532.5
1	0215		28	247.	3.6	3535.7	*	1	0750		95	646.	19.8	3539.3	*	1	1325		162	0.	.0	3532.5
1	0220		29	251.	3.7	3535.7	*	1	0755		96	560.	15.6	3538.5	*	1	1330		163	0.	.0	3532.5
1	0225		30	265.	4.2	3535.9	*	1	0800		97	480.	12.1	3537.8	*	1	1335		164	0.	.0	3532.5
1	0230		31	292.	5.1	3536.1	*	1	0805		98	405.	9.0	3537.1	*	1	1340		165	0.	.0	3532.5
1	0235		32	327.	6.3	3536.4	*	1	0810		99	333.	6.5	3536.5	*	1	1345		166	0.	.0	3532.5

1	0240	33	359.	7.4	3536.7	*	1	0815	100	272.	4.4	3535.9	*	1	1350	167	0.	.0	3532.5
1	0245	34	385.	8.2	3536.9	*	1	0820	101	221.	2.7	3535.3	*	1	1355	168	0.	.0	3532.5
1	0250	35	404.	9.0	3537.1	*	1	0825	102	157.	1.4	3534.5	*	1	1400	169	0.	.0	3532.5
1	0255	36	422.	9.7	3537.3	*	1	0830	103	70.	.6	3533.4	*	1	1405	170	0.	.0	3532.5
1	0300	37	441.	10.5	3537.4	*	1	0835	104	32.	.3	3532.9	*	1	1410	171	0.	.0	3532.5
1	0305	38	459.	11.2	3537.6	*	1	0840	105	14.	.1	3532.7	*	1	1415	172	0.	.0	3532.5
1	0310	39	482.	12.1	3537.8	*	1	0845	106	6.	.1	3532.6	*	1	1420	173	0.	.0	3532.5
1	0315	40	526.	14.1	3538.2	*	1	0850	107	3.	.0	3532.5	*	1	1425	174	0.	.0	3532.5
1	0320	41	626.	18.7	3539.1	*	1	0855	108	1.	.0	3532.5	*	1	1430	175	0.	.0	3532.5
1	0325	42	800.	29.1	3540.9	*	1	0900	109	1.	.0	3532.5	*	1	1435	176	0.	.0	3532.5
1	0330	43	943.	48.7	3542.5	*	1	0905	110	0.	.0	3532.5	*	1	1440	177	0.	.0	3532.5
1	0335	44	1372.	78.0	3547.0	*	1	0910	111	0.	.0	3532.5	*	1	1445	178	0.	.0	3532.5
1	0340	45	1608.	113.3	3550.0	*	1	0915	112	0.	.0	3532.5	*	1	1450	179	0.	.0	3532.5
1	0345	46	1766.	149.3	3552.4	*	1	0920	113	0.	.0	3532.5	*	1	1455	180	0.	.0	3532.5
1	0350	47	1875.	182.1	3554.2	*	1	0925	114	0.	.0	3532.5	*	1	1500	181	0.	.0	3532.5
1	0355	48	1956.	210.2	3555.6	*	1	0930	115	0.	.0	3532.5	*	1	1505	182	0.	.0	3532.5
1	0400	49	2016.	233.7	3556.7	*	1	0935	116	0.	.0	3532.5	*	1	1510	183	0.	.0	3532.5
1	0405	50	2058.	252.7	3557.5	*	1	0940	117	0.	.0	3532.5	*	1	1515	184	0.	.0	3532.5
1	0410	51	2088.	267.9	3558.2	*	1	0945	118	0.	.0	3532.5	*	1	1520	185	0.	.0	3532.5
1	0415	52	2110.	279.5	3558.6	*	1	0950	119	0.	.0	3532.5	*	1	1525	186	0.	.0	3532.5
1	0420	53	2126.	287.5	3559.0	*	1	0955	120	0.	.0	3532.5	*	1	1530	187	0.	.0	3532.5
1	0425	54	2135.	292.2	3559.2	*	1	1000	121	0.	.0	3532.5	*	1	1535	188	0.	.0	3532.5
1	0430	55	2140.	294.6	3559.3	*	1	1005	122	0.	.0	3532.5	*	1	1540	189	0.	.0	3532.5
1	0435	56	2142.	295.7	3559.3	*	1	1010	123	0.	.0	3532.5	*	1	1545	190	0.	.0	3532.5
1	0440	57	2144.	296.7	3559.4	*	1	1015	124	0.	.0	3532.5	*	1	1550	191	0.	.0	3532.5
1	0445	58	2146.	297.8	3559.4	*	1	1020	125	0.	.0	3532.5	*	1	1555	192	0.	.0	3532.5
1	0450	59	2148.	298.8	3559.4	*	1	1025	126	0.	.0	3532.5	*	1	1600	193	0.	.0	3532.5
1	0455	60	2149.	299.4	3559.5	*	1	1030	127	0.	.0	3532.5	*	1	1605	194	0.	.0	3532.5
1	0500	61	2149.	299.5	3559.5	*	1	1035	128	0.	.0	3532.5	*	1	1610	195	0.	.0	3532.5
1	0505	62	2148.	299.0	3559.5	*	1	1040	129	0.	.0	3532.5	*	1	1615	196	0.	.0	3532.5
1	0510	63	2145.	297.3	3559.4	*	1	1045	130	0.	.0	3532.5	*	1	1620	197	0.	.0	3532.5
1	0515	64	2139.	293.9	3559.2	*	1	1050	131	0.	.0	3532.5	*	1	1625	198	0.	.0	3532.5
1	0520	65	2129.	289.1	3559.0	*	1	1055	132	0.	.0	3532.5	*	1	1630	199	0.	.0	3532.5
1	0525	66	2117.	282.9	3558.8	*	1	1100	133	0.	.0	3532.5	*	1	1635	200	0.	.0	3532.5
1	0530	67	2103.	275.6	3558.5	*	1	1105	134	0.	.0	3532.5	*						
						*							*						

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2149.	5.00		1394.	519.	519.	519.
		(INCHES)	1.921	1.977	1.977	1.977
		(AC-FT)	691.	711.	711.	711.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
300.	5.00	140.	51.	51.	51.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3559.48	5.00	3548.90	3538.62	3538.62	3538.62

CUMULATIVE AREA = 6.74 SQ MI

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HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .88

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	3532.5	*	1		0535	68	2072.	260.2	3557.8	*	1		1110	135	0.	.0	3532.5
1		0005	2	0.	.0	3532.5	*	1		0540	69	2055.	251.2	3557.5	*	1		1115	136	0.	.0	3532.5
1		0010	3	0.	.0	3532.5	*	1		0545	70	2036.	241.6	3557.1	*	1		1120	137	0.	.0	3532.5
1		0015	4	0.	.0	3532.5	*	1		0550	71	2011.	231.5	3556.6	*	1		1125	138	0.	.0	3532.5
1		0020	5	0.	.0	3532.5	*	1		0555	72	1984.	221.0	3556.1	*	1		1130	139	0.	.0	3532.5
1		0025	6	2.	.0	3532.5	*	1		0600	73	1956.	210.4	3555.6	*	1		1135	140	0.	.0	3532.5
1		0030	7	7.	.1	3532.6	*	1		0605	74	1928.	199.6	3555.1	*	1		1140	141	0.	.0	3532.5
1		0035	8	17.	.2	3532.7	*	1		0610	75	1896.	188.6	3554.6	*	1		1145	142	0.	.0	3532.5
1		0040	9	29.	.3	3532.9	*	1		0615	76	1861.	177.6	3554.0	*	1		1150	143	0.	.0	3532.5
1		0045	10	41.	.4	3533.0	*	1		0620	77	1826.	166.5	3553.4	*	1		1155	144	0.	.0	3532.5
1		0050	11	51.	.5	3533.2	*	1		0625	78	1789.	155.4	3552.7	*	1		1200	145	0.	.0	3532.5
1		0055	12	55.	.5	3533.2	*	1		0630	79	1747.	144.2	3552.1	*	1		1205	146	0.	.0	3532.5
1		0100	13	54.	.5	3533.2	*	1		0635	80	1706.	133.2	3551.4	*	1		1210	147	0.	.0	3532.5
1		0105	14	48.	.4	3533.1	*	1		0640	81	1656.	122.3	3550.6	*	1		1215	148	0.	.0	3532.5
1		0110	15	44.	.4	3533.1	*	1		0645	82	1598.	111.6	3549.9	*	1		1220	149	0.	.0	3532.5
1		0115	16	43.	.4	3533.1	*	1		0650	83	1542.	101.3	3549.1	*	1		1225	150	0.	.0	3532.5
1		0120	17	47.	.4	3533.1	*	1		0655	84	1470.	91.2	3548.2	*	1		1230	151	0.	.0	3532.5
1		0125	18	56.	.5	3533.2	*	1		0700	85	1399.	81.6	3547.4	*	1		1235	152	0.	.0	3532.5
1		0130	19	72.	.7	3533.4	*	1		0705	86	1265.	72.7	3545.9	*	1		1240	153	0.	.0	3532.5
1		0135	20	98.	.9	3533.8	*	1		0710	87	1094.	64.7	3544.2	*	1		1245	154	0.	.0	3532.5
1		0140	21	133.	1.2	3534.2	*	1		0715	88	976.	57.8	3542.9	*	1		1250	155	0.	.0	3532.5
1		0145	22	177.	1.6	3534.8	*	1		0720	89	952.	51.2	3542.6	*	1		1255	156	0.	.0	3532.5
1		0150	23	202.	2.1	3535.1	*	1		0725	90	929.	44.8	3542.4	*	1		1300	157	0.	.0	3532.5
1		0155	24	218.	2.6	3535.3	*	1		0730	91	907.	38.6	3542.1	*	1		1305	158	0.	.0	3532.5
1		0200	25	232.	3.1	3535.5	*	1		0735	92	847.	32.6	3541.4	*	1		1310	159	0.	.0	3532.5
1		0205	26	239.	3.3	3535.6	*	1		0740	93	771.	27.1	3540.5	*	1		1315	160	0.	.0	3532.5
1		0210	27	241.	3.4	3535.6	*	1		0745	94	691.	22.0	3539.7	*	1		1320	161	0.	.0	3532.5

1	0215	28	241.	3.4	3535.6	*	1	0750	95	603.	17.6	3538.9	*	1	1325	162	0.	.0	3532.5
1	0220	29	244.	3.5	3535.6	*	1	0755	96	520.	13.8	3538.1	*	1	1330	163	0.	.0	3532.5
1	0225	30	258.	4.0	3535.8	*	1	0800	97	441.	10.5	3537.4	*	1	1335	164	0.	.0	3532.5
1	0230	31	285.	4.8	3536.1	*	1	0805	98	369.	7.7	3536.8	*	1	1340	165	0.	.0	3532.5
1	0235	32	318.	6.0	3536.4	*	1	0810	99	301.	5.4	3536.2	*	1	1345	166	0.	.0	3532.5
1	0240	33	350.	7.1	3536.6	*	1	0815	100	245.	3.5	3535.6	*	1	1350	167	0.	.0	3532.5
1	0245	34	375.	7.9	3536.9	*	1	0820	101	200.	2.0	3535.1	*	1	1355	168	0.	.0	3532.5
1	0250	35	395.	8.6	3537.0	*	1	0825	102	105.	.9	3533.9	*	1	1400	169	0.	.0	3532.5
1	0255	36	412.	9.3	3537.2	*	1	0830	103	47.	.4	3533.1	*	1	1405	170	0.	.0	3532.5
1	0300	37	431.	10.1	3537.4	*	1	0835	104	21.	.2	3532.8	*	1	1410	171	0.	.0	3532.5
1	0305	38	449.	10.8	3537.5	*	1	0840	105	10.	.1	3532.6	*	1	1415	172	0.	.0	3532.5
1	0310	39	471.	11.7	3537.7	*	1	0845	106	4.	.0	3532.6	*	1	1420	173	0.	.0	3532.5
1	0315	40	515.	13.5	3538.1	*	1	0850	107	2.	.0	3532.5	*	1	1425	174	0.	.0	3532.5
1	0320	41	613.	18.1	3539.0	*	1	0855	108	1.	.0	3532.5	*	1	1430	175	0.	.0	3532.5
1	0325	42	786.	28.1	3540.7	*	1	0900	109	0.	.0	3532.5	*	1	1435	176	0.	.0	3532.5
1	0330	43	938.	47.2	3542.5	*	1	0905	110	0.	.0	3532.5	*	1	1440	177	0.	.0	3532.5
1	0335	44	1336.	76.0	3546.7	*	1	0910	111	0.	.0	3532.5	*	1	1445	178	0.	.0	3532.5
1	0340	45	1594.	110.8	3549.8	*	1	0915	112	0.	.0	3532.5	*	1	1450	179	0.	.0	3532.5
1	0345	46	1754.	146.2	3552.2	*	1	0920	113	0.	.0	3532.5	*	1	1455	180	0.	.0	3532.5
1	0350	47	1863.	178.2	3554.0	*	1	0925	114	0.	.0	3532.5	*	1	1500	181	0.	.0	3532.5
1	0355	48	1945.	205.9	3555.4	*	1	0930	115	0.	.0	3532.5	*	1	1505	182	0.	.0	3532.5
1	0400	49	2004.	228.9	3556.5	*	1	0935	116	0.	.0	3532.5	*	1	1510	183	0.	.0	3532.5
1	0405	50	2048.	247.6	3557.3	*	1	0940	117	0.	.0	3532.5	*	1	1515	184	0.	.0	3532.5
1	0410	51	2077.	262.6	3557.9	*	1	0945	118	0.	.0	3532.5	*	1	1520	185	0.	.0	3532.5
1	0415	52	2099.	273.9	3558.4	*	1	0950	119	0.	.0	3532.5	*	1	1525	186	0.	.0	3532.5
1	0420	53	2114.	281.6	3558.7	*	1	0955	120	0.	.0	3532.5	*	1	1530	187	0.	.0	3532.5
1	0425	54	2123.	286.2	3558.9	*	1	1000	121	0.	.0	3532.5	*	1	1535	188	0.	.0	3532.5
1	0430	55	2128.	288.5	3559.0	*	1	1005	122	0.	.0	3532.5	*	1	1540	189	0.	.0	3532.5
1	0435	56	2130.	289.5	3559.1	*	1	1010	123	0.	.0	3532.5	*	1	1545	190	0.	.0	3532.5
1	0440	57	2131.	290.3	3559.1	*	1	1015	124	0.	.0	3532.5	*	1	1550	191	0.	.0	3532.5
1	0445	58	2133.	291.2	3559.1	*	1	1020	125	0.	.0	3532.5	*	1	1555	192	0.	.0	3532.5
1	0450	59	2135.	292.1	3559.2	*	1	1025	126	0.	.0	3532.5	*	1	1600	193	0.	.0	3532.5
1	0455	60	2136.	292.5	3559.2	*	1	1030	127	0.	.0	3532.5	*	1	1605	194	0.	.0	3532.5
1	0500	61	2136.	292.5	3559.2	*	1	1035	128	0.	.0	3532.5	*	1	1610	195	0.	.0	3532.5
1	0505	62	2134.	291.8	3559.2	*	1	1040	129	0.	.0	3532.5	*	1	1615	196	0.	.0	3532.5
1	0510	63	2131.	290.0	3559.1	*	1	1045	130	0.	.0	3532.5	*	1	1620	197	0.	.0	3532.5
1	0515	64	2124.	286.7	3558.9	*	1	1050	131	0.	.0	3532.5	*	1	1625	198	0.	.0	3532.5
1	0520	65	2115.	281.8	3558.7	*	1	1055	132	0.	.0	3532.5	*	1	1630	199	0.	.0	3532.5
1	0525	66	2103.	275.6	3558.5	*	1	1100	133	0.	.0	3532.5	*	1	1635	200	0.	.0	3532.5
1	0530	67	2088.	268.4	3558.2	*	1	1105	134	0.	.0	3532.5	*						

PEAK FLOW	TIME	MAXIMUM AVERAGE FLOW			
		6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)				
		(CFS)			
+ 2136.	5.00	1373.	511.	511.	511.
		(INCHES) 1.893	1.945	1.945	1.945
		(AC-FT) 681.	700.	700.	700.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
292.	5.00	136.	49.	49.	49.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3559.18	5.00	3548.62	3538.51	3538.51	3538.51

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .55

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	3532.5	1		0535	68	1063.	63.3	3543.8	1		1110	135	0.	.0	3532.5
1		0005	2	0.	.0	3532.5	1		0540	69	981.	59.3	3543.0	1		1115	136	0.	.0	3532.5
1		0010	3	0.	.0	3532.5	1		0545	70	966.	55.2	3542.8	1		1120	137	0.	.0	3532.5
1		0015	4	0.	.0	3532.5	1		0550	71	951.	50.8	3542.6	1		1125	138	0.	.0	3532.5
1		0020	5	0.	.0	3532.5	1		0555	72	934.	46.3	3542.4	1		1130	139	0.	.0	3532.5
1		0025	6	0.	.0	3532.5	1		0600	73	918.	41.6	3542.2	1		1135	140	0.	.0	3532.5
1		0030	7	0.	.0	3532.5	1		0605	74	900.	36.8	3542.0	1		1140	141	0.	.0	3532.5
1		0035	8	0.	.0	3532.5	1		0610	75	841.	32.1	3541.3	1		1145	142	0.	.0	3532.5
1		0040	9	1.	.0	3532.5	1		0615	76	781.	27.7	3540.6	1		1150	143	0.	.0	3532.5
1		0045	10	1.	.0	3532.5	1		0620	77	719.	23.5	3539.9	1		1155	144	0.	.0	3532.5
1		0050	11	1.	.0	3532.5	1		0625	78	644.	19.6	3539.3	1		1200	145	0.	.0	3532.5
1		0055	12	1.	.0	3532.5	1		0630	79	571.	16.1	3538.6	1		1205	146	0.	.0	3532.5
1		0100	13	1.	.0	3532.5	1		0635	80	502.	13.0	3538.0	1		1210	147	0.	.0	3532.5
1		0105	14	1.	.0	3532.5	1		0640	81	434.	10.2	3537.4	1		1215	148	0.	.0	3532.5
1		0110	15	1.	.0	3532.5	1		0645	82	372.	7.8	3536.8	1		1220	149	0.	.0	3532.5
1		0115	16	1.	.0	3532.5	1		0650	83	311.	5.8	3536.3	1		1225	150	0.	.0	3532.5
1		0120	17	1.	.0	3532.5	1		0655	84	260.	4.0	3535.8	1		1230	151	0.	.0	3532.5
1		0125	18	2.	.0	3532.5	1		0700	85	217.	2.6	3535.3	1		1235	152	0.	.0	3532.5
1		0130	19	4.	.0	3532.6	1		0705	86	160.	1.4	3534.6	1		1240	153	0.	.0	3532.5
1		0135	20	7.	.1	3532.6	1		0710	87	82.	.7	3533.6	1		1245	154	0.	.0	3532.5
1		0140	21	11.	.1	3532.6	1		0715	88	45.	.4	3533.1	1		1250	155	0.	.0	3532.5
1		0145	22	16.	.1	3532.7	1		0720	89	27.	.2	3532.8	1		1255	156	0.	.0	3532.5

1	0150	23	21.	.2	3532.8	*	1	0725	90	17.	.2	3532.7	*	1	1300	157	0.	.0	3532.5
1	0155	24	25.	.2	3532.8	*	1	0730	91	12.	.1	3532.7	*	1	1305	158	0.	.0	3532.5
1	0200	25	29.	.3	3532.9	*	1	0735	92	8.	.1	3532.6	*	1	1310	159	0.	.0	3532.5
1	0205	26	32.	.3	3532.9	*	1	0740	93	6.	.1	3532.6	*	1	1315	160	0.	.0	3532.5
1	0210	27	34.	.3	3532.9	*	1	0745	94	5.	.0	3532.6	*	1	1320	161	0.	.0	3532.5
1	0215	28	37.	.3	3533.0	*	1	0750	95	4.	.0	3532.5	*	1	1325	162	0.	.0	3532.5
1	0220	29	44.	.4	3533.1	*	1	0755	96	3.	.0	3532.5	*	1	1330	163	0.	.0	3532.5
1	0225	30	55.	.5	3533.2	*	1	0800	97	2.	.0	3532.5	*	1	1335	164	0.	.0	3532.5
1	0230	31	69.	.6	3533.4	*	1	0805	98	2.	.0	3532.5	*	1	1340	165	0.	.0	3532.5
1	0235	32	86.	.8	3533.6	*	1	0810	99	1.	.0	3532.5	*	1	1345	166	0.	.0	3532.5
1	0240	33	103.	.9	3533.8	*	1	0815	100	1.	.0	3532.5	*	1	1350	167	0.	.0	3532.5
1	0245	34	118.	1.1	3534.0	*	1	0820	101	1.	.0	3532.5	*	1	1355	168	0.	.0	3532.5
1	0250	35	129.	1.2	3534.2	*	1	0825	102	1.	.0	3532.5	*	1	1400	169	0.	.0	3532.5
1	0255	36	136.	1.2	3534.3	*	1	0830	103	0.	.0	3532.5	*	1	1405	170	0.	.0	3532.5
1	0300	37	143.	1.3	3534.4	*	1	0835	104	0.	.0	3532.5	*	1	1410	171	0.	.0	3532.5
1	0305	38	156.	1.4	3534.5	*	1	0840	105	0.	.0	3532.5	*	1	1415	172	0.	.0	3532.5
1	0310	39	177.	1.6	3534.8	*	1	0845	106	0.	.0	3532.5	*	1	1420	173	0.	.0	3532.5
1	0315	40	200.	2.0	3535.1	*	1	0850	107	0.	.0	3532.5	*	1	1425	174	0.	.0	3532.5
1	0320	41	232.	3.1	3535.5	*	1	0855	108	0.	.0	3532.5	*	1	1430	175	0.	.0	3532.5
1	0325	42	312.	5.8	3536.3	*	1	0900	109	0.	.0	3532.5	*	1	1435	176	0.	.0	3532.5
1	0330	43	472.	11.7	3537.7	*	1	0905	110	0.	.0	3532.5	*	1	1440	177	0.	.0	3532.5
1	0335	44	698.	22.4	3539.8	*	1	0910	111	0.	.0	3532.5	*	1	1445	178	0.	.0	3532.5
1	0340	45	901.	37.1	3542.0	*	1	0915	112	0.	.0	3532.5	*	1	1450	179	0.	.0	3532.5
1	0345	46	959.	53.2	3542.7	*	1	0920	113	0.	.0	3532.5	*	1	1455	180	0.	.0	3532.5
1	0350	47	1158.	67.7	3544.8	*	1	0925	114	0.	.0	3532.5	*	1	1500	181	0.	.0	3532.5
1	0355	48	1380.	79.1	3547.1	*	1	0930	115	0.	.0	3532.5	*	1	1505	182	0.	.0	3532.5
1	0400	49	1445.	87.8	3547.9	*	1	0935	116	0.	.0	3532.5	*	1	1510	183	0.	.0	3532.5
1	0405	50	1492.	94.2	3548.5	*	1	0940	117	0.	.0	3532.5	*	1	1515	184	0.	.0	3532.5
1	0410	51	1525.	98.7	3548.9	*	1	0945	118	0.	.0	3532.5	*	1	1520	185	0.	.0	3532.5
1	0415	52	1543.	101.4	3549.1	*	1	0950	119	0.	.0	3532.5	*	1	1525	186	0.	.0	3532.5
1	0420	53	1548.	102.4	3549.2	*	1	0955	120	0.	.0	3532.5	*	1	1530	187	0.	.0	3532.5
1	0425	54	1546.	101.9	3549.2	*	1	1000	121	0.	.0	3532.5	*	1	1535	188	0.	.0	3532.5
1	0430	55	1537.	100.3	3549.0	*	1	1005	122	0.	.0	3532.5	*	1	1540	189	0.	.0	3532.5
1	0435	56	1521.	98.0	3548.8	*	1	1010	123	0.	.0	3532.5	*	1	1545	190	0.	.0	3532.5
1	0440	57	1503.	95.6	3548.6	*	1	1015	124	0.	.0	3532.5	*	1	1550	191	0.	.0	3532.5
1	0445	58	1487.	93.5	3548.4	*	1	1020	125	0.	.0	3532.5	*	1	1555	192	0.	.0	3532.5
1	0450	59	1472.	91.5	3548.3	*	1	1025	126	0.	.0	3532.5	*	1	1600	193	0.	.0	3532.5
1	0455	60	1458.	89.6	3548.1	*	1	1030	127	0.	.0	3532.5	*	1	1605	194	0.	.0	3532.5
1	0500	61	1443.	87.5	3547.9	*	1	1035	128	0.	.0	3532.5	*	1	1610	195	0.	.0	3532.5
1	0505	62	1426.	85.3	3547.7	*	1	1040	129	0.	.0	3532.5	*	1	1615	196	0.	.0	3532.5
1	0510	63	1406.	82.6	3547.5	*	1	1045	130	0.	.0	3532.5	*	1	1620	197	0.	.0	3532.5
1	0515	64	1382.	79.4	3547.2	*	1	1050	131	0.	.0	3532.5	*	1	1625	198	0.	.0	3532.5
1	0520	65	1327.	75.6	3546.6	*	1	1055	132	0.	.0	3532.5	*	1	1630	199	0.	.0	3532.5
1	0525	66	1239.	71.5	3545.7	*	1	1100	133	0.	.0	3532.5	*	1	1635	200	0.	.0	3532.5
1	0530	67	1151.	67.4	3544.7	*	1	1105	134	0.	.0	3532.5	*						
						*							*						

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 1548.	4.33		665.	241.	241.	241.
		(INCHES)	.917	.918	.918	.918
		(AC-FT)	330.	330.	330.	330.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
102.	4.33	35.	13.	13.	13.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3549.19	4.33	3539.70	3535.11	3535.11	3535.11

CUMULATIVE AREA = 6.74 SQ MI

1

PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2	RATIO 3	RATIO 4	RATIO 5	RATIO 6	RATIO 7	RATIO 8	RATIO 9
					1.00	.98	.95	.93	.92	.91	.89	.88	.55
HYDROGRAPH AT													
+	DB54-1	2.22	1	FLOW	2586.	2499.	2412.	2325.	2290.	2265.	2220.	2186.	1052.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RDB54-1	2.22	1	FLOW	2534.	2449.	2363.	2278.	2244.	2220.	2176.	2142.	1031.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT													
+	DB54-5	.23	1	FLOW	464.	448.	431.	415.	409.	404.	396.	389.	180.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT													
+	CDB54-5	2.45	1	FLOW	2622.	2534.	2446.	2358.	2322.	2298.	2252.	2217.	1069.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00

ROUTED TO													
+	RCDB54-5	2.45	1	FLOW	2615.	2500.	2416.	2358.	2295.	2264.	2237.	2220.	1066.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.17
HYDROGRAPH AT													
+	DB54-2	.29	1	FLOW	652.	631.	609.	587.	579.	573.	561.	553.	269.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB54-2	.29	1	FLOW	606.	587.	555.	548.	540.	534.	524.	516.	252.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	DB54-3	.52	1	FLOW	1129.	1091.	1054.	1016.	1001.	991.	971.	956.	465.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB54-3	.52	1	FLOW	984.	951.	918.	885.	872.	862.	845.	832.	401.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	DB54-4	.20	1	FLOW	374.	361.	348.	336.	331.	327.	320.	315.	151.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	CDB54-4	1.01	1	FLOW	1964.	1899.	1821.	1768.	1742.	1724.	1690.	1664.	804.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCDB54-4	1.01	1	FLOW	1867.	1808.	1717.	1664.	1640.	1629.	1587.	1565.	776.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.67
2 COMBINED AT													
+	CRCDB544	3.46	1	FLOW	3243.	3152.	2999.	2909.	2851.	2831.	2768.	2741.	1320.
				TIME	3.67	3.67	3.67	3.92	3.67	3.67	3.67	3.92	3.92
ROUTED TO													
+	RCRCDB54	3.46	1	FLOW	3224.	3100.	2987.	2899.	2837.	2803.	2760.	2730.	1310.
				TIME	3.92	3.92	3.92	3.92	3.92	3.75	3.92	3.92	4.00
HYDROGRAPH AT													
+	DB54-6R	.84	1	FLOW	1062.	1024.	986.	948.	933.	922.	902.	887.	401.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CDB54-6R	4.30	1	FLOW	4265.	4121.	3961.	3809.	3760.	3725.	3628.	3570.	1661.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.92
HYDROGRAPH AT													
+	DB55-1	.64	1	FLOW	1157.	1118.	1079.	1040.	1025.	1014.	994.	978.	471.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RDB55-1	.64	1	FLOW	1114.	1083.	1046.	1004.	997.	980.	968.	946.	465.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-2	.10	1	FLOW	191.	185.	178.	172.	170.	168.	165.	162.	81.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-2	.74	1	FLOW	1282.	1238.	1197.	1149.	1140.	1122.	1107.	1083.	535.
				TIME	3.58	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RDB55-2	.74	1	FLOW	1276.	1237.	1196.	1147.	1139.	1121.	1107.	1080.	525.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-3	.26	1	FLOW	623.	602.	581.	561.	553.	547.	536.	528.	258.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-3	.26	1	FLOW	588.	567.	547.	527.	518.	514.	503.	497.	235.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT													
+	DB55-4	.17	1	FLOW	308.	297.	286.	275.	271.	268.	262.	258.	118.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-4	.43	1	FLOW	871.	839.	809.	778.	765.	758.	742.	732.	338.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-4	.43	1	FLOW	825.	795.	766.	738.	723.	720.	702.	694.	333.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	DB55-5	.19	1	FLOW	342.	330.	318.	307.	302.	299.	293.	288.	136.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-5	.62	1	FLOW	1167.	1125.	1085.	1045.	1025.	1019.	995.	982.	469.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58

2 COMBINED AT													
+	CCDB55-5	1.36	1	FLOW	2401.	2317.	2229.	2146.	2111.	2089.	2046.	2014.	942.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RDB55-5	1.36	1	FLOW	2307.	2284.	2173.	2057.	2063.	2071.	1967.	1943.	945.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-7	.44	1	FLOW	740.	716.	692.	668.	659.	652.	640.	630.	317.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RDB55-7	.44	1	FLOW	688.	666.	643.	621.	612.	606.	594.	585.	292.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	DB55-6	.10	1	FLOW	210.	204.	198.	191.	189.	187.	184.	181.	98.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-6	.10	1	FLOW	179.	174.	168.	163.	161.	159.	157.	155.	83.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-8	.55	1	FLOW	1012.	980.	948.	916.	903.	894.	877.	864.	439.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
4 COMBINED AT													
+	CDB55-8	2.45	1	FLOW	4039.	3960.	3795.	3624.	3608.	3600.	3468.	3421.	1698.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	SUM5IN	6.74	1	FLOW	8198.	7992.	7640.	7331.	7250.	7215.	7001.	6898.	3301.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.75
ROUTED TO													
+	SUM5DB	6.74	1	FLOW	2303.	2266.	2228.	2193.	2179.	2169.	2149.	2136.	1548.
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	4.33
			** PEAK STAGES IN FEET **										
			1	STAGE	3562.73	3561.95	3561.16	3560.40	3560.10	3559.90	3559.48	3559.18	3549.19
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	4.33
ROUTED TO													
+	SUM5OT	6.74	1	FLOW	2302.	2266.	2228.	2193.	2179.	2169.	2149.	2136.	1548.
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	4.33
HYDROGRAPH AT													
+	SWAA-1	.24	1	FLOW	326.	315.	304.	293.	289.	286.	280.	276.	134.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CSWAA-1	6.98	1	FLOW	2381.	2342.	2303.	2266.	2251.	2241.	2220.	2205.	1593.
				TIME	5.00	5.00	4.92	4.92	4.92	4.92	4.92	4.92	4.25
ROUTED TO													
+	RCSWAA-1	6.98	1	FLOW	2380.	2342.	2303.	2265.	2250.	2240.	2220.	2205.	1591.
				TIME	5.00	5.00	5.00	4.92	4.92	4.92	4.92	4.92	4.25
HYDROGRAPH AT													
+	ST-CR	.03	1	FLOW	48.	47.	46.	44.	44.	43.	43.	42.	24.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	5-9A1	.06	1	FLOW	126.	122.	119.	115.	114.	113.	111.	109.	60.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	C-CR	7.07	1	FLOW	2411.	2372.	2332.	2294.	2279.	2269.	2248.	2233.	1602.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.92	4.25
HYDROGRAPH AT													
+	X	.04	1	FLOW	70.	68.	65.	63.	62.	62.	60.	60.	30.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	R/X	.04	1	FLOW	68.	66.	64.	62.	61.	60.	59.	59.	30.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	W	.04	1	FLOW	74.	72.	70.	67.	66.	66.	65.	64.	32.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT													
+	PT0	.07	1	FLOW	139.	134.	130.	125.	123.	122.	120.	118.	61.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.58
ROUTED TO													
+	R/PT0	.07	1	FLOW	137.	133.	129.	124.	122.	121.	119.	117.	60.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	V	.04	1	FLOW	77.	74.	72.	69.	68.	68.	66.	65.	33.

				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT														
+	PT1	.11	1	FLOW	211.	204.	198.	191.	188.	186.	183.	180.	93.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO														
+	R/PT1	.11	1	FLOW	208.	201.	196.	190.	185.	183.	182.	178.	89.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT														
+	U	.04	1	FLOW	75.	73.	70.	68.	67.	66.	65.	64.	33.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.58
2 COMBINED AT														
+	PT2	.15	1	FLOW	282.	274.	266.	257.	252.	249.	247.	241.	123.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT														
+	ST1	.01	1	FLOW	26.	25.	25.	24.	24.	23.	23.	23.	13.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	PT3	.17	1	FLOW	309.	299.	290.	281.	276.	273.	270.	264.	136.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	PT3A	7.23	1	FLOW	2503.	2462.	2418.	2373.	2356.	2344.	2315.	2298.	1619.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	4.17
HYDROGRAPH AT														
+	T	.05	1	FLOW	87.	84.	81.	78.	77.	76.	75.	74.	38.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	PT4	7.28	1	FLOW	2538.	2497.	2452.	2405.	2388.	2376.	2346.	2328.	1624.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	4.17
HYDROGRAPH AT														
+	COS-5	.01	1	FLOW	13.	13.	12.	11.	11.	11.	11.	10.	3.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	PT5	7.29	1	FLOW	2545.	2503.	2458.	2411.	2394.	2382.	2352.	2334.	1625.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	4.17
HYDROGRAPH AT														
+	Q2	.02	1	FLOW	40.	39.	38.	36.	36.	35.	35.	34.	17.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT														
+	PT5A	7.32	1	FLOW	2559.	2517.	2471.	2424.	2407.	2394.	2364.	2346.	1627.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	4.17
HYDROGRAPH AT														
+	ST-AL	.02	1	FLOW	43.	42.	40.	39.	39.	38.	38.	37.	21.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	CP-AL	7.34	1	FLOW	2580.	2534.	2488.	2441.	2423.	2411.	2380.	2362.	1630.
				TIME	3.75	3.83	3.83	3.83	3.83	3.83	3.83	3.83	4.17
HYDROGRAPH AT														
+	Y	.04	1	FLOW	75.	73.	70.	68.	67.	66.	65.	64.	33.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO														
+	R/Y	.04	1	FLOW	73.	71.	68.	66.	65.	65.	63.	63.	33.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT														
+	Z	.04	1	FLOW	80.	78.	75.	73.	72.	71.	70.	69.	36.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT														
+	PT6	.08	1	FLOW	149.	145.	140.	135.	133.	132.	130.	128.	66.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.58
HYDROGRAPH AT														
+	ST2	.01	1	FLOW	17.	16.	16.	15.	15.	15.	15.	14.	8.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT														
+	PT7	.08	1	FLOW	166.	161.	156.	151.	148.	147.	144.	142.	73.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO														
+	R/PT7	.08	1	FLOW	159.	155.	150.	144.	143.	141.	139.	137.	72.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT														
+	NP-2	.02	1	FLOW	21.	20.	19.	18.	18.	17.	17.	16.	5.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.58
2 COMBINED AT														

+	PT8	.10	1	FLOW	179.	173.	167.	161.	159.	157.	155.	152.	77.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R/PT8	.10	1	FLOW	177.	171.	165.	160.	158.	155.	153.	150.	75.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	R	.04	1	FLOW	77.	74.	72.	69.	68.	68.	67.	66.	33.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT													
+	PT9A	.14	1	FLOW	251.	243.	234.	226.	224.	220.	217.	213.	107.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	ES-2	.02	1	FLOW	49.	48.	46.	45.	44.	44.	43.	43.	24.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	R/ES-2	.02	1	FLOW	46.	45.	44.	42.	42.	41.	41.	40.	22.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT													
+	S	.03	1	FLOW	60.	58.	56.	54.	54.	53.	52.	51.	26.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT													
+	PT9B	.05	1	FLOW	107.	103.	100.	97.	95.	94.	93.	91.	47.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	R/PT9B	.05	1	FLOW	101.	98.	97.	92.	92.	90.	88.	88.	46.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	PT9C	.19	1	FLOW	352.	341.	331.	319.	316.	311.	305.	302.	153.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R/PT9C	.19	1	FLOW	350.	339.	329.	317.	314.	309.	303.	300.	151.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	Q1	.02	1	FLOW	45.	44.	43.	41.	41.	40.	39.	39.	19.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT													
+	PT9D	.22	1	FLOW	393.	380.	369.	355.	352.	346.	340.	336.	170.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R/PT9D	.22	1	FLOW	390.	377.	366.	352.	349.	344.	338.	334.	167.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	ST4	.01	1	FLOW	21.	20.	20.	19.	19.	19.	19.	18.	10.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT													
+	PT10	.23	1	FLOW	409.	396.	384.	370.	366.	361.	355.	350.	176.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	BB	.05	1	FLOW	97.	94.	91.	88.	87.	86.	84.	83.	42.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	R/BB	.05	1	FLOW	95.	92.	89.	87.	86.	85.	84.	82.	42.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	CC	.04	1	FLOW	83.	81.	78.	75.	74.	74.	72.	71.	36.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	PT11	.09	1	FLOW	169.	163.	157.	151.	149.	148.	145.	142.	70.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.67
2 COMBINED AT													
+	PT12	.32	1	FLOW	578.	559.	542.	521.	515.	508.	499.	493.	244.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	P	.04	1	FLOW	67.	65.	63.	61.	60.	59.	58.	57.	29.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	PT13	.36	1	FLOW	645.	624.	604.	582.	575.	568.	557.	550.	273.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	ST-DF	.02	1	FLOW	33.	32.	31.	30.	30.	30.	29.	29.	16.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67

2 COMBINED AT													
+	C-47	.38	1	FLOW	676.	654.	634.	611.	604.	596.	585.	577.	288.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	C-47A	7.71	1	FLOW	3109.	3038.	2966.	2884.	2858.	2830.	2787.	2750.	1699.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	4.08
HYDROGRAPH AT													
+	SWFH-1	.56	1	FLOW	893.	863.	833.	803.	791.	782.	766.	754.	362.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RSWFH-1	.56	1	FLOW	887.	859.	828.	796.	784.	776.	760.	748.	355.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-2	.53	1	FLOW	929.	901.	873.	846.	835.	827.	812.	801.	430.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CSWFH-2	1.09	1	FLOW	1816.	1760.	1701.	1642.	1619.	1603.	1572.	1549.	785.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCSWFH-2	1.09	1	FLOW	1805.	1749.	1690.	1632.	1609.	1592.	1562.	1538.	775.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-3	.15	1	FLOW	321.	312.	303.	294.	291.	288.	284.	280.	160.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-3	1.25	1	FLOW	2092.	2029.	1962.	1896.	1870.	1851.	1816.	1790.	921.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCSWFH-3	1.25	1	FLOW	2080.	2014.	1950.	1881.	1857.	1837.	1804.	1775.	907.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-6	.25	1	FLOW	489.	475.	460.	446.	440.	436.	428.	422.	227.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RSWFH-6	.25	1	FLOW	479.	464.	450.	436.	430.	426.	418.	413.	219.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	SWFH-7	.31	1	FLOW	629.	611.	593.	575.	568.	563.	553.	546.	302.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-6	.56	1	FLOW	1108.	1076.	1043.	1011.	998.	989.	971.	959.	521.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCSWFH6	.56	1	FLOW	1094.	1062.	1029.	998.	984.	976.	958.	946.	512.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-7	1.81	1	FLOW	3085.	2989.	2897.	2798.	2763.	2735.	2686.	2646.	1389.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-4	.12	1	FLOW	196.	189.	182.	175.	172.	170.	166.	163.	73.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RSWFH-4	.12	1	FLOW	186.	178.	171.	165.	162.	160.	157.	153.	71.
				TIME	3.58	3.58	3.58	3.58	3.58	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-5	.26	1	FLOW	493.	478.	463.	448.	442.	438.	430.	424.	224.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-5	.38	1	FLOW	679.	656.	634.	613.	604.	598.	587.	577.	290.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCSWFH-5	.38	1	FLOW	653.	634.	612.	594.	585.	580.	570.	560.	291.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	ST3	.01	1	FLOW	17.	17.	16.	16.	16.	15.	15.	15.	9.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	R/ST3	.01	1	FLOW	16.	15.	15.	15.	14.	14.	14.	14.	8.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	AA	.03	1	FLOW	63.	62.	60.	58.	57.	57.	56.	55.	31.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50

ROUTED TO													
+	R/AA	.03	1	FLOW	61.	58.	57.	56.	55.	54.	54.	53.	30.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	ST-FH	.02	1	FLOW	44.	43.	42.	40.	40.	40.	39.	38.	22.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
4 COMBINED AT													
+	CP-FH	.43	1	FLOW	765.	737.	715.	688.	679.	671.	659.	650.	339.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.67
2 COMBINED AT													
+	CCSWFH-7	2.24	1	FLOW	3829.	3712.	3596.	3477.	3431.	3397.	3338.	3288.	1728.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67

1

SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
(FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)

ISTAQ	ELEMENT	DT	PEAK	TIME TO PEAK	VOLUME	INTERPOLATED TO COMPUTATION INTERVAL DT	PEAK	TIME TO PEAK	VOLUME
		(MIN)	(CFS)	(MIN)	(IN)	(MIN)	(CFS)	(MIN)	(IN)
FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	4.70	2621.58	244.61	2.38	5.00	2614.97	245.00	2.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3109E+03 EXCESS= .0000E+00 OUTFLOW= .3110E+03 BASIN STORAGE= .1245E-01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	4.77	2512.38	243.06	2.29	5.00	2499.95	245.00	2.29

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2994E+03 EXCESS= .0000E+00 OUTFLOW= .2995E+03 BASIN STORAGE= .9871E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	4.83	2421.93	246.37	2.21	5.00	2415.79	245.00	2.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2886E+03 EXCESS= .0000E+00 OUTFLOW= .2886E+03 BASIN STORAGE= .1267E-01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	4.90	2359.22	244.95	2.13	5.00	2358.38	245.00	2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2780E+03 EXCESS= .0000E+00 OUTFLOW= .2780E+03 BASIN STORAGE= .9866E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	4.93	2302.63	246.36	2.09	5.00	2294.92	245.00	2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2734E+03 EXCESS= .0000E+00 OUTFLOW= .2735E+03 BASIN STORAGE= .1213E-01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	4.95	2264.31	242.41	2.07	5.00	2263.73	245.00	2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2703E+03 EXCESS= .0000E+00 OUTFLOW= .2704E+03 BASIN STORAGE= .9679E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	4.99	2245.13	244.28	2.03	5.00	2237.27	245.00	2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2648E+03 EXCESS= .0000E+00 OUTFLOW= .2648E+03 BASIN STORAGE= .1113E-01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	5.00	2220.05	245.00	2.00	5.00	2220.05	245.00	2.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2604E+03 EXCESS= .0000E+00 OUTFLOW= .2605E+03 BASIN STORAGE= .1369E-01 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00									
	RCDB54-5 MANE	5.00	1066.07	250.00	.94	5.00	1066.07	250.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1229E+03 EXCESS= .0000E+00 OUTFLOW= .1229E+03 BASIN STORAGE= .1286E-01 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00									
	RDB54-2 MANE	3.50	639.46	213.50	2.33	5.00	605.93	215.00	2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3569E+02 EXCESS= .0000E+00 OUTFLOW= .3575E+02 BASIN STORAGE= .4009E-02 PERCENT ERROR= -.2

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          FOR PLAN = 1  RATIO=  .00
           RDB54-2  MANE         3.56    617.34    213.59      2.24      5.00    586.60    215.00        2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3441E+02 EXCESS= .0000E+00 OUTFLOW= .3446E+02 BASIN STORAGE= .4227E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
           RDB54-2  MANE         3.61    577.92    212.74      2.15      5.00    554.54    215.00        2.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3299E+02 EXCESS= .0000E+00 OUTFLOW= .3305E+02 BASIN STORAGE= .3568E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
           RDB54-2  MANE         3.50    574.94    213.50      2.08      5.00    547.65    215.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3190E+02 EXCESS= .0000E+00 OUTFLOW= .3195E+02 BASIN STORAGE= .3851E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
           RDB54-2  MANE         3.50    566.34    213.50      2.05      5.00    539.87    215.00        2.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3139E+02 EXCESS= .0000E+00 OUTFLOW= .3144E+02 BASIN STORAGE= .3829E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
           RDB54-2  MANE         3.50    560.32    213.50      2.02      5.00    534.41    215.00        2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3104E+02 EXCESS= .0000E+00 OUTFLOW= .3109E+02 BASIN STORAGE= .3813E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
           RDB54-2  MANE         3.50    549.13    213.50      1.98      5.00    524.28    215.00        1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3039E+02 EXCESS= .0000E+00 OUTFLOW= .3044E+02 BASIN STORAGE= .3785E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
           RDB54-2  MANE         3.50    540.53    213.50      1.95      5.00    516.49    215.00        1.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2989E+02 EXCESS= .0000E+00 OUTFLOW= .2994E+02 BASIN STORAGE= .3762E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
           RDB54-2  MANE         3.75    252.92    217.50       .91      5.00    252.24    215.00         .91

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1403E+02 EXCESS= .0000E+00 OUTFLOW= .1405E+02 BASIN STORAGE= .5116E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
          RCDB54-4  MANE         2.39   1921.81    217.11      2.33      5.00   1866.71    215.00        2.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1253E+03 EXCESS= .0000E+00 OUTFLOW= .1253E+03 BASIN STORAGE= .4270E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCDB54-4  MANE         2.42   1867.24    217.40      2.25      5.00   1807.53    215.00        2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1209E+03 EXCESS= .0000E+00 OUTFLOW= .1209E+03 BASIN STORAGE= .4132E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCDB54-4  MANE         2.45   1764.63    218.31      2.16      5.00   1717.06    215.00        2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1162E+03 EXCESS= .0000E+00 OUTFLOW= .1163E+03 BASIN STORAGE= .4734E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCDB54-4  MANE         2.48   1715.66    218.19      2.08      5.00   1663.55    215.00        2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1119E+03 EXCESS= .0000E+00 OUTFLOW= .1120E+03 BASIN STORAGE= .4850E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCDB54-4  MANE         2.49   1697.97    216.88      2.05      5.00   1639.76    215.00        2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1102E+03 EXCESS= .0000E+00 OUTFLOW= .1102E+03 BASIN STORAGE= .4984E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCDB54-4  MANE         2.50   1687.86    217.72      2.02      5.00   1629.29    215.00        2.02
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1089E+03 EXCESS= .0000E+00 OUTFLOW= .1090E+03 BASIN STORAGE= .4031E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCDB54-4	MANE	2.52	1644.19	216.79	1.98	5.00	1586.76	215.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1067E+03 EXCESS= .0000E+00 OUTFLOW= .1067E+03 BASIN STORAGE= .3587E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCDB54-4	MANE	2.54	1620.95	218.02	1.95	5.00	1564.57	215.00	1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1049E+03 EXCESS= .0000E+00 OUTFLOW= .1050E+03 BASIN STORAGE= .3643E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCDB54-4	MANE	3.31	795.35	218.42	.92	5.00	776.48	220.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4933E+02 EXCESS= .0000E+00 OUTFLOW= .4935E+02 BASIN STORAGE= .4511E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	1.45	3234.38	221.09	2.37	5.00	3224.18	235.00	2.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4366E+03 EXCESS= .0000E+00 OUTFLOW= .4366E+03 BASIN STORAGE= .2599E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	1.47	3145.74	221.94	2.28	5.00	3099.97	235.00	2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4205E+03 EXCESS= .0000E+00 OUTFLOW= .4205E+03 BASIN STORAGE= .2745E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	1.50	3003.71	221.52	2.19	5.00	2987.48	235.00	2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4048E+03 EXCESS= .0000E+00 OUTFLOW= .4048E+03 BASIN STORAGE= .3006E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	1.51	2903.90	236.14	2.12	5.00	2899.42	235.00	2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3902E+03 EXCESS= .0000E+00 OUTFLOW= .3902E+03 BASIN STORAGE= .3087E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	1.52	2845.42	222.62	2.08	5.00	2836.66	235.00	2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3837E+03 EXCESS= .0000E+00 OUTFLOW= .3837E+03 BASIN STORAGE= .2781E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	1.53	2835.19	221.67	2.06	5.00	2803.12	225.00	2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3793E+03 EXCESS= .0000E+00 OUTFLOW= .3793E+03 BASIN STORAGE= .2788E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	1.54	2767.50	221.96	2.01	5.00	2759.60	235.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3715E+03 EXCESS= .0000E+00 OUTFLOW= .3715E+03 BASIN STORAGE= .2578E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	1.55	2735.76	236.69	1.98	5.00	2730.32	235.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3654E+03 EXCESS= .0000E+00 OUTFLOW= .3654E+03 BASIN STORAGE= .2820E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCRCDB54	MANE	2.02	1317.26	236.56	.93	5.00	1309.83	240.00	.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1723E+03 EXCESS= .0000E+00 OUTFLOW= .1723E+03 BASIN STORAGE= .3122E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.13	1143.23	216.86	2.36	5.00	1114.46	220.00	2.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8063E+02 EXCESS= .0000E+00 OUTFLOW= .8065E+02 BASIN STORAGE= .2373E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.15	1112.30	217.33	2.28	5.00	1082.74	220.00	2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7780E+02 EXCESS= .0000E+00 OUTFLOW= .7782E+02 BASIN STORAGE= .3029E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.18	1071.56	217.88	2.20	5.00	1046.08	220.00	2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7495E+02 EXCESS= .0000E+00 OUTFLOW= .7497E+02 BASIN STORAGE= .2465E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.21	1031.05	218.49	2.11	5.00	1003.83	220.00	2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7213E+02 EXCESS= .0000E+00 OUTFLOW= .7214E+02 BASIN STORAGE= .3049E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.22	1019.07	217.43	2.08	5.00	996.64	220.00	2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7101E+02 EXCESS= .0000E+00 OUTFLOW= .7103E+02 BASIN STORAGE= .3028E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.23	1005.62	218.25	2.06	5.00	980.47	220.00	2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7020E+02 EXCESS= .0000E+00 OUTFLOW= .7022E+02 BASIN STORAGE= .2277E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.24	987.83	217.55	2.01	5.00	968.15	220.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6876E+02 EXCESS= .0000E+00 OUTFLOW= .6878E+02 BASIN STORAGE= .2795E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.26	968.96	218.76	1.98	5.00	945.82	220.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6763E+02 EXCESS= .0000E+00 OUTFLOW= .6765E+02 BASIN STORAGE= .2749E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-1	MANE	2.91	468.20	218.62	.94	5.00	465.00	220.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3196E+02 EXCESS= .0000E+00 OUTFLOW= .3197E+02 BASIN STORAGE= .2839E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.11	1285.69	216.74	2.36	5.00	1276.32	220.00	2.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9299E+02 EXCESS= .0000E+00 OUTFLOW= .9299E+02 BASIN STORAGE= .1168E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.12	1244.26	217.12	2.28	5.00	1236.62	220.00	2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8974E+02 EXCESS= .0000E+00 OUTFLOW= .8975E+02 BASIN STORAGE= .1239E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.13	1197.70	219.75	2.19	5.00	1195.79	220.00	2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8647E+02 EXCESS= .0000E+00 OUTFLOW= .8647E+02 BASIN STORAGE= .1415E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.15	1152.37	217.14	2.11	5.00	1147.35	220.00	2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8322E+02 EXCESS= .0000E+00 OUTFLOW= .8322E+02 BASIN STORAGE= .1260E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.15	1139.59	220.06	2.08	5.00	1139.32	220.00	2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8196E+02 EXCESS= .0000E+00 OUTFLOW= .8196E+02 BASIN STORAGE= .1249E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.16	1121.87	220.11	2.06	5.00	1121.47	220.00	2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8099E+02 EXCESS= .0000E+00 OUTFLOW= .8100E+02 BASIN STORAGE= .1260E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.16	1107.29	219.98	2.01	5.00	1107.18	220.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7939E+02 EXCESS= .0000E+00 OUTFLOW= .7940E+02 BASIN STORAGE= .1273E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.17	1082.55	217.01	1.98	5.00	1080.16	220.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7802E+02 EXCESS= .0000E+00 OUTFLOW= .7802E+02 BASIN STORAGE= .1315E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-2	MANE	1.50	531.55	220.89	.94	5.00	525.34	220.00	.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3697E+02 EXCESS= .0000E+00 OUTFLOW= .3697E+02 BASIN STORAGE= .1267E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.34	608.54	211.14	2.27	5.00	587.83	210.00	2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3140E+02 EXCESS= .0000E+00 OUTFLOW= .3141E+02 BASIN STORAGE= .1585E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.35	586.46	211.05	2.18	5.00	567.01	210.00	2.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3027E+02 EXCESS= .0000E+00 OUTFLOW= .3028E+02 BASIN STORAGE= .1823E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.37	565.37	211.02	2.10	5.00	546.76	210.00	2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2916E+02 EXCESS= .0000E+00 OUTFLOW= .2917E+02 BASIN STORAGE= .1493E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.39	545.24	211.05	2.02	5.00	526.91	210.00	2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2804E+02 EXCESS= .0000E+00 OUTFLOW= .2805E+02 BASIN STORAGE= .1648E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.40	532.99	210.80	1.99	5.00	517.83	210.00	1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2758E+02 EXCESS= .0000E+00 OUTFLOW= .2759E+02 BASIN STORAGE= .1397E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.40	530.05	211.61	1.97	5.00	513.90	210.00	1.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2729E+02 EXCESS= .0000E+00 OUTFLOW= .2730E+02 BASIN STORAGE= .1369E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.41	516.00	211.73	1.93	5.00	502.62	210.00	1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2670E+02 EXCESS= .0000E+00 OUTFLOW= .2671E+02 BASIN STORAGE= .1374E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.42	515.21	211.51	1.90	5.00	496.89	210.00	1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2628E+02 EXCESS= .0000E+00 OUTFLOW= .2629E+02 BASIN STORAGE= .1596E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RDB55-3	MANE	1.84	247.98	212.12	.88	5.00	235.09	210.00	.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1225E+02 EXCESS= .0000E+00 OUTFLOW= .1226E+02 BASIN STORAGE= .1720E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RDB55-4	MANE	2.92	861.69	212.92	2.19	5.00	824.89	215.00	2.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5058E+02 EXCESS= .0000E+00 OUTFLOW= .5062E+02 BASIN STORAGE= .4217E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

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          RDB55-4  MANE         2.96    827.02    212.84      2.11      5.00    795.18    215.00        2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4871E+02 EXCESS= .0000E+00 OUTFLOW= .4875E+02 BASIN STORAGE= .4412E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-4  MANE         3.00    793.69    212.77      2.03      5.00    766.16    215.00        2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4686E+02 EXCESS= .0000E+00 OUTFLOW= .4691E+02 BASIN STORAGE= .4632E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-4  MANE         3.04    761.78    212.72      1.95      5.00    737.83    215.00        1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4503E+02 EXCESS= .0000E+00 OUTFLOW= .4507E+02 BASIN STORAGE= .3198E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-4  MANE         3.06    743.98    214.07      1.92      5.00    722.65    215.00        1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4421E+02 EXCESS= .0000E+00 OUTFLOW= .4424E+02 BASIN STORAGE= .3627E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-4  MANE         3.07    726.73    214.77      1.89      5.00    720.40    215.00        1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4371E+02 EXCESS= .0000E+00 OUTFLOW= .4375E+02 BASIN STORAGE= .4398E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-4  MANE         3.09    729.40    213.43      1.85      5.00    702.39    215.00        1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4276E+02 EXCESS= .0000E+00 OUTFLOW= .4280E+02 BASIN STORAGE= .4296E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-4  MANE         3.11    706.46    214.49      1.82      5.00    693.74    215.00        1.82

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4204E+02 EXCESS= .0000E+00 OUTFLOW= .4208E+02 BASIN STORAGE= .3210E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-4  MANE         4.13    335.23    214.57       .83      5.00    333.02    215.00         .84

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1924E+02 EXCESS= .0000E+00 OUTFLOW= .1927E+02 BASIN STORAGE= .4947E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-5  MANE         4.09   2314.66    221.00      2.28      5.00   2306.80    220.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1654E+03 EXCESS= .0000E+00 OUTFLOW= .1656E+03 BASIN STORAGE= .9007E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-5  MANE         4.15   2294.13    219.74      2.20      5.00   2283.51    220.00        2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1596E+03 EXCESS= .0000E+00 OUTFLOW= .1598E+03 BASIN STORAGE= .7406E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-5  MANE         4.21   2209.24    218.70      2.12      5.00   2173.01    220.00        2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1537E+03 EXCESS= .0000E+00 OUTFLOW= .1538E+03 BASIN STORAGE= .9629E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-5  MANE         4.26   2057.92    221.75      2.04      5.00   2057.15    220.00        2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1476E+03 EXCESS= .0000E+00 OUTFLOW= .1477E+03 BASIN STORAGE= .7774E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-5  MANE         4.29   2092.55    218.81      2.01      5.00   2063.42    220.00        2.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1457E+03 EXCESS= .0000E+00 OUTFLOW= .1458E+03 BASIN STORAGE= .9607E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
          RDB55-5  MANE         4.31   2082.50    219.64      1.99      5.00   2070.66    220.00        1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1440E+03 EXCESS= .0000E+00 OUTFLOW= .1442E+03 BASIN STORAGE= .8316E-02 PERCENT ERROR=   -.1
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          FOR PLAN = 1  RATIO=  .00
           RDB55-5  MANE          4.34   1985.47    221.32      1.94      5.00   1967.48    220.00        1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1405E+03 EXCESS= .0000E+00 OUTFLOW= .1407E+03 BASIN STORAGE= .9087E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
           RDB55-5  MANE          4.36   1962.59    218.25      1.91      5.00   1942.54    220.00        1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1385E+03 EXCESS= .0000E+00 OUTFLOW= .1386E+03 BASIN STORAGE= .6947E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
           RDB55-5  MANE          5.00    945.27    220.00       .89      5.00    945.27    220.00         .89

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6470E+02 EXCESS= .0000E+00 OUTFLOW= .6480E+02 BASIN STORAGE= .8846E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .39   2302.46    305.18      2.32      5.00   2302.44    305.00        2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8356E+03 EXCESS= .0000E+00 OUTFLOW= .8356E+03 BASIN STORAGE= .9862E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .39   2265.70    305.18      2.24      5.00   2265.70    305.00        2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8058E+03 EXCESS= .0000E+00 OUTFLOW= .8058E+03 BASIN STORAGE= .9899E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .40   2228.36    300.46      2.16      5.00   2228.27    300.00        2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7759E+03 EXCESS= .0000E+00 OUTFLOW= .7759E+03 BASIN STORAGE= .9699E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .40   2192.90    300.39      2.08      5.00   2192.85    300.00        2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7467E+03 EXCESS= .0000E+00 OUTFLOW= .7467E+03 BASIN STORAGE= .9706E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .40   2178.84    300.36      2.04      5.00   2178.81    300.00        2.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7354E+03 EXCESS= .0000E+00 OUTFLOW= .7354E+03 BASIN STORAGE= .9852E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .40   2169.38    300.49      2.02      5.00   2169.37    300.00        2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7275E+03 EXCESS= .0000E+00 OUTFLOW= .7275E+03 BASIN STORAGE= .9757E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .40   2149.44    299.98      1.98      5.00   2149.44    300.00        1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7113E+03 EXCESS= .0000E+00 OUTFLOW= .7113E+03 BASIN STORAGE= .9823E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .40   2135.65    299.95      1.95      5.00   2135.65    300.00        1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6997E+03 EXCESS= .0000E+00 OUTFLOW= .6997E+03 BASIN STORAGE= .1002E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            SUM5OT  MANE          .46   1548.08    260.68       .92      5.00   1547.77    260.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3302E+03 EXCESS= .0000E+00 OUTFLOW= .3302E+03 BASIN STORAGE= .9853E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWAA-1  MANE          1.11   2380.42    299.45      2.32      5.00   2380.38    300.00        2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8640E+03 EXCESS= .0000E+00 OUTFLOW= .8640E+03 BASIN STORAGE= .2901E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWAA-1  MANE          1.12   2341.90    299.19      2.24      5.00   2341.85    300.00        2.24
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .8331E+03 EXCESS= .0000E+00 OUTFLOW= .8331E+03 BASIN STORAGE= .2916E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWAA-1	MANE	1.12	2302.92	296.71	2.15	5.00	2302.67	300.00	2.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8023E+03 EXCESS= .0000E+00 OUTFLOW= .8023E+03 BASIN STORAGE= .3040E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWAA-1	MANE	1.13	2265.53	296.39	2.07	5.00	2265.10	295.00	2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7722E+03 EXCESS= .0000E+00 OUTFLOW= .7722E+03 BASIN STORAGE= .3114E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWAA-1	MANE	1.13	2250.74	296.03	2.04	5.00	2250.43	295.00	2.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7604E+03 EXCESS= .0000E+00 OUTFLOW= .7604E+03 BASIN STORAGE= .2864E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWAA-1	MANE	1.14	2240.74	296.56	2.02	5.00	2240.41	295.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7522E+03 EXCESS= .0000E+00 OUTFLOW= .7522E+03 BASIN STORAGE= .2882E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWAA-1	MANE	1.14	2219.82	296.53	1.98	5.00	2219.59	295.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7355E+03 EXCESS= .0000E+00 OUTFLOW= .7356E+03 BASIN STORAGE= .3105E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWAA-1	MANE	1.14	2205.35	296.17	1.94	5.00	2205.16	295.00	1.94

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7236E+03 EXCESS= .0000E+00 OUTFLOW= .7236E+03 BASIN STORAGE= .3064E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWAA-1	MANE	1.30	1592.14	256.60	.92	5.00	1591.49	255.00	.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3416E+03 EXCESS= .0000E+00 OUTFLOW= .3416E+03 BASIN STORAGE= .2919E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/X	MANE	2.07	69.72	212.74	2.23	5.00	68.40	215.00	2.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4323E+01 EXCESS= .0000E+00 OUTFLOW= .4324E+01 BASIN STORAGE= .3382E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/X	MANE	2.08	67.45	212.41	2.15	5.00	66.19	215.00	2.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4175E+01 EXCESS= .0000E+00 OUTFLOW= .4176E+01 BASIN STORAGE= .3767E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/X	MANE	2.10	65.26	214.22	2.07	5.00	63.91	215.00	2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4029E+01 EXCESS= .0000E+00 OUTFLOW= .4029E+01 BASIN STORAGE= .3082E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/X	MANE	2.12	63.06	213.99	2.00	5.00	61.58	215.00	1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3880E+01 EXCESS= .0000E+00 OUTFLOW= .3880E+01 BASIN STORAGE= .3448E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/X	MANE	2.13	62.08	212.64	1.97	5.00	61.16	215.00	1.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3824E+01 EXCESS= .0000E+00 OUTFLOW= .3824E+01 BASIN STORAGE= .3759E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/X	MANE	2.13	61.50	213.18	1.95	5.00	60.23	215.00	1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3782E+01 EXCESS= .0000E+00 OUTFLOW= .3783E+01 BASIN STORAGE= .3212E-03 PERCENT ERROR= .0

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          FOR PLAN = 1  RATIO=  .00
               R/X  MANE         2.14     60.40    214.21      1.91      5.00     59.17    215.00        1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3706E+01 EXCESS= .0000E+00 OUTFLOW= .3707E+01 BASIN STORAGE= .3295E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
               R/X  MANE         2.15     59.41    212.86      1.88      5.00     58.62    215.00        1.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3650E+01 EXCESS= .0000E+00 OUTFLOW= .3650E+01 BASIN STORAGE= .3654E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
               R/X  MANE         2.56     30.16    214.74       .92      5.00     30.00    215.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1777E+01 EXCESS= .0000E+00 OUTFLOW= .1778E+01 BASIN STORAGE= .4170E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         1.80    139.07    212.71      2.25      5.00    137.22    215.00        2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8834E+01 EXCESS= .0000E+00 OUTFLOW= .8835E+01 BASIN STORAGE= .3812E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         1.82    134.60    212.61      2.17      5.00    132.93    215.00        2.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8533E+01 EXCESS= .0000E+00 OUTFLOW= .8534E+01 BASIN STORAGE= .4015E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         1.83    130.16    212.53      2.10      5.00    128.59    215.00        2.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8235E+01 EXCESS= .0000E+00 OUTFLOW= .8236E+01 BASIN STORAGE= .3104E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         1.85    125.61    212.62      2.02      5.00    124.15    215.00        2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7935E+01 EXCESS= .0000E+00 OUTFLOW= .7935E+01 BASIN STORAGE= .3121E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         1.86    124.45    213.44      1.99      5.00    122.15    215.00        1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7825E+01 EXCESS= .0000E+00 OUTFLOW= .7825E+01 BASIN STORAGE= .3249E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         1.86    122.71    214.03      1.97      5.00    121.03    215.00        1.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7742E+01 EXCESS= .0000E+00 OUTFLOW= .7743E+01 BASIN STORAGE= .3731E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         1.87    120.65    213.07      1.93      5.00    119.01    215.00        1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7583E+01 EXCESS= .0000E+00 OUTFLOW= .7584E+01 BASIN STORAGE= .3802E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         1.88    118.95    213.98      1.90      5.00    117.27    215.00        1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7472E+01 EXCESS= .0000E+00 OUTFLOW= .7473E+01 BASIN STORAGE= .3901E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT0  MANE         2.21     60.55    214.79       .93      5.00     60.43    215.00         .93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3669E+01 EXCESS= .0000E+00 OUTFLOW= .3669E+01 BASIN STORAGE= .4173E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT1  MANE         2.18    209.43    213.92      2.25      5.00    208.03    215.00        2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1358E+02 EXCESS= .0000E+00 OUTFLOW= .1358E+02 BASIN STORAGE= .4607E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT1  MANE         2.20    201.51    215.63      2.17      5.00    201.46    215.00        2.17
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1311E+02 EXCESS= .0000E+00 OUTFLOW= .1311E+02 BASIN STORAGE= .5631E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT1	MANE	2.22	196.14	215.20	2.09	5.00	195.89	215.00	2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1265E+02 EXCESS= .0000E+00 OUTFLOW= .1265E+02 BASIN STORAGE= .4673E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT1	MANE	2.24	190.06	214.84	2.02	5.00	189.77	215.00	2.02

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1219E+02 EXCESS= .0000E+00 OUTFLOW= .1220E+02 BASIN STORAGE= .5542E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT1	MANE	2.25	185.52	215.67	1.99	5.00	185.35	215.00	1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1200E+02 EXCESS= .0000E+00 OUTFLOW= .1201E+02 BASIN STORAGE= .4157E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT1	MANE	2.25	184.28	213.93	1.97	5.00	183.42	215.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1189E+02 EXCESS= .0000E+00 OUTFLOW= .1189E+02 BASIN STORAGE= .5254E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT1	MANE	2.26	182.11	214.86	1.93	5.00	181.87	215.00	1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1164E+02 EXCESS= .0000E+00 OUTFLOW= .1165E+02 BASIN STORAGE= .5591E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT1	MANE	2.27	177.90	215.65	1.90	5.00	177.57	215.00	1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1147E+02 EXCESS= .0000E+00 OUTFLOW= .1147E+02 BASIN STORAGE= .4329E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT1	MANE	2.68	90.53	217.04	.93	5.00	89.49	215.00	.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5620E+01 EXCESS= .0000E+00 OUTFLOW= .5620E+01 BASIN STORAGE= .5757E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/Y	MANE	1.93	74.73	212.48	2.32	5.00	72.95	215.00	2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4687E+01 EXCESS= .0000E+00 OUTFLOW= .4688E+01 BASIN STORAGE= .3380E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/Y	MANE	1.95	72.37	212.23	2.24	5.00	70.63	215.00	2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4532E+01 EXCESS= .0000E+00 OUTFLOW= .4532E+01 BASIN STORAGE= .3687E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/Y	MANE	1.96	70.01	212.02	2.16	5.00	68.28	215.00	2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4377E+01 EXCESS= .0000E+00 OUTFLOW= .4378E+01 BASIN STORAGE= .2986E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/Y	MANE	1.98	67.79	213.83	2.09	5.00	65.97	215.00	2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4222E+01 EXCESS= .0000E+00 OUTFLOW= .4223E+01 BASIN STORAGE= .3275E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/Y	MANE	1.99	66.80	212.59	2.05	5.00	65.44	215.00	2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4160E+01 EXCESS= .0000E+00 OUTFLOW= .4161E+01 BASIN STORAGE= .3533E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/Y	MANE	1.99	66.19	213.12	2.03	5.00	64.68	215.00	2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4117E+01 EXCESS= .0000E+00 OUTFLOW= .4118E+01 BASIN STORAGE= .3022E-03 PERCENT ERROR= .0

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          FOR PLAN = 1  RATIO=  .00
               R/Y  MANE         2.00     64.87    212.11      1.99      5.00     63.47    215.00        1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4037E+01 EXCESS= .0000E+00 OUTFLOW= .4037E+01 BASIN STORAGE= .3068E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
               R/Y  MANE         2.01     64.02    212.88      1.96      5.00     62.79    215.00        1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3975E+01 EXCESS= .0000E+00 OUTFLOW= .3976E+01 BASIN STORAGE= .3371E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
               R/Y  MANE         2.37     33.11    213.49       .98      5.00     32.71    215.00         .98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1981E+01 EXCESS= .0000E+00 OUTFLOW= .1981E+01 BASIN STORAGE= .3711E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.43    165.38    212.04      2.36      5.00    159.37    215.00        2.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1052E+02 EXCESS= .0000E+00 OUTFLOW= .1052E+02 BASIN STORAGE= .2633E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.44    160.27    212.25      2.28      5.00    154.73    215.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1017E+02 EXCESS= .0000E+00 OUTFLOW= .1017E+02 BASIN STORAGE= .3222E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.46    155.19    212.50      2.20      5.00    149.78    215.00        2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9826E+01 EXCESS= .0000E+00 OUTFLOW= .9827E+01 BASIN STORAGE= .3055E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.47    149.97    212.85      2.13      5.00    144.48    215.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9484E+01 EXCESS= .0000E+00 OUTFLOW= .9485E+01 BASIN STORAGE= .2759E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.47    147.92    212.18      2.09      5.00    143.07    215.00        2.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9347E+01 EXCESS= .0000E+00 OUTFLOW= .9347E+01 BASIN STORAGE= .2717E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.48    146.40    212.71      2.07      5.00    141.47    215.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9248E+01 EXCESS= .0000E+00 OUTFLOW= .9249E+01 BASIN STORAGE= .3000E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.48    143.96    212.13      2.03      5.00    139.04    215.00        2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9072E+01 EXCESS= .0000E+00 OUTFLOW= .9073E+01 BASIN STORAGE= .2872E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.49    141.75    211.50      2.00      5.00    136.72    215.00        2.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8937E+01 EXCESS= .0000E+00 OUTFLOW= .8938E+01 BASIN STORAGE= .2765E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT7  MANE         1.76     73.55    212.63      1.01      5.00     72.27    215.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4504E+01 EXCESS= .0000E+00 OUTFLOW= .4504E+01 BASIN STORAGE= .3281E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT8  MANE         1.60    179.70    213.05      2.12      5.00    177.18    215.00        2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1167E+02 EXCESS= .0000E+00 OUTFLOW= .1167E+02 BASIN STORAGE= .3783E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
             R/PT8  MANE         1.61    173.87    213.13      2.05      5.00    171.40    215.00        2.05
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1127E+02 EXCESS= .0000E+00 OUTFLOW= .1127E+02 BASIN STORAGE= .3741E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT8	MANE	1.63	167.97	213.35	1.97	5.00	165.45	215.00	1.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1087E+02 EXCESS= .0000E+00 OUTFLOW= .1087E+02 BASIN STORAGE= .3611E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT8	MANE	1.64	161.39	213.73	1.90	5.00	159.93	215.00	1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1047E+02 EXCESS= .0000E+00 OUTFLOW= .1047E+02 BASIN STORAGE= .3210E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT8	MANE	1.65	158.58	212.67	1.87	5.00	157.99	215.00	1.87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1031E+02 EXCESS= .0000E+00 OUTFLOW= .1031E+02 BASIN STORAGE= .3591E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT8	MANE	1.65	157.98	213.29	1.85	5.00	155.49	215.00	1.85

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1020E+02 EXCESS= .0000E+00 OUTFLOW= .1020E+02 BASIN STORAGE= .2875E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT8	MANE	1.66	153.76	212.62	1.81	5.00	153.31	215.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9988E+01 EXCESS= .0000E+00 OUTFLOW= .9989E+01 BASIN STORAGE= .3731E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT8	MANE	1.67	152.26	213.55	1.79	5.00	150.37	215.00	1.79

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9835E+01 EXCESS= .0000E+00 OUTFLOW= .9836E+01 BASIN STORAGE= .3672E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/PT8	MANE	1.98	74.87	215.62	.87	5.00	74.74	215.00	.87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4785E+01 EXCESS= .0000E+00 OUTFLOW= .4785E+01 BASIN STORAGE= .3664E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/ES-2	MANE	1.55	48.09	211.29	2.54	5.00	46.33	210.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2825E+01 EXCESS= .0000E+00 OUTFLOW= .2825E+01 BASIN STORAGE= .2548E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/ES-2	MANE	1.56	46.66	211.27	2.46	5.00	44.96	210.00	2.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2736E+01 EXCESS= .0000E+00 OUTFLOW= .2736E+01 BASIN STORAGE= .2653E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/ES-2	MANE	1.58	45.28	211.29	2.38	5.00	43.60	210.00	2.38

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2649E+01 EXCESS= .0000E+00 OUTFLOW= .2649E+01 BASIN STORAGE= .2057E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/ES-2	MANE	1.59	43.94	211.34	2.31	5.00	42.26	210.00	2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2562E+01 EXCESS= .0000E+00 OUTFLOW= .2562E+01 BASIN STORAGE= .2094E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/ES-2	MANE	1.59	43.07	212.02	2.27	5.00	41.62	210.00	2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2525E+01 EXCESS= .0000E+00 OUTFLOW= .2525E+01 BASIN STORAGE= .2226E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

R/ES-2	MANE	1.60	42.48	210.89	2.25	5.00	41.18	210.00	2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2500E+01 EXCESS= .0000E+00 OUTFLOW= .2501E+01 BASIN STORAGE= .2546E-03 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

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          R/ES-2  MANE         1.60     42.30    211.79      2.21      5.00     40.64    210.00        2.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2456E+01 EXCESS= .0000E+00 OUTFLOW= .2456E+01 BASIN STORAGE= .2519E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/ES-2  MANE         1.61     41.19    210.88      2.18      5.00     39.92    210.00        2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2420E+01 EXCESS= .0000E+00 OUTFLOW= .2420E+01 BASIN STORAGE= .2635E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/ES-2  MANE         1.87     22.56    210.96      1.15      5.00     21.64    210.00        1.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1276E+01 EXCESS= .0000E+00 OUTFLOW= .1276E+01 BASIN STORAGE= .2212E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.43    104.19    213.97      2.35      5.00    101.01    215.00        2.35

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6474E+01 EXCESS= .0000E+00 OUTFLOW= .6476E+01 BASIN STORAGE= .4850E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.45    101.68    213.21      2.28      5.00     98.27    215.00        2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6263E+01 EXCESS= .0000E+00 OUTFLOW= .6265E+01 BASIN STORAGE= .4171E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.47     99.09    212.48      2.20      5.00     96.76    215.00        2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6055E+01 EXCESS= .0000E+00 OUTFLOW= .6057E+01 BASIN STORAGE= .5540E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.49     94.41    214.26      2.12      5.00     92.17    215.00        2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5840E+01 EXCESS= .0000E+00 OUTFLOW= .5841E+01 BASIN STORAGE= .4912E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.50     94.39    212.55      2.09      5.00     92.32    215.00        2.09

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5756E+01 EXCESS= .0000E+00 OUTFLOW= .5757E+01 BASIN STORAGE= .5630E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.51     93.06    213.10      2.07      5.00     90.31    215.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5698E+01 EXCESS= .0000E+00 OUTFLOW= .5700E+01 BASIN STORAGE= .4891E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.52     90.73    213.98      2.03      5.00     88.12    215.00        2.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5585E+01 EXCESS= .0000E+00 OUTFLOW= .5587E+01 BASIN STORAGE= .5471E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.53     89.84    212.33      2.00      5.00     88.40    215.00        2.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5505E+01 EXCESS= .0000E+00 OUTFLOW= .5506E+01 BASIN STORAGE= .4243E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9B  MANE         2.98     46.97    214.38      1.01      5.00     46.39    215.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2774E+01 EXCESS= .0000E+00 OUTFLOW= .2775E+01 BASIN STORAGE= .4489E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9C  MANE          .62    350.22    214.98      2.20      5.00    350.22    215.00        2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2288E+02 EXCESS= .0000E+00 OUTFLOW= .2288E+02 BASIN STORAGE= .1315E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          R/PT9C  MANE          .62    339.35    215.42      2.13      5.00    338.99    215.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2211E+02 EXCESS= .0000E+00 OUTFLOW= .2211E+02 BASIN STORAGE= .1489E-03 PERCENT ERROR=    .0
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          FOR PLAN = 1  RATIO=  .00
            R/PT9C  MANE          .63    329.54    215.12      2.05      5.00    329.23    215.00        2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2134E+02 EXCESS= .0000E+00 OUTFLOW= .2134E+02 BASIN STORAGE= .1328E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9C  MANE          .63    317.18    215.29      1.98      5.00    316.68    215.00        1.98

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2057E+02 EXCESS= .0000E+00 OUTFLOW= .2057E+02 BASIN STORAGE= .1525E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9C  MANE          .63    314.29    215.12      1.95      5.00    313.95    215.00        1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2025E+02 EXCESS= .0000E+00 OUTFLOW= .2025E+02 BASIN STORAGE= .1444E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9C  MANE          .64    309.37    215.37      1.93      5.00    308.86    215.00        1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2004E+02 EXCESS= .0000E+00 OUTFLOW= .2004E+02 BASIN STORAGE= .1306E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9C  MANE          .64    303.64    215.07      1.89      5.00    303.44    215.00        1.89

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1964E+02 EXCESS= .0000E+00 OUTFLOW= .1964E+02 BASIN STORAGE= .1308E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9C  MANE          .64    300.05    215.06      1.86      5.00    299.86    215.00        1.86

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1934E+02 EXCESS= .0000E+00 OUTFLOW= .1934E+02 BASIN STORAGE= .1339E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9C  MANE          .76    151.86    216.01       .92      5.00    151.17    215.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9508E+01 EXCESS= .0000E+00 OUTFLOW= .9508E+01 BASIN STORAGE= .1463E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .68    390.86    215.64      2.21      5.00    390.35    215.00        2.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2566E+02 EXCESS= .0000E+00 OUTFLOW= .2566E+02 BASIN STORAGE= .1506E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .69    378.15    215.33      2.13      5.00    377.40    215.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2479E+02 EXCESS= .0000E+00 OUTFLOW= .2479E+02 BASIN STORAGE= .1516E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .70    367.21    215.54      2.06      5.00    366.31    215.00        2.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2393E+02 EXCESS= .0000E+00 OUTFLOW= .2393E+02 BASIN STORAGE= .1680E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .70    353.35    215.51      1.98      5.00    352.45    215.00        1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2306E+02 EXCESS= .0000E+00 OUTFLOW= .2306E+02 BASIN STORAGE= .1541E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .70    349.77    215.30      1.95      5.00    348.93    215.00        1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2271E+02 EXCESS= .0000E+00 OUTFLOW= .2271E+02 BASIN STORAGE= .1691E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .71    344.58    215.44      1.93      5.00    343.71    215.00        1.93

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2247E+02 EXCESS= .0000E+00 OUTFLOW= .2247E+02 BASIN STORAGE= .1646E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .71    338.75    215.69      1.89      5.00    337.85    215.00        1.90
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .2202E+02 EXCESS= .0000E+00 OUTFLOW= .2202E+02 BASIN STORAGE= .1496E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .71    334.60    215.64      1.87      5.00    333.60    215.00        1.87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2169E+02 EXCESS= .0000E+00 OUTFLOW= .2169E+02 BASIN STORAGE= .1584E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
            R/PT9D  MANE          .84    168.19    216.10       .92      5.00    166.97    215.00         .92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1065E+02 EXCESS= .0000E+00 OUTFLOW= .1065E+02 BASIN STORAGE= .1631E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         3.75     95.85    221.25      2.27      5.00     95.23    220.00        2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6063E+01 EXCESS= .0000E+00 OUTFLOW= .6069E+01 BASIN STORAGE= .1718E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         3.75     92.94    221.25      2.20      5.00     92.24    220.00        2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5859E+01 EXCESS= .0000E+00 OUTFLOW= .5864E+01 BASIN STORAGE= .1662E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         3.75     90.03    221.25      2.12      5.00     89.25    220.00        2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5655E+01 EXCESS= .0000E+00 OUTFLOW= .5661E+01 BASIN STORAGE= .1637E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         3.50     87.85    220.50      2.05      5.00     87.23    220.00        2.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5453E+01 EXCESS= .0000E+00 OUTFLOW= .5459E+01 BASIN STORAGE= .1972E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         3.50     86.65    220.50      2.01      5.00     86.02    220.00        2.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5372E+01 EXCESS= .0000E+00 OUTFLOW= .5378E+01 BASIN STORAGE= .1959E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         3.50     85.80    220.50      1.99      5.00     85.17    220.00        1.99

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5315E+01 EXCESS= .0000E+00 OUTFLOW= .5321E+01 BASIN STORAGE= .1950E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         3.50     84.24    220.50      1.95      5.00     83.59    220.00        1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5210E+01 EXCESS= .0000E+00 OUTFLOW= .5216E+01 BASIN STORAGE= .1933E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         3.50     83.03    220.50      1.92      5.00     82.38    220.00        1.92

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5130E+01 EXCESS= .0000E+00 OUTFLOW= .5135E+01 BASIN STORAGE= .1920E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
              R/BB  MANE         5.00     41.84    220.00       .95      5.00     41.84    220.00         .95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2526E+01 EXCESS= .0000E+00 OUTFLOW= .2531E+01 BASIN STORAGE= .1712E-02 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE         1.28    889.49    220.65      2.24      5.00    887.10    220.00        2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6668E+02 EXCESS= .0000E+00 OUTFLOW= .6668E+02 BASIN STORAGE= .2297E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE         1.29    858.87    219.83      2.16      5.00    858.70    220.00        2.16

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6430E+02 EXCESS= .0000E+00 OUTFLOW= .6431E+02 BASIN STORAGE= .2535E-02 PERCENT ERROR=    .0
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          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE          1.31    830.79    220.36      2.08      5.00    827.87    220.00        2.08

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6192E+02 EXCESS= .0000E+00 OUTFLOW= .6192E+02 BASIN STORAGE= .2628E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE          1.33    798.64    220.98      2.00      5.00    796.44    220.00        2.00

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5954E+02 EXCESS= .0000E+00 OUTFLOW= .5955E+02 BASIN STORAGE= .2153E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE          1.34    786.74    220.98      1.97      5.00    784.26    220.00        1.97

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5860E+02 EXCESS= .0000E+00 OUTFLOW= .5861E+02 BASIN STORAGE= .2163E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE          1.35    779.74    220.58      1.94      5.00    775.89    220.00        1.95

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5794E+02 EXCESS= .0000E+00 OUTFLOW= .5795E+02 BASIN STORAGE= .2405E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE          1.36    762.84    221.02      1.90      5.00    760.05    220.00        1.90

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5672E+02 EXCESS= .0000E+00 OUTFLOW= .5672E+02 BASIN STORAGE= .2158E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE          1.36    750.85    221.06      1.87      5.00    748.03    220.00        1.87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5578E+02 EXCESS= .0000E+00 OUTFLOW= .5579E+02 BASIN STORAGE= .2145E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-1  MANE          1.83    359.01    221.54       .87      5.00    355.21    220.00         .87

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2598E+02 EXCESS= .0000E+00 OUTFLOW= .2598E+02 BASIN STORAGE= .2364E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-2  MANE           .56   1808.61    220.20      2.42      5.00   1804.85    220.00        2.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1413E+03 EXCESS= .0000E+00 OUTFLOW= .1413E+03 BASIN STORAGE= .1272E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-2  MANE           .57   1753.61    220.70      2.34      5.00   1748.94    220.00        2.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1366E+03 EXCESS= .0000E+00 OUTFLOW= .1366E+03 BASIN STORAGE= .1304E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-2  MANE           .58   1694.46    220.25      2.26      5.00   1690.28    220.00        2.26

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1318E+03 EXCESS= .0000E+00 OUTFLOW= .1318E+03 BASIN STORAGE= .1405E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-2  MANE           .59   1637.76    220.45      2.18      5.00   1631.54    220.00        2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1270E+03 EXCESS= .0000E+00 OUTFLOW= .1271E+03 BASIN STORAGE= .1285E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-2  MANE           .59   1615.46    220.54      2.15      5.00   1608.82    220.00        2.15

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1252E+03 EXCESS= .0000E+00 OUTFLOW= .1252E+03 BASIN STORAGE= .1244E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-2  MANE           .59   1595.91    220.24      2.12      5.00   1591.87    220.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1238E+03 EXCESS= .0000E+00 OUTFLOW= .1238E+03 BASIN STORAGE= .1391E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-2  MANE           .60   1566.99    220.73      2.08      5.00   1561.89    220.00        2.08
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .1214E+03 EXCESS= .0000E+00 OUTFLOW= .1214E+03 BASIN STORAGE= .1286E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-2	MANE	.60	1542.56	220.24	2.05	5.00	1538.40	220.00	2.05

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1195E+03 EXCESS= .0000E+00 OUTFLOW= .1195E+03 BASIN STORAGE= .1401E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-2	MANE	.79	781.33	220.55	1.01	5.00	775.43	220.00	1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .5895E+02 EXCESS= .0000E+00 OUTFLOW= .5895E+02 BASIN STORAGE= .1334E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	.80	2086.06	220.75	2.48	5.00	2080.16	220.00	2.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1648E+03 EXCESS= .0000E+00 OUTFLOW= .1648E+03 BASIN STORAGE= .1952E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	.81	2018.77	220.27	2.40	5.00	2014.07	220.00	2.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1594E+03 EXCESS= .0000E+00 OUTFLOW= .1594E+03 BASIN STORAGE= .2011E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	.82	1956.02	220.78	2.31	5.00	1950.31	220.00	2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1539E+03 EXCESS= .0000E+00 OUTFLOW= .1539E+03 BASIN STORAGE= .1921E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	.83	1887.82	220.53	2.23	5.00	1880.97	220.00	2.23

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1485E+03 EXCESS= .0000E+00 OUTFLOW= .1485E+03 BASIN STORAGE= .2227E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	.83	1862.07	220.91	2.20	5.00	1856.95	220.00	2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1463E+03 EXCESS= .0000E+00 OUTFLOW= .1463E+03 BASIN STORAGE= .2255E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	.84	1841.03	220.99	2.18	5.00	1837.34	220.00	2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1448E+03 EXCESS= .0000E+00 OUTFLOW= .1448E+03 BASIN STORAGE= .2072E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	.84	1808.33	220.95	2.14	5.00	1803.57	220.00	2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1420E+03 EXCESS= .0000E+00 OUTFLOW= .1420E+03 BASIN STORAGE= .2219E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	.85	1782.67	220.56	2.10	5.00	1775.30	220.00	2.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1398E+03 EXCESS= .0000E+00 OUTFLOW= .1398E+03 BASIN STORAGE= .2085E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-3	MANE	1.11	916.05	221.36	1.05	5.00	907.11	220.00	1.06

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7014E+02 EXCESS= .0000E+00 OUTFLOW= .7015E+02 BASIN STORAGE= .1890E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RSWFH-6	MANE	.86	486.95	215.70	2.62	5.00	478.66	215.00	2.62

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3560E+02 EXCESS= .0000E+00 OUTFLOW= .3561E+02 BASIN STORAGE= .1143E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RSWFH-6	MANE	.87	472.37	215.70	2.54	5.00	464.21	215.00	2.54

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3448E+02 EXCESS= .0000E+00 OUTFLOW= .3448E+02 BASIN STORAGE= .1149E-02 PERCENT ERROR= .0

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          FOR PLAN = 1  RATIO=  .00
           RSWFH-6  MANE          .88    458.30    215.75      2.45      5.00    449.90    215.00        2.46

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3335E+02 EXCESS= .0000E+00 OUTFLOW= .3335E+02 BASIN STORAGE= .1141E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-6  MANE          .90    444.75    215.86      2.37      5.00    435.82    215.00        2.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3223E+02 EXCESS= .0000E+00 OUTFLOW= .3223E+02 BASIN STORAGE= .1282E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-6  MANE          .90    438.51    216.10      2.34      5.00    429.64    215.00        2.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3178E+02 EXCESS= .0000E+00 OUTFLOW= .3178E+02 BASIN STORAGE= .1183E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-6  MANE          .90    434.84    216.00      2.31      5.00    425.85    215.00        2.32

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3147E+02 EXCESS= .0000E+00 OUTFLOW= .3147E+02 BASIN STORAGE= .1245E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-6  MANE          .91    425.68    215.70      2.27      5.00    417.96    215.00        2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3089E+02 EXCESS= .0000E+00 OUTFLOW= .3089E+02 BASIN STORAGE= .1173E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-6  MANE          .92    421.64    215.97      2.24      5.00    412.66    215.00        2.24

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3044E+02 EXCESS= .0000E+00 OUTFLOW= .3044E+02 BASIN STORAGE= .1260E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RSWFH-6  MANE         1.17    226.10    216.96      1.17      5.00    219.44    215.00        1.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1585E+02 EXCESS= .0000E+00 OUTFLOW= .1585E+02 BASIN STORAGE= .1131E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCSWFH6  MANE          .58   1100.79    215.84      2.64      5.00   1093.84    215.00        2.64

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7888E+02 EXCESS= .0000E+00 OUTFLOW= .7889E+02 BASIN STORAGE= .1121E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCSWFH6  MANE          .59   1071.62    215.50      2.56      5.00   1062.27    215.00        2.56

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7642E+02 EXCESS= .0000E+00 OUTFLOW= .7642E+02 BASIN STORAGE= .1136E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCSWFH6  MANE          .59   1037.74    215.77      2.48      5.00   1029.48    215.00        2.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7395E+02 EXCESS= .0000E+00 OUTFLOW= .7396E+02 BASIN STORAGE= .1145E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCSWFH6  MANE          .60   1006.76    215.49      2.39      5.00    997.79    215.00        2.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7150E+02 EXCESS= .0000E+00 OUTFLOW= .7150E+02 BASIN STORAGE= .1064E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCSWFH6  MANE          .61    992.44    215.43      2.36      5.00    984.15    215.00        2.36

CONTINUITY SUMMARY (AC-FT) - INFLOW= .7052E+02 EXCESS= .0000E+00 OUTFLOW= .7052E+02 BASIN STORAGE= .1123E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCSWFH6  MANE          .61    986.21    215.60      2.34      5.00    976.44    215.00        2.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6983E+02 EXCESS= .0000E+00 OUTFLOW= .6983E+02 BASIN STORAGE= .1059E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCSWFH6  MANE          .61    964.57    215.90      2.30      5.00    957.82    215.00        2.30
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CONTINUITY SUMMARY (AC-FT) - INFLOW= .6855E+02 EXCESS= .0000E+00 OUTFLOW= .6856E+02 BASIN STORAGE= .1063E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH6	MANE	.61	953.68	215.80	2.26	5.00	945.50	215.00	2.27

CONTINUITY SUMMARY (AC-FT) - INFLOW= .6758E+02 EXCESS= .0000E+00 OUTFLOW= .6758E+02 BASIN STORAGE= .1068E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH6	MANE	.78	519.59	215.72	1.19	5.00	511.60	215.00	1.19

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3553E+02 EXCESS= .0000E+00 OUTFLOW= .3553E+02 BASIN STORAGE= .1151E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	2.31	193.53	217.29	2.04	5.00	186.25	215.00	2.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1271E+02 EXCESS= .0000E+00 OUTFLOW= .1272E+02 BASIN STORAGE= .2263E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	2.35	184.31	218.17	1.96	5.00	177.81	215.00	1.96

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1222E+02 EXCESS= .0000E+00 OUTFLOW= .1222E+02 BASIN STORAGE= .2460E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	2.38	177.50	216.76	1.88	5.00	171.20	215.00	1.88

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1174E+02 EXCESS= .0000E+00 OUTFLOW= .1175E+02 BASIN STORAGE= .2730E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	2.42	171.62	217.79	1.81	5.00	164.65	215.00	1.81

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1127E+02 EXCESS= .0000E+00 OUTFLOW= .1128E+02 BASIN STORAGE= .2231E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	2.44	167.77	216.78	1.78	5.00	161.52	215.00	1.77

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1108E+02 EXCESS= .0000E+00 OUTFLOW= .1108E+02 BASIN STORAGE= .2170E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	2.45	167.01	217.78	1.76	5.00	160.39	220.00	1.76

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1095E+02 EXCESS= .0000E+00 OUTFLOW= .1096E+02 BASIN STORAGE= .2286E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	2.47	163.39	217.21	1.72	5.00	157.10	220.00	1.71

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1070E+02 EXCESS= .0000E+00 OUTFLOW= .1071E+02 BASIN STORAGE= .2669E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	2.49	158.66	218.69	1.69	5.00	153.09	220.00	1.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1052E+02 EXCESS= .0000E+00 OUTFLOW= .1052E+02 BASIN STORAGE= .2477E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RSWFH-4	MANE	3.42	72.11	219.07	.75	5.00	71.01	220.00	.75

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4649E+01 EXCESS= .0000E+00 OUTFLOW= .4652E+01 BASIN STORAGE= .2870E-02 PERCENT ERROR= -.1

FOR PLAN = 1 RATIO= .00

RCSWFH-5	MANE	1.88	674.64	216.68	2.41	5.00	653.48	220.00	2.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4835E+02 EXCESS= .0000E+00 OUTFLOW= .4836E+02 BASIN STORAGE= .2907E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

RCSWFH-5	MANE	1.91	652.96	217.83	2.33	5.00	633.86	220.00	2.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4669E+02 EXCESS= .0000E+00 OUTFLOW= .4670E+02 BASIN STORAGE= .3734E-02 PERCENT ERROR= .0

FOR PLAN = 1 RATIO= .00

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          RCSWFH-5  MANE          1.94    632.65    216.89      2.25      5.00    612.14    220.00        2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4507E+02 EXCESS= .0000E+00 OUTFLOW= .4508E+02 BASIN STORAGE= .3785E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-5  MANE          1.96    610.49    217.95      2.17      5.00    593.97    220.00        2.17

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4349E+02 EXCESS= .0000E+00 OUTFLOW= .4350E+02 BASIN STORAGE= .2859E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-5  MANE          1.98    602.36    217.28      2.14      5.00    585.37    220.00        2.13

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4280E+02 EXCESS= .0000E+00 OUTFLOW= .4281E+02 BASIN STORAGE= .3451E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-5  MANE          1.98    595.47    218.10      2.11      5.00    579.68    220.00        2.11

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4238E+02 EXCESS= .0000E+00 OUTFLOW= .4239E+02 BASIN STORAGE= .3764E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-5  MANE          2.00    585.18    217.76      2.07      5.00    570.29    220.00        2.07

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4152E+02 EXCESS= .0000E+00 OUTFLOW= .4153E+02 BASIN STORAGE= .3040E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-5  MANE          2.01    575.93    217.20      2.04      5.00    560.47    220.00        2.04

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4089E+02 EXCESS= .0000E+00 OUTFLOW= .4090E+02 BASIN STORAGE= .3492E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
          RCSWFH-5  MANE          2.65    291.39    219.95      1.01      5.00    291.13    220.00        1.01

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2023E+02 EXCESS= .0000E+00 OUTFLOW= .2023E+02 BASIN STORAGE= .3116E-02 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE          3.00     15.98    216.00      2.78      5.00     15.87    215.00        2.78

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9517E+00 EXCESS= .0000E+00 OUTFLOW= .9534E+00 BASIN STORAGE= .5928E-03 PERCENT ERROR=   -.2

          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE          3.00     15.58    216.00      2.70      5.00     15.38    215.00        2.69

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9239E+00 EXCESS= .0000E+00 OUTFLOW= .9244E+00 BASIN STORAGE= .5775E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE          3.00     15.16    216.00      2.61      5.00     14.96    215.00        2.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8962E+00 EXCESS= .0000E+00 OUTFLOW= .8967E+00 BASIN STORAGE= .5687E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE          3.00     14.75    216.00      2.53      5.00     14.54    215.00        2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8684E+00 EXCESS= .0000E+00 OUTFLOW= .8690E+00 BASIN STORAGE= .5598E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE          3.00     14.58    216.00      2.50      5.00     14.37    215.00        2.50

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8573E+00 EXCESS= .0000E+00 OUTFLOW= .8579E+00 BASIN STORAGE= .5562E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE          3.00     14.46    216.00      2.48      5.00     14.25    215.00        2.47

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8496E+00 EXCESS= .0000E+00 OUTFLOW= .8502E+00 BASIN STORAGE= .5537E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE          3.00     14.24    216.00      2.44      5.00     14.03    215.00        2.43

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8352E+00 EXCESS= .0000E+00 OUTFLOW= .8358E+00 BASIN STORAGE= .5490E-03 PERCENT ERROR=   -.1
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```
          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE         3.00     14.08    216.00      2.40      5.00     13.86    215.00        2.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .8241E+00 EXCESS= .0000E+00 OUTFLOW= .8247E+00 BASIN STORAGE= .5454E-03 PERCENT ERROR=   -.1

          FOR PLAN = 1  RATIO=  .00
             R/ST3  MANE         3.50      7.95    217.00      1.34      5.00      7.85    215.00        1.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4578E+00 EXCESS= .0000E+00 OUTFLOW= .4582E+00 BASIN STORAGE= .7546E-03 PERCENT ERROR=   -.3

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.19     62.94    212.30      2.61      5.00     60.66    215.00        2.61

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4032E+01 EXCESS= .0000E+00 OUTFLOW= .4032E+01 BASIN STORAGE= .3066E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.20     60.54    213.84      2.53      5.00     58.50    215.00        2.53

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3907E+01 EXCESS= .0000E+00 OUTFLOW= .3908E+01 BASIN STORAGE= .3901E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.22     59.02    213.22      2.45      5.00     56.96    215.00        2.45

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3783E+01 EXCESS= .0000E+00 OUTFLOW= .3783E+01 BASIN STORAGE= .3431E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.24     57.46    212.62      2.37      5.00     55.78    215.00        2.37

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3662E+01 EXCESS= .0000E+00 OUTFLOW= .3663E+01 BASIN STORAGE= .4197E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.25     56.51    213.29      2.34      5.00     54.57    215.00        2.34

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3610E+01 EXCESS= .0000E+00 OUTFLOW= .3610E+01 BASIN STORAGE= .3549E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.25     55.85    213.76      2.32      5.00     53.99    215.00        2.31

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3578E+01 EXCESS= .0000E+00 OUTFLOW= .3578E+01 BASIN STORAGE= .3035E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.26     55.40    212.40      2.28      5.00     53.72    215.00        2.28

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3517E+01 EXCESS= .0000E+00 OUTFLOW= .3517E+01 BASIN STORAGE= .3335E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.27     54.45    213.09      2.25      5.00     52.70    215.00        2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3465E+01 EXCESS= .0000E+00 OUTFLOW= .3466E+01 BASIN STORAGE= .3854E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
              R/AA  MANE         2.62     30.39    212.49      1.20      5.00     30.21    215.00        1.21

CONTINUITY SUMMARY (AC-FT) - INFLOW= .1859E+01 EXCESS= .0000E+00 OUTFLOW= .1860E+01 BASIN STORAGE= .3820E-03 PERCENT ERROR=    .0


*** NORMAL END OF HEC-1 ***
```

APPENDIX B

Hydraulic Calculations

Worksheet for Facility 1

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.60	%
Normal Depth	4.55	ft
Diameter	54.57	in
Discharge	326.00	ft³/s

Results

Diameter	54.57	in
Normal Depth	4.55	ft
Flow Area	16.24	ft²
Wetted Perimeter	14.29	ft
Top Width	0.00	ft
Critical Depth	4.46	ft
Percent Full	100.0	%
Critical Slope	2.32772	%
Velocity	20.08	ft/s
Velocity Head	6.26	ft
Specific Energy	10.81	ft
Froude Number	0.00	
Maximum Discharge	350.68	ft³/s
Discharge Full	326.00	ft³/s
Slope Full	2.60	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 1

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.55	ft
Critical Depth	4.46	ft
Channel Slope	2.60	%
Critical Slope	2.32772	%

Worksheet for Facility 2A

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.68	ft
Diameter	32.19	in
Discharge	70.00	ft³/s

Results

Diameter	32.19	in
Normal Depth	2.68	ft
Flow Area	5.65	ft²
Wetted Perimeter	8.43	ft
Top Width	0.00	ft
Critical Depth	2.56	ft
Percent Full	100.0	%
Critical Slope	1.73517	%
Velocity	12.39	ft/s
Velocity Head	2.38	ft
Specific Energy	5.07	ft
Froude Number	0.00	
Maximum Discharge	75.30	ft³/s
Discharge Full	70.00	ft³/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 2A

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.68	ft
Critical Depth	2.56	ft
Channel Slope	2.00	%
Critical Slope	1.73517	%

Worksheet for Facility 2

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.40	%
Normal Depth	2.59	ft
Diameter	31.11	in
Discharge	70.00	ft^3/s

Results

Diameter	31.11	in
Normal Depth	2.59	ft
Flow Area	5.28	ft^2
Wetted Perimeter	8.14	ft
Top Width	0.00	ft
Critical Depth	2.51	ft
Percent Full	100.0	%
Critical Slope	2.10325	%
Velocity	13.26	ft/s
Velocity Head	2.73	ft
Specific Energy	5.33	ft
Froude Number	0.00	
Maximum Discharge	75.30	ft^3/s
Discharge Full	70.00	ft^3/s
Slope Full	2.40	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 2

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.59	ft
Critical Depth	2.51	ft
Channel Slope	2.40	%
Critical Slope	2.10325	%

Worksheet for Facility 3

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.74	ft
Diameter	32.87	in
Discharge	74.00	ft^3/s

Results

Diameter	32.87	in
Normal Depth	2.74	ft
Flow Area	5.89	ft^2
Wetted Perimeter	8.61	ft
Top Width	0.00	ft
Critical Depth	2.61	ft
Percent Full	100.0	%
Critical Slope	1.73559	%
Velocity	12.56	ft/s
Velocity Head	2.45	ft
Specific Energy	5.19	ft
Froude Number	0.00	
Maximum Discharge	79.60	ft^3/s
Discharge Full	74.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 3

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.74	ft
Critical Depth	2.61	ft
Channel Slope	2.00	%
Critical Slope	1.73559	%

Worksheet for Facility 4

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.40	%
Normal Depth	3.35	ft
Diameter	40.24	in
Discharge	139.00	ft^3/s

Results

Diameter	40.24	in
Normal Depth	3.35	ft
Flow Area	8.83	ft^2
Wetted Perimeter	10.53	ft
Top Width	0.00	ft
Critical Depth	3.26	ft
Percent Full	100.0	%
Critical Slope	2.11698	%
Velocity	15.74	ft/s
Velocity Head	3.85	ft
Specific Energy	7.20	ft
Froude Number	0.00	
Maximum Discharge	149.52	ft^3/s
Discharge Full	139.00	ft^3/s
Slope Full	2.40	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 4

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.35	ft
Critical Depth	3.26	ft
Channel Slope	2.40	%
Critical Slope	2.11698	%

Worksheet for Facility 5

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.78	ft
Diameter	33.36	in
Discharge	77.00	ft^3/s

Results

Diameter	33.36	in
Normal Depth	2.78	ft
Flow Area	6.07	ft^2
Wetted Perimeter	8.73	ft
Top Width	0.00	ft
Critical Depth	2.65	ft
Percent Full	100.0	%
Critical Slope	1.73611	%
Velocity	12.68	ft/s
Velocity Head	2.50	ft
Specific Energy	5.28	ft
Froude Number	0.00	
Maximum Discharge	82.83	ft^3/s
Discharge Full	77.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 5

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.78	ft
Critical Depth	2.65	ft
Channel Slope	2.00	%
Critical Slope	1.73611	%

Worksheet for Facility 6

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	3.00	%
Normal Depth	3.76	ft
Diameter	45.12	in
Discharge	211.00	ft^3/s

Results

Diameter	45.12	in
Normal Depth	3.76	ft
Flow Area	11.11	ft^2
Wetted Perimeter	11.81	ft
Top Width	0.00	ft
Critical Depth	3.70	ft
Percent Full	100.0	%
Critical Slope	2.70369	%
Velocity	19.00	ft/s
Velocity Head	5.61	ft
Specific Energy	9.37	ft
Froude Number	0.00	
Maximum Discharge	226.98	ft^3/s
Discharge Full	211.00	ft^3/s
Slope Full	3.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 6

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.76	ft
Critical Depth	3.70	ft
Channel Slope	3.00	%
Critical Slope	2.70369	%

Worksheet for Facility 7

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.75	ft
Diameter	33.04	in
Discharge	75.00	ft^3/s

Results

Diameter	33.04	in
Normal Depth	2.75	ft
Flow Area	5.95	ft^2
Wetted Perimeter	8.65	ft
Top Width	0.00	ft
Critical Depth	2.63	ft
Percent Full	100.0	%
Critical Slope	1.73566	%
Velocity	12.60	ft/s
Velocity Head	2.47	ft
Specific Energy	5.22	ft
Froude Number	0.00	
Maximum Discharge	80.68	ft^3/s
Discharge Full	75.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 7

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.75	ft
Critical Depth	2.63	ft
Channel Slope	2.00	%
Critical Slope	1.73566	%

Worksheet for Facility 8

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.50	%
Normal Depth	4.49	ft
Diameter	53.88	in
Discharge	309.00	ft³/s

Results

Diameter	53.88	in
Normal Depth	4.49	ft
Flow Area	15.83	ft²
Wetted Perimeter	14.10	ft
Top Width	0.00	ft
Critical Depth	4.39	ft
Percent Full	100.0	%
Critical Slope	2.23005	%
Velocity	19.52	ft/s
Velocity Head	5.92	ft
Specific Energy	10.41	ft
Froude Number	0.00	
Maximum Discharge	332.40	ft³/s
Discharge Full	309.00	ft³/s
Slope Full	2.50	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 8

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.49	ft
Critical Depth	4.39	ft
Channel Slope	2.50	%
Critical Slope	2.23005	%

Worksheet for Facility 9

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.91	ft
Diameter	34.93	in
Discharge	87.00	ft^3/s

Results

Diameter	34.93	in
Normal Depth	2.91	ft
Flow Area	6.65	ft^2
Wetted Perimeter	9.14	ft
Top Width	0.00	ft
Critical Depth	2.78	ft
Percent Full	100.0	%
Critical Slope	1.73718	%
Velocity	13.08	ft/s
Velocity Head	2.66	ft
Specific Energy	5.57	ft
Froude Number	0.00	
Maximum Discharge	93.59	ft^3/s
Discharge Full	87.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 9

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.91	ft
Critical Depth	2.78	ft
Channel Slope	2.00	%
Critical Slope	1.73718	%

Worksheet for Facility 10

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	6.50	%
Normal Depth	1.14	ft
Diameter	13.72	in
Discharge	13.00	ft^3/s

Results

Diameter	13.72	in
Normal Depth	1.14	ft
Flow Area	1.03	ft^2
Wetted Perimeter	3.59	ft
Top Width	0.00	ft
Critical Depth	1.13	ft
Percent Full	100.0	%
Critical Slope	6.03684	%
Velocity	12.65	ft/s
Velocity Head	2.49	ft
Specific Energy	3.63	ft
Froude Number	0.00	
Maximum Discharge	13.98	ft^3/s
Discharge Full	12.99	ft^3/s
Slope Full	6.51	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 10

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.14	ft
Critical Depth	1.13	ft
Channel Slope	6.50	%
Critical Slope	6.03684	%

Worksheet for Facility 11

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	1.00	%
Normal Depth	2.48	ft
Diameter	29.72	in
Discharge	40.00	ft³/s

Results

Diameter	29.72	in
Normal Depth	2.48	ft
Flow Area	4.82	ft²
Wetted Perimeter	7.78	ft
Top Width	0.00	ft
Critical Depth	2.13	ft
Percent Full	100.0	%
Critical Slope	0.92654	%
Velocity	8.30	ft/s
Velocity Head	1.07	ft
Specific Energy	3.55	ft
Froude Number	0.00	
Maximum Discharge	43.03	ft³/s
Discharge Full	40.00	ft³/s
Slope Full	1.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 11

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.48	ft
Critical Depth	2.13	ft
Channel Slope	1.00	%
Critical Slope	0.92654	%

Worksheet for Facility 12

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	3.30	%
Normal Depth	2.51	ft
Diameter	30.07	in
Discharge	75.00	ft^3/s

Results

Diameter	30.07	in
Normal Depth	2.51	ft
Flow Area	4.93	ft^2
Wetted Perimeter	7.87	ft
Top Width	0.00	ft
Critical Depth	2.46	ft
Percent Full	100.0	%
Critical Slope	2.96428	%
Velocity	15.20	ft/s
Velocity Head	3.59	ft
Specific Energy	6.10	ft
Froude Number	0.00	
Maximum Discharge	80.68	ft^3/s
Discharge Full	75.00	ft^3/s
Slope Full	3.30	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 12

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.51	ft
Critical Depth	2.46	ft
Channel Slope	3.30	%
Critical Slope	2.96428	%

Worksheet for Facility 13

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	3.00	%
Normal Depth	2.61	ft
Diameter	31.37	in
Discharge	80.00	ft^3/s

Results

Diameter	31.37	in
Normal Depth	2.61	ft
Flow Area	5.37	ft^2
Wetted Perimeter	8.21	ft
Top Width	0.00	ft
Critical Depth	2.56	ft
Percent Full	100.0	%
Critical Slope	2.67616	%
Velocity	14.91	ft/s
Velocity Head	3.45	ft
Specific Energy	6.07	ft
Froude Number	0.00	
Maximum Discharge	86.06	ft^3/s
Discharge Full	80.01	ft^3/s
Slope Full	3.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 13

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.61	ft
Critical Depth	2.56	ft
Channel Slope	3.00	%
Critical Slope	2.67616	%

Worksheet for Facility 14

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	4.10	%
Normal Depth	3.24	ft
Diameter	38.90	in
Discharge	166.00	ft³/s

Results

Diameter	38.90	in
Normal Depth	3.24	ft
Flow Area	8.25	ft²
Wetted Perimeter	10.18	ft
Top Width	0.00	ft
Critical Depth	3.21	ft
Percent Full	100.0	%
Critical Slope	3.77236	%
Velocity	20.12	ft/s
Velocity Head	6.29	ft
Specific Energy	9.53	ft
Froude Number	0.00	
Maximum Discharge	178.57	ft³/s
Discharge Full	166.00	ft³/s
Slope Full	4.10	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 14

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.24	ft
Critical Depth	3.21	ft
Channel Slope	4.10	%
Critical Slope	3.77236	%

Worksheet for Facility 15

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	1.71	ft
Diameter	20.50	in
Discharge	21.00	ft^3/s

Results

Diameter	20.50	in
Normal Depth	1.71	ft
Flow Area	2.29	ft^2
Wetted Perimeter	5.37	ft
Top Width	0.00	ft
Critical Depth	1.60	ft
Percent Full	100.0	%
Critical Slope	1.72818	%
Velocity	9.17	ft/s
Velocity Head	1.31	ft
Specific Energy	3.01	ft
Froude Number	0.00	
Maximum Discharge	22.59	ft^3/s
Discharge Full	21.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 15

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.71	ft
Critical Depth	1.60	ft
Channel Slope	2.00	%
Critical Slope	1.72818	%

Worksheet for Facility 16

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.10	%
Normal Depth	3.78	ft
Diameter	45.36	in
Discharge	179.00	ft^3/s

Results

Diameter	45.36	in
Normal Depth	3.78	ft
Flow Area	11.22	ft^2
Wetted Perimeter	11.88	ft
Top Width	0.00	ft
Critical Depth	3.65	ft
Percent Full	100.0	%
Critical Slope	1.83939	%
Velocity	15.95	ft/s
Velocity Head	3.95	ft
Specific Energy	7.73	ft
Froude Number	0.00	
Maximum Discharge	192.56	ft^3/s
Discharge Full	179.00	ft^3/s
Slope Full	2.10	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 16

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.78	ft
Critical Depth	3.65	ft
Channel Slope	2.10	%
Critical Slope	1.83939	%

Worksheet for Facility 17

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.78	ft
Diameter	33.36	in
Discharge	77.00	ft^3/s

Results

Diameter	33.36	in
Normal Depth	2.78	ft
Flow Area	6.07	ft^2
Wetted Perimeter	8.73	ft
Top Width	0.00	ft
Critical Depth	2.65	ft
Percent Full	100.0	%
Critical Slope	1.73611	%
Velocity	12.68	ft/s
Velocity Head	2.50	ft
Specific Energy	5.28	ft
Froude Number	0.00	
Maximum Discharge	82.83	ft^3/s
Discharge Full	77.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 17

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.78	ft
Critical Depth	2.65	ft
Channel Slope	2.00	%
Critical Slope	1.73611	%

Worksheet for Facility 18

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.35	ft
Diameter	28.16	in
Discharge	49.00	ft^3/s

Results

Diameter	28.16	in
Normal Depth	2.35	ft
Flow Area	4.33	ft^2
Wetted Perimeter	7.37	ft
Top Width	0.00	ft
Critical Depth	2.23	ft
Percent Full	100.0	%
Critical Slope	1.73210	%
Velocity	11.33	ft/s
Velocity Head	1.99	ft
Specific Energy	4.34	ft
Froude Number	0.00	
Maximum Discharge	52.71	ft^3/s
Discharge Full	49.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 18

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.35	ft
Critical Depth	2.23	ft
Channel Slope	2.00	%
Critical Slope	1.73210	%

Worksheet for Facility 19

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	4.00	%
Normal Depth	2.06	ft
Diameter	24.73	in
Discharge	49.00	ft^3/s

Results

Diameter	24.73	in
Normal Depth	2.06	ft
Flow Area	3.34	ft^2
Wetted Perimeter	6.47	ft
Top Width	0.00	ft
Critical Depth	2.03	ft
Percent Full	100.0	%
Critical Slope	3.63098	%
Velocity	14.69	ft/s
Velocity Head	3.35	ft
Specific Energy	5.41	ft
Froude Number	0.00	
Maximum Discharge	52.71	ft^3/s
Discharge Full	49.00	ft^3/s
Slope Full	4.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 19

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.06	ft
Critical Depth	2.03	ft
Channel Slope	4.00	%
Critical Slope	3.63098	%

Worksheet for Facility 20

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.53	ft
Diameter	30.38	in
Discharge	60.00	ft^3/s

Results

Diameter	30.38	in
Normal Depth	2.53	ft
Flow Area	5.03	ft^2
Wetted Perimeter	7.95	ft
Top Width	0.00	ft
Critical Depth	2.41	ft
Percent Full	100.0	%
Critical Slope	1.73376	%
Velocity	11.92	ft/s
Velocity Head	2.21	ft
Specific Energy	4.74	ft
Froude Number	0.00	
Maximum Discharge	64.54	ft^3/s
Discharge Full	60.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 20

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.53	ft
Critical Depth	2.41	ft
Channel Slope	2.00	%
Critical Slope	1.73376	%

Worksheet for Facility 21

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.90	%
Normal Depth	2.93	ft
Diameter	35.20	in
Discharge	107.00	ft^3/s

Results

Diameter	35.20	in
Normal Depth	2.93	ft
Flow Area	6.76	ft^2
Wetted Perimeter	9.22	ft
Top Width	0.00	ft
Critical Depth	2.87	ft
Percent Full	100.0	%
Critical Slope	2.58833	%
Velocity	15.83	ft/s
Velocity Head	3.89	ft
Specific Energy	6.83	ft
Froude Number	0.00	
Maximum Discharge	115.10	ft^3/s
Discharge Full	107.00	ft^3/s
Slope Full	2.90	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 21

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.93	ft
Critical Depth	2.87	ft
Channel Slope	2.90	%
Critical Slope	2.58833	%

Worksheet for Facility 22

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.10	%
Normal Depth	4.29	ft
Diameter	51.49	in
Discharge	251.00	ft^3/s

Results

Diameter	51.49	in
Normal Depth	4.29	ft
Flow Area	14.46	ft^2
Wetted Perimeter	13.48	ft
Top Width	0.00	ft
Critical Depth	4.16	ft
Percent Full	100.0	%
Critical Slope	1.84565	%
Velocity	17.36	ft/s
Velocity Head	4.68	ft
Specific Energy	8.97	ft
Froude Number	0.00	
Maximum Discharge	269.97	ft^3/s
Discharge Full	250.97	ft^3/s
Slope Full	2.10	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 22

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.29	ft
Critical Depth	4.16	ft
Channel Slope	2.10	%
Critical Slope	1.84565	%

Worksheet for Facility 23

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	3.80	%
Normal Depth	4.36	ft
Diameter	52.30	in
Discharge	352.00	ft^3/s

Results

Diameter	52.30	in
Normal Depth	4.36	ft
Flow Area	14.92	ft^2
Wetted Perimeter	13.69	ft
Top Width	0.00	ft
Critical Depth	4.32	ft
Percent Full	100.0	%
Critical Slope	3.50211	%
Velocity	23.59	ft/s
Velocity Head	8.65	ft
Specific Energy	13.01	ft
Froude Number	0.00	
Maximum Discharge	378.65	ft^3/s
Discharge Full	352.00	ft^3/s
Slope Full	3.80	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 23

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.36	ft
Critical Depth	4.32	ft
Channel Slope	3.80	%
Critical Slope	3.50211	%

Worksheet for Facility 24

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.27	ft
Diameter	27.28	in
Discharge	45.00	ft^3/s

Results

Diameter	27.28	in
Normal Depth	2.27	ft
Flow Area	4.06	ft^2
Wetted Perimeter	7.14	ft
Top Width	0.00	ft
Critical Depth	2.16	ft
Percent Full	100.0	%
Critical Slope	1.73145	%
Velocity	11.09	ft/s
Velocity Head	1.91	ft
Specific Energy	4.18	ft
Froude Number	0.00	
Maximum Discharge	48.41	ft^3/s
Discharge Full	45.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 24

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.27	ft
Critical Depth	2.16	ft
Channel Slope	2.00	%
Critical Slope	1.73145	%

Worksheet for Facility 25

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	5.10	%
Normal Depth	4.30	ft
Diameter	51.58	in
Discharge	393.00	ft^3/s

Results

Diameter	51.58	in
Normal Depth	4.30	ft
Flow Area	14.51	ft^2
Wetted Perimeter	13.50	ft
Top Width	0.00	ft
Critical Depth	4.27	ft
Percent Full	100.0	%
Critical Slope	4.79256	%
Velocity	27.08	ft/s
Velocity Head	11.40	ft
Specific Energy	15.70	ft
Froude Number	0.00	
Maximum Discharge	422.72	ft^3/s
Discharge Full	392.97	ft^3/s
Slope Full	5.10	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 25

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.30	ft
Critical Depth	4.27	ft
Channel Slope	5.10	%
Critical Slope	4.79256	%

Worksheet for Facility 26

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	5.10	%
Normal Depth	4.36	ft
Diameter	52.36	in
Discharge	409.00	ft^3/s

Results

Diameter	52.36	in
Normal Depth	4.36	ft
Flow Area	14.95	ft^2
Wetted Perimeter	13.71	ft
Top Width	0.00	ft
Critical Depth	4.34	ft
Percent Full	100.0	%
Critical Slope	4.79306	%
Velocity	27.35	ft/s
Velocity Head	11.63	ft
Specific Energy	15.99	ft
Froude Number	0.00	
Maximum Discharge	439.97	ft^3/s
Discharge Full	409.01	ft^3/s
Slope Full	5.10	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 26

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.36	ft
Critical Depth	4.34	ft
Channel Slope	5.10	%
Critical Slope	4.79306	%

Worksheet for Facility 27

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.86	ft
Diameter	34.31	in
Discharge	83.00	ft^3/s

Results

Diameter	34.31	in
Normal Depth	2.86	ft
Flow Area	6.42	ft^2
Wetted Perimeter	8.98	ft
Top Width	0.00	ft
Critical Depth	2.73	ft
Percent Full	100.0	%
Critical Slope	1.73685	%
Velocity	12.92	ft/s
Velocity Head	2.60	ft
Specific Energy	5.46	ft
Froude Number	0.00	
Maximum Discharge	89.28	ft^3/s
Discharge Full	83.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 27

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.86	ft
Critical Depth	2.73	ft
Channel Slope	2.00	%
Critical Slope	1.73685	%

Worksheet for Facility 28

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.50	%
Normal Depth	3.93	ft
Diameter	47.18	in
Discharge	97.00	ft^3/s

Results

Diameter	47.18	in
Normal Depth	3.93	ft
Flow Area	12.14	ft^2
Wetted Perimeter	12.35	ft
Top Width	0.00	ft
Critical Depth	3.00	ft
Percent Full	100.0	%
Critical Slope	0.57940	%
Velocity	7.99	ft/s
Velocity Head	0.99	ft
Specific Energy	4.92	ft
Froude Number	0.00	
Maximum Discharge	104.35	ft^3/s
Discharge Full	97.00	ft^3/s
Slope Full	0.50	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 28

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.93	ft
Critical Depth	3.00	ft
Channel Slope	0.50	%
Critical Slope	0.57940	%

Worksheet for Facility 29

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.50	%
Normal Depth	4.84	ft
Diameter	58.10	in
Discharge	169.00	ft^3/s

Results

Diameter	58.10	in
Normal Depth	4.84	ft
Flow Area	18.41	ft^2
Wetted Perimeter	15.21	ft
Top Width	0.00	ft
Critical Depth	3.75	ft
Percent Full	100.0	%
Critical Slope	0.55859	%
Velocity	9.18	ft/s
Velocity Head	1.31	ft
Specific Energy	6.15	ft
Froude Number	0.00	
Maximum Discharge	181.81	ft^3/s
Discharge Full	169.02	ft^3/s
Slope Full	0.50	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 29

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.84	ft
Critical Depth	3.75	ft
Channel Slope	0.50	%
Critical Slope	0.55859	%

Worksheet for Facility 30 RCB

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.015	
Channel Slope	1.00	%
Bottom Width	7.00	ft
Discharge	578.00	ft^3/s

Results

Normal Depth	5.12	ft
Flow Area	35.82	ft^2
Wetted Perimeter	17.24	ft
Top Width	7.00	ft
Critical Depth	5.96	ft
Critical Slope	0.68096	%
Velocity	16.13	ft/s
Velocity Head	4.05	ft
Specific Energy	9.16	ft
Froude Number	1.26	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.12	ft
Critical Depth	5.96	ft
Channel Slope	1.00	%
Critical Slope	0.68096	%

Worksheet for Facility 31

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.64	ft
Diameter	31.67	in
Discharge	67.00	ft^3/s

Results

Diameter	31.67	in
Normal Depth	2.64	ft
Flow Area	5.47	ft^2
Wetted Perimeter	8.29	ft
Top Width	0.00	ft
Critical Depth	2.52	ft
Percent Full	100.0	%
Critical Slope	1.73476	%
Velocity	12.25	ft/s
Velocity Head	2.33	ft
Specific Energy	4.97	ft
Froude Number	0.00	
Maximum Discharge	72.07	ft^3/s
Discharge Full	67.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 31

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.64	ft
Critical Depth	2.52	ft
Channel Slope	2.00	%
Critical Slope	1.73476	%

Worksheet for Facility 32 RCB

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.015	
Channel Slope	1.00	%
Bottom Width	7.00	ft
Discharge	676.00	ft^3/s

Results

Normal Depth	5.79	ft
Flow Area	40.56	ft^2
Wetted Perimeter	18.59	ft
Top Width	7.00	ft
Critical Depth	6.62	ft
Critical Slope	0.71917	%
Velocity	16.67	ft/s
Velocity Head	4.32	ft
Specific Energy	10.11	ft
Froude Number	1.22	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	5.79	ft
Critical Depth	6.62	ft
Channel Slope	1.00	%
Critical Slope	0.71917	%

Worksheet for Facility 33

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	3.00	%
Normal Depth	1.46	ft
Diameter	17.55	in
Discharge	17.00	ft^3/s

Results

Diameter	17.55	in
Normal Depth	1.46	ft
Flow Area	1.68	ft^2
Wetted Perimeter	4.59	ft
Top Width	0.00	ft
Critical Depth	1.42	ft
Percent Full	100.0	%
Critical Slope	2.63575	%
Velocity	10.12	ft/s
Velocity Head	1.59	ft
Specific Energy	3.05	ft
Froude Number	0.00	
Maximum Discharge	18.29	ft^3/s
Discharge Full	17.00	ft^3/s
Slope Full	3.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 33

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.46	ft
Critical Depth	1.42	ft
Channel Slope	3.00	%
Critical Slope	2.63575	%

Worksheet for Facility 34

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	2.00	%
Normal Depth	2.58	ft
Diameter	30.94	in
Discharge	63.00	ft^3/s

Results

Diameter	30.94	in
Normal Depth	2.58	ft
Flow Area	5.22	ft^2
Wetted Perimeter	8.10	ft
Top Width	0.00	ft
Critical Depth	2.46	ft
Percent Full	100.0	%
Critical Slope	1.73412	%
Velocity	12.06	ft/s
Velocity Head	2.26	ft
Specific Energy	4.84	ft
Froude Number	0.00	
Maximum Discharge	67.77	ft^3/s
Discharge Full	63.00	ft^3/s
Slope Full	2.00	%
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	100.00	%

Worksheet for Facility 34

GVF Output Data

Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.58	ft
Critical Depth	2.46	ft
Channel Slope	2.00	%
Critical Slope	1.73412	%

Worksheet for Facility 35 RCB

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.015	
Channel Slope	2.00	%
Bottom Width	8.00	ft
Discharge	679.00	ft^3/s

Results

Normal Depth	3.86	ft
Flow Area	30.89	ft^2
Wetted Perimeter	15.72	ft
Top Width	8.00	ft
Critical Depth	6.07	ft
Critical Slope	0.61565	%
Velocity	21.98	ft/s
Velocity Head	7.51	ft
Specific Energy	11.37	ft
Froude Number	1.97	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	3.86	ft
Critical Depth	6.07	ft
Channel Slope	2.00	%
Critical Slope	0.61565	%

Worksheet for Facility 36 RCB

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.015	
Channel Slope	2.00	%
Bottom Width	8.00	ft
Discharge	765.00	ft^3/s

Results

Normal Depth	4.22	ft
Flow Area	33.79	ft^2
Wetted Perimeter	16.45	ft
Top Width	8.00	ft
Critical Depth	6.57	ft
Critical Slope	0.63976	%
Velocity	22.64	ft/s
Velocity Head	7.97	ft
Specific Energy	12.19	ft
Froude Number	1.94	
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	4.22	ft
Critical Depth	6.57	ft
Channel Slope	2.00	%
Critical Slope	0.63976	%

APPENDIX C

Reference Materials

LAS VEGAS
CITY COUNCIL

CAROLYN G. GOODMAN
MAYOR

STAVROS S. ANTHONY
MAYOR PRO TEM

LOIS TARKANIAN
STEVEN D. ROSS
RICKI Y. BARLOW
BOB COFFIN
BOB BEERS

ELIZABETH N. FRETWELL
CITY MANAGER

July 16, 2012

Ms. Julie Cleaver
The Howard Hughes Company, LLC
10801 West Charleston Boulevard, 3rd Floor
Las Vegas, Nevada 89135

RE: MOD-45960 - MINOR MODIFICATION
ADMINISTRATIVE CYCLE - JUNE 2012

Dear Ms. Cleaver:

Your request for a Minor Modification TO THE SUMMERLIN DEVELOPMENT PLAN FOR VILLAGE 23A AND 23B (a portion of APN 137-22-000-015), P-C (Planned Community) Zone, Ward 2 (Beers), has been considered administratively by the Department of Planning staff.

The Department of Planning has administratively ***APPROVED*** your request.

This action by the Department of Planning staff on July 16, 2012 is final unless a written appeal is filed with the Director of the Department of Planning within ten days of the date of this letter.

Sincerely,

Steve Gebeke, AICP
Planning Supervisor
Case Planning Division

SG:clb

cc: Mr. Josh Johnson
GC Wallace
1555 South Rainbow Boulevard
Las Vegas, Nevada 89146

CITY OF LAS VEGAS
DEPARTMENT OF PLANNING
DEVELOPMENT SERVICES CENTER
333 NORTH RANCHO DRIVE
3RD FLOOR
LAS VEGAS, NEVADA 89106

VOICE 702.229.6301
FAX 702.474.0352
TTY 702.386.9108
www.lasvegasnevada.gov

City of Las Vegas

AGENDA MEMO - PLANNING

ADMINISTRATIVE REVIEW DATE: JULY 2012
DEPARTMENT: PLANNING
ITEM DESCRIPTION: APPLICANT/OWNER: THE HOWARD HUGHES COMPANY, LLC

** STAFF RECOMMENDATION(S) **

CASE NUMBER	*RECOMMENDATION*	*REQUIRED FOR APPROVAL*
MOD-45960	Staff APPROVES.	

YK

Staff Report Page One
July 2012 - Administrative Review Meeting

** STAFF REPORT **

PROJECT DESCRIPTION

This is a request for a Minor Modification to the Summerlin Master Development Plan to amend a portion of the land use designations for Summerlin Village 23A and 23B. Since the planned modifications are minor and maintain the overall goals and objectives of the Summerlin Development Plan, staff approves the application.

ISSUES

- The Summerlin Residential Design Review Committee supports the request via a letter dated June 26, 2012.

BACKGROUND INFORMATION

Related Relevant City Actions by P&D, Fire, Bldg., etc	
12/19/96	The City Council approved a request for a Petition to Annex (A-0020-96) property located on the west side of the proposed west leg of the Beltway between Charleston Boulevard and Cheyenne Avenue containing approximately 8,318 acres with an effective date of 02/28/97.
01/27/97	The City Council approved a request to amend the Southwest Sector of the General Plan (GPA-0052-96) to add property generally located along the west side of the proposed west leg of the Beltway between Charleston Boulevard and Cheyenne Avenue to R (Rural Density Residential), ML (Medium-Low Density Residential), M (Medium Density Residential), SC (Service Commercial), GC (General Commercial), TC (Tourist Commercial), P (Parks/Recreation/Open Space), S (School) and PF (Pubic Facilities). The Planning Commission and staff recommended approval.
	The City Council approved a related request for Rezoning (Z-0119-96) from N-U (Non-Urban) to PC (Planned Community).
11/23/98	The City Council approved a request for a Special Use Permit (U-0119-98) for two Electric Substations and overhead Transmission Lines on property located at the northwest corner of the western Beltway and Far Hills Way. The Planning Commission and staff recommended approval.
08/16/00	The City Council approved a request for a Reinstatement and Extension of Time [U-0119-98(1)] of a previously approved Special Use Permit (U-0119-98) for two Electric Substations and overhead Transmission Lines on the north side of Far Hills Avenue, west of the western Beltway. Staff recommended approval.

05/19/04	The City Council approved a revision (DIR-3934) to the Summerlin Development Standards Manual, dated February 10, 2004. The Planning Commission and staff recommended approval.
12/21/05	The City Council approved a request for an Extension of Time (EOT-10227) for a previously approved Special Use Permit (U-0119-98) for two Electric Substations and overhead Transmission Lines adjacent to the north side of far Hills Avenue, approximately 4,580 feet west of the Las Vegas Beltway. Staff recommended approval.
08/10/06	The Planning Commission approved Tentative Map (TMP-14767) for a nine lot residential subdivision on 493 acres adjacent to the northwest corner of Alta Drive and Vista Run Drive. Staff recommended approval.
12/16/09	The City Council approved an Extension of Time (EOT-36462) for a previously approved Special Use Permit (U-119-98) for two electric substations and overhead transmission lines adjacent to the north side of Far Hills Avenue, approximately 4,580 feet west of the Las Vegas Beltway. Staff recommended approval.

Most Recent Change of Ownership	
12/18/97	A deed was recorded for a change in ownership.

Related Building Permits/Business Licenses
No activity on file.

Pre-Application Meeting	
05/30/12	Staff met with the applicant and reviewed the requirements for a Minor Modification to Summerlin Village 23A and 23B.

Neighborhood Meeting
No neighborhood meeting was required, nor was one held.

Details of Application Request	
Site Area	
Gross Acres	2,682.84

Surrounding Property	*Existing Land Use Per Title 19.12*	*Planned or Special Land Use Designation*	*Existing Zoning District*
Subject Property	Undeveloped	PC (Planned Community)	P-C (Planned Community) [PF (Public Facilities) Summerlin Special Use Land Designation]
North	Las Vegas Valley Water Pump	PC (Planned Community)	P-C (Planned Community) [PF (Public Facilities) Summerlin Special Use Land Designation]
South	Undeveloped Land	PC (Planned Community)	P-C (Planned Community) [MF2 (Medium Density Multi-Family) Summerlin Special Land Use Designation]
East	Undeveloped Land	PC (Planned Community)	P-C (Planned Community) [PF (Public Facilities) Summerlin Special Land Use Designation]
	Single Family Residences	PC (Planned Community)	P-C (Planned Community) [SF3 (Single Family Detached) Summerlin Special Land Use Designation]
West	Undeveloped Land	PC (Planned Community)	U (Undeveloped) [PC (Planned Community) Summerlin Special Land Use Designation]

Master Plan Areas	*Yes*	*No*	*Compliance*
Summerlin	X		Y
Special Purpose and Overlay Districts	***Yes***	***No***	***Compliance***
P-C (Planned Community) District	X		Y
Trails		X	N/A
Rural Preservation Overlay District		X	N/A
Las Vegas Redevelopment Plan Area		X	N/A
Development Impact Notification Assessment		X	N/A
Project of Regional Significance		X	N/A

ANALYSIS

This is a request for a Minor Modification to the Summerlin Master Development Plan to amend a portion of the land use designations for Summerlin Village 23A and 23B. Specifically, the "neighborhood focus" land use for Parcel ES-1 has been relocated from 23A to 23B at the junction of the village paseo and the neighborhood park. Parcels ES-1 and WS-1 in 23A will be developed as low density single-story homes and the total number of residential parcels has increased from ten to fourteen. The total net acreage designated as multi-family decreased in 23B from 80.3 acres to 43.5 acres reducing the allowable residential units by 8-1/2%. The boundaries of the paseo have been adjusted to conform to the natural grade of the site. Finally, Parcel COS-7 has been created to extend the village paseo to Far Hills Avenue to provide a connection opportunity with planned residential villages to the north. Since the planned modifications are minor and maintain the overall goals and objectives of the Summerlin Development Plan, staff approves the application.

NOTICES MAILED N/A

APPROVALS 0

PROTESTS 0

MAYOR
OSCAR B. GOODMAN

CITY COUNCIL
GARY REESE
(MAYOR PRO-TEM)
MICHAEL J. McDONALD
LARRY BROWN
LYNETTE B. McDONALD
LAWRENCE WEEKLY
MICHAEL MACK

CITY MANAGER
VIRGINIA VALENTINE

May 7, 2002

John R. Tobin, P.E.
G. C. Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, Nevada 89102

RE: Master Traffic Study and Addendum for Summerlin Villages 23A & 23B
TM-0006-02

Dear Mr. Tobin:

The Traffic Engineering Division has reviewed the master traffic study and addendum for Summerlin Villages 23A and 23B, to be located on the northwest corner of Charleston Boulevard and Desert Foothills Drive. This project consists of 3,107 single family detached dwelling units, 733 single family attached dwelling units, 924 multi-family dwelling units, three church sites, two elementary school sites and two park sites. The amended study is approved, with the following conditions:

1. The Nevada Department of Transportation (NDOT) and Clark County must approve all improvements on Charleston Boulevard.

2. The West Collector Road is not being constructed with this Village. This approval does not constitute approval of any character or cross-section for this street.

3. The four proposed roundabouts (at the four Loop Road/Spine Road intersections) must comply with FHWA guidelines unless an alternative design is approved by the City Traffic Engineer.

4. Corner channelizing islands may not be installed without the approval of the City Traffic Engineer. At this time, the proposed channelizing islands at the three Desert Foothills Drive intersections are not approved.

5. The proposed curb return flaring at 2-lane collector intersections in accordance with Figure 4 is acceptable.

6. Bus turnouts in accordance with Clark County Area Standard Drawing #234.1 are required on the downstream legs of the following intersections: Far Hills/West Collector, Far Hills/Desert Foothills, Alta/West Collector, Alta/Desert Foothills and Charleston/Desert Foothills. Easements in accordance with Clark County Area Standard Drawing #234.2 must be granted to the Regional Transportation Commission (RTC) at each of these turnouts at a location acceptable to the RTC for each bus stop prior to the installation of a bus stop at that location.

CITY OF LAS VEGAS
400 STEWART AVENUE
LAS VEGAS, NEVADA 89101

VOICE 702.229.6011
TDD 702.386.9108

7. At the intersection of Far Hills Avenue and Spine Road, additional right-of-way is required for an exclusive right turn lane on the south leg in accordance with Clark County Area Standard Drawing #201.1.

8. At the intersection of Far Hills Avenue and Link Road, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for an exclusive right turn lane on the south leg and for a second left turn lane on the east and west legs.

9. At the intersection of Far Hills Avenue and Desert Foothills Drive, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for an exclusive right turn lane on the south leg and for a second left turn lane on all legs.

10. At the intersection of Alta Drive and Spine Road, additional right-of-way is required for an exclusive right turn lane on the south and east legs in accordance with Clark County Area Standard Drawing #201.1.

11. At the intersection of Desert Sunrise Road and Desert Foothills Drive, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for exclusive right turn lanes on the north, south and west legs and for a second left turn lane on the north and south legs. An acceptable transition may be proposed in lieu of a second left turn lane on the north leg.

12. At the intersection of Desert Sunrise Road (Spine Road) and Desert Foothills Drive, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for exclusive right turn lanes on the north, south and west legs and for a second left turn lane on the north and south legs.

13. At the intersection of Charleston Boulevard and Desert Foothills Drive, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for an exclusive right turn lane on the east leg and for a second left turn lane on the north leg. Comply with the requirements of NDOT and Clark County regarding additional right-of-way for turn lanes on the south side of Charleston Boulevard. If NDOT approves dropping a through lane westbound on Charleston Boulevard at Desert Foothills Drive, additional right-of-way may not be required for an exclusive right turn lane. The City of Las Vegas Traffic Engineering recommends right-of-way for a second left turn lane on the south leg to permit the opposing left turn lanes to align.

14. Underground conduit with appropriate pullboxes must be installed for the proposed school flashers on Spine Road near Loop Roads A and B.

15. The following intersections are anticipated to be signalized: Far Hills/West Collector, Far Hills/Spine, Far Hills/Link, Far Hills/Desert Foothills, Alta/West Collector, Alta/Spine, Alta/Desert Foothills, Desert Sunrise (Spine)/Desert Foothills, Charleston/West Collector, and Charleston/Desert Foothills. Appropriate underground improvements must be installed prior to or concurrent with the construction of any street improvements that would conflict.

16. A minimum of two lanes of pavement along Desert Foothills Drive to the existing pavement on Far Hills Avenue shall be completed prior to the issuance of building permits for more than 1150 dwelling units in Village 23A. When Desert Foothills Drive is completed from Charleston Boulevard to the Beltway, this limit may be raised to 1750 dwelling units.

17. Spine Road must be reevaluated if the number of proposed dwelling units in Village 23A exceeds 3250 or if the number of proposed dwelling units in Village 23B exceeds 3300.

This condition of approval does not supersede or eliminate conditions of approval imposed by the Planning Commission and/or the City Council. An addendum to this traffic study is required if the development of the site occurs in a manner not in keeping with the land use assumptions contained in the report. Please contact me at 229-2452 if you have any questions.

Sincerely,

Rick Schroder, P.E.
Transportation Planning

RES

cc: O. C. White, P.E.
Wayne Dowdey, P.E.
Qiong Liu, P.E.
Cheri Edelman, P.E.
Gary Phillips
Kent Sears, P.E., NDOT
Denise LeMoine, P.E., CCTMD
David Yancey, RTC
file

0602.10C

PLANNING &
DEVELOPMENT

Development
Services Center
731 S. Fourth Street
Las Vegas, NV 89101

TDD 702-386-9108
Voice:
Administration 229-6353
Comp Planning 229-6022
Current Planning 229-6301
www.ci.las-vegas.nv.us

RECEIVED
MAR 19 2002
G.C. WALLACE, INC.
SUMMERLIN

March 15, 2002

Mr. Gerald M. Robbins
The Howard Hughes Corporation, a Delaware Corporation
10000 West Charleston Boulevard, Suite #200
Las Vegas, Nevada 89135

RE: TENTATIVE MAP - SUMMERLIN VILLAGE-23A - TM-0006-02

Dear Mr. Robbins:

Your request for a Tentative Map on 389.40 acres adjacent to the northwest corner of Charleston Boulevard and Desert Foothills Drive, PC (Planned Community) Zone, Ward 2 (L.B. McDonald), was considered by the Planning Commission on March 14, 2002.

The Planning Commission voted to *APPROVE* your request, subject to the following:

Planning and Development

1. Approval of the Tentative Map shall be for no more than two (2) years. If a Final Map is not recorded on all or a portion of the area embraced by the Tentative Map within two (2) years of the approval of the Tentative Map, a new Tentative Map must be filed.

2. All development shall conform to the Conditions of Approval for Rezoning (Z-0119-96), Summerlin Development Plan Review (SV-0018-01) and the Summerlin Development Standards.

3. Street names must be provided in accordance with the City's street naming regulations.

4. All development is subject to the conditions of City departments and State Subdivision Statutes.

5. A fully operational fire protection system, including fire apparatus roads, fire hydrants and water supply, shall be installed and shall be functioning prior to construction of any combustible structures.

Mayor
Oscar B. Goodman

City Council
Gary Reese
(Mayor Pro-Tem)
Michael J. McDonald
Larry Brown
Lynette Boggs McDonald
Lawrence Weekly
Michael Mack

City Manager
[illegible] Valentine

Public Works

6. Dedicate appropriate public street right-of-ways and construct public and private streets in accordance with Summerlin Development and Improvement Standards.

7. The location and design of all proposed roadway intersections with Charleston Boulevard shall meet the approval of the Nevada Department of Transportation.

8. A minimum of two lanes of pavement along Desert Foothills Drive to the existing pavement on Far Hills Aveneu shall be completed prior to the development causing the intersection of Desert Foothills/Charleston Boulevard to exceed design capacity, as established in the Village Master Traffic Study.

9. The construction of the collector road on the western edge of this village may be deferred; final determination of construction requirements shall be determined at the time of approval of the Traffic Study for the future villages adjacent to the west edge of this site of at the time of approval of a Tentative Map for such future villages, whichever is first.

10. A Master Streetlight Plan for Summerlin Village 23 must be approved prior to the submittal of any improvement plans.

11. A Master Drainage Plan and Technical Drainage Study and a Master Traffic Impact Analysis must be approved by the Department of Public Works prior to the recordation of any Final Map creating any development pod sites anywhere on the overall tentative map subdivision site.

12. Site development to comply with all applicable conditions of approval for SV-18-01, Z-119-96, and all applicable Summerlin Standards.

13. The approval of all Public Works related improvements shown on this Tentative Map is in concept only. Specific design and construction details relating to size, type and/or alignment of public improvements, including but not limited to street, sewer and drainage improvements, shall be resolved prior to approval of the construction plans by the City. No deviations from adopted City Standards shall be allowed unless specific written approval for such is received from the City Engineer prior to the recordation of a Final Map or the approval of subdivision-related construction plans, whichever may occur first.

This action by the Planning Commission on March 14, 2002 is final unless a written appeal is filed with the City Clerk within seven days of the date of the Planning Commission's decision or there is a review action filed by the City Council within the same time period.

Sincerely,

Andrew P. Reed, Senior Planner
Planning and Development Department
Current Planning Division

APR:clb

cc: Mr. Bert Hughes
G.C. Wallace, Inc.
10000 West Charleston Boulevard, Suite #130
Las Vegas, Nevada 89135

UPDATE #2 TO THE TECHNICAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B ALTA DRIVE INTERIM GRADING (VILLAGES 23A/23B ALTA DRIVE STREET IMPROVEMENTS)

62023-140

June 2012

Prepared for:

The Howard Hughes Corporation
10000 W. Charleston Blvd., Suite 200
Las Vegas, Nevada 89135
Phone: (702) 791-4200
Fax: (702) 791-4450

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			**DATE:** June 27, 2012
TO: **Land Development Services** Department of Public Works			**FROM:** Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: **Summerlin Village 23B – Alta Drive Interim Grading (Summerlin Village 23A/23B Alta Drive Street Imp. – Update #2)**			**COPIES TO:** G.C. Wallace, Inc.
Cross Streets:	Alta Dr. between Desert Foothill & Sky Vista		Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4050D.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-34-299-001; -699-005; -699-006 & more		CCRFCD
Zoning Action:	N/A		
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	8/9/2006 & 8/31/2006	9/13/2006	Not Approved	$400.00	Paid: $400
2nd Submittal	10/19/2006	11/2/2006	Conditional Approval	$400.00	56131: $400
CCRFCD	1/8/2007	1/22/2007	Concurrence	N/C	N/C
3rd Submittal & Supplement	6/7/2012 & 6/26/2012	6/20/2012 & 6/26/2012	See Comments Below	$100.00	285773: $100
			TOTAL FEES (LDDRS):	**$900.00**	----

REMARKS:

3rd Submittal & Supplement: Update #2 to provide interim flood protection berms/ditches along the north side of the rough graded Alta Drive

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

Note to Land Development:

A recent site inspection by Flood Control staff revealed that a sump pit at the intersection of Alta and Fox Hill had been backfilled. In order for the proposed ditches to function properly, the sump pit must be re-opened prior to the final acceptance of the improvement plans.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Amendment and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

END OF REMARKS
ays

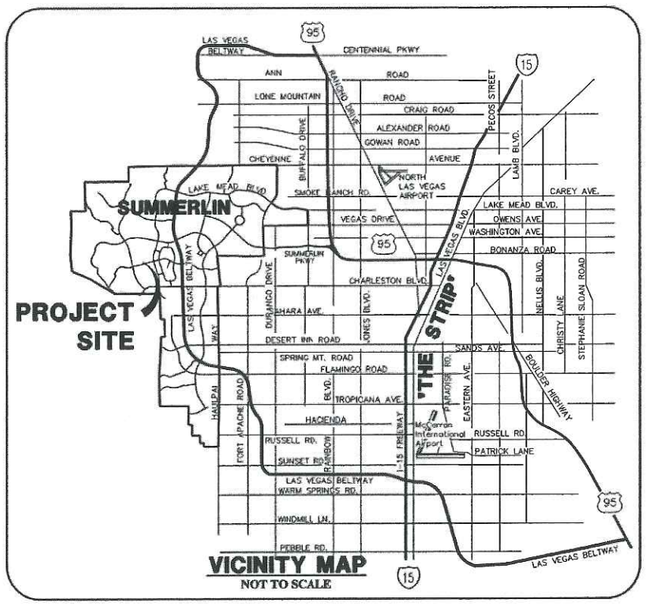
T/R/S: T20S/R59E/34
AREA K-34

SUMMERLIN

SM

VILLAGE 23B ALTA DRIVE INTERIM GRADING

APN: 137-22-000-015, 137-34-299-001



VICINITY MAP
NOT TO SCALE

DEVELOPER

The Howard Hughes Corporation SM
An Affiliate of THE ROUSE COMPANY

THE HOWARD HUGHES CORPORATION
a Delaware corporation

10801 W. CHARLESTON, 3RD FLOOR
LAS VEGAS, NEVADA 89135
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450

ENGINEER

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

NOTE

PRE-DEVELOPMENT MEETING WITH DEPARTMENT OF DEVELOPMENT SERVICES, CIVIL ENGINEERING DIVISION, OFF-SITE INSPECTOR REQUIRED. CONTACT CIVIL ENGINEERING INSPECTOR AT 455-4610.

CAUTION TO CONTRACTOR

THE CONTRACTOR SHALL BE RESPONSIBLE TO INVESTIGATE AND VERIFY THE ACTUAL LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND FACILITIES AT LEAST 48 HOURS IN ADVANCE OF THE PERFORMANCE OF ANY WORK.

DRAINAGE CERTIFICATION

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DANIEL F. KELLEY P.E. 21134 — DATE 6-5-12

THE HOWARD HUGHES CORPORATION,
a Delaware corporation

By: _____ DATE
KEVIN ORROCK

Title: EXECUTIVE VICE PRESIDENT

CLV PLANNING DEPARTMENT

THIS PLAN MEETS THE APPLICABLE STANDARDS IF THE PLANNING AND DEVELOPMENT DEPARTMENT

_____ DATE
MARGO WHEELER, AICP, CURRENT PLANNING MANAGER

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. — DATE

CENTURYLINK — DATE

THE AFFIXED CENTURYLINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NV ENERGY — DATE

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

NV ENERGY – TRANSMISSION ENGINEERING — DATE

SOUTHWEST GAS CORP. — DATE

SOUTHERN NEVADA WATER AUTHORITY — DATE

SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

HTE: 12-XXXX

STATE OF NEVADA — DANIEL F. KELLEY — No. 09/30/2013 — 21134 — CIVIL — PROFESSIONAL ENGINEER — DATE 6-5-12

90% SUBMITTAL

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	CCW APP

PROJECT NO. 62023B-140
DESIGN: DFK
DRAWN: DFK
CHECK: DJY
PLOT DATE: 06-05-12
PLOT TIME: 15:27:38

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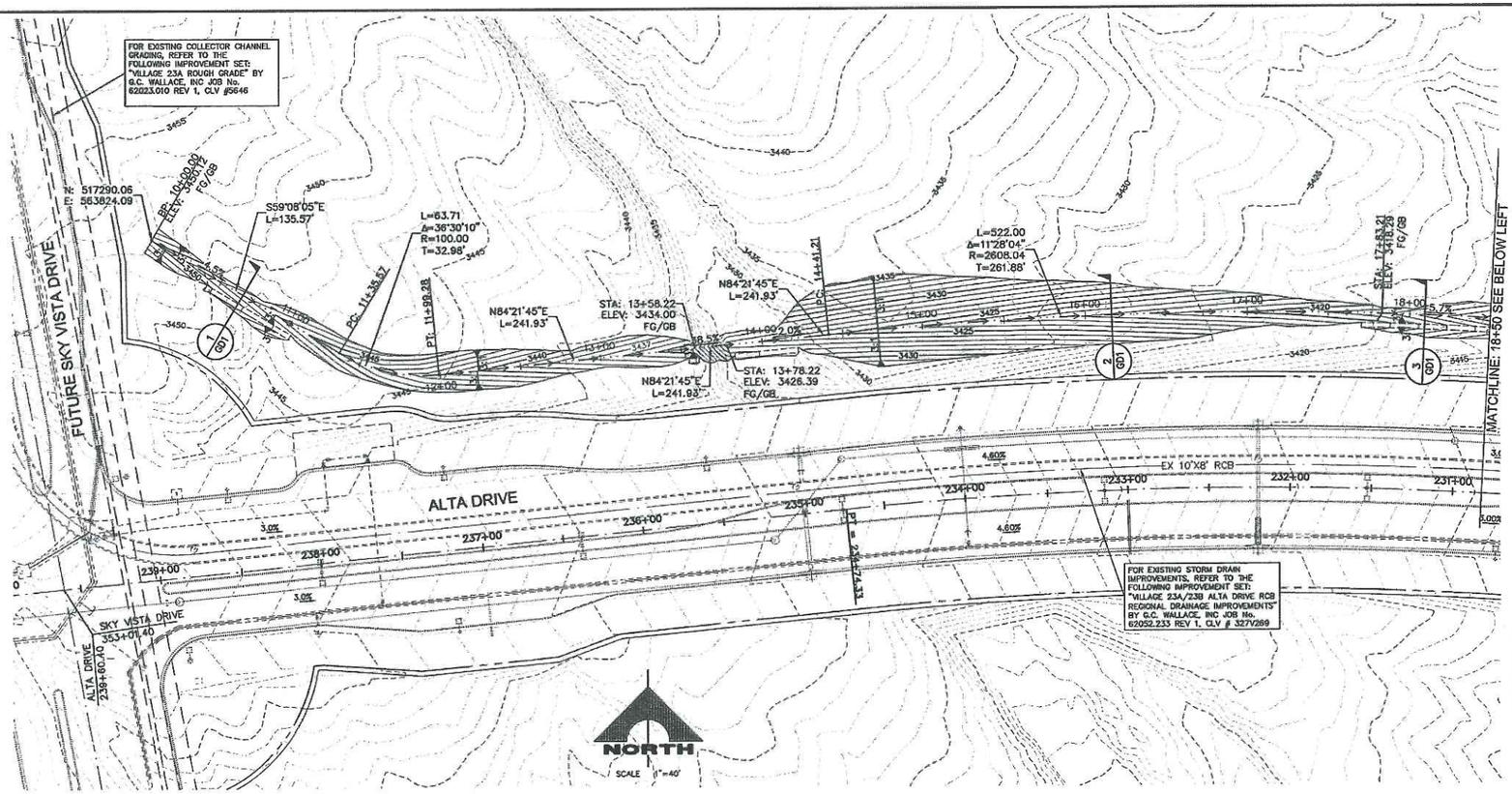
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Daniel Kelley
7/19/2010

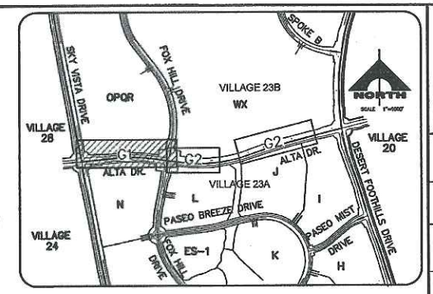
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VILLAGE 23B ALTA DRIVE INTERIM GRADING

COVER SHEET

DRAWING
C1
1 OF 5 SHTS





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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

INTERIM DRAINAGE QUANTITIES
CUT = 3659 CY
FILL = 462 CY
NET = 3197 CY (CUT)

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.&G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RCD ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

HTE: 12-XXXX

STATE OF NEVADA — PROFESSIONAL ENGINEER — DANIEL L. KELLEY — CIVIL — No. 21139 — DATE: 4-5-12

90% SUBMITTAL

DESCRIPTION	DATE	REV'D	DATE	AGEN APP	DATE	OCW APP

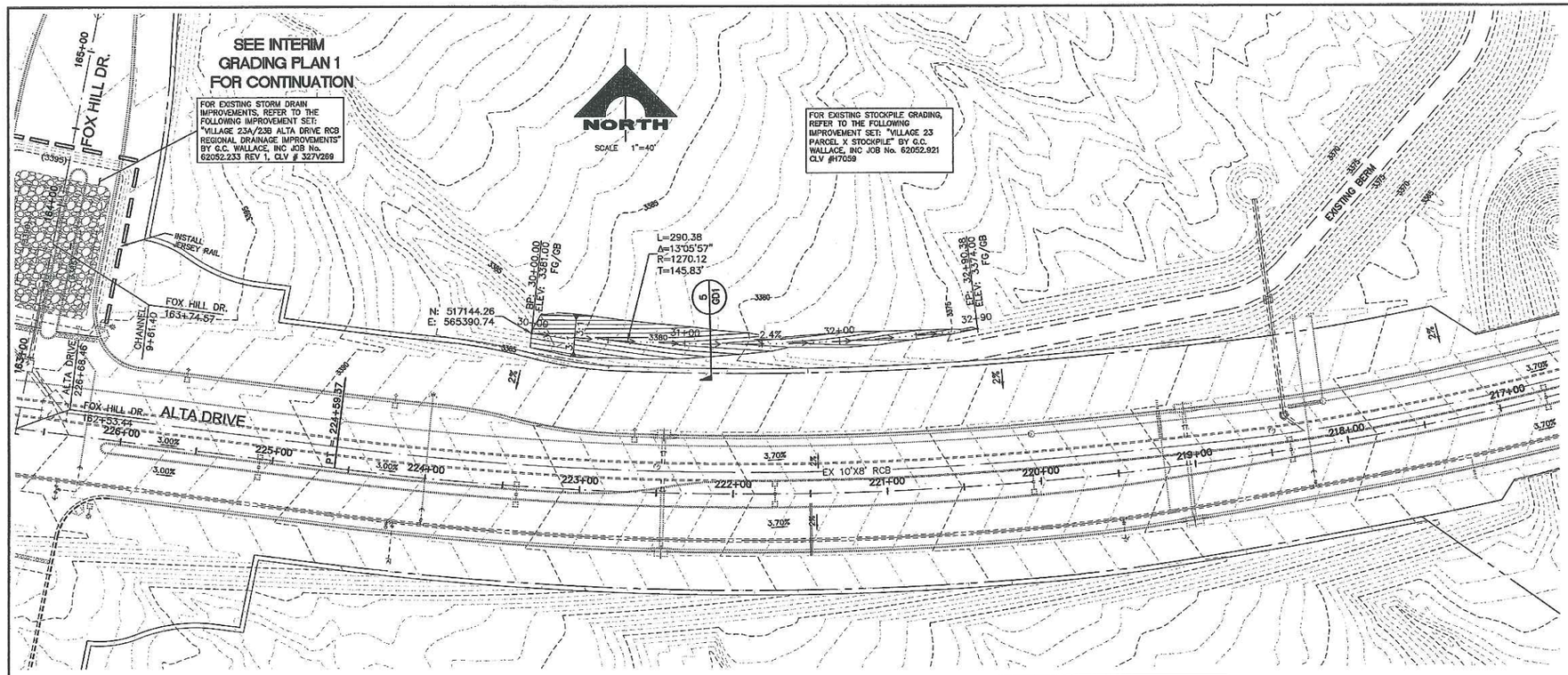
PROJECT NO. 62023B-140
DESIGN: DFK
DRAWN: DFK
CHECK: DJY
PLOT DATE: 08-05-12
PLOT TIME: 15:28:09

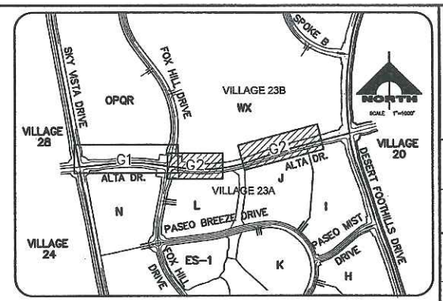
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HOWARD HUGHES PROPERTIES, INC.
VILLAGE 23B ALTA DRIVE INTERIM GRADING
INTERIM GRADING PLAN 1

DRAWING G1
3 of 5 SHTS





NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM, PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

40 0 40 80
SCALE FEET

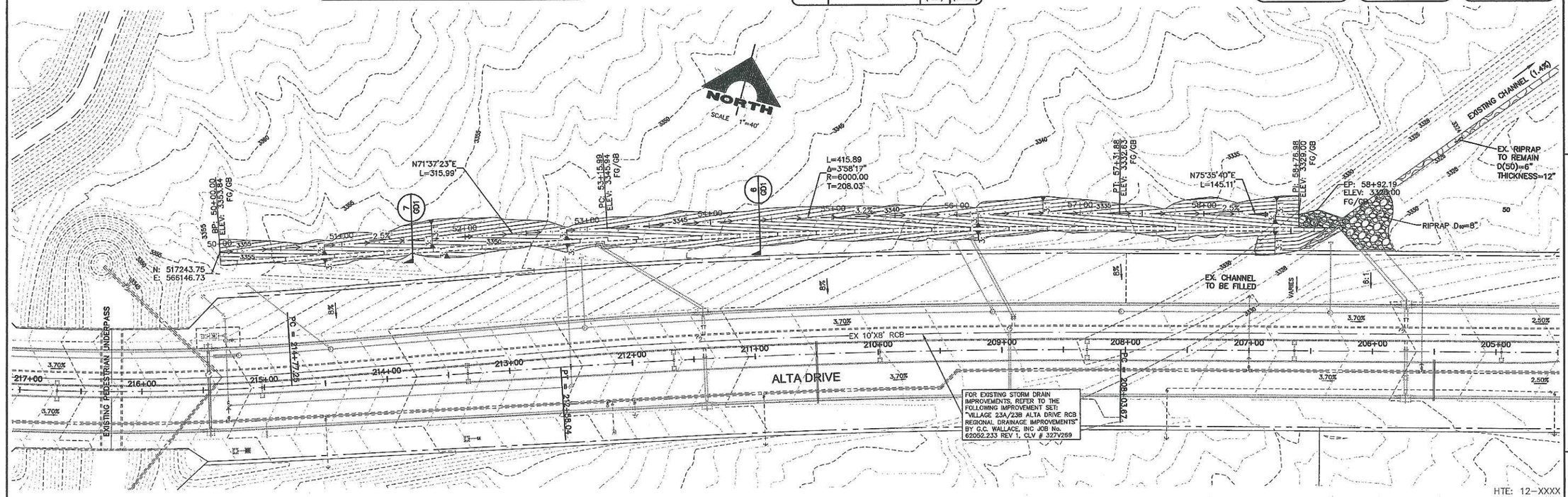
BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION



HTE: 12-XXXX

ENGINEER'S STATE OF NEVADA — JAMES F. KELLEY — No. 9676 — PROFESSIONAL — CIVIL — DATE: 6/17/10

90% SUBMITTAL

REV	DATE	DESCRIPTION	DATE	ABEN. APP	DATE	CCW. APP

PROJECT NO. 62023B-140
DESIGN: DFK
DRAWN: DFK
CHECK: DJF
PLOT DATE: 06-25-12
PLOT TIME: 16:08:39

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HOWARD HUGHES PROPERTIES, INC.

VILLAGE 23B ALTA DRIVE INTERIM GRADING

INTERIM GRADING PLAN 2

DRAWING G2

4 OF 5 SHTS

V-DITCH AND BERM (4)
SCALE: NTS

V-DITCH AND BERM (7)
SCALE: NTS

V-DITCH AND BERM (3)
SCALE: NTS

V-DITCH AND BERM (6)
SCALE: NTS

V-DITCH AND BERM (2)
SCALE: NTS

V-DITCH CHANNEL (UNLINED) (5)
SCALE: NTS

V-DITCH AND BERM (1)
SCALE: NTS

HTE: 12-XXXX

90% SUBMITTAL

DATE: 12-3-12

REV	DATE	DESCRIPTION	DATE	ASSEN APP	DATE	CON APP

PROJECT NO. 62023B-140
DESIGN: DFK
DRAWN: DFK
CHECK: DJT
PLOT DATE: 09-05-12
PLOT TIME: 15:28:28

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HOWARD HUGHES PROPERTIES, INC.
VILLAGE 23B ALTA DRIVE INTERIM GRADING
GRADING DETAILS

DRAWING
GD1
5 OF 5 SHTS

REGIONAL FLOOD CONTROL DISTRICT

2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-24
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

Category A	Category B
Channel	Channel
Stormdrain	Stormdrain
Crossing	Crossing

N

0 500 1,000 2,000 3,000
Feet
Scale: 1 inch = 2,000 feet
Refer to Figure G-2 for Aerial Source(s)

US95 I-15 I-215

	1	2	3				
4	5	6					
		7	8	9	10		
11	12	13	14	15	16	17	
	18	19	20	21	22	23	
	24	25	26	27	28		
	29	30	31	32	33	34	
	35	36	37	38	39	40	
	41	42	43	44	45	46	
	47	48	49	50	51	52	
	53	54	55	56			
	57	58	59				

PBS PB

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
APAD		ANGEL PARK - ALTA DRIVE BRANCH						
0044	E	11' X 8' RCAP	1565	3140	CSWAA-3	ALLGOW4	8.26	4.24
0073	E	11' X 8' RCAP	2220	2917	CSWAA-2	ALLGOW3	7.68	3.50
0146	E	10' X 8' RCB	3010	2220	CSWAA-1	ALLGOW3	6.98	4.40
0203	E	2: 7' X 5.5' RCB	1136	2220	CSWAA-1	ALLGOW3	6.98	5.28
0225	E	2: 7' X 5.5' RCB Outlet	360	2149	SUM5DB	ALLGOW3	6.74	3.40
APBE		ANGEL PARK - BELTWAY BRANCH						
0013	E	3: 12' X 8' RCB	489	4060	CSWFH-9	ALLGOW3	2.65	6.50
0022	E	Conc Chnl 20'W 7'D 2:1 SS	1556	4060	CSWFH-9	ALLGOW3	2.65	1.81
0051	E	Conc Chnl 20'W 7'D 2:1 SS	1583	4060	CSWFH-9	ALLGOW3	2.65	2.77
0081	E	8' X 8' RCBC @ Far Hills	777	423	SWFH-9	ALLGOW3	0.17	2.32
0094	E	Conc Chnl 10'W 5'D 2:1 SS	1465	423	SWFH-9	ALLGOW3	0.17	1.88
0122	E	Conc Chnl 10'W 4'D 2:1 SS	1409	423	SWFH-9	ALLGOW3	0.17	0.80
APCH		ANGEL PARK - CARRIAGE HILL BRANCH						
0000	E	8' X 6' RCB	152	585	SWFH-8	ALLGOW3	0.29	0.87
0003	P0	8' X 7' RCB	1461	585	SWFH-8	ALLGOW3	0.29	2.39
0031	P0	8' X 5' RCB	896	585	SWFH-8	ALLGOW3	0.29	0.60
APD2		ANGEL PARK - DESERT FOOTHILLS 2 BRANCH						
0002	P0	7' X 7' RCB	964	948	SWAA-2	ALLGOW3	0.70	2.00
APD5		ANGEL PARK - DESERT FOOTHILLS 5 BRANCH						
0000	P0	8' X 6' RCB	685	1701	CSWFH-2	ALLGOW3	1.09	1.89
0013	P0	72" RCP	1436	1701	CSWFH-2	ALLGOW3	1.09	4.18
APD6		ANGEL PARK - DESERT FOOTHILLS 6 BRANCH						
0000	P0	6' X 6' RCB	2604	1076	CSWFH-6	ALLGOW3	0.56	6.15
APDF		ANGEL PARK - DESERT FOOTHILLS BRANCH						
0000	P0	12' X 10' RCB	1356	2897	CSWFH-7	ALLGOW3	1.81	2.20
0026	P0	12' X 10' RCB	2463	1962	CSWFH-3	ALLGOW3	1.25	1.62
0073	P0	10' X 8' RCB	2679	1962	CSWFH-3	ALLGOW3	1.25	4.10
0123	P0	6' X 5' RCB	5355	1701	CSWFH-2	ALLGOW3	1.09	6.53
APF2		ANGEL PARK - FAR HILLS 2 BRANCH						
0000	P0	8' X 6' RCB	1046	669	CSWFH-5	ALLGOW3	0.38	1.00
APFH		ANGEL PARK - FAR HILLS BRANCH						
0000	E	2: 8' X 8' RCB	995	3862	CSWFH-8	ALLGOW3	2.48	3.50
0019	E	2: 8' X 8' RCB	250	3392	CCSWFH-7	ALLGOW3	2.18	4.19
0024	E	16' X 8' RCAP	1943	3392	CCSWFH-7	ALLGOW3	2.18	5.10
0061	E	8' X 7' RCB	1492	669	CSWFH-5	ALLGOW3	0.38	2.00
0089	P0	8' X 6' RCB	2902	669	CSWFH-5	ALLGOW3	0.38	2.00
0144	P0	7' X 6' RCB	1556	669	CSWFH-5	ALLGOW3	0.38	5.50
APM5		ANGEL PARK - MIDDLE 5 BRANCH						
0000	E	384 ac-ft Detention Basin #5		7001	SUM5IN	ALLGOW3	6.74	
0001	E	12,153 cfs PMF Spillway		12153	SUM5IN	ALLGOW3	6.74	
0008	P0	Conc Chnl 50'W 4.5'D 2:1 SS	2102	3725	CDB54-6R	ALLGOW3	4.30	5.20
0009	P0	Conc Chnl 50'W 4.5'D 2:1 SS	4180	3624	CDB55-8	ALLGOW3	2.45	5.80
0047	E	Diversion Berm with Gabion Bank Protection	1000	3725	CDB54-6R	ALLGOW3	4.30	1.30
0056	P0	Conc Chnl 80'W 4'D 2:1 SS	284	3725	CDB54-6R	ALLGOW3	4.30	1.30
0057	P0	Conc Chnl 50'W 3'D 2:1 SS	9922	1821	CDB54-4	ALLGOW3	1.01	6.80
0059	P0	Conc Chnl 100'W 3'D 2:1 SS	6923	2358	CDB54-5	ALLGOW3	2.45	7.00
0212	P0	Conc Chnl 30'W 3.5'D 2:1 SS	6695	1238	CDB55-2	ALLGOW3	0.74	7.50
0213	P0	Conc Chnl 50'W 2.5'D 2:1 SS	6522	1125	CDB55-5	ALLGOW3	0.62	7.30
APSP		ANGEL PARK - SUMMERLIN PARKWAY						
0135	E	Conc Chnl 10'W 6'D 2:1 SS	2030	1173	C8B-1	ALLGOW3	1.14	2.40
0177	E	9' X 8' RCBC at Anasazi	330	867	C11B-1	ALLGOW3	0.84	1.70
0183	E	Conc Chnl 10'W 8'D 2:1 SS	1680	867	C11B-1	ALLGOW3	0.84	1.70
GO02		GOWAN SOUTH FACILITIES (CHEYENNE CHANNEL)						
0257	E	Conc Chnl 10'W 6.75'D 1.5:1 SS	4293	2577	CCJ-C	ALLGOW3	2.97	4.10
GOB2		GOWAN LONE MOUNTAIN SYST. 2 BELTWAY						
0000	P0	36" RCP Outlet	118	75	DET22	ALLGOW3	0.76	6.76
0001	P0	123 ac-ft Village 22 Detention Basin		1344	CSV22-DB	ALLGOW3	0.76	
0020	P0	8' X 7' RCB	857	1247	SV22-2	ALLGOW3	0.70	8.30
0033	P0	8' X 6' RCB	3359	1247	SV22-2	ALLGOW3	0.70	6.90
0096	P0	6' X 5' RCB	1332	1247	SV22-2	ALLGOW3	0.70	6.00

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
GOB3		GOWAN LONE MOUNTAIN SYST. 3 BELTWAY						
0000	P0	66" RCP	1877	530	SV22-3	ALLGOW3	0.28	6.60
0035	P0	54" RCP	965	530	SV22-3	ALLGOW3	0.28	6.40
GOBE		GOWAN LONE MOUNTAIN SYST. BELTWAY						
0000	E	20' X 10' RCBC @ Access Rd	30	958	CSV22-3	GW3SC	0.28	5.67
0001	E	Conc Chnl 20'W 5'D 2:1 SS	3355	958	CSV22-3	GW3SC	0.28	6.50
0065	E	Conc Chnl 20'W 6'D 2:1 SS	1220	958	CSV22-3	GW3SC	0.28	1.90
0088	E	2: 10'X9' RCBC @ Lake Mead	400	471	CDET22	ALLGOW3	0.96	0.50
0096	E	Conc Chnl 20'W 9'D 2:1 SS	627	471	CDET22	ALLGOW3	0.96	0.50
0108	E	Conc Chnl 20'W 6'D 2:1 SS	1021	471	CDET22	ALLGOW3	0.96	0.50
0127	E	Conc Chnl 20'W 6'D 2:1 SS	638	442	SV22-1	ALLGOW3	0.20	0.50
0139	E	Conc Chnl 10'W 5.5'D 2:1 SS	1500	442	SV22-1	ALLGOW3	0.20	1.02
GOL3		GOWAN LONE MOUNTAIN SYSTEM-BRANCH 3						
0010	E	Conc Chnl 20'W 10'D 0:1 SS	3037	2946	CRCLMT1R	GW3SC	2.61	2.78
0068	E	Transition Structure	100	2946	CRCLMT1R	GW3SC	2.61	3.50
0070	E	20' X 6' RCBC @ Cliff Shadows	350	1162	CRCSV223	ALLGOW3	5.68	2.44
0077	E	Conc Chnl 20'W 6'D 0:1 SS	1229	1162	CRCSV223	ALLGOW3	5.68	6.11
0100	E	Conc Chnl 20'W 10'D 0:1 SS	200	1162	CRCSV223	ALLGOW3	5.68	5.67
0115	E	66" RCP Outlet	670	679	DET26	ALLGOW3	4.43	
0128	E	333 ac-ft Village 26 Detention Basin		3767	VIL26IN	ALLGOW3	4.43	
0137	P0	14' X 14' RCB	4335	3767	VIL26IN	ALLGOW3	4.43	0.50
0216	P0	Conc Chnl 50'W 4.5'D 2:1 SS	3761	3693	CSV26-1	ALLGOW3	4.15	6.08
0289	P0	Conc Chnl 50'W 3.5'D 2:1 SS	6215	2396	30	ALLGOW3	2.51	7.95
0290	E	Natural Wash 363'W	4850	1465	SV26-1	ALLGOW3	1.64	22.50
0370	E	Natural Wash 450'W	7000	2396	30	ALLGOW3	2.51	8.50
GOL4		GOWAN LONE MOUNTAIN SYSTEM-BRANCH 4						
0000	E	14' X 8' RCB	554	2257	CLMT1R	ALLGOW3	2.33	2.50
0010	E	2: 9' X 8' RCB	820	2257	CLMT1R	ALLGOW3	2.33	4.74
0025	E	Soil Cement Chnl 60'W 8'D 3-4:1 SS	320	2257	CLMT1R	ALLGOW3	2.33	2.00
0026	E	Soil Cement Chnl 42'W 6'D 3-4:1 SS	700	2257	CLMT1R	ALLGOW3	2.33	1.00

** The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.*

*** As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.*

^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

REGIONAL FLOOD CONTROL DISTRICT

2008 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

FACILITY INVENTORY FIGURE F - 24

LEGEND

ID (Facility Identifier) AABB
- Parent Stream Name
- Stream Name

River Mile 0000
- Distance Above Confluence with Parent Stream (Miles)
- Miles in Hundredths

Existing Facility..... E
Proposed or Modified Facility..... P
Contingency Level
- Category B..... P0
- Master Plan..... P1
- Preliminary Design..... P2
- Design..... P3

Bottom Width..... W

Depth..... D

Side Slope, H:V..... SS

Construction Features

Cast in Place Concrete Pipe..... CIPCP	Reinforced Concrete Arch Culvert..... RCAC
Corrugated Metal Arch Pipe Culvert..... CMAP	Reinforced Concrete Box..... RCB
Corrugated Metal Pipe Culvert..... CMPC	Reinforced Concrete Box Culvert..... RCBC
High Density Polyethylene..... HDPE	Reinforced Concrete Pipe..... RCP
Horizontal Elliptical Reinforced Concrete Pipe..... HERCP	Reinforced Concrete Pipe Culvert..... RCPC
Reinforced Concrete Arch Pipe..... RCAP	Storm Sewer Pipe..... SSP

PBS&J PB

REGIONAL FLOOD CONTROL DISTRICT

2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-29
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

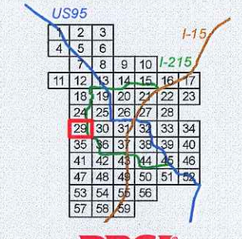
Category A		Category B	
Channel		Channel	
Stormdrain		Stormdrain	
Crossing		Crossing	

N

0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)



PBS&J
PB

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
APAD		ANGEL PARK - ALTA DRIVE BRANCH						
0000	E	2: 12' X 8' RCB	944	3140	CSWAA-3	ALLGOW4	8.26	6.00
0018	E	10' X 8' RCB	1392	3140	CSWAA-3	ALLGOW4	8.26	4.53
0044	E	11' X 8' RCAP	1565	3140	CSWAA-3	ALLGOW4	8.26	4.24
0073	E	11' X 8' RCAP	2220	2917	CSWAA-2	ALLGOW3	7.68	3.50
0115	E	10' X 8' RCB	1632	2917	CSWAA-2	ALLGOW3	7.68	2.20
0146	E	10' X 8' RCB	3010	2220	CSWAA-1	ALLGOW3	6.98	4.40
0203	E	2: 7' X 5.5' RCB	1136	2220	CSWAA-1	ALLGOW3	6.98	5.28
0225	E	2: 7' X 5.5' RCB Outlet	360	2149	SUM5DB	ALLGOW3	6.74	3.40
APBE		ANGEL PARK - BELTWAY BRANCH						
0000	E	3: 12' X 8' RCB	712	4060	CSWFH-9	ALLGOW3	2.65	0.82
0013	E	3: 12' X 8' RCB	489	4060	CSWFH-9	ALLGOW3	2.65	6.50
0022	E	Conc Chnl 20'W 7'D 2:1 SS	1556	4060	CSWFH-9	ALLGOW3	2.65	1.81
APCB		ANGEL PARK - CHARLESTON BLVD BRANCH						
0000	E	2: 10' X 6' RCB	833	1622	CSW18	ALLGOW3	1.35	1.54
0001	E	12' X 6' RCB	988	1622	CSW18	ALLGOW3	1.35	3.13
0019	E	11' X 6' RCB	1616	1196	CSW17	ALLGOW3	0.94	1.39
0050	E	8' X 7' RCB	757	1196	CSW17	ALLGOW3	0.94	1.00
0064	E	8' X 7' RCB	849	1196	CSW17	ALLGOW3	0.94	2.08
0080	E	7' X 7' RCB	1489	743	SW11	ALLGOW3	0.59	1.67
APD2		ANGEL PARK - DESERT FOOTHILLS 2 BRANCH						
0000	E	7' X 7' RCB	96	948	SWAA-2	ALLGOW3	0.70	3.62
0002	P0	7' X 7' RCB	964	948	SWAA-2	ALLGOW3	0.70	2.00
APD3		ANGEL PARK - DESERT FOOTHILLS 3 BRANCH						
0000	E	7' X 7' RCB	1090	743	SW11	ALLGOW3	0.59	1.67
0021	E	7' X 7' RCB	749	743	SW11	ALLGOW3	0.59	2.75
APM5		ANGEL PARK - MIDDLE 5 BRANCH						
0000	E	384 ac-ft Detention Basin #5		7001	SUM5IN	ALLGOW3	6.74	
0001	E	12,153 cfs PMF Spillway		12153	SUM5IN	ALLGOW3	6.74	
0009	P0	Conc Chnl 50'W 4.5'D 2:1 SS	4180	3624	CDB55-8	ALLGOW3	2.45	5.80
APMD		ANGEL PARK - MIDDLE BRANCH						
0133	E	Natural Wash	3015	6048	C11A-3*	ALLGOW4	11.31	3.00
0190	E	3: 12'X8' RCBC @ Town Center	236	6048	C11A-3	ALLGOW4	11.31	3.53
0195	E	Transition Structure	145	6048	C11A-3	ALLGOW4	11.31	3.59
0198	E	Conc Chnl 62'-68'W 5.5'-7.5'D 2:1 SS	500	6048	C11A-3	ALLGOW4	11.31	3.59
0208	E	Conc Chnl 62'-68'W 6.5'-7.5'D 2:1 SS	550	6048	C11A-3	ALLGOW4	11.31	2.81
0218	E	Conc Chnl 66'-69'W 6.5'-7.0'D 2:1 SS	500	6048	C11A-3	ALLGOW4	11.31	2.00
0227	E	Transition Structure	134	6048	C11A-3	ALLGOW4	11.31	2.00
0230	E	3: 12' X 8' RCBC @ Pavilion Center Dr	133	5889	C11A-1	ALLGOW4	11.12	2.00
0233	E	Transition Structure	207	5869	C11A-1	ALLGOW4	11.12	4.00
0237	E	Conc Chnl 76' W 6.5'-9.0'D 2:1 SS	516	5889	C11A-1	ALLGOW4	11.12	4.00
0247	E	3: 12' X 8' RCBC @ Access Rd	52	5889	C11A-1	ALLGOW4	11.12	4.00
0248	E	Transition Structure	128	5889	C11A-1	ALLGOW4	11.12	4.00
0253	E	Conc Chnl 76'W 6.5'D 2:1 SS	283	5889	C11A-1	ALLGOW4	11.12	4.00
0258	E	Transition Structure	100	5788	CRCSWFH9	ALLGOW4	10.91	0.82
APSO		ANGEL PARK - SOUTH BRANCH						
0205	E	Natural Wash	2380	2056	C12B	ALLGOW3	2.00	3.46
0254	E	2: 8' X 8' RCBC @ Town Center Dr.	190	1932	C12A	ALLGOW3	1.74	3.00
0255	E	24' X 12' RCAC @ Town Center Dr.	140	1932	C12A	ALLGOW3	1.74	3.00
0258	E	Natural Wash	3235	1932	C12A	ALLGOW3	1.74	1.36
0345	E	2: 8' X 8' RCBC @ Pavilion Center	120	1622	CSW18	ALLGOW3	1.35	2.00
0346	E	Natural Wash	880	1622	CSW18	ALLGOW3	1.35	1.40
RRBW		RED ROCK CHANNEL - BELTWAY LATERAL						
0000	E	6' X 6' RCB	1300	500	USACE	USACE	0.72	0.67
RRR4		R4 CHANNEL						
0000	E	Conc Chnl 16'W 10'D 0:1 SS	260	2400	USACE	USACE	7.08	3.15
0007	E	16' X 10' RCBC	80	2400	USACE	USACE	7.08	4.25
0008	E	Conc Chnl 16'W 7.5'D 0:1 SS	2200	2400	USACE	USACE	7.08	2.88
RRWA		RED ROCK CHANNEL						
0395	E	Conc Chnl 19'W 10'D 0:1 SS	1180	4800	USACE	USACE	4.61	1.75
0425	E	19' X 10' RCBC @ Town Center	230	4800	USACE	USACE	4.61	1.75

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
RRWA		RED ROCK CHANNEL						
0430	E	Conc Chnl 14'W 13'D 0:1 SS	230	2300	USACE	USACE	2.19	3.15
0435	E	14' X 10' RCBC	50	2300	USACE	USACE	2.19	3.15
0436	E	Conc Chnl 14'W 8'D 0:1 SS	800	2300	USACE	USACE	2.19	3.15
0440	E	Conc Chnl 10'W 7.5'D 2:1 SS	2660	2300	USACE	USACE	2.19	2.14
0490	E	Conc Chnl 13'W 10'D 0:1 SS	200	2300	USACE	USACE	2.19	1.00
0500	E	13' X 10' RCBC @ Desert Inn	190	1900	USACE	USACE	1.75	1.00
0502	E	Conc Chnl 10'W 7'D 2:1 SS	1580	1900	USACE	USACE	1.75	2.60
0534	E	Conc Chnl 16'W 7'D 0:1 SS	400	1500	USACE	USACE	1.07	1.24
0541	E	Conc Chnl 10'W 7'D 2:1 SS	2120	1500	USACE	USACE	1.07	0.80
0581	E	13' X 9' RCB	1040	1000	USACE	USACE	1.07	0.60
0606	E	10' X 9' RCB	450	750	USACE	USACE	0.72	0.60
0607	E	10' X 9' RCB	450	750	USACE	USACE	0.72	0.60
0608	E	96" RCP	4930	460	USACE	USACE	0.72	0.55
0692	E	96" CIPCP	195	180	USACE	USACE	0.19	1.40
0695	E	96" RCP	290	180	USACE	USACE	0.19	0.50
0701	E	72" RCP	125	180	USACE	USACE	54.74	0.50
0709	E	Riprap Chnl 10'W 6'D 2:1 SS	830	180	USACE	USACE	54.74	0.80
0714	E	2.25' X 2.25' RCBC Outlet	445	180	USACE	USACE	54.74	
0715	E	110,000 cfs PMF Spillway		110000	USACE	USACE	54.74	
0716	E	2,007 ac-ft Red Rock Detention Basin		12800	USACE	USACE	54.74	
0777	E	2 Span Bridge 200'W 17'D @ SR 159	50	1998	CRD3	FLAM3A	1.24	2.50

** The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.*

*** As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.*

^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

USACE - Refer to "Las Vegas Wash & Tributaries (Tropicana and Flamingo Washes) Hydrologic Basis for Design" prepared by U.S. Army Corps of Engineers, Los Angeles District, June 1993. See Figure S-6 for USACE Boundary.

REGIONAL FLOOD CONTROL DISTRICT

2008 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

FACILITY INVENTORY FIGURE F - 29

LEGEND

ID (Facility Identifier) AABB
- Parent Stream Name
- Stream Name

River Mile 0000
- Distance Above Confluence with Parent Stream (Miles)
- Miles in Hundredths

Existing Facility..... E
Proposed or Modified Facility..... P
Contingency Level
- Category B..... P0
- Master Plan..... P1
- Preliminary Design..... P2
- Design..... P3

Bottom Width..... W

Depth..... D

Side Slope, H:V..... SS

Construction Features

Cast in Place Concrete Pipe..... CIPCP	Reinforced Concrete Arch Culvert..... RCAC
Corrugated Metal Arch Pipe Culvert..... CMAP	Reinforced Concrete Box..... RCB
Corrugated Metal Pipe Culvert..... CMPC	Reinforced Concrete Box Culvert..... RCBC
High Density Polyethylene..... HDPE	Reinforced Concrete Pipe..... RCP
Horizontal Elliptical Reinforced Concrete Pipe..... HERCP	Reinforced Concrete Pipe Culvert..... RCPC
Reinforced Concrete Arch Pipe..... RCAP	Storm Sewer Pipe..... SSP

PBS&J PB

REGIONAL FLOOD CONTROL DISTRICT

2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE H- 24

HYDROLOGIC SUMMARY

LEGEND

- Ultimate Development Boundary
- Watershed Boundary
- Subbasin Boundary
- Drought Ordinance Boundary
- Flow Arrows

Flood Control Facilities

- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Category A Remove & Replace/ Parallel Facilities
- Category B Remove & Replace/ Parallel Facilities

Type Hydrologic Soil Groups

- A Low Runoff Potential
- B Moderately Low Runoff Potential
- C Moderately High Runoff Potential
- D High Runoff Potential/Rock Outcrops

Typical Land Use

1	Undeveloped Land, Open Desert
2	Parks, Golf Courses
3	Rural
4 / 14*	Low Density Residential
5 / 15*	Medium Density Residential
6 / 16*	High Density Residential
7 / 17*	Public Facility, Residential
8 / 18*	Very High Density Residential
9 / 19*	Commerical, Retail, Casino, High Rise Condominiums
10 / 20*	Light Industrial
11 / 21*	Heavy Industrial
12 / 22*	Schools
13	Lakes

* Drought Ordinance Applied

N

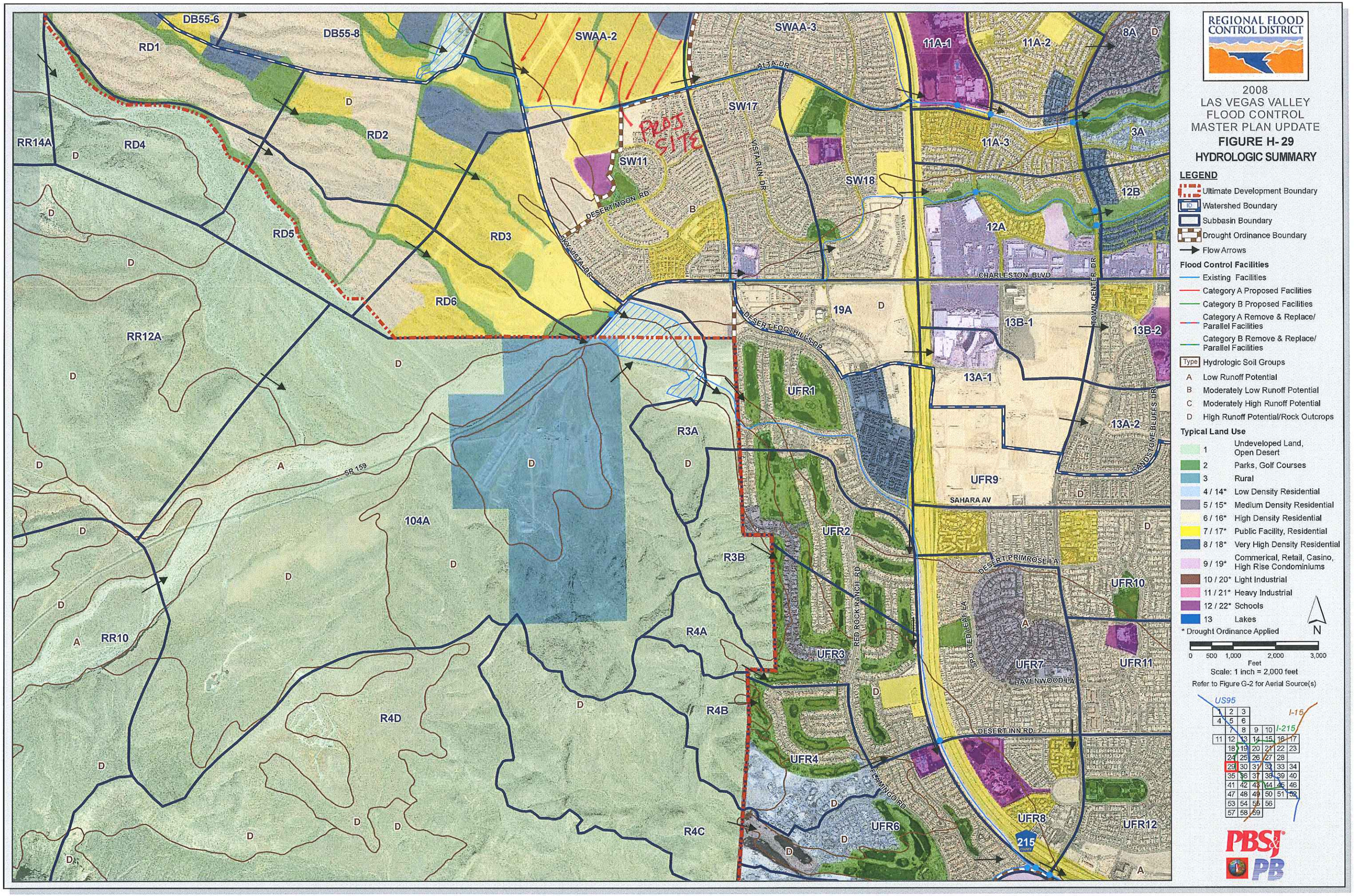
0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)

US95 I-15 I-215

PBS&J PB


DB55-6
DB55-8
RD1
SWAA-2
SWAA-3
11A-1
11A-2
8A
ALTA DR
SW17
PROJECT SITE
RR14A
RD4
RD2
3A
11A-3
SW11
VISTA RUN DR
SW18
12B
DESERT MOON RD
SKYVISTA DR
RD5
RD3
12A
CHARLESTON BLVD
TOWN CENTER DR
RD6
19A
13B-1
13B-2
DESERT FOOTHILLS DR
RR12A
UFR1
13A-1
13A-2
SANDSTONE BLUFFS DR
R3A
SR 159
UFR9
SAHARA AV
104A
UFR2
R3B
DESERT PRIMROSE LA
UFR10
RED ROCK RANCH RD
SPOTTED LEAF LA
RR10
R4A
UFR3
UFR7
UFR11
HAVENWOOD LA
R4D
R4B
DESERT INN RD
UFR4
FLAMINGO RD
UFR8
UFR12
R4C
UFR6
215
REGIONAL FLOOD CONTROL DISTRICT
2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE
FIGURE H-29
HYDROLOGIC SUMMARY
LEGEND
Ultimate Development Boundary
ID Watershed Boundary
Subbasin Boundary
Drought Ordinance Boundary
Flow Arrows
Flood Control Facilities
Existing Facilities
Category A Proposed Facilities
Category B Proposed Facilities
Category A Remove & Replace/ Parallel Facilities
Category B Remove & Replace/ Parallel Facilities
Type Hydrologic Soil Groups
A Low Runoff Potential
B Moderately Low Runoff Potential
C Moderately High Runoff Potential
D High Runoff Potential/Rock Outcrops
Typical Land Use
1 Undeveloped Land, Open Desert
2 Parks, Golf Courses
3 Rural
4 / 14* Low Density Residential
5 / 15* Medium Density Residential
6 / 16* High Density Residential
7 / 17* Public Facility, Residential
8 / 18* Very High Density Residential
9 / 19* Commerical, Retail, Casino, High Rise Condominiums
10 / 20* Light Industrial
11 / 21* Heavy Industrial
12 / 22* Schools
13 Lakes
* Drought Ordinance Applied
N
0 500 1,000 2,000 3,000
Feet
Scale: 1 inch = 2,000 feet
Refer to Figure G-2 for Aerial Source(s)
US95
I-15
I-215
PBS&J
PB

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

PBS&J
File: FORM4.XLS

Las Vegas Valley Master Plan Update
Gowan Watershed
Ultimate Conditions

BY: MLD
DATE: 7/24/12

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check	Tlag	REMARKS
DESIG: (1)	DEV./EX. (D or E)	CN	K (2)	AREA Ac (3)	AREA Mi^2	INITIAL LENGTH Feet (4)	SLOPE % (5)	Ti Min (6)	TRAVEL LENGTH Feet (7)	SLOPE % (8)	V1 VELOCITY FPS (9a)	V2 VELOCITY FPS (9b)	Tt Min (10)	Min (13)	Min (14)	Tlag= 0.6Tc/60 Hours	RAINFALL Q100/Q10 Inches
DB54-2	E	86.9	0.7569	184.28	0.288	100	20.0	2.3	5400	39.3	9.3	18.4	5.3	7.6	N/A	**0.076**	3.66
DB54-3	E	87.2	0.7614	332.25	0.519	100	40.0	1.8	6800	32.7	8.5	16.8	7.2	9.0	N/A	**0.090**	3.67
DB54-4	D	86.8	0.7552	130.17	0.203	100	1.0	6.2	5100	9.1	6.1	9.2	9.7	15.9	38.9	**0.159**	3.60
DB54-5	E	85.2	0.7352	144.51	0.226	100	40.0	1.9	5700	25.5	7.5	14.9	6.9	8.9	N/A	**0.089**	3.67
DB54-6R	D	85.3	0.7353	538.42	0.841	500	9.0	7.1	13136	7.5	5.5	8.4	26.6	33.7	85.8	**0.337**	3.56
DB55-1	E	87.2	0.7616	409.75	0.640	100	40.0	1.8	10600	14.1	5.6	11.0	16.7	18.5	N/A	**0.185**	3.68
DB55-2	D	88.3	0.7758	63.43	0.099	100	1.0	5.8	4400	7.7	5.6	8.5	9.1	15.0	35.0	**0.150**	3.56
DB55-3	E	86.8	0.7553	166.70	0.260	100	40.0	1.8	3100	26.9	7.7	15.3	3.9	5.7	N/A	**0.057**	3.61
DB55-4	D	84.7	0.7287	110.95	0.173	100	1.0	6.7	3600	10.4	6.5	9.9	6.5	13.2	30.6	**0.132**	3.58
DB55-5	D	86.4	0.7501	121.02	0.189	100	1.0	6.3	4100	7.7	5.6	8.5	8.6	14.9	33.3	**0.149**	3.54
DB55-6	D	92.0	0.8238	61.73	0.096	100	1.0	5.0	3000	8.7	5.9	9.0	6.0	11.0	27.2	**0.110**	3.52
DB55-7	D	89.0	0.7854	284.05	0.444	100	1.0	5.7	9200	9.0	6.0	9.2	17.2	22.9	61.7	**0.229**	3.54
DB55-8	D	89.7	0.7946	348.72	0.545	100	1.0	5.5	5200	6.4	5.1	7.8	11.7	17.2	39.4	**0.172**	3.46
SWAA-1	D	88.2	0.7736	152.37	0.238	100	1.0	5.9	8300	3.3	3.7	5.6	25.7	31.5	56.7	**0.315**	3.44
SWAA-2	D	90.9	0.8100	448.15	0.700	100	1.0	5.2	9100	3.0	3.5	5.3	29.4	34.6	61.1	**0.346**	3.39
SWAA-3	D	87.8	0.7694	371.84	0.581	100	1.0	6.0	9330	3.0	3.5	5.3	30.1	36.1	62.4	**0.361**	3.31
SWFH-1	D	86.9	0.7570	357.96	0.559	100	1.0	6.2	8089	8.5	5.9	8.9	15.6	21.8	55.5	**0.218**	3.57
SWFH-2	D	91.9	0.8229	341.89	0.534	100	1.0	5.0	7250	4.4	4.2	6.4	19.5	24.5	50.8	**0.245**	3.49
SWFH-3	D	94.7	0.8598	98.32	0.154	100	1.0	4.3	4250	3.5	3.8	5.7	13.1	17.4	34.2	**0.174**	3.44
SWFH-4	D	84.7	0.7287	74.76	0.117	100	1.0	6.7	4706	8.0	5.7	8.7	9.6	16.2	36.7	**0.162**	3.55
SWFH-5	D	91.4	0.8171	165.45	0.259	100	1.0	5.1	6400	7.0	5.3	8.1	13.7	18.8	46.1	**0.188**	3.50
SWFH-6	D	92.2	0.8266	163.51	0.255	100	1.0	4.9	5400	4.9	4.5	6.8	13.9	18.8	40.6	**0.188**	3.46
SWFH-7	D	93.1	0.8394	195.51	0.305	100	1.0	4.7	4681	6.3	5.1	7.7	10.7	15.4	36.6	**0.154**	3.41
SWFH-8	D	93.7	0.8465	187.91	0.294	100	1.0	4.6	5700	7.0	5.3	8.1	12.3	16.8	42.2	**0.168**	3.36
SWFH-9	D	94.1	0.8527	109.46	0.171	100	1.0	4.5	900	8.0	5.7	8.7	2.2	6.7	15.6	**0.067**	3.33

Tc = Ti + Tt Tlag = 0.6 Tc
Ti = 1.8 (1.1 - K) L^1/2 / S^1/3
K = 0.0132 (CN) - 0.39
Tc Check = L/180+10

For the travel time (Tt) calculations,
V1 applies to the first 500 feet of travel distance;
V2 applies to the remaining travel distance.

Existing V1 = 14.8*(S/100)^1/2 Developed V1 = 20.2*(S/100)^1/2
Existing V2 = 29.4*(S/100)^1/2 Developed V2 = 30.6*(S/100)^1/2

REFERENCE :

STANDARD FORM 4

GOWAN WATERSHED

Lag Time Calculations for Subbasins with an Area Greater than 1 mi^2

Basin	Slope (ave.) ft/ft	Length (total) ft.	Length (Centroid) ft.	n	$TLAG_{USBR}$	
DB54-1	0.190	15,600	6,700.00	0.050	0.495	
30	0.171	15,500	7,900.00	0.050	0.530	
SV26-1	0.151	15,600	9,600.00	0.050	0.579	
LMT1R	0.165	13,500	5,300.00	0.050	0.447	
BOXCANYON	0.109	21,500	11,800.00	0.023	0.327	Note: 0.0225 was used for n because these basins are partly inside and outside the UDB.
CAM-10A	0.130	12,500	5,800.00	0.023	0.210	Note: 0.0225 was used for n because these basins are partly inside and outside the UDB.
CAM-10B	0.144	13,000	6,000.00	0.023	0.211	Note: 0.0225 was used for n because these basins are partly inside and outside the UDB.

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN  1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   23JUN08  TIME  10:11:08   *
*                                       *
*****************************************
```

```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*       DAVIS, CALIFORNIA 95616     *
*           (916) 756-1104          *
*                                   *
*************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
          LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

                    *DIAGRAM
*** FREE ***
               1    ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2008 MASTER PLAN UPDATE
               2    ID    GOWAN WATERSHED (ALL)
               3    ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
               4    ID    INPUT FILE = ALLGOW3.DAT
               5    ID    INPUT FILE DATE = MAY 5, 2008
               6    ID    DESIGN STORM = 100-YEAR 6-HR STORM
               7    ID    STORM DISTRIBUTION = SDN #3
               8    ID    MODELED BY PBS&J (MICHELE L. D'ALESSANDRO, E.I., CFM)
               9    ID    CHECKED BY PBS&J (HARSHAL B. DESAI, P.E., CFM)
              10    ID    STORM CENTERING = FULL WATERSHED
              11    ID
              12    ID    REFERENCED HYDROLOGIC MODELS:
              13    ID    CITY OF LAS VEGAS CITY WIDE HYDROLOGY ANALYSIS (PBS&J 1997)
              14    ID    NORTHWEST NEIGHBORHOOD STUDY PHASE 1 (PBS&J 1997)
              15    ID    RESPONSE TO COMMENTS ON THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD
              16    ID    CONTROL MASTER PLAN UPDATE (G.C. WALLACE 2006)
              17    ID    3RD RESPONSE TO COMMENTS ON THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD
              18    ID    CONTROL MASTER PLAN UPDATE (G.C. WALLACE 2006)
              19    ID    SUPPLEMENT FOR THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD CONTROL
              20    ID    MASTER PLAN UPDATE (G.C. WALLACE 2006)
              21    ID    GOWAN OUTFALL - LONE MOUNTAIN BRANCH PRELIMINARY DESIGN REPORT
              22    ID    (G.C. WALLACE 2007)
              23    ID    LONE MOUNTAIN WESTERN BELTWAY DETENTION BASIN PARAMETERS (RECEIVED
              24    ID    FROM G.C. WALLACE ON JANUARY 31, 2008)
              25    ID    US 95/RANCHO FIS RESTUDY (PBS&J 1998)
              26    ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
              27    ID
              28    ID                          AREA    DARF
              29    ID                          SQ. MI.
              30    ID                          0-0.5   0.99
              31    ID                          0.5-1   0.975
              32    ID                          1-2     0.95
              33    ID                          2-3     0.925
              34    ID                          3-4     0.915
              35    ID                          4-5     0.908
              36    ID                          5-6     0.903
              37    ID                          6-7     0.895
              38    ID                          7-8     0.885
              39    ID
              40    ID  JR CARD RATIOS REPRESENT DEPTH-AREA REDUCTION FACTORS (DARF'S)
              41    ID
              42    ID  100-YEAR,  6-HOUR STORM,  SDN3
              43    ID
              44    IT       5       0       0     650
              45    IO       5       0       0
              46    IN       5       0       0
              47    JR    PREC    0.99   0.975    0.95   0.925   0.915   0.908   0.903   0.895   0.885
                    *
```



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          LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              48    KK  LV29-C
              49    BA   0.277
```

```
                * HYDROLOGIC MODEL (11-20-06); THE HYDROLOGY WAS REVISEED IN ORDER TO
                * INCORPORATE ALL EXISTING/PROPOSED MPU FACILITIES
                *
1                                       HEC-1 INPUT                                    PAGE 34

   LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   1248         KK  DB54-1
   1249         BA   2.222
   1250         PB    3.72
   1251         LS       0    87.2
   1252         UD   0.495
                *

   1253         KK RDB54-1
   1254         KM  ROUTE DB54-1 TO CDB54-5
   1255         KM  NATURAL WASH
   1256         KM  TRAVEL LENGTH = 4,500
   1257         KM  SLOPE = 3.7%
   1258         KM  N = 0.040
   1259         KM  HYDRAULIC RADIUS = 1.5
   1260         KM  VELOCITY = 14.9
   1261         RM       1   0.084    0.15
                *

   1262         KK  DB54-5
   1263         BA   0.226
   1264         PB    3.67
   1265         LS       0    85.2
   1266         UD   0.089
                *

   1267         KK CDB54-5
   1268         KM  COMBINE DB54-5 AND RDB54-1
   1269         HC       2
                *

   1270         KKRCDB54-5
   1271         KM  ROUTE CDB54-5 TO CRCDB544
   1272         KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
   1273         KM  FACILITY # = APM5 0059
   1274         KM  LINING = CONCRETE
   1275         RD    8923    0.07   0.015       0    TRAP     100       2
                *

   1276         KK  DB54-2
   1277         BA   0.288
   1278         PB    3.66
   1279         LS       0    86.9
   1280         UD   0.076
                *

   1281         KK RDB54-2
   1282         KM  ROUTE DB54-2 TO CDB54-4
   1283         KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
   1284         KM  FACILITY # = APM5 0057
   1285         KM  LINING = CONCRETE
   1286         RD    4920   0.068   0.015       0    TRAP      50       2
                *
1                                       HEC-1 INPUT                                    PAGE 35

   LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   1287         KK  DB54-3
   1288         BA   0.519
   1289         PB    3.67
   1290         LS       0    87.2
   1291         UD   0.090
                *

   1292         KK RDB54-3
   1293         KM  ROUTE DB54-3 TO CDB54-4
   1294         KM  NATURAL WASH
   1295         KM  TRAVEL LENGTH = 5,200
   1296         KM  SLOPE = 3.0%
   1297         KM  N = 0.040
   1298         KM  HYDRAULIC RADIUS = 1.5
   1299         KM  VELOCITY = 13.5
   1300         RM       1   0.107    0.15
                *

   1301         KK  DB54-4
   1302         BA   0.203
   1303         PB    3.60
   1304         LS       0    86.8
   1305         UD   0.159
                *

   1306         KK CDB54-4
   1307         KM  COMBINE DB54-4, RDB54-3 AND RDB54-2
   1308         HC       3
                *
```

OFFSITE AREAS TRIBUTARY TO SKY VISTA DRIVE

```
1309          KKRCDB54-4
1310          KM  ROUTE CDB54-4 TO CRCDB544
1311          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1312          KM  FACILITY # = APM5 0057
1313          KM  LINING = CONCRETE
1314          RD    5000   0.068   0.015       0    TRAP      50       2
              *

1315          KKCRCDB544
1316          KM  COMBINE RCDB54-4 AND CDB54-5
1317          HC       2
              *

1318          KKRCRCDB54
1319          KM  ROUTE CRCDB544 TO CDB54-6R
1320          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1321          KM  FACILITY # = APM5 0008, 0047, 0056
1322          KM  LINING = CONCRETE
1323          RD    3365   0.052   0.015       0    TRAP      50       2
              *
1                                        HEC-1 INPUT                                                PAGE 36

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1324          KK DB54-6R
1325          BA   0.841
1326          PB    3.56
1327          LS       0    85.3
1328          UD   0.337
              *

1329          KKCDB54-6R
1330          KM  COMBINE RCRCDB54 AND DB54-6R
1331          HC       2
              *

1332          KK  DB55-1
1333          BA   0.640
1334          PB    3.68
1335          LS       0    87.2
1336          UD   0.185
              *

1337          KK RDB55-1
1338          KM  ROUTE DB55-1 TO CDB55-2
1339          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1340          KM  FACILITY # = APM5 0212
1341          KM  LINING = CONCRETE
1342          RD    4350   0.075   0.015       0    TRAP      30       2
              *

1343          KK  DB55-2
1344          BA   0.099
1345          PB    3.56
1346          LS       0    88.3
1347          UD   0.150
              *

1348          KK CDB55-2
1349          KM  COMBINE RDB55-1 AND DB55-2
1350          HC       2
              *

1351          KK RDB55-2
1352          KM  ROUTE CDB55-2 TO CCDB55-5
1353          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1354          KM  FACILITY # = APM5 0212
1355          KM  LINING = CONCRETE
1356          RD    2345   0.075   0.015       0    TRAP      30       2
              *

1357          KK  DB55-3
1358          BA   0.260
1359          PB    3.61
1360          LS       0    86.8
1361          UD   0.057
              *
1                                        HEC-1 INPUT                                                PAGE 37

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1362          KK RDB55-3
1363          KM  ROUTE DB55-3 TO CDB55-4
1364          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1365          KM  FACILITY # = APM5 0213
1366          KM  LINING = CONCRETE
1367          RD    1880   0.073   0.015       0    TRAP      50       2
              *

1368          KK  DB55-4
1369          BA   0.173
1370          PB    3.58
1371          LS       0    84.7
```

```
1372          UD   0.132
              *

1373          KK CDB55-4
1374          KM  COMBINE RDB55-3 AND DB55-4
1375          HC       2
              *

1376          KK RDB55-4
1377          KM  ROUTE CDB55-4 TO CDB55-5
1378          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1379          KM  FACILITY # = APM5 0213
1380          KM  LINING = CONCRETE
1381          RD    4640   0.073   0.015       0    TRAP      50       2
              *

1382          KK  DB55-5
1383          BA   0.189
1384          PB    3.54
1385          LS       0    86.4
1386          UD   0.149
              *

1387          KK CDB55-5
1388          KM  COMBINE DB55-5 AND RDB55-4
1389          HC       2
              *

1390          KKCCDB55-5
1391          KM  COMBINE CDB55-5 AND RCDB55-2
1392          HC       2
              *

1393          KK RDB55-5
1394          KM  ROUTE TO SUMMERLIN #5 DETENTION BASIN
1395          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1396          KM  FACILITY # = APM5 0009
1397          KM  LINING = CONCRETE
1398          RD41800.05       8   0.015       0    TRAP      50       2
              *
1                                    HEC-1 INPUT                                                    PAGE 38

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1399          KK  DB55-7
1400          BA   0.444
1401          PB    3.54
1402          LS       0    89.0
1403          UD   0.229
              *

1404          KK RDB55-7
1405          KM  ROUTE DB55-7 TO CDB55-8
1406          KM  NATURAL WASH
1407          KM  TRAVEL LENGTH = 5,300
1408          KM  SLOPE = 3.0%
1409          KM  N = 0.040
1410          KM  HYDRAULIC RADIUS = 1.5
1411          KM  VELOCITY = 13.5
1412          RM       1   0.109    0.15
              *

1413          KK  DB55-6
1414          BA   0.096
1415          PB    3.52
1416          LS       0    92.0
1417          UD   0.110
              *

1418          KK RDB55-6
1419          KM  ROUTE DB55-6 TO CDB55-8
1420          KM  NATURAL WASH
1421          KM  TRAVEL LENGTH = 10,000
1422          KM  SLOPE = 3.7%
1423          KM  N = 0.040
1424          KM  HYDRAULIC RADIUS = 1.5
1425          KM  VELOCITY = 14.9
1426          RM       2   0.186    0.15
              *

1427          KK  DB55-8
1428          BA   0.545
1429          PB    3.46
1430          LS       0    89.7
1431          UD   0.172
              *

1432          KK CDB55-8
1433          KM  COMBINE DB55-8, RDB55-6, RCDB55-5 AND RDB55-7
1434          HC       4
              *

1435          KK  SUM5IN
1436          KM  COMBINE CDB55-8 AND CDB54-7
```

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1437          KM  TOTAL INFLOW TO SUMMERLIN #5 DETENTION BASIN
1438          KO       1
1439          HC       2
              *
1                                        HEC-1 INPUT                                        PAGE 39

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1440          KK  SUM5DB
1441          KM  SUMMERLIN DETENTION BASIN 5
1442          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1443          KM  FACILITY # = APM5 0000
1444          KM  STORAGE VOLUME = 384.1 ACRE-FEET
1445          KM  OUTLET = 2: 7' x 5.5' RCBS
1446          KM  100-YEAR DISCHARGE = 2,150 CFS
1447          KM  SPILLWAY LENGTH = 453.6'
1448          KM  SPILLWAY HEIGHT =
1449          KM  SPILLWAY CREST ELEVATION = 3563'
1450          KM  SPILLWAY TYPE = CONCRETE BROAD CRESTED WEIR
1451          KM  PMF DISCHARGE = 12,153 CFS
1452          KM  TOP OF EMBANKMENT ELEVATION = 3569'
1453          KM  DETENTION BASIN PARAMETERS REFERENCED FROM "DETENTION BASIN NO. 5
1454          KM  EXPANSION AND DIVERSION BERM" PLANS BY G.C. WALLACE (5-23-2001)
1455          KM  STAGE-STORAGE-DISCHARGE CURVE REFERENCED FROM "2006 SUMMERLIN WEST
1456          KM  CONCEPTUAL DRAINAGE STUDY MASTER PLAN AMENDMENT: EXISTING OFFSITE/PROPOSED
1457          KM  ONSITE DRAINAGE CONDITION" HYDROLOGIC MODEL DATED 8-7-2006 AND SUBMITTED
1458          KM  WITH THE SUPPLEMENT FOR THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD
1459          KM  CONTROL MASTER PLAN UPDATE BY G.C. WALLACE (08-2006)
1460          KO       1
1461          RS       1    STOR      -1
1462          SV       0    1.73    4.55    8.45   13.08    18.2   23.81   29.96    36.7   43.93
1463          SV   59.55   77.49   99.82  127.17  159.39  196.38  240.07  384.05  405.65  535.25
1464          SQ       0     192     276     391     505     616     725     813     900     982
1465          SQ    1176    1368    1534    1683    1804    1920    2033    2315    3725   23201
1466          SE  3532.5    3535    3536    3537    3538    3539    3540    3541    3542    3543
1467          SE    3543    3547    3549    3551    3553    3555    3557    3563    3564    3569
1468          SS    3563   435.6       3     1.5
              *

1469          KK  SUM5OT
1470          KM  ROUTE SUM5DB TO CSWAA-1
1471          KM  FACILITY = ANGEL PARK - ALTA DRIVE
1472          KM  FACILITY # = APAD 0203, 0225
1473          KM  LINING = RCB
1474          RD    1495  0.0528   0.015       0    TRAP      14       0
              *

1475          KK  SWAA-1 → offsite tributary to Sky Vista Drive
1476          BA   0.238
1477          PB    3.44
1478          LS       0    88.2
1479          UD   0.315
              *

1480          KK CSWAA-1
1481          KM  COMBINE SUM5OT AND SWAA-1
1482          HC       2
              *
1                                        HEC-1 INPUT                                        PAGE 40

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1483          KKRCSWAA-1
1484          KM  ROUTE CSWAA-1 TO CSWAA-2
1485          KM  FACILITY = ANGEL PARK - ALTA DRIVE
1486          KM  FACILITY # = APAD 0115, 0146
1487          KM  LINING = RCB
1488          RD    4640   0.044   0.015       0    TRAP      10       0
              *

1489          KK  SWAA-2 → Village 23B
1490          BA   0.700
1491          PB    3.39
1492          LS       0    90.9
1493          UD   0.346
              *

1494          KK CSWAA-2
1495          KM  COMBINE RCSWAA-1 AND SWAA-2
1496          HC       2
              *

1497          KKRCSWAA-2
1498          KM  ROUTE CSWAA-2 TO CSWAA-3
1499          KM  FACILITY = ANGEL PARK - ALTA DRIVE
1500          KM  FACILITY # = APAD 0000, 0018, 0044, 0073
1501          KM  LINING = RCB
1502          RD    6120   0.035   0.015       0    TRAP      11       0
              *

1503          KK  SWAA-3
1504          BA   0.581
1505          PB    3.31
```

```
1506          LS       0    87.8
1507          UD   0.361
              *

1508          KK CSWAA-3
1509          KM  COMBINE RCSWAA-2 AND SWAA-3
1510          HC       2
              *

1511          KK  SWFH-1
1512          BA   0.559
1513          PB    3.57
1514          LS       0    86.9
1515          UD   0.218
              *

1516          KK RSWFH-1
1517          KM  ROUTE SWFH-1 TO CSWFH-2
1518          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
1519          KM  FACILITY # = APDF 0123
1520          KM  LINING = RCB
1521          RD    5355  0.0653   0.015       0    TRAP       5       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1522          KK  SWFH-2
1523          BA   0.534
1524          PB    3.49
1525          LS       0    91.9
1526          UD   0.245
              *

1527          KK CSWFH-2
1528          KM  COMBINE RSWFH-1 AND SWFH-2
1529          HC       2
              *

1530          KKRCSWFH-2
1531          KM  ROUTE CSWFH-2 TO CSWFH-3
1532          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
1533          KM  FACILITY # = APDF 0073
1534          KM  LINING = RCB
1535          RD    2070   0.041   0.015       0    TRAP      10       0
              *

1536          KK  SWFH-3
1537          BA   0.154
1538          PB    3.44
1539          LS       0    94.7
1540          UD   0.174
              *

1541          KK CSWFH-3
1542          KM  COMBINE RCSHFH-2 AND SWFH-3
1543          HC       2
              *

1544          KKRCSWFH-3
1545          KM  ROUTE CSWFH-3 TO CRSWFH-6
1546          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
1547          KM  FACILITY # = APDF 0026, 0073
1548          KM  LINING = RCB
1549          RD    3100   0.041   0.015       0    TRAP      10       0
              *

1550          KK  SWFH-6
1551          BA   0.255
1552          PB    3.46
1553          LS       0    92.2
1554          UD   0.188
              *

1555          KK RSWFH-6
1556          KM  ROUTE SWFH-6 TO CSWFH-6
1557          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS 6 BRANCH
1558          KM  FACILITY # = APD6 0000
1559          KM  LINING = RCB
1560          RD    2600  0.0615   0.015       0    TRAP       6       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1561          KK  SWFH-7
1562          BA   0.305
1563          PB    3.41
1564          LS       0    93.1
1565          UD   0.154
              *

1566          KK CSWFH-6
```

AREA TRIBUTARY TO FAR HILLS AVENUE

```
1567          KM  COMBINE RSWFH-6 AND SWFH-7
1568          HC       2
              *

1569          KK RCSWFH6
1570          KM  ROUTE CSWFH-6 TO CSWFH-7
1571          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
1572          KM  FACILITY # = APDF 0000
1573          KM  LINING = RCB
1574          RD    1350   0.022   0.015       0    TRAP      12       0
              *

1575          KK CSWFH-7
1576          KM  COMBINE RCSWFH-3 AND RCSWFH6
1577          HC       2
              *

1578          KK  SWFH-4
1579          BA   0.117
1580          PB    3.55
1581          LS       0    84.7
1582          UD   0.162
              *

1583          KK RSWFH-4
1584          KM  ROUTE SWFH-4 TO CSWFH-5
1585          KM  FACILITY = ANGEL PARK - FAR HILLS DRIVE
1586          KM  FACILITY # = APFH 0144
1587          KM  LINING = RCB
1588          RD    4392   0.055   0.015       0    TRAP       7       0
              *

1589          KK  SWFH-5
1590          BA   0.259
1591          PB    3.50
1592          LS       0    91.4
1593          UD   0.188
              *

1594          KK CSWFH-5
1595          KM  COMBINE RSWFH-4 AND SWFH-5
1596          HC       2
              *
1                                        HEC-1 INPUT                                                    PAGE 43

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1597          KKRCSWFH-5
1598          KM  ROUTE CSWFH-5 TO CCSWFH-7
1599          KM  FACILITY = ANGEL PARK - FAR HILLS DRIVE
1600          KM  FACILITY # = APFH 0061, 0089
1601          KM  LINING = RCB
1602          RD    4120    0.02   0.015       0    TRAP       8       0
              *

1603          KKCCSWFH-7
1604          KM  COMBINE RCSWFH-5 AND CSWFH-7
1605          HC       2
              *

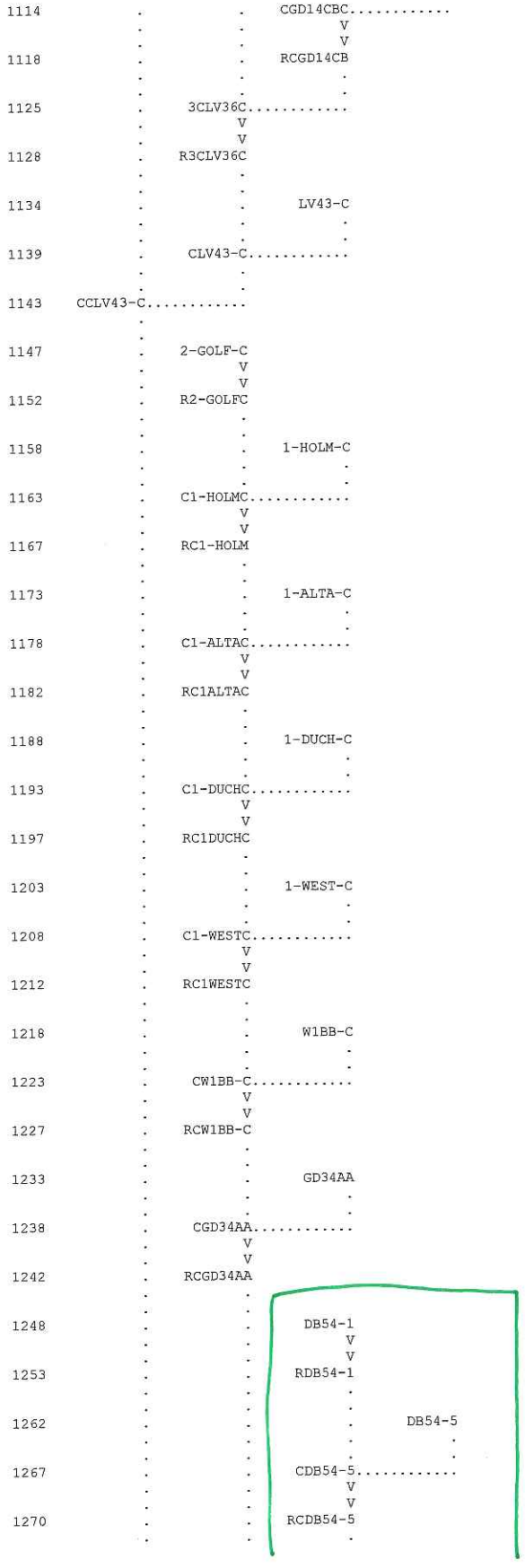
1606          KKRCCSWFH7
1607          KM  ROUTE CCSWFH-7 TO CSWFH-8
1608          KM  FACILITY = ANGEL PARK - FAR HILLS DRIVE
1609          KM  FACILITY # = APFH 0019, 0024
1610          KM  LINING = RCA
1611          RD    2193   0.051   0.015       0    TRAP      16       0
              *

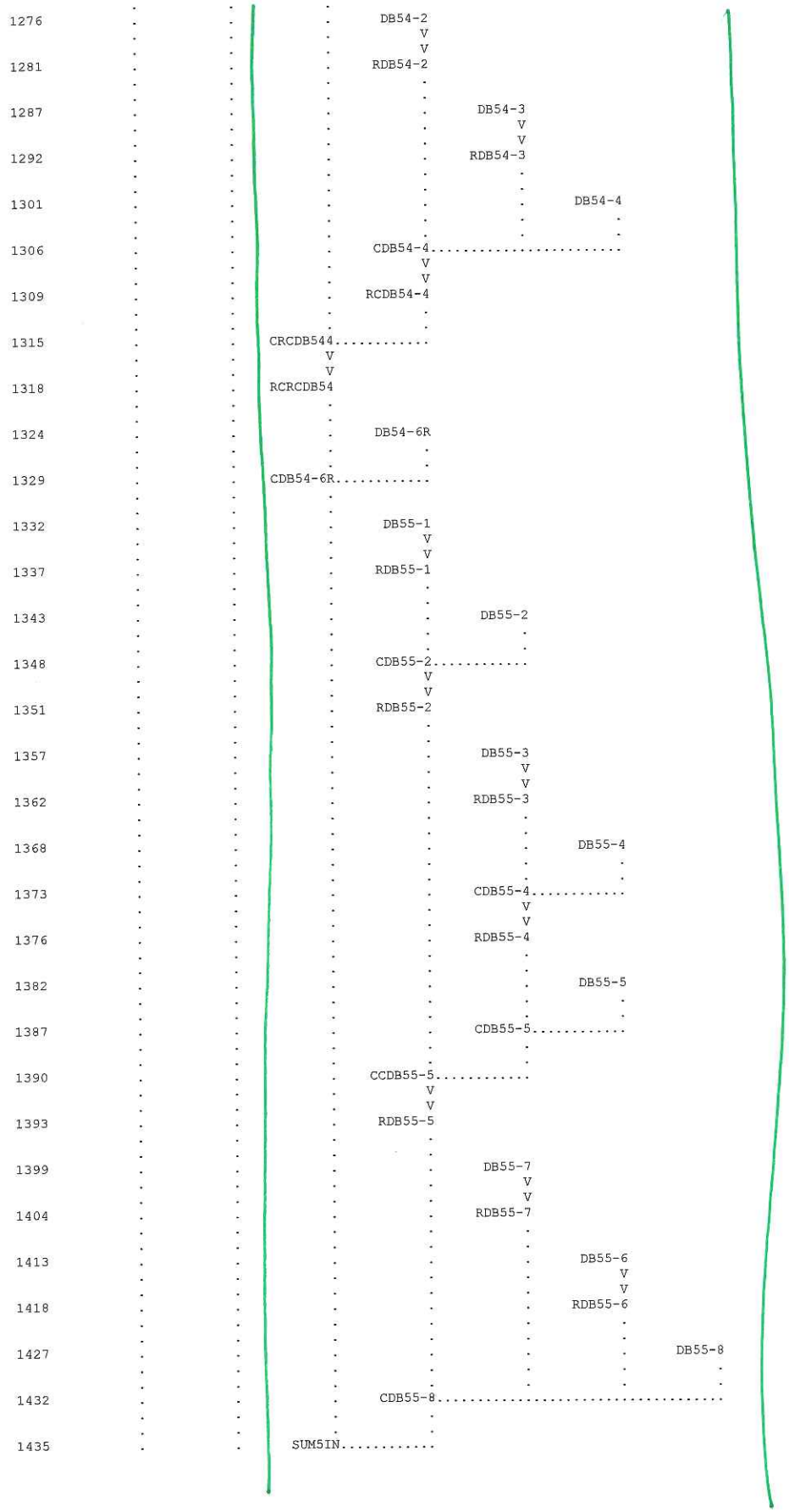
1612          KK  SWFH-8
1613          BA   0.294
1614          PB    3.36
1615          LS       0    93.7
1616          UD   0.168
              *

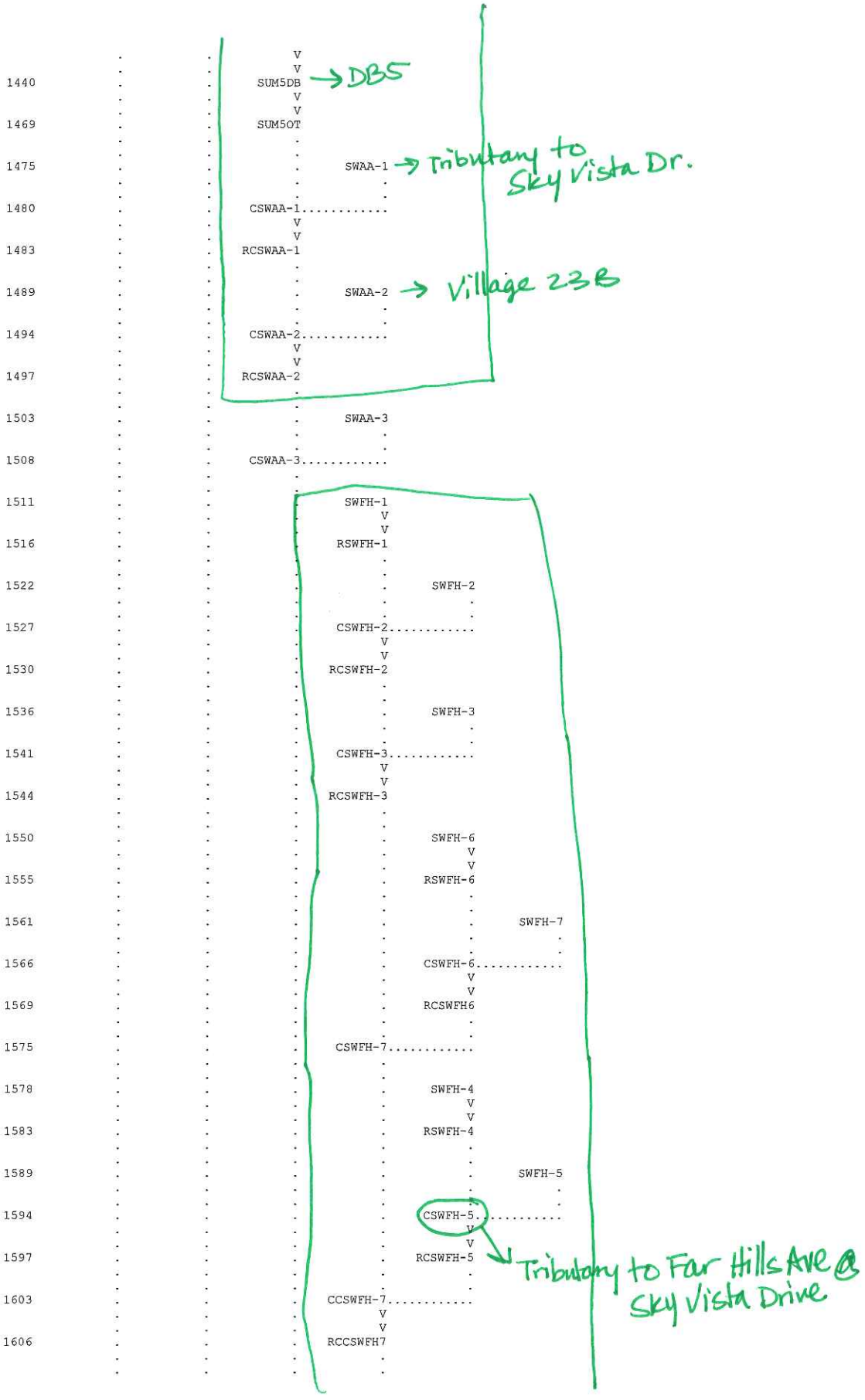
1617          KK CSWFH-8
1618          KM  COMBINE RCCSWFH7 AND SWFH-8
1619          HC       2
              *

1620          KKRCSWFH-8
1621          KM  ROUTE CSWFH-8 TO CSWFJ-9
1622          KM  FACILITY = ANGEL PARK - BELTWAY BRANCH
1623          KM  FACILITY # = APFH 0000
1624          KM  LINING = RCB
1625          KM  ROUTE CHANGED TO KINEMATIC WAVE TO ACHIEVE STABLILITY
1626          RK     995   0.035   0.015       0    TRAP      16       0
              *

1627          KK  SWFH-9
1628          BA   0.171
1629          PB    3.33
1630          LS       0    94.1
1631          UD   0.067
```


1114 CGD14CBC
1118 RCGD14CB
1125 3CLV36C
1128 R3CLV36C
1134 LV43-C
1139 CLV43-C
1143 CCLV43-C
1147 2-GOLF-C
1152 R2-GOLFC
1158 1-HOLM-C
1163 C1-HOLMC
1167 RC1-HOLM
1173 1-ALTA-C
1178 C1-ALTAC
1182 RC1ALTAC
1188 1-DUCH-C
1193 C1-DUCHC
1197 RC1DUCHC
1203 1-WEST-C
1208 C1-WESTC
1212 RC1WESTC
1218 W1BB-C
1223 CW1BB-C
1227 RCW1BB-C
1233 GD34AA
1238 CGD34AA
1242 RCGD34AA
1248 DB54-1
1253 RDB54-1
1262 DB54-5
1267 CDB54-5
1270 RCDB54-5


1276
DB54-2
1281
RDB54-2
1287
DB54-3
1292
RDB54-3
1301
DB54-4
1306
CDB54-4
1309
RCDB54-4
1315
CRCDB544
1318
RCRCDB54
1324
DB54-6R
1329
CDB54-6R
1332
DB55-1
1337
RDB55-1
1343
DB55-2
1348
CDB55-2
1351
RDB55-2
1357
DB55-3
1362
RDB55-3
1368
DB55-4
1373
CDB55-4
1376
RDB55-4
1382
DB55-5
1387
CDB55-5
1390
CCDB55-5
1393
RDB55-5
1399
DB55-7
1404
RDB55-7
1413
DB55-6
1418
RDB55-6
1427
DB55-8
1432
CDB55-8
1435
SUM5IN


SUM5DB
DB5
SUM5OT
SWAA-1
Tributary to Sky Vista Dr.
CSWAA-1
RCSWAA-1
SWAA-2
Village 23B
CSWAA-2
RCSWAA-2
SWAA-3
CSWAA-3
SWFH-1
RSWFH-1
SWFH-2
CSWFH-2
RCSWFH-2
SWFH-3
CSWFH-3
RCSWFH-3
SWFH-6
RSWFH-6
SWFH-7
CSWFH-6
RCSWFH6
CSWFH-7
SWFH-4
RSWFH-4
SWFH-5
CSWFH-5
RCSWFH-5
Tributary to Far Hills Ave @ Sky Vista Drive
CCSWFH-7
RCCSWFH7

1	1345	166	0.	.0	3532.5 *	2	0750	383	0.	.0	3532.5 *	3	0155	600	0.	.0	3532.5
1	1350	167	0.	.0	3532.5 *	2	0755	384	0.	.0	3532.5 *	3	0200	601	0.	.0	3532.5
1	1355	168	0.	.0	3532.5 *	2	0800	385	0.	.0	3532.5 *	3	0205	602	0.	.0	3532.5
1	1400	169	0.	.0	3532.5 *	2	0805	386	0.	.0	3532.5 *	3	0210	603	0.	.0	3532.5
1	1405	170	0.	.0	3532.5 *	2	0810	387	0.	.0	3532.5 *	3	0215	604	0.	.0	3532.5
1	1410	171	0.	.0	3532.5 *	2	0815	388	0.	.0	3532.5 *	3	0220	605	0.	.0	3532.5
1	1415	172	0.	.0	3532.5 *	2	0820	389	0.	.0	3532.5 *	3	0225	606	0.	.0	3532.5
1	1420	173	0.	.0	3532.5 *	2	0825	390	0.	.0	3532.5 *	3	0230	607	0.	.0	3532.5
1	1425	174	0.	.0	3532.5 *	2	0830	391	0.	.0	3532.5 *	3	0235	608	0.	.0	3532.5
1	1430	175	0.	.0	3532.5 *	2	0835	392	0.	.0	3532.5 *	3	0240	609	0.	.0	3532.5
1	1435	176	0.	.0	3532.5 *	2	0840	393	0.	.0	3532.5 *	3	0245	610	0.	.0	3532.5
1	1440	177	0.	.0	3532.5 *	2	0845	394	0.	.0	3532.5 *	3	0250	611	0.	.0	3532.5
1	1445	178	0.	.0	3532.5 *	2	0850	395	0.	.0	3532.5 *	3	0255	612	0.	.0	3532.5
1	1450	179	0.	.0	3532.5 *	2	0855	396	0.	.0	3532.5 *	3	0300	613	0.	.0	3532.5
1	1455	180	0.	.0	3532.5 *	2	0900	397	0.	.0	3532.5 *	3	0305	614	0.	.0	3532.5
1	1500	181	0.	.0	3532.5 *	2	0905	398	0.	.0	3532.5 *	3	0310	615	0.	.0	3532.5
1	1505	182	0.	.0	3532.5 *	2	0910	399	0.	.0	3532.5 *	3	0315	616	0.	.0	3532.5
1	1510	183	0.	.0	3532.5 *	2	0915	400	0.	.0	3532.5 *	3	0320	617	0.	.0	3532.5
1	1515	184	0.	.0	3532.5 *	2	0920	401	0.	.0	3532.5 *	3	0325	618	0.	.0	3532.5
1	1520	185	0.	.0	3532.5 *	2	0925	402	0.	.0	3532.5 *	3	0330	619	0.	.0	3532.5
1	1525	186	0.	.0	3532.5 *	2	0930	403	0.	.0	3532.5 *	3	0335	620	0.	.0	3532.5
1	1530	187	0.	.0	3532.5 *	2	0935	404	0.	.0	3532.5 *	3	0340	621	0.	.0	3532.5
1	1535	188	0.	.0	3532.5 *	2	0940	405	0.	.0	3532.5 *	3	0345	622	0.	.0	3532.5
1	1540	189	0.	.0	3532.5 *	2	0945	406	0.	.0	3532.5 *	3	0350	623	0.	.0	3532.5
1	1545	190	0.	.0	3532.5 *	2	0950	407	0.	.0	3532.5 *	3	0355	624	0.	.0	3532.5
1	1550	191	0.	.0	3532.5 *	2	0955	408	0.	.0	3532.5 *	3	0400	625	0.	.0	3532.5
1	1555	192	0.	.0	3532.5 *	2	1000	409	0.	.0	3532.5 *	3	0405	626	0.	.0	3532.5
1	1600	193	0.	.0	3532.5 *	2	1005	410	0.	.0	3532.5 *	3	0410	627	0.	.0	3532.5
1	1605	194	0.	.0	3532.5 *	2	1010	411	0.	.0	3532.5 *	3	0415	628	0.	.0	3532.5
1	1610	195	0.	.0	3532.5 *	2	1015	412	0.	.0	3532.5 *	3	0420	629	0.	.0	3532.5
1	1615	196	0.	.0	3532.5 *	2	1020	413	0.	.0	3532.5 *	3	0425	630	0.	.0	3532.5
1	1620	197	0.	.0	3532.5 *	2	1025	414	0.	.0	3532.5 *	3	0430	631	0.	.0	3532.5
1	1625	198	0.	.0	3532.5 *	2	1030	415	0.	.0	3532.5 *	3	0435	632	0.	.0	3532.5
1	1630	199	0.	.0	3532.5 *	2	1035	416	0.	.0	3532.5 *	3	0440	633	0.	.0	3532.5
1	1635	200	0.	.0	3532.5 *	2	1040	417	0.	.0	3532.5 *	3	0445	634	0.	.0	3532.5
1	1640	201	0.	.0	3532.5 *	2	1045	418	0.	.0	3532.5 *	3	0450	635	0.	.0	3532.5
1	1645	202	0.	.0	3532.5 *	2	1050	419	0.	.0	3532.5 *	3	0455	636	0.	.0	3532.5
1	1650	203	0.	.0	3532.5 *	2	1055	420	0.	.0	3532.5 *	3	0500	637	0.	.0	3532.5
1	1655	204	0.	.0	3532.5 *	2	1100	421	0.	.0	3532.5 *	3	0505	638	0.	.0	3532.5
1	1700	205	0.	.0	3532.5 *	2	1105	422	0.	.0	3532.5 *	3	0510	639	0.	.0	3532.5
1	1705	206	0.	.0	3532.5 *	2	1110	423	0.	.0	3532.5 *	3	0515	640	0.	.0	3532.5
1	1710	207	0.	.0	3532.5 *	2	1115	424	0.	.0	3532.5 *	3	0520	641	0.	.0	3532.5
1	1715	208	0.	.0	3532.5 *	2	1120	425	0.	.0	3532.5 *	3	0525	642	0.	.0	3532.5
1	1720	209	0.	.0	3532.5 *	2	1125	426	0.	.0	3532.5 *	3	0530	643	0.	.0	3532.5
1	1725	210	0.	.0	3532.5 *	2	1130	427	0.	.0	3532.5 *	3	0535	644	0.	.0	3532.5
1	1730	211	0.	.0	3532.5 *	2	1135	428	0.	.0	3532.5 *	3	0540	645	0.	.0	3532.5
1	1735	212	0.	.0	3532.5 *	2	1140	429	0.	.0	3532.5 *	3	0545	646	0.	.0	3532.5
1	1740	213	0.	.0	3532.5 *	2	1145	430	0.	.0	3532.5 *	3	0550	647	0.	.0	3532.5
1	1745	214	0.	.0	3532.5 *	2	1150	431	0.	.0	3532.5 *	3	0555	648	0.	.0	3532.5
1	1750	215	0.	.0	3532.5 *	2	1155	432	0.	.0	3532.5 *	3	0600	649	0.	.0	3532.5
1	1755	216	0.	.0	3532.5 *	2	1200	433	0.	.0	3532.5 *	3	0605	650	0.	.0	3532.5
1	1800	217	0.	.0	3532.5 *	2	1205	434	0.	.0	3532.5 *						
					*						*						

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PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	54.08-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2162.	5.00		1411.	364.	161.	161.
		(INCHES)	1.945	2.005	2.005	2.005
		(AC-FT)	700.	721.	721.	721.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	54.08-HR
+ (AC-FT)	(HR)				
306.	5.00	144.	36.	16.	16.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	54.08-HR
+ (FEET)	(HR)				
3559.74	5.00	3549.15	3536.80	3534.41	3534.41

CUMULATIVE AREA = 6.74 SQ MI

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HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .89

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	0000		1	0.	.0	3532.5	1	1805		218	0.	.0	3532.5	2	1210		435	0.	.0	3532.5
1	0005		2	0.	.0	3532.5	1	1810		219	0.	.0	3532.5	2	1215		436	0.	.0	3532.5
1	0010		3	0.	.0	3532.5	1	1815		220	0.	.0	3532.5	2	1220		437	0.	.0	3532.5
1	0015		4	0.	.0	3532.5	1	1820		221	0.	.0	3532.5	2	1225		438	0.	.0	3532.5
1	0020		5	0.	.0	3532.5	1	1825		222	0.	.0	3532.5	2	1230		439	0.	.0	3532.5
1	0025		6	2.	.0	3532.5	1	1830		223	0.	.0	3532.5	2	1235		440	0.	.0	3532.5
1	0030		7	7.	.1	3532.6	1	1835		224	0.	.0	3532.5	2	1240		441	0.	.0	3532.5
1	0035		8	18.	.2	3532.7	1	1840		225	0.	.0	3532.5	2	1245		442	0.	.0	3532.5
1	0040		9	31.	.3	3532.9	1	1845		226	0.	.0	3532.5	2	1250		443	0.	.0	3532.5
1	0045		10	44.	.4	3533.1	1	1850		227	0.	.0	3532.5	2	1255		444	0.	.0	3532.5

1	0050	11	54.	.5	3533.2	*	1	1855	228	0.	.0	3532.5	*	2	1300	445	0.	.0	3532.5
1	0055	12	59.	.5	3533.3	*	1	1900	229	0.	.0	3532.5	*	2	1305	446	0.	.0	3532.5
1	0100	13	58.	.5	3533.3	*	1	1905	230	0.	.0	3532.5	*	2	1310	447	0.	.0	3532.5
1	0105	14	52.	.5	3533.2	*	1	1910	231	0.	.0	3532.5	*	2	1315	448	0.	.0	3532.5
1	0110	15	47.	.4	3533.1	*	1	1915	232	0.	.0	3532.5	*	2	1320	449	0.	.0	3532.5
1	0115	16	46.	.4	3533.1	*	1	1920	233	0.	.0	3532.5	*	2	1325	450	0.	.0	3532.5
1	0120	17	50.	.4	3533.1	*	1	1925	234	0.	.0	3532.5	*	2	1330	451	0.	.0	3532.5
1	0125	18	59.	.5	3533.3	*	1	1930	235	0.	.0	3532.5	*	2	1335	452	0.	.0	3532.5
1	0130	19	76.	.7	3533.5	*	1	1935	236	0.	.0	3532.5	*	2	1340	453	0.	.0	3532.5
1	0135	20	102.	.9	3533.8	*	1	1940	237	0.	.0	3532.5	*	2	1345	454	0.	.0	3532.5
1	0140	21	138.	1.2	3534.3	*	1	1945	238	0.	.0	3532.5	*	2	1350	455	0.	.0	3532.5
1	0145	22	184.	1.7	3534.9	*	1	1950	239	0.	.0	3532.5	*	2	1355	456	0.	.0	3532.5
1	0150	23	205.	2.2	3535.2	*	1	1955	240	0.	.0	3532.5	*	2	1400	457	0.	.0	3532.5
1	0155	24	222.	2.8	3535.4	*	1	2000	241	0.	.0	3532.5	*	2	1405	458	0.	.0	3532.5
1	0200	25	237.	3.2	3535.5	*	1	2005	242	0.	.0	3532.5	*	2	1410	459	0.	.0	3532.5
1	0205	26	245.	3.5	3535.6	*	1	2010	243	0.	.0	3532.5	*	2	1415	460	0.	.0	3532.5
1	0210	27	247.	3.6	3535.7	*	1	2015	244	0.	.0	3532.5	*	2	1420	461	0.	.0	3532.5
1	0215	28	247.	3.6	3535.7	*	1	2020	245	0.	.0	3532.5	*	2	1425	462	0.	.0	3532.5
1	0220	29	251.	3.7	3535.7	*	1	2025	246	0.	.0	3532.5	*	2	1430	463	0.	.0	3532.5
1	0225	30	265.	4.2	3535.9	*	1	2030	247	0.	.0	3532.5	*	2	1435	464	0.	.0	3532.5
1	0230	31	292.	5.1	3536.1	*	1	2035	248	0.	.0	3532.5	*	2	1440	465	0.	.0	3532.5
1	0235	32	327.	6.3	3536.4	*	1	2040	249	0.	.0	3532.5	*	2	1445	466	0.	.0	3532.5
1	0240	33	359.	7.4	3536.7	*	1	2045	250	0.	.0	3532.5	*	2	1450	467	0.	.0	3532.5
1	0245	34	385.	8.2	3536.9	*	1	2050	251	0.	.0	3532.5	*	2	1455	468	0.	.0	3532.5
1	0250	35	404.	9.0	3537.1	*	1	2055	252	0.	.0	3532.5	*	2	1500	469	0.	.0	3532.5
1	0255	36	422.	9.7	3537.3	*	1	2100	253	0.	.0	3532.5	*	2	1505	470	0.	.0	3532.5
1	0300	37	441.	10.5	3537.4	*	1	2105	254	0.	.0	3532.5	*	2	1510	471	0.	.0	3532.5
1	0305	38	459.	11.2	3537.6	*	1	2110	255	0.	.0	3532.5	*	2	1515	472	0.	.0	3532.5
1	0310	39	482.	12.1	3537.8	*	1	2115	256	0.	.0	3532.5	*	2	1520	473	0.	.0	3532.5
1	0315	40	526.	14.1	3538.2	*	1	2120	257	0.	.0	3532.5	*	2	1525	474	0.	.0	3532.5
1	0320	41	626.	18.7	3539.1	*	1	2125	258	0.	.0	3532.5	*	2	1530	475	0.	.0	3532.5
1	0325	42	800.	29.1	3540.9	*	1	2130	259	0.	.0	3532.5	*	2	1535	476	0.	.0	3532.5
1	0330	43	943.	48.7	3542.5	*	1	2135	260	0.	.0	3532.5	*	2	1540	477	0.	.0	3532.5
1	0335	44	1372.	78.0	3547.0	*	1	2140	261	0.	.0	3532.5	*	2	1545	478	0.	.0	3532.5
1	0340	45	1608.	113.3	3550.0	*	1	2145	262	0.	.0	3532.5	*	2	1550	479	0.	.0	3532.5
1	0345	46	1766.	149.3	3552.4	*	1	2150	263	0.	.0	3532.5	*	2	1555	480	0.	.0	3532.5
1	0350	47	1875.	182.1	3554.2	*	1	2155	264	0.	.0	3532.5	*	2	1600	481	0.	.0	3532.5
1	0355	48	1956.	210.2	3555.6	*	1	2200	265	0.	.0	3532.5	*	2	1605	482	0.	.0	3532.5
1	0400	49	2016.	233.7	3556.7	*	1	2205	266	0.	.0	3532.5	*	2	1610	483	0.	.0	3532.5
1	0405	50	2058.	252.7	3557.5	*	1	2210	267	0.	.0	3532.5	*	2	1615	484	0.	.0	3532.5
1	0410	51	2088.	267.9	3558.2	*	1	2215	268	0.	.0	3532.5	*	2	1620	485	0.	.0	3532.5
1	0415	52	2110.	279.5	3558.6	*	1	2220	269	0.	.0	3532.5	*	2	1625	486	0.	.0	3532.5
1	0420	53	2126.	287.5	3559.0	*	1	2225	270	0.	.0	3532.5	*	2	1630	487	0.	.0	3532.5
1	0425	54	2135.	292.2	3559.2	*	1	2230	271	0.	.0	3532.5	*	2	1635	488	0.	.0	3532.5
1	0430	55	2140.	294.6	3559.3	*	1	2235	272	0.	.0	3532.5	*	2	1640	489	0.	.0	3532.5
1	0435	56	2142.	295.7	3559.3	*	1	2240	273	0.	.0	3532.5	*	2	1645	490	0.	.0	3532.5
1	0440	57	2144.	296.7	3559.4	*	1	2245	274	0.	.0	3532.5	*	2	1650	491	0.	.0	3532.5
1	0445	58	2146.	297.8	3559.4	*	1	2250	275	0.	.0	3532.5	*	2	1655	492	0.	.0	3532.5
1	0450	59	2148.	298.8	3559.4	*	1	2255	276	0.	.0	3532.5	*	2	1700	493	0.	.0	3532.5
1	0455	60	2149.	299.4	3559.5	*	1	2300	277	0.	.0	3532.5	*	2	1705	494	0.	.0	3532.5
1	0500	61	2149.	299.5	3559.5	*	1	2305	278	0.	.0	3532.5	*	2	1710	495	0.	.0	3532.5
1	0505	62	2148.	299.0	3559.5	*	1	2310	279	0.	.0	3532.5	*	2	1715	496	0.	.0	3532.5
1	0510	63	2145.	297.3	3559.4	*	1	2315	280	0.	.0	3532.5	*	2	1720	497	0.	.0	3532.5
1	0515	64	2139.	293.9	3559.2	*	1	2320	281	0.	.0	3532.5	*	2	1725	498	0.	.0	3532.5
1	0520	65	2129.	289.1	3559.0	*	1	2325	282	0.	.0	3532.5	*	2	1730	499	0.	.0	3532.5
1	0525	66	2117.	282.9	3558.8	*	1	2330	283	0.	.0	3532.5	*	2	1735	500	0.	.0	3532.5
1	0530	67	2103.	275.6	3558.5	*	1	2335	284	0.	.0	3532.5	*	2	1740	501	0.	.0	3532.5
1	0535	68	2087.	267.4	3558.1	*	1	2340	285	0.	.0	3532.5	*	2	1745	502	0.	.0	3532.5
1	0540	69	2069.	258.4	3557.8	*	1	2345	286	0.	.0	3532.5	*	2	1750	503	0.	.0	3532.5
1	0545	70	2050.	248.7	3557.4	*	1	2350	287	0.	.0	3532.5	*	2	1755	504	0.	.0	3532.5
1	0550	71	2029.	238.5	3556.9	*	1	2355	288	0.	.0	3532.5	*	2	1800	505	0.	.0	3532.5
1	0555	72	2002.	228.0	3556.4	*	2	0000	289	0.	.0	3532.5	*	2	1805	506	0.	.0	3532.5
1	0600	73	1974.	217.3	3556.0	*	2	0005	290	0.	.0	3532.5	*	2	1810	507	0.	.0	3532.5
1	0605	74	1946.	206.4	3555.5	*	2	0010	291	0.	.0	3532.5	*	2	1815	508	0.	.0	3532.5
1	0610	75	1917.	195.4	3554.9	*	2	0015	292	0.	.0	3532.5	*	2	1820	509	0.	.0	3532.5
1	0615	76	1882.	184.3	3554.3	*	2	0020	293	0.	.0	3532.5	*	2	1825	510	0.	.0	3532.5
1	0620	77	1847.	173.0	3553.7	*	2	0025	294	0.	.0	3532.5	*	2	1830	511	0.	.0	3532.5
1	0625	78	1811.	161.7	3553.1	*	2	0030	295	0.	.0	3532.5	*	2	1835	512	0.	.0	3532.5
1	0630	79	1771.	150.5	3552.4	*	2	0035	296	0.	.0	3532.5	*	2	1840	513	0.	.0	3532.5
1	0635	80	1728.	139.3	3551.8	*	2	0040	297	0.	.0	3532.5	*	2	1845	514	0.	.0	3532.5
1	0640	81	1687.	128.2	3551.1	*	2	0045	298	0.	.0	3532.5	*	2	1850	515	0.	.0	3532.5
1	0645	82	1630.	117.4	3550.3	*	2	0050	299	0.	.0	3532.5	*	2	1855	516	0.	.0	3532.5
1	0650	83	1572.	106.8	3549.5	*	2	0055	300	0.	.0	3532.5	*	2	1900	517	0.	.0	3532.5
1	0655	84	1510.	96.5	3548.7	*	2	0100	301	0.	.0	3532.5	*	2	1905	518	0.	.0	3532.5
1	0700	85	1436.	86.7	3547.8	*	2	0105	302	0.	.0	3532.5	*	2	1910	519	0.	.0	3532.5
1	0705	86	1363.	77.3	3546.9	*	2	0110	303	0.	.0	3532.5	*	2	1915	520	0.	.0	3532.5
1	0710	87	1179.	68.7	3545.0	*	2	0115	304	0.	.0	3532.5	*	2	1920	521	0.	.0	3532.5
1	0715	88	1019.	61.3	3543.4	*	2	0120	305	0.	.0	3532.5	*	2	1925	522	0.	.0	3532.5
1	0720	89	964.	54.5	3542.8	*	2	0125	306	0.	.0	3532.5	*	2	1930	523	0.	.0	3532.5
1	0725	90	941.	48.1	3542.5	*	2	0130	307	0.	.0	3532.5	*	2	1935	524	0.	.0	3532.5
1	0730	91	918.	41.7	3542.2	*	2	0135	308	0.	.0	3532.5	*	2	1940	525	0.	.0	3532.5
1	0735	92	885.	35.6	3541.8	*	2	0140	309	0.	.0	3532.5	*	2	1945	526	0.	.0	3532.5
1	0740	93	810.	29.8	3541.0	*	2	0145	310	0.	.0	3532.5	*	2	1950	527	0.	.0	3532.5
1	0745	94	735.	24.5	3540.1	*	2	0150	311	0.	.0	3532.5	*	2	1955	528	0.	.0	3532.5
1	0750	95	646.	19.8	3539.3	*	2	0155	312	0.	.0	3532.5	*	2	2000	529	0.	.0	3532.5
1	0755	96	560.	15.6	3538.5	*	2	0200	313	0.	.0	3532.5	*	2	2005	530	0.	.0	3532.5
1	0800	97	480.	12.1	3537.8	*	2	0205	314	0.	.0	3532.5	*	2	2010	531	0.	.0	3532.5
1	0805	98	405.	9.0	3537.1	*	2	0210	315	0.	.0	3532.5	*	2	2015	532	0.	.0	3532.5
1	0810	99	333.	6.5	3536.5	*	2	0215	316	0.	.0	3532.5	*	2	2020	533	0.	.0	3532.5
1	0815	100	272.	4.4	3535.9	*	2	0220	317	0.	.0	3532.5	*	2	2025	534	0.	.0	3532.5
1	0820	101	221.	2.7	3535.3	*	2	0225	318	0.	.0	3532.5	*	2	2030	535	0.	.0	3532.5
1	0825	102	157.	1.4	3534.5	*	2	0230	319	0.	.0	3532.5	*	2	2035	536	0.	.0	3532.5
1	0830	103	70.	.6	3533.4	*	2	0235	320	0.	.0	3532.5	*	2	2040	537	0.	.0	3532.5
1	0835	104	32.	.3	3532.9	*	2	0240	321	0.	.0	3532.5	*	2	2045	538	0.	.0	3532.5
1	0840	105	14.	.1	3532.7	*	2	0245	322	0.	.0	3532.5	*	2	2050	539	0.	.0	3532.5

1	0845 106	6.	.1	3532.6 *	2	0250 323	0.	.0	3532.5 *	2	2055 540	0.	.0	3532.5
1	0850 107	3.	.0	3532.5 *	2	0255 324	0.	.0	3532.5 *	2	2100 541	0.	.0	3532.5
1	0855 108	1.	.0	3532.5 *	2	0300 325	0.	.0	3532.5 *	2	2105 542	0.	.0	3532.5
1	0900 109	1.	.0	3532.5 *	2	0305 326	0.	.0	3532.5 *	2	2110 543	0.	.0	3532.5
1	0905 110	0.	.0	3532.5 *	2	0310 327	0.	.0	3532.5 *	2	2115 544	0.	.0	3532.5
1	0910 111	0.	.0	3532.5 *	2	0315 328	0.	.0	3532.5 *	2	2120 545	0.	.0	3532.5
1	0915 112	0.	.0	3532.5 *	2	0320 329	0.	.0	3532.5 *	2	2125 546	0.	.0	3532.5
1	0920 113	0.	.0	3532.5 *	2	0325 330	0.	.0	3532.5 *	2	2130 547	0.	.0	3532.5
1	0925 114	0.	.0	3532.5 *	2	0330 331	0.	.0	3532.5 *	2	2135 548	0.	.0	3532.5
1	0930 115	0.	.0	3532.5 *	2	0335 332	0.	.0	3532.5 *	2	2140 549	0.	.0	3532.5
1	0935 116	0.	.0	3532.5 *	2	0340 333	0.	.0	3532.5 *	2	2145 550	0.	.0	3532.5
1	0940 117	0.	.0	3532.5 *	2	0345 334	0.	.0	3532.5 *	2	2150 551	0.	.0	3532.5
1	0945 118	0.	.0	3532.5 *	2	0350 335	0.	.0	3532.5 *	2	2155 552	0.	.0	3532.5
1	0950 119	0.	.0	3532.5 *	2	0355 336	0.	.0	3532.5 *	2	2200 553	0.	.0	3532.5
1	0955 120	0.	.0	3532.5 *	2	0400 337	0.	.0	3532.5 *	2	2205 554	0.	.0	3532.5
1	1000 121	0.	.0	3532.5 *	2	0405 338	0.	.0	3532.5 *	2	2210 555	0.	.0	3532.5
1	1005 122	0.	.0	3532.5 *	2	0410 339	0.	.0	3532.5 *	2	2215 556	0.	.0	3532.5
1	1010 123	0.	.0	3532.5 *	2	0415 340	0.	.0	3532.5 *	2	2220 557	0.	.0	3532.5
1	1015 124	0.	.0	3532.5 *	2	0420 341	0.	.0	3532.5 *	2	2225 558	0.	.0	3532.5
1	1020 125	0.	.0	3532.5 *	2	0425 342	0.	.0	3532.5 *	2	2230 559	0.	.0	3532.5
1	1025 126	0.	.0	3532.5 *	2	0430 343	0.	.0	3532.5 *	2	2235 560	0.	.0	3532.5
1	1030 127	0.	.0	3532.5 *	2	0435 344	0.	.0	3532.5 *	2	2240 561	0.	.0	3532.5
1	1035 128	0.	.0	3532.5 *	2	0440 345	0.	.0	3532.5 *	2	2245 562	0.	.0	3532.5
1	1040 129	0.	.0	3532.5 *	2	0445 346	0.	.0	3532.5 *	2	2250 563	0.	.0	3532.5
1	1045 130	0.	.0	3532.5 *	2	0450 347	0.	.0	3532.5 *	2	2255 564	0.	.0	3532.5
1	1050 131	0.	.0	3532.5 *	2	0455 348	0.	.0	3532.5 *	2	2300 565	0.	.0	3532.5
1	1055 132	0.	.0	3532.5 *	2	0500 349	0.	.0	3532.5 *	2	2305 566	0.	.0	3532.5
1	1100 133	0.	.0	3532.5 *	2	0505 350	0.	.0	3532.5 *	2	2310 567	0.	.0	3532.5
1	1105 134	0.	.0	3532.5 *	2	0510 351	0.	.0	3532.5 *	2	2315 568	0.	.0	3532.5
1	1110 135	0.	.0	3532.5 *	2	0515 352	0.	.0	3532.5 *	2	2320 569	0.	.0	3532.5
1	1115 136	0.	.0	3532.5 *	2	0520 353	0.	.0	3532.5 *	2	2325 570	0.	.0	3532.5
1	1120 137	0.	.0	3532.5 *	2	0525 354	0.	.0	3532.5 *	2	2330 571	0.	.0	3532.5
1	1125 138	0.	.0	3532.5 *	2	0530 355	0.	.0	3532.5 *	2	2335 572	0.	.0	3532.5
1	1130 139	0.	.0	3532.5 *	2	0535 356	0.	.0	3532.5 *	2	2340 573	0.	.0	3532.5
1	1135 140	0.	.0	3532.5 *	2	0540 357	0.	.0	3532.5 *	2	2345 574	0.	.0	3532.5
1	1140 141	0.	.0	3532.5 *	2	0545 358	0.	.0	3532.5 *	2	2350 575	0.	.0	3532.5
1	1145 142	0.	.0	3532.5 *	2	0550 359	0.	.0	3532.5 *	2	2355 576	0.	.0	3532.5
1	1150 143	0.	.0	3532.5 *	2	0555 360	0.	.0	3532.5 *	3	0000 577	0.	.0	3532.5
1	1155 144	0.	.0	3532.5 *	2	0600 361	0.	.0	3532.5 *	3	0005 578	0.	.0	3532.5
1	1200 145	0.	.0	3532.5 *	2	0605 362	0.	.0	3532.5 *	3	0010 579	0.	.0	3532.5
1	1205 146	0.	.0	3532.5 *	2	0610 363	0.	.0	3532.5 *	3	0015 580	0.	.0	3532.5
1	1210 147	0.	.0	3532.5 *	2	0615 364	0.	.0	3532.5 *	3	0020 581	0.	.0	3532.5
1	1215 148	0.	.0	3532.5 *	2	0620 365	0.	.0	3532.5 *	3	0025 582	0.	.0	3532.5
1	1220 149	0.	.0	3532.5 *	2	0625 366	0.	.0	3532.5 *	3	0030 583	0.	.0	3532.5
1	1225 150	0.	.0	3532.5 *	2	0630 367	0.	.0	3532.5 *	3	0035 584	0.	.0	3532.5
1	1230 151	0.	.0	3532.5 *	2	0635 368	0.	.0	3532.5 *	3	0040 585	0.	.0	3532.5
1	1235 152	0.	.0	3532.5 *	2	0640 369	0.	.0	3532.5 *	3	0045 586	0.	.0	3532.5
1	1240 153	0.	.0	3532.5 *	2	0645 370	0.	.0	3532.5 *	3	0050 587	0.	.0	3532.5
1	1245 154	0.	.0	3532.5 *	2	0650 371	0.	.0	3532.5 *	3	0055 588	0.	.0	3532.5
1	1250 155	0.	.0	3532.5 *	2	0655 372	0.	.0	3532.5 *	3	0100 589	0.	.0	3532.5
1	1255 156	0.	.0	3532.5 *	2	0700 373	0.	.0	3532.5 *	3	0105 590	0.	.0	3532.5
1	1300 157	0.	.0	3532.5 *	2	0705 374	0.	.0	3532.5 *	3	0110 591	0.	.0	3532.5
1	1305 158	0.	.0	3532.5 *	2	0710 375	0.	.0	3532.5 *	3	0115 592	0.	.0	3532.5
1	1310 159	0.	.0	3532.5 *	2	0715 376	0.	.0	3532.5 *	3	0120 593	0.	.0	3532.5
1	1315 160	0.	.0	3532.5 *	2	0720 377	0.	.0	3532.5 *	3	0125 594	0.	.0	3532.5
1	1320 161	0.	.0	3532.5 *	2	0725 378	0.	.0	3532.5 *	3	0130 595	0.	.0	3532.5
1	1325 162	0.	.0	3532.5 *	2	0730 379	0.	.0	3532.5 *	3	0135 596	0.	.0	3532.5
1	1330 163	0.	.0	3532.5 *	2	0735 380	0.	.0	3532.5 *	3	0140 597	0.	.0	3532.5
1	1335 164	0.	.0	3532.5 *	2	0740 381	0.	.0	3532.5 *	3	0145 598	0.	.0	3532.5
1	1340 165	0.	.0	3532.5 *	2	0745 382	0.	.0	3532.5 *	3	0150 599	0.	.0	3532.5
1	1345 166	0.	.0	3532.5 *	2	0750 383	0.	.0	3532.5 *	3	0155 600	0.	.0	3532.5
1	1350 167	0.	.0	3532.5 *	2	0755 384	0.	.0	3532.5 *	3	0200 601	0.	.0	3532.5
1	1355 168	0.	.0	3532.5 *	2	0800 385	0.	.0	3532.5 *	3	0205 602	0.	.0	3532.5
1	1400 169	0.	.0	3532.5 *	2	0805 386	0.	.0	3532.5 *	3	0210 603	0.	.0	3532.5
1	1405 170	0.	.0	3532.5 *	2	0810 387	0.	.0	3532.5 *	3	0215 604	0.	.0	3532.5
1	1410 171	0.	.0	3532.5 *	2	0815 388	0.	.0	3532.5 *	3	0220 605	0.	.0	3532.5
1	1415 172	0.	.0	3532.5 *	2	0820 389	0.	.0	3532.5 *	3	0225 606	0.	.0	3532.5
1	1420 173	0.	.0	3532.5 *	2	0825 390	0.	.0	3532.5 *	3	0230 607	0.	.0	3532.5
1	1425 174	0.	.0	3532.5 *	2	0830 391	0.	.0	3532.5 *	3	0235 608	0.	.0	3532.5
1	1430 175	0.	.0	3532.5 *	2	0835 392	0.	.0	3532.5 *	3	0240 609	0.	.0	3532.5
1	1435 176	0.	.0	3532.5 *	2	0840 393	0.	.0	3532.5 *	3	0245 610	0.	.0	3532.5
1	1440 177	0.	.0	3532.5 *	2	0845 394	0.	.0	3532.5 *	3	0250 611	0.	.0	3532.5
1	1445 178	0.	.0	3532.5 *	2	0850 395	0.	.0	3532.5 *	3	0255 612	0.	.0	3532.5
1	1450 179	0.	.0	3532.5 *	2	0855 396	0.	.0	3532.5 *	3	0300 613	0.	.0	3532.5
1	1455 180	0.	.0	3532.5 *	2	0900 397	0.	.0	3532.5 *	3	0305 614	0.	.0	3532.5
1	1500 181	0.	.0	3532.5 *	2	0905 398	0.	.0	3532.5 *	3	0310 615	0.	.0	3532.5
1	1505 182	0.	.0	3532.5 *	2	0910 399	0.	.0	3532.5 *	3	0315 616	0.	.0	3532.5
1	1510 183	0.	.0	3532.5 *	2	0915 400	0.	.0	3532.5 *	3	0320 617	0.	.0	3532.5
1	1515 184	0.	.0	3532.5 *	2	0920 401	0.	.0	3532.5 *	3	0325 618	0.	.0	3532.5
1	1520 185	0.	.0	3532.5 *	2	0925 402	0.	.0	3532.5 *	3	0330 619	0.	.0	3532.5
1	1525 186	0.	.0	3532.5 *	2	0930 403	0.	.0	3532.5 *	3	0335 620	0.	.0	3532.5
1	1530 187	0.	.0	3532.5 *	2	0935 404	0.	.0	3532.5 *	3	0340 621	0.	.0	3532.5
1	1535 188	0.	.0	3532.5 *	2	0940 405	0.	.0	3532.5 *	3	0345 622	0.	.0	3532.5
1	1540 189	0.	.0	3532.5 *	2	0945 406	0.	.0	3532.5 *	3	0350 623	0.	.0	3532.5
1	1545 190	0.	.0	3532.5 *	2	0950 407	0.	.0	3532.5 *	3	0355 624	0.	.0	3532.5
1	1550 191	0.	.0	3532.5 *	2	0955 408	0.	.0	3532.5 *	3	0400 625	0.	.0	3532.5
1	1555 192	0.	.0	3532.5 *	2	1000 409	0.	.0	3532.5 *	3	0405 626	0.	.0	3532.5
1	1600 193	0.	.0	3532.5 *	2	1005 410	0.	.0	3532.5 *	3	0410 627	0.	.0	3532.5
1	1605 194	0.	.0	3532.5 *	2	1010 411	0.	.0	3532.5 *	3	0415 628	0.	.0	3532.5
1	1610 195	0.	.0	3532.5 *	2	1015 412	0.	.0	3532.5 *	3	0420 629	0.	.0	3532.5
1	1615 196	0.	.0	3532.5 *	2	1020 413	0.	.0	3532.5 *	3	0425 630	0.	.0	3532.5
1	1620 197	0.	.0	3532.5 *	2	1025 414	0.	.0	3532.5 *	3	0430 631	0.	.0	3532.5
1	1625 198	0.	.0	3532.5 *	2	1030 415	0.	.0	3532.5 *	3	0435 632	0.	.0	3532.5
1	1630 199	0.	.0	3532.5 *	2	1035 416	0.	.0	3532.5 *	3	0440 633	0.	.0	3532.5
1	1635 200	0.	.0	3532.5 *	2	1040 417	0.	.0	3532.5 *	3	0445 634	0.	.0	3532.5

1	1640	201	0.	.0	3532.5	*	2	1045	418	0.	.0	3532.5	*	3	0450	635	0.	.0	3532.5
1	1645	202	0.	.0	3532.5	*	2	1050	419	0.	.0	3532.5	*	3	0455	636	0.	.0	3532.5
1	1650	203	0.	.0	3532.5	*	2	1055	420	0.	.0	3532.5	*	3	0500	637	0.	.0	3532.5
1	1655	204	0.	.0	3532.5	*	2	1100	421	0.	.0	3532.5	*	3	0505	638	0.	.0	3532.5
1	1700	205	0.	.0	3532.5	*	2	1105	422	0.	.0	3532.5	*	3	0510	639	0.	.0	3532.5
1	1705	206	0.	.0	3532.5	*	2	1110	423	0.	.0	3532.5	*	3	0515	640	0.	.0	3532.5
1	1710	207	0.	.0	3532.5	*	2	1115	424	0.	.0	3532.5	*	3	0520	641	0.	.0	3532.5
1	1715	208	0.	.0	3532.5	*	2	1120	425	0.	.0	3532.5	*	3	0525	642	0.	.0	3532.5
1	1720	209	0.	.0	3532.5	*	2	1125	426	0.	.0	3532.5	*	3	0530	643	0.	.0	3532.5
1	1725	210	0.	.0	3532.5	*	2	1130	427	0.	.0	3532.5	*	3	0535	644	0.	.0	3532.5
1	1730	211	0.	.0	3532.5	*	2	1135	428	0.	.0	3532.5	*	3	0540	645	0.	.0	3532.5
1	1735	212	0.	.0	3532.5	*	2	1140	429	0.	.0	3532.5	*	3	0545	646	0.	.0	3532.5
1	1740	213	0.	.0	3532.5	*	2	1145	430	0.	.0	3532.5	*	3	0550	647	0.	.0	3532.5
1	1745	214	0.	.0	3532.5	*	2	1150	431	0.	.0	3532.5	*	3	0555	648	0.	.0	3532.5
1	1750	215	0.	.0	3532.5	*	2	1155	432	0.	.0	3532.5	*	3	0600	649	0.	.0	3532.5
1	1755	216	0.	.0	3532.5	*	2	1200	433	0.	.0	3532.5	*	3	0605	650	0.	.0	3532.5
1	1800	217	0.	.0	3532.5	*	2	1205	434	0.	.0	3532.5	*						

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	54.08-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2149.	5.00		1394.	359.	159.	159.
		(INCHES)	1.921	1.977	1.977	1.977
		(AC-FT)	691.	711.	711.	711.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	54.08-HR
+ (AC-FT)	(HR)					
300.	5.00		140.	35.	16.	16.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	54.08-HR
+ (FEET)	(HR)					
3559.48	5.00		3548.90	3536.73	3534.38	3534.38

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .88

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	3532.5	*	1		1805	218	0.	.0	3532.5	*	2		1210	435	0.	.0	3532.5
1		0005	2	0.	.0	3532.5	*	1		1810	219	0.	.0	3532.5	*	2		1215	436	0.	.0	3532.5
1		0010	3	0.	.0	3532.5	*	1		1815	220	0.	.0	3532.5	*	2		1220	437	0.	.0	3532.5
1		0015	4	0.	.0	3532.5	*	1		1820	221	0.	.0	3532.5	*	2		1225	438	0.	.0	3532.5
1		0020	5	0.	.0	3532.5	*	1		1825	222	0.	.0	3532.5	*	2		1230	439	0.	.0	3532.5
1		0025	6	2.	.0	3532.5	*	1		1830	223	0.	.0	3532.5	*	2		1235	440	0.	.0	3532.5
1		0030	7	7.	.1	3532.6	*	1		1835	224	0.	.0	3532.5	*	2		1240	441	0.	.0	3532.5
1		0035	8	17.	.2	3532.7	*	1		1840	225	0.	.0	3532.5	*	2		1245	442	0.	.0	3532.5
1		0040	9	29.	.3	3532.9	*	1		1845	226	0.	.0	3532.5	*	2		1250	443	0.	.0	3532.5
1		0045	10	41.	.4	3533.0	*	1		1850	227	0.	.0	3532.5	*	2		1255	444	0.	.0	3532.5
1		0050	11	51.	.5	3533.2	*	1		1855	228	0.	.0	3532.5	*	2		1300	445	0.	.0	3532.5
1		0055	12	55.	.5	3533.2	*	1		1900	229	0.	.0	3532.5	*	2		1305	446	0.	.0	3532.5
1		0100	13	54.	.5	3533.2	*	1		1905	230	0.	.0	3532.5	*	2		1310	447	0.	.0	3532.5
1		0105	14	48.	.4	3533.1	*	1		1910	231	0.	.0	3532.5	*	2		1315	448	0.	.0	3532.5
1		0110	15	44.	.4	3533.1	*	1		1915	232	0.	.0	3532.5	*	2		1320	449	0.	.0	3532.5
1		0115	16	43.	.4	3533.1	*	1		1920	233	0.	.0	3532.5	*	2		1325	450	0.	.0	3532.5
1		0120	17	47.	.4	3533.1	*	1		1925	234	0.	.0	3532.5	*	2		1330	451	0.	.0	3532.5
1		0125	18	56.	.5	3533.2	*	1		1930	235	0.	.0	3532.5	*	2		1335	452	0.	.0	3532.5
1		0130	19	72.	.7	3533.4	*	1		1935	236	0.	.0	3532.5	*	2		1340	453	0.	.0	3532.5
1		0135	20	98.	.9	3533.8	*	1		1940	237	0.	.0	3532.5	*	2		1345	454	0.	.0	3532.5
1		0140	21	133.	1.2	3534.2	*	1		1945	238	0.	.0	3532.5	*	2		1350	455	0.	.0	3532.5
1		0145	22	177.	1.6	3534.8	*	1		1950	239	0.	.0	3532.5	*	2		1355	456	0.	.0	3532.5
1		0150	23	202.	2.1	3535.1	*	1		1955	240	0.	.0	3532.5	*	2		1400	457	0.	.0	3532.5
1		0155	24	218.	2.6	3535.3	*	1		2000	241	0.	.0	3532.5	*	2		1405	458	0.	.0	3532.5
1		0200	25	232.	3.1	3535.5	*	1		2005	242	0.	.0	3532.5	*	2		1410	459	0.	.0	3532.5
1		0205	26	239.	3.3	3535.6	*	1		2010	243	0.	.0	3532.5	*	2		1415	460	0.	.0	3532.5
1		0210	27	241.	3.4	3535.6	*	1		2015	244	0.	.0	3532.5	*	2		1420	461	0.	.0	3532.5
1		0215	28	241.	3.4	3535.6	*	1		2020	245	0.	.0	3532.5	*	2		1425	462	0.	.0	3532.5
1		0220	29	244.	3.5	3535.6	*	1		2025	246	0.	.0	3532.5	*	2		1430	463	0.	.0	3532.5
1		0225	30	258.	4.0	3535.8	*	1		2030	247	0.	.0	3532.5	*	2		1435	464	0.	.0	3532.5
1		0230	31	285.	4.8	3536.1	*	1		2035	248	0.	.0	3532.5	*	2		1440	465	0.	.0	3532.5
1		0235	32	318.	6.0	3536.4	*	1		2040	249	0.	.0	3532.5	*	2		1445	466	0.	.0	3532.5
1		0240	33	350.	7.1	3536.6	*	1		2045	250	0.	.0	3532.5	*	2		1450	467	0.	.0	3532.5
1		0245	34	375.	7.9	3536.9	*	1		2050	251	0.	.0	3532.5	*	2		1455	468	0.	.0	3532.5
1		0250	35	395.	8.6	3537.0	*	1		2055	252	0.	.0	3532.5	*	2		1500	469	0.	.0	3532.5
1		0255	36	412.	9.3	3537.2	*	1		2100	253	0.	.0	3532.5	*	2		1505	470	0.	.0	3532.5
1		0300	37	431.	10.1	3537.4	*	1		2105	254	0.	.0	3532.5	*	2		1510	471	0.	.0	3532.5
1		0305	38	449.	10.8	3537.5	*	1		2110	255	0.	.0	3532.5	*	2		1515	472	0.	.0	3532.5
1		0310	39	471.	11.7	3537.7	*	1		2115	256	0.	.0	3532.5	*	2		1520	473	0.	.0	3532.5
1		0315	40	515.	13.5	3538.1	*	1		2120	257	0.	.0	3532.5	*	2		1525	474	0.	.0	3532.5
1		0320	41	613.	18.1	3539.0	*	1		2125	258	0.	.0	3532.5	*	2		1530	475	0.	.0	3532.5
1		0325	42	786.	28.1	3540.7	*	1		2130	259	0.	.0	3532.5	*	2		1535	476	0.	.0	3532.5
1		0330	43	938.	47.2	3542.5	*	1		2135	260	0.	.0	3532.5	*	2		1540	477	0.	.0	3532.5
1		0335	44	1336.	76.0	3546.7	*	1		2140	261	0.	.0	3532.5	*	2		1545	478	0.	.0	3532.5
1		0340	45	1594.	110.8	3549.8	*	1		2145	262	0.	.0	3532.5	*	2		1550	479	0.	.0	3532.5

				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT														
+	W1BB-C	.30	1	FLOW	334.	328.	317.	306.	302.	299.	297.	293.	289.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT														
+	CW1BB-C	2.14	1	FLOW	2008.	1967.	1895.	1825.	1797.	1778.	1763.	1744.	1712.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO														
+	RCW1BB-C	2.14	1	FLOW	1994.	1953.	1880.	1810.	1783.	1763.	1749.	1729.	1697.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT														
+	GD34AA	.27	1	FLOW	280.	274.	265.	256.	252.	249.	247.	244.	241.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT														
+	CGD34AA	2.41	1	FLOW	2273.	2227.	2145.	2065.	2034.	2013.	1996.	1973.	1938.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO														
+	RCGD34AA	2.41	1	FLOW	2239.	2192.	2112.	2033.	2001.	1979.	1962.	1939.	1905.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.92
HYDROGRAPH AT														
+	DB54-1	2.22	1	FLOW	2551.	2499.	2412.	2325.	2290.	2265.	2248.	2220.	2186.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO														
+	RDB54-1	2.22	1	FLOW	2500.	2449.	2363.	2278.	2244.	2220.	2203.	2176.	2142.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT														
+	DB54-5	.23	1	FLOW	457.	448.	431.	415.	409.	404.	401.	396.	389.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT														
+	CDB54-5	2.45	1	FLOW	2587.	2534.	2446.	2358.	2322.	2298.	2280.	2252.	2217.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
ROUTED TO														
+	RCDB54-5	2.45	1	FLOW	2562.	2500.	2416.	2358.	2295.	2264.	2249.	2237.	2220.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
HYDROGRAPH AT														
+	DB54-2	.29	1	FLOW	644.	631.	609.	587.	579.	573.	568.	561.	553.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO														
+	RDB54-2	.29	1	FLOW	590.	587.	555.	548.	540.	534.	531.	524.	516.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT														
+	DB54-3	.52	1	FLOW	1114.	1091.	1054.	1016.	1001.	991.	983.	971.	956.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO														
+	RDB54-3	.52	1	FLOW	971.	951.	918.	885.	872.	862.	856.	845.	832.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT														
+	DB54-4	.20	1	FLOW	369.	361.	348.	336.	331.	327.	324.	320.	315.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT														
+	CDB54-4	1.01	1	FLOW	1929.	1899.	1821.	1768.	1742.	1724.	1711.	1690.	1664.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO														
+	RCDB54-4	1.01	1	FLOW	1820.	1808.	1717.	1664.	1640.	1629.	1606.	1587.	1565.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	CRCDB544	3.46	1	FLOW	3185.	3152.	2999.	2909.	2851.	2831.	2794.	2768.	2741.
				TIME	3.67	3.67	3.67	3.92	3.67	3.67	3.67	3.67	3.92
ROUTED TO														
+	RCRCDB54	3.46	1	FLOW	3162.	3100.	2987.	2899.	2837.	2803.	2783.	2760.	2730.
				TIME	3.92	3.92	3.92	3.92	3.92	3.75	3.92	3.92	3.92
HYDROGRAPH AT														
+	DB54-6R	.84	1	FLOW	1047.	1024.	986.	948.	933.	922.	914.	902.	887.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT														
+	CDB54-6R	4.30	1	FLOW	4206.	4121.	3961.	3809.	3760.	3725.	3685.	3628.	3570.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT														
+	DB55-1	.64	1	FLOW	1142.	1118.	1079.	1040.	1025.	1014.	1006.	994.	978.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO														

+	RDB55-1	.64	1	FLOW	1104.	1083.	1046.	1004.	997.	980.	972.	968.	946.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-2	.10	1	FLOW	188.	185.	178.	172.	170.	168.	167.	165.	162.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-2	.74	1	FLOW	1263.	1238.	1197.	1149.	1140.	1122.	1113.	1107.	1083.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RDB55-2	.74	1	FLOW	1262.	1237.	1196.	1147.	1139.	1121.	1112.	1107.	1080.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-3	.26	1	FLOW	614.	602.	581.	561.	553.	547.	543.	536.	528.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-3	.26	1	FLOW	578.	567.	547.	527.	518.	514.	508.	503.	497.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT													
+	DB55-4	.17	1	FLOW	304.	297.	286.	275.	271.	268.	266.	262.	258.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-4	.43	1	FLOW	856.	839.	809.	778.	765.	758.	751.	742.	732.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-4	.43	1	FLOW	804.	795.	766.	738.	723.	720.	711.	702.	694.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	DB55-5	.19	1	FLOW	337.	330.	318.	307.	302.	299.	296.	293.	288.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-5	.62	1	FLOW	1142.	1125.	1085.	1045.	1025.	1019.	1007.	995.	982.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CCDB55-5	1.36	1	FLOW	2354.	2317.	2229.	2146.	2111.	2089.	2073.	2046.	2014.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RDB55-5	1.36	1	FLOW	2285.	2284.	2173.	2057.	2063.	2071.	2038.	1967.	1943.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-7	.44	1	FLOW	730.	716.	692.	668.	659.	652.	647.	640.	630.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RDB55-7	.44	1	FLOW	679.	666.	643.	621.	612.	606.	601.	594.	585.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	DB55-6	.10	1	FLOW	208.	204.	198.	191.	189.	187.	186.	184.	181.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-6	.10	1	FLOW	177.	174.	168.	163.	161.	159.	158.	157.	155.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-8	.55	1	FLOW	999.	980.	948.	916.	903.	894.	887.	877.	864.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
4 COMBINED AT													
+	CDB55-8	2.45	1	FLOW	3995.	3960.	3795.	3624.	3608.	3600.	3556.	3468.	3421.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	SUM5IN	6.74	1	FLOW	8080.	7992.	7640.	7331.	7250.	7215.	7123.	7001.	6898.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	SUM5DB	6.74	1	FLOW	2287.	2266.	2228.	2193.	2179.	2169.	2162.	2149.	2136.
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	5.00
			** PEAK STAGES IN FEET **										
			1	STAGE	3562.41	3561.95	3561.16	3560.40	3560.10	3559.90	3559.74	3559.48	3559.18
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	5.00
ROUTED TO													
+	SUM5OT	6.74	1	FLOW	2287.	2266.	2228.	2193.	2179.	2169.	2162.	2149.	2136.
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	5.00
HYDROGRAPH AT													
+	SWAA-1	.24	1	FLOW	322.	315.	304.	293.	289.	286.	284.	280.	276.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75

DB5 outfall

Flow to Sky Vista Drive RCP

2 COMBINED AT													
+	CSWAA-1	6.98	1	FLOW	2364.	2342.	2303.	2266.	2251.	2241.	2233.	2220.	2205.
				TIME	5.00	5.00	4.92	4.92	4.92	4.92	4.92	4.92	4.92
ROUTED TO													
+	RCSWAA-1	6.98	1	FLOW	2364.	2342.	2303.	2265.	2250.	2240.	2233.	2220.	2205.
				TIME	5.00	5.00	5.00	4.92	4.92	4.92	4.92	4.92	4.92
HYDROGRAPH AT													
+	SWAA-2	.70	1	FLOW	967.	948.	918.	887.	875.	867.	861.	851.	839.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CSWAA-2	7.68	1	FLOW	3201.	3163.	3097.	3029.	3003.	2984.	2969.	2944.	2917.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO													
+	RCSWAA-2	7.68	1	FLOW	3181.	3142.	3077.	3008.	2981.	2963.	2947.	2923.	2898.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92	3.92	3.92
HYDROGRAPH AT													
+	SWAA-3	.58	1	FLOW	682.	668.	644.	620.	611.	604.	599.	592.	582.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CSWAA-3	8.26	1	FLOW	3861.	3808.	3719.	3627.	3591.	3567.	3544.	3513.	3474.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	SWFH-1	.56	1	FLOW	881.	863.	833.	803.	791.	782.	776.	766.	754.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RSWFH-1	.56	1	FLOW	875.	859.	828.	796.	784.	776.	771.	760.	748.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-2	.53	1	FLOW	918.	901.	873.	846.	835.	827.	821.	812.	801.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CSWFH-2	1.09	1	FLOW	1793.	1760.	1701.	1642.	1619.	1603.	1593.	1572.	1549.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCSWFH-2	1.09	1	FLOW	1782.	1749.	1690.	1632.	1609.	1592.	1582.	1562.	1538.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-3	.15	1	FLOW	318.	312.	303.	294.	291.	288.	287.	284.	280.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-3	1.25	1	FLOW	2066.	2029.	1962.	1896.	1870.	1851.	1839.	1816.	1790.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCSWFH-3	1.25	1	FLOW	2052.	2014.	1950.	1881.	1857.	1837.	1825.	1804.	1775.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-6	.25	1	FLOW	483.	475.	460.	446.	440.	436.	433.	428.	422.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RSWFH-6	.25	1	FLOW	474.	464.	450.	436.	430.	426.	423.	418.	413.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	SWFH-7	.31	1	FLOW	622.	611.	593.	575.	568.	563.	559.	553.	546.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-6	.56	1	FLOW	1096.	1076.	1043.	1011.	998.	989.	982.	971.	959.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCSWFH6	.56	1	FLOW	1082.	1062.	1029.	998.	984.	976.	970.	958.	946.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-7	1.81	1	FLOW	3044.	2989.	2897.	2798.	2763.	2735.	2718.	2686.	2646.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-4	.12	1	FLOW	193.	189.	182.	175.	172.	170.	169.	166.	163.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RSWFH-4	.12	1	FLOW	182.	178.	171.	165.	162.	160.	158.	157.	153.
				TIME	3.58	3.58	3.58	3.58	3.58	3.67	3.58	3.67	3.67
HYDROGRAPH AT													
+	SWFH-5	.26	1	FLOW	487.	478.	463.	448.	442.	438.	435.	430.	424.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58

→ Village 2BB

* Flow @ Alta / Desert Foothills

*

Flow to Far Hills Ave RCB

2 COMBINED AT												
+	CSWFH-5	.38	1	FLOW	669.	656.	634.	613.	604.	598.	593.	587.	577.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCSWFH-5	.38	1	FLOW	645.	634.	612.	594.	585.	580.	574.	570.	560.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CCSWFH-7	2.18	1	FLOW	3690.	3623.	3509.	3392.	3348.	3315.	3291.	3257.	3207.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCCSWFH7	2.18	1	FLOW	3683.	3618.	3501.	3385.	3340.	3309.	3284.	3250.	3198.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-8	.29	1	FLOW	585.	575.	558.	541.	535.	530.	526.	521.	514.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-8	2.48	1	FLOW	4198.	4124.	3993.	3862.	3811.	3776.	3748.	3709.	3652.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCSWFH-8	2.48	1	FLOW	4197.	4123.	3992.	3861.	3809.	3772.	3745.	3707.	3650.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-9	.17	1	FLOW	423.	416.	404.	392.	387.	384.	382.	378.	373.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT													
+	CSWFH-9	2.65	1	FLOW	4428.	4344.	4207.	4060.	4004.	3965.	3935.	3890.	3834.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCSHFH-9	2.65	1	FLOW	4389.	4321.	4179.	4037.	3997.	3944.	3920.	3890.	3819.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CRCSWFH9	10.91	1	FLOW	7789.	7660.	7451.	7228.	7146.	7087.	7033.	6969.	6875.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	RCRCSWFH	10.91	1	FLOW	7783.	7657.	7445.	7221.	7138.	7079.	7027.	6960.	6864.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	11A-1	.21	1	FLOW	241.	235.	227.	218.	214.	212.	210.	207.	203.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	C11A-1	11.12	1	FLOW	8024.	7892.	7671.	7438.	7352.	7290.	7237.	7167.	7067.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	RC11A-1	11.12	1	FLOW	8012.	7874.	7649.	7415.	7330.	7265.	7214.	7145.	7040.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	11A-3	.19	1	FLOW	285.	279.	270.	260.	257.	254.	252.	249.	245.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C11A-3	11.31	1	FLOW	8269.	8126.	7893.	7650.	7562.	7494.	7442.	7371.	7262.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	RC11A-3	11.31	1	FLOW	8079.	7941.	7716.	7485.	7397.	7333.	7284.	7211.	7111.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	3A	.18	1	FLOW	203.	198.	190.	182.	179.	177.	176.	173.	170.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C3A	11.49	1	FLOW	8243.	8102.	7871.	7633.	7543.	7477.	7427.	7353.	7249.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO													
+	RC3A	11.49	1	FLOW	7995.	7850.	7615.	7377.	7286.	7217.	7172.	7095.	6989.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT													
+	3B-1	.26	1	FLOW	248.	242.	231.	221.	216.	213.	211.	208.	204.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C3B-1	11.75	1	FLOW	8168.	8019.	7777.	7532.	7438.	7368.	7321.	7242.	7134.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RC3B-1	11.75	1	FLOW	8105.	7956.	7715.	7469.	7373.	7302.	7258.	7177.	7073.

* Flow to Far Hills/Desert Foothills

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: April 13, 2007
TO: Land Development Services Department of Public Works				FROM: Oh Sang Kwon, P.E. Flood Control Department of Public Works
SUBJECT:	Drainage Study for:			COPIES TO:
Master Summerlin West Planning Area				G.C. Wallace, Inc.
Cross Streets:	Charleston Blvd/Cheyenne and I-215/BLM			Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS3983E.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-013			CCRFCD
Zoning Action:				CCDDS
FEMA Flood Zone	YES	X	NO	CCDPW
Proposed Storm Drain	YES	X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	8/7/2006	8/30/2006	Not Approved	$400.00	288923: $400
2nd Submittal	9/29/2006 & 10/30/2006	10/20/2006 & 11/13/2006	Not Approved	$400.00	Paid: $400
3rd Submittal	11/22/2006	12/4/2006	Conditional Approval	$400.00	58324: $400
4th Submittal	3/29/2007	4/13/2007	Approved	$400.00	66016: $400
CCRFCD	2/12/2007	2/12/2007	Concurrence	N/C	-
CCDDS	1/16/2007	1/16/2007	Concurrence	N/C	-
CCDPW	4/11/2007	4/13/2007	Concurrence	N/C	-
			TOTAL FEES (LDDRS):	$1600.00	---

REMARKS:

4th Submittal: Response to CCDPW comments.

The Master Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Department of Development Service concurrence.
	is conditionally approved subject to Clark County Department of Public Works concurrence.

1. As condition of final approval, any change to land uses/densities will require an update to this Master Drainage Study. Detention basin or other mitigation will be required if the flow values and assumed land uses/densities are increased from this Master Drainage Study.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent"

Curve Number Calculations

Developed Conditions For the Southern Regional Watershed

Project site consists of soils 112 (HSG "A"), 152 (HSG "D"), 155 (HSG "D"), 191 (HSG "B"), 360 (HSG "D"), 502 (HSG "C")
640 (HSG "D"), 1321 (HSG "D"), 1351 (HSG "D")
Composite curve numbers were calculated.

Area within Loop Road

	DENSITY	LOT	LOT	CN TYPE				
USAGE	(units/acres)	SIZE	VALUE	A	B	C	D	
SF2	6	7260	7000	76	84	89	91	7,000 sq. ft. lots
SF3	10	4356	4000	81	88	91	93	INDUSTRIAL
SFA	18	2420	2000	81	88	91	93	INDUSTRIAL
MF2	21	2074	2000	81	88	91	93	INDUSTRIAL
MF3	21	2074	2000	81	88	91	93	INDUSTRIAL
NF	N/A	N/A	N/A	81	88	91	93	INDUSTRIAL
COS*	N/A	N/A	N/A	55	72	81	86	OPEN LAND, FAIR CONDITION
COS**	N/A	N/A	N/A	63	77	85	88	UNDISTURBED LAND, POOR CONDITION
COM	N/A	N/A	N/A	81	88	91	93	INDUSTRIAL
H-1	N/A	N/A	N/A	81	88	91	93	INDUSTRIAL
BLM	N/A	N/A	N/A	63	77	85	88	UNDISTURBED LAND, POOR CONDITION
Undevelopable Property	N/A	N/A	N/A	81	88	91	93	INDUSTRIAL
COS/OPEN LAND	N/A	N/A	N/A	49	69	79	84	PARK/GOLF COURSE, FAIR CONDITION

Notes:
1. Densities of SF2 and SF3 were reduced beyond the Loop Road - see calculations below.
2. NF (Neighborhood Focus) - consists of schools
3. COS (Community Open Space) - consists of manmade parks w/desert and grass landscaping
4. COS* (Community Open Space) - consists of natural terrain, preserved waterways
   2002 MPU HEC-1 used Fair Conditions for tributary basins north of Summerlin Pkwy and Poor Conditions for tributary basins south of Summerlin Pkwy
5. COS** (Community Open Space) - consists of natural terrain, i.e. Red Rock outcrops
6. H-1 (Limited Resort and Apartment District) - considered high density/commercial
7. BLM (Bureau of Land Management Land) - undisturbed land
8. Undevelopable Property - shown as white on the Land Use Plan and will be reserved for water reservoirs, power substations, undevelopable terrain and U.S. Waters
9. Golf Course - shown as teal on the Land Use Plan and will consist of turf

Area Beyond Loop Road

	DENSITY	LOT	LOT	CN TYPE				
USAGE	UNITS/ACRE	SIZE	VALUE	A	B	C	D	
SF2	4	10000	10000	61	75	83	87	10,000 SF LOTS
SF3	5	9000	9000	67	78.5	85.5	88.5	9000 SF LOTS

2006 Summerlin West Planning Area Flood Control Master Plan Update
Proposed Condition

Land Use Distribution (Acres)/Curve Number Calculation													
Basin	Total Acres	SF2	SF3	COS (Park and Golf Course)	COS* Fair (undisturbed/ BLM)	COS** Poor (undisturbed/ BLM)	SFA, MF2, MF3, NF, COM, H-1	Undevelopable Property	Percent in Soil Group A	Percent in Soil Group B	Percent in Soil Group C	Percent in Soil Group D	Composite CN
Village 26 Offsite/Onsite													
Tributary to Detention Basin No. 5/Alta Drive													
3-1A	74.6	34.3		40.3								100.00%	85.4
3-1B	375.26	189.1		115.1	1.8	29.3	40.0		6.63%	3.86%		89.51%	84.5
3-2A	168.7	116.6	13.4	3.6			26.6	8.5			0.12%	99.88%	91.4
3-3A	238.3	160.7	58.4	9.0				10.2				100.00%	91.3
3-3B	276.2	40.9	112.2	7.8			115.3				4.65%	95.35%	92.4
3-3C	91.1	59.9	31.2							0.36%	36.90%	62.74%	90.9
3-4A	208.4	44.1	118.3				16.1	29.9				100.00%	92.6
3-5A	193.9	34.0	47.9	8.1			103.9				1.00%	99.00%	92.3
3-6A	84.3		9.0				49.7	25.6			0.60%	99.40%	93.0
4-4A	171.7	52.5		55.4	52.5			11.3				100.00%	86.1
4-6A	545.2	130.1	83.9	90.9	104.7	130.2	1.2	4.2	3.07%		2.19%	94.74%	85.9
5-2A	59	8.6		14.1	5.9		30.4					100.00%	89.3
5-4A	142.7	27.0		42.1	56.9			16.7				100.00%	86.4
5-5A	122.3	58.2	15.3	39.5	9.3							100.00%	86.1
5-6A	57	13.2			8.8		35.0					100.00%	90.5
5-7A	282.2	46.2	65.6	42.0	40.1		74.8	13.5				100.00%	88.6
5-8A	347.3	143.5	90.4	38.0	42.0		33.4				1.51%	98.49%	87.5
5-9A	64.7		28.6	36.1							19.52%	80.48%	85.2
5-10A	68.3	60.7		7.7							68.00%	32.00%	83.9
5-10AR	54.8		16.1	4.1			34.6				7.47%	92.58%	90.8

Notes:

1. Densities of SF2 and SF3 were reduced beyond the Loop Road - see calculations below.
2. NF (Neighborhood Focus) - consists of schools
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HYDROLOGIC CRITERIA AND DESIGN MANUAL

TIME OF CONCENTRATION

G. C. WALLACE, INC.
Engineers/Planners/Surveyors

2006 Summerlin West Flood Control Master Plan Update
Developed Condition-Tributary to DB5/Alta Drive

Project No: 62A.W04.007
Date: 7/30/2006
Calculated by: rnl

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc CHECK URBANIZED BASINS		Tc	Tlag	REMARKS
DESIG: (1)	DEV./EX. (D or E)	CN (16)	K (2)	AREA Ac (3)	AREA Sq Mi (4)	INITIAL LENGTH Feet (5)	SLOPE % (6)	Ti Min (7)	TRAVEL LENGTH Feet (8)	SLOPE % (9a)	V1 VELOCITY fps (9b)	V2 VELOCITY fps (10)	Tt Min (11)	TOTAL LENGTH Feet (12)	Tc = (L/180)+10 Min (13)	Min (14)	Tlag = 0.6Tc/60 Hours (15)	Remarks:
3-1A	D	85.4	0.7373	74.6	0.1166	200	2.0	7.3	4706	8.0	5.7	8.7	9.6	4906	37.3	16.9	0.169	3.56
3-1B	D	84.5	0.7254	375.3	0.5864	200	2.0	7.6	8089	8.5	5.9	8.9	15.6	8289	56.1	23.2	0.232	3.57
3-2A	D	91.4	0.8165	168.7	0.2636	200	2.0	5.7	6400	7.0	5.3	8.1	13.7	6600	46.7	19.4	0.194	3.50
3-3A	D	91.3	0.8152	238.3	0.3723	200	2.0	5.8	7500	7.0	5.3	8.1	16.0	7700	52.8	21.7	0.217	3.49
3-3B	D	92.4	0.8297	276.2	0.4316	200	2.0	5.5	6000	7.0	5.3	8.1	12.9	6200	44.4	18.3	0.183	3.46
3-3C	D	90.9	0.8099	91.1	0.1423	200	2.0	5.9	4875	6.3	5.1	7.7	11.2	5075	38.2	17.0	0.170	3.49
3-4A	D	92.6	0.8323	208.4	0.3256	200	2.0	5.4	4681	6.3	5.1	7.7	10.8	4881	37.1	16.2	0.162	3.41
3-5A	D	92.3	0.8284	193.9	0.3030	200	2.0	5.5	5700	7.0	5.3	8.1	12.3	5900	42.8	17.8	0.178	3.36
3-6A	D	93	0.8376	84.3	0.1317	200	2.0	5.3	900	8.0	5.7	8.7	2.2	1100	16.1	7.5	0.075	3.33
4-1-4-3, 4-5																		REFERENCED
4-4A	D	86.1	0.7465	171.7	0.2683	500	14.0	5.9	4503	12.0	7.0	10.6	7.5	5003	37.8	13.4	0.134	
4-6A	D	85.9	0.7439	545.2	0.8519	500	9.0	6.9	13136	7.5	5.5	8.4	26.6	13636	85.8	33.5	0.335	3.56
5-1																		REFERENCED
5-2A	D	89.3	0.7888	59.0	0.0922	500	10.0	5.8	3600	8.5	5.9	8.9	7.2	4100	32.8	13.0	0.130	
5-3																		REFERENCED
5-4A	D	86.4	0.7505	142.7	0.2230	500	16.0	5.6	2986	10.0	6.4	9.7	5.6	3486	29.4	11.2	0.112	
5-5A	D	86.1	0.7465	122.3	0.1911	500	8.0	7.1	2837	8.0	5.7	8.7	6.0	3337	28.5	13.1	0.131	
5-6A	D	90.5	0.8046	57.0	0.0891	500	10.0	5.5	2050	8.5	5.9	8.9	4.3	2550	24.2	9.8	0.098	
5-7A	D	88.6	0.7795	282.2	0.4409	500	14.0	5.4	7811	9.0	6.1	9.2	14.6	8311	56.2	20.0	0.200	
5-8A	D	87.5	0.7650	347.3	0.5427	500	6.0	7.4	5342	7.5	5.5	8.4	11.1	5842	42.5	18.6	0.186	
5-9A	D	85.2	0.7346	64.7	0.1011	200	2.0	7.4	1578	6.5	5.2	7.8	3.9	1778	19.9	11.3	0.113	
5-10A	D	83.9	0.7175	68.3	0.1067	200	2.0	7.7	3240	5.5	4.7	7.2	8.1	3440	29.1	15.9	0.159	
5-10AR	D	90.8	0.8086	54.8	0.0856	200	2.0	5.9	3580	5.5	4.7	7.2	8.9	3780	31.0	14.8	0.148	

$Tc = Ti + Tt$ $\quad Tlag = 0.6\ Tc$

$Ti = 1.8\ (1.1 - K)\ L^{1/2} / S^{1/3}$

$K = 0.0132\ (CN) - 0.39$

For the travel time (Tt) calculations,
V1 applies to the first 500 feet of travel distance;
V2 applies to the remaining travel distance.

Existing: $V1 = 14.8*(S/100)^{1/2}$ $\quad V2 = 29.4*(S/100)^{1/2}$

Developed: $V1 = 20.2*(S/100)^{1/2}$ $\quad V2 = 30.6*(S/100)^{1/2}$

REFERENCE:

STANDARD FORM 4

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   20NOV06  TIME  09:59:13   *
*                                       *
*****************************************
```

```
*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID   ************************************************************
    2         ID   * :.....: *
    3         ID   * :              2006 SUMMERLIN WEST                    : *
    4         ID   * :          CONCEPTUAL DRAINAGE STUDY                  : *
    5         ID   * :       SUMMERLIN MASTER PLAN AMENDMENT               : *
    6         ID   * :  EXISTING OFFSITE/ PROPOSED ONSITE DRAINAGE CONDITION : *
    7         ID   * :.....:.....: *
    8         ID   * :       CLIENT_ _ _ _THE HOWARD HUGHES CORP.          : *
    9         ID   * :       RETURN PERIOD_ _ _ _100-YEAR                  : *
   10         ID   * :       DISTRIBUTUION_ _ _ _6-HOUR SDN5               : *
   11         ID   * :       PROJECT NO_ _ _ _ 62A.W04.007                 : *
   12         ID   * :       FILENAME_ _ _ _ _ _ SDN3 Southr3.h1           : *
   13         ID   * :       DATE_ _ _ _ _ _ _ 11/17/06                    : *
   14         ID   * :       MODELED BY_ _ _ _ _ WJM, SBS                  : *
   15         ID   * :.....: *
   16         ID   * :                                                     : *
   17         ID   * :   BASIN/                              AREA    DARF  : *
   18         ID   * :  LOCATION                           (sq.mi.)        : *
   19         ID   * :                                                     : *
   20         ID   * :                        . . . . . 0.00 to 0.49  0.990 : *
   21         ID   * :                        . . . . . 0.50 to 0.99  0.975 : *
   22         ID   * :                        . . . . . 1.00 to 1.99  0.950 : *
   23         ID   * :                        . . . . . 2.00 to 2.99  0.925 : *
   24         ID   * :                        . . . . . 3.00 to 3.99  0.915 : *
   25         ID   * :                        . . . . . 4.00 to 4.99  0.908 : *
   26         ID   * :                        . . . . . 5.00 to 5.99  0.903 : *
   27         ID   * :                        . . . . . 6.00 to 6.99  0.895 : *
   28         ID   * :                        . . . . . 7.00 to 8.00  0.885 : *
   29         ID   * :.....: *
   30         ID   ************************************************************
   31         ID   ************************************************************
   32         ID   * :                                                     : *
   33         ID   * :                                                     : *
   34         ID   * :.....: *
   35         ID   ************************************************************
   36         ID
   37         IT       5       0       0     300
   38         IO       5
   39         IN       5       0       0
   40         JR     PREC   0.990   0.975   0.950   0.925   0.915   0.908   0.903   0.895   0.885
              * WATERSHEDS TRIBUTARY TO PROPOSED DIVERSION BERM
              * PREVIOUS LOCATION OF DB4
              *

   41         KK     4-1
   42         KM   REFERENCED FROM CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN
   43         KM   UPDATE  -  GOWAN WATERSHED (ALL)
   44         BA   2.222
   45         PB    3.72
   46         PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
   47         PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
   48         PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
   49         PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
   50         PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   51         PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
   52         PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
   53         PC    .998    .999   1.00
   54         LS       0   87.2
   55         UD   0.495
              *

   56         KK     R-1
   57         KM   REFERENCED FROM CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN
   58         KM   UPDATE  -  GOWAN WATERSHED (ALL)
   59         KM   ROUTE DB54-1 TO CDB54-5
```

```
202          KK    R-12
203          KM    REFERENCED FROM CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN
204          KM    UPDATE  -  GOWAN WATERSHED (ALL)
205          RM       2   0.186     0.3
             *

206          KK    5-7A
207          KM    PRECIPITATION VALUE IS REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM
208          KM    FINAL DESIGN REPORT-1/01
209          BA    .4409
210          PB    3.54
211          LS       0     88.6
212          UD    0.200
             *

213          KK    R-13
214          KM    REFERENCED FROM CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN
215          KM    UPDATE  -  GOWAN WATERSHED (ALL)
216          RM       1   0.109     0.3
             *

217          KK    5-8A
218          KM    PRECIPITATION VALUE IS REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM
219          KM    FINAL DESIGN REPORT-1/01
220          BA    .5427
221          PB    3.46
222          LS       0     87.5
223          UD    0.186
             *

224          KK    C-8
225          KM    COMBINE C-7, 5-6A, 5-7A, & 5-8A
226          HC       4
             *

227          KK    C-9
228          KM    COMBINE C-4 & C-8
229          KM    TOTAL INFLOW PROPOSED TO BE ACCEPTED BY EXPANSION OF DB5
230          HC       2
             *

231          KK  SUMDB5
232          KM   SUMMERLIN DETENTION BASIN 5
233          KM   FACILITY = ANGEL PARK - MIDDLE S BRANCH
234          KM   FACILITY # = APM5 0000
235          KM   STORAGE VOLUME = 405 ACRE-FEET
236          KM   OUTLET = 2: 8' x 6' RCBS
237          KM   100-YEAR DISCHARGE = 2,332 CFS
238          KM   SPILLWAY LENGTH =
239          KM   SPILLWAY HEIGHT =
240          KM   SPILLWAY CREST ELEVATION = 3561.5
241          KM   SPILLWAY TYPE =
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

242          KM   PMF DISCHARGE = 32,200
243          KM   TOP OF EMBANKMENT ELEVATION = 2124'
244          KM   FROM G.C. WALLACE MASTER PLAN AMENDMENT TO SUMMERLIN WEST
245          KM  KO     1
246          RS       1    STOR      -1
             * INCREASE STRORAGE VOLUME BY AN ADDITIONAL 40%
             *    0      25      40     105     215     340     380     500     600
247          SV      0      35      56     147     301     476     532     700     840
248          SQ      0     265     586    1092    1718    2199    2332   12593   27569
249          SE   3542    3545    3547    3550    3555    3560  3561.5    3564    3566
             *

250          KK  DCDB5
251          KM  DIVERT ALL FLOW FOR STORM CENTERING
252          DT  DCDB5
253          DI  0           51     125     500   10000
254          DQ  0           51     125     500   10000
             *

255          KK     R14
256          KM   REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM FINAL DESIGN REPORT-1/01
257          KM   ROUTE THE FLOWS DISCHARGED FROM DB5 TO ALTA DRIVE
258          RD    2550    .055    .013            CIRC        5
             *

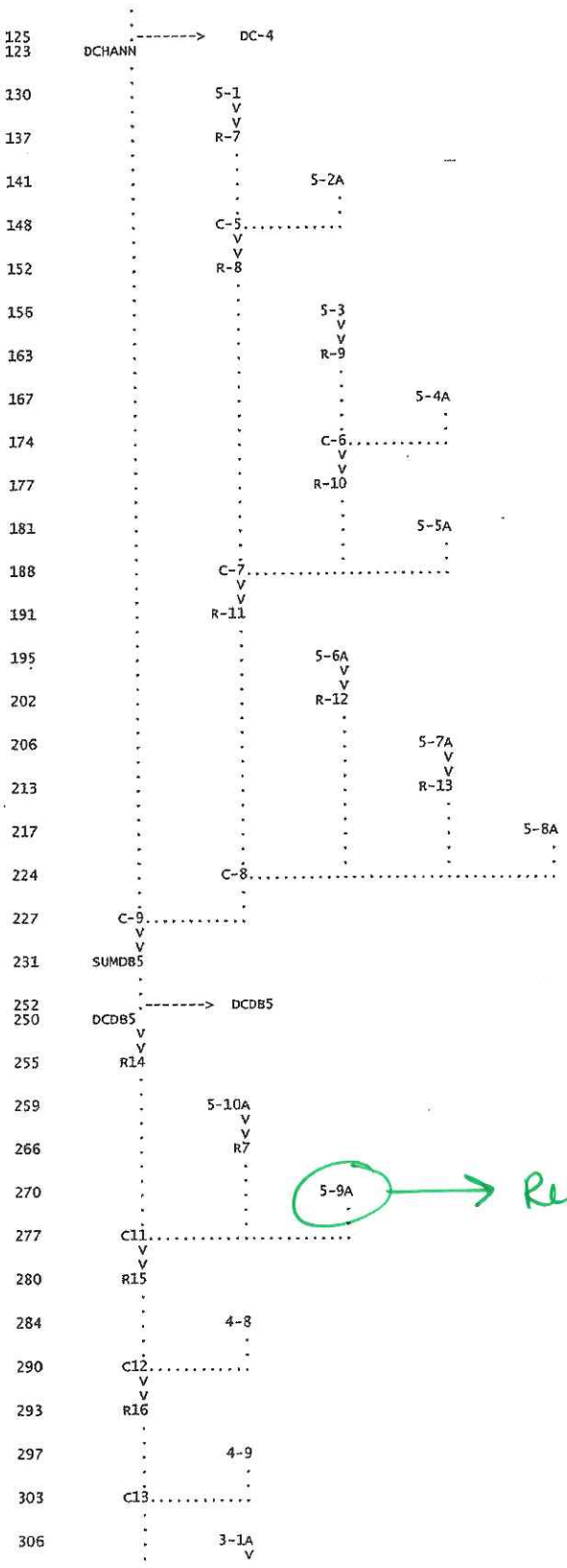
259          KK   5-10A
260          KM   PRECIPITATION VALUE IS REFERENCED FROM BASIN 4-7 FROM DETENTION BASIN NO.5/
261          KM   DIVERSION BERM FINAL DESIGN REPORT-1/01
262          BA   .1067
263          PB   3.43
264          LS      0    83.9
265          UD    .159
             *

266          KK      R7
267          KM   REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM FINAL DESIGN REPORT-1/01
268          KM   ROUTE THE FLOWS GENERATED BY 5-10A TO ALTA DRIVE RCB
269          RM       2      .14       .3
             *

270          KK    5-9A
271          KM   PRECIPITATION VALUE IS REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM
272          KM   FINAL DESIGN REPORT-1/01
273          BA   .1011
274          PB   3.43
275          LS      0    85.2
276          UD    .113
             *

277          KK     C11
278          KM   COMBINE EXPANDED DB5, 5-10A & 5-9A INTO ALTA DRIVE RCB
```

* Revised Area Trib to Alta per 2008 MPU



5-9A → Rev. Area Trib. to Alta RCB

				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	SUMDB5	6.75	1	FLOW	2089.	2061.	2011.	1961.	1942.	1928.	1918.	1902.	1883.
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.08
				** PEAK STAGES IN FEET **									
			1	STAGE	3558.85	3558.56	3558.05	3557.53	3557.32	3557.18	3557.08	3556.92	3556.72
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.08
DIVERSION TO													
+	DCDB5	6.75	1	FLOW	2089.	2061.	2011.	1961.	1942.	1928.	1918.	1902.	1883.
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.08
HYDROGRAPH AT													
+	DCDB5	6.75	1	FLOW	0.	0.	0.	0.	0.	0.	0.	0.	0.
				TIME	.00	.00	.00	.00	.00	.00	.00	.00	.00
ROUTED TO													
+	R14	6.75	1	FLOW	0.	0.	0.	0.	0.	0.	0.	0.	0.
				TIME	.00	.00	.00	.00	.00	.00	.00	.00	.00
HYDROGRAPH AT													
+	5-10A	.11	1	FLOW	164.	160.	154.	148.	145.	143.	142.	140.	138.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R7	.11	1	FLOW	152.	148.	143.	137.	135.	133.	132.	130.	128.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	5-9A	.10	1	FLOW	171.	167.	161.	155.	153.	151.	150.	148.	145.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	C11	6.96	1	FLOW	282.	275.	265.	254.	250.	247.	245.	242.	237.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R15	6.96	1	FLOW	275.	269.	257.	248.	243.	241.	239.	235.	232.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	4-8	.69	1	FLOW	961.	941.	907.	873.	860.	850.	843.	833.	819.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C12	7.64	1	FLOW	1236.	1210.	1164.	1121.	1103.	1092.	1083.	1068.	1051.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	R16	7.64	1	FLOW	1216.	1190.	1143.	1099.	1081.	1071.	1062.	1048.	1030.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	4-9	.58	1	FLOW	733.	716.	688.	660.	649.	641.	635.	626.	615.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C13	8.22	1	FLOW	1949.	1906.	1831.	1759.	1730.	1712.	1697.	1674.	1645.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	3-1A	.12	1	FLOW	195.	191.	184.	177.	174.	172.	171.	168.	166.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RC14W	.12	1	FLOW	189.	182.	175.	169.	172.	172.	170.	168.	158.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	3-2A	.26	1	FLOW	489.	480.	464.	449.	443.	439.	436.	431.	425.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	5-10A	.09	1	FLOW	167.	164.	159.	154.	152.	150.	149.	148.	146.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	C14	.47	1	FLOW	822.	806.	779.	752.	744.	737.	732.	723.	709.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RC14	.47	1	FLOW	816.	796.	772.	740.	740.	733.	728.	716.	702.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	3-1B	.59	1	FLOW	840.	822.	791.	760.	747.	739.	733.	723.	711.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	R3-1B	.59	1	FLOW	813.	797.	765.	731.	721.	719.	715.	704.	684.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	3-3C	.14	1	FLOW	274.	269.	261.	252.	249.	246.	245.	242.	239.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R3-3C	.14	1	FLOW	265.	260.	252.	244.	240.	238.	236.	233.	230.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	3-3B	.43	1	FLOW	832.	817.	793.	768.	758.	751.	746.	738.	728.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	C15A	1.16	1	FLOW	1831.	1788.	1733.	1668.	1648.	1631.	1616.	1593.	1571.

NORTH

SCALE 1" = 1500'

1500 0 1500 3000

SCALE FEET

LAKE MEAD BLVD

LOOP ROAD

SUMMERLIN PKWY

BELTWAY CHANNEL

FAR HILLS AVENUE

ALTA DRIVE

ALTA CHANNEL

VILLAGE 24
SEE FIGURE 9B

CHARLESTON BLVD.

REDROCK DETENTION BASIN

5-9A1
Area added
to Model

LEGEND

- DRAINAGE SUBBASIN
- SUBBASIN BOUNDARY
- V26 TRIBUTARY (SEE FIGURE 6B)
- BELTWAY CHANNEL (NORTH) TRIBUTARY (SEE FIGURE 7)
- DB5/ALTA TRIBUTARY (SEE FIGURE 8A)
- REDROCK DETENTION BASIN TRIBUTARY (SEE FIGURE 9B)

DESIGN: FAM
DRAWN: FAM
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 01-19-07
PLOT TIME: 09:45:22

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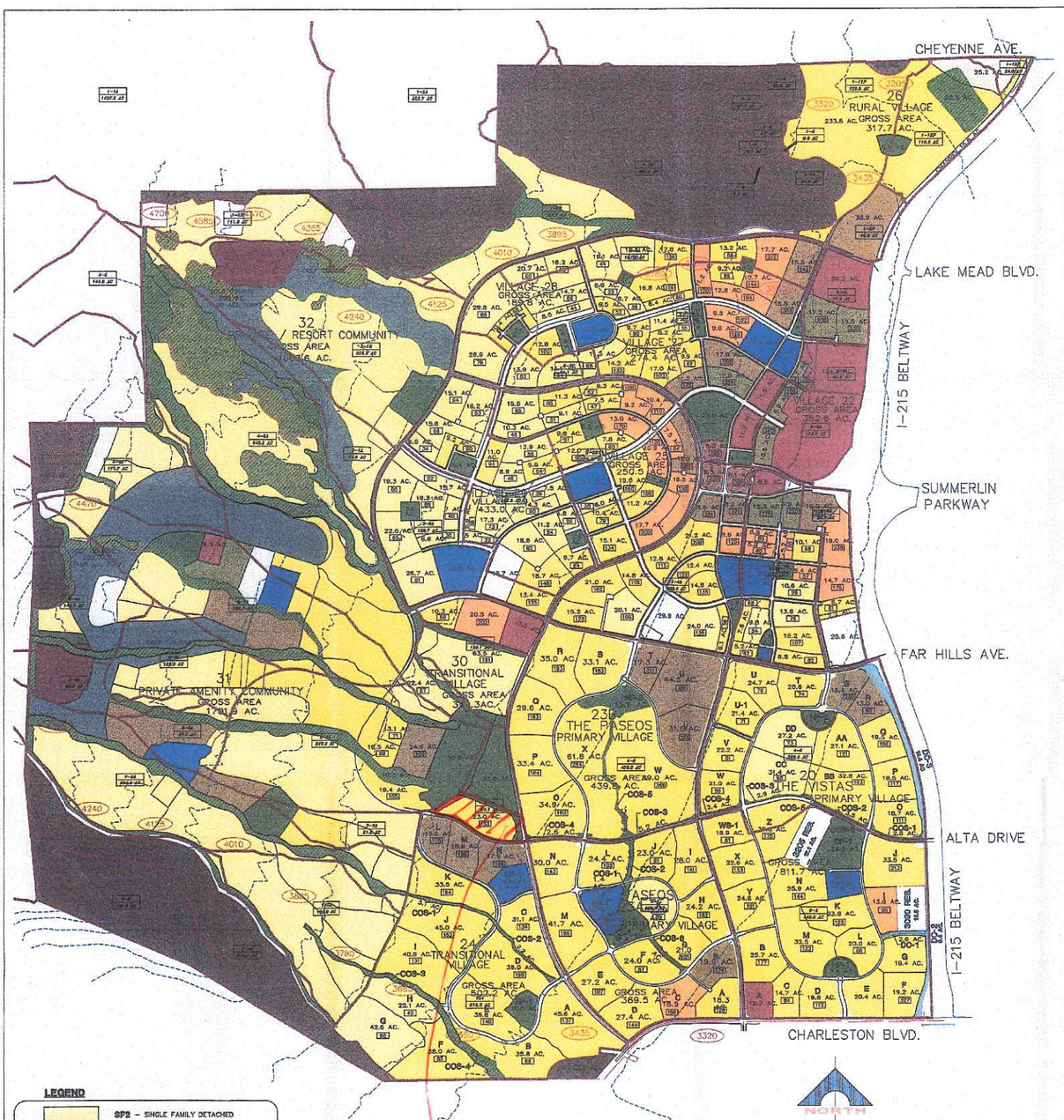
G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BOULEVARD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM

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2006 SUMMERLIN WEST PLANNING AREA
FLOOD CONTROL MASTER PLAN UPDATE
FIGURE 5

OVERALL PROPOSED DRAINAGE MAP

DRAWING
FIG 5
SHT OF SHTS



		PROPOSED	EXISTING	REMAINING
VILLAGE 20	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	607.9	523	0245	(20)
MULTI FAMILY	40.9	270	210	60
COMMERCIAL	12.7	-	-	-
SCHOOL	11.5	-	-	-
PARK	52.5	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	85.0	-	-	-
TOTAL	917	3625	3523	0
VILLAGE 21	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	527.9	2735	0	2735
MULTI FAMILY	68.8	1705	0	1705
COMMERCIAL	51.5	-	-	-
SCHOOL	14.7	-	-	-
PARK	91	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	55.5	-	-	-
TOTAL	4557	4428	0	4428
VILLAGE 22	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	104	228	0	228
MULTI FAMILY	125.8	2520	0	2520
COMMERCIAL	92.3	-	-	-
SCHOOL	14.5	-	-	-
PARK	68.1	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	382.8	3308	0	3308
VILLAGE 23	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	623.8	2159	1158	1981
MULTI FAMILY	123.1	1070	174	896
COMMERCIAL	0	-	-	-
SCHOOL	19.4	-	-	-
PARK	49.9	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	826.3	4229	1332	2977
VILLAGE 24	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	407.4	1329	0	1329
MULTI FAMILY	49.7	555	0	555
COMMERCIAL	0	-	-	-
SCHOOL	14.5	-	-	-
PARK	13.5	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	19.7	-	-	-
TOTAL	502.2	1885	0	1885
VILLAGE 25	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	223.8	1260	0	1260
MULTI FAMILY	15.0	285	0	285
COMMERCIAL	0	-	-	-
SCHOOL	12.1	-	-	-
PARK	7.3	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	258.2	2245	0	2245
VILLAGE 26	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	223.5	1243	-	1243
MULTI FAMILY	29.9	460	-	460
COMMERCIAL	0	-	-	-
SCHOOL	0	-	-	-
PARK	6.5	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	40.8	-	-	-
TOTAL	297.7	672	0	1703
VILLAGE 27	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	254.5	1921	0	1921
MULTI FAMILY	13.8	175	0	175
COMMERCIAL	0	-	-	-
SCHOOL	0	-	-	-
PARK	9.1	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	274.4	2096	0	2096
VILLAGE 28	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	198.1	664	0	664
MULTI FAMILY	0	0	0	0
COMMERCIAL	0	-	-	-
SCHOOL	14.5	-	-	-
PARK	7.2	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	199.8	664	0	664
VILLAGE 29	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	575.0	1795	0	1795
MULTI FAMILY	0	0	0	0
COMMERCIAL	0	-	-	-
SCHOOL	22.8	-	-	-
PARK	12.7	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	11.7	-	-	-
TOTAL	622.2	1795	0	1795
VILLAGE 30	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	170.9	914	0	914
MULTI FAMILY	45.1	289	0	289
COMMERCIAL	15.5	-	-	-
SCHOOL	0	-	-	-
PARK	61.0	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	53.7	-	-	-
TOTAL	346.3	1203	0	1203
VILLAGE 31	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	1001.8	2955	0	2955
MULTI FAMILY	107.1	148	0	148
COMMERCIAL	8.5	-	-	-
SCHOOL	20.9	-	-	-
PARK	40.0	-	-	-
GOLF COURSE	200.0	-	-	-
HOTEL	30.0	-	-	-
UNDEVELOPABLE	279.9	-	-	-
TOTAL	1709.9	3713	0	3713
VILLAGE 32	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	60.1	100	0	100
MULTI FAMILY	0	0	0	0
COMMERCIAL	0	-	-	-
SCHOOL	0	-	-	-
PARK	40.0	-	-	-
GOLF COURSE	200.0	-	-	-
HOTEL	40.0	-	-	-
UNDEVELOPABLE	192.5	-	-	-
TOTAL	532.6	100	0	100
GRAND TOTAL	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	5018.8	22260	4431	18949
MULTI FAMILY	692.3	8129	464	6939
COMMERCIAL	226.6	-	-	-
SCHOOL	161.6	-	-	-
PARK	668.8	-	-	-
GOLF COURSE	400.0	-	-	-
HOTEL	70.0	-	-	-
UNDEVELOPABLE	827.8	-	-	-
	7327.7	30702	4895	25888

LEGEND

- SF2 – SINGLE FAMILY DETACHED
- SF3 – SINGLE FAMILY DETACHED
- SFA – SINGLE FAMILY ATTACHED
- MF2 – MULTI FAMILY MEDIUM DENSITY
- MF3 – MULTI FAMILY HIGH DENSITY
- NF – NEIGHBORHOOD FOCUS
- COS – COMMUNITY OPEN SPACE
- COS – RED ROCK
- OPEN LAND – FAIR CONDITION
- COM – COMMERCIAL
- H-1 – LIMITED RESORT AND APARTMENT DISTRICT
- BLM – LAND TURNED OVER TO BLM
- – NATURAL PRESERVATION
- UNDEVELOPABLE PROPERTY, RESERVED FOR WATER RESERVOIRS, POWER SUBSTATIONS, UNDEVELOPABLE TERRAIN, AND U.S. WATERS
- 113 PROPOSED DWELLING UNITS
- 3090 WATER ZONE DESIGNATION

S-9A1
Area added to model

SUMMERLIN

SUMMERLIN WEST CONCEPTUAL LAND USE PLAN

FEBRUARY 22, 2006

The Howard Hughes Corporation
an affiliate of General Growth Properties, Inc.

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
OFFICE: (702) 804-8566 FAX: (702) 804-8566
SUMMERLIN OFFICE: 10000 CHARLESTON BLVD., STE. 120
OFFICE: (702) 804-8566 FAX: (702) 804-8560

DISCLAIMER:
THIS MAP DEPICTS EXISTING AND PROPOSED DEVELOPMENT IN SUMMERLIN. PROPOSED DEVELOPMENTS SHOWN ON THE PLAN ARE CONCEPTUAL AND PRELIMINARY, AND ARE INCLUDED ONLY TO SHOW INTENT AND RELATIONSHIP TO THE EXISTING COMMUNITY. PROPOSED DEVELOPMENTS MAY REQUIRE APPROVALS BY GOVERNMENTAL AGENCIES WHICH MAY NOT BE OBTAINED.

ALL PROPOSED LAND USES AND IMPROVEMENTS ARE SUBJECT TO MODIFICATION OR ELIMINATION WITHOUT NOTICE. THE INFORMATION DEPICTED HEREON SHOULD NOT BE A BASIS FOR A DECISION TO PURCHASE OR LEASE PROPERTY IN SUMMERLIN.

HA 2023.C

RESPONSE TO COMMENTS ON THE UPDATE TO THE TECHNICAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B ROUGH GRADING

62023.260

November 2006

Prepared For:

The Howard Hughes Corporation
10000 West Charleston Boulevard, Suite 200
Las Vegas, Nevada 89134
Phone: (702) 791-4000
Fax: (702) 791-4385

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

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Chairman
City of Las Vegas

Chip Maxfield
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Mayor Bill Nicholes
City of Mesquite

Roger Tobler
City of Boulder City

Bruce L. Woodbury
Clark County

December 15, 2006

Mr. Randy Fultz, P.E.
City of Las Vegas Public Works
731 S. 4th Street
Las Vegas, NV 89101

DISTRICT CONCURRENCE: **SUMMERLIN V23B ROUGH GRADING UPDATE (DS4019) (RFCD No. 06-6940)**

Dear Mr. Fultz:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated June 7, 2006, and Addendum No. 1 dated November 6, 2006, for above-mentioned project as submitted by G. C. WALLACE INC. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Public Works dated November 22, 2006.

District concurs with acceptance of this Technical Drainage Study by City of Las Vegas Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage*.

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by G. C. WALLACE INC., may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: _____
Abigail Mayrena, P.E.
Associate Engineer

_____
Andrew R. Trelease, P.E., CFM
Principal Civil Engineer

AM:ART:jb

c: Debra M. Yamachika, P.E., G. C. WALLACE INC.

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600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: *http://www.regionalflood.org*

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: November 22, 2006
TO: **Land Development Services** Department of Public Works			FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **SMRLN V23B Rough Grading - Update**		COPIES TO: G.C. Wallace, Inc.
Cross Streets:	Desert Foothills Drive & Alta Drive		Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4019B.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-014		CCRFCD
Zoning Action:	N/A		
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES	NO X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	6/8/2006	7/6/2006	Not Approved	$100.00	47340:$100
2nd Submittal	11/7/2006	11/21/2006	See Comments Below	$400.00	57146: $400
			TOTAL FEES (LDDRS):	**$500.00**	—

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

1. **This drainage study is acceptable in concept**, however, the *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District* (CCRFCD) has issued a letter of concurrence. The Engineer should contact the CCRFCD to confirm that they have begun their review.

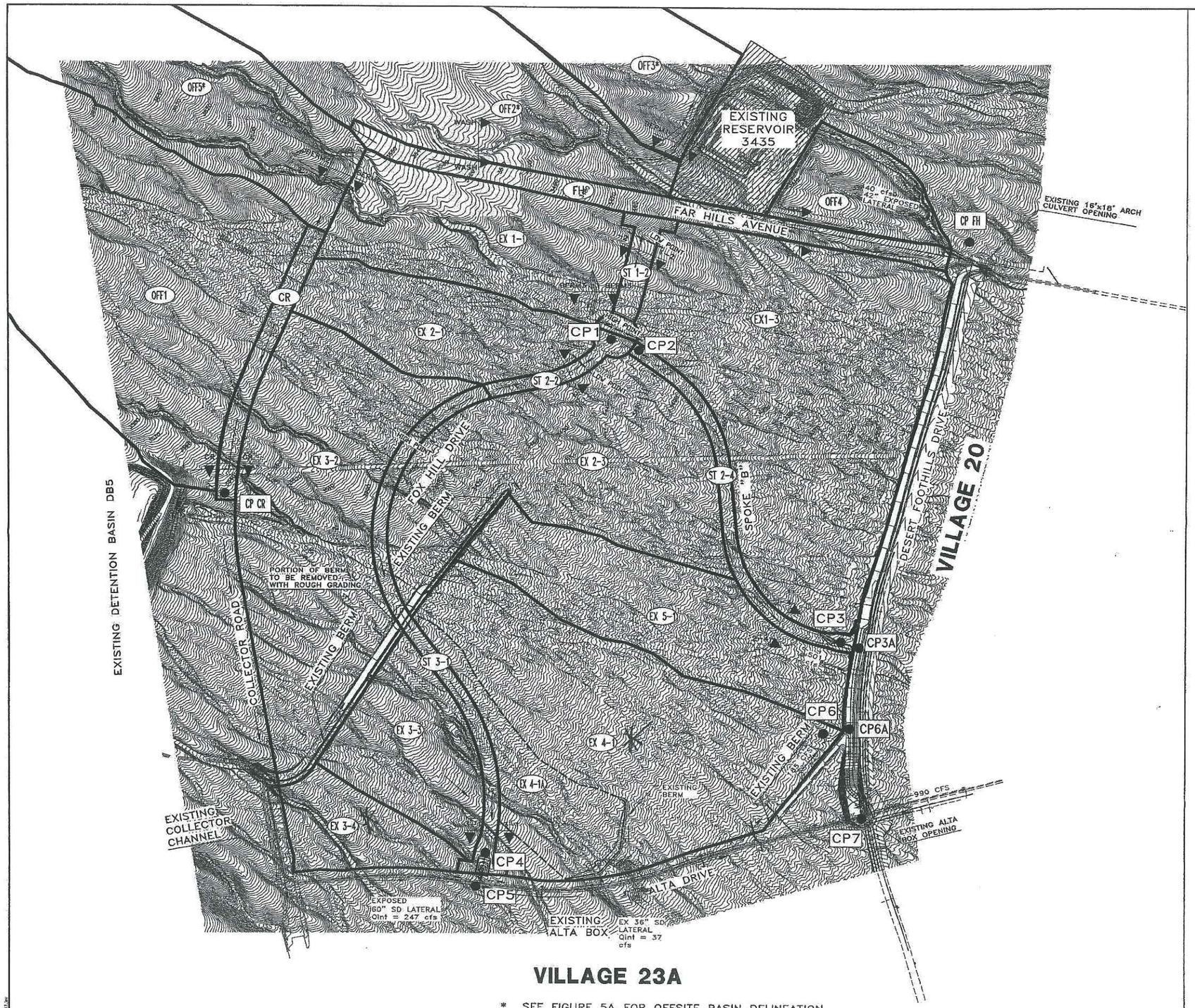
NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

END OF REMARKS

ays

T/R/S: T20S/R59E/22
AREA K-22

Post-it® Fax Note 7671	Date 11/22/06 # of pages ▶
To Debra Yamachika	From Albert Sung
Co./Dept. GCW	Co. CLV
Phone #	Phone # 229-200
Fax # 804-2299	Fax #



VILLAGE 23A

* SEE FIGURE 5A FOR OFFSITE BASIN DELINEATION
** EX4-1A IS A PRORATED BASIN. SEE CALCULATION PROVIDED IN APPENDIX A

NORTH
SCALE 1"=300'

GRAPHIC SCALE
300 0 150 300
(IN FEET)
1 inch = 300 ft.

LEGEND
- (1-1) DRAINAGE SUBBASIN
- CP1 CONCENTRATION POINT
- SUBBASIN BOUNDARY
- FLOW DIRECTION
- CR CR CROSS SECTION LOCATION

SUMMARY OF STREET CROSS SECTIONS

SECTION	Q100(cfs)	DEPTH(ft)	VELOCITY(fps)	VxD
1-2	14	0.4	1.9	0.7
2-2	74	0.5	4.7	2.5
2-4	495	1.0	9.4	9.8
3-1	239	0.9	6.1	5.3
FH	43	0.2	3.4	0.5
CR	306	0.6	6.8	3.7
BERM1	830	2.5	8.0	--
BERM2	99	1.1	6.5	--
BERM3	281	3.3	6.7	--
WASH	100	1.7	9.3	--

SUMMARY OF HEC-1 MODEL
ULTIMATE CONDITIONS

Subbasin/ Combination Point	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
OFF1	99.2	284	121
CR	5.8	19	9
CPCR	-	303	131
OFF2	326.6	724	315
FH	12.9	39	19
OFF4	12.6	38	16
OFF3	29.9	84	36
CPFH	-	852	372
OFF5	74.7	200	84
EX1-1	32.6	89	38
CP1	-	289	122
EX2-1	23.2	64	27
ST2-2	2.8	10	5
CP2	-	363	154
EX2-3	50.6	133	55
ST2-4	5.8	20	10
CP3	-	514	219
EX1-3	80.12	229	98
ST1-2	3.7	13	6
CP3A	-	735	323
ST3-1	9.1	29	14
EX3-2	59.0	163	70
REX3-2	-	162	69
EX3-3	2.5	58	24
CP4	-	247	104
D1	-	247	104
REMCP	-	0	0
EX3-4	12.1	34	14
CP5	-	34	14
EX4-1	73.2	189	79
D2	-	37	15
REMEX	-	152	63
CP6	-	185	78
EX5-1	34.2	91	38
CP6A	-	269	116
CP7	-	990	439

DESIGN:
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CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-07-06
PLOT TIME: 11:08:44

REV	DATE	DESCRIPTION	DATE	APP	DRW	APP	DATE

G.C. WALLACE COMPANIES
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SUMMERLIN VILLAGE 23B - ROUGH GRADING
FIGURE 5 REVISED
REVISED PROPOSED DRAINAGE PLAN

DRAWING
FIG5R
SHT OF SHTS

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE SUMMERLIN IMPROVEMENT STANDARDS AS APPROVED BY THE CITY COUNCIL ON 11/18/92, SIGNED BY CLV 2/2/93, "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST ISSUE; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLAN LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON THESE PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD OR UNDERGROUND POWER, GAS AND/OR OTHER UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COSTS AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES, AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER OR OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGN TO BE APPROVED BY THE CITY PRIOR TO USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED TYPE CURB.
8. AC PAVEMENT TO BE 1/2" ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS
9. CURB & GUTTER WITH A GRADE OF LESS THAN FIVE TENTHS OF ONE PERCENT SHALL BE WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION. ANY CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR PER SUMMERLIN STD DRAWING NO. S-47.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED AS SHOWN ON PLANS PER SUMMERLIN STD. DRAWING NO. S-75. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE SOILS ENGINEER APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWOUT LINES MAY BE DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS INSPECTOR IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATION.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.550.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC. SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOW LINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.
16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR YTHE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.

CONSTRUCTION NOTES

1. ALL BARRICADING AND TEMPORARY TRAFFIC CONTROL DEVICES OR METHODS USED DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "NEVADA TRAFFIC CONTROL MANUAL," MOST RECENT EDITION, PUBLISHED BY THE STATE OF NEVADA, DEPARTMENT OF HIGHWAYS, EXCEPT AS OTHERWISE PROVIDED IN THE CONTRACT SPECIFICATIONS OR AS REQUIRED BY THE ENGINEER.
2. AT THE TIME OF PRE-CONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL FURNISH, FOR APPROVAL, A TRAFFIC BARRICADING PLAN AND METHOD OF MAINTAINING PUBLIC CONVEYANCE AND SAFETY THROUGHOUT THE CONSTRUCTION AREA. TRAFFIC BARRICADING PLANS SHALL COMPLY WITH APPLICABLE PORTIONS OF SECTIONS 624 AND 625 OF THE STANDARD SPECIFICATIONS, THE TRAFFIC CONTROL MANUAL AND APPLICABLE CITY ORDINANCES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERTICAL ADJUSTMENT OF EXISTING SANITARY, WATER AND STORM SEWER MANHOLES TO THE FINAL FINISH GRADES AS NOTED ON THE CONTRACT DRAWINGS, AND IN ACCORDANCE WITH SECTION 609 OF THE "STANDARD SPECIFICATIONS," AND ANY VERTICAL ADJUSTMENTS OF WATER VALVE BOXES AND OTHER APPURTENANCES SHALL BE IN ACCORDANCE WITH THE DETAILS SHOWN ON THE CONTRACT DRAWINGS.
4. NOTICE: GRADING AUTHORIZED ONLY AFTER PERMITTEE'S FULL COMPLIANCE WITH FEDERAL ENDANGERED SPECIES ACT.
5. THE DESIGN GRADE (DG) INDICATED ON THESE PLANS IS FOR VERTICAL ELEVATION DESIGN CALCULATION PURPOSES AND DOES NOT NECESSARILY REPRESENT THE FINISH IMPROVEMENT GRADES @ CENTERLINE. (I.E. THROUGH MEDIAN AREAS).
6. ALL EXISTING UTILITY CROSSINGS MUST BE VERIFIED PRIOR TO CONSTRUCTION OF ANY MAIN LINES OR LATERALS THAT MAY BE ADVERSELY EFFECTED ANY DISCREPANCIES IN LOCATION AND/OR ELEVATION MUST BE PROVIDED TO THE ENGINEER FOR ACCEPTANCE PRIOR TO CONSTRUCTION.

QUANTITIES

6" D50 RIP-RAP	256 C.Y.
8" D50 RIP-RAP	9,100 C.Y.
12" D50 RIP-RAP	2,607 C.Y.
EXCAVATION	218,936 C.Y.
EMBANKMENT	107,836 C.Y.

DEVIATIONS FROM STANDARDS

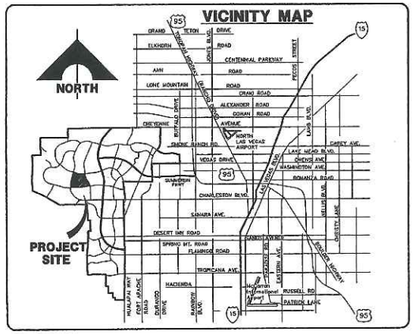
1. PROPOSE 80 FOOT RIGHT-OF-WAY IN LIEU OF 81 FOOT RIGHT-OF-WAY (S.L.S. DWG. NO. S-9). REDUCE LANDSCAPED MEDIAN ISLAND (PROPOSED 24.66 FEET IN LIEU OF 27.66 FEET) IN EXCHANGE FOR ADDITIONAL PAVEMENT TO ALLOW FOR SHARED BICYCLE USE.
2. PROPOSE VARYING CROSS-SLOPES AT INTERSECTIONS (S.L.S. DWG. NO. DC-1). POTENTIALLY SIGNALIZED INTERSECTIONS ARE PROPOSED WITH MINIMUM CROWNED CROSS-SLOPES OF 0.5% TO STRAIGHT-GRADED DESIGNS TO MAINTAIN HIGHER LEVELS OF SERVICE. ALTHOUGH WE DO NOT CONSIDER THIS A TRUE DEVIATION, WE ARE REQUESTING CITY SUPPORT OF THIS DESIGN PRACTICE.
3. PROPOSE 2% TILT SECTION IN LIEU OF 2% CROWNED SECTION (S.L.S. DWG. NO. DC-1). 700 LINEAR FEET OF ROADWAY (FOX HILL DRIVE, ROUNDABOUT TO FAR HILLS AVE.) IS PROPOSED WITH 2% TILT-SECTION TO AVOID LENGTHY CROSS-SLOPE TRANSITIONS AT EACH END OF ROADWAY.

LEGEND AND ABBREVIATIONS

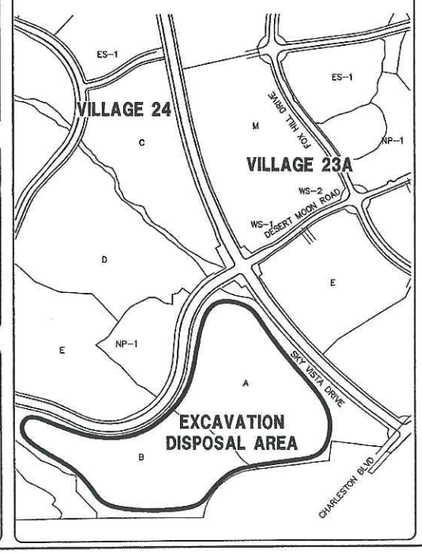
- (3/7) DRAWING NUMBER FOR DETAIL W/ REF. TO THE SHEET WHERE IT IS SHOWN
- (1/W) INDICATES CONSTRUCTION NOTE
- (1) OR (A) INDICATES HORIZONTAL CURVE DATA
- (1) REVISION NUMBER
- FUTURE FACILITIES NOT IN THIS CONTRACT (N.I.C.)
- EXISTING FEATURES
- PROPERTY LINE/LANDSCAPE LINE
- CENTERLINE
- 2975 EXISTING CONTOUR
- 60.50 TC — PROPOSED TOP OF CURB ELEVATION
- (60.50) TC — EXISTING TOP OF CURB ELEVATION
- [60.50] TC — FUTURE TOP OF CURB ELEVATION
- STUB & PLUG PIPE
- EXTENSION OF ROUGH GRADING IN AREA OF EXISTING ROUGH GRADING
- EXISTING ROUGH GRADING
- RIPRAP
- EXISTING RIPRAP
- EXISTING FIRE HYDRANT
- FIRE HYDRANT
- EDGE OF PAVEMENT
- TOP SLOPE / TOE SLOPE — 3:1 SLOPE UNLESS OTHERWISE NOTED ON PLAN

AC	=	ASPHALT CONCRETE	N.T.S.	=	NOT TO SCALE
AD	=	ALGEBRAIC DIFFERENCE IN GRADE	PAVMT.	=	PAVEMENT
BC	=	BACK OF CURB	PB	=	PULLBOX
BCR	=	BEGIN CURB RETURN	PC	=	POINT OF CURVATURE
BVCE	=	BEGIN VERTICAL CURVE ELEVATION	PCC	=	POINT OF COMPOUND CURVE
BVCS	=	BEGIN VERTICAL CURVE STATION	PED.	=	PEDESTRIAN
CC	=	CLARK COUNTY	PL.℄	=	PROPERTY LINE
CCFD	=	CLARK COUNTY FIRE DEPARTMENT	POC	=	POINT ON CURVE
CCSD	=	CLARK COUNTY SANITATION DISTRICT	PRC	=	POINT OF REVERSE CURVE
CF	=	CURB FACE	PSI	=	POUNDS PER SQUARE INCH
CFS	=	CUBIC FEET PER SECOND	PT	=	POINT OF TANGENCY
CL.℄	=	CENTERLINE	PVC	=	POLYVINYL CHLORIDE
CLR.	=	CLEAR	PVI	=	POINT OF VERTICAL INTERSECTION
CONC.	=	CONCRETE	PZ	=	PRESSURE ZONE
DG	=	DESIGN GRADE AT CENTERLINE	R	=	RADIUS
D.I.	=	DROP INLET	RCB	=	REINFORCED CONCRETE BOX
D.I.P.	=	DUCTILE IRON PIPE	RCP	=	REINFORCED CONCRETE PIPE
D/L	=	DAYLIGHT	RED	=	REDUCER
EGR	=	END CURB RETURN	REF.	=	REFERENCE
EG	=	EXISTING GROUND	RG	=	ROUGH GRADE
EGL	=	ENERGY GRADE LINE	RPPA	=	REDUCED PRESSURE PRINCIPLE ASSEMBLY
ENCASE	=	ENCASEMENT	RT	=	RIGHT
EP	=	EDGE OF PAVEMENT	R/W	=	RIGHT-OF-WAY
ESMT.	=	EASEMENT	S	=	SANITARY SEWER
EVCE	=	END VERTICAL CURVE ELEVATION	SD	=	STORM DRAIN
EVCS	=	END VERTICAL CURVE STATION	SDMH	=	STORM DRAIN MANHOLE
EX.	=	EXISTING	SMH	=	SANITARY SEWER MANHOLE
FG	=	FINISHED GRADE	STA	=	STATION
FS	=	FINISHED SURFACE	SW	=	SIDEWALK
FH	=	FIRE HYDRANT	T	=	TANGENT
FL	=	FLOW LINE	TB	=	TOP OF BERM
FUT.	=	FUTURE	TC	=	TOP OF CURB
GB	=	GRADE BREAK	TMH	=	TOP OF MANHOLE
GV	=	GATE VALVE	TP	=	TOP OF PIPE
HGL	=	HYDRAULIC GRADE LINE	TRANS.	=	TRANSITION
INV	=	INVERT	TS	=	TRAFFIC SIGNAL POLE
IRR	=	IRRIGATION	UDS	=	UNIFORM DESIGN STANDARDS – LAS VEGAS VALLEY WATER DISTRICT
K	=	COEFFICIENT OF VERTICAL CURVE	USD	=	UNIFORM STANDARD DRAWINGS– CLARK COUNTY AREA NEVADA
L	=	LENGTH			
LS	=	LANDSCAPE			
LT	=	LEFT	VC	=	VERTICAL CURVE
LVVWD	=	LAS VEGAS VALLEY WATER DISTRICT	W	=	WATER
MLCP	=	MORTAR LINED CEMENT PIPE	WM	=	WATER METER
MUTCD	=	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES	& PT	=	ANGLE POINT
NDOT	=	NEVADA DEPARTMENT OF TRANSPORTATION	Δ	=	CURVE DELTA
N.I.C.	=	NOT IN THIS CONTRACT			

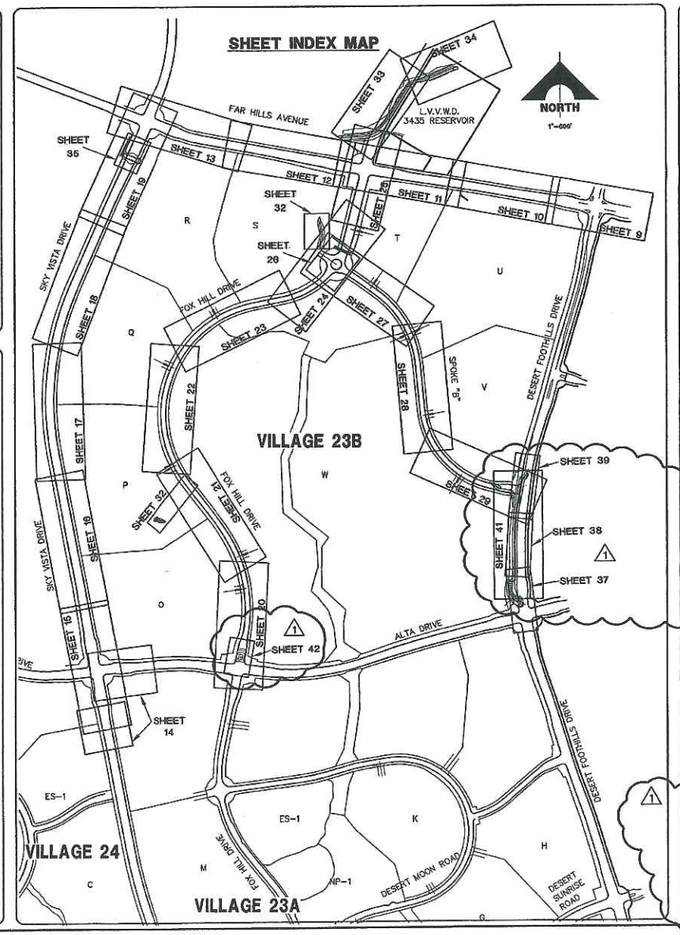
VICINITY MAP



EXCAVATION DISPOSAL SITE LOCATION



SHEET INDEX MAP



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SHT 5.	HORIZONTAL CONTROL PLAN III
SHT 6.	HORIZONTAL CONTROL PLAN IV
SHT 7.	HORIZONTAL CONTROL PLAN V
SHT 8.	HORIZONTAL CONTROL PLAN VI
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	SKY VISTA DRIVE PLAN AND PROFILE, STA. 345+00 TO STA. 348+50
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SHT 43.	HORIZONTAL CONTROL VII

LOCATION

LYING WITHIN SECTIONS 26 AND 27, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA.

BENCHMARK

DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN. (CLV B.M. NO. D368 3)	3246.71 (FEET)	989.599 (METERS)

NOTE: THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM.

Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

CLV DRAWING NO. _____

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.
3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OF FACILITIES AND/OR CAVING OF THE EXCAVATION.
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

	HORIZONTAL	VERTICAL	COMPACTION)
A. PAVEMENT AREA SUBGRADE	0.1'+	+0.0' TO -0.1'	SEE SOILS REPORT
B. ENGINEER FILL	0.5'+	+0.1 TO -0.1'	SEE SOILS REPORT

COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEVADA — No. 10259 — CIVIL — BEN HUMPHREY — DATE: 12/2/06

DESIGN: GTP	DRAWN: GTP	CHECK: BAH	ISSUE DATE:	ISSUE EDITOR:	PLOT DATE: 07-19-06	PLOT TIME: 11:50:41

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REV DATE		DESCRIPTION	

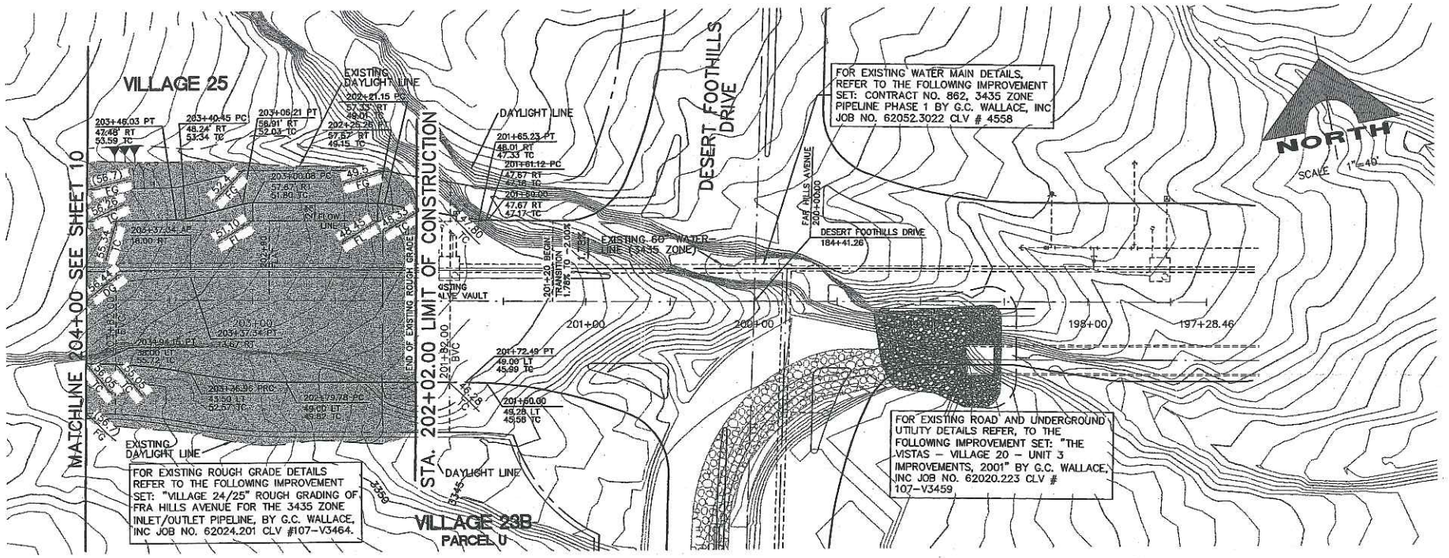
G.C. WALLACE, INC. Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299 gwallace.com
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SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
PROJECT DATA SHEET

SHEET 2 OF 43 SHTS

JOB NO. 62023.260

ACAD Rev. 12/2/13.dwg



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, SQ TEST NORTH OF STATION 767+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FAR HILLS AVENUE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

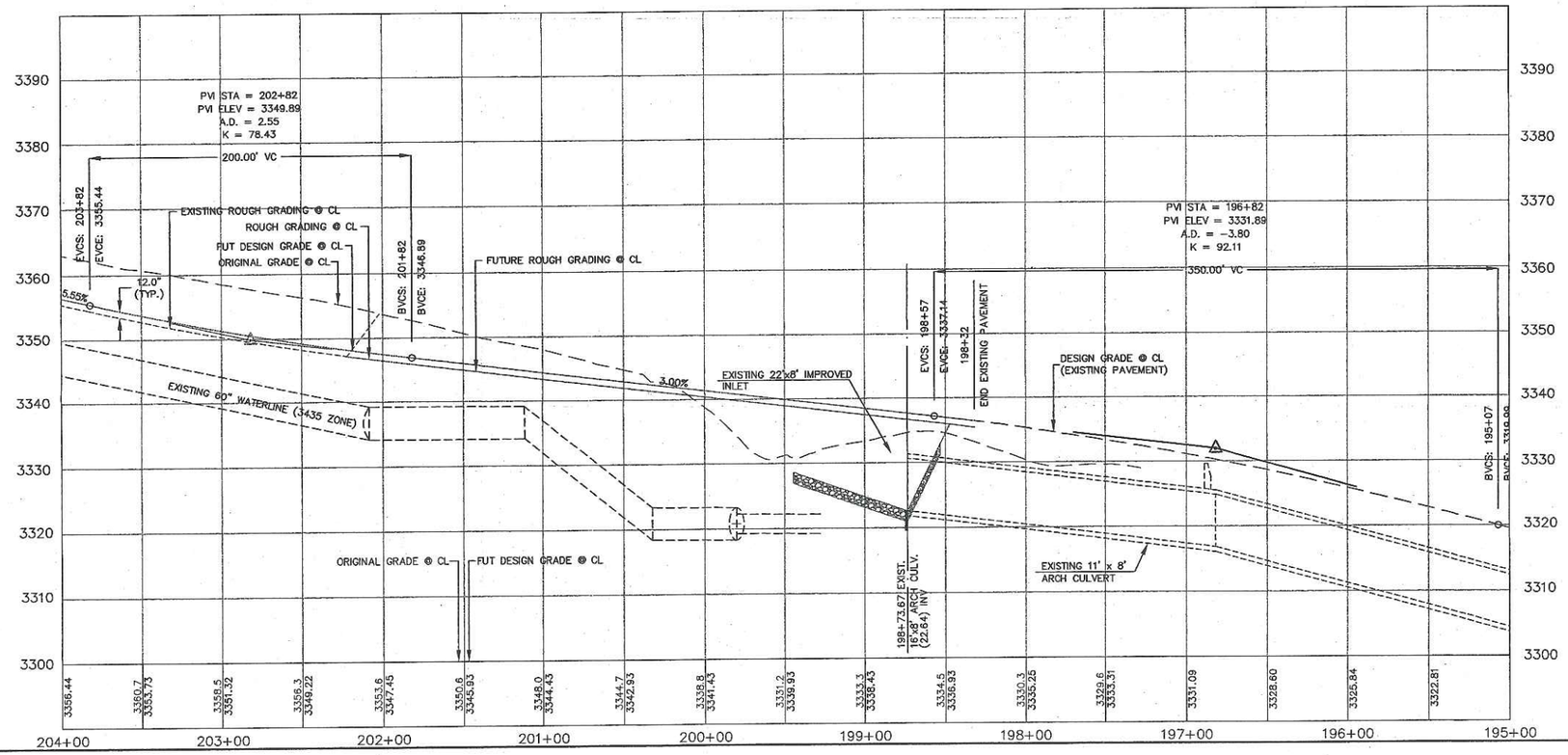
40 0 40 80
SCALE FEET

NOTE

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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY! CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111



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gcwallace
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ISSUE DATE: 8/01/03

SUMMERLIN

VILLAGE 23B ROUGH GRADING

FAR HILLS AVENUE PLAN AND PROFILE BEGIN TO STA 204+00

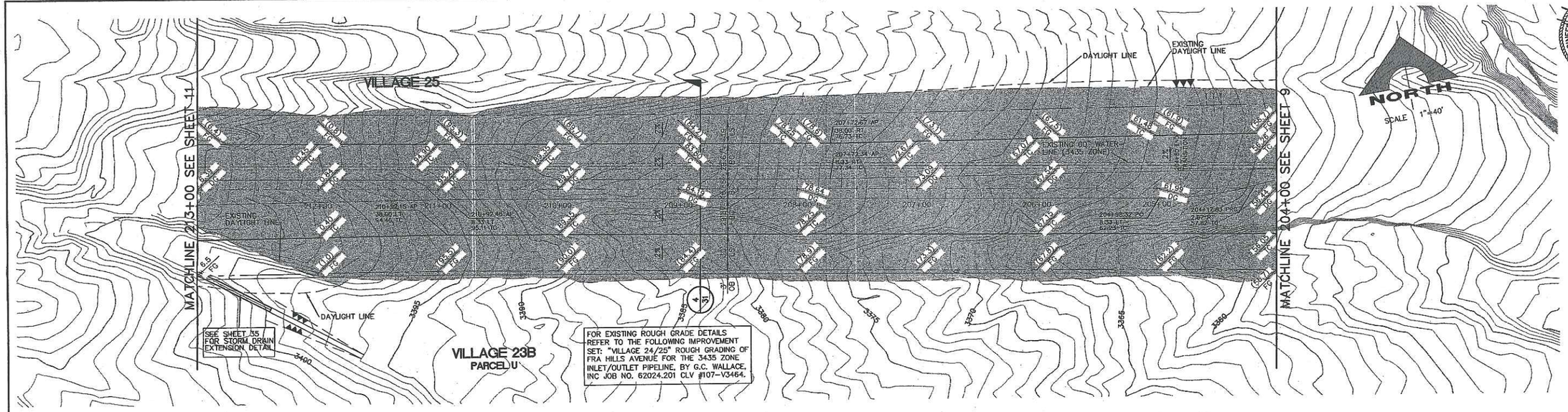
SHEET 9 OF 35 SHTS

JOB NO. 62023.260

DESIGN: GTP
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ISSUE DATE:
PLOT DATE: 08-25-03
PLOT TIME: 08:33:17

DATE	DESCRIPTION	DRAWN	APP'D	DATE	CONST. APP'D
	ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION				

STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER
BRENT A. HUGHES
No. 10258
CIVIL
EXP. 10/31/2004
DATE: 8/21/03



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FAR HILLS AVENUE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

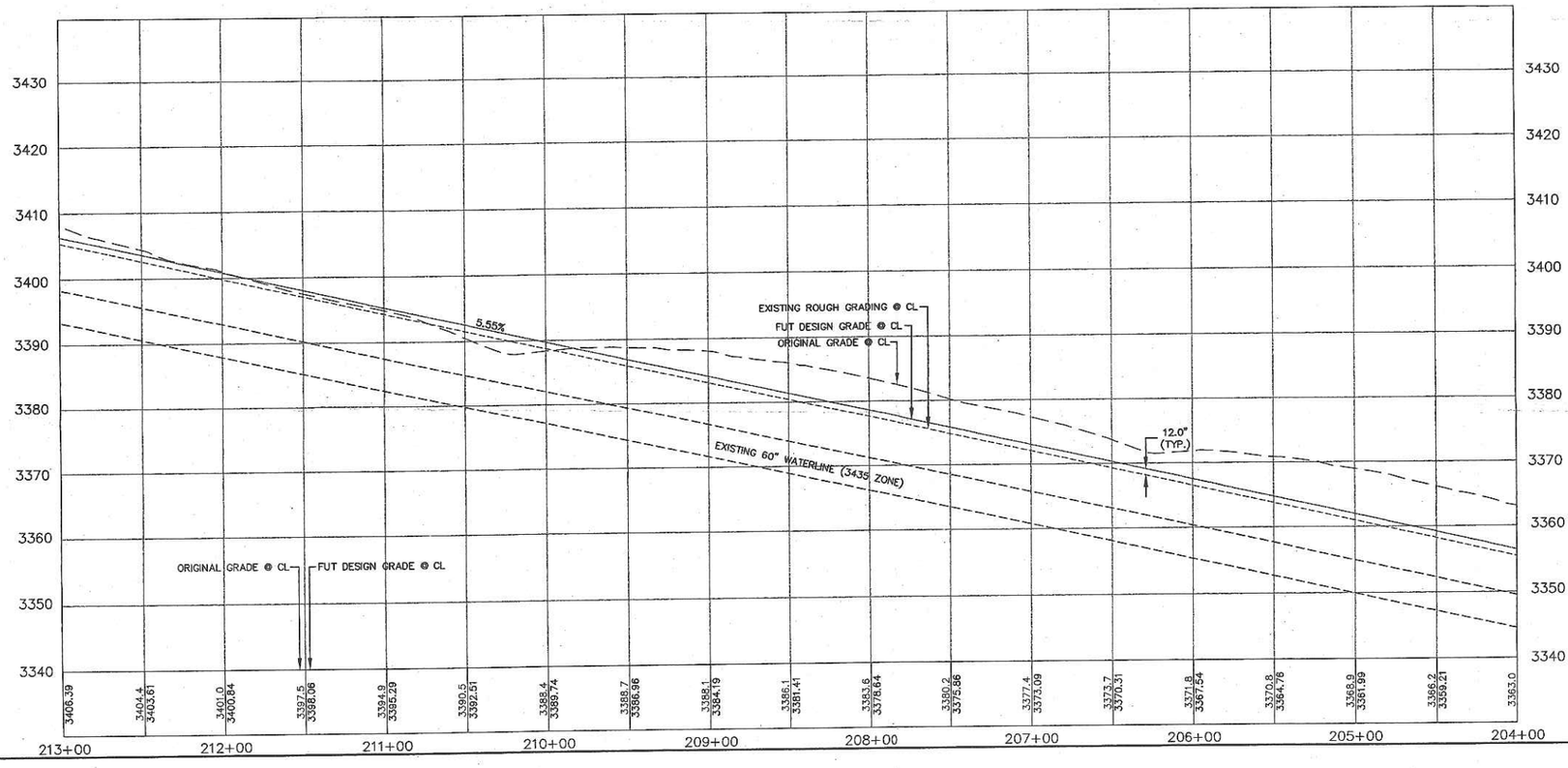
40 0 40 80
SCALE FEET

NOTE

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Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 FAX: (702) 804-2099
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ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-28-03
PLOT TIME: 08:32:34

REV	DATE	DESCRIPTION	DATE AGEN. APP	DATE ROW APP

STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN A. HUTCHINSON — No. 10277 — CIVIL — DATE: 9/2/03

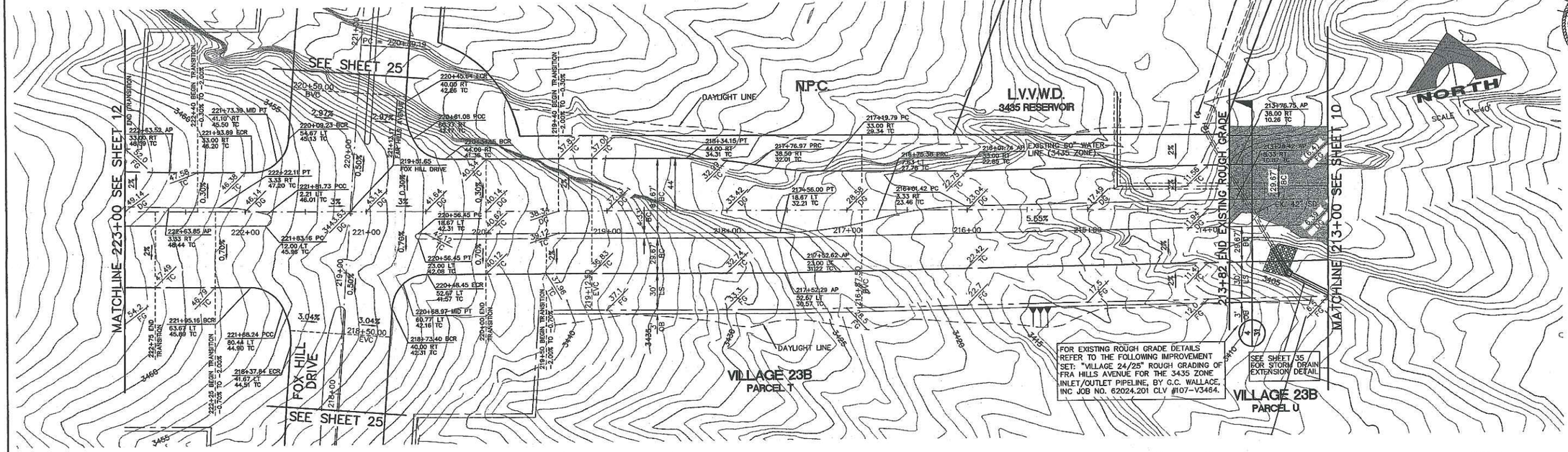
ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FAR HILLS AVENUE PLAN AND PROFILE
STA 204+00 TO STA 213+00

SHEET 10
10 OF 35 SHTS

JOB NO. 62023.260

pp2435.dwg 032912.dn



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV09-34S526	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

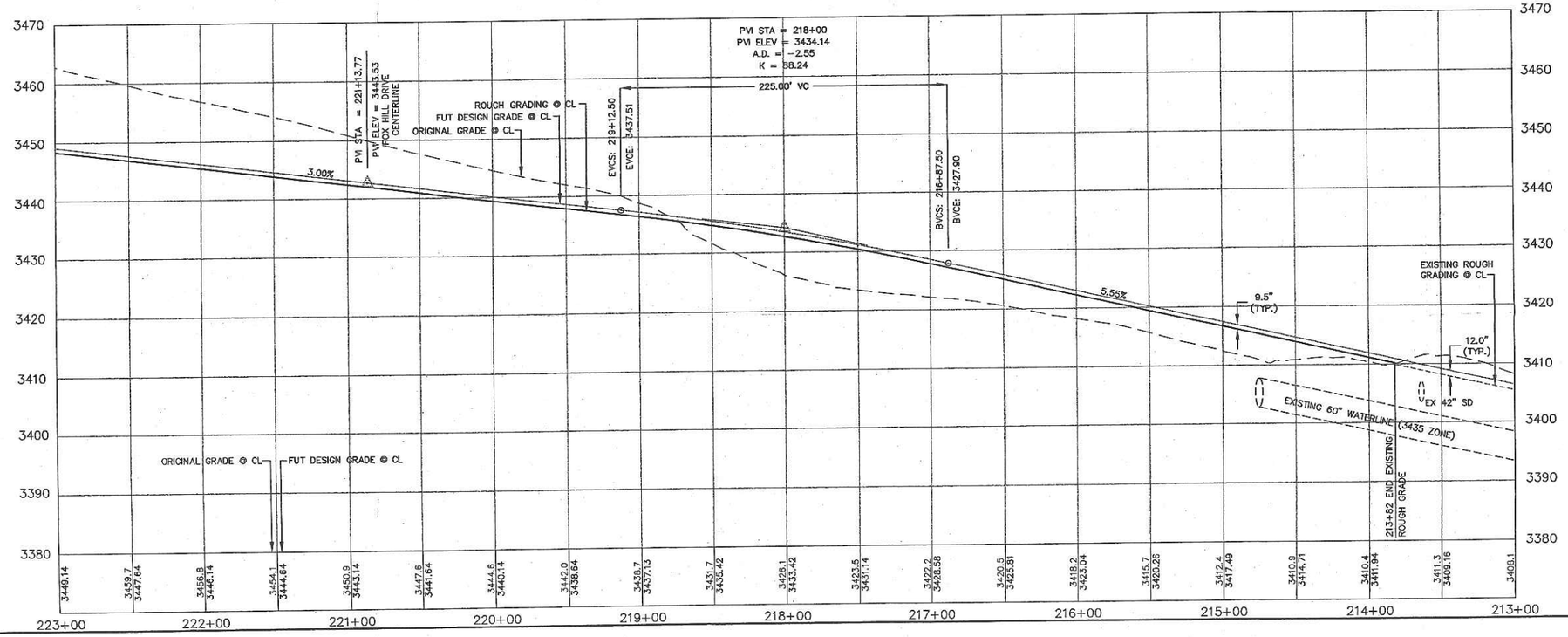
FAR HILLS AVENUE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

SCALE 40 0 40 80 FEET

NOTE

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Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2600 FAX: (702) 804-2630
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ISSUE DATE:
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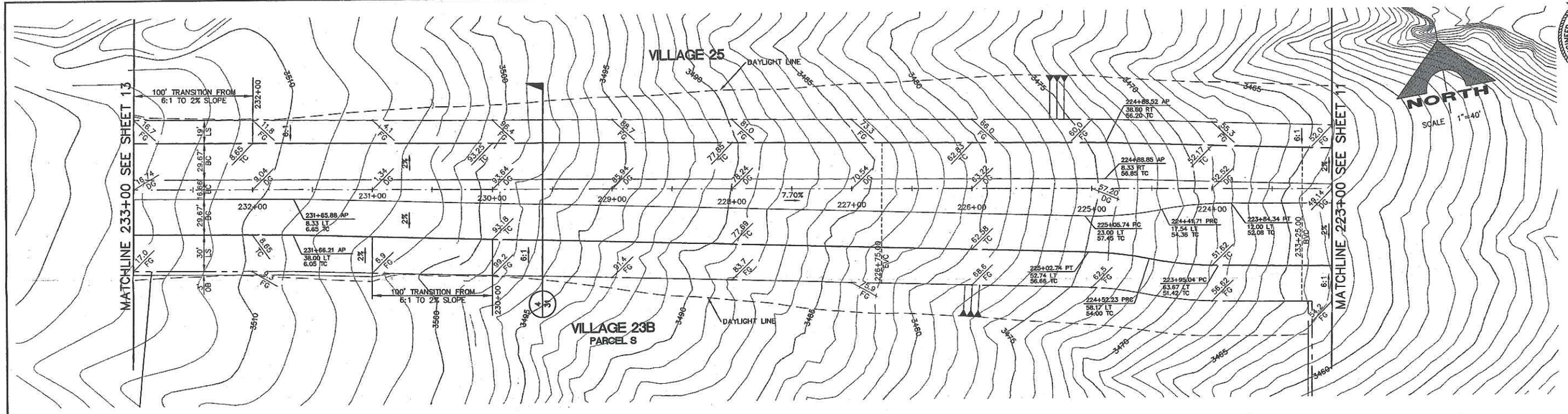
DATE: 8/01/03

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FAR HILLS AVENUE PLAN AND PROFILE
STA 213+00 TO STA 223+00

SHEET 11
11 OF 35 SHTS

JOB NO. 62023.260



SCALE: 40 0 40 80 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE9	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FAR HILLS AVENUE

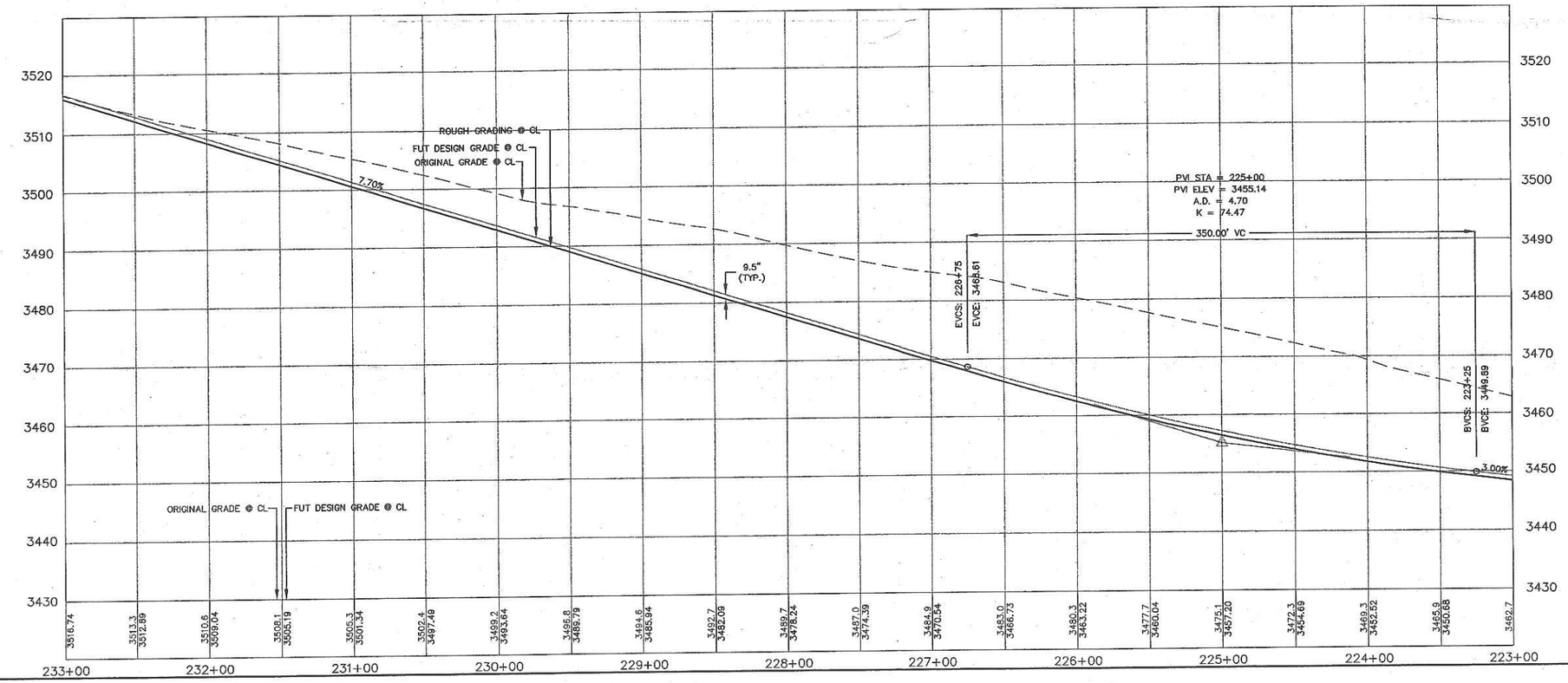
SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

NOTE

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3516.74	3513.3 3512.89	3510.6 3509.04	3508.1 3505.19	3505.3 3501.34	3502.4 3497.49	3499.2 3493.64	3496.8 3489.79	3494.6 3485.94	3492.7 3482.09	3489.7 3478.24	3487.0 3474.39	3484.9 3470.54	3483.0 3466.73	3480.3 3463.22	3477.7 3460.04	3475.1 3457.20	3472.3 3454.69	3469.3 3452.52	3466.9 3450.88	3464.7

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gcwallace.com
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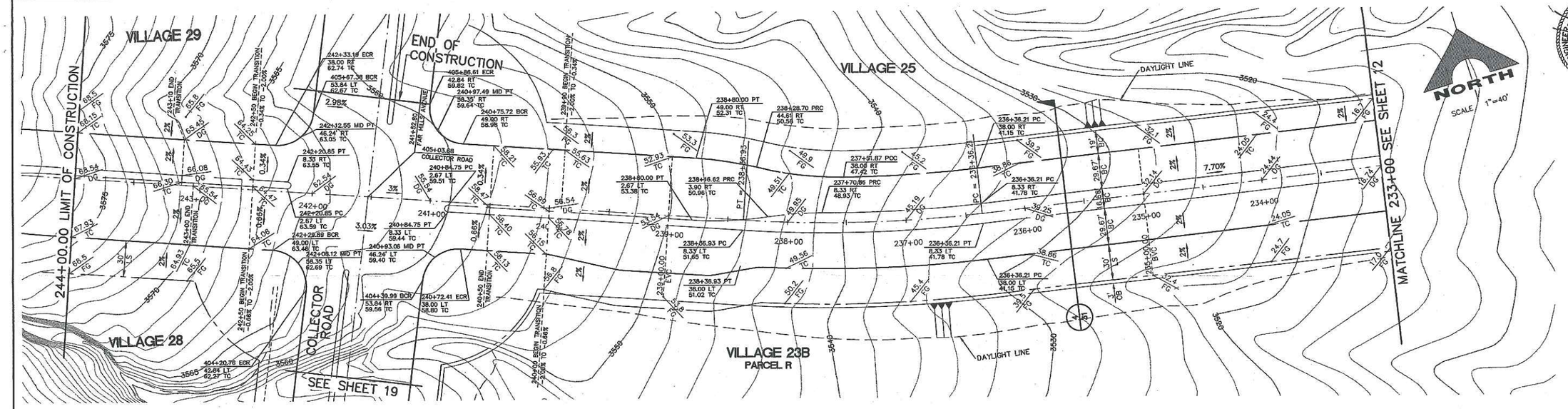
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ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 08:31:02

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FAR HILLS AVENUE PLAN AND PROFILE
STA 223+00 TO STA 233+00

SHEET 12
12 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
GLV09-345SE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FAR HILLS AVENUE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

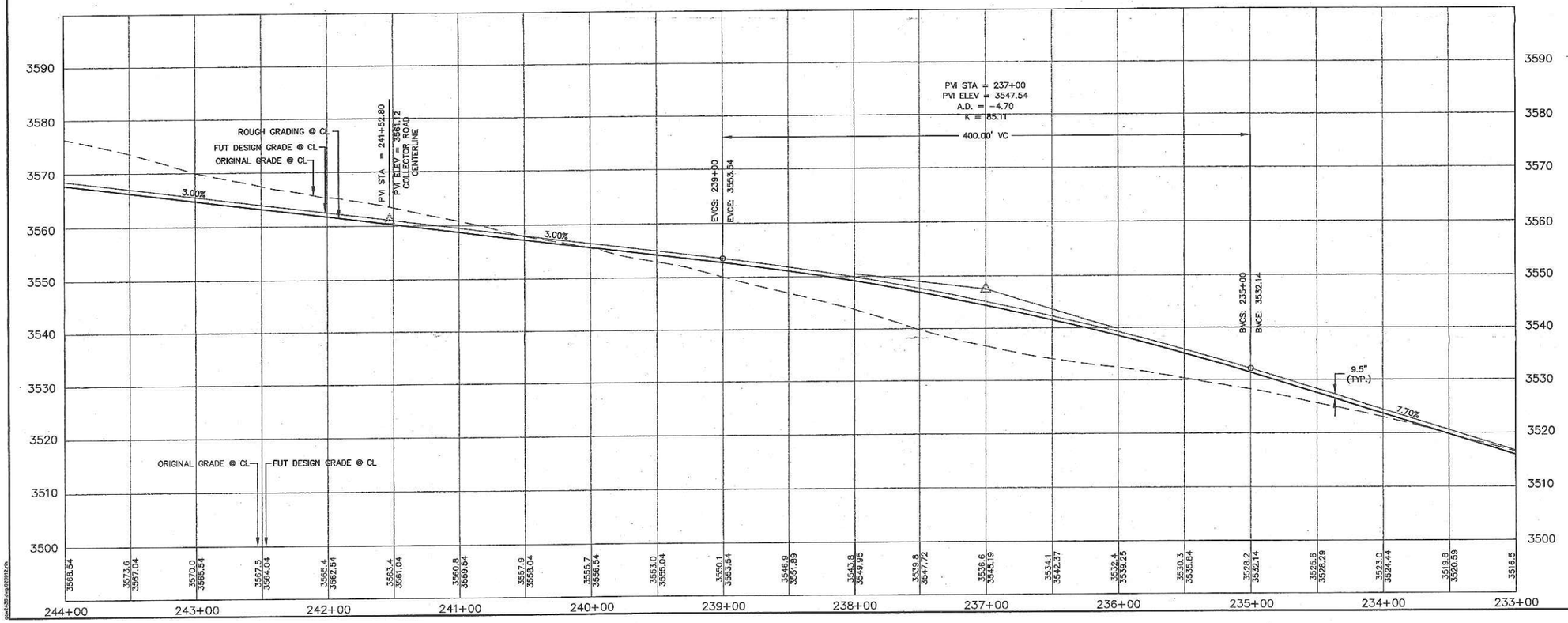
40 0 40 80
SCALE FEET

NOTE

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PLOT TIME:	08:30:28

DATE	DESCRIPTION	DATE	ASSY. APP	DATE	CONST. APP
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ENGINEER - STATE OF NEVADA
RAYMOND A. HUGHES
No. 12259
PROFESSIONAL
CIVIL
EXP. 06/30/2004
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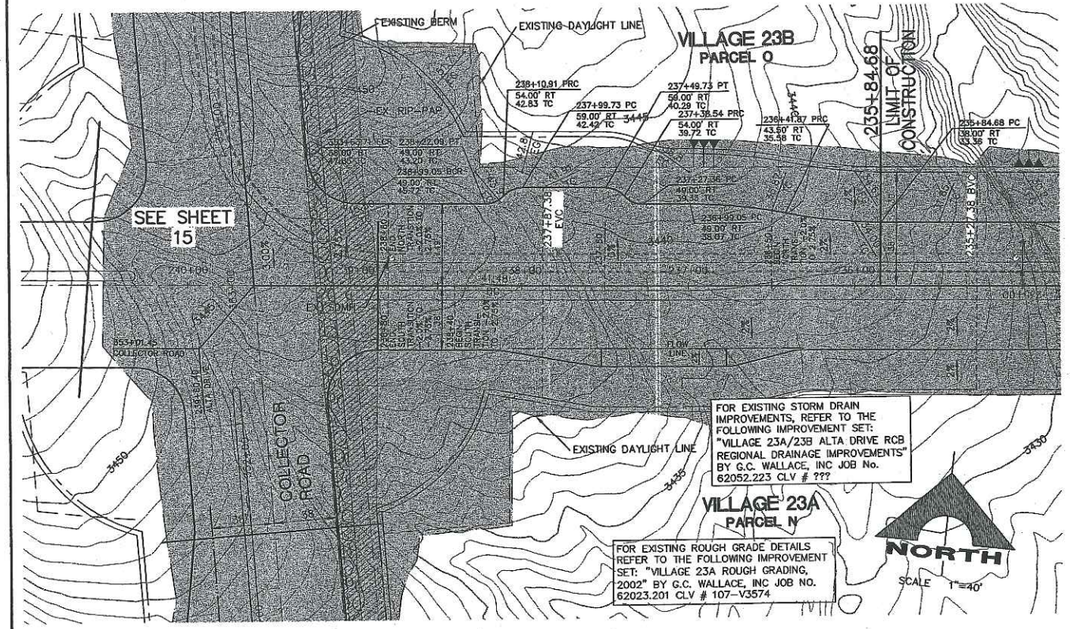
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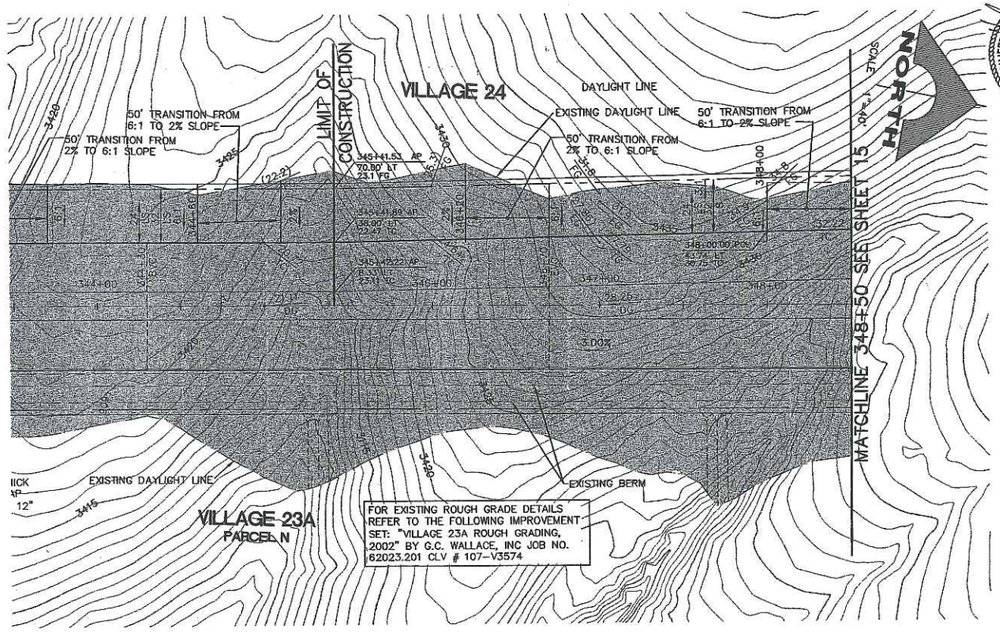
SUMMERLIN
VILLAGE 23B ROUGH GRADING
FAR HILLS AVENUE PLAN AND PROFILE
STA 233+00 TO END

SHEET 13
13 OF 35 SHTS

JOB NO. 62023.260

ISSUE DATE: 8/01/03





SCALE: 40 0 40 80 FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

ALTA DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

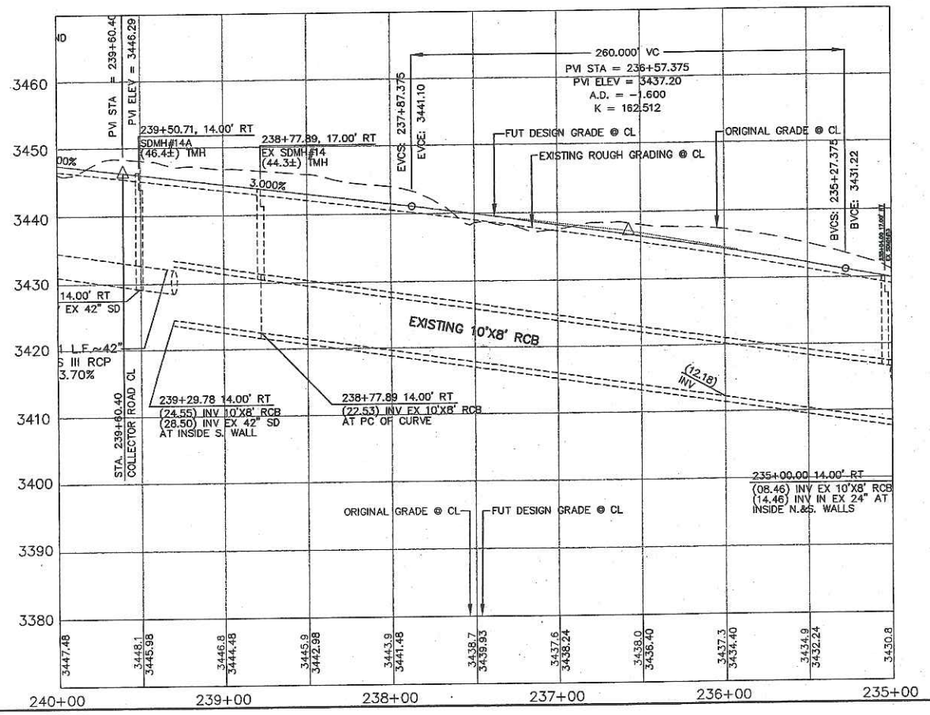
THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

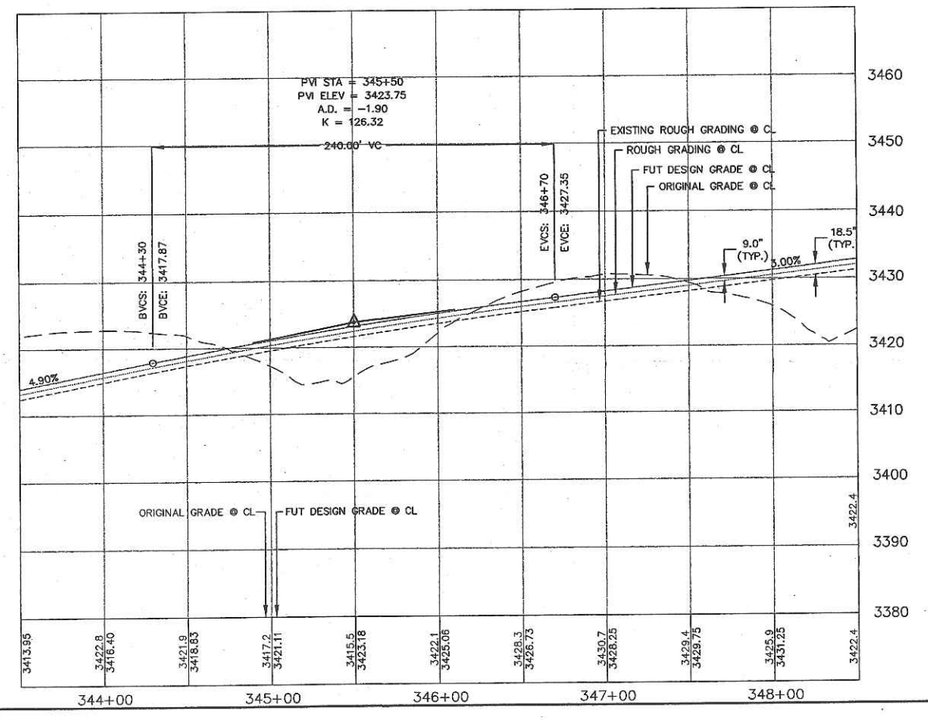
COLLECTOR ROAD

SCALE: HORIZ. 1" = 40'
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ISSUE DATE: 08-29-03
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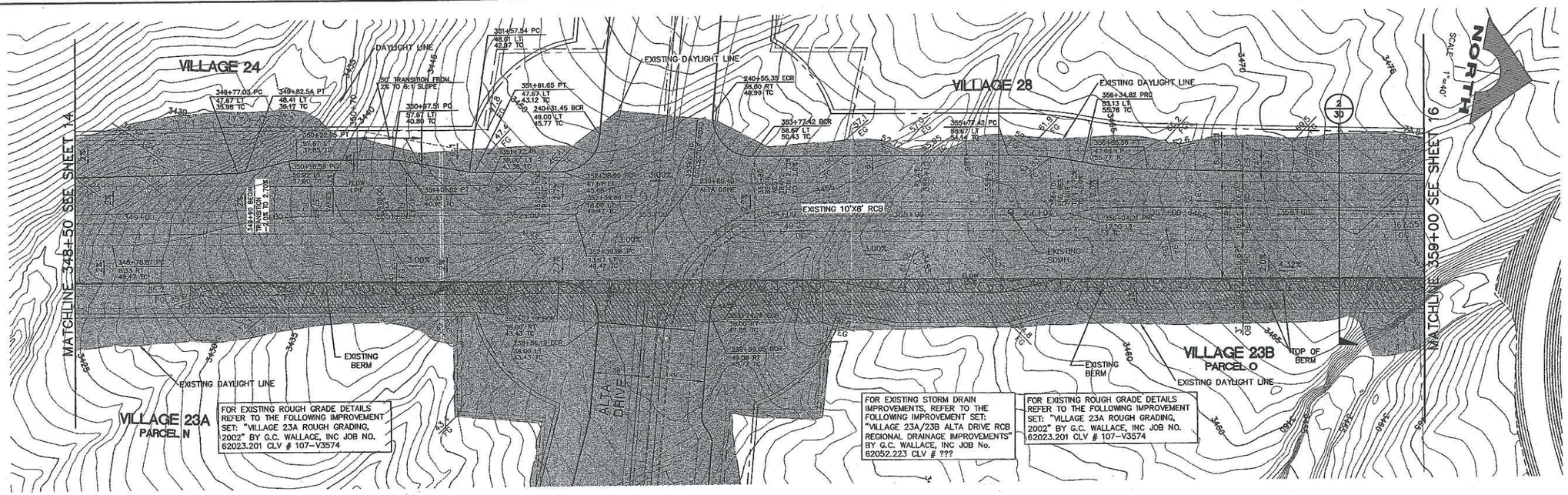
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ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD/ALTA DRIVE
PLAN AND PROFILE

SHEET 14
14 OF 35 SHTS

JOB NO. 62023.260



SCALE 40 0 40 80 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

COLLECTOR ROAD

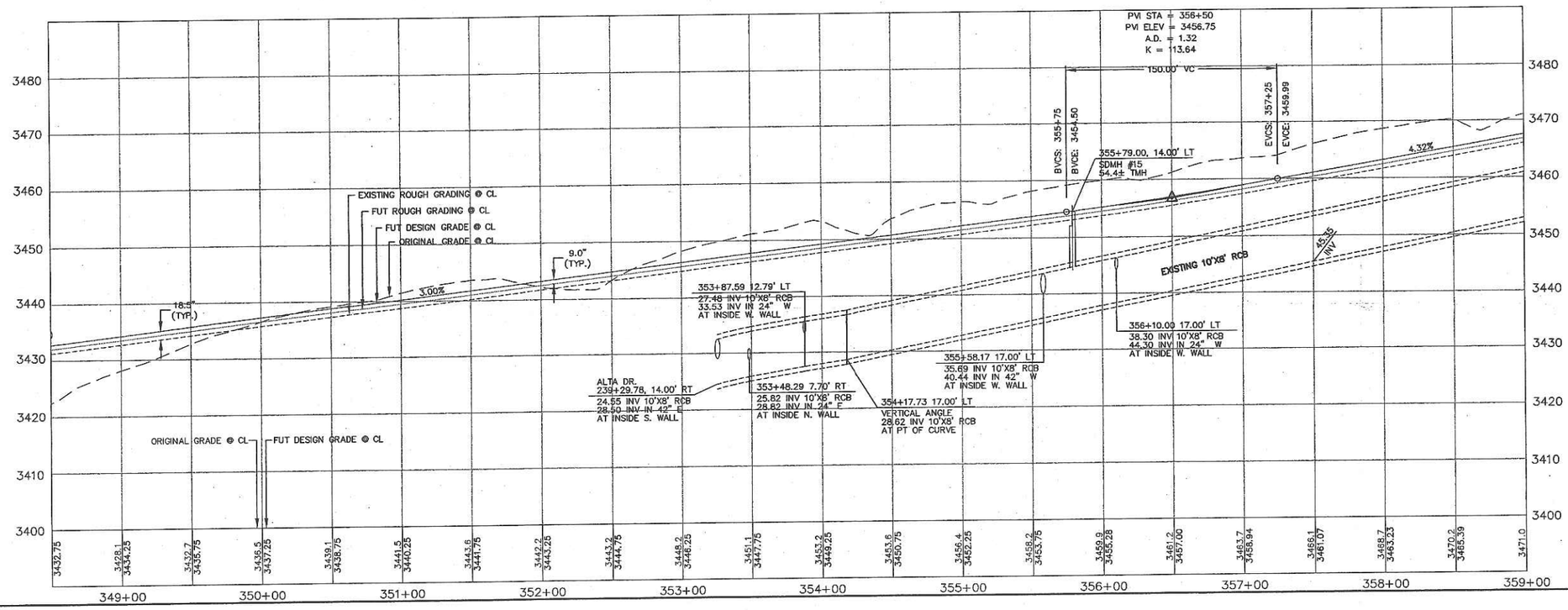
SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

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SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD
PLAN AND PROFILE

SHEET 15
14 OF 35 SHTS

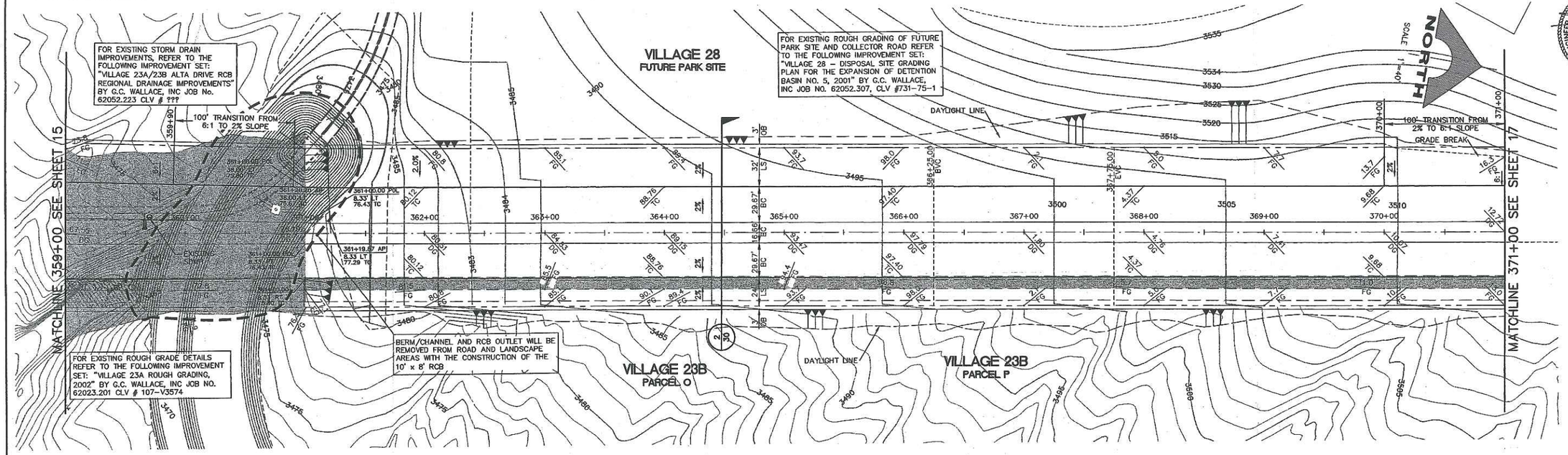
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ISSUE DATE: 8/01/03

STATE OF NEVADA — BRIAN A. HOLMES — No. 9444 — REGISTERED PROFESSIONAL ENGINEER — DATE: 8/1/03



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLYD9-34SSE8	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

COLLECTOR ROAD

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

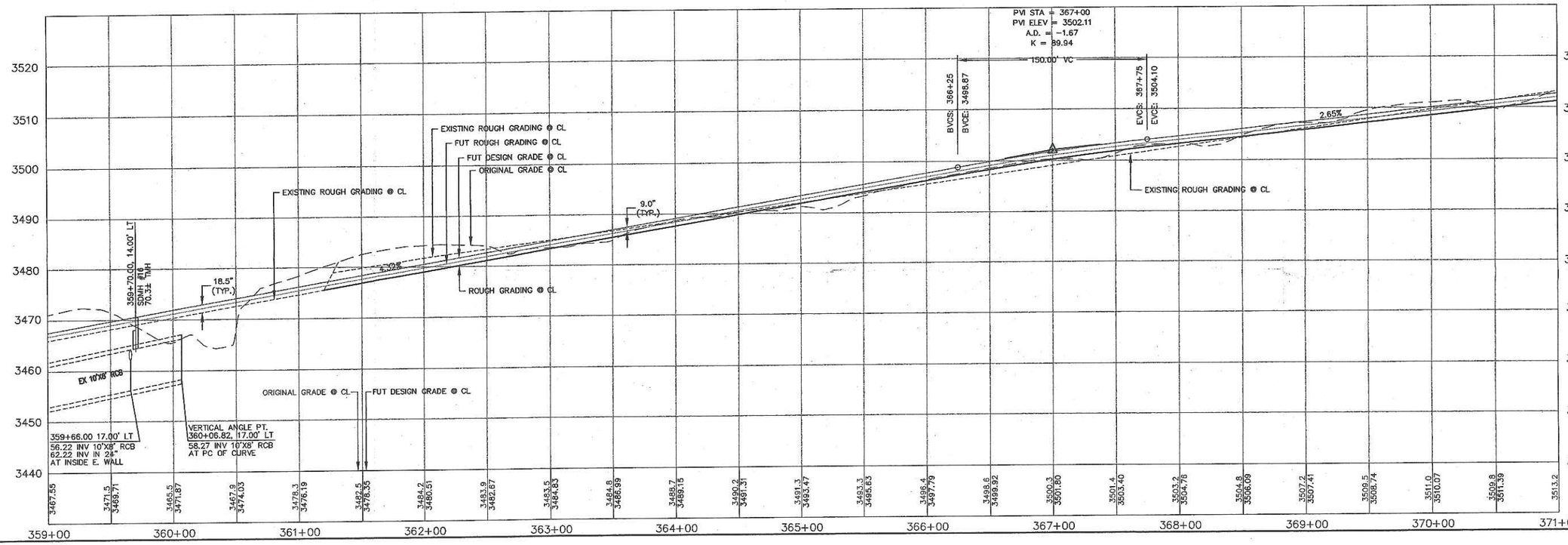
40 0 40 80
SCALE FEET

NOTE

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gpeterson

DESCRIPTION	REV'T DATE	DATE AGEN. APP	DATE ENGR. APP	DATE
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STATE OF NEVADA — ENGINEER — ROBERT A. HUGHES — No. 10881 — PROFESSIONAL — CIVIL — Exp. 06/30/2005

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SUMMERLIN

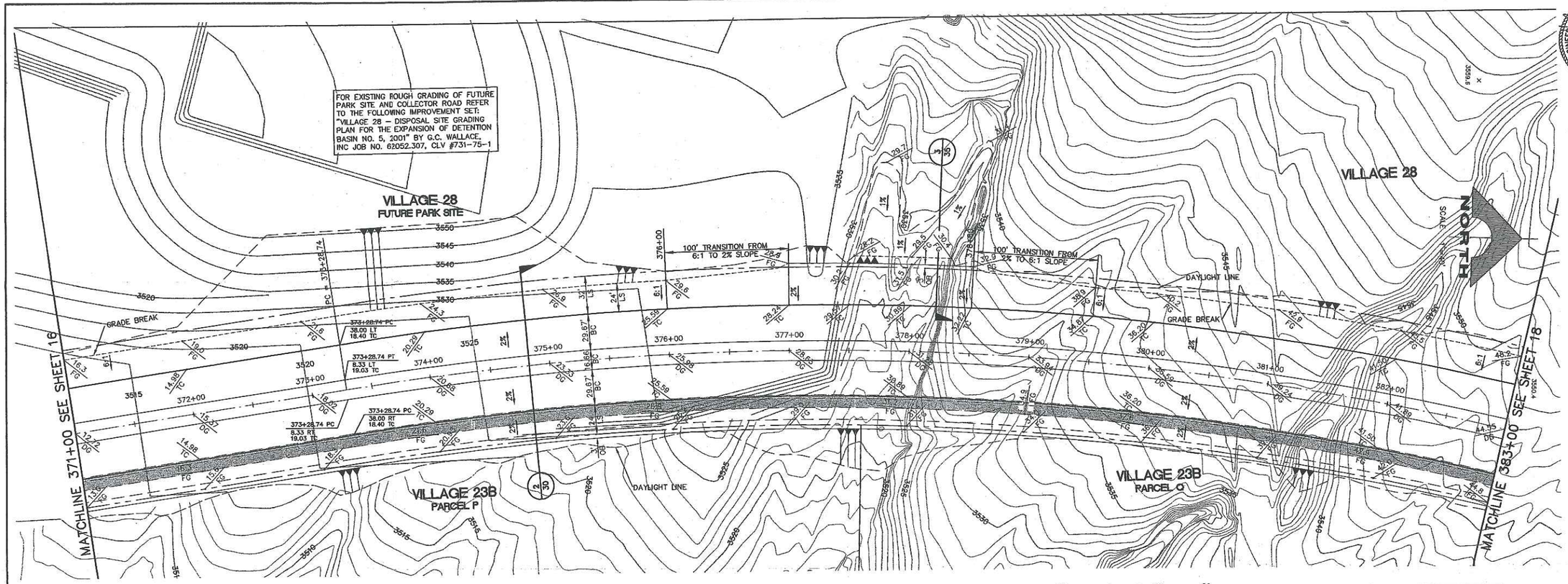
VILLAGE 23B ROUGH GRADING

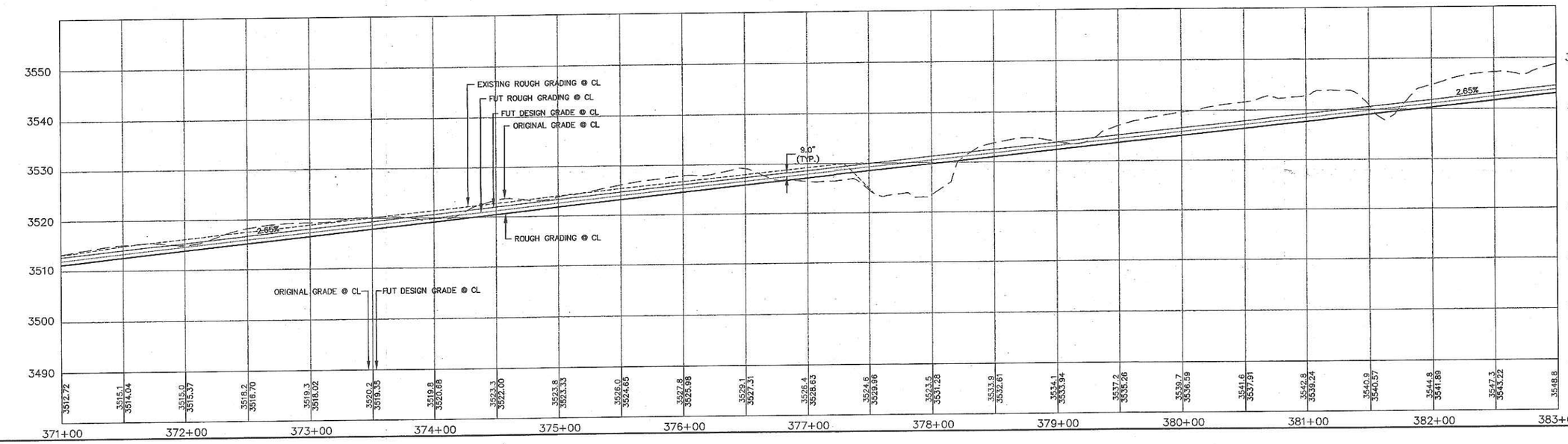
COLLECTOR ROAD PLAN AND PROFILE
BEGIN TO STA 371+00

SHEET 16
14 OF 35 SHTS

JOB NO. 62023.260

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION





BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

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COLLECTOR ROAD

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

SCALE 40 0 40 80 FEET

NOTE

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STATE OF NEVADA
PROFESSIONAL ENGINEER
BRIAN BARRY HUGHES
No. 10258
CIVIL
DATE: 4/30/2008

DATE: 9/01/03

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dpaterson

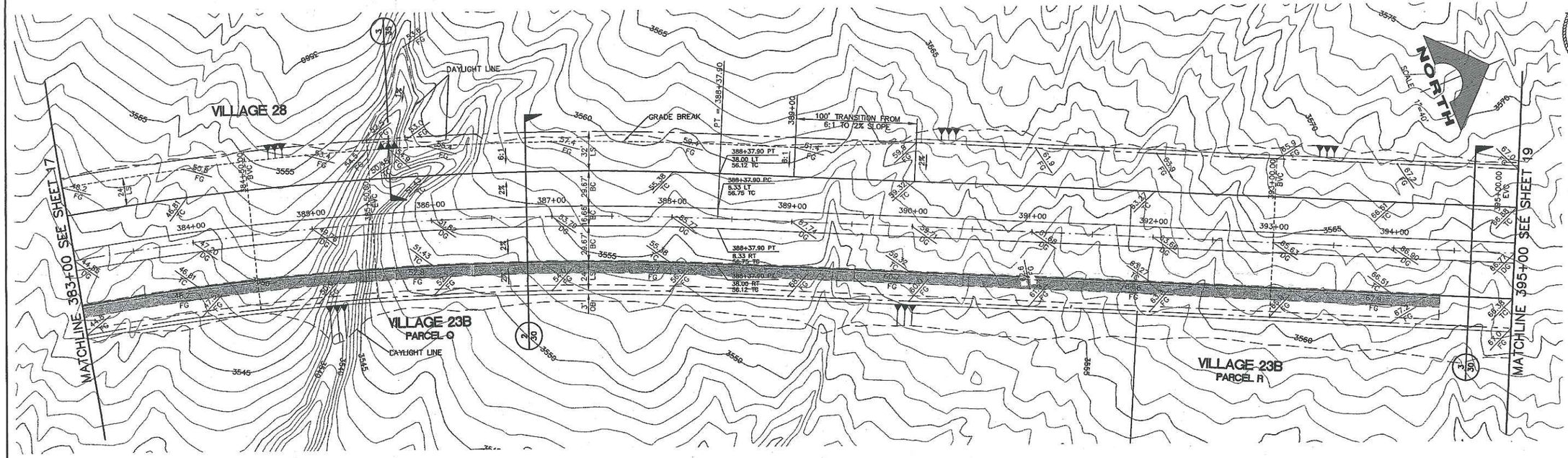
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ISSUED

SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD PLAN AND PROFILE
STA 371+00 TO STA 383+00

SHEET 17
15 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
01V09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 767+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

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COLLECTOR ROAD

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

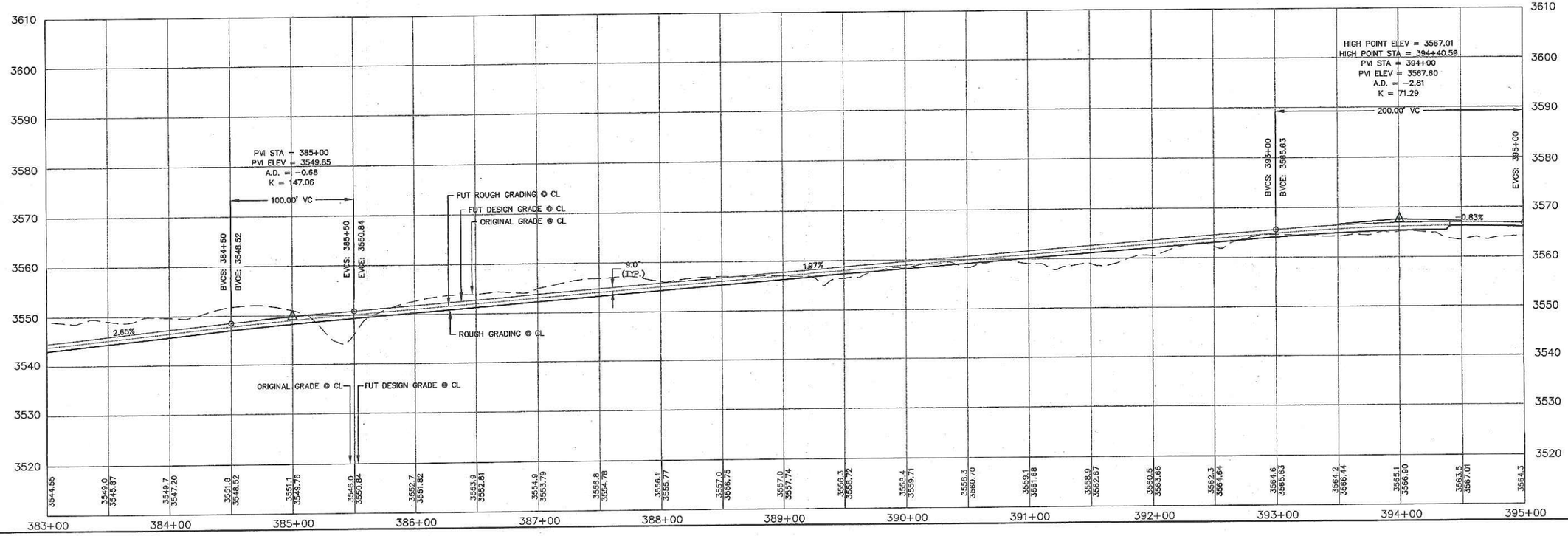
40 0 40 80
SCALE FEET

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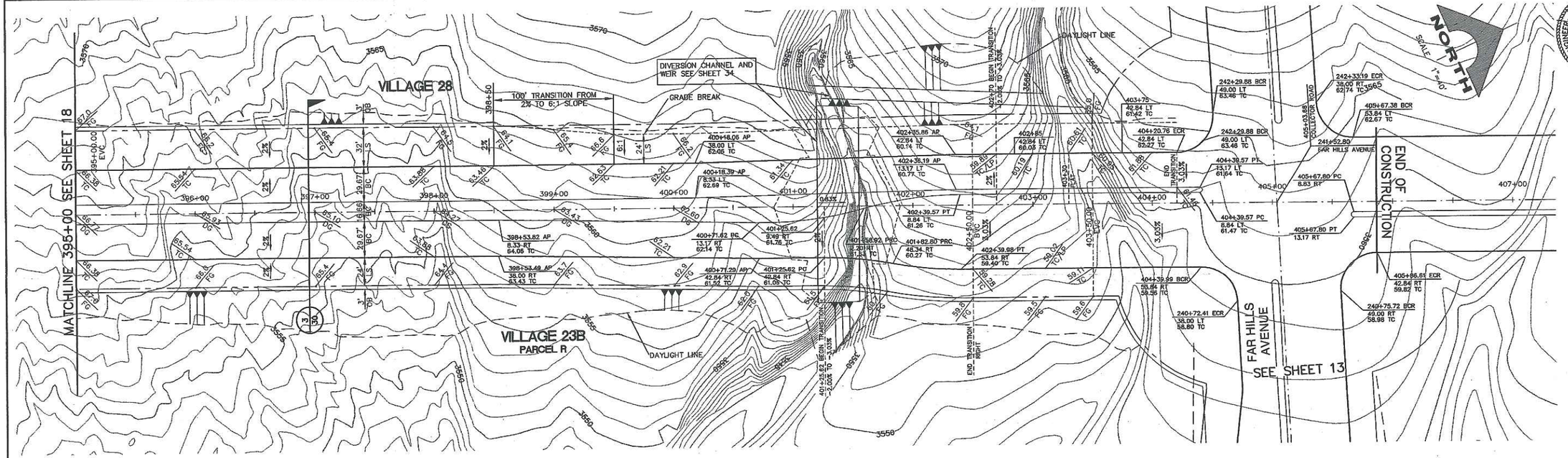
DATE: 8/01/03

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1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
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SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD PLAN AND PROFILE
STA 383+00 TO STA 395+00

SHEET 18
16 OF 35 SHTS

JOB NO. 62023.260



SCALE: 40 0 40 80 FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
GLV09-34SSE8	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

COLLECTOR ROAD

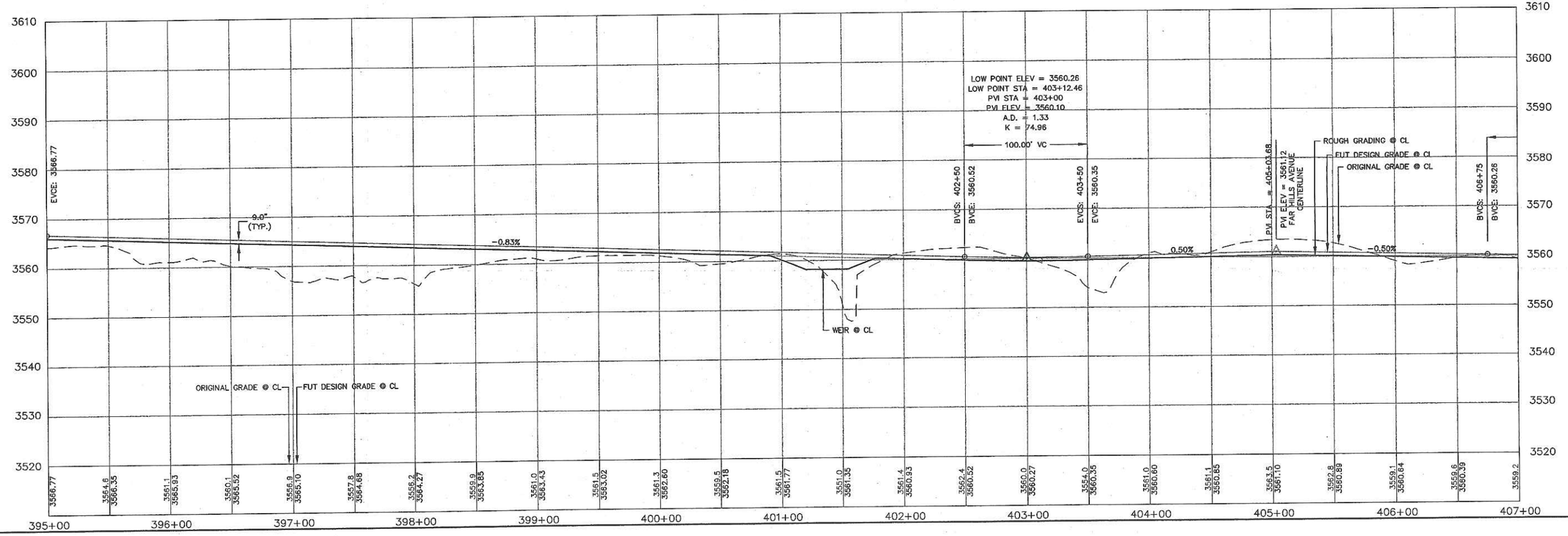
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| | | |

FOR EXISTING ROUGH GRADE DETAILS REFER TO THE FOLLOWING IMPROVEMENT SET: "VILLAGE 23A ROUGH GRADING, 2002" BY G.C. WALLACE INC. JOB NO. 62023.201 CLV #107-V3574

STORM DRAIN AND TEMPORARY DRAINAGE INLET, SEE SHEET 42

EXISTING DAYLIGHT LINE

LIMIT OF CONSTRUCTION

ALTA DRIVE

FOX HILL DRIVE

VILLAGE 23B PARCEL O

VILLAGE 23B PARCEL X

DAYLIGHT LINE

102.03' TRANSITION FROM 10% TO 2% SLOPE

SEE SHEET 43

NORTH

SCALE 1"=40'

SCALE 40 0 40 80 FEET

NOTE

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BENCHMARK

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FOX HILL DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

PVI STA = 168+00
PVI ELEV = 3405.15
A.D. = 2.47
K = 60.73
150.00' VC

EXISTING ROUGH GRADE @ CL

ROUGH GRADING @ CL

FUT DESIGN GRADE @ CL

ORIGINAL GRADE @ CL

LIMIT OF CONSTRUCTION 163+52.64 ELEV. 98.08 (MATCH TO EXISTING ROUGH GRADE)

PVI STA = 162+53.44
PVI ELEV = 3393.53

BVCS: 167+25
BVCE: 3403.96

EVCS: 168+75
EVCE: 3408.19

9.0" (TYP.)

1.58%

4.05%

STORM DRAIN AND TEMPORARY DRAINAGE INLET, SEE SHEET 42

STA 162+53.44 ALTA DRIVE CL (228+68.46)

161+00	162+00	163+00	164+00	165+00	166+00	167+00	168+00	169+00	170+00	171+00	172+00
3394.11	3392.4	3394.90	3391.4	3393.69	3394.0	3396.48	3394.0	3397.26	3396.5	3398.05	3399.0	3398.84	3401.3	3399.63	3401.3	3400.42	3400.2	3401.21	3397.8	3402.00	3405.4	3402.76	3407.1	3403.57	3407.9	3404.41	3408.8	3405.61	3405.8	3407.23	3405.3	3408.20	3411.5	3411.22	3414.5	3413.26	3417.1	3415.27	3419.6	3417.30	3422.4	3419.32	3423.5	3423.5

CLV DRAWING NO.

DESIGN: GTP	DRAWN: GTP	CHECK: BAH	ISSUE DATE:	ISSUE EDITOR:	PLOT DATE: 07-19-06	PLOT TIME: 10:41:34
REV	DATE	DESCRIPTION	DATE	APP	DATE	DRW	APP
1	6/01/06	ADD 60" STORM DRAIN AND INTERIM INLET					

DATE: 7/26/06

BERT L. HIGGINS, JR. No. 10259 REGISTERED ENGINEER - STATE OF NEVADA

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
TEL: (702) 804-2000 • FAX: (702) 804-2299
gcwallace

I:\V23b\RG\dwg\mcs\V23BRc020.dwg

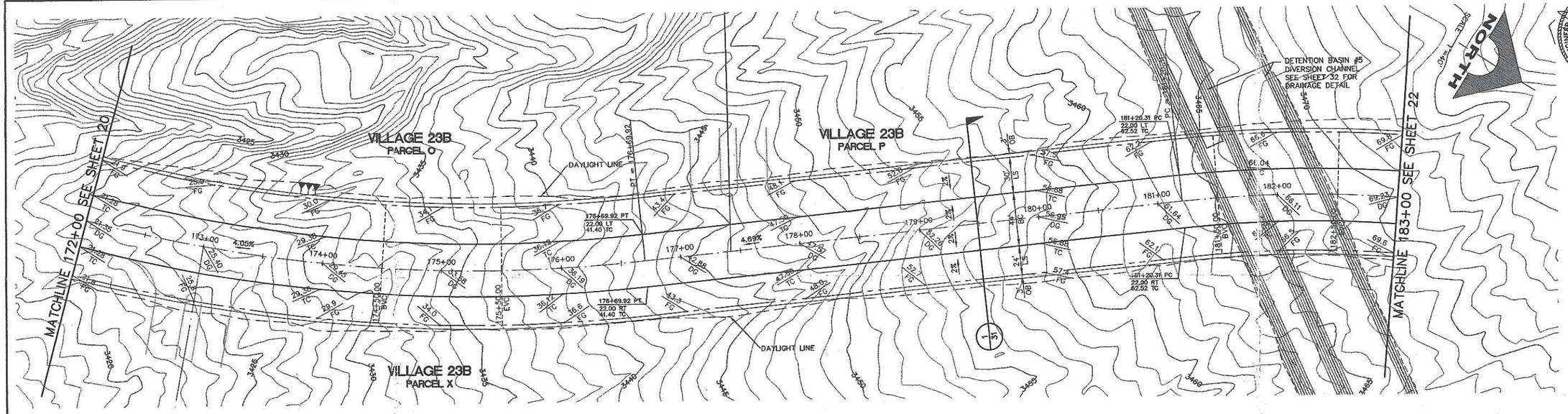
SUMMERLIN

VILLAGE 23B WATERLINE IMPROVEMENT GRADING

FOX HILL DRIVE PLAN AND PROFILE BEGIN TO STA 172+00

SHEET 20
20 OF 43 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
01V09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FOX HILL DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

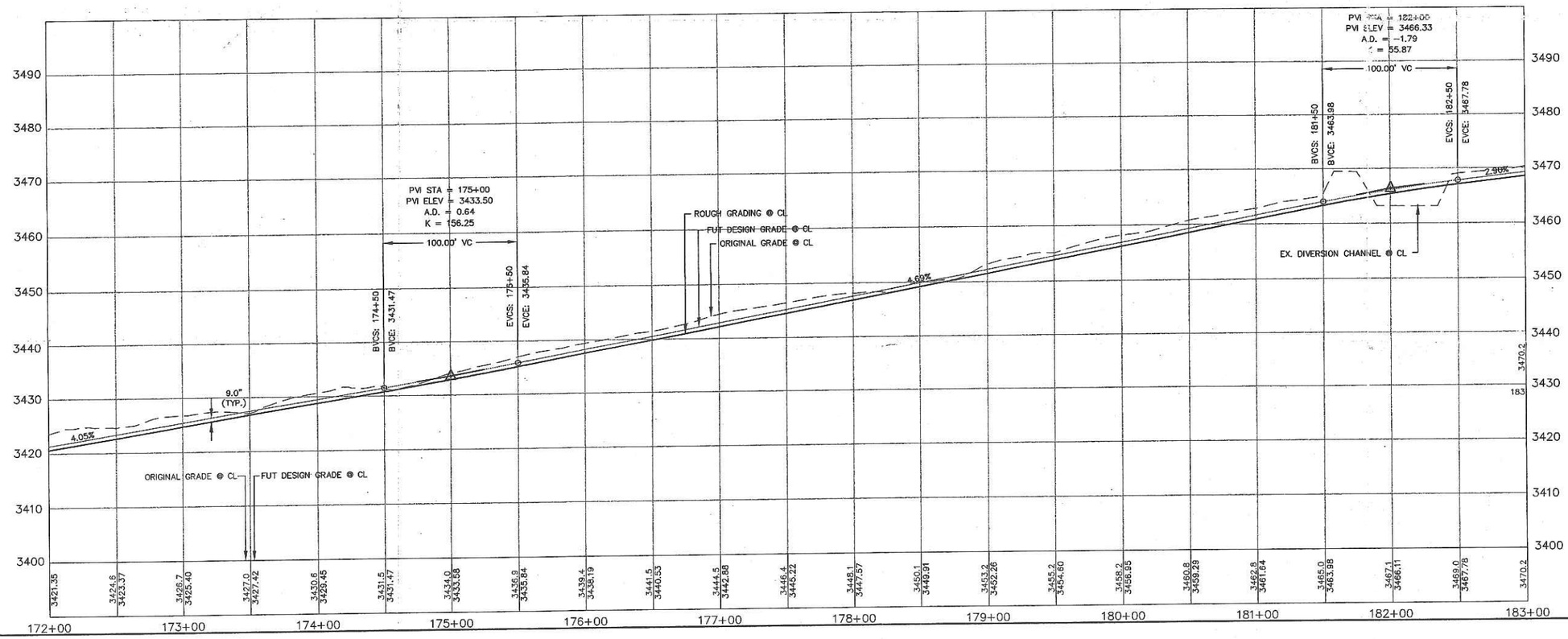
40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
(UNDERGROUND SERVICE ALERT (USA))

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111



REV.	DATE	DESCRIPTION	DATE APPR.	DATE ORIGN.	APP'D

DESIGN:
DRAWN:
CHECK:
ISSUE EDITOR:
ISSUE DATE: 08-29-03
PLOT DATE: 08-29-03
PLOT TIME: 08:20:21

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

DATE: 8/16/03

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

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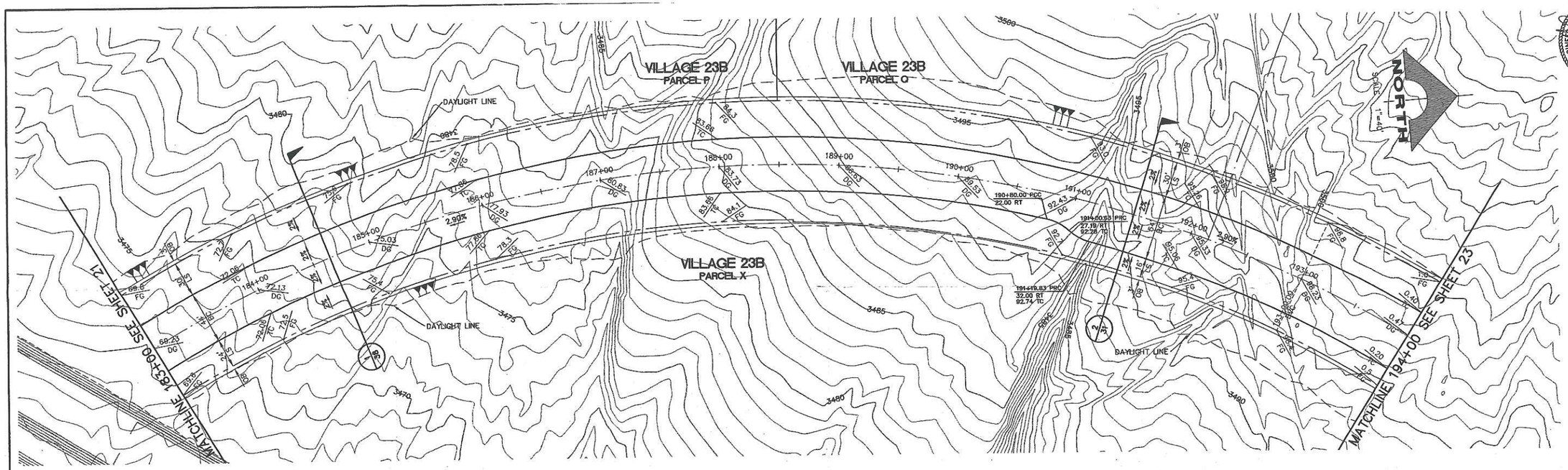
SUMMERLIN

VILLAGE 23B ROUGH GRADING

FOX HILL DRIVE PLAN AND PROFILE
STA 172+00 TO STA 183+00

SHEET 21
19 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FOX HILL DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

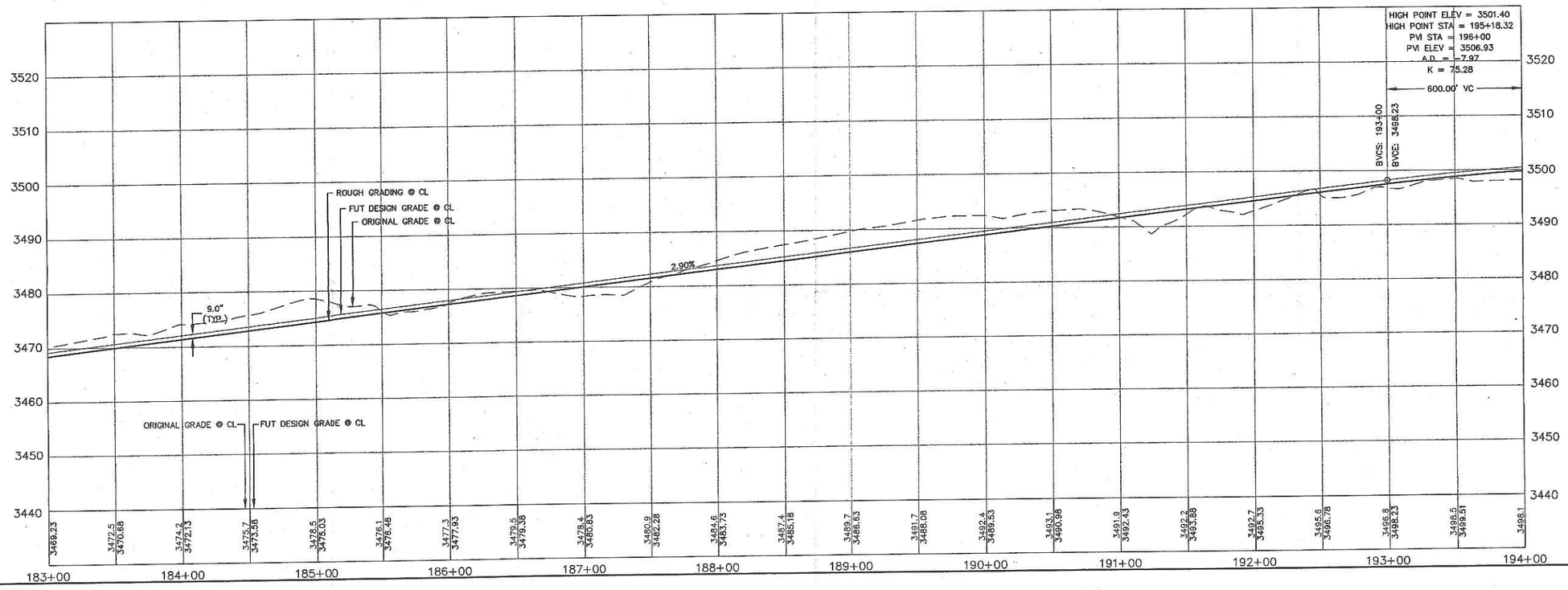
40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
(WASHOUGHNOE SERVICE AREA ONLY)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
"CALL BEFORE YOU DO OVERHEAD"
CALL 1-702-593-6111



DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 08:19:48
jpaterson

REV	DATE	DESCRIPTION	DATE	AGEN	APP'D	DATE	GCW	APP

DATE: 8/01/03

ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

ISSUE DATE: 8/01/03

STATE OF NEVADA — BRUCE W. HUGHES — No. 10259 — CIVIL — EXP. 06/30/2004 — PROFESSIONAL ENGINEER

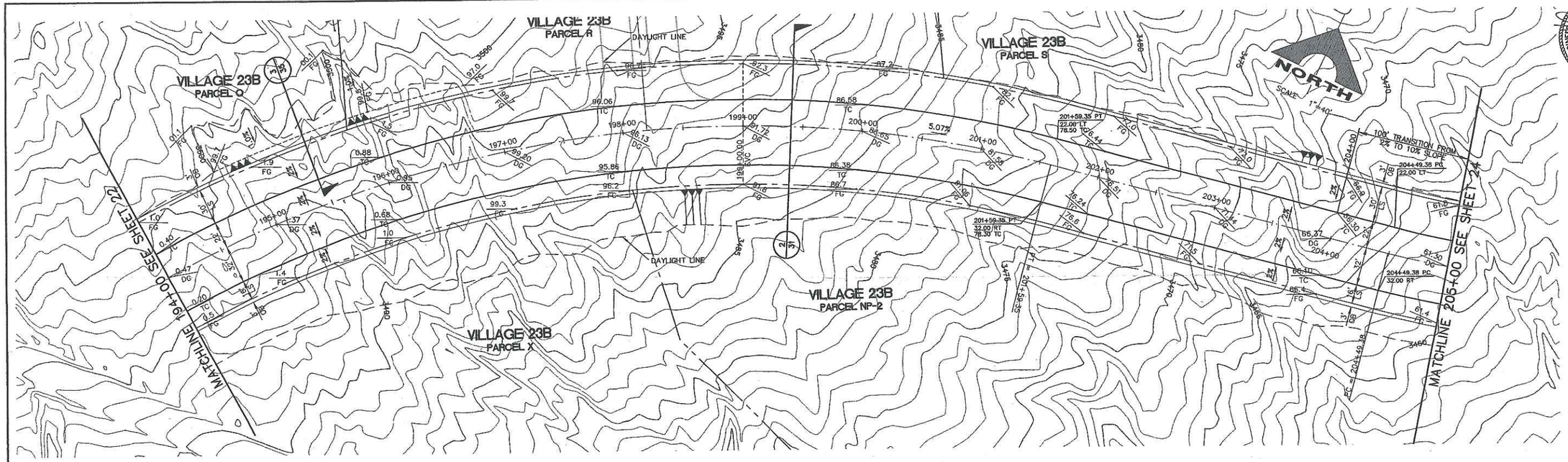
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
F:\V23b\RGV\dwg\mrs\V23b0c022.dwg

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FOX HILL DRIVE PLAN AND PROFILE
STA 183+00 TO STA 194+00

SHEET 22
20 OF 35 SHTS

JOB NO. 62023.260

grw2426.dwg 022912.dfx



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
GLVD9-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FOX HILL DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

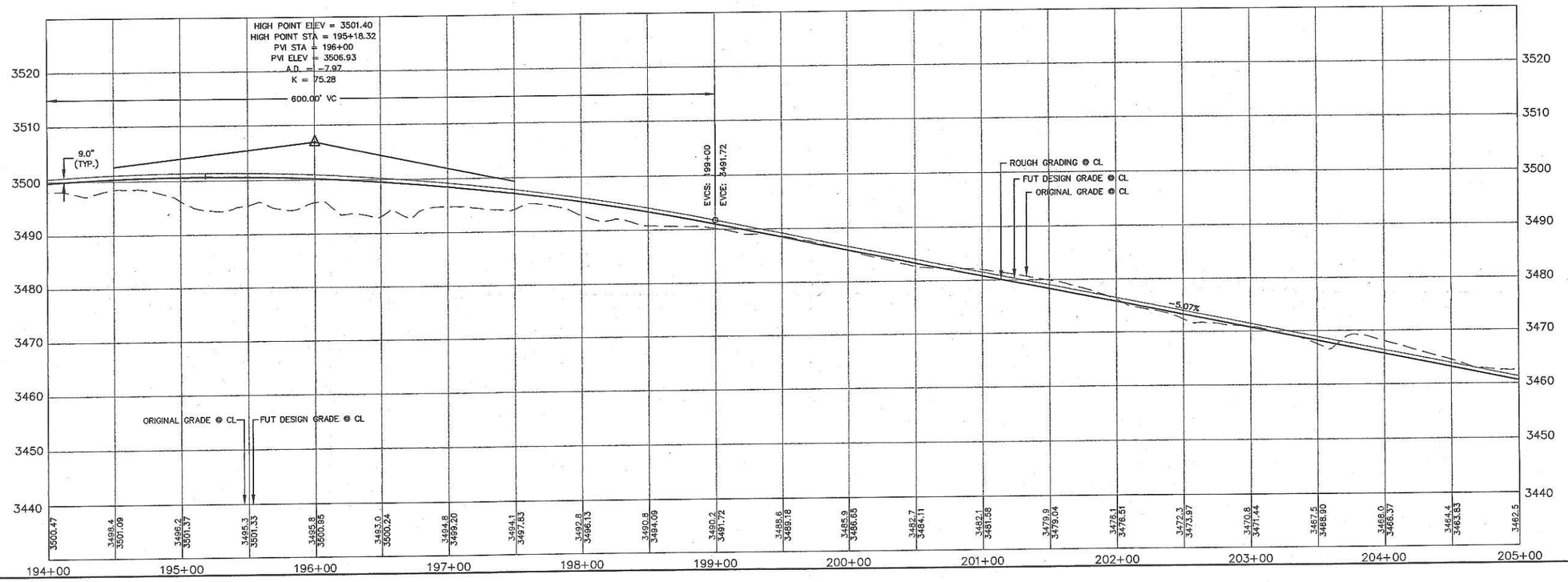
40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's easy.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID MEETING OVERHEAD POWER LINES. IT'S EASY!
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111



G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD, LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
F:\V23b\RG\dwg\mpa\23BGc023.dwg gpaterson

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 08:48:55

REV	DATE	DESCRIPTION	DATE	AGEN. APP.	DATE	CITY APP.

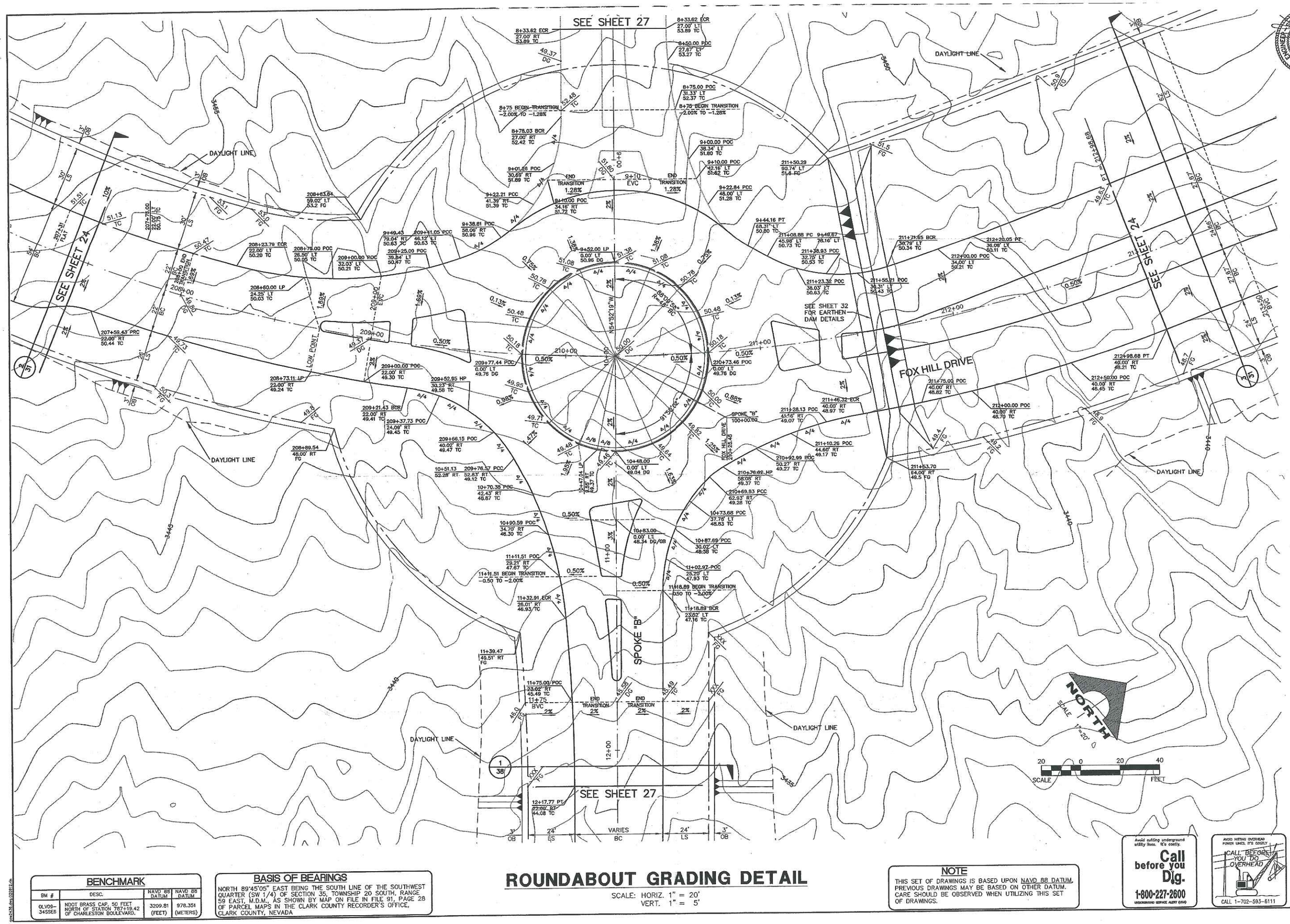
DATE: 8/29/03

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FOX HILL DRIVE PLAN AND PROFILE
STA 194+00 TO STA 205+00

SHEET 23
21 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81	978.351

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

ROUNDABOUT GRADING DETAIL

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

STATE OF NEVADA — BRET A. HOLMES — No. 10251 — PROFESSIONAL ENGINEER — CIVIL — DATE: 9-1-03

REV.	DATE	DESCRIPTION	DATE: AGEN. APP.	DATE: DGN. APP.

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 09-29-03
PLOT TIME: 08:06:38

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

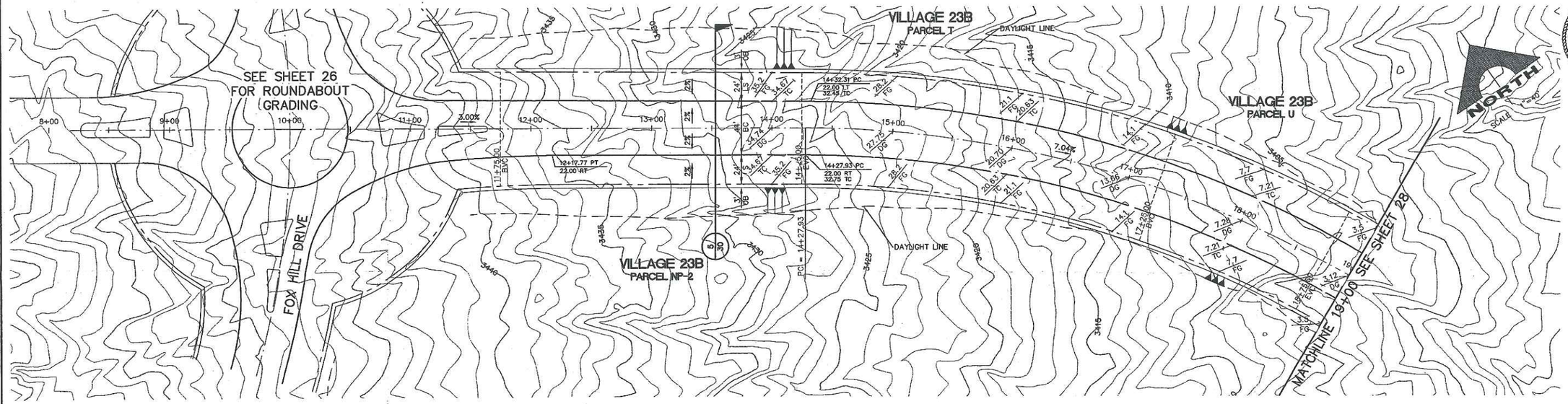
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2229

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SUMMERLIN
VILLAGE 20B ROUGH GRADING
FOX HILL DRIVE/SPOKE "B" ROUNDABOUT GRADING DETAIL

SHEET 26
26 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
01V09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 767+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

SPOKE "B"

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

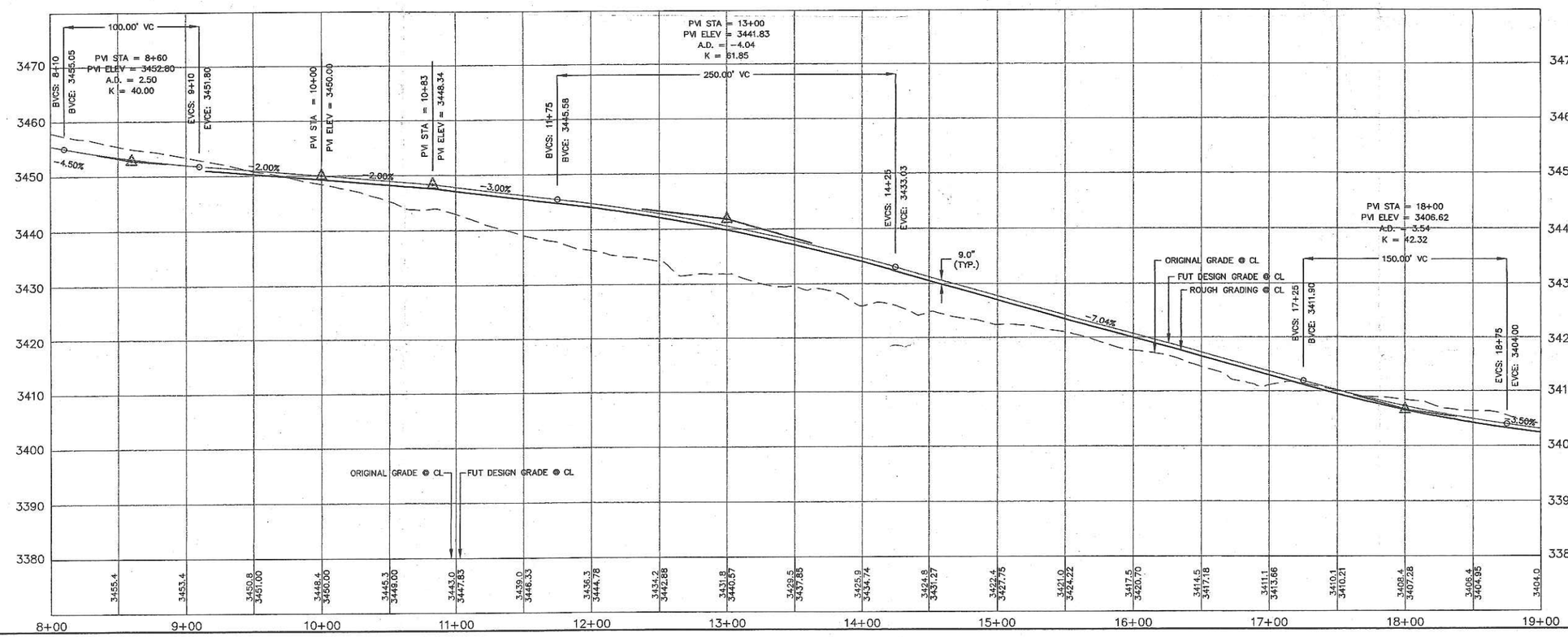
40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111



DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE EDITOR:
ISSUE DATE:
PLOT DATE: 08-28-03
PLOT TIME: 07:58:02

NO.	DESCRIPTION	DATE	APP'D	DATE	CHK'D	APP'D
1	ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION	8/01/03				

BRET T. HOWES
No. 10256
STATE OF NEVADA
PROFESSIONAL ENGINEER
CIVIL
EXP. 06/30/2006
DATE: 8/29/03

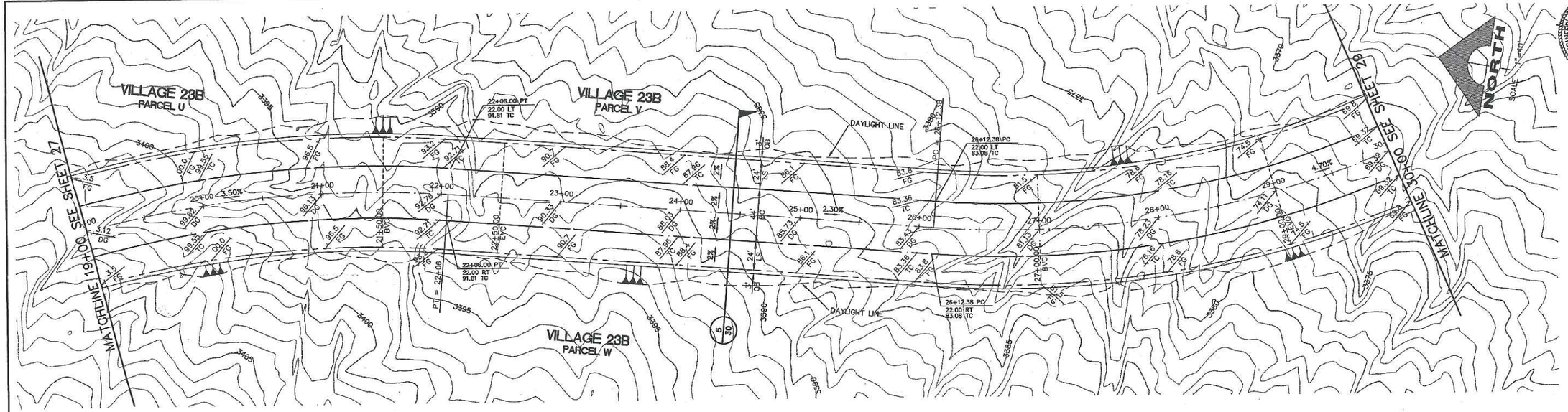
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2229
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ISSUE DATE: 8/01/03

SUMMERLIN
VILLAGE 23B ROUGH GRADING
SPOKE "B" PLAN AND PROFILE
BEGIN TO 19+00

JOB NO. 62023.260

SHEET
27
27 OF 35 SHTS



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SS66	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

SPOKE "B"

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

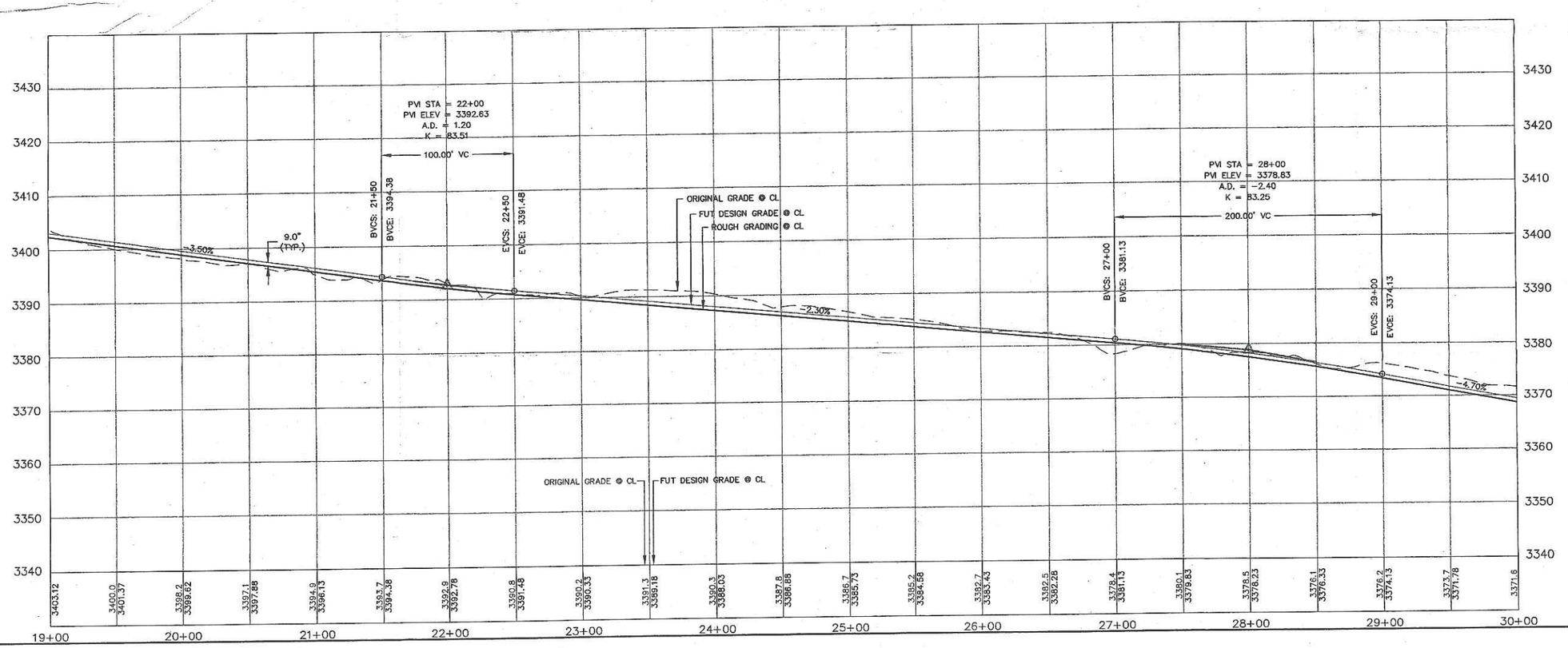
40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly. **Call before you Dig. 1-800-227-2600**

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111



G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 • FAX (702) 804-2909
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DESIGN: GTP
DRAWN: GTP
CHECK: BJH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:57:32

REV.	DATE	DESCRIPTION	DATE	AGEN.	APP.	DATE	CGW	APP.

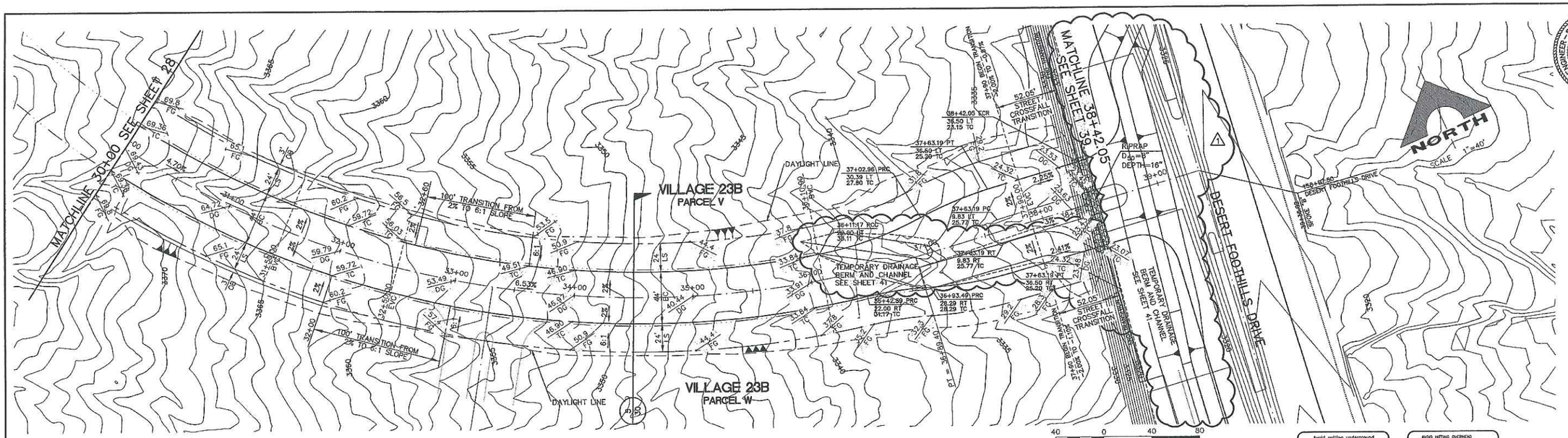
ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
SPOKE "B" PLAN AND PROFILE
19+00 TO 30+00

JOB NO. 62023.260

SHEET 28
28 OF 35 SHTS

20023A05.dwg 082803.dw



BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

SPOKE "B"

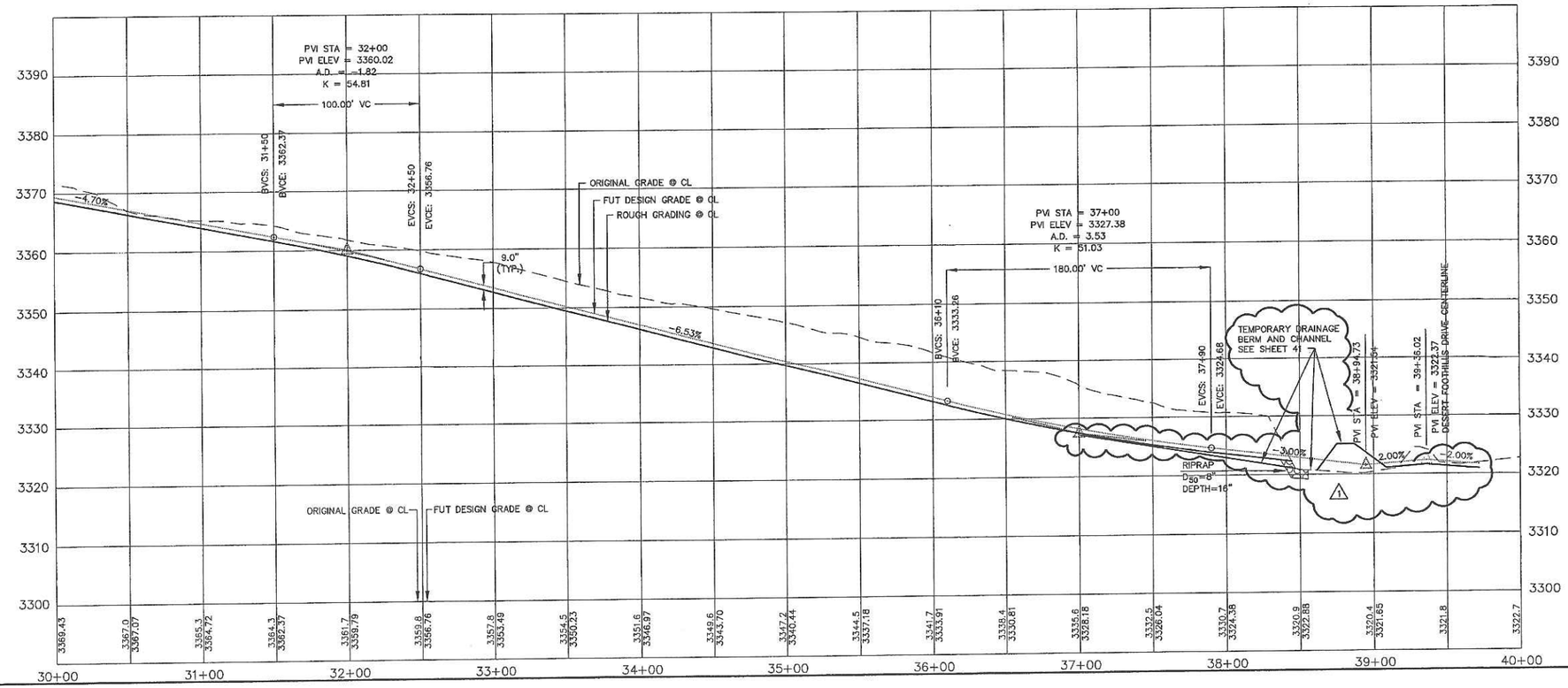
SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

NOTE

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Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-8111



CLV DRAWING NO.

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gcwallace.com
L:\V23b\RGV\dwg\Vegas\V23BGrd29.dwg

SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
SPOKE "B" PLAN AND PROFILE
30+00 TO 40+00

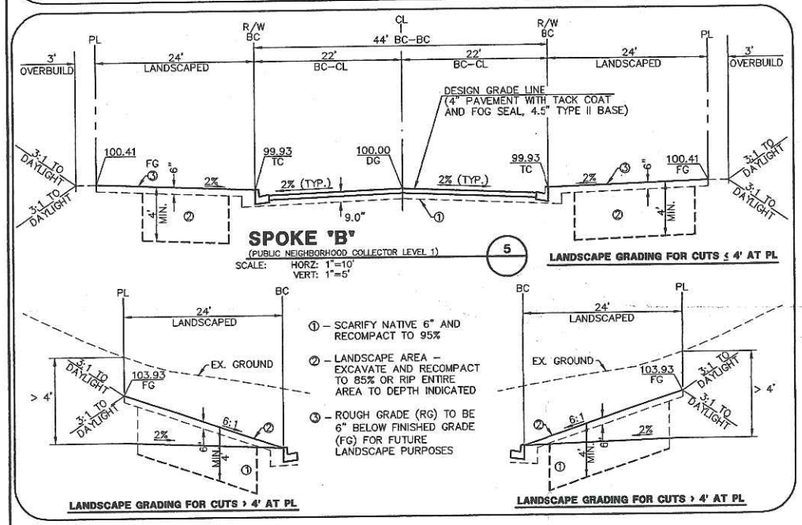
SHEET 29
29 OF 43 SHTS

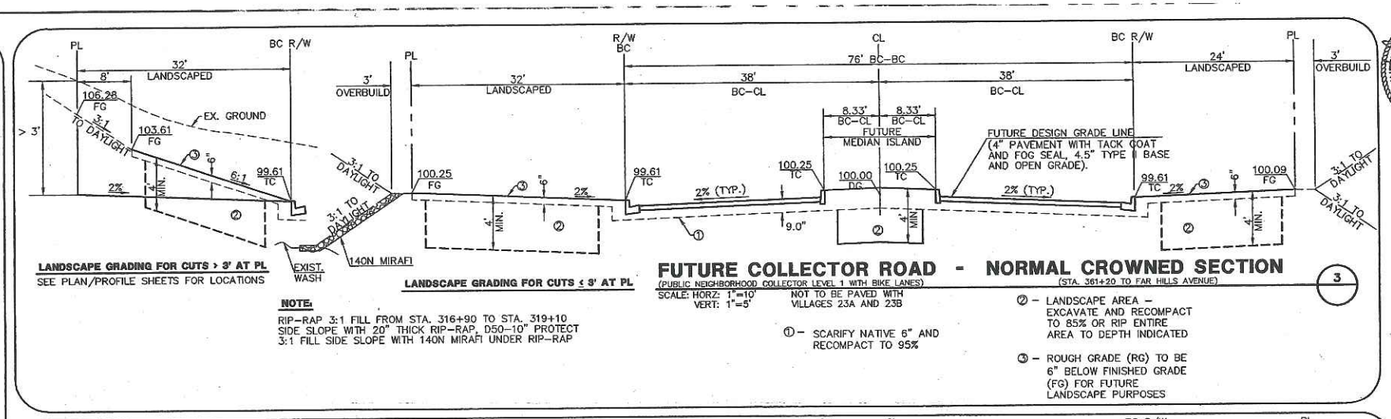
JOB NO. 62023.260

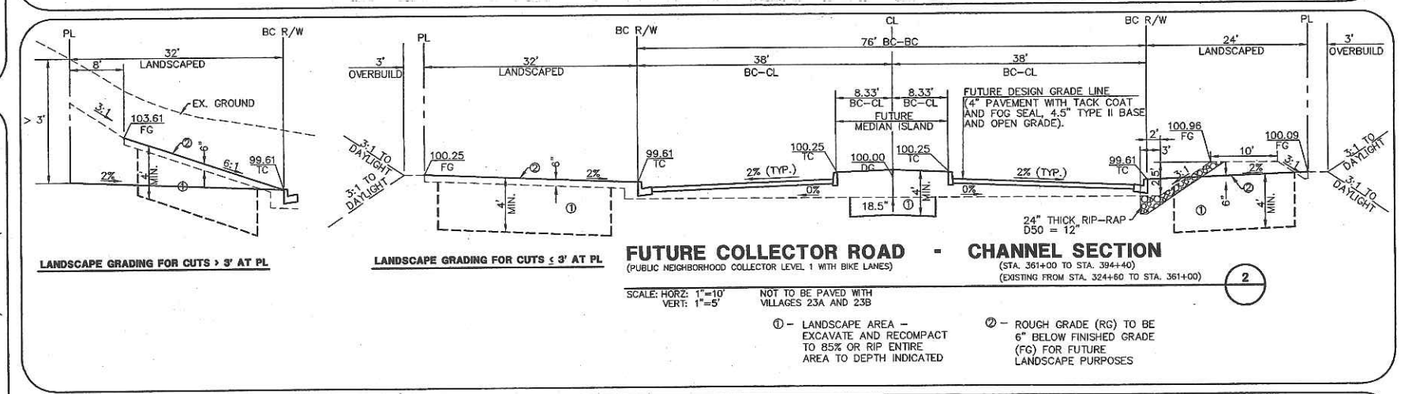
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CHECK: BAH
ISSUE DATE:
ISSUE EDITOR: ---
PLOT DATE: 07-19-06
PLOT TIME: 11:21:43
PLOTTED BY: gpeterson

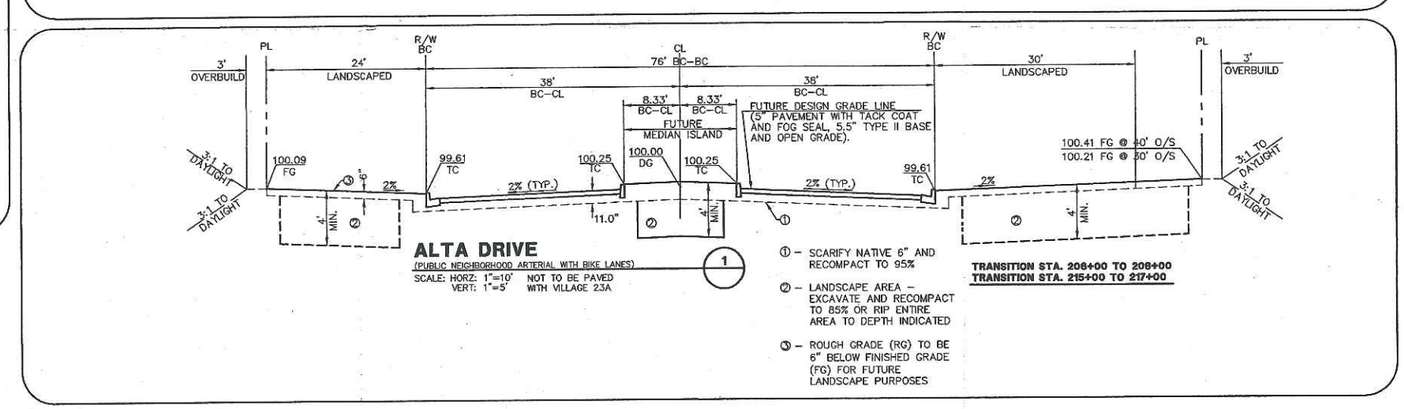
REV	DATE	DESCRIPTION	DATE	ASSN.	APP	DATE	SCH.	APP
1	8/07/06	ADD DESERT FOOTHILLS DRIVE ROUGH GRADING						

BERT A. HUNSAKER
No. 10295
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER
DATE: 7/20/06









STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN J. JUDGES — No. 10234 — CIVIL

NO.	DESCRIPTION	DATE	AGEN. APP.	DATE	CONT. APP.	DATE
	ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION	8/01/03				

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:32:49

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

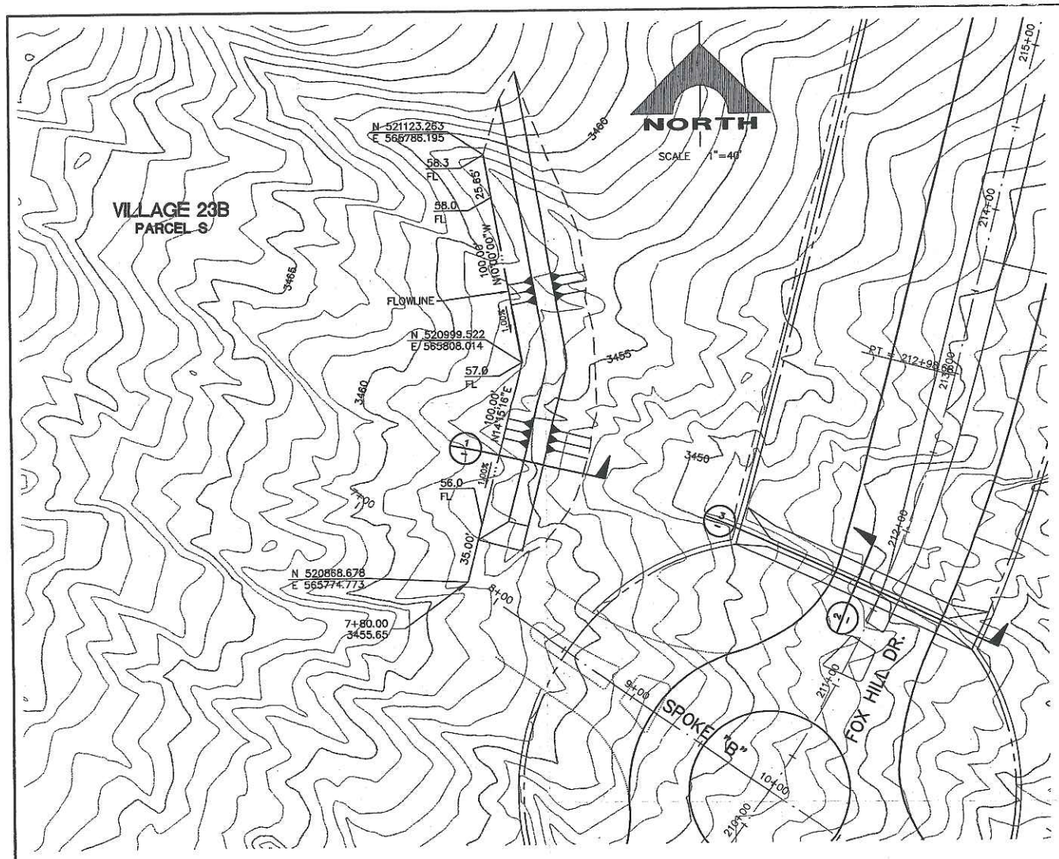
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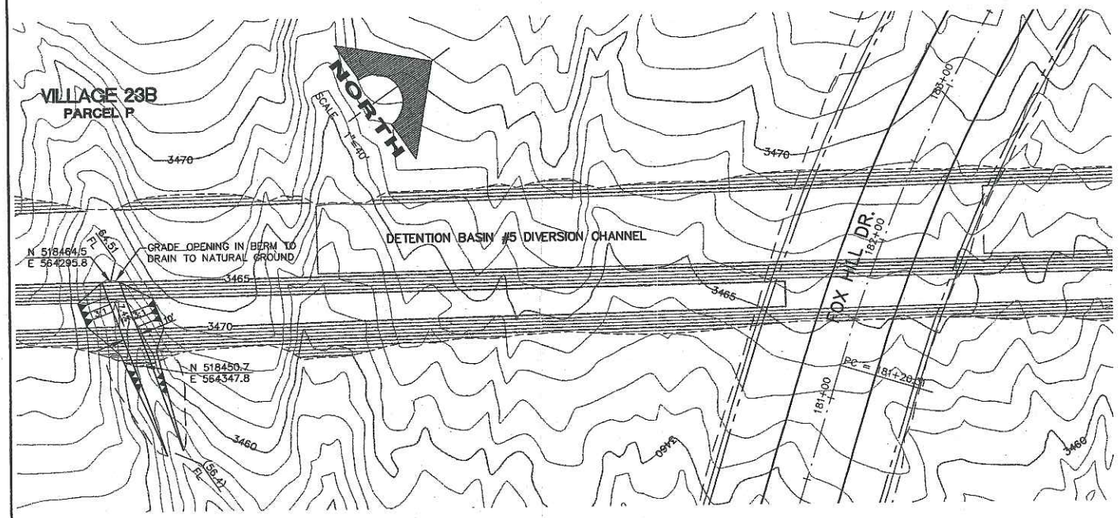
SUMMERLIN
VILLAGE 23B ROUGH GRADING
TYPICAL SECTIONS I

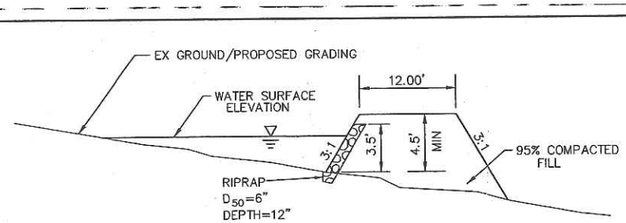
JOB NO. 62023.260

SHEET 30
30 OF 35 SHTS

pw:ALTA.dwg 8/01/03 rdn

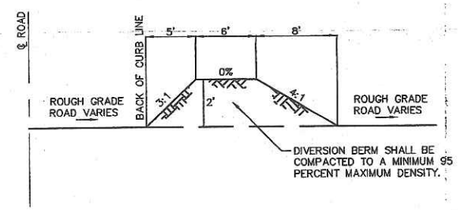






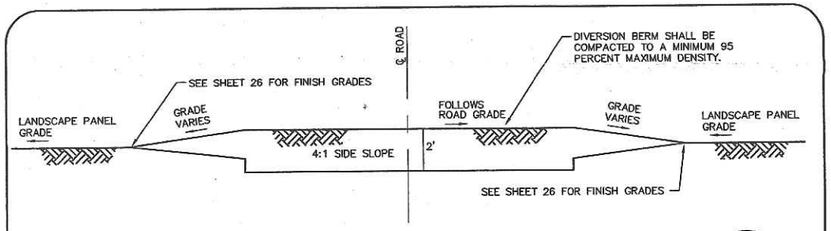
BERM DETAIL (1)

NO SCALE



TYPICAL EARTHEN DAM - SECTION (2)

SCALE: N.T.S.



TYPICAL EARTHEN DAM - PROFILE (3)

SCALE: N.T.S.

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.61 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M.; AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

DIVERSION BERM DETAILS

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-8111



DESIGN: GTP
DRAWN: GTP
CHECK: BMH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:30:08

DESCRIPTION	DES'G. DATE	DATE AGEN. APP.	DATE DES'K. APP.
8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION			

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

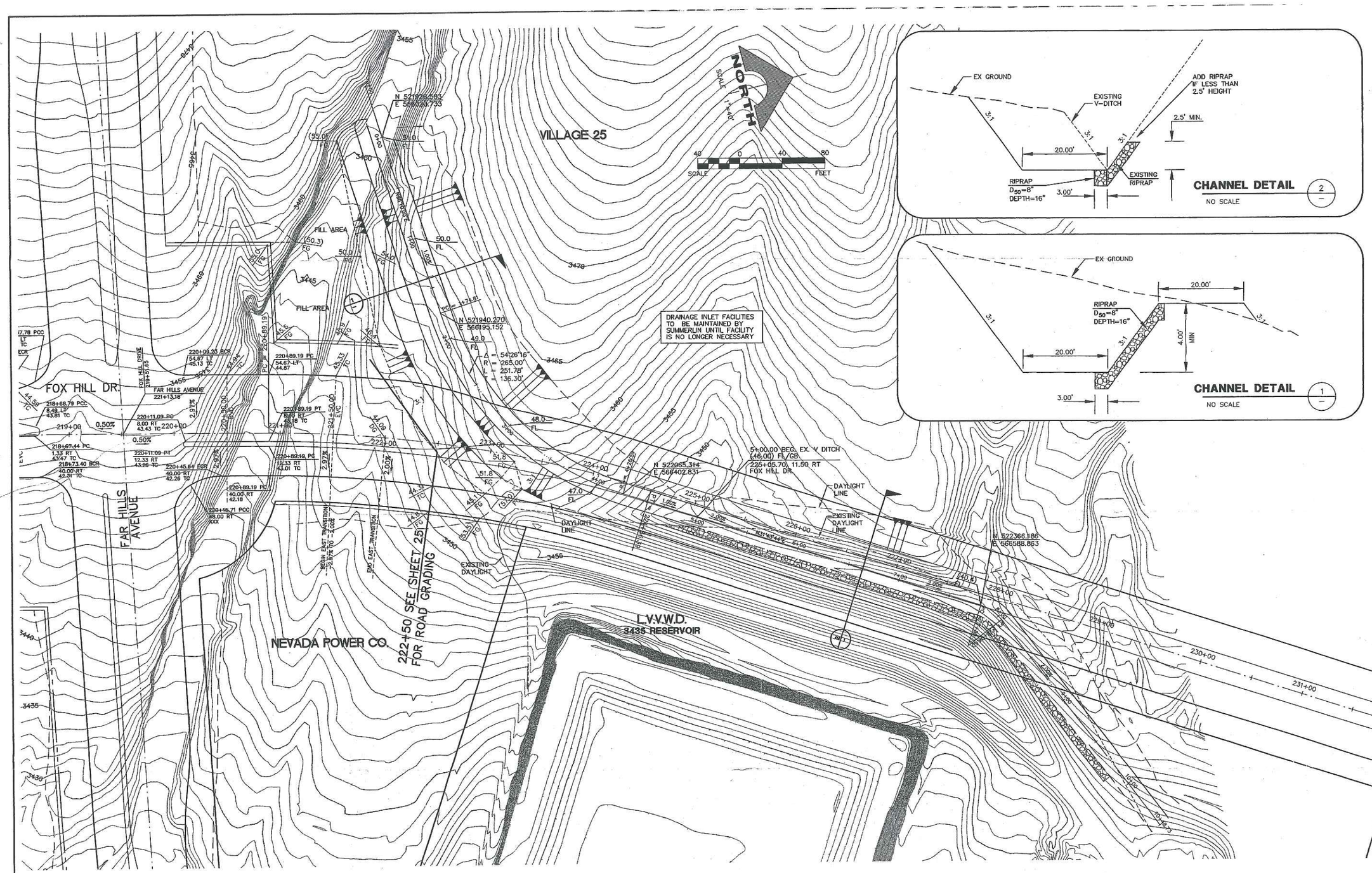
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ISSUE DATE: 8/01/03

SUMMERLIN
VILLAGE 23B ROUGH GRADING
INTERIM GRADING I

SHEET 32
32 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLVD6-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

DIVERSION CHANNEL

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 (UNDERGROUND SERVICE ALERT ORS)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

STATE OF NEVADA — BRENT G. WALLACE — No. 10324 — PROFESSIONAL — CIVIL

BY	DATE	DESCRIPTION	DATE:
			DATE:

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:20:10

DATE: | AGEN. APP. | DATE: | DCCW. APP.

ISSUE FOR AGENCY REVIEW – NOT FOR CONSTRUCTION

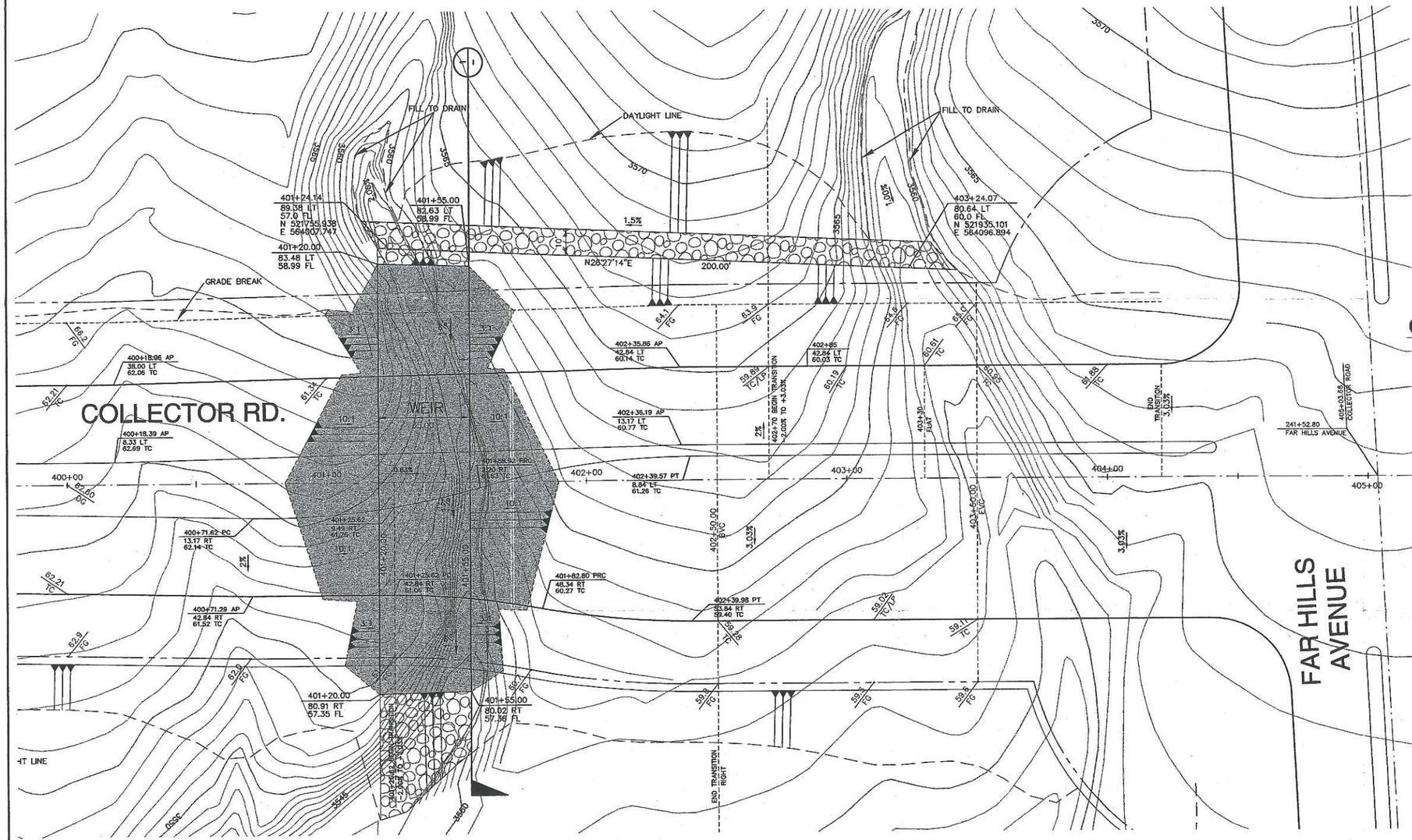
ISSUE DATE: 8/01/03

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
F:\V25\VRD\Dwg\Vrpg\V25RGD03.dwg

SUMMERLIN
VILLAGE 25B ROUGH GRADING
INTERIM GRADING II

SHEET 33
33 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 767+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

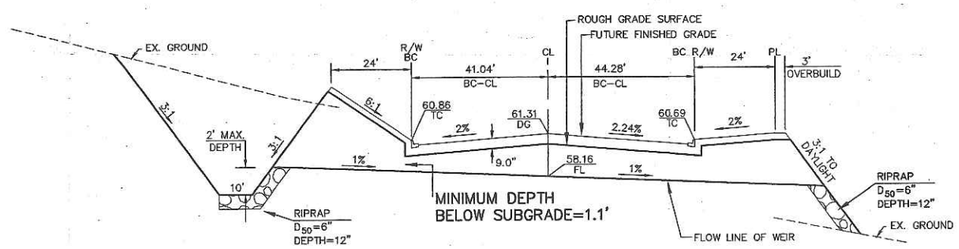
COLLECTOR ROAD WEIR

SCALE: HORIZ. 1" = 20'

SCALE 40 0 40 80 FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.



COLLECTOR ROAD - WEIR PROFILE AT STA 401+55 (1)

SCALE: HORZ: 1"=20' VERT: 1"=5'

Avoid cutting underground utility lines. It's costly. **Call before you Dig. 1-800-227-2600** UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

STATE OF NEVADA — REGISTERED PROFESSIONAL ENGINEER — BERT HUNSAKER — No. 10253 — CIVIL — DATE: 10/14/03

REV	DATE	DESCRIPTION	DRAWN	APP	DATE	CONST. APP.	DATE
			AGENCY APP.				

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:47:06

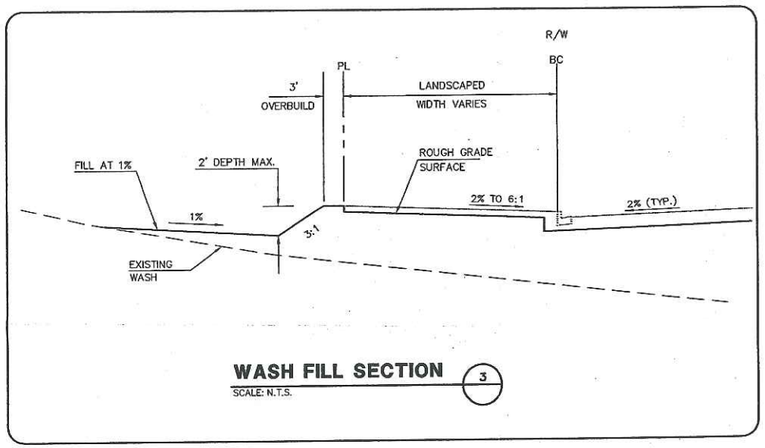
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 • FAX: (702) 804-2299

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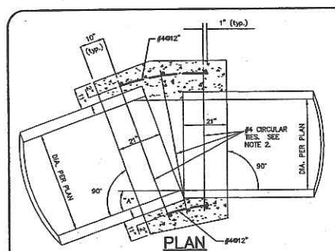
SUMMERLIN
VILLAGE 23B ROUGH GRADING
INTERIM GRADING III

SHEET 34
34 OF 35 SHTS

JOB NO. 62023.260



WASH FILL SECTION (3)
SCALE: N.T.S.



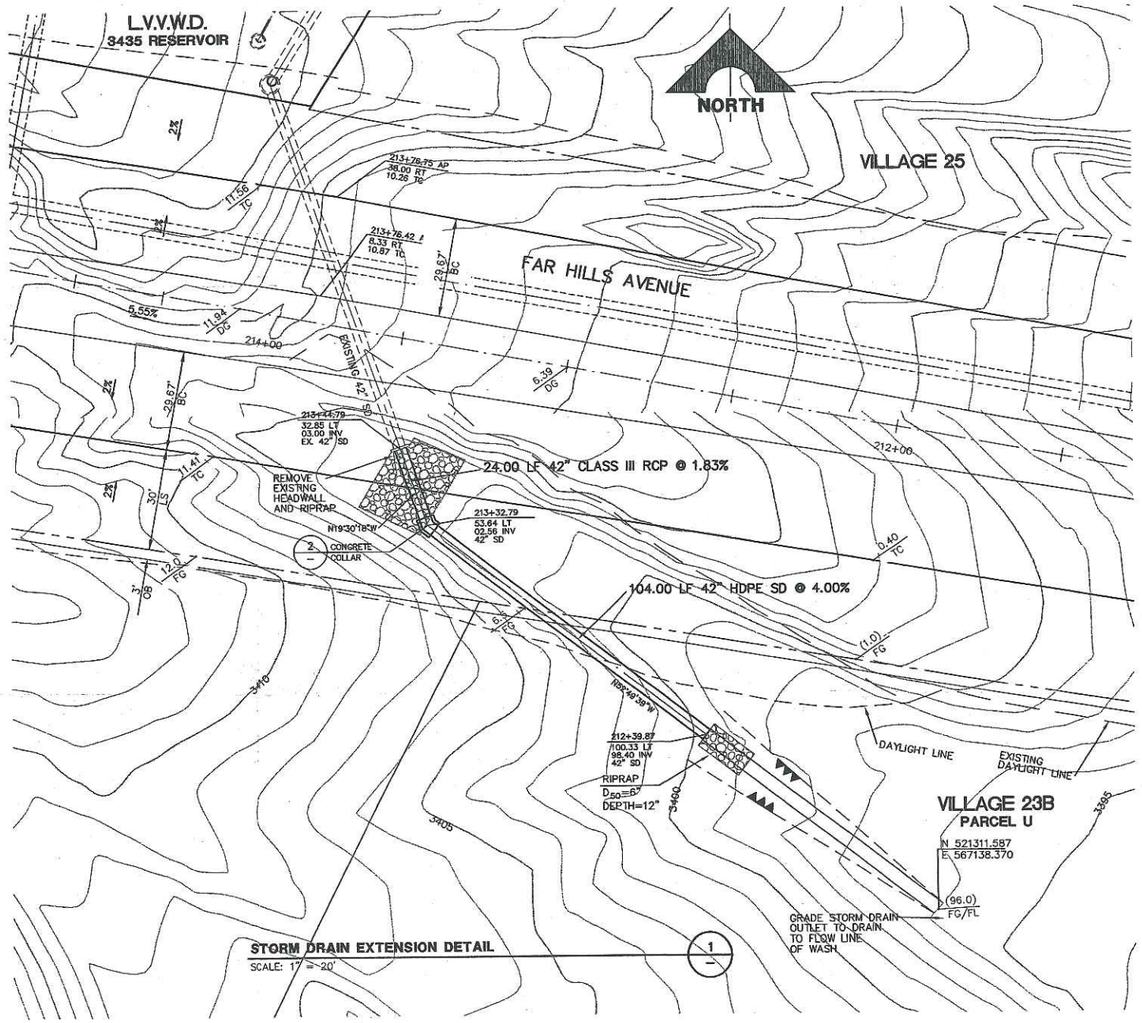
CONCRETE COLLAR DETAIL (2)
SCALE: N.T.S.

NOTES:

1. WHERE THE SLOPE OF THE UPSTREAM PIPE IS GREATER THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN SOFFITS. WHERE THE SLOPE OF THE UPSTREAM PIPE IS LESS THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN INVERTS.
2. WHERE THE SPACE BETWEEN THE PIPE EXTREMITIES EXCEEDS 2 1/2 INCHES, THE NUMBER OF CIRCULAR TIES SHALL BE INCREASED TO MAINTAIN A MAXIMUM SPACING OF 6 INCHES CENTER TO CENTER. CIRCULAR TIES SHALL HAVE A DIAMETER 5 INCHES GREATER THAN THE OUTSIDE DIAMETER OF THE LARGER PIPE.
3. CONTRACTOR TO USE CONCRETE COLLAR WHEN CONNECTING TO AN EXISTING STUB WHERE A FIELD ADJUSTMENT IS NEEDED. ANGLE "A" SHALL NOT EXCEED 45°.

CIRCULAR TIES:

PIPE DIAMETER	SPACE BETWEEN PIPE EXTREMITIES	NO. OF CIRCULAR TIES
21" or less	2 1/2"	3
24" to 30"	2 1/2" or less	3
33" to 57"	2 1/2" or less	4
60" to 66"	2 1/2" or less	5



STORM DRAIN EXTENSION DETAIL (1)
SCALE: 1" = 20'

STATE OF NEVADA — PROFESSIONAL ENGINEER — BRET M. HIGGS — CIVIL — No. 19259 — 08/01/03

REV	DATE	DESCRIPTION	DATE	AGENCY APP'D	DATE	GCW APP'D

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-28-03
PLOT TIME: 11:51:42
gpeterson
F:\V23b\V65\dwg\mmpk\23B5c035.dwg

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000• FAX (702) 804-2299

ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION
ISSUE DATE: 8/01/03

SUMMERLIN
VILLAGE 23B ROUGH GRADING
MISCELLANEOUS DETAILS

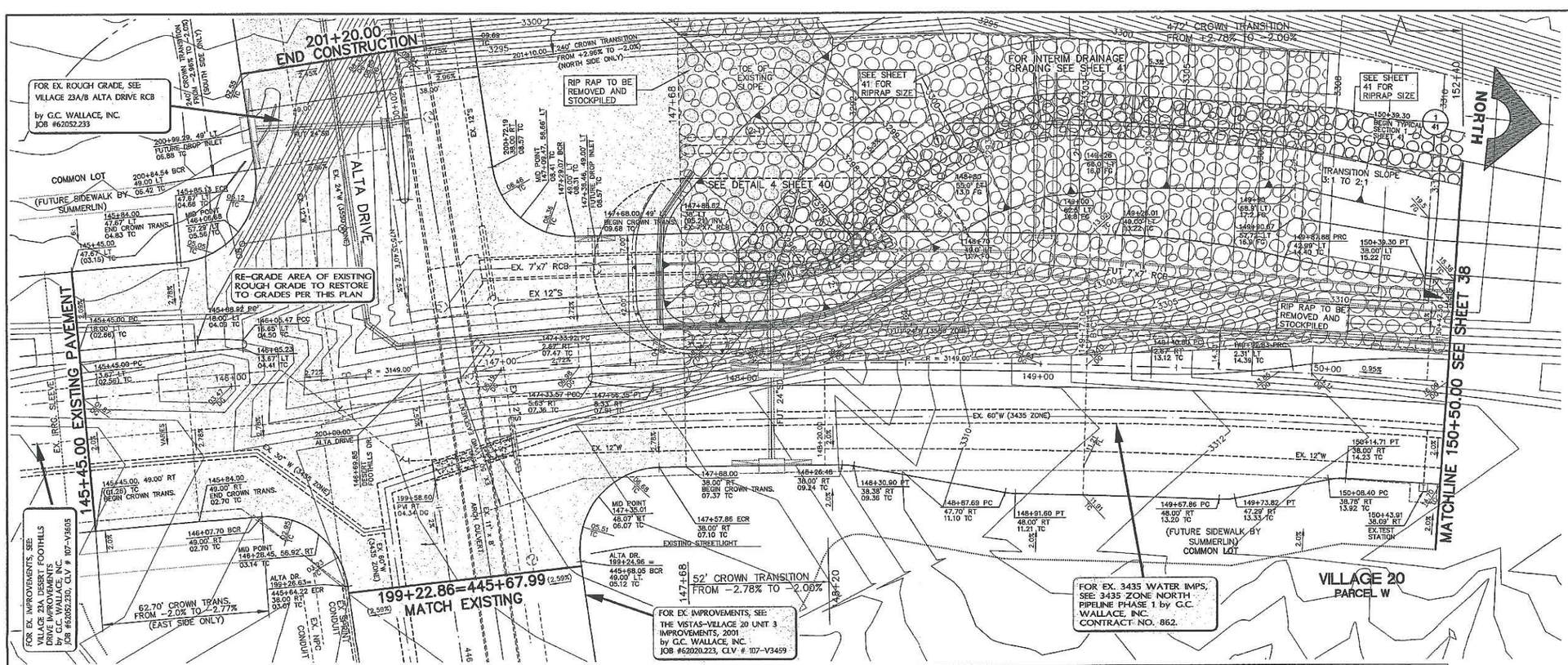
SHEET 35
35 OF 35 SHTS

JOB NO. 62023.260

dm24.25 dwg 023972.da

DESERT FOOTHILLS DRIVE (PUBLIC)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



20 0 20 40
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-227-2929

CLV DRAWING NO.

DRAWING 37
37 OF 43 SHTS

JOB NO. 62023.260

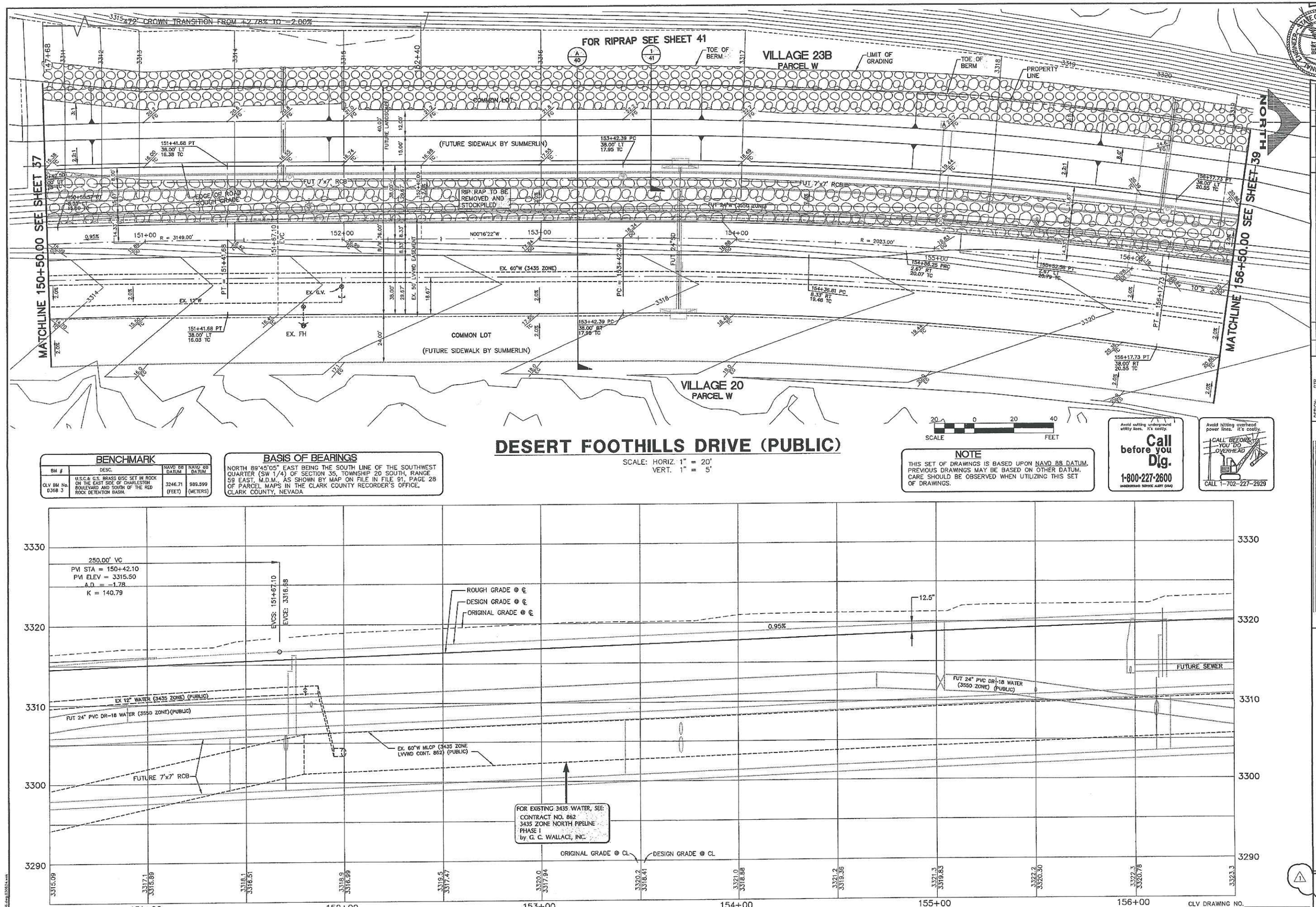
SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
DESERT FOOTHILLS DRIVE PLAN AND PROFILE
STA. 145+45 TO 150+50

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-19-06
PLOT TIME: 11:44:15

REV	DATE	DESCRIPTION	DATE	ASSY	ASP	DATE	ACM	ASP
1	6/01/06	NEW SHEET FOR DESERT FOOTHILLS DRIVE GRADING						

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
spetersen
I:\V23b\WD\dwg\Vmex\23Sfdc037.dwg

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEVADA — BRENT K. WALLACE — No. 7869 — CIVIL — DATE: 7/20/06



DESERT FOOTHILLS DRIVE (PUBLIC)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

SCALE 20 0 20 40 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. DJ68 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

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Avoid hitting overhead power lines. It's costly. CALL BEFORE YOU DO OVERHEAD CALL 1-702-227-2929

CLV DRAWING NO.

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000• FAX: (702) 804-2299
gpeterson
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SUMMERLIN

VILLAGE 23B WATERLINE IMPROVEMENT GRADING

DESERT FOOTHILLS DRIVE PLAN AND PROFILE
STA: 150+50 TO 156+50

DRAWING 38
38 OF 43 SHTS

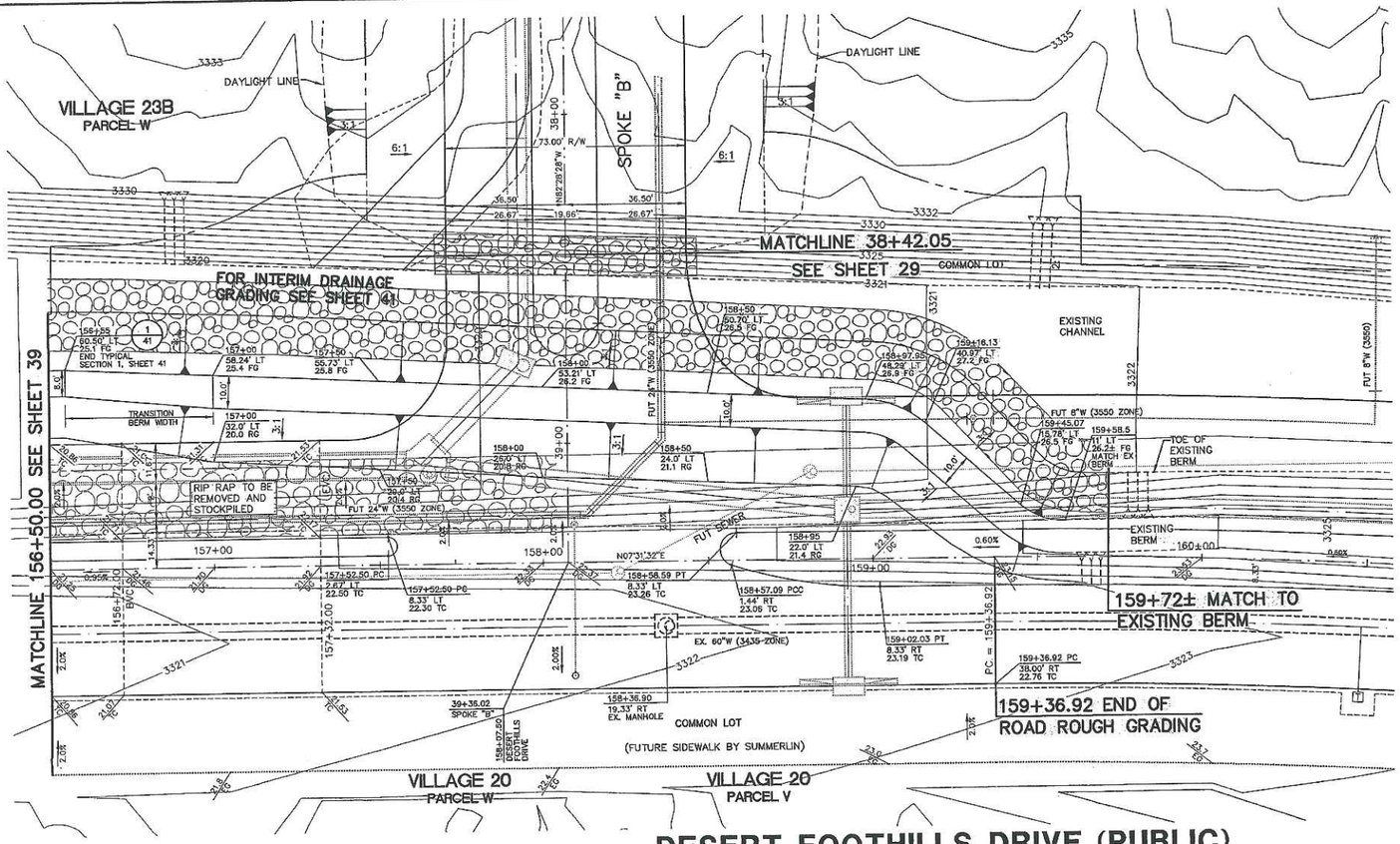
JOB NO. 62023.260

REV	DATE	DESCRIPTION	DATE AGEN. APP	DATE GOV. APP
1	8/07/08	REV SHEET FOR DESERT FOOTHILLS DRIVE GRADING		

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-15-08
PLOT TIME: 11:48:14

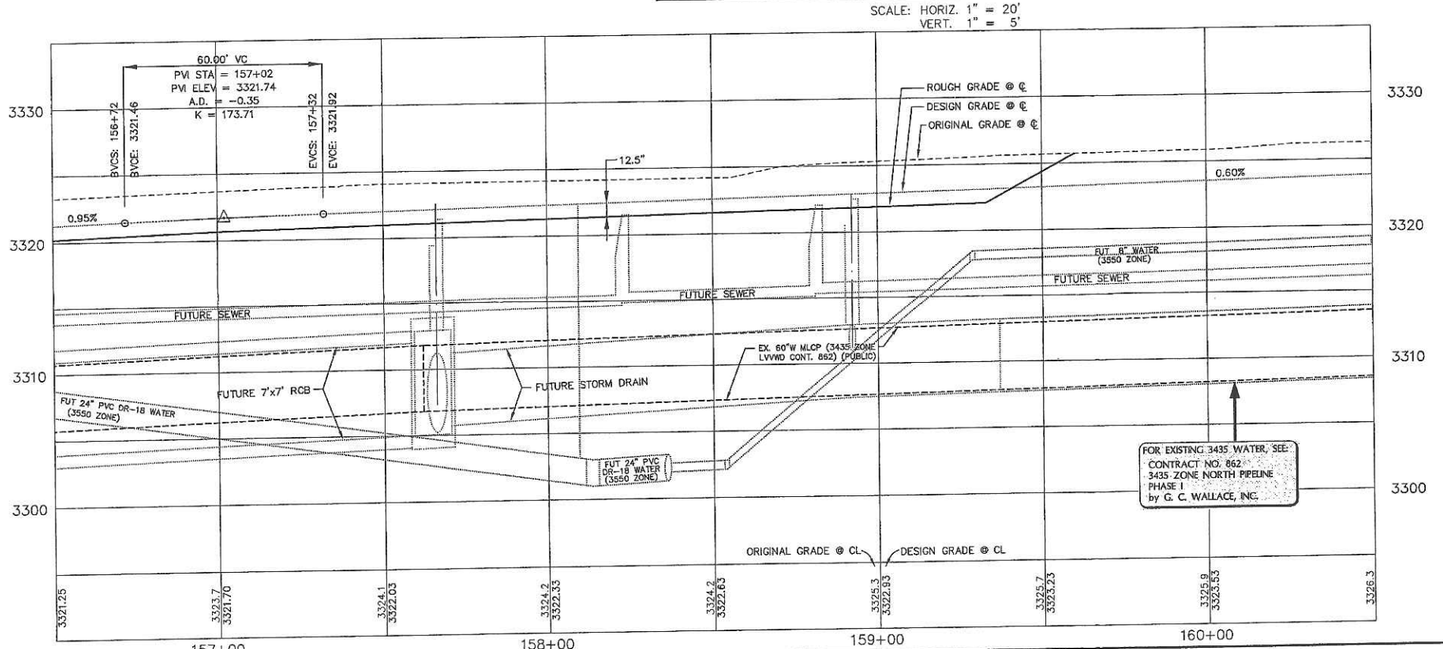
DATE: 1/2/08

GRADING ENGINEER - STATE OF NEVADA - BRETT H. GILLESPIE - No. 9146 - PROFESSIONAL ENGINEER - CIVIL



DESERT FOOTHILLS DRIVE (PUBLIC)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No: D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

20 0 20 40
SCALE FEET

NOTE

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Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-227-2929

APPROVAL:

LAS VEGAS VALLEY WATER DISTRICT DATE

CLV DRAWING NO.

ENGINEER - STATE OF NEVADA - BERT M. HARRIS - No. 10295 - PROFESSIONAL ENGINEER - CIVIL
DATE: 12/16

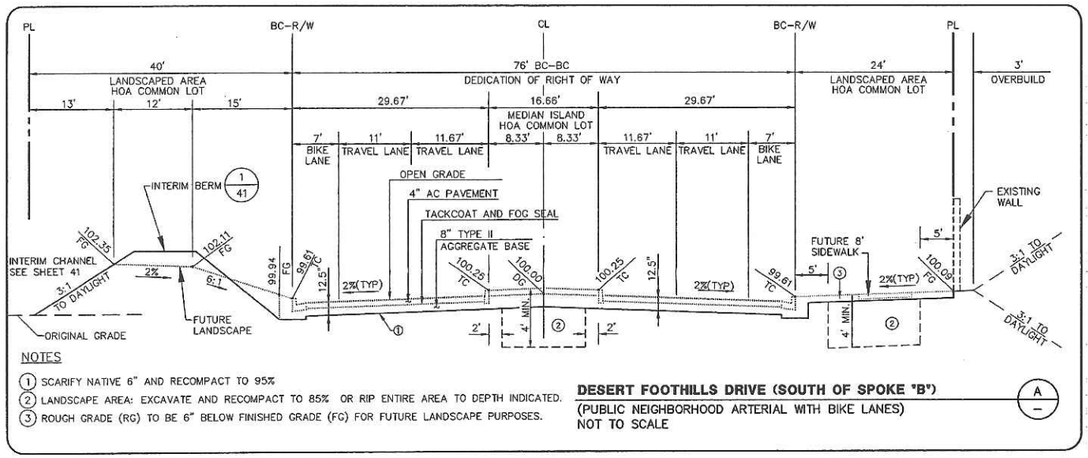
REV	DATE	DESCRIPTION	DATE AGEN. APP	DATE ENGR. APP
1	9/01/06	H/W SHEET FOR DESERT FOOTHILLS DRIVE GRADING		

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-18-06
PLOT TIME: 11:51:02

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD.,LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gpaterson
I:\V23b\WG\dwg\Vmps\V23BSc039.dwg

SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
DESERT FOOTHILLS DRIVE PLAN AND PROFILE
STA. 166+50 TO 160+00

DRAWING 39
39 OF 43 SHTS
JOB NO. 62023.260

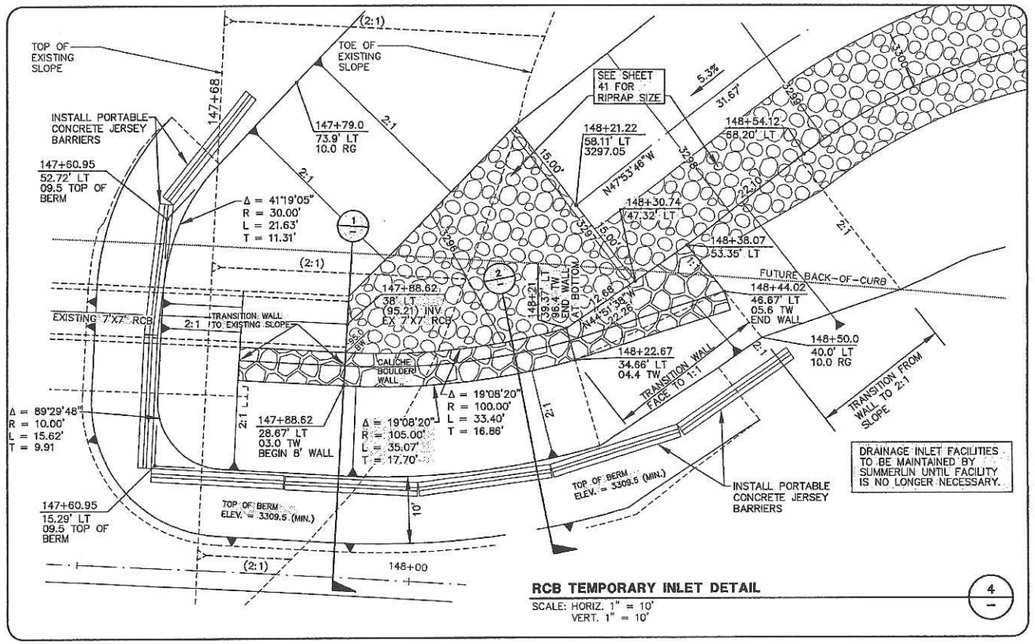


NOTES

(1) SCARIFY NATIVE 6" AND RECOMPACT TO 95%
(2) LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR RIP ENTIRE AREA TO DEPTH INDICATED.
(3) ROUGH GRADE (RG) TO BE 6" BELOW FINISHED GRADE (FG) FOR FUTURE LANDSCAPE PURPOSES.

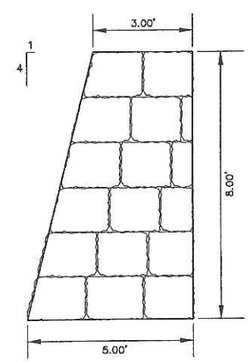
DESERT FOOTHILLS DRIVE (SOUTH OF SPOKE "B")
(PUBLIC NEIGHBORHOOD ARTERIAL WITH BIKE LANES)
NOT TO SCALE

A



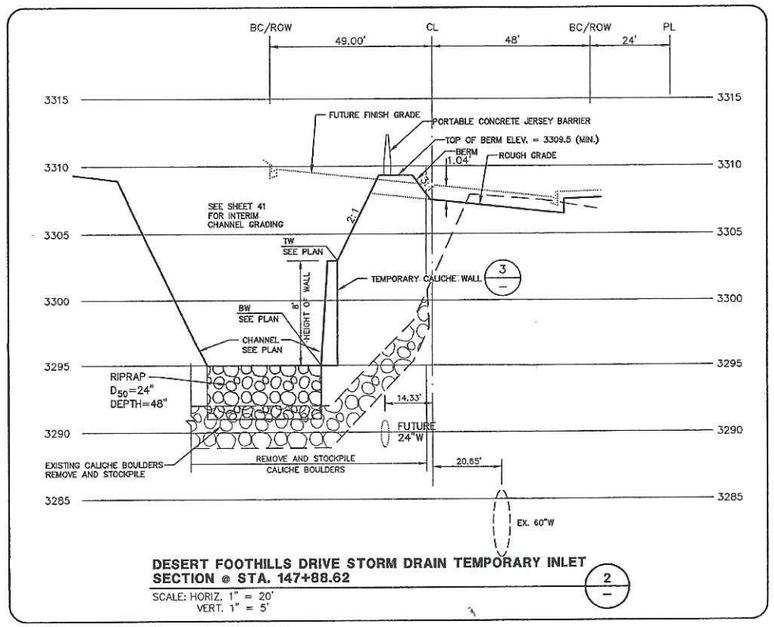
RCB TEMPORARY INLET DETAIL
SCALE: HORIZ. 1" = 10'
VERT. 1" = 10'

4



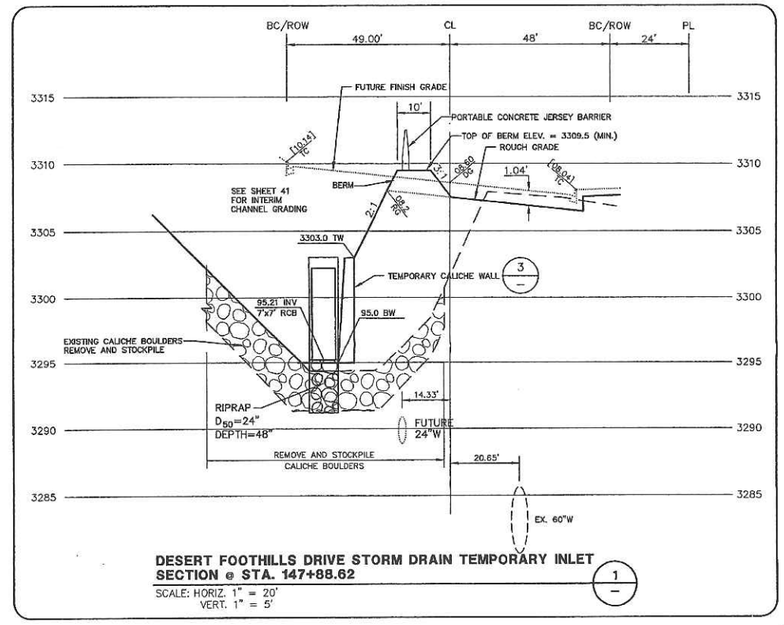
TEMPORARY CALICHE BOULDER WALL DETAIL
SCALE: HORIZ. 1" = 2'
VERT. 1" = 2'

3



DESERT FOOTHILLS DRIVE STORM DRAIN TEMPORARY INLET SECTION @ STA. 147+88.62
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

2



DESERT FOOTHILLS DRIVE STORM DRAIN TEMPORARY INLET SECTION @ STA. 147+88.62
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

1

STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN T. HUGHES — No. 10259 — DATE: 11/2/10

REV	DATE	DESCRIPTION	DATE	APP
1	11/2/10	PDT/DR NEW SHEET FOR DESERT FOOTHILLS DRIVE GRADING	11/2/10	BTH

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 11-03-06
PLOT TIME: 10:52:49

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 • FAX (702) 804-2099
E:\V23\RG\Users\V23RGGTP.dwg
gpatterson

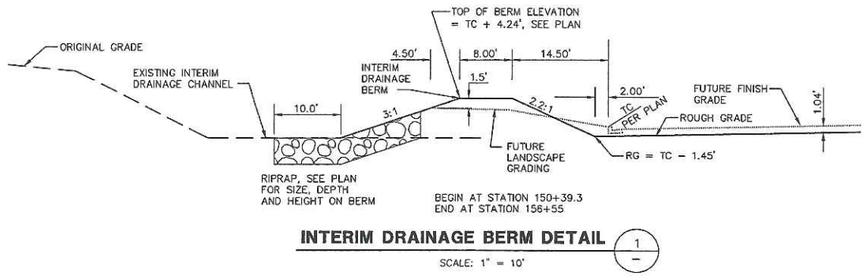
SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
DESERT FOOTHILLS DRIVE SECTIONS AND DETAILS

DRAWING 40
40 OF 43 SHTS

JOB NO. 62023.260

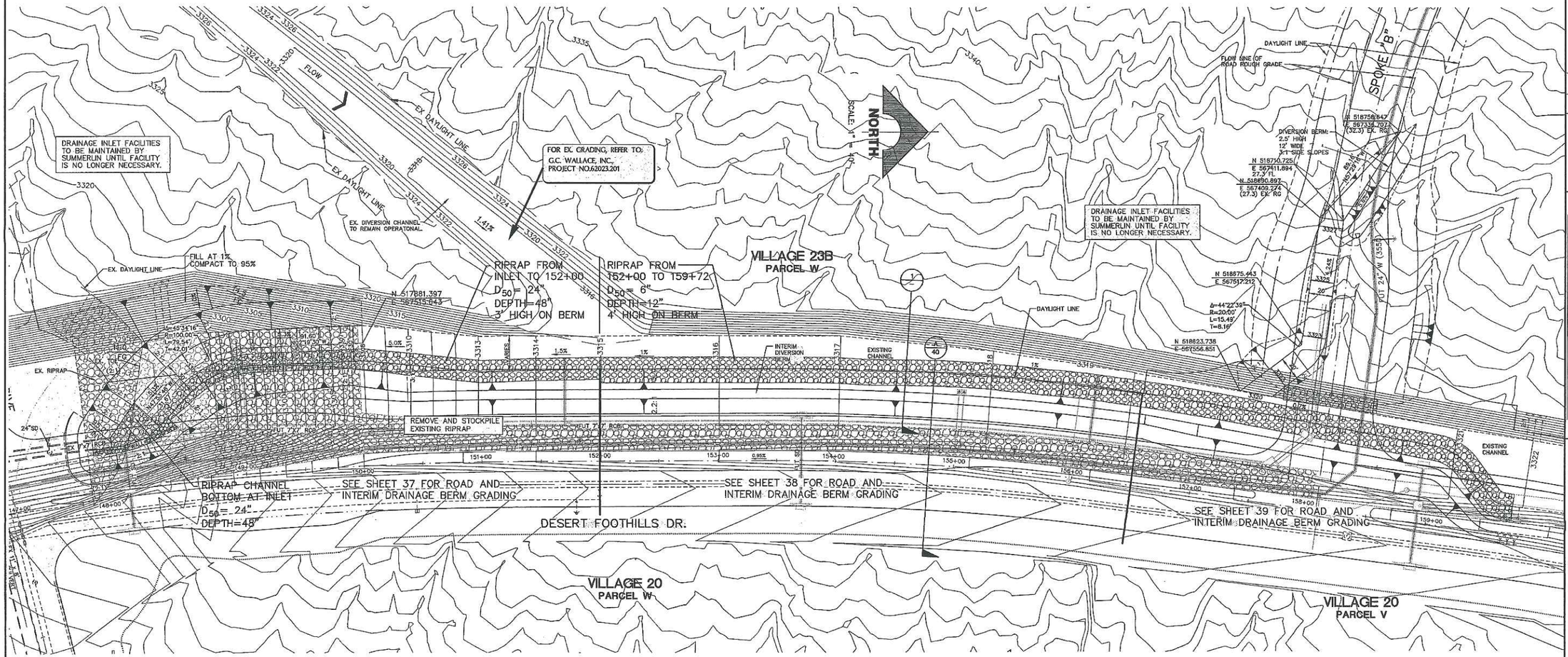
CLV DRAWING NO.

rpc24.36.dwg 120524.ctb



INTERIM DRAINAGE BERM DETAIL (1/-)

SCALE: 1" = 10'



SCALE: 40 0 40 80 FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 0368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-227-2929

CLV DRAWING NO.

REV. DATE: 7/07/06 NEW SHEET FOR DESERT FOOTHILLS DRIVE GRADING
DESCRIPTION: DATE: AGEN. APP: DATE: CCW. APP:

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-13-06
PLOT TIME: 13:28:00

DATE: 7/20/06

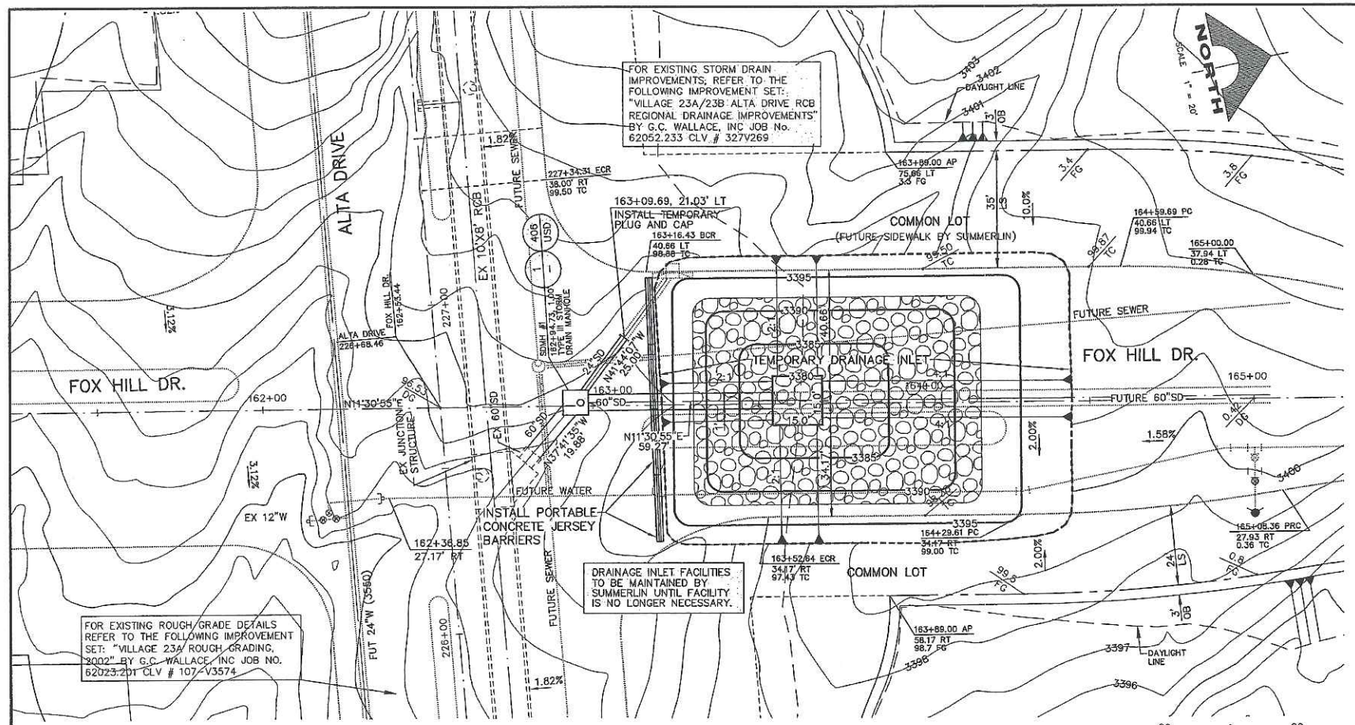
STATE OF NEVADA
BRENT W. WALLACE
No. 10276
REGISTERED ENGINEER
CIVIL

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
(702) 804-2100 FAX (702) 804-2909
E:\V23b\GW\dwg\prop\23BGrd01.dwg

SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
INTERIM GRADING PLAN V

DRAWING 41
41 OF 43 SHTS

JOB NO. 62023.260



FOX HILL DRIVE (PUBLIC)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

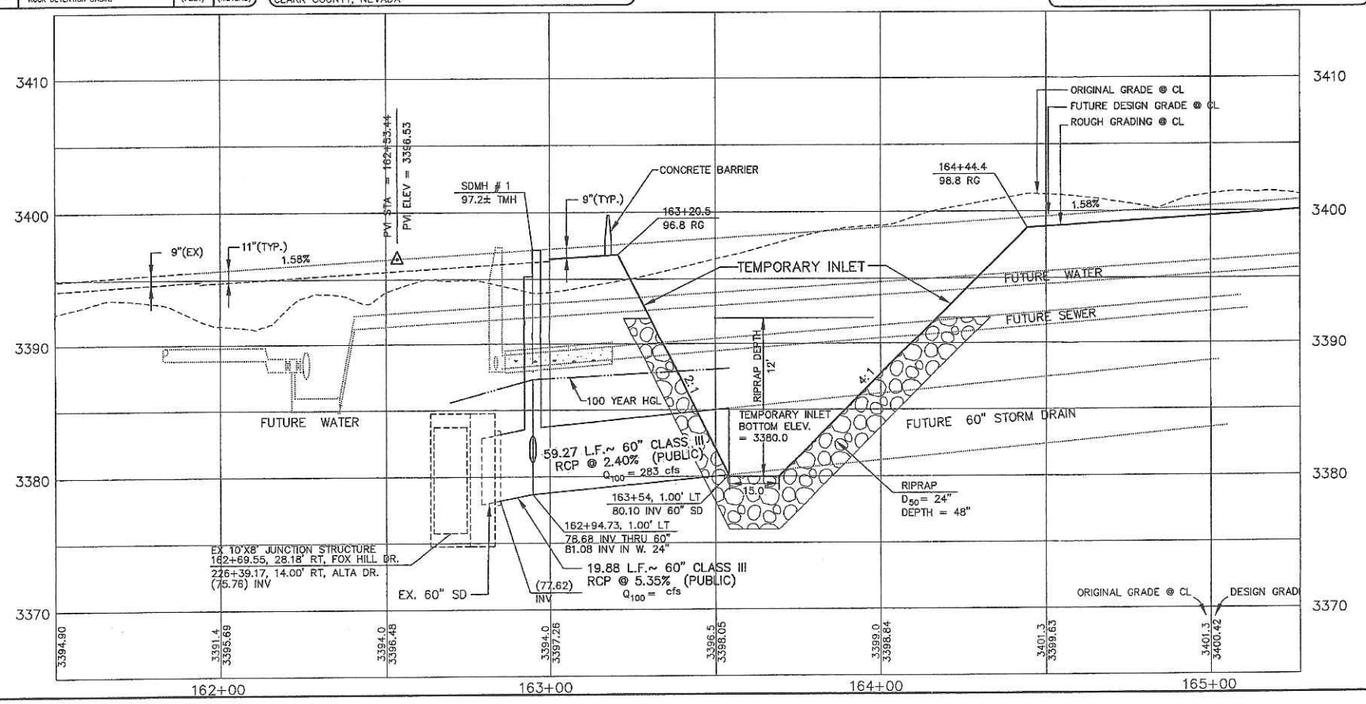
BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 0388 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

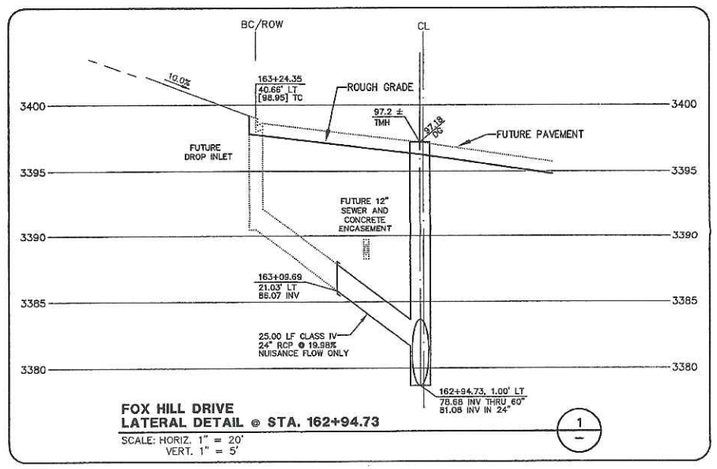
BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

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FOX HILL DRIVE
LATERAL DETAIL @ STA. 162+94.73 (1)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
(UNDERGROUND SERVICE ALERT (USA))

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111

APPROVAL:

LAS VEGAS VALLEY WATER DISTRICT (#28258) DATE

ENGINEER'S STATE OF NEVADA — BRET T. ALLEN — No. 9146 — PROFESSIONAL ENGINEER — CIVIL
DATE: 12/16

REV	DATE	DESCRIPTION	DATE	AGEN.	APP.	DATE	CONV.	APP.
1	5/10/06	REV SHEET FOR ADDING STORM DRAIN TO FOX HILL DRIVE						

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-18-06
PLOT TIME: 11:31:43

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gpeterson
H:\V23b\RG\dwgs\Vmss\V23BGC042.dwg

SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
FOX HILL DRIVE STORM DRAIN AND INTERIM DRAINAGE INLET

SHEET 42
42 OF 43 SHTS

JOB NO. 62023.260

CLV DRAWING NO. _____

HA 211

ADDENDUM
TO THE
TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 23A/23B
ALTA DRIVE RCB REGIONAL DRAINAGE IMPROVEMENTS

62052.233

September 2003

Prepared for:

The Howard Hughes Corporation
a Delaware Corporation
10000 West Charleston Blvd., Ste. 200
Las Vegas, Nevada 89135
Phone: (702) 791-4300
Fax: (702) 791-4453

G. C. WALLACE, INC.
Engineers/Planners/Surveyors

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

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City of Las Vegas

Chip Maxfield
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Shari Buck
City of North Las Vegas

Karla Burton
City of Boulder City

Mayor James Gibson
City of Henderson

Michael Mack
City of Las Vegas

Mayor Bill Nicholes
City of Mesquite

Bruce L. Woodbury
Clark County

November 13, 2003

Mr. Randy Fultz, P.E.
City of Las Vegas Public Works
731 S. Fourth St
Las Vegas, NV 89101

DISTRICT CONCURRENCE: SUMMERLIN VILLAGES 23A/23B – ALTA DRIVE RCB UPDATE (DS3225) (RFCD No. 03-5466)

Dear Mr. Fultz:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated September 18, 2003, for the above-mentioned project as submitted by G. C. Wallace, Inc. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Public Works dated October 13, 2003.

District concurs with acceptance of this Technical Drainage Study by City of Las Vegas Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage.*

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by G. C. Wallace, Inc. may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: _____
Andrew R. Trelease, P.E.
Senior Civil Engineer

ART:css

c: Randall K. Gremlich, P.E., G. C. Wallace, Inc.

File: 20-59-22.GCW

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: *http://www.ccrfcd.org*

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM	DATE: October 13, 2003
TO: Land Development Services Department of Public Works	FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: Summerlin Villages 23A / 23B - Alta Drive RCB - Update	COPIES TO: G.C. Wallace
Cross Streets: Desert Foothills Drive & Collector Road	Howard Hughes Corporation
FILE NO.: F:\Depot\DSMEMOS\DS3225D.doc	Bart Anderson, P.E., DEVCO
Parcel Number: 137-22-000-006, 137-28-000-001	CCRFCD
Zoning Action:	
FEMA Flood Zone: YES / No X	
Proposed Storm Drain: YES X / No	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID G.R. #
1st Submittal	10/23/2002	11/6/2002	Not Approved	$250.00	93648: $250
2nd Submittal	11/8/2002	11/22/2002	Conditionally Approved	$250.00	94545: $250
CCRFCD	12/18/2002	12/24/2002	Concurrence	N/C	N/C
3rd Submittal	9/26/2003	10/10/2003	Conditionally Approved	$250.00	111744: $250
			TOTAL FEES (LDDRS):	$750.00	---

REMARKS:

3rd Submittal: Update to revise lateral flows into the Regional Alta RCB and minor relocation of lateral pipes and sizes

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions.
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

1. The changes proposed in this update impacts the Clark County Regional Facility (APAD 0000), CCRFCD concurrence is required again prior to final approval of the drainage study by the City of Las Vegas.

END OF REMARKS
B&H/ays

T/R/S: T20S/R59E/22 & 28
AREA K-22 & K-28

Post-it® Fax Note 7671	Date 10/13/03 # of pages ▶
To Amanda Gonzales	From Albert Sung
Co./Dept. GCW	Co. CLV
Phone #	Phone # 229-200
Fax # 804-2297	Fax #

SUMMERLIN

SM

VILLAGE 23A/23B ALTA DRIVE RCB REGIONAL DRAINAGE IMPROVEMENTS

SID #808 PROJECT NO. 32
(SUMMERLIN REGIONAL PROJECT NUMBERS: R5, R6, AND R7)
APN # 137-22-000-006

2002

DEVELOPER

The Howard Hughes Corporation SM
An Affiliate of THE ROUSE COMPANY

THE HOWARD HUGHES CORPORATION
a Delaware corporation

10000 W. CHARLESTON, SUITE 200
LAS VEGAS, NEVADA 89135
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450

ENGINEER

G.C. WALLACE, INC.
Engineers/Planners/Surveyors

1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
OFFICE: (702) 804-2000, FAX: (702) 804-2299
SUMMERLIN OFFICE 10000 CHARLESTON BLVD., STE. 130
OFFICE: (702) 804-2160, FAX: (702) 804-2295

DRAINAGE CERTIFICATION

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

BERT A. HUGHES R.P.E. 10259 — DATE

THE HOWARD HUGHES CORPORATION,
a Delaware corporation

By: _____ DATE
LARRY BROCATO

Title: EXECUTIVE VICE PRESIDENT

"APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-OF-WAY AND / OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND / OR SPECIFICATIONS, EXCEPT THOSE SPECIFICALLY LISTED UNDER DEVIATIONS FROM STANDARD. THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARDS IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA".

CHARLES KAJKOWSKI, Jr.; PE #4784 — DATE
CITY ENGINEER
CITY OF LAS VEGAS, NEVADA

CLV PLANNING DEPARTMENT

THIS PLAN MEETS THE APPLICABLE STANDARDS IF THE PLANNING AND DEVELOPMENT DEPARTMENT

M. MARGO WHEELER, AICP, CURRENT PLANNING MANAGER — DATE

SPRINT NEVADA DISCLAIMER

NOTE:
THE AFFIXED SPRINT NEVADA APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

SPRINT — REVIEWED BY — DATE

NEVADA POWER COMPANY DISCLAIMER

NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS.

CALL BEFORE YOU DIG: 1(800)227-2600

NEVADA POWER Co. — REVIEWED BY — DATE

DATE

NO WATER IMPROVEMENTS IN THIS SET

LAS VEGAS VALLEY WATER DISTRICT — DATE

CLV FIRE DEPARTMENT — DATE

SOUTHWEST GAS CORP. — DATE

CITY OF LAS VEGAS DRAWING NO. _____ **SHEET 1 OF 32**

PROFESSIONAL ENGINEER - STATE OF NEVADA - BERT A. HUGHES - No. 10259 - CIVIL - DATE 11/7/03

DESIGN:			
DRAWN:			
CHECK:			
ISSUE DATE:			
ISSUE EDITOR:			
PLOT DATE: 08-09-03			
PLOT TIME: 08:20:55			
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REV.	DATE	DESCRIPTION	DATE

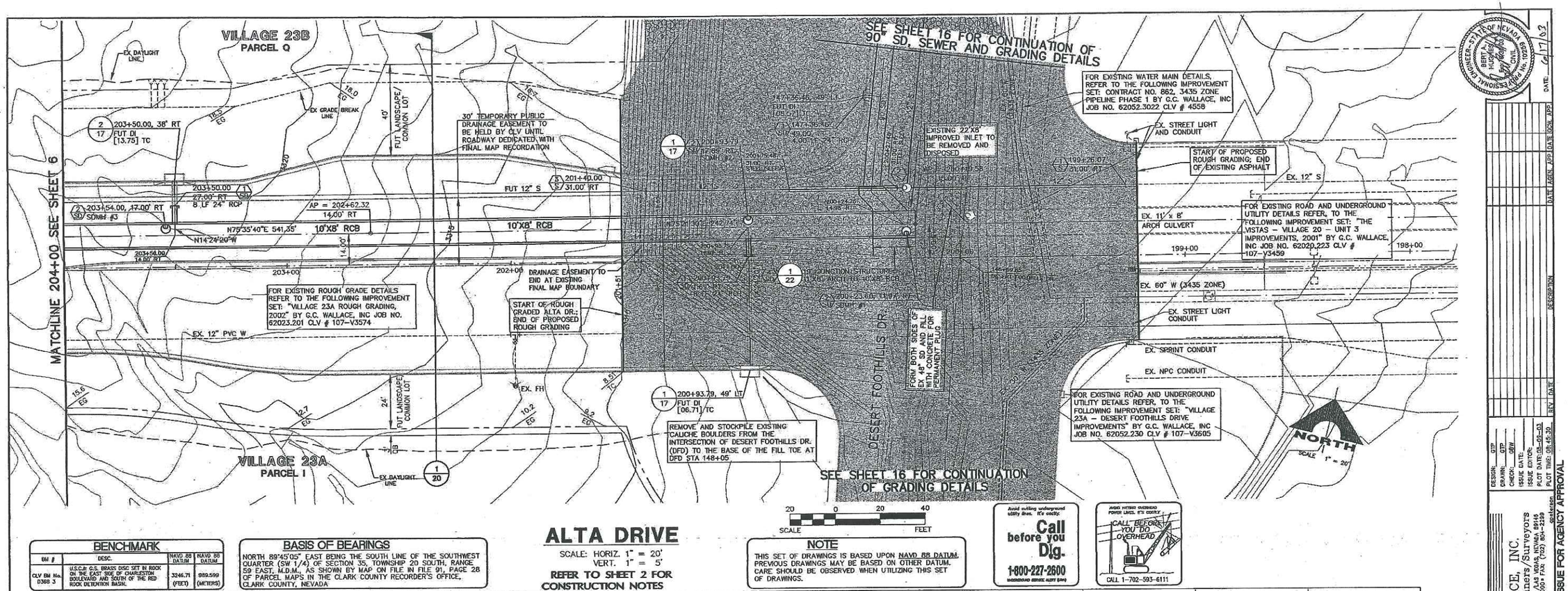
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
OFFICE: (702) 804-2000, FAX: (702) 804-2299
SUMMERLIN OFFICE 10000 CHARLESTON BLVD., STE. 130
OFFICE: (702) 804-2160, FAX: (702) 804-2295

ISSUE DATE 02/10/03 ISSUE FOR AGENCY APP.

SUMMERLIN
VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS
COVER SHEET

SHEET 1 OF 32 SHTS

JOB NO. 62052.233



BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 J	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

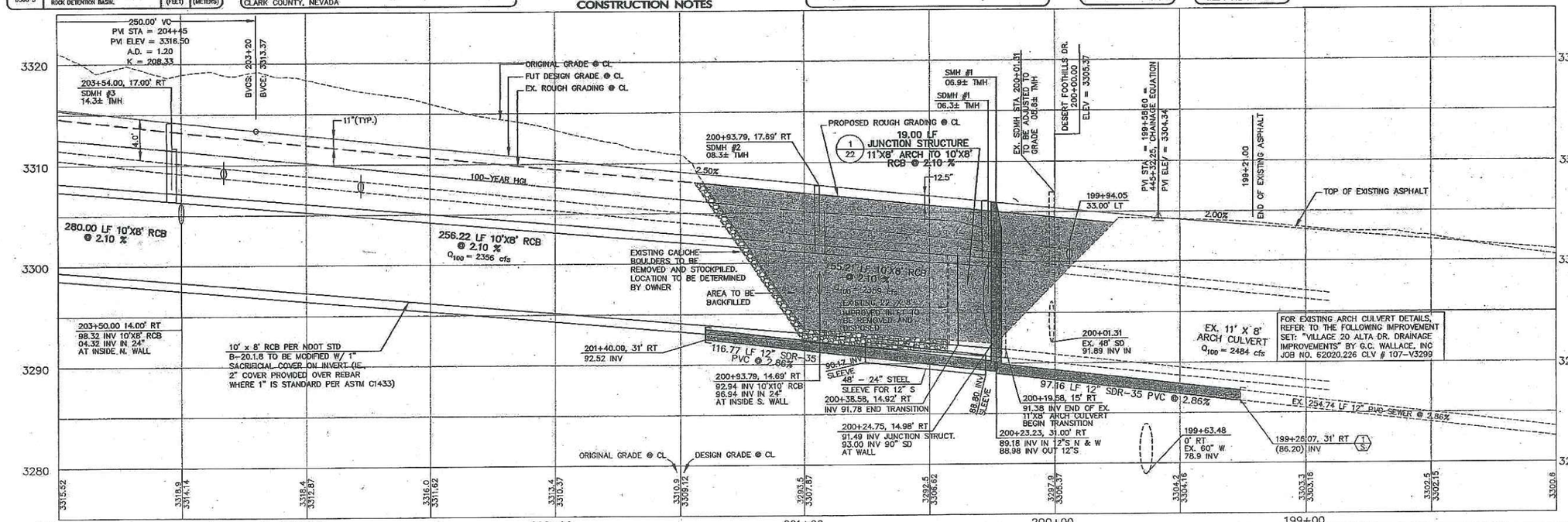
ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.



G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
(702) 804-2100 FAX (702) 804-2199
F:\V23\ALTA-RCB\DWG\MP5\ALTA-DR05.dwg

ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

DESIGN: GTP
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CHECK: GBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 05-05-03
PLOT TIME: 08:45:30

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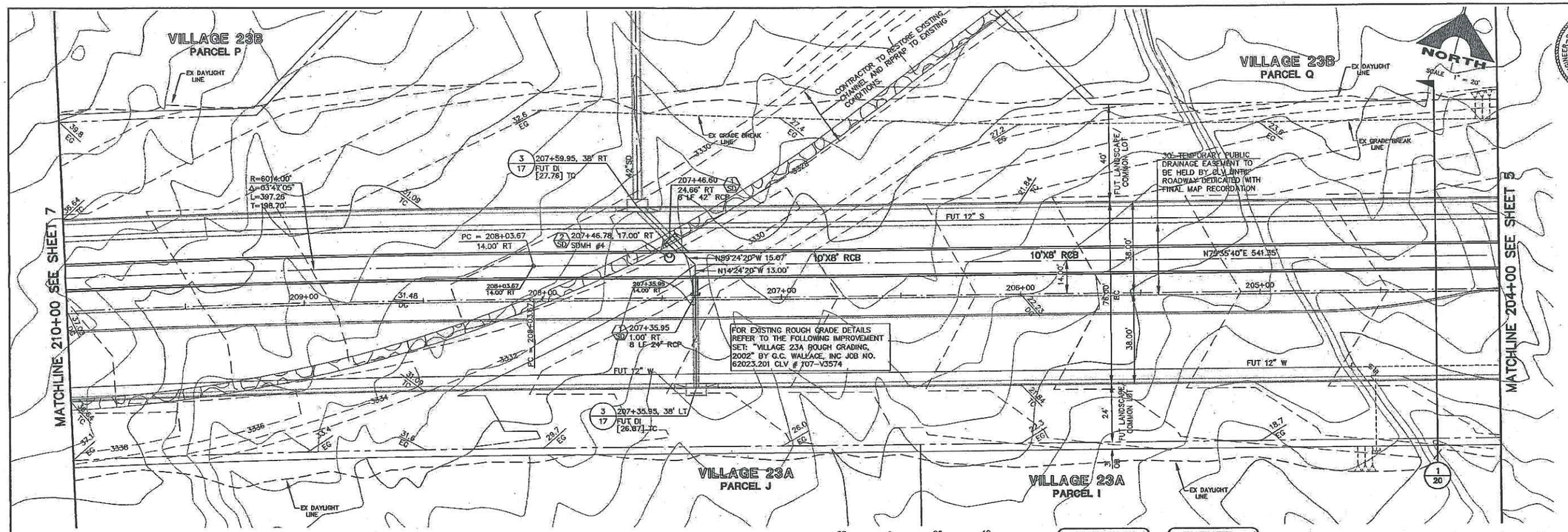
SUMMERLIN

VILL. 23A/23B ALTA DR. RCB REQ. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 200+00 TO STA 204+00

JOB NO. 62052.233

SHEET 5
5 OF 32 SHTS



20 0 20 40
SCALE FEET

ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

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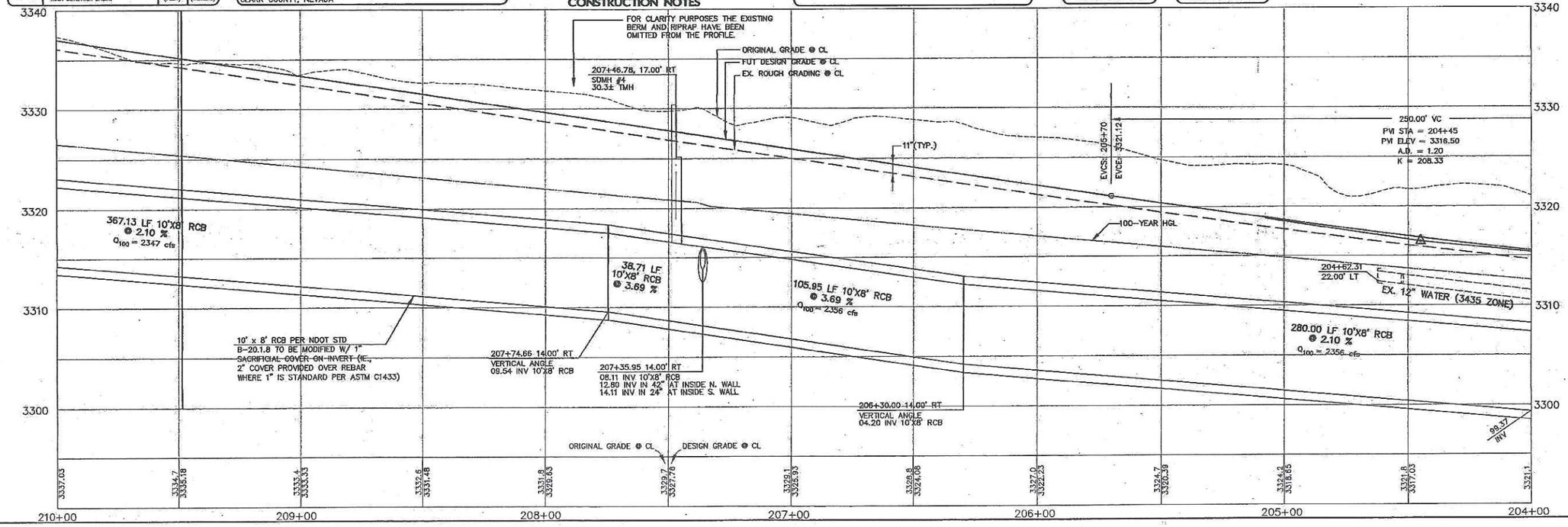
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Avoid cutting underground utility lines. It's costly.
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1-800-227-2600
NEVADA ONE CALL ASSN (ENV)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111



DESIGN: OTP
DRAWN: OTP
CHECK: GBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 06-09-03
PLOT TIME: 08:48:43

REV.	DATE	DESCRIPTION	DATE AGEN. APP.	DATE GOV. APP.

DATE: 6/7/02

STATE OF NEVADA — PROFESSIONAL ENGINEER — ROBERT A. TRUSSELL — No. 7486 — CIVIL

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
2030 E. FLAMINGO RD., SUITE 230
LAS VEGAS, NEVADA 89119
TELEPHONE: (702) 804-2500 FAX: (702) 804-2299

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ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

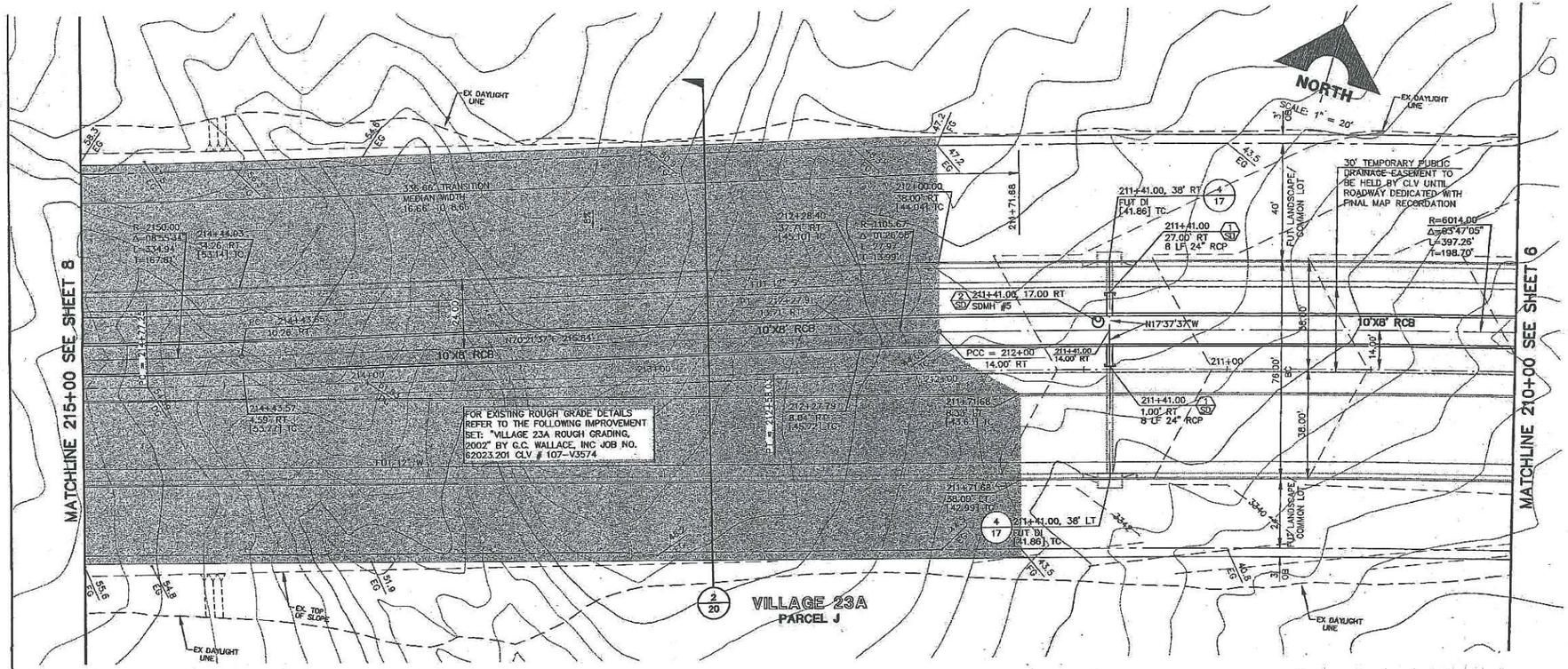
SUMMERLIN

VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 204+00 TO STA 210+00

SHEET
6
6 OF 32 SHTS

JOB NO. 62052.233



ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

SCALE: 20 0 20 40 FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.595 (METERS)

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Avoid cutting underground utility lines. It's costly. **Call before you Dig. 1-800-227-2600** (NEVADA ONE CALL AGENT 0010)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-8111

ALBERT A. PAGLIARO No. 10258 STATE OF NEVADA PROFESSIONAL ENGINEER CIVIL DATE: 10/10/02

NO.	DESCRIPTION	DATE	AGEN. APP.	DATE	CONT. APP.	DATE
1	ISSUE FOR AGENCY APPROVAL	02/10/03				

DESIGN: GTP
DRAWN: GTP
CHECK: GTP
ISSUE DATE: 02/10/03
PLOT DATE: 02-09-03
PLOT TIME: 08:54:31

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

F:\V23\VILLA-RCB\DWG\VIPER\ALTDR2072.dwg

ISSUE DATE: 02/10/03

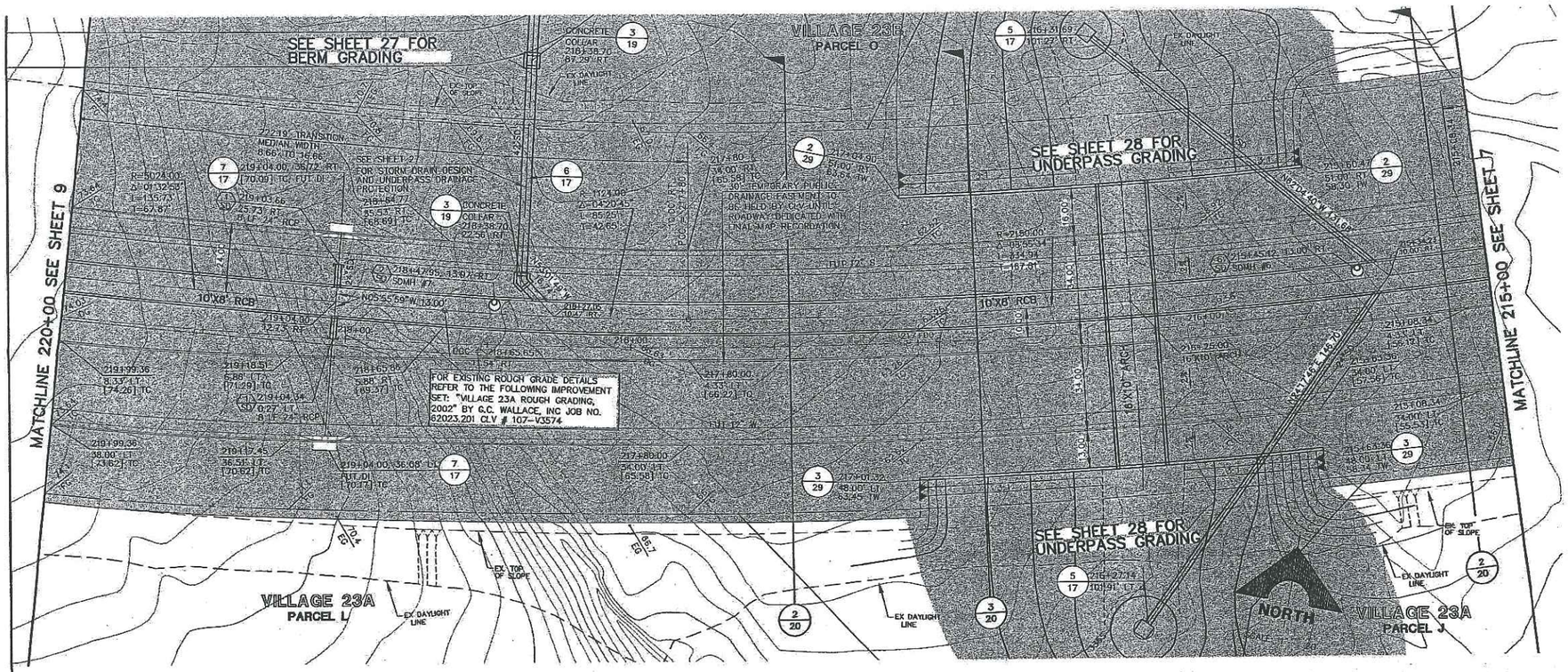
JOB NO. 62052.233

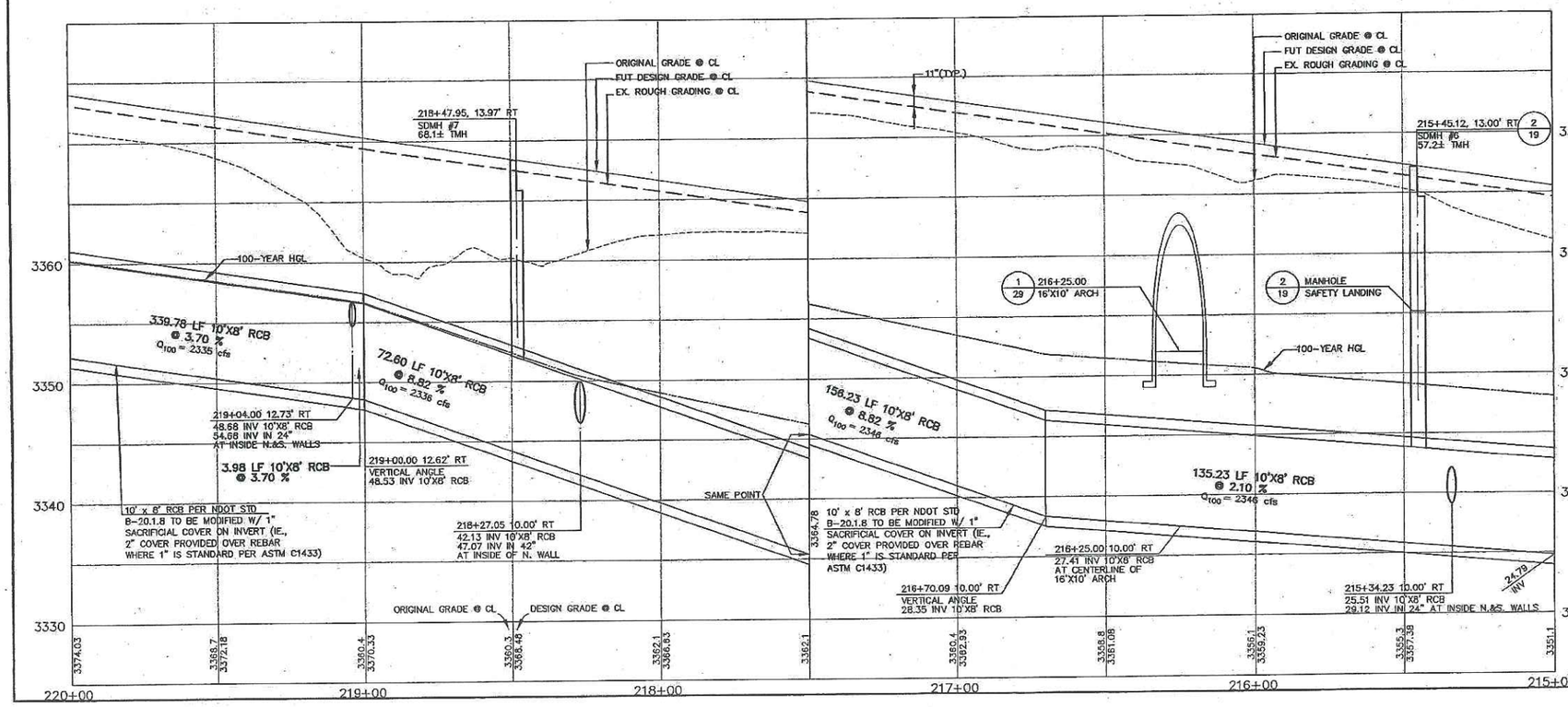
SUMMERLIN

VILL 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 210+00 TO STA 215+00

SHEET 7
7 OF 32 SHTS





Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
WASHOE COUNTY AREA 644

Avoid hitting overhead power lines. It's costly.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-5111

ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

SCALE 20 0 20 40 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88* DATUM
CLV BM No. 0368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RCD ROCK DETENTION BASIN.	3245.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

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STATE OF NEVADA — ROBERT A. HUDDLESTON — No. 9508 — PROFESSIONAL ENGINEER — CIVIL
DATE: 11/7/02

DESIGN: GTP	DRAWN: GTP	CHECK: GBW	ISSUE DATE:	ISSUE EDITOR:	PLOT DATE: 05-20-03	PLOT TIME: 08:58:39

REV.	DATE	DESCRIPTION	DATE	APP	DATE	APP

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2099

ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

SUMMERLIN

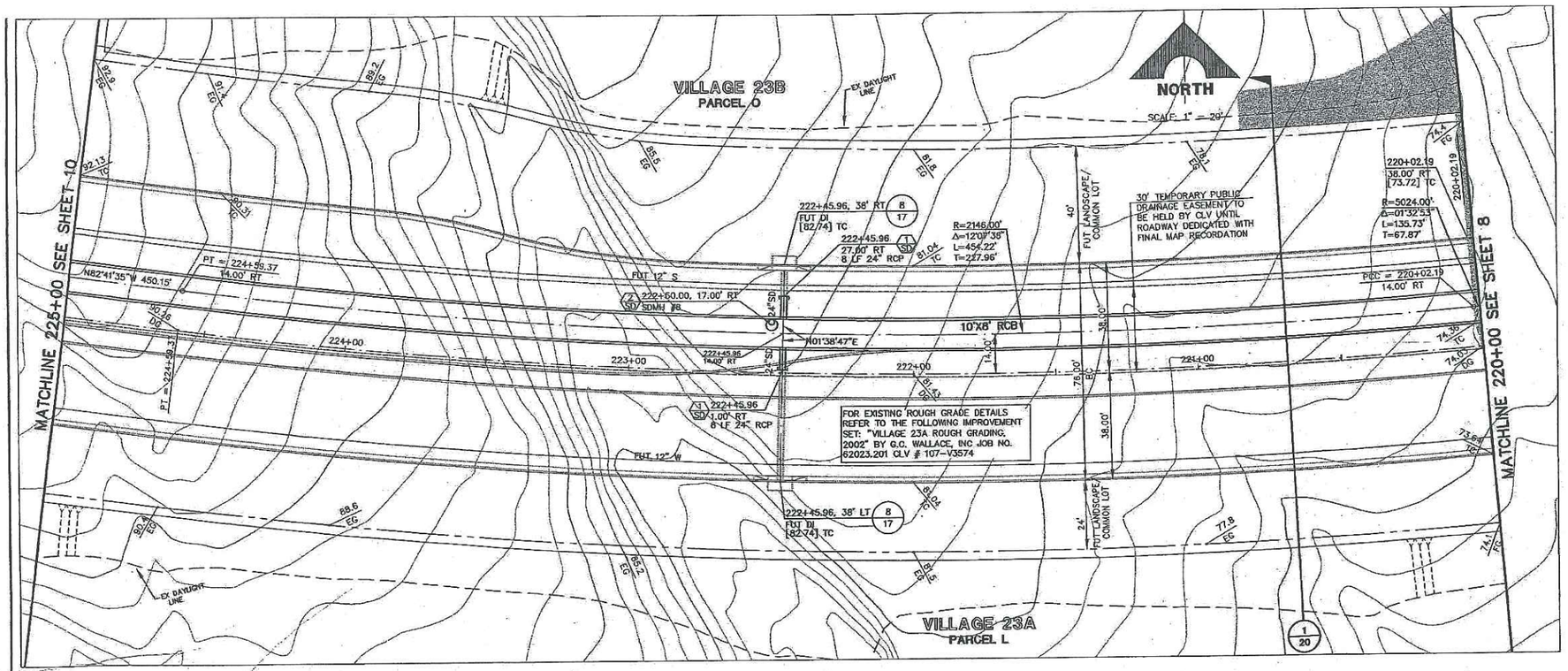
VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

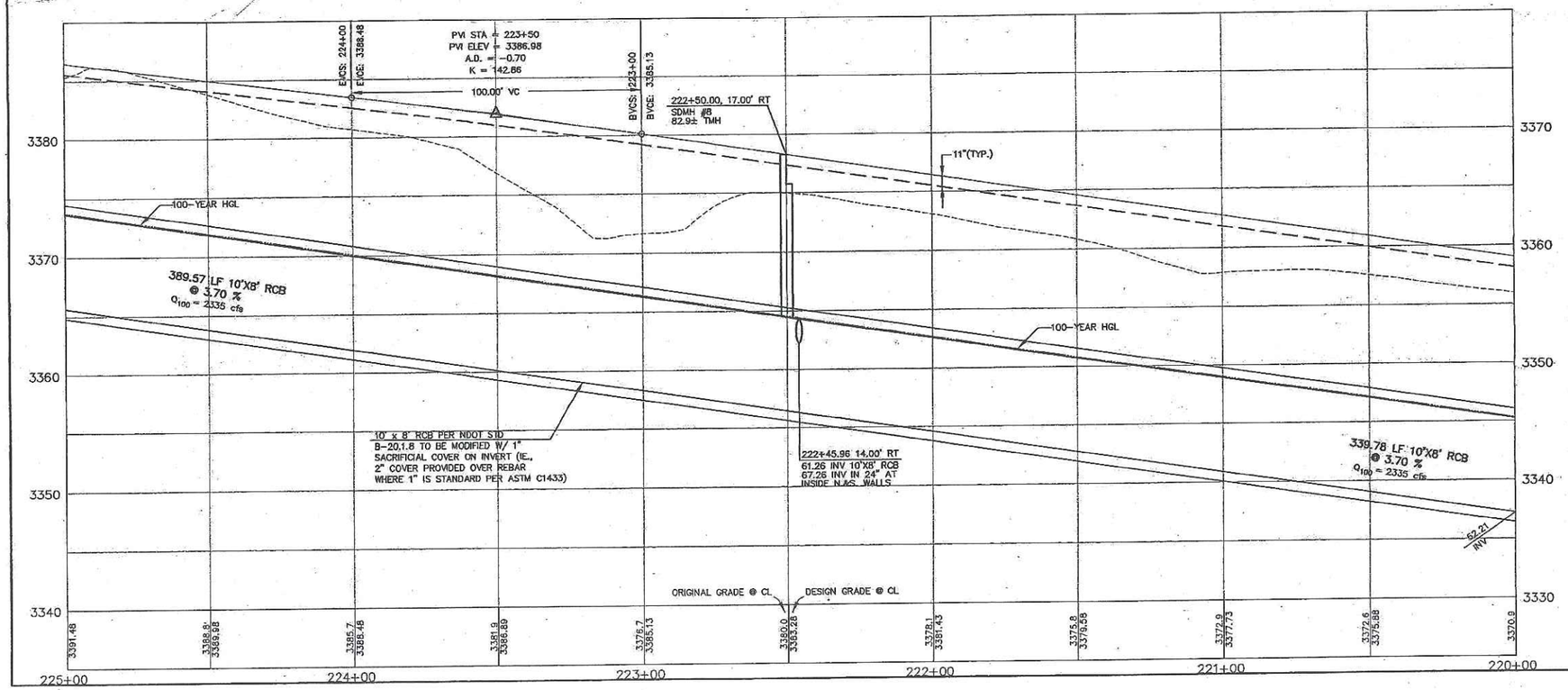
ALTA DRIVE PLAN AND PROFILE
STA. 215+00 TO STA. 220+00

SHEET 8
8 OF 32 SHTS

JOB NO. 62052.283

F:\V23\ALTA-RCB\DWGS\RCB-PP.DWG





ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

SCALE: 20 0 20 40 FEET

BENCHMARK

BM #:	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 0388 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.399 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

BERT A. GOFF — STATE OF NEVADA — REGISTERED ENGINEER — No. 10259 — CIVIL — DATE: 1/7/03

DESIGN: GTP
DRAWN: GTP
CHECK: GBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 1/28/03 - 09:52
PLOT TIME: 09:01:33

REV	DATE	DESCRIPTION	DATE APPD	APP'D	DATE SCHL APP'D

ISSUE FOR AGENCY APPROVAL
ISSUE DATE: 02/10/03

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gwlaswww
F:\Y2k\VILTA-RCB\DWG\MPS\ALS2-009.dwg

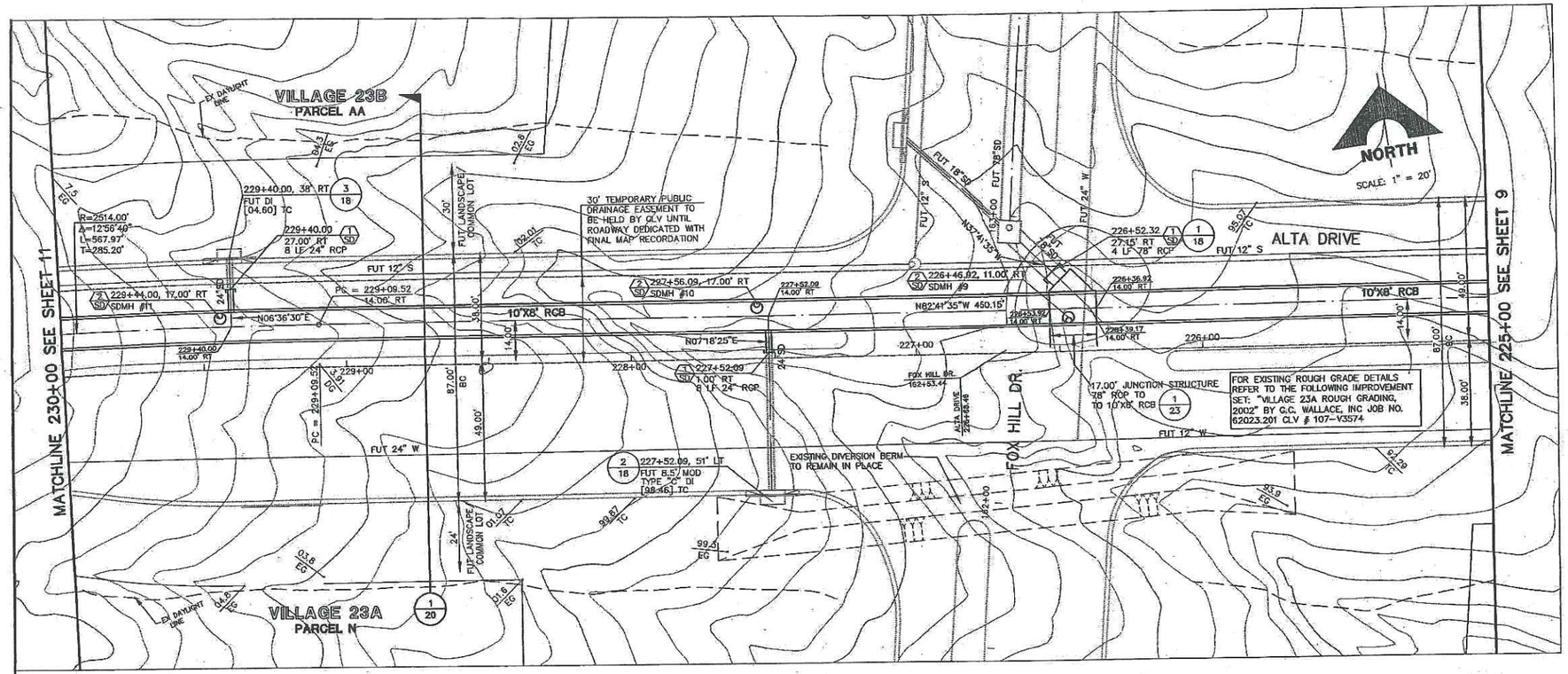
SUMMERLIN

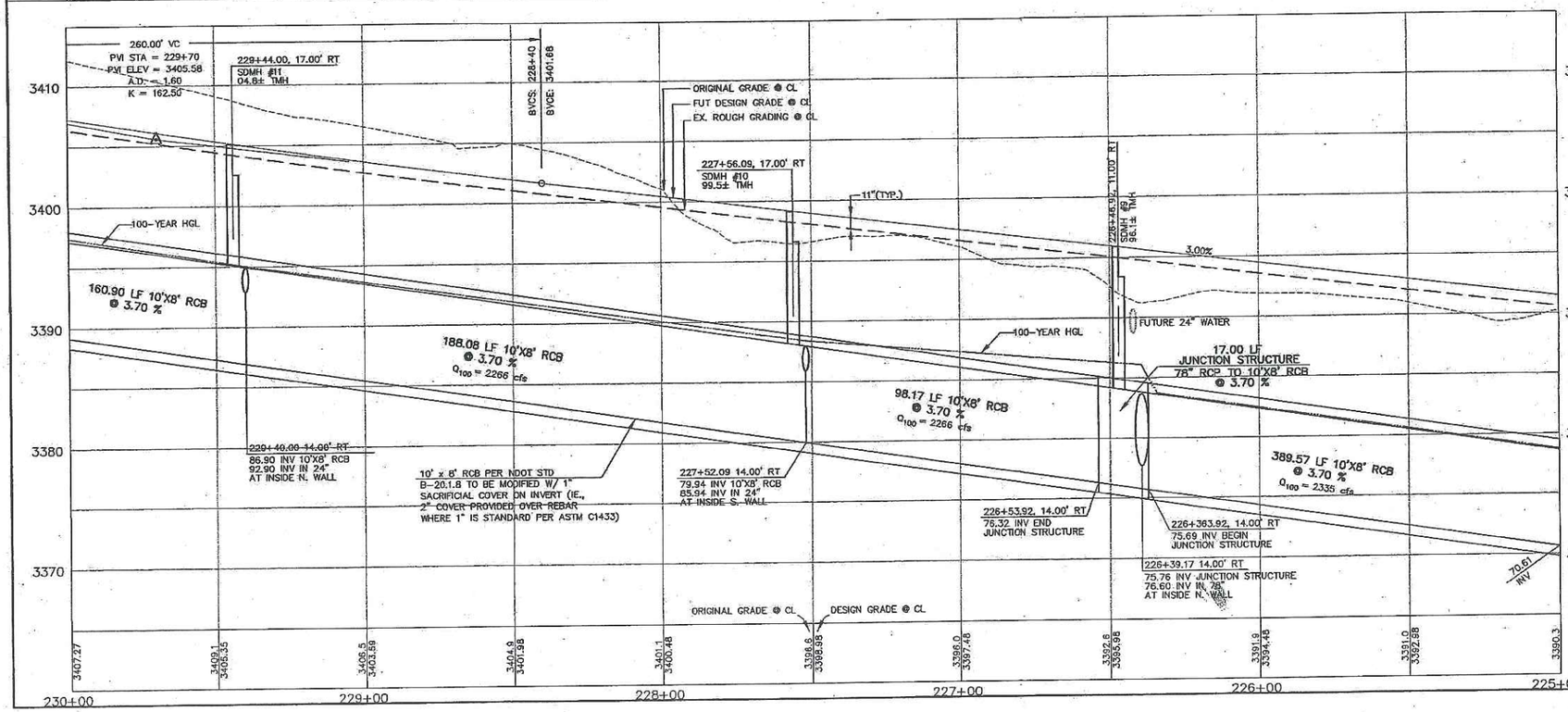
VILL. 23A/23B ALTA DR. RCB REQ. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 220+00 TO STA 225+00

SHEET 9
9 OF 32 SHTS

JOB NO. 62052.233





ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

SCALE 20 0 20 40 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 0368 S	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

STATE OF NEVADA — PROFESSIONAL ENGINEER — No. 10257 — DATE: 6/1/03

DESIGN: GTP
DRAWN: GTP
CHECK: DBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 06-05-03
PLOT TIME: 09:10:37

REV.	DATE	DESCRIPTION	DATE APPD.	APP'D	DATE ADDN.	APP'D

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD.,STE.400, LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2909

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ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

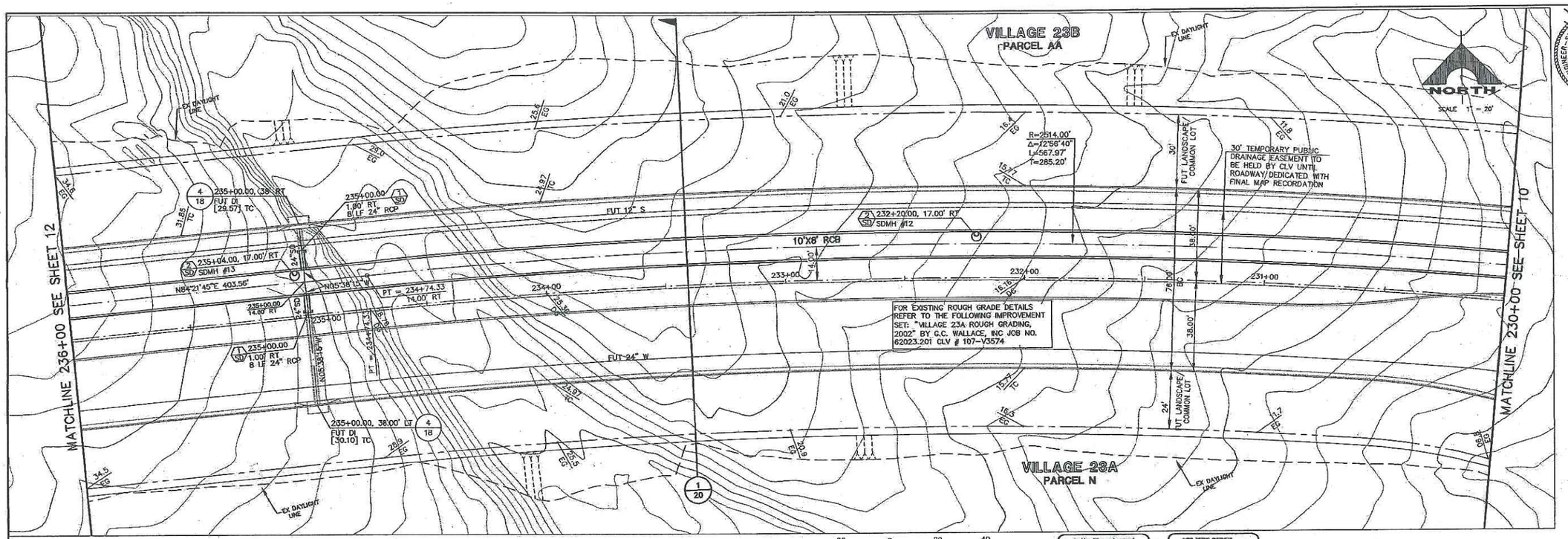
SUMMERLIN

VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 225+00 TO 230+00

SHEET 10
10 OF 32 SHTS

JOB NO. 62052.233



ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

20 0 20 40
SCALE FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.569 (METERS)

BASIS OF BEARINGS

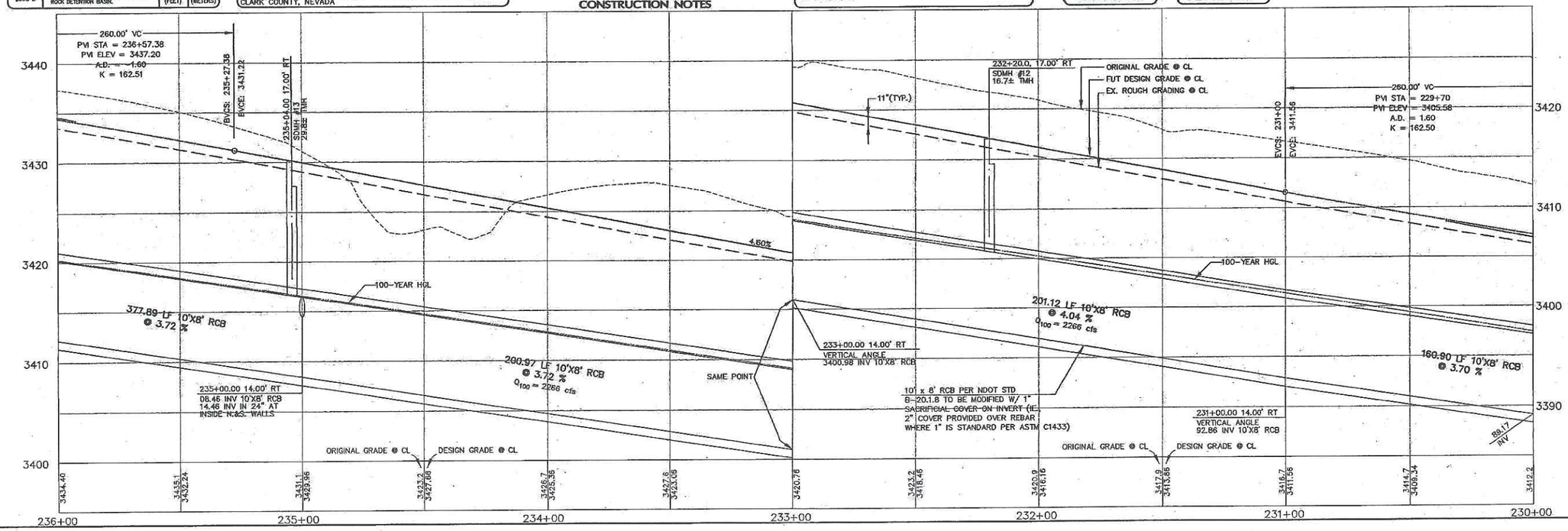
NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111



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DRAWN: GTP
CHECK: GBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 05-09-03
PLOT TIME: 09:10:38

DESCRIPTION	DATE	APP	DATE	AGENCY APP

DATE: 4/7/03

BRETT A. HUGHES — No. 9509 — STATE OF NEVADA — REGISTERED PROFESSIONAL ENGINEER — CIVIL

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 FAX (702) 804-2099
F:\V23\ALTA-RCB\DWG\MPES_VA5240-01.dwg gpeterson

ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

SUMMERLIN

VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 230+00 TO 236+00

SHEET 11
11 OF 32 SHTS

JOB NO. 62052.203

VILLAGE 28

VILLAGE 24

VILLAGE 23B
PARCEL AA

VILLAGE 23A
PARCEL N

MATCHLINE SEE SHEET 13 FOR CONTINUATION OF RCB

MATCHLINE 236+00 SEE SHEET 11

COLLECTOR RD

ALTA DRIVE

NORTH
SCALE: 1" = 20'

EXISTING BERM AND RIPRAP TO REMAIN IN PLACE

R=10.00'
Δ=65°00'00"
L=163.19'
T=100.80'

EX DAYLIGHT LINE

FUTURE L.V.V.W.D. SERVICE AREA FOR PRV

30' TEMPORARY PUBLIC DRAINAGE EASEMENT TO BE HELD BY CLV UNTIL ROADWAY DEDICATED WITH FINAL MAP RECORDATION

30' FUT LANDSCAPE/ COMMON LOT

240+61.00
14.00' RT

R=1086.00'
Δ=05°14'25"
L=99.32'
T=49.70'

FUT 12" S
N84°21'45"E 9.69'

PC = 239+60.40
14.00' RT

42" SD

239+50.71, 14.00' RT
SDMH #14A

N52°30'27"E
24.64'

COLLECTOR ROAD
239+01.40

239+60.40
RCB

FUT 30" W

238+77.89, 17.00' RT
SDMH #14

10'X8' RCB

N84°21'45"E 403.56'

PC = 238+77.89
14.00' RT

CONTRACTOR TO RESTORE EXISTING DIVERSION BERM AND CHANNEL

FUT 24" W

FUTURE BUS STOP

FOR EXISTING ROUGH GRADE DETAILS REFER TO THE FOLLOWING IMPROVEMENT SET: "VILLAGE 23A ROUGH GRADING, 2002" BY G.C. WALLACE, INC JOB NO. 62023.201 CLV # 107-V3574

2419.00'

76.00'

38.00'

241+00

240+00

239+00

238+00

237+00

3445

3440

38.0' EOP

38.01 TC

45.30 TC

43.9 EOG

42.5 EOG

42.0 EOG

40.3 EOG

37.78 EOG

45.78 TC

43.78 TC

41.78 TC

14.00'

11.88 TC

38.0' EOP

75.00' EOP

24' CROSSGUTTER/ COMMON LOT

20 0 20 40
SCALE FEET

1/20

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

NOTE

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1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID NEARBY OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111

3450
3440
3430
3420
3410

PVI STA = 242+80
PVI ELEV = 3455.88
A.D. = 4.10
K = 97.56
400.00' VC

EVCS: 240+80
EVCE: 3449.88

LIMIT OF CONSTRUCTION

3.00%

COLLECTOR STREET
PVI STA = 239+60.40
PVI ELEV = 3446.29

FOR CLARITY PURPOSES THE EXISTING BERM AND RIPRAP HAVE BEEN OMITTED FROM THE PROFILE.

239+50.71, 14.00' RT
SDMH #14A
46.4± TMH

17.00' RT

238+77.89, 17.00' RT
SDMH #14
44.3± TMH

ORIGINAL GRADE @ CL
FUT DESIGN GRADE @ CL
EX. ROUGH GRADING @ CL

EVCS: 237+87.38
EVCE: 3441.10

260.00' VC
PVI STA = 236+57.38
PVI ELEV = 3437.20
A.D. = 1.60
K = 162.51

11"(TYP.)

FUTURE 30" WATER
STA: 239+34.91
AT RCB CL

100-YEAR HGL

109.01 L.F.~42" CLASS III RCP @ 3.70%
Q_{100} = 40 cfs

240+61.00 14.00' RT
33.23 INV 42" SD

239+50.71 14.00' RT
29.20 INV 42" SD

18.91 L.F.~42" CLASS III RCP @ 3.70%

54.04 LF 10'X8' RCB @ 3.73 %
Q_{100} = 2266 cfs

239+29.78 14.00' RT
24.55 INV 10'X8' RCB
28.50 INV 42" SD
AT INSIDE S. WALL

238+77.89 14.00' RT
22.53 INV 10'X8' RCB
AT PC OF CURVE

377.89 LF 10'X8' RCB @ 3.72 %
Q_{100} = 2266 cfs

12.18 INV.

SEE SHEET 13 FOR CONTINUATION OF RCB

ORIGINAL GRADE @ CL
DESIGN GRADE @ CL

10' x 8' RCB PER NDOT STD B-20.1.8 TO BE MODIFIED W/ 1" SACRIFICIAL COVER ON INVERT (IE., 2" COVER PROVIDED OVER REBAR WHERE 1" IS STANDARD PER ASTM C1433)

3454.22 3458.9 3452.23 | 3456.3 3450.60 | 3451.9 3448.98 | 3446.1 3447.48 | 3448.1 3445.98 | 3446.8 3444.48 | 3445.9 3442.98 | 3444.0 3441.48 | 3438.6 3439.83 | 3437.5 3438.24 | 3436.1 3438.40 | 3437.3

242+00 241+00 240+00 239+00 238+00 237+00 236+00

DESIGN: GTP
DRAWN: GTP
CHECK: GWB
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 05-09-03
PLOT TIME: 08:15:57

REV.	DATE	DESCRIPTION	DATE APPD.	APP.

DATE: 6/17/02

STATE OF NEVADA — ALBERT A. HUGHES — No. 9492 — PROFESSIONAL ENGINEER — 6/17/02

ISSUE FOR AGENCY APPROVAL

ISSUE DATE: 02/10/03

JOB NO. 62052.233

SHEET 12 OF 32 SHTS

SUMMERLIN

VLL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 236+00 TO STA 241+00

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD.
LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2600 • FAX: (702) 804-2299
F:\V23\ALTA-RCB\DWG\VLV23-02012.dwg

HA 2240

RESPONSE TO COMMENTS ON THE CONCEPTUAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B

62023.050

October 2003

Prepared for:

Howard Hughes Properties, Inc.
a Nevada Corporation
10000 West Charleston Boulevard, Suite 200
Las Vegas, NV 89135
Phone: (702) 791-4300
Fax: (702) 791-4450

G. C. WALLACE, INC.
Engineers/Planners/Surveyors

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

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City of Las Vegas

Chip Maxfield
Vice-Chairman
Clark County

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Karla Burton
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Mayor James Gibson
City of Henderson

Michael Mack
City of Las Vegas

Mayor Bill Nicholes
City of Mesquite

Bruce L. Woodbury
Clark County

November 20, 2003

Mr. Randy Fultz, P.E.
City of Las Vegas Public Works
731 S. Fourth St
Las Vegas, NV 89101

DISTRICT CONCURRENCE: SUMMERLIN VILLAGE 23B (DS3420)
(RFCD NO. 03-5463)

Dear Mr. Fultz:

Clark County Regional Flood Control District (District) reviewed Conceptual Drainage Study dated October 10, 2003, for the above-mentioned project as submitted by G. C. Wallace, Inc. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Public Works dated October 24, 2003.

District concurs with acceptance of this Conceptual Drainage Study by City of Las Vegas Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage.*

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by G. C. Wallace, Inc. may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: _____
Andrew R. Trelease, P.E.
Senior Civil Engineer

ART:css

c: Randall K. Gremlich, P.E., G. C. Wallace, Inc.

File: 20-59-34.GCW

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: http://www.ccrfcd.org

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: October 24, 2003
TO: Land Development Services Department of Public Works			FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Conceptual Drainage Study for: Summerlin Village 23B		COPIES TO: G.C. Wallace Inc.
Cross Streets:	NWC of Alta Drive & Desert Foothills Drive		Howard Hughes Corp.
File Number:	F:\Depot\DSMEMOS\DS3420B.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-010		CCRFCD
Zoning Action:			
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID G.R. No.
1st Submittal	9/15/2003	9/29/2003	Not Approved	$250.00	110938: $250
2nd Submittal	10/10/2003	10/24/2003	See Comments Below	$400.00	112511: $400
			TOTAL FEES (LDDRS):	$650.00	—

REMARKS:

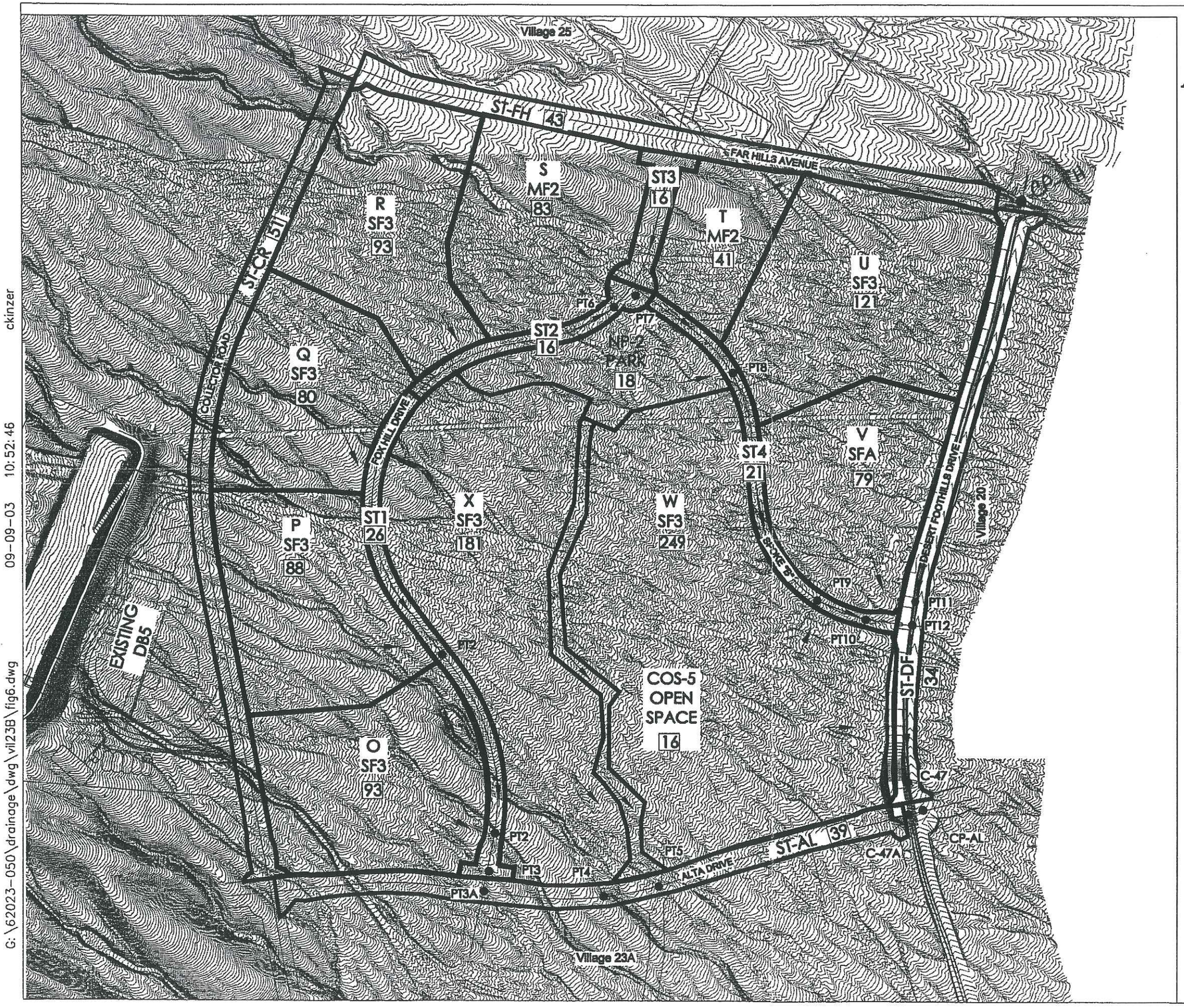
The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

1. **This drainage study is acceptable in concept,** however, the City of Las Vegas will not formally accept the study until the Clark County Regional Flood Control District (CCRFCD) has issued a letter of concurrence. The Engineer should contact the CCRFCD to confirm that they have begun their review.
2. **The proposed public drainage easement (privately maintained) in Figure 7 will be dedicated and recorded in the final map of individual parcel upon site development.**
3. ***Hydraulic calculations for the storm drains must be provided in a technical drainage study for this Village upon site development.***
4. ***Projects that disturb more than one acre of land must submit to the Nevada Division of Environmental Protection: (1) a "Notice of Intent" to discharge, (2) a request for inclusion in the Stormwater General Permit No. GNV0022241, and (3) a stormwater pollution prevention plan. For more information, please call (775) 687-4670, ext. 3138.***

END OF REMARKS
B&H/ays

Post-it® Fax Note 7671	Date 10/27	# of pages ▶
To Randall Gremlich	From Albert Sung	
Co./Dept. G C Wallace	Co. CLV Flood	
Phone #	Phone # 229-2007	
Fax # 804-2899	Fax #	



09-09-03 10:52:46 ckinzer

G:\62023-050\drainage\dwg\vil23B\fig6.dwg

NORTH

SCALE 1"=600'

GRAPHIC SCALE

600 0 300 600

(IN FEET)

1 inch = 600 ft.

STREET CROSS SECTION SUMMARY

BASIN/ CONC. POINT	AREA	Q10(cfs)	Q100(cfs)
ST-CR	15.8	24	51
Q	26.6	35	80
P	30.0	39	88
PT1	–	73	167
O	31.8	41	93
PT2	–	112	257
ST1	7.8	13	26
PT3	–	125	283
PT3A	–	–	2318
X	58.0	78	181
PT4	–	–	2344
COS-5	5.9	6	16
PT5	–	–	2347
R	31.2	42	93
S	27.5	38	83
PT6	–	77	173
ST2	4.0	8	16
ST3	3.7	8	16
PT7	–	87	193
NP-2	13.4	4	18
PT8	–	89	203
W	84.9	110	249
PT9	–	193	452
ST4	5.8	10	21
PT10	–	202	471
U	39.5	54	121
V	27.2	34	79
PT11	–	88	199
PT12	–	290	670
ST-DF	12.9	16	34
C-47	–	305	703
C-47A	–	–	2461
ST-AL	12.0	19	39
CP-AL	–	–	2467
T	13.7	18	41
ST-FH	13.2	21	43
CP-FH	–	38	82

LEGEND

A — PARCEL AND BASIN NAME

——— PROPOSED STORM DRAIN

SF3 — PARCEL DENSITIES

13 — MAXIMUM COMBINED DISCHARGE FROM PARCEL

→ FLOW DIRECTION

SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY

FIGURE 6

ULTIMATE CONDITIONS
DRAINAGE BASIN MAP

G.C. WALLACE, INC.
Engineers/Planners/Surveyors

Village 25

FAR HILLS AVENUE

8'x7' RCB @ 2%

36" @ 2%

DP18

Parcel R
SF3
93

Parcel S
MF2
83

Parcel T
MF2
41

Parcel U
SF3
121

ST-CR 51

COLLECTOR ROAD

42" @ 2%

DP9

193 cfs

54" @ 2%

SCENIC DRIVE

97 cfs

42" @ 2%

DP8

Parcel Q
SF3
80

Parcel
NP-2
PARK
18

48" @ 2%

DP13

DP10

FOX HILL DRIVE

HIGH POINT

116 cfs
42" @ 2%

COS-5
OPEN
SPACE
16

Parcel V
SFA
79

Village 20

42" @ 2%

DP1

Parcel X
SF3
181

60" @ 2%

301 cfs

Parcel P
SF3
88

Parcel W
SF3
249

42" @ 2%

DP14

216 cfs
54" @ 2%

DP11

DP12

452 cfs

199 cfs
54" @ 2%

72" @2%

471 cfs
72" @ 2%

DP15

42" @ 2%

DP2

DB5

PUBLIC DRAINAGE
EASEMENT
TO BE PRIVATELY
MAINTAINED

670 cfs
84" @ 2%

12 cfs 24"

12 cfs 24"

703 cfs
7'x7' RCB @ 2%

13 cfs 24"

27 cfs
30" @ 1.0%

DP16

DP17

Parcel O
SF3
93

7 cfs
24" @ 1%

DP7

42" @ 2%

45 cfs
36" @ 1.5%

16 cfs
30" @ 1.0%

DP6

DP3

283 cfs
60" @ 2%

ALTA DRIVE

ST-AL 39

Ex. 10'x8' RCB

DP4

DP5

NORTH

SCALE 1"=600'

GRAPHIC SCALE

600 0 300 600

(IN FEET)

1 inch = 600 ft.

LEGEND

- A — PARCEL NAME
- PROPOSED STORM DRAIN
- DP1 — DESIGN POINT
- 13 — MAXIMUM DISCHARGE FROM PARCEL
- 3 3 — STREET CROSS SECTION LOCATION
- EXISTING STORM DRAIN
- FUTURE EASEMENT

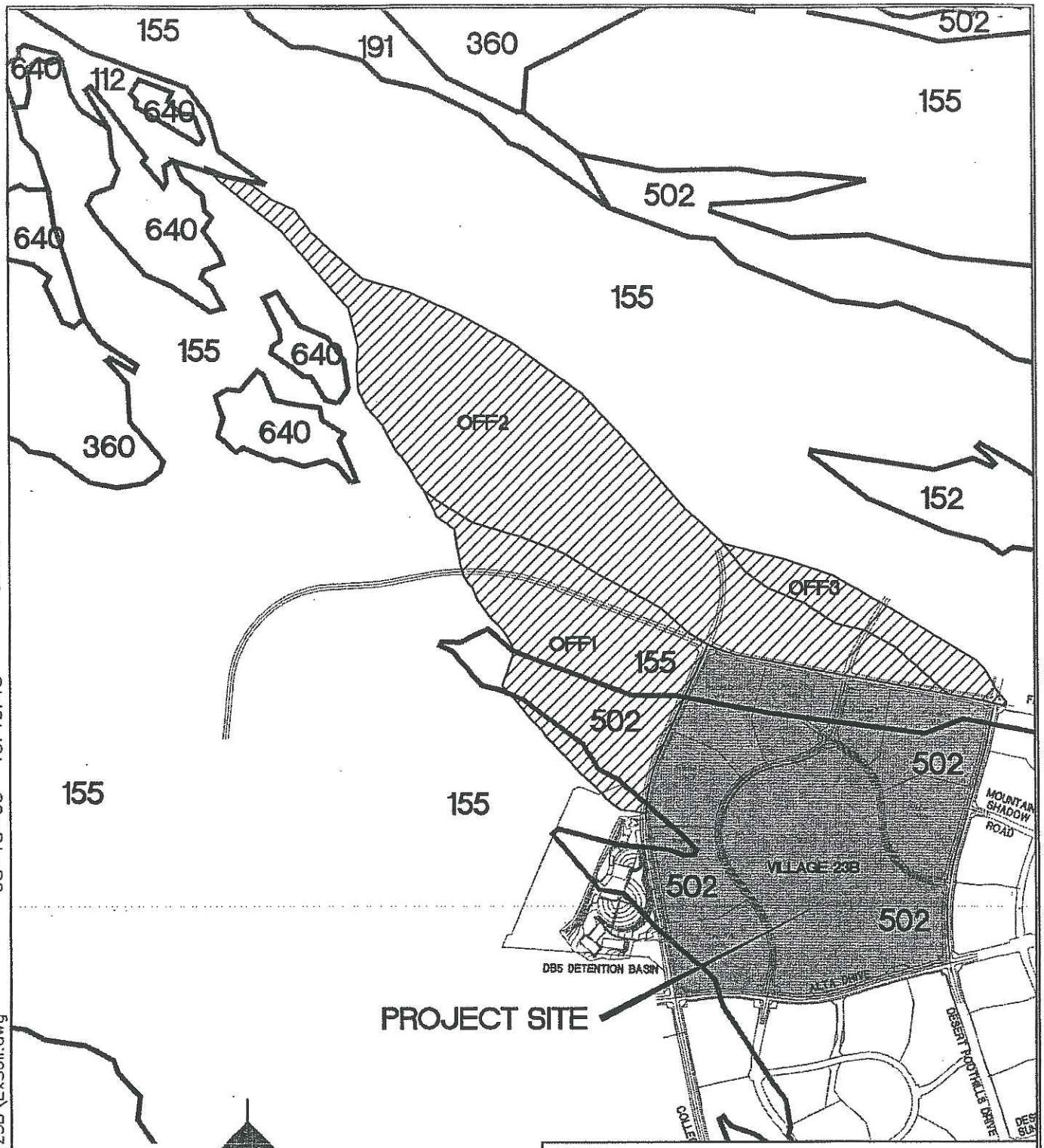
SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY

FIGURE 7

DRAINAGE FACILITIES MAP

G.C. WALLACE, INC.
Engineers/Planners/Surveyors

C:\62023-050\drainage\dwg\vil23B\fig7.dwg 09-26-03 17:53:60 ckinzer



SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY

SOIL

EXHIBIT

G.C. WALLACE, INC.
Engineers/Planning/Surveyors

G:\62023-050\drainage\dwg\vil23B\ExSoil.dwg 08-18-03 15:40:48 ablack

PARK/OPEN SPACE

Composite Curve Number Calculations

Hydrologic Soil Group	Park (Fair Condition)	Open Space (Natural Desert Landscaping)
A	49.0	63.0
B	69.0	77.0
D	84.0	88.0

G.C. Wallace, Inc.

Date: 12/5/01

File: 2revCN.wb3

By: ALG

SOIL 502

Description	Type	%	Park	Open Space
Arizo	A	5.00%	2.5	3.2
Canutio	B	55.00%	38.0	42.4
Cave	D	40.00%	33.6	35.2
Composite CN		100.00%	74.0	80.7

SOIL 155

Description	Type	%	Park	Open Space
Arizo	A	5.00%	2.5	3.2
Caliza	B	5.00%	3.5	3.9
Cave	D	90.00%	75.6	79.2
Composite CN		100.00%	81.5	86.2

(63)(.05) = 3.15

(77)(.05) = 3.85

PROPOSED CONDITIONS

SUBBASIN	Park/Open Space		COMP CN
SUBBASIN	Soil 502	Soil 155	
NP-2	100.00%	0.00%	74

Assume for Hill = 75% landscaping

(86.2)(.25) = 21.55

(99)(.75) = 74.25

95.80

RUNOFF CURVE NUMBERS
(URBAN AREAS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	[84] ← COS-5
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved: curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved: open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	[81]	[88]	91	[93] ← Residential
Residential districts by average lot size:					
See Table 602A					
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

Composite Curve Number Calculations

Hydrologic Soil Group	Residential	Commercial	Open Space (Natural Desert Landscaping)	Interior Streets
A	81.0	81.0	63.0	98.0
B	88.0	88.0	77.0	98.0
D	93.0	93.0	88.0	98.0

G.C. Wallace, Inc.
Date: 9/11/03
File: CN.wb3
By: AT

SOIL 502

Description	Type	%	Residential	Residential	Open Space (Natural Desert Landscaping)	Interior Streets
Arizo	A	5.00%	4.1	4.1	3.2	4.9
Canutio	B	55.00%	48.4	48.4	42.4	53.9
Cave	D	40.00%	37.2	37.2	35.2	39.2
Composite CN		100.00%	89.7	89.7	80.7	98.0

SOIL 155

Description	Type	%	Residential	Residential	Open Space (Natural Desert Landscaping)	Interior Streets
Arizo	A	5.00%	4.1	4.1	3.2	4.9
Caliza	B	5.00%	4.4	4.4	3.9	4.9
Cave	D	90.00%	83.7	83.7	79.2	88.2
Composite CN		100.00%	92.2	92.2	86.2	98.0

PROPOSED CONDITIONS

SUBBASIN	Residential		COMP CN (Residential)	Open Space (Natural Desert Landscaping)		Interior Streets		COMP CN (Street)
SUBBASIN	Soil 502	Soil 155		Soil 502	Soil 155	Soil 502	Soil 155	
O	82.70%	17.30%	90					
P	86.40%	13.60%	90					
Q	96.50%	3.50%	90					
R	57.10%	42.90%	91					
S	44.70%	55.30%	91					
T	44.00%	56.00%	91					
U	65.60%	34.40%	91					
V	100.00%	0.00%	90					
X	100.00%	0.00%	90					
W	100.00%	0.00%	90					
ST1				100.00%	0.00%	100.00%	0.00%	95
ST2				100.00%	0.00%	100.00%	0.00%	95
ST3				30.70%	69.30%	30.70%	69.30%	95
ST4				100.00%	0.00%	100.00%	0.00%	95

*RESIDENTIAL (Density = 8.0 units per acre)
(Lot Size = < 6000 sq. ft.)
**ROADWAY (80% PAVED, 20% LANDSCAPE)

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

G.C. Wallace, Inc.
File: ULT-SF4.WB2
Project No.: 62023-050

SUMMERLIN VILLAGE 23B
ULTIMATE CONDITIONS

BY: ALG
DATE: 08/26/03

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc CHECK URBANIZED BASINS		Tc	Tlag	REMARKS
DESIG: (1)	DEV./EX. (D or E)	CN	K (2)	AREA Ac (3)	AREA MI^2	INITIAL LENGTH Feet (4)	SLOPE % (5)	Ti Min (6)	TRAVEL LENGTH Feet (7)	SLOPE % (8)	V1 VELOCITY FPS (9a)	V2 VELOCITY FPS (9b)	Tt Min (10)	TOTAL LENGTH Ft (11)	Tc = (L/180)+10 Min (12)	Min (13)	Tlag= 0.6Tc/60 Hours	
O	D	90.0	0.7980	31.81	0.04970	100	1.0	5.4	2085	3.6	3.8	5.8	6.8	2185	22.1	12.2	0.122	
P	D	90.0	0.7980	30.05	0.04695	100	1.0	5.4	1890	3.7	3.9	5.9	6.1	1990	21.1	11.5	0.115	
Q	D	90.0	0.7980	26.65	0.04164	100	1.0	5.4	1545	3.6	3.8	5.8	5.2	1645	19.1	10.6	0.106	
R	D	91.0	0.8112	31.21	0.04877	100	1.0	5.2	2185	2.2	3.0	4.5	9.0	2285	22.7	14.2	0.142	
S	D	91.0	0.8112	27.54	0.04303	100	1.0	5.2	1850	2.8	3.4	5.1	6.9	1950	20.8	12.1	0.121	
T	D	91.0	0.8112	13.67	0.02136	100	1.0	5.2	1225	1.8	2.7	4.1	6.0	1325	17.4	11.2	0.112	
U	D	91.0	0.8112	39.49	0.06170	100	1.0	5.2	1220	2.0	2.9	4.3	5.7	1320	17.3	10.9	0.109	
V	D	90.0	0.7980	27.19	0.04248	100	1.0	5.4	2200	2.3	3.1	4.6	8.8	2300	22.8	14.3	0.143	
ST1	D	95.0	0.8640	7.80	0.01219	21	2.0	1.5	3185	2.3	3.1	4.7	12.3	3206	27.8	13.8	0.138	
ST2	D	95.0	0.8640	4.00	0.00625	21	2.0	1.5	1500	3.6	3.8	5.8	5.0	1521	18.5	6.6	0.066	
ST3	D	95.0	0.8640	3.74	0.00584	21	2.0	1.5	830	3.6	3.8	5.8	3.1	851	14.7	4.7	0.047	
ST4	D	95.0	0.8640	5.84	0.00913	21	2.0	1.5	2840	4.2	4.1	6.2	8.3	2861	25.9	9.8	0.098	
NP-2	D	74.0	0.5868	13.42	0.02097	500	5.0	12.1	2930	5.0	4.5	6.8	7.8	3430	29.1	19.8	0.198	
X	D	90.0	0.7980	58.05	0.09070	100	1.0	5.4	1450	4.8	4.4	6.7	4.2	1550	18.6	9.7	0.097	
W	D	90.0	0.7980	84.95	0.13273	100	1.0	5.4	2400	4.7	4.4	6.6	6.7	2500	23.9	12.1	0.121	
COS-5	D	84.0	0.7188	5.94	0.00928	36.5	2.0	3.3	1500	5.0	4.5	6.8	4.3	1537	18.5	7.6	0.076	

Ti = 1.8 (1.1 - K) L^1/2 / S^1/3

K = 0.0132 (CN) - 0.39

V1 applies to the first 500 feet of travel distance;
V2 applies to the remaining travel distance.

Existing V2 = 29.4*(S/100)^1/2

Developed V2 = 30.6*(S/100)^1/2

REFERENCE :

STANDARD FORM 4

```
**********************************************
*                                            *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)       *
*              MAY  1991                     *
*           VERSION 4.0.1E                   *
*      Lahey F77L-EM/32 version 5.01         *
*        Dodson & Associates, Inc.           *
*  RUN DATE  09/02/03  TIME  15:27:59        *
**********************************************
```

```
**************************************
*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET         *
*       DAVIS, CALIFORNIA 95616      *
*            (916) 551-1748          *
*                                    *
**************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

          *DIAGRAM
  1       ID   ********************************************************************
  2       ID   * .............................................................. *
  3       ID   * :                  SUMMERLIN VILLAGE 23B                   : *
  4       ID   * :                  MASTER STUDY UPDATE (MAY 2002)          : *
  5       ID   * :                  DEVELOPED ONSITE                        : *
  6       ID   * :                  DEVELOPED OFFSITE                       : *
  7       ID   * :...........................................................: *
  8       ID   * :             RETURN PERIOD_ _ _ _10 & 100-YEAR            : *
  9       ID   * :             DISTRIBUTION_ _ _ _ 6-HOUR SDN3              : *
 10       ID   * :             PROJECT NO_ _ _ _ _ 62023.050                : *
 11       ID   * :             FILENAME_ _ _ _ _ _ VILL23DEV.DAT            : *
 12       ID   * :             DATE_ _ _ _ _ _ _ _ 05/20/02                 : *
 13       ID   * :             MODELED BY_ _ _ _ _ ALG                      : *
 14       ID   * :                                                          : *
 15       ID   * :  DEPTH AREA REDUCTION FACTORS:                           : *
 16       ID   * :  AREA                DARF                                : *
 17       ID   * :  0.5 SQ MI            .98                                : *
 18       ID   * :  1.0 SQ MI            .97                                : *
 19       ID   * :  1.5 SQ MI            .95                                : *
 20       ID   * :  2.0 SQ MI            .93                                : *
 21       ID   * :  7.65 SQ MI           .89                                : *
 22       ID   * :  10-YEAR STORM        .55                                : *
 23       ID   * :...........................................................: *
 24       ID   ********************************************************************
 25       IT       5       0       0     200
 26       IO       5       0
 27       IN       5       0       0
 28       JR    PREC     1.0     .98     .97     .95     .93     .89     .55

 29       KK   UNIT1
 30       KM
 31       KM    UNIT 1 AS ANALYZED IN VILLAGE 20
 32       KM
 33       KM            AREA   369.7      AC
 34       KM            Tlag   17.84     MIN
 35       KM              CN      87
 36       BA  0.5776
 37       PB    3.29
 38       PC   0.000   .0200   .0570   .0700   .0870   .1080   .1240   .1300   .1300   .1300
 39       PC   .1300   .1300   .1300   .1330   .1400   .1420   .1480   .1580   .1720   .1810
 40       PC   .1900   .1970   .1990   .2000   .2010   .2040   .2140   .2290   .2410   .2490
 41       PC   .2510   .2560   .2700   .2780   .2810   .2830   .2950   .3220   .3520   .4090
 42       PC   .4990   .5900   .7100   .7440   .7810   .8120   .8190   .8350   .8510   .8560
 43       PC   .8600   .8680   .8760   .8880   .9100   .9260   .9370   .9500   .9700   .9760
 44       PC   .9820   .9850   .9870   .9890   .9900   .9930   .9930   .9940   .9950   .9980
 45       PC   .9980   .9990  1.000
 46       LS       0      87
 47       UD   .1784
          *
          *
          *  BASIN PARAMETERS FOR OFFSITE BASINS TAKEN
          *  DIRECTLY FROM SUMMERLIN VILLAGE WEST DB#4 MODIFICATION UPDATE
          *
```

1 HEC-1 INPUT PAGE 2

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 48       KK     4-1
 49       KM
 50       KM    OFFSITE WATERSHED
 51       KM
 52       KM            AREA 1412.53      AC
 53       KM              Kn   0.040
 54       KM               S 1041.05   FT/MI
 55       KM              Lc    1.21      MI
```

```
56          KM              L     2.87      MI
57          KM          Tcheck     N/A     MIN
58          KM           Tlag    38.1     MIN
59          KM             CN      90
60          BA  2.2071
61          PB    3.72
62          LS       0      90
63          UD   0.381
            *

64          KK     R-1
65          KM   ROUTE DOWNSTREAM OF 4-5  THROUGH 4-5
66          KM   UNDEVELOPED AREA
67          RM       1   0.084     0.3
            *

68          KK     4-5
69          KM
70          KM    OFFSITE WATERSHED
71          KM
72          KM            AREA  140.93      AC
73          KM              Lo     500      FT
74          KM              So    56.0       %
75          KM              Lt    5655      FT
76          KM              St    24.3       %
77          KM              V1    7.30    FT/S
78          KM              V2   14.49    FT/S
79          KM              Ti    3.45     MIN
80          KM              Tt    7.07     MIN
81          KM          Tcheck     N/A     MIN
82          KM           Tlag   10.52     MIN
83          KM             CN      88
84          BA  .22021
85          PB    3.67
86          LS       0      88
87          UD   0.105
            *

88          KK     C-1
89          KM   COMBINE 4-1 & 4-5 U/S OF 4-6
90          KM   LIMITED DEVELOPMENT (RED ROCK PRESENT WITHIN SUB-BASIN 4-6)
91          HC       2
            *
```



```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

92          KK     R-2
93          KM   ROUTE DOWNSTREAM OF 4-6 THROUGH 4-6 & THROUGH PROPOSED DIVERSION BERM
94          RM       4   0.319     0.3
            *

95          KK     4-2
96          KM
97          KM    OFFSITE WATERSHED
98          KM
99          KM            AREA  173.39      AC
100         KM              Lo     500      FT
101         KM              So    61.0       %
102         KM              Lt    4710      FT
103         KM              St    40.7       %
104         KM              V1    9.44    FT/S
105         KM              V2   18.76    FT/S
106         KM              Ti    2.95     MIN
107         KM              Tt    4.62     MIN
108         KM          Tcheck     N/A     MIN
109         KM           Tlag    7.57     MIN
110         KM             CN      91
111         BA  .27093
112         PB    3.66
113         LS       0      91
114         UD   0.076
            *

115         KK     R-3
116         KM   ROUTE DOWNSTREAM OF 4-4 THROUGH 4-4
117         RM       1   0.123     0.3
            *

118         KK     4-3
119         KM
120         KM    OFFSITE WATERSHED
121         KM
122         KM            AREA  302.39      AC
123         KM              Lo     500      FT
124         KM              So    52.9       %
125         KM              Lt    4610      FT
126         KM              St    42.0       %
127         KM              V1    9.59    FT/S
128         KM              V2   19.05    FT/S
129         KM              Ti    2.96     MIN
130         KM              Tt    4.46     MIN
131         KM          Tcheck     N/A     MIN
132         KM           Tlag    7.42     MIN
133         KM             CN      92
134         BA  .47249
135         PB    3.67
136         LS       0      92
137         UD   0.074
            *
```



```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
```

```
138          KK     R-4
139          KM   ROUTE DOWNSTREAM OF 4-4 THROUGH 4-4
140          RM       1   0.107      0.3
             *

141          KK     4-4
142          KM
143          KM    ONSITE WATERSHED (PORTION OF VILLAGE 30)
144          KM
145          KM             AREA  171.67       AC
146          KM               Lo     500       FT
147          KM               So    15.5        %
148          KM               Lt    5040       FT
149          KM               St     9.3        %
150          KM               V1    6.16     FT/S
151          KM               V2    9.33     FT/S
152          KM               Ti    4.88      MIN
153          KM               Tt    9.46      MIN
154          KM          Tcheck   40.78      MIN
155          KM            Tlag   14.34      MIN
156          KM               CN      90
157          BA  .26824
158          PB   3.61
159          LS      0       90
160          UD  0.143
             *

161          KK     C-2
162          KM   COMBINE 4-2, 4-3, & 4-4 D/S OF 4-4
163          HC       3
             *

164          KK     R-5
165          KM   ROUTE DOWNSTREAM OF 4-6 THROUGH 4-6 & THROUGH PROPOSED DIVERSION BERM
166          RM       2   0.150      0.3
             *

167          KK     4-6
168          KM
169          KM    ONSITE WATERSHED (PORTION OF VILLAGE 29 & 30)
170          KM
171          KM             AREA  518.65       AC
172          KM               Lo     500       FT
173          KM               So     9.0        %
174          KM               Lt   12245       FT
175          KM               St     6.8        %
176          KM               V1    5.27     FT/S
177          KM               V2    7.98     FT/S
178          KM               Ti    6.35      MIN
179          KM               Tt   26.11      MIN
180          KM          Tcheck   80.81      MIN
181          KM            Tlag   32.46      MIN
182          KM               CN      88
183          BA  .81039
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

184          PB    3.57
185          LS       0       88
186          UD   0.325
             *

187          KK     C-3
188          KM   COMBINE C-1, C-2, & 4-6 D/S OF 4-6 (POSSIBLE BRIDGE OR CULVERT LOCATION)
189          KM   PENDING THE DESIGN & PLANNING (POSSIBLE FUTURE ROAD LAYOUT)
190          HC       3
             *

191          KK     R-6
192          KM   ROUTE DOWNSTREAM OF 4-7 THROUGH 4-7
193          RD    1690    .049   0.040            TRAP      60       3
             *

194          KK    4-7A
195          KM    PREVIOUS DB#4 AREA
196          KM    ONSITE WATERSHED
197          KM    IN ALL LIKELIHOOD TO REMAIN UNDEVELOPED OPEN SPACE AREA
198          KM
199          KM             AREA   19.57       AC
200          KM               Lo     500       FT
201          KM               So     5.0        %
202          KM               Lt    1190       FT
203          KM               St     4.9        %
204          KM               V1    4.47     FT/S
205          KM               V2    6.77     FT/S
206          KM               Ti    8.35      MIN
207          KM               Tt    3.56      MIN
208          KM          Tcheck   19.39      MIN
209          KM            Tlag   11.91      MIN
210          KM               CN      86
211          BA  .03058
212          PB    3.44
213          LS       0       86
214          UD   0.119
             *

215          KK     C-4
216          KM   COMBINE C-3 & 4-7 D/S OF 4-7
217          KM   ENTRANCE TO EXPANDED DB5
218          HC       2
             *

219          KK  DCHANN
```

```
220         DT    DC-4
            * division channel 60' wide bottom width
221         DI       0    4173    6277    7979    9586   11174   12714   14247   15747   17260
222         DI   18761   20246   21743   23223   24683   26153   27631   29119   30584   32058
223         DQ       0       0    1000    2000    3000    4000    5000    6000    7000    8000
224         DQ    9000   10000   11000   12000   13000   14000   15000   16000   17000   18000
            *
            *
            * WATERSHEDS TRIBUTARY DIRECTLY TO EXPANDED DB5
            *
```



```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

225         KK     5-1
226         KM
227         KM     OFFSITE WATERSHED
228         KM
229         KM             AREA  451.90      AC
230         KM               Lo     500      FT
231         KM               So    95.0       %
232         KM               Lt   11390      FT
233         KM               St    17.8       %
234         KM               V1    6.24    FT/S
235         KM               V2   12.40    FT/S
236         KM               Ti    2.66     MIN
237         KM               Tt   15.97     MIN
238         KM          Tcheck     N/A     MIN
239         KM            Tlag   18.63     MIN
240         KM              CN      90
241         BA  .70610
242         PB    3.68
243         LS       0      90
244         UD   0.186
            *
245         KK     R-7
246         KM    ROUTE DOWNSTREAM OF 5-2 THROUGH 5-2
247         RM       1   0.114     0.3
            *
248         KK     5-2
249         KM
250         KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
251         KM
252         KM             AREA   59.04      AC
253         KM               Lo     500      FT
254         KM               So     9.5       %
255         KM               Lt    3910      FT
256         KM               St     8.2       %
257         KM               V1    5.78    FT/S
258         KM               V2    8.76    FT/S
259         KM               Ti    6.74     MIN
260         KM               Tt    7.93     MIN
261         KM          Tcheck   34.50     MIN
262         KM            Tlag   14.67     MIN
263         KM              CN      86
264         BA  .09225
265         PB    3.56
266         LS       0      86
267         UD   0.147
            *
```



```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

268         KK     C-5
269         KM    COMBINE 5-1 & 5-2
270         KM     POSSIBLE ROAD LAYOUT LOCATION
271         HC       2
            *
272         KK     R-8
273         KM    ROUTE DOWNSTREAM OF 5-5
274         RD    1050    .058   0.040            TRAP      50       3
            *
275         KK     5-3
276         KM
277         KM     OFFSITE WATERSHED
278         KM
279         KM             AREA  137.32      AC
280         KM               Lo     500      FT
281         KM               So    44.0       %
282         KM               Lt    2830      FT
283         KM               St    24.7       %
284         KM               V1    7.36    FT/S
285         KM               V2   14.61    FT/S
286         KM               Ti    3.29     MIN
287         KM               Tt    3.79     MIN
288         KM          Tcheck     N/A     MIN
289         KM            Tlag    7.08     MIN
290         KM              CN      91
291         BA  .21456
292         PB    3.61
293         LS       0      91
294         UD   0.071
            *
295         KK     R-9
296         KM    ROUTE DOWNSTREAM OF 5-4 TRHOUGH 5-4
297         RD    2040   0.079   0.040            TRAP      50       3
            *
```

```
298          KK     5-4
299          KM
300          KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
301          KM
302          KM              AREA  142.73      AC
303          KM                Lo     500      FT
304          KM                So    23.0       %
305          KM                Lt    3665      FT
306          KM                St     8.5       %
307          KM                V1    5.89    FT/S
308          KM                V2    8.92    FT/S
309          KM                Ti    4.83     MIN
310          KM                Tt    7.33     MIN
311          KM           Tcheck   33.14     MIN
312          KM             Tlag   12.16     MIN
313          KM                CN      87
1                                        HEC-1 INPUT                                        PAGE  8

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

314          BA  .22302
315          PB   3.59
316          LS      0       87
317          UD  0.122
             *

318          KK     C-6
319          KM   COMBINE 5-3 & 5-4
320          HC       2
             *

321          KK    R-10
322          KM   ROUTE DOWNSTREAM OF 5-5 TRHOUGH 5-5
323          RD   3250   0.065   0.040            TRAP      45        3
             *

324          KK     5-5
325          KM
326          KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
327          KM
328          KM              AREA  122.45      AC
329          KM                Lo     500      FT
330          KM                So     9.2       %
331          KM                Lt    3270      FT
332          KM                St     6.6       %
333          KM                V1    5.19    FT/S
334          KM                V2    7.86    FT/S
335          KM                Ti    6.82     MIN
336          KM                Tt    7.48     MIN
337          KM           Tcheck   30.94     MIN
338          KM             Tlag   14.30     MIN
339          KM                CN      86
340          BA  .19134
341          PB   3.54
342          LS      0       86
343          UD  0.143
             *

344          KK     C-7
345          KM   COMBINE C-5, C-6, & 5-5
346          HC       3
             *

347          KK    R-11
348          KM   ROUTE DOWNSTREAM OF 5-8 TRHOUGH 5-8
349          RM       2   0.167     0.3
             *

350          KK     5-6
351          KM
352          KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
353          KM
354          KM              AREA   56.77      AC
355          KM                Lo     500      FT
356          KM                So    10.6       %
1                                        HEC-1 INPUT                                        PAGE  9

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

357          KM                Lt    2155      FT
358          KM                St     8.4       %
359          KM                V1    5.85    FT/S
360          KM                V2    8.87    FT/S
361          KM                Ti    6.50     MIN
362          KM                Tt    4.53     MIN
363          KM           Tcheck   24.75     MIN
364          KM             Tlag   11.03     MIN
365          KM                CN      86
366          BA  .08870
367          PB   3.51
368          LS      0       86
369          UD  0.110
             *

370          KK    R-12
371          KM   ROUTE DOWNSTREAM OF 5-8 TRHOUGH 5-8
372          RM       2   0.186     0.3
             *

373          KK     5-7
374          KM
375          KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
376          KM
377          KM              AREA  281.98      AC
```

```
378          KM              Lo     500       FT
379          KM              So    13.5        %
380          KM              Lt    8105       FT
381          KM              St     7.9        %
382          KM              V1    5.68     FT/S
383          KM              V2    8.60     FT/S
384          KM              Ti    6.00      MIN
385          KM              Tt   16.20      MIN
386          KM          Tcheck   57.81      MIN
387          KM            Tlag   22.20      MIN
388          KM              CN      86
389          BA  .44060
390          PB    3.54
391          LS       0      86
392          UD   0.222
             *

393          KK    R-13
394          KM   ROUTE DOWNSTREAM OF 5-8 TRHOUGH 5-8
395          RM       1   0.109     0.3
             *

396          KK     5-8
397          KM
398          KM    ONSITE WATERSHED (PORTION OF VILLAGE 30)
399          KM    PORTION OF EXPANDED DB5
400          KM
401          KM            AREA  357.54      AC
402          KM              Lo     500       FT
403          KM              So     6.0        %
1                                  HEC-1 INPUT                                    PAGE 10

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

404          KM              Lt    5385       FT
405          KM              St     5.6        %
406          KM              V1    4.78     FT/S
407          KM              V2    7.24     FT/S
408          KM              Ti    7.86      MIN
409          KM              Tt   12.99      MIN
410          KM          Tcheck   42.69      MIN
411          KM            Tlag   20.85      MIN
412          KM              CN      86
413          BA  .54303
414          PB    3.46
415          LS       0      86
416          UD   0.208
             *

417          KK     C-8
418          KM   COMBINE C-7, 5-6, 5-7, & 5-8
419          HC       4
             *

420          KK     C-9
421          KM   COMBINE C-4 & C-8
422          KM   TOTAL INFLOW PROPOSED TO BE ACCEPTED BY EXPANSION OF DB5
423          HC       2
             *

424          KK  DB5MOD
425          KO       1
426          KM   EXPANSION OF DB5 TO ACCOMMODATE THE 100-YEAR STORM EVENT
427          KM   PMF RUNOFF WILL REMAIN THE SAME.  DIVERSION BERM THAT CAPTURES
428          KM   RUNOFF FROM PREVIOUSLY PLANNED DB4 IS DESIGNED ONLY FOR THE 100-YEAR STORM
429          RS       1    STOR      -1
430          SV       0    1.73     4.55     8.45    13.08    18.20    23.81    29.96    36.70    43.93
431          SV   59.55   77.49    99.82   127.17   159.39   196.38   240.07   286.47   358.85   535.25
432          SQ       0     192      276      391      505      616      725      813      900      982
433          SQ    1176    1368     1534     1683     1804     1920     2033     2135     2273     2567
434          SE  3532.5    3535     3536     3537     3538     3539     3540     3541     3542     3543
435          SE    3545    3547     3549     3551     3553     3555     3557     3559     3562     3569
436          SS  3563.0  453.60        3      1.5
437          ST    3569  2504.3        3      1.5
             *

438          KK     R14
439          KM   ROUTE THE FLOWS DISCHRGED FROM DB5 TO ALTA DRIVE
440          RD    2550    .055    .013            CIRC       5
             *
             * THE FOLLOWING HYDROGRAPHS WERE TAKEN DIRECTLY FROM 1997 SWMPU
             *

441          KK     4-7
442          BA    .103
443          PB    3.43
444          LS       0      87
445          UD    .133
             *
1                                  HEC-1 INPUT                                    PAGE 11

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

446          KK    R4-7
447          KM   ROUTE THE FLOWS GENERATED BY 4-7 TO ALTA DRIVE RCB
448          RM       2     .14      .3
             *

449          KK     5-9
450          BA   .0387
451          PB    3.43
452          LS       0      87
453          UD    .128
             *
```

```
454          KK     C11
455          KM   COMBINE EXPANDED DB5, 4-7, & 5-9 INTO ALTA DRIVE RCB
456          HC       3
             *

457          KK    RC11
458          KM   ROUTE THE FLOWS WITHIN ALTA DRIVE TO LAKE MEAD BLVD.
459          RD    3850    .035    .015            TRAP      10       0
             *

460          KK   ST-CR
461          KM
462          KM    COLLECTOR ROAD (NORTH)
463          KM
464          KM            AREA    15.8      AC
465          KM            Tlag   16.30     MIN
466          KM              CN      93
467          BA  0.0247
468          LS       0      93
469          UD   .1630
             *

470          KK    C-DB
471          KM   COMBINE COLLECTOR ROAD AND DETENTION BASIN OUTFLOW
472          HC       2
             *

473          KK     Q
474          KM
475          KM            AREA   26.65      AC
476          KM            Tlag    10.6     MIN
477          KM              CN      90
478          BA  .04164
479          PB    3.29
480          LS       0    90.0
481          UD    .106
             *
1                                        HEC-1 INPUT                                        PAGE 12

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

482          KK   R/C
483          KM   ROUTE THROUGH ST1 (FOX HILL) TO PT1
484          RD    1100   0.029   0.016            TRAP       0      50
             *

485          KK     P
486          KM
487          KM            AREA   30.05      AC
488          KM            Tlag    11.5     MIN
489          KM              CN      90
490          BA  .04695
491          LS       0    90.0
492          UD    .115
             *

493          KK   PT1
494          KM   COMBINE P AND Q
495          HC       2
             *

496          KK   R/PT1
497          KM   ROUTE THROUGH ST1 (FOX HILL) TO PT1
498          RD    1400   0.041   0.016            TRAP       0      50
             *

499          KK     O
500          KM
501          KM            AREA   31.81      AC
502          KM            Tlag    12.2     MIN
503          KM              CN      90
504          BA  .04970
505          LS       0    90.0
506          UD    .122
             *

507          KK   PT2
508          KM   COMBINE O AND PT1
509          HC       2
             *

510          KK   ST1
511          KM
512          KM            AREA    7.80      AC
513          KM            Tlag    13.8     MIN
514          KM              CN      95
515          BA  .01219
516          LS       0    95.0
517          UD    .138
             *
1                                        HEC-1 INPUT                                        PAGE 13

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

518          KK   PT3
519          KM   COMBINE PT2 AND ST1
520          HC       2
             *

521          KK   PT3A
522          KM   COMBINE PT3 WITH ALTA BOX
523          HC       2
```

```
*
524  KK     X
525  KM
526  KM            AREA    58.05      AC
527  KM            Tlag     9.7      MIN
528  KM              CN      90
529  BA  .09070
530  LS        0    90.0
531  UD     .097
*
532  KK   PT4
533  KM   COMBINE X AND PT3
534  HC         2
*
535  KK   COS5
536  KM
537  KM            AREA     5.94      AC
538  KM            Tlag      7.6      MIN
539  KM              CN       84
540  BA  .00928
541  LS        0    84.0
542  UD     .076
*
543  KK   PT5
544  KM   COMBINE COS5 AND PT4
545  HC         2
*
546  KK     R
547  KM
548  KM            AREA    31.21      AC
549  KM            Tlag     14.2      MIN
550  KM              CN     91.0
551  BA  .04877
552  LS        0    91.0
553  UD   0.142
*
1                                   HEC-1 INPUT                                 PAGE 14

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

554  KK   R/R
555  KM   ROUTE THROUGH ST2 (FOX HILL) TO ROUND-A-BOUT
556  RD    1100   0.051   0.016              TRAP        0       50
*
557  KK     S
558  KM
559  KM            AREA    27.54      AC
560  KM            Tlag     12.1      MIN
561  KM              CN       91
562  BA  .04303
563  LS        0    91.0
564  UD     .121
*
565  KK   PT6
566  KM   COMBINE  R AND S
567  HC         2
*
568  KK   ST2
569  KM
570  KM            AREA     4.00      AC
571  KM            Tlag      6.6      MIN
572  KM              CN       95
573  BA  .00625
574  LS        0    95.0
575  UD     .066
*
576  KK   ST3
577  KM
578  KM            AREA     3.74      AC
579  KM            Tlag      5.0      MIN (USE 5.0 MINUTES AS A MINIMUM)
580  KM              CN       95
581  BA  .00584
582  LS        0    95.0
583  UD     .050
*
584  KK   PT7
585  KM   COMBINE PT6, ST2, AND ST3
586  HC         3
*
587  KK  R/PT2
588  KM   ROUTE THROUGH ST4 (SPOKE ROAD) TO DESERT FOOTHILLS
589  RD    2840   0.042   0.016              TRAP        0       50
*
1                                   HEC-1 INPUT                                 PAGE 15

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

590  KK   NP-2
591  KM
592  KM            AREA     13.4      AC
593  KM            Tlag     19.8      MIN
594  KM              CN       74
```

```
595          BA  .02097
596          LS       0    74.0
597          UD    .198
             *

598          KK   PT8
599          KM   COMBINE NP-2 AND PT7
600          HC       2
             *

601          KK    W
602          KM
603          KM             AREA   84.95      AC
604          KM             Tlag    12.1     MIN
605          KM               CN      90
606          BA  .13273
607          LS       0    90.0
608          UD    .121
             *

609          KK    PT9
610          KM   COMBINE W AND PT7
611          HC       2
             *

612          KK   ST4
613          KM
614          KM             AREA    5.84      AC
615          KM             Tlag    9.8      MIN
616          KM               CN      95
617          BA  .00913
618          LS       0    95.0
619          UD    .098
             *

620          KK   PT10
621          KM   COMBINE PT9 AND ST4
622          HC       2
             *

623          KK    U
624          KM
625          KM             AREA   39.49      AC
626          KM             Tlag    10.9     MIN
627          KM               CN      91
628          BA  .06170
629          LS       0    91.0
630          UD    .109
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

631          KK   R/U
632          KM   ROUTE THROUGH DESERT FOOTHILLS
633          RD    1790   0.042   0.016            TRAP       0      50
             *

634          KK    V
635          KM
636          KM             AREA   27.19      AC
637          KM             Tlag    14.3     MIN
638          KM               CN      90
639          BA  .04248
640          LS       0    90.0
641          UD    .143
             *

642          KK   PT11
643          KM   COMBINE V AND U
644          HC       2
             *

645          KK   PT12
646          KM   COMBINE PT11 AND PT10
647          HC       2
             *

648          KK   ST-DF
649          KM
650          KM    DESERT FOOTHILLS DRIVE (NORTH)
651          KM
652          KM             AREA    12.9      AC
653          KM             Tlag   21.40     MIN
654          KM               CN      92
655          BA  0.0202
656          LS       0      92
657          UD   .2140
             *

658          KK    C-47
659          KM   COMBINE C-46 AND ALTA DRIVE
660          HC       2
             *

661          KK   C-47A
662          KM   COMBINE C-47 AND C-34
663          HC       2
             *

664          KK   ST-AL
665          KM
666          KM    ALTA DRIVE
667          KM
```

```
668          KM            AREA    12.0      AC
669          KM            Tlag    13.55     MIN
670          KM              CN      94
```

1 HEC-1 INPUT

```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

671          BA  0.0188
672          LS        0       94
673          UD   .1355
             *

674          KK   CP-AL
675          KM   COMBINE C-47A AND ALTA DRIVE
676          HC        2
             *

677          KK      T
678          KM
679          KM              AREA   13.40      AC
680          KM              Tlag    11.2      MIN
681          KM                CN      91
682          BA  .02094
683          LS        0     91.0
684          UD    .112
             *

685          KK   R/T
686          KM   ROUTE THROUGH ST4 (FOX HILL) TO PT3
687          RD    2300   0.042   0.016              TRAP       0       50
             *

688          KK   ST-FH
689          KM
690          KM    FAR HILLS AVENUE
691          KM
692          KM              AREA    13.2      AC
693          KM              Tlag   12.40      MIN
694          KM                CN      94
695          BA  0.0206
696          LS        0       94
697          UD   .1240
             *

698          KK   CP-FH
699          KM   COMBINE F AND ST5 (FAR HILLS DRIVE)
700          HC        2
             *

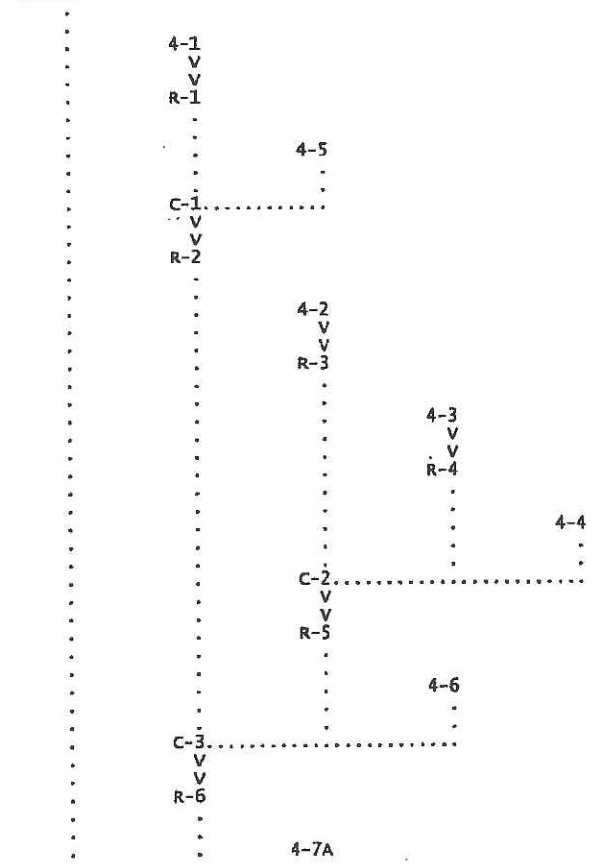
701          ZZ
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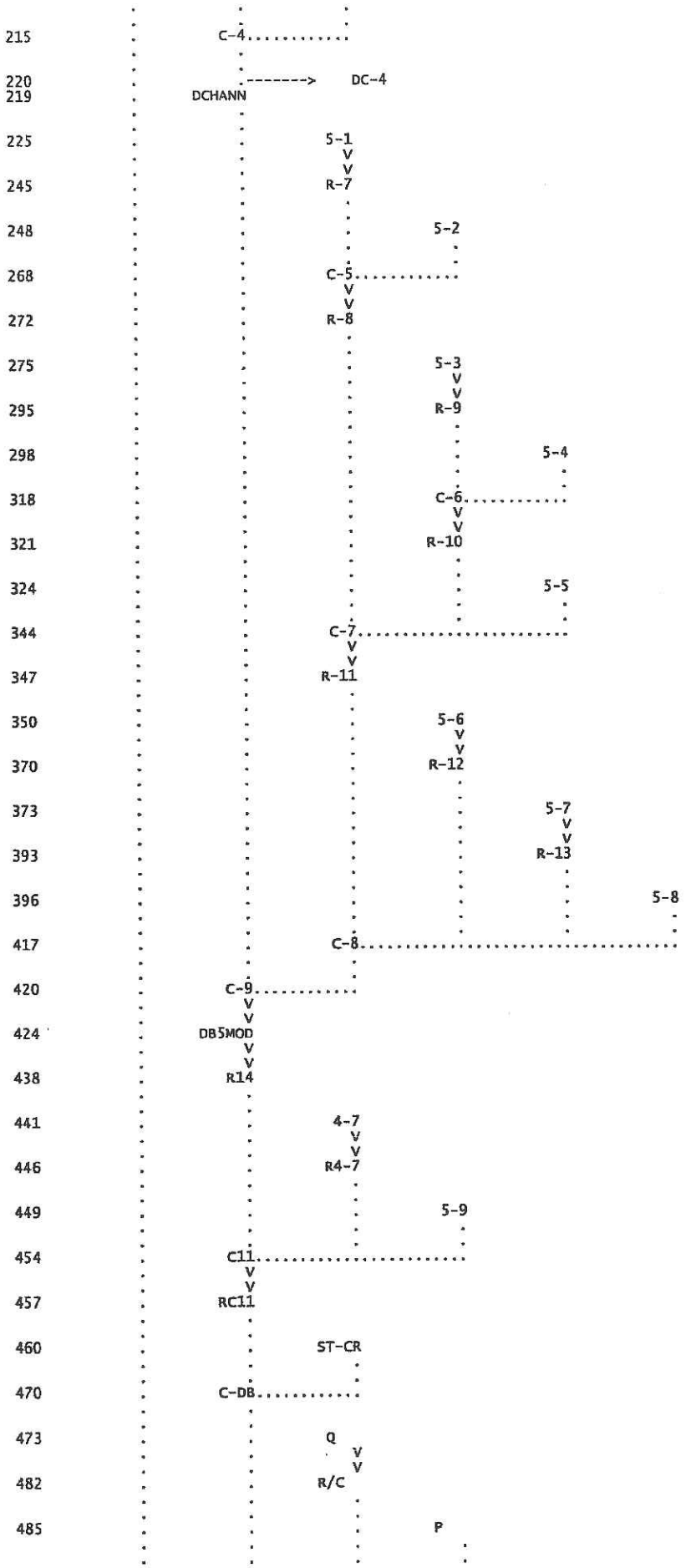
1 SCHEMATIC DIAGRAM OF STREAM NETWORK

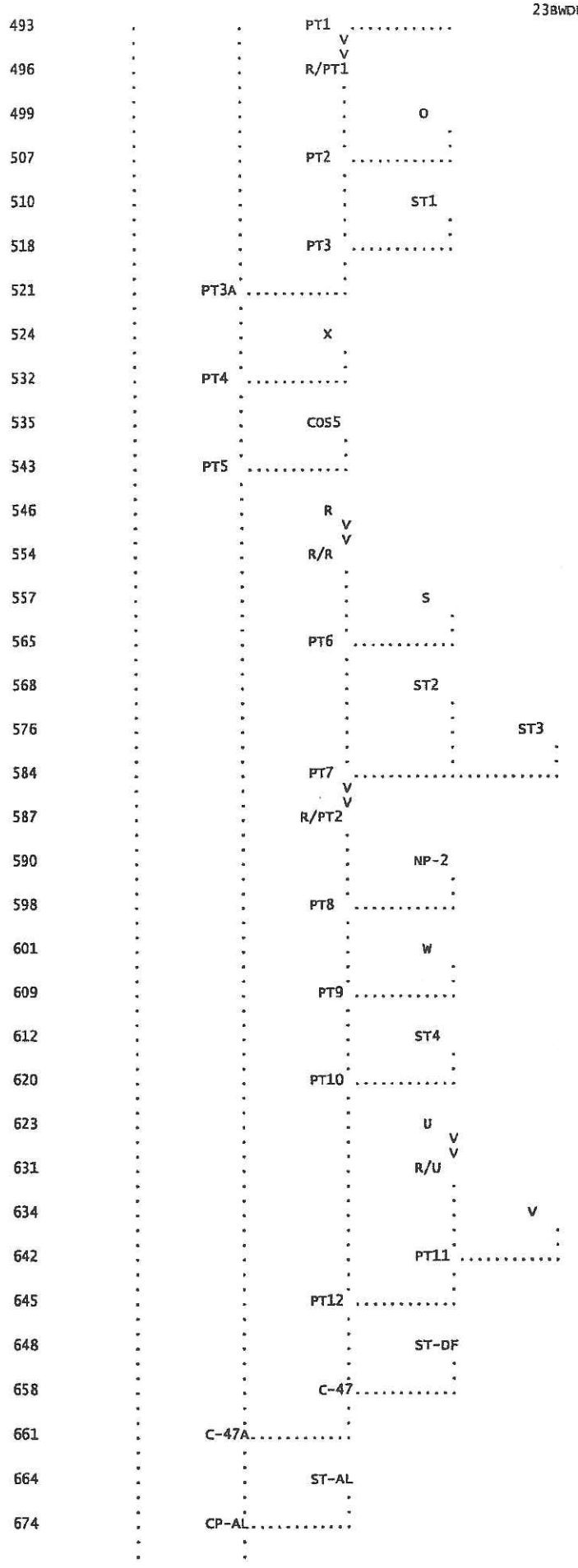
INPUT LINE NO.

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW




215
C-4
220
DC-4
219
DCHANN
225
5-1
245
R-7
248
5-2
268
C-5
272
R-8
275
5-3
295
R-9
298
5-4
318
C-6
321
R-10
324
5-5
344
C-7
347
R-11
350
5-6
370
R-12
373
5-7
393
R-13
396
5-8
417
C-8
420
C-9
424
DB5MOD
438
R14
441
4-7
446
R4-7
449
5-9
454
C11
457
RC11
460
ST-CR
470
C-DB
473
Q
482
R/C
485
P


493
PT1
496
R/PT1
499
O
507
PT2
510
ST1
518
PT3
521
PT3A
524
X
532
PT4
535
COS5
543
PT5
546
R
554
R/R
557
S
565
PT6
568
ST2
576
ST3
584
PT7
587
R/PT2
590
NP-2
598
PT8
601
W
609
PT9
612
ST4
620
PT10
623
U
631
R/U
634
V
642
PT11
645
PT12
648
ST-DF
658
C-47
661
C-47A
664
ST-AL
674
CP-AL

```
677          .          .          T
             .          .          V
             .          .          V
685          .          .       R/T
             .          .          .
             .          .          .
688          .          .          .       ST-FH
             .          .          .          .
             .          .          .          .
698          .          .       CP-FH.........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
**********************************************
*                                            *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)        *
*             MAY   1991                     *
*          VERSION 4.0.1E                    *
*     Lahey F77L-EM/32 version 5.01          *
*       Dodson & Associates, Inc.            *
*  RUN DATE  09/02/03  TIME  15:27:59        *
**********************************************
```

```
**************************************
*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET         *
*       DAVIS, CALIFORNIA 95616      *
*           (916) 551-1748           *
*                                    *
**************************************
```

```
*****************************************************************
*  :.....................................................:      *
*  :                  SUMMERLIN VILLAGE 23B              :      *
*  :                  MASTER STUDY UPDATE (MAY 2002)     :      *
*  :                  DEVELOPED ONSITE                   :      *
*  :                  DEVELOPED OFFSITE                  :      *
*  :.....................................................:      *
*  :             RETURN PERIOD_ _ _ _10 & 100-YEAR       :      *
*  :             DISTRIBUTION_ _ _ _ _ 6-HOUR SDN3       :      *
*  :             PROJECT NO_ _ _ _ _ _ 62023.050         :      *
*  :             FILENAME_ _ _ _ _ _ _ VILL23DEV.DAT     :      *
*  :             DATE_ _ _ _ _ _ _ _ _ 05/20/02          :      *
*  :             MODELED BY_ _ _ _ _ _ ALG               :      *
*  :                                                     :      *
*  :  DEPTH AREA REDUCTION FACTORS:                      :      *
*  :  AREA              DARF                             :      *
*  :  0.5 SQ MI          .98                             :      *
*  :  1.0 SQ MI          .97                             :      *
*  :  1.5 SQ MI          .95                             :      *
*  :  2.0 SQ MI          .93                             :      *
*  :  7.65 SQ MI         .89                             :      *
*  :  10-YEAR STORM      .55                             :      *
*  :.....................................................:      *
*****************************************************************
```

```
 26 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN          5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME         0000  STARTING TIME
                        NQ          200  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      1    0  ENDING DATE
                    NDTIME         1635  ENDING TIME
                     ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL     0.08 HOURS
                      TOTAL TIME BASE    16.58 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT

    JP            MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR            MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                  1.00      0.98      0.97      0.95      0.93      0.89      0.55
```

*** ***

```
            ***************
            *             *
 424 KK     *    DB5MOD   *
            *             *
            ***************

 425 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          1  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                         EXPANSION OF DB5 TO ACCOMMODATE THE 100-YEAR STORM EVENT
                         PMF RUNOFF WILL REMAIN THE SAME.  DIVERSION BERM THAT CAPTURES
                         RUNOFF FROM PREVIOUSLY PLANNED DB4 IS DESIGNED ONLY FOR THE 100-YEAR STORM

                HYDROGRAPH ROUTING DATA
```

```
429 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       STOR  TYPE OF INITIAL CONDITION
                   RSVRIC      -1.00  INITIAL CONDITION
                        X       0.00 WORKING R AND D COEFFICIENT

430 SV          STORAGE          0.0        1.7        4.6        8.4       13.1       18.2       23.8       30.0       36.7       43.9
                                59.5       77.5       99.8      127.2      159.4      196.4      240.1      286.5      358.9      535.3

432 SQ          DISCHARGE         0.      192.       276.       391.       505.       616.       725.       813.       900.       982.
                               1176.     1368.      1534.      1683.      1804.      1920.      2033.      2135.      2273.      2567.

434 SE          ELEVATION      3532.50    3535.00    3536.00    3537.00    3538.00    3539.00    3540.00    3541.00    3542.00    3543.00
                               3545.00    3547.00    3549.00    3551.00    3553.00    3555.00    3557.00    3559.00    3562.00    3569.00

436 SS          SPILLWAY
                     CREL     3563.00  SPILLWAY CREST ELEVATION
                     SPWID     453.60  SPILLWAY WIDTH
                     COQW        3.00  WEIR COEFFICIENT
                     EXPW        1.50  EXPONENT OF HEAD

437 ST          TOP OF DAM
                     TOPEL    3569.00  ELEVATION AT TOP OF DAM
                     DAMWID   2504.30  DAM WIDTH
                     COQD        3.00  WEIR COEFFICIENT
                     EXPD        1.50  EXPONENT OF HEAD
```

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

(INCLUDING FLOW OVER DAM)

STORAGE	0.00	1.73	4.55	8.45	13.08	18.20	23.81	29.96	36.70	43.93
OUTFLOW	0.00	192.00	276.00	391.00	505.00	616.00	725.00	813.00	900.00	982.00
ELEVATION	3532.50	3535.00	3536.00	3537.00	3538.00	3539.00	3540.00	3541.00	3542.00	3543.00
STORAGE	59.55	77.49	99.82	127.17	159.39	196.38	240.07	286.47	358.85	535.25
OUTFLOW	1176.00	1368.00	1534.00	1683.00	1804.00	1920.00	2033.00	2135.00	2273.00	2567.00
ELEVATION	3545.00	3547.00	3549.00	3551.00	3553.00	3555.00	3557.00	3559.00	3562.00	3569.00

****

HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	1		0535	68	2320.	387.0	3563.1	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	1		0540	69	2305.	378.2	3562.8	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	1		0545	70	2289.	368.4	3562.4	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	1		0550	71	2271.	357.7	3562.0	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	1		0555	72	2249.	346.4	3561.5	1		1130	139	0.	0.0	3532.5
1		0025	6	1.	0.0	3532.5	1		0600	73	2227.	334.6	3561.0	1		1135	140	0.	0.0	3532.5
1		0030	7	7.	0.1	3532.6	1		0605	74	2204.	322.4	3560.5	1		1140	141	0.	0.0	3532.5
1		0035	8	25.	0.2	3532.8	1		0610	75	2180.	310.0	3560.0	1		1145	142	0.	0.0	3532.5
1		0040	9	63.	0.6	3533.3	1		0615	76	2155.	297.2	3559.4	1		1150	143	0.	0.0	3532.5
1		0045	10	116.	1.0	3534.0	1		0620	77	2130.	284.3	3558.9	1		1155	144	0.	0.0	3532.5
1		0050	11	170.	1.5	3534.7	1		0625	78	2101.	271.2	3558.3	1		1200	145	0.	0.0	3532.5
1		0055	12	196.	1.9	3535.0	1		0630	79	2072.	258.0	3557.8	1		1205	146	0.	0.0	3532.5
1		0100	13	200.	2.0	3535.1	1		0635	80	2043.	244.7	3557.2	1		1210	147	0.	0.0	3532.5
1		0105	14	197.	1.9	3535.1	1		0640	81	2011.	231.5	3556.6	1		1215	148	0.	0.0	3532.5
1		0110	15	190.	1.7	3535.0	1		0645	82	1977.	218.4	3556.0	1		1220	149	0.	0.0	3532.5
1		0115	16	170.	1.5	3534.7	1		0650	83	1943.	205.3	3555.4	1		1225	150	0.	0.0	3532.5
1		0120	17	161.	1.5	3534.6	1		0655	84	1908.	192.4	3554.8	1		1230	151	0.	0.0	3532.5
1		0125	18	162.	1.5	3534.6	1		0700	85	1868.	179.7	3554.1	1		1235	152	0.	0.0	3532.5
1		0130	19	174.	1.6	3534.8	1		0705	86	1828.	167.2	3553.4	1		1240	153	0.	0.0	3532.5
1		0135	20	194.	1.8	3535.0	1		0710	87	1787.	154.8	3552.7	1		1245	154	0.	0.0	3532.5
1		0140	21	208.	2.3	3535.2	1		0715	88	1742.	142.8	3552.0	1		1250	155	0.	0.0	3532.5
1		0145	22	233.	3.1	3535.5	1		0720	89	1697.	131.0	3551.2	1		1255	156	0.	0.0	3532.5
1		0150	23	269.	4.3	3535.9	1		0725	90	1642.	119.6	3550.4	1		1300	157	0.	0.0	3532.5
1		0155	24	309.	5.7	3536.3	1		0730	91	1581.	108.5	3549.6	1		1305	158	0.	0.0	3532.5
1		0200	25	346.	6.9	3536.6	1		0735	92	1519.	97.9	3548.8	1		1310	159	0.	0.0	3532.5
1		0205	26	375.	7.9	3536.9	1		0740	93	1444.	87.7	3547.9	1		1315	160	0.	0.0	3532.5
1		0210	27	392.	8.5	3537.0	1		0745	94	1372.	78.0	3547.0	1		1320	161	0.	0.0	3532.5
1		0215	28	400.	8.8	3537.1	1		0750	95	1276.	68.9	3546.0	1		1325	162	0.	0.0	3532.5
1		0220	29	406.	9.1	3537.1	1		0755	96	1185.	60.4	3545.1	1		1330	163	0.	0.0	3532.5
1		0225	30	419.	9.6	3537.2	1		0800	97	1089.	52.6	3544.1	1		1335	164	0.	0.0	3532.5
1		0230	31	444.	10.6	3537.5	1		0805	98	1000.	45.4	3543.2	1		1340	165	0.	0.0	3532.5
1		0235	32	479.	12.0	3537.8	1		0810	99	923.	38.8	3542.3	1		1345	166	0.	0.0	3532.5
1		0240	33	517.	13.6	3538.1	1		0815	100	848.	32.7	3541.4	1		1350	167	0.	0.0	3532.5
1		0245	34	548.	15.1	3538.4	1		0820	101	772.	27.1	3540.5	1		1355	168	0.	0.0	3532.5
1		0250	35	574.	16.3	3538.6	1		0825	102	691.	22.1	3539.7	1		1400	169	0.	0.0	3532.5
1		0255	36	598.	17.4	3538.8	1		0830	103	603.	17.6	3538.9	1		1405	170	0.	0.0	3532.5
1		0300	37	623.	18.6	3539.1	1		0835	104	519.	13.7	3538.1	1		1410	171	0.	0.0	3532.5
1		0305	38	646.	19.8	3539.3	1		0840	105	440.	10.4	3537.4	1		1415	172	0.	0.0	3532.5
1		0310	39	671.	21.0	3539.5	1		0845	106	368.	7.7	3536.8	1		1420	173	0.	0.0	3532.5
1		0315	40	709.	23.0	3539.9	1		0850	107	300.	5.4	3536.2	1		1425	174	0.	0.0	3532.5
1		0320	41	771.	27.0	3540.5	1		0855	108	244.	3.5	3535.6	1		1430	175	0.	0.0	3532.5
1		0325	42	880.	35.2	3541.8	1		0900	109	199.	2.0	3535.1	1		1435	176	0.	0.0	3532.5
1		0330	43	1058.	50.0	3543.8	1		0905	110	102.	0.9	3533.8	1		1440	177	0.	0.0	3532.5
1		0335	44	1329.	73.9	3546.6	1		0910	111	46.	0.4	3533.1	1		1445	178	0.	0.0	3532.5
1		0340	45	1575.	107.4	3549.6	1		0915	112	20.	0.2	3532.8	1		1450	179	0.	0.0	3532.5
1		0345	46	1761.	147.9	3552.3	1		0920	113	9.	0.1	3532.6	1		1455	180	0.	0.0	3532.5
1		0350	47	1902.	190.6	3554.7	1		0925	114	4.	0.0	3532.6	1		1500	181	0.	0.0	3532.5
1		0355	48	2009.	230.8	3556.6	1		0930	115	2.	0.0	3532.5	1		1505	182	0.	0.0	3532.5
1		0400	49	2092.	266.8	3558.2	1		0935	116	1.	0.0	3532.5	1		1510	183	0.	0.0	3532.5
1		0405	50	2157.	298.1	3559.5	1		0940	117	0.	0.0	3532.5	1		1515	184	0.	0.0	3532.5
1		0410	51	2209.	325.1	3560.6	1		0945	118	0.	0.0	3532.5	1		1520	185	0.	0.0	3532.5
1		0415	52	2252.	348.1	3561.6	1		0950	119	0.	0.0	3532.5	1		1525	186	0.	0.0	3532.5
1		0420	53	2286.	366.6	3562.3	1		0955	120	0.	0.0	3532.5	1		1530	187	0.	0.0	3532.5
1		0425	54	2309.	380.6	3562.9	1		1000	121	0.	0.0	3532.5	1		1535	188	0.	0.0	3532.5

1	0430	55	2326.	390.4	3563.3	* 1	1005	122	0.	0.0	3532.5	* 1	1540	189	0.	0.0	3532.5			
1	0435	56	2336.	396.9	3563.5	* 1	1010	123	0.	0.0	3532.5	* 1	1545	190	0.	0.0	3532.5			
1	0440	57	2344.	401.4	3563.7	* 1	1015	124	0.	0.0	3532.5	* 1	1550	191	0.	0.0	3532.5			
1	0445	58	2349.	404.7	3563.8	* 1	1020	125	0.	0.0	3532.5	* 1	1555	192	0.	0.0	3532.5			
1	0450	59	2354.	407.4	3563.9	* 1	1025	126	0.	0.0	3532.5	* 1	1600	193	0.	0.0	3532.5			
1	0455	60	2357.	409.5	3564.0	* 1	1030	127	0.	0.0	3532.5	* 1	1605	194	0.	0.0	3532.5			
1	0500	61	2360.	410.8	3564.1	* 1	1035	128	0.	0.0	3532.5	* 1	1610	195	0.	0.0	3532.5			
1	0505	62	2361.	411.4	3564.1	* 1	1040	129	0.	0.0	3532.5	* 1	1615	196	0.	0.0	3532.5			
1	0510	63	2360.	411.1	3564.1	* 1	1045	130	0.	0.0	3532.5	* 1	1620	197	0.	0.0	3532.5			
1	0515	64	2357.	409.4	3564.0	* 1	1050	131	0.	0.0	3532.5	* 1	1625	198	0.	0.0	3532.5			
1	0520	65	2352.	406.1	3563.9	* 1	1055	132	0.	0.0	3532.5	* 1	1630	199	0.	0.0	3532.5			
1	0525	66	2344.	401.2	3563.7	* 1	1100	133	0.	0.0	3532.5	* 1	1635	200	0.	0.0	3532.5			
1	0530	67	2333.	394.7	3563.4	* 1	1105	134	0.	0.0	3532.5	*								

PEAK OUTFLOW IS 2361. AT TIME 5.08 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)	(CFS)				
+ 2361.	5.08		1691.	652.	652.	652.
		(INCHES)	2.319	2.473	2.473	2.473
		(AC-FT)	839.	894.	894.	894.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
411.	5.08	207.	76.	76.	76.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3564.09	5.08	3553.14	3540.46	3540.46	3540.46

CUMULATIVE AREA = 6.78 SQ MI

HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.98

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	*	1		0535	68	2296.	372.6	3562.5	*	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	*	1		0540	69	2281.	363.8	3562.2	*	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	*	1		0545	70	2264.	354.0	3561.8	*	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	*	1		0550	71	2244.	343.5	3561.4	*	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	*	1		0555	72	2222.	332.3	3560.9	*	1		1130	139	0.	0.0	3532.5
1		0025	6	1.	0.0	3532.5	*	1		0600	73	2200.	320.6	3560.4	*	1		1135	140	0.	0.0	3532.5
1		0030	7	6.	0.1	3532.6	*	1		0605	74	2177.	308.5	3559.9	*	1		1140	141	0.	0.0	3532.5
1		0035	8	22.	0.2	3532.8	*	1		0610	75	2153.	296.1	3559.4	*	1		1145	142	0.	0.0	3532.5
1		0040	9	56.	0.5	3533.2	*	1		0615	76	2129.	283.5	3558.9	*	1		1150	143	0.	0.0	3532.5
1		0045	10	106.	1.0	3533.9	*	1		0620	77	2100.	270.8	3558.3	*	1		1155	144	0.	0.0	3532.5
1		0050	11	156.	1.4	3534.5	*	1		0625	78	2072.	257.8	3557.8	*	1		1200	145	0.	0.0	3532.5
1		0055	12	188.	1.7	3535.0	*	1		0630	79	2043.	244.8	3557.2	*	1		1205	146	0.	0.0	3532.5
1		0100	13	193.	1.8	3535.0	*	1		0635	80	2012.	231.8	3556.6	*	1		1210	147	0.	0.0	3532.5
1		0105	14	186.	1.7	3534.9	*	1		0640	81	1978.	218.8	3556.0	*	1		1215	148	0.	0.0	3532.5
1		0110	15	168.	1.5	3534.7	*	1		0645	82	1944.	205.8	3555.4	*	1		1220	149	0.	0.0	3532.5
1		0115	16	155.	1.4	3534.5	*	1		0650	83	1909.	193.0	3554.8	*	1		1225	150	0.	0.0	3532.5
1		0120	17	149.	1.3	3534.4	*	1		0655	84	1870.	180.3	3554.1	*	1		1230	151	0.	0.0	3532.5
1		0125	18	152.	1.4	3534.5	*	1		0700	85	1831.	167.8	3553.5	*	1		1235	152	0.	0.0	3532.5
1		0130	19	164.	1.5	3534.6	*	1		0705	86	1790.	155.6	3552.8	*	1		1240	153	0.	0.0	3532.5
1		0135	20	187.	1.7	3534.9	*	1		0710	87	1744.	143.5	3552.0	*	1		1245	154	0.	0.0	3532.5
1		0140	21	203.	2.1	3535.1	*	1		0715	88	1700.	131.8	3551.3	*	1		1250	155	0.	0.0	3532.5
1		0145	22	226.	2.9	3535.4	*	1		0720	89	1646.	120.3	3550.5	*	1		1255	156	0.	0.0	3532.5
1		0150	23	259.	4.0	3535.8	*	1		0725	90	1585.	109.2	3549.7	*	1		1300	157	0.	0.0	3532.5
1		0155	24	297.	5.3	3536.2	*	1		0730	91	1525.	98.6	3548.9	*	1		1305	158	0.	0.0	3532.5
1		0200	25	332.	6.5	3536.5	*	1		0735	92	1449.	88.3	3548.0	*	1		1310	159	0.	0.0	3532.5
1		0205	26	360.	7.4	3536.7	*	1		0740	93	1377.	78.6	3547.1	*	1		1315	160	0.	0.0	3532.5
1		0210	27	377.	8.0	3536.9	*	1		0745	94	1282.	69.5	3546.1	*	1		1320	161	0.	0.0	3532.5
1		0215	28	385.	8.3	3537.0	*	1		0750	95	1191.	61.0	3545.2	*	1		1325	162	0.	0.0	3532.5
1		0220	29	392.	8.5	3537.0	*	1		0755	96	1096.	53.1	3544.2	*	1		1330	163	0.	0.0	3532.5
1		0225	30	404.	9.0	3537.1	*	1		0800	97	1006.	45.9	3543.2	*	1		1335	164	0.	0.0	3532.5
1		0230	31	428.	9.9	3537.3	*	1		0805	98	929.	39.2	3542.3	*	1		1340	165	0.	0.0	3532.5
1		0235	32	462.	11.3	3537.6	*	1		0810	99	853.	33.1	3541.5	*	1		1345	166	0.	0.0	3532.5
1		0240	33	499.	12.8	3537.9	*	1		0815	100	777.	27.5	3540.6	*	1		1350	167	0.	0.0	3532.5
1		0245	34	529.	14.2	3538.2	*	1		0820	101	697.	22.4	3539.7	*	1		1355	168	0.	0.0	3532.5
1		0250	35	555.	15.4	3538.4	*	1		0825	102	609.	17.9	3538.9	*	1		1400	169	0.	0.0	3532.5
1		0255	36	578.	16.5	3538.7	*	1		0830	103	525.	14.0	3538.2	*	1		1405	170	0.	0.0	3532.5
1		0300	37	602.	17.6	3538.9	*	1		0835	104	445.	10.6	3537.5	*	1		1410	171	0.	0.0	3532.5
1		0305	38	626.	18.7	3539.1	*	1		0840	105	373.	7.8	3536.8	*	1		1415	172	0.	0.0	3532.5
1		0310	39	650.	19.9	3539.3	*	1		0845	106	304.	5.5	3536.2	*	1		1420	173	0.	0.0	3532.5
1		0315	40	687.	21.8	3539.6	*	1		0850	107	248.	3.6	3535.7	*	1		1425	174	0.	0.0	3532.5
1		0320	41	752.	25.7	3540.3	*	1		0855	108	202.	2.1	3535.1	*	1		1430	175	0.	0.0	3532.5
1		0325	42	859.	33.5	3541.5	*	1		0900	109	109.	1.0	3533.9	*	1		1435	176	0.	0.0	3532.5
1		0330	43	1031.	47.8	3543.5	*	1		0905	110	49.	0.4	3533.1	*	1		1440	177	0.	0.0	3532.5
1		0335	44	1298.	70.9	3546.3	*	1		0910	111	22.	0.2	3532.8	*	1		1445	178	0.	0.0	3532.5
1		0340	45	1554.	103.4	3549.3	*	1		0915	112	10.	0.1	3532.6	*	1		1450	179	0.	0.0	3532.5
1		0345	46	1742.	142.8	3552.0	*	1		0920	113	4.	0.0	3532.6	*	1		1455	180	0.	0.0	3532.5
1		0350	47	1882.	184.4	3554.4	*	1		0925	114	2.	0.0	3532.5	*	1		1500	181	0.	0.0	3532.5
1		0355	48	1990.	223.6	3556.2	*	1		0930	115	1.	0.0	3532.5	*	1		1505	182	0.	0.0	3532.5
1		0400	49	2074.	258.8	3557.8	*	1		0935	116	0.	0.0	3532.5	*	1		1510	183	0.	0.0	3532.5
1		0405	50	2141.	289.5	3559.1	*	1		0940	117	0.	0.0	3532.5	*	1		1515	184	0.	0.0	3532.5
1		0410	51	2191.	315.9	3560.2	*	1		0945	118	0.	0.0	3532.5	*	1		1520	185	0.	0.0	3532.5
1		0415	52	2233.	338.1	3561.1	*	1		0950	119	0.	0.0	3532.5	*	1		1525	186	0.	0.0	3532.5
1		0420	53	2267.	355.9	3561.9	*	1		0955	120	0.	0.0	3532.5	*	1		1530	187	0.	0.0	3532.5
1		0425	54	2290.	369.3	3562.4	*	1		1000	121	0.	0.0	3532.5	*	1		1535	188	0.	0.0	3532.5
1		0430	55	2306.	378.6	3562.8	*	1		1005	122	0.	0.0	3532.5	*	1		1540	189	0.	0.0	3532.5
1		0435	56	2316.	384.8	3563.0	*	1		1010	123	0.	0.0	3532.5	*	1		1545	190	0.	0.0	3532.5

1	0440	57	2323.	388.9	3563.2	*	1	1015	124	0.	0.0	3532.5	*	1	1550	191	0.	0.0	3532.5
1	0445	58	2328.	391.9	3563.3	*	1	1020	125	0.	0.0	3532.5	*	1	1555	192	0.	0.0	3532.5
1	0450	59	2332.	394.3	3563.4	*	1	1025	126	0.	0.0	3532.5	*	1	1600	193	0.	0.0	3532.5
1	0455	60	2335.	396.1	3563.5	*	1	1030	127	0.	0.0	3532.5	*	1	1605	194	0.	0.0	3532.5
1	0500	61	2337.	397.3	3563.5	*	1	1035	128	0.	0.0	3532.5	*	1	1610	195	0.	0.0	3532.5
1	0505	62	2338.	397.6	3563.5	*	1	1040	129	0.	0.0	3532.5	*	1	1615	196	0.	0.0	3532.5
1	0510	63	2337.	397.1	3563.5	*	1	1045	130	0.	0.0	3532.5	*	1	1620	197	0.	0.0	3532.5
1	0515	64	2334.	395.3	3563.4	*	1	1050	131	0.	0.0	3532.5	*	1	1625	198	0.	0.0	3532.5
1	0520	65	2328.	391.9	3563.3	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2320.	386.8	3563.1	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2309.	380.4	3562.9	*	1	1105	134	0.	0.0	3532.5	*						

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PEAK OUTFLOW IS 2338. AT TIME 5.08 HOURS

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	16.58-HR
2338.	5.08	(CFS)	1656.	636.	636.	636.
		(INCHES)	2.271	2.411	2.411	2.411
		(AC-FT)	821.	872.	872.	872.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	16.58-HR
398.	5.08	198.	72.	72.	72.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	16.58-HR
3563.54	5.08	3552.61	3540.22	3540.22	3540.22

CUMULATIVE AREA = 6.78 SQ MI

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HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.97

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	*	1		0535	68	2284.	365.4	3562.3	*	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	*	1		0540	69	2269.	356.6	3561.9	*	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	*	1		0545	70	2250.	346.9	3561.5	*	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	*	1		0550	71	2230.	336.3	3561.1	*	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	*	1		0555	72	2209.	325.2	3560.6	*	1		1130	139	0.	0.0	3532.5
1		0025	6	1.	0.0	3532.5	*	1		0600	73	2187.	313.5	3560.1	*	1		1135	140	0.	0.0	3532.5
1		0030	7	6.	0.1	3532.6	*	1		0605	74	2164.	301.5	3559.6	*	1		1140	141	0.	0.0	3532.5
1		0035	8	21.	0.2	3532.8	*	1		0610	75	2140.	289.2	3559.1	*	1		1145	142	0.	0.0	3532.5
1		0040	9	53.	0.5	3533.2	*	1		0615	76	2113.	276.7	3558.6	*	1		1150	143	0.	0.0	3532.5
1		0045	10	101.	0.9	3533.8	*	1		0620	77	2086.	264.0	3558.0	*	1		1155	144	0.	0.0	3532.5
1		0050	11	150.	1.3	3534.4	*	1		0625	78	2057.	251.1	3557.5	*	1		1200	145	0.	0.0	3532.5
1		0055	12	181.	1.6	3534.9	*	1		0630	79	2028.	238.2	3556.9	*	1		1205	146	0.	0.0	3532.5
1		0100	13	188.	1.7	3534.9	*	1		0635	80	1995.	225.3	3556.3	*	1		1210	147	0.	0.0	3532.5
1		0105	14	178.	1.6	3534.8	*	1		0640	81	1961.	212.4	3555.7	*	1		1215	148	0.	0.0	3532.5
1		0110	15	162.	1.5	3534.6	*	1		0645	82	1928.	199.5	3555.1	*	1		1220	149	0.	0.0	3532.5
1		0115	16	149.	1.3	3534.4	*	1		0650	83	1890.	186.8	3554.5	*	1		1225	150	0.	0.0	3532.5
1		0120	17	144.	1.3	3534.4	*	1		0655	84	1851.	174.3	3553.8	*	1		1230	151	0.	0.0	3532.5
1		0125	18	147.	1.3	3534.4	*	1		0700	85	1812.	161.9	3553.1	*	1		1235	152	0.	0.0	3532.5
1		0130	19	159.	1.4	3534.6	*	1		0705	86	1768.	149.8	3552.4	*	1		1240	153	0.	0.0	3532.5
1		0135	20	181.	1.6	3534.9	*	1		0710	87	1723.	137.9	3551.7	*	1		1245	154	0.	0.0	3532.5
1		0140	21	201.	2.0	3535.1	*	1		0715	88	1678.	126.3	3550.9	*	1		1250	155	0.	0.0	3532.5
1		0145	22	223.	2.8	3535.4	*	1		0720	89	1617.	115.0	3550.1	*	1		1255	156	0.	0.0	3532.5
1		0150	23	254.	3.8	3535.7	*	1		0725	90	1557.	104.1	3549.3	*	1		1300	157	0.	0.0	3532.5
1		0155	24	291.	5.1	3536.1	*	1		0730	91	1488.	93.7	3548.4	*	1		1305	158	0.	0.0	3532.5
1		0200	25	326.	6.2	3536.4	*	1		0735	92	1414.	83.7	3547.6	*	1		1310	159	0.	0.0	3532.5
1		0205	26	353.	7.2	3536.7	*	1		0740	93	1333.	74.3	3546.6	*	1		1315	160	0.	0.0	3532.5
1		0210	27	369.	7.7	3536.8	*	1		0745	94	1239.	65.4	3545.7	*	1		1320	161	0.	0.0	3532.5
1		0215	28	378.	8.0	3536.9	*	1		0750	95	1147.	57.2	3544.7	*	1		1325	162	0.	0.0	3532.5
1		0220	29	384.	8.2	3536.9	*	1		0755	96	1053.	49.6	3543.7	*	1		1330	163	0.	0.0	3532.5
1		0225	30	397.	8.7	3537.1	*	1		0800	97	968.	42.7	3542.8	*	1		1335	164	0.	0.0	3532.5
1		0230	31	420.	9.6	3537.3	*	1		0805	98	895.	36.3	3541.9	*	1		1340	165	0.	0.0	3532.5
1		0235	32	453.	11.0	3537.5	*	1		0810	99	818.	30.4	3541.1	*	1		1345	166	0.	0.0	3532.5
1		0240	33	489.	12.4	3537.9	*	1		0815	100	742.	25.0	3540.2	*	1		1350	167	0.	0.0	3532.5
1		0245	34	520.	13.8	3538.1	*	1		0820	101	655.	20.2	3539.4	*	1		1355	168	0.	0.0	3532.5
1		0250	35	545.	14.9	3538.4	*	1		0825	102	568.	16.0	3538.6	*	1		1400	169	0.	0.0	3532.5
1		0255	36	568.	16.0	3538.6	*	1		0830	103	487.	12.4	3537.8	*	1		1405	170	0.	0.0	3532.5
1		0300	37	592.	17.1	3538.8	*	1		0835	104	411.	9.3	3537.2	*	1		1410	171	0.	0.0	3532.5
1		0305	38	616.	18.2	3539.0	*	1		0840	105	339.	6.7	3536.5	*	1		1415	172	0.	0.0	3532.5
1		0310	39	639.	19.4	3539.2	*	1		0845	106	276.	4.6	3536.0	*	1		1420	173	0.	0.0	3532.5
1		0315	40	676.	21.3	3539.5	*	1		0850	107	225.	2.8	3535.4	*	1		1425	174	0.	0.0	3532.5
1		0320	41	742.	25.0	3540.2	*	1		0855	108	166.	1.5	3534.7	*	1		1430	175	0.	0.0	3532.5
1		0325	42	848.	32.7	3541.4	*	1		0900	109	74.	0.7	3533.5	*	1		1435	176	0.	0.0	3532.5
1		0330	43	1017.	46.8	3543.4	*	1		0905	110	33.	0.3	3532.9	*	1		1440	177	0.	0.0	3532.5
1		0335	44	1283.	69.5	3546.1	*	1		0910	111	15.	0.1	3532.7	*	1		1445	178	0.	0.0	3532.5
1		0340	45	1543.	101.5	3549.1	*	1		0915	112	7.	0.1	3532.6	*	1		1450	179	0.	0.0	3532.5
1		0345	46	1733.	140.4	3551.8	*	1		0920	113	3.	0.0	3532.5	*	1		1455	180	0.	0.0	3532.5
1		0350	47	1873.	181.5	3554.2	*	1		0925	114	1.	0.0	3532.5	*	1		1500	181	0.	0.0	3532.5
1		0355	48	1982.	220.2	3556.1	*	1		0930	115	1.	0.0	3532.5	*	1		1505	182	0.	0.0	3532.5
1		0400	49	2066.	255.0	3557.6	*	1		0935	116	0.	0.0	3532.5	*	1		1510	183	0.	0.0	3532.5
1		0405	50	2132.	285.3	3558.9	*	1		0940	117	0.	0.0	3532.5	*	1		1515	184	0.	0.0	3532.5
1		0410	51	2182.	311.4	3560.0	*	1		0945	118	0.	0.0	3532.5	*	1		1520	185	0.	0.0	3532.5
1		0415	52	2224.	333.2	3560.9	*	1		0950	119	0.	0.0	3532.5	*	1		1525	186	0.	0.0	3532.5
1		0420	53	2257.	350.7	3561.7	*	1		0955	120	0.	0.0	3532.5	*	1		1530	187	0.	0.0	3532.5
1		0425	54	2281.	363.8	3562.2	*	1		1000	121	0.	0.0	3532.5	*	1		1535	188	0.	0.0	3532.5
1		0430	55	2296.	372.9	3562.6	*	1		1005	122	0.	0.0	3532.5	*	1		1540	189	0.	0.0	3532.5
1		0435	56	2306.	378.8	3562.8	*	1		1010	123	0.	0.0	3532.5	*	1		1545	190	0.	0.0	3532.5
1		0440	57	2313.	382.7	3562.9	*	1		1015	124	0.	0.0	3532.5	*	1		1550	191	0.	0.0	3532.5
1		0445	58	2318.	385.6	3563.1	*	1		1020	125	0.	0.0	3532.5	*	1		1555	192	0.	0.0	3532.5

1	0450	59	2321.	387.9	3563.2	*	1	1025	126	0.	0.0	3532.5	*	1	1600	193	0.	0.0	3532.5
1	0455	60	2324.	389.5	3563.2	*	1	1030	127	0.	0.0	3532.5	*	1	1605	194	0.	0.0	3532.5
1	0500	61	2326.	390.5	3563.3	*	1	1035	128	0.	0.0	3532.5	*	1	1610	195	0.	0.0	3532.5
1	0505	62	2326.	390.8	3563.3	*	1	1040	129	0.	0.0	3532.5	*	1	1615	196	0.	0.0	3532.5
1	0510	63	2325.	390.1	3563.2	*	1	1045	130	0.	0.0	3532.5	*	1	1620	197	0.	0.0	3532.5
1	0515	64	2322.	388.2	3563.2	*	1	1050	131	0.	0.0	3532.5	*	1	1625	198	0.	0.0	3532.5
1	0520	65	2316.	384.7	3563.0	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2308.	379.6	3562.8	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2297.	373.1	3562.6	*	1	1105	134	0.	0.0	3532.5	*						
						*							*						

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PEAK OUTFLOW IS 2326. AT TIME 5.08 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2326.	5.08		1638.	628.	628.	628.
		(INCHES)	2.247	2.380	2.380	2.380
		(AC-FT)	812.	860.	860.	860.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
391.	5.08	193.	71.	71.	71.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3563.27	5.08	3552.34	3540.11	3540.11	3540.11

CUMULATIVE AREA = 6.78 SQ MI

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HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.95

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
							*								*							
1	0000		1	0.	0.0	3532.5	*	1	0535		68	2257.	350.4	3561.7	*	1	1110		135	0.	0.0	3532.5
1	0005		2	0.	0.0	3532.5	*	1	0540		69	2240.	341.7	3561.3	*	1	1115		136	0.	0.0	3532.5
1	0010		3	0.	0.0	3532.5	*	1	0545		70	2222.	332.0	3560.9	*	1	1120		137	0.	0.0	3532.5
1	0015		4	0.	0.0	3532.5	*	1	0550		71	2202.	321.5	3560.5	*	1	1125		138	0.	0.0	3532.5
1	0020		5	0.	0.0	3532.5	*	1	0555		72	2181.	310.5	3560.0	*	1	1130		139	0.	0.0	3532.5
1	0025		6	1.	0.0	3532.5	*	1	0600		73	2159.	298.9	3559.5	*	1	1135		140	0.	0.0	3532.5
1	0030		7	5.	0.0	3532.6	*	1	0605		74	2136.	287.0	3559.0	*	1	1140		141	0.	0.0	3532.5
1	0035		8	18.	0.2	3532.7	*	1	0610		75	2110.	274.9	3558.5	*	1	1145		142	0.	0.0	3532.5
1	0040		9	47.	0.4	3533.1	*	1	0615		76	2082.	262.5	3558.0	*	1	1150		143	0.	0.0	3532.5
1	0045		10	92.	0.8	3533.7	*	1	0620		77	2055.	250.0	3557.4	*	1	1155		144	0.	0.0	3532.5
1	0050		11	137.	1.2	3534.3	*	1	0625		78	2026.	237.3	3556.9	*	1	1200		145	0.	0.0	3532.5
1	0055		12	168.	1.5	3534.7	*	1	0630		79	1993.	224.6	3556.3	*	1	1205		146	0.	0.0	3532.5
1	0100		13	175.	1.6	3534.8	*	1	0635		80	1960.	211.9	3555.7	*	1	1210		147	0.	0.0	3532.5
1	0105		14	165.	1.5	3534.6	*	1	0640		81	1927.	199.2	3555.1	*	1	1215		148	0.	0.0	3532.5
1	0110		15	150.	1.4	3534.5	*	1	0645		82	1889.	186.6	3554.5	*	1	1220		149	0.	0.0	3532.5
1	0115		16	139.	1.2	3534.3	*	1	0650		83	1850.	174.2	3553.8	*	1	1225		150	0.	0.0	3532.5
1	0120		17	134.	1.2	3534.2	*	1	0655		84	1812.	161.9	3553.1	*	1	1230		151	0.	0.0	3532.5
1	0125		18	137.	1.2	3534.3	*	1	0700		85	1768.	149.8	3552.4	*	1	1235		152	0.	0.0	3532.5
1	0130		19	149.	1.3	3534.4	*	1	0705		86	1724.	138.0	3551.7	*	1	1240		153	0.	0.0	3532.5
1	0135		20	171.	1.5	3534.7	*	1	0710		87	1679.	126.4	3550.9	*	1	1245		154	0.	0.0	3532.5
1	0140		21	197.	1.9	3535.1	*	1	0715		88	1617.	115.1	3550.1	*	1	1250		155	0.	0.0	3532.5
1	0145		22	216.	2.5	3535.3	*	1	0720		89	1558.	104.3	3549.3	*	1	1255		156	0.	0.0	3532.5
1	0150		23	246.	3.5	3535.6	*	1	0725		90	1489.	93.8	3548.5	*	1	1300		157	0.	0.0	3532.5
1	0155		24	280.	4.7	3536.0	*	1	0730		91	1415.	83.8	3547.6	*	1	1305		158	0.	0.0	3532.5
1	0200		25	313.	5.8	3536.3	*	1	0735		92	1335.	74.4	3546.7	*	1	1310		159	0.	0.0	3532.5
1	0205		26	339.	6.7	3536.5	*	1	0740		93	1240.	65.6	3545.7	*	1	1315		160	0.	0.0	3532.5
1	0210		27	354.	7.2	3536.7	*	1	0745		94	1149.	57.3	3544.7	*	1	1320		161	0.	0.0	3532.5
1	0215		28	362.	7.5	3536.7	*	1	0750		95	1054.	49.8	3543.7	*	1	1325		162	0.	0.0	3532.5
1	0220		29	368.	7.7	3536.8	*	1	0755		96	969.	42.8	3542.8	*	1	1330		163	0.	0.0	3532.5
1	0225		30	381.	8.1	3536.9	*	1	0800		97	896.	36.4	3542.0	*	1	1335		164	0.	0.0	3532.5
1	0230		31	404.	9.0	3537.1	*	1	0805		98	820.	30.5	3541.1	*	1	1340		165	0.	0.0	3532.5
1	0235		32	436.	10.3	3537.4	*	1	0810		99	743.	25.1	3540.2	*	1	1345		166	0.	0.0	3532.5
1	0240		33	471.	11.7	3537.7	*	1	0815		100	656.	20.3	3539.4	*	1	1350		167	0.	0.0	3532.5
1	0245		34	503.	13.0	3538.0	*	1	0820		101	570.	16.1	3538.6	*	1	1355		168	0.	0.0	3532.5
1	0250		35	527.	14.1	3538.2	*	1	0825		102	489.	12.4	3537.9	*	1	1400		169	0.	0.0	3532.5
1	0255		36	549.	15.1	3538.4	*	1	0830		103	412.	9.3	3537.2	*	1	1405		170	0.	0.0	3532.5
1	0300		37	572.	16.2	3538.6	*	1	0835		104	340.	6.7	3536.6	*	1	1410		171	0.	0.0	3532.5
1	0305		38	594.	17.2	3538.8	*	1	0840		105	277.	4.6	3536.0	*	1	1415		172	0.	0.0	3532.5
1	0310		39	619.	18.4	3539.0	*	1	0845		106	226.	2.9	3535.4	*	1	1420		173	0.	0.0	3532.5
1	0315		40	653.	20.1	3539.3	*	1	0850		107	167.	1.5	3534.7	*	1	1425		174	0.	0.0	3532.5
1	0320		41	723.	23.7	3540.0	*	1	0855		108	75.	0.7	3533.5	*	1	1430		175	0.	0.0	3532.5
1	0325		42	827.	31.1	3541.2	*	1	0900		109	33.	0.3	3532.9	*	1	1435		176	0.	0.0	3532.5
1	0330		43	991.	44.6	3543.1	*	1	0905		110	15.	0.1	3532.7	*	1	1440		177	0.	0.0	3532.5
1	0335		44	1251.	66.6	3545.8	*	1	0910		111	7.	0.1	3532.6	*	1	1445		178	0.	0.0	3532.5
1	0340		45	1517.	97.5	3548.8	*	1	0915		112	3.	0.0	3532.5	*	1	1450		179	0.	0.0	3532.5
1	0345		46	1714.	135.4	3551.5	*	1	0920		113	1.	0.0	3532.5	*	1	1455		180	0.	0.0	3532.5
1	0350		47	1854.	175.3	3553.9	*	1	0925		114	1.	0.0	3532.5	*	1	1500		181	0.	0.0	3532.5
1	0355		48	1963.	213.1	3555.8	*	1	0930		115	0.	0.0	3532.5	*	1	1505		182	0.	0.0	3532.5
1	0400		49	2048.	247.1	3557.3	*	1	0935		116	0.	0.0	3532.5	*	1	1510		183	0.	0.0	3532.5
1	0405		50	2113.	276.6	3558.6	*	1	0940		117	0.	0.0	3532.5	*	1	1515		184	0.	0.0	3532.5
1	0410		51	2164.	301.7	3559.6	*	1	0945		118	0.	0.0	3532.5	*	1	1520		185	0.	0.0	3532.5
1	0415		52	2204.	322.7	3560.5	*	1	0950		119	0.	0.0	3532.5	*	1	1525		186	0.	0.0	3532.5
1	0420		53	2236.	339.5	3561.2	*	1	0955		120	0.	0.0	3532.5	*	1	1530		187	0.	0.0	3532.5
1	0425		54	2260.	352.0	3561.7	*	1	1000		121	0.	0.0	3532.5	*	1	1535		188	0.	0.0	3532.5
1	0430		55	2276.	360.5	3562.1	*	1	1005		122	0.	0.0	3532.5	*	1	1540		189	0.	0.0	3532.5
1	0435		56	2285.	366.1	3562.3	*	1	1010		123	0.	0.0	3532.5	*	1	1545		190	0.	0.0	3532.5
1	0440		57	2291.	369.7	3562.4	*	1	1015		124	0.	0.0	3532.5	*	1	1550		191	0.	0.0	3532.5
1	0445		58	2295.	372.2	3562.5	*	1	1020		125	0.	0.0	3532.5	*	1	1555		192	0.	0.0	3532.5
1	0450		59	2299.	374.2	3562.6	*	1	1025		126	0.	0.0	3532.5	*	1	1600		193	0.	0.0	3532.5
1	0455		60	2301.	375.6	3562.7	*	1	1030		127	0.	0.0	3532.5	*	1	1605		194	0.	0.0	3532.5

1	0500	61	2302.	376.3	3562.7	*	1	1035	128	0.	0.0	3532.5	*	1	1610	195	0.	0.0	3532.5
1	0505	62	2302.	376.4	3562.7	*	1	1040	129	0.	0.0	3532.5	*	1	1615	196	0.	0.0	3532.5
1	0510	63	2301.	375.6	3562.7	*	1	1045	130	0.	0.0	3532.5	*	1	1620	197	0.	0.0	3532.5
1	0515	64	2297.	373.5	3562.6	*	1	1050	131	0.	0.0	3532.5	*	1	1625	198	0.	0.0	3532.5
1	0520	65	2291.	369.9	3562.4	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2283.	364.7	3562.2	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2272.	358.2	3562.0	*	1	1105	134	0.	0.0	3532.5	*						

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PEAK OUTFLOW IS 2302. AT TIME 5.08 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)	(CFS)				
+ 2302.	5.08		1601.	611.	611.	611.
		(INCHES)	2.196	2.315	2.315	2.315
		(AC-FT)	794.	837.	837.	837.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
376.	5.08	184.	67.	67.	67.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3562.70	5.08	3551.79	3539.87	3539.87	3539.87

CUMULATIVE AREA = 6.78 SQ MI

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HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.93

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	1		0535	68	2228.	335.3	3561.0	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	1		0540	69	2211.	326.6	3560.7	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	1		0545	70	2193.	317.0	3560.3	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	1		0550	71	2173.	306.6	3559.8	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	1		0555	72	2152.	295.6	3559.4	1		1130	139	0.	0.0	3532.5
1		0025	6	1.	0.0	3532.5	1		0600	73	2130.	284.2	3558.9	1		1135	140	0.	0.0	3532.5
1		0030	7	4.	0.0	3532.6	1		0605	74	2104.	272.5	3558.4	1		1140	141	0.	0.0	3532.5
1		0035	8	16.	0.1	3532.7	1		0610	75	2078.	260.5	3557.9	1		1145	142	0.	0.0	3532.5
1		0040	9	42.	0.4	3533.0	1		0615	76	2051.	248.3	3557.4	1		1150	143	0.	0.0	3532.5
1		0045	10	82.	0.7	3533.6	1		0620	77	2022.	236.0	3556.8	1		1155	144	0.	0.0	3532.5
1		0050	11	125.	1.1	3534.1	1		0625	78	1990.	223.5	3556.2	1		1200	145	0.	0.0	3532.5
1		0055	12	154.	1.4	3534.5	1		0630	79	1958.	211.0	3555.7	1		1205	146	0.	0.0	3532.5
1		0100	13	161.	1.5	3534.6	1		0635	80	1925.	198.5	3555.1	1		1210	147	0.	0.0	3532.5
1		0105	14	153.	1.4	3534.5	1		0640	81	1888.	186.0	3554.4	1		1215	148	0.	0.0	3532.5
1		0110	15	139.	1.3	3534.3	1		0645	82	1849.	173.7	3553.8	1		1220	149	0.	0.0	3532.5
1		0115	16	129.	1.2	3534.2	1		0650	83	1811.	161.5	3553.1	1		1225	150	0.	0.0	3532.5
1		0120	17	124.	1.1	3534.1	1		0655	84	1767.	149.6	3552.4	1		1230	151	0.	0.0	3532.5
1		0125	18	127.	1.1	3534.2	1		0700	85	1723.	137.8	3551.7	1		1235	152	0.	0.0	3532.5
1		0130	19	139.	1.3	3534.3	1		0705	86	1678.	126.2	3550.9	1		1240	153	0.	0.0	3532.5
1		0135	20	160.	1.4	3534.6	1		0710	87	1617.	115.0	3550.1	1		1245	154	0.	0.0	3532.5
1		0140	21	193.	1.8	3535.0	1		0715	88	1558.	104.2	3549.3	1		1250	155	0.	0.0	3532.5
1		0145	22	210.	2.3	3535.2	1		0720	89	1489.	93.8	3548.5	1		1255	156	0.	0.0	3532.5
1		0150	23	237.	3.2	3535.5	1		0725	90	1415.	83.8	3547.6	1		1300	157	0.	0.0	3532.5
1		0155	24	269.	4.3	3535.9	1		0730	91	1335.	74.4	3546.7	1		1305	158	0.	0.0	3532.5
1		0200	25	300.	5.4	3536.2	1		0735	92	1240.	65.5	3545.7	1		1310	159	0.	0.0	3532.5
1		0205	26	324.	6.2	3536.4	1		0740	93	1148.	57.3	3544.7	1		1315	160	0.	0.0	3532.5
1		0210	27	339.	6.7	3536.5	1		0745	94	1054.	49.7	3543.7	1		1320	161	0.	0.0	3532.5
1		0215	28	346.	6.9	3536.6	1		0750	95	969.	42.8	3542.8	1		1325	162	0.	0.0	3532.5
1		0220	29	352.	7.1	3536.7	1		0755	96	896.	36.4	3542.0	1		1330	163	0.	0.0	3532.5
1		0225	30	365.	7.6	3536.8	1		0800	97	820.	30.5	3541.1	1		1335	164	0.	0.0	3532.5
1		0230	31	389.	8.4	3537.0	1		0805	98	743.	25.1	3540.2	1		1340	165	0.	0.0	3532.5
1		0235	32	419.	9.6	3537.2	1		0810	99	656.	20.3	3539.4	1		1345	166	0.	0.0	3532.5
1		0240	33	453.	11.0	3537.5	1		0815	100	570.	16.1	3538.6	1		1350	167	0.	0.0	3532.5
1		0245	34	483.	12.2	3537.8	1		0820	101	489.	12.4	3537.9	1		1355	168	0.	0.0	3532.5
1		0250	35	508.	13.2	3538.0	1		0825	102	412.	9.3	3537.2	1		1400	169	0.	0.0	3532.5
1		0255	36	529.	14.2	3538.2	1		0830	103	340.	6.7	3536.6	1		1405	170	0.	0.0	3532.5
1		0300	37	551.	15.2	3538.4	1		0835	104	277.	4.6	3536.0	1		1410	171	0.	0.0	3532.5
1		0305	38	573.	16.2	3538.6	1		0840	105	226.	2.9	3535.4	1		1415	172	0.	0.0	3532.5
1		0310	39	597.	17.3	3538.8	1		0845	106	167.	1.5	3534.7	1		1420	173	0.	0.0	3532.5
1		0315	40	632.	19.0	3539.1	1		0850	107	75.	0.7	3533.5	1		1425	174	0.	0.0	3532.5
1		0320	41	699.	22.5	3539.8	1		0855	108	33.	0.3	3532.9	1		1430	175	0.	0.0	3532.5
1		0325	42	807.	29.6	3540.9	1		0900	109	15.	0.1	3532.7	1		1435	176	0.	0.0	3532.5
1		0330	43	968.	42.7	3542.8	1		0905	110	7.	0.1	3532.6	1		1440	177	0.	0.0	3532.5
1		0335	44	1222.	63.8	3545.5	1		0910	111	3.	0.0	3532.5	1		1445	178	0.	0.0	3532.5
1		0340	45	1489.	93.8	3548.5	1		0915	112	1.	0.0	3532.5	1		1450	179	0.	0.0	3532.5
1		0345	46	1695.	130.3	3551.2	1		0920	113	1.	0.0	3532.5	1		1455	180	0.	0.0	3532.5
1		0350	47	1835.	169.2	3553.5	1		0925	114	0.	0.0	3532.5	1		1500	181	0.	0.0	3532.5
1		0355	48	1945.	206.1	3555.4	1		0930	115	0.	0.0	3532.5	1		1505	182	0.	0.0	3532.5
1		0400	49	2030.	239.0	3557.0	1		0935	116	0.	0.0	3532.5	1		1510	183	0.	0.0	3532.5
1		0405	50	2093.	267.6	3558.2	1		0940	117	0.	0.0	3532.5	1		1515	184	0.	0.0	3532.5
1		0410	51	2145.	291.8	3559.2	1		0945	118	0.	0.0	3532.5	1		1520	185	0.	0.0	3532.5
1		0415	52	2184.	311.9	3560.1	1		0950	119	0.	0.0	3532.5	1		1525	186	0.	0.0	3532.5
1		0420	53	2214.	328.0	3560.7	1		0955	120	0.	0.0	3532.5	1		1530	187	0.	0.0	3532.5
1		0425	54	2237.	340.0	3561.2	1		1000	121	0.	0.0	3532.5	1		1535	188	0.	0.0	3532.5
1		0430	55	2253.	348.2	3561.6	1		1005	122	0.	0.0	3532.5	1		1540	189	0.	0.0	3532.5
1		0435	56	2262.	353.3	3561.8	1		1010	123	0.	0.0	3532.5	1		1545	190	0.	0.0	3532.5
1		0440	57	2269.	356.5	3561.9	1		1015	124	0.	0.0	3532.5	1		1550	191	0.	0.0	3532.5
1		0445	58	2273.	358.7	3562.0	1		1020	125	0.	0.0	3532.5	1		1555	192	0.	0.0	3532.5
1		0450	59	2276.	360.4	3562.1	1		1025	126	0.	0.0	3532.5	1		1600	193	0.	0.0	3532.5
1		0455	60	2277.	361.5	3562.1	1		1030	127	0.	0.0	3532.5	1		1605	194	0.	0.0	3532.5
1		0500	61	2278.	362.0	3562.1	1		1035	128	0.	0.0	3532.5	1		1610	195	0.	0.0	3532.5
1		0505	62	2278.	361.8	3562.1	1		1040	129	0.	0.0	3532.5	1		1615	196	0.	0.0	3532.5

1	0510	63	2276.	360.8	3562.1	*	1	1045	130	0.	0.0	3532.5	*	1	1620	197	0.	0.0	3532.5
1	0515	64	2272.	358.6	3562.0	*	1	1050	131	0.	0.0	3532.5	*	1	1625	198	0.	0.0	3532.5
1	0520	65	2265.	354.9	3561.8	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2255.	349.6	3561.6	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2243.	343.1	3561.3	*	1	1105	134	0.	0.0	3532.5	*						

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PEAK OUTFLOW IS 2278. AT TIME 5.00 HOURS

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	16.58-HR
		(CFS)				
2278.	5.00		1562.	594.	594.	594.
		(INCHES)	2.143	2.251	2.251	2.251
		(AC-FT)	775.	814.	814.	814.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	16.58-HR
362.	5.00	175.	64.	64.	64.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	16.58-HR
3562.12	5.00	3551.23	3539.63	3539.63	3539.63

CUMULATIVE AREA = 6.78 SQ MI

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HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.89

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5 *	1		0535	68	2171.	305.2	3559.8 *	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5 *	1		0540	69	2154.	296.5	3559.4 *	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5 *	1		0545	70	2136.	287.1	3559.0 *	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5 *	1		0550	71	2114.	276.9	3558.6 *	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5 *	1		0555	72	2090.	266.2	3558.1 *	1		1130	139	0.	0.0	3532.5
1		0025	6	0.	0.0	3532.5 *	1		0600	73	2066.	255.0	3557.6 *	1		1135	140	0.	0.0	3532.5
1		0030	7	3.	0.0	3532.5 *	1		0605	74	2041.	243.6	3557.2 *	1		1140	141	0.	0.0	3532.5
1		0035	8	11.	0.1	3532.6 *	1		0610	75	2012.	231.9	3556.6 *	1		1145	142	0.	0.0	3532.5
1		0040	9	32.	0.3	3532.9 *	1		0615	76	1981.	220.1	3556.1 *	1		1150	143	0.	0.0	3532.5
1		0045	10	66.	0.6	3533.4 *	1		0620	77	1950.	208.2	3555.5 *	1		1155	144	0.	0.0	3532.5
1		0050	11	102.	0.9	3533.8 *	1		0625	78	1919.	196.1	3555.0 *	1		1200	145	0.	0.0	3532.5
1		0055	12	128.	1.2	3534.2 *	1		0630	79	1881.	184.1	3554.3 *	1		1205	146	0.	0.0	3532.5
1		0100	13	136.	1.2	3534.3 *	1		0635	80	1844.	172.1	3553.7 *	1		1210	147	0.	0.0	3532.5
1		0105	14	130.	1.2	3534.2 *	1		0640	81	1807.	160.2	3553.0 *	1		1215	148	0.	0.0	3532.5
1		0110	15	119.	1.1	3534.0 *	1		0645	82	1763.	148.4	3552.3 *	1		1220	149	0.	0.0	3532.5
1		0115	16	110.	1.0	3533.9 *	1		0650	83	1719.	136.8	3551.6 *	1		1225	150	0.	0.0	3532.5
1		0120	17	106.	1.0	3533.9 *	1		0655	84	1674.	125.5	3550.9 *	1		1230	151	0.	0.0	3532.5
1		0125	18	109.	1.0	3533.9 *	1		0700	85	1613.	114.4	3550.1 *	1		1235	152	0.	0.0	3532.5
1		0130	19	120.	1.1	3534.1 *	1		0705	86	1555.	103.6	3549.3 *	1		1240	153	0.	0.0	3532.5
1		0135	20	139.	1.3	3534.3 *	1		0710	87	1485.	93.3	3548.4 *	1		1245	154	0.	0.0	3532.5
1		0140	21	170.	1.5	3534.7 *	1		0715	88	1412.	83.4	3547.5 *	1		1250	155	0.	0.0	3532.5
1		0145	22	200.	2.0	3535.1 *	1		0720	89	1331.	74.0	3546.6 *	1		1255	156	0.	0.0	3532.5
1		0150	23	222.	2.7	3535.4 *	1		0725	90	1237.	65.2	3545.6 *	1		1300	157	0.	0.0	3532.5
1		0155	24	249.	3.6	3535.7 *	1		0730	91	1145.	57.0	3544.7 *	1		1305	158	0.	0.0	3532.5
1		0200	25	276.	4.5	3536.0 *	1		0735	92	1051.	49.5	3543.7 *	1		1310	159	0.	0.0	3532.5
1		0205	26	297.	5.3	3536.2 *	1		0740	93	967.	42.6	3542.8 *	1		1315	160	0.	0.0	3532.5
1		0210	27	310.	5.7	3536.3 *	1		0745	94	893.	36.2	3541.9 *	1		1320	161	0.	0.0	3532.5
1		0215	28	317.	5.9	3536.4 *	1		0750	95	817.	30.3	3541.1 *	1		1325	162	0.	0.0	3532.5
1		0220	29	322.	6.1	3536.4 *	1		0755	96	741.	24.9	3540.2 *	1		1330	163	0.	0.0	3532.5
1		0225	30	333.	6.5	3536.5 *	1		0800	97	654.	20.1	3539.3 *	1		1335	164	0.	0.0	3532.5
1		0230	31	355.	7.2	3536.7 *	1		0805	98	567.	15.9	3538.6 *	1		1340	165	0.	0.0	3532.5
1		0235	32	388.	8.3	3537.0 *	1		0810	99	486.	12.3	3537.8 *	1		1345	166	0.	0.0	3532.5
1		0240	33	418.	9.6	3537.2 *	1		0815	100	410.	9.2	3537.2 *	1		1350	167	0.	0.0	3532.5
1		0245	34	446.	10.7	3537.5 *	1		0820	101	338.	6.7	3536.5 *	1		1355	168	0.	0.0	3532.5
1		0250	35	469.	11.6	3537.7 *	1		0825	102	276.	4.5	3536.0 *	1		1400	169	0.	0.0	3532.5
1		0255	36	491.	12.5	3537.9 *	1		0830	103	224.	2.8	3535.4 *	1		1405	170	0.	0.0	3532.5
1		0300	37	512.	13.4	3538.1 *	1		0835	104	164.	1.5	3534.6 *	1		1410	171	0.	0.0	3532.5
1		0305	38	532.	14.3	3538.2 *	1		0840	105	74.	0.7	3533.5 *	1		1415	172	0.	0.0	3532.5
1		0310	39	555.	15.4	3538.4 *	1		0845	106	33.	0.3	3532.9 *	1		1420	173	0.	0.0	3532.5
1		0315	40	588.	16.9	3538.7 *	1		0850	107	15.	0.1	3532.7 *	1		1425	174	0.	0.0	3532.5
1		0320	41	653.	20.1	3539.3 *	1		0855	108	7.	0.1	3532.6 *	1		1430	175	0.	0.0	3532.5
1		0325	42	765.	26.6	3540.5 *	1		0900	109	3.	0.0	3532.5 *	1		1435	176	0.	0.0	3532.5
1		0330	43	922.	38.6	3542.3 *	1		0905	110	1.	0.0	3532.5 *	1		1440	177	0.	0.0	3532.5
1		0335	44	1161.	58.4	3544.8 *	1		0910	111	1.	0.0	3532.5 *	1		1445	178	0.	0.0	3532.5
1		0340	45	1433.	86.2	3547.8 *	1		0915	112	0.	0.0	3532.5 *	1		1450	179	0.	0.0	3532.5
1		0345	46	1646.	120.3	3550.5 *	1		0920	113	0.	0.0	3532.5 *	1		1455	180	0.	0.0	3532.5
1		0350	47	1794.	156.7	3552.8 *	1		0925	114	0.	0.0	3532.5 *	1		1500	181	0.	0.0	3532.5
1		0355	48	1904.	191.2	3554.7 *	1		0930	115	0.	0.0	3532.5 *	1		1505	182	0.	0.0	3532.5
1		0400	49	1986.	221.9	3556.2 *	1		0935	116	0.	0.0	3532.5 *	1		1510	183	0.	0.0	3532.5
1		0405	50	2051.	248.4	3557.4 *	1		0940	117	0.	0.0	3532.5 *	1		1515	184	0.	0.0	3532.5
1		0410	51	2101.	270.8	3558.3 *	1		0945	118	0.	0.0	3532.5 *	1		1520	185	0.	0.0	3532.5
1		0415	52	2141.	289.5	3559.1 *	1		0950	119	0.	0.0	3532.5 *	1		1525	186	0.	0.0	3532.5
1		0420	53	2169.	304.3	3559.7 *	1		0955	120	0.	0.0	3532.5 *	1		1530	187	0.	0.0	3532.5
1		0425	54	2190.	315.2	3560.2 *	1		1000	121	0.	0.0	3532.5 *	1		1535	188	0.	0.0	3532.5
1		0430	55	2204.	322.4	3560.5 *	1		1005	122	0.	0.0	3532.5 *	1		1540	189	0.	0.0	3532.5
1		0435	56	2212.	326.9	3560.7 *	1		1010	123	0.	0.0	3532.5 *	1		1545	190	0.	0.0	3532.5
1		0440	57	2217.	329.5	3560.8 *	1		1015	124	0.	0.0	3532.5 *	1		1550	191	0.	0.0	3532.5
1		0445	58	2220.	331.2	3560.9 *	1		1020	125	0.	0.0	3532.5 *	1		1555	192	0.	0.0	3532.5
1		0450	59	2223.	332.4	3560.9 *	1		1025	126	0.	0.0	3532.5 *	1		1600	193	0.	0.0	3532.5
1		0455	60	2224.	333.1	3560.9 *	1		1030	127	0.	0.0	3532.5 *	1		1605	194	0.	0.0	3532.5
1		0500	61	2224.	333.2	3560.9 *	1		1035	128	0.	0.0	3532.5 *	1		1610	195	0.	0.0	3532.5
1		0505	62	2223.	332.6	3560.9 *	1		1040	129	0.	0.0	3532.5 *	1		1615	196	0.	0.0	3532.5
1		0510	63	2220.	331.2	3560.9 *	1		1045	130	0.	0.0	3532.5 *	1		1620	197	0.	0.0	3532.5
1		0515	64	2216.	328.7	3560.8 *	1		1050	131	0.	0.0	3532.5 *	1		1625	198	0.	0.0	3532.5

1	0520	65	2208.	324.8	3560.6	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2198.	319.5	3560.4	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2185.	312.9	3560.1	*	1	1105	134	0.	0.0	3532.5	*						

PEAK OUTFLOW IS 2224. AT TIME 5.00 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
(CFS)	(HR)	(CFS)				
2224.	5.00		1483.	559.	559.	559.
		(INCHES)	2.034	2.119	2.119	2.119
		(AC-FT)	735.	766.	766.	766.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
(AC-FT)	(HR)				
333.	5.00	157.	57.	57.	57.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
(FEET)	(HR)				
3560.93	5.00	3550.10	3539.15	3539.15	3539.15

CUMULATIVE AREA = 6.78 SQ MI

HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.55

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	*	1		0535	68	1396.	81.3	3547.3	*	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	*	1		0540	69	1346.	75.4	3546.8	*	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	*	1		0545	70	1281.	69.4	3546.1	*	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	*	1		0550	71	1216.	63.3	3545.4	*	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	*	1		0555	72	1148.	57.3	3544.7	*	1		1130	139	0.	0.0	3532.5
1		0025	6	0.	0.0	3532.5	*	1		0600	73	1076.	51.5	3544.0	*	1		1135	140	0.	0.0	3532.5
1		0030	7	0.	0.0	3532.5	*	1		0605	74	1006.	45.9	3543.2	*	1		1140	141	0.	0.0	3532.5
1		0035	8	0.	0.0	3532.5	*	1		0610	75	943.	40.5	3542.5	*	1		1145	142	0.	0.0	3532.5
1		0040	9	1.	0.0	3532.5	*	1		0615	76	882.	35.3	3541.8	*	1		1150	143	0.	0.0	3532.5
1		0045	10	2.	0.0	3532.5	*	1		0620	77	818.	30.4	3541.1	*	1		1155	144	0.	0.0	3532.5
1		0050	11	5.	0.0	3532.6	*	1		0625	78	752.	25.7	3540.3	*	1		1200	145	0.	0.0	3532.5
1		0055	12	8.	0.1	3532.6	*	1		0630	79	678.	21.4	3539.6	*	1		1205	146	0.	0.0	3532.5
1		0100	13	10.	0.1	3532.6	*	1		0635	80	601.	17.5	3538.9	*	1		1210	147	0.	0.0	3532.5
1		0105	14	9.	0.1	3532.6	*	1		0640	81	525.	14.0	3538.2	*	1		1215	148	0.	0.0	3532.5
1		0110	15	8.	0.1	3532.6	*	1		0645	82	453.	10.9	3537.5	*	1		1220	149	0.	0.0	3532.5
1		0115	16	7.	0.1	3532.6	*	1		0650	83	387.	8.3	3537.0	*	1		1225	150	0.	0.0	3532.5
1		0120	17	7.	0.1	3532.6	*	1		0655	84	320.	6.1	3536.4	*	1		1230	151	0.	0.0	3532.5
1		0125	18	7.	0.1	3532.6	*	1		0700	85	265.	4.2	3535.9	*	1		1235	152	0.	0.0	3532.5
1		0130	19	10.	0.1	3532.6	*	1		0705	86	218.	2.6	3535.3	*	1		1240	153	0.	0.0	3532.5
1		0135	20	13.	0.1	3532.7	*	1		0710	87	156.	1.4	3534.5	*	1		1245	154	0.	0.0	3532.5
1		0140	21	19.	0.2	3532.7	*	1		0715	88	74.	0.7	3533.5	*	1		1250	155	0.	0.0	3532.5
1		0145	22	29.	0.3	3532.9	*	1		0720	89	36.	0.3	3533.0	*	1		1255	156	0.	0.0	3532.5
1		0150	23	43.	0.4	3533.1	*	1		0725	90	18.	0.2	3532.7	*	1		1300	157	0.	0.0	3532.5
1		0155	24	60.	0.5	3533.3	*	1		0730	91	10.	0.1	3532.6	*	1		1305	158	0.	0.0	3532.5
1		0200	25	75.	0.7	3533.5	*	1		0735	92	5.	0.0	3532.6	*	1		1310	159	0.	0.0	3532.5
1		0205	26	86.	0.8	3533.6	*	1		0740	93	3.	0.0	3532.5	*	1		1315	160	0.	0.0	3532.5
1		0210	27	91.	0.8	3533.7	*	1		0745	94	2.	0.0	3532.5	*	1		1320	161	0.	0.0	3532.5
1		0215	28	92.	0.8	3533.7	*	1		0750	95	1.	0.0	3532.5	*	1		1325	162	0.	0.0	3532.5
1		0220	29	92.	0.8	3533.7	*	1		0755	96	1.	0.0	3532.5	*	1		1330	163	0.	0.0	3532.5
1		0225	30	99.	0.9	3533.8	*	1		0800	97	1.	0.0	3532.5	*	1		1335	164	0.	0.0	3532.5
1		0230	31	115.	1.0	3534.0	*	1		0805	98	0.	0.0	3532.5	*	1		1340	165	0.	0.0	3532.5
1		0235	32	139.	1.2	3534.3	*	1		0810	99	0.	0.0	3532.5	*	1		1345	166	0.	0.0	3532.5
1		0240	33	163.	1.5	3534.6	*	1		0815	100	0.	0.0	3532.5	*	1		1350	167	0.	0.0	3532.5
1		0245	34	181.	1.6	3534.9	*	1		0820	101	0.	0.0	3532.5	*	1		1355	168	0.	0.0	3532.5
1		0250	35	192.	1.7	3535.0	*	1		0825	102	0.	0.0	3532.5	*	1		1400	169	0.	0.0	3532.5
1		0255	36	196.	1.8	3535.0	*	1		0830	103	0.	0.0	3532.5	*	1		1405	170	0.	0.0	3532.5
1		0300	37	201.	2.0	3535.1	*	1		0835	104	0.	0.0	3532.5	*	1		1410	171	0.	0.0	3532.5
1		0305	38	208.	2.3	3535.2	*	1		0840	105	0.	0.0	3532.5	*	1		1415	172	0.	0.0	3532.5
1		0310	39	217.	2.6	3535.3	*	1		0845	106	0.	0.0	3532.5	*	1		1420	173	0.	0.0	3532.5
1		0315	40	231.	3.0	3535.5	*	1		0850	107	0.	0.0	3532.5	*	1		1425	174	0.	0.0	3532.5
1		0320	41	264.	4.1	3535.9	*	1		0855	108	0.	0.0	3532.5	*	1		1430	175	0.	0.0	3532.5
1		0325	42	333.	6.5	3536.5	*	1		0900	109	0.	0.0	3532.5	*	1		1435	176	0.	0.0	3532.5
1		0330	43	456.	11.1	3537.6	*	1		0905	110	0.	0.0	3532.5	*	1		1440	177	0.	0.0	3532.5
1		0335	44	631.	19.0	3539.1	*	1		0910	111	0.	0.0	3532.5	*	1		1445	178	0.	0.0	3532.5
1		0340	45	823.	30.7	3541.1	*	1		0915	112	0.	0.0	3532.5	*	1		1450	179	0.	0.0	3532.5
1		0345	46	1003.	45.6	3543.2	*	1		0920	113	0.	0.0	3532.5	*	1		1455	180	0.	0.0	3532.5
1		0350	47	1199.	61.7	3545.2	*	1		0925	114	0.	0.0	3532.5	*	1		1500	181	0.	0.0	3532.5
1		0355	48	1360.	76.7	3546.9	*	1		0930	115	0.	0.0	3532.5	*	1		1505	182	0.	0.0	3532.5
1		0400	49	1457.	89.5	3548.1	*	1		0935	116	0.	0.0	3532.5	*	1		1510	183	0.	0.0	3532.5
1		0405	50	1535.	100.0	3549.0	*	1		0940	117	0.	0.0	3532.5	*	1		1515	184	0.	0.0	3532.5
1		0410	51	1581.	108.4	3549.6	*	1		0945	118	0.	0.0	3532.5	*	1		1520	185	0.	0.0	3532.5
1		0415	52	1615.	114.7	3550.1	*	1		0950	119	0.	0.0	3532.5	*	1		1525	186	0.	0.0	3532.5
1		0420	53	1639.	119.2	3550.4	*	1		0955	120	0.	0.0	3532.5	*	1		1530	187	0.	0.0	3532.5
1		0425	54	1653.	121.6	3550.6	*	1		1000	121	0.	0.0	3532.5	*	1		1535	188	0.	0.0	3532.5
1		0430	55	1656.	122.2	3550.6	*	1		1005	122	0.	0.0	3532.5	*	1		1540	189	0.	0.0	3532.5
1		0435	56	1652.	121.4	3550.6	*	1		1010	123	0.	0.0	3532.5	*	1		1545	190	0.	0.0	3532.5
1		0440	57	1643.	119.8	3550.5	*	1		1015	124	0.	0.0	3532.5	*	1		1550	191	0.	0.0	3532.5
1		0445	58	1631.	117.6	3550.3	*	1		1020	125	0.	0.0	3532.5	*	1		1555	192	0.	0.0	3532.5
1		0450	59	1619.	115.3	3550.1	*	1		1025	126	0.	0.0	3532.5	*	1		1600	193	0.	0.0	3532.5
1		0455	60	1605.	112.9	3550.0	*	1		1030	127	0.	0.0	3532.5	*	1		1605	194	0.	0.0	3532.5
1		0500	61	1591.	110.4	3549.8	*	1		1035	128	0.	0.0	3532.5	*	1		1610	195	0.	0.0	3532.5
1		0505	62	1576.	107.6	3549.6	*	1		1040	129	0.	0.0	3532.5	*	1		1615	196	0.	0.0	3532.5
1		0510	63	1559.	104.5	3549.3	*	1		1045	130	0.	0.0	3532.5	*	1		1620	197	0.	0.0	3532.5
1		0515	64	1540.	100.9	3549.1	*	1		1050	131	0.	0.0	3532.5	*	1		1625	198	0.	0.0	3532.5
1		0520	65	1512.	96.8	3548.7	*	1		1055	132	0.	0.0	3532.5	*	1		1630	199	0.	0.0	3532.5
1		0525	66	1477.	92.1	3548.3	*	1		1100	133	0.	0.0	3532.5	*	1		1635	200	0.	0.0	3532.5

1 0530 67 1438. 86.9 3547.8 * 1 1105 134 0. 0.0 3532.5 *

PEAK OUTFLOW IS 1656. AT TIME 4.50 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)	(CFS)				
+ 1656.	4.50		753.	273.	273.	273.
		(INCHES)	1.032	1.034	1.034	1.034
		(AC-FT)	373.	374.	374.	374.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
122.	4.50	42.	15.	15.	15.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3550.63	4.50	3540.72	3535.48	3535.48	3535.48

CUMULATIVE AREA = 6.78 SQ MI

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PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 1.00	RATIO 2 0.98	RATIO 3 0.97	RATIO 4 0.95	RATIO 5 0.93	RATIO 6 0.89	RATIO 7 0.55
HYDROGRAPH AT											
+	UNIT1	0.58	1	FLOW	904.	879.	866.	841.	816.	765.	352.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	4-1	2.21	1	FLOW	3200.	3120.	3081.	3001.	2922.	2763.	1425.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO											
+	R-1	2.21	1	FLOW	3152.	3073.	3034.	2956.	2878.	2721.	1403.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT											
+	4-5	0.22	1	FLOW	463.	451.	445.	432.	420.	396.	193.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT											
+	C-1	2.43	1	FLOW	3274.	3192.	3151.	3068.	2986.	2822.	1451.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92
ROUTED TO											
+	R-2	2.43	1	FLOW	3126.	3047.	3008.	2930.	2851.	2694.	1383.
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.25
HYDROGRAPH AT											
+	4-2	0.27	1	FLOW	684.	668.	660.	643.	627.	594.	316.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO											
+	R-3	0.27	1	FLOW	607.	592.	585.	570.	556.	526.	277.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	4-3	0.47	1	FLOW	1232.	1204.	1190.	1161.	1132.	1075.	586.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO											
+	R-4	0.47	1	FLOW	1118.	1092.	1079.	1052.	1026.	974.	527.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	4-4	0.27	1	FLOW	557.	544.	537.	523.	509.	482.	249.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT											
+	C-2	1.01	1	FLOW	2282.	2228.	2200.	2146.	2091.	1982.	1053.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	R-5	1.01	1	FLOW	2090.	2040.	2015.	1965.	1915.	1815.	965.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	4-6	0.81	1	FLOW	1145.	1114.	1099.	1068.	1038.	977.	473.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT											
+	C-3	4.25	1	FLOW	4589.	4472.	4414.	4297.	4180.	3947.	1994.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO											
+	R-6	4.25	1	FLOW	4560.	4450.	4388.	4268.	4156.	3918.	1979.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92
HYDROGRAPH AT											
+	4-7A	0.03	1	FLOW	54.	53.	52.	50.	49.	46.	21.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58

2 COMBINED AT	C-4	4.28	1	FLOW	4582.	4471.	4409.	4289.	4176.	3937.	1985.
+				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92
DIVERSION TO	DC-4	4.28	1	FLOW	194.	142.	112.	55.	2.	0.	0.
+				TIME	3.83	3.83	3.83	3.83	3.83	0.08	0.08
HYDROGRAPH AT	DCHANN	4.28	1	FLOW	4388.	4329.	4297.	4234.	4175.	3937.	1985.
+				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92
HYDROGRAPH AT	S-1	0.71	1	FLOW	1383.	1349.	1331.	1297.	1262.	1193.	611.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R-7	0.71	1	FLOW	1275.	1244.	1228.	1197.	1165.	1102.	571.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	S-2	0.09	1	FLOW	167.	162.	160.	155.	150.	141.	66.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	C-5	0.80	1	FLOW	1411.	1375.	1357.	1321.	1286.	1214.	615.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.75
ROUTED TO	R-8	0.80	1	FLOW	1386.	1351.	1335.	1303.	1268.	1197.	613.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	S-3	0.21	1	FLOW	542.	529.	523.	510.	497.	471.	250.
+				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO	R-9	0.21	1	FLOW	484.	473.	466.	453.	439.	419.	232.
+				TIME	3.50	3.50	3.50	3.50	3.58	3.58	3.58
HYDROGRAPH AT	S-4	0.22	1	FLOW	431.	419.	413.	402.	391.	368.	178.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	C-6	0.44	1	FLOW	907.	888.	874.	855.	829.	787.	410.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R-10	0.44	1	FLOW	895.	867.	870.	845.	818.	761.	384.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67
HYDROGRAPH AT	S-5	0.19	1	FLOW	345.	336.	331.	321.	312.	293.	136.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT	C-7	1.43	1	FLOW	2487.	2407.	2381.	2314.	2252.	2146.	1085.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO	R-11	1.43	1	FLOW	2348.	2279.	2254.	2193.	2133.	2022.	1018.
+				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT	S-6	0.09	1	FLOW	161.	157.	154.	150.	146.	137.	65.
+				TIME	3.50	3.50	3.50	3.58	3.58	3.58	3.58
ROUTED TO	R-12	0.09	1	FLOW	146.	142.	140.	136.	132.	124.	58.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	S-7	0.44	1	FLOW	674.	655.	645.	627.	608.	571.	264.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO	R-13	0.44	1	FLOW	645.	627.	618.	600.	582.	546.	250.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	S-8	0.54	1	FLOW	815.	792.	781.	758.	735.	690.	319.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
4 COMBINED AT	C-8	2.50	1	FLOW	3755.	3648.	3606.	3502.	3399.	3194.	1542.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.83
2 COMBINED AT	C-9	6.78	1	FLOW	8033.	7869.	7794.	7635.	7480.	7061.	3523.
+				TIME	3.75	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO	DB5MOD	6.78	1	FLOW	2361.	2338.	2326.	2302.	2278.	2224.	1656.
+				TIME	5.08	5.08	5.08	5.08	5.00	5.00	4.50
			** PEAK STAGES IN FEET **								
			1	STAGE	3564.09	3563.54	3563.27	3562.70	3562.12	3560.93	3550.63
				TIME	5.08	5.08	5.08	5.08	5.00	5.00	4.50
ROUTED TO	R14	6.78	1	FLOW	2360.	2338.	2326.	2302.	2278.	2224.	1655.
+				TIME	5.08	5.08	5.08	5.08	5.00	5.00	4.50

HYDROGRAPH AT	4-7	0.10	1	FLOW	186.	181.	178.	173.	168.	158.	75.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R4-7	0.10	1	FLOW	170.	165.	163.	158.	154.	144.	68.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.75
HYDROGRAPH AT	5-9	0.04	1	FLOW	70.	68.	67.	65.	63.	60.	28.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT	C11	6.92	1	FLOW	2404.	2381.	2369.	2345.	2321.	2265.	1669.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.58
ROUTED TO	RC11	6.92	1	FLOW	2404.	2381.	2369.	2345.	2320.	2265.	1669.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.58
HYDROGRAPH AT	ST-CR	0.02	1	FLOW	51.	49.	49.	48.	46.	44.	24.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	C-DB	6.95	1	FLOW	2413.	2390.	2378.	2354.	2329.	2273.	1674.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.58
HYDROGRAPH AT	Q	0.04	1	FLOW	80.	78.	77.	75.	73.	69.	35.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO	R/C	0.04	1	FLOW	79.	77.	76.	75.	72.	68.	35.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	P	0.05	1	FLOW	88.	86.	85.	83.	80.	76.	39.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT1	0.09	1	FLOW	167.	163.	161.	158.	152.	144.	73.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R/PT1	0.09	1	FLOW	164.	162.	157.	155.	149.	141.	71.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	O	0.05	1	FLOW	93.	91.	90.	88.	85.	81.	41.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT2	0.14	1	FLOW	257.	253.	247.	243.	234.	222.	112.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	ST1	0.01	1	FLOW	26.	25.	25.	24.	24.	23.	13.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT3	0.15	1	FLOW	283.	278.	272.	267.	258.	245.	125.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT3A	7.10	1	FLOW	2464.	2440.	2427.	2402.	2376.	2318.	1697.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.58
HYDROGRAPH AT	X	0.09	1	FLOW	181.	177.	174.	170.	165.	156.	78.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT	PT4	7.19	1	FLOW	2494.	2468.	2456.	2430.	2403.	2344.	1714.
				TIME	4.92	4.92	4.92	4.92	4.83	4.83	4.58
HYDROGRAPH AT	COS5	0.01	1	FLOW	16.	16.	16.	15.	15.	14.	6.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT	PT5	7.20	1	FLOW	2496.	2471.	2459.	2432.	2406.	2347.	1715.
				TIME	4.92	4.92	4.83	4.83	4.83	4.83	4.58
HYDROGRAPH AT	R	0.05	1	FLOW	93.	91.	90.	87.	85.	80.	42.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R/R	0.05	1	FLOW	90.	88.	87.	85.	82.	78.	40.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	S	0.04	1	FLOW	83.	81.	80.	78.	76.	72.	38.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT6	0.09	1	FLOW	173.	169.	167.	163.	158.	150.	77.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	ST2	0.01	1	FLOW	16.	15.	15.	15.	15.	14.	8.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50

HYDROGRAPH AT

	ST3	0.01	1	FLOW	16.	15.	15.	15.	14.	14.	8.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
3 COMBINED AT											
+	PT7	0.10	1	FLOW	193.	188.	186.	181.	176.	167.	87.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	R/PT2	0.10	1	FLOW	185.	181.	179.	175.	170.	161.	85.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	NP-2	0.02	1	FLOW	18.	17.	17.	16.	15.	14.	4.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	PT8	0.12	1	FLOW	203.	198.	195.	191.	185.	175.	89.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	W	0.13	1	FLOW	249.	243.	240.	234.	228.	215.	110.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	PT9	0.26	1	FLOW	452.	440.	434.	423.	411.	388.	192.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	ST4	0.01	1	FLOW	21.	20.	20.	20.	19.	18.	10.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT											
+	PT10	0.27	1	FLOW	471.	458.	452.	440.	428.	404.	202.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	U	0.06	1	FLOW	121.	118.	117.	114.	111.	105.	54.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.58
ROUTED TO											
+	R/U	0.06	1	FLOW	120.	117.	116.	113.	110.	104.	54.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	V	0.04	1	FLOW	79.	77.	76.	74.	72.	68.	34.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	PT11	0.10	1	FLOW	199.	194.	191.	187.	181.	171.	88.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	PT12	0.37	1	FLOW	670.	652.	644.	627.	610.	576.	290.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	ST-DF	0.02	1	FLOW	34.	33.	33.	32.	31.	29.	16.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	C-47	0.39	1	FLOW	703.	685.	676.	659.	640.	605.	305.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C-47A	7.59	1	FLOW	2722.	2669.	2638.	2583.	2528.	2461.	1777.
				TIME	3.67	3.67	3.67	3.67	3.75	4.83	4.67
HYDROGRAPH AT											
+	ST-AL	0.02	1	FLOW	39.	38.	38.	37.	36.	34.	19.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	CP-AL	7.61	1	FLOW	2752.	2699.	2667.	2612.	2549.	2467.	1781.
				TIME	3.67	3.67	3.67	3.67	3.67	4.83	4.67
HYDROGRAPH AT											
+	T	0.02	1	FLOW	41.	40.	39.	38.	37.	35.	18.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.58
ROUTED TO											
+	R/T	0.02	1	FLOW	40.	39.	38.	37.	36.	34.	19.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67
HYDROGRAPH AT											
+	ST-FH	0.02	1	FLOW	43.	42.	41.	40.	39.	38.	21.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	CP-FH	0.04	1	FLOW	82.	80.	79.	77.	75.	71.	38.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58

1 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB5MOD
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	3532.50	3563.00	3569.00
STORAGE	0.	384.	535.
OUTFLOW	0.	2315.	2567.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS

1.00	3564.09	0.00	411.	2361.	0.00	5.08	0.00
0.98	3563.54	0.00	398.	2338.	0.00	5.08	0.00
0.97	3563.27	0.00	391.	2326.	0.00	5.08	0.00
0.95	3562.70	0.00	376.	2302.	0.00	5.08	0.00
0.93	3562.12	0.00	362.	2278.	0.00	5.00	0.00
0.89	3560.93	0.00	333.	2224.	0.00	5.00	0.00
0.55	3550.63	0.00	122.	1656.	0.00	4.50	0.00

*** NORMAL END OF HEC-1 ***

LAS VEGAS
CITY COUNCIL

CAROLYN G. GOODMAN
MAYOR

STAVROS S. ANTHONY
MAYOR PRO TEM

LOIS TARKANIAN
STEVEN D. ROSS
RICKI Y. BARLOW
BOB COFFIN
BOB BEERS

ELIZABETH N. FRETWELL
CITY MANAGER

July 16, 2012

Ms. Julie Cleaver
The Howard Hughes Company, LLC
10801 West Charleston Boulevard, 3rd Floor
Las Vegas, Nevada 89135

RE: MOD-45960 - MINOR MODIFICATION
ADMINISTRATIVE CYCLE - JUNE 2012

Dear Ms. Cleaver:

Your request for a Minor Modification TO THE SUMMERLIN DEVELOPMENT PLAN FOR VILLAGE 23A AND 23B (a portion of APN 137-22-000-015), P-C (Planned Community) Zone, Ward 2 (Beers), has been considered administratively by the Department of Planning staff.

The Department of Planning has administratively ***APPROVED*** your request.

This action by the Department of Planning staff on July 16, 2012 is final unless a written appeal is filed with the Director of the Department of Planning within ten days of the date of this letter.

Sincerely,

Steve Gebeke, AICP
Planning Supervisor
Case Planning Division

SG:clb

cc: Mr. Josh Johnson
GC Wallace
1555 South Rainbow Boulevard
Las Vegas, Nevada 89146

CITY OF LAS VEGAS
DEPARTMENT OF PLANNING
DEVELOPMENT SERVICES CENTER
333 NORTH RANCHO DRIVE
3RD FLOOR
LAS VEGAS, NEVADA 89106

VOICE 702.229.6301
FAX 702.474.0352
TTY 702.386.9108
www.lasvegasnevada.gov

City of Las Vegas

AGENDA MEMO - PLANNING

ADMINISTRATIVE REVIEW DATE: JULY 2012
DEPARTMENT: PLANNING
ITEM DESCRIPTION: APPLICANT/OWNER: THE HOWARD HUGHES COMPANY, LLC

** STAFF RECOMMENDATION(S) **

CASE NUMBER	*RECOMMENDATION*	*REQUIRED FOR APPROVAL*
MOD-45960	Staff APPROVES.	

YK

Staff Report Page One
July 2012 - Administrative Review Meeting

** STAFF REPORT **

PROJECT DESCRIPTION

This is a request for a Minor Modification to the Summerlin Master Development Plan to amend a portion of the land use designations for Summerlin Village 23A and 23B. Since the planned modifications are minor and maintain the overall goals and objectives of the Summerlin Development Plan, staff approves the application.

ISSUES

- The Summerlin Residential Design Review Committee supports the request via a letter dated June 26, 2012.

BACKGROUND INFORMATION

Related Relevant City Actions by P&D, Fire, Bldg., etc	
12/19/96	The City Council approved a request for a Petition to Annex (A-0020-96) property located on the west side of the proposed west leg of the Beltway between Charleston Boulevard and Cheyenne Avenue containing approximately 8,318 acres with an effective date of 02/28/97.
01/27/97	The City Council approved a request to amend the Southwest Sector of the General Plan (GPA-0052-96) to add property generally located along the west side of the proposed west leg of the Beltway between Charleston Boulevard and Cheyenne Avenue to R (Rural Density Residential), ML (Medium-Low Density Residential), M (Medium Density Residential), SC (Service Commercial), GC (General Commercial), TC (Tourist Commercial), P (Parks/Recreation/Open Space), S (School) and PF (Pubic Facilities). The Planning Commission and staff recommended approval.
	The City Council approved a related request for Rezoning (Z-0119-96) from N-U (Non-Urban) to PC (Planned Community).
11/23/98	The City Council approved a request for a Special Use Permit (U-0119-98) for two Electric Substations and overhead Transmission Lines on property located at the northwest corner of the western Beltway and Far Hills Way. The Planning Commission and staff recommended approval.
08/16/00	The City Council approved a request for a Reinstatement and Extension of Time [U-0119-98(1)] of a previously approved Special Use Permit (U-0119-98) for two Electric Substations and overhead Transmission Lines on the north side of Far Hills Avenue, west of the western Beltway. Staff recommended approval.

05/19/04	The City Council approved a revision (DIR-3934) to the Summerlin Development Standards Manual, dated February 10, 2004. The Planning Commission and staff recommended approval.
12/21/05	The City Council approved a request for an Extension of Time (EOT-10227) for a previously approved Special Use Permit (U-0119-98) for two Electric Substations and overhead Transmission Lines adjacent to the north side of far Hills Avenue, approximately 4,580 feet west of the Las Vegas Beltway. Staff recommended approval.
08/10/06	The Planning Commission approved Tentative Map (TMP-14767) for a nine lot residential subdivision on 493 acres adjacent to the northwest corner of Alta Drive and Vista Run Drive. Staff recommended approval.
12/16/09	The City Council approved an Extension of Time (EOT-36462) for a previously approved Special Use Permit (U-119-98) for two electric substations and overhead transmission lines adjacent to the north side of Far Hills Avenue, approximately 4,580 feet west of the Las Vegas Beltway. Staff recommended approval.

Most Recent Change of Ownership	
12/18/97	A deed was recorded for a change in ownership.

Related Building Permits/Business Licenses
No activity on file.

Pre-Application Meeting	
05/30/12	Staff met with the applicant and reviewed the requirements for a Minor Modification to Summerlin Village 23A and 23B.

Neighborhood Meeting
No neighborhood meeting was required, nor was one held.

Details of Application Request	
Site Area	
Gross Acres	2,682.84

Surrounding Property	*Existing Land Use Per Title 19.12*	*Planned or Special Land Use Designation*	*Existing Zoning District*
Subject Property	Undeveloped	PC (Planned Community)	P-C (Planned Community) [PF (Public Facilities) Summerlin Special Use Land Designation]
North	Las Vegas Valley Water Pump	PC (Planned Community)	P-C (Planned Community) [PF (Public Facilities) Summerlin Special Use Land Designation]
South	Undeveloped Land	PC (Planned Community)	P-C (Planned Community) [MF2 (Medium Density Multi-Family) Summerlin Special Land Use Designation]
East	Undeveloped Land	PC (Planned Community)	P-C (Planned Community) [PF (Public Facilities) Summerlin Special Land Use Designation]
	Single Family Residences	PC (Planned Community)	P-C (Planned Community) [SF3 (Single Family Detached) Summerlin Special Land Use Designation]
West	Undeveloped Land	PC (Planned Community)	U (Undeveloped) [PC (Planned Community) Summerlin Special Land Use Designation]

Master Plan Areas	*Yes*	*No*	*Compliance*
Summerlin	X		Y
Special Purpose and Overlay Districts	***Yes***	***No***	***Compliance***
P-C (Planned Community) District	X		Y
Trails		X	N/A
Rural Preservation Overlay District		X	N/A
Las Vegas Redevelopment Plan Area		X	N/A
Development Impact Notification Assessment		X	N/A
Project of Regional Significance		X	N/A

ANALYSIS

This is a request for a Minor Modification to the Summerlin Master Development Plan to amend a portion of the land use designations for Summerlin Village 23A and 23B. Specifically, the "neighborhood focus" land use for Parcel ES-1 has been relocated from 23A to 23B at the junction of the village paseo and the neighborhood park. Parcels ES-1 and WS-1 in 23A will be developed as low density single-story homes and the total number of residential parcels has increased from ten to fourteen. The total net acreage designated as multi-family decreased in 23B from 80.3 acres to 43.5 acres reducing the allowable residential units by 8-1/2%. The boundaries of the paseo have been adjusted to conform to the natural grade of the site. Finally, Parcel COS-7 has been created to extend the village paseo to Far Hills Avenue to provide a connection opportunity with planned residential villages to the north. Since the planned modifications are minor and maintain the overall goals and objectives of the Summerlin Development Plan, staff approves the application.

NOTICES MAILED N/A

APPROVALS 0

PROTESTS 0

MAYOR
OSCAR B. GOODMAN

CITY COUNCIL
GARY REESE
(MAYOR PRO-TEM)
MICHAEL J. McDONALD
LARRY BROWN
LYNETTE B. McDONALD
LAWRENCE WEEKLY
MICHAEL MACK

CITY MANAGER
VIRGINIA VALENTINE

May 7, 2002

John R. Tobin, P.E.
G. C. Wallace, Inc.
1555 South Rainbow Boulevard
Las Vegas, Nevada 89102

RE: Master Traffic Study and Addendum for Summerlin Villages 23A & 23B
TM-0006-02

Dear Mr. Tobin:

The Traffic Engineering Division has reviewed the master traffic study and addendum for Summerlin Villages 23A and 23B, to be located on the northwest corner of Charleston Boulevard and Desert Foothills Drive. This project consists of 3,107 single family detached dwelling units, 733 single family attached dwelling units, 924 multi-family dwelling units, three church sites, two elementary school sites and two park sites. The amended study is approved, with the following conditions:

1. The Nevada Department of Transportation (NDOT) and Clark County must approve all improvements on Charleston Boulevard.

2. The West Collector Road is not being constructed with this Village. This approval does not constitute approval of any character or cross-section for this street.

3. The four proposed roundabouts (at the four Loop Road/Spine Road intersections) must comply with FHWA guidelines unless an alternative design is approved by the City Traffic Engineer.

4. Corner channelizing islands may not be installed without the approval of the City Traffic Engineer. At this time, the proposed channelizing islands at the three Desert Foothills Drive intersections are not approved.

5. The proposed curb return flaring at 2-lane collector intersections in accordance with Figure 4 is acceptable.

6. Bus turnouts in accordance with Clark County Area Standard Drawing #234.1 are required on the downstream legs of the following intersections: Far Hills/West Collector, Far Hills/Desert Foothills, Alta/West Collector, Alta/Desert Foothills and Charleston/Desert Foothills. Easements in accordance with Clark County Area Standard Drawing #234.2 must be granted to the Regional Transportation Commission (RTC) at each of these turnouts at a location acceptable to the RTC for each bus stop prior to the installation of a bus stop at that location.

CITY OF LAS VEGAS
400 STEWART AVENUE
LAS VEGAS, NEVADA 89101

VOICE 702.229.6011
TDD 702.386.9108

7. At the intersection of Far Hills Avenue and Spine Road, additional right-of-way is required for an exclusive right turn lane on the south leg in accordance with Clark County Area Standard Drawing #201.1.

8. At the intersection of Far Hills Avenue and Link Road, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for an exclusive right turn lane on the south leg and for a second left turn lane on the east and west legs.

9. At the intersection of Far Hills Avenue and Desert Foothills Drive, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for an exclusive right turn lane on the south leg and for a second left turn lane on all legs.

10. At the intersection of Alta Drive and Spine Road, additional right-of-way is required for an exclusive right turn lane on the south and east legs in accordance with Clark County Area Standard Drawing #201.1.

11. At the intersection of Desert Sunrise Road and Desert Foothills Drive, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for exclusive right turn lanes on the north, south and west legs and for a second left turn lane on the north and south legs. An acceptable transition may be proposed in lieu of a second left turn lane on the north leg.

12. At the intersection of Desert Sunrise Road (Spine Road) and Desert Foothills Drive, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for exclusive right turn lanes on the north, south and west legs and for a second left turn lane on the north and south legs.

13. At the intersection of Charleston Boulevard and Desert Foothills Drive, additional right-of-way is required in accordance with Clark County Area Standard Drawing #201.1 for an exclusive right turn lane on the east leg and for a second left turn lane on the north leg. Comply with the requirements of NDOT and Clark County regarding additional right-of-way for turn lanes on the south side of Charleston Boulevard. If NDOT approves dropping a through lane westbound on Charleston Boulevard at Desert Foothills Drive, additional right-of-way may not be required for an exclusive right turn lane. The City of Las Vegas Traffic Engineering recommends right-of-way for a second left turn lane on the south leg to permit the opposing left turn lanes to align.

14. Underground conduit with appropriate pullboxes must be installed for the proposed school flashers on Spine Road near Loop Roads A and B.

15. The following intersections are anticipated to be signalized: Far Hills/West Collector, Far Hills/Spine, Far Hills/Link, Far Hills/Desert Foothills, Alta/West Collector, Alta/Spine, Alta/Desert Foothills, Desert Sunrise (Spine)/Desert Foothills, Charleston/West Collector, and Charleston/Desert Foothills. Appropriate underground improvements must be installed prior to or concurrent with the construction of any street improvements that would conflict.

16. A minimum of two lanes of pavement along Desert Foothills Drive to the existing pavement on Far Hills Avenue shall be completed prior to the issuance of building permits for more than 1150 dwelling units in Village 23A. When Desert Foothills Drive is completed from Charleston Boulevard to the Beltway, this limit may be raised to 1750 dwelling units.

17. Spine Road must be reevaluated if the number of proposed dwelling units in Village 23A exceeds 3250 or if the number of proposed dwelling units in Village 23B exceeds 3300.

This condition of approval does not supersede or eliminate conditions of approval imposed by the Planning Commission and/or the City Council. An addendum to this traffic study is required if the development of the site occurs in a manner not in keeping with the land use assumptions contained in the report. Please contact me at 229-2452 if you have any questions.

Sincerely,

Rick Schroder, P.E.
Transportation Planning

RES

cc: O. C. White, P.E.
Wayne Dowdey, P.E.
Qiong Liu, P.E.
Cheri Edelman, P.E.
Gary Phillips
Kent Sears, P.E., NDOT
Denise LeMoine, P.E., CCTMD
David Yancey, RTC
file

0602.10C

PLANNING &
DEVELOPMENT

Development
Services Center
731 S. Fourth Street
Las Vegas, NV 89101

TDD 702-386-9108
Voice:
Administration 229-6353
Comp Planning 229-6022
Current Planning 229-6301
www.ci.las-vegas.nv.us

RECEIVED
MAR 19 2002
G.C. WALLACE, INC.
SUMMERLIN

March 15, 2002

Mr. Gerald M. Robbins
The Howard Hughes Corporation, a Delaware Corporation
10000 West Charleston Boulevard, Suite #200
Las Vegas, Nevada 89135

RE: TENTATIVE MAP - SUMMERLIN VILLAGE-23A - TM-0006-02

Dear Mr. Robbins:

Your request for a Tentative Map on 389.40 acres adjacent to the northwest corner of Charleston Boulevard and Desert Foothills Drive, PC (Planned Community) Zone, Ward 2 (L.B. McDonald), was considered by the Planning Commission on March 14, 2002.

The Planning Commission voted to *APPROVE* your request, subject to the following:

Planning and Development

1. Approval of the Tentative Map shall be for no more than two (2) years. If a Final Map is not recorded on all or a portion of the area embraced by the Tentative Map within two (2) years of the approval of the Tentative Map, a new Tentative Map must be filed.

2. All development shall conform to the Conditions of Approval for Rezoning (Z-0119-96), Summerlin Development Plan Review (SV-0018-01) and the Summerlin Development Standards.

3. Street names must be provided in accordance with the City's street naming regulations.

4. All development is subject to the conditions of City departments and State Subdivision Statutes.

5. A fully operational fire protection system, including fire apparatus roads, fire hydrants and water supply, shall be installed and shall be functioning prior to construction of any combustible structures.

Mayor
Oscar B. Goodman

City Council
Gary Reese
(Mayor Pro-Tem)
Michael J. McDonald
Larry Brown
Lynette Boggs McDonald
Lawrence Weekly
Michael Mack

City Manager
[illegible] Valentine

Public Works

6. Dedicate appropriate public street right-of-ways and construct public and private streets in accordance with Summerlin Development and Improvement Standards.

7. The location and design of all proposed roadway intersections with Charleston Boulevard shall meet the approval of the Nevada Department of Transportation.

8. A minimum of two lanes of pavement along Desert Foothills Drive to the existing pavement on Far Hills Aveneu shall be completed prior to the development causing the intersection of Desert Foothills/Charleston Boulevard to exceed design capacity, as established in the Village Master Traffic Study.

9. The construction of the collector road on the western edge of this village may be deferred; final determination of construction requirements shall be determined at the time of approval of the Traffic Study for the future villages adjacent to the west edge of this site of at the time of approval of a Tentative Map for such future villages, whichever is first.

10. A Master Streetlight Plan for Summerlin Village 23 must be approved prior to the submittal of any improvement plans.

11. A Master Drainage Plan and Technical Drainage Study and a Master Traffic Impact Analysis must be approved by the Department of Public Works prior to the recordation of any Final Map creating any development pod sites anywhere on the overall tentative map subdivision site.

12. Site development to comply with all applicable conditions of approval for SV-18-01, Z-119-96, and all applicable Summerlin Standards.

13. The approval of all Public Works related improvements shown on this Tentative Map is in concept only. Specific design and construction details relating to size, type and/or alignment of public improvements, including but not limited to street, sewer and drainage improvements, shall be resolved prior to approval of the construction plans by the City. No deviations from adopted City Standards shall be allowed unless specific written approval for such is received from the City Engineer prior to the recordation of a Final Map or the approval of subdivision-related construction plans, whichever may occur first.

This action by the Planning Commission on March 14, 2002 is final unless a written appeal is filed with the City Clerk within seven days of the date of the Planning Commission's decision or there is a review action filed by the City Council within the same time period.

Sincerely,

Andrew P. Reed, Senior Planner
Planning and Development Department
Current Planning Division

APR:clb

cc: Mr. Bert Hughes
G.C. Wallace, Inc.
10000 West Charleston Boulevard, Suite #130
Las Vegas, Nevada 89135

UPDATE #2 TO THE TECHNICAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B ALTA DRIVE INTERIM GRADING (VILLAGES 23A/23B ALTA DRIVE STREET IMPROVEMENTS)

62023-140

June 2012

Prepared for:

The Howard Hughes Corporation
10000 W. Charleston Blvd., Suite 200
Las Vegas, Nevada 89135
Phone: (702) 791-4200
Fax: (702) 791-4450

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			**DATE:** June 27, 2012
TO: **Land Development Services** Department of Public Works			**FROM:** Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: **Summerlin Village 23B – Alta Drive Interim Grading (Summerlin Village 23A/23B Alta Drive Street Imp. – Update #2)**			**COPIES TO:** G.C. Wallace, Inc.
Cross Streets:	Alta Dr. between Desert Foothill & Sky Vista		Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4050D.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-34-299-001; -699-005; -699-006 & more		CCRFCD
Zoning Action:	N/A		
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	8/9/2006 & 8/31/2006	9/13/2006	Not Approved	$400.00	Paid: $400
2nd Submittal	10/19/2006	11/2/2006	Conditional Approval	$400.00	56131: $400
CCRFCD	1/8/2007	1/22/2007	Concurrence	N/C	N/C
3rd Submittal & Supplement	6/7/2012 & 6/26/2012	6/20/2012 & 6/26/2012	See Comments Below	$100.00	285773: $100
			TOTAL FEES (LDDRS):	**$900.00**	----

REMARKS:

3rd Submittal & Supplement: Update #2 to provide interim flood protection berms/ditches along the north side of the rough graded Alta Drive

The Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

Note to Land Development:

A recent site inspection by Flood Control staff revealed that a sump pit at the intersection of Alta and Fox Hill had been backfilled. In order for the proposed ditches to function properly, the sump pit must be re-opened prior to the final acceptance of the improvement plans.

NOTE: Any future changes to the proposed design (or design assumptions) as outlined in the approved drainage study and attached preliminary grading plan which affect drainage must be addressed in a Drainage Study Amendment and accepted by the *City of Las Vegas Flood Control Section*. Additionally, conditional acceptance of a drainage study is valid for a period of one (1) year. If the proposed construction has not been completed in that time period, the *City of Las Vegas* reserves the right to require additional conditions and/or submission and acceptance of a complete drainage study update prior to further construction of a project.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

END OF REMARKS
ays

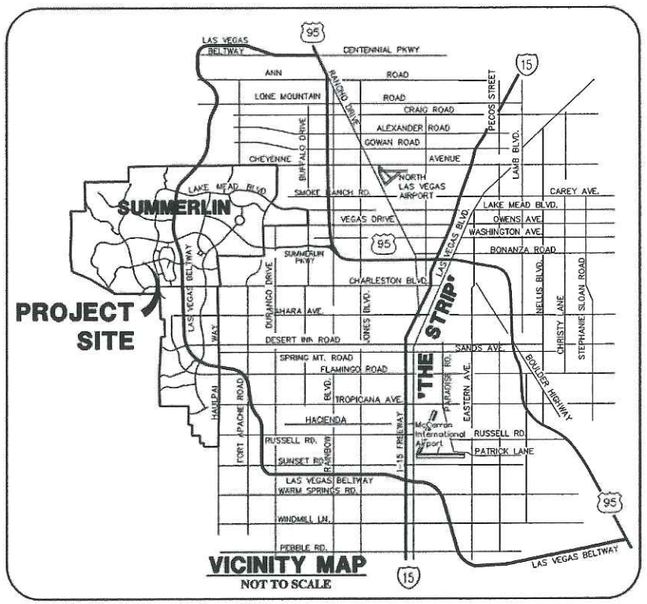
T/R/S: T20S/R59E/34
AREA K-34

SUMMERLIN

SM

VILLAGE 23B ALTA DRIVE INTERIM GRADING

APN: 137-22-000-015, 137-34-299-001



VICINITY MAP
NOT TO SCALE

DEVELOPER

The Howard Hughes Corporation SM
An Affiliate of THE ROUSE COMPANY

THE HOWARD HUGHES CORPORATION
a Delaware corporation

10801 W. CHARLESTON, 3RD FLOOR
LAS VEGAS, NEVADA 89135
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450

ENGINEER

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM

NOTE

PRE-DEVELOPMENT MEETING WITH DEPARTMENT OF DEVELOPMENT SERVICES, CIVIL ENGINEERING DIVISION, OFF-SITE INSPECTOR REQUIRED. CONTACT CIVIL ENGINEERING INSPECTOR AT 455-4610.

CAUTION TO CONTRACTOR

THE CONTRACTOR SHALL BE RESPONSIBLE TO INVESTIGATE AND VERIFY THE ACTUAL LOCATION AND DEPTH OF ALL EXISTING UNDERGROUND FACILITIES AT LEAST 48 HOURS IN ADVANCE OF THE PERFORMANCE OF ANY WORK.

DRAINAGE CERTIFICATION

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

DANIEL F. KELLEY P.E. 21134 — DATE 6-5-12

THE HOWARD HUGHES CORPORATION,
a Delaware corporation

By: _____ DATE
KEVIN ORROCK

Title: EXECUTIVE VICE PRESIDENT

CLV PLANNING DEPARTMENT

THIS PLAN MEETS THE APPLICABLE STANDARDS IF THE PLANNING AND DEVELOPMENT DEPARTMENT

_____ DATE
MARGO WHEELER, AICP, CURRENT PLANNING MANAGER

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. — DATE

CENTURYLINK — DATE

THE AFFIXED CENTURYLINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NV ENERGY — DATE

NEVADA POWER COMPANY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY EXISTING OR FUTURE CONFLICTS ONCE THE FINAL DESIGN IS COMPLETED. THE NEW SERVICE AND THE RESOLUTION OF ANY CONFLICTS WILL BE ACCOMPLISHED PURSUANT TO THE NEVADA PUBLIC UTILITY COMMISSION'S RULES AND REGULATIONS.

NV ENERGY – TRANSMISSION ENGINEERING — DATE

SOUTHWEST GAS CORP. — DATE

SOUTHERN NEVADA WATER AUTHORITY — DATE

SNWA APPROVAL IS VALID FOR ONE (1) YEAR FROM THE SIGNATURE DATE. IF CONSTRUCTION WITHIN THE EASEMENT OR RESTRICTED PIPE SAFETY ZONE IS NOT COMPLETE PLANS MUST BE RESUBMITTED TO SNWA FOR APPROVAL.

HTE: 12-XXXX

STATE OF NEVADA — DANIEL F. KELLEY — No. 09/30/2013 — 21134 — CIVIL — PROFESSIONAL ENGINEER — DATE 6-5-12

90% SUBMITTAL

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	CCW APP

PROJECT NO. 62023B-140
DESIGN: DFK
DRAWN: DFK
CHECK: DJY
PLOT DATE: 06-05-12
PLOT TIME: 15:27:38

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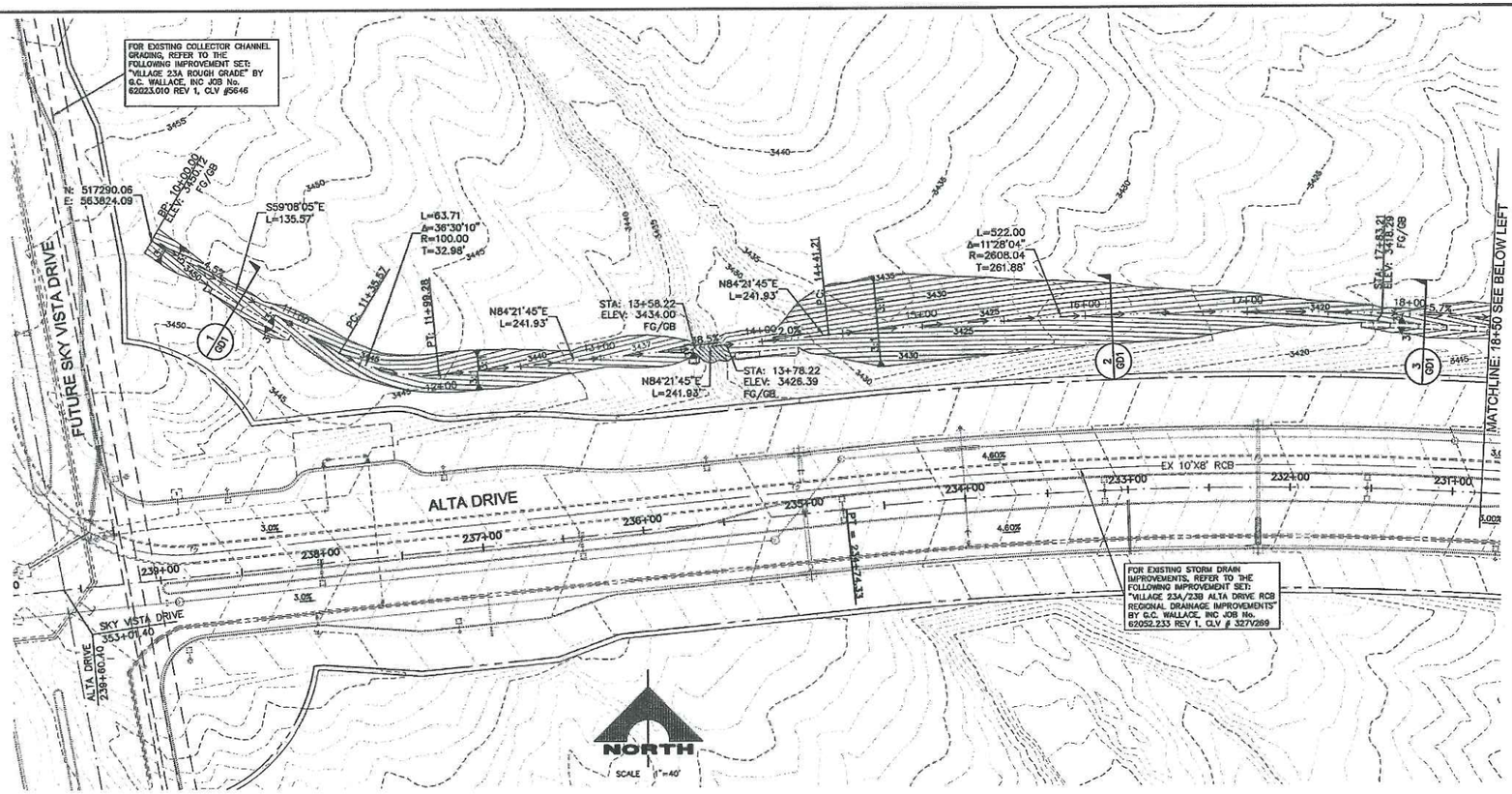
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Daniel Kelley
7/19/2010

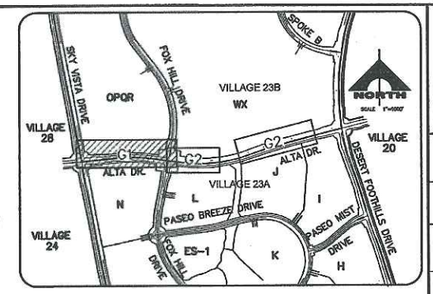
HOWARD HUGHES PROPERTIES, INC.

VILLAGE 23B ALTA DRIVE INTERIM GRADING

COVER SHEET

DRAWING
C1
1 OF 5 SHTS





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CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

FAST
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1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

INTERIM DRAINAGE QUANTITIES
CUT = 3659 CY
FILL = 462 CY
NET = 3197 CY (CUT)

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.&G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RCD ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

HTE: 12-XXXX

STATE OF NEVADA — PROFESSIONAL ENGINEER — DANIEL L. KELLEY — CIVIL — No. 21139 — DATE: 4-5-12

90% SUBMITTAL

DESCRIPTION	DATE	REV'D	DATE	AGEN APP	DATE	OCW APP

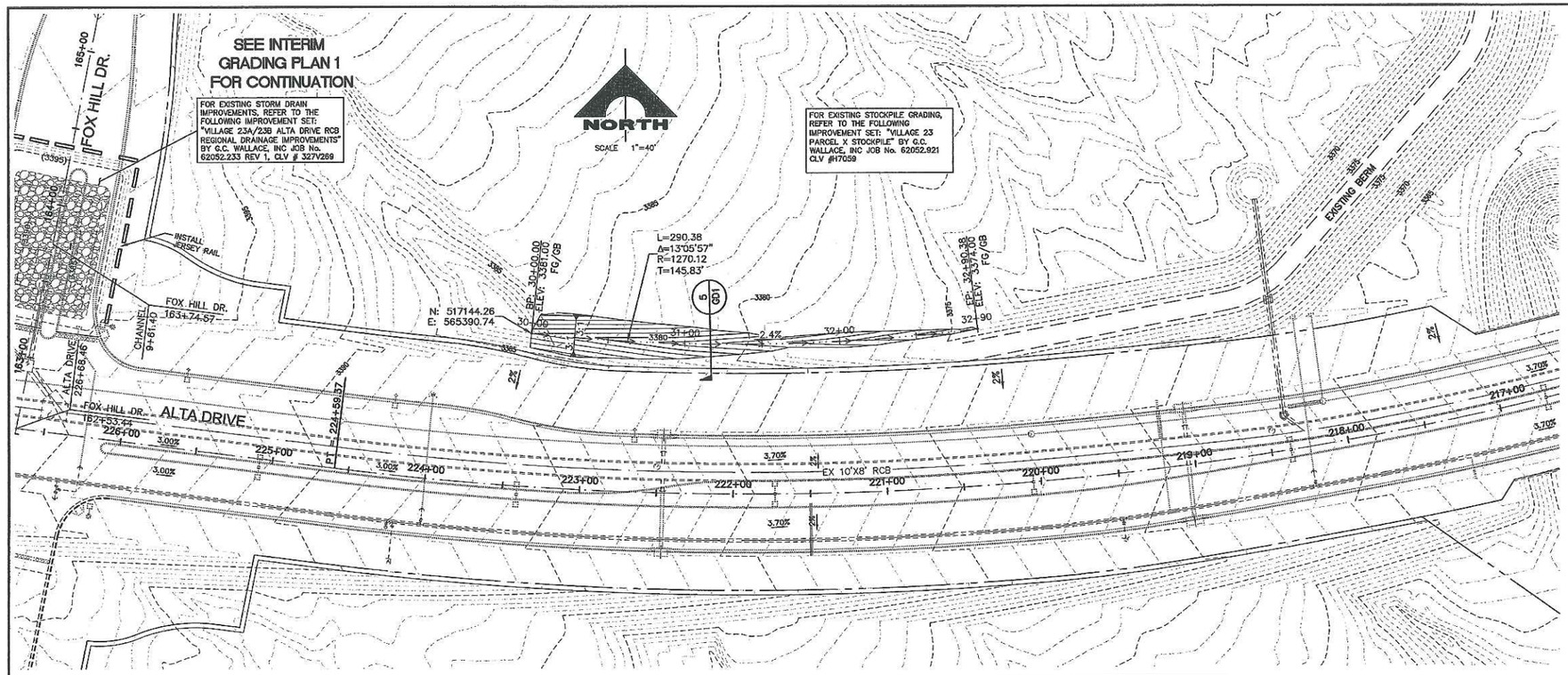
PROJECT NO. 62023B-140
DESIGN: DFK
DRAWN: DFK
CHECK: DJY
PLOT DATE: 08-05-12
PLOT TIME: 15:28:09

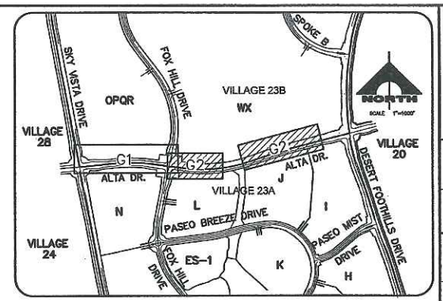
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Daniel Kelley 7/19/2010

HOWARD HUGHES PROPERTIES, INC.
VILLAGE 23B ALTA DRIVE INTERIM GRADING
INTERIM GRADING PLAN 1

DRAWING G1
3 of 5 SHTS





NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM, PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

40 0 40 80
SCALE FEET

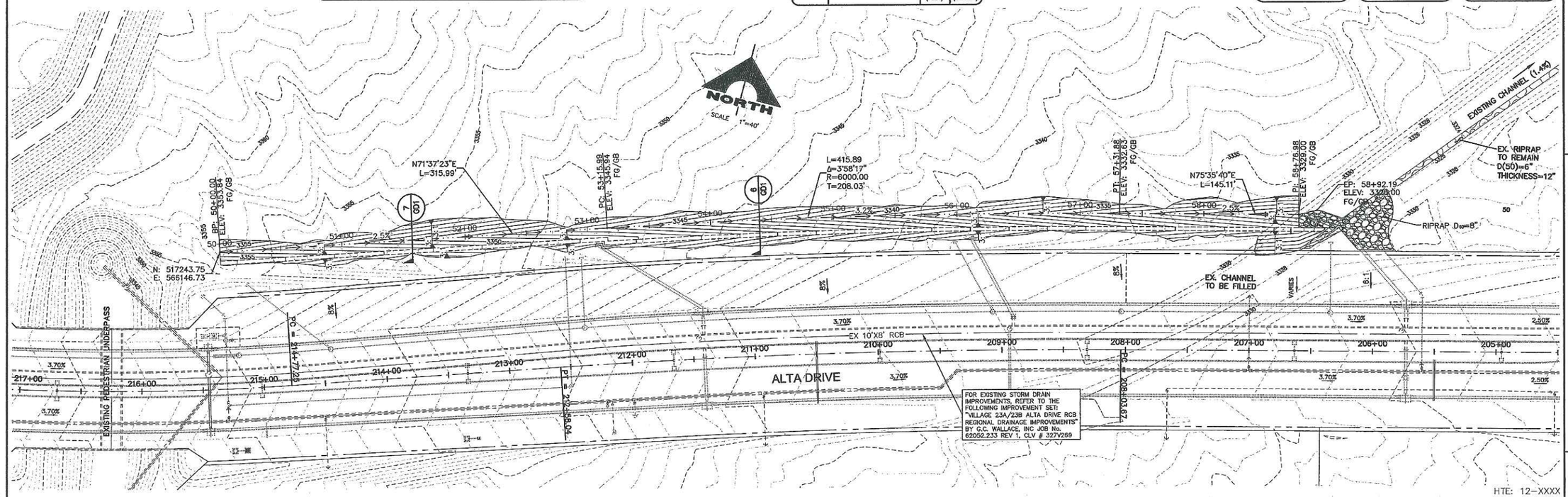
BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

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FAST
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1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION



HTE: 12-XXXX

ENGINEER'S STATE OF NEVADA — JAMES F. KELLEY — No. 9676 — PROFESSIONAL — CIVIL — DATE: 6/17/10

90% SUBMITTAL

REV	DATE	DESCRIPTION	DATE	ABEN. APP	DATE	CCW. APP

PROJECT NO. 62023B-140
DESIGN: DFK
DRAWN: DFK
CHECK: DJF
PLOT DATE: 06-25-12
PLOT TIME: 16:08:39

G.C. WALLACE COMPANIES
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Hung Le
7/19/2010

HOWARD HUGHES PROPERTIES, INC.

VILLAGE 23B ALTA DRIVE INTERIM GRADING

INTERIM GRADING PLAN 2

DRAWING G2

4 OF 5 SHTS

V-DITCH AND BERM (4)
SCALE: NTS

V-DITCH AND BERM (7)
SCALE: NTS

V-DITCH AND BERM (3)
SCALE: NTS

V-DITCH AND BERM (6)
SCALE: NTS

V-DITCH AND BERM (2)
SCALE: NTS

V-DITCH CHANNEL (UNLINED) (5)
SCALE: NTS

V-DITCH AND BERM (1)
SCALE: NTS

HTE: 12-XXXX

90% SUBMITTAL

DATE: 12-3-12

REV	DATE	DESCRIPTION	DATE	ASSEN APP	DATE	CON APP

PROJECT NO. 62023B-140
DESIGN: DFK
DRAWN: DFK
CHECK: DJT
PLOT DATE: 09-05-12
PLOT TIME: 15:28:28

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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Daniel Kelley 7/19/2010

HOWARD HUGHES PROPERTIES, INC.
VILLAGE 23B ALTA DRIVE INTERIM GRADING
GRADING DETAILS

DRAWING
GD1
5 OF 5 SHTS

REGIONAL FLOOD CONTROL DISTRICT

2008
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-24
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

Category A	Category B
Channel	Channel
Stormdrain	Stormdrain
Crossing	Crossing

N

0 500 1,000 2,000 3,000
Feet
Scale: 1 inch = 2,000 feet
Refer to Figure G-2 for Aerial Source(s)

US95 I-15 I-215

	1	2	3				
4	5	6					
		7	8	9	10		
11	12	13	14	15	16	17	
	18	19	20	21	22	23	
	24	25	26	27	28		
	29	30	31	32	33	34	
	35	36	37	38	39	40	
	41	42	43	44	45	46	
	47	48	49	50	51	52	
	53	54	55	56			
	57	58	59				

PBS PB

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
APAD		ANGEL PARK - ALTA DRIVE BRANCH						
0044	E	11' X 8' RCAP	1565	3140	CSWAA-3	ALLGOW4	8.26	4.24
0073	E	11' X 8' RCAP	2220	2917	CSWAA-2	ALLGOW3	7.68	3.50
0146	E	10' X 8' RCB	3010	2220	CSWAA-1	ALLGOW3	6.98	4.40
0203	E	2: 7' X 5.5' RCB	1136	2220	CSWAA-1	ALLGOW3	6.98	5.28
0225	E	2: 7' X 5.5' RCB Outlet	360	2149	SUM5DB	ALLGOW3	6.74	3.40
APBE		ANGEL PARK - BELTWAY BRANCH						
0013	E	3: 12' X 8' RCB	489	4060	CSWFH-9	ALLGOW3	2.65	6.50
0022	E	Conc Chnl 20'W 7'D 2:1 SS	1556	4060	CSWFH-9	ALLGOW3	2.65	1.81
0051	E	Conc Chnl 20'W 7'D 2:1 SS	1583	4060	CSWFH-9	ALLGOW3	2.65	2.77
0081	E	8' X 8' RCBC @ Far Hills	777	423	SWFH-9	ALLGOW3	0.17	2.32
0094	E	Conc Chnl 10'W 5'D 2:1 SS	1465	423	SWFH-9	ALLGOW3	0.17	1.88
0122	E	Conc Chnl 10'W 4'D 2:1 SS	1409	423	SWFH-9	ALLGOW3	0.17	0.80
APCH		ANGEL PARK - CARRIAGE HILL BRANCH						
0000	E	8' X 6' RCB	152	585	SWFH-8	ALLGOW3	0.29	0.87
0003	P0	8' X 7' RCB	1461	585	SWFH-8	ALLGOW3	0.29	2.39
0031	P0	8' X 5' RCB	896	585	SWFH-8	ALLGOW3	0.29	0.60
APD2		ANGEL PARK - DESERT FOOTHILLS 2 BRANCH						
0002	P0	7' X 7' RCB	964	948	SWAA-2	ALLGOW3	0.70	2.00
APD5		ANGEL PARK - DESERT FOOTHILLS 5 BRANCH						
0000	P0	8' X 6' RCB	685	1701	CSWFH-2	ALLGOW3	1.09	1.89
0013	P0	72" RCP	1436	1701	CSWFH-2	ALLGOW3	1.09	4.18
APD6		ANGEL PARK - DESERT FOOTHILLS 6 BRANCH						
0000	P0	6' X 6' RCB	2604	1076	CSWFH-6	ALLGOW3	0.56	6.15
APDF		ANGEL PARK - DESERT FOOTHILLS BRANCH						
0000	P0	12' X 10' RCB	1356	2897	CSWFH-7	ALLGOW3	1.81	2.20
0026	P0	12' X 10' RCB	2463	1962	CSWFH-3	ALLGOW3	1.25	1.62
0073	P0	10' X 8' RCB	2679	1962	CSWFH-3	ALLGOW3	1.25	4.10
0123	P0	6' X 5' RCB	5355	1701	CSWFH-2	ALLGOW3	1.09	6.53
APF2		ANGEL PARK - FAR HILLS 2 BRANCH						
0000	P0	8' X 6' RCB	1046	669	CSWFH-5	ALLGOW3	0.38	1.00
APFH		ANGEL PARK - FAR HILLS BRANCH						
0000	E	2: 8' X 8' RCB	995	3862	CSWFH-8	ALLGOW3	2.48	3.50
0019	E	2: 8' X 8' RCB	250	3392	CCSWFH-7	ALLGOW3	2.18	4.19
0024	E	16' X 8' RCAP	1943	3392	CCSWFH-7	ALLGOW3	2.18	5.10
0061	E	8' X 7' RCB	1492	669	CSWFH-5	ALLGOW3	0.38	2.00
0089	P0	8' X 6' RCB	2902	669	CSWFH-5	ALLGOW3	0.38	2.00
0144	P0	7' X 6' RCB	1556	669	CSWFH-5	ALLGOW3	0.38	5.50
APM5		ANGEL PARK - MIDDLE 5 BRANCH						
0000	E	384 ac-ft Detention Basin #5		7001	SUM5IN	ALLGOW3	6.74	
0001	E	12,153 cfs PMF Spillway		12153	SUM5IN	ALLGOW3	6.74	
0008	P0	Conc Chnl 50'W 4.5'D 2:1 SS	2102	3725	CDB54-6R	ALLGOW3	4.30	5.20
0009	P0	Conc Chnl 50'W 4.5'D 2:1 SS	4180	3624	CDB55-8	ALLGOW3	2.45	5.80
0047	E	Diversion Berm with Gabion Bank Protection	1000	3725	CDB54-6R	ALLGOW3	4.30	1.30
0056	P0	Conc Chnl 80'W 4'D 2:1 SS	284	3725	CDB54-6R	ALLGOW3	4.30	1.30
0057	P0	Conc Chnl 50'W 3'D 2:1 SS	9922	1821	CDB54-4	ALLGOW3	1.01	6.80
0059	P0	Conc Chnl 100'W 3'D 2:1 SS	6923	2358	CDB54-5	ALLGOW3	2.45	7.00
0212	P0	Conc Chnl 30'W 3.5'D 2:1 SS	6695	1238	CDB55-2	ALLGOW3	0.74	7.50
0213	P0	Conc Chnl 50'W 2.5'D 2:1 SS	6522	1125	CDB55-5	ALLGOW3	0.62	7.30
APSP		ANGEL PARK - SUMMERLIN PARKWAY						
0135	E	Conc Chnl 10'W 6'D 2:1 SS	2030	1173	C8B-1	ALLGOW3	1.14	2.40
0177	E	9' X 8' RCBC at Anasazi	330	867	C11B-1	ALLGOW3	0.84	1.70
0183	E	Conc Chnl 10'W 8'D 2:1 SS	1680	867	C11B-1	ALLGOW3	0.84	1.70
GO02		GOWAN SOUTH FACILITIES (CHEYENNE CHANNEL)						
0257	E	Conc Chnl 10'W 6.75'D 1.5:1 SS	4293	2577	CCJ-C	ALLGOW3	2.97	4.10
GOB2		GOWAN LONE MOUNTAIN SYST. 2 BELTWAY						
0000	P0	36" RCP Outlet	118	75	DET22	ALLGOW3	0.76	6.76
0001	P0	123 ac-ft Village 22 Detention Basin		1344	CSV22-DB	ALLGOW3	0.76	
0020	P0	8' X 7' RCB	857	1247	SV22-2	ALLGOW3	0.70	8.30
0033	P0	8' X 6' RCB	3359	1247	SV22-2	ALLGOW3	0.70	6.90
0096	P0	6' X 5' RCB	1332	1247	SV22-2	ALLGOW3	0.70	6.00

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
GOB3		GOWAN LONE MOUNTAIN SYST. 3 BELTWAY						
0000	P0	66" RCP	1877	530	SV22-3	ALLGOW3	0.28	6.60
0035	P0	54" RCP	965	530	SV22-3	ALLGOW3	0.28	6.40
GOBE		GOWAN LONE MOUNTAIN SYST. BELTWAY						
0000	E	20' X 10' RCBC @ Access Rd	30	958	CSV22-3	GW3SC	0.28	5.67
0001	E	Conc Chnl 20'W 5'D 2:1 SS	3355	958	CSV22-3	GW3SC	0.28	6.50
0065	E	Conc Chnl 20'W 6'D 2:1 SS	1220	958	CSV22-3	GW3SC	0.28	1.90
0088	E	2: 10'X9' RCBC @ Lake Mead	400	471	CDET22	ALLGOW3	0.96	0.50
0096	E	Conc Chnl 20'W 9'D 2:1 SS	627	471	CDET22	ALLGOW3	0.96	0.50
0108	E	Conc Chnl 20'W 6'D 2:1 SS	1021	471	CDET22	ALLGOW3	0.96	0.50
0127	E	Conc Chnl 20'W 6'D 2:1 SS	638	442	SV22-1	ALLGOW3	0.20	0.50
0139	E	Conc Chnl 10'W 5.5'D 2:1 SS	1500	442	SV22-1	ALLGOW3	0.20	1.02
GOL3		GOWAN LONE MOUNTAIN SYSTEM-BRANCH 3						
0010	E	Conc Chnl 20'W 10'D 0:1 SS	3037	2946	CRCLMT1R	GW3SC	2.61	2.78
0068	E	Transition Structure	100	2946	CRCLMT1R	GW3SC	2.61	3.50
0070	E	20' X 6' RCBC @ Cliff Shadows	350	1162	CRCSV223	ALLGOW3	5.68	2.44
0077	E	Conc Chnl 20'W 6'D 0:1 SS	1229	1162	CRCSV223	ALLGOW3	5.68	6.11
0100	E	Conc Chnl 20'W 10'D 0:1 SS	200	1162	CRCSV223	ALLGOW3	5.68	5.67
0115	E	66" RCP Outlet	670	679	DET26	ALLGOW3	4.43	
0128	E	333 ac-ft Village 26 Detention Basin		3767	VIL26IN	ALLGOW3	4.43	
0137	P0	14' X 14' RCB	4335	3767	VIL26IN	ALLGOW3	4.43	0.50
0216	P0	Conc Chnl 50'W 4.5'D 2:1 SS	3761	3693	CSV26-1	ALLGOW3	4.15	6.08
0289	P0	Conc Chnl 50'W 3.5'D 2:1 SS	6215	2396	30	ALLGOW3	2.51	7.95
0290	E	Natural Wash 363'W	4850	1465	SV26-1	ALLGOW3	1.64	22.50
0370	E	Natural Wash 450'W	7000	2396	30	ALLGOW3	2.51	8.50
GOL4		GOWAN LONE MOUNTAIN SYSTEM-BRANCH 4						
0000	E	14' X 8' RCB	554	2257	CLMT1R	ALLGOW3	2.33	2.50
0010	E	2: 9' X 8' RCB	820	2257	CLMT1R	ALLGOW3	2.33	4.74
0025	E	Soil Cement Chnl 60'W 8'D 3-4:1 SS	320	2257	CLMT1R	ALLGOW3	2.33	2.00
0026	E	Soil Cement Chnl 42'W 6'D 3-4:1 SS	700	2257	CLMT1R	ALLGOW3	2.33	1.00

** The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.*

*** As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.*

^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

REGIONAL FLOOD CONTROL DISTRICT

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FACILITY INVENTORY FIGURE F - 24

LEGEND

ID (Facility Identifier) AABB
- Parent Stream Name
- Stream Name

River Mile 0000
- Distance Above Confluence with Parent Stream (Miles)
- Miles in Hundredths

Existing Facility..... E
Proposed or Modified Facility..... P
Contingency Level
- Category B..... P0
- Master Plan..... P1
- Preliminary Design..... P2
- Design..... P3

Bottom Width..... W

Depth..... D

Side Slope, H:V..... SS

Construction Features

Cast in Place Concrete Pipe..... CIPCP	Reinforced Concrete Arch Culvert..... RCAC
Corrugated Metal Arch Pipe Culvert..... CMAP	Reinforced Concrete Box..... RCB
Corrugated Metal Pipe Culvert..... CMPC	Reinforced Concrete Box Culvert..... RCBC
High Density Polyethylene..... HDPE	Reinforced Concrete Pipe..... RCP
Horizontal Elliptical Reinforced Concrete Pipe..... HERCP	Reinforced Concrete Pipe Culvert..... RCPC
Reinforced Concrete Arch Pipe..... RCAP	Storm Sewer Pipe..... SSP

PBS&J PB

REGIONAL FLOOD CONTROL DISTRICT

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LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-29
FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Local Proposed Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

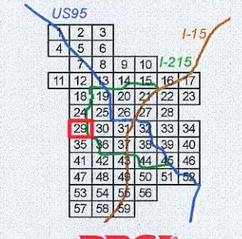
Category A		Category B	
Channel		Channel	
Stormdrain		Stormdrain	
Crossing		Crossing	

N

0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)



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ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
APAD		ANGEL PARK - ALTA DRIVE BRANCH						
0000	E	2: 12' X 8' RCB	944	3140	CSWAA-3	ALLGOW4	8.26	6.00
0018	E	10' X 8' RCB	1392	3140	CSWAA-3	ALLGOW4	8.26	4.53
0044	E	11' X 8' RCAP	1565	3140	CSWAA-3	ALLGOW4	8.26	4.24
0073	E	11' X 8' RCAP	2220	2917	CSWAA-2	ALLGOW3	7.68	3.50
0115	E	10' X 8' RCB	1632	2917	CSWAA-2	ALLGOW3	7.68	2.20
0146	E	10' X 8' RCB	3010	2220	CSWAA-1	ALLGOW3	6.98	4.40
0203	E	2: 7' X 5.5' RCB	1136	2220	CSWAA-1	ALLGOW3	6.98	5.28
0225	E	2: 7' X 5.5' RCB Outlet	360	2149	SUM5DB	ALLGOW3	6.74	3.40
APBE		ANGEL PARK - BELTWAY BRANCH						
0000	E	3: 12' X 8' RCB	712	4060	CSWFH-9	ALLGOW3	2.65	0.82
0013	E	3: 12' X 8' RCB	489	4060	CSWFH-9	ALLGOW3	2.65	6.50
0022	E	Conc Chnl 20'W 7'D 2:1 SS	1556	4060	CSWFH-9	ALLGOW3	2.65	1.81
APCB		ANGEL PARK - CHARLESTON BLVD BRANCH						
0000	E	2: 10' X 6' RCB	833	1622	CSW18	ALLGOW3	1.35	1.54
0001	E	12' X 6' RCB	988	1622	CSW18	ALLGOW3	1.35	3.13
0019	E	11' X 6' RCB	1616	1196	CSW17	ALLGOW3	0.94	1.39
0050	E	8' X 7' RCB	757	1196	CSW17	ALLGOW3	0.94	1.00
0064	E	8' X 7' RCB	849	1196	CSW17	ALLGOW3	0.94	2.08
0080	E	7' X 7' RCB	1489	743	SW11	ALLGOW3	0.59	1.67
APD2		ANGEL PARK - DESERT FOOTHILLS 2 BRANCH						
0000	E	7' X 7' RCB	96	948	SWAA-2	ALLGOW3	0.70	3.62
0002	P0	7' X 7' RCB	964	948	SWAA-2	ALLGOW3	0.70	2.00
APD3		ANGEL PARK - DESERT FOOTHILLS 3 BRANCH						
0000	E	7' X 7' RCB	1090	743	SW11	ALLGOW3	0.59	1.67
0021	E	7' X 7' RCB	749	743	SW11	ALLGOW3	0.59	2.75
APM5		ANGEL PARK - MIDDLE 5 BRANCH						
0000	E	384 ac-ft Detention Basin #5		7001	SUM5IN	ALLGOW3	6.74	
0001	E	12,153 cfs PMF Spillway		12153	SUM5IN	ALLGOW3	6.74	
0009	P0	Conc Chnl 50'W 4.5'D 2:1 SS	4180	3624	CDB55-8	ALLGOW3	2.45	5.80
APMD		ANGEL PARK - MIDDLE BRANCH						
0133	E	Natural Wash	3015	6048	C11A-3*	ALLGOW4	11.31	3.00
0190	E	3: 12'X8' RCBC @ Town Center	236	6048	C11A-3	ALLGOW4	11.31	3.53
0195	E	Transition Structure	145	6048	C11A-3	ALLGOW4	11.31	3.59
0198	E	Conc Chnl 62'-68'W 5.5'-7.5'D 2:1 SS	500	6048	C11A-3	ALLGOW4	11.31	3.59
0208	E	Conc Chnl 62'-68'W 6.5'-7.5'D 2:1 SS	550	6048	C11A-3	ALLGOW4	11.31	2.81
0218	E	Conc Chnl 66'-69'W 6.5'-7.0'D 2:1 SS	500	6048	C11A-3	ALLGOW4	11.31	2.00
0227	E	Transition Structure	134	6048	C11A-3	ALLGOW4	11.31	2.00
0230	E	3: 12' X 8' RCBC @ Pavilion Center Dr	133	5889	C11A-1	ALLGOW4	11.12	2.00
0233	E	Transition Structure	207	5869	C11A-1	ALLGOW4	11.12	4.00
0237	E	Conc Chnl 76' W 6.5'-9.0'D 2:1 SS	516	5889	C11A-1	ALLGOW4	11.12	4.00
0247	E	3: 12' X 8' RCBC @ Access Rd	52	5889	C11A-1	ALLGOW4	11.12	4.00
0248	E	Transition Structure	128	5889	C11A-1	ALLGOW4	11.12	4.00
0253	E	Conc Chnl 76'W 6.5'D 2:1 SS	283	5889	C11A-1	ALLGOW4	11.12	4.00
0258	E	Transition Structure	100	5788	CRCSWFH9	ALLGOW4	10.91	0.82
APSO		ANGEL PARK - SOUTH BRANCH						
0205	E	Natural Wash	2380	2056	C12B	ALLGOW3	2.00	3.46
0254	E	2: 8' X 8' RCBC @ Town Center Dr.	190	1932	C12A	ALLGOW3	1.74	3.00
0255	E	24' X 12' RCAC @ Town Center Dr.	140	1932	C12A	ALLGOW3	1.74	3.00
0258	E	Natural Wash	3235	1932	C12A	ALLGOW3	1.74	1.36
0345	E	2: 8' X 8' RCBC @ Pavilion Center	120	1622	CSW18	ALLGOW3	1.35	2.00
0346	E	Natural Wash	880	1622	CSW18	ALLGOW3	1.35	1.40
RRBW		RED ROCK CHANNEL - BELTWAY LATERAL						
0000	E	6' X 6' RCB	1300	500	USACE	USACE	0.72	0.67
RRR4		R4 CHANNEL						
0000	E	Conc Chnl 16'W 10'D 0:1 SS	260	2400	USACE	USACE	7.08	3.15
0007	E	16' X 10' RCBC	80	2400	USACE	USACE	7.08	4.25
0008	E	Conc Chnl 16'W 7.5'D 0:1 SS	2200	2400	USACE	USACE	7.08	2.88
RRWA		RED ROCK CHANNEL						
0395	E	Conc Chnl 19'W 10'D 0:1 SS	1180	4800	USACE	USACE	4.61	1.75
0425	E	19' X 10' RCBC @ Town Center	230	4800	USACE	USACE	4.61	1.75

ID / River Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
RRWA		RED ROCK CHANNEL						
0430	E	Conc Chnl 14'W 13'D 0:1 SS	230	2300	USACE	USACE	2.19	3.15
0435	E	14' X 10' RCBC	50	2300	USACE	USACE	2.19	3.15
0436	E	Conc Chnl 14'W 8'D 0:1 SS	800	2300	USACE	USACE	2.19	3.15
0440	E	Conc Chnl 10'W 7.5'D 2:1 SS	2660	2300	USACE	USACE	2.19	2.14
0490	E	Conc Chnl 13'W 10'D 0:1 SS	200	2300	USACE	USACE	2.19	1.00
0500	E	13' X 10' RCBC @ Desert Inn	190	1900	USACE	USACE	1.75	1.00
0502	E	Conc Chnl 10'W 7'D 2:1 SS	1580	1900	USACE	USACE	1.75	2.60
0534	E	Conc Chnl 16'W 7'D 0:1 SS	400	1500	USACE	USACE	1.07	1.24
0541	E	Conc Chnl 10'W 7'D 2:1 SS	2120	1500	USACE	USACE	1.07	0.80
0581	E	13' X 9' RCB	1040	1000	USACE	USACE	1.07	0.60
0606	E	10' X 9' RCB	450	750	USACE	USACE	0.72	0.60
0607	E	10' X 9' RCB	450	750	USACE	USACE	0.72	0.60
0608	E	96" RCP	4930	460	USACE	USACE	0.72	0.55
0692	E	96" CIPCP	195	180	USACE	USACE	0.19	1.40
0695	E	96" RCP	290	180	USACE	USACE	0.19	0.50
0701	E	72" RCP	125	180	USACE	USACE	54.74	0.50
0709	E	Riprap Chnl 10'W 6'D 2:1 SS	830	180	USACE	USACE	54.74	0.80
0714	E	2.25' X 2.25' RCBC Outlet	445	180	USACE	USACE	54.74	
0715	E	110,000 cfs PMF Spillway		110000	USACE	USACE	54.74	
0716	E	2,007 ac-ft Red Rock Detention Basin		12800	USACE	USACE	54.74	
0777	E	2 Span Bridge 200'W 17'D @ SR 159	50	1998	CRD3	FLAM3A	1.24	2.50

** The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.*

*** As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.*

^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e., HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

USACE - Refer to "Las Vegas Wash & Tributaries (Tropicana and Flamingo Washes) Hydrologic Basis for Design" prepared by U.S. Army Corps of Engineers, Los Angeles District, June 1993. See Figure S-6 for USACE Boundary.

REGIONAL FLOOD CONTROL DISTRICT

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FACILITY INVENTORY FIGURE F - 29

LEGEND

ID (Facility Identifier) AABB
- Parent Stream Name
- Stream Name

River Mile 0000
- Distance Above Confluence with Parent Stream (Miles)
- Miles in Hundredths

Existing Facility..... E
Proposed or Modified Facility..... P
Contingency Level
- Category B..... P0
- Master Plan..... P1
- Preliminary Design..... P2
- Design..... P3

Bottom Width..... W

Depth..... D

Side Slope, H:V..... SS

Construction Features

Cast in Place Concrete Pipe..... CIPCP	Reinforced Concrete Arch Culvert..... RCAC
Corrugated Metal Arch Pipe Culvert..... CMAP	Reinforced Concrete Box..... RCB
Corrugated Metal Pipe Culvert..... CMPC	Reinforced Concrete Box Culvert..... RCBC
High Density Polyethylene..... HDPE	Reinforced Concrete Pipe..... RCP
Horizontal Elliptical Reinforced Concrete Pipe..... HERCP	Reinforced Concrete Pipe Culvert..... RCPC
Reinforced Concrete Arch Pipe..... RCAP	Storm Sewer Pipe..... SSP

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FLOOD CONTROL
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FIGURE H- 24

HYDROLOGIC SUMMARY

LEGEND

- Ultimate Development Boundary
- Watershed Boundary
- Subbasin Boundary
- Drought Ordinance Boundary
- Flow Arrows

Flood Control Facilities

- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Category A Remove & Replace/ Parallel Facilities
- Category B Remove & Replace/ Parallel Facilities

Type Hydrologic Soil Groups

- A Low Runoff Potential
- B Moderately Low Runoff Potential
- C Moderately High Runoff Potential
- D High Runoff Potential/Rock Outcrops

Typical Land Use

1	Undeveloped Land, Open Desert
2	Parks, Golf Courses
3	Rural
4 / 14*	Low Density Residential
5 / 15*	Medium Density Residential
6 / 16*	High Density Residential
7 / 17*	Public Facility, Residential
8 / 18*	Very High Density Residential
9 / 19*	Commerical, Retail, Casino, High Rise Condominiums
10 / 20*	Light Industrial
11 / 21*	Heavy Industrial
12 / 22*	Schools
13	Lakes

* Drought Ordinance Applied

N

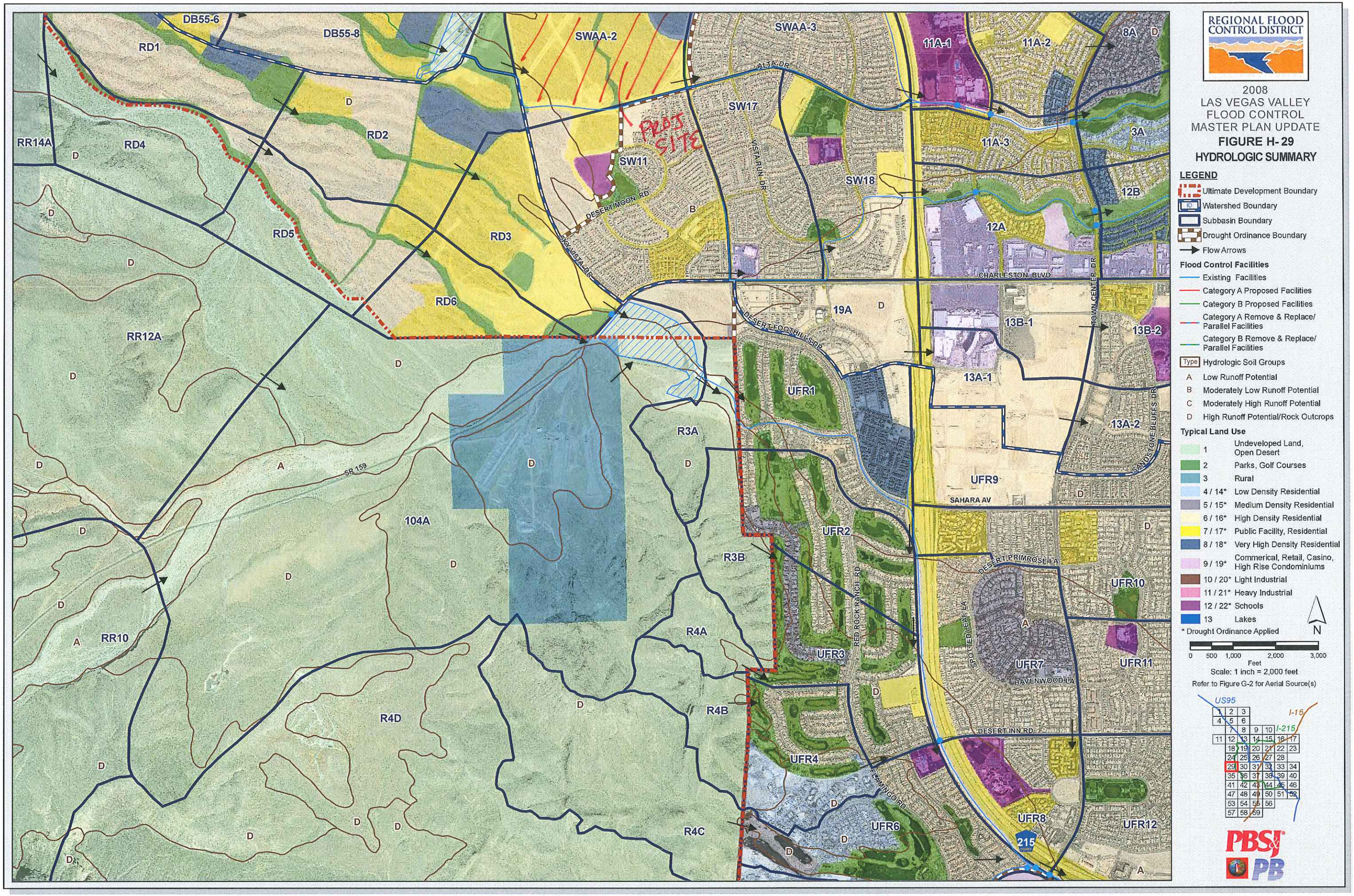
0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

Refer to Figure G-2 for Aerial Source(s)

US95 I-15 I-215

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DB55-6
DB55-8
RD1
SWAA-2
SWAA-3
11A-1
11A-2
8A
ALTA DR
SW17
PROJECT SITE
RR14A
RD4
RD2
3A
11A-3
SW11
VISTA RUN DR
SW18
12B
DESERT MOON RD
SKYVISTA DR
RD5
RD3
12A
CHARLESTON BLVD
TOWN CENTER DR
RD6
19A
13B-1
13B-2
DESERT FOOTHILLS DR
RR12A
UFR1
13A-1
13A-2
SANDSTONE BLUFFS DR
R3A
SR 159
UFR9
SAHARA AV
104A
UFR2
R3B
DESERT PRIMROSE LA
UFR10
RED ROCK RANCH RD
SPOTTED LEAF LA
RR10
R4A
UFR3
UFR7
UFR11
HAVENWOOD LA
R4D
R4B
DESERT INN RD
UFR4
FLAMINGO RD
UFR8
UFR12
R4C
UFR6
215
REGIONAL FLOOD CONTROL DISTRICT
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MASTER PLAN UPDATE
FIGURE H-29
HYDROLOGIC SUMMARY
LEGEND
Ultimate Development Boundary
ID Watershed Boundary
Subbasin Boundary
Drought Ordinance Boundary
Flow Arrows
Flood Control Facilities
Existing Facilities
Category A Proposed Facilities
Category B Proposed Facilities
Category A Remove & Replace/ Parallel Facilities
Category B Remove & Replace/ Parallel Facilities
Type Hydrologic Soil Groups
A Low Runoff Potential
B Moderately Low Runoff Potential
C Moderately High Runoff Potential
D High Runoff Potential/Rock Outcrops
Typical Land Use
1 Undeveloped Land, Open Desert
2 Parks, Golf Courses
3 Rural
4 / 14* Low Density Residential
5 / 15* Medium Density Residential
6 / 16* High Density Residential
7 / 17* Public Facility, Residential
8 / 18* Very High Density Residential
9 / 19* Commerical, Retail, Casino, High Rise Condominiums
10 / 20* Light Industrial
11 / 21* Heavy Industrial
12 / 22* Schools
13 Lakes
* Drought Ordinance Applied
N
0 500 1,000 2,000 3,000
Feet
Scale: 1 inch = 2,000 feet
Refer to Figure G-2 for Aerial Source(s)
US95
I-15
I-215
PBS&J
PB

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

PBS&J
File: FORM4.XLS

Las Vegas Valley Master Plan Update
Gowan Watershed
Ultimate Conditions

BY: MLD
DATE: 7/24/12

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check	Tlag	REMARKS
DESIG: (1)	DEV./EX. (D or E)	CN	K (2)	AREA Ac (3)	AREA Mi^2	INITIAL LENGTH Feet (4)	SLOPE % (5)	Ti Min (6)	TRAVEL LENGTH Feet (7)	SLOPE % (8)	V1 VELOCITY FPS (9a)	V2 VELOCITY FPS (9b)	Tt Min (10)	Min (13)	Min (14)	Tlag= 0.6Tc/60 Hours	RAINFALL Q100/Q10 Inches
DB54-2	E	86.9	0.7569	184.28	0.288	100	20.0	2.3	5400	39.3	9.3	18.4	5.3	7.6	N/A	**0.076**	3.66
DB54-3	E	87.2	0.7614	332.25	0.519	100	40.0	1.8	6800	32.7	8.5	16.8	7.2	9.0	N/A	**0.090**	3.67
DB54-4	D	86.8	0.7552	130.17	0.203	100	1.0	6.2	5100	9.1	6.1	9.2	9.7	15.9	38.9	**0.159**	3.60
DB54-5	E	85.2	0.7352	144.51	0.226	100	40.0	1.9	5700	25.5	7.5	14.9	6.9	8.9	N/A	**0.089**	3.67
DB54-6R	D	85.3	0.7353	538.42	0.841	500	9.0	7.1	13136	7.5	5.5	8.4	26.6	33.7	85.8	**0.337**	3.56
DB55-1	E	87.2	0.7616	409.75	0.640	100	40.0	1.8	10600	14.1	5.6	11.0	16.7	18.5	N/A	**0.185**	3.68
DB55-2	D	88.3	0.7758	63.43	0.099	100	1.0	5.8	4400	7.7	5.6	8.5	9.1	15.0	35.0	**0.150**	3.56
DB55-3	E	86.8	0.7553	166.70	0.260	100	40.0	1.8	3100	26.9	7.7	15.3	3.9	5.7	N/A	**0.057**	3.61
DB55-4	D	84.7	0.7287	110.95	0.173	100	1.0	6.7	3600	10.4	6.5	9.9	6.5	13.2	30.6	**0.132**	3.58
DB55-5	D	86.4	0.7501	121.02	0.189	100	1.0	6.3	4100	7.7	5.6	8.5	8.6	14.9	33.3	**0.149**	3.54
DB55-6	D	92.0	0.8238	61.73	0.096	100	1.0	5.0	3000	8.7	5.9	9.0	6.0	11.0	27.2	**0.110**	3.52
DB55-7	D	89.0	0.7854	284.05	0.444	100	1.0	5.7	9200	9.0	6.0	9.2	17.2	22.9	61.7	**0.229**	3.54
DB55-8	D	89.7	0.7946	348.72	0.545	100	1.0	5.5	5200	6.4	5.1	7.8	11.7	17.2	39.4	**0.172**	3.46
SWAA-1	D	88.2	0.7736	152.37	0.238	100	1.0	5.9	8300	3.3	3.7	5.6	25.7	31.5	56.7	**0.315**	3.44
SWAA-2	D	90.9	0.8100	448.15	0.700	100	1.0	5.2	9100	3.0	3.5	5.3	29.4	34.6	61.1	**0.346**	3.39
SWAA-3	D	87.8	0.7694	371.84	0.581	100	1.0	6.0	9330	3.0	3.5	5.3	30.1	36.1	62.4	**0.361**	3.31
SWFH-1	D	86.9	0.7570	357.96	0.559	100	1.0	6.2	8089	8.5	5.9	8.9	15.6	21.8	55.5	**0.218**	3.57
SWFH-2	D	91.9	0.8229	341.89	0.534	100	1.0	5.0	7250	4.4	4.2	6.4	19.5	24.5	50.8	**0.245**	3.49
SWFH-3	D	94.7	0.8598	98.32	0.154	100	1.0	4.3	4250	3.5	3.8	5.7	13.1	17.4	34.2	**0.174**	3.44
SWFH-4	D	84.7	0.7287	74.76	0.117	100	1.0	6.7	4706	8.0	5.7	8.7	9.6	16.2	36.7	**0.162**	3.55
SWFH-5	D	91.4	0.8171	165.45	0.259	100	1.0	5.1	6400	7.0	5.3	8.1	13.7	18.8	46.1	**0.188**	3.50
SWFH-6	D	92.2	0.8266	163.51	0.255	100	1.0	4.9	5400	4.9	4.5	6.8	13.9	18.8	40.6	**0.188**	3.46
SWFH-7	D	93.1	0.8394	195.51	0.305	100	1.0	4.7	4681	6.3	5.1	7.7	10.7	15.4	36.6	**0.154**	3.41
SWFH-8	D	93.7	0.8465	187.91	0.294	100	1.0	4.6	5700	7.0	5.3	8.1	12.3	16.8	42.2	**0.168**	3.36
SWFH-9	D	94.1	0.8527	109.46	0.171	100	1.0	4.5	900	8.0	5.7	8.7	2.2	6.7	15.6	**0.067**	3.33

Tc = Ti + Tt Tlag = 0.6 Tc
Ti = 1.8 (1.1 - K) L^1/2 / S^1/3
K = 0.0132 (CN) - 0.39
Tc Check = L/180+10

For the travel time (Tt) calculations,
V1 applies to the first 500 feet of travel distance;
V2 applies to the remaining travel distance.

Existing V1 = 14.8*(S/100)^1/2 Developed V1 = 20.2*(S/100)^1/2
Existing V2 = 29.4*(S/100)^1/2 Developed V2 = 30.6*(S/100)^1/2

REFERENCE :

STANDARD FORM 4

GOWAN WATERSHED

Lag Time Calculations for Subbasins with an Area Greater than 1 mi^2

Basin	Slope (ave.) ft/ft	Length (total) ft.	Length (Centroid) ft.	n	$TLAG_{USBR}$	
DB54-1	0.190	15,600	6,700.00	0.050	0.495	
30	0.171	15,500	7,900.00	0.050	0.530	
SV26-1	0.151	15,600	9,600.00	0.050	0.579	
LMT1R	0.165	13,500	5,300.00	0.050	0.447	
BOXCANYON	0.109	21,500	11,800.00	0.023	0.327	Note: 0.0225 was used for n because these basins are partly inside and outside the UDB.
CAM-10A	0.130	12,500	5,800.00	0.023	0.210	Note: 0.0225 was used for n because these basins are partly inside and outside the UDB.
CAM-10B	0.144	13,000	6,000.00	0.023	0.211	Note: 0.0225 was used for n because these basins are partly inside and outside the UDB.

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN  1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   23JUN08  TIME  10:11:08   *
*                                       *
*****************************************
```

```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*       DAVIS, CALIFORNIA 95616     *
*           (916) 756-1104          *
*                                   *
*************************************
```

```
X     X  XXXXXXX   XXXXX           X
X     X  X        X     X         XX
X     X  X        X               X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X               X
X     X  X        X     X         X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
          LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

                    *DIAGRAM
*** FREE ***
               1    ID    CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2008 MASTER PLAN UPDATE
               2    ID    GOWAN WATERSHED (ALL)
               3    ID    RECOMMENDED DRAINAGE SYSTEM WITH ULTIMATE DEVELOPMENT
               4    ID    INPUT FILE = ALLGOW3.DAT
               5    ID    INPUT FILE DATE = MAY 5, 2008
               6    ID    DESIGN STORM = 100-YEAR 6-HR STORM
               7    ID    STORM DISTRIBUTION = SDN #3
               8    ID    MODELED BY PBS&J (MICHELE L. D'ALESSANDRO, E.I., CFM)
               9    ID    CHECKED BY PBS&J (HARSHAL B. DESAI, P.E., CFM)
              10    ID    STORM CENTERING = FULL WATERSHED
              11    ID
              12    ID    REFERENCED HYDROLOGIC MODELS:
              13    ID    CITY OF LAS VEGAS CITY WIDE HYDROLOGY ANALYSIS (PBS&J 1997)
              14    ID    NORTHWEST NEIGHBORHOOD STUDY PHASE 1 (PBS&J 1997)
              15    ID    RESPONSE TO COMMENTS ON THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD
              16    ID    CONTROL MASTER PLAN UPDATE (G.C. WALLACE 2006)
              17    ID    3RD RESPONSE TO COMMENTS ON THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD
              18    ID    CONTROL MASTER PLAN UPDATE (G.C. WALLACE 2006)
              19    ID    SUPPLEMENT FOR THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD CONTROL
              20    ID    MASTER PLAN UPDATE (G.C. WALLACE 2006)
              21    ID    GOWAN OUTFALL - LONE MOUNTAIN BRANCH PRELIMINARY DESIGN REPORT
              22    ID    (G.C. WALLACE 2007)
              23    ID    LONE MOUNTAIN WESTERN BELTWAY DETENTION BASIN PARAMETERS (RECEIVED
              24    ID    FROM G.C. WALLACE ON JANUARY 31, 2008)
              25    ID    US 95/RANCHO FIS RESTUDY (PBS&J 1998)
              26    ID    JR CARDS CONTAIN DARFS BASED ON THE FOLLOWING VALUES:
              27    ID
              28    ID                          AREA    DARF
              29    ID                          SQ. MI.
              30    ID                          0-0.5   0.99
              31    ID                          0.5-1   0.975
              32    ID                          1-2     0.95
              33    ID                          2-3     0.925
              34    ID                          3-4     0.915
              35    ID                          4-5     0.908
              36    ID                          5-6     0.903
              37    ID                          6-7     0.895
              38    ID                          7-8     0.885
              39    ID
              40    ID  JR CARD RATIOS REPRESENT DEPTH-AREA REDUCTION FACTORS (DARF'S)
              41    ID
              42    ID  100-YEAR,  6-HOUR STORM,  SDN3
              43    ID
              44    IT       5       0       0     650
              45    IO       5       0       0
              46    IN       5       0       0
              47    JR    PREC    0.99   0.975    0.95   0.925   0.915   0.908   0.903   0.895   0.885
                    *
```



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          LINE      ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

              48    KK  LV29-C
              49    BA   0.277
```

```
                * HYDROLOGIC MODEL (11-20-06); THE HYDROLOGY WAS REVISEED IN ORDER TO
                * INCORPORATE ALL EXISTING/PROPOSED MPU FACILITIES
                *
1                                       HEC-1 INPUT                                    PAGE 34

   LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   1248         KK  DB54-1
   1249         BA   2.222
   1250         PB    3.72
   1251         LS       0    87.2
   1252         UD   0.495
                *

   1253         KK RDB54-1
   1254         KM  ROUTE DB54-1 TO CDB54-5
   1255         KM  NATURAL WASH
   1256         KM  TRAVEL LENGTH = 4,500
   1257         KM  SLOPE = 3.7%
   1258         KM  N = 0.040
   1259         KM  HYDRAULIC RADIUS = 1.5
   1260         KM  VELOCITY = 14.9
   1261         RM       1   0.084    0.15
                *

   1262         KK  DB54-5
   1263         BA   0.226
   1264         PB    3.67
   1265         LS       0    85.2
   1266         UD   0.089
                *

   1267         KK CDB54-5
   1268         KM  COMBINE DB54-5 AND RDB54-1
   1269         HC       2
                *

   1270         KKRCDB54-5
   1271         KM  ROUTE CDB54-5 TO CRCDB544
   1272         KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
   1273         KM  FACILITY # = APM5 0059
   1274         KM  LINING = CONCRETE
   1275         RD    8923    0.07   0.015       0    TRAP     100       2
                *

   1276         KK  DB54-2
   1277         BA   0.288
   1278         PB    3.66
   1279         LS       0    86.9
   1280         UD   0.076
                *

   1281         KK RDB54-2
   1282         KM  ROUTE DB54-2 TO CDB54-4
   1283         KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
   1284         KM  FACILITY # = APM5 0057
   1285         KM  LINING = CONCRETE
   1286         RD    4920   0.068   0.015       0    TRAP      50       2
                *
1                                       HEC-1 INPUT                                    PAGE 35

   LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

   1287         KK  DB54-3
   1288         BA   0.519
   1289         PB    3.67
   1290         LS       0    87.2
   1291         UD   0.090
                *

   1292         KK RDB54-3
   1293         KM  ROUTE DB54-3 TO CDB54-4
   1294         KM  NATURAL WASH
   1295         KM  TRAVEL LENGTH = 5,200
   1296         KM  SLOPE = 3.0%
   1297         KM  N = 0.040
   1298         KM  HYDRAULIC RADIUS = 1.5
   1299         KM  VELOCITY = 13.5
   1300         RM       1   0.107    0.15
                *

   1301         KK  DB54-4
   1302         BA   0.203
   1303         PB    3.60
   1304         LS       0    86.8
   1305         UD   0.159
                *

   1306         KK CDB54-4
   1307         KM  COMBINE DB54-4, RDB54-3 AND RDB54-2
   1308         HC       3
                *
```

OFFSITE AREAS TRIBUTARY TO SKY VISTA DRIVE

```
1309          KKRCDB54-4
1310          KM  ROUTE CDB54-4 TO CRCDB544
1311          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1312          KM  FACILITY # = APM5 0057
1313          KM  LINING = CONCRETE
1314          RD    5000   0.068   0.015       0    TRAP      50       2
              *

1315          KKCRCDB544
1316          KM  COMBINE RCDB54-4 AND CDB54-5
1317          HC       2
              *

1318          KKRCRCDB54
1319          KM  ROUTE CRCDB544 TO CDB54-6R
1320          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1321          KM  FACILITY # = APM5 0008, 0047, 0056
1322          KM  LINING = CONCRETE
1323          RD    3365   0.052   0.015       0    TRAP      50       2
              *
1                                        HEC-1 INPUT                                                PAGE 36

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1324          KK DB54-6R
1325          BA   0.841
1326          PB    3.56
1327          LS       0    85.3
1328          UD   0.337
              *

1329          KKCDB54-6R
1330          KM  COMBINE RCRCDB54 AND DB54-6R
1331          HC       2
              *

1332          KK  DB55-1
1333          BA   0.640
1334          PB    3.68
1335          LS       0    87.2
1336          UD   0.185
              *

1337          KK RDB55-1
1338          KM  ROUTE DB55-1 TO CDB55-2
1339          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1340          KM  FACILITY # = APM5 0212
1341          KM  LINING = CONCRETE
1342          RD    4350   0.075   0.015       0    TRAP      30       2
              *

1343          KK  DB55-2
1344          BA   0.099
1345          PB    3.56
1346          LS       0    88.3
1347          UD   0.150
              *

1348          KK CDB55-2
1349          KM  COMBINE RDB55-1 AND DB55-2
1350          HC       2
              *

1351          KK RDB55-2
1352          KM  ROUTE CDB55-2 TO CCDB55-5
1353          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1354          KM  FACILITY # = APM5 0212
1355          KM  LINING = CONCRETE
1356          RD    2345   0.075   0.015       0    TRAP      30       2
              *

1357          KK  DB55-3
1358          BA   0.260
1359          PB    3.61
1360          LS       0    86.8
1361          UD   0.057
              *
1                                        HEC-1 INPUT                                                PAGE 37

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1362          KK RDB55-3
1363          KM  ROUTE DB55-3 TO CDB55-4
1364          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1365          KM  FACILITY # = APM5 0213
1366          KM  LINING = CONCRETE
1367          RD    1880   0.073   0.015       0    TRAP      50       2
              *

1368          KK  DB55-4
1369          BA   0.173
1370          PB    3.58
1371          LS       0    84.7
```

```
1372          UD   0.132
              *

1373          KK CDB55-4
1374          KM  COMBINE RDB55-3 AND DB55-4
1375          HC       2
              *

1376          KK RDB55-4
1377          KM  ROUTE CDB55-4 TO CDB55-5
1378          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1379          KM  FACILITY # = APM5 0213
1380          KM  LINING = CONCRETE
1381          RD    4640   0.073   0.015       0    TRAP      50       2
              *

1382          KK  DB55-5
1383          BA   0.189
1384          PB    3.54
1385          LS       0    86.4
1386          UD   0.149
              *

1387          KK CDB55-5
1388          KM  COMBINE DB55-5 AND RDB55-4
1389          HC       2
              *

1390          KKCCDB55-5
1391          KM  COMBINE CDB55-5 AND RCDB55-2
1392          HC       2
              *

1393          KK RDB55-5
1394          KM  ROUTE TO SUMMERLIN #5 DETENTION BASIN
1395          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1396          KM  FACILITY # = APM5 0009
1397          KM  LINING = CONCRETE
1398          RD41800.05       8   0.015       0    TRAP      50       2
              *
1                                    HEC-1 INPUT                                                    PAGE 38

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1399          KK  DB55-7
1400          BA   0.444
1401          PB    3.54
1402          LS       0    89.0
1403          UD   0.229
              *

1404          KK RDB55-7
1405          KM  ROUTE DB55-7 TO CDB55-8
1406          KM  NATURAL WASH
1407          KM  TRAVEL LENGTH = 5,300
1408          KM  SLOPE = 3.0%
1409          KM  N = 0.040
1410          KM  HYDRAULIC RADIUS = 1.5
1411          KM  VELOCITY = 13.5
1412          RM       1   0.109    0.15
              *

1413          KK  DB55-6
1414          BA   0.096
1415          PB    3.52
1416          LS       0    92.0
1417          UD   0.110
              *

1418          KK RDB55-6
1419          KM  ROUTE DB55-6 TO CDB55-8
1420          KM  NATURAL WASH
1421          KM  TRAVEL LENGTH = 10,000
1422          KM  SLOPE = 3.7%
1423          KM  N = 0.040
1424          KM  HYDRAULIC RADIUS = 1.5
1425          KM  VELOCITY = 14.9
1426          RM       2   0.186    0.15
              *

1427          KK  DB55-8
1428          BA   0.545
1429          PB    3.46
1430          LS       0    89.7
1431          UD   0.172
              *

1432          KK CDB55-8
1433          KM  COMBINE DB55-8, RDB55-6, RCDB55-5 AND RDB55-7
1434          HC       4
              *

1435          KK  SUM5IN
1436          KM  COMBINE CDB55-8 AND CDB54-7
```

```
1437          KM  TOTAL INFLOW TO SUMMERLIN #5 DETENTION BASIN
1438          KO       1
1439          HC       2
              *
1                                        HEC-1 INPUT                                        PAGE 39

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1440          KK  SUM5DB
1441          KM  SUMMERLIN DETENTION BASIN 5
1442          KM  FACILITY = ANGEL PARK - MIDDLE 5 BRANCH
1443          KM  FACILITY # = APM5 0000
1444          KM  STORAGE VOLUME = 384.1 ACRE-FEET
1445          KM  OUTLET = 2: 7' x 5.5' RCBS
1446          KM  100-YEAR DISCHARGE = 2,150 CFS
1447          KM  SPILLWAY LENGTH = 453.6'
1448          KM  SPILLWAY HEIGHT =
1449          KM  SPILLWAY CREST ELEVATION = 3563'
1450          KM  SPILLWAY TYPE = CONCRETE BROAD CRESTED WEIR
1451          KM  PMF DISCHARGE = 12,153 CFS
1452          KM  TOP OF EMBANKMENT ELEVATION = 3569'
1453          KM  DETENTION BASIN PARAMETERS REFERENCED FROM "DETENTION BASIN NO. 5
1454          KM  EXPANSION AND DIVERSION BERM" PLANS BY G.C. WALLACE (5-23-2001)
1455          KM  STAGE-STORAGE-DISCHARGE CURVE REFERENCED FROM "2006 SUMMERLIN WEST
1456          KM  CONCEPTUAL DRAINAGE STUDY MASTER PLAN AMENDMENT: EXISTING OFFSITE/PROPOSED
1457          KM  ONSITE DRAINAGE CONDITION" HYDROLOGIC MODEL DATED 8-7-2006 AND SUBMITTED
1458          KM  WITH THE SUPPLEMENT FOR THE 2006 SUMMERLIN WEST PLANNING AREA FLOOD
1459          KM  CONTROL MASTER PLAN UPDATE BY G.C. WALLACE (08-2006)
1460          KO       1
1461          RS       1    STOR      -1
1462          SV       0    1.73    4.55    8.45   13.08    18.2   23.81   29.96    36.7   43.93
1463          SV   59.55   77.49   99.82  127.17  159.39  196.38  240.07  384.05  405.65  535.25
1464          SQ       0     192     276     391     505     616     725     813     900     982
1465          SQ    1176    1368    1534    1683    1804    1920    2033    2315    3725   23201
1466          SE  3532.5    3535    3536    3537    3538    3539    3540    3541    3542    3543
1467          SE    3543    3547    3549    3551    3553    3555    3557    3563    3564    3569
1468          SS    3563   435.6       3     1.5
              *

1469          KK  SUM5OT
1470          KM  ROUTE SUM5DB TO CSWAA-1
1471          KM  FACILITY = ANGEL PARK - ALTA DRIVE
1472          KM  FACILITY # = APAD 0203, 0225
1473          KM  LINING = RCB
1474          RD    1495  0.0528   0.015       0    TRAP      14       0
              *

1475          KK  SWAA-1 → offsite tributary to Sky Vista Drive
1476          BA   0.238
1477          PB    3.44
1478          LS       0    88.2
1479          UD   0.315
              *

1480          KK CSWAA-1
1481          KM  COMBINE SUM5OT AND SWAA-1
1482          HC       2
              *
1                                        HEC-1 INPUT                                        PAGE 40

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1483          KKRCSWAA-1
1484          KM  ROUTE CSWAA-1 TO CSWAA-2
1485          KM  FACILITY = ANGEL PARK - ALTA DRIVE
1486          KM  FACILITY # = APAD 0115, 0146
1487          KM  LINING = RCB
1488          RD    4640   0.044   0.015       0    TRAP      10       0
              *

1489          KK  SWAA-2 → Village 23B
1490          BA   0.700
1491          PB    3.39
1492          LS       0    90.9
1493          UD   0.346
              *

1494          KK CSWAA-2
1495          KM  COMBINE RCSWAA-1 AND SWAA-2
1496          HC       2
              *

1497          KKRCSWAA-2
1498          KM  ROUTE CSWAA-2 TO CSWAA-3
1499          KM  FACILITY = ANGEL PARK - ALTA DRIVE
1500          KM  FACILITY # = APAD 0000, 0018, 0044, 0073
1501          KM  LINING = RCB
1502          RD    6120   0.035   0.015       0    TRAP      11       0
              *

1503          KK  SWAA-3
1504          BA   0.581
1505          PB    3.31
```

```
1506          LS       0    87.8
1507          UD   0.361
              *

1508          KK CSWAA-3
1509          KM  COMBINE RCSWAA-2 AND SWAA-3
1510          HC       2
              *

1511          KK  SWFH-1
1512          BA   0.559
1513          PB    3.57
1514          LS       0    86.9
1515          UD   0.218
              *

1516          KK RSWFH-1
1517          KM  ROUTE SWFH-1 TO CSWFH-2
1518          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
1519          KM  FACILITY # = APDF 0123
1520          KM  LINING = RCB
1521          RD    5355  0.0653   0.015       0    TRAP       5       0
              *
```



```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1522          KK  SWFH-2
1523          BA   0.534
1524          PB    3.49
1525          LS       0    91.9
1526          UD   0.245
              *

1527          KK CSWFH-2
1528          KM  COMBINE RSWFH-1 AND SWFH-2
1529          HC       2
              *

1530          KKRCSWFH-2
1531          KM  ROUTE CSWFH-2 TO CSWFH-3
1532          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
1533          KM  FACILITY # = APDF 0073
1534          KM  LINING = RCB
1535          RD    2070   0.041   0.015       0    TRAP      10       0
              *

1536          KK  SWFH-3
1537          BA   0.154
1538          PB    3.44
1539          LS       0    94.7
1540          UD   0.174
              *

1541          KK CSWFH-3
1542          KM  COMBINE RCSHFH-2 AND SWFH-3
1543          HC       2
              *

1544          KKRCSWFH-3
1545          KM  ROUTE CSWFH-3 TO CRSWFH-6
1546          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
1547          KM  FACILITY # = APDF 0026, 0073
1548          KM  LINING = RCB
1549          RD    3100   0.041   0.015       0    TRAP      10       0
              *

1550          KK  SWFH-6
1551          BA   0.255
1552          PB    3.46
1553          LS       0    92.2
1554          UD   0.188
              *

1555          KK RSWFH-6
1556          KM  ROUTE SWFH-6 TO CSWFH-6
1557          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS 6 BRANCH
1558          KM  FACILITY # = APD6 0000
1559          KM  LINING = RCB
1560          RD    2600  0.0615   0.015       0    TRAP       6       0
              *
```



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LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1561          KK  SWFH-7
1562          BA   0.305
1563          PB    3.41
1564          LS       0    93.1
1565          UD   0.154
              *

1566          KK CSWFH-6
```

AREA TRIBUTARY TO FAR HILLS AVENUE

```
1567          KM  COMBINE RSWFH-6 AND SWFH-7
1568          HC       2
              *

1569          KK RCSWFH6
1570          KM  ROUTE CSWFH-6 TO CSWFH-7
1571          KM  FACILITY = ANGEL PARK - DESERT FOOTHILLS
1572          KM  FACILITY # = APDF 0000
1573          KM  LINING = RCB
1574          RD    1350   0.022   0.015       0    TRAP      12       0
              *

1575          KK CSWFH-7
1576          KM  COMBINE RCSWFH-3 AND RCSWFH6
1577          HC       2
              *

1578          KK  SWFH-4
1579          BA   0.117
1580          PB    3.55
1581          LS       0    84.7
1582          UD   0.162
              *

1583          KK RSWFH-4
1584          KM  ROUTE SWFH-4 TO CSWFH-5
1585          KM  FACILITY = ANGEL PARK - FAR HILLS DRIVE
1586          KM  FACILITY # = APFH 0144
1587          KM  LINING = RCB
1588          RD    4392   0.055   0.015       0    TRAP       7       0
              *

1589          KK  SWFH-5
1590          BA   0.259
1591          PB    3.50
1592          LS       0    91.4
1593          UD   0.188
              *

1594          KK CSWFH-5
1595          KM  COMBINE RSWFH-4 AND SWFH-5
1596          HC       2
              *
1                                        HEC-1 INPUT                                                    PAGE 43

LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1597          KKRCSWFH-5
1598          KM  ROUTE CSWFH-5 TO CCSWFH-7
1599          KM  FACILITY = ANGEL PARK - FAR HILLS DRIVE
1600          KM  FACILITY # = APFH 0061, 0089
1601          KM  LINING = RCB
1602          RD    4120    0.02   0.015       0    TRAP       8       0
              *

1603          KKCCSWFH-7
1604          KM  COMBINE RCSWFH-5 AND CSWFH-7
1605          HC       2
              *

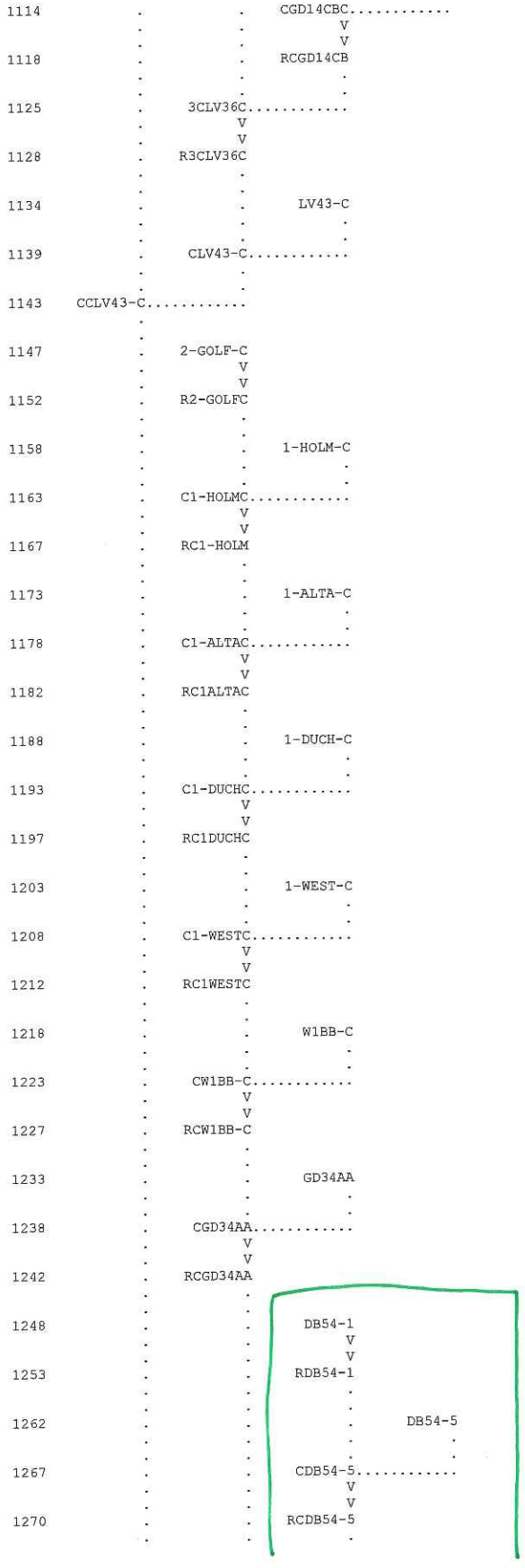
1606          KKRCCSWFH7
1607          KM  ROUTE CCSWFH-7 TO CSWFH-8
1608          KM  FACILITY = ANGEL PARK - FAR HILLS DRIVE
1609          KM  FACILITY # = APFH 0019, 0024
1610          KM  LINING = RCA
1611          RD    2193   0.051   0.015       0    TRAP      16       0
              *

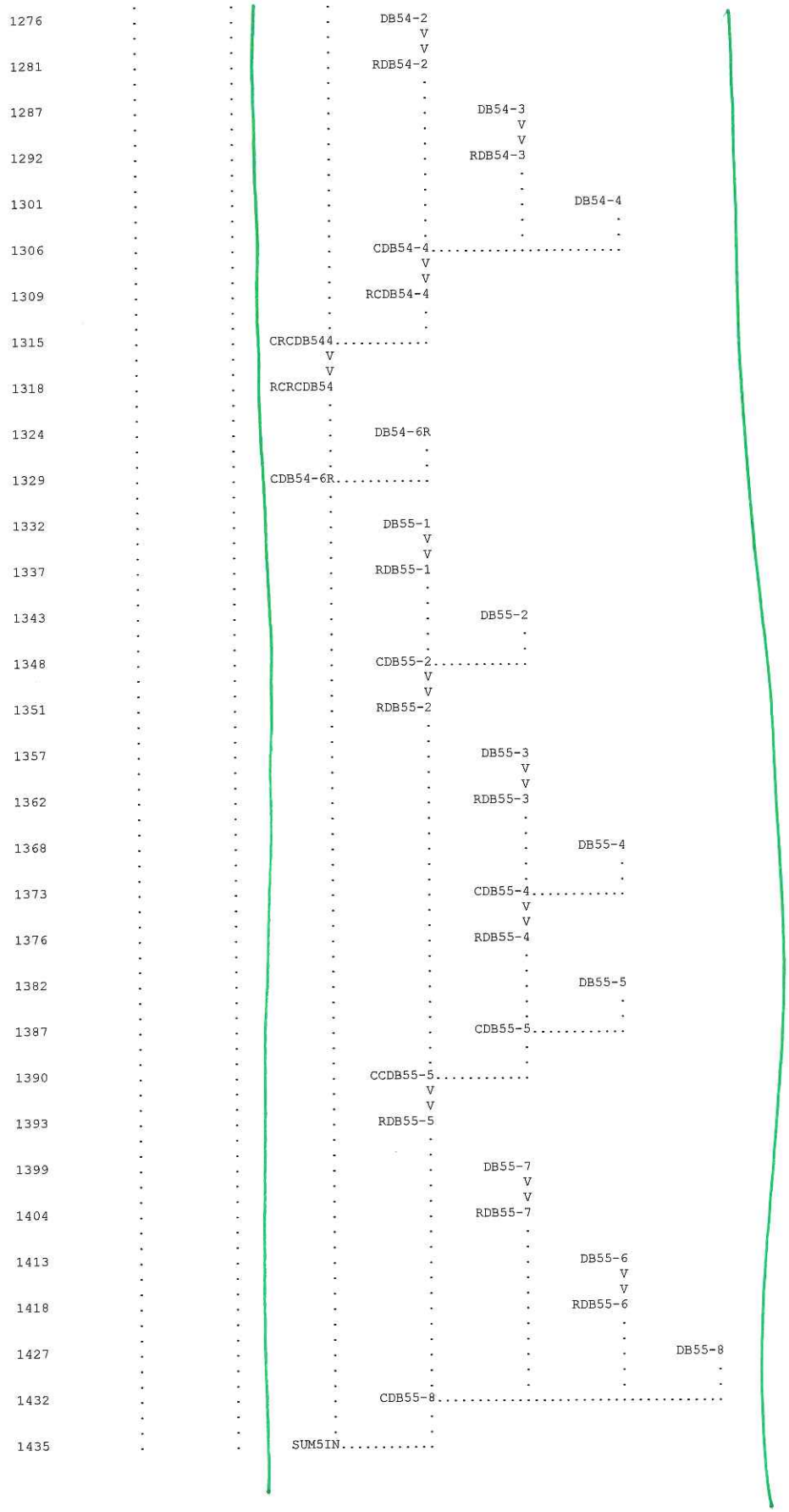
1612          KK  SWFH-8
1613          BA   0.294
1614          PB    3.36
1615          LS       0    93.7
1616          UD   0.168
              *

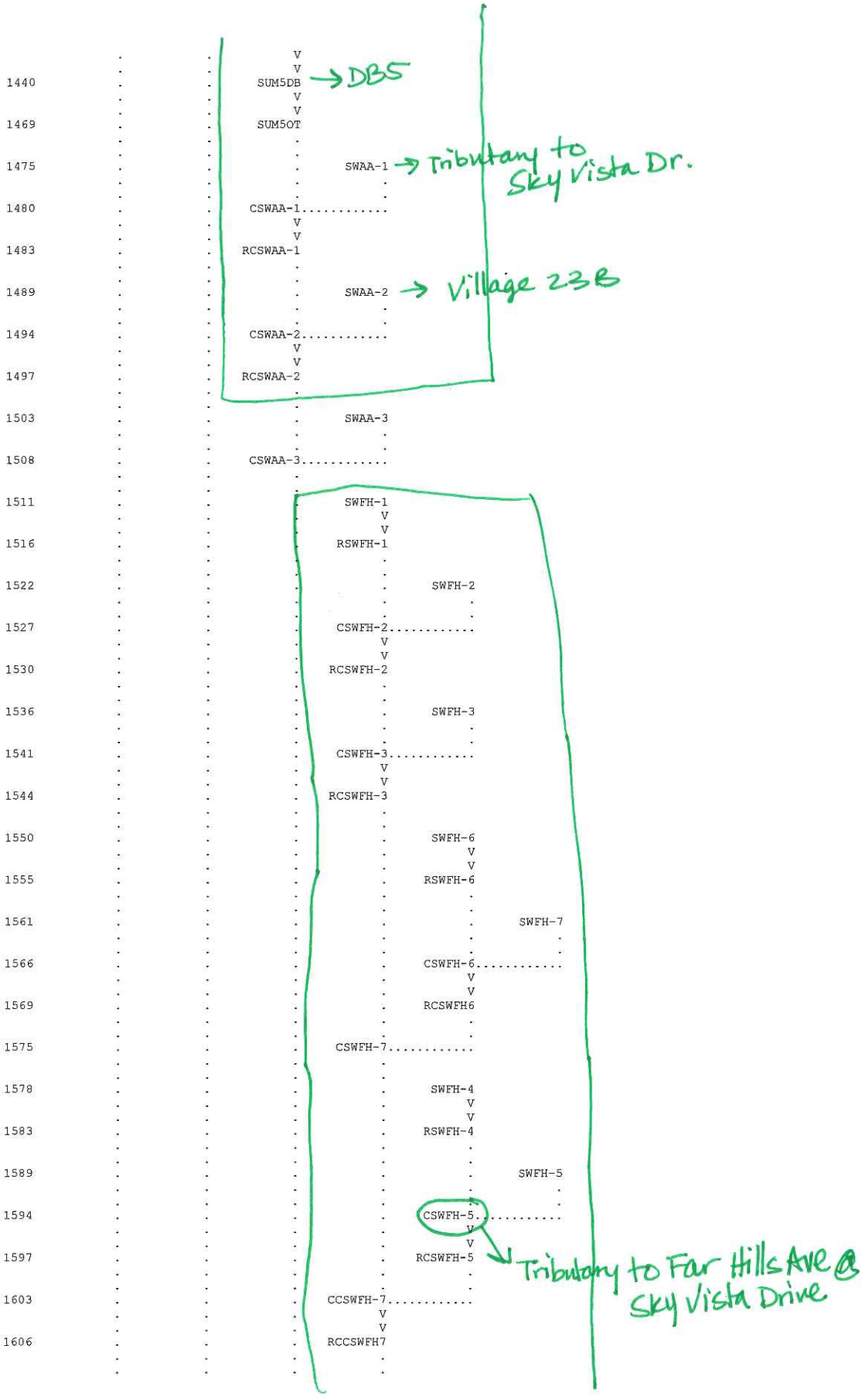
1617          KK CSWFH-8
1618          KM  COMBINE RCCSWFH7 AND SWFH-8
1619          HC       2
              *

1620          KKRCSWFH-8
1621          KM  ROUTE CSWFH-8 TO CSWFJ-9
1622          KM  FACILITY = ANGEL PARK - BELTWAY BRANCH
1623          KM  FACILITY # = APFH 0000
1624          KM  LINING = RCB
1625          KM  ROUTE CHANGED TO KINEMATIC WAVE TO ACHIEVE STABLILITY
1626          RK     995   0.035   0.015       0    TRAP      16       0
              *

1627          KK  SWFH-9
1628          BA   0.171
1629          PB    3.33
1630          LS       0    94.1
1631          UD   0.067
```


1114 CGD14CBC
1118 RCGD14CB
1125 3CLV36C
1128 R3CLV36C
1134 LV43-C
1139 CLV43-C
1143 CCLV43-C
1147 2-GOLF-C
1152 R2-GOLFC
1158 1-HOLM-C
1163 C1-HOLMC
1167 RC1-HOLM
1173 1-ALTA-C
1178 C1-ALTAC
1182 RC1ALTAC
1188 1-DUCH-C
1193 C1-DUCHC
1197 RC1DUCHC
1203 1-WEST-C
1208 C1-WESTC
1212 RC1WESTC
1218 W1BB-C
1223 CW1BB-C
1227 RCW1BB-C
1233 GD34AA
1238 CGD34AA
1242 RCGD34AA
1248 DB54-1
1253 RDB54-1
1262 DB54-5
1267 CDB54-5
1270 RCDB54-5


1276
DB54-2
1281
RDB54-2
1287
DB54-3
1292
RDB54-3
1301
DB54-4
1306
CDB54-4
1309
RCDB54-4
1315
CRCDB544
1318
RCRCDB54
1324
DB54-6R
1329
CDB54-6R
1332
DB55-1
1337
RDB55-1
1343
DB55-2
1348
CDB55-2
1351
RDB55-2
1357
DB55-3
1362
RDB55-3
1368
DB55-4
1373
CDB55-4
1376
RDB55-4
1382
DB55-5
1387
CDB55-5
1390
CCDB55-5
1393
RDB55-5
1399
DB55-7
1404
RDB55-7
1413
DB55-6
1418
RDB55-6
1427
DB55-8
1432
CDB55-8
1435
SUM5IN


SUM5DB
DB5
SUM5OT
SWAA-1
Tributary to Sky Vista Dr.
CSWAA-1
RCSWAA-1
SWAA-2
Village 23B
CSWAA-2
RCSWAA-2
SWAA-3
CSWAA-3
SWFH-1
RSWFH-1
SWFH-2
CSWFH-2
RCSWFH-2
SWFH-3
CSWFH-3
RCSWFH-3
SWFH-6
RSWFH-6
SWFH-7
CSWFH-6
RCSWFH6
CSWFH-7
SWFH-4
RSWFH-4
SWFH-5
CSWFH-5
RCSWFH-5
Tributary to Far Hills Ave @ Sky Vista Drive
CCSWFH-7
RCCSWFH7

1	1345	166	0.	.0	3532.5 *	2	0750	383	0.	.0	3532.5 *	3	0155	600	0.	.0	3532.5
1	1350	167	0.	.0	3532.5 *	2	0755	384	0.	.0	3532.5 *	3	0200	601	0.	.0	3532.5
1	1355	168	0.	.0	3532.5 *	2	0800	385	0.	.0	3532.5 *	3	0205	602	0.	.0	3532.5
1	1400	169	0.	.0	3532.5 *	2	0805	386	0.	.0	3532.5 *	3	0210	603	0.	.0	3532.5
1	1405	170	0.	.0	3532.5 *	2	0810	387	0.	.0	3532.5 *	3	0215	604	0.	.0	3532.5
1	1410	171	0.	.0	3532.5 *	2	0815	388	0.	.0	3532.5 *	3	0220	605	0.	.0	3532.5
1	1415	172	0.	.0	3532.5 *	2	0820	389	0.	.0	3532.5 *	3	0225	606	0.	.0	3532.5
1	1420	173	0.	.0	3532.5 *	2	0825	390	0.	.0	3532.5 *	3	0230	607	0.	.0	3532.5
1	1425	174	0.	.0	3532.5 *	2	0830	391	0.	.0	3532.5 *	3	0235	608	0.	.0	3532.5
1	1430	175	0.	.0	3532.5 *	2	0835	392	0.	.0	3532.5 *	3	0240	609	0.	.0	3532.5
1	1435	176	0.	.0	3532.5 *	2	0840	393	0.	.0	3532.5 *	3	0245	610	0.	.0	3532.5
1	1440	177	0.	.0	3532.5 *	2	0845	394	0.	.0	3532.5 *	3	0250	611	0.	.0	3532.5
1	1445	178	0.	.0	3532.5 *	2	0850	395	0.	.0	3532.5 *	3	0255	612	0.	.0	3532.5
1	1450	179	0.	.0	3532.5 *	2	0855	396	0.	.0	3532.5 *	3	0300	613	0.	.0	3532.5
1	1455	180	0.	.0	3532.5 *	2	0900	397	0.	.0	3532.5 *	3	0305	614	0.	.0	3532.5
1	1500	181	0.	.0	3532.5 *	2	0905	398	0.	.0	3532.5 *	3	0310	615	0.	.0	3532.5
1	1505	182	0.	.0	3532.5 *	2	0910	399	0.	.0	3532.5 *	3	0315	616	0.	.0	3532.5
1	1510	183	0.	.0	3532.5 *	2	0915	400	0.	.0	3532.5 *	3	0320	617	0.	.0	3532.5
1	1515	184	0.	.0	3532.5 *	2	0920	401	0.	.0	3532.5 *	3	0325	618	0.	.0	3532.5
1	1520	185	0.	.0	3532.5 *	2	0925	402	0.	.0	3532.5 *	3	0330	619	0.	.0	3532.5
1	1525	186	0.	.0	3532.5 *	2	0930	403	0.	.0	3532.5 *	3	0335	620	0.	.0	3532.5
1	1530	187	0.	.0	3532.5 *	2	0935	404	0.	.0	3532.5 *	3	0340	621	0.	.0	3532.5
1	1535	188	0.	.0	3532.5 *	2	0940	405	0.	.0	3532.5 *	3	0345	622	0.	.0	3532.5
1	1540	189	0.	.0	3532.5 *	2	0945	406	0.	.0	3532.5 *	3	0350	623	0.	.0	3532.5
1	1545	190	0.	.0	3532.5 *	2	0950	407	0.	.0	3532.5 *	3	0355	624	0.	.0	3532.5
1	1550	191	0.	.0	3532.5 *	2	0955	408	0.	.0	3532.5 *	3	0400	625	0.	.0	3532.5
1	1555	192	0.	.0	3532.5 *	2	1000	409	0.	.0	3532.5 *	3	0405	626	0.	.0	3532.5
1	1600	193	0.	.0	3532.5 *	2	1005	410	0.	.0	3532.5 *	3	0410	627	0.	.0	3532.5
1	1605	194	0.	.0	3532.5 *	2	1010	411	0.	.0	3532.5 *	3	0415	628	0.	.0	3532.5
1	1610	195	0.	.0	3532.5 *	2	1015	412	0.	.0	3532.5 *	3	0420	629	0.	.0	3532.5
1	1615	196	0.	.0	3532.5 *	2	1020	413	0.	.0	3532.5 *	3	0425	630	0.	.0	3532.5
1	1620	197	0.	.0	3532.5 *	2	1025	414	0.	.0	3532.5 *	3	0430	631	0.	.0	3532.5
1	1625	198	0.	.0	3532.5 *	2	1030	415	0.	.0	3532.5 *	3	0435	632	0.	.0	3532.5
1	1630	199	0.	.0	3532.5 *	2	1035	416	0.	.0	3532.5 *	3	0440	633	0.	.0	3532.5
1	1635	200	0.	.0	3532.5 *	2	1040	417	0.	.0	3532.5 *	3	0445	634	0.	.0	3532.5
1	1640	201	0.	.0	3532.5 *	2	1045	418	0.	.0	3532.5 *	3	0450	635	0.	.0	3532.5
1	1645	202	0.	.0	3532.5 *	2	1050	419	0.	.0	3532.5 *	3	0455	636	0.	.0	3532.5
1	1650	203	0.	.0	3532.5 *	2	1055	420	0.	.0	3532.5 *	3	0500	637	0.	.0	3532.5
1	1655	204	0.	.0	3532.5 *	2	1100	421	0.	.0	3532.5 *	3	0505	638	0.	.0	3532.5
1	1700	205	0.	.0	3532.5 *	2	1105	422	0.	.0	3532.5 *	3	0510	639	0.	.0	3532.5
1	1705	206	0.	.0	3532.5 *	2	1110	423	0.	.0	3532.5 *	3	0515	640	0.	.0	3532.5
1	1710	207	0.	.0	3532.5 *	2	1115	424	0.	.0	3532.5 *	3	0520	641	0.	.0	3532.5
1	1715	208	0.	.0	3532.5 *	2	1120	425	0.	.0	3532.5 *	3	0525	642	0.	.0	3532.5
1	1720	209	0.	.0	3532.5 *	2	1125	426	0.	.0	3532.5 *	3	0530	643	0.	.0	3532.5
1	1725	210	0.	.0	3532.5 *	2	1130	427	0.	.0	3532.5 *	3	0535	644	0.	.0	3532.5
1	1730	211	0.	.0	3532.5 *	2	1135	428	0.	.0	3532.5 *	3	0540	645	0.	.0	3532.5
1	1735	212	0.	.0	3532.5 *	2	1140	429	0.	.0	3532.5 *	3	0545	646	0.	.0	3532.5
1	1740	213	0.	.0	3532.5 *	2	1145	430	0.	.0	3532.5 *	3	0550	647	0.	.0	3532.5
1	1745	214	0.	.0	3532.5 *	2	1150	431	0.	.0	3532.5 *	3	0555	648	0.	.0	3532.5
1	1750	215	0.	.0	3532.5 *	2	1155	432	0.	.0	3532.5 *	3	0600	649	0.	.0	3532.5
1	1755	216	0.	.0	3532.5 *	2	1200	433	0.	.0	3532.5 *	3	0605	650	0.	.0	3532.5
1	1800	217	0.	.0	3532.5 *	2	1205	434	0.	.0	3532.5 *						
					*						*						

****

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	54.08-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2162.	5.00		1411.	364.	161.	161.
		(INCHES)	1.945	2.005	2.005	2.005
		(AC-FT)	700.	721.	721.	721.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	54.08-HR
+ (AC-FT)	(HR)				
306.	5.00	144.	36.	16.	16.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	54.08-HR
+ (FEET)	(HR)				
3559.74	5.00	3549.15	3536.80	3534.41	3534.41

CUMULATIVE AREA = 6.74 SQ MI

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HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .89

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	0000		1	0.	.0	3532.5	1	1805		218	0.	.0	3532.5	2	1210		435	0.	.0	3532.5
1	0005		2	0.	.0	3532.5	1	1810		219	0.	.0	3532.5	2	1215		436	0.	.0	3532.5
1	0010		3	0.	.0	3532.5	1	1815		220	0.	.0	3532.5	2	1220		437	0.	.0	3532.5
1	0015		4	0.	.0	3532.5	1	1820		221	0.	.0	3532.5	2	1225		438	0.	.0	3532.5
1	0020		5	0.	.0	3532.5	1	1825		222	0.	.0	3532.5	2	1230		439	0.	.0	3532.5
1	0025		6	2.	.0	3532.5	1	1830		223	0.	.0	3532.5	2	1235		440	0.	.0	3532.5
1	0030		7	7.	.1	3532.6	1	1835		224	0.	.0	3532.5	2	1240		441	0.	.0	3532.5
1	0035		8	18.	.2	3532.7	1	1840		225	0.	.0	3532.5	2	1245		442	0.	.0	3532.5
1	0040		9	31.	.3	3532.9	1	1845		226	0.	.0	3532.5	2	1250		443	0.	.0	3532.5
1	0045		10	44.	.4	3533.1	1	1850		227	0.	.0	3532.5	2	1255		444	0.	.0	3532.5

1	0050	11	54.	.5	3533.2	*	1	1855	228	0.	.0	3532.5	*	2	1300	445	0.	.0	3532.5
1	0055	12	59.	.5	3533.3	*	1	1900	229	0.	.0	3532.5	*	2	1305	446	0.	.0	3532.5
1	0100	13	58.	.5	3533.3	*	1	1905	230	0.	.0	3532.5	*	2	1310	447	0.	.0	3532.5
1	0105	14	52.	.5	3533.2	*	1	1910	231	0.	.0	3532.5	*	2	1315	448	0.	.0	3532.5
1	0110	15	47.	.4	3533.1	*	1	1915	232	0.	.0	3532.5	*	2	1320	449	0.	.0	3532.5
1	0115	16	46.	.4	3533.1	*	1	1920	233	0.	.0	3532.5	*	2	1325	450	0.	.0	3532.5
1	0120	17	50.	.4	3533.1	*	1	1925	234	0.	.0	3532.5	*	2	1330	451	0.	.0	3532.5
1	0125	18	59.	.5	3533.3	*	1	1930	235	0.	.0	3532.5	*	2	1335	452	0.	.0	3532.5
1	0130	19	76.	.7	3533.5	*	1	1935	236	0.	.0	3532.5	*	2	1340	453	0.	.0	3532.5
1	0135	20	102.	.9	3533.8	*	1	1940	237	0.	.0	3532.5	*	2	1345	454	0.	.0	3532.5
1	0140	21	138.	1.2	3534.3	*	1	1945	238	0.	.0	3532.5	*	2	1350	455	0.	.0	3532.5
1	0145	22	184.	1.7	3534.9	*	1	1950	239	0.	.0	3532.5	*	2	1355	456	0.	.0	3532.5
1	0150	23	205.	2.2	3535.2	*	1	1955	240	0.	.0	3532.5	*	2	1400	457	0.	.0	3532.5
1	0155	24	222.	2.8	3535.4	*	1	2000	241	0.	.0	3532.5	*	2	1405	458	0.	.0	3532.5
1	0200	25	237.	3.2	3535.5	*	1	2005	242	0.	.0	3532.5	*	2	1410	459	0.	.0	3532.5
1	0205	26	245.	3.5	3535.6	*	1	2010	243	0.	.0	3532.5	*	2	1415	460	0.	.0	3532.5
1	0210	27	247.	3.6	3535.7	*	1	2015	244	0.	.0	3532.5	*	2	1420	461	0.	.0	3532.5
1	0215	28	247.	3.6	3535.7	*	1	2020	245	0.	.0	3532.5	*	2	1425	462	0.	.0	3532.5
1	0220	29	251.	3.7	3535.7	*	1	2025	246	0.	.0	3532.5	*	2	1430	463	0.	.0	3532.5
1	0225	30	265.	4.2	3535.9	*	1	2030	247	0.	.0	3532.5	*	2	1435	464	0.	.0	3532.5
1	0230	31	292.	5.1	3536.1	*	1	2035	248	0.	.0	3532.5	*	2	1440	465	0.	.0	3532.5
1	0235	32	327.	6.3	3536.4	*	1	2040	249	0.	.0	3532.5	*	2	1445	466	0.	.0	3532.5
1	0240	33	359.	7.4	3536.7	*	1	2045	250	0.	.0	3532.5	*	2	1450	467	0.	.0	3532.5
1	0245	34	385.	8.2	3536.9	*	1	2050	251	0.	.0	3532.5	*	2	1455	468	0.	.0	3532.5
1	0250	35	404.	9.0	3537.1	*	1	2055	252	0.	.0	3532.5	*	2	1500	469	0.	.0	3532.5
1	0255	36	422.	9.7	3537.3	*	1	2100	253	0.	.0	3532.5	*	2	1505	470	0.	.0	3532.5
1	0300	37	441.	10.5	3537.4	*	1	2105	254	0.	.0	3532.5	*	2	1510	471	0.	.0	3532.5
1	0305	38	459.	11.2	3537.6	*	1	2110	255	0.	.0	3532.5	*	2	1515	472	0.	.0	3532.5
1	0310	39	482.	12.1	3537.8	*	1	2115	256	0.	.0	3532.5	*	2	1520	473	0.	.0	3532.5
1	0315	40	526.	14.1	3538.2	*	1	2120	257	0.	.0	3532.5	*	2	1525	474	0.	.0	3532.5
1	0320	41	626.	18.7	3539.1	*	1	2125	258	0.	.0	3532.5	*	2	1530	475	0.	.0	3532.5
1	0325	42	800.	29.1	3540.9	*	1	2130	259	0.	.0	3532.5	*	2	1535	476	0.	.0	3532.5
1	0330	43	943.	48.7	3542.5	*	1	2135	260	0.	.0	3532.5	*	2	1540	477	0.	.0	3532.5
1	0335	44	1372.	78.0	3547.0	*	1	2140	261	0.	.0	3532.5	*	2	1545	478	0.	.0	3532.5
1	0340	45	1608.	113.3	3550.0	*	1	2145	262	0.	.0	3532.5	*	2	1550	479	0.	.0	3532.5
1	0345	46	1766.	149.3	3552.4	*	1	2150	263	0.	.0	3532.5	*	2	1555	480	0.	.0	3532.5
1	0350	47	1875.	182.1	3554.2	*	1	2155	264	0.	.0	3532.5	*	2	1600	481	0.	.0	3532.5
1	0355	48	1956.	210.2	3555.6	*	1	2200	265	0.	.0	3532.5	*	2	1605	482	0.	.0	3532.5
1	0400	49	2016.	233.7	3556.7	*	1	2205	266	0.	.0	3532.5	*	2	1610	483	0.	.0	3532.5
1	0405	50	2058.	252.7	3557.5	*	1	2210	267	0.	.0	3532.5	*	2	1615	484	0.	.0	3532.5
1	0410	51	2088.	267.9	3558.2	*	1	2215	268	0.	.0	3532.5	*	2	1620	485	0.	.0	3532.5
1	0415	52	2110.	279.5	3558.6	*	1	2220	269	0.	.0	3532.5	*	2	1625	486	0.	.0	3532.5
1	0420	53	2126.	287.5	3559.0	*	1	2225	270	0.	.0	3532.5	*	2	1630	487	0.	.0	3532.5
1	0425	54	2135.	292.2	3559.2	*	1	2230	271	0.	.0	3532.5	*	2	1635	488	0.	.0	3532.5
1	0430	55	2140.	294.6	3559.3	*	1	2235	272	0.	.0	3532.5	*	2	1640	489	0.	.0	3532.5
1	0435	56	2142.	295.7	3559.3	*	1	2240	273	0.	.0	3532.5	*	2	1645	490	0.	.0	3532.5
1	0440	57	2144.	296.7	3559.4	*	1	2245	274	0.	.0	3532.5	*	2	1650	491	0.	.0	3532.5
1	0445	58	2146.	297.8	3559.4	*	1	2250	275	0.	.0	3532.5	*	2	1655	492	0.	.0	3532.5
1	0450	59	2148.	298.8	3559.4	*	1	2255	276	0.	.0	3532.5	*	2	1700	493	0.	.0	3532.5
1	0455	60	2149.	299.4	3559.5	*	1	2300	277	0.	.0	3532.5	*	2	1705	494	0.	.0	3532.5
1	0500	61	2149.	299.5	3559.5	*	1	2305	278	0.	.0	3532.5	*	2	1710	495	0.	.0	3532.5
1	0505	62	2148.	299.0	3559.5	*	1	2310	279	0.	.0	3532.5	*	2	1715	496	0.	.0	3532.5
1	0510	63	2145.	297.3	3559.4	*	1	2315	280	0.	.0	3532.5	*	2	1720	497	0.	.0	3532.5
1	0515	64	2139.	293.9	3559.2	*	1	2320	281	0.	.0	3532.5	*	2	1725	498	0.	.0	3532.5
1	0520	65	2129.	289.1	3559.0	*	1	2325	282	0.	.0	3532.5	*	2	1730	499	0.	.0	3532.5
1	0525	66	2117.	282.9	3558.8	*	1	2330	283	0.	.0	3532.5	*	2	1735	500	0.	.0	3532.5
1	0530	67	2103.	275.6	3558.5	*	1	2335	284	0.	.0	3532.5	*	2	1740	501	0.	.0	3532.5
1	0535	68	2087.	267.4	3558.1	*	1	2340	285	0.	.0	3532.5	*	2	1745	502	0.	.0	3532.5
1	0540	69	2069.	258.4	3557.8	*	1	2345	286	0.	.0	3532.5	*	2	1750	503	0.	.0	3532.5
1	0545	70	2050.	248.7	3557.4	*	1	2350	287	0.	.0	3532.5	*	2	1755	504	0.	.0	3532.5
1	0550	71	2029.	238.5	3556.9	*	1	2355	288	0.	.0	3532.5	*	2	1800	505	0.	.0	3532.5
1	0555	72	2002.	228.0	3556.4	*	2	0000	289	0.	.0	3532.5	*	2	1805	506	0.	.0	3532.5
1	0600	73	1974.	217.3	3556.0	*	2	0005	290	0.	.0	3532.5	*	2	1810	507	0.	.0	3532.5
1	0605	74	1946.	206.4	3555.5	*	2	0010	291	0.	.0	3532.5	*	2	1815	508	0.	.0	3532.5
1	0610	75	1917.	195.4	3554.9	*	2	0015	292	0.	.0	3532.5	*	2	1820	509	0.	.0	3532.5
1	0615	76	1882.	184.3	3554.3	*	2	0020	293	0.	.0	3532.5	*	2	1825	510	0.	.0	3532.5
1	0620	77	1847.	173.0	3553.7	*	2	0025	294	0.	.0	3532.5	*	2	1830	511	0.	.0	3532.5
1	0625	78	1811.	161.7	3553.1	*	2	0030	295	0.	.0	3532.5	*	2	1835	512	0.	.0	3532.5
1	0630	79	1771.	150.5	3552.4	*	2	0035	296	0.	.0	3532.5	*	2	1840	513	0.	.0	3532.5
1	0635	80	1728.	139.3	3551.8	*	2	0040	297	0.	.0	3532.5	*	2	1845	514	0.	.0	3532.5
1	0640	81	1687.	128.2	3551.1	*	2	0045	298	0.	.0	3532.5	*	2	1850	515	0.	.0	3532.5
1	0645	82	1630.	117.4	3550.3	*	2	0050	299	0.	.0	3532.5	*	2	1855	516	0.	.0	3532.5
1	0650	83	1572.	106.8	3549.5	*	2	0055	300	0.	.0	3532.5	*	2	1900	517	0.	.0	3532.5
1	0655	84	1510.	96.5	3548.7	*	2	0100	301	0.	.0	3532.5	*	2	1905	518	0.	.0	3532.5
1	0700	85	1436.	86.7	3547.8	*	2	0105	302	0.	.0	3532.5	*	2	1910	519	0.	.0	3532.5
1	0705	86	1363.	77.3	3546.9	*	2	0110	303	0.	.0	3532.5	*	2	1915	520	0.	.0	3532.5
1	0710	87	1179.	68.7	3545.0	*	2	0115	304	0.	.0	3532.5	*	2	1920	521	0.	.0	3532.5
1	0715	88	1019.	61.3	3543.4	*	2	0120	305	0.	.0	3532.5	*	2	1925	522	0.	.0	3532.5
1	0720	89	964.	54.5	3542.8	*	2	0125	306	0.	.0	3532.5	*	2	1930	523	0.	.0	3532.5
1	0725	90	941.	48.1	3542.5	*	2	0130	307	0.	.0	3532.5	*	2	1935	524	0.	.0	3532.5
1	0730	91	918.	41.7	3542.2	*	2	0135	308	0.	.0	3532.5	*	2	1940	525	0.	.0	3532.5
1	0735	92	885.	35.6	3541.8	*	2	0140	309	0.	.0	3532.5	*	2	1945	526	0.	.0	3532.5
1	0740	93	810.	29.8	3541.0	*	2	0145	310	0.	.0	3532.5	*	2	1950	527	0.	.0	3532.5
1	0745	94	735.	24.5	3540.1	*	2	0150	311	0.	.0	3532.5	*	2	1955	528	0.	.0	3532.5
1	0750	95	646.	19.8	3539.3	*	2	0155	312	0.	.0	3532.5	*	2	2000	529	0.	.0	3532.5
1	0755	96	560.	15.6	3538.5	*	2	0200	313	0.	.0	3532.5	*	2	2005	530	0.	.0	3532.5
1	0800	97	480.	12.1	3537.8	*	2	0205	314	0.	.0	3532.5	*	2	2010	531	0.	.0	3532.5
1	0805	98	405.	9.0	3537.1	*	2	0210	315	0.	.0	3532.5	*	2	2015	532	0.	.0	3532.5
1	0810	99	333.	6.5	3536.5	*	2	0215	316	0.	.0	3532.5	*	2	2020	533	0.	.0	3532.5
1	0815	100	272.	4.4	3535.9	*	2	0220	317	0.	.0	3532.5	*	2	2025	534	0.	.0	3532.5
1	0820	101	221.	2.7	3535.3	*	2	0225	318	0.	.0	3532.5	*	2	2030	535	0.	.0	3532.5
1	0825	102	157.	1.4	3534.5	*	2	0230	319	0.	.0	3532.5	*	2	2035	536	0.	.0	3532.5
1	0830	103	70.	.6	3533.4	*	2	0235	320	0.	.0	3532.5	*	2	2040	537	0.	.0	3532.5
1	0835	104	32.	.3	3532.9	*	2	0240	321	0.	.0	3532.5	*	2	2045	538	0.	.0	3532.5
1	0840	105	14.	.1	3532.7	*	2	0245	322	0.	.0	3532.5	*	2	2050	539	0.	.0	3532.5

1	0845 106	6.	.1	3532.6 *	2	0250 323	0.	.0	3532.5 *	2	2055 540	0.	.0	3532.5
1	0850 107	3.	.0	3532.5 *	2	0255 324	0.	.0	3532.5 *	2	2100 541	0.	.0	3532.5
1	0855 108	1.	.0	3532.5 *	2	0300 325	0.	.0	3532.5 *	2	2105 542	0.	.0	3532.5
1	0900 109	1.	.0	3532.5 *	2	0305 326	0.	.0	3532.5 *	2	2110 543	0.	.0	3532.5
1	0905 110	0.	.0	3532.5 *	2	0310 327	0.	.0	3532.5 *	2	2115 544	0.	.0	3532.5
1	0910 111	0.	.0	3532.5 *	2	0315 328	0.	.0	3532.5 *	2	2120 545	0.	.0	3532.5
1	0915 112	0.	.0	3532.5 *	2	0320 329	0.	.0	3532.5 *	2	2125 546	0.	.0	3532.5
1	0920 113	0.	.0	3532.5 *	2	0325 330	0.	.0	3532.5 *	2	2130 547	0.	.0	3532.5
1	0925 114	0.	.0	3532.5 *	2	0330 331	0.	.0	3532.5 *	2	2135 548	0.	.0	3532.5
1	0930 115	0.	.0	3532.5 *	2	0335 332	0.	.0	3532.5 *	2	2140 549	0.	.0	3532.5
1	0935 116	0.	.0	3532.5 *	2	0340 333	0.	.0	3532.5 *	2	2145 550	0.	.0	3532.5
1	0940 117	0.	.0	3532.5 *	2	0345 334	0.	.0	3532.5 *	2	2150 551	0.	.0	3532.5
1	0945 118	0.	.0	3532.5 *	2	0350 335	0.	.0	3532.5 *	2	2155 552	0.	.0	3532.5
1	0950 119	0.	.0	3532.5 *	2	0355 336	0.	.0	3532.5 *	2	2200 553	0.	.0	3532.5
1	0955 120	0.	.0	3532.5 *	2	0400 337	0.	.0	3532.5 *	2	2205 554	0.	.0	3532.5
1	1000 121	0.	.0	3532.5 *	2	0405 338	0.	.0	3532.5 *	2	2210 555	0.	.0	3532.5
1	1005 122	0.	.0	3532.5 *	2	0410 339	0.	.0	3532.5 *	2	2215 556	0.	.0	3532.5
1	1010 123	0.	.0	3532.5 *	2	0415 340	0.	.0	3532.5 *	2	2220 557	0.	.0	3532.5
1	1015 124	0.	.0	3532.5 *	2	0420 341	0.	.0	3532.5 *	2	2225 558	0.	.0	3532.5
1	1020 125	0.	.0	3532.5 *	2	0425 342	0.	.0	3532.5 *	2	2230 559	0.	.0	3532.5
1	1025 126	0.	.0	3532.5 *	2	0430 343	0.	.0	3532.5 *	2	2235 560	0.	.0	3532.5
1	1030 127	0.	.0	3532.5 *	2	0435 344	0.	.0	3532.5 *	2	2240 561	0.	.0	3532.5
1	1035 128	0.	.0	3532.5 *	2	0440 345	0.	.0	3532.5 *	2	2245 562	0.	.0	3532.5
1	1040 129	0.	.0	3532.5 *	2	0445 346	0.	.0	3532.5 *	2	2250 563	0.	.0	3532.5
1	1045 130	0.	.0	3532.5 *	2	0450 347	0.	.0	3532.5 *	2	2255 564	0.	.0	3532.5
1	1050 131	0.	.0	3532.5 *	2	0455 348	0.	.0	3532.5 *	2	2300 565	0.	.0	3532.5
1	1055 132	0.	.0	3532.5 *	2	0500 349	0.	.0	3532.5 *	2	2305 566	0.	.0	3532.5
1	1100 133	0.	.0	3532.5 *	2	0505 350	0.	.0	3532.5 *	2	2310 567	0.	.0	3532.5
1	1105 134	0.	.0	3532.5 *	2	0510 351	0.	.0	3532.5 *	2	2315 568	0.	.0	3532.5
1	1110 135	0.	.0	3532.5 *	2	0515 352	0.	.0	3532.5 *	2	2320 569	0.	.0	3532.5
1	1115 136	0.	.0	3532.5 *	2	0520 353	0.	.0	3532.5 *	2	2325 570	0.	.0	3532.5
1	1120 137	0.	.0	3532.5 *	2	0525 354	0.	.0	3532.5 *	2	2330 571	0.	.0	3532.5
1	1125 138	0.	.0	3532.5 *	2	0530 355	0.	.0	3532.5 *	2	2335 572	0.	.0	3532.5
1	1130 139	0.	.0	3532.5 *	2	0535 356	0.	.0	3532.5 *	2	2340 573	0.	.0	3532.5
1	1135 140	0.	.0	3532.5 *	2	0540 357	0.	.0	3532.5 *	2	2345 574	0.	.0	3532.5
1	1140 141	0.	.0	3532.5 *	2	0545 358	0.	.0	3532.5 *	2	2350 575	0.	.0	3532.5
1	1145 142	0.	.0	3532.5 *	2	0550 359	0.	.0	3532.5 *	2	2355 576	0.	.0	3532.5
1	1150 143	0.	.0	3532.5 *	2	0555 360	0.	.0	3532.5 *	3	0000 577	0.	.0	3532.5
1	1155 144	0.	.0	3532.5 *	2	0600 361	0.	.0	3532.5 *	3	0005 578	0.	.0	3532.5
1	1200 145	0.	.0	3532.5 *	2	0605 362	0.	.0	3532.5 *	3	0010 579	0.	.0	3532.5
1	1205 146	0.	.0	3532.5 *	2	0610 363	0.	.0	3532.5 *	3	0015 580	0.	.0	3532.5
1	1210 147	0.	.0	3532.5 *	2	0615 364	0.	.0	3532.5 *	3	0020 581	0.	.0	3532.5
1	1215 148	0.	.0	3532.5 *	2	0620 365	0.	.0	3532.5 *	3	0025 582	0.	.0	3532.5
1	1220 149	0.	.0	3532.5 *	2	0625 366	0.	.0	3532.5 *	3	0030 583	0.	.0	3532.5
1	1225 150	0.	.0	3532.5 *	2	0630 367	0.	.0	3532.5 *	3	0035 584	0.	.0	3532.5
1	1230 151	0.	.0	3532.5 *	2	0635 368	0.	.0	3532.5 *	3	0040 585	0.	.0	3532.5
1	1235 152	0.	.0	3532.5 *	2	0640 369	0.	.0	3532.5 *	3	0045 586	0.	.0	3532.5
1	1240 153	0.	.0	3532.5 *	2	0645 370	0.	.0	3532.5 *	3	0050 587	0.	.0	3532.5
1	1245 154	0.	.0	3532.5 *	2	0650 371	0.	.0	3532.5 *	3	0055 588	0.	.0	3532.5
1	1250 155	0.	.0	3532.5 *	2	0655 372	0.	.0	3532.5 *	3	0100 589	0.	.0	3532.5
1	1255 156	0.	.0	3532.5 *	2	0700 373	0.	.0	3532.5 *	3	0105 590	0.	.0	3532.5
1	1300 157	0.	.0	3532.5 *	2	0705 374	0.	.0	3532.5 *	3	0110 591	0.	.0	3532.5
1	1305 158	0.	.0	3532.5 *	2	0710 375	0.	.0	3532.5 *	3	0115 592	0.	.0	3532.5
1	1310 159	0.	.0	3532.5 *	2	0715 376	0.	.0	3532.5 *	3	0120 593	0.	.0	3532.5
1	1315 160	0.	.0	3532.5 *	2	0720 377	0.	.0	3532.5 *	3	0125 594	0.	.0	3532.5
1	1320 161	0.	.0	3532.5 *	2	0725 378	0.	.0	3532.5 *	3	0130 595	0.	.0	3532.5
1	1325 162	0.	.0	3532.5 *	2	0730 379	0.	.0	3532.5 *	3	0135 596	0.	.0	3532.5
1	1330 163	0.	.0	3532.5 *	2	0735 380	0.	.0	3532.5 *	3	0140 597	0.	.0	3532.5
1	1335 164	0.	.0	3532.5 *	2	0740 381	0.	.0	3532.5 *	3	0145 598	0.	.0	3532.5
1	1340 165	0.	.0	3532.5 *	2	0745 382	0.	.0	3532.5 *	3	0150 599	0.	.0	3532.5
1	1345 166	0.	.0	3532.5 *	2	0750 383	0.	.0	3532.5 *	3	0155 600	0.	.0	3532.5
1	1350 167	0.	.0	3532.5 *	2	0755 384	0.	.0	3532.5 *	3	0200 601	0.	.0	3532.5
1	1355 168	0.	.0	3532.5 *	2	0800 385	0.	.0	3532.5 *	3	0205 602	0.	.0	3532.5
1	1400 169	0.	.0	3532.5 *	2	0805 386	0.	.0	3532.5 *	3	0210 603	0.	.0	3532.5
1	1405 170	0.	.0	3532.5 *	2	0810 387	0.	.0	3532.5 *	3	0215 604	0.	.0	3532.5
1	1410 171	0.	.0	3532.5 *	2	0815 388	0.	.0	3532.5 *	3	0220 605	0.	.0	3532.5
1	1415 172	0.	.0	3532.5 *	2	0820 389	0.	.0	3532.5 *	3	0225 606	0.	.0	3532.5
1	1420 173	0.	.0	3532.5 *	2	0825 390	0.	.0	3532.5 *	3	0230 607	0.	.0	3532.5
1	1425 174	0.	.0	3532.5 *	2	0830 391	0.	.0	3532.5 *	3	0235 608	0.	.0	3532.5
1	1430 175	0.	.0	3532.5 *	2	0835 392	0.	.0	3532.5 *	3	0240 609	0.	.0	3532.5
1	1435 176	0.	.0	3532.5 *	2	0840 393	0.	.0	3532.5 *	3	0245 610	0.	.0	3532.5
1	1440 177	0.	.0	3532.5 *	2	0845 394	0.	.0	3532.5 *	3	0250 611	0.	.0	3532.5
1	1445 178	0.	.0	3532.5 *	2	0850 395	0.	.0	3532.5 *	3	0255 612	0.	.0	3532.5
1	1450 179	0.	.0	3532.5 *	2	0855 396	0.	.0	3532.5 *	3	0300 613	0.	.0	3532.5
1	1455 180	0.	.0	3532.5 *	2	0900 397	0.	.0	3532.5 *	3	0305 614	0.	.0	3532.5
1	1500 181	0.	.0	3532.5 *	2	0905 398	0.	.0	3532.5 *	3	0310 615	0.	.0	3532.5
1	1505 182	0.	.0	3532.5 *	2	0910 399	0.	.0	3532.5 *	3	0315 616	0.	.0	3532.5
1	1510 183	0.	.0	3532.5 *	2	0915 400	0.	.0	3532.5 *	3	0320 617	0.	.0	3532.5
1	1515 184	0.	.0	3532.5 *	2	0920 401	0.	.0	3532.5 *	3	0325 618	0.	.0	3532.5
1	1520 185	0.	.0	3532.5 *	2	0925 402	0.	.0	3532.5 *	3	0330 619	0.	.0	3532.5
1	1525 186	0.	.0	3532.5 *	2	0930 403	0.	.0	3532.5 *	3	0335 620	0.	.0	3532.5
1	1530 187	0.	.0	3532.5 *	2	0935 404	0.	.0	3532.5 *	3	0340 621	0.	.0	3532.5
1	1535 188	0.	.0	3532.5 *	2	0940 405	0.	.0	3532.5 *	3	0345 622	0.	.0	3532.5
1	1540 189	0.	.0	3532.5 *	2	0945 406	0.	.0	3532.5 *	3	0350 623	0.	.0	3532.5
1	1545 190	0.	.0	3532.5 *	2	0950 407	0.	.0	3532.5 *	3	0355 624	0.	.0	3532.5
1	1550 191	0.	.0	3532.5 *	2	0955 408	0.	.0	3532.5 *	3	0400 625	0.	.0	3532.5
1	1555 192	0.	.0	3532.5 *	2	1000 409	0.	.0	3532.5 *	3	0405 626	0.	.0	3532.5
1	1600 193	0.	.0	3532.5 *	2	1005 410	0.	.0	3532.5 *	3	0410 627	0.	.0	3532.5
1	1605 194	0.	.0	3532.5 *	2	1010 411	0.	.0	3532.5 *	3	0415 628	0.	.0	3532.5
1	1610 195	0.	.0	3532.5 *	2	1015 412	0.	.0	3532.5 *	3	0420 629	0.	.0	3532.5
1	1615 196	0.	.0	3532.5 *	2	1020 413	0.	.0	3532.5 *	3	0425 630	0.	.0	3532.5
1	1620 197	0.	.0	3532.5 *	2	1025 414	0.	.0	3532.5 *	3	0430 631	0.	.0	3532.5
1	1625 198	0.	.0	3532.5 *	2	1030 415	0.	.0	3532.5 *	3	0435 632	0.	.0	3532.5
1	1630 199	0.	.0	3532.5 *	2	1035 416	0.	.0	3532.5 *	3	0440 633	0.	.0	3532.5
1	1635 200	0.	.0	3532.5 *	2	1040 417	0.	.0	3532.5 *	3	0445 634	0.	.0	3532.5

1	1640	201	0.	.0	3532.5	*	2	1045	418	0.	.0	3532.5	*	3	0450	635	0.	.0	3532.5
1	1645	202	0.	.0	3532.5	*	2	1050	419	0.	.0	3532.5	*	3	0455	636	0.	.0	3532.5
1	1650	203	0.	.0	3532.5	*	2	1055	420	0.	.0	3532.5	*	3	0500	637	0.	.0	3532.5
1	1655	204	0.	.0	3532.5	*	2	1100	421	0.	.0	3532.5	*	3	0505	638	0.	.0	3532.5
1	1700	205	0.	.0	3532.5	*	2	1105	422	0.	.0	3532.5	*	3	0510	639	0.	.0	3532.5
1	1705	206	0.	.0	3532.5	*	2	1110	423	0.	.0	3532.5	*	3	0515	640	0.	.0	3532.5
1	1710	207	0.	.0	3532.5	*	2	1115	424	0.	.0	3532.5	*	3	0520	641	0.	.0	3532.5
1	1715	208	0.	.0	3532.5	*	2	1120	425	0.	.0	3532.5	*	3	0525	642	0.	.0	3532.5
1	1720	209	0.	.0	3532.5	*	2	1125	426	0.	.0	3532.5	*	3	0530	643	0.	.0	3532.5
1	1725	210	0.	.0	3532.5	*	2	1130	427	0.	.0	3532.5	*	3	0535	644	0.	.0	3532.5
1	1730	211	0.	.0	3532.5	*	2	1135	428	0.	.0	3532.5	*	3	0540	645	0.	.0	3532.5
1	1735	212	0.	.0	3532.5	*	2	1140	429	0.	.0	3532.5	*	3	0545	646	0.	.0	3532.5
1	1740	213	0.	.0	3532.5	*	2	1145	430	0.	.0	3532.5	*	3	0550	647	0.	.0	3532.5
1	1745	214	0.	.0	3532.5	*	2	1150	431	0.	.0	3532.5	*	3	0555	648	0.	.0	3532.5
1	1750	215	0.	.0	3532.5	*	2	1155	432	0.	.0	3532.5	*	3	0600	649	0.	.0	3532.5
1	1755	216	0.	.0	3532.5	*	2	1200	433	0.	.0	3532.5	*	3	0605	650	0.	.0	3532.5
1	1800	217	0.	.0	3532.5	*	2	1205	434	0.	.0	3532.5	*						

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	54.08-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2149.	5.00		1394.	359.	159.	159.
		(INCHES)	1.921	1.977	1.977	1.977
		(AC-FT)	691.	711.	711.	711.

PEAK STORAGE	TIME		MAXIMUM AVERAGE STORAGE			
			6-HR	24-HR	72-HR	54.08-HR
+ (AC-FT)	(HR)					
300.	5.00		140.	35.	16.	16.

PEAK STAGE	TIME		MAXIMUM AVERAGE STAGE			
			6-HR	24-HR	72-HR	54.08-HR
+ (FEET)	(HR)					
3559.48	5.00		3548.90	3536.73	3534.38	3534.38

CUMULATIVE AREA = 6.74 SQ MI

HYDROGRAPH AT STATION SUM5DB
PLAN 1, RATIO = .88

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	.0	3532.5	*	1		1805	218	0.	.0	3532.5	*	2		1210	435	0.	.0	3532.5
1		0005	2	0.	.0	3532.5	*	1		1810	219	0.	.0	3532.5	*	2		1215	436	0.	.0	3532.5
1		0010	3	0.	.0	3532.5	*	1		1815	220	0.	.0	3532.5	*	2		1220	437	0.	.0	3532.5
1		0015	4	0.	.0	3532.5	*	1		1820	221	0.	.0	3532.5	*	2		1225	438	0.	.0	3532.5
1		0020	5	0.	.0	3532.5	*	1		1825	222	0.	.0	3532.5	*	2		1230	439	0.	.0	3532.5
1		0025	6	2.	.0	3532.5	*	1		1830	223	0.	.0	3532.5	*	2		1235	440	0.	.0	3532.5
1		0030	7	7.	.1	3532.6	*	1		1835	224	0.	.0	3532.5	*	2		1240	441	0.	.0	3532.5
1		0035	8	17.	.2	3532.7	*	1		1840	225	0.	.0	3532.5	*	2		1245	442	0.	.0	3532.5
1		0040	9	29.	.3	3532.9	*	1		1845	226	0.	.0	3532.5	*	2		1250	443	0.	.0	3532.5
1		0045	10	41.	.4	3533.0	*	1		1850	227	0.	.0	3532.5	*	2		1255	444	0.	.0	3532.5
1		0050	11	51.	.5	3533.2	*	1		1855	228	0.	.0	3532.5	*	2		1300	445	0.	.0	3532.5
1		0055	12	55.	.5	3533.2	*	1		1900	229	0.	.0	3532.5	*	2		1305	446	0.	.0	3532.5
1		0100	13	54.	.5	3533.2	*	1		1905	230	0.	.0	3532.5	*	2		1310	447	0.	.0	3532.5
1		0105	14	48.	.4	3533.1	*	1		1910	231	0.	.0	3532.5	*	2		1315	448	0.	.0	3532.5
1		0110	15	44.	.4	3533.1	*	1		1915	232	0.	.0	3532.5	*	2		1320	449	0.	.0	3532.5
1		0115	16	43.	.4	3533.1	*	1		1920	233	0.	.0	3532.5	*	2		1325	450	0.	.0	3532.5
1		0120	17	47.	.4	3533.1	*	1		1925	234	0.	.0	3532.5	*	2		1330	451	0.	.0	3532.5
1		0125	18	56.	.5	3533.2	*	1		1930	235	0.	.0	3532.5	*	2		1335	452	0.	.0	3532.5
1		0130	19	72.	.7	3533.4	*	1		1935	236	0.	.0	3532.5	*	2		1340	453	0.	.0	3532.5
1		0135	20	98.	.9	3533.8	*	1		1940	237	0.	.0	3532.5	*	2		1345	454	0.	.0	3532.5
1		0140	21	133.	1.2	3534.2	*	1		1945	238	0.	.0	3532.5	*	2		1350	455	0.	.0	3532.5
1		0145	22	177.	1.6	3534.8	*	1		1950	239	0.	.0	3532.5	*	2		1355	456	0.	.0	3532.5
1		0150	23	202.	2.1	3535.1	*	1		1955	240	0.	.0	3532.5	*	2		1400	457	0.	.0	3532.5
1		0155	24	218.	2.6	3535.3	*	1		2000	241	0.	.0	3532.5	*	2		1405	458	0.	.0	3532.5
1		0200	25	232.	3.1	3535.5	*	1		2005	242	0.	.0	3532.5	*	2		1410	459	0.	.0	3532.5
1		0205	26	239.	3.3	3535.6	*	1		2010	243	0.	.0	3532.5	*	2		1415	460	0.	.0	3532.5
1		0210	27	241.	3.4	3535.6	*	1		2015	244	0.	.0	3532.5	*	2		1420	461	0.	.0	3532.5
1		0215	28	241.	3.4	3535.6	*	1		2020	245	0.	.0	3532.5	*	2		1425	462	0.	.0	3532.5
1		0220	29	244.	3.5	3535.6	*	1		2025	246	0.	.0	3532.5	*	2		1430	463	0.	.0	3532.5
1		0225	30	258.	4.0	3535.8	*	1		2030	247	0.	.0	3532.5	*	2		1435	464	0.	.0	3532.5
1		0230	31	285.	4.8	3536.1	*	1		2035	248	0.	.0	3532.5	*	2		1440	465	0.	.0	3532.5
1		0235	32	318.	6.0	3536.4	*	1		2040	249	0.	.0	3532.5	*	2		1445	466	0.	.0	3532.5
1		0240	33	350.	7.1	3536.6	*	1		2045	250	0.	.0	3532.5	*	2		1450	467	0.	.0	3532.5
1		0245	34	375.	7.9	3536.9	*	1		2050	251	0.	.0	3532.5	*	2		1455	468	0.	.0	3532.5
1		0250	35	395.	8.6	3537.0	*	1		2055	252	0.	.0	3532.5	*	2		1500	469	0.	.0	3532.5
1		0255	36	412.	9.3	3537.2	*	1		2100	253	0.	.0	3532.5	*	2		1505	470	0.	.0	3532.5
1		0300	37	431.	10.1	3537.4	*	1		2105	254	0.	.0	3532.5	*	2		1510	471	0.	.0	3532.5
1		0305	38	449.	10.8	3537.5	*	1		2110	255	0.	.0	3532.5	*	2		1515	472	0.	.0	3532.5
1		0310	39	471.	11.7	3537.7	*	1		2115	256	0.	.0	3532.5	*	2		1520	473	0.	.0	3532.5
1		0315	40	515.	13.5	3538.1	*	1		2120	257	0.	.0	3532.5	*	2		1525	474	0.	.0	3532.5
1		0320	41	613.	18.1	3539.0	*	1		2125	258	0.	.0	3532.5	*	2		1530	475	0.	.0	3532.5
1		0325	42	786.	28.1	3540.7	*	1		2130	259	0.	.0	3532.5	*	2		1535	476	0.	.0	3532.5
1		0330	43	938.	47.2	3542.5	*	1		2135	260	0.	.0	3532.5	*	2		1540	477	0.	.0	3532.5
1		0335	44	1336.	76.0	3546.7	*	1		2140	261	0.	.0	3532.5	*	2		1545	478	0.	.0	3532.5
1		0340	45	1594.	110.8	3549.8	*	1		2145	262	0.	.0	3532.5	*	2		1550	479	0.	.0	3532.5

				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT														
+	W1BB-C	.30	1	FLOW	334.	328.	317.	306.	302.	299.	297.	293.	289.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT														
+	CW1BB-C	2.14	1	FLOW	2008.	1967.	1895.	1825.	1797.	1778.	1763.	1744.	1712.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO														
+	RCW1BB-C	2.14	1	FLOW	1994.	1953.	1880.	1810.	1783.	1763.	1749.	1729.	1697.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT														
+	GD34AA	.27	1	FLOW	280.	274.	265.	256.	252.	249.	247.	244.	241.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT														
+	CGD34AA	2.41	1	FLOW	2273.	2227.	2145.	2065.	2034.	2013.	1996.	1973.	1938.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO														
+	RCGD34AA	2.41	1	FLOW	2239.	2192.	2112.	2033.	2001.	1979.	1962.	1939.	1905.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.92
HYDROGRAPH AT														
+	DB54-1	2.22	1	FLOW	2551.	2499.	2412.	2325.	2290.	2265.	2248.	2220.	2186.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO														
+	RDB54-1	2.22	1	FLOW	2500.	2449.	2363.	2278.	2244.	2220.	2203.	2176.	2142.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
HYDROGRAPH AT														
+	DB54-5	.23	1	FLOW	457.	448.	431.	415.	409.	404.	401.	396.	389.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT														
+	CDB54-5	2.45	1	FLOW	2587.	2534.	2446.	2358.	2322.	2298.	2280.	2252.	2217.
				TIME	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
ROUTED TO														
+	RCDB54-5	2.45	1	FLOW	2562.	2500.	2416.	2358.	2295.	2264.	2249.	2237.	2220.
				TIME	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08	4.08
HYDROGRAPH AT														
+	DB54-2	.29	1	FLOW	644.	631.	609.	587.	579.	573.	568.	561.	553.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO														
+	RDB54-2	.29	1	FLOW	590.	587.	555.	548.	540.	534.	531.	524.	516.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT														
+	DB54-3	.52	1	FLOW	1114.	1091.	1054.	1016.	1001.	991.	983.	971.	956.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO														
+	RDB54-3	.52	1	FLOW	971.	951.	918.	885.	872.	862.	856.	845.	832.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT														
+	DB54-4	.20	1	FLOW	369.	361.	348.	336.	331.	327.	324.	320.	315.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT														
+	CDB54-4	1.01	1	FLOW	1929.	1899.	1821.	1768.	1742.	1724.	1711.	1690.	1664.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO														
+	RCDB54-4	1.01	1	FLOW	1820.	1808.	1717.	1664.	1640.	1629.	1606.	1587.	1565.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT														
+	CRCDB544	3.46	1	FLOW	3185.	3152.	2999.	2909.	2851.	2831.	2794.	2768.	2741.
				TIME	3.67	3.67	3.67	3.92	3.67	3.67	3.67	3.67	3.92
ROUTED TO														
+	RCRCDB54	3.46	1	FLOW	3162.	3100.	2987.	2899.	2837.	2803.	2783.	2760.	2730.
				TIME	3.92	3.92	3.92	3.92	3.92	3.75	3.92	3.92	3.92
HYDROGRAPH AT														
+	DB54-6R	.84	1	FLOW	1047.	1024.	986.	948.	933.	922.	914.	902.	887.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT														
+	CDB54-6R	4.30	1	FLOW	4206.	4121.	3961.	3809.	3760.	3725.	3685.	3628.	3570.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT														
+	DB55-1	.64	1	FLOW	1142.	1118.	1079.	1040.	1025.	1014.	1006.	994.	978.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO														

+	RDB55-1	.64	1	FLOW	1104.	1083.	1046.	1004.	997.	980.	972.	968.	946.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-2	.10	1	FLOW	188.	185.	178.	172.	170.	168.	167.	165.	162.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-2	.74	1	FLOW	1263.	1238.	1197.	1149.	1140.	1122.	1113.	1107.	1083.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RDB55-2	.74	1	FLOW	1262.	1237.	1196.	1147.	1139.	1121.	1112.	1107.	1080.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-3	.26	1	FLOW	614.	602.	581.	561.	553.	547.	543.	536.	528.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-3	.26	1	FLOW	578.	567.	547.	527.	518.	514.	508.	503.	497.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT													
+	DB55-4	.17	1	FLOW	304.	297.	286.	275.	271.	268.	266.	262.	258.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-4	.43	1	FLOW	856.	839.	809.	778.	765.	758.	751.	742.	732.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-4	.43	1	FLOW	804.	795.	766.	738.	723.	720.	711.	702.	694.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	DB55-5	.19	1	FLOW	337.	330.	318.	307.	302.	299.	296.	293.	288.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CDB55-5	.62	1	FLOW	1142.	1125.	1085.	1045.	1025.	1019.	1007.	995.	982.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CCDB55-5	1.36	1	FLOW	2354.	2317.	2229.	2146.	2111.	2089.	2073.	2046.	2014.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RDB55-5	1.36	1	FLOW	2285.	2284.	2173.	2057.	2063.	2071.	2038.	1967.	1943.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-7	.44	1	FLOW	730.	716.	692.	668.	659.	652.	647.	640.	630.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RDB55-7	.44	1	FLOW	679.	666.	643.	621.	612.	606.	601.	594.	585.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	DB55-6	.10	1	FLOW	208.	204.	198.	191.	189.	187.	186.	184.	181.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO													
+	RDB55-6	.10	1	FLOW	177.	174.	168.	163.	161.	159.	158.	157.	155.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	DB55-8	.55	1	FLOW	999.	980.	948.	916.	903.	894.	887.	877.	864.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
4 COMBINED AT													
+	CDB55-8	2.45	1	FLOW	3995.	3960.	3795.	3624.	3608.	3600.	3556.	3468.	3421.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	SUM5IN	6.74	1	FLOW	8080.	7992.	7640.	7331.	7250.	7215.	7123.	7001.	6898.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	SUM5DB	6.74	1	FLOW	2287.	2266.	2228.	2193.	2179.	2169.	2162.	2149.	2136.
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	5.00
			** PEAK STAGES IN FEET **										
			1	STAGE	3562.41	3561.95	3561.16	3560.40	3560.10	3559.90	3559.74	3559.48	3559.18
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	5.00
ROUTED TO													
+	SUM5OT	6.74	1	FLOW	2287.	2266.	2228.	2193.	2179.	2169.	2162.	2149.	2136.
				TIME	5.08	5.08	5.00	5.00	5.00	5.00	5.00	5.00	5.00
HYDROGRAPH AT													
+	SWAA-1	.24	1	FLOW	322.	315.	304.	293.	289.	286.	284.	280.	276.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75

DB5 outfall

Flow to Sky Vista Drive RCP

2 COMBINED AT													
+	CSWAA-1	6.98	1	FLOW	2364.	2342.	2303.	2266.	2251.	2241.	2233.	2220.	2205.
				TIME	5.00	5.00	4.92	4.92	4.92	4.92	4.92	4.92	4.92
ROUTED TO													
+	RCSWAA-1	6.98	1	FLOW	2364.	2342.	2303.	2265.	2250.	2240.	2233.	2220.	2205.
				TIME	5.00	5.00	5.00	4.92	4.92	4.92	4.92	4.92	4.92
HYDROGRAPH AT													
+	SWAA-2	.70	1	FLOW	967.	948.	918.	887.	875.	867.	861.	851.	839.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CSWAA-2	7.68	1	FLOW	3201.	3163.	3097.	3029.	3003.	2984.	2969.	2944.	2917.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO													
+	RCSWAA-2	7.68	1	FLOW	3181.	3142.	3077.	3008.	2981.	2963.	2947.	2923.	2898.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92	3.92	3.92
HYDROGRAPH AT													
+	SWAA-3	.58	1	FLOW	682.	668.	644.	620.	611.	604.	599.	592.	582.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	CSWAA-3	8.26	1	FLOW	3861.	3808.	3719.	3627.	3591.	3567.	3544.	3513.	3474.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	SWFH-1	.56	1	FLOW	881.	863.	833.	803.	791.	782.	776.	766.	754.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RSWFH-1	.56	1	FLOW	875.	859.	828.	796.	784.	776.	771.	760.	748.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-2	.53	1	FLOW	918.	901.	873.	846.	835.	827.	821.	812.	801.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CSWFH-2	1.09	1	FLOW	1793.	1760.	1701.	1642.	1619.	1603.	1593.	1572.	1549.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCSWFH-2	1.09	1	FLOW	1782.	1749.	1690.	1632.	1609.	1592.	1582.	1562.	1538.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-3	.15	1	FLOW	318.	312.	303.	294.	291.	288.	287.	284.	280.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-3	1.25	1	FLOW	2066.	2029.	1962.	1896.	1870.	1851.	1839.	1816.	1790.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCSWFH-3	1.25	1	FLOW	2052.	2014.	1950.	1881.	1857.	1837.	1825.	1804.	1775.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-6	.25	1	FLOW	483.	475.	460.	446.	440.	436.	433.	428.	422.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RSWFH-6	.25	1	FLOW	474.	464.	450.	436.	430.	426.	423.	418.	413.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	SWFH-7	.31	1	FLOW	622.	611.	593.	575.	568.	563.	559.	553.	546.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-6	.56	1	FLOW	1096.	1076.	1043.	1011.	998.	989.	982.	971.	959.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCSWFH6	.56	1	FLOW	1082.	1062.	1029.	998.	984.	976.	970.	958.	946.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-7	1.81	1	FLOW	3044.	2989.	2897.	2798.	2763.	2735.	2718.	2686.	2646.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-4	.12	1	FLOW	193.	189.	182.	175.	172.	170.	169.	166.	163.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RSWFH-4	.12	1	FLOW	182.	178.	171.	165.	162.	160.	158.	157.	153.
				TIME	3.58	3.58	3.58	3.58	3.58	3.67	3.58	3.67	3.67
HYDROGRAPH AT													
+	SWFH-5	.26	1	FLOW	487.	478.	463.	448.	442.	438.	435.	430.	424.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58

→ Village 2BB

* Flow @ Alta / Desert Foothills

*

Flow to Far Hills Ave RCB

2 COMBINED AT												
+	CSWFH-5	.38	1	FLOW	669.	656.	634.	613.	604.	598.	593.	587.	577.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCSWFH-5	.38	1	FLOW	645.	634.	612.	594.	585.	580.	574.	570.	560.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CCSWFH-7	2.18	1	FLOW	3690.	3623.	3509.	3392.	3348.	3315.	3291.	3257.	3207.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCCSWFH7	2.18	1	FLOW	3683.	3618.	3501.	3385.	3340.	3309.	3284.	3250.	3198.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-8	.29	1	FLOW	585.	575.	558.	541.	535.	530.	526.	521.	514.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT													
+	CSWFH-8	2.48	1	FLOW	4198.	4124.	3993.	3862.	3811.	3776.	3748.	3709.	3652.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	RCSWFH-8	2.48	1	FLOW	4197.	4123.	3992.	3861.	3809.	3772.	3745.	3707.	3650.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	SWFH-9	.17	1	FLOW	423.	416.	404.	392.	387.	384.	382.	378.	373.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT													
+	CSWFH-9	2.65	1	FLOW	4428.	4344.	4207.	4060.	4004.	3965.	3935.	3890.	3834.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RCSHFH-9	2.65	1	FLOW	4389.	4321.	4179.	4037.	3997.	3944.	3920.	3890.	3819.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	CRCSWFH9	10.91	1	FLOW	7789.	7660.	7451.	7228.	7146.	7087.	7033.	6969.	6875.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	RCRCSWFH	10.91	1	FLOW	7783.	7657.	7445.	7221.	7138.	7079.	7027.	6960.	6864.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	11A-1	.21	1	FLOW	241.	235.	227.	218.	214.	212.	210.	207.	203.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
2 COMBINED AT													
+	C11A-1	11.12	1	FLOW	8024.	7892.	7671.	7438.	7352.	7290.	7237.	7167.	7067.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	RC11A-1	11.12	1	FLOW	8012.	7874.	7649.	7415.	7330.	7265.	7214.	7145.	7040.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	11A-3	.19	1	FLOW	285.	279.	270.	260.	257.	254.	252.	249.	245.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C11A-3	11.31	1	FLOW	8269.	8126.	7893.	7650.	7562.	7494.	7442.	7371.	7262.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
ROUTED TO													
+	RC11A-3	11.31	1	FLOW	8079.	7941.	7716.	7485.	7397.	7333.	7284.	7211.	7111.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT													
+	3A	.18	1	FLOW	203.	198.	190.	182.	179.	177.	176.	173.	170.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C3A	11.49	1	FLOW	8243.	8102.	7871.	7633.	7543.	7477.	7427.	7353.	7249.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO													
+	RC3A	11.49	1	FLOW	7995.	7850.	7615.	7377.	7286.	7217.	7172.	7095.	6989.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT													
+	3B-1	.26	1	FLOW	248.	242.	231.	221.	216.	213.	211.	208.	204.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C3B-1	11.75	1	FLOW	8168.	8019.	7777.	7532.	7438.	7368.	7321.	7242.	7134.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92	3.92
ROUTED TO													
+	RC3B-1	11.75	1	FLOW	8105.	7956.	7715.	7469.	7373.	7302.	7258.	7177.	7073.

* Flow to Far Hills/Desert Foothills

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: April 13, 2007
TO: Land Development Services Department of Public Works				FROM: Oh Sang Kwon, P.E. Flood Control Department of Public Works
SUBJECT:	Drainage Study for:			COPIES TO:
Master Summerlin West Planning Area				G.C. Wallace, Inc.
Cross Streets:	Charleston Blvd/Cheyenne and I-215/BLM			Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS3983E.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-013			CCRFCD
Zoning Action:				CCDDS
FEMA Flood Zone	YES	X	NO	CCDPW
Proposed Storm Drain	YES	X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	8/7/2006	8/30/2006	Not Approved	$400.00	288923: $400
2nd Submittal	9/29/2006 & 10/30/2006	10/20/2006 & 11/13/2006	Not Approved	$400.00	Paid: $400
3rd Submittal	11/22/2006	12/4/2006	Conditional Approval	$400.00	58324: $400
4th Submittal	3/29/2007	4/13/2007	Approved	$400.00	66016: $400
CCRFCD	2/12/2007	2/12/2007	Concurrence	N/C	-
CCDDS	1/16/2007	1/16/2007	Concurrence	N/C	-
CCDPW	4/11/2007	4/13/2007	Concurrence	N/C	-
			TOTAL FEES (LDDRS):	$1600.00	---

REMARKS:

4th Submittal: Response to CCDPW comments.

The Master Drainage Study for the subject project has been reviewed and:

X	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Department of Development Service concurrence.
	is conditionally approved subject to Clark County Department of Public Works concurrence.

1. As condition of final approval, any change to land uses/densities will require an update to this Master Drainage Study. Detention basin or other mitigation will be required if the flow values and assumed land uses/densities are increased from this Master Drainage Study.

NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent"

Curve Number Calculations

Developed Conditions For the Southern Regional Watershed

Project site consists of soils 112 (HSG "A"), 152 (HSG "D"), 155 (HSG "D"), 191 (HSG "B"), 360 (HSG "D"), 502 (HSG "C")
640 (HSG "D"), 1321 (HSG "D"), 1351 (HSG "D")
Composite curve numbers were calculated.

Area within Loop Road

	DENSITY	LOT	LOT	CN TYPE				
USAGE	(units/acres)	SIZE	VALUE	A	B	C	D	
SF2	6	7260	7000	76	84	89	91	7,000 sq. ft. lots
SF3	10	4356	4000	81	88	91	93	INDUSTRIAL
SFA	18	2420	2000	81	88	91	93	INDUSTRIAL
MF2	21	2074	2000	81	88	91	93	INDUSTRIAL
MF3	21	2074	2000	81	88	91	93	INDUSTRIAL
NF	N/A	N/A	N/A	81	88	91	93	INDUSTRIAL
COS*	N/A	N/A	N/A	55	72	81	86	OPEN LAND, FAIR CONDITION
COS**	N/A	N/A	N/A	63	77	85	88	UNDISTURBED LAND, POOR CONDITION
COM	N/A	N/A	N/A	81	88	91	93	INDUSTRIAL
H-1	N/A	N/A	N/A	81	88	91	93	INDUSTRIAL
BLM	N/A	N/A	N/A	63	77	85	88	UNDISTURBED LAND, POOR CONDITION
Undevelopable Property	N/A	N/A	N/A	81	88	91	93	INDUSTRIAL
COS/OPEN LAND	N/A	N/A	N/A	49	69	79	84	PARK/GOLF COURSE, FAIR CONDITION

Notes:
1. Densities of SF2 and SF3 were reduced beyond the Loop Road - see calculations below.
2. NF (Neighborhood Focus) - consists of schools
3. COS (Community Open Space) - consists of manmade parks w/desert and grass landscaping
4. COS* (Community Open Space) - consists of natural terrain, preserved waterways
   2002 MPU HEC-1 used Fair Conditions for tributary basins north of Summerlin Pkwy and Poor Conditions for tributary basins south of Summerlin Pkwy
5. COS** (Community Open Space) - consists of natural terrain, i.e. Red Rock outcrops
6. H-1 (Limited Resort and Apartment District) - considered high density/commercial
7. BLM (Bureau of Land Management Land) - undisturbed land
8. Undevelopable Property - shown as white on the Land Use Plan and will be reserved for water reservoirs, power substations, undevelopable terrain and U.S. Waters
9. Golf Course - shown as teal on the Land Use Plan and will consist of turf

Area Beyond Loop Road

	DENSITY	LOT	LOT	CN TYPE				
USAGE	UNITS/ACRE	SIZE	VALUE	A	B	C	D	
SF2	4	10000	10000	61	75	83	87	10,000 SF LOTS
SF3	5	9000	9000	67	78.5	85.5	88.5	9000 SF LOTS

2006 Summerlin West Planning Area Flood Control Master Plan Update
Proposed Condition

Land Use Distribution (Acres)/Curve Number Calculation													
Basin	Total Acres	SF2	SF3	COS (Park and Golf Course)	COS* Fair (undisturbed/ BLM)	COS** Poor (undisturbed/ BLM)	SFA, MF2, MF3, NF, COM, H-1	Undevelopable Property	Percent in Soil Group A	Percent in Soil Group B	Percent in Soil Group C	Percent in Soil Group D	Composite CN
Village 26 Offsite/Onsite													
Tributary to Detention Basin No. 5/Alta Drive													
3-1A	74.6	34.3		40.3								100.00%	85.4
3-1B	375.26	189.1		115.1	1.8	29.3	40.0		6.63%	3.86%		89.51%	84.5
3-2A	168.7	116.6	13.4	3.6			26.6	8.5			0.12%	99.88%	91.4
3-3A	238.3	160.7	58.4	9.0				10.2				100.00%	91.3
3-3B	276.2	40.9	112.2	7.8			115.3				4.65%	95.35%	92.4
3-3C	91.1	59.9	31.2							0.36%	36.90%	62.74%	90.9
3-4A	208.4	44.1	118.3				16.1	29.9				100.00%	92.6
3-5A	193.9	34.0	47.9	8.1			103.9				1.00%	99.00%	92.3
3-6A	84.3		9.0				49.7	25.6			0.60%	99.40%	93.0
4-4A	171.7	52.5		55.4	52.5			11.3				100.00%	86.1
4-6A	545.2	130.1	83.9	90.9	104.7	130.2	1.2	4.2	3.07%		2.19%	94.74%	85.9
5-2A	59	8.6		14.1	5.9		30.4					100.00%	89.3
5-4A	142.7	27.0		42.1	56.9			16.7				100.00%	86.4
5-5A	122.3	58.2	15.3	39.5	9.3							100.00%	86.1
5-6A	57	13.2			8.8		35.0					100.00%	90.5
5-7A	282.2	46.2	65.6	42.0	40.1		74.8	13.5				100.00%	88.6
5-8A	347.3	143.5	90.4	38.0	42.0		33.4				1.51%	98.49%	87.5
5-9A	64.7		28.6	36.1							19.52%	80.48%	85.2
5-10A	68.3	60.7		7.7							68.00%	32.00%	83.9
5-10AR	54.8		16.1	4.1			34.6				7.47%	92.58%	90.8

Notes:

1. Densities of SF2 and SF3 were reduced beyond the Loop Road - see calculations below.
2. NF (Neighborhood Focus) - consists of schools
3. COS (Community Open Space) - consists of manmade parks w/desert and grass landscaping
4. COS* (Community Open Space) - consists of natural terrain, preserved waterways
   2002 MPU HEC-1 used Fair Conditions for tributary basins north of Summerlin Pkwy and Poor Conditions for tributary basins south of Summerlin Pkwy
5. COS** (Community Open Space) - consists of natural terrain, i.e. Red Rock outcrops
6. H-1 (Limited Resort and Apartment District) - considered high density/commercial
7. BLM (Bureau of Land Management Land) - undisturbed land
8. Undevelopable Property - shown as white on the Land Use Plan and will be reserved for water reservoirs, power substations, undevelopable terrain and U.S. Waters
9. Golf Course - shown as teal on the Land Use Plan and will consist of turf

HYDROLOGIC CRITERIA AND DESIGN MANUAL

TIME OF CONCENTRATION

G. C. WALLACE, INC.
Engineers/Planners/Surveyors

2006 Summerlin West Flood Control Master Plan Update
Developed Condition-Tributary to DB5/Alta Drive

Project No: 62A.W04.007
Date: 7/30/2006
Calculated by: rnl

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc CHECK URBANIZED BASINS		Tc	Tlag	REMARKS
DESIG: (1)	DEV./EX. (D or E)	CN (16)	K (2)	AREA Ac (3)	AREA Sq Mi (4)	INITIAL LENGTH Feet (5)	SLOPE % (6)	Ti Min (7)	TRAVEL LENGTH Feet (8)	SLOPE % (9a)	V1 VELOCITY fps (9b)	V2 VELOCITY fps (10)	Tt Min (11)	TOTAL LENGTH Feet (12)	Tc = (L/180)+10 Min (13)	Min (14)	Tlag = 0.6Tc/60 Hours (15)	Remarks:
3-1A	D	85.4	0.7373	74.6	0.1166	200	2.0	7.3	4706	8.0	5.7	8.7	9.6	4906	37.3	16.9	0.169	3.56
3-1B	D	84.5	0.7254	375.3	0.5864	200	2.0	7.6	8089	8.5	5.9	8.9	15.6	8289	56.1	23.2	0.232	3.57
3-2A	D	91.4	0.8165	168.7	0.2636	200	2.0	5.7	6400	7.0	5.3	8.1	13.7	6600	46.7	19.4	0.194	3.50
3-3A	D	91.3	0.8152	238.3	0.3723	200	2.0	5.8	7500	7.0	5.3	8.1	16.0	7700	52.8	21.7	0.217	3.49
3-3B	D	92.4	0.8297	276.2	0.4316	200	2.0	5.5	6000	7.0	5.3	8.1	12.9	6200	44.4	18.3	0.183	3.46
3-3C	D	90.9	0.8099	91.1	0.1423	200	2.0	5.9	4875	6.3	5.1	7.7	11.2	5075	38.2	17.0	0.170	3.49
3-4A	D	92.6	0.8323	208.4	0.3256	200	2.0	5.4	4681	6.3	5.1	7.7	10.8	4881	37.1	16.2	0.162	3.41
3-5A	D	92.3	0.8284	193.9	0.3030	200	2.0	5.5	5700	7.0	5.3	8.1	12.3	5900	42.8	17.8	0.178	3.36
3-6A	D	93	0.8376	84.3	0.1317	200	2.0	5.3	900	8.0	5.7	8.7	2.2	1100	16.1	7.5	0.075	3.33
4-1-4-3, 4-5																		REFERENCED
4-4A	D	86.1	0.7465	171.7	0.2683	500	14.0	5.9	4503	12.0	7.0	10.6	7.5	5003	37.8	13.4	0.134	
4-6A	D	85.9	0.7439	545.2	0.8519	500	9.0	6.9	13136	7.5	5.5	8.4	26.6	13636	85.8	33.5	0.335	3.56
5-1																		REFERENCED
5-2A	D	89.3	0.7888	59.0	0.0922	500	10.0	5.8	3600	8.5	5.9	8.9	7.2	4100	32.8	13.0	0.130	
5-3																		REFERENCED
5-4A	D	86.4	0.7505	142.7	0.2230	500	16.0	5.6	2986	10.0	6.4	9.7	5.6	3486	29.4	11.2	0.112	
5-5A	D	86.1	0.7465	122.3	0.1911	500	8.0	7.1	2837	8.0	5.7	8.7	6.0	3337	28.5	13.1	0.131	
5-6A	D	90.5	0.8046	57.0	0.0891	500	10.0	5.5	2050	8.5	5.9	8.9	4.3	2550	24.2	9.8	0.098	
5-7A	D	88.6	0.7795	282.2	0.4409	500	14.0	5.4	7811	9.0	6.1	9.2	14.6	8311	56.2	20.0	0.200	
5-8A	D	87.5	0.7650	347.3	0.5427	500	6.0	7.4	5342	7.5	5.5	8.4	11.1	5842	42.5	18.6	0.186	
5-9A	D	85.2	0.7346	64.7	0.1011	200	2.0	7.4	1578	6.5	5.2	7.8	3.9	1778	19.9	11.3	0.113	
5-10A	D	83.9	0.7175	68.3	0.1067	200	2.0	7.7	3240	5.5	4.7	7.2	8.1	3440	29.1	15.9	0.159	
5-10AR	D	90.8	0.8086	54.8	0.0856	200	2.0	5.9	3580	5.5	4.7	7.2	8.9	3780	31.0	14.8	0.148	

$Tc = Ti + Tt$ $\quad Tlag = 0.6\ Tc$

$Ti = 1.8\ (1.1 - K)\ L^{1/2} / S^{1/3}$

$K = 0.0132\ (CN) - 0.39$

For the travel time (Tt) calculations,
V1 applies to the first 500 feet of travel distance;
V2 applies to the remaining travel distance.

Existing: $V1 = 14.8*(S/100)^{1/2}$ $\quad V2 = 29.4*(S/100)^{1/2}$

Developed: $V1 = 20.2*(S/100)^{1/2}$ $\quad V2 = 30.6*(S/100)^{1/2}$

REFERENCE:

STANDARD FORM 4

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   20NOV06  TIME  09:59:13   *
*                                       *
*****************************************
```

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*****************************************
*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*          609 SECOND STREET            *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
```

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X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
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THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM


```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

              *DIAGRAM
    1         ID   ************************************************************
    2         ID   * :.....: *
    3         ID   * :              2006 SUMMERLIN WEST                    : *
    4         ID   * :          CONCEPTUAL DRAINAGE STUDY                  : *
    5         ID   * :       SUMMERLIN MASTER PLAN AMENDMENT               : *
    6         ID   * :  EXISTING OFFSITE/ PROPOSED ONSITE DRAINAGE CONDITION : *
    7         ID   * :.....:.....: *
    8         ID   * :       CLIENT_ _ _ _THE HOWARD HUGHES CORP.          : *
    9         ID   * :       RETURN PERIOD_ _ _ _100-YEAR                  : *
   10         ID   * :       DISTRIBUTUION_ _ _ _6-HOUR SDN5               : *
   11         ID   * :       PROJECT NO_ _ _ _ 62A.W04.007                 : *
   12         ID   * :       FILENAME_ _ _ _ _ _ SDN3 Southr3.h1           : *
   13         ID   * :       DATE_ _ _ _ _ _ _ 11/17/06                    : *
   14         ID   * :       MODELED BY_ _ _ _ _ WJM, SBS                  : *
   15         ID   * :.....: *
   16         ID   * :                                                     : *
   17         ID   * :   BASIN/                              AREA    DARF  : *
   18         ID   * :  LOCATION                           (sq.mi.)        : *
   19         ID   * :                                                     : *
   20         ID   * :                        . . . . . 0.00 to 0.49  0.990 : *
   21         ID   * :                        . . . . . 0.50 to 0.99  0.975 : *
   22         ID   * :                        . . . . . 1.00 to 1.99  0.950 : *
   23         ID   * :                        . . . . . 2.00 to 2.99  0.925 : *
   24         ID   * :                        . . . . . 3.00 to 3.99  0.915 : *
   25         ID   * :                        . . . . . 4.00 to 4.99  0.908 : *
   26         ID   * :                        . . . . . 5.00 to 5.99  0.903 : *
   27         ID   * :                        . . . . . 6.00 to 6.99  0.895 : *
   28         ID   * :                        . . . . . 7.00 to 8.00  0.885 : *
   29         ID   * :.....: *
   30         ID   ************************************************************
   31         ID   ************************************************************
   32         ID   * :                                                     : *
   33         ID   * :                                                     : *
   34         ID   * :.....: *
   35         ID   ************************************************************
   36         ID
   37         IT       5       0       0     300
   38         IO       5
   39         IN       5       0       0
   40         JR     PREC   0.990   0.975   0.950   0.925   0.915   0.908   0.903   0.895   0.885
              * WATERSHEDS TRIBUTARY TO PROPOSED DIVERSION BERM
              * PREVIOUS LOCATION OF DB4
              *

   41         KK     4-1
   42         KM   REFERENCED FROM CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN
   43         KM   UPDATE  -  GOWAN WATERSHED (ALL)
   44         BA   2.222
   45         PB    3.72
   46         PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
   47         PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
   48         PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
   49         PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
   50         PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
```



```
LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

   51         PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
   52         PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
   53         PC    .998    .999   1.00
   54         LS       0   87.2
   55         UD   0.495
              *

   56         KK     R-1
   57         KM   REFERENCED FROM CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN
   58         KM   UPDATE  -  GOWAN WATERSHED (ALL)
   59         KM   ROUTE DB54-1 TO CDB54-5
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```
202          KK    R-12
203          KM    REFERENCED FROM CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN
204          KM    UPDATE  -  GOWAN WATERSHED (ALL)
205          RM       2   0.186     0.3
             *

206          KK    5-7A
207          KM    PRECIPITATION VALUE IS REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM
208          KM    FINAL DESIGN REPORT-1/01
209          BA    .4409
210          PB    3.54
211          LS       0     88.6
212          UD    0.200
             *

213          KK    R-13
214          KM    REFERENCED FROM CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT 2002 MASTER PLAN
215          KM    UPDATE  -  GOWAN WATERSHED (ALL)
216          RM       1   0.109     0.3
             *

217          KK    5-8A
218          KM    PRECIPITATION VALUE IS REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM
219          KM    FINAL DESIGN REPORT-1/01
220          BA    .5427
221          PB    3.46
222          LS       0     87.5
223          UD    0.186
             *

224          KK    C-8
225          KM    COMBINE C-7, 5-6A, 5-7A, & 5-8A
226          HC       4
             *

227          KK    C-9
228          KM    COMBINE C-4 & C-8
229          KM    TOTAL INFLOW PROPOSED TO BE ACCEPTED BY EXPANSION OF DB5
230          HC       2
             *

231          KK  SUMDB5
232          KM   SUMMERLIN DETENTION BASIN 5
233          KM   FACILITY = ANGEL PARK - MIDDLE S BRANCH
234          KM   FACILITY # = APM5 0000
235          KM   STORAGE VOLUME = 405 ACRE-FEET
236          KM   OUTLET = 2: 8' x 6' RCBS
237          KM   100-YEAR DISCHARGE = 2,332 CFS
238          KM   SPILLWAY LENGTH =
239          KM   SPILLWAY HEIGHT =
240          KM   SPILLWAY CREST ELEVATION = 3561.5
241          KM   SPILLWAY TYPE =
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LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

242          KM   PMF DISCHARGE = 32,200
243          KM   TOP OF EMBANKMENT ELEVATION = 2124'
244          KM   FROM G.C. WALLACE MASTER PLAN AMENDMENT TO SUMMERLIN WEST
245          KM  KO     1
246          RS       1    STOR      -1
             * INCREASE STRORAGE VOLUME BY AN ADDITIONAL 40%
             *    0      25      40     105     215     340     380     500     600
247          SV      0      35      56     147     301     476     532     700     840
248          SQ      0     265     586    1092    1718    2199    2332   12593   27569
249          SE   3542    3545    3547    3550    3555    3560  3561.5    3564    3566
             *

250          KK  DCDB5
251          KM  DIVERT ALL FLOW FOR STORM CENTERING
252          DT  DCDB5
253          DI  0           51     125     500   10000
254          DQ  0           51     125     500   10000
             *

255          KK     R14
256          KM   REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM FINAL DESIGN REPORT-1/01
257          KM   ROUTE THE FLOWS DISCHARGED FROM DB5 TO ALTA DRIVE
258          RD    2550    .055    .013            CIRC        5
             *

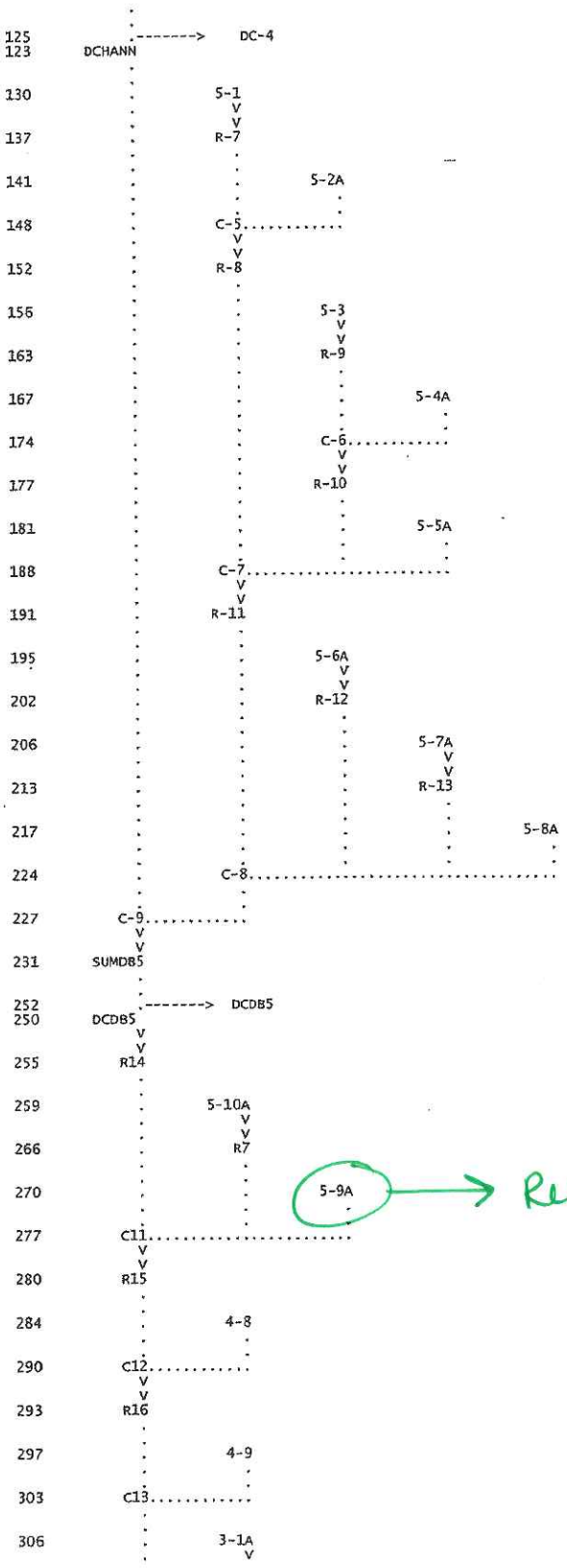
259          KK   5-10A
260          KM   PRECIPITATION VALUE IS REFERENCED FROM BASIN 4-7 FROM DETENTION BASIN NO.5/
261          KM   DIVERSION BERM FINAL DESIGN REPORT-1/01
262          BA   .1067
263          PB   3.43
264          LS      0    83.9
265          UD    .159
             *

266          KK      R7
267          KM   REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM FINAL DESIGN REPORT-1/01
268          KM   ROUTE THE FLOWS GENERATED BY 5-10A TO ALTA DRIVE RCB
269          RM       2      .14       .3
             *

270          KK    5-9A
271          KM   PRECIPITATION VALUE IS REFERENCED FROM DETENTION BASIN NO.5/DIVERSION BERM
272          KM   FINAL DESIGN REPORT-1/01
273          BA   .1011
274          PB   3.43
275          LS      0    85.2
276          UD    .113
             *

277          KK     C11
278          KM   COMBINE EXPANDED DB5, 5-10A & 5-9A INTO ALTA DRIVE RCB
```

* Revised Area Trib to Alta per 2008 MPU



5-9A → Rev. Area Trib. to Alta RCB

				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	SUMDB5	6.75	1	FLOW	2089.	2061.	2011.	1961.	1942.	1928.	1918.	1902.	1883.
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.08
				** PEAK STAGES IN FEET **									
			1	STAGE	3558.85	3558.56	3558.05	3557.53	3557.32	3557.18	3557.08	3556.92	3556.72
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.08
DIVERSION TO													
+	DCDB5	6.75	1	FLOW	2089.	2061.	2011.	1961.	1942.	1928.	1918.	1902.	1883.
				TIME	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.17	5.08
HYDROGRAPH AT													
+	DCDB5	6.75	1	FLOW	0.	0.	0.	0.	0.	0.	0.	0.	0.
				TIME	.00	.00	.00	.00	.00	.00	.00	.00	.00
ROUTED TO													
+	R14	6.75	1	FLOW	0.	0.	0.	0.	0.	0.	0.	0.	0.
				TIME	.00	.00	.00	.00	.00	.00	.00	.00	.00
HYDROGRAPH AT													
+	5-10A	.11	1	FLOW	164.	160.	154.	148.	145.	143.	142.	140.	138.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R7	.11	1	FLOW	152.	148.	143.	137.	135.	133.	132.	130.	128.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	5-9A	.10	1	FLOW	171.	167.	161.	155.	153.	151.	150.	148.	145.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	C11	6.96	1	FLOW	282.	275.	265.	254.	250.	247.	245.	242.	237.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R15	6.96	1	FLOW	275.	269.	257.	248.	243.	241.	239.	235.	232.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	4-8	.69	1	FLOW	961.	941.	907.	873.	860.	850.	843.	833.	819.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C12	7.64	1	FLOW	1236.	1210.	1164.	1121.	1103.	1092.	1083.	1068.	1051.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	R16	7.64	1	FLOW	1216.	1190.	1143.	1099.	1081.	1071.	1062.	1048.	1030.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	4-9	.58	1	FLOW	733.	716.	688.	660.	649.	641.	635.	626.	615.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT													
+	C13	8.22	1	FLOW	1949.	1906.	1831.	1759.	1730.	1712.	1697.	1674.	1645.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	3-1A	.12	1	FLOW	195.	191.	184.	177.	174.	172.	171.	168.	166.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RC14W	.12	1	FLOW	189.	182.	175.	169.	172.	172.	170.	168.	158.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	3-2A	.26	1	FLOW	489.	480.	464.	449.	443.	439.	436.	431.	425.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	5-10A	.09	1	FLOW	167.	164.	159.	154.	152.	150.	149.	148.	146.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	C14	.47	1	FLOW	822.	806.	779.	752.	744.	737.	732.	723.	709.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	RC14	.47	1	FLOW	816.	796.	772.	740.	740.	733.	728.	716.	702.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT													
+	3-1B	.59	1	FLOW	840.	822.	791.	760.	747.	739.	733.	723.	711.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO													
+	R3-1B	.59	1	FLOW	813.	797.	765.	731.	721.	719.	715.	704.	684.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT													
+	3-3C	.14	1	FLOW	274.	269.	261.	252.	249.	246.	245.	242.	239.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO													
+	R3-3C	.14	1	FLOW	265.	260.	252.	244.	240.	238.	236.	233.	230.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT													
+	3-3B	.43	1	FLOW	832.	817.	793.	768.	758.	751.	746.	738.	728.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT													
+	C15A	1.16	1	FLOW	1831.	1788.	1733.	1668.	1648.	1631.	1616.	1593.	1571.

NORTH

SCALE 1" = 1500'

1500 0 1500 3000

SCALE FEET

LAKE MEAD BLVD

LOOP ROAD

SUMMERLIN PKWY

BELTWAY CHANNEL

FAR HILLS AVENUE

ALTA DRIVE

ALTA CHANNEL

VILLAGE 24
SEE FIGURE 9B

CHARLESTON BLVD.

REDROCK DETENTION BASIN

5-9A1
Area added
to Model

LEGEND

- DRAINAGE SUBBASIN
- SUBBASIN BOUNDARY
- V26 TRIBUTARY (SEE FIGURE 6B)
- BELTWAY CHANNEL (NORTH) TRIBUTARY (SEE FIGURE 7)
- DB5/ALTA TRIBUTARY (SEE FIGURE 8A)
- REDROCK DETENTION BASIN TRIBUTARY (SEE FIGURE 9B)

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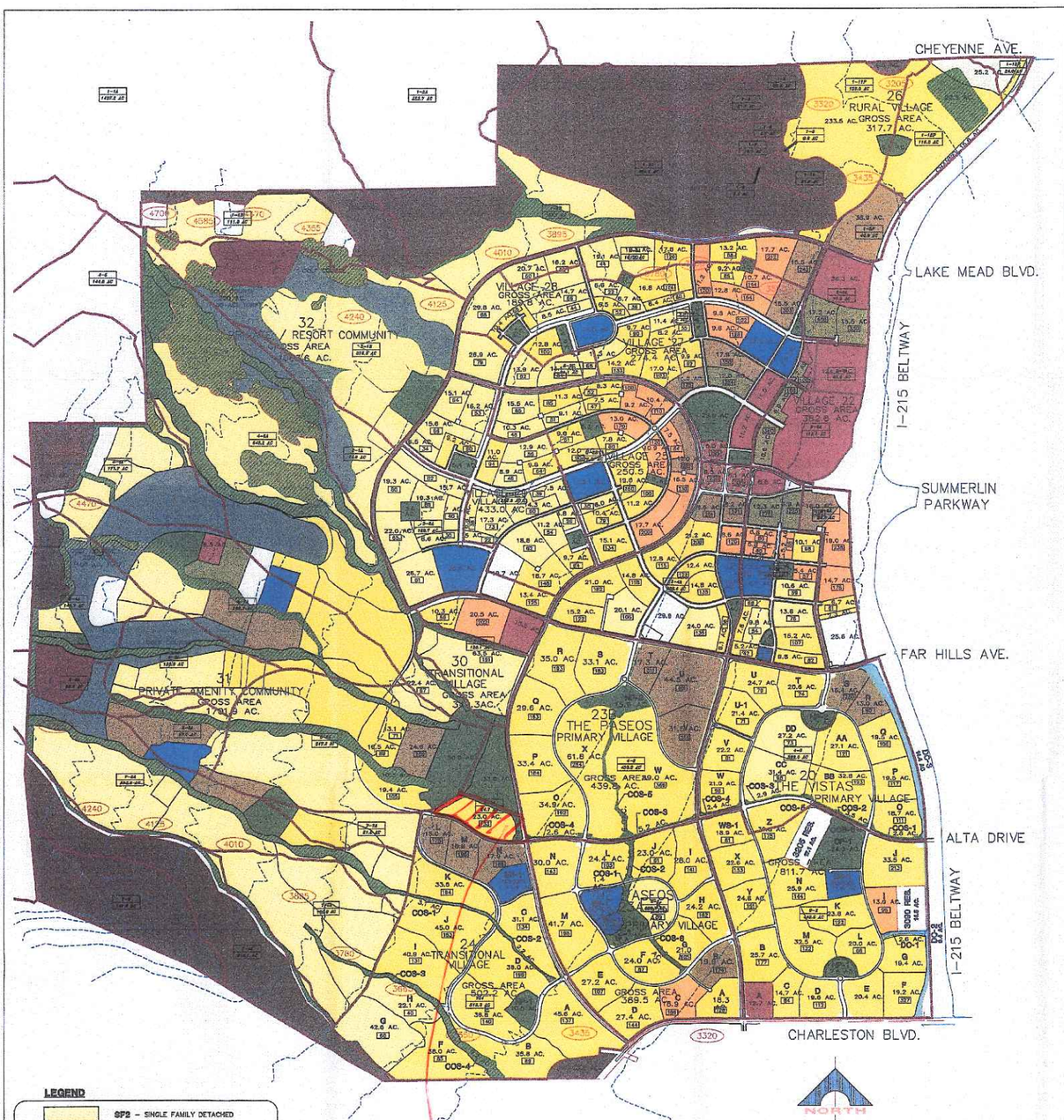
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2006 SUMMERLIN WEST PLANNING AREA
FLOOD CONTROL MASTER PLAN UPDATE
FIGURE 5

OVERALL PROPOSED DRAINAGE MAP

DRAWING
FIG 5
SHT OF SHTS



		PROPOSED	EXISTING	REMAINING
VILLAGE 20	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	607.9	523	0245	(20)
MULTI FAMILY	40.9	270	210	60
COMMERCIAL	12.7	-	-	-
SCHOOL	11.5	-	-	-
PARK	52.5	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	85.0	-	-	-
TOTAL	917	3625	3523	0
VILLAGE 21	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	527.9	2735	0	2735
MULTI FAMILY	68.8	1705	0	1705
COMMERCIAL	51.5	-	-	-
SCHOOL	14.7	-	-	-
PARK	91	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	55.5	-	-	-
TOTAL	4557	4428	0	4428
VILLAGE 22	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	104	228	0	228
MULTI FAMILY	125.8	2520	0	2520
COMMERCIAL	92.3	-	-	-
SCHOOL	14.5	-	-	-
PARK	68.1	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	382.8	3308	0	3308
VILLAGE 23	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	623.8	2159	1158	1981
MULTI FAMILY	123.1	1070	174	896
COMMERCIAL	0	-	-	-
SCHOOL	19.4	-	-	-
PARK	49.9	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	826.3	4229	1332	2977
VILLAGE 24	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	407.4	1329	0	1329
MULTI FAMILY	49.7	555	0	555
COMMERCIAL	0	-	-	-
SCHOOL	14.5	-	-	-
PARK	13.5	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	19.7	-	-	-
TOTAL	502.2	1885	0	1885
VILLAGE 25	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	223.8	1260	0	1260
MULTI FAMILY	15.0	285	0	285
COMMERCIAL	0	-	-	-
SCHOOL	12.1	-	-	-
PARK	7.3	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	258.2	2245	0	2245
VILLAGE 26	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	223.5	1243	-	1243
MULTI FAMILY	29.9	460	-	460
COMMERCIAL	0	-	-	-
SCHOOL	0	-	-	-
PARK	6.5	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	40.8	-	-	-
TOTAL	297.7	672	0	1703
VILLAGE 27	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	254.5	1921	0	1921
MULTI FAMILY	13.8	175	0	175
COMMERCIAL	0	-	-	-
SCHOOL	0	-	-	-
PARK	9.1	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	274.4	2096	0	2096
VILLAGE 28	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	198.1	664	0	664
MULTI FAMILY	0	0	0	0
COMMERCIAL	0	-	-	-
SCHOOL	14.5	-	-	-
PARK	7.2	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	0	-	-	-
TOTAL	199.8	664	0	664
VILLAGE 29	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	575.0	1795	0	1795
MULTI FAMILY	0	0	0	0
COMMERCIAL	0	-	-	-
SCHOOL	22.8	-	-	-
PARK	12.7	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	11.7	-	-	-
TOTAL	622.2	1795	0	1795
VILLAGE 30	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	170.9	914	0	914
MULTI FAMILY	45.1	289	0	289
COMMERCIAL	15.5	-	-	-
SCHOOL	0	-	-	-
PARK	61.0	-	-	-
GOLF COURSE	0	-	-	-
HOTEL	0	-	-	-
UNDEVELOPABLE	53.7	-	-	-
TOTAL	346.3	1203	0	1203
VILLAGE 31	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	1001.8	2955	0	2955
MULTI FAMILY	107.1	148	0	148
COMMERCIAL	8.5	-	-	-
SCHOOL	20.9	-	-	-
PARK	40.0	-	-	-
GOLF COURSE	200.0	-	-	-
HOTEL	30.0	-	-	-
UNDEVELOPABLE	279.9	-	-	-
TOTAL	1709.9	3713	0	3713
VILLAGE 32	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	60.1	100	0	100
MULTI FAMILY	0	0	0	0
COMMERCIAL	0	-	-	-
SCHOOL	0	-	-	-
PARK	40.0	-	-	-
GOLF COURSE	200.0	-	-	-
HOTEL	40.0	-	-	-
UNDEVELOPABLE	192.5	-	-	-
TOTAL	532.6	100	0	100
GRAND TOTAL	AC.	D.U.	D.U.	D.U.
SINGLE FAMILY	5018.8	22260	4431	18949
MULTI FAMILY	692.3	8129	464	6939
COMMERCIAL	226.6	-	-	-
SCHOOL	161.6	-	-	-
PARK	668.8	-	-	-
GOLF COURSE	400.0	-	-	-
HOTEL	70.0	-	-	-
UNDEVELOPABLE	827.8	-	-	-
	7327.7	30702	4895	25888

LEGEND

- SF2 – SINGLE FAMILY DETACHED
- SF3 – SINGLE FAMILY DETACHED
- SFA – SINGLE FAMILY ATTACHED
- MF2 – MULTI FAMILY MEDIUM DENSITY
- MF3 – MULTI FAMILY HIGH DENSITY
- NF – NEIGHBORHOOD FOCUS
- COS – COMMUNITY OPEN SPACE
- COS – RED ROCK
- OPEN LAND – FAIR CONDITION
- COM – COMMERCIAL
- H-1 – LIMITED RESORT AND APARTMENT DISTRICT
- BLM – LAND TURNED OVER TO BLM
- – NATURAL PRESERVATION
- UNDEVELOPABLE PROPERTY, RESERVED FOR WATER RESERVOIRS, POWER SUBSTATIONS, UNDEVELOPABLE TERRAIN, AND U.S. WATERS
- 113 PROPOSED DWELLING UNITS
- 3090 WATER ZONE DESIGNATION

S-9A1
Area added to model

SUMMERLIN

SUMMERLIN WEST CONCEPTUAL LAND USE PLAN

FEBRUARY 22, 2006

The Howard Hughes Corporation
an affiliate of General Growth Properties, Inc.

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
OFFICE: (702) 804-8566 FAX: (702) 804-8566
SUMMERLIN OFFICE: 10000 CHARLESTON BLVD., STE. 120
OFFICE: (702) 804-8566 FAX: (702) 804-8560

DISCLAIMER:
THIS MAP DEPICTS EXISTING AND PROPOSED DEVELOPMENT IN SUMMERLIN. PROPOSED DEVELOPMENTS SHOWN ON THE PLAN ARE CONCEPTUAL AND PRELIMINARY, AND ARE INCLUDED ONLY TO SHOW INTENT AND RELATIONSHIP TO THE EXISTING COMMUNITY. PROPOSED DEVELOPMENTS MAY REQUIRE APPROVALS BY GOVERNMENTAL AGENCIES WHICH MAY NOT BE OBTAINED.

ALL PROPOSED LAND USES AND IMPROVEMENTS ARE SUBJECT TO MODIFICATION OR ELIMINATION WITHOUT NOTICE. THE INFORMATION DEPICTED HEREON SHOULD NOT BE A BASIS FOR A DECISION TO PURCHASE OR LEASE PROPERTY IN SUMMERLIN.

HA 2023.C

RESPONSE TO COMMENTS ON THE UPDATE TO THE TECHNICAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B ROUGH GRADING

62023.260

November 2006

Prepared For:

The Howard Hughes Corporation
10000 West Charleston Boulevard, Suite 200
Las Vegas, Nevada 89134
Phone: (702) 791-4000
Fax: (702) 791-4385

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS

REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

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Chairman
City of Las Vegas

Chip Maxfield
Vice-Chairman
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City of Henderson

Mayor Bill Nicholes
City of Mesquite

Roger Tobler
City of Boulder City

Bruce L. Woodbury
Clark County

December 15, 2006

Mr. Randy Fultz, P.E.
City of Las Vegas Public Works
731 S. 4th Street
Las Vegas, NV 89101

DISTRICT CONCURRENCE: **SUMMERLIN V23B ROUGH GRADING UPDATE (DS4019) (RFCD No. 06-6940)**

Dear Mr. Fultz:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated June 7, 2006, and Addendum No. 1 dated November 6, 2006, for above-mentioned project as submitted by G. C. WALLACE INC. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Public Works dated November 22, 2006.

District concurs with acceptance of this Technical Drainage Study by City of Las Vegas Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage*.

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by G. C. WALLACE INC., may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: _____
Abigail Mayrena, P.E.
Associate Engineer

_____
Andrew R. Trelease, P.E., CFM
Principal Civil Engineer

AM:ART:jb

c: Debra M. Yamachika, P.E., G. C. WALLACE INC.

I:\LD Concurrence 1.doc

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: *http://www.regionalflood.org*

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: November 22, 2006
TO: **Land Development Services** Department of Public Works			FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **SMRLN V23B Rough Grading - Update**		COPIES TO: G.C. Wallace, Inc.
Cross Streets:	Desert Foothills Drive & Alta Drive		Howard Hughes Corporation
File Number:	F:\Depot\DSMemos\DS4019B.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-014		CCRFCD
Zoning Action:	N/A		
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES	NO X	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	6/8/2006	7/6/2006	Not Approved	$100.00	47340:$100
2nd Submittal	11/7/2006	11/21/2006	See Comments Below	$400.00	57146: $400
			TOTAL FEES (LDDRS):	**$500.00**	—

REMARKS:

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

1. **This drainage study is acceptable in concept**, however, the *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District* (CCRFCD) has issued a letter of concurrence. The Engineer should contact the CCRFCD to confirm that they have begun their review.

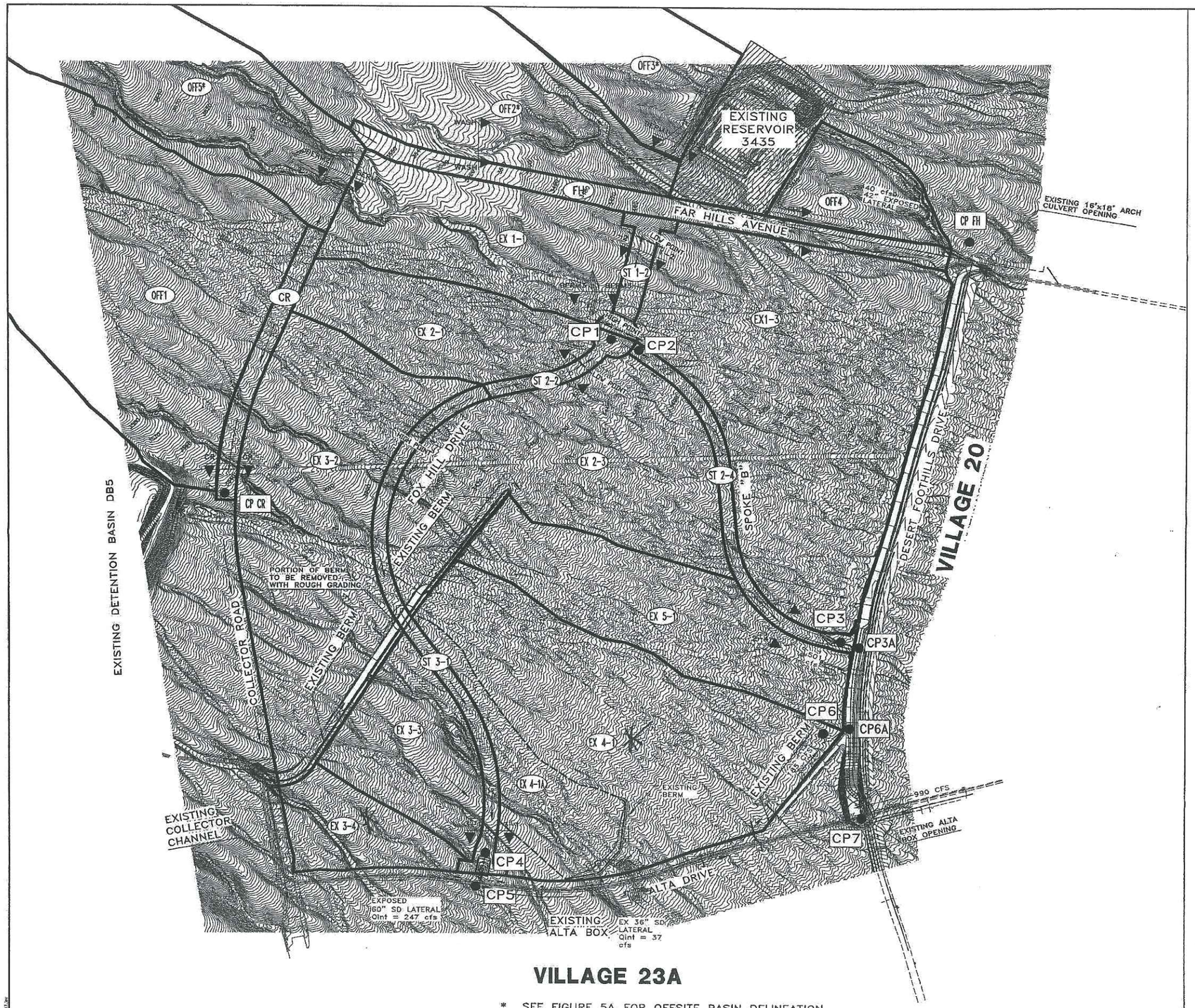
NOTE: Please be advised that all land surface area disturbances over 1 acre or any area adjacent to a water way must submit to the Nevada Division of Environmental Protection a "Notice of Intent" to discharge that certifies a stormwater pollution prevention plan has been developed and is maintained on site; for inclusion in the Stormwater General Permit No. NVR100000. A phased construction unit in a contiguous subdivision is considered under construction until all stripped or disturbed surface areas have been covered by paving, building construction or planting. For more information, including forms and applications see http://ndep.nv.gov/bwpc/storm01.htm or call (775) 687-9429.

END OF REMARKS

ays

T/R/S: T20S/R59E/22
AREA K-22

Post-it® Fax Note 7671	Date 11/22/06 # of pages ▶
To Debra Yamachika	From Albert Sung
Co./Dept. GCW	Co. CLV
Phone #	Phone # 229-200
Fax # 804-2299	Fax #



VILLAGE 23A

* SEE FIGURE 5A FOR OFFSITE BASIN DELINEATION
** EX4-1A IS A PRORATED BASIN. SEE CALCULATION PROVIDED IN APPENDIX A

NORTH
SCALE 1"=300'

GRAPHIC SCALE
300 0 150 300
(IN FEET)
1 inch = 300 ft.

LEGEND
- (1-1) DRAINAGE SUBBASIN
- CP1 CONCENTRATION POINT
- SUBBASIN BOUNDARY
- FLOW DIRECTION
- CR CR CROSS SECTION LOCATION

SUMMARY OF STREET CROSS SECTIONS

SECTION	Q100(cfs)	DEPTH(ft)	VELOCITY(fps)	VxD
1-2	14	0.4	1.9	0.7
2-2	74	0.5	4.7	2.5
2-4	495	1.0	9.4	9.8
3-1	239	0.9	6.1	5.3
FH	43	0.2	3.4	0.5
CR	306	0.6	6.8	3.7
BERM1	830	2.5	8.0	--
BERM2	99	1.1	6.5	--
BERM3	281	3.3	6.7	--
WASH	100	1.7	9.3	--

SUMMARY OF HEC-1 MODEL
ULTIMATE CONDITIONS

Subbasin/ Combination Point	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
OFF1	99.2	284	121
CR	5.8	19	9
CPCR	-	303	131
OFF2	326.6	724	315
FH	12.9	39	19
OFF4	12.6	38	16
OFF3	29.9	84	36
CPFH	-	852	372
OFF5	74.7	200	84
EX1-1	32.6	89	38
CP1	-	289	122
EX2-1	23.2	64	27
ST2-2	2.8	10	5
CP2	-	363	154
EX2-3	50.6	133	55
ST2-4	5.8	20	10
CP3	-	514	219
EX1-3	80.12	229	98
ST1-2	3.7	13	6
CP3A	-	735	323
ST3-1	9.1	29	14
EX3-2	59.0	163	70
REX3-2	-	162	69
EX3-3	2.5	58	24
CP4	-	247	104
D1	-	247	104
REMCP	-	0	0
EX3-4	12.1	34	14
CP5	-	34	14
EX4-1	73.2	189	79
D2	-	37	15
REMEX	-	152	63
CP6	-	185	78
EX5-1	34.2	91	38
CP6A	-	269	116
CP7	-	990	439

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ISSUE EDITOR:
PLOT DATE: 08-07-06
PLOT TIME: 11:08:44

REV	DATE	DESCRIPTION	DATE	APP	DRW	APP	DATE

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SUMMERLIN VILLAGE 23B - ROUGH GRADING
FIGURE 5 REVISED
REVISED PROPOSED DRAINAGE PLAN

DRAWING
FIG5R
SHT OF SHTS

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE SUMMERLIN IMPROVEMENT STANDARDS AS APPROVED BY THE CITY COUNCIL ON 11/18/92, SIGNED BY CLV 2/2/93, "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST ISSUE; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLAN LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON THESE PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD OR UNDERGROUND POWER, GAS AND/OR OTHER UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COSTS AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES, AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE CITY ENGINEER OR OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGN TO BE APPROVED BY THE CITY PRIOR TO USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMUM EVERY 300' IN EXTRUDED TYPE CURB.
8. AC PAVEMENT TO BE 1/2" ABOVE LIP OF ALL GUTTERS AFTER COMPACTION, EXCEPT AT SIDEWALK RAMPS AND CROSS GUTTERS
9. CURB & GUTTER WITH A GRADE OF LESS THAN FIVE TENTHS OF ONE PERCENT SHALL BE WATER TESTED AS SOON AS POSSIBLE AFTER CONSTRUCTION. ANY CURB AND GUTTER FOUND TO BE UNACCEPTABLE TO THE CITY SHALL BE REMOVED AND REPLACED AT THE EXPENSE OF THE CONTRACTOR PER SUMMERLIN STD DRAWING NO. S-47.
10. SIDEWALK RAMPS SHALL BE CONSTRUCTED AS SHOWN ON PLANS PER SUMMERLIN STD. DRAWING NO. S-75. EXACT LOCATION OF RAMPS MAY BE ADJUSTED IN THE FIELD BY A CITY INSPECTOR.
11. CONTRACTOR SHALL PROVIDE ALL NECESSARY HORIZONTAL AND VERTICAL TRANSITIONS BETWEEN NEW CONSTRUCTION AND EXISTING SURFACES TO PROVIDE FOR PROPER DRAINAGE AND FOR INGRESS AND EGRESS TO NEW CONSTRUCTION. THE EXTENT OF TRANSITIONS TO BE AS SHOWN ON PLANS.
12. ALL GRADING WORK SHALL CONFORM TO THE SOILS REPORT AS PREPARED BY THE SOILS ENGINEER APPROVED BY THE CITY ENGINEER, AND AS SHOWN ON THESE PLANS.
13. EXACT LOCATION OF ALL SAWOUT LINES MAY BE DETERMINED IN THE FIELD BY A CITY OF LAS VEGAS INSPECTOR IF LOCATION ON PLANS IS NOT CLEARLY SHOWN, OR OR EXISTING PAVEMENT CONDITION REQUIRES RELOCATION.
14. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT EXISTING PERMANENT SURVEY MONUMENTS. ANY MONUMENTS DISTURBED SHALL BE REPLACED AND ADJUSTED PER AVAILABLE RECORDS IN ACCORDANCE WITH N.R.S. STATUTE NO. 625.550.
15. UTILITY COMPANY METER BOXES, MANHOLE LIDS, VALVE COVERS, ETC. SHALL BE LOCATED OUT OF DRIVEWAYS, DRIVEWAY APRONS, FLOW LINES, AND CROSS GUTTERS UNLESS WRITTEN APPROVAL IS GRANTED BY THE UTILITY COMPANY AND THE CITY ENGINEER.
16. ALL WALLS, NEW OR EXISTING, ARE ONLY SHOWN ON CIVIL PLANS FOR YTHE PURPOSE OF REVIEWING GRADING RELATIONSHIPS; FLOOD CONTROL AND SIGHT DISTANCE AT INTERSECTIONS. NEW WALLS REQUIRE A SEPARATE PERMIT AND INSPECTION BY THE BUILDING DEPARTMENT.
17. ASPHALT MIX DESIGN MUST BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT OF ASPHALT WITHIN CITY RIGHT OF WAY.
18. CONTRACTOR SHALL ADJUST ALL NEW AND EXISTING INLETS, VALVE BOXES, MANHOLE RIMS, AND SEWER CLEAN OUTS, ETC. TO FINISH GRADE AS APPLICABLE WHETHER OR NOT THEY ARE SHOWN ON THE PLANS.
19. MATERIALS, HANDLING AND PLACEMENT OF PORTLAND CEMENT CONCRETE SHALL BE IN ACCORDANCE WITH APPLICABLE SECTIONS OF NDOT OR THE CLARK COUNTY AREA SPECIFICATIONS (AS APPLICABLE) AND THE PLANS AND DETAILS SHOWN HEREON.

CONSTRUCTION NOTES

1. ALL BARRICADING AND TEMPORARY TRAFFIC CONTROL DEVICES OR METHODS USED DURING CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE "NEVADA TRAFFIC CONTROL MANUAL," MOST RECENT EDITION, PUBLISHED BY THE STATE OF NEVADA, DEPARTMENT OF HIGHWAYS, EXCEPT AS OTHERWISE PROVIDED IN THE CONTRACT SPECIFICATIONS OR AS REQUIRED BY THE ENGINEER.
2. AT THE TIME OF PRE-CONSTRUCTION CONFERENCE, THE CONTRACTOR SHALL FURNISH, FOR APPROVAL, A TRAFFIC BARRICADING PLAN AND METHOD OF MAINTAINING PUBLIC CONVEYANCE AND SAFETY THROUGHOUT THE CONSTRUCTION AREA. TRAFFIC BARRICADING PLANS SHALL COMPLY WITH APPLICABLE PORTIONS OF SECTIONS 624 AND 625 OF THE STANDARD SPECIFICATIONS, THE TRAFFIC CONTROL MANUAL AND APPLICABLE CITY ORDINANCES.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERTICAL ADJUSTMENT OF EXISTING SANITARY, WATER AND STORM SEWER MANHOLES TO THE FINAL FINISH GRADES AS NOTED ON THE CONTRACT DRAWINGS, AND IN ACCORDANCE WITH SECTION 609 OF THE "STANDARD SPECIFICATIONS," AND ANY VERTICAL ADJUSTMENTS OF WATER VALVE BOXES AND OTHER APPURTENANCES SHALL BE IN ACCORDANCE WITH THE DETAILS SHOWN ON THE CONTRACT DRAWINGS.
4. NOTICE: GRADING AUTHORIZED ONLY AFTER PERMITTEE'S FULL COMPLIANCE WITH FEDERAL ENDANGERED SPECIES ACT.
5. THE DESIGN GRADE (DG) INDICATED ON THESE PLANS IS FOR VERTICAL ELEVATION DESIGN CALCULATION PURPOSES AND DOES NOT NECESSARILY REPRESENT THE FINISH IMPROVEMENT GRADES @ CENTERLINE. (I.E. THROUGH MEDIAN AREAS).
6. ALL EXISTING UTILITY CROSSINGS MUST BE VERIFIED PRIOR TO CONSTRUCTION OF ANY MAIN LINES OR LATERALS THAT MAY BE ADVERSELY EFFECTED ANY DISCREPANCIES IN LOCATION AND/OR ELEVATION MUST BE PROVIDED TO THE ENGINEER FOR ACCEPTANCE PRIOR TO CONSTRUCTION.

QUANTITIES

6" D50 RIP-RAP	256 C.Y.
8" D50 RIP-RAP	9,100 C.Y.
12" D50 RIP-RAP	2,607 C.Y.
EXCAVATION	218,936 C.Y.
EMBANKMENT	107,836 C.Y.

DEVIATIONS FROM STANDARDS

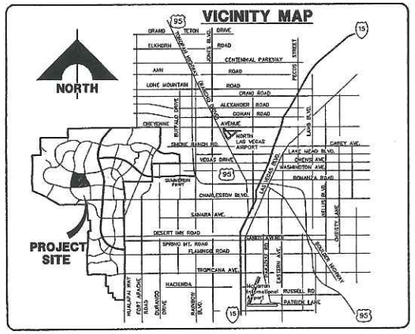
1. PROPOSE 80 FOOT RIGHT-OF-WAY IN LIEU OF 81 FOOT RIGHT-OF-WAY (S.L.S. DWG. NO. S-9). REDUCE LANDSCAPED MEDIAN ISLAND (PROPOSED 24.66 FEET IN LIEU OF 27.66 FEET) IN EXCHANGE FOR ADDITIONAL PAVEMENT TO ALLOW FOR SHARED BICYCLE USE.
2. PROPOSE VARYING CROSS-SLOPES AT INTERSECTIONS (S.L.S. DWG. NO. DC-1). POTENTIALLY SIGNALIZED INTERSECTIONS ARE PROPOSED WITH MINIMUM CROWNED CROSS-SLOPES OF 0.5% TO STRAIGHT-GRADED DESIGNS TO MAINTAIN HIGHER LEVELS OF SERVICE. ALTHOUGH WE DO NOT CONSIDER THIS A TRUE DEVIATION, WE ARE REQUESTING CITY SUPPORT OF THIS DESIGN PRACTICE.
3. PROPOSE 2% TILT SECTION IN LIEU OF 2% CROWNED SECTION (S.L.S. DWG. NO. DC-1). 700 LINEAR FEET OF ROADWAY (FOX HILL DRIVE, ROUNDABOUT TO FAR HILLS AVE.) IS PROPOSED WITH 2% TILT-SECTION TO AVOID LENGTHY CROSS-SLOPE TRANSITIONS AT EACH END OF ROADWAY.

LEGEND AND ABBREVIATIONS

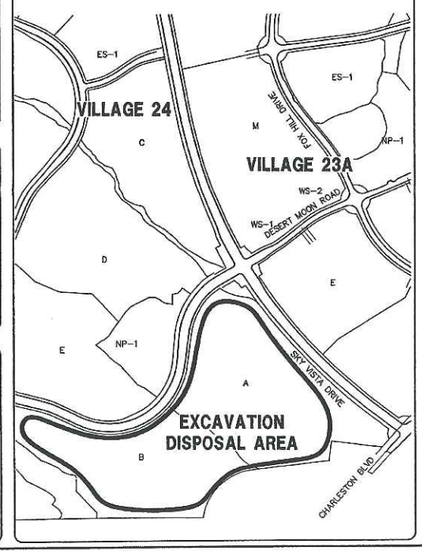
- (3/7) DRAWING NUMBER FOR DETAIL W/ REF. TO THE SHEET WHERE IT IS SHOWN
- (1/W) INDICATES CONSTRUCTION NOTE
- (1) OR (A) INDICATES HORIZONTAL CURVE DATA
- (1) REVISION NUMBER
- FUTURE FACILITIES NOT IN THIS CONTRACT (N.I.C.)
- EXISTING FEATURES
- PROPERTY LINE/LANDSCAPE LINE
- CENTERLINE
- 2975 EXISTING CONTOUR
- 60.50 TC — PROPOSED TOP OF CURB ELEVATION
- (60.50) TC — EXISTING TOP OF CURB ELEVATION
- [60.50] TC — FUTURE TOP OF CURB ELEVATION
- STUB & PLUG PIPE
- EXTENSION OF ROUGH GRADING IN AREA OF EXISTING ROUGH GRADING
- EXISTING ROUGH GRADING
- RIPRAP
- EXISTING RIPRAP
- EXISTING FIRE HYDRANT
- FIRE HYDRANT
- EDGE OF PAVEMENT
- TOP SLOPE / TOE SLOPE — 3:1 SLOPE UNLESS OTHERWISE NOTED ON PLAN

AC	=	ASPHALT CONCRETE	N.T.S.	=	NOT TO SCALE
AD	=	ALGEBRAIC DIFFERENCE IN GRADE	PAVMT.	=	PAVEMENT
BC	=	BACK OF CURB	PB	=	PULLBOX
BCR	=	BEGIN CURB RETURN	PC	=	POINT OF CURVATURE
BVCE	=	BEGIN VERTICAL CURVE ELEVATION	PCC	=	POINT OF COMPOUND CURVE
BVCS	=	BEGIN VERTICAL CURVE STATION	PED.	=	PEDESTRIAN
CC	=	CLARK COUNTY	PL.℄	=	PROPERTY LINE
CCFD	=	CLARK COUNTY FIRE DEPARTMENT	POC	=	POINT ON CURVE
CCSD	=	CLARK COUNTY SANITATION DISTRICT	PRC	=	POINT OF REVERSE CURVE
CF	=	CURB FACE	PSI	=	POUNDS PER SQUARE INCH
CFS	=	CUBIC FEET PER SECOND	PT	=	POINT OF TANGENCY
CL.℄	=	CENTERLINE	PVC	=	POLYVINYL CHLORIDE
CLR.	=	CLEAR	PVI	=	POINT OF VERTICAL INTERSECTION
CONC.	=	CONCRETE	PZ	=	PRESSURE ZONE
DG	=	DESIGN GRADE AT CENTERLINE	R	=	RADIUS
D.I.	=	DROP INLET	RCB	=	REINFORCED CONCRETE BOX
D.I.P.	=	DUCTILE IRON PIPE	RCP	=	REINFORCED CONCRETE PIPE
D/L	=	DAYLIGHT	RED	=	REDUCER
EGR	=	END CURB RETURN	REF.	=	REFERENCE
EG	=	EXISTING GROUND	RG	=	ROUGH GRADE
EGL	=	ENERGY GRADE LINE	RPPA	=	REDUCED PRESSURE PRINCIPLE ASSEMBLY
ENCASE	=	ENCASEMENT	RT	=	RIGHT
EP	=	EDGE OF PAVEMENT	R/W	=	RIGHT-OF-WAY
ESMT.	=	EASEMENT	S	=	SANITARY SEWER
EVCE	=	END VERTICAL CURVE ELEVATION	SD	=	STORM DRAIN
EVCS	=	END VERTICAL CURVE STATION	SDMH	=	STORM DRAIN MANHOLE
EX.	=	EXISTING	SMH	=	SANITARY SEWER MANHOLE
FG	=	FINISHED GRADE	STA	=	STATION
FS	=	FINISHED SURFACE	SW	=	SIDEWALK
FH	=	FIRE HYDRANT	T	=	TANGENT
FL	=	FLOW LINE	TB	=	TOP OF BERM
FUT.	=	FUTURE	TC	=	TOP OF CURB
GB	=	GRADE BREAK	TMH	=	TOP OF MANHOLE
GV	=	GATE VALVE	TP	=	TOP OF PIPE
HGL	=	HYDRAULIC GRADE LINE	TRANS.	=	TRANSITION
INV	=	INVERT	TS	=	TRAFFIC SIGNAL POLE
IRR	=	IRRIGATION	UDS	=	UNIFORM DESIGN STANDARDS – LAS VEGAS VALLEY WATER DISTRICT
K	=	COEFFICIENT OF VERTICAL CURVE	USD	=	UNIFORM STANDARD DRAWINGS– CLARK COUNTY AREA NEVADA
L	=	LENGTH			
LS	=	LANDSCAPE			
LT	=	LEFT	VC	=	VERTICAL CURVE
LVVWD	=	LAS VEGAS VALLEY WATER DISTRICT	W	=	WATER
MLCP	=	MORTAR LINED CEMENT PIPE	WM	=	WATER METER
MUTCD	=	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES	& PT	=	ANGLE POINT
NDOT	=	NEVADA DEPARTMENT OF TRANSPORTATION	Δ	=	CURVE DELTA
N.I.C.	=	NOT IN THIS CONTRACT			

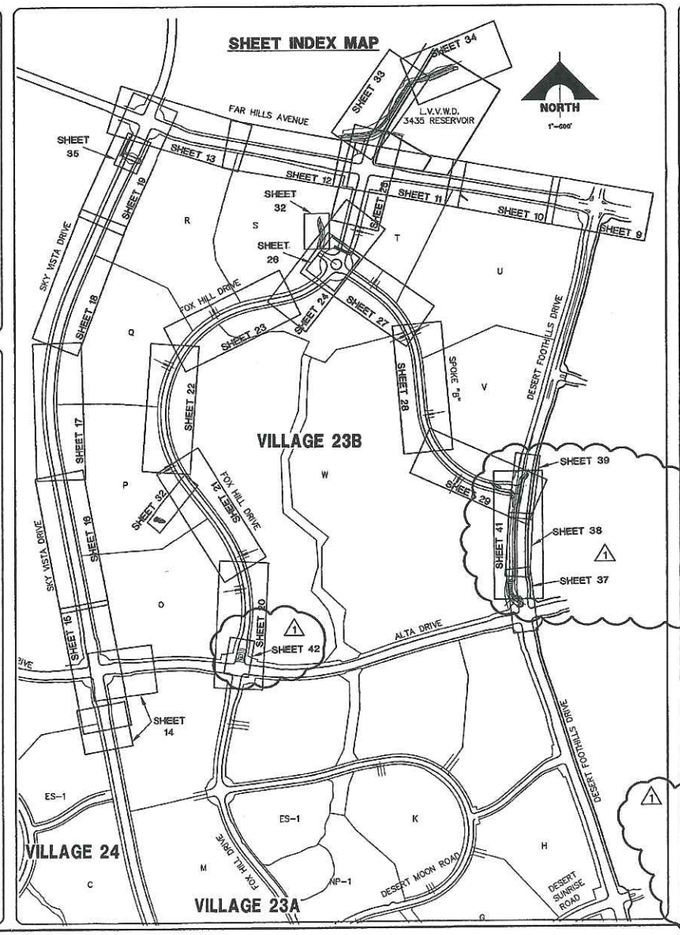
VICINITY MAP



EXCAVATION DISPOSAL SITE LOCATION



SHEET INDEX MAP



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LOCATION

LYING WITHIN SECTIONS 26 AND 27, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA.

BENCHMARK

DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN. (CLV B.M. NO. D368 3)	3246.71 (FEET)	989.599 (METERS)

NOTE: THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM.

Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

CLV DRAWING NO. _____

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE IMMEDIATELY NOTIFIED FOR DIRECTION.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PERFORM ALL NECESSARY CUTS AND FILLS WITHIN THE LIMITS OF THIS PROJECT AND THE RELATED OFF-SITE WORK, SO AS TO GENERATE THE DESIRED SUBGRADE, FINISH GRADES AND SLOPES SHOWN.
3. CONTRACTOR SHALL TAKE FULL RESPONSIBILITY FOR ALL EXCAVATION. ADEQUATE SHORING SHALL BE DESIGNED AND PROVIDED BY THE CONTRACTOR TO PREVENT UNDERMINING OF ANY ADJACENT FEATURES OF FACILITIES AND/OR CAVING OF THE EXCAVATION.
4. THE CONTRACTOR IS WARNED THAT AN EARTHWORK BALANCE WAS NOT NECESSARILY THE INTENT OF THIS PROJECT. ANY ADDITIONAL MATERIAL REQUIRED OR LEFTOVER MATERIAL FOLLOWING EARTHWORK OPERATIONS BECOMES THE RESPONSIBILITY OF THE CONTRACTOR.
5. THE GRADING CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH THE OWNER TO PROVIDE FOR THE REQUIREMENTS OF THE PROJECT STORM WATER POLLUTION PREVENTION PLAN (SWPPP) AND ASSOCIATED PERMIT.
6. CONTRACTOR SHALL GRADE TO THE LINES AND ELEVATIONS SHOWN ON THE PLANS WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

	HORIZONTAL	VERTICAL	COMPACTION)
A. PAVEMENT AREA SUBGRADE	0.1'+	+0.0' TO -0.1'	SEE SOILS REPORT
B. ENGINEER FILL	0.5'+	+0.1 TO -0.1'	SEE SOILS REPORT

COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE.

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REGISTERED PROFESSIONAL ENGINEER — STATE OF NEVADA — No. 10259 — CIVIL — BEN HUMPHREY — DATE: 12/2/06

DESIGN: GTP	DRAWN: GTP	CHECK: BAH	ISSUE DATE:	ISSUE EDITOR:	PLOT DATE: 07-19-06	PLOT TIME: 11:50:41

DATE	AGENCY APP	DATE	CCSWP APP
6/01/06	CB	CHANGE SHEET INDEX AND REVISE BENCHMARK	
REV DATE		DESCRIPTION	

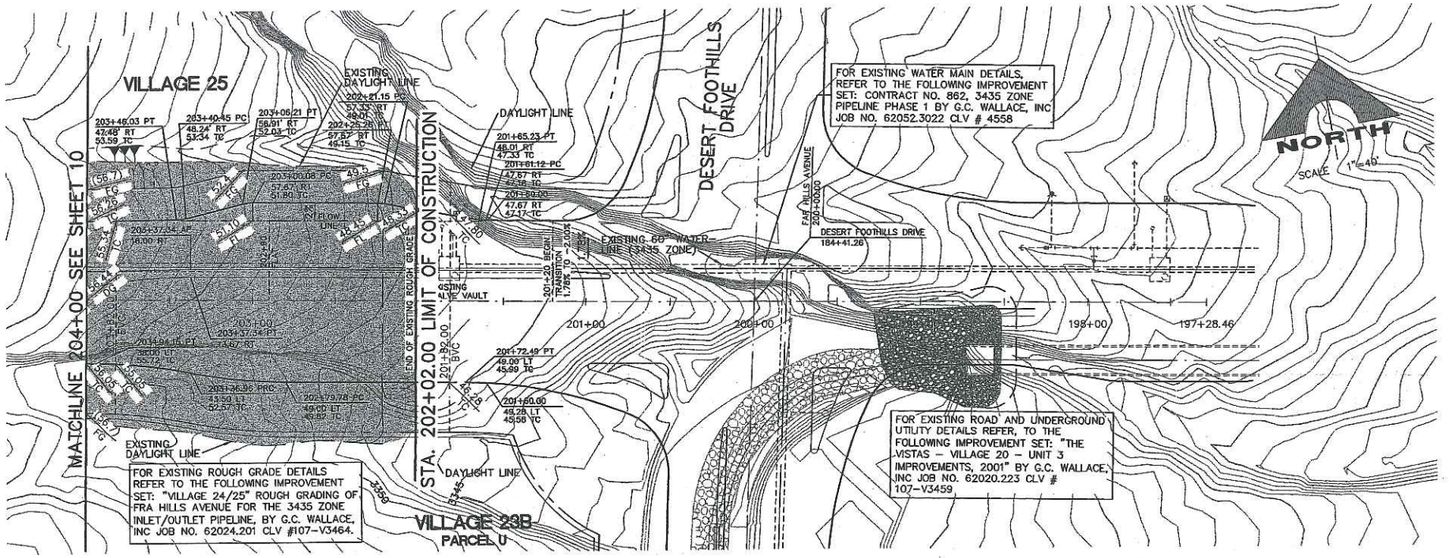
G.C. WALLACE, INC. Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299 gwallace.com
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SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
PROJECT DATA SHEET

SHEET 2 OF 43 SHTS

JOB NO. 62023.260

ACAD Rev. 12/2/13.dwg



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, SQ TEST NORTH OF STATION 767+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FAR HILLS AVENUE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

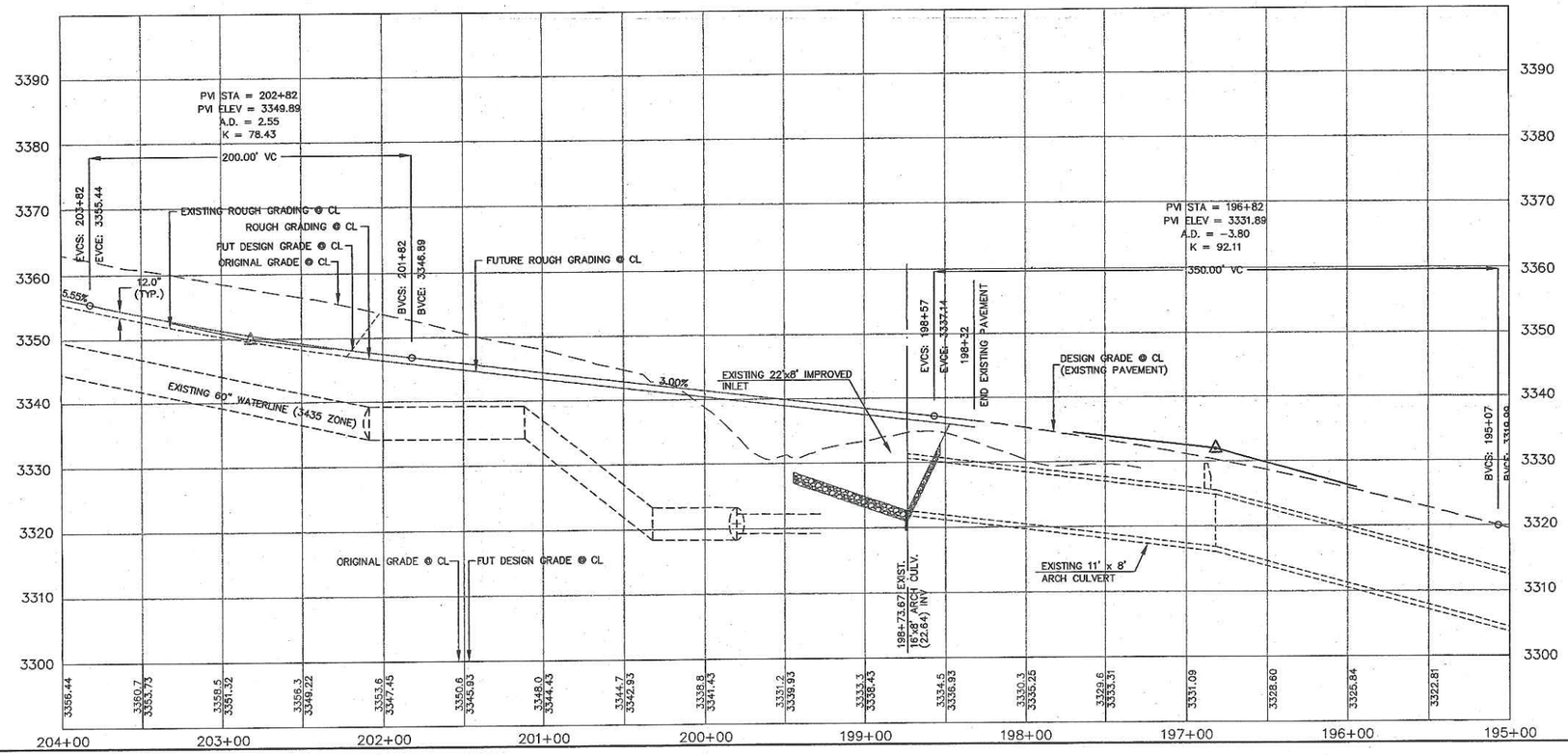
40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM, PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY! CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111



G.C. WALLACE, INC.
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1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gcwallace
F:\V23b\VEGAS\Imps\V23B5c009.dwg

ISSUE DATE: 8/01/03

SUMMERLIN

VILLAGE 23B ROUGH GRADING

FAR HILLS AVENUE PLAN AND PROFILE BEGIN TO STA 204+00

SHEET 9 OF 35 SHTS

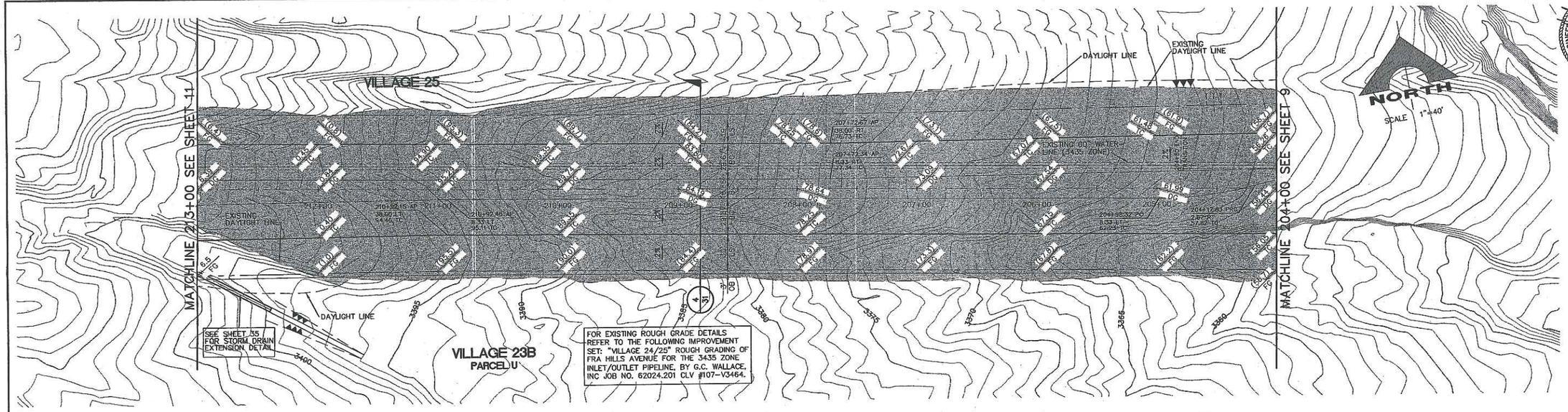
JOB NO. 62023.260

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ISSUE DATE:
PLOT DATE: 08-25-03
PLOT TIME: 08:33:17

DATE	DESCRIPTION	DRAWN	APP'D	DATE	CONST. APP'D
	ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION				

REV. DATE

STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER
BRENT A. HUGHES
No. 10258
CIVIL
EXP. 10/31/2004
DATE: 8/21/03



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FAR HILLS AVENUE

SCALE: HORIZ. 1" = 40'
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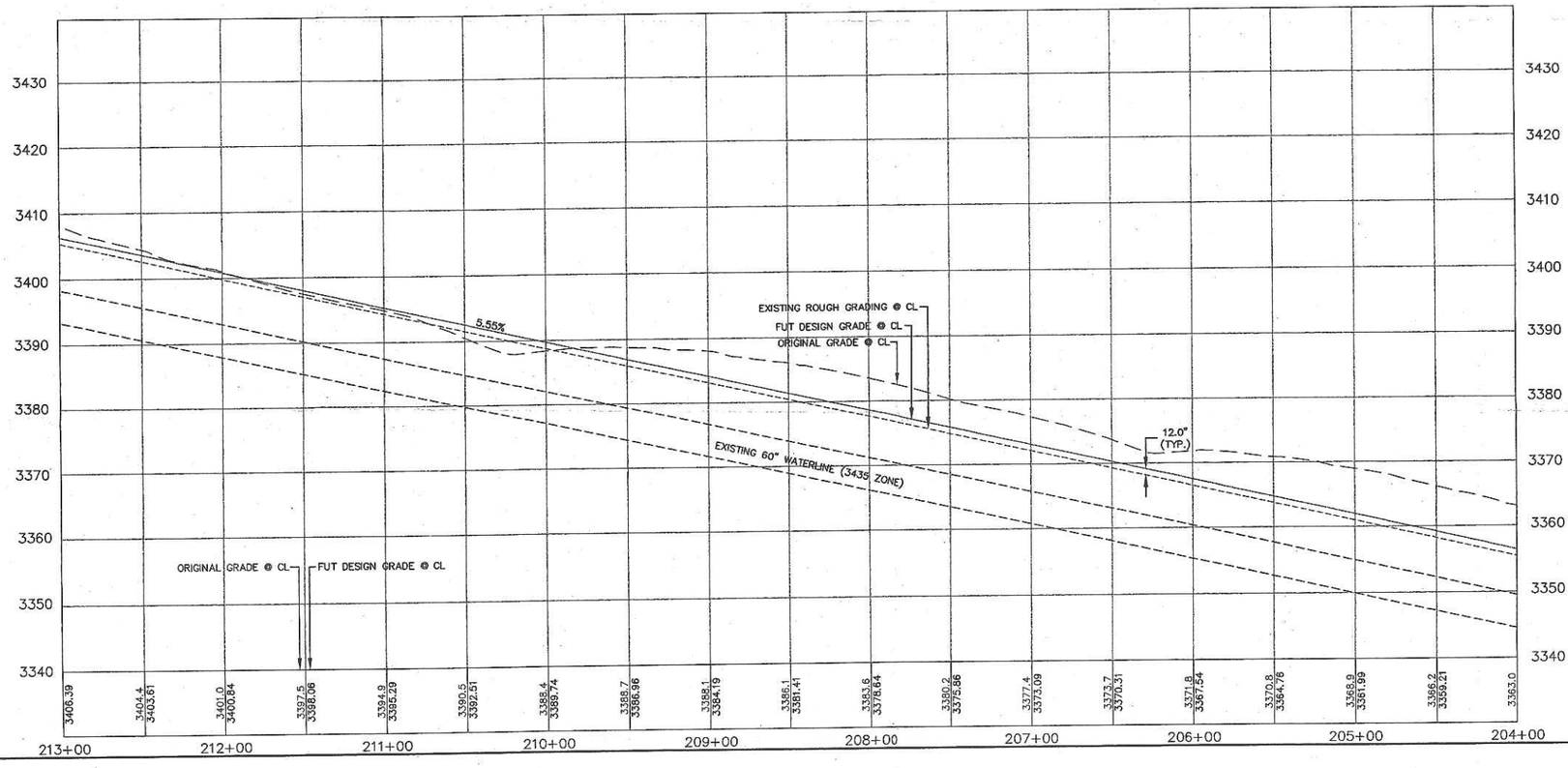
40 0 40 80
SCALE FEET

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1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 FAX: (702) 804-2099
F:\V23b\REV\dwg\dwg\V23BSc010.dwg

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-28-03
PLOT TIME: 08:32:34

REV	DATE	DESCRIPTION	DATE AGEN. APP	DATE ROW APP

STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN A. HUTCHINSON — No. 10277 — CIVIL — DATE: 9/2/03

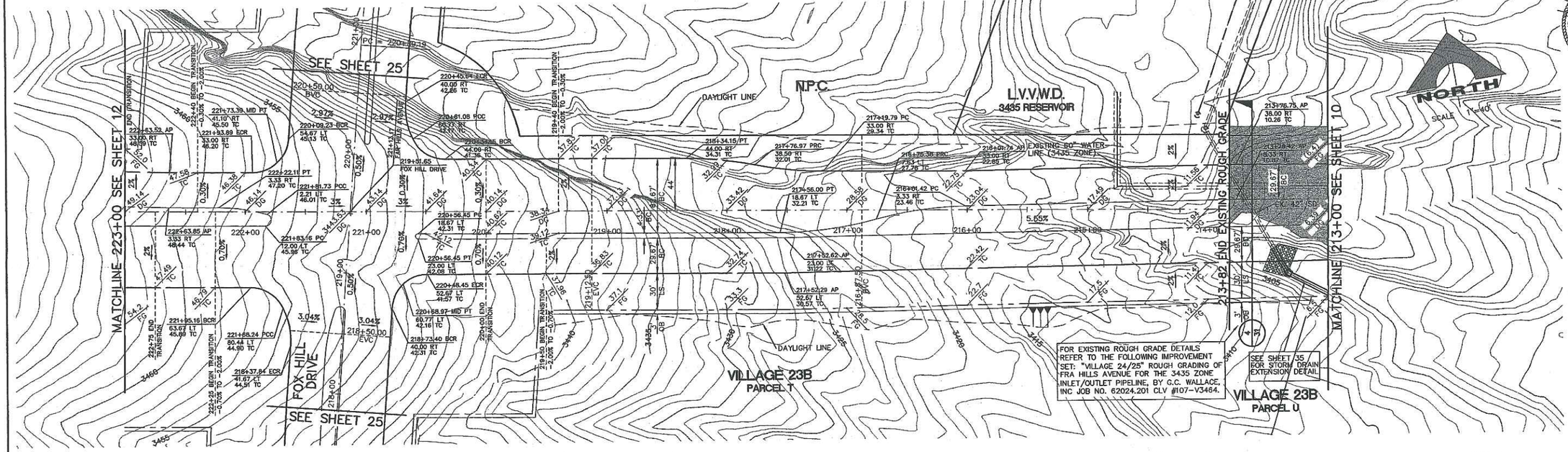
ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FAR HILLS AVENUE PLAN AND PROFILE
STA 204+00 TO STA 213+00

SHEET 10
10 OF 35 SHTS

JOB NO. 62023.260

pp2435.dwg 032912.dn



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV09-34S526	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

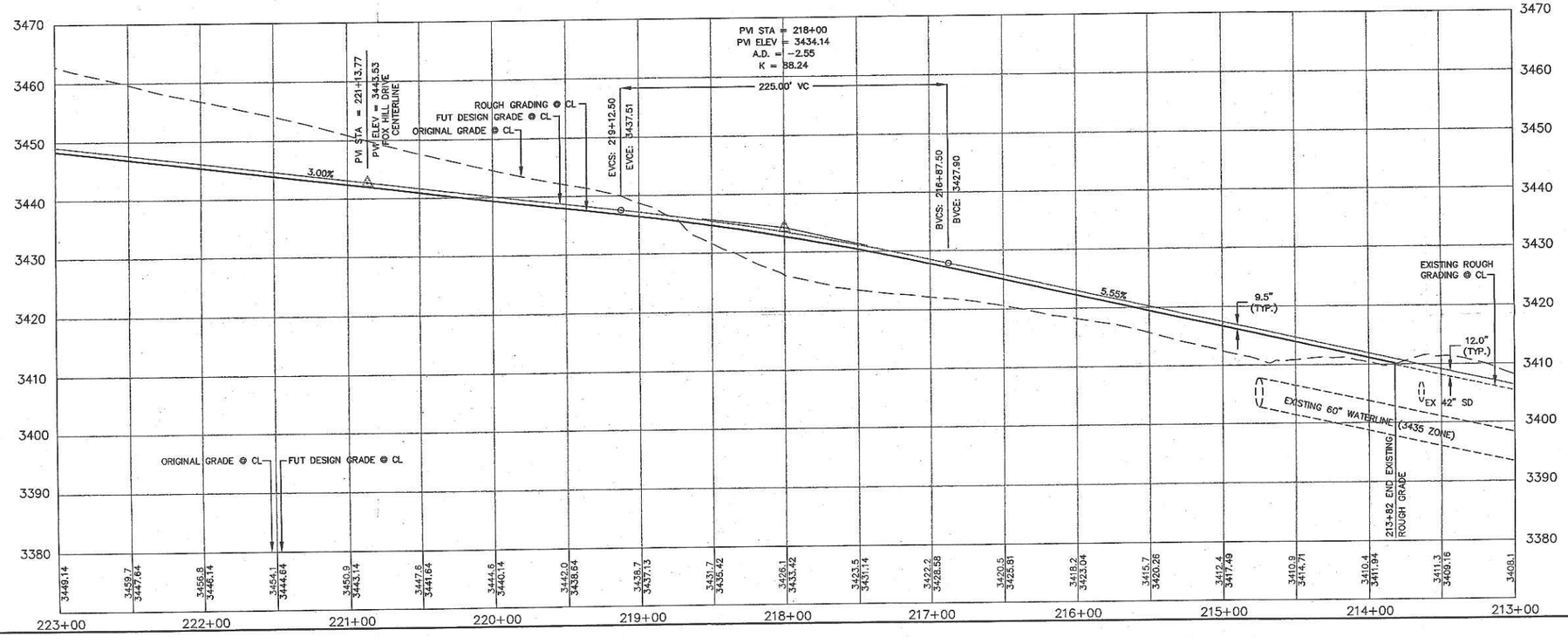
FAR HILLS AVENUE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

SCALE 40 0 40 80 FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.



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TELEPHONE: (702) 804-2600 FAX: (702) 804-2630
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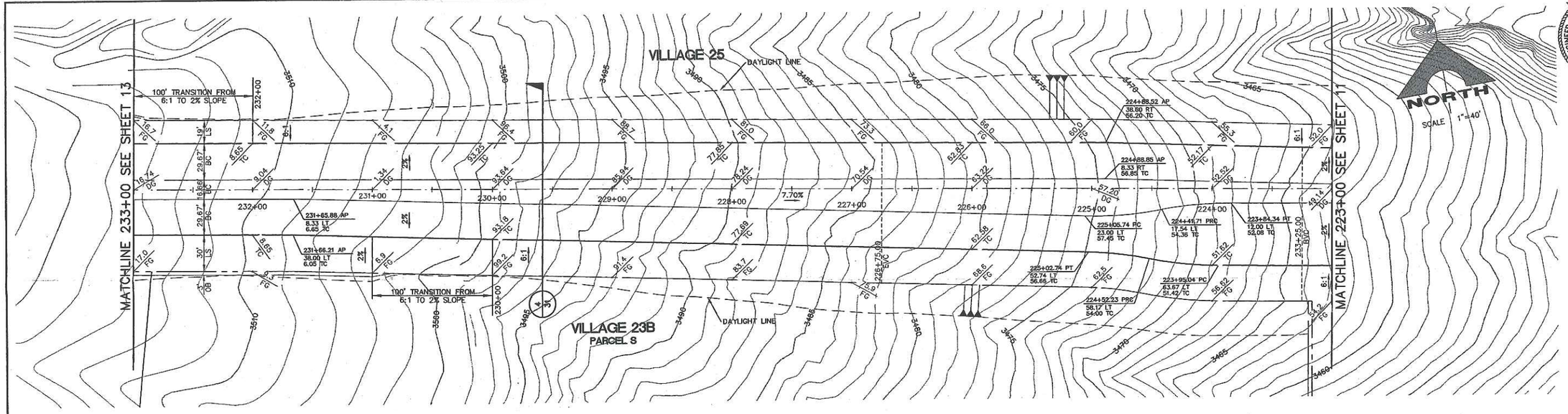
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ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FAR HILLS AVENUE PLAN AND PROFILE
STA 213+00 TO STA 223+00

SHEET 11
11 OF 35 SHTS

JOB NO. 62023.260



SCALE: 40 0 40 80 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE9	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FAR HILLS AVENUE

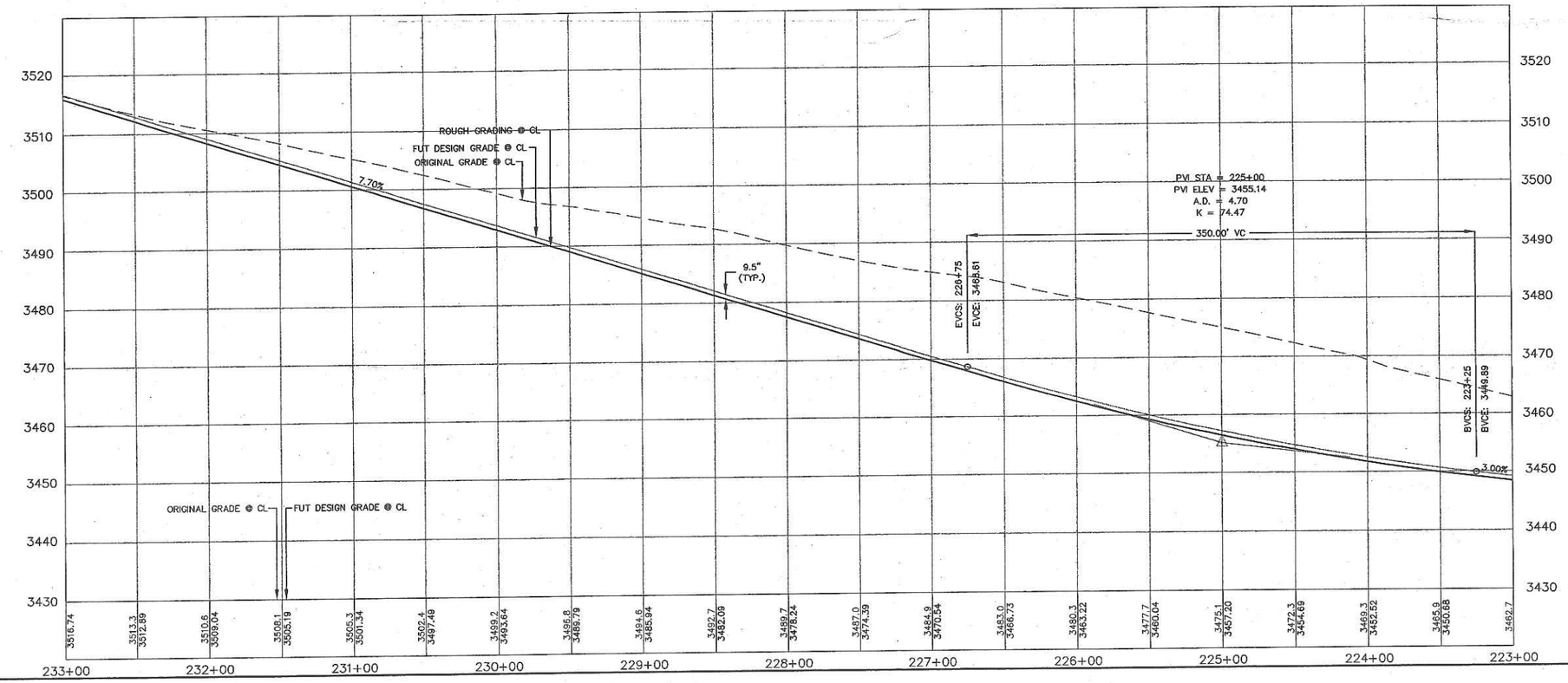
SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

NOTE

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3516.74	3513.3 3512.89	3510.6 3509.04	3508.1 3505.19	3505.3 3501.34	3502.4 3497.49	3499.2 3493.64	3496.8 3489.79	3494.6 3485.94	3492.7 3482.09	3489.7 3478.24	3487.0 3474.39	3484.9 3470.54	3483.0 3466.73	3480.3 3463.22	3477.7 3460.04	3475.1 3457.20	3472.3 3454.69	3469.3 3452.52	3466.9 3450.88	3464.7

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gcwallace.com
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ISSUE DATE: 9/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

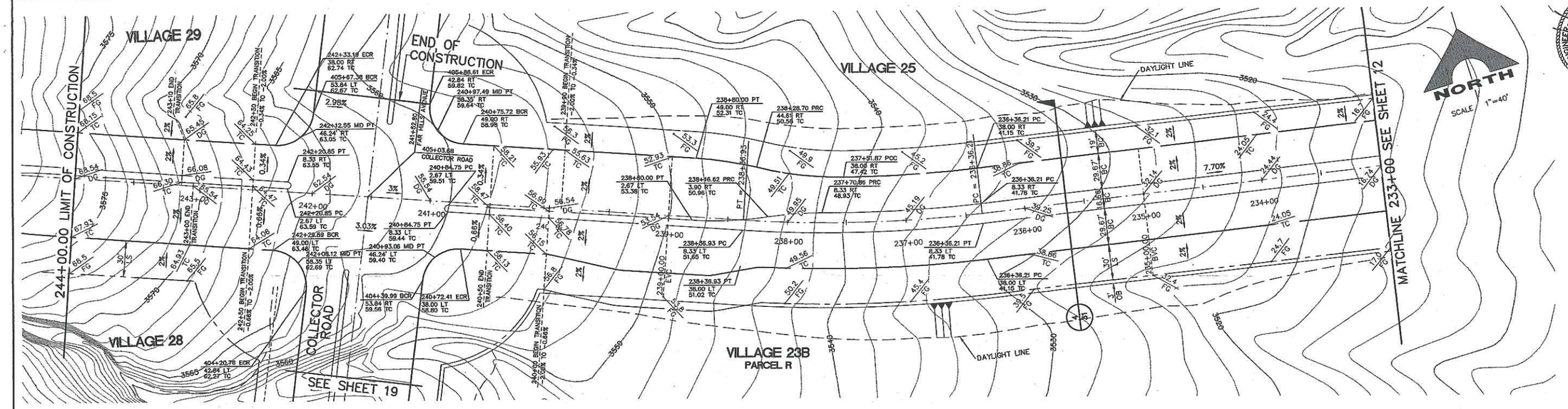
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PLOT DATE: 08-29-03
PLOT TIME: 08:31:02

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FAR HILLS AVENUE PLAN AND PROFILE
STA 223+00 TO STA 233+00

SHEET 12
12 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
GLV09-345SE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FAR HILLS AVENUE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

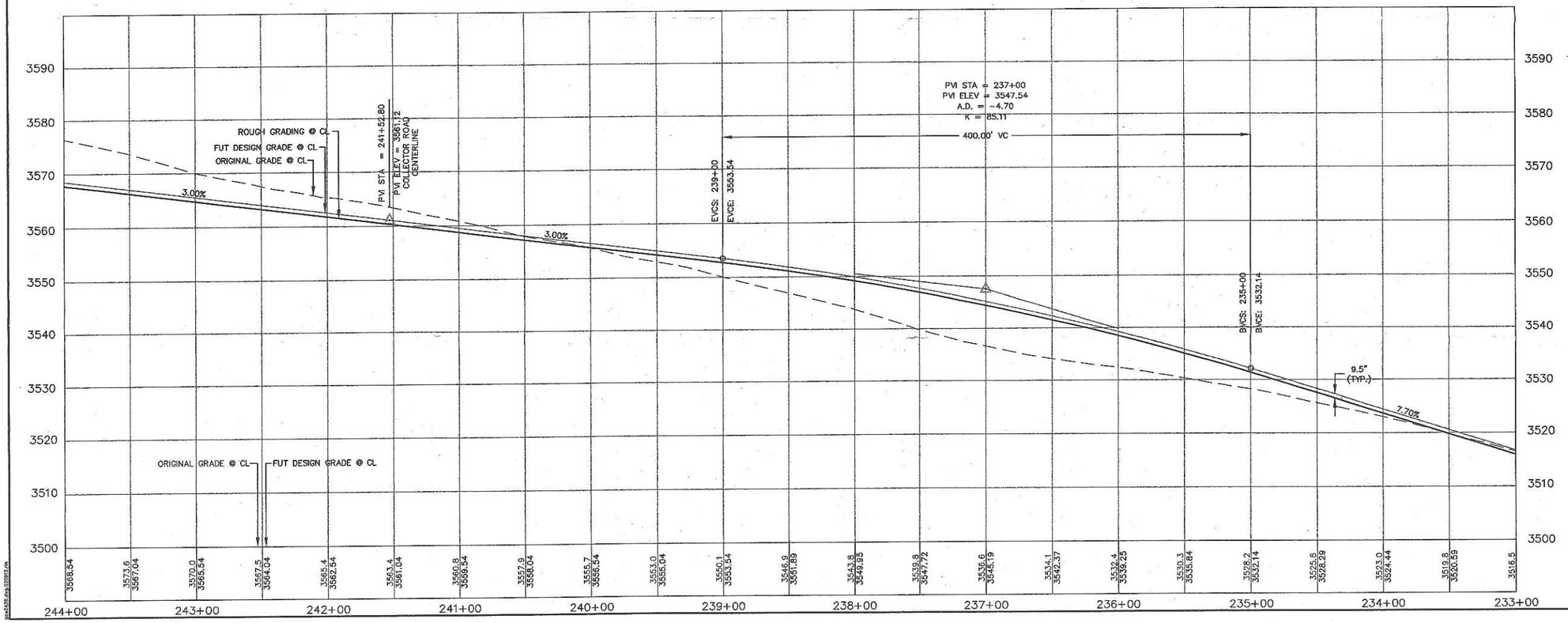
40 0 40 80
SCALE FEET

NOTE

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PLOT DATE:	08-28-03
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DATE	DESCRIPTION	DATE	ASSY. APP	DATE	CONST. APP
8/01/03	ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION				

ENGINEER - STATE OF NEVADA
RAYMOND A. HUGHES
No. 12259
PROFESSIONAL
CIVIL
EXP. 06/30/2004
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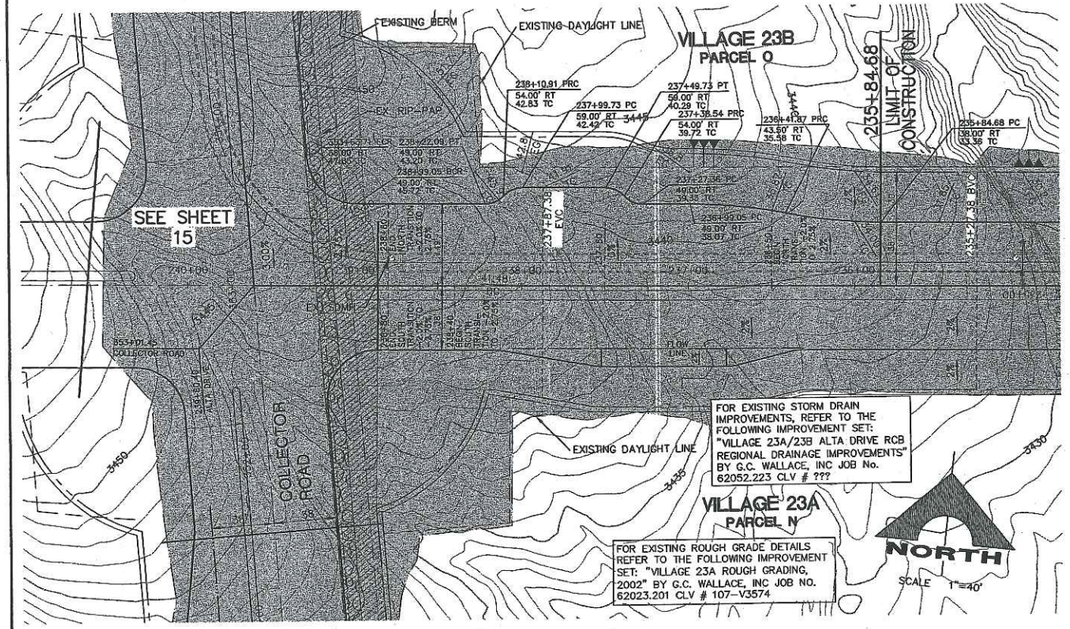
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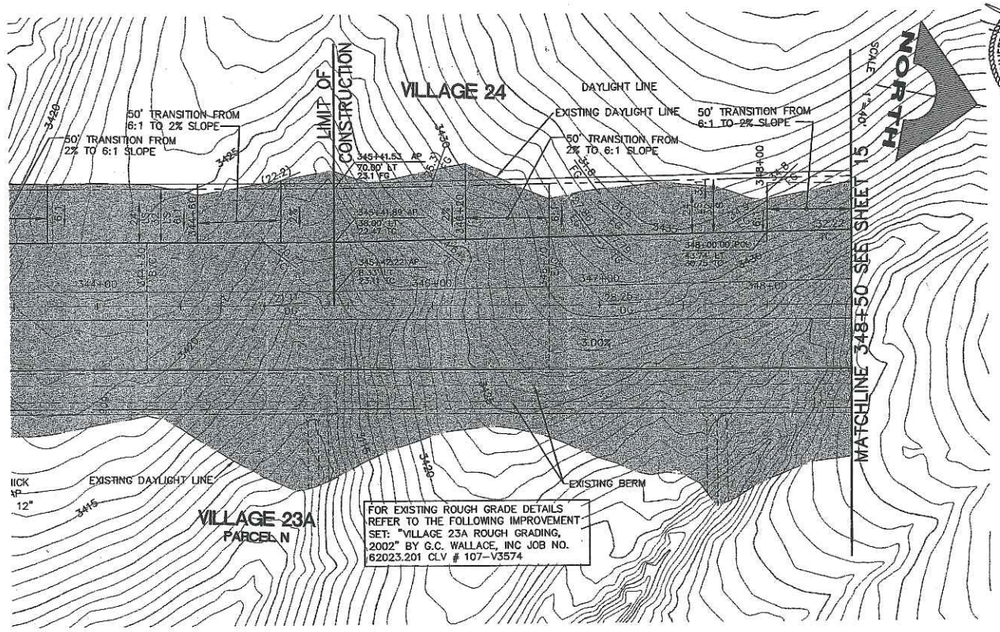
SUMMERLIN
VILLAGE 23B ROUGH GRADING
FAR HILLS AVENUE PLAN AND PROFILE
STA 233+00 TO END

SHEET 13
13 OF 35 SHTS

JOB NO. 62023.260

ISSUE DATE: 8/01/03





SCALE: 40 0 40 80 FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

ALTA DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

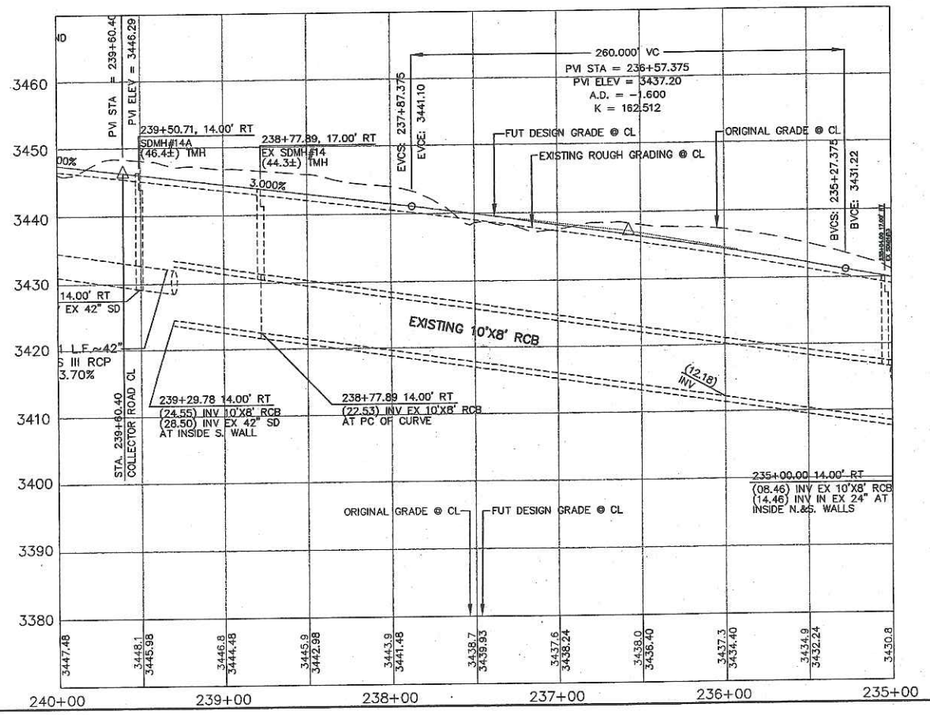
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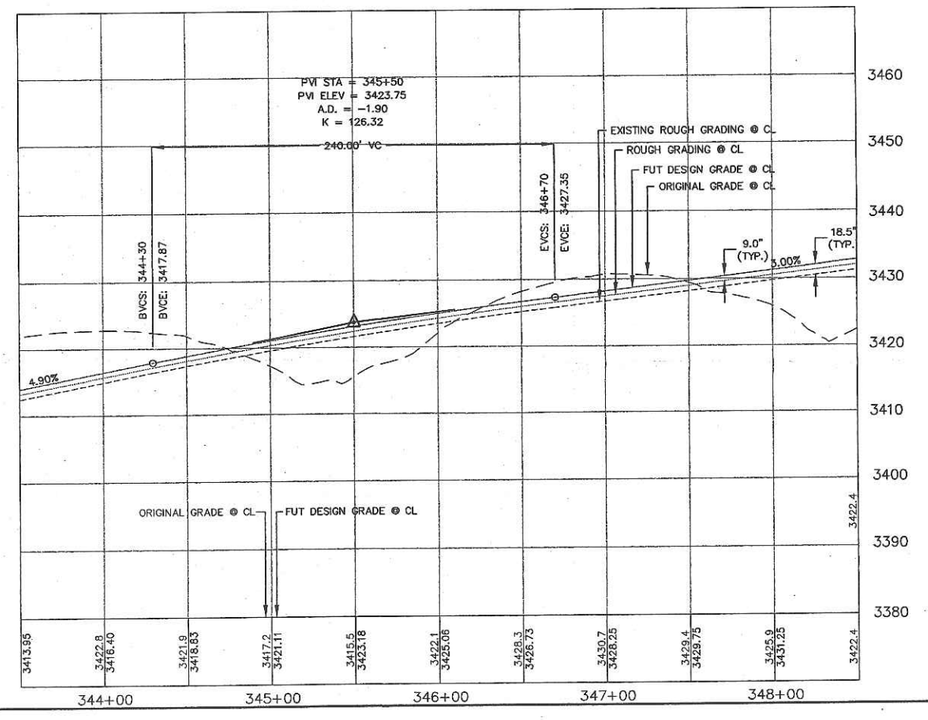
COLLECTOR ROAD

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

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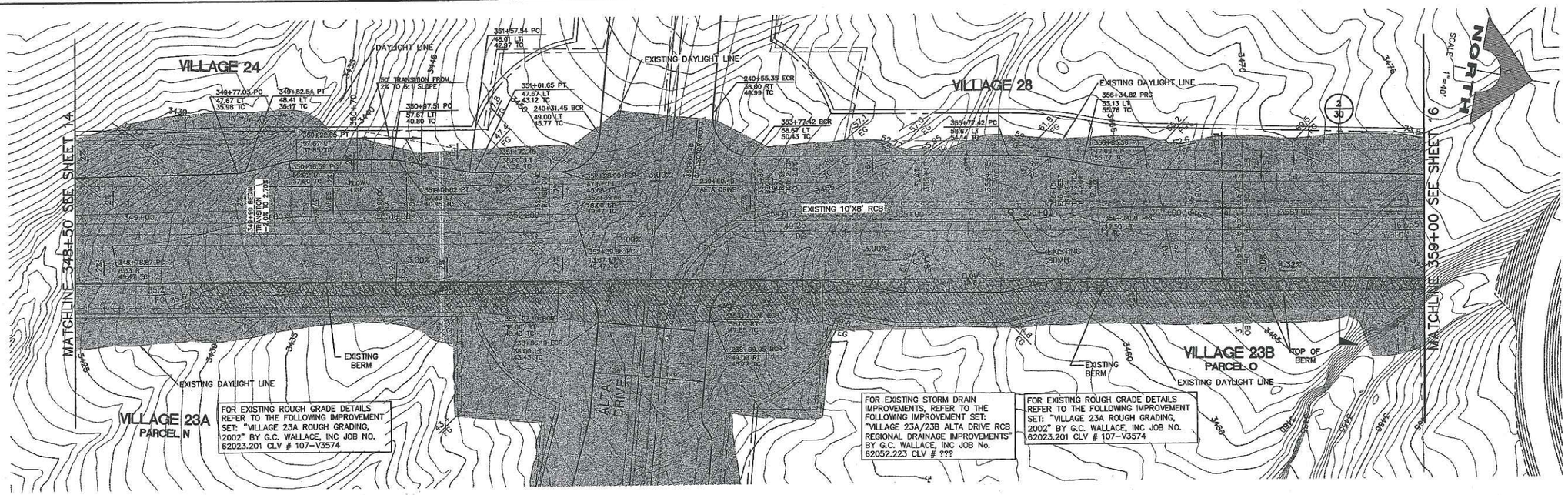
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ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD/ALTA DRIVE
PLAN AND PROFILE

SHEET 14
14 OF 35 SHTS

JOB NO. 62023.260



SCALE 40 0 40 80 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

COLLECTOR ROAD

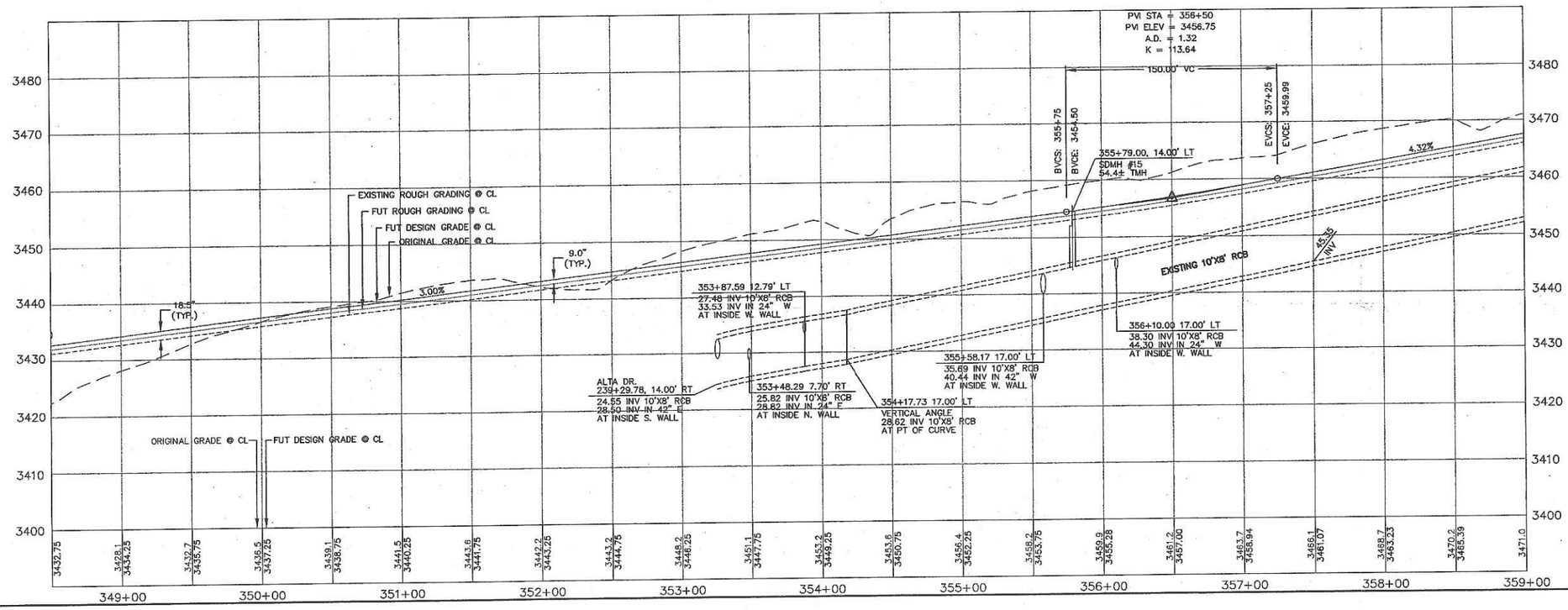
SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

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SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD
PLAN AND PROFILE

SHEET 15
14 OF 35 SHTS

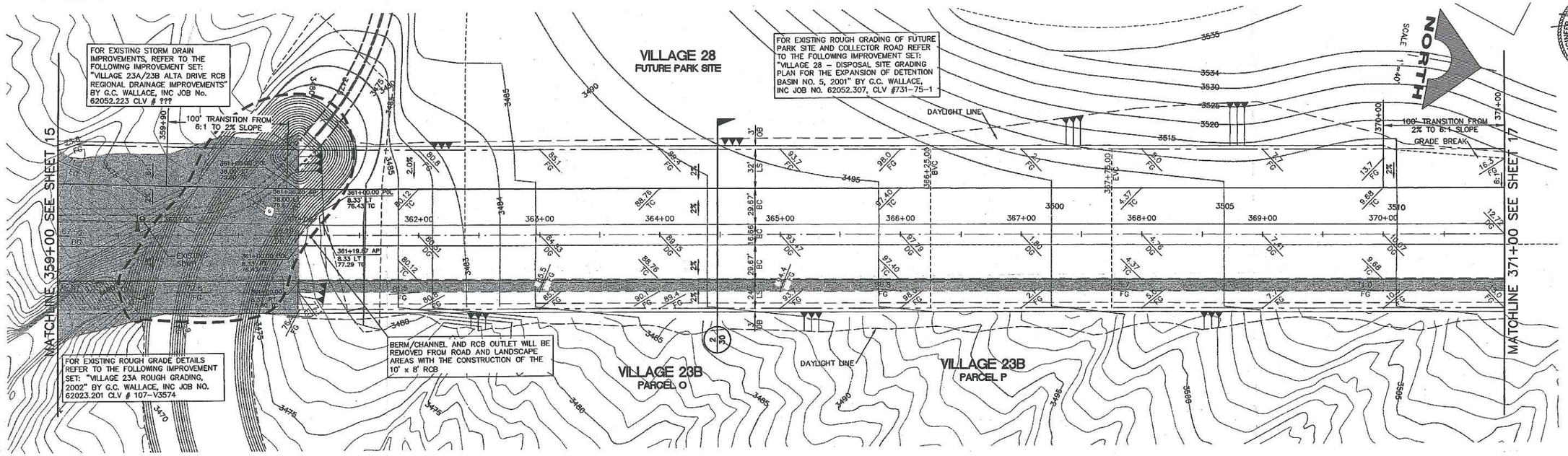
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		ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION	8/01/03						

ISSUE DATE: 8/01/03

STATE OF NEVADA — BRIAN A. HOLMES — No. 9444 — REGISTERED PROFESSIONAL ENGINEER — DATE: 8/1/03



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLYD9-34SSE8	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

COLLECTOR ROAD

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

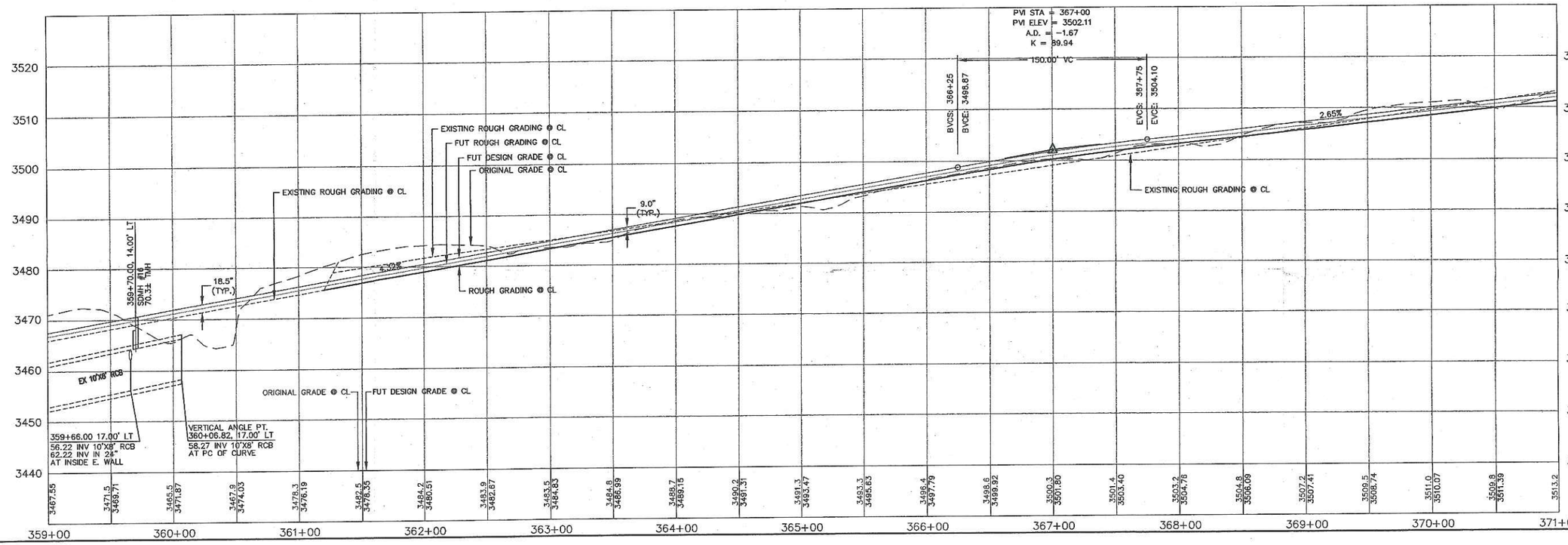
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SCALE FEET

NOTE

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NEVADA UNDERGROUND SERVICE ALERT (NSA)

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CALL 1-702-593-6111



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gpeterson

DESCRIPTION	REV'T DATE	DATE AGEN. APP	DATE ENGR. APP	DATE
ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION				8/01/03

STATE OF NEVADA — ENGINEER — ROBERT A. HUGHES — No. 10881 — PROFESSIONAL — CIVIL — Exp. 06/30/2005

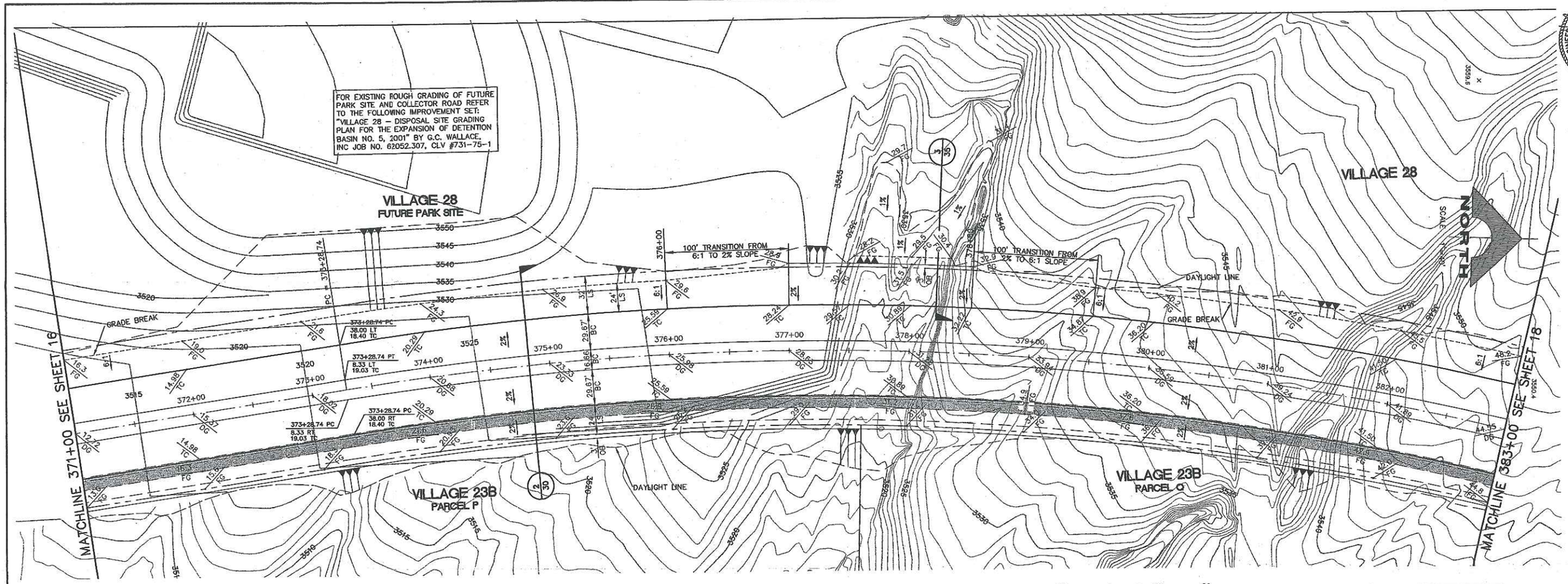
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TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
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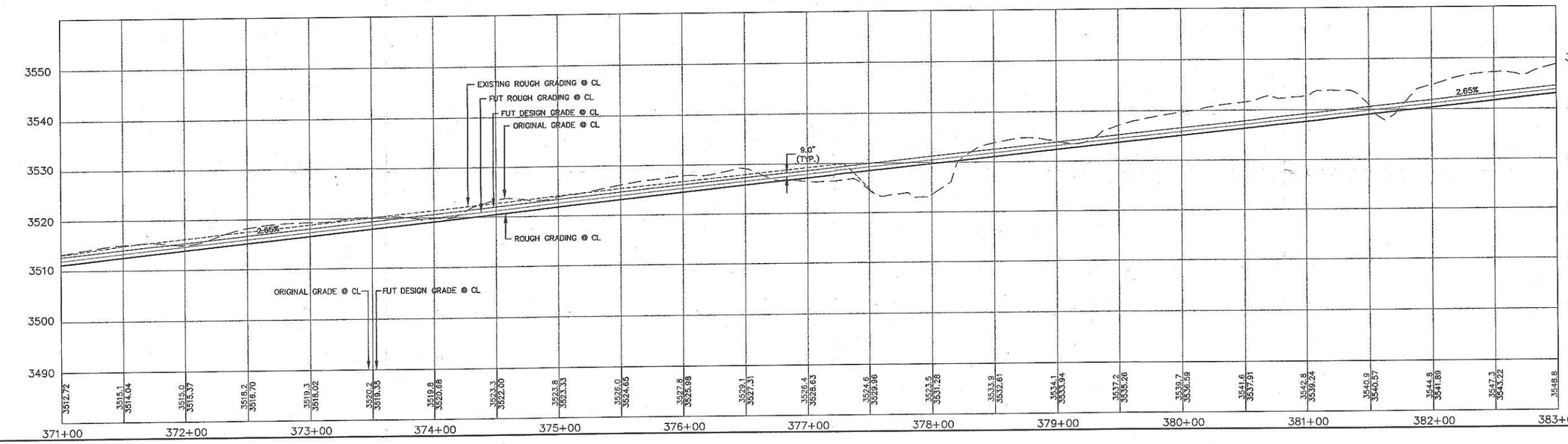
ISSUE DATE: 8/01/03

SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD PLAN AND PROFILE
BEGIN TO STA 371+00

SHEET 16
14 OF 35 SHTS

JOB NO. 62023.260





BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

COLLECTOR ROAD

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

SCALE 40 0 40 80 FEET

NOTE

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STATE OF NEVADA
PROFESSIONAL ENGINEER
BRIAN BARRY HUGHES
No. 10258
CIVIL
DATE: 4/30/2008

DATE: 9/01/03

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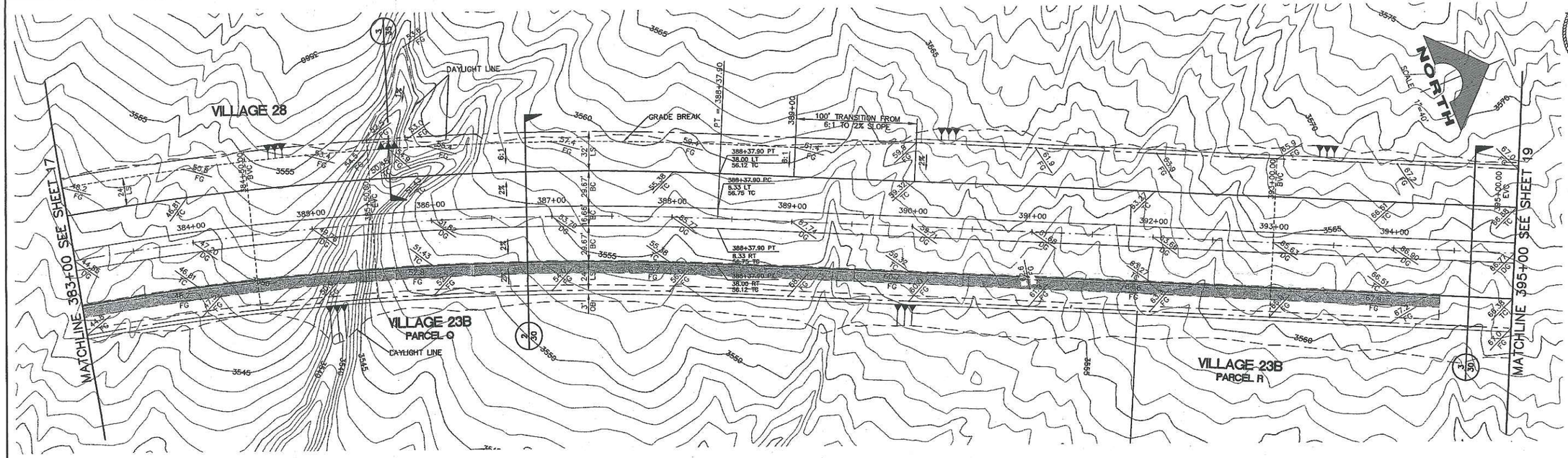
G.C. WALLACE, INC.
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ISSUED

SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD PLAN AND PROFILE
STA 371+00 TO STA 383+00

SHEET 17
15 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
01V09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 767+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

COLLECTOR ROAD

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

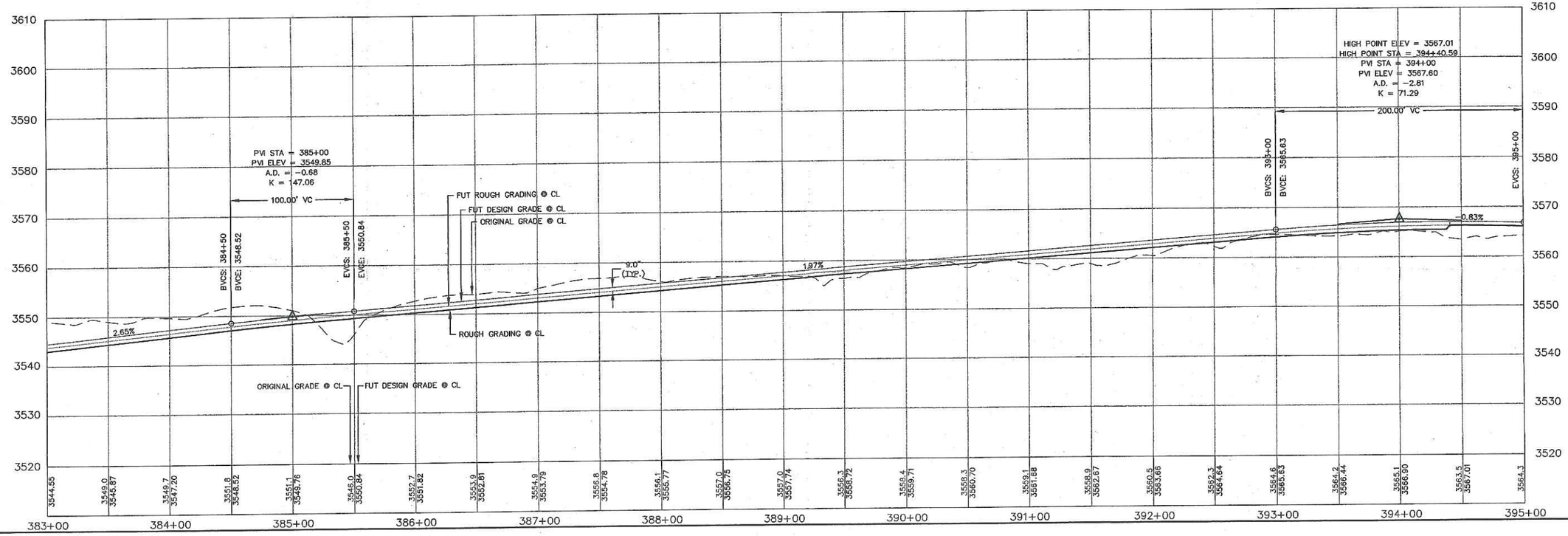
40 0 40 80
SCALE FEET

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DESIGN:	GTP
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CHKD:	BAM
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ISSUE ENTD:	
PLOT DATE:	08-28-03
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ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

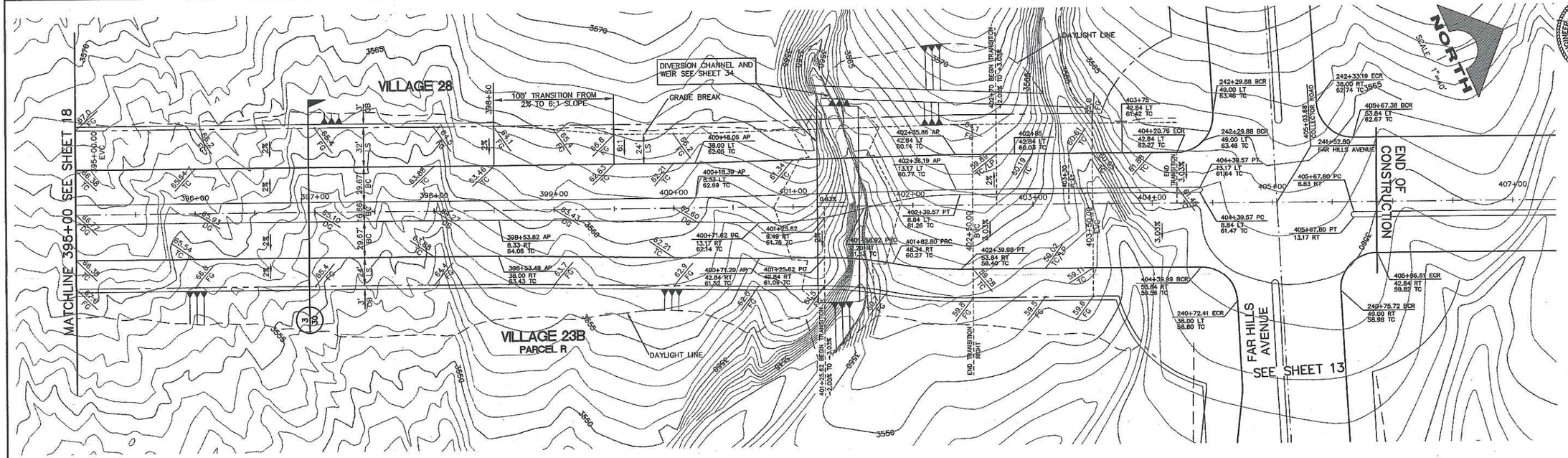
DATE: 8/01/03

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
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SUMMERLIN
VILLAGE 23B ROUGH GRADING
COLLECTOR ROAD PLAN AND PROFILE
STA 383+00 TO STA 395+00

SHEET 18
16 OF 35 SHTS

JOB NO. 62023.260



SCALE: 40 0 40 80 FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
GLV09-34SSE8	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

COLLECTOR ROAD

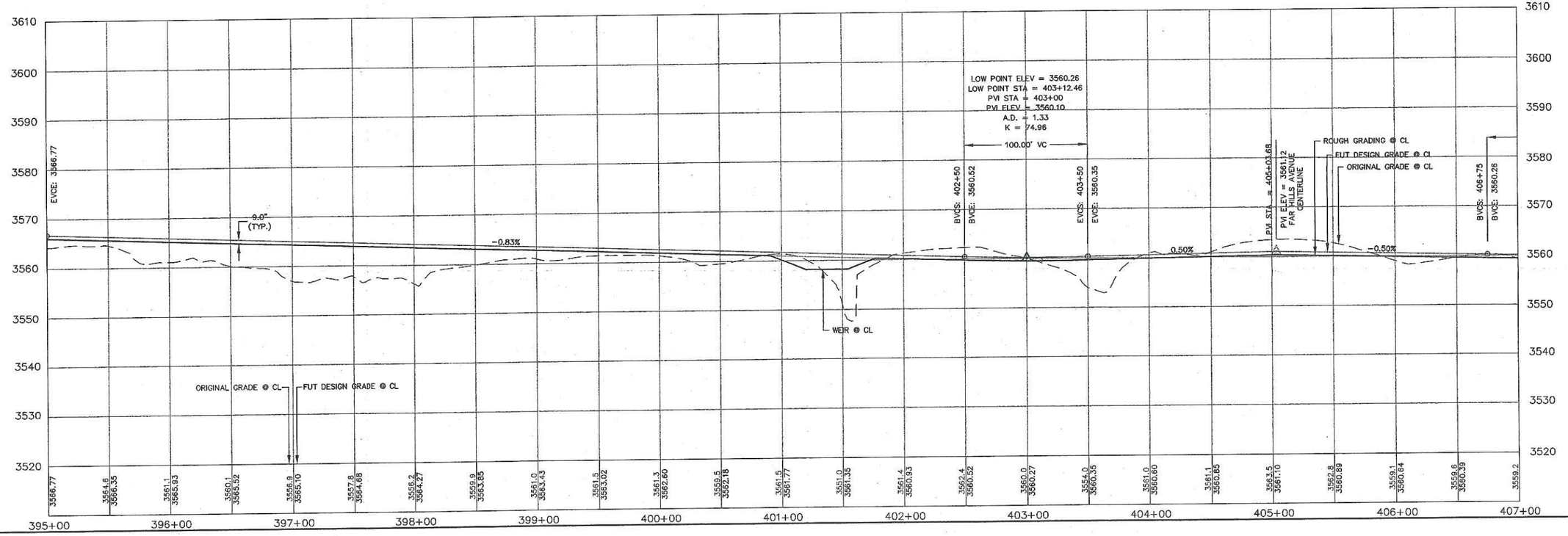
SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111



| | | |

FOR EXISTING ROUGH GRADE DETAILS REFER TO THE FOLLOWING IMPROVEMENT SET: "VILLAGE 23A ROUGH GRADING, 2002" BY G.C. WALLACE INC. JOB NO. 62023.201 CLV #107-V3574

STORM DRAIN AND TEMPORARY DRAINAGE INLET, SEE SHEET 42

EXISTING DAYLIGHT LINE

LIMIT OF CONSTRUCTION

ALTA DRIVE

FOX HILL DRIVE

VILLAGE 23B PARCEL O

VILLAGE 23B PARCEL X

DAYLIGHT LINE

102.03' TRANSITION FROM 10% TO 2% SLOPE

SEE SHEET 43

NORTH

SCALE 1"=40'

SCALE 40 0 40 80 FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S DEADLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-8111

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE8	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FOX HILL DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

PVI STA = 168+00
PVI ELEV = 3405.15
A.D. = 2.47
K = 60.73
150.00' VC

EXISTING ROUGH GRADE @ CL

ROUGH GRADING @ CL

FUT DESIGN GRADE @ CL

ORIGINAL GRADE @ CL

LIMIT OF CONSTRUCTION 163+52.64 ELEV. 98.08 (MATCH TO EXISTING ROUGH GRADE)

PVI STA = 162+53.44
PVI ELEV = 3393.53

BVCS: 167+25
BVCE: 3403.96

EVCS: 168+75
EVCE: 3408.19

9.0" (TYP.)

1.58%

4.05%

STORM DRAIN AND TEMPORARY DRAINAGE INLET, SEE SHEET 42

STA 162+53.44 ALTA DRIVE CL (228+68.46)

161+00	162+00	163+00	164+00	165+00	166+00	167+00	168+00	169+00	170+00	171+00	172+00
3394.11	3392.4	3394.90	3391.4	3393.69	3394.0	3396.48	3394.0	3397.26	3396.5	3398.05	3399.0	3398.84	3401.3	3399.63	3401.3	3400.42	3400.2	3401.21	3397.8	3402.00	3405.4	3402.76	3407.1	3403.57	3407.9	3404.41	3408.8	3405.61	3405.8	3407.23	3405.3	3408.20	3411.5	3411.22	3414.5	3413.26	3417.1	3415.27	3419.6	3417.30	3422.4	3419.32	3423.5	3423.5

CLV DRAWING NO.

DESIGN: GTP	DRAWN: GTP	CHECK: BAH	ISSUE DATE:	ISSUE EDITOR:	PLOT DATE: 07-19-06	PLOT TIME: 10:41:34
REV	DATE	DESCRIPTION	DATE	APP	DATE	DRW	APP
1	6/01/06	ADD 60" STORM DRAIN AND INTERIM INLET					

DATE: 7/26/06

BERT L. HIGGINS JR. 10278 CIVIL REGISTERED PROFESSIONAL ENGINEER - STATE OF NEVADA

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gcsterson

I:\V23b\RG\dwg\cross\V23BRc020.dwg

SUMMERLIN

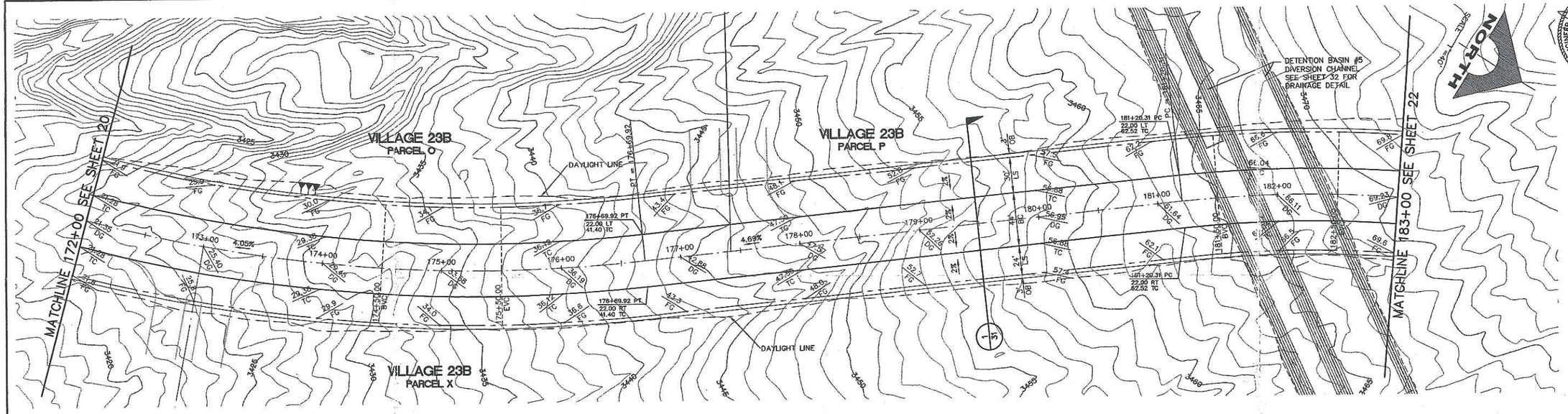
VILLAGE 23B WATERLINE IMPROVEMENT GRADING

FOX HILL DRIVE PLAN AND PROFILE BEGIN TO STA 172+00

SHEET 20 20 OF 43 SHTS

JOB NO. 62023.260

z:\v23b\rg\dwg\cross\v23brc020.dgn



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
01V09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FOX HILL DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

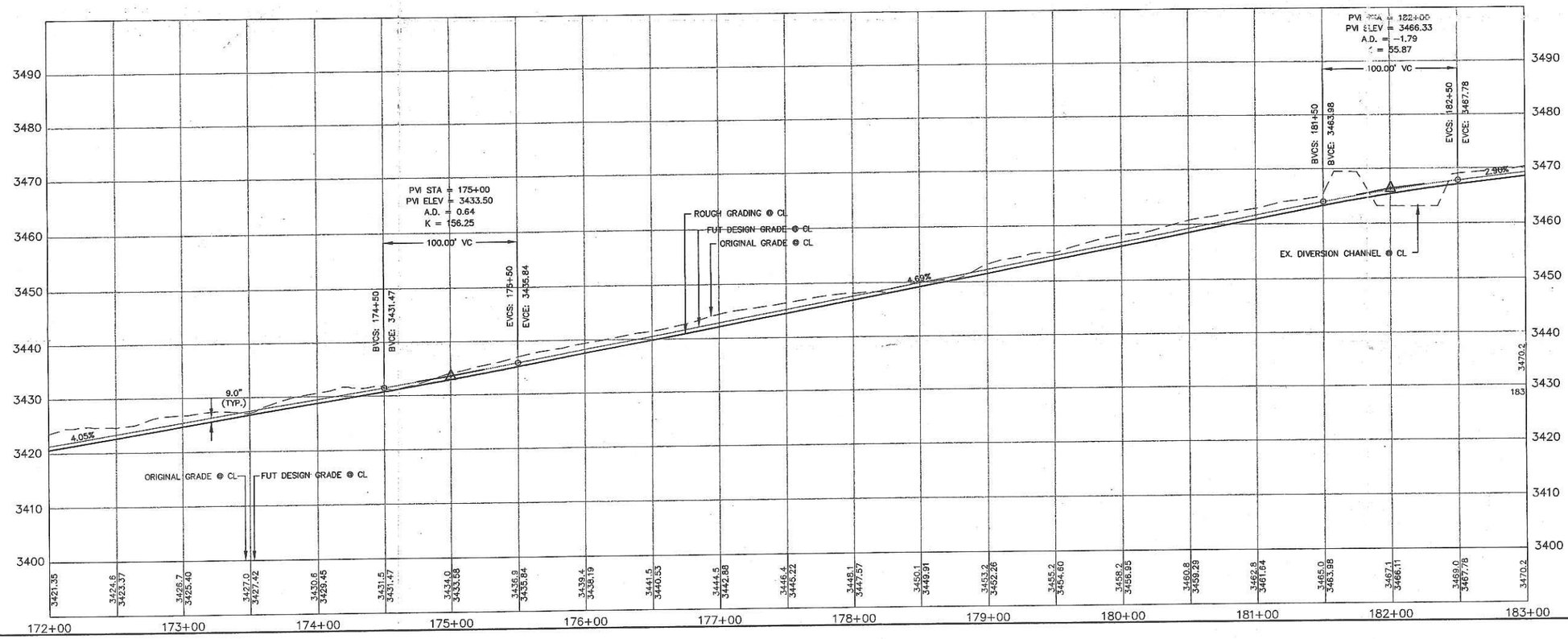
40 0 40 80
SCALE FEET

NOTE

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Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
(UNDERGROUND SERVICE ALERT (USA))

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111



REV.	DATE	DESCRIPTION	DATE APPR.	DATE ORIGN.	APP'D

DESIGN:
DRAWN:
CHECK:
ISSUE EDITOR:
ISSUE DATE: 08-29-03
PLOT DATE: 08-29-03
PLOT TIME: 08:20:21

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

DATE: 8/16/03

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

P:\V23b\NGV\dwg\Umra\V23B5c021.dwg

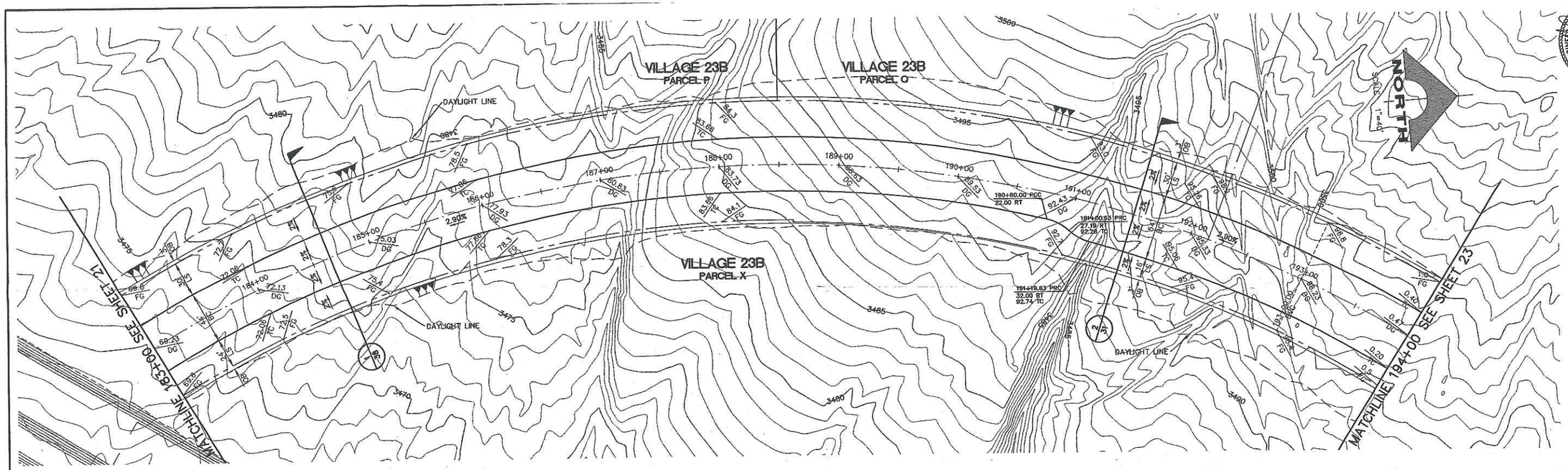
SUMMERLIN

VILLAGE 23B ROUGH GRADING

FOX HILL DRIVE PLAN AND PROFILE
STA 172+00 TO STA 183+00

SHEET 21
19 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FOX HILL DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

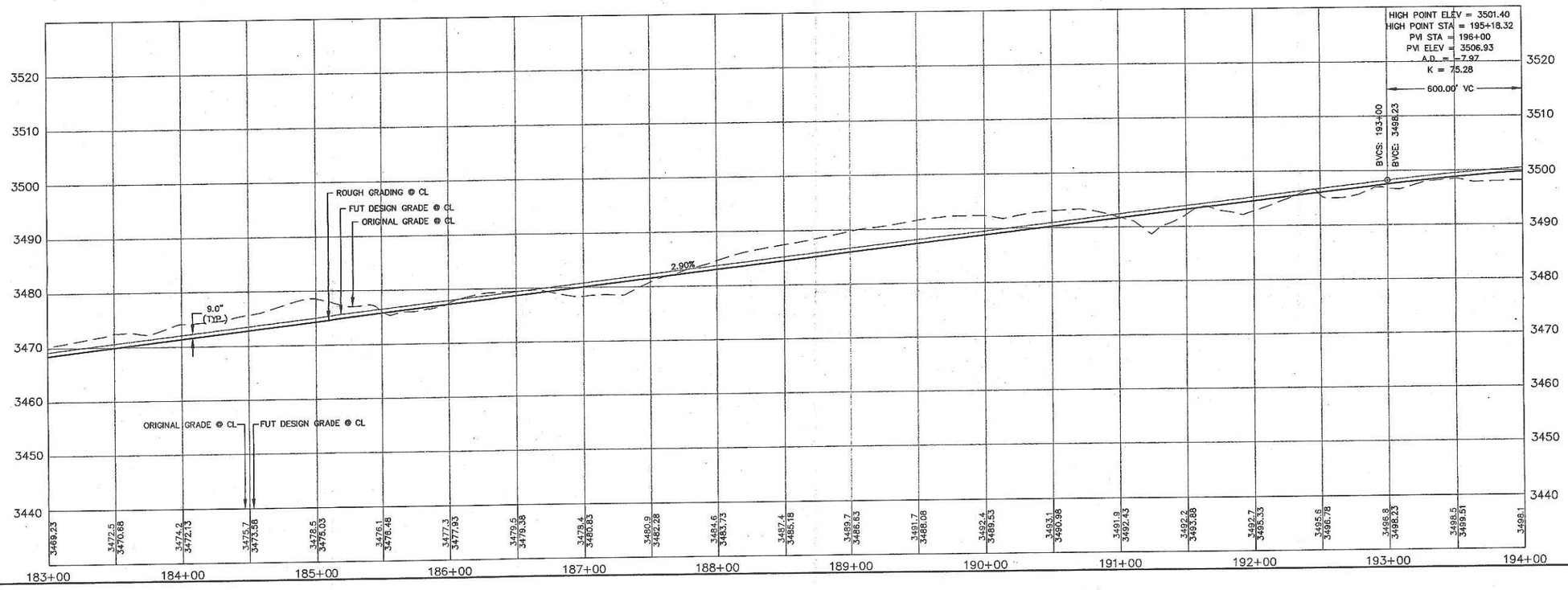
40 0 40 80
SCALE FEET

NOTE

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Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
(WASHOUGHNOE SERVICE AREA ONLY)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
"CALL BEFORE YOU DO OVERHEAD"
CALL 1-702-593-6111



DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 08:19:48
jpaterson

REV	DATE	DESCRIPTION	DATE	AGEN	APP'D	DATE	GCW	APP

DATE: 8/01/03

ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

ISSUE DATE: 8/01/03

STATE OF NEVADA — BRUCE H. HUGHES — No. 10259 — CIVIL — EXP. 06/30/2004 — PROFESSIONAL ENGINEER

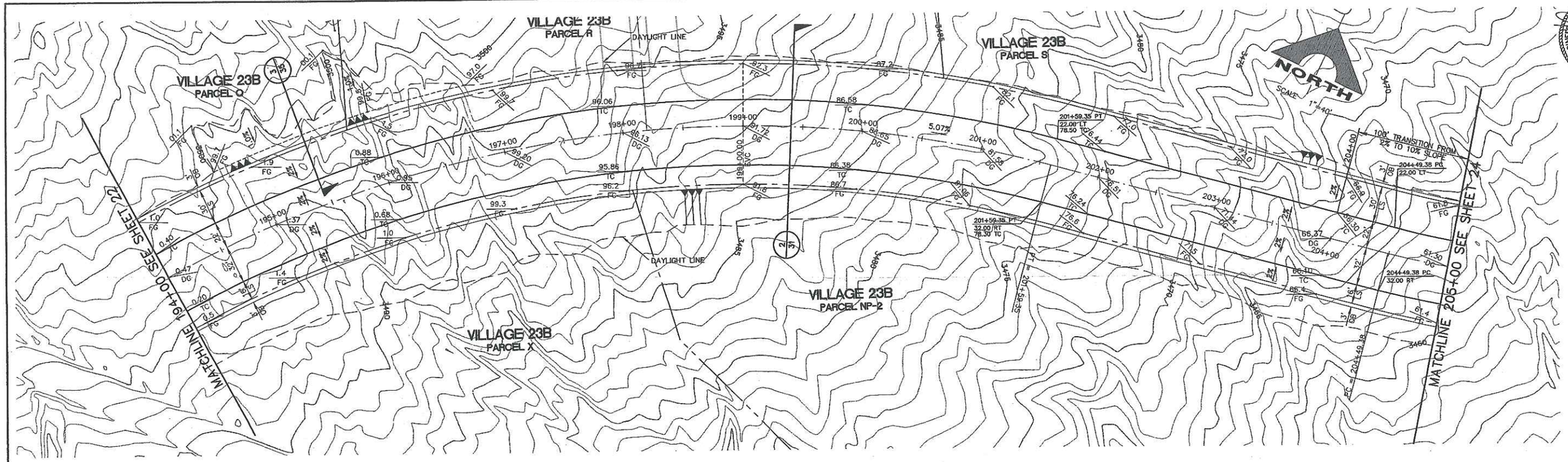
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
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SUMMERLIN
VILLAGE 23B ROUGH GRADING
FOX HILL DRIVE PLAN AND PROFILE
STA 183+00 TO STA 194+00

SHEET 22
20 OF 35 SHTS

JOB NO. 62023.260

grw2426.dwg 022912.dtx



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
GLVD9-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

FOX HILL DRIVE

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

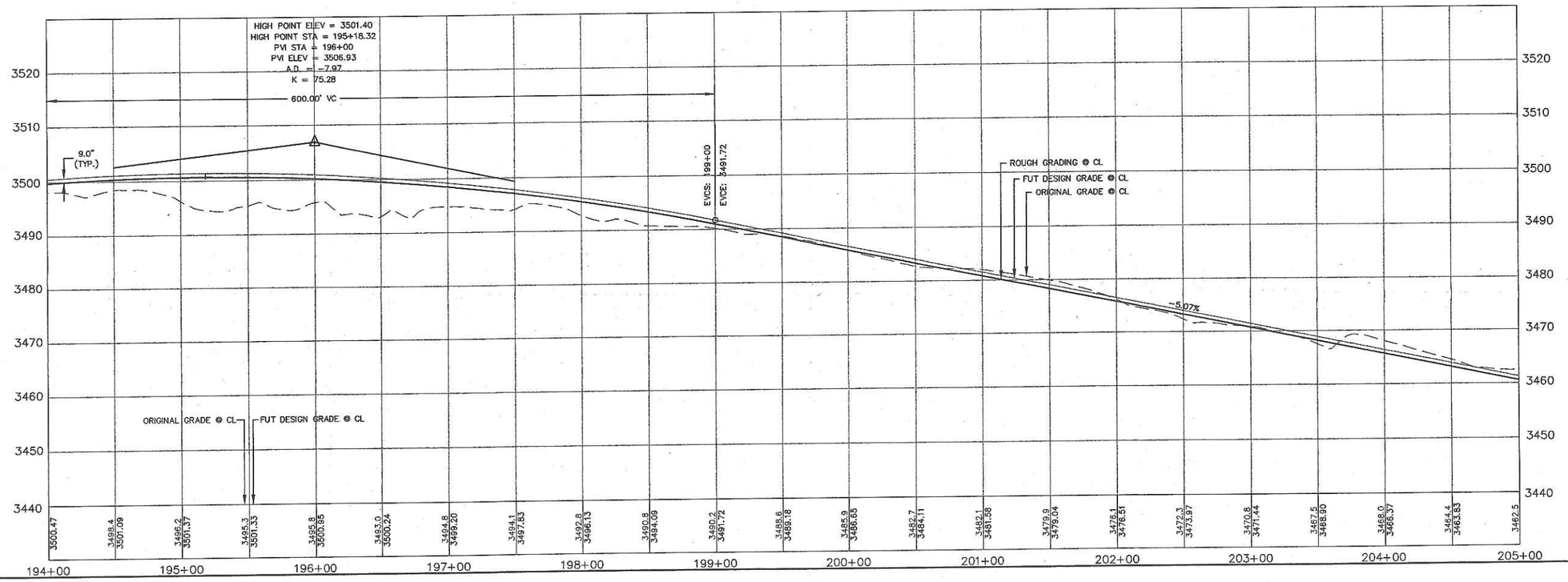
40 0 40 80
SCALE FEET

NOTE

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Avoid cutting underground utility lines. It's easy.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID MEETING OVERHEAD POWER LINES. IT'S EASY!
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111



G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD, LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
F:\V23b\RG\dwg\mpa\23BGc023.dwg gpaterson

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 08:48:55

REV	DATE	DESCRIPTION	DATE	AGEN. APP.	DATE	CITY APP.

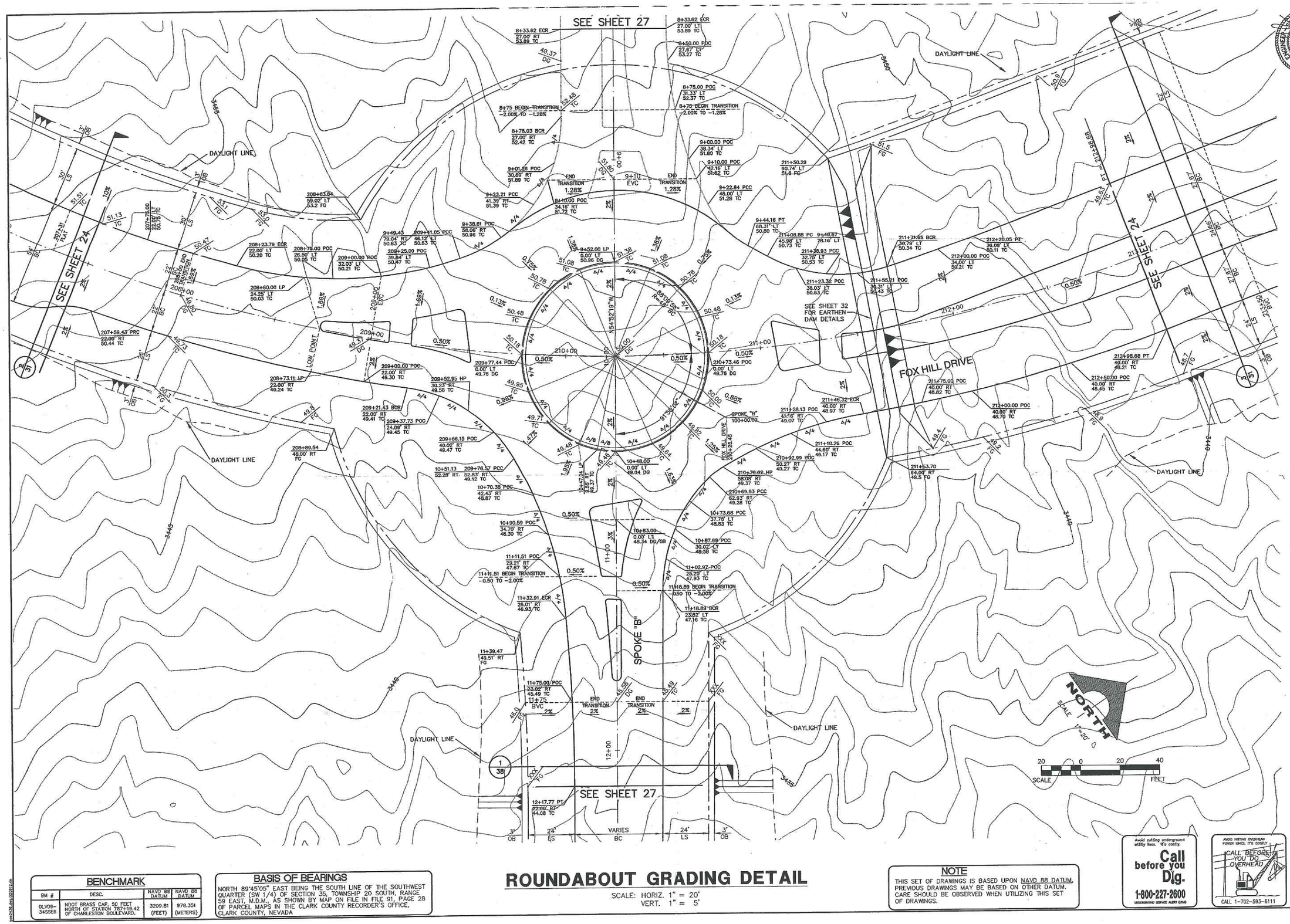
DATE: 8/29/03

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
FOX HILL DRIVE PLAN AND PROFILE
STA 194+00 TO STA 205+00

SHEET 23
21 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81	978.351

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

ROUNDABOUT GRADING DETAIL

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

NOTE

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Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

STATE OF NEVADA — BRET A. HOLMES — No. 10251 — PROFESSIONAL ENGINEER — CIVIL — DATE: 9-1-03

REV.	DATE	DESCRIPTION	DATE: AGEN. APP.	DATE: DGN. APP.

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 09-29-03
PLOT TIME: 08:06:38

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

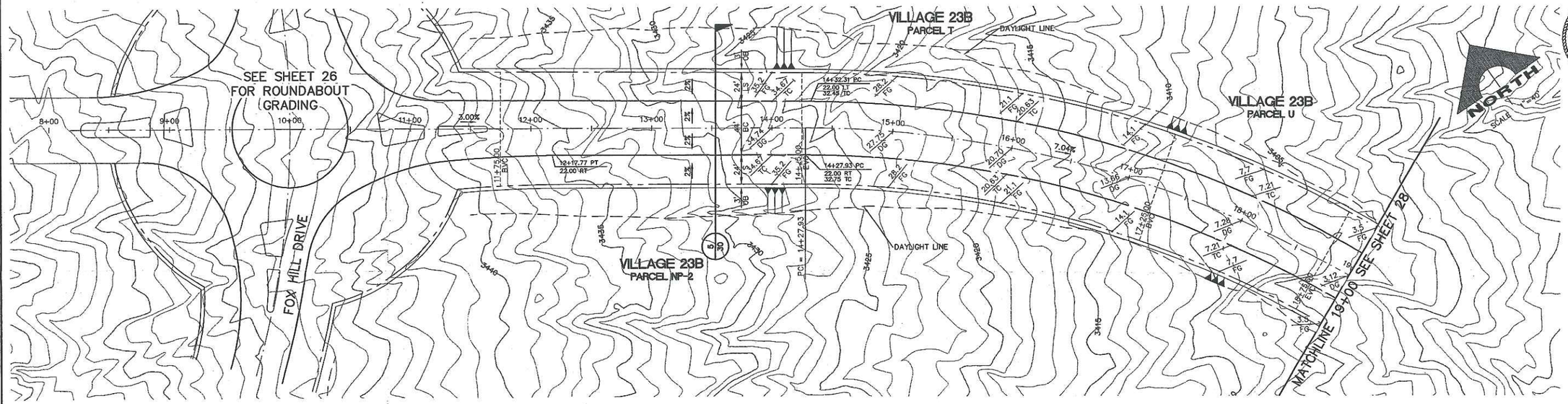
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2229

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SUMMERLIN
VILLAGE 20B ROUGH GRADING
FOX HILL DRIVE/SPOKE "B" ROUNDABOUT GRADING DETAIL

SHEET 26
26 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
01V09–34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 767+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

SPOKE "B"

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

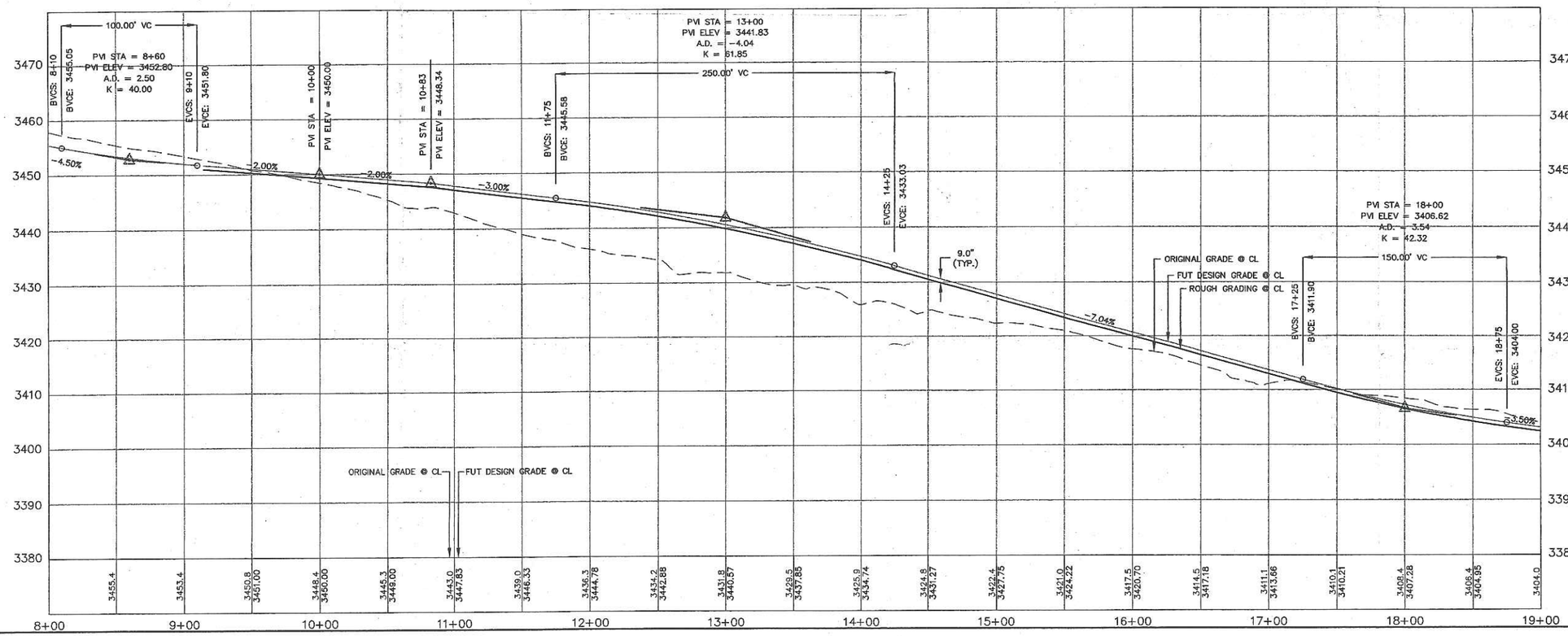
40 0 40 80
SCALE FEET

NOTE

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Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
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CALL 1-702-593-6111



NO.	DATE	DESCRIPTION	DATE	DESIGN	DRAWN	CHECK	APP	DATE	SIGN	APP	DATE
1	8/01/03	ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION		GTP	GTP	BAH					

ISSUE DATE: 8/01/03
PLOT DATE: 08-29-03
PLOT TIME: 07:58:02

BRET T. HOWES — STATE OF NEVADA — No. 10256 — CIVIL — EXPIRES 06/30/2008 — DATE 8/29/03

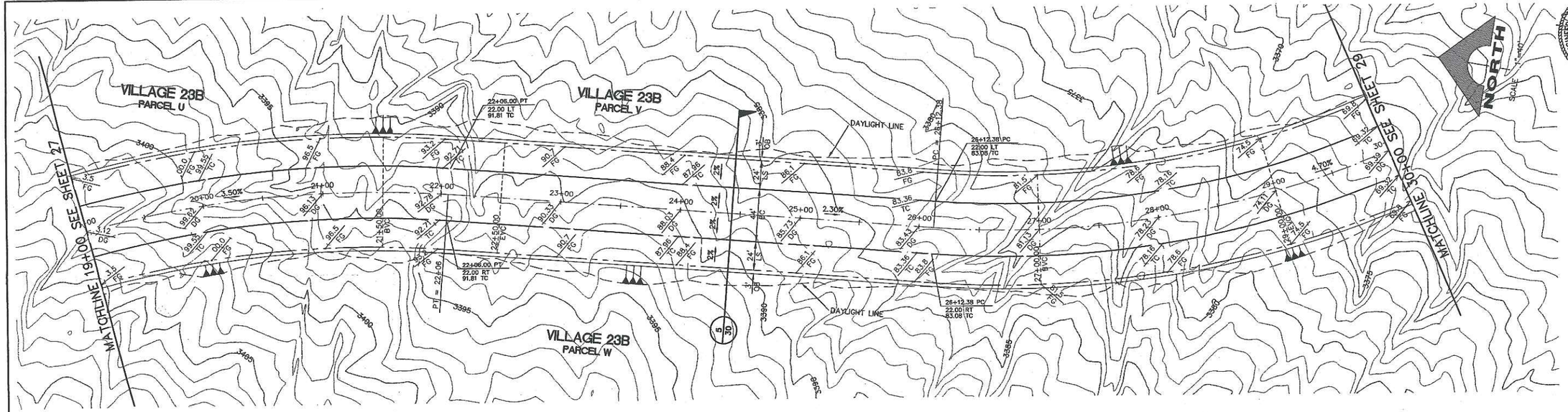
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

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SUMMERLIN
VILLAGE 23B ROUGH GRADING
SPOKE "B" PLAN AND PROFILE
BEGIN TO 19+00

JOB NO. 62023.260

SHEET 27
27 OF 35 SHTS



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SS66	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

SPOKE "B"

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

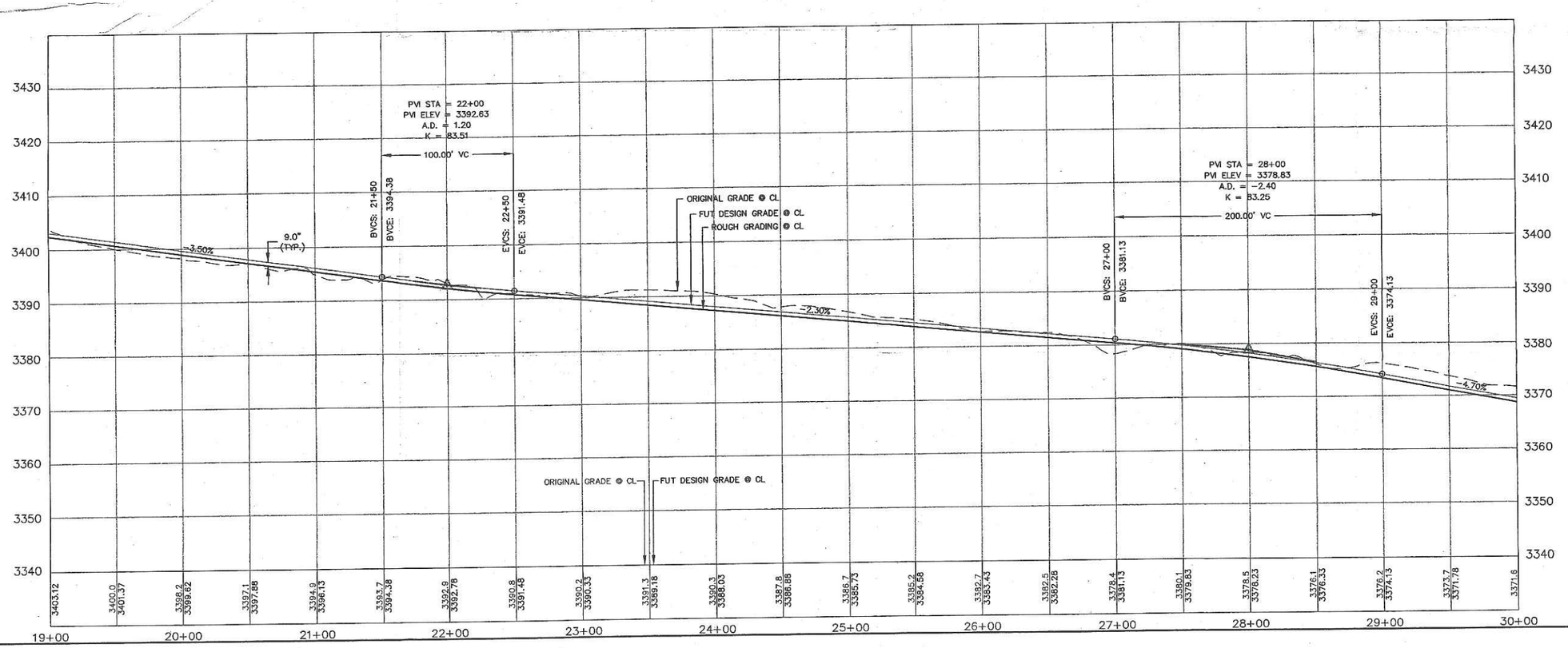
40 0 40 80
SCALE FEET

NOTE

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Avoid cutting underground utility lines. It's costly. **Call before you Dig. 1-800-227-2600**

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111



G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 • FAX (702) 804-2909
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DESIGN: GTP
DRAWN: GTP
CHECK: BJH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:57:32

REV.	DATE	DESCRIPTION	DATE	AGEN.	APP.	DATE	CGW	APP.

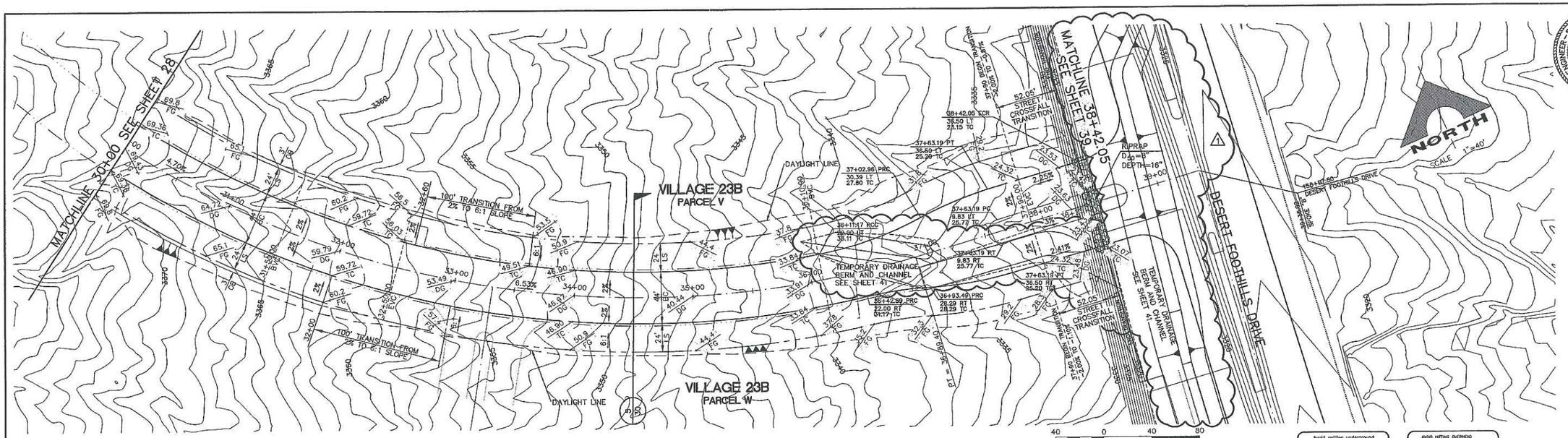
ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

SUMMERLIN
VILLAGE 23B ROUGH GRADING
SPOKE "B" PLAN AND PROFILE
19+00 TO 30+00

JOB NO. 62023.260

SHEET 28
28 OF 35 SHTS

20023d28.dwg 082803.dw



BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

SPOKE "B"

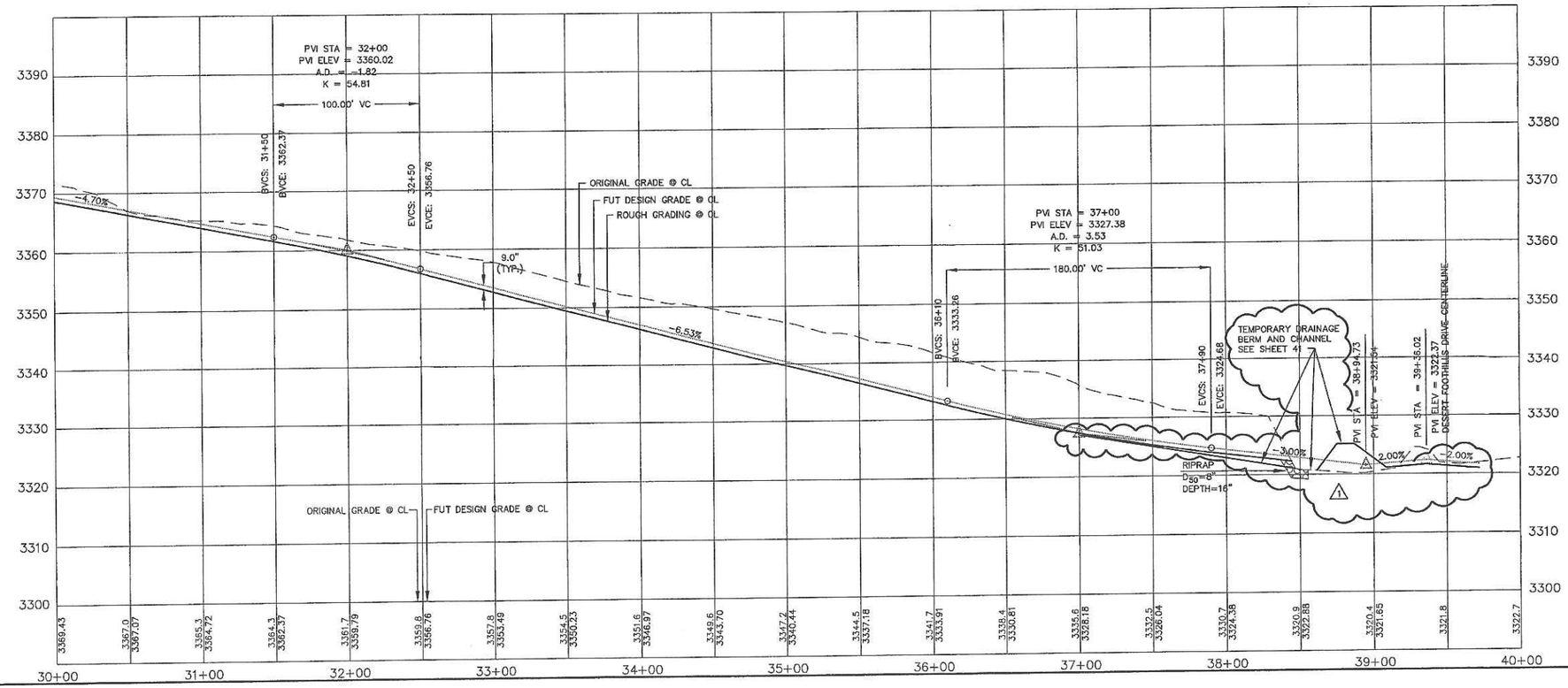
SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

NOTE

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1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-8111



CLV DRAWING NO.

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gcwallace.com
L:\V23b\RGV\dwg\Vegas\V23BGrd29.dwg

SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
SPOKE "B" PLAN AND PROFILE
30+00 TO 40+00

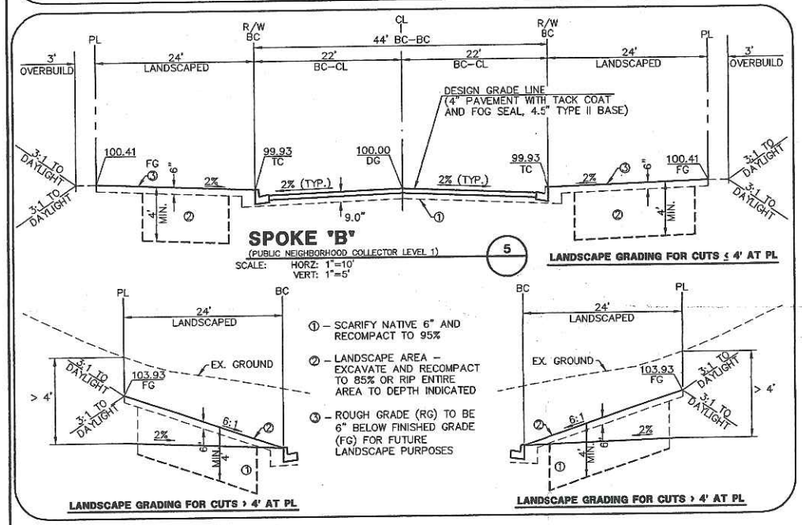
SHEET 29
29 OF 43 SHTS

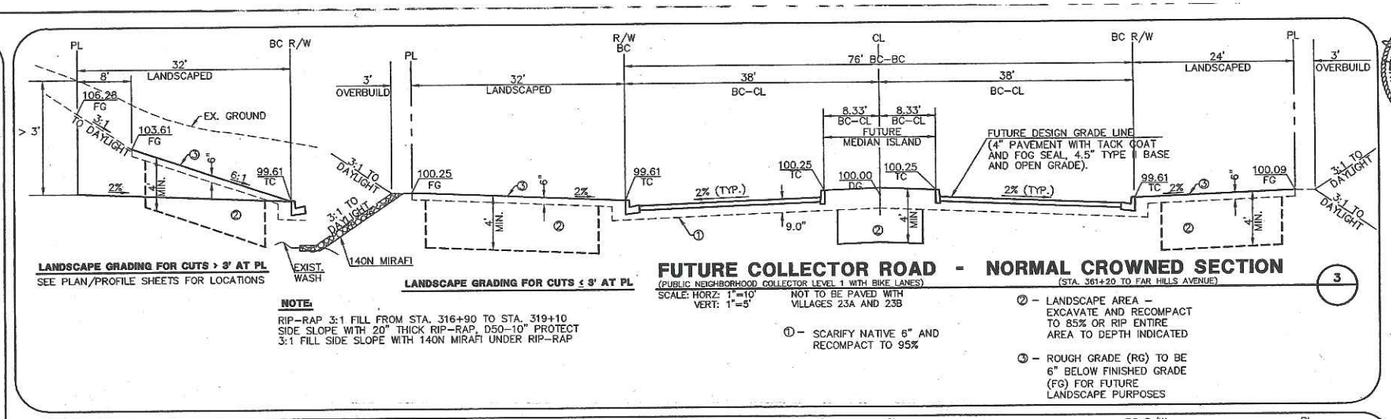
JOB NO. 62023.260

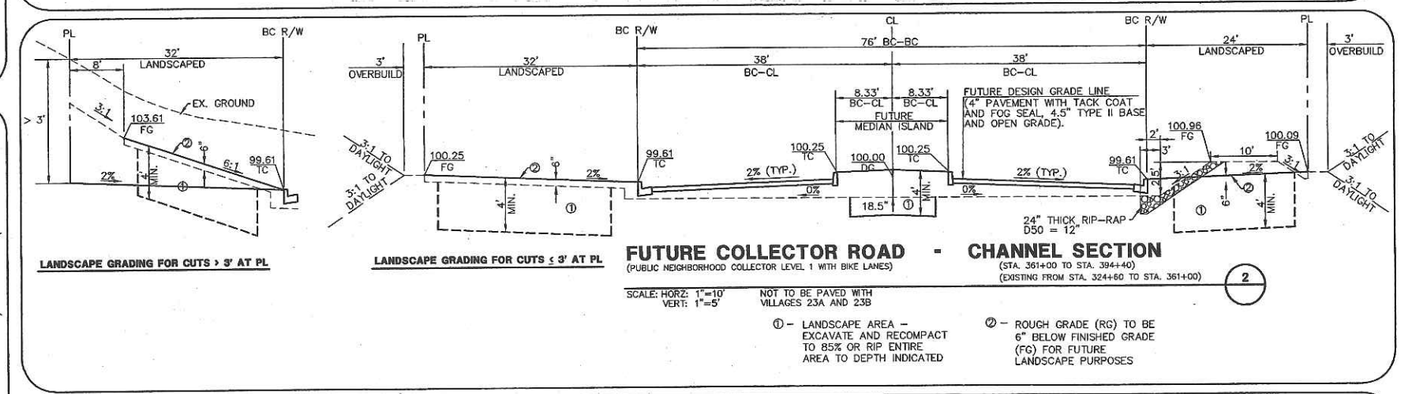
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PLOT DATE: 07-19-06
PLOT TIME: 11:21:43
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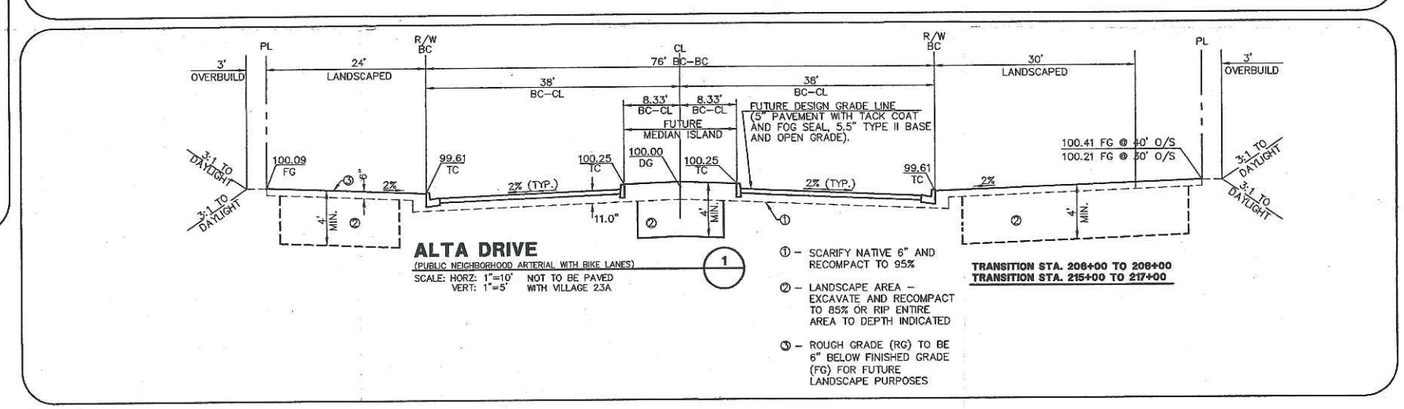
REV	DATE	DESCRIPTION	DATE	ASSN.	APP	DATE	SCH.	APP
1	8/07/06	ADD DESERT FOOTHILLS DRIVE ROUGH GRADING						

BERT A. HUNSAKER
No. 10295
STATE OF NEVADA
REGISTERED PROFESSIONAL ENGINEER
DATE: 7/20/06









STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN J. JUDGES — No. 10234 — CIVIL

NO.	DESCRIPTION	DATE	AGEN. APP.	DATE	CONT. APP.	DATE
	ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION	8/01/03				

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:32:49

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

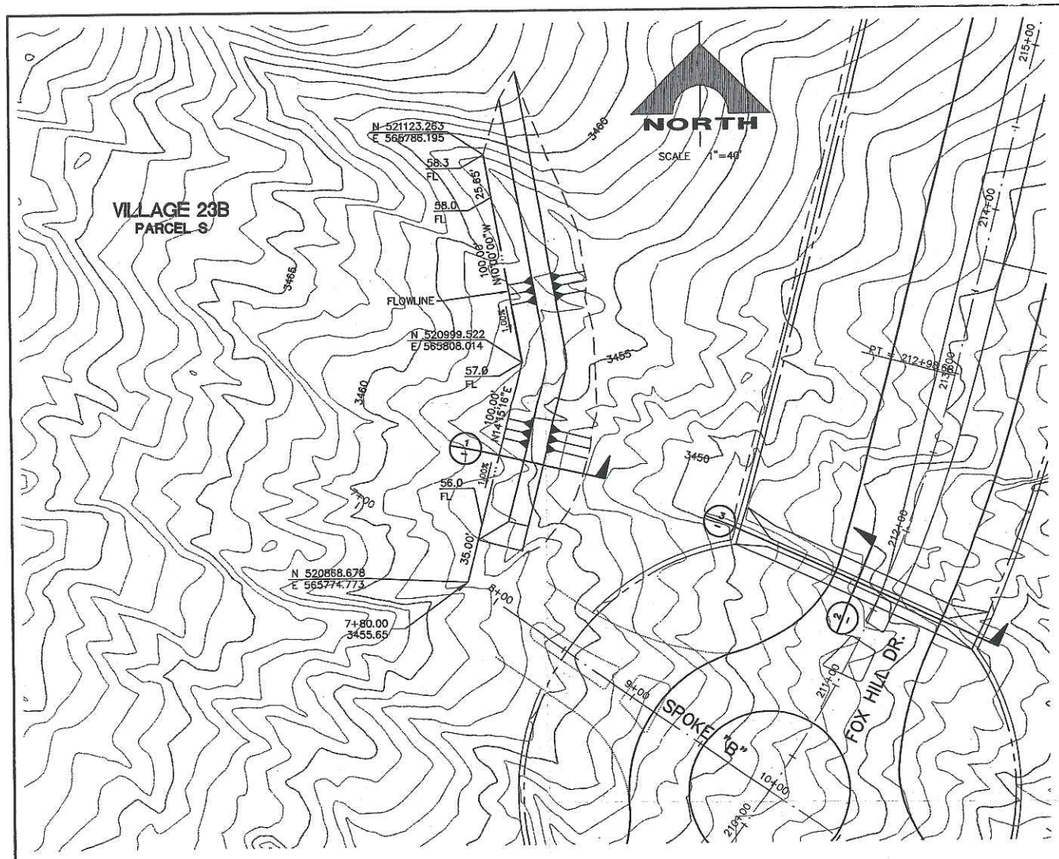
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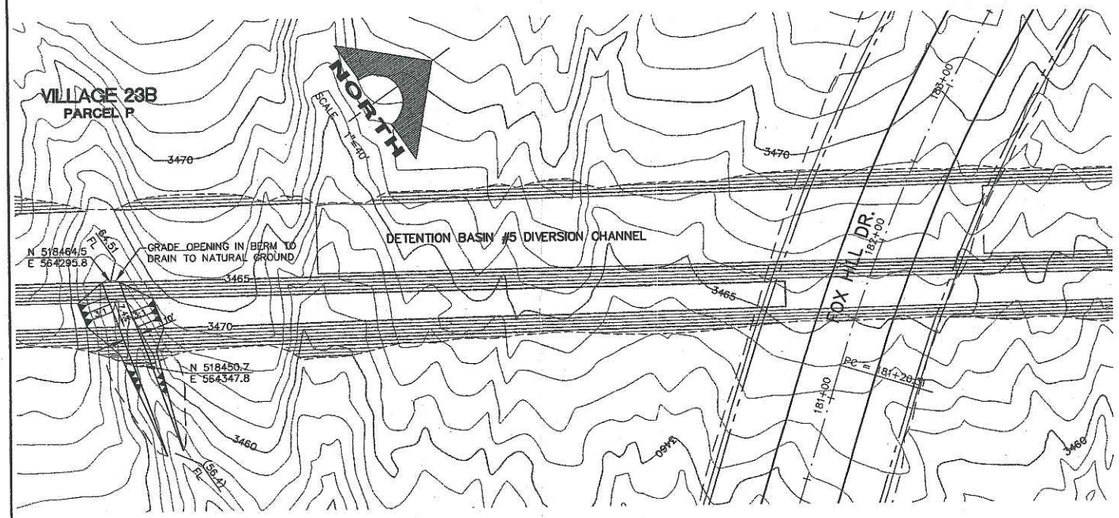
SUMMERLIN
VILLAGE 23B ROUGH GRADING
TYPICAL SECTIONS I

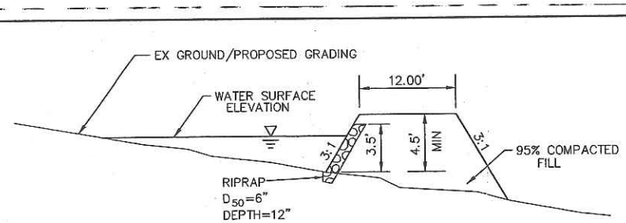
JOB NO. 62023.260

SHEET 30
30 OF 35 SHTS

pw:ALTA.dwg 8/01/03 rdn

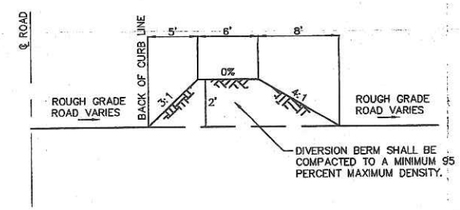






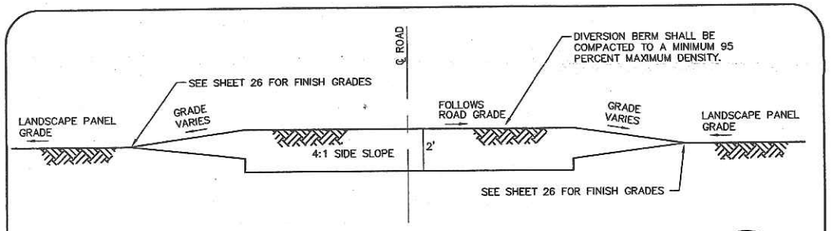
BERM DETAIL (1)

NO SCALE



TYPICAL EARTHEN DAM - SECTION (2)

SCALE: N.T.S.



TYPICAL EARTHEN DAM - PROFILE (3)

SCALE: N.T.S.

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.61 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M.; AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

DIVERSION BERM DETAILS

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-8111



DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:30:08

DESCRIPTION	DES'N. DATE	DATE AGEN. APP.	DATE DES'N. APP.	DATE:
8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION				

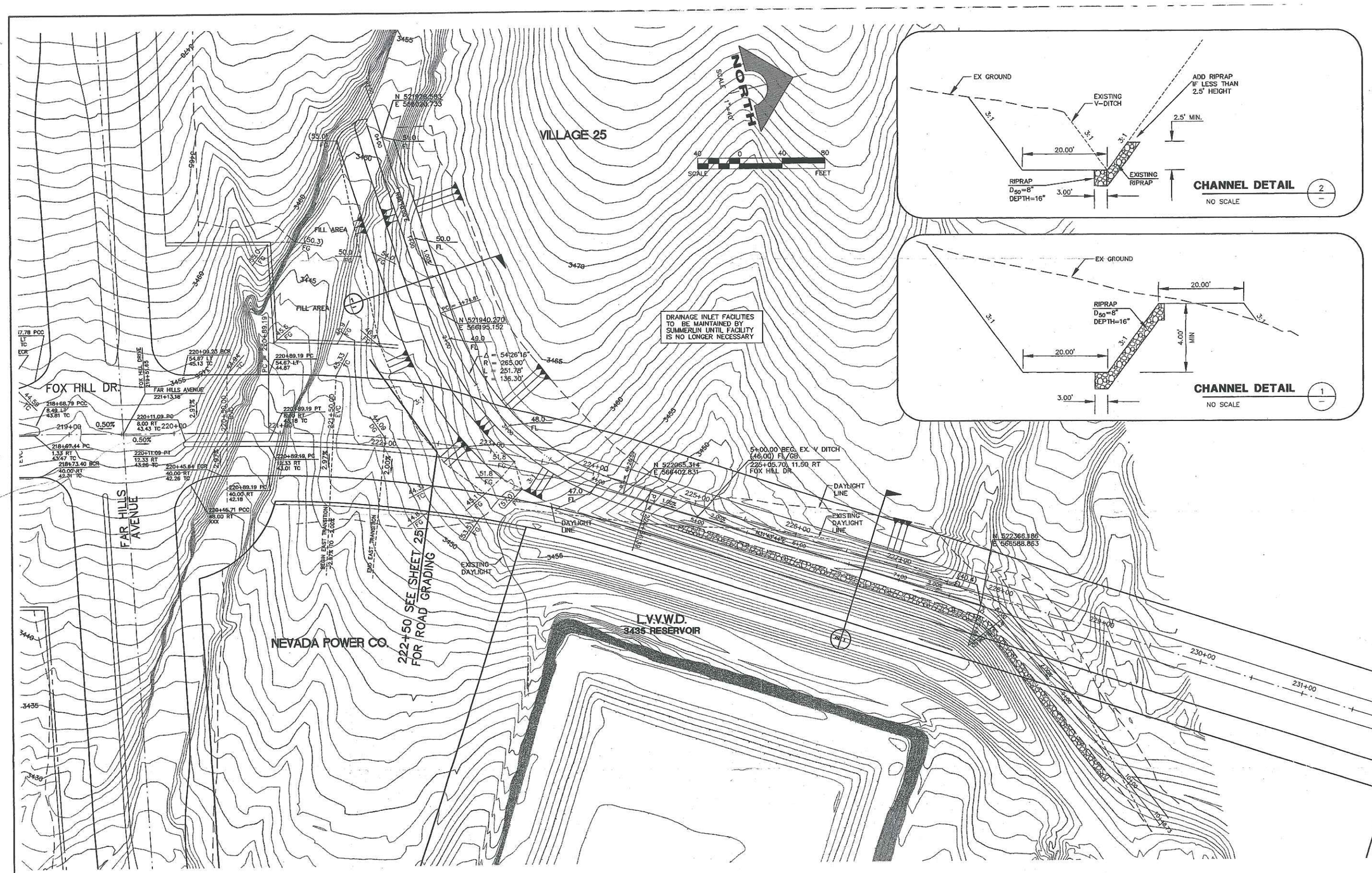
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
F:\V23b\R05\dwg\Vimp\V23b26d32.dwg 08/29/03

ISSUE DATE: 8/01/03

SUMMERLIN
VILLAGE 23B ROUGH GRADING
INTERIM GRADING I

SHEET 32
32 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLVD6-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 787+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

DIVERSION CHANNEL

SCALE: HORIZ. 1" = 40'
VERT. 1" = 10'

40 0 40 80
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 (UNDERGROUND SERVICE ALERT ORS)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

STATE OF NEVADA — BRENT G. WALLACE — No. 10324 — PROFESSIONAL — CIVIL

BY	DATE	DESCRIPTION	DATE:
			DATE:

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:20:10

DATE: | AGEN. APP. | DATE: | DCCW. APP.

ISSUE FOR AGENCY REVIEW – NOT FOR CONSTRUCTION

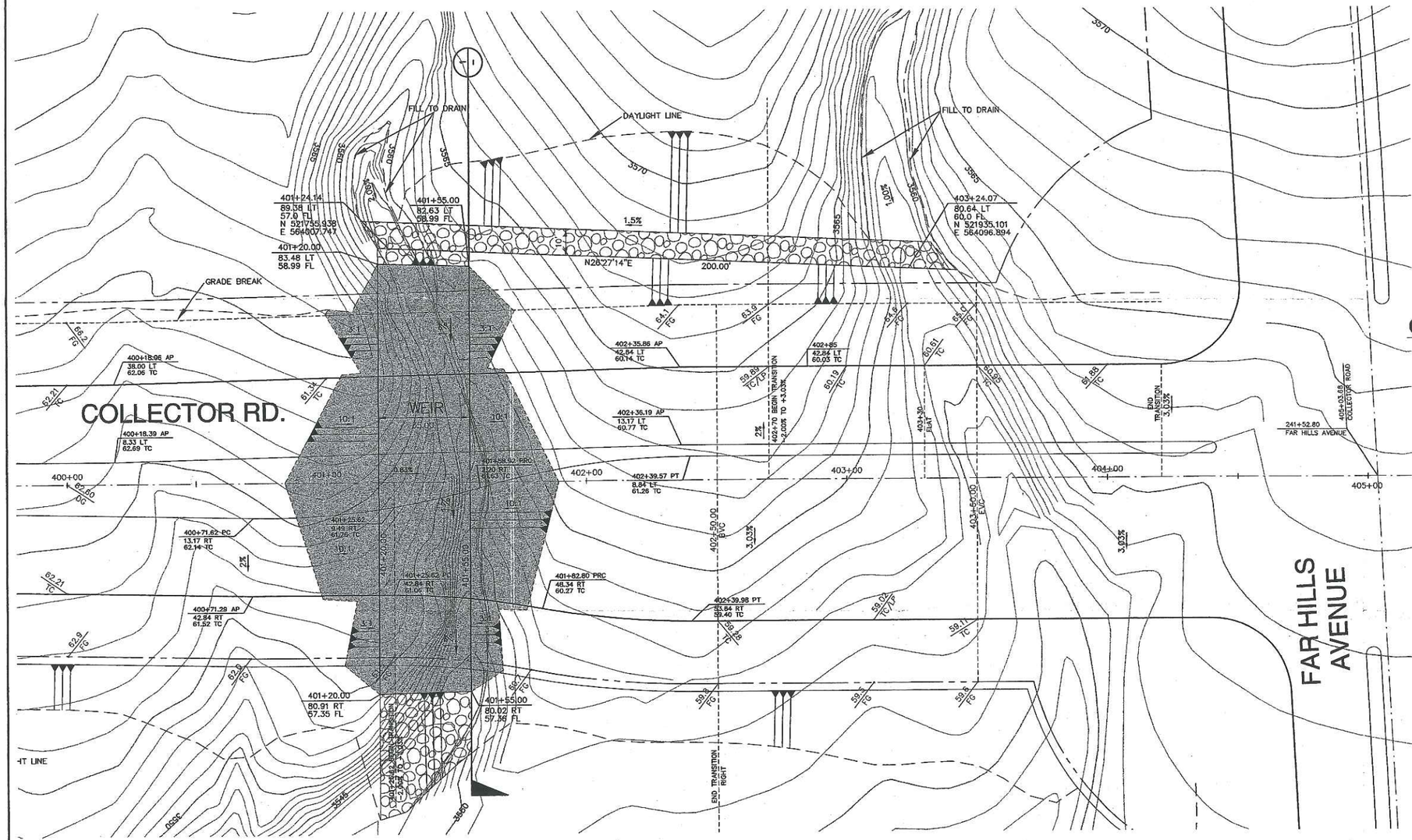
ISSUE DATE: 8/01/03

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
F:\V25\VRD\Dwg\Vrpg\V25RGD03.dwg

SUMMERLIN
VILLAGE 25B ROUGH GRADING
INTERIM GRADING II

SHEET 33
33 OF 35 SHTS

JOB NO. 62023.260



BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
OLV09-34SSE6	NDOT BRASS CAP, 50 FEET NORTH OF STATION 767+19.42 OF CHARLESTON BOULEVARD.	3209.81 (FEET)	978.351 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

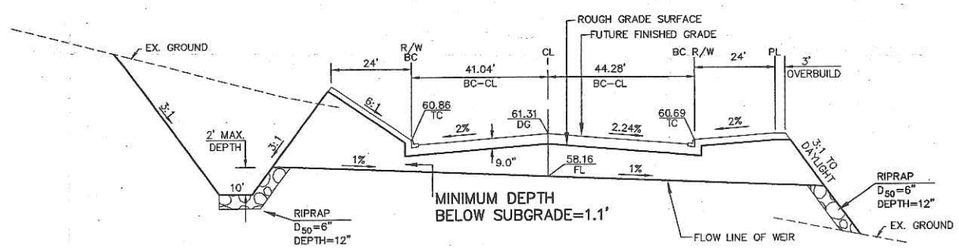
COLLECTOR ROAD WEIR

SCALE: HORIZ. 1" = 20'

SCALE 40 0 40 80 FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.



COLLECTOR ROAD - WEIR PROFILE AT STA 401+55 (1)

SCALE: HORZ: 1"=20' VERT: 1"=5'

Avoid cutting underground utility lines. It's costly. **Call before you Dig. 1-800-227-2600** UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

STATE OF NEVADA — REGISTERED PROFESSIONAL ENGINEER — BERT HUNSAKER — No. 10253 — CIVIL — DATE: 10/14/03

REV	DATE	DESCRIPTION	DRAWN	APP	DATE	CONST. APP.	DATE
			AGENCY APP.				

ISSUE DATE: 8/01/03 ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-29-03
PLOT TIME: 07:47:06

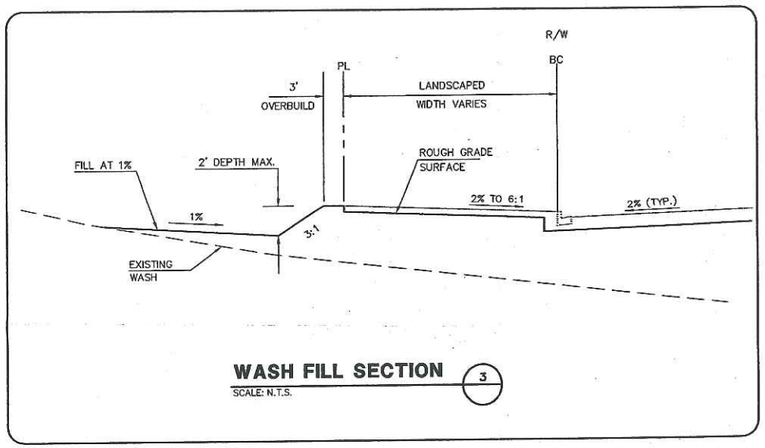
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 • FAX: (702) 804-2299

F:\V2233\VGD\dwg\Mines\V2336G34.dwg

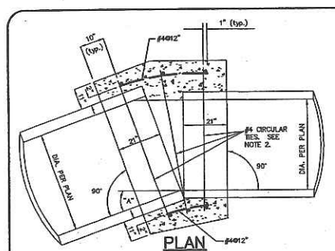
SUMMERLIN
VILLAGE 23B ROUGH GRADING
INTERIM GRADING III

SHEET 34
34 OF 35 SHTS

JOB NO. 62023.260



WASH FILL SECTION (3)
SCALE: N.T.S.



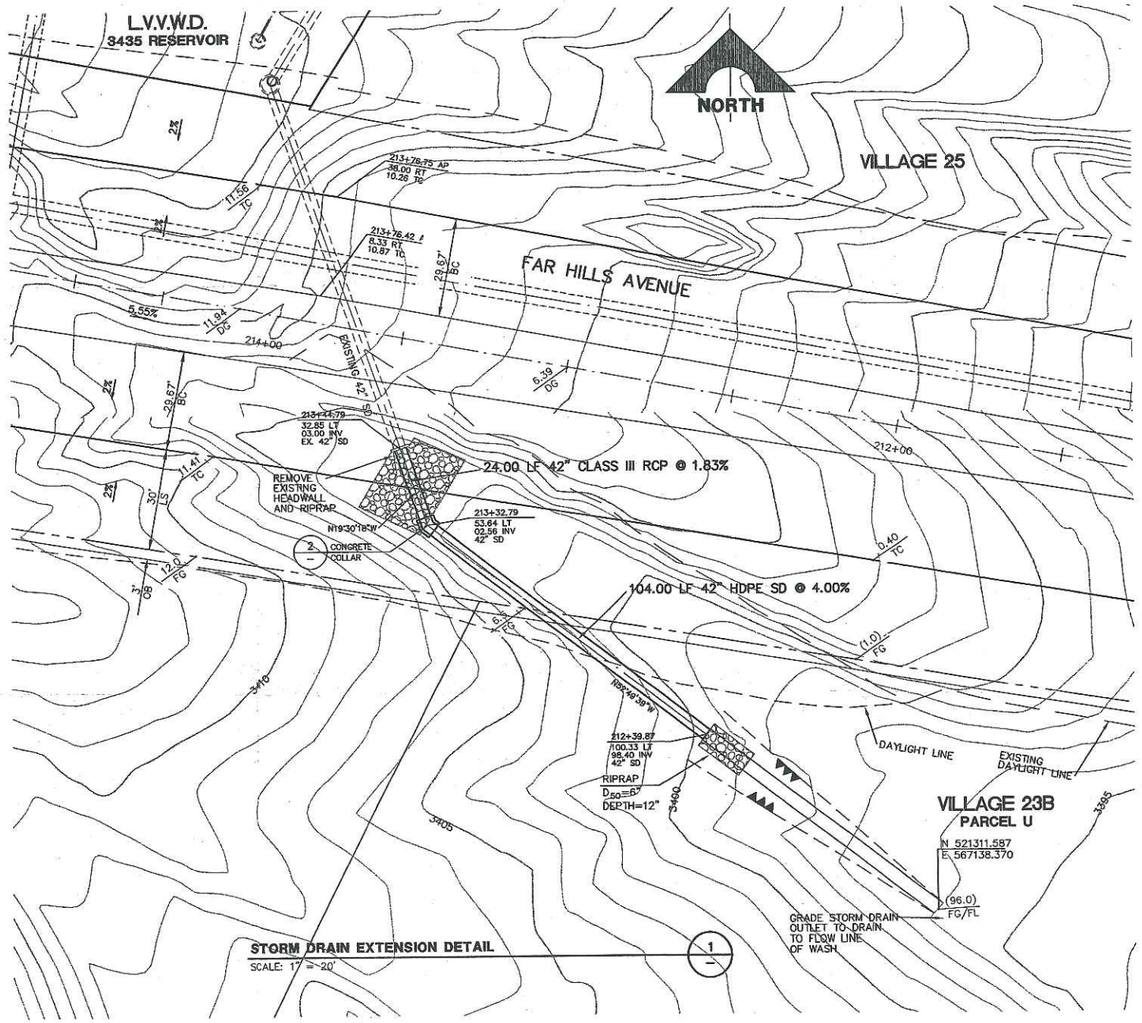
CONCRETE COLLAR DETAIL (2)
SCALE: N.T.S.

NOTES:

1. WHERE THE SLOPE OF THE UPSTREAM PIPE IS GREATER THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN SOFFITS. WHERE THE SLOPE OF THE UPSTREAM PIPE IS LESS THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN INVERTS.
2. WHERE THE SPACE BETWEEN THE PIPE EXTREMITIES EXCEEDS 2 1/2 INCHES, THE NUMBER OF CIRCULAR TIES SHALL BE INCREASED TO MAINTAIN A MAXIMUM SPACING OF 6 INCHES CENTER TO CENTER. CIRCULAR TIES SHALL HAVE A DIAMETER 5 INCHES GREATER THAN THE OUTSIDE DIAMETER OF THE LARGER PIPE.
3. CONTRACTOR TO USE CONCRETE COLLAR WHEN CONNECTING TO AN EXISTING STUB WHERE A FIELD ADJUSTMENT IS NEEDED. ANGLE "A" SHALL NOT EXCEED 45°.

CIRCULAR TIES:

PIPE DIAMETER	SPACE BETWEEN PIPE EXTREMITIES	NO. OF CIRCULAR TIES
21" or less	2 1/2"	3
24" to 30"	2 1/2" or less	3
33" to 57"	2 1/2" or less	4
60" to 66"	2 1/2" or less	5



STORM DRAIN EXTENSION DETAIL (1)
SCALE: 1" = 20'

STATE OF NEVADA — PROFESSIONAL ENGINEER — BRET M. HIGGS — CIVIL — No. 19259 — 08/01/03

REV	DATE	DESCRIPTION	DATE	AGENCY APP'D	DATE	GCW APP'D

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 08-28-03
PLOT TIME: 11:51:42
gpeterson
F:\V23b\V65\dwg\mmpk\23B5c035.dwg

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000• FAX (702) 804-2299

ISSUE FOR AGENCY REVIEW - NOT FOR CONSTRUCTION
ISSUE DATE: 8/01/03

SUMMERLIN
VILLAGE 23B ROUGH GRADING
MISCELLANEOUS DETAILS

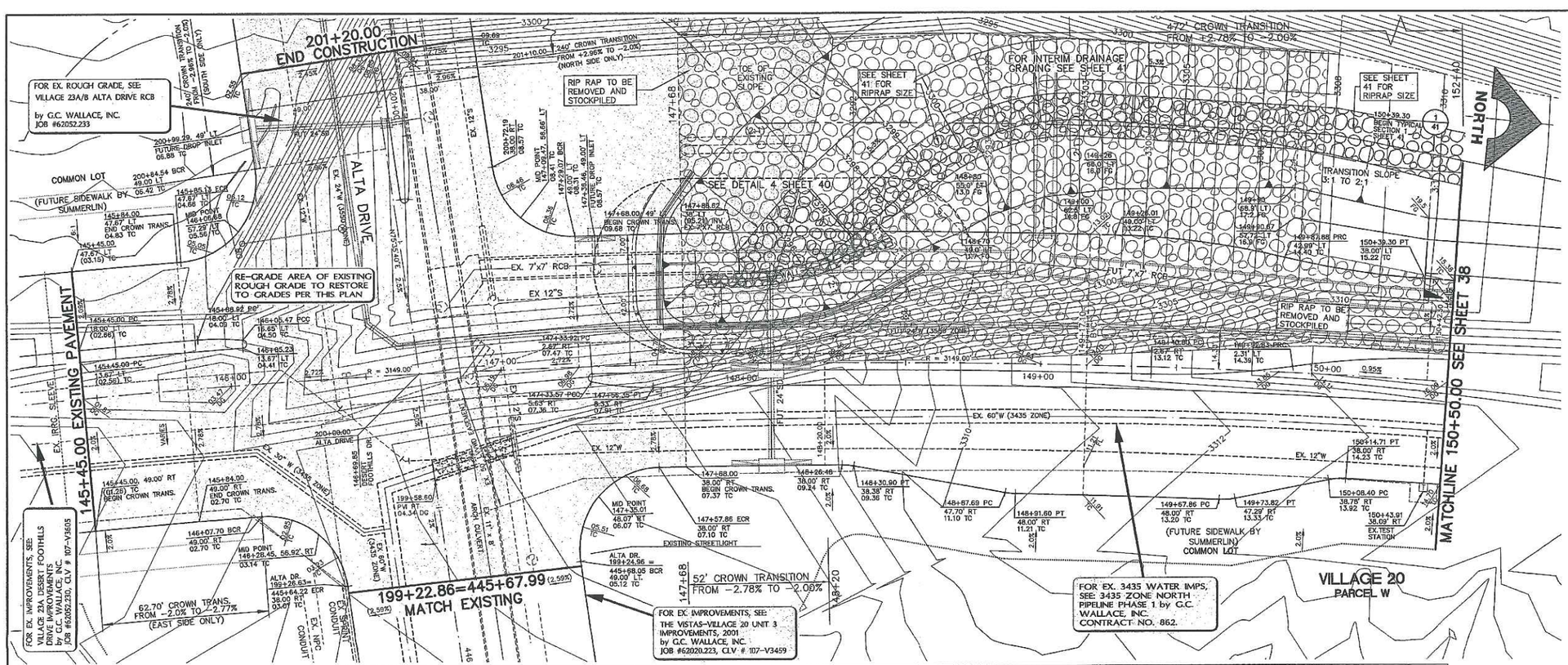
SHEET 35
35 OF 35 SHTS

JOB NO. 62023.260

dm24.25 dwg 023972.da

DESERT FOOTHILLS DRIVE (PUBLIC)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



20 0 20 40
SCALE FEET

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-227-2929

CLV DRAWING NO.

DRAWING 37
37 OF 43 SHTS

JOB NO. 62023.260

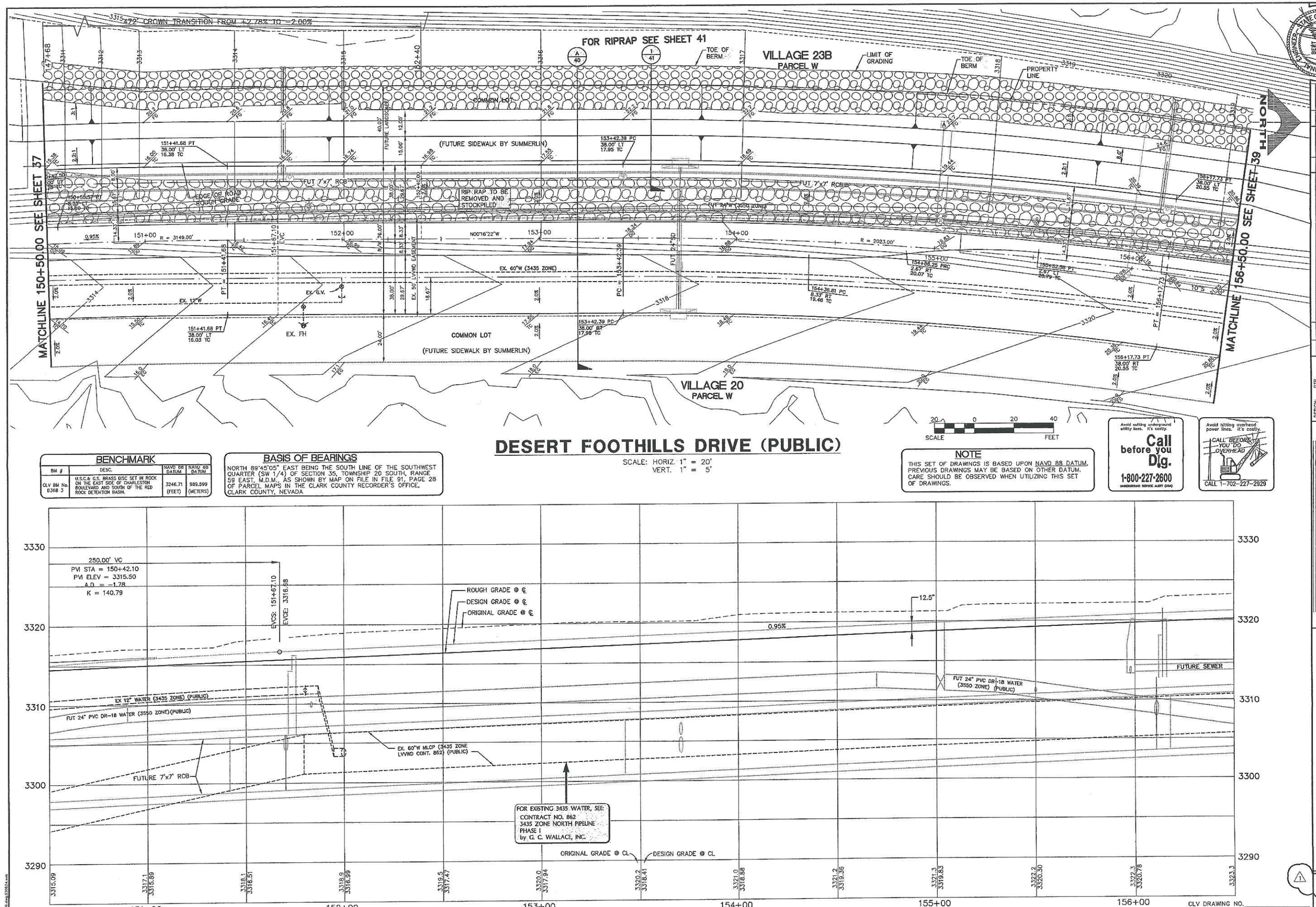
SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
DESERT FOOTHILLS DRIVE PLAN AND PROFILE
STA. 145+45 TO 150+50

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-19-06
PLOT TIME: 11:44:15

REV	DATE	DESCRIPTION	DATE	ASSY	ASP	DATE	ACM	ASP
1	6/01/06	NEW SHEET FOR DESERT FOOTHILLS DRIVE GRADING						

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
I:\V23b\WD\dwg\Vmisc\235tc037.dwg

PROFESSIONAL ENGINEER - STATE OF NEVADA
BRENT T. WALLACE
No. 7844
CIVIL
DATE: 7/20/06



DESERT FOOTHILLS DRIVE (PUBLIC)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

SCALE 20 0 20 40 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. DJ68 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly. **Call before you Dig. 1-800-227-2600** UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly. CALL BEFORE YOU DO OVERHEAD CALL 1-702-227-2929

CLV DRAWING NO.

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000• FAX: (702) 804-2299
gpeterson
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SUMMERLIN

VILLAGE 23B WATERLINE IMPROVEMENT GRADING

DESERT FOOTHILLS DRIVE PLAN AND PROFILE
STA: 150+50 TO 156+50

DRAWING 38
38 OF 43 SHTS

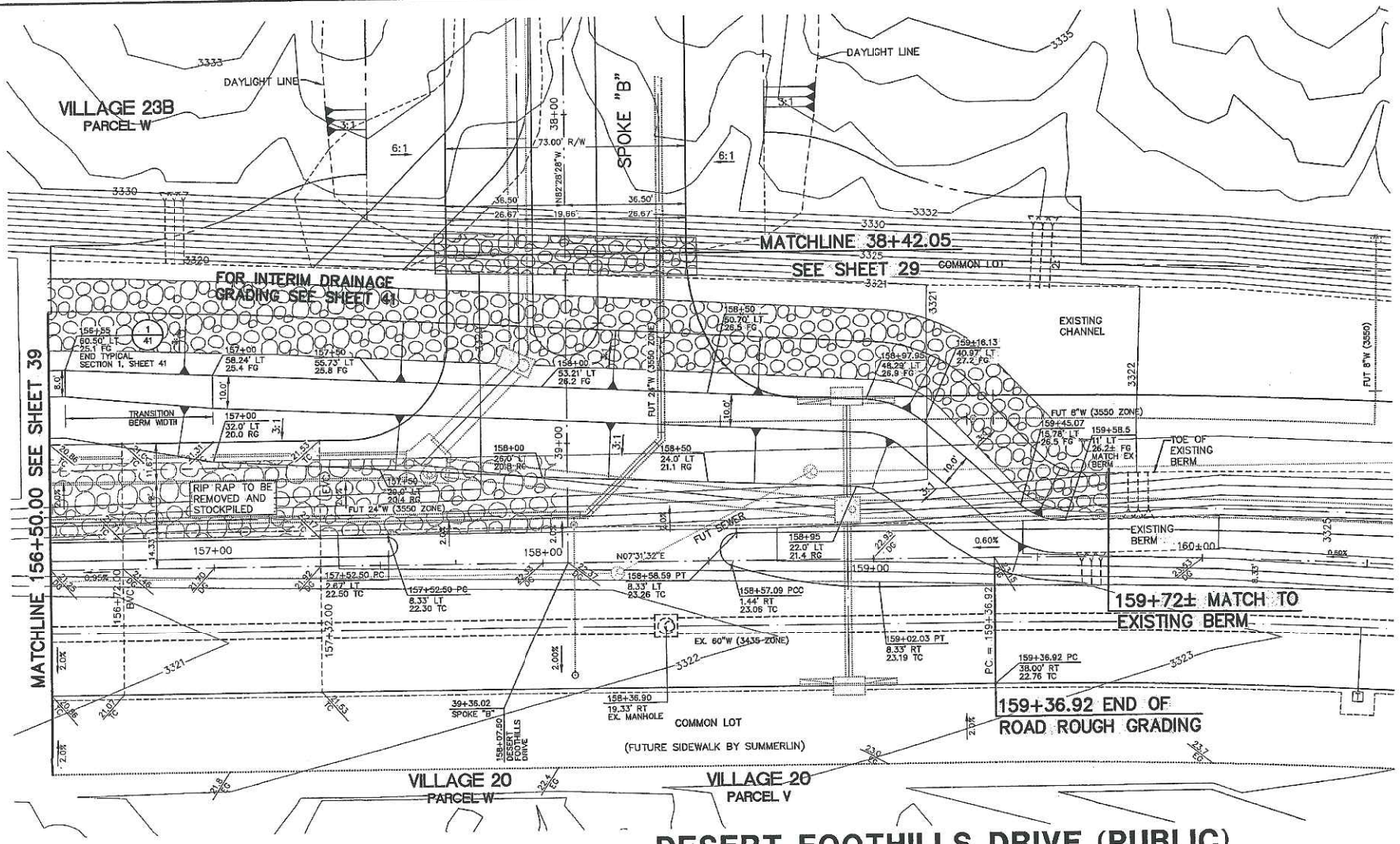
JOB NO. 62023.260

REV	DATE	DESCRIPTION	DATE AGEN. APP	DATE GOV. APP
1	8/07/08	REV SHEET FOR DESERT FOOTHILLS DRIVE GRADING		

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-15-08
PLOT TIME: 11:48:14

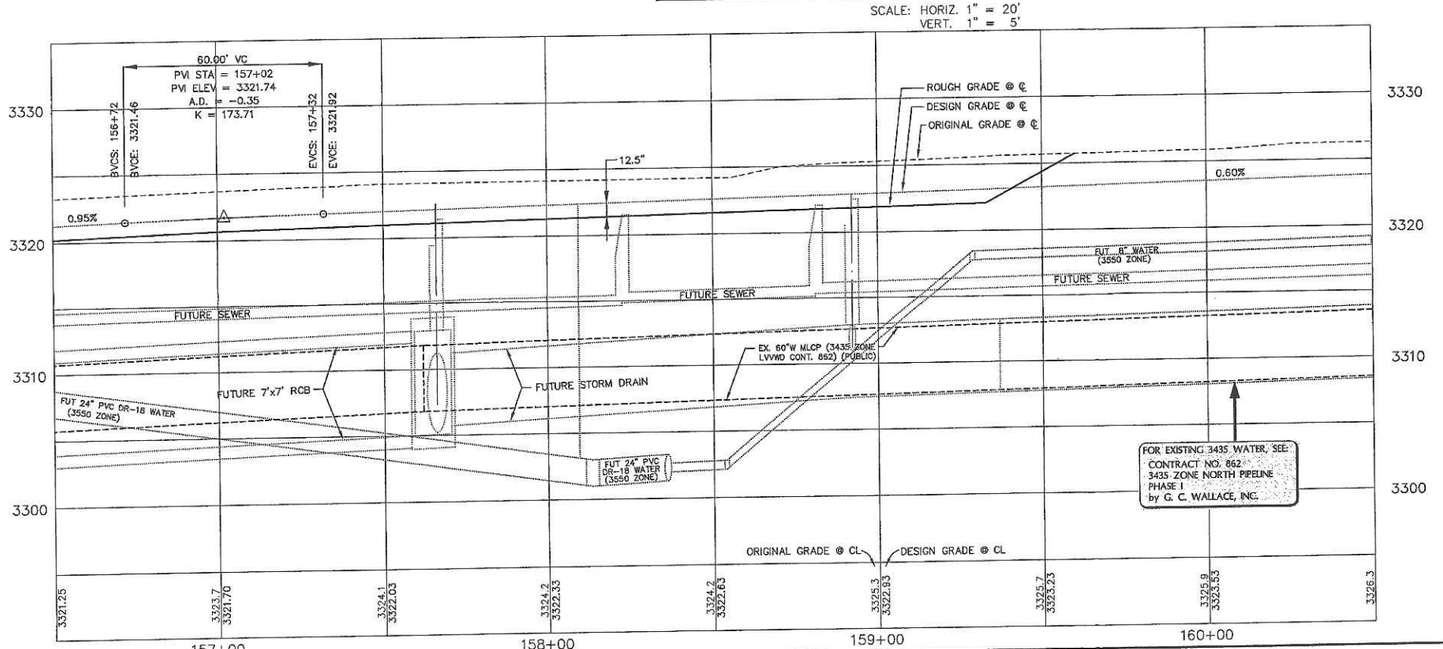
DATE: 1/2/08

GRADING ENGINEER - STATE OF NEVADA - BRETT H. GILLESPIE - No. 9146 - PROFESSIONAL ENGINEER - CIVIL



DESERT FOOTHILLS DRIVE (PUBLIC)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'



BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No: D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

20 0 20 40
SCALE FEET

NOTE

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Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-227-2929

APPROVAL:

LAS VEGAS VALLEY WATER DISTRICT DATE

CLV DRAWING NO.

ENGINEER - STATE OF NEVADA - BERT M. HARRIS - No. 10295 - PROFESSIONAL ENGINEER - CIVIL
DATE: 12/16

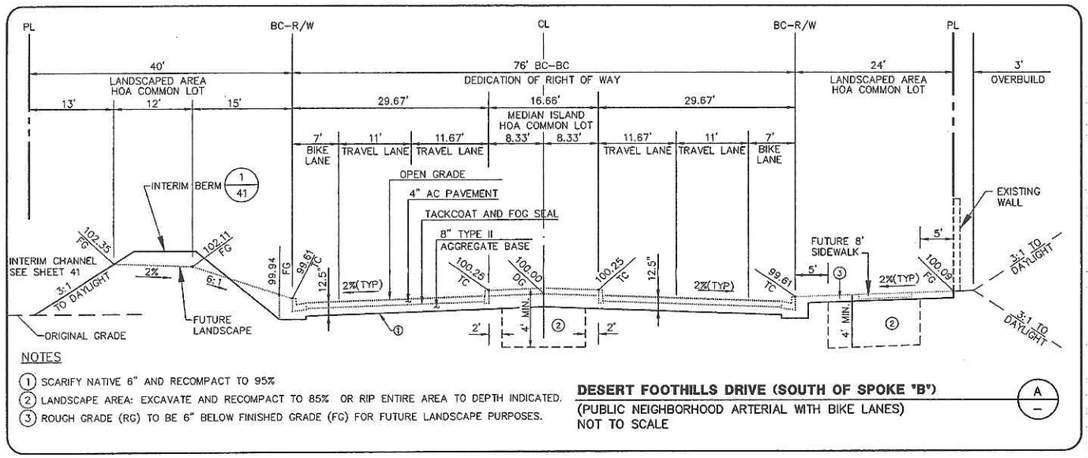
REV	DATE	DESCRIPTION	DATE AGEN. APP	DATE ENGR. APP
1	9/01/06	H/W SHEET FOR DESERT FOOTHILLS DRIVE GRADING		

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-18-06
PLOT TIME: 11:51:02

G. C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD.,LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gpaterson
I:\V23b\WG\dwg\Vmps\V23BSc039.dwg

SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
DESERT FOOTHILLS DRIVE PLAN AND PROFILE
STA. 166+50 TO 160+00

DRAWING 39
39 OF 43 SHTS
JOB NO. 62023.260

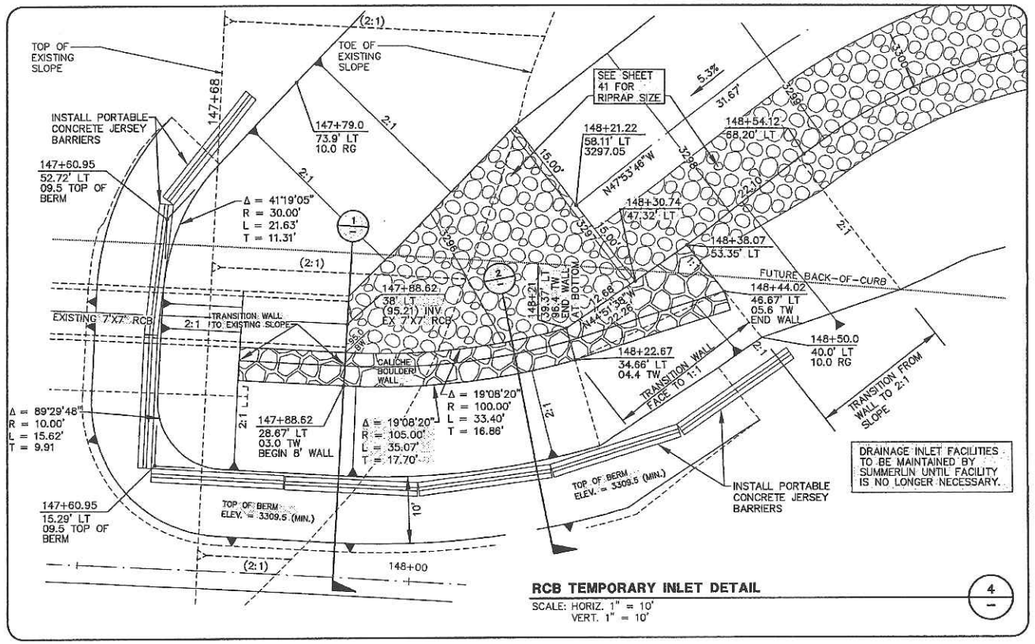


NOTES

(1) SCARIFY NATIVE 6" AND RECOMPACT TO 95%
(2) LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR RIP ENTIRE AREA TO DEPTH INDICATED.
(3) ROUGH GRADE (RG) TO BE 6" BELOW FINISHED GRADE (FG) FOR FUTURE LANDSCAPE PURPOSES.

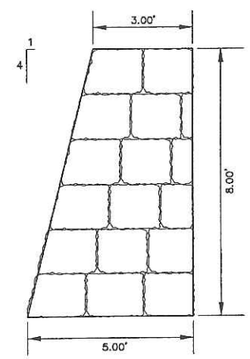
DESERT FOOTHILLS DRIVE (SOUTH OF SPOKE "B")
(PUBLIC NEIGHBORHOOD ARTERIAL WITH BIKE LANES)
NOT TO SCALE

A



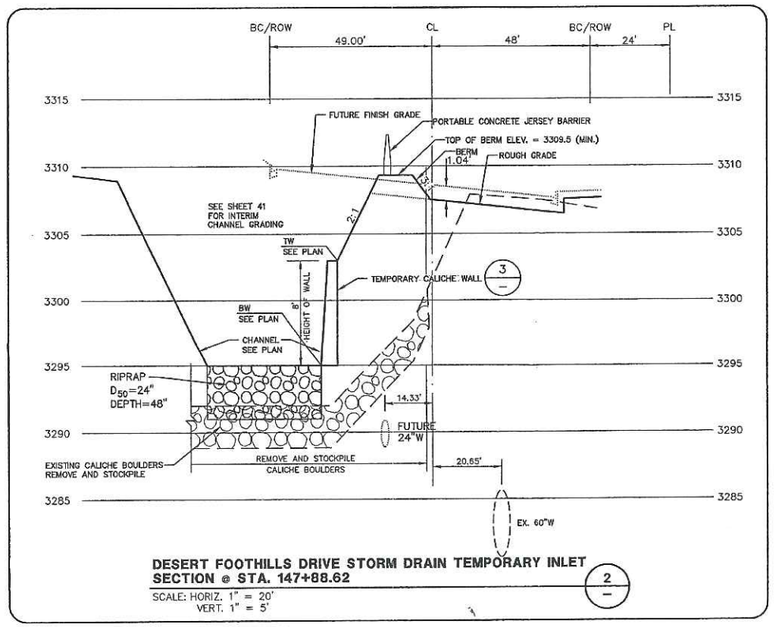
RCB TEMPORARY INLET DETAIL
SCALE: HORIZ. 1" = 10'
VERT. 1" = 10'

4



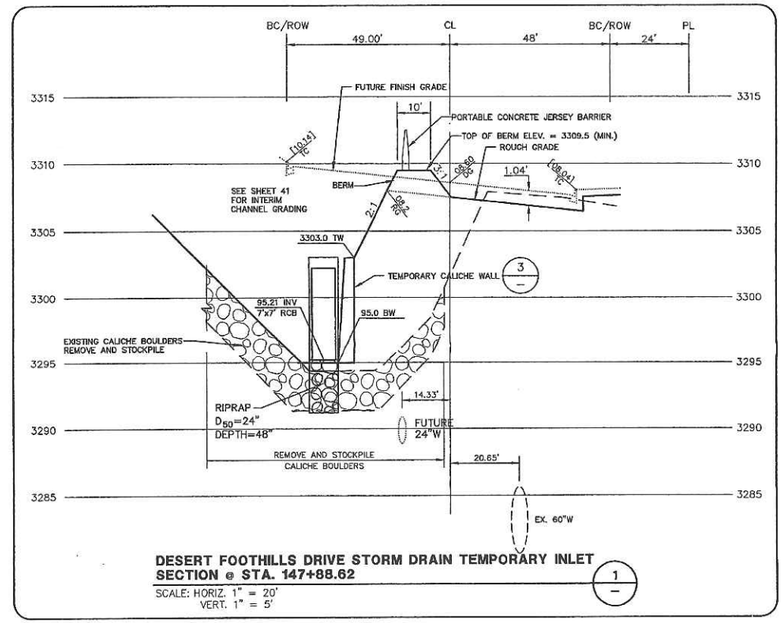
TEMPORARY CALICHE BOULDER WALL DETAIL
SCALE: HORIZ. 1" = 2'
VERT. 1" = 2'

3



DESERT FOOTHILLS DRIVE STORM DRAIN TEMPORARY INLET SECTION @ STA. 147+88.62
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

2



DESERT FOOTHILLS DRIVE STORM DRAIN TEMPORARY INLET SECTION @ STA. 147+88.62
SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

1

STATE OF NEVADA — PROFESSIONAL ENGINEER — BRIAN T. HUGHES — No. 10259 — DATE: 11/2/10

REV	DATE	DESCRIPTION	DATE	APP
1	11/2/10	PDTP FOR NEW SHEET FOR DESERT FOOTHILLS DRIVE GRADING	11/2/10	BTH

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 11-03-06
PLOT TIME: 10:52:49

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 • FAX (702) 804-2099
E:\V23\RG\Users\V23RGGTP.dwg
gpatterson

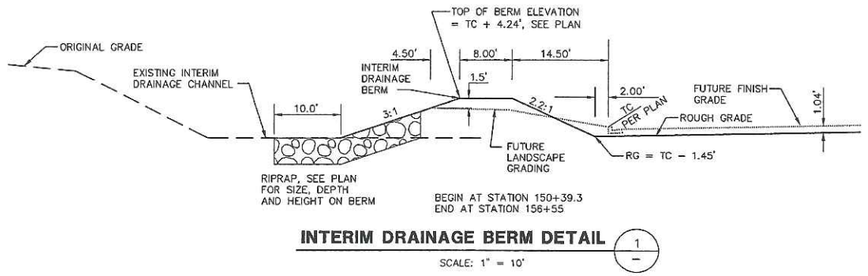
SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
DESERT FOOTHILLS DRIVE SECTIONS AND DETAILS

DRAWING 40
40 OF 43 SHTS

JOB NO. 62023.260

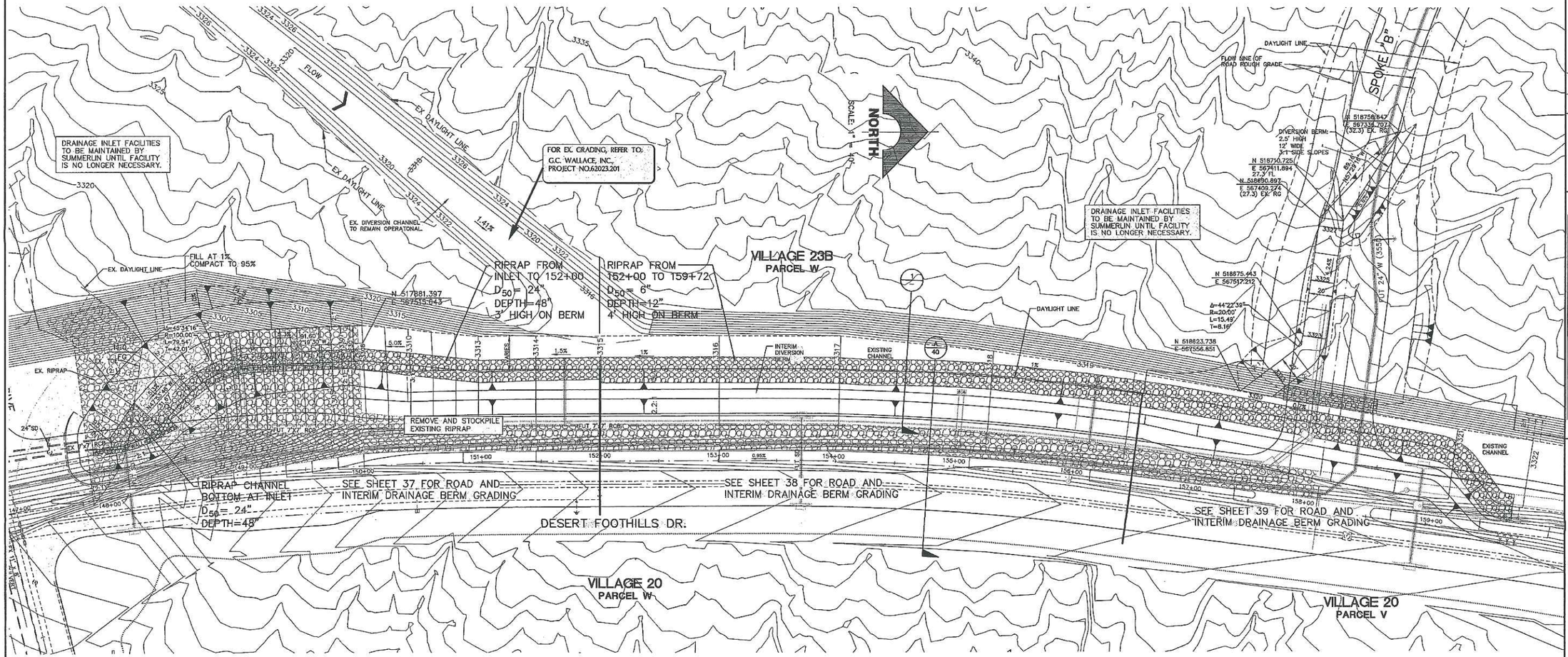
CLV DRAWING NO.

rpc24.36.dwg 120524.ctb



INTERIM DRAINAGE BERM DETAIL (1/-)

SCALE: 1" = 10'



SCALE: 40 0 40 80 FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 0368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

Avoid hitting overhead power lines. It's costly.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-227-2929

CLV DRAWING NO.

REV. DATE: 7/07/06 NEW SHEET FOR DESERT FOOTHILLS DRIVE GRADING
DESCRIPTION: DATE: AGEN. APP: DATE: CCW. APP:

DESIGN: GTP
DRAWN: GTP
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-13-06
PLOT TIME: 13:28:00

DATE: 7/20/06

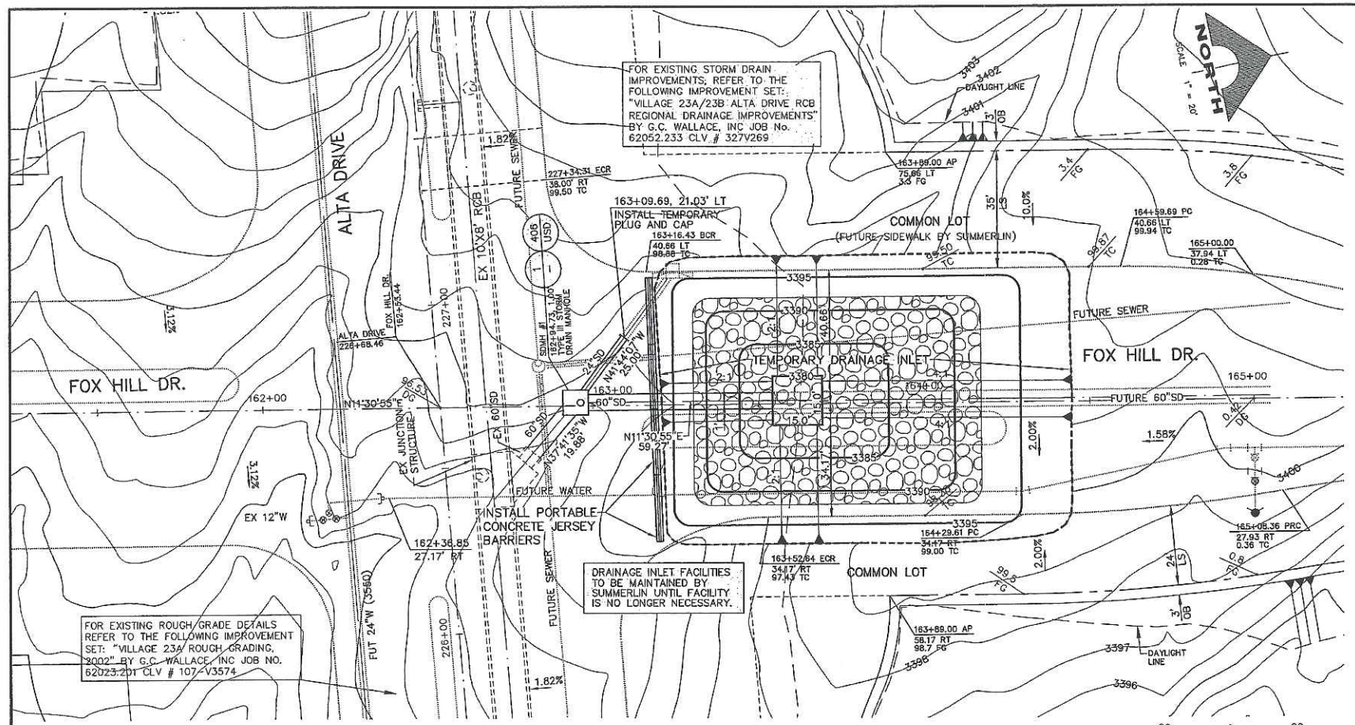
STATE OF NEVADA
BRENT W. WALLACE
No. 10276
CIVIL
PROFESSIONAL ENGINEER

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
(702) 804-2100 FAX (702) 804-2101
E:\V23b\GW\dwg\prop\23BGr04.dwg

SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
INTERIM GRADING PLAN V

DRAWING 41
41 OF 43 SHTS

JOB NO. 62023.260



FOX HILL DRIVE (PUBLIC)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

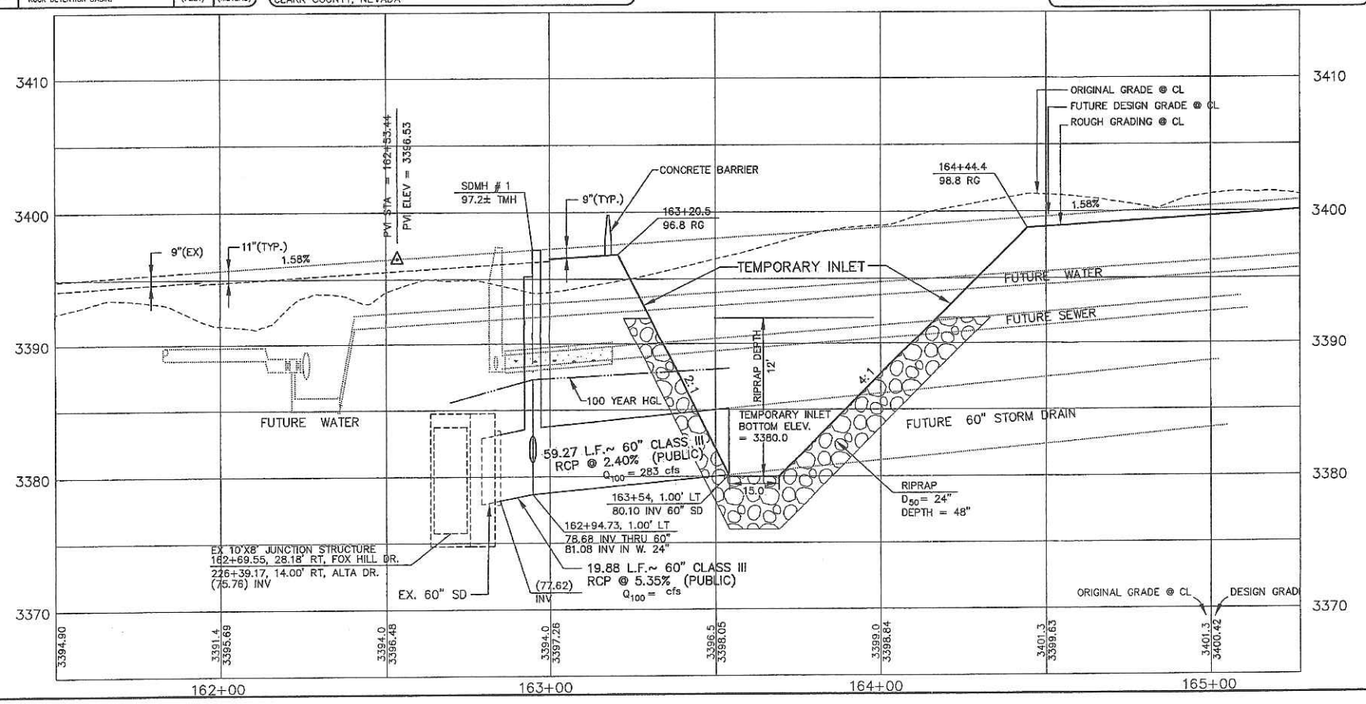
BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 0388 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

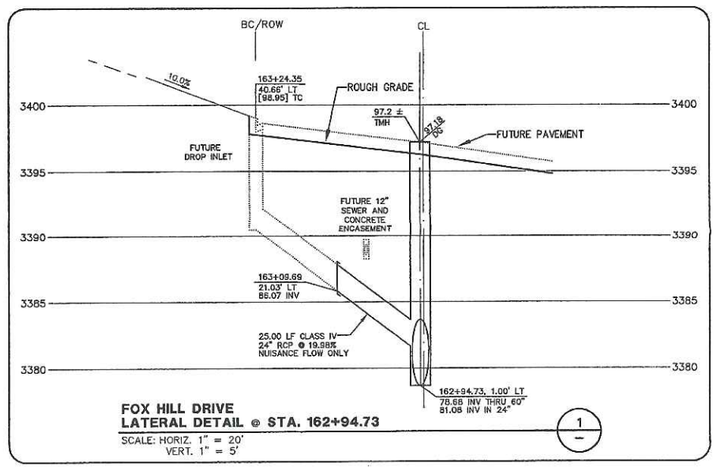
BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

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FOX HILL DRIVE
LATERAL DETAIL @ STA. 162+94.73 (1)

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
(UNDERGROUND SERVICE ALERT (USA))

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111

APPROVAL:

LAS VEGAS VALLEY WATER DISTRICT (#28258) DATE

ENGINEER'S STATE OF NEVADA — BRET T. ALLEN — No. 9146 — PROFESSIONAL ENGINEER — CIVIL
DATE: 12/16

REV	DATE	DESCRIPTION	DATE	AGEN.	APP.	DATE	CONV.	APP.
1	5/10/06	REV SHEET FOR ADDING STORM DRAIN TO FOX HILL DRIVE						

DESIGN: GTP
DRAWN: GTP
CHECK: BAH
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-18-06
PLOT TIME: 11:31:43

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gpeterson
H:\V23b\RG\dwgs\Vmss\V23BGC042.dwg

SUMMERLIN
VILLAGE 23B WATERLINE IMPROVEMENT GRADING
FOX HILL DRIVE STORM DRAIN AND INTERIM DRAINAGE INLET

SHEET 42
42 OF 43 SHTS

JOB NO. 62023.260

CLV DRAWING NO. _____

HA 211

ADDENDUM
TO THE
TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 23A/23B
ALTA DRIVE RCB REGIONAL DRAINAGE IMPROVEMENTS

62052.233

September 2003

Prepared for:

The Howard Hughes Corporation
a Delaware Corporation
10000 West Charleston Blvd., Ste. 200
Las Vegas, Nevada 89135
Phone: (702) 791-4300
Fax: (702) 791-4453

G. C. WALLACE, INC.
Engineers/Planners/Surveyors

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

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Chairman
City of Las Vegas

Chip Maxfield
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Clark County

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Karla Burton
City of Boulder City

Mayor James Gibson
City of Henderson

Michael Mack
City of Las Vegas

Mayor Bill Nicholes
City of Mesquite

Bruce L. Woodbury
Clark County

November 13, 2003

Mr. Randy Fultz, P.E.
City of Las Vegas Public Works
731 S. Fourth St
Las Vegas, NV 89101

DISTRICT CONCURRENCE: SUMMERLIN VILLAGES 23A/23B – ALTA DRIVE RCB UPDATE (DS3225) (RFCD No. 03-5466)

Dear Mr. Fultz:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated September 18, 2003, for the above-mentioned project as submitted by G. C. Wallace, Inc. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Public Works dated October 13, 2003.

District concurs with acceptance of this Technical Drainage Study by City of Las Vegas Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage.*

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by G. C. Wallace, Inc. may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: _____
Andrew R. Trelease, P.E.
Senior Civil Engineer

ART:css

c: Randall K. Gremlich, P.E., G. C. Wallace, Inc.

File: 20-59-22.GCW

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: *http://www.ccrfcd.org*

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM	DATE: October 13, 2003
TO: Land Development Services Department of Public Works	FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT: Drainage Study for: Summerlin Villages 23A / 23B - Alta Drive RCB - Update	COPIES TO: G.C. Wallace
Cross Streets: Desert Foothills Drive & Collector Road	Howard Hughes Corporation
FILE NO.: F:\Depot\DSMEMOS\DS3225D.doc	Bart Anderson, P.E., DEVCO
Parcel Number: 137-22-000-006, 137-28-000-001	CCRFCD
Zoning Action:	
FEMA Flood Zone: YES / No X	
Proposed Storm Drain: YES X / No	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID G.R. #
1st Submittal	10/23/2002	11/6/2002	Not Approved	$250.00	93648: $250
2nd Submittal	11/8/2002	11/22/2002	Conditionally Approved	$250.00	94545: $250
CCRFCD	12/18/2002	12/24/2002	Concurrence	N/C	N/C
3rd Submittal	9/26/2003	10/10/2003	Conditionally Approved	$250.00	111744: $250
			TOTAL FEES (LDDRS):	$750.00	---

REMARKS:

3rd Submittal: Update to revise lateral flows into the Regional Alta RCB and minor relocation of lateral pipes and sizes

The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions.
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

1. The changes proposed in this update impacts the Clark County Regional Facility (APAD 0000), CCRFCD concurrence is required again prior to final approval of the drainage study by the City of Las Vegas.

END OF REMARKS
B&H/ays

T/R/S: T20S/R59E/22 & 28
AREA K-22 & K-28

Post-it® Fax Note 7671	Date 10/13/03 # of pages ▶
To Amanda Gonzales	From Albert Sung
Co./Dept. GCW	Co. CLV
Phone #	Phone # 229-200
Fax # 804-2297	Fax #

SUMMERLIN

SM

VILLAGE 23A/23B ALTA DRIVE RCB REGIONAL DRAINAGE IMPROVEMENTS

SID #808 PROJECT NO. 32
(SUMMERLIN REGIONAL PROJECT NUMBERS: R5, R6, AND R7)
APN # 137-22-000-006

2002

DEVELOPER

The Howard Hughes Corporation SM
An Affiliate of THE ROUSE COMPANY

THE HOWARD HUGHES CORPORATION
a Delaware corporation

10000 W. CHARLESTON, SUITE 200
LAS VEGAS, NEVADA 89135
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450

ENGINEER

G.C. WALLACE, INC.
Engineers/Planners/Surveyors

1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
OFFICE: (702) 804-2000, FAX: (702) 804-2299
SUMMERLIN OFFICE 10000 CHARLESTON BLVD., STE. 130
OFFICE: (702) 804-2160, FAX: (702) 804-2295

DRAINAGE CERTIFICATION

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

BERT A. HUGHES R.P.E. 10259 — DATE

THE HOWARD HUGHES CORPORATION,
a Delaware corporation

By: _____ DATE
LARRY BROCATO

Title: EXECUTIVE VICE PRESIDENT

"APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-OF-WAY AND / OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FROM ADOPTED STANDARDS AND / OR SPECIFICATIONS, EXCEPT THOSE SPECIFICALLY LISTED UNDER DEVIATIONS FROM STANDARD. THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN DEVIATIONS FROM STANDARDS IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA".

CHARLES KAJKOWSKI, Jr.; PE #4784 — DATE
CITY ENGINEER
CITY OF LAS VEGAS, NEVADA

CLV PLANNING DEPARTMENT

THIS PLAN MEETS THE APPLICABLE STANDARDS IF THE PLANNING AND DEVELOPMENT DEPARTMENT

M. MARGO WHEELER, AICP, CURRENT PLANNING MANAGER — DATE

SPRINT NEVADA DISCLAIMER

NOTE:
THE AFFIXED SPRINT NEVADA APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

SPRINT — REVIEWED BY — DATE

NEVADA POWER COMPANY DISCLAIMER

NOTE:
EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS.

CALL BEFORE YOU DIG: 1(800)227-2600

NEVADA POWER Co. — REVIEWED BY — DATE

DATE

NO WATER IMPROVEMENTS IN THIS SET

LAS VEGAS VALLEY WATER DISTRICT — DATE

CLV FIRE DEPARTMENT — DATE

SOUTHWEST GAS CORP. — DATE

CITY OF LAS VEGAS DRAWING NO. _____ **SHEET 1 OF 32**

PROFESSIONAL ENGINEER - STATE OF NEVADA - BERT A. HUGHES - No. 10259 - CIVIL - DATE 11/7/03

DESIGN:			
DRAWN:			
CHECK:			
ISSUE DATE:			
ISSUE EDITOR:			
PLOT DATE: 08-09-03			
PLOT TIME: 08:20:55			
F:\V23\ALTA-RCB\LDM\MES\ALSdc01.dgn			
REV.	DATE	DESCRIPTION	DATE

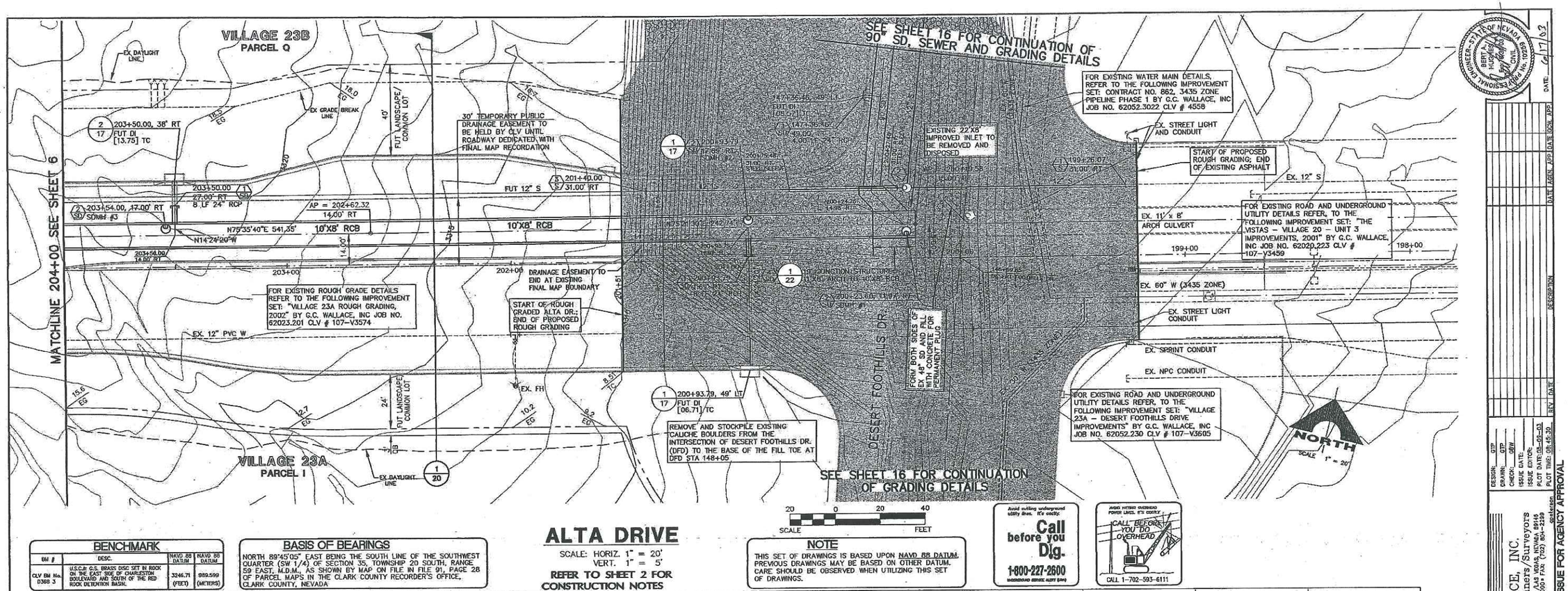
G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
OFFICE: (702) 804-2000, FAX: (702) 804-2299
SUMMERLIN OFFICE 10000 CHARLESTON BLVD., STE. 130
OFFICE: (702) 804-2160, FAX: (702) 804-2295

ISSUE DATE 02/10/03 ISSUE FOR AGENCY APP.

SUMMERLIN
VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS
COVER SHEET

SHEET 1 OF 32 SHTS

JOB NO. 62052.233



BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 J	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

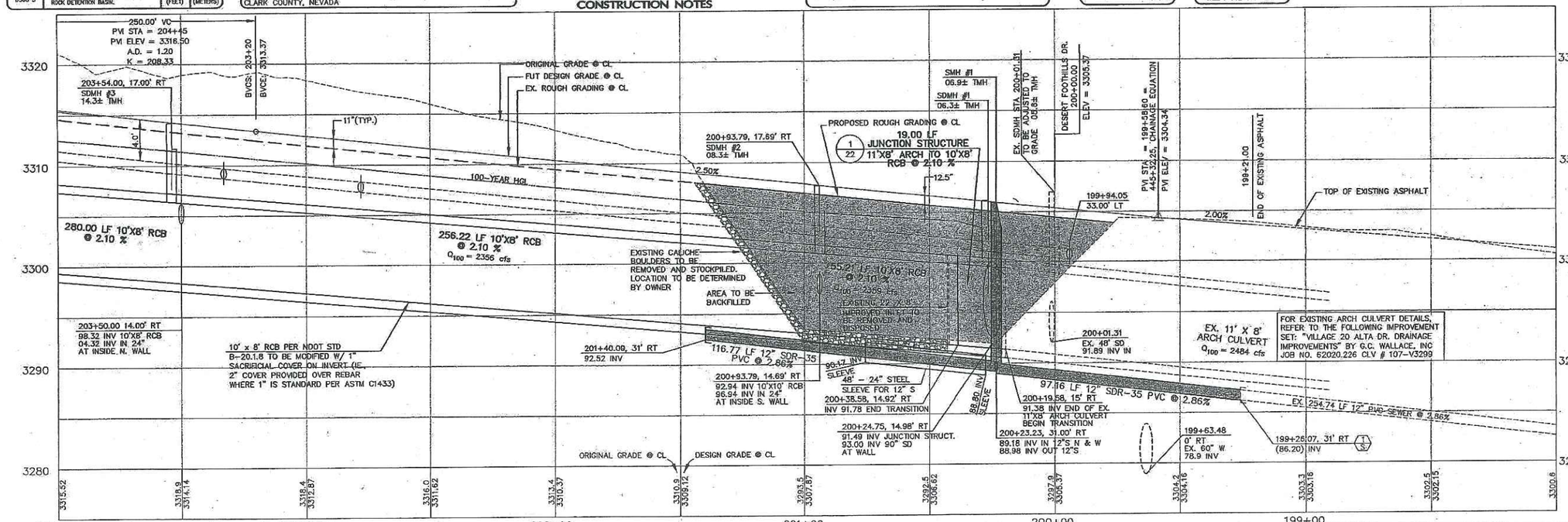
ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.



G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
(702) 804-2100 FAX (702) 804-2199
F:\V23\ALTA-RCB\DWG\MP5\ALTA-DR05.dwg

ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

DESIGN: GTP
DRAWN: GTP
CHECK: GBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 05-05-03
PLOT TIME: 08:45:30

REV.	DATE	DESCRIPTION	DRAWN	APP'D	DATE AGEN. APP'D	DATE BOOK APP'D

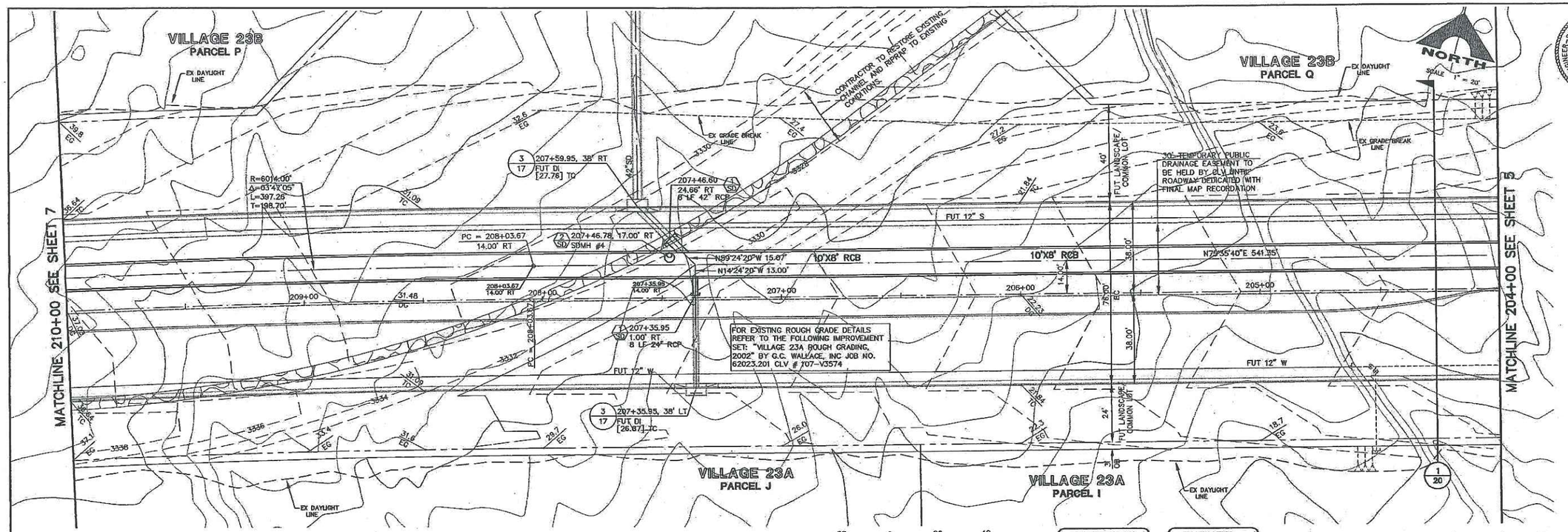
SUMMERLIN

VILL. 23A/23B ALTA DR. RCB REQ. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 200+00 TO STA 204+00

JOB NO. 62052.233

SHEET 5
5 OF 32 SHTS



20 0 20 40
SCALE FEET

ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

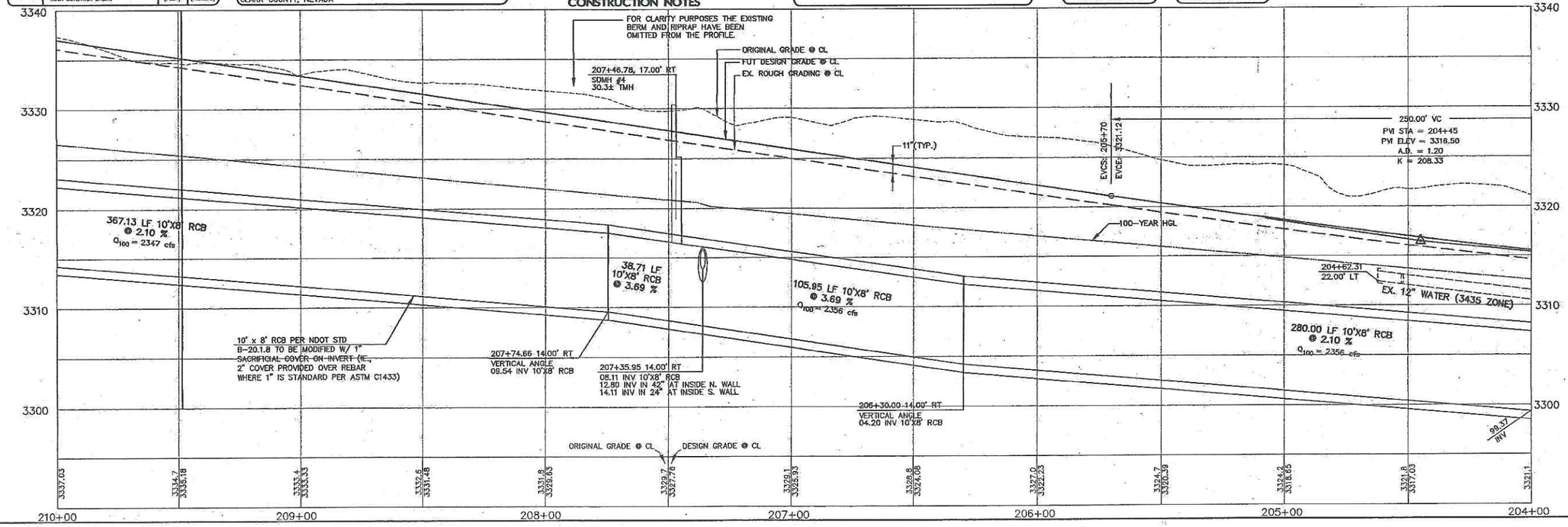
NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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1-800-227-2600
NEVADA ONE CALL ASSN (ENV)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111



DESIGN: OTP
DRAWN: OTP
CHECK: GBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 06-09-03
PLOT TIME: 08:48:43

REV.	DATE	DESCRIPTION	DATE AGEN. APP.	DATE GOV. APP.

DATE: 6/7/02

STATE OF NEVADA — PROFESSIONAL ENGINEER — ROBERT A. TRUSSELL — No. 7486 — CIVIL

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
2030 E. FLAMINGO RD., SUITE 230
LAS VEGAS, NEVADA 89119
TELEPHONE: (702) 804-2500 FAX: (702) 804-2299

P:\V23\ALTA\...RCB\DWG\MPFVALS2-0505.dwg

ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

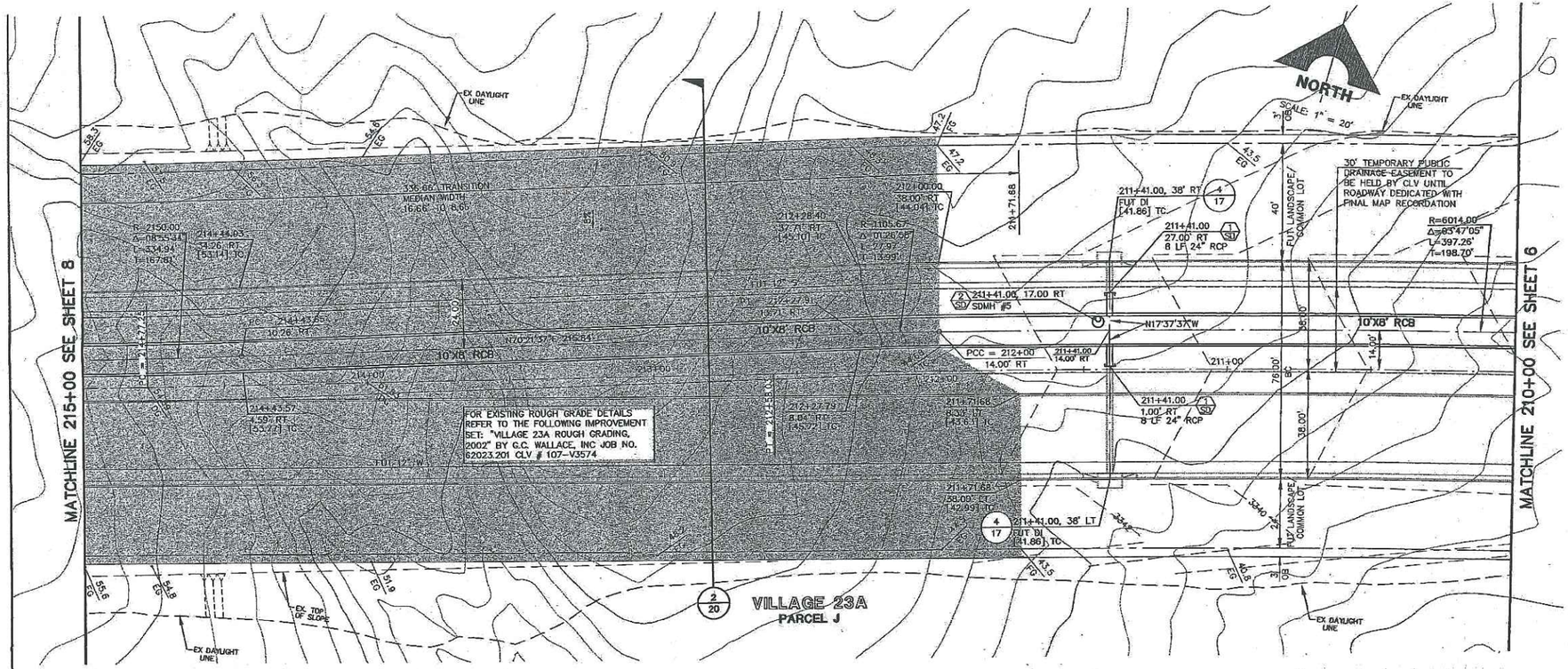
SUMMERLIN

VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 204+00 TO STA 210+00

SHEET
6
6 OF 32 SHTS

JOB NO. 62052.233



ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

SCALE: 20 0 20 40 FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.595 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

NOTE

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Avoid cutting underground utility lines. It's costly. **Call before you Dig. 1-800-227-2600** (NEVADA ONE CALL AGENT 0010)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-8111

ALBERT A. PAGLIARO No. 10258 STATE OF NEVADA PROFESSIONAL ENGINEER CIVIL DATE: 10/10/02

NO.	DESCRIPTION	DATE	AGEN. APP.	DATE	CONT. APP.	DATE
1	ISSUE FOR AGENCY APPROVAL	02/10/03				

DESIGN: GTP
DRAWN: GTP
CHECK: GTP
ISSUE DATE: 02/10/03
PLOT DATE: 02-09-03
PLOT TIME: 08:54:31

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299

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ISSUE DATE: 02/10/03

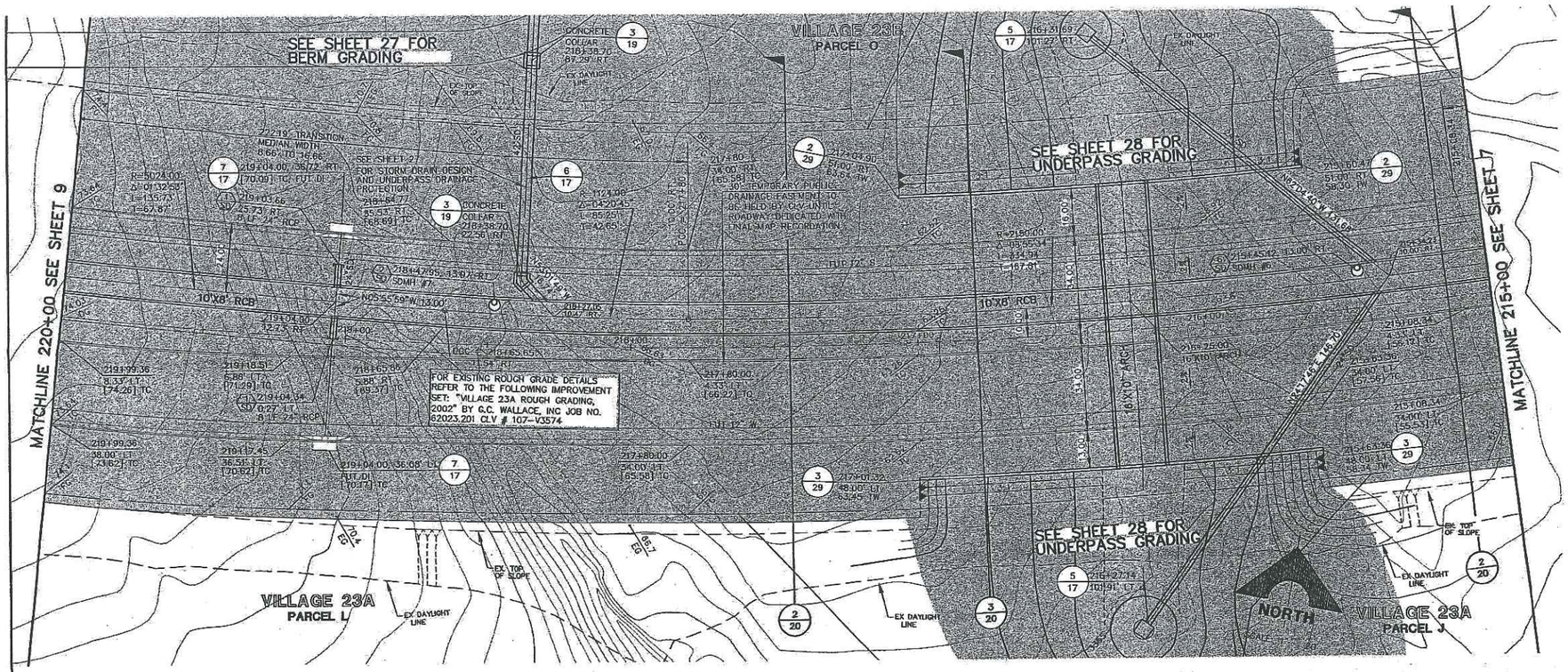
JOB NO. 62052.233

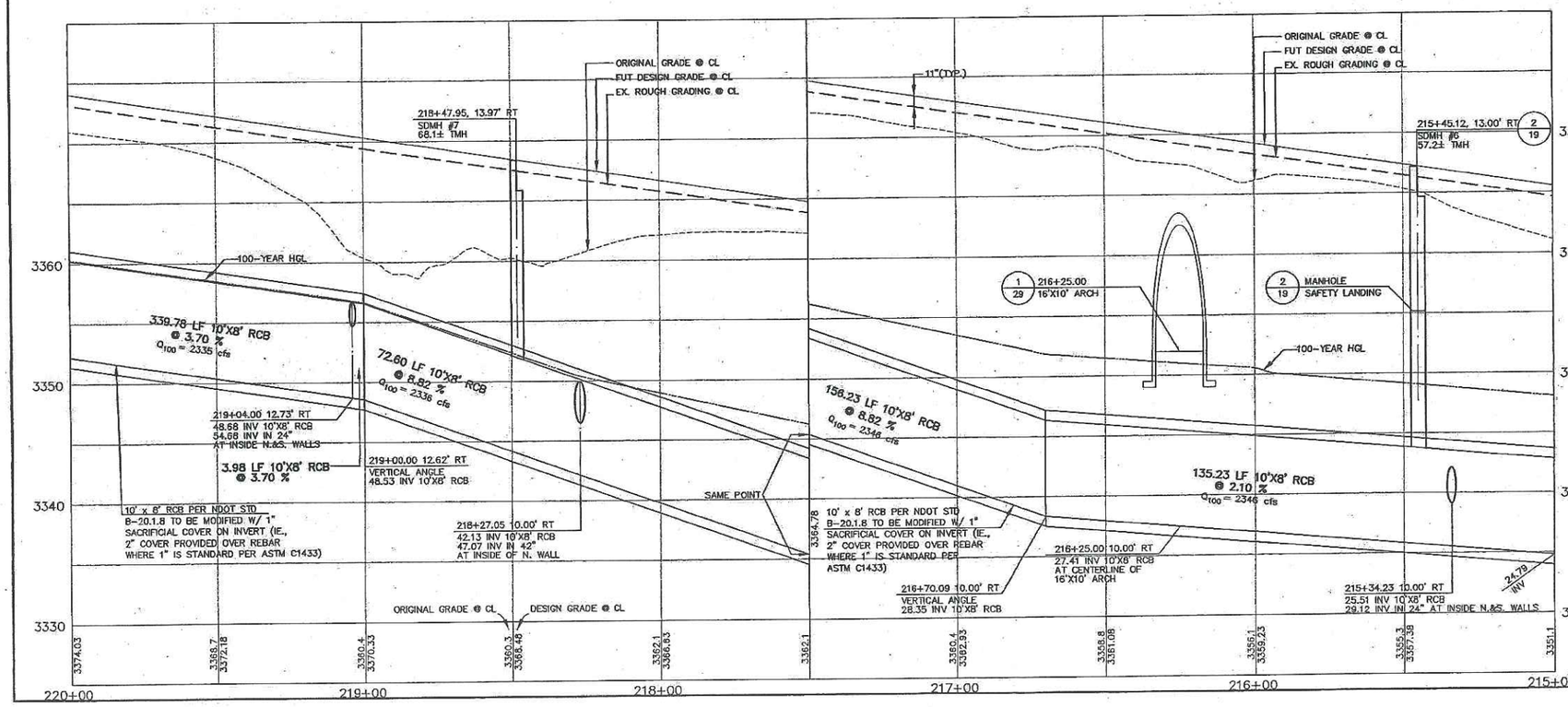
SUMMERLIN

VILL 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 210+00 TO STA 215+00

SHEET 7
7 OF 32 SHTS





Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
WASHOE COUNTY AREA 644

Avoid hitting overhead power lines. It's costly.
CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-5111

ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

SCALE 20 0 20 40 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88* DATUM
CLV BM No. 0368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RCD ROCK DETENTION BASIN.	3245.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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STATE OF NEVADA — ROBERT A. HUDDLESTON — No. 9508 — PROFESSIONAL ENGINEER — CIVIL
DATE: 11/7/02

DESIGN: GTP	DRAWN: GTP	CHECK: GBW	ISSUE DATE:	ISSUE EDITOR:	PLOT DATE: 05-20-03	PLOT TIME: 08:58:39

REV.	DATE	DESCRIPTION	DATE	APP	DATE	APP

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2099

ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

SUMMERLIN

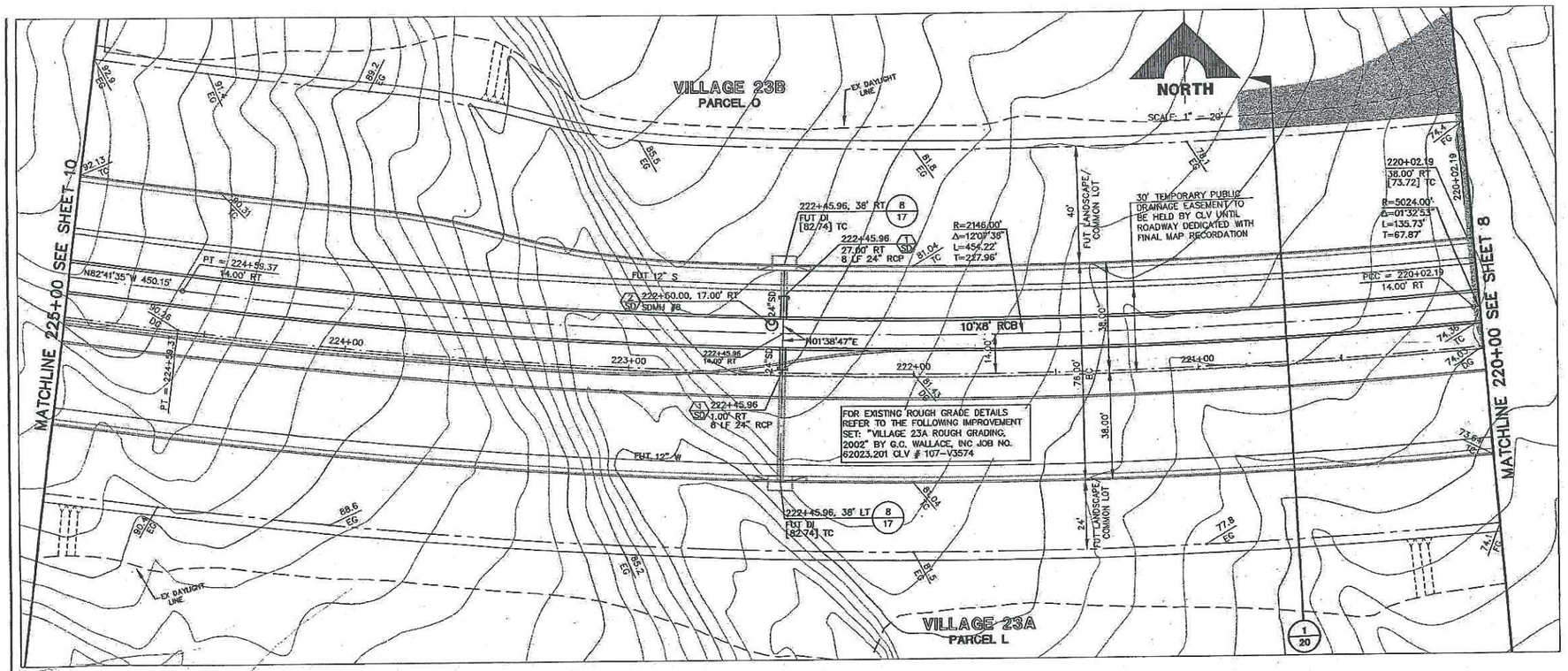
VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

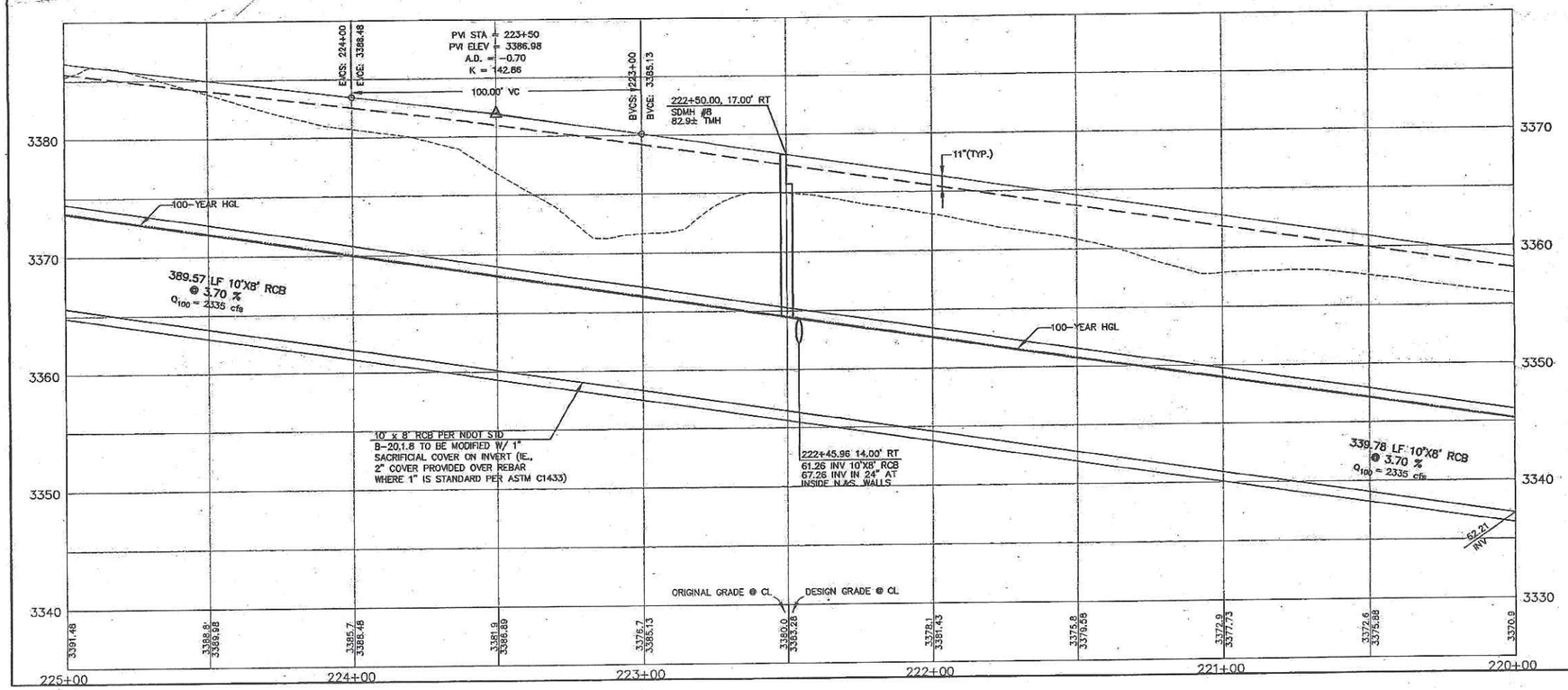
ALTA DRIVE PLAN AND PROFILE
STA. 215+00 TO STA. 220+00

SHEET 8
8 OF 32 SHTS

JOB NO. 62052.283

F:\V23\ALTA-RCB\DWGS\RCB-PP.DWG





ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

SCALE: 20 0 20 40 FEET

BENCHMARK

BM #:	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 0388 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.399 (METERS)

BASIS OF BEARINGS

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Avoid cutting underground utility lines. It's costly. Call before you Dig. 1-800-227-2600 UNDERGROUND SERVICE ALERT (USA)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

BERT A. GOFF — STATE OF NEVADA — REGISTERED ENGINEER — No. 10259 — CIVIL — DATE: 1/7/03

DESIGN: GTP
DRAWN: GTP
CHECK: GBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 1/28/03 - 09:52
PLOT TIME: 09:01:33

REV	DATE	DESCRIPTION	DATE APPD	APP'D	DATE SCHL APP'D

ISSUE FOR AGENCY APPROVAL
ISSUE DATE: 02/10/03

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD./LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2299
gwlaswww
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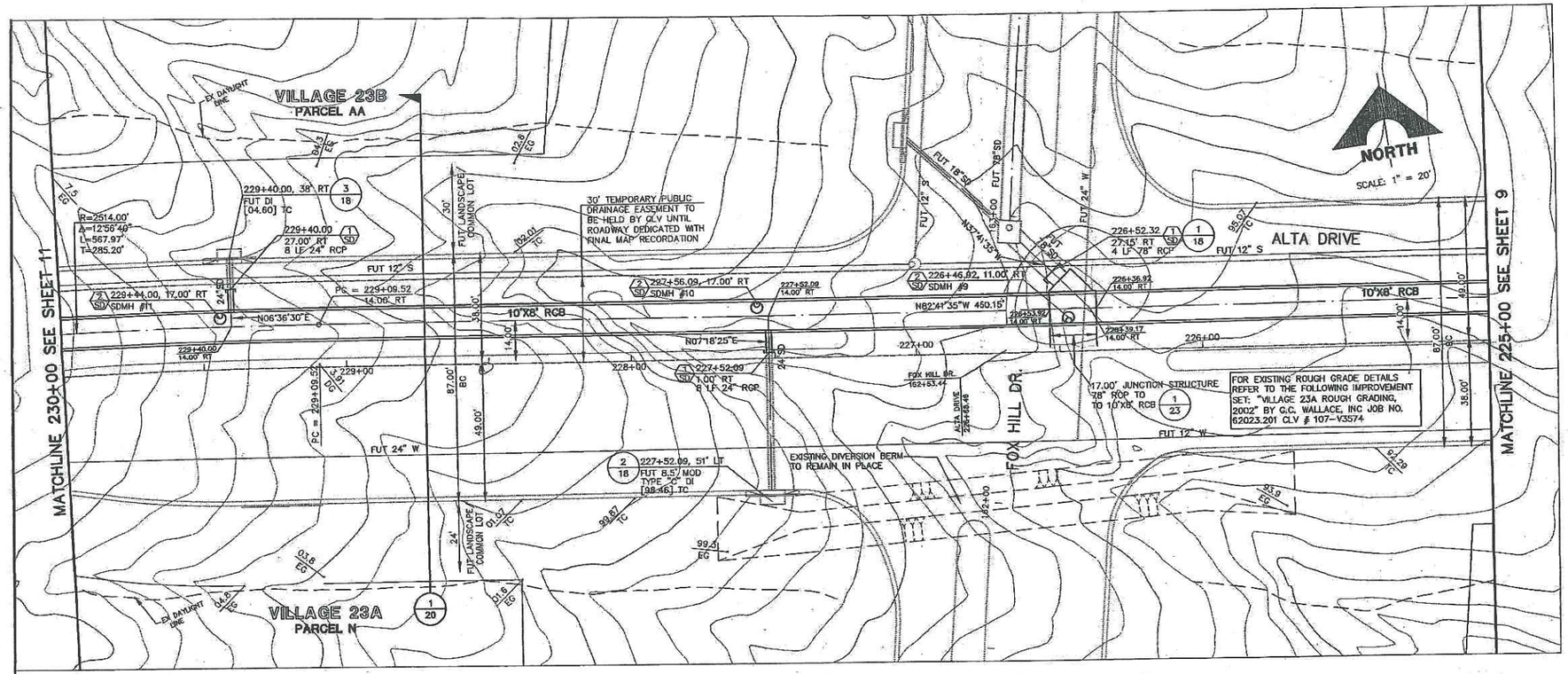
SUMMERLIN

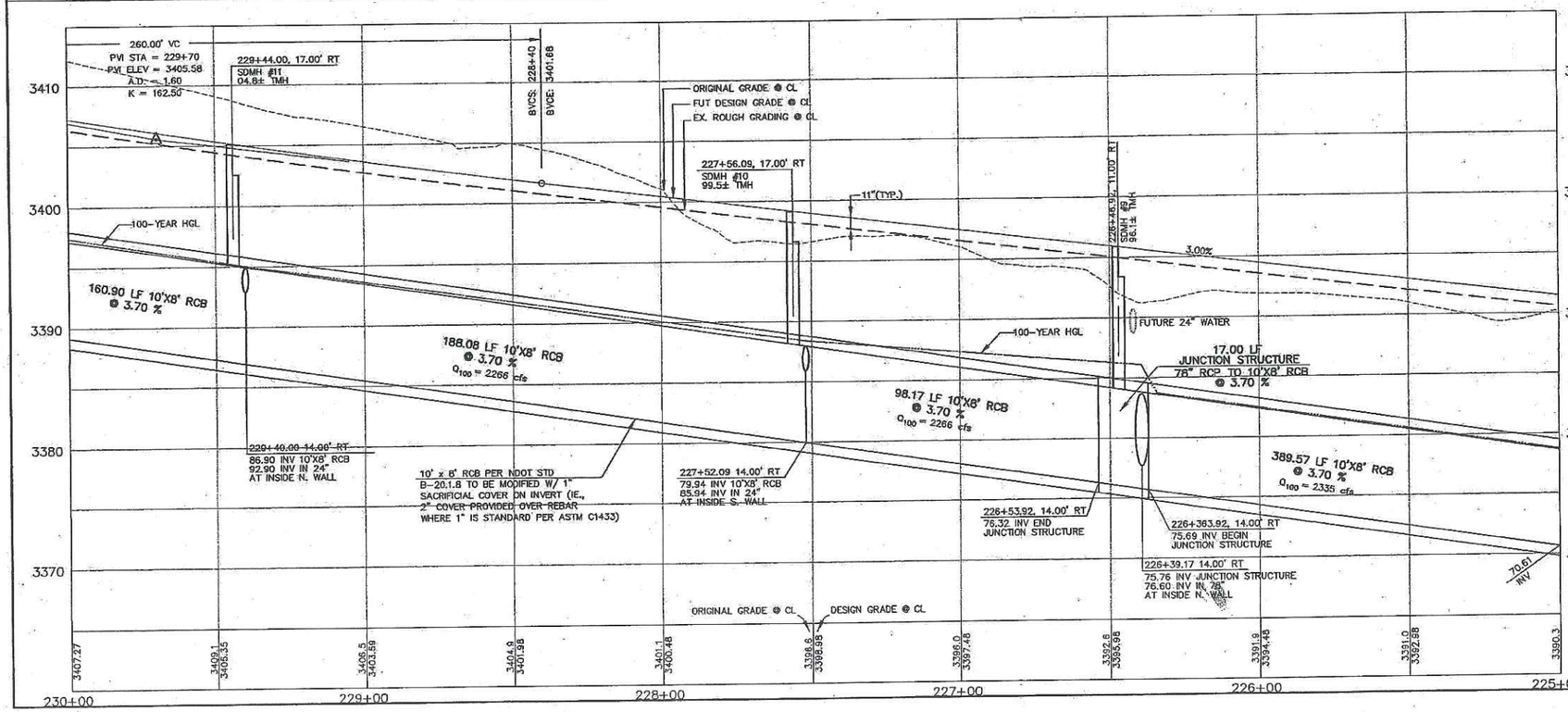
VILL. 23A/23B ALTA DR. RCB REQ. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 220+00 TO STA 225+00

SHEET 9
9 OF 32 SHTS

JOB NO. 62052.233





ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

SCALE 20 0 20 40 FEET

BENCHMARK

BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. 0368 S	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

NORTH 89°45'05" EAST BEING THE SOUTH LINE OF THE SOUTHWEST QUARTER (SW 1/4) OF SECTION 35, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY MAP ON FILE IN FILE 91, PAGE 28 OF PARCEL MAPS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA

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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD. CALL 1-702-593-6111

STATE OF NEVADA — PROFESSIONAL ENGINEER — No. 10257 — DATE: 6/1/03

DESIGN: GTP
DRAWN: GTP
CHECK: DBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 06-05-03
PLOT TIME: 09:10:37

REV.	DATE	DESCRIPTION	DATE APPD.	APP'D	DATE ADDN.	APP'D

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD.,STE.400, LAS VEGAS, NEVADA 89146
TELEPHONE: (702) 804-2000 • FAX: (702) 804-2909

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ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

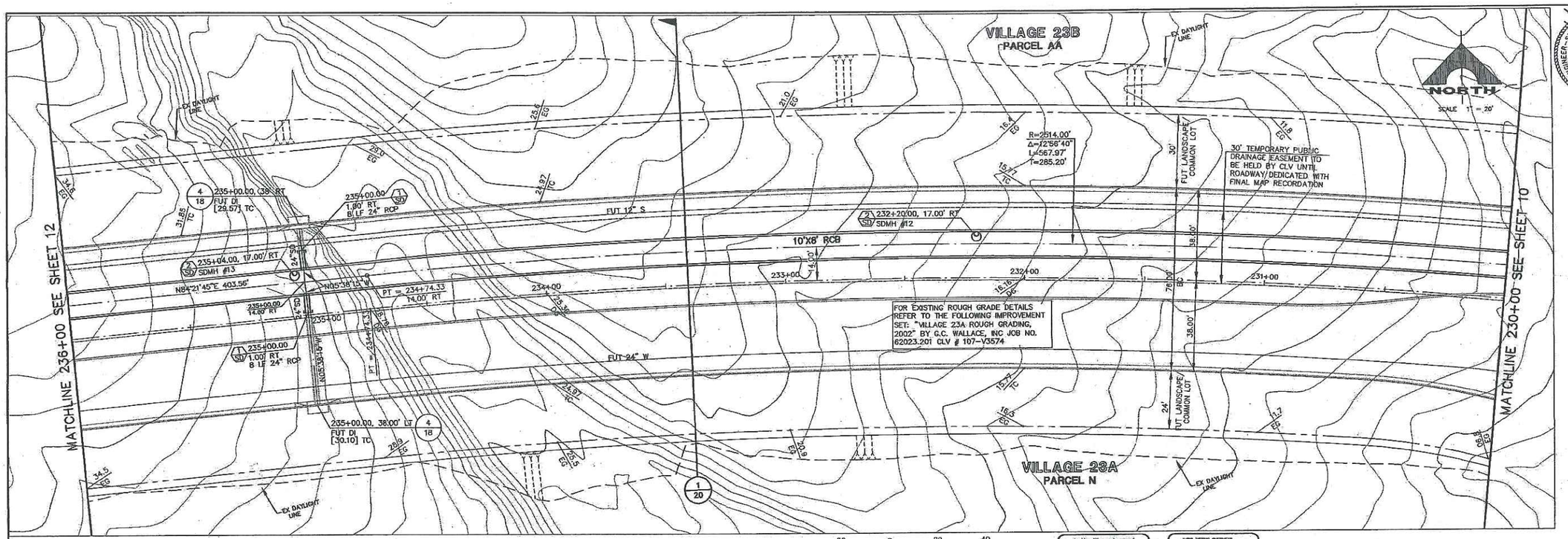
SUMMERLIN

VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 225+00 TO 230+00

SHEET 10
10 OF 32 SHTS

JOB NO. 62052.233



ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

20 0 20 40
SCALE FEET

BENCHMARK			
BM #	DESC.	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.569 (METERS)

BASIS OF BEARINGS

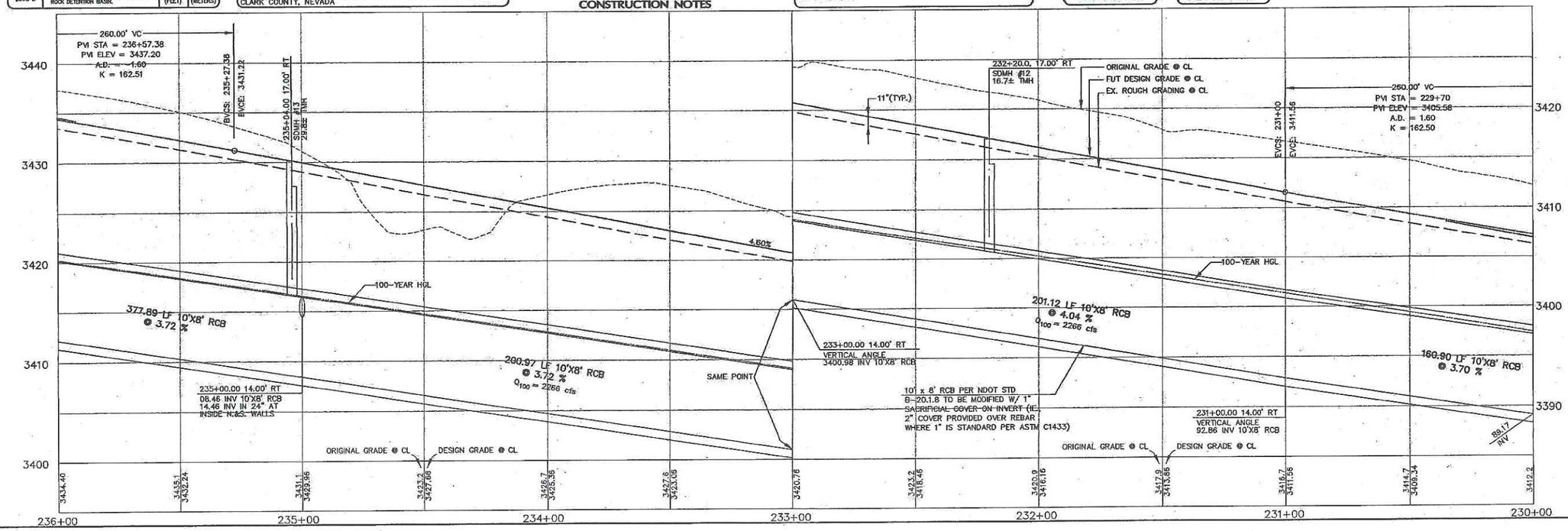
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DESIGN: GTP
DRAWN: GTP
CHECK: GBW
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 05-09-03
PLOT TIME: 09:10:38

DESCRIPTION	DATE	APP	DATE	AGENCY APP

DATE: 4/7/03

BRETT A. HUGHES — No. 9509 — STATE OF NEVADA — REGISTERED PROFESSIONAL ENGINEER — CIVIL

G.C. WALLACE, INC.
Engineers/Planners/Surveyors
1555 SOUTH RAINBOW BLVD., LAS VEGAS, NEVADA 89146
TELEPHONE (702) 804-2000 FAX (702) 804-2099
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ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

SUMMERLIN

VILL. 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 230+00 TO 236+00

SHEET 11
11 OF 32 SHTS

JOB NO. 62052.203

VILLAGE 28

VILLAGE 24

VILLAGE 23B
PARCEL AA

VILLAGE 23A
PARCEL N

MATCHLINE SEE SHEET 13 FOR CONTINUATION OF RCB

MATCHLINE 236+00 SEE SHEET 11

COLLECTOR RD

ALTA DRIVE

NORTH
SCALE: 1" = 20'

EXISTING BERM AND RIPRAP TO REMAIN IN PLACE

R=10.00'
Δ=65°00'00"
L=163.19'
T=100.80'

EX DAYLIGHT LINE

FUTURE L.V.V.W.D. SERVICE AREA FOR PRV

30' TEMPORARY PUBLIC DRAINAGE EASEMENT TO BE HELD BY CLV UNTIL ROADWAY DEDICATED WITH FINAL MAP RECORDATION

30' LANDSCAPE/ COMMON LOT

38' LANDSCAPE/ COMMON LOT

240+61.00
14.00' RT

R=1086.00'
Δ=05°14'25"
L=99.32'
T=49.70'

FUT 12" S
N84°21'45"E 9.69'

PC = 239+60.40
14.00' RT

42" SD

239+50.71, 14.00' RT
SDMH #14A

N52°30'27"E
24.64'

COLLECTOR ROAD
239+01.40

239+60.40
RCB

FUT 30" W

238+77.89, 17.00' RT
SDMH #14

10'X8' RCB

N84°21'45"E 403.56'

PC = 238+77.89
14.00' RT

CONTRACTOR TO RESTORE EXISTING DIVERSION BERM AND CHANNEL

FUT 24" W

FUTURE BUS STOP

FOR EXISTING ROUGH GRADE DETAILS REFER TO THE FOLLOWING IMPROVEMENT SET: "VILLAGE 23A ROUGH GRADING, 2002" BY G.C. WALLACE, INC JOB NO. 62023.201 CLV # 107-V3574

1/20

20 0 20 40
SCALE FEET

Avoid cutting underground utility lines. It's costly.
Call before you Dig.
1-800-227-2600
UNDERGROUND SERVICE ALERT (USA)

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CALL BEFORE YOU DO OVERHEAD
CALL 1-702-593-6111

BENCHMARK

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CLV BM No. D368 3	U.S.C.& G.S. BRASS DISC SET IN ROCK ON THE EAST SIDE OF CHARLESTON BOULEVARD AND SOUTH OF THE RED ROCK DETENTION BASIN.	3246.71 (FEET)	989.599 (METERS)

BASIS OF BEARINGS

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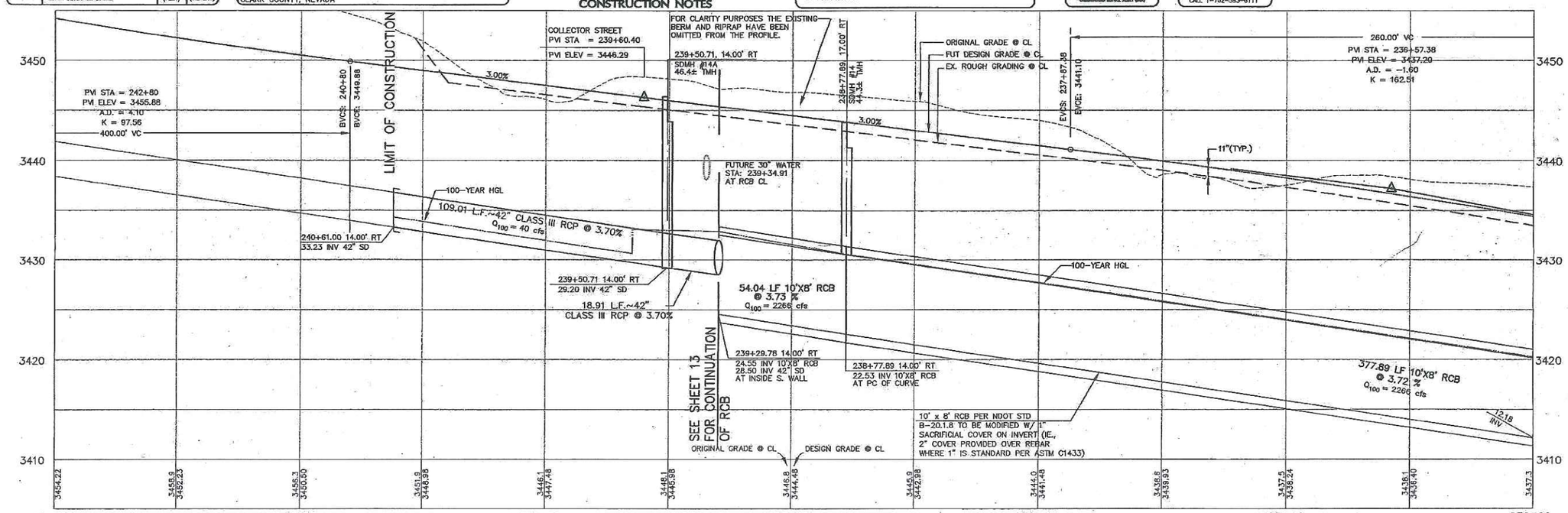
ALTA DRIVE

SCALE: HORIZ. 1" = 20'
VERT. 1" = 5'

REFER TO SHEET 2 FOR CONSTRUCTION NOTES

NOTE

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G.C. WALLACE, INC.
Engineers/Planners/Surveyors
5555 S. EASTERN AVE. LAS VEGAS, NEVADA 89119
TELEPHONE: (702) 804-2600 • FAX: (702) 804-2299
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DESIGN: GTP
DRAWN: GTP
CHECK: GWB
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 05-09-03
PLOT TIME: 08:15:57

REV.	DATE	DESCRIPTION	DATE APPD.	APP.

DATE: 6/17/02

ISSUE DATE: 02/10/03 ISSUE FOR AGENCY APPROVAL

SUMMERLIN

VLL 23A/23B ALTA DR. RCB REG. DRAINAGE IMPROVEMENTS

ALTA DRIVE PLAN AND PROFILE
STA 236+00 TO STA 241+00

JOB NO. 62052.233

SHEET
12
12 OF 32 SHTS

HA 2240

RESPONSE TO COMMENTS ON THE CONCEPTUAL DRAINAGE STUDY FOR SUMMERLIN VILLAGE 23B

62023.050

October 2003

Prepared for:

Howard Hughes Properties, Inc.
a Nevada Corporation
10000 West Charleston Boulevard, Suite 200
Las Vegas, NV 89135
Phone: (702) 791-4300
Fax: (702) 791-4450

G. C. WALLACE, INC.
Engineers/Planners/Surveyors

CLARK COUNTY
REGIONAL FLOOD CONTROL DISTRICT

Gale Wm. Fraser, II, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

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City of Henderson

Michael Mack
City of Las Vegas

Mayor Bill Nicholes
City of Mesquite

Bruce L. Woodbury
Clark County

November 20, 2003

Mr. Randy Fultz, P.E.
City of Las Vegas Public Works
731 S. Fourth St
Las Vegas, NV 89101

DISTRICT CONCURRENCE: SUMMERLIN VILLAGE 23B (DS3420)
(RFCD NO. 03-5463)

Dear Mr. Fultz:

Clark County Regional Flood Control District (District) reviewed Conceptual Drainage Study dated October 10, 2003, for the above-mentioned project as submitted by G. C. Wallace, Inc. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Public Works dated October 24, 2003.

District concurs with acceptance of this Conceptual Drainage Study by City of Las Vegas Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage.*

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by G. C. Wallace, Inc. may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

GALE WM. FRASER, II, P.E.
General Manager/Chief Engineer

BY: _____
Andrew R. Trelease, P.E.
Senior Civil Engineer

ART:css

c: Randall K. Gremlich, P.E., G. C. Wallace, Inc.

File: 20-59-34.GCW

600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 455-3139 • FAX: (702) 455-3870
Website: http://www.ccrfcd.org

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: October 24, 2003
TO: Land Development Services Department of Public Works			FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Conceptual Drainage Study for: Summerlin Village 23B		COPIES TO: G.C. Wallace Inc.
Cross Streets:	NWC of Alta Drive & Desert Foothills Drive		Howard Hughes Corp.
File Number:	F:\Depot\DSMEMOS\DS3420B.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-010		CCRFCD
Zoning Action:			
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID G.R. No.
1st Submittal	9/15/2003	9/29/2003	Not Approved	$250.00	110938: $250
2nd Submittal	10/10/2003	10/24/2003	See Comments Below	$400.00	112511: $400
			TOTAL FEES (LDDRS):	$650.00	—

REMARKS:

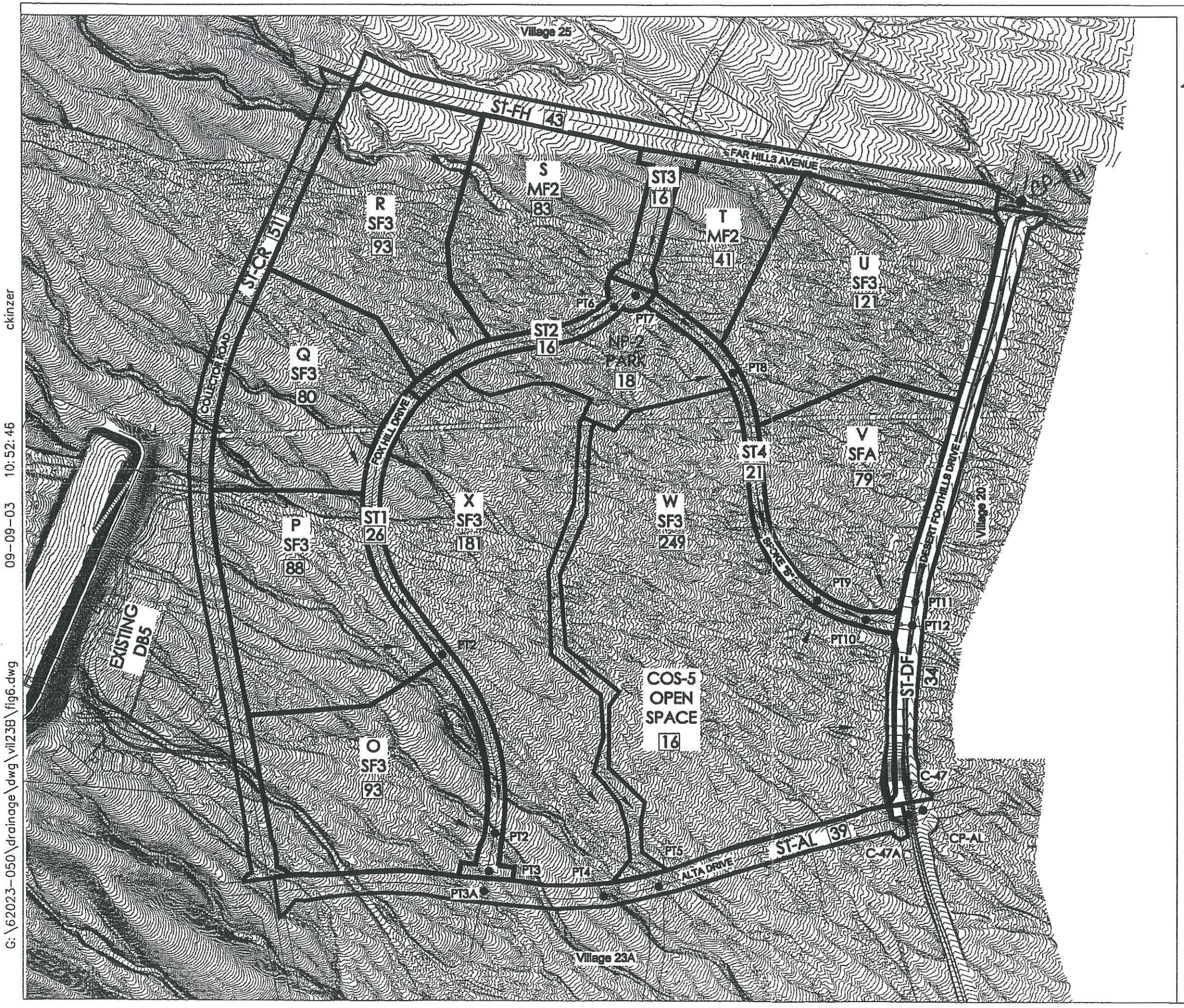
The Drainage Study for the subject project has been reviewed and:

	is approved subject to conformance to all City standards and the following conditions:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.

1. **This drainage study is acceptable in concept,** however, the City of Las Vegas will not formally accept the study until the Clark County Regional Flood Control District (CCRFCD) has issued a letter of concurrence. The Engineer should contact the CCRFCD to confirm that they have begun their review.
2. **The proposed public drainage easement (privately maintained) in Figure 7 will be dedicated and recorded in the final map of individual parcel upon site development.**
3. ***Hydraulic calculations for the storm drains must be provided in a technical drainage study for this Village upon site development.***
4. ***Projects that disturb more than one acre of land must submit to the Nevada Division of Environmental Protection: (1) a "Notice of Intent" to discharge, (2) a request for inclusion in the Stormwater General Permit No. GNV0022241, and (3) a stormwater pollution prevention plan. For more information, please call (775) 687-4670, ext. 3138.***

END OF REMARKS
B&H/ays

Post-it® Fax Note 7671	Date 10/27	# of pages ▶
To Randall Gremlich	From Albert Sung	
Co./Dept. G C Wallace	Co. CLV Flood	
Phone #	Phone # 229-2007	
Fax # 804-2899	Fax #	



09-09-03 10:52:46 ckinzer

G:\62023-050\drainage\dwg\vil23B\fig6.dwg

NORTH

SCALE 1"=600'

GRAPHIC SCALE

600 0 300 600

(IN FEET)

1 inch = 600 ft.

STREET CROSS SECTION SUMMARY

BASIN/ CONC. POINT	AREA	Q10(cfs)	Q100(cfs)
ST-CR	15.8	24	51
Q	26.6	35	80
P	30.0	39	88
PT1	–	73	167
O	31.8	41	93
PT2	–	112	257
ST1	7.8	13	26
PT3	–	125	283
PT3A	–	–	2318
X	58.0	78	181
PT4	–	–	2344
COS-5	5.9	6	16
PT5	–	–	2347
R	31.2	42	93
S	27.5	38	83
PT6	–	77	173
ST2	4.0	8	16
ST3	3.7	8	16
PT7	–	87	193
NP-2	13.4	4	18
PT8	–	89	203
W	84.9	110	249
PT9	–	193	452
ST4	5.8	10	21
PT10	–	202	471
U	39.5	54	121
V	27.2	34	79
PT11	–	88	199
PT12	–	290	670
ST-DF	12.9	16	34
C-47	–	305	703
C-47A	–	–	2461
ST-AL	12.0	19	39
CP-AL	–	–	2467
T	13.7	18	41
ST-FH	13.2	21	43
CP-FH	–	38	82

LEGEND

A — PARCEL AND BASIN NAME

——— PROPOSED STORM DRAIN

SF3 — PARCEL DENSITIES

13 — MAXIMUM COMBINED DISCHARGE FROM PARCEL

→ FLOW DIRECTION

SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY

FIGURE 6

ULTIMATE CONDITIONS
DRAINAGE BASIN MAP

G.C. WALLACE, INC.
Engineers/Planners/Surveyors

Village 25

FAR HILLS AVENUE

8'x7' RCB @ 2%

36" @ 2%

DP18

Parcel R
SF3
93

Parcel S
MF2
83

Parcel T
MF2
41

Parcel U
SF3
121

ST-CR 51

COLLECTOR ROAD

42" @ 2%

DP9

193 cfs

54" @ 2%

SCENIC DRIVE

97 cfs

42" @ 2%

DP8

Parcel Q
SF3
80

Parcel
NP-2
PARK
18

48" @ 2%

DP13

DP10

FOX HILL DRIVE

HIGH POINT

116 cfs
42" @ 2%

COS-5
OPEN
SPACE
16

Parcel V
SFA
79

Village 20

42" @ 2%

DP1

Parcel X
SF3
181

60" @ 2%

301 cfs

Parcel P
SF3
88

Parcel W
SF3
249

42" @ 2%

DP14

216 cfs
54" @ 2%

DP11

DP12

452 cfs

199 cfs
54" @ 2%

72" @2%

471 cfs
72" @ 2%

DP15

42" @ 2%

DP2

DB5

PUBLIC DRAINAGE
EASEMENT
TO BE PRIVATELY
MAINTAINED

670 cfs
84" @ 2%

12 cfs 24"

12 cfs 24"

703 cfs
7'x7' RCB @ 2%

13 cfs 24"

27 cfs
30" @ 1.0%

DP16

DP17

Parcel O
SF3
93

7 cfs
24" @ 1%

DP7

42" @ 2%

45 cfs
36" @ 1.5%

16 cfs
30" @ 1.0%

DP6

DP3

283 cfs
60" @ 2%

ALTA DRIVE

ST-AL 39

Ex. 10'x8' RCB

DP4

DP5

NORTH

SCALE 1"=600'

GRAPHIC SCALE

600 0 300 600

(IN FEET)

1 inch = 600 ft.

LEGEND

- A — PARCEL NAME
- PROPOSED STORM DRAIN
- DP1 — DESIGN POINT
- 13 — MAXIMUM DISCHARGE FROM PARCEL
- 3 3 — STREET CROSS SECTION LOCATION
- EXISTING STORM DRAIN
- FUTURE EASEMENT

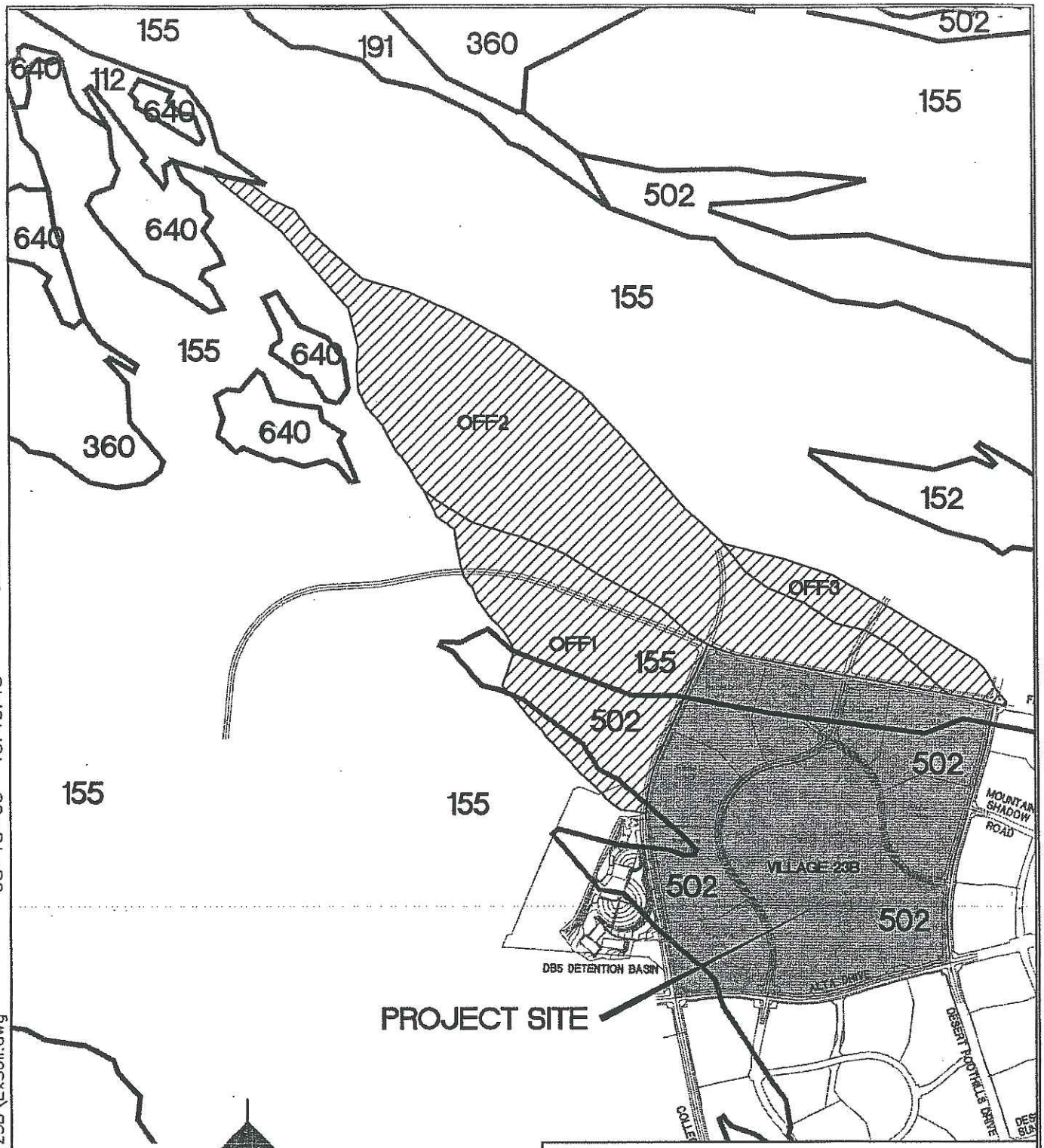
SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY

FIGURE 7

DRAINAGE FACILITIES MAP

G.C. WALLACE, INC.
Engineers/Planners/Surveyors

C:\62023-050\drainage\dwg\vil23B\fig7.dwg 09-26-03 17:53:60 ckinzer



SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY

SOIL

EXHIBIT

G.C. WALLACE, INC.
Engineers/Planning/Surveyors

G:\62023-050\drainage\dwg\vil23B\ExSoil.dwg 08-18-03 15:40:48 ablack

PARK/OPEN SPACE

Composite Curve Number Calculations

Hydrologic Soil Group	Park (Fair Condition)	Open Space (Natural Desert Landscaping)
A	49.0	63.0
B	69.0	77.0
D	84.0	88.0

G.C. Wallace, Inc.

Date: 12/5/01

File: 2revCN.wb3

By: ALG

SOIL 502

Description	Type	%	Park	Open Space
Arizo	A	5.00%	2.5	3.2
Canutio	B	55.00%	38.0	42.4
Cave	D	40.00%	33.6	35.2
Composite CN		100.00%	74.0	80.7

SOIL 155

Description	Type	%	Park	Open Space
Arizo	A	5.00%	2.5	3.2
Caliza	B	5.00%	3.5	3.9
Cave	D	90.00%	75.6	79.2
Composite CN		100.00%	81.5	86.2

(63)(.05) = 3.15

(77)(.05) = 3.85

PROPOSED CONDITIONS

SUBBASIN	Park/Open Space		COMP CN
SUBBASIN	Soil 502	Soil 155	
NP-2	100.00%	0.00%	74

Assume for Hill = 75% landscaping

(86.2)(.25) = 21.55

(99)(.75) = 74.25

95.80

RUNOFF CURVE NUMBERS
(URBAN AREAS[1])

Cover description		Curve numbers for hydrologic soil group—			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	[84] ← COS-5
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved: curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved: open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	[81]	[88]	91	[93] ← Residential
Residential districts by average lot size:					
See Table 602A					
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94

1 Average runoff condition, and $I_a = 0.2S$.

2 The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system. Impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using Figure 603.

3 CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

4 Composite CN's for natural desert landscaping should be computed using Figure 603 based on the impervious area percentage (CN #98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.

5 Composite CN's to use for the design of temporary measures during grading and construction should be computed using Figure 603 based on the degree of development impervious area percentage) and the CN's for the newly graded pervious areas.

Revision	Date

Composite Curve Number Calculations

Hydrologic Soil Group	Residential	Commercial	Open Space (Natural Desert Landscaping)	Interior Streets
A	81.0	81.0	63.0	98.0
B	88.0	88.0	77.0	98.0
D	93.0	93.0	88.0	98.0

G.C. Wallace, Inc.
Date: 9/11/03
File: CN.wb3
By: AT

SOIL 502

Description	Type	%	Residential	Residential	Open Space (Natural Desert Landscaping)	Interior Streets
Arizo	A	5.00%	4.1	4.1	3.2	4.9
Canutio	B	55.00%	48.4	48.4	42.4	53.9
Cave	D	40.00%	37.2	37.2	35.2	39.2
Composite CN		100.00%	89.7	89.7	80.7	98.0

SOIL 155

Description	Type	%	Residential	Residential	Open Space (Natural Desert Landscaping)	Interior Streets
Arizo	A	5.00%	4.1	4.1	3.2	4.9
Caliza	B	5.00%	4.4	4.4	3.9	4.9
Cave	D	90.00%	83.7	83.7	79.2	88.2
Composite CN		100.00%	92.2	92.2	86.2	98.0

PROPOSED CONDITIONS

SUBBASIN	Residential		COMP CN (Residential)	Open Space (Natural Desert Landscaping)		Interior Streets		COMP CN (Street)
SUBBASIN	Soil 502	Soil 155		Soil 502	Soil 155	Soil 502	Soil 155	
O	82.70%	17.30%	90					
P	86.40%	13.60%	90					
Q	96.50%	3.50%	90					
R	57.10%	42.90%	91					
S	44.70%	55.30%	91					
T	44.00%	56.00%	91					
U	65.60%	34.40%	91					
V	100.00%	0.00%	90					
X	100.00%	0.00%	90					
W	100.00%	0.00%	90					
ST1				100.00%	0.00%	100.00%	0.00%	95
ST2				100.00%	0.00%	100.00%	0.00%	95
ST3				30.70%	69.30%	30.70%	69.30%	95
ST4				100.00%	0.00%	100.00%	0.00%	95

*RESIDENTIAL (Density = 8.0 units per acre)
(Lot Size = < 6000 sq. ft.)
**ROADWAY (80% PAVED, 20% LANDSCAPE)

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

G.C. Wallace, Inc.
File: ULT-SF4.WB2
Project No.: 62023-050

SUMMERLIN VILLAGE 23B
ULTIMATE CONDITIONS

BY: ALG
DATE: 08/26/03

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc CHECK URBANIZED BASINS		Tc	Tlag	REMARKS
DESIG: (1)	DEV./EX. (D or E)	CN	K (2)	AREA Ac (3)	AREA MI^2	INITIAL LENGTH Feet (4)	SLOPE % (5)	Ti Min (6)	TRAVEL LENGTH Feet (7)	SLOPE % (8)	V1 VELOCITY FPS (9a)	V2 VELOCITY FPS (9b)	Tt Min (10)	TOTAL LENGTH Ft (11)	Tc = (L/180)+10 Min (12)	Min (13)	Tlag= 0.6Tc/60 Hours	
O	D	90.0	0.7980	31.81	0.04970	100	1.0	5.4	2085	3.6	3.8	5.8	6.8	2185	22.1	12.2	0.122	
P	D	90.0	0.7980	30.05	0.04695	100	1.0	5.4	1890	3.7	3.9	5.9	6.1	1990	21.1	11.5	0.115	
Q	D	90.0	0.7980	26.65	0.04164	100	1.0	5.4	1545	3.6	3.8	5.8	5.2	1645	19.1	10.6	0.106	
R	D	91.0	0.8112	31.21	0.04877	100	1.0	5.2	2185	2.2	3.0	4.5	9.0	2285	22.7	14.2	0.142	
S	D	91.0	0.8112	27.54	0.04303	100	1.0	5.2	1850	2.8	3.4	5.1	6.9	1950	20.8	12.1	0.121	
T	D	91.0	0.8112	13.67	0.02136	100	1.0	5.2	1225	1.8	2.7	4.1	6.0	1325	17.4	11.2	0.112	
U	D	91.0	0.8112	39.49	0.06170	100	1.0	5.2	1220	2.0	2.9	4.3	5.7	1320	17.3	10.9	0.109	
V	D	90.0	0.7980	27.19	0.04248	100	1.0	5.4	2200	2.3	3.1	4.6	8.8	2300	22.8	14.3	0.143	
ST1	D	95.0	0.8640	7.80	0.01219	21	2.0	1.5	3185	2.3	3.1	4.7	12.3	3206	27.8	13.8	0.138	
ST2	D	95.0	0.8640	4.00	0.00625	21	2.0	1.5	1500	3.6	3.8	5.8	5.0	1521	18.5	6.6	0.066	
ST3	D	95.0	0.8640	3.74	0.00584	21	2.0	1.5	830	3.6	3.8	5.8	3.1	851	14.7	4.7	0.047	
ST4	D	95.0	0.8640	5.84	0.00913	21	2.0	1.5	2840	4.2	4.1	6.2	8.3	2861	25.9	9.8	0.098	
NP-2	D	74.0	0.5868	13.42	0.02097	500	5.0	12.1	2930	5.0	4.5	6.8	7.8	3430	29.1	19.8	0.198	
X	D	90.0	0.7980	58.05	0.09070	100	1.0	5.4	1450	4.8	4.4	6.7	4.2	1550	18.6	9.7	0.097	
W	D	90.0	0.7980	84.95	0.13273	100	1.0	5.4	2400	4.7	4.4	6.6	6.7	2500	23.9	12.1	0.121	
COS-5	D	84.0	0.7188	5.94	0.00928	36.5	2.0	3.3	1500	5.0	4.5	6.8	4.3	1537	18.5	7.6	0.076	

Ti = 1.8 (1.1 - K) L^1/2 / S^1/3

K = 0.0132 (CN) - 0.39

V1 applies to the first 500 feet of travel distance;
V2 applies to the remaining travel distance.

Existing V2 = 29.4*(S/100)^1/2

Developed V2 = 30.6*(S/100)^1/2

REFERENCE :

STANDARD FORM 4

```
**********************************************
*                                            *
*    FLOOD HYDROGRAPH PACKAGE  (HEC-1)       *
*              MAY  1991                     *
*           VERSION 4.0.1E                   *
*      Lahey F77L-EM/32 version 5.01         *
*        Dodson & Associates, Inc.           *
*  RUN DATE  09/02/03  TIME  15:27:59        *
**********************************************
```

```
**************************************
*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET         *
*       DAVIS, CALIFORNIA 95616      *
*            (916) 551-1748          *
*                                    *
**************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX          XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

1 HEC-1 INPUT PAGE 1

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

          *DIAGRAM
  1       ID   ********************************************************************
  2       ID   * .............................................................. *
  3       ID   * :                  SUMMERLIN VILLAGE 23B                   : *
  4       ID   * :                  MASTER STUDY UPDATE (MAY 2002)          : *
  5       ID   * :                  DEVELOPED ONSITE                        : *
  6       ID   * :                  DEVELOPED OFFSITE                       : *
  7       ID   * :...........................................................: *
  8       ID   * :             RETURN PERIOD_ _ _ _10 & 100-YEAR            : *
  9       ID   * :             DISTRIBUTION_ _ _ _ 6-HOUR SDN3              : *
 10       ID   * :             PROJECT NO_ _ _ _ _ 62023.050                : *
 11       ID   * :             FILENAME_ _ _ _ _ _ VILL23DEV.DAT            : *
 12       ID   * :             DATE_ _ _ _ _ _ _ _ 05/20/02                 : *
 13       ID   * :             MODELED BY_ _ _ _ _ ALG                      : *
 14       ID   * :                                                          : *
 15       ID   * :  DEPTH AREA REDUCTION FACTORS:                           : *
 16       ID   * :  AREA                DARF                                : *
 17       ID   * :  0.5 SQ MI            .98                                : *
 18       ID   * :  1.0 SQ MI            .97                                : *
 19       ID   * :  1.5 SQ MI            .95                                : *
 20       ID   * :  2.0 SQ MI            .93                                : *
 21       ID   * :  7.65 SQ MI           .89                                : *
 22       ID   * :  10-YEAR STORM        .55                                : *
 23       ID   * :...........................................................: *
 24       ID   ********************************************************************
 25       IT       5       0       0     200
 26       IO       5       0
 27       IN       5       0       0
 28       JR    PREC     1.0     .98     .97     .95     .93     .89     .55

 29       KK   UNIT1
 30       KM
 31       KM    UNIT 1 AS ANALYZED IN VILLAGE 20
 32       KM
 33       KM            AREA   369.7      AC
 34       KM            Tlag   17.84     MIN
 35       KM              CN      87
 36       BA  0.5776
 37       PB    3.29
 38       PC   0.000   .0200   .0570   .0700   .0870   .1080   .1240   .1300   .1300   .1300
 39       PC   .1300   .1300   .1300   .1330   .1400   .1420   .1480   .1580   .1720   .1810
 40       PC   .1900   .1970   .1990   .2000   .2010   .2040   .2140   .2290   .2410   .2490
 41       PC   .2510   .2560   .2700   .2780   .2810   .2830   .2950   .3220   .3520   .4090
 42       PC   .4990   .5900   .7100   .7440   .7810   .8120   .8190   .8350   .8510   .8560
 43       PC   .8600   .8680   .8760   .8880   .9100   .9260   .9370   .9500   .9700   .9760
 44       PC   .9820   .9850   .9870   .9890   .9900   .9930   .9930   .9940   .9950   .9980
 45       PC   .9980   .9990  1.000
 46       LS       0      87
 47       UD   .1784
          *
          *
          *  BASIN PARAMETERS FOR OFFSITE BASINS TAKEN
          *  DIRECTLY FROM SUMMERLIN VILLAGE WEST DB#4 MODIFICATION UPDATE
          *
```

1 HEC-1 INPUT PAGE 2

```
LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

 48       KK     4-1
 49       KM
 50       KM    OFFSITE WATERSHED
 51       KM
 52       KM            AREA 1412.53      AC
 53       KM              Kn   0.040
 54       KM               S 1041.05   FT/MI
 55       KM              Lc    1.21      MI
```

```
56          KM              L     2.87      MI
57          KM          Tcheck     N/A     MIN
58          KM           Tlag    38.1     MIN
59          KM             CN      90
60          BA  2.2071
61          PB    3.72
62          LS       0      90
63          UD   0.381
            *

64          KK     R-1
65          KM   ROUTE DOWNSTREAM OF 4-5  THROUGH 4-5
66          KM   UNDEVELOPED AREA
67          RM       1   0.084     0.3
            *

68          KK     4-5
69          KM
70          KM    OFFSITE WATERSHED
71          KM
72          KM            AREA  140.93      AC
73          KM              Lo     500      FT
74          KM              So    56.0       %
75          KM              Lt    5655      FT
76          KM              St    24.3       %
77          KM              V1    7.30    FT/S
78          KM              V2   14.49    FT/S
79          KM              Ti    3.45     MIN
80          KM              Tt    7.07     MIN
81          KM          Tcheck     N/A     MIN
82          KM           Tlag   10.52     MIN
83          KM             CN      88
84          BA  .22021
85          PB    3.67
86          LS       0      88
87          UD   0.105
            *

88          KK     C-1
89          KM   COMBINE 4-1 & 4-5 U/S OF 4-6
90          KM   LIMITED DEVELOPMENT (RED ROCK PRESENT WITHIN SUB-BASIN 4-6)
91          HC       2
            *
```



```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

92          KK     R-2
93          KM   ROUTE DOWNSTREAM OF 4-6 THROUGH 4-6 & THROUGH PROPOSED DIVERSION BERM
94          RM       4   0.319     0.3
            *

95          KK     4-2
96          KM
97          KM    OFFSITE WATERSHED
98          KM
99          KM            AREA  173.39      AC
100         KM              Lo     500      FT
101         KM              So    61.0       %
102         KM              Lt    4710      FT
103         KM              St    40.7       %
104         KM              V1    9.44    FT/S
105         KM              V2   18.76    FT/S
106         KM              Ti    2.95     MIN
107         KM              Tt    4.62     MIN
108         KM          Tcheck     N/A     MIN
109         KM           Tlag    7.57     MIN
110         KM             CN      91
111         BA  .27093
112         PB    3.66
113         LS       0      91
114         UD   0.076
            *

115         KK     R-3
116         KM   ROUTE DOWNSTREAM OF 4-4 THROUGH 4-4
117         RM       1   0.123     0.3
            *

118         KK     4-3
119         KM
120         KM    OFFSITE WATERSHED
121         KM
122         KM            AREA  302.39      AC
123         KM              Lo     500      FT
124         KM              So    52.9       %
125         KM              Lt    4610      FT
126         KM              St    42.0       %
127         KM              V1    9.59    FT/S
128         KM              V2   19.05    FT/S
129         KM              Ti    2.96     MIN
130         KM              Tt    4.46     MIN
131         KM          Tcheck     N/A     MIN
132         KM           Tlag    7.42     MIN
133         KM             CN      92
134         BA  .47249
135         PB    3.67
136         LS       0      92
137         UD   0.074
            *
```



```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10
```

```
138          KK     R-4
139          KM   ROUTE DOWNSTREAM OF 4-4 THROUGH 4-4
140          RM       1   0.107      0.3
             *

141          KK     4-4
142          KM
143          KM    ONSITE WATERSHED (PORTION OF VILLAGE 30)
144          KM
145          KM             AREA  171.67       AC
146          KM               Lo     500       FT
147          KM               So    15.5        %
148          KM               Lt    5040       FT
149          KM               St     9.3        %
150          KM               V1    6.16     FT/S
151          KM               V2    9.33     FT/S
152          KM               Ti    4.88      MIN
153          KM               Tt    9.46      MIN
154          KM          Tcheck   40.78      MIN
155          KM            Tlag   14.34      MIN
156          KM               CN      90
157          BA  .26824
158          PB   3.61
159          LS      0       90
160          UD  0.143
             *

161          KK     C-2
162          KM   COMBINE 4-2, 4-3, & 4-4 D/S OF 4-4
163          HC       3
             *

164          KK     R-5
165          KM   ROUTE DOWNSTREAM OF 4-6 THROUGH 4-6 & THROUGH PROPOSED DIVERSION BERM
166          RM       2   0.150      0.3
             *

167          KK     4-6
168          KM
169          KM    ONSITE WATERSHED (PORTION OF VILLAGE 29 & 30)
170          KM
171          KM             AREA  518.65       AC
172          KM               Lo     500       FT
173          KM               So     9.0        %
174          KM               Lt   12245       FT
175          KM               St     6.8        %
176          KM               V1    5.27     FT/S
177          KM               V2    7.98     FT/S
178          KM               Ti    6.35      MIN
179          KM               Tt   26.11      MIN
180          KM          Tcheck   80.81      MIN
181          KM            Tlag   32.46      MIN
182          KM               CN      88
183          BA  .81039
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

184          PB    3.57
185          LS       0       88
186          UD   0.325
             *

187          KK     C-3
188          KM   COMBINE C-1, C-2, & 4-6 D/S OF 4-6 (POSSIBLE BRIDGE OR CULVERT LOCATION)
189          KM   PENDING THE DESIGN & PLANNING (POSSIBLE FUTURE ROAD LAYOUT)
190          HC       3
             *

191          KK     R-6
192          KM   ROUTE DOWNSTREAM OF 4-7 THROUGH 4-7
193          RD    1690    .049   0.040            TRAP      60       3
             *

194          KK    4-7A
195          KM    PREVIOUS DB#4 AREA
196          KM    ONSITE WATERSHED
197          KM    IN ALL LIKELIHOOD TO REMAIN UNDEVELOPED OPEN SPACE AREA
198          KM
199          KM             AREA   19.57       AC
200          KM               Lo     500       FT
201          KM               So     5.0        %
202          KM               Lt    1190       FT
203          KM               St     4.9        %
204          KM               V1    4.47     FT/S
205          KM               V2    6.77     FT/S
206          KM               Ti    8.35      MIN
207          KM               Tt    3.56      MIN
208          KM          Tcheck   19.39      MIN
209          KM            Tlag   11.91      MIN
210          KM               CN      86
211          BA  .03058
212          PB    3.44
213          LS       0       86
214          UD   0.119
             *

215          KK     C-4
216          KM   COMBINE C-3 & 4-7 D/S OF 4-7
217          KM   ENTRANCE TO EXPANDED DB5
218          HC       2
             *

219          KK  DCHANN
```

```
220         DT    DC-4
            * division channel 60' wide bottom width
221         DI       0    4173    6277    7979    9586   11174   12714   14247   15747   17260
222         DI   18761   20246   21743   23223   24683   26153   27631   29119   30584   32058
223         DQ       0       0    1000    2000    3000    4000    5000    6000    7000    8000
224         DQ    9000   10000   11000   12000   13000   14000   15000   16000   17000   18000
            *
            *
            * WATERSHEDS TRIBUTARY DIRECTLY TO EXPANDED DB5
            *
```



```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

225         KK     5-1
226         KM
227         KM     OFFSITE WATERSHED
228         KM
229         KM             AREA  451.90      AC
230         KM               Lo     500      FT
231         KM               So    95.0       %
232         KM               Lt   11390      FT
233         KM               St    17.8       %
234         KM               V1    6.24    FT/S
235         KM               V2   12.40    FT/S
236         KM               Ti    2.66     MIN
237         KM               Tt   15.97     MIN
238         KM          Tcheck     N/A     MIN
239         KM            Tlag   18.63     MIN
240         KM              CN      90
241         BA  .70610
242         PB    3.68
243         LS       0      90
244         UD   0.186
            *
245         KK     R-7
246         KM    ROUTE DOWNSTREAM OF 5-2 THROUGH 5-2
247         RM       1   0.114     0.3
            *
248         KK     5-2
249         KM
250         KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
251         KM
252         KM             AREA   59.04      AC
253         KM               Lo     500      FT
254         KM               So     9.5       %
255         KM               Lt    3910      FT
256         KM               St     8.2       %
257         KM               V1    5.78    FT/S
258         KM               V2    8.76    FT/S
259         KM               Ti    6.74     MIN
260         KM               Tt    7.93     MIN
261         KM          Tcheck   34.50     MIN
262         KM            Tlag   14.67     MIN
263         KM              CN      86
264         BA  .09225
265         PB    3.56
266         LS       0      86
267         UD   0.147
            *
```



```
LINE        ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

268         KK     C-5
269         KM    COMBINE 5-1 & 5-2
270         KM     POSSIBLE ROAD LAYOUT LOCATION
271         HC       2
            *
272         KK     R-8
273         KM    ROUTE DOWNSTREAM OF 5-5
274         RD    1050    .058   0.040            TRAP      50       3
            *
275         KK     5-3
276         KM
277         KM     OFFSITE WATERSHED
278         KM
279         KM             AREA  137.32      AC
280         KM               Lo     500      FT
281         KM               So    44.0       %
282         KM               Lt    2830      FT
283         KM               St    24.7       %
284         KM               V1    7.36    FT/S
285         KM               V2   14.61    FT/S
286         KM               Ti    3.29     MIN
287         KM               Tt    3.79     MIN
288         KM          Tcheck     N/A     MIN
289         KM            Tlag    7.08     MIN
290         KM              CN      91
291         BA  .21456
292         PB    3.61
293         LS       0      91
294         UD   0.071
            *
295         KK     R-9
296         KM    ROUTE DOWNSTREAM OF 5-4 TRHOUGH 5-4
297         RD    2040   0.079   0.040            TRAP      50       3
            *
```

```
298          KK     5-4
299          KM
300          KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
301          KM
302          KM              AREA  142.73      AC
303          KM                Lo     500      FT
304          KM                So    23.0       %
305          KM                Lt    3665      FT
306          KM                St     8.5       %
307          KM                V1    5.89    FT/S
308          KM                V2    8.92    FT/S
309          KM                Ti    4.83     MIN
310          KM                Tt    7.33     MIN
311          KM           Tcheck   33.14     MIN
312          KM             Tlag   12.16     MIN
313          KM                CN      87
1                                        HEC-1 INPUT                                        PAGE  8

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

314          BA  .22302
315          PB   3.59
316          LS      0       87
317          UD  0.122
             *

318          KK     C-6
319          KM   COMBINE 5-3 & 5-4
320          HC       2
             *

321          KK    R-10
322          KM   ROUTE DOWNSTREAM OF 5-5 TRHOUGH 5-5
323          RD   3250   0.065   0.040            TRAP      45        3
             *

324          KK     5-5
325          KM
326          KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
327          KM
328          KM              AREA  122.45      AC
329          KM                Lo     500      FT
330          KM                So     9.2       %
331          KM                Lt    3270      FT
332          KM                St     6.6       %
333          KM                V1    5.19    FT/S
334          KM                V2    7.86    FT/S
335          KM                Ti    6.82     MIN
336          KM                Tt    7.48     MIN
337          KM           Tcheck   30.94     MIN
338          KM             Tlag   14.30     MIN
339          KM                CN      86
340          BA  .19134
341          PB   3.54
342          LS      0       86
343          UD  0.143
             *

344          KK     C-7
345          KM   COMBINE C-5, C-6, & 5-5
346          HC       3
             *

347          KK    R-11
348          KM   ROUTE DOWNSTREAM OF 5-8 TRHOUGH 5-8
349          RM       2   0.167     0.3
             *

350          KK     5-6
351          KM
352          KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
353          KM
354          KM              AREA   56.77      AC
355          KM                Lo     500      FT
356          KM                So    10.6       %
1                                        HEC-1 INPUT                                        PAGE  9

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

357          KM                Lt    2155      FT
358          KM                St     8.4       %
359          KM                V1    5.85    FT/S
360          KM                V2    8.87    FT/S
361          KM                Ti    6.50     MIN
362          KM                Tt    4.53     MIN
363          KM           Tcheck   24.75     MIN
364          KM             Tlag   11.03     MIN
365          KM                CN      86
366          BA  .08870
367          PB   3.51
368          LS      0       86
369          UD  0.110
             *

370          KK    R-12
371          KM   ROUTE DOWNSTREAM OF 5-8 TRHOUGH 5-8
372          RM       2   0.186     0.3
             *

373          KK     5-7
374          KM
375          KM     ONSITE WATERSHED (PORTION OF VILLAGE 30)
376          KM
377          KM              AREA  281.98      AC
```

```
378          KM              Lo     500       FT
379          KM              So    13.5        %
380          KM              Lt    8105       FT
381          KM              St     7.9        %
382          KM              V1    5.68     FT/S
383          KM              V2    8.60     FT/S
384          KM              Ti    6.00      MIN
385          KM              Tt   16.20      MIN
386          KM          Tcheck   57.81      MIN
387          KM            Tlag   22.20      MIN
388          KM              CN      86
389          BA  .44060
390          PB    3.54
391          LS       0      86
392          UD   0.222
             *

393          KK    R-13
394          KM   ROUTE DOWNSTREAM OF 5-8 TRHOUGH 5-8
395          RM       1   0.109     0.3
             *

396          KK     5-8
397          KM
398          KM    ONSITE WATERSHED (PORTION OF VILLAGE 30)
399          KM    PORTION OF EXPANDED DB5
400          KM
401          KM            AREA  357.54      AC
402          KM              Lo     500       FT
403          KM              So     6.0        %
1                                  HEC-1 INPUT                                    PAGE 10

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

404          KM              Lt    5385       FT
405          KM              St     5.6        %
406          KM              V1    4.78     FT/S
407          KM              V2    7.24     FT/S
408          KM              Ti    7.86      MIN
409          KM              Tt   12.99      MIN
410          KM          Tcheck   42.69      MIN
411          KM            Tlag   20.85      MIN
412          KM              CN      86
413          BA  .54303
414          PB    3.46
415          LS       0      86
416          UD   0.208
             *

417          KK     C-8
418          KM   COMBINE C-7, 5-6, 5-7, & 5-8
419          HC       4
             *

420          KK     C-9
421          KM   COMBINE C-4 & C-8
422          KM   TOTAL INFLOW PROPOSED TO BE ACCEPTED BY EXPANSION OF DB5
423          HC       2
             *

424          KK  DB5MOD
425          KO       1
426          KM   EXPANSION OF DB5 TO ACCOMMODATE THE 100-YEAR STORM EVENT
427          KM   PMF RUNOFF WILL REMAIN THE SAME.  DIVERSION BERM THAT CAPTURES
428          KM   RUNOFF FROM PREVIOUSLY PLANNED DB4 IS DESIGNED ONLY FOR THE 100-YEAR STORM
429          RS       1    STOR      -1
430          SV       0    1.73     4.55     8.45    13.08    18.20    23.81    29.96    36.70    43.93
431          SV   59.55   77.49    99.82   127.17   159.39   196.38   240.07   286.47   358.85   535.25
432          SQ       0     192      276      391      505      616      725      813      900      982
433          SQ    1176    1368     1534     1683     1804     1920     2033     2135     2273     2567
434          SE  3532.5    3535     3536     3537     3538     3539     3540     3541     3542     3543
435          SE    3545    3547     3549     3551     3553     3555     3557     3559     3562     3569
436          SS  3563.0  453.60        3      1.5
437          ST    3569  2504.3        3      1.5
             *

438          KK     R14
439          KM   ROUTE THE FLOWS DISCHRGED FROM DB5 TO ALTA DRIVE
440          RD    2550    .055    .013            CIRC       5
             *
             * THE FOLLOWING HYDROGRAPHS WERE TAKEN DIRECTLY FROM 1997 SWMPU
             *

441          KK     4-7
442          BA    .103
443          PB    3.43
444          LS       0      87
445          UD    .133
             *
1                                  HEC-1 INPUT                                    PAGE 11

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

446          KK    R4-7
447          KM   ROUTE THE FLOWS GENERATED BY 4-7 TO ALTA DRIVE RCB
448          RM       2     .14      .3
             *

449          KK     5-9
450          BA   .0387
451          PB    3.43
452          LS       0      87
453          UD    .128
             *
```

```
454          KK     C11
455          KM   COMBINE EXPANDED DB5, 4-7, & 5-9 INTO ALTA DRIVE RCB
456          HC       3
             *

457          KK    RC11
458          KM   ROUTE THE FLOWS WITHIN ALTA DRIVE TO LAKE MEAD BLVD.
459          RD    3850    .035    .015            TRAP      10       0
             *

460          KK   ST-CR
461          KM
462          KM    COLLECTOR ROAD (NORTH)
463          KM
464          KM            AREA    15.8      AC
465          KM            Tlag   16.30     MIN
466          KM              CN      93
467          BA  0.0247
468          LS       0      93
469          UD   .1630
             *

470          KK    C-DB
471          KM   COMBINE COLLECTOR ROAD AND DETENTION BASIN OUTFLOW
472          HC       2
             *

473          KK     Q
474          KM
475          KM            AREA   26.65      AC
476          KM            Tlag    10.6     MIN
477          KM              CN      90
478          BA  .04164
479          PB    3.29
480          LS       0    90.0
481          UD    .106
             *
1                                        HEC-1 INPUT                                        PAGE 12

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

482          KK   R/C
483          KM   ROUTE THROUGH ST1 (FOX HILL) TO PT1
484          RD    1100   0.029   0.016            TRAP       0      50
             *

485          KK     P
486          KM
487          KM            AREA   30.05      AC
488          KM            Tlag    11.5     MIN
489          KM              CN      90
490          BA  .04695
491          LS       0    90.0
492          UD    .115
             *

493          KK   PT1
494          KM   COMBINE P AND Q
495          HC       2
             *

496          KK   R/PT1
497          KM   ROUTE THROUGH ST1 (FOX HILL) TO PT1
498          RD    1400   0.041   0.016            TRAP       0      50
             *

499          KK     O
500          KM
501          KM            AREA   31.81      AC
502          KM            Tlag    12.2     MIN
503          KM              CN      90
504          BA  .04970
505          LS       0    90.0
506          UD    .122
             *

507          KK   PT2
508          KM   COMBINE O AND PT1
509          HC       2
             *

510          KK   ST1
511          KM
512          KM            AREA    7.80      AC
513          KM            Tlag    13.8     MIN
514          KM              CN      95
515          BA  .01219
516          LS       0    95.0
517          UD    .138
             *
1                                        HEC-1 INPUT                                        PAGE 13

LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

518          KK   PT3
519          KM   COMBINE PT2 AND ST1
520          HC       2
             *

521          KK   PT3A
522          KM   COMBINE PT3 WITH ALTA BOX
523          HC       2
```

```
*
524  KK     X
525  KM
526  KM            AREA    58.05      AC
527  KM            Tlag     9.7      MIN
528  KM              CN      90
529  BA  .09070
530  LS        0    90.0
531  UD     .097
*
532  KK   PT4
533  KM   COMBINE X AND PT3
534  HC         2
*
535  KK   COS5
536  KM
537  KM            AREA     5.94      AC
538  KM            Tlag      7.6      MIN
539  KM              CN       84
540  BA  .00928
541  LS        0    84.0
542  UD     .076
*
543  KK   PT5
544  KM   COMBINE COS5 AND PT4
545  HC         2
*
546  KK     R
547  KM
548  KM            AREA    31.21      AC
549  KM            Tlag     14.2      MIN
550  KM              CN     91.0
551  BA  .04877
552  LS        0    91.0
553  UD   0.142
*
1                                   HEC-1 INPUT                                 PAGE 14

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

554  KK   R/R
555  KM   ROUTE THROUGH ST2 (FOX HILL) TO ROUND-A-BOUT
556  RD    1100   0.051   0.016              TRAP        0       50
*
557  KK     S
558  KM
559  KM            AREA    27.54      AC
560  KM            Tlag     12.1      MIN
561  KM              CN       91
562  BA  .04303
563  LS        0    91.0
564  UD     .121
*
565  KK   PT6
566  KM   COMBINE  R AND S
567  HC         2
*
568  KK   ST2
569  KM
570  KM            AREA     4.00      AC
571  KM            Tlag      6.6      MIN
572  KM              CN       95
573  BA  .00625
574  LS        0    95.0
575  UD     .066
*
576  KK   ST3
577  KM
578  KM            AREA     3.74      AC
579  KM            Tlag      5.0      MIN (USE 5.0 MINUTES AS A MINIMUM)
580  KM              CN       95
581  BA  .00584
582  LS        0    95.0
583  UD     .050
*
584  KK   PT7
585  KM   COMBINE PT6, ST2, AND ST3
586  HC         3
*
587  KK  R/PT2
588  KM   ROUTE THROUGH ST4 (SPOKE ROAD) TO DESERT FOOTHILLS
589  RD    2840   0.042   0.016              TRAP        0       50
*
1                                   HEC-1 INPUT                                 PAGE 15

LINE      ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

590  KK   NP-2
591  KM
592  KM            AREA     13.4      AC
593  KM            Tlag     19.8      MIN
594  KM              CN       74
```

```
595          BA  .02097
596          LS       0    74.0
597          UD    .198
             *

598          KK   PT8
599          KM   COMBINE NP-2 AND PT7
600          HC       2
             *

601          KK    W
602          KM
603          KM             AREA   84.95      AC
604          KM             Tlag    12.1     MIN
605          KM               CN      90
606          BA  .13273
607          LS       0    90.0
608          UD    .121
             *

609          KK    PT9
610          KM   COMBINE W AND PT7
611          HC       2
             *

612          KK   ST4
613          KM
614          KM             AREA    5.84      AC
615          KM             Tlag    9.8      MIN
616          KM               CN      95
617          BA  .00913
618          LS       0    95.0
619          UD    .098
             *

620          KK   PT10
621          KM   COMBINE PT9 AND ST4
622          HC       2
             *

623          KK    U
624          KM
625          KM             AREA   39.49      AC
626          KM             Tlag    10.9     MIN
627          KM               CN      91
628          BA  .06170
629          LS       0    91.0
630          UD    .109
             *
```



```
LINE         ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

631          KK   R/U
632          KM   ROUTE THROUGH DESERT FOOTHILLS
633          RD    1790   0.042   0.016            TRAP       0      50
             *

634          KK    V
635          KM
636          KM             AREA   27.19      AC
637          KM             Tlag    14.3     MIN
638          KM               CN      90
639          BA  .04248
640          LS       0    90.0
641          UD    .143
             *

642          KK   PT11
643          KM   COMBINE V AND U
644          HC       2
             *

645          KK   PT12
646          KM   COMBINE PT11 AND PT10
647          HC       2
             *

648          KK   ST-DF
649          KM
650          KM    DESERT FOOTHILLS DRIVE (NORTH)
651          KM
652          KM             AREA    12.9      AC
653          KM             Tlag   21.40     MIN
654          KM               CN      92
655          BA  0.0202
656          LS       0      92
657          UD   .2140
             *

658          KK    C-47
659          KM   COMBINE C-46 AND ALTA DRIVE
660          HC       2
             *

661          KK   C-47A
662          KM   COMBINE C-47 AND C-34
663          HC       2
             *

664          KK   ST-AL
665          KM
666          KM    ALTA DRIVE
667          KM
```

```
668          KM            AREA    12.0      AC
669          KM            Tlag    13.55     MIN
670          KM              CN      94
```

1 HEC-1 INPUT

```
LINE         ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.....10

671          BA  0.0188
672          LS        0       94
673          UD   .1355
             *

674          KK   CP-AL
675          KM   COMBINE C-47A AND ALTA DRIVE
676          HC        2
             *

677          KK      T
678          KM
679          KM              AREA   13.40      AC
680          KM              Tlag    11.2      MIN
681          KM                CN      91
682          BA  .02094
683          LS        0     91.0
684          UD    .112
             *

685          KK   R/T
686          KM   ROUTE THROUGH ST4 (FOX HILL) TO PT3
687          RD    2300   0.042   0.016              TRAP       0       50
             *

688          KK   ST-FH
689          KM
690          KM    FAR HILLS AVENUE
691          KM
692          KM              AREA    13.2      AC
693          KM              Tlag   12.40      MIN
694          KM                CN      94
695          BA  0.0206
696          LS        0       94
697          UD   .1240
             *

698          KK   CP-FH
699          KM   COMBINE F AND ST5 (FAR HILLS DRIVE)
700          HC        2
             *

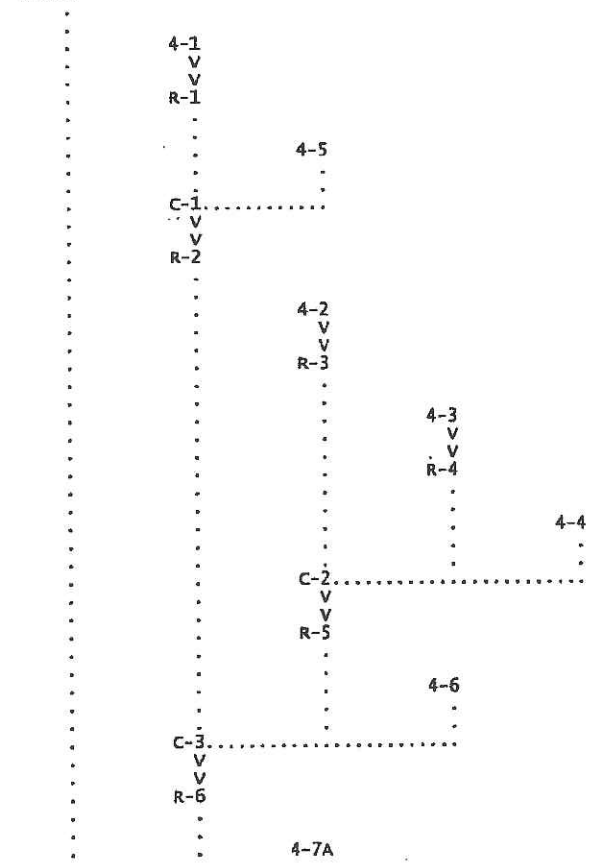
701          ZZ
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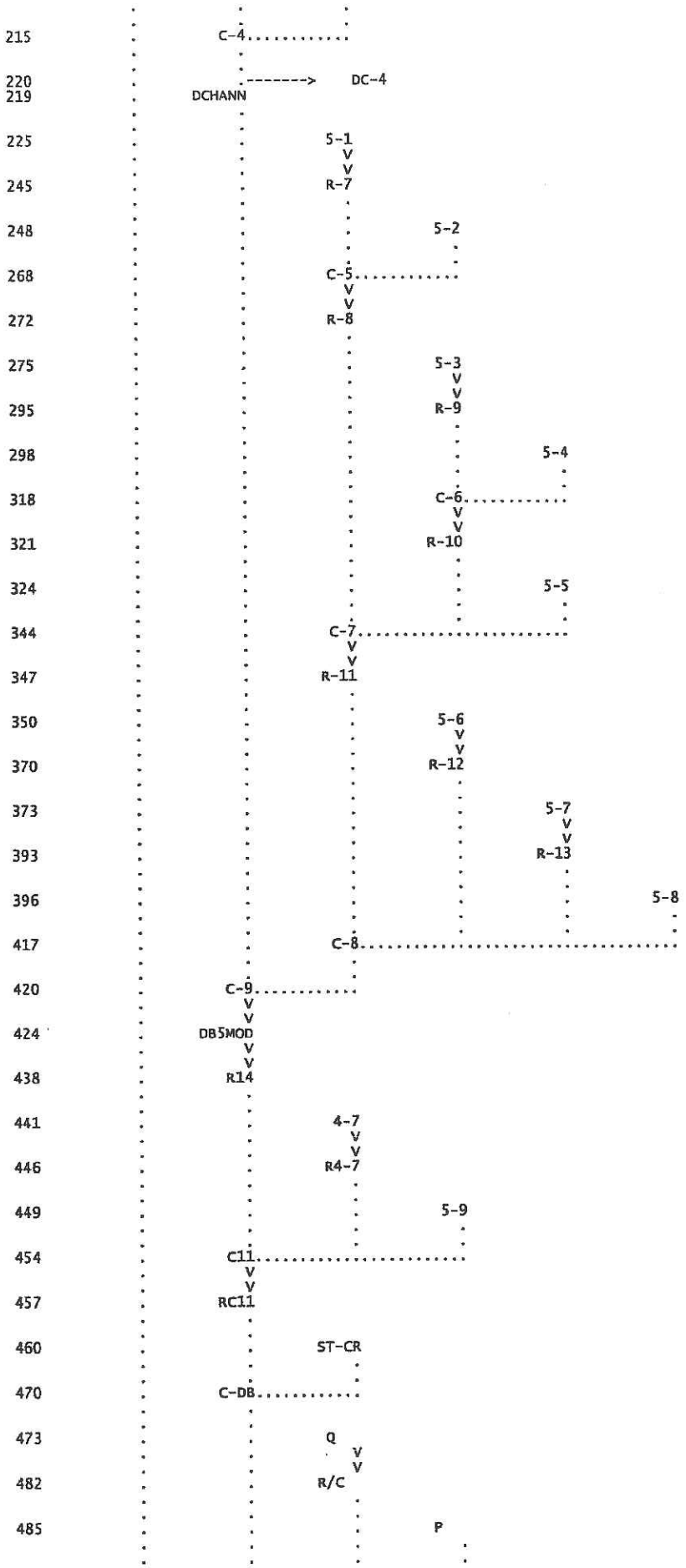
1 SCHEMATIC DIAGRAM OF STREAM NETWORK

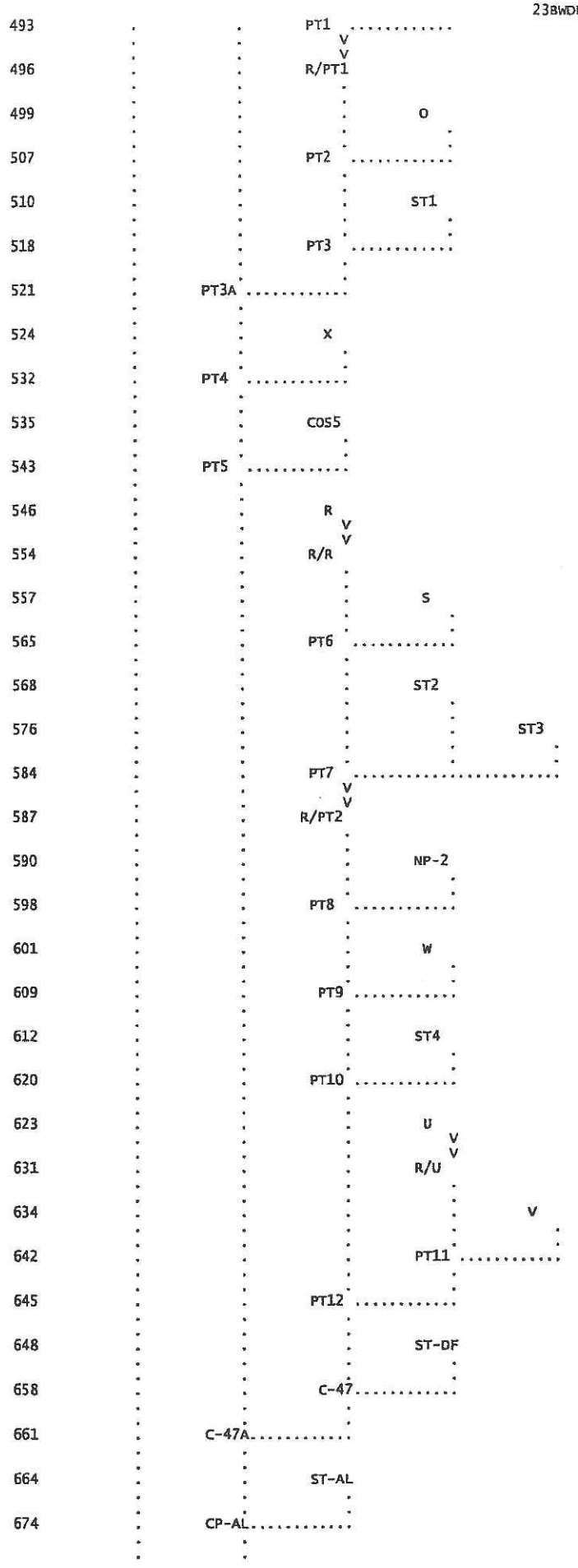
INPUT LINE NO.

(V) ROUTING (---->) DIVERSION OR PUMP FLOW

(.) CONNECTOR (<----) RETURN OF DIVERTED OR PUMPED FLOW




215
C-4
220
DC-4
219
DCHANN
225
5-1
245
R-7
248
5-2
268
C-5
272
R-8
275
5-3
295
R-9
298
5-4
318
C-6
321
R-10
324
5-5
344
C-7
347
R-11
350
5-6
370
R-12
373
5-7
393
R-13
396
5-8
417
C-8
420
C-9
424
DB5MOD
438
R14
441
4-7
446
R4-7
449
5-9
454
C11
457
RC11
460
ST-CR
470
C-DB
473
Q
482
R/C
485
P


493
PT1
496
R/PT1
499
O
507
PT2
510
ST1
518
PT3
521
PT3A
524
X
532
PT4
535
COS5
543
PT5
546
R
554
R/R
557
S
565
PT6
568
ST2
576
ST3
584
PT7
587
R/PT2
590
NP-2
598
PT8
601
W
609
PT9
612
ST4
620
PT10
623
U
631
R/U
634
V
642
PT11
645
PT12
648
ST-DF
658
C-47
661
C-47A
664
ST-AL
674
CP-AL

```
677          .          .          T
             .          .          V
             .          .          V
685          .          .       R/T
             .          .          .
             .          .          .
688          .          .          .       ST-FH
             .          .          .          .
             .          .          .          .
698          .          .       CP-FH.........
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
**********************************************
*                                            *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)        *
*             MAY   1991                     *
*          VERSION 4.0.1E                    *
*     Lahey F77L-EM/32 version 5.01          *
*       Dodson & Associates, Inc.            *
*  RUN DATE  09/02/03  TIME  15:27:59        *
**********************************************
```

```
**************************************
*                                    *
*    U.S. ARMY CORPS OF ENGINEERS    *
*    HYDROLOGIC ENGINEERING CENTER   *
*          609 SECOND STREET         *
*       DAVIS, CALIFORNIA 95616      *
*           (916) 551-1748           *
*                                    *
**************************************
```

```
*****************************************************************
*  :.....................................................:      *
*  :                  SUMMERLIN VILLAGE 23B              :      *
*  :                  MASTER STUDY UPDATE (MAY 2002)     :      *
*  :                  DEVELOPED ONSITE                   :      *
*  :                  DEVELOPED OFFSITE                  :      *
*  :.....................................................:      *
*  :             RETURN PERIOD_ _ _ _10 & 100-YEAR       :      *
*  :             DISTRIBUTION_ _ _ _ _ 6-HOUR SDN3       :      *
*  :             PROJECT NO_ _ _ _ _ _ 62023.050         :      *
*  :             FILENAME_ _ _ _ _ _ _ VILL23DEV.DAT     :      *
*  :             DATE_ _ _ _ _ _ _ _ _ 05/20/02          :      *
*  :             MODELED BY_ _ _ _ _ _ ALG               :      *
*  :                                                     :      *
*  :  DEPTH AREA REDUCTION FACTORS:                      :      *
*  :  AREA              DARF                             :      *
*  :  0.5 SQ MI          .98                             :      *
*  :  1.0 SQ MI          .97                             :      *
*  :  1.5 SQ MI          .95                             :      *
*  :  2.0 SQ MI          .93                             :      *
*  :  7.65 SQ MI         .89                             :      *
*  :  10-YEAR STORM      .55                             :      *
*  :.....................................................:      *
*****************************************************************
```

```
 26 IO          OUTPUT CONTROL VARIABLES
                     IPRNT          5  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE

    IT          HYDROGRAPH TIME DATA
                      NMIN          5  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1    0  STARTING DATE
                     ITIME         0000  STARTING TIME
                        NQ          200  NUMBER OF HYDROGRAPH ORDINATES
                    NDDATE      1    0  ENDING DATE
                    NDTIME         1635  ENDING TIME
                     ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL     0.08 HOURS
                      TOTAL TIME BASE    16.58 HOURS

          ENGLISH UNITS
               DRAINAGE AREA          SQUARE MILES
               PRECIPITATION DEPTH    INCHES
               LENGTH, ELEVATION      FEET
               FLOW                   CUBIC FEET PER SECOND
               STORAGE VOLUME         ACRE-FEET
               SURFACE AREA           ACRES
               TEMPERATURE            DEGREES FAHRENHEIT

    JP            MULTI-PLAN OPTION
                      NPLAN           1  NUMBER OF PLANS

    JR            MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                  1.00      0.98      0.97      0.95      0.93      0.89      0.55
```

*** ***

```
            ***************
            *             *
 424 KK     *    DB5MOD   *
            *             *
            ***************

 425 KO          OUTPUT CONTROL VARIABLES
                     IPRNT          1  PRINT CONTROL
                     IPLOT          0  PLOT CONTROL
                     QSCAL         0.  HYDROGRAPH PLOT SCALE
                         EXPANSION OF DB5 TO ACCOMMODATE THE 100-YEAR STORM EVENT
                         PMF RUNOFF WILL REMAIN THE SAME.  DIVERSION BERM THAT CAPTURES
                         RUNOFF FROM PREVIOUSLY PLANNED DB4 IS DESIGNED ONLY FOR THE 100-YEAR STORM

                HYDROGRAPH ROUTING DATA
```

```
429 RS          STORAGE ROUTING
                    NSTPS          1  NUMBER OF SUBREACHES
                     ITYP       STOR  TYPE OF INITIAL CONDITION
                   RSVRIC      -1.00  INITIAL CONDITION
                        X       0.00 WORKING R AND D COEFFICIENT

430 SV          STORAGE          0.0        1.7        4.6        8.4       13.1       18.2       23.8       30.0       36.7       43.9
                                59.5       77.5       99.8      127.2      159.4      196.4      240.1      286.5      358.9      535.3

432 SQ          DISCHARGE         0.      192.       276.       391.       505.       616.       725.       813.       900.       982.
                               1176.     1368.      1534.      1683.      1804.      1920.      2033.      2135.      2273.      2567.

434 SE          ELEVATION      3532.50    3535.00    3536.00    3537.00    3538.00    3539.00    3540.00    3541.00    3542.00    3543.00
                               3545.00    3547.00    3549.00    3551.00    3553.00    3555.00    3557.00    3559.00    3562.00    3569.00

436 SS          SPILLWAY
                     CREL     3563.00  SPILLWAY CREST ELEVATION
                     SPWID     453.60  SPILLWAY WIDTH
                     COQW        3.00  WEIR COEFFICIENT
                     EXPW        1.50  EXPONENT OF HEAD

437 ST          TOP OF DAM
                     TOPEL    3569.00  ELEVATION AT TOP OF DAM
                     DAMWID   2504.30  DAM WIDTH
                     COQD        3.00  WEIR COEFFICIENT
                     EXPD        1.50  EXPONENT OF HEAD
```

***

COMPUTED STORAGE-OUTFLOW-ELEVATION DATA

(INCLUDING FLOW OVER DAM)

STORAGE	0.00	1.73	4.55	8.45	13.08	18.20	23.81	29.96	36.70	43.93
OUTFLOW	0.00	192.00	276.00	391.00	505.00	616.00	725.00	813.00	900.00	982.00
ELEVATION	3532.50	3535.00	3536.00	3537.00	3538.00	3539.00	3540.00	3541.00	3542.00	3543.00
STORAGE	59.55	77.49	99.82	127.17	159.39	196.38	240.07	286.47	358.85	535.25
OUTFLOW	1176.00	1368.00	1534.00	1683.00	1804.00	1920.00	2033.00	2135.00	2273.00	2567.00
ELEVATION	3545.00	3547.00	3549.00	3551.00	3553.00	3555.00	3557.00	3559.00	3562.00	3569.00

****

HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 1.00

****

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	1		0535	68	2320.	387.0	3563.1	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	1		0540	69	2305.	378.2	3562.8	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	1		0545	70	2289.	368.4	3562.4	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	1		0550	71	2271.	357.7	3562.0	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	1		0555	72	2249.	346.4	3561.5	1		1130	139	0.	0.0	3532.5
1		0025	6	1.	0.0	3532.5	1		0600	73	2227.	334.6	3561.0	1		1135	140	0.	0.0	3532.5
1		0030	7	7.	0.1	3532.6	1		0605	74	2204.	322.4	3560.5	1		1140	141	0.	0.0	3532.5
1		0035	8	25.	0.2	3532.8	1		0610	75	2180.	310.0	3560.0	1		1145	142	0.	0.0	3532.5
1		0040	9	63.	0.6	3533.3	1		0615	76	2155.	297.2	3559.4	1		1150	143	0.	0.0	3532.5
1		0045	10	116.	1.0	3534.0	1		0620	77	2130.	284.3	3558.9	1		1155	144	0.	0.0	3532.5
1		0050	11	170.	1.5	3534.7	1		0625	78	2101.	271.2	3558.3	1		1200	145	0.	0.0	3532.5
1		0055	12	196.	1.9	3535.0	1		0630	79	2072.	258.0	3557.8	1		1205	146	0.	0.0	3532.5
1		0100	13	200.	2.0	3535.1	1		0635	80	2043.	244.7	3557.2	1		1210	147	0.	0.0	3532.5
1		0105	14	197.	1.9	3535.1	1		0640	81	2011.	231.5	3556.6	1		1215	148	0.	0.0	3532.5
1		0110	15	190.	1.7	3535.0	1		0645	82	1977.	218.4	3556.0	1		1220	149	0.	0.0	3532.5
1		0115	16	170.	1.5	3534.7	1		0650	83	1943.	205.3	3555.4	1		1225	150	0.	0.0	3532.5
1		0120	17	161.	1.5	3534.6	1		0655	84	1908.	192.4	3554.8	1		1230	151	0.	0.0	3532.5
1		0125	18	162.	1.5	3534.6	1		0700	85	1868.	179.7	3554.1	1		1235	152	0.	0.0	3532.5
1		0130	19	174.	1.6	3534.8	1		0705	86	1828.	167.2	3553.4	1		1240	153	0.	0.0	3532.5
1		0135	20	194.	1.8	3535.0	1		0710	87	1787.	154.8	3552.7	1		1245	154	0.	0.0	3532.5
1		0140	21	208.	2.3	3535.2	1		0715	88	1742.	142.8	3552.0	1		1250	155	0.	0.0	3532.5
1		0145	22	233.	3.1	3535.5	1		0720	89	1697.	131.0	3551.2	1		1255	156	0.	0.0	3532.5
1		0150	23	269.	4.3	3535.9	1		0725	90	1642.	119.6	3550.4	1		1300	157	0.	0.0	3532.5
1		0155	24	309.	5.7	3536.3	1		0730	91	1581.	108.5	3549.6	1		1305	158	0.	0.0	3532.5
1		0200	25	346.	6.9	3536.6	1		0735	92	1519.	97.9	3548.8	1		1310	159	0.	0.0	3532.5
1		0205	26	375.	7.9	3536.9	1		0740	93	1444.	87.7	3547.9	1		1315	160	0.	0.0	3532.5
1		0210	27	392.	8.5	3537.0	1		0745	94	1372.	78.0	3547.0	1		1320	161	0.	0.0	3532.5
1		0215	28	400.	8.8	3537.1	1		0750	95	1276.	68.9	3546.0	1		1325	162	0.	0.0	3532.5
1		0220	29	406.	9.1	3537.1	1		0755	96	1185.	60.4	3545.1	1		1330	163	0.	0.0	3532.5
1		0225	30	419.	9.6	3537.2	1		0800	97	1089.	52.6	3544.1	1		1335	164	0.	0.0	3532.5
1		0230	31	444.	10.6	3537.5	1		0805	98	1000.	45.4	3543.2	1		1340	165	0.	0.0	3532.5
1		0235	32	479.	12.0	3537.8	1		0810	99	923.	38.8	3542.3	1		1345	166	0.	0.0	3532.5
1		0240	33	517.	13.6	3538.1	1		0815	100	848.	32.7	3541.4	1		1350	167	0.	0.0	3532.5
1		0245	34	548.	15.1	3538.4	1		0820	101	772.	27.1	3540.5	1		1355	168	0.	0.0	3532.5
1		0250	35	574.	16.3	3538.6	1		0825	102	691.	22.1	3539.7	1		1400	169	0.	0.0	3532.5
1		0255	36	598.	17.4	3538.8	1		0830	103	603.	17.6	3538.9	1		1405	170	0.	0.0	3532.5
1		0300	37	623.	18.6	3539.1	1		0835	104	519.	13.7	3538.1	1		1410	171	0.	0.0	3532.5
1		0305	38	646.	19.8	3539.3	1		0840	105	440.	10.4	3537.4	1		1415	172	0.	0.0	3532.5
1		0310	39	671.	21.0	3539.5	1		0845	106	368.	7.7	3536.8	1		1420	173	0.	0.0	3532.5
1		0315	40	709.	23.0	3539.9	1		0850	107	300.	5.4	3536.2	1		1425	174	0.	0.0	3532.5
1		0320	41	771.	27.0	3540.5	1		0855	108	244.	3.5	3535.6	1		1430	175	0.	0.0	3532.5
1		0325	42	880.	35.2	3541.8	1		0900	109	199.	2.0	3535.1	1		1435	176	0.	0.0	3532.5
1		0330	43	1058.	50.0	3543.8	1		0905	110	102.	0.9	3533.8	1		1440	177	0.	0.0	3532.5
1		0335	44	1329.	73.9	3546.6	1		0910	111	46.	0.4	3533.1	1		1445	178	0.	0.0	3532.5
1		0340	45	1575.	107.4	3549.6	1		0915	112	20.	0.2	3532.8	1		1450	179	0.	0.0	3532.5
1		0345	46	1761.	147.9	3552.3	1		0920	113	9.	0.1	3532.6	1		1455	180	0.	0.0	3532.5
1		0350	47	1902.	190.6	3554.7	1		0925	114	4.	0.0	3532.6	1		1500	181	0.	0.0	3532.5
1		0355	48	2009.	230.8	3556.6	1		0930	115	2.	0.0	3532.5	1		1505	182	0.	0.0	3532.5
1		0400	49	2092.	266.8	3558.2	1		0935	116	1.	0.0	3532.5	1		1510	183	0.	0.0	3532.5
1		0405	50	2157.	298.1	3559.5	1		0940	117	0.	0.0	3532.5	1		1515	184	0.	0.0	3532.5
1		0410	51	2209.	325.1	3560.6	1		0945	118	0.	0.0	3532.5	1		1520	185	0.	0.0	3532.5
1		0415	52	2252.	348.1	3561.6	1		0950	119	0.	0.0	3532.5	1		1525	186	0.	0.0	3532.5
1		0420	53	2286.	366.6	3562.3	1		0955	120	0.	0.0	3532.5	1		1530	187	0.	0.0	3532.5
1		0425	54	2309.	380.6	3562.9	1		1000	121	0.	0.0	3532.5	1		1535	188	0.	0.0	3532.5

1	0430	55	2326.	390.4	3563.3	* 1	1005	122	0.	0.0	3532.5	* 1	1540	189	0.	0.0	3532.5			
1	0435	56	2336.	396.9	3563.5	* 1	1010	123	0.	0.0	3532.5	* 1	1545	190	0.	0.0	3532.5			
1	0440	57	2344.	401.4	3563.7	* 1	1015	124	0.	0.0	3532.5	* 1	1550	191	0.	0.0	3532.5			
1	0445	58	2349.	404.7	3563.8	* 1	1020	125	0.	0.0	3532.5	* 1	1555	192	0.	0.0	3532.5			
1	0450	59	2354.	407.4	3563.9	* 1	1025	126	0.	0.0	3532.5	* 1	1600	193	0.	0.0	3532.5			
1	0455	60	2357.	409.5	3564.0	* 1	1030	127	0.	0.0	3532.5	* 1	1605	194	0.	0.0	3532.5			
1	0500	61	2360.	410.8	3564.1	* 1	1035	128	0.	0.0	3532.5	* 1	1610	195	0.	0.0	3532.5			
1	0505	62	2361.	411.4	3564.1	* 1	1040	129	0.	0.0	3532.5	* 1	1615	196	0.	0.0	3532.5			
1	0510	63	2360.	411.1	3564.1	* 1	1045	130	0.	0.0	3532.5	* 1	1620	197	0.	0.0	3532.5			
1	0515	64	2357.	409.4	3564.0	* 1	1050	131	0.	0.0	3532.5	* 1	1625	198	0.	0.0	3532.5			
1	0520	65	2352.	406.1	3563.9	* 1	1055	132	0.	0.0	3532.5	* 1	1630	199	0.	0.0	3532.5			
1	0525	66	2344.	401.2	3563.7	* 1	1100	133	0.	0.0	3532.5	* 1	1635	200	0.	0.0	3532.5			
1	0530	67	2333.	394.7	3563.4	* 1	1105	134	0.	0.0	3532.5	*								

PEAK OUTFLOW IS 2361. AT TIME 5.08 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)	(CFS)				
+ 2361.	5.08		1691.	652.	652.	652.
		(INCHES)	2.319	2.473	2.473	2.473
		(AC-FT)	839.	894.	894.	894.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
411.	5.08	207.	76.	76.	76.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3564.09	5.08	3553.14	3540.46	3540.46	3540.46

CUMULATIVE AREA = 6.78 SQ MI

HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.98

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	*	1		0535	68	2296.	372.6	3562.5	*	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	*	1		0540	69	2281.	363.8	3562.2	*	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	*	1		0545	70	2264.	354.0	3561.8	*	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	*	1		0550	71	2244.	343.5	3561.4	*	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	*	1		0555	72	2222.	332.3	3560.9	*	1		1130	139	0.	0.0	3532.5
1		0025	6	1.	0.0	3532.5	*	1		0600	73	2200.	320.6	3560.4	*	1		1135	140	0.	0.0	3532.5
1		0030	7	6.	0.1	3532.6	*	1		0605	74	2177.	308.5	3559.9	*	1		1140	141	0.	0.0	3532.5
1		0035	8	22.	0.2	3532.8	*	1		0610	75	2153.	296.1	3559.4	*	1		1145	142	0.	0.0	3532.5
1		0040	9	56.	0.5	3533.2	*	1		0615	76	2129.	283.5	3558.9	*	1		1150	143	0.	0.0	3532.5
1		0045	10	106.	1.0	3533.9	*	1		0620	77	2100.	270.8	3558.3	*	1		1155	144	0.	0.0	3532.5
1		0050	11	156.	1.4	3534.5	*	1		0625	78	2072.	257.8	3557.8	*	1		1200	145	0.	0.0	3532.5
1		0055	12	188.	1.7	3535.0	*	1		0630	79	2043.	244.8	3557.2	*	1		1205	146	0.	0.0	3532.5
1		0100	13	193.	1.8	3535.0	*	1		0635	80	2012.	231.8	3556.6	*	1		1210	147	0.	0.0	3532.5
1		0105	14	186.	1.7	3534.9	*	1		0640	81	1978.	218.8	3556.0	*	1		1215	148	0.	0.0	3532.5
1		0110	15	168.	1.5	3534.7	*	1		0645	82	1944.	205.8	3555.4	*	1		1220	149	0.	0.0	3532.5
1		0115	16	155.	1.4	3534.5	*	1		0650	83	1909.	193.0	3554.8	*	1		1225	150	0.	0.0	3532.5
1		0120	17	149.	1.3	3534.4	*	1		0655	84	1870.	180.3	3554.1	*	1		1230	151	0.	0.0	3532.5
1		0125	18	152.	1.4	3534.5	*	1		0700	85	1831.	167.8	3553.5	*	1		1235	152	0.	0.0	3532.5
1		0130	19	164.	1.5	3534.6	*	1		0705	86	1790.	155.6	3552.8	*	1		1240	153	0.	0.0	3532.5
1		0135	20	187.	1.7	3534.9	*	1		0710	87	1744.	143.5	3552.0	*	1		1245	154	0.	0.0	3532.5
1		0140	21	203.	2.1	3535.1	*	1		0715	88	1700.	131.8	3551.3	*	1		1250	155	0.	0.0	3532.5
1		0145	22	226.	2.9	3535.4	*	1		0720	89	1646.	120.3	3550.5	*	1		1255	156	0.	0.0	3532.5
1		0150	23	259.	4.0	3535.8	*	1		0725	90	1585.	109.2	3549.7	*	1		1300	157	0.	0.0	3532.5
1		0155	24	297.	5.3	3536.2	*	1		0730	91	1525.	98.6	3548.9	*	1		1305	158	0.	0.0	3532.5
1		0200	25	332.	6.5	3536.5	*	1		0735	92	1449.	88.3	3548.0	*	1		1310	159	0.	0.0	3532.5
1		0205	26	360.	7.4	3536.7	*	1		0740	93	1377.	78.6	3547.1	*	1		1315	160	0.	0.0	3532.5
1		0210	27	377.	8.0	3536.9	*	1		0745	94	1282.	69.5	3546.1	*	1		1320	161	0.	0.0	3532.5
1		0215	28	385.	8.3	3537.0	*	1		0750	95	1191.	61.0	3545.2	*	1		1325	162	0.	0.0	3532.5
1		0220	29	392.	8.5	3537.0	*	1		0755	96	1096.	53.1	3544.2	*	1		1330	163	0.	0.0	3532.5
1		0225	30	404.	9.0	3537.1	*	1		0800	97	1006.	45.9	3543.2	*	1		1335	164	0.	0.0	3532.5
1		0230	31	428.	9.9	3537.3	*	1		0805	98	929.	39.2	3542.3	*	1		1340	165	0.	0.0	3532.5
1		0235	32	462.	11.3	3537.6	*	1		0810	99	853.	33.1	3541.5	*	1		1345	166	0.	0.0	3532.5
1		0240	33	499.	12.8	3537.9	*	1		0815	100	777.	27.5	3540.6	*	1		1350	167	0.	0.0	3532.5
1		0245	34	529.	14.2	3538.2	*	1		0820	101	697.	22.4	3539.7	*	1		1355	168	0.	0.0	3532.5
1		0250	35	555.	15.4	3538.4	*	1		0825	102	609.	17.9	3538.9	*	1		1400	169	0.	0.0	3532.5
1		0255	36	578.	16.5	3538.7	*	1		0830	103	525.	14.0	3538.2	*	1		1405	170	0.	0.0	3532.5
1		0300	37	602.	17.6	3538.9	*	1		0835	104	445.	10.6	3537.5	*	1		1410	171	0.	0.0	3532.5
1		0305	38	626.	18.7	3539.1	*	1		0840	105	373.	7.8	3536.8	*	1		1415	172	0.	0.0	3532.5
1		0310	39	650.	19.9	3539.3	*	1		0845	106	304.	5.5	3536.2	*	1		1420	173	0.	0.0	3532.5
1		0315	40	687.	21.8	3539.6	*	1		0850	107	248.	3.6	3535.7	*	1		1425	174	0.	0.0	3532.5
1		0320	41	752.	25.7	3540.3	*	1		0855	108	202.	2.1	3535.1	*	1		1430	175	0.	0.0	3532.5
1		0325	42	859.	33.5	3541.5	*	1		0900	109	109.	1.0	3533.9	*	1		1435	176	0.	0.0	3532.5
1		0330	43	1031.	47.8	3543.5	*	1		0905	110	49.	0.4	3533.1	*	1		1440	177	0.	0.0	3532.5
1		0335	44	1298.	70.9	3546.3	*	1		0910	111	22.	0.2	3532.8	*	1		1445	178	0.	0.0	3532.5
1		0340	45	1554.	103.4	3549.3	*	1		0915	112	10.	0.1	3532.6	*	1		1450	179	0.	0.0	3532.5
1		0345	46	1742.	142.8	3552.0	*	1		0920	113	4.	0.0	3532.6	*	1		1455	180	0.	0.0	3532.5
1		0350	47	1882.	184.4	3554.4	*	1		0925	114	2.	0.0	3532.5	*	1		1500	181	0.	0.0	3532.5
1		0355	48	1990.	223.6	3556.2	*	1		0930	115	1.	0.0	3532.5	*	1		1505	182	0.	0.0	3532.5
1		0400	49	2074.	258.8	3557.8	*	1		0935	116	0.	0.0	3532.5	*	1		1510	183	0.	0.0	3532.5
1		0405	50	2141.	289.5	3559.1	*	1		0940	117	0.	0.0	3532.5	*	1		1515	184	0.	0.0	3532.5
1		0410	51	2191.	315.9	3560.2	*	1		0945	118	0.	0.0	3532.5	*	1		1520	185	0.	0.0	3532.5
1		0415	52	2233.	338.1	3561.1	*	1		0950	119	0.	0.0	3532.5	*	1		1525	186	0.	0.0	3532.5
1		0420	53	2267.	355.9	3561.9	*	1		0955	120	0.	0.0	3532.5	*	1		1530	187	0.	0.0	3532.5
1		0425	54	2290.	369.3	3562.4	*	1		1000	121	0.	0.0	3532.5	*	1		1535	188	0.	0.0	3532.5
1		0430	55	2306.	378.6	3562.8	*	1		1005	122	0.	0.0	3532.5	*	1		1540	189	0.	0.0	3532.5
1		0435	56	2316.	384.8	3563.0	*	1		1010	123	0.	0.0	3532.5	*	1		1545	190	0.	0.0	3532.5

1	0440	57	2323.	388.9	3563.2	*	1	1015	124	0.	0.0	3532.5	*	1	1550	191	0.	0.0	3532.5
1	0445	58	2328.	391.9	3563.3	*	1	1020	125	0.	0.0	3532.5	*	1	1555	192	0.	0.0	3532.5
1	0450	59	2332.	394.3	3563.4	*	1	1025	126	0.	0.0	3532.5	*	1	1600	193	0.	0.0	3532.5
1	0455	60	2335.	396.1	3563.5	*	1	1030	127	0.	0.0	3532.5	*	1	1605	194	0.	0.0	3532.5
1	0500	61	2337.	397.3	3563.5	*	1	1035	128	0.	0.0	3532.5	*	1	1610	195	0.	0.0	3532.5
1	0505	62	2338.	397.6	3563.5	*	1	1040	129	0.	0.0	3532.5	*	1	1615	196	0.	0.0	3532.5
1	0510	63	2337.	397.1	3563.5	*	1	1045	130	0.	0.0	3532.5	*	1	1620	197	0.	0.0	3532.5
1	0515	64	2334.	395.3	3563.4	*	1	1050	131	0.	0.0	3532.5	*	1	1625	198	0.	0.0	3532.5
1	0520	65	2328.	391.9	3563.3	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2320.	386.8	3563.1	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2309.	380.4	3562.9	*	1	1105	134	0.	0.0	3532.5	*						

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PEAK OUTFLOW IS 2338. AT TIME 5.08 HOURS

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	16.58-HR
2338.	5.08	(CFS)	1656.	636.	636.	636.
		(INCHES)	2.271	2.411	2.411	2.411
		(AC-FT)	821.	872.	872.	872.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	16.58-HR
398.	5.08	198.	72.	72.	72.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	16.58-HR
3563.54	5.08	3552.61	3540.22	3540.22	3540.22

CUMULATIVE AREA = 6.78 SQ MI

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HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.97

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	*	1		0535	68	2284.	365.4	3562.3	*	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	*	1		0540	69	2269.	356.6	3561.9	*	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	*	1		0545	70	2250.	346.9	3561.5	*	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	*	1		0550	71	2230.	336.3	3561.1	*	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	*	1		0555	72	2209.	325.2	3560.6	*	1		1130	139	0.	0.0	3532.5
1		0025	6	1.	0.0	3532.5	*	1		0600	73	2187.	313.5	3560.1	*	1		1135	140	0.	0.0	3532.5
1		0030	7	6.	0.1	3532.6	*	1		0605	74	2164.	301.5	3559.6	*	1		1140	141	0.	0.0	3532.5
1		0035	8	21.	0.2	3532.8	*	1		0610	75	2140.	289.2	3559.1	*	1		1145	142	0.	0.0	3532.5
1		0040	9	53.	0.5	3533.2	*	1		0615	76	2113.	276.7	3558.6	*	1		1150	143	0.	0.0	3532.5
1		0045	10	101.	0.9	3533.8	*	1		0620	77	2086.	264.0	3558.0	*	1		1155	144	0.	0.0	3532.5
1		0050	11	150.	1.3	3534.4	*	1		0625	78	2057.	251.1	3557.5	*	1		1200	145	0.	0.0	3532.5
1		0055	12	181.	1.6	3534.9	*	1		0630	79	2028.	238.2	3556.9	*	1		1205	146	0.	0.0	3532.5
1		0100	13	188.	1.7	3534.9	*	1		0635	80	1995.	225.3	3556.3	*	1		1210	147	0.	0.0	3532.5
1		0105	14	178.	1.6	3534.8	*	1		0640	81	1961.	212.4	3555.7	*	1		1215	148	0.	0.0	3532.5
1		0110	15	162.	1.5	3534.6	*	1		0645	82	1928.	199.5	3555.1	*	1		1220	149	0.	0.0	3532.5
1		0115	16	149.	1.3	3534.4	*	1		0650	83	1890.	186.8	3554.5	*	1		1225	150	0.	0.0	3532.5
1		0120	17	144.	1.3	3534.4	*	1		0655	84	1851.	174.3	3553.8	*	1		1230	151	0.	0.0	3532.5
1		0125	18	147.	1.3	3534.4	*	1		0700	85	1812.	161.9	3553.1	*	1		1235	152	0.	0.0	3532.5
1		0130	19	159.	1.4	3534.6	*	1		0705	86	1768.	149.8	3552.4	*	1		1240	153	0.	0.0	3532.5
1		0135	20	181.	1.6	3534.9	*	1		0710	87	1723.	137.9	3551.7	*	1		1245	154	0.	0.0	3532.5
1		0140	21	201.	2.0	3535.1	*	1		0715	88	1678.	126.3	3550.9	*	1		1250	155	0.	0.0	3532.5
1		0145	22	223.	2.8	3535.4	*	1		0720	89	1617.	115.0	3550.1	*	1		1255	156	0.	0.0	3532.5
1		0150	23	254.	3.8	3535.7	*	1		0725	90	1557.	104.1	3549.3	*	1		1300	157	0.	0.0	3532.5
1		0155	24	291.	5.1	3536.1	*	1		0730	91	1488.	93.7	3548.4	*	1		1305	158	0.	0.0	3532.5
1		0200	25	326.	6.2	3536.4	*	1		0735	92	1414.	83.7	3547.6	*	1		1310	159	0.	0.0	3532.5
1		0205	26	353.	7.2	3536.7	*	1		0740	93	1333.	74.3	3546.6	*	1		1315	160	0.	0.0	3532.5
1		0210	27	369.	7.7	3536.8	*	1		0745	94	1239.	65.4	3545.7	*	1		1320	161	0.	0.0	3532.5
1		0215	28	378.	8.0	3536.9	*	1		0750	95	1147.	57.2	3544.7	*	1		1325	162	0.	0.0	3532.5
1		0220	29	384.	8.2	3536.9	*	1		0755	96	1053.	49.6	3543.7	*	1		1330	163	0.	0.0	3532.5
1		0225	30	397.	8.7	3537.1	*	1		0800	97	968.	42.7	3542.8	*	1		1335	164	0.	0.0	3532.5
1		0230	31	420.	9.6	3537.3	*	1		0805	98	895.	36.3	3541.9	*	1		1340	165	0.	0.0	3532.5
1		0235	32	453.	11.0	3537.5	*	1		0810	99	818.	30.4	3541.1	*	1		1345	166	0.	0.0	3532.5
1		0240	33	489.	12.4	3537.9	*	1		0815	100	742.	25.0	3540.2	*	1		1350	167	0.	0.0	3532.5
1		0245	34	520.	13.8	3538.1	*	1		0820	101	655.	20.2	3539.4	*	1		1355	168	0.	0.0	3532.5
1		0250	35	545.	14.9	3538.4	*	1		0825	102	568.	16.0	3538.6	*	1		1400	169	0.	0.0	3532.5
1		0255	36	568.	16.0	3538.6	*	1		0830	103	487.	12.4	3537.8	*	1		1405	170	0.	0.0	3532.5
1		0300	37	592.	17.1	3538.8	*	1		0835	104	411.	9.3	3537.2	*	1		1410	171	0.	0.0	3532.5
1		0305	38	616.	18.2	3539.0	*	1		0840	105	339.	6.7	3536.5	*	1		1415	172	0.	0.0	3532.5
1		0310	39	639.	19.4	3539.2	*	1		0845	106	276.	4.6	3536.0	*	1		1420	173	0.	0.0	3532.5
1		0315	40	676.	21.3	3539.5	*	1		0850	107	225.	2.8	3535.4	*	1		1425	174	0.	0.0	3532.5
1		0320	41	742.	25.0	3540.2	*	1		0855	108	166.	1.5	3534.7	*	1		1430	175	0.	0.0	3532.5
1		0325	42	848.	32.7	3541.4	*	1		0900	109	74.	0.7	3533.5	*	1		1435	176	0.	0.0	3532.5
1		0330	43	1017.	46.8	3543.4	*	1		0905	110	33.	0.3	3532.9	*	1		1440	177	0.	0.0	3532.5
1		0335	44	1283.	69.5	3546.1	*	1		0910	111	15.	0.1	3532.7	*	1		1445	178	0.	0.0	3532.5
1		0340	45	1543.	101.5	3549.1	*	1		0915	112	7.	0.1	3532.6	*	1		1450	179	0.	0.0	3532.5
1		0345	46	1733.	140.4	3551.8	*	1		0920	113	3.	0.0	3532.5	*	1		1455	180	0.	0.0	3532.5
1		0350	47	1873.	181.5	3554.2	*	1		0925	114	1.	0.0	3532.5	*	1		1500	181	0.	0.0	3532.5
1		0355	48	1982.	220.2	3556.1	*	1		0930	115	1.	0.0	3532.5	*	1		1505	182	0.	0.0	3532.5
1		0400	49	2066.	255.0	3557.6	*	1		0935	116	0.	0.0	3532.5	*	1		1510	183	0.	0.0	3532.5
1		0405	50	2132.	285.3	3558.9	*	1		0940	117	0.	0.0	3532.5	*	1		1515	184	0.	0.0	3532.5
1		0410	51	2182.	311.4	3560.0	*	1		0945	118	0.	0.0	3532.5	*	1		1520	185	0.	0.0	3532.5
1		0415	52	2224.	333.2	3560.9	*	1		0950	119	0.	0.0	3532.5	*	1		1525	186	0.	0.0	3532.5
1		0420	53	2257.	350.7	3561.7	*	1		0955	120	0.	0.0	3532.5	*	1		1530	187	0.	0.0	3532.5
1		0425	54	2281.	363.8	3562.2	*	1		1000	121	0.	0.0	3532.5	*	1		1535	188	0.	0.0	3532.5
1		0430	55	2296.	372.9	3562.6	*	1		1005	122	0.	0.0	3532.5	*	1		1540	189	0.	0.0	3532.5
1		0435	56	2306.	378.8	3562.8	*	1		1010	123	0.	0.0	3532.5	*	1		1545	190	0.	0.0	3532.5
1		0440	57	2313.	382.7	3562.9	*	1		1015	124	0.	0.0	3532.5	*	1		1550	191	0.	0.0	3532.5
1		0445	58	2318.	385.6	3563.1	*	1		1020	125	0.	0.0	3532.5	*	1		1555	192	0.	0.0	3532.5

1	0450	59	2321.	387.9	3563.2	*	1	1025	126	0.	0.0	3532.5	*	1	1600	193	0.	0.0	3532.5
1	0455	60	2324.	389.5	3563.2	*	1	1030	127	0.	0.0	3532.5	*	1	1605	194	0.	0.0	3532.5
1	0500	61	2326.	390.5	3563.3	*	1	1035	128	0.	0.0	3532.5	*	1	1610	195	0.	0.0	3532.5
1	0505	62	2326.	390.8	3563.3	*	1	1040	129	0.	0.0	3532.5	*	1	1615	196	0.	0.0	3532.5
1	0510	63	2325.	390.1	3563.2	*	1	1045	130	0.	0.0	3532.5	*	1	1620	197	0.	0.0	3532.5
1	0515	64	2322.	388.2	3563.2	*	1	1050	131	0.	0.0	3532.5	*	1	1625	198	0.	0.0	3532.5
1	0520	65	2316.	384.7	3563.0	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2308.	379.6	3562.8	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2297.	373.1	3562.6	*	1	1105	134	0.	0.0	3532.5	*						
						*							*						

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PEAK OUTFLOW IS 2326. AT TIME 5.08 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)					
		(CFS)				
+ 2326.	5.08		1638.	628.	628.	628.
		(INCHES)	2.247	2.380	2.380	2.380
		(AC-FT)	812.	860.	860.	860.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
391.	5.08	193.	71.	71.	71.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3563.27	5.08	3552.34	3540.11	3540.11	3540.11

CUMULATIVE AREA = 6.78 SQ MI

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HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.95

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
							*								*							
1	0000		1	0.	0.0	3532.5	*	1	0535		68	2257.	350.4	3561.7	*	1	1110		135	0.	0.0	3532.5
1	0005		2	0.	0.0	3532.5	*	1	0540		69	2240.	341.7	3561.3	*	1	1115		136	0.	0.0	3532.5
1	0010		3	0.	0.0	3532.5	*	1	0545		70	2222.	332.0	3560.9	*	1	1120		137	0.	0.0	3532.5
1	0015		4	0.	0.0	3532.5	*	1	0550		71	2202.	321.5	3560.5	*	1	1125		138	0.	0.0	3532.5
1	0020		5	0.	0.0	3532.5	*	1	0555		72	2181.	310.5	3560.0	*	1	1130		139	0.	0.0	3532.5
1	0025		6	1.	0.0	3532.5	*	1	0600		73	2159.	298.9	3559.5	*	1	1135		140	0.	0.0	3532.5
1	0030		7	5.	0.0	3532.6	*	1	0605		74	2136.	287.0	3559.0	*	1	1140		141	0.	0.0	3532.5
1	0035		8	18.	0.2	3532.7	*	1	0610		75	2110.	274.9	3558.5	*	1	1145		142	0.	0.0	3532.5
1	0040		9	47.	0.4	3533.1	*	1	0615		76	2082.	262.5	3558.0	*	1	1150		143	0.	0.0	3532.5
1	0045		10	92.	0.8	3533.7	*	1	0620		77	2055.	250.0	3557.4	*	1	1155		144	0.	0.0	3532.5
1	0050		11	137.	1.2	3534.3	*	1	0625		78	2026.	237.3	3556.9	*	1	1200		145	0.	0.0	3532.5
1	0055		12	168.	1.5	3534.7	*	1	0630		79	1993.	224.6	3556.3	*	1	1205		146	0.	0.0	3532.5
1	0100		13	175.	1.6	3534.8	*	1	0635		80	1960.	211.9	3555.7	*	1	1210		147	0.	0.0	3532.5
1	0105		14	165.	1.5	3534.6	*	1	0640		81	1927.	199.2	3555.1	*	1	1215		148	0.	0.0	3532.5
1	0110		15	150.	1.4	3534.5	*	1	0645		82	1889.	186.6	3554.5	*	1	1220		149	0.	0.0	3532.5
1	0115		16	139.	1.2	3534.3	*	1	0650		83	1850.	174.2	3553.8	*	1	1225		150	0.	0.0	3532.5
1	0120		17	134.	1.2	3534.2	*	1	0655		84	1812.	161.9	3553.1	*	1	1230		151	0.	0.0	3532.5
1	0125		18	137.	1.2	3534.3	*	1	0700		85	1768.	149.8	3552.4	*	1	1235		152	0.	0.0	3532.5
1	0130		19	149.	1.3	3534.4	*	1	0705		86	1724.	138.0	3551.7	*	1	1240		153	0.	0.0	3532.5
1	0135		20	171.	1.5	3534.7	*	1	0710		87	1679.	126.4	3550.9	*	1	1245		154	0.	0.0	3532.5
1	0140		21	197.	1.9	3535.1	*	1	0715		88	1617.	115.1	3550.1	*	1	1250		155	0.	0.0	3532.5
1	0145		22	216.	2.5	3535.3	*	1	0720		89	1558.	104.3	3549.3	*	1	1255		156	0.	0.0	3532.5
1	0150		23	246.	3.5	3535.6	*	1	0725		90	1489.	93.8	3548.5	*	1	1300		157	0.	0.0	3532.5
1	0155		24	280.	4.7	3536.0	*	1	0730		91	1415.	83.8	3547.6	*	1	1305		158	0.	0.0	3532.5
1	0200		25	313.	5.8	3536.3	*	1	0735		92	1335.	74.4	3546.7	*	1	1310		159	0.	0.0	3532.5
1	0205		26	339.	6.7	3536.5	*	1	0740		93	1240.	65.6	3545.7	*	1	1315		160	0.	0.0	3532.5
1	0210		27	354.	7.2	3536.7	*	1	0745		94	1149.	57.3	3544.7	*	1	1320		161	0.	0.0	3532.5
1	0215		28	362.	7.5	3536.7	*	1	0750		95	1054.	49.8	3543.7	*	1	1325		162	0.	0.0	3532.5
1	0220		29	368.	7.7	3536.8	*	1	0755		96	969.	42.8	3542.8	*	1	1330		163	0.	0.0	3532.5
1	0225		30	381.	8.1	3536.9	*	1	0800		97	896.	36.4	3542.0	*	1	1335		164	0.	0.0	3532.5
1	0230		31	404.	9.0	3537.1	*	1	0805		98	820.	30.5	3541.1	*	1	1340		165	0.	0.0	3532.5
1	0235		32	436.	10.3	3537.4	*	1	0810		99	743.	25.1	3540.2	*	1	1345		166	0.	0.0	3532.5
1	0240		33	471.	11.7	3537.7	*	1	0815		100	656.	20.3	3539.4	*	1	1350		167	0.	0.0	3532.5
1	0245		34	503.	13.0	3538.0	*	1	0820		101	570.	16.1	3538.6	*	1	1355		168	0.	0.0	3532.5
1	0250		35	527.	14.1	3538.2	*	1	0825		102	489.	12.4	3537.9	*	1	1400		169	0.	0.0	3532.5
1	0255		36	549.	15.1	3538.4	*	1	0830		103	412.	9.3	3537.2	*	1	1405		170	0.	0.0	3532.5
1	0300		37	572.	16.2	3538.6	*	1	0835		104	340.	6.7	3536.6	*	1	1410		171	0.	0.0	3532.5
1	0305		38	594.	17.2	3538.8	*	1	0840		105	277.	4.6	3536.0	*	1	1415		172	0.	0.0	3532.5
1	0310		39	619.	18.4	3539.0	*	1	0845		106	226.	2.9	3535.4	*	1	1420		173	0.	0.0	3532.5
1	0315		40	653.	20.1	3539.3	*	1	0850		107	167.	1.5	3534.7	*	1	1425		174	0.	0.0	3532.5
1	0320		41	723.	23.7	3540.0	*	1	0855		108	75.	0.7	3533.5	*	1	1430		175	0.	0.0	3532.5
1	0325		42	827.	31.1	3541.2	*	1	0900		109	33.	0.3	3532.9	*	1	1435		176	0.	0.0	3532.5
1	0330		43	991.	44.6	3543.1	*	1	0905		110	15.	0.1	3532.7	*	1	1440		177	0.	0.0	3532.5
1	0335		44	1251.	66.6	3545.8	*	1	0910		111	7.	0.1	3532.6	*	1	1445		178	0.	0.0	3532.5
1	0340		45	1517.	97.5	3548.8	*	1	0915		112	3.	0.0	3532.5	*	1	1450		179	0.	0.0	3532.5
1	0345		46	1714.	135.4	3551.5	*	1	0920		113	1.	0.0	3532.5	*	1	1455		180	0.	0.0	3532.5
1	0350		47	1854.	175.3	3553.9	*	1	0925		114	1.	0.0	3532.5	*	1	1500		181	0.	0.0	3532.5
1	0355		48	1963.	213.1	3555.8	*	1	0930		115	0.	0.0	3532.5	*	1	1505		182	0.	0.0	3532.5
1	0400		49	2048.	247.1	3557.3	*	1	0935		116	0.	0.0	3532.5	*	1	1510		183	0.	0.0	3532.5
1	0405		50	2113.	276.6	3558.6	*	1	0940		117	0.	0.0	3532.5	*	1	1515		184	0.	0.0	3532.5
1	0410		51	2164.	301.7	3559.6	*	1	0945		118	0.	0.0	3532.5	*	1	1520		185	0.	0.0	3532.5
1	0415		52	2204.	322.7	3560.5	*	1	0950		119	0.	0.0	3532.5	*	1	1525		186	0.	0.0	3532.5
1	0420		53	2236.	339.5	3561.2	*	1	0955		120	0.	0.0	3532.5	*	1	1530		187	0.	0.0	3532.5
1	0425		54	2260.	352.0	3561.7	*	1	1000		121	0.	0.0	3532.5	*	1	1535		188	0.	0.0	3532.5
1	0430		55	2276.	360.5	3562.1	*	1	1005		122	0.	0.0	3532.5	*	1	1540		189	0.	0.0	3532.5
1	0435		56	2285.	366.1	3562.3	*	1	1010		123	0.	0.0	3532.5	*	1	1545		190	0.	0.0	3532.5
1	0440		57	2291.	369.7	3562.4	*	1	1015		124	0.	0.0	3532.5	*	1	1550		191	0.	0.0	3532.5
1	0445		58	2295.	372.2	3562.5	*	1	1020		125	0.	0.0	3532.5	*	1	1555		192	0.	0.0	3532.5
1	0450		59	2299.	374.2	3562.6	*	1	1025		126	0.	0.0	3532.5	*	1	1600		193	0.	0.0	3532.5
1	0455		60	2301.	375.6	3562.7	*	1	1030		127	0.	0.0	3532.5	*	1	1605		194	0.	0.0	3532.5

1	0500	61	2302.	376.3	3562.7	*	1	1035	128	0.	0.0	3532.5	*	1	1610	195	0.	0.0	3532.5
1	0505	62	2302.	376.4	3562.7	*	1	1040	129	0.	0.0	3532.5	*	1	1615	196	0.	0.0	3532.5
1	0510	63	2301.	375.6	3562.7	*	1	1045	130	0.	0.0	3532.5	*	1	1620	197	0.	0.0	3532.5
1	0515	64	2297.	373.5	3562.6	*	1	1050	131	0.	0.0	3532.5	*	1	1625	198	0.	0.0	3532.5
1	0520	65	2291.	369.9	3562.4	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2283.	364.7	3562.2	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2272.	358.2	3562.0	*	1	1105	134	0.	0.0	3532.5	*						

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PEAK OUTFLOW IS 2302. AT TIME 5.08 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)	(CFS)				
+ 2302.	5.08		1601.	611.	611.	611.
		(INCHES)	2.196	2.315	2.315	2.315
		(AC-FT)	794.	837.	837.	837.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
376.	5.08	184.	67.	67.	67.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3562.70	5.08	3551.79	3539.87	3539.87	3539.87

CUMULATIVE AREA = 6.78 SQ MI

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HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.93

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	1		0535	68	2228.	335.3	3561.0	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	1		0540	69	2211.	326.6	3560.7	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	1		0545	70	2193.	317.0	3560.3	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	1		0550	71	2173.	306.6	3559.8	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	1		0555	72	2152.	295.6	3559.4	1		1130	139	0.	0.0	3532.5
1		0025	6	1.	0.0	3532.5	1		0600	73	2130.	284.2	3558.9	1		1135	140	0.	0.0	3532.5
1		0030	7	4.	0.0	3532.6	1		0605	74	2104.	272.5	3558.4	1		1140	141	0.	0.0	3532.5
1		0035	8	16.	0.1	3532.7	1		0610	75	2078.	260.5	3557.9	1		1145	142	0.	0.0	3532.5
1		0040	9	42.	0.4	3533.0	1		0615	76	2051.	248.3	3557.4	1		1150	143	0.	0.0	3532.5
1		0045	10	82.	0.7	3533.6	1		0620	77	2022.	236.0	3556.8	1		1155	144	0.	0.0	3532.5
1		0050	11	125.	1.1	3534.1	1		0625	78	1990.	223.5	3556.2	1		1200	145	0.	0.0	3532.5
1		0055	12	154.	1.4	3534.5	1		0630	79	1958.	211.0	3555.7	1		1205	146	0.	0.0	3532.5
1		0100	13	161.	1.5	3534.6	1		0635	80	1925.	198.5	3555.1	1		1210	147	0.	0.0	3532.5
1		0105	14	153.	1.4	3534.5	1		0640	81	1888.	186.0	3554.4	1		1215	148	0.	0.0	3532.5
1		0110	15	139.	1.3	3534.3	1		0645	82	1849.	173.7	3553.8	1		1220	149	0.	0.0	3532.5
1		0115	16	129.	1.2	3534.2	1		0650	83	1811.	161.5	3553.1	1		1225	150	0.	0.0	3532.5
1		0120	17	124.	1.1	3534.1	1		0655	84	1767.	149.6	3552.4	1		1230	151	0.	0.0	3532.5
1		0125	18	127.	1.1	3534.2	1		0700	85	1723.	137.8	3551.7	1		1235	152	0.	0.0	3532.5
1		0130	19	139.	1.3	3534.3	1		0705	86	1678.	126.2	3550.9	1		1240	153	0.	0.0	3532.5
1		0135	20	160.	1.4	3534.6	1		0710	87	1617.	115.0	3550.1	1		1245	154	0.	0.0	3532.5
1		0140	21	193.	1.8	3535.0	1		0715	88	1558.	104.2	3549.3	1		1250	155	0.	0.0	3532.5
1		0145	22	210.	2.3	3535.2	1		0720	89	1489.	93.8	3548.5	1		1255	156	0.	0.0	3532.5
1		0150	23	237.	3.2	3535.5	1		0725	90	1415.	83.8	3547.6	1		1300	157	0.	0.0	3532.5
1		0155	24	269.	4.3	3535.9	1		0730	91	1335.	74.4	3546.7	1		1305	158	0.	0.0	3532.5
1		0200	25	300.	5.4	3536.2	1		0735	92	1240.	65.5	3545.7	1		1310	159	0.	0.0	3532.5
1		0205	26	324.	6.2	3536.4	1		0740	93	1148.	57.3	3544.7	1		1315	160	0.	0.0	3532.5
1		0210	27	339.	6.7	3536.5	1		0745	94	1054.	49.7	3543.7	1		1320	161	0.	0.0	3532.5
1		0215	28	346.	6.9	3536.6	1		0750	95	969.	42.8	3542.8	1		1325	162	0.	0.0	3532.5
1		0220	29	352.	7.1	3536.7	1		0755	96	896.	36.4	3542.0	1		1330	163	0.	0.0	3532.5
1		0225	30	365.	7.6	3536.8	1		0800	97	820.	30.5	3541.1	1		1335	164	0.	0.0	3532.5
1		0230	31	389.	8.4	3537.0	1		0805	98	743.	25.1	3540.2	1		1340	165	0.	0.0	3532.5
1		0235	32	419.	9.6	3537.2	1		0810	99	656.	20.3	3539.4	1		1345	166	0.	0.0	3532.5
1		0240	33	453.	11.0	3537.5	1		0815	100	570.	16.1	3538.6	1		1350	167	0.	0.0	3532.5
1		0245	34	483.	12.2	3537.8	1		0820	101	489.	12.4	3537.9	1		1355	168	0.	0.0	3532.5
1		0250	35	508.	13.2	3538.0	1		0825	102	412.	9.3	3537.2	1		1400	169	0.	0.0	3532.5
1		0255	36	529.	14.2	3538.2	1		0830	103	340.	6.7	3536.6	1		1405	170	0.	0.0	3532.5
1		0300	37	551.	15.2	3538.4	1		0835	104	277.	4.6	3536.0	1		1410	171	0.	0.0	3532.5
1		0305	38	573.	16.2	3538.6	1		0840	105	226.	2.9	3535.4	1		1415	172	0.	0.0	3532.5
1		0310	39	597.	17.3	3538.8	1		0845	106	167.	1.5	3534.7	1		1420	173	0.	0.0	3532.5
1		0315	40	632.	19.0	3539.1	1		0850	107	75.	0.7	3533.5	1		1425	174	0.	0.0	3532.5
1		0320	41	699.	22.5	3539.8	1		0855	108	33.	0.3	3532.9	1		1430	175	0.	0.0	3532.5
1		0325	42	807.	29.6	3540.9	1		0900	109	15.	0.1	3532.7	1		1435	176	0.	0.0	3532.5
1		0330	43	968.	42.7	3542.8	1		0905	110	7.	0.1	3532.6	1		1440	177	0.	0.0	3532.5
1		0335	44	1222.	63.8	3545.5	1		0910	111	3.	0.0	3532.5	1		1445	178	0.	0.0	3532.5
1		0340	45	1489.	93.8	3548.5	1		0915	112	1.	0.0	3532.5	1		1450	179	0.	0.0	3532.5
1		0345	46	1695.	130.3	3551.2	1		0920	113	1.	0.0	3532.5	1		1455	180	0.	0.0	3532.5
1		0350	47	1835.	169.2	3553.5	1		0925	114	0.	0.0	3532.5	1		1500	181	0.	0.0	3532.5
1		0355	48	1945.	206.1	3555.4	1		0930	115	0.	0.0	3532.5	1		1505	182	0.	0.0	3532.5
1		0400	49	2030.	239.0	3557.0	1		0935	116	0.	0.0	3532.5	1		1510	183	0.	0.0	3532.5
1		0405	50	2093.	267.6	3558.2	1		0940	117	0.	0.0	3532.5	1		1515	184	0.	0.0	3532.5
1		0410	51	2145.	291.8	3559.2	1		0945	118	0.	0.0	3532.5	1		1520	185	0.	0.0	3532.5
1		0415	52	2184.	311.9	3560.1	1		0950	119	0.	0.0	3532.5	1		1525	186	0.	0.0	3532.5
1		0420	53	2214.	328.0	3560.7	1		0955	120	0.	0.0	3532.5	1		1530	187	0.	0.0	3532.5
1		0425	54	2237.	340.0	3561.2	1		1000	121	0.	0.0	3532.5	1		1535	188	0.	0.0	3532.5
1		0430	55	2253.	348.2	3561.6	1		1005	122	0.	0.0	3532.5	1		1540	189	0.	0.0	3532.5
1		0435	56	2262.	353.3	3561.8	1		1010	123	0.	0.0	3532.5	1		1545	190	0.	0.0	3532.5
1		0440	57	2269.	356.5	3561.9	1		1015	124	0.	0.0	3532.5	1		1550	191	0.	0.0	3532.5
1		0445	58	2273.	358.7	3562.0	1		1020	125	0.	0.0	3532.5	1		1555	192	0.	0.0	3532.5
1		0450	59	2276.	360.4	3562.1	1		1025	126	0.	0.0	3532.5	1		1600	193	0.	0.0	3532.5
1		0455	60	2277.	361.5	3562.1	1		1030	127	0.	0.0	3532.5	1		1605	194	0.	0.0	3532.5
1		0500	61	2278.	362.0	3562.1	1		1035	128	0.	0.0	3532.5	1		1610	195	0.	0.0	3532.5
1		0505	62	2278.	361.8	3562.1	1		1040	129	0.	0.0	3532.5	1		1615	196	0.	0.0	3532.5

1	0510	63	2276.	360.8	3562.1	*	1	1045	130	0.	0.0	3532.5	*	1	1620	197	0.	0.0	3532.5
1	0515	64	2272.	358.6	3562.0	*	1	1050	131	0.	0.0	3532.5	*	1	1625	198	0.	0.0	3532.5
1	0520	65	2265.	354.9	3561.8	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2255.	349.6	3561.6	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2243.	343.1	3561.3	*	1	1105	134	0.	0.0	3532.5	*						

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PEAK OUTFLOW IS 2278. AT TIME 5.00 HOURS

PEAK FLOW (CFS)	TIME (HR)		MAXIMUM AVERAGE FLOW 6-HR	24-HR	72-HR	16.58-HR
		(CFS)				
2278.	5.00		1562.	594.	594.	594.
		(INCHES)	2.143	2.251	2.251	2.251
		(AC-FT)	775.	814.	814.	814.

PEAK STORAGE (AC-FT)	TIME (HR)	MAXIMUM AVERAGE STORAGE 6-HR	24-HR	72-HR	16.58-HR
362.	5.00	175.	64.	64.	64.

PEAK STAGE (FEET)	TIME (HR)	MAXIMUM AVERAGE STAGE 6-HR	24-HR	72-HR	16.58-HR
3562.12	5.00	3551.23	3539.63	3539.63	3539.63

CUMULATIVE AREA = 6.78 SQ MI

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HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.89

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DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5 *	1		0535	68	2171.	305.2	3559.8 *	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5 *	1		0540	69	2154.	296.5	3559.4 *	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5 *	1		0545	70	2136.	287.1	3559.0 *	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5 *	1		0550	71	2114.	276.9	3558.6 *	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5 *	1		0555	72	2090.	266.2	3558.1 *	1		1130	139	0.	0.0	3532.5
1		0025	6	0.	0.0	3532.5 *	1		0600	73	2066.	255.0	3557.6 *	1		1135	140	0.	0.0	3532.5
1		0030	7	3.	0.0	3532.5 *	1		0605	74	2041.	243.6	3557.2 *	1		1140	141	0.	0.0	3532.5
1		0035	8	11.	0.1	3532.6 *	1		0610	75	2012.	231.9	3556.6 *	1		1145	142	0.	0.0	3532.5
1		0040	9	32.	0.3	3532.9 *	1		0615	76	1981.	220.1	3556.1 *	1		1150	143	0.	0.0	3532.5
1		0045	10	66.	0.6	3533.4 *	1		0620	77	1950.	208.2	3555.5 *	1		1155	144	0.	0.0	3532.5
1		0050	11	102.	0.9	3533.8 *	1		0625	78	1919.	196.1	3555.0 *	1		1200	145	0.	0.0	3532.5
1		0055	12	128.	1.2	3534.2 *	1		0630	79	1881.	184.1	3554.3 *	1		1205	146	0.	0.0	3532.5
1		0100	13	136.	1.2	3534.3 *	1		0635	80	1844.	172.1	3553.7 *	1		1210	147	0.	0.0	3532.5
1		0105	14	130.	1.2	3534.2 *	1		0640	81	1807.	160.2	3553.0 *	1		1215	148	0.	0.0	3532.5
1		0110	15	119.	1.1	3534.0 *	1		0645	82	1763.	148.4	3552.3 *	1		1220	149	0.	0.0	3532.5
1		0115	16	110.	1.0	3533.9 *	1		0650	83	1719.	136.8	3551.6 *	1		1225	150	0.	0.0	3532.5
1		0120	17	106.	1.0	3533.9 *	1		0655	84	1674.	125.5	3550.9 *	1		1230	151	0.	0.0	3532.5
1		0125	18	109.	1.0	3533.9 *	1		0700	85	1613.	114.4	3550.1 *	1		1235	152	0.	0.0	3532.5
1		0130	19	120.	1.1	3534.1 *	1		0705	86	1555.	103.6	3549.3 *	1		1240	153	0.	0.0	3532.5
1		0135	20	139.	1.3	3534.3 *	1		0710	87	1485.	93.3	3548.4 *	1		1245	154	0.	0.0	3532.5
1		0140	21	170.	1.5	3534.7 *	1		0715	88	1412.	83.4	3547.5 *	1		1250	155	0.	0.0	3532.5
1		0145	22	200.	2.0	3535.1 *	1		0720	89	1331.	74.0	3546.6 *	1		1255	156	0.	0.0	3532.5
1		0150	23	222.	2.7	3535.4 *	1		0725	90	1237.	65.2	3545.6 *	1		1300	157	0.	0.0	3532.5
1		0155	24	249.	3.6	3535.7 *	1		0730	91	1145.	57.0	3544.7 *	1		1305	158	0.	0.0	3532.5
1		0200	25	276.	4.5	3536.0 *	1		0735	92	1051.	49.5	3543.7 *	1		1310	159	0.	0.0	3532.5
1		0205	26	297.	5.3	3536.2 *	1		0740	93	967.	42.6	3542.8 *	1		1315	160	0.	0.0	3532.5
1		0210	27	310.	5.7	3536.3 *	1		0745	94	893.	36.2	3541.9 *	1		1320	161	0.	0.0	3532.5
1		0215	28	317.	5.9	3536.4 *	1		0750	95	817.	30.3	3541.1 *	1		1325	162	0.	0.0	3532.5
1		0220	29	322.	6.1	3536.4 *	1		0755	96	741.	24.9	3540.2 *	1		1330	163	0.	0.0	3532.5
1		0225	30	333.	6.5	3536.5 *	1		0800	97	654.	20.1	3539.3 *	1		1335	164	0.	0.0	3532.5
1		0230	31	355.	7.2	3536.7 *	1		0805	98	567.	15.9	3538.6 *	1		1340	165	0.	0.0	3532.5
1		0235	32	388.	8.3	3537.0 *	1		0810	99	486.	12.3	3537.8 *	1		1345	166	0.	0.0	3532.5
1		0240	33	418.	9.6	3537.2 *	1		0815	100	410.	9.2	3537.2 *	1		1350	167	0.	0.0	3532.5
1		0245	34	446.	10.7	3537.5 *	1		0820	101	338.	6.7	3536.5 *	1		1355	168	0.	0.0	3532.5
1		0250	35	469.	11.6	3537.7 *	1		0825	102	276.	4.5	3536.0 *	1		1400	169	0.	0.0	3532.5
1		0255	36	491.	12.5	3537.9 *	1		0830	103	224.	2.8	3535.4 *	1		1405	170	0.	0.0	3532.5
1		0300	37	512.	13.4	3538.1 *	1		0835	104	164.	1.5	3534.6 *	1		1410	171	0.	0.0	3532.5
1		0305	38	532.	14.3	3538.2 *	1		0840	105	74.	0.7	3533.5 *	1		1415	172	0.	0.0	3532.5
1		0310	39	555.	15.4	3538.4 *	1		0845	106	33.	0.3	3532.9 *	1		1420	173	0.	0.0	3532.5
1		0315	40	588.	16.9	3538.7 *	1		0850	107	15.	0.1	3532.7 *	1		1425	174	0.	0.0	3532.5
1		0320	41	653.	20.1	3539.3 *	1		0855	108	7.	0.1	3532.6 *	1		1430	175	0.	0.0	3532.5
1		0325	42	765.	26.6	3540.5 *	1		0900	109	3.	0.0	3532.5 *	1		1435	176	0.	0.0	3532.5
1		0330	43	922.	38.6	3542.3 *	1		0905	110	1.	0.0	3532.5 *	1		1440	177	0.	0.0	3532.5
1		0335	44	1161.	58.4	3544.8 *	1		0910	111	1.	0.0	3532.5 *	1		1445	178	0.	0.0	3532.5
1		0340	45	1433.	86.2	3547.8 *	1		0915	112	0.	0.0	3532.5 *	1		1450	179	0.	0.0	3532.5
1		0345	46	1646.	120.3	3550.5 *	1		0920	113	0.	0.0	3532.5 *	1		1455	180	0.	0.0	3532.5
1		0350	47	1794.	156.7	3552.8 *	1		0925	114	0.	0.0	3532.5 *	1		1500	181	0.	0.0	3532.5
1		0355	48	1904.	191.2	3554.7 *	1		0930	115	0.	0.0	3532.5 *	1		1505	182	0.	0.0	3532.5
1		0400	49	1986.	221.9	3556.2 *	1		0935	116	0.	0.0	3532.5 *	1		1510	183	0.	0.0	3532.5
1		0405	50	2051.	248.4	3557.4 *	1		0940	117	0.	0.0	3532.5 *	1		1515	184	0.	0.0	3532.5
1		0410	51	2101.	270.8	3558.3 *	1		0945	118	0.	0.0	3532.5 *	1		1520	185	0.	0.0	3532.5
1		0415	52	2141.	289.5	3559.1 *	1		0950	119	0.	0.0	3532.5 *	1		1525	186	0.	0.0	3532.5
1		0420	53	2169.	304.3	3559.7 *	1		0955	120	0.	0.0	3532.5 *	1		1530	187	0.	0.0	3532.5
1		0425	54	2190.	315.2	3560.2 *	1		1000	121	0.	0.0	3532.5 *	1		1535	188	0.	0.0	3532.5
1		0430	55	2204.	322.4	3560.5 *	1		1005	122	0.	0.0	3532.5 *	1		1540	189	0.	0.0	3532.5
1		0435	56	2212.	326.9	3560.7 *	1		1010	123	0.	0.0	3532.5 *	1		1545	190	0.	0.0	3532.5
1		0440	57	2217.	329.5	3560.8 *	1		1015	124	0.	0.0	3532.5 *	1		1550	191	0.	0.0	3532.5
1		0445	58	2220.	331.2	3560.9 *	1		1020	125	0.	0.0	3532.5 *	1		1555	192	0.	0.0	3532.5
1		0450	59	2223.	332.4	3560.9 *	1		1025	126	0.	0.0	3532.5 *	1		1600	193	0.	0.0	3532.5
1		0455	60	2224.	333.1	3560.9 *	1		1030	127	0.	0.0	3532.5 *	1		1605	194	0.	0.0	3532.5
1		0500	61	2224.	333.2	3560.9 *	1		1035	128	0.	0.0	3532.5 *	1		1610	195	0.	0.0	3532.5
1		0505	62	2223.	332.6	3560.9 *	1		1040	129	0.	0.0	3532.5 *	1		1615	196	0.	0.0	3532.5
1		0510	63	2220.	331.2	3560.9 *	1		1045	130	0.	0.0	3532.5 *	1		1620	197	0.	0.0	3532.5
1		0515	64	2216.	328.7	3560.8 *	1		1050	131	0.	0.0	3532.5 *	1		1625	198	0.	0.0	3532.5

1	0520	65	2208.	324.8	3560.6	*	1	1055	132	0.	0.0	3532.5	*	1	1630	199	0.	0.0	3532.5
1	0525	66	2198.	319.5	3560.4	*	1	1100	133	0.	0.0	3532.5	*	1	1635	200	0.	0.0	3532.5
1	0530	67	2185.	312.9	3560.1	*	1	1105	134	0.	0.0	3532.5	*						

PEAK OUTFLOW IS 2224. AT TIME 5.00 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
(CFS)	(HR)	(CFS)				
2224.	5.00		1483.	559.	559.	559.
		(INCHES)	2.034	2.119	2.119	2.119
		(AC-FT)	735.	766.	766.	766.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
(AC-FT)	(HR)				
333.	5.00	157.	57.	57.	57.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
(FEET)	(HR)				
3560.93	5.00	3550.10	3539.15	3539.15	3539.15

CUMULATIVE AREA = 6.78 SQ MI

HYDROGRAPH AT STATION DB5MOD
PLAN 1, RATIO = 0.55

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	*	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1		0000	1	0.	0.0	3532.5	*	1		0535	68	1396.	81.3	3547.3	*	1		1110	135	0.	0.0	3532.5
1		0005	2	0.	0.0	3532.5	*	1		0540	69	1346.	75.4	3546.8	*	1		1115	136	0.	0.0	3532.5
1		0010	3	0.	0.0	3532.5	*	1		0545	70	1281.	69.4	3546.1	*	1		1120	137	0.	0.0	3532.5
1		0015	4	0.	0.0	3532.5	*	1		0550	71	1216.	63.3	3545.4	*	1		1125	138	0.	0.0	3532.5
1		0020	5	0.	0.0	3532.5	*	1		0555	72	1148.	57.3	3544.7	*	1		1130	139	0.	0.0	3532.5
1		0025	6	0.	0.0	3532.5	*	1		0600	73	1076.	51.5	3544.0	*	1		1135	140	0.	0.0	3532.5
1		0030	7	0.	0.0	3532.5	*	1		0605	74	1006.	45.9	3543.2	*	1		1140	141	0.	0.0	3532.5
1		0035	8	0.	0.0	3532.5	*	1		0610	75	943.	40.5	3542.5	*	1		1145	142	0.	0.0	3532.5
1		0040	9	1.	0.0	3532.5	*	1		0615	76	882.	35.3	3541.8	*	1		1150	143	0.	0.0	3532.5
1		0045	10	2.	0.0	3532.5	*	1		0620	77	818.	30.4	3541.1	*	1		1155	144	0.	0.0	3532.5
1		0050	11	5.	0.0	3532.6	*	1		0625	78	752.	25.7	3540.3	*	1		1200	145	0.	0.0	3532.5
1		0055	12	8.	0.1	3532.6	*	1		0630	79	678.	21.4	3539.6	*	1		1205	146	0.	0.0	3532.5
1		0100	13	10.	0.1	3532.6	*	1		0635	80	601.	17.5	3538.9	*	1		1210	147	0.	0.0	3532.5
1		0105	14	9.	0.1	3532.6	*	1		0640	81	525.	14.0	3538.2	*	1		1215	148	0.	0.0	3532.5
1		0110	15	8.	0.1	3532.6	*	1		0645	82	453.	10.9	3537.5	*	1		1220	149	0.	0.0	3532.5
1		0115	16	7.	0.1	3532.6	*	1		0650	83	387.	8.3	3537.0	*	1		1225	150	0.	0.0	3532.5
1		0120	17	7.	0.1	3532.6	*	1		0655	84	320.	6.1	3536.4	*	1		1230	151	0.	0.0	3532.5
1		0125	18	7.	0.1	3532.6	*	1		0700	85	265.	4.2	3535.9	*	1		1235	152	0.	0.0	3532.5
1		0130	19	10.	0.1	3532.6	*	1		0705	86	218.	2.6	3535.3	*	1		1240	153	0.	0.0	3532.5
1		0135	20	13.	0.1	3532.7	*	1		0710	87	156.	1.4	3534.5	*	1		1245	154	0.	0.0	3532.5
1		0140	21	19.	0.2	3532.7	*	1		0715	88	74.	0.7	3533.5	*	1		1250	155	0.	0.0	3532.5
1		0145	22	29.	0.3	3532.9	*	1		0720	89	36.	0.3	3533.0	*	1		1255	156	0.	0.0	3532.5
1		0150	23	43.	0.4	3533.1	*	1		0725	90	18.	0.2	3532.7	*	1		1300	157	0.	0.0	3532.5
1		0155	24	60.	0.5	3533.3	*	1		0730	91	10.	0.1	3532.6	*	1		1305	158	0.	0.0	3532.5
1		0200	25	75.	0.7	3533.5	*	1		0735	92	5.	0.0	3532.6	*	1		1310	159	0.	0.0	3532.5
1		0205	26	86.	0.8	3533.6	*	1		0740	93	3.	0.0	3532.5	*	1		1315	160	0.	0.0	3532.5
1		0210	27	91.	0.8	3533.7	*	1		0745	94	2.	0.0	3532.5	*	1		1320	161	0.	0.0	3532.5
1		0215	28	92.	0.8	3533.7	*	1		0750	95	1.	0.0	3532.5	*	1		1325	162	0.	0.0	3532.5
1		0220	29	92.	0.8	3533.7	*	1		0755	96	1.	0.0	3532.5	*	1		1330	163	0.	0.0	3532.5
1		0225	30	99.	0.9	3533.8	*	1		0800	97	1.	0.0	3532.5	*	1		1335	164	0.	0.0	3532.5
1		0230	31	115.	1.0	3534.0	*	1		0805	98	0.	0.0	3532.5	*	1		1340	165	0.	0.0	3532.5
1		0235	32	139.	1.2	3534.3	*	1		0810	99	0.	0.0	3532.5	*	1		1345	166	0.	0.0	3532.5
1		0240	33	163.	1.5	3534.6	*	1		0815	100	0.	0.0	3532.5	*	1		1350	167	0.	0.0	3532.5
1		0245	34	181.	1.6	3534.9	*	1		0820	101	0.	0.0	3532.5	*	1		1355	168	0.	0.0	3532.5
1		0250	35	192.	1.7	3535.0	*	1		0825	102	0.	0.0	3532.5	*	1		1400	169	0.	0.0	3532.5
1		0255	36	196.	1.8	3535.0	*	1		0830	103	0.	0.0	3532.5	*	1		1405	170	0.	0.0	3532.5
1		0300	37	201.	2.0	3535.1	*	1		0835	104	0.	0.0	3532.5	*	1		1410	171	0.	0.0	3532.5
1		0305	38	208.	2.3	3535.2	*	1		0840	105	0.	0.0	3532.5	*	1		1415	172	0.	0.0	3532.5
1		0310	39	217.	2.6	3535.3	*	1		0845	106	0.	0.0	3532.5	*	1		1420	173	0.	0.0	3532.5
1		0315	40	231.	3.0	3535.5	*	1		0850	107	0.	0.0	3532.5	*	1		1425	174	0.	0.0	3532.5
1		0320	41	264.	4.1	3535.9	*	1		0855	108	0.	0.0	3532.5	*	1		1430	175	0.	0.0	3532.5
1		0325	42	333.	6.5	3536.5	*	1		0900	109	0.	0.0	3532.5	*	1		1435	176	0.	0.0	3532.5
1		0330	43	456.	11.1	3537.6	*	1		0905	110	0.	0.0	3532.5	*	1		1440	177	0.	0.0	3532.5
1		0335	44	631.	19.0	3539.1	*	1		0910	111	0.	0.0	3532.5	*	1		1445	178	0.	0.0	3532.5
1		0340	45	823.	30.7	3541.1	*	1		0915	112	0.	0.0	3532.5	*	1		1450	179	0.	0.0	3532.5
1		0345	46	1003.	45.6	3543.2	*	1		0920	113	0.	0.0	3532.5	*	1		1455	180	0.	0.0	3532.5
1		0350	47	1199.	61.7	3545.2	*	1		0925	114	0.	0.0	3532.5	*	1		1500	181	0.	0.0	3532.5
1		0355	48	1360.	76.7	3546.9	*	1		0930	115	0.	0.0	3532.5	*	1		1505	182	0.	0.0	3532.5
1		0400	49	1457.	89.5	3548.1	*	1		0935	116	0.	0.0	3532.5	*	1		1510	183	0.	0.0	3532.5
1		0405	50	1535.	100.0	3549.0	*	1		0940	117	0.	0.0	3532.5	*	1		1515	184	0.	0.0	3532.5
1		0410	51	1581.	108.4	3549.6	*	1		0945	118	0.	0.0	3532.5	*	1		1520	185	0.	0.0	3532.5
1		0415	52	1615.	114.7	3550.1	*	1		0950	119	0.	0.0	3532.5	*	1		1525	186	0.	0.0	3532.5
1		0420	53	1639.	119.2	3550.4	*	1		0955	120	0.	0.0	3532.5	*	1		1530	187	0.	0.0	3532.5
1		0425	54	1653.	121.6	3550.6	*	1		1000	121	0.	0.0	3532.5	*	1		1535	188	0.	0.0	3532.5
1		0430	55	1656.	122.2	3550.6	*	1		1005	122	0.	0.0	3532.5	*	1		1540	189	0.	0.0	3532.5
1		0435	56	1652.	121.4	3550.6	*	1		1010	123	0.	0.0	3532.5	*	1		1545	190	0.	0.0	3532.5
1		0440	57	1643.	119.8	3550.5	*	1		1015	124	0.	0.0	3532.5	*	1		1550	191	0.	0.0	3532.5
1		0445	58	1631.	117.6	3550.3	*	1		1020	125	0.	0.0	3532.5	*	1		1555	192	0.	0.0	3532.5
1		0450	59	1619.	115.3	3550.1	*	1		1025	126	0.	0.0	3532.5	*	1		1600	193	0.	0.0	3532.5
1		0455	60	1605.	112.9	3550.0	*	1		1030	127	0.	0.0	3532.5	*	1		1605	194	0.	0.0	3532.5
1		0500	61	1591.	110.4	3549.8	*	1		1035	128	0.	0.0	3532.5	*	1		1610	195	0.	0.0	3532.5
1		0505	62	1576.	107.6	3549.6	*	1		1040	129	0.	0.0	3532.5	*	1		1615	196	0.	0.0	3532.5
1		0510	63	1559.	104.5	3549.3	*	1		1045	130	0.	0.0	3532.5	*	1		1620	197	0.	0.0	3532.5
1		0515	64	1540.	100.9	3549.1	*	1		1050	131	0.	0.0	3532.5	*	1		1625	198	0.	0.0	3532.5
1		0520	65	1512.	96.8	3548.7	*	1		1055	132	0.	0.0	3532.5	*	1		1630	199	0.	0.0	3532.5
1		0525	66	1477.	92.1	3548.3	*	1		1100	133	0.	0.0	3532.5	*	1		1635	200	0.	0.0	3532.5

1 0530 67 1438. 86.9 3547.8 * 1 1105 134 0. 0.0 3532.5 *

PEAK OUTFLOW IS 1656. AT TIME 4.50 HOURS

PEAK FLOW	TIME		MAXIMUM AVERAGE FLOW			
			6-HR	24-HR	72-HR	16.58-HR
+ (CFS)	(HR)	(CFS)				
+ 1656.	4.50		753.	273.	273.	273.
		(INCHES)	1.032	1.034	1.034	1.034
		(AC-FT)	373.	374.	374.	374.

PEAK STORAGE	TIME	MAXIMUM AVERAGE STORAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (AC-FT)	(HR)				
122.	4.50	42.	15.	15.	15.

PEAK STAGE	TIME	MAXIMUM AVERAGE STAGE			
		6-HR	24-HR	72-HR	16.58-HR
+ (FEET)	(HR)				
3550.63	4.50	3540.72	3535.48	3535.48	3535.48

CUMULATIVE AREA = 6.78 SQ MI

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PEAK FLOW AND STAGE (END-OF-PERIOD) SUMMARY FOR MULTIPLE PLAN-RATIO ECONOMIC COMPUTATIONS
FLOWS IN CUBIC FEET PER SECOND, AREA IN SQUARE MILES
TIME TO PEAK IN HOURS

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 1.00	RATIO 2 0.98	RATIO 3 0.97	RATIO 4 0.95	RATIO 5 0.93	RATIO 6 0.89	RATIO 7 0.55
HYDROGRAPH AT											
+	UNIT1	0.58	1	FLOW	904.	879.	866.	841.	816.	765.	352.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	4-1	2.21	1	FLOW	3200.	3120.	3081.	3001.	2922.	2763.	1425.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO											
+	R-1	2.21	1	FLOW	3152.	3073.	3034.	2956.	2878.	2721.	1403.
				TIME	3.92	3.92	3.92	3.92	3.92	3.92	3.92
HYDROGRAPH AT											
+	4-5	0.22	1	FLOW	463.	451.	445.	432.	420.	396.	193.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT											
+	C-1	2.43	1	FLOW	3274.	3192.	3151.	3068.	2986.	2822.	1451.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92
ROUTED TO											
+	R-2	2.43	1	FLOW	3126.	3047.	3008.	2930.	2851.	2694.	1383.
				TIME	4.17	4.17	4.17	4.17	4.17	4.17	4.25
HYDROGRAPH AT											
+	4-2	0.27	1	FLOW	684.	668.	660.	643.	627.	594.	316.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO											
+	R-3	0.27	1	FLOW	607.	592.	585.	570.	556.	526.	277.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	4-3	0.47	1	FLOW	1232.	1204.	1190.	1161.	1132.	1075.	586.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO											
+	R-4	0.47	1	FLOW	1118.	1092.	1079.	1052.	1026.	974.	527.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	4-4	0.27	1	FLOW	557.	544.	537.	523.	509.	482.	249.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT											
+	C-2	1.01	1	FLOW	2282.	2228.	2200.	2146.	2091.	1982.	1053.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	R-5	1.01	1	FLOW	2090.	2040.	2015.	1965.	1915.	1815.	965.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT											
+	4-6	0.81	1	FLOW	1145.	1114.	1099.	1068.	1038.	977.	473.
				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
3 COMBINED AT											
+	C-3	4.25	1	FLOW	4589.	4472.	4414.	4297.	4180.	3947.	1994.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO											
+	R-6	4.25	1	FLOW	4560.	4450.	4388.	4268.	4156.	3918.	1979.
				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92
HYDROGRAPH AT											
+	4-7A	0.03	1	FLOW	54.	53.	52.	50.	49.	46.	21.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58

2 COMBINED AT	C-4	4.28	1	FLOW	4582.	4471.	4409.	4289.	4176.	3937.	1985.
+				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92
DIVERSION TO	DC-4	4.28	1	FLOW	194.	142.	112.	55.	2.	0.	0.
+				TIME	3.83	3.83	3.83	3.83	3.83	0.08	0.08
HYDROGRAPH AT	DCHANN	4.28	1	FLOW	4388.	4329.	4297.	4234.	4175.	3937.	1985.
+				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.92
HYDROGRAPH AT	S-1	0.71	1	FLOW	1383.	1349.	1331.	1297.	1262.	1193.	611.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R-7	0.71	1	FLOW	1275.	1244.	1228.	1197.	1165.	1102.	571.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	S-2	0.09	1	FLOW	167.	162.	160.	155.	150.	141.	66.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	C-5	0.80	1	FLOW	1411.	1375.	1357.	1321.	1286.	1214.	615.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.75
ROUTED TO	R-8	0.80	1	FLOW	1386.	1351.	1335.	1303.	1268.	1197.	613.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	S-3	0.21	1	FLOW	542.	529.	523.	510.	497.	471.	250.
+				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO	R-9	0.21	1	FLOW	484.	473.	466.	453.	439.	419.	232.
+				TIME	3.50	3.50	3.50	3.50	3.58	3.58	3.58
HYDROGRAPH AT	S-4	0.22	1	FLOW	431.	419.	413.	402.	391.	368.	178.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	C-6	0.44	1	FLOW	907.	888.	874.	855.	829.	787.	410.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R-10	0.44	1	FLOW	895.	867.	870.	845.	818.	761.	384.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67
HYDROGRAPH AT	S-5	0.19	1	FLOW	345.	336.	331.	321.	312.	293.	136.
+				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT	C-7	1.43	1	FLOW	2487.	2407.	2381.	2314.	2252.	2146.	1085.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO	R-11	1.43	1	FLOW	2348.	2279.	2254.	2193.	2133.	2022.	1018.
+				TIME	3.83	3.83	3.83	3.83	3.83	3.83	3.83
HYDROGRAPH AT	S-6	0.09	1	FLOW	161.	157.	154.	150.	146.	137.	65.
+				TIME	3.50	3.50	3.50	3.58	3.58	3.58	3.58
ROUTED TO	R-12	0.09	1	FLOW	146.	142.	140.	136.	132.	124.	58.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	S-7	0.44	1	FLOW	674.	655.	645.	627.	608.	571.	264.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
ROUTED TO	R-13	0.44	1	FLOW	645.	627.	618.	600.	582.	546.	250.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.75
HYDROGRAPH AT	S-8	0.54	1	FLOW	815.	792.	781.	758.	735.	690.	319.
+				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
4 COMBINED AT	C-8	2.50	1	FLOW	3755.	3648.	3606.	3502.	3399.	3194.	1542.
+				TIME	3.75	3.75	3.75	3.75	3.75	3.75	3.83
2 COMBINED AT	C-9	6.78	1	FLOW	8033.	7869.	7794.	7635.	7480.	7061.	3523.
+				TIME	3.75	3.83	3.83	3.83	3.83	3.83	3.83
ROUTED TO	DB5MOD	6.78	1	FLOW	2361.	2338.	2326.	2302.	2278.	2224.	1656.
+				TIME	5.08	5.08	5.08	5.08	5.00	5.00	4.50
			** PEAK STAGES IN FEET **								
			1	STAGE	3564.09	3563.54	3563.27	3562.70	3562.12	3560.93	3550.63
				TIME	5.08	5.08	5.08	5.08	5.00	5.00	4.50
ROUTED TO	R14	6.78	1	FLOW	2360.	2338.	2326.	2302.	2278.	2224.	1655.
+				TIME	5.08	5.08	5.08	5.08	5.00	5.00	4.50

HYDROGRAPH AT	4-7	0.10	1	FLOW	186.	181.	178.	173.	168.	158.	75.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R4-7	0.10	1	FLOW	170.	165.	163.	158.	154.	144.	68.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.75
HYDROGRAPH AT	5-9	0.04	1	FLOW	70.	68.	67.	65.	63.	60.	28.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
3 COMBINED AT	C11	6.92	1	FLOW	2404.	2381.	2369.	2345.	2321.	2265.	1669.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.58
ROUTED TO	RC11	6.92	1	FLOW	2404.	2381.	2369.	2345.	2320.	2265.	1669.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.58
HYDROGRAPH AT	ST-CR	0.02	1	FLOW	51.	49.	49.	48.	46.	44.	24.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	C-DB	6.95	1	FLOW	2413.	2390.	2378.	2354.	2329.	2273.	1674.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.58
HYDROGRAPH AT	Q	0.04	1	FLOW	80.	78.	77.	75.	73.	69.	35.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
ROUTED TO	R/C	0.04	1	FLOW	79.	77.	76.	75.	72.	68.	35.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	P	0.05	1	FLOW	88.	86.	85.	83.	80.	76.	39.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT1	0.09	1	FLOW	167.	163.	161.	158.	152.	144.	73.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R/PT1	0.09	1	FLOW	164.	162.	157.	155.	149.	141.	71.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	O	0.05	1	FLOW	93.	91.	90.	88.	85.	81.	41.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT2	0.14	1	FLOW	257.	253.	247.	243.	234.	222.	112.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	ST1	0.01	1	FLOW	26.	25.	25.	24.	24.	23.	13.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT3	0.15	1	FLOW	283.	278.	272.	267.	258.	245.	125.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT3A	7.10	1	FLOW	2464.	2440.	2427.	2402.	2376.	2318.	1697.
				TIME	4.92	4.92	4.92	4.92	4.92	4.92	4.58
HYDROGRAPH AT	X	0.09	1	FLOW	181.	177.	174.	170.	165.	156.	78.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT	PT4	7.19	1	FLOW	2494.	2468.	2456.	2430.	2403.	2344.	1714.
				TIME	4.92	4.92	4.92	4.92	4.83	4.83	4.58
HYDROGRAPH AT	COS5	0.01	1	FLOW	16.	16.	16.	15.	15.	14.	6.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT	PT5	7.20	1	FLOW	2496.	2471.	2459.	2432.	2406.	2347.	1715.
				TIME	4.92	4.92	4.83	4.83	4.83	4.83	4.58
HYDROGRAPH AT	R	0.05	1	FLOW	93.	91.	90.	87.	85.	80.	42.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO	R/R	0.05	1	FLOW	90.	88.	87.	85.	82.	78.	40.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	S	0.04	1	FLOW	83.	81.	80.	78.	76.	72.	38.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT	PT6	0.09	1	FLOW	173.	169.	167.	163.	158.	150.	77.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT	ST2	0.01	1	FLOW	16.	15.	15.	15.	15.	14.	8.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50

HYDROGRAPH AT

	ST3	0.01	1	FLOW	16.	15.	15.	15.	14.	14.	8.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
3 COMBINED AT											
+	PT7	0.10	1	FLOW	193.	188.	186.	181.	176.	167.	87.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
ROUTED TO											
+	R/PT2	0.10	1	FLOW	185.	181.	179.	175.	170.	161.	85.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	NP-2	0.02	1	FLOW	18.	17.	17.	16.	15.	14.	4.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	PT8	0.12	1	FLOW	203.	198.	195.	191.	185.	175.	89.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	W	0.13	1	FLOW	249.	243.	240.	234.	228.	215.	110.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	PT9	0.26	1	FLOW	452.	440.	434.	423.	411.	388.	192.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	ST4	0.01	1	FLOW	21.	20.	20.	20.	19.	18.	10.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
2 COMBINED AT											
+	PT10	0.27	1	FLOW	471.	458.	452.	440.	428.	404.	202.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	U	0.06	1	FLOW	121.	118.	117.	114.	111.	105.	54.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.58
ROUTED TO											
+	R/U	0.06	1	FLOW	120.	117.	116.	113.	110.	104.	54.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	V	0.04	1	FLOW	79.	77.	76.	74.	72.	68.	34.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	PT11	0.10	1	FLOW	199.	194.	191.	187.	181.	171.	88.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	PT12	0.37	1	FLOW	670.	652.	644.	627.	610.	576.	290.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	ST-DF	0.02	1	FLOW	34.	33.	33.	32.	31.	29.	16.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
2 COMBINED AT											
+	C-47	0.39	1	FLOW	703.	685.	676.	659.	640.	605.	305.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	C-47A	7.59	1	FLOW	2722.	2669.	2638.	2583.	2528.	2461.	1777.
				TIME	3.67	3.67	3.67	3.67	3.75	4.83	4.67
HYDROGRAPH AT											
+	ST-AL	0.02	1	FLOW	39.	38.	38.	37.	36.	34.	19.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	CP-AL	7.61	1	FLOW	2752.	2699.	2667.	2612.	2549.	2467.	1781.
				TIME	3.67	3.67	3.67	3.67	3.67	4.83	4.67
HYDROGRAPH AT											
+	T	0.02	1	FLOW	41.	40.	39.	38.	37.	35.	18.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.58
ROUTED TO											
+	R/T	0.02	1	FLOW	40.	39.	38.	37.	36.	34.	19.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67
HYDROGRAPH AT											
+	ST-FH	0.02	1	FLOW	43.	42.	41.	40.	39.	38.	21.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	CP-FH	0.04	1	FLOW	82.	80.	79.	77.	75.	71.	38.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58

1 SUMMARY OF DAM OVERTOPPING/BREACH ANALYSIS FOR STATION DB5MOD
(PEAKS SHOWN ARE FOR INTERNAL TIME STEP USED DURING BREACH FORMATION)

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	3532.50	3563.00	3569.00
STORAGE	0.	384.	535.
OUTFLOW	0.	2315.	2567.

RATIO OF PMF	MAXIMUM RESERVOIR W.S.ELEV	MAXIMUM DEPTH OVER DAM	MAXIMUM STORAGE AC-FT	MAXIMUM OUTFLOW CFS	DURATION OVER TOP HOURS	TIME OF MAX OUTFLOW HOURS	TIME OF FAILURE HOURS

1.00	3564.09	0.00	411.	2361.	0.00	5.08	0.00
0.98	3563.54	0.00	398.	2338.	0.00	5.08	0.00
0.97	3563.27	0.00	391.	2326.	0.00	5.08	0.00
0.95	3562.70	0.00	376.	2302.	0.00	5.08	0.00
0.93	3562.12	0.00	362.	2278.	0.00	5.00	0.00
0.89	3560.93	0.00	333.	2224.	0.00	5.00	0.00
0.55	3550.63	0.00	122.	1656.	0.00	4.50	0.00

*** NORMAL END OF HEC-1 ***

Village 25

EXISTING RESERVOIR 3435

CSWFH-5

35 679 cfs 8'x6' RCB @ 2%

ST-FH 44

FAR HILLS AVENUE

CP-FH

36 CCSWFH-7 Ex. 16'x8' RCAP

765 cfs 8'x7' RCB @ 2%

ST3 17

34 42" @ 2%

Z MF1 80

17 cfs 33 24" @ 3%

13 42" @ 3%

Y SF3 75

12 36" @ 3.3%

75 cfs 36" @ 3.3%

ST2 17

PT7

AA MF2 63

BB SF3 97

28 54" @ 0.5%

1 326 cfs 60" @ 2% CSWAA-1

ST-CR 48

SKY VISTA DRIVE

X SF3 70

2A 42" @ 2%

14 166 cfs 48" @ 4.1%

NP-2 PARK 21

PT8

HIGH POINT

ES-2 SF3 49

2 70 cfs 42" @ 2.4%

FOX HILL DRIVE

15 21 cfs 30" @ 2%

179 cfs 54" @ 2.1%

ST4 21

16

CC SF3 83

97 cfs 54" @ 0.5%

DESERT FOOTHILLS DRIVE

W SF3 74

3 42" @ 2%

326 cfs 60" @ 2.6%

ST1 26

18 49 cfs 36" @ 2%

19 49 cfs 36" @ 4%

R SF3 77

17 77 cfs 42" @ 2%

21

PT9A 251 cfs 22 60" @ 2.1%

352 cfs 23 60" @ 3.8%

PT9C

SPOKE 'B'

S SF3 60

PT0

4 159 cfs 48" @ 2.4%

20 60 cfs 42" @ 2%

PT9B

107 cfs 42" @ 2.9%

45 cfs 24 36" @ 2%

Q1 SF3 45

PT9D 42" @ 2%

25

83 cfs 27

PT10

PT11

169 cfs 29 66" @ 0.5%

PT12

393 cfs 60" @ 5.1%

26 409 cfs 60" @ 5.1%

P SF3 67

ST-DF 33

578 cfs 30 7'x6' RCB @ 1%

676 cfs 32 7'x7' RCB @ 1%

40 cfs 11 36" @ 1%

31 67 cfs 42" @ 2%

C-47

C-47A

Ex. 11'x8' RCAP

Ex. 10'x8' RCB

ST-AL 43

CP-AL

PT5A

EXISTING DB5

V SF3 77

5 42" @ 2%

PT1

T SF3 87

6 211 54" @ 3%

COS-5 OPEN SPACE 13

U SF3 75

7 42" @ 2%

13 cfs 10 Ex. 30" @ 6.5%

87 cfs 9 Ex. 36" @ 2%

309 cfs 8 Ex. 60" @ 2.5%

Q2 SF3 40

5-9A1 SF3 126

PT17

PT3

Ex. 10'x8' RCB

ALTA DRIVE

PT5

PT4

C-CR

PT3A

Village 20

Village 23A

NORTH

SCALE 1" = 300'

GRAPHIC SCALE

300 0 150 300

(IN FEET)

1 inch = 300 ft.

LEGEND

A / SF3	PARCEL NAME / PARCEL DENSITIES
13	MAXIMUM DISCHARGE FROM PARCEL
	PROPOSED STORM DRAIN
PT1	CONCENTRATION POINT
	EXISTING STORM DRAIN
	SUBBASIN BOUNDARY
8	FACILITY IDENTIFIER

DESIGN:
DRAWN:
CHECK:
ISSUE DATE:
ISSUE EDITOR:
PLOT DATE: 07-25-12
PLOT TIME: 14:19:28

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SUMMERLIN VILLAGE 23B

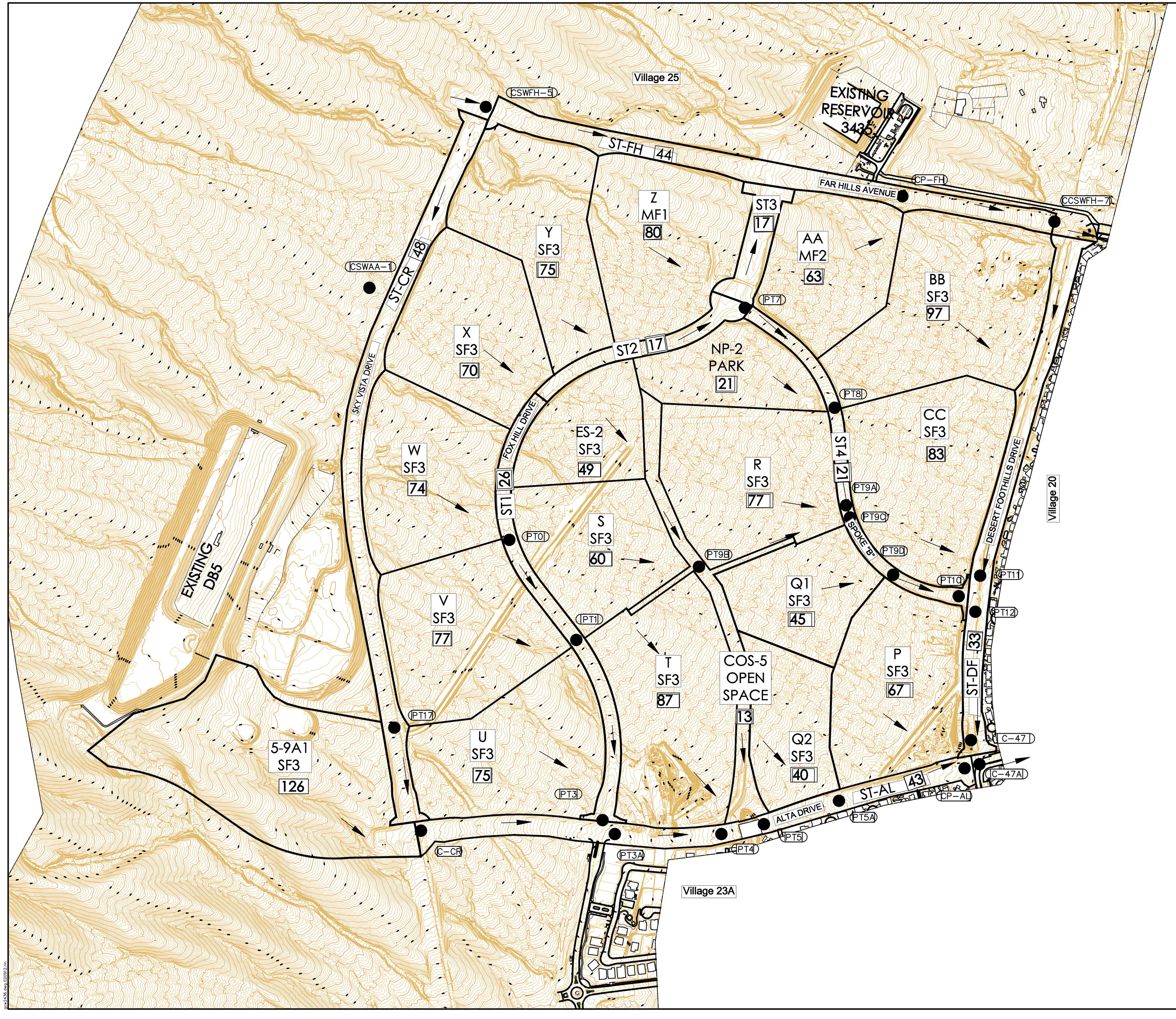
CONCEPTUAL DRAINAGE STUDY

DRAINAGE FACILITIES MAP - ULTIMATE CONDITIONS

SHEET

FIG 7U

1 OF 1 SHTS



NORTH

SCALE 1" = 300'

GRAPHIC SCALE

300 0 150 300

(IN FEET)

1 inch = 300 ft.

SUMMARY OF ULTIMATE CONDITIONS HEC-1 MODEL

SB OR CP	AREA (AC)	100 YR (CFS)	10 YR (CFS)
5-9A1	38.58	126	60
AA	18.52	63	31
BB	32.03	97	42
C-47	-	676	288
C-47A	-	2750	1699
CC	28.57	83	36
C-CR	-	2233	1602
CCSWFH-7	-	3477	1728
COS-5	8.79	13	3
CP-AL	-	2362	1630
CP-FH	-	765	339
CSWAA-1	-	2220	1593
CSWFH-5	-	679	290
ES-2	13.33	49	24
NP-2	12.54	21	5
P	24.03	67	29
PT0	-	139	61
PT1	-	211	93
PT10	-	409	176
PT11	-	169	70
PT12	-	578	244
PT13	-	645	273
PT2	-	282	123
PT3	-	309	136
PT3A	-	2298	1619
PT4	-	2328	1624
PT5	-	2334	1625
PT5A	-	2346	1627
PT6	-	149	66
PT7	-	168	73
PT9A	-	251	107
PT9B	-	107	47
PT9C	-	352	153
PT9D	-	393	170
Q1	14.87	45	19
Q2	13.34	40	17
R	25.54	77	33
S	19.69	60	26
ST1	8.00	26	13
ST2	4.25	17	8
ST3	4.12	17	9
ST4	5.98	21	10
ST-AL	13.03	43	21
ST-CR	16.43	48	24
ST-DF	12.14	33	16
ST-FH	13.14	44	22
SUMSOT	-	2149	1548
SWAA-1	-	326	134
T	29.70	87	38
U	25.15	75	33
V	25.45	77	33
W	23.78	74	32
X	23.31	70	30
Y	24.30	75	33
Z	25.01	80	36

LEGEND

A / SF3	PARCEL NAME / PARCEL DENSITIES
13	MAXIMUM DISCHARGE FROM PARCEL
PT1 ●	CONCENTRATION POINT
———	SUBBASIN BOUNDARY

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SUMMERLIN VILLAGE 23B
CONCEPTUAL DRAINAGE STUDY
ULTIMATE CONDITIONS DRAINAGE BASIN MAP

SHEET
FIG 6U
1 OF 1 SHTS

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