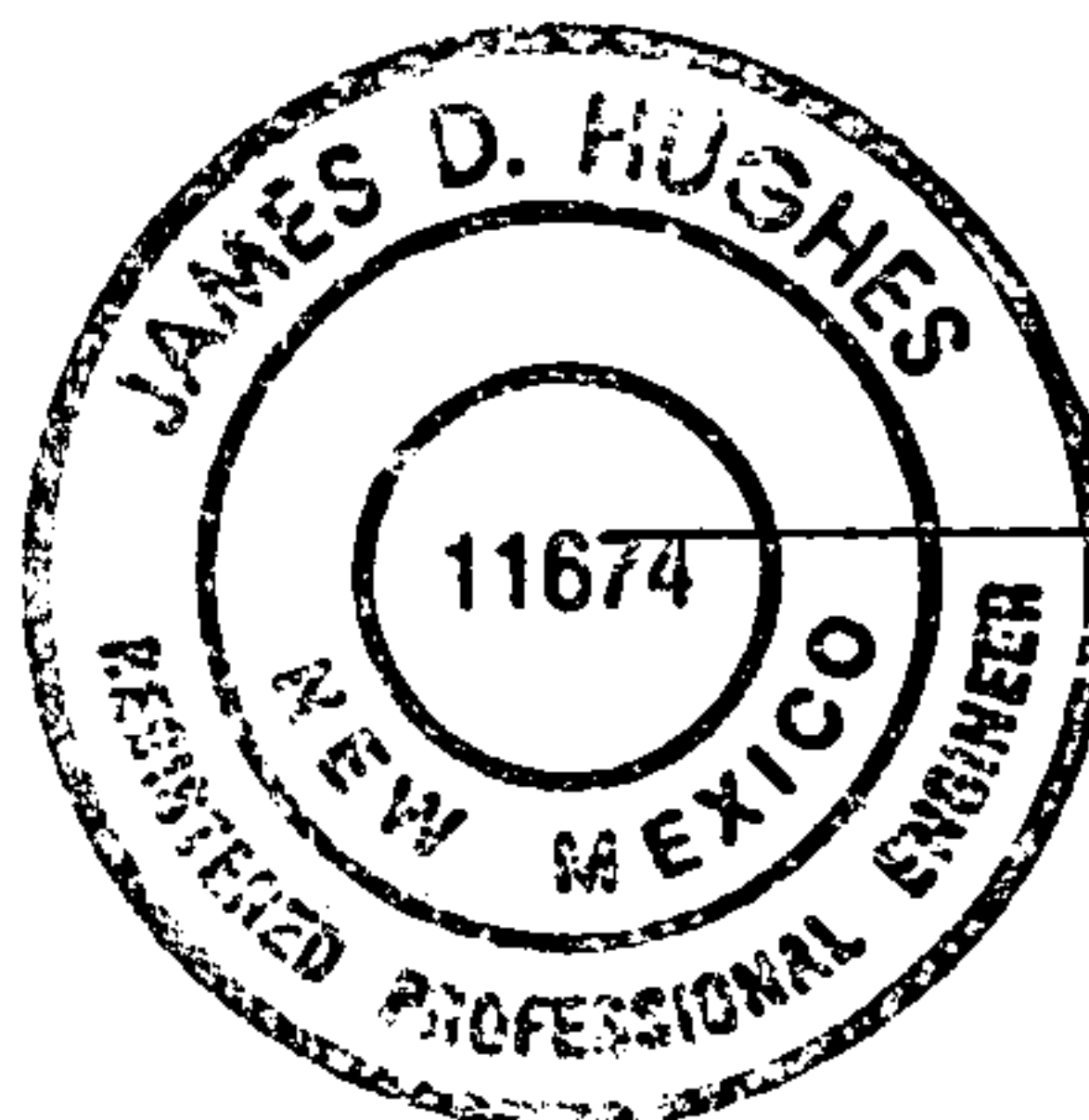


ADDENDUM NO.'S 1, 2, AND 3
TO THE
MASTER DRAINAGE MANAGEMENT PLAN FOR
PRIMROSE POINTE

PREPARED FOR:
S & S ASSOCIATES
OCTOBER, 1990
REVISED FEBRUARY 3, 1993

PREPARED BY:
COMMUNITY SCIENCES CORPORATION
CORRALES, NEW MEXICO
(505) 897-0000

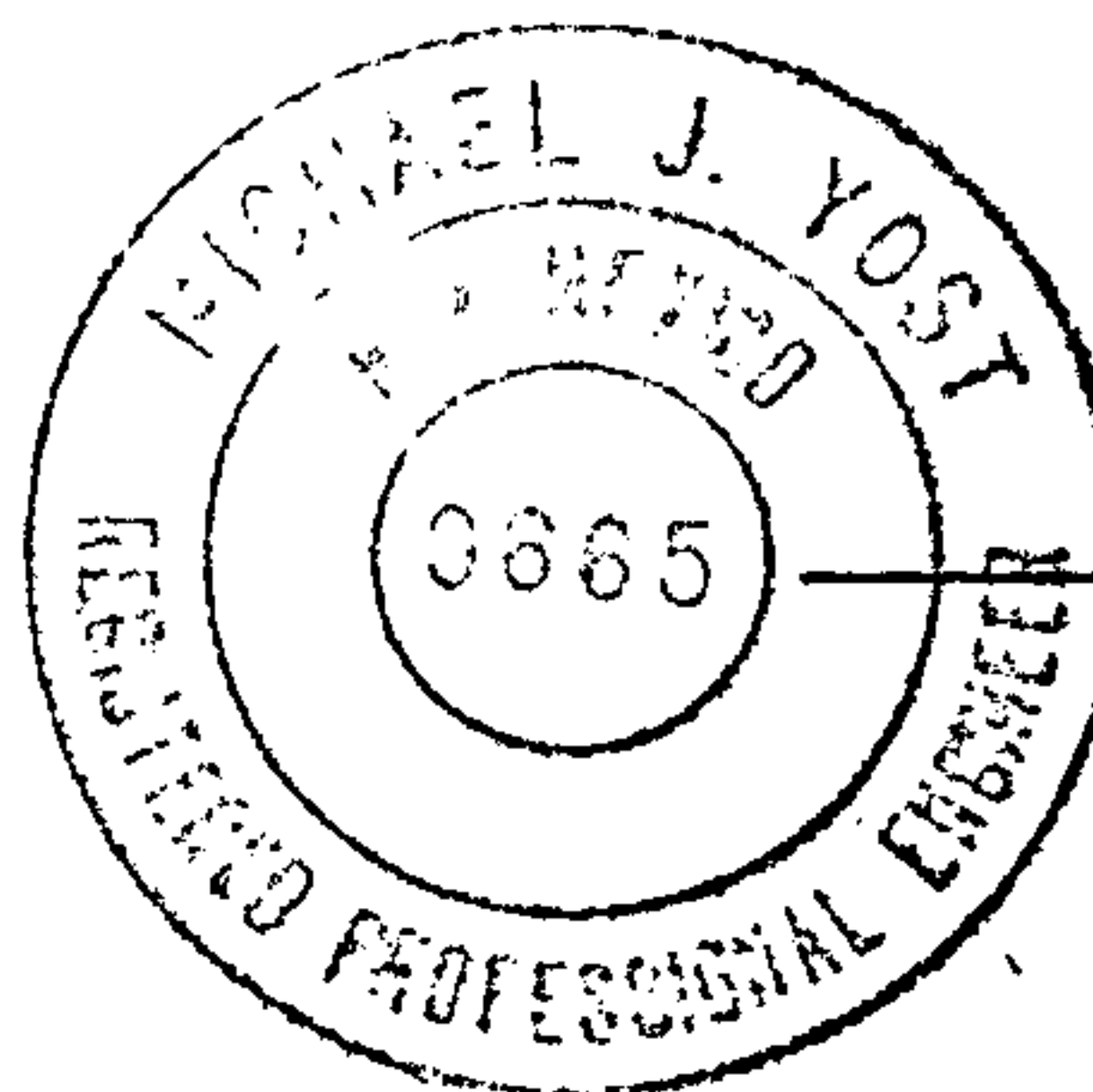


James D. Hughes
Z-4-93 JAMES D. HUGHES, P.E.

ADDENDUM NO. 1
TO THE
MASTER DRAINAGE MANAGEMENT PLAN FOR
PRIMROSE POINTE

PREPARED FOR:
S & S ASSOCIATES
OCTOBER, 1990

PREPARED BY:
COMMUNITY SCIENCES CORPORATION
CORRALES, NEW MEXICO
(505) 897-0000



Michael J. Yost
MICHAEL J. YOST, P.E.
2/4/93

ADDENDUM NO. 1
TO THE
MASTER DRAINAGE PLAN FOR
PRIMROSE POINTE

This report is to accompany the Master Drainage Management Plan for Primrose Pointe, by Community Sciences Corporation, June, 1990 and revised September, 1990 as Addendum No. 1. The purpose of this addendum is to present discussion concerning the applicability of an alluvial fan study for the project.

The site is located just west of the foothills of the Sandia Mountains. Upstream of the project site, alluvial fans are obvious. However, within the project limits, both of the main arroyos are well defined channels with obvious thalwegs. It is apparent that these channels are subject to degradation and meandering in their natural state. However, the slope of the entire site is roughly parallel to the slope of the thalwegs and there is no flattening of the slope or "sheet flow" conditions. In addition to the channels, the arroyos are further defined by discernible valleys. Therefore, in its present condition the channels are apparently not subject to abruptly abandoning the main channels and forming new channels; a phenomena known as avulsion.

In addition, the existing arroyos have sandy bottoms with very sparse vegetation. The floodplain above the banks is covered with a good stand of native grasses. Therefore the floodplains outside the natural channels are not nearly as susceptible to erosion and the "cutting" of new channels.

Another point about the existing condition is that there are culverts under Tramway, "dip" sections and/or culverts across Tennyson and dip sections across Lowell. These three points on each arroyo control the alignments as they enter and leave the project site. Again, this diminishes the propensity for the arroyos to abandon their natural channel and form new ones.

As stated in the Master Drainage Plan, the proposed treatment of the arroyos is to consist of excavating an earthen channel that will be reinforced with intermittent bank stabilization and grade checks. This channel will be constructed to provide capacity for the 100-year storm event (including provision for sediment bulking and freeboard for surface wave action and super-elevation). Provisions will also be made to account for degradation of the channel bottom and the ensuing bank erosion.

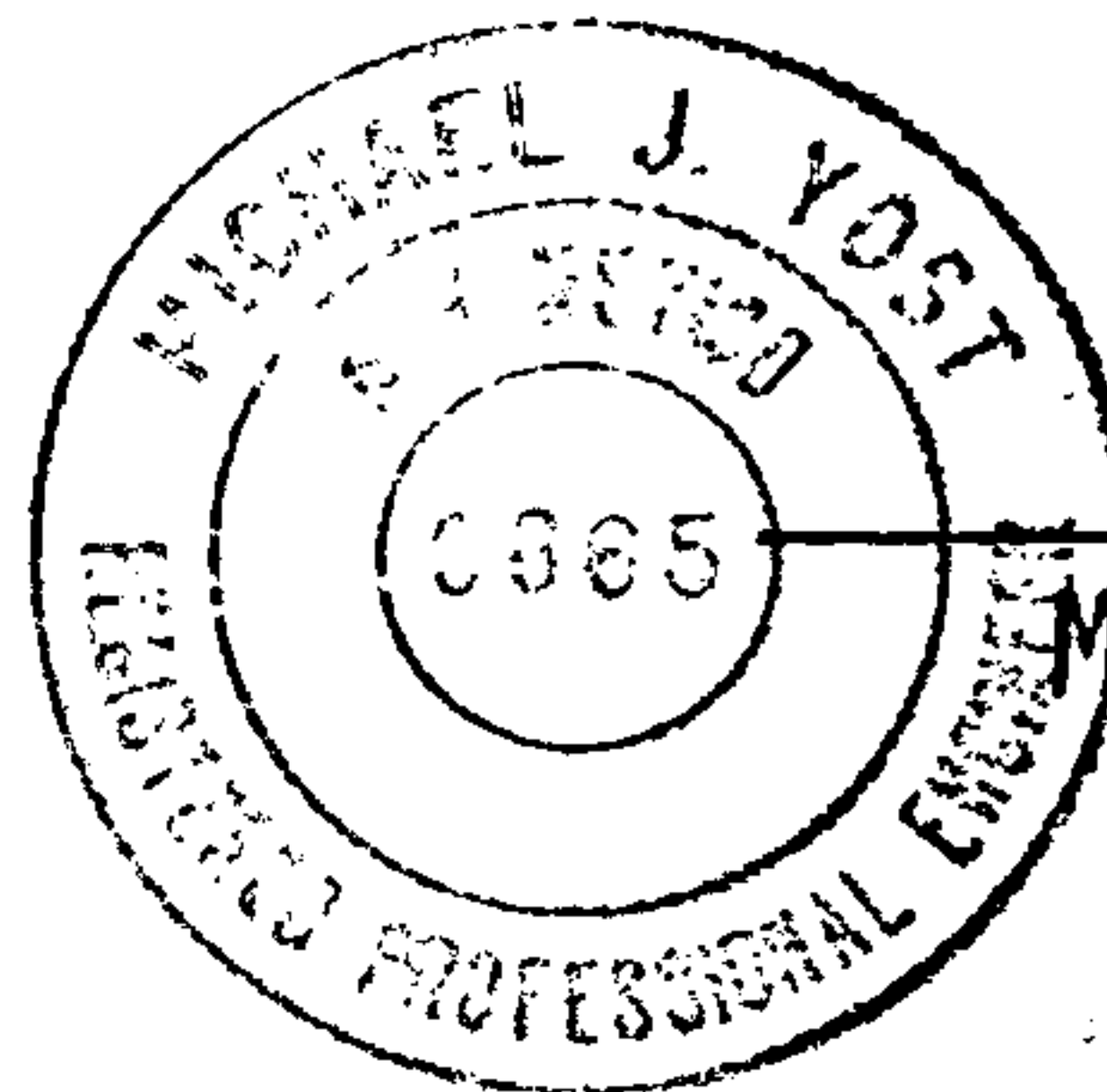
The intent of the proposed arroyo treatment is to provide a channel that is visually appropriate given the semirural nature of the area, and yet provide enough stabilization that safety and property are not in immediate jeopardy. This entrenched channel, with its appurtenant stabilization measures, will preclude avulsions and their ramifications.

In summary, the existing conditions of the two main arroyos do not indicate a susceptibility to avulsions or alluvial fan conditions. In any case, the proposed treatment of the arroyos for the post-developed conditions definitely do not indicate a propensity for avulsions.

ADDENDUM NO. 2
TO THE
MASTER DRAINAGE MANAGEMENT PLAN FOR
PRIMROSE POINTE

PREPARED FOR:
S & S ASSOCIATES
OCTOBER, 1990

PREPARED BY:
COMMUNITY SCIENCES CORPORATION
CORRALES, NEW MEXICO
(505) 897-0000



Michael J. Yost
MICHAEL J. YOST, P.E.
2/4/93

ADDENDUM #2

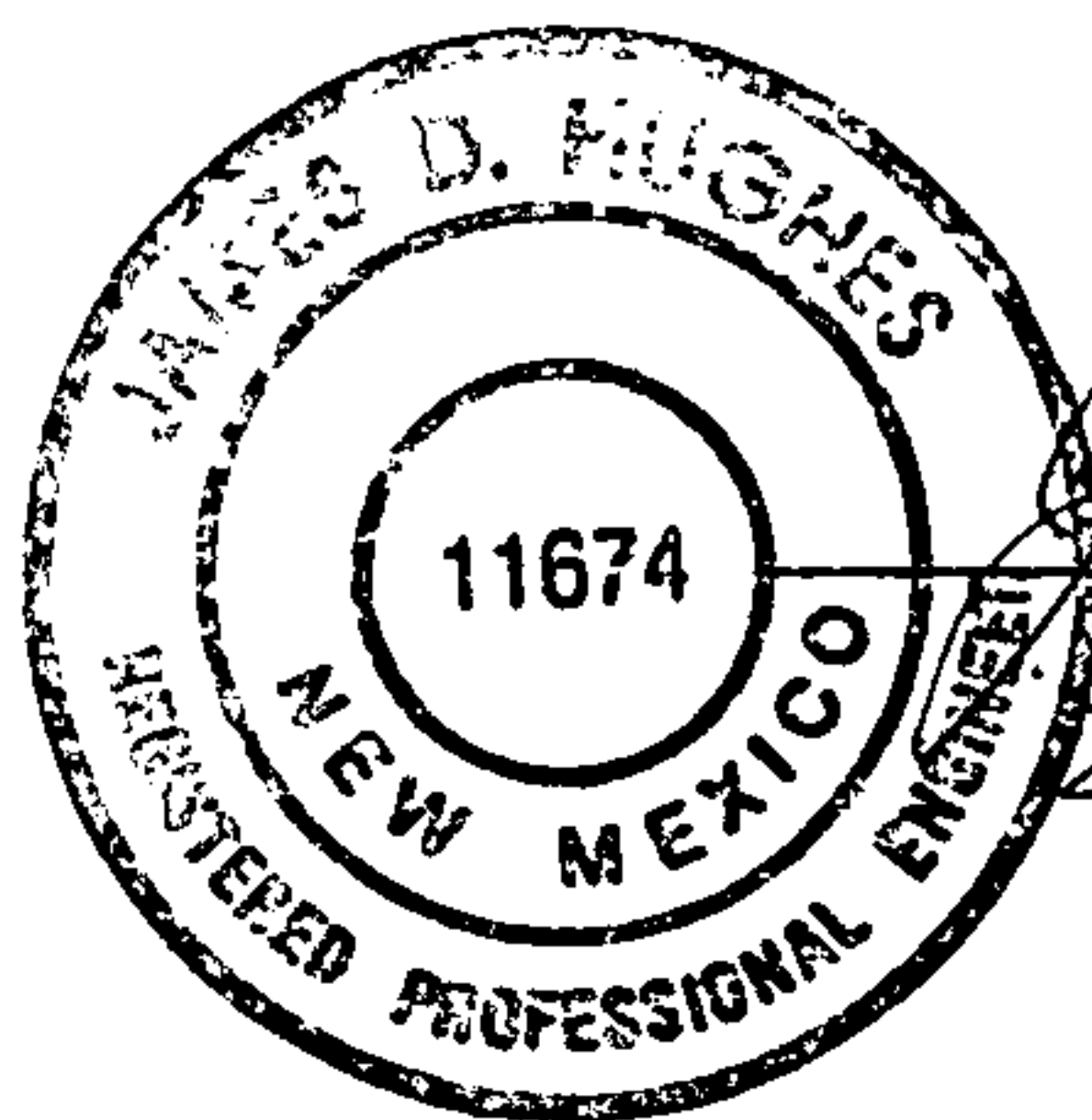
Addendum #2 is now void as part of this February, 1993 revision. The purpose of this addendum was originally to demonstrate that the downstream off-site arroyos would remain in a stable (non-erosive) condition during the more frequent periods of low flow that will result from this development. After further evaluation of the analysis in the original Addendum, AMAFCA and Community Sciences Corporation agreed that those off-site arroyos are presently erosive and would continue to be so for flows as low as 2 cfs.

Clear water discharge from the ponds, after the peak of the storm is passed, is expected to be slightly degradational on-site but in equilibrium in the downstream off-site reaches. With the addition of the BMP retention volume, these minor pond flows will be drastically reduced. Pond flows from the less frequent (more major) events will contribute insignificant flows to the channels, which will be in equilibrium with the off-site upstream and downstream channels. The sediment transported during these major events will far outweigh the extremely minor degradation that will occur with the minor clear water discharges from the ponds. This is an intentional design characteristic, inherent in the flexible channel design concept. Final design of each phase will keep this expected minor degradation on-site, particularly where on-site ponds are located near the downstream edge of the development.

ADDENDUM NO. 3
TO THE
MASTER DRAINAGE MANAGEMENT PLAN
FOR
PRIMROSE POINTE
(A PLANNED DEVELOPMENT IN NORTH ALBUQUERQUE ACRES
BERNALILLO COUNTY, NEW MEXICO)

PREPARED FOR
S & S ASSOCIATES
REVISED SEPTEMBER 15, 1992
REVISED NOVEMBER 27, 1992
REVISED FEBRUARY 3, 1993

PREPARED BY:
COMMUNITY SCIENCES CORPORATION
CORRALES, NEW MEXICO
(505) 897-0000



James D. Hughes
2-4-93

JAMES D. HUGHES, P.E.

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I. INTRODUCTION

AMAFCA and Bernalillo County Public Works responded to the "Master Drainage Management Plan for Primrose Pointe" (MDMP) as Revised September, 1990 with two levels of comments: the Master Plan Level and the Detailed Site Development Plan Level. The Master Development Plan for Primrose Pointe was approved by the Bernalillo County Planning Commission (CPC) in December, 1990. One of the conditions was that AMAFCA's "Master Plan Level" comments be addressed by the Developer. Subsequently, an appeal to the CPC's approval was upheld by the Bernalillo County Commissioners. Negotiations with the opposing neighborhood groups have resulted in a 296-lot Master Plan, as opposed to the over 400 lots shown in the original Master Plan. The new plan has been submitted and approved by the CPC. This Addendum addresses the seven Master Plan Level comments which are itemized below. The fact that the proposed density is significantly lower than originally proposed does not bear on this level of commenting, although it is the general consensus that the lower density will make implementation of the MDMP easier to implement. The seven Master Plan Level comments are:

- A. The north minor branch of the south tributary of the La Cueva Arroyo goes through the intersection of Lowell Street and Oakland Avenue. This arroyo was not included in the Master Drainage Management Plan (MDMP) analysis. This arroyo will affect the northwest portion of Primrose Pointe and must be added to in the on-site and off-site analysis.
- B. The analysis of off-site basins must be based on the best topographic mapping that is currently available. The use of USGS mapping is acceptable only when other mapping is not available. See Item No. 18 from our letter of September 12, 1990.
- C. The off-site sub-basin NDB-1 has more than 50 percent of its area at 20 percent and greater slope, with the remainder of the basin between 10 and 20 percent slope. Land treatment C and B would be more appropriate for these areas. We note that the percentage of impervious treatment was reduced to zero. Is this reduction appropriate under fully developed conditions?
- D. The percentage of impervious treatment for existing on-site conditions was raised to 20 percent. This value does not appear to reflect existing development at Primrose Pointe.
- E. The location of developed condition basins LC-3A, Off-site 2A and Off-site 1A are not shown on any mapping. They should be identified on a map so we can compare with the existing condition basins.

- F. The existing condition AHYMO output shows an area for basins LC-3 and LC-2A of 0.1449 square miles. Basin LC-2A is not included on Table 4. The area for basin NDB-4 should be verified. The total area of existing condition basins (Table 4 as corrected) does not agree with the total area of the developed condition basins (Tables 5A, 5B and 5C). Area differences should be resolved.
- G. This comment generally refers to "Hydraulic", "Lateral Migration", and "Erosion and Deposition" analysis per the letter from Resource Consultants & Engineers, Inc., dated November 20, 1990, the contents of which have been organized into a summary format as follows.

1. HYDRAULIC ANALYSIS (HEC-2 Computations):

- a. Runs to include 10-year and 100-year flows for both pre- and post-development conditions.
- b. Runs to include flow modifications to account for sediment bulking.
- c. Runs to be used to identify erosion and deposit areas (also see local scour).
- d. Runs to be used to identify super-elevation and wave action requirements on bank heights.
- e. Runs to be used to identify and locate changes between the sub- and super-critical flow regimes.
- f. Runs to include investigation and confirmation of flow geometries as they approach the arroyos in the off-site areas at the upstream ends.
- g. Runs to include off-site downstream geometry to determine the impact of this development.
- h. Runs to be used to identify any other problems.

2. LOCAL SCOUR AND LATERAL MIGRATION

- a. Design Modifications
 1. Bank stabilization needed upstream and downstream of check dams.
 2. Check dams to be tied back into the stream banks.
 3. Foundation of check dams to be set below combined scoured stream level (see 2.b. below).
 4. Other bank stabilization techniques may be needed where lateral erosive forces are high.
- b. Local scour immediately downstream of check dams should be estimated and added to expected degradation of bed to determine the combined scoured stream level.

1. Check stability of check dam with combined scoured stream level.
2. Calculate freeboard needed to accommodate the hydraulic jump that is expected to occur with combined scoured stream level.
3. Address bank stability with combined scoured stream level.
4. Erosion risk analysis (i.e., prudent line analysis) may need to be more comprehensive.

3. EROSION AND DEPOSITION

- a. References and details of application must be provided for the sediment transport analysis.
- b. Document base line sediment transport assumptions from upstream and from proposed ponds.
- c. Document the determination of expected degradation with the detailed design.
- d. Document downstream impacts of sediment transport changes associated with this development.
- e. Sediment continuity analysis (previously referred to in G.1.c. above) to be used to ascertain if deposition will decrease channel capacity of specific reaches.
- f. An analysis of alterations, to the peak volume, and timing of runoff to be used to evaluate potential alterations in low flow stability of the channels below this development.

The above comments must be addressed and resolved prior to AMAFCA and County Public Works approval of the Master Plan. This report is to accompany the Master Drainage Management Plan for Primrose Pointe, by Community Sciences Corporation, June 1990 and Revised September 1990, as Addendum No. 3.

II. SUMMARY OF RESPONSES TO COMMENTS

- A. Drainage at the intersection of Oakland Avenue and Lowell Street will be handled either by crossing dip sections flush with existing grade or drainage structure as may be required by the County with final design of Phase V, meeting requirements of all applicable ordinances including upstream and downstream improvements as necessary to prevent erosion and maintain existing levels of sediment transport capacity, as now indicated on the On-Site Drainage Plate. Final design of Phase V is to include a detailed flood plain study including field-surveyed cross sections and HEC-2 split flow analysis of

the area upstream of the intersection of Lowell and Oakland, to ensure the adequacy of the flood protection measures to be taken to protect the proposed Phase V lots to be developed adjacent to that flood plain. As indicated by 1991 topography, Lowell Street now conveys a major portion of the flood plain discharge from that intersection. Additional concrete paving and stabilized project/roadside swales may be incorporated into the final design, subject to County and AMAFCA approval.

- B. The use of USGS topography for mapping of off-site drainage basins is merely a conceptual tool used to present more detailed study. Drainage basins for the north minor branch of the south tributary of the La Cueva Arroyo have been added to the original master drainage plate, which has been inserted as the first page in Appendix A of this Addendum. Additional supplemental topo and drainage divides are illustrated on prints of a 1991 aerial topo, at a scale of 1" = 500', in a new pocket at the end of this report. This new topographic data will be used to update the hydrologic analysis used for the design of each phase.
- C. Hydrology for existing (pre-developed) conditions was re-run using the September 1991 version of AHYMO and using a 50:50 split between land treatments C and B for NDB-1. However, the percent imperviousness remains at zero because it is appropriate for National Forest Area. Flows from NDB-1 in the original report were in substantial agreement with the flows presented in the currently accepted FEMA "Flood Insurance Study". However, these flows were almost doubled in this new model contained herein.
- D. The AHYMO runs in this report are not to be used for final design. They are approximations, to be replaced by more detailed study as part of the final design for each phase. Existing on-site conditions include 0.0 percent imperviousness, which is to be reflected in the final design AHYMO models. Additionally, the ponds will be designed to limit post-development peak flows to those of existing conditions and to capture the difference between the pre- and post-development initial abstracts. Each phase of development is required to have a detailed drainage report, to include: (1) documentation of the fact that peak flows will not be increased by either decreased channel storage or by changes in land use and drainage patterns associated with that particular phase, (2) ditch, street, pipe, and inlet hydraulic calculations, and (3) terrain management plan all of the foregoing in accordance with County ordinances and policies. Additionally, increased flows that might result from the collection of existing multiple discharge points into a single developed discharge point will also be offset by the ponds.
- E. The location of basins LC-3A, Off-site 2A, and Off-site 1A are shown on the 1991 topography, as included at the end of this report.

It should be noted that Off-site 2A is the portion of Off-site 2 that is wholly outside of Primrose Pointe and will then be diverted by an improved Oakland Avenue street section to the northwest corner of the site. Likewise, Off-site 1A is that portion of Off-site 1 that is wholly off-site. It was subdivided for the purpose of sizing the culverts that are to convey drainage across Anaheim Avenue. LC-3A is the off-site portion of Basin LC-3.

- F. Basin LC-2A is a sub-basin of LC-2. Its hydrologic parameters are listed on Table 5B of the original Master Drainage Management Plan. A table has been added to this Addendum at the beginning of Appendix A which summarizes the drainage areas for

both pre- and post-development, thus clearly indicating that the total for pre-development is the same as that for post-development.

- G. The "soft arroyo" treatment, as presented in the September 1990 revised version of the Master Drainage Management Plan (MDMP), is in accordance with standard engineering practice and as outlined in the Drainage and Flood Control Publication entitled Design Guidelines and Criteria for Channels and Hydraulic Structures on Sandy Soils by Simons, Li & Associates, Inc., June, 1981. The design concept is simple and straight-forward. As illustrated on page 86 of that publication, grade control structures are spaced according to the equilibrium slope limitations. ~~Then, over a period of time, the final equilibrium state is reached through the erosional degradation process. The grade control structures are re-evaluated as drop structures with adequate scour protection provided.~~ The grade control structures will consist of chute baffle-type energy dissipating drop structures.

The MDMP proposes to take this design concept a step further by including a well-defined channel built at a slope slightly steeper than the equilibrium slope in the initial construction phase. As previously presented, the channel is designed to contain 100-year flows with appropriate freeboard to account for both the velocity head and super-elevation of supercritical flow through curves. Bank stabilization around the outside edge of the curves along with the initial well-defined channel (typically a minimum of 6' depth) construction will serve the purpose, of confining the ~~eventual degraded~~ channel to the specific alignment as illustrated on the On-site Drainage Plate (enclosed at the end of this report).

1. The hydraulic analysis was performed using HEC-2. This software requires very specific geometric detail for construction of the model. Those specific details are subject to change in the final design since this preliminary model is based on several assumptions which are not normally allowed in detailed flood plain studies (i.e., normally cross sections are field surveyed but these are based on two foot contour interval aerial photography flown May 15, 1973). The procedure of developing the model, several new figures and the hydraulic calculations are contained in Appendix B.
 - a. Eight separate models are presented. Each one includes three separate profiles (100-year, 10-year, and 2-year flows). The models are:
 1. North Domingo Baca, pre-development condition, supercritical.
 2. North Domingo Baca, pre-development condition, subcritical.
 3. North Domingo Baca, post-development condition, supercritical.
 4. ~~North Domingo Baca, post-development condition, subcritical.~~ Runs not included because no sustained subcritical flow exists under the proposed conditions.
 5. South minor branch of the south tributary of the La Cueva, pre-development condition, supercritical.
 6. South minor branch of the south tributary of the La Cueva, pre-development condition, subcritical.
 7. South minor branch of the south tributary of the La Cueva, post-development condition, supercritical.
 8. ~~South minor branch of the south tributary of the La Cueva,~~

post-development condition, supercritical. Runs not included because no sustained subcritical flow exists under the proposed conditions.

- b. The pre-developed flows were increased by 10% to account for sediment bulking in the channel analysis.
- c. Output from the HEC-2 runs was used to quantify sediment transport capacity at each proposed cross section for each of the three peak flows. Documentation of the procedure and a summary of the calculations is presented in Appendix G. The original Master Plan estimated equilibrium slopes based on 100-year peak flows that were approximately equivalent to the 2-year equilibrium slopes cited in the April 29, 1992 comments from Resource Consultants & Engineers, Inc. The channel bed slopes are now presented at a slightly flatter equilibrium slope than originally presented, but the final plans are to re-identify the slope at which the channel is actually to be constructed, as now indicated in Note No. 3 on the On-Site Drainage Plate.
- d. Bank heights as originally calculated, including allowances for both super-elevation and freeboard, are to be used. (See the response to Comment No. G.2.b. on page 8.) Figure E at the back of Appendix B illustrates the fact that the energy grade line will be below that minimum top of bank elevation everywhere except right at the top of each drop structure, thus confirming the adequacy of the previous channel design.
- e. The subcritical profiles contain only one short reach of sustained subcritical depth in the proposed channels. That reach is located just above Lowell street on the North Dominga Baca Arroyo. The HEC-2 runs calculated subcritical depth in only three other places on the south minor branch of the south tributary of the La Cueva Arroyo. At each of those three times, the location was right at the toe of a drop structure, conveyance change was outside of acceptable range, and critical depth was calculated at the adjacent sections both up and downstream. Detailed analysis was performed in the one confirmed subcritical reach including hydraulic jump calculations, and is presented at the end of Appendix B.

After examining this hydraulic jump, it became apparent that the bank heights as specified will contain any hydraulic jump including any jump that might occur during the evolving stages of degradation. This is most apparent when observing the containment of the supercritical EGL below the top of banks. It is verified in observing the extremely small amount of energy required for the jump and in noting that energy would take place in the form of a deficit to the supercritical EGL which is already contained. The only possible situation that could produce a jump that would exceed the channel capacity is the inconceivable situation where tremendous aggregation takes place below the drop structure, thus producing unimaginably high backwater (subcritical) energy elevations. That would be an aggregation/backwater problem and no further hydraulic jump analysis is needed.
- f. Upstream off-site conditions were not investigated with regard to the geometry of flow since very deep drop structures are proposed

immediately below Tennyson Street on both arroyos (see the arroyo profiles, Figures A and B in Appendix B). The drops will either have no effect upstream if the approaching flow is subcritical or they will improve upstream conditions if the approaching flow is ~~subcritical~~ supercritical. Either way, there is no potential for adverse impact to off-site property.

~~Nothing in the proposed design will be introduced to contract the flows at the upstream site boundaries.~~ If the spread of the flow upstream is wider than the proposed receiving channels (note receiving channel top widths are 50 feet and 75 feet for the North Domingo Baca and the south minor branch of the south tributary of the La Cueva Arroyo, respectively), then that flow will be passed onto this site in the form of sheet flow or as is the case at the North Domingo Baca, the upstream off-site area will be rebuilt to control those off-site flows as they enter the site, and sooner or later find its way back into the arroyo. By assuming that all of the flow enters the arroyo at the upstream edge of the site, the most conservative possible hydraulic assumptions have been made. The extent to which street flows enter the site at inappropriate location will be investigated at the time of final design and dealt with then to insure no adverse impact will occur to either existing off-site property or proposed on-site property, in accordance with standard engineering practices and principals of design.

There may be concerns about reflective waves with changes in the arroyo cross section geometrics. However, the drop structure will dominate hydraulic parameters to the point of excluding the possibility of the usual reflective waves normally associated with contraction in supercritical flow.

- g. Downstream geometry is included in the HEC-2 runs and they indicate that this development will have no significant adverse impact on the downstream properties. The alignment of both arroyos as they approach Lowell Street has been modified from the original alignment in order to better match the geometry of the downstream receiving channel (see the updated On-site Drainage Plate at the end of the report).
- h. Identifying any other concerns will be addressed at the final design stage where specific local detail can be dealt with in greater certainty.

2. As discussed in the January 15, 1991 meeting with AMAFCA and FCI, lateral migration is less of a concern now that the channel is to be well-defined, with the initial construction to include bank stabilization at the outside of curves and with grade control structures. The remaining potential for lateral migration will be addressed in the final design of each phase, possibly including some combination of "Spurs" (see FHA, HEC-No. 20, Section 6.3) and a regular inspection and maintenance program.

- a. The recommended design modifications are appropriate details which have been added as discussed in Appendix B. Further refinement of these details will accompany final design when the actual geometry is addressed in specific detail.

- 1. Done. (See Appendix B.)

2. Done. (See Appendix B.)
3. (See 2., below.)
4. Stabilization along the outside bank of all curves is shown on the On-site Drainage Plate and was thoroughly addressed in the original report. The depth of the toe of that bank stabilization is addressed in the next section. "Other" stabilization at pipes discharging into the arroyos will be addressed at the final design stage as indicated in the original report.

b. ~~Local scour has been estimated (see Appendix C) and expected degradation has also been re-evaluated (see Appendix C). The two result in a combined scour level at the bottom of the drop structure as follows:~~

~~North Domingo Baca 7 1/2 feet~~

~~South minor branch of the south tributary of La Cueva 5 1/2 feet~~

1. ~~The check dams have been sized to "toe in" below the expected combined scour depth.~~
2. Channel conditions vary depending on the time of the year and they change during the course of a single event. If the channel conditions are such that the resistance to flow is primarily due to the roughness of the bed and bank material, with little effect from bed form and vegetation, then the flow regime is likely to be stable supercritical flow. However, where Manning's "*n*" is higher (as typically conservatively estimated), the flow regime is likely to be unstable supercritical flow. In a reach with the higher "*n*" values, the unstable condition will result in an undulating water surface where the depth of water at the peaks is approximately equal to the sequent depth of the conservatively estimated supercritical depth. No further hydraulic jump analysis is needed. The final channel design depth calculations will simply add freeboard and superelevation depths to the sequent depth instead of the normal depth in determining the appropriate channel design depths. Thus, even the unpredictable jumps will be contained within the channel, with the entire freeboard depth reserved for roll waves.
3. ~~Whenever bank stabilization is to be placed immediately downstream of a check dam, the combined scour level is to be the depth below finished grade that the bank stabilization is to extend. Otherwise, the five foot depth shown on the typical section will control.~~
4. As previously discussed, the erosion risk (prudent line) needs a less comprehensive analysis because of the structural integrity of the proposed channel.

3. The erosion and deposition analysis portion of this report generally overlaps the analysis efforts of Section 2 above.

- 11
11
- a. The sediment transport analysis is fully documented in Appendix C.
 - b. Base line sediment transport assumptions were documented in the MDMP and will be documented in greater detail with the final design of each phase.
 - c. Final design calculations and detailed designs will accompany each phase. A scale model study will identify scour at the toe of the drop structures. Soil cement bank stabilization will extend to a minimum depth of 12" below the anticipated equilibrium elevation minus the depth of local scour.
 - d. Downstream impacts of sediment transport changes associated with this development will be mitigated as indicated by the notes on the On-site Drainage Plate in a pocket at the end of this report.
 - e. ~~An overview of reach specific sediment analysis would indicate that the general degradation would be greater than any local deposition. (See Appendix C.) Therefore, no decrease in channel capacity is expected.~~ Analysis now indicates that sediment deposition is only likely to occur just below the energy dissipators where the channel depth will be more than adequate since it is in transition. Areas of sediment deposition are to be avoided with the final design. Where they are unavoidable, they will be compensated for by increased bank heights.
 - f. Low flow stability as originally addressed in Addendum No. 2 which was subsequently voided. Clear water discharge from the ponds after the peak of the storm is passed is expected to be slightly degradational on-site but in equilibrium in the downstream off-site reaches. With the addition of the BMP retention volume, these minor pond flows will be drastically reduced. Pond flows from the less frequent (more major) events will contribute insignificant flows to the channels, which will be in equilibrium with the off-site upstream and downstream channels. The sediment transported during these major events will far outweigh the extremely minor degradation that will occur with the minor clear water discharges from the ponds. This is an intentional design characteristic, inherent in the flexible channel design concept. Final design of each phase will address limiting this expected minor degradation to on-site areas, particularly where on-site ponds are located near the downstream edge of the development.

APPENDIX A

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- 1. OFF-SITE BASIN MAP**
- 2. SUPPLEMENTAL FEMA TOPO**
- 3. DRAINAGE AREA SUMMARY***
- 4. NORTH DOMINGO BACA, EXISTING 2-YEAR FLOWS**
 - A. INPUT FILE "NDB2EX.DAT"**
 - B. SUMMARY OUTPUT "NDB2EX.SUM"**
 - C. OUTPUT "NDB2EX.OUT"**
- 5. NORTH DOMINGO BACA, EXISTING 10-YEAR FLOWS**
 - A. INPUT FILE "NDB10EX.DAT"**
 - B. SUMMARY OUTPUT "NDB10EX.SUM"**
 - C. OUTPUT "NDB10EX.OUT"**
- 6. NORTH DOMINGO BACA, EXISTING 100-YEAR FLOWS**
 - A. INPUT FILE "NDB100EX.DAT"**
 - B. SUMMARY OUTPUT "NDB100EX.SUM"**
 - C. OUTPUT "NDB100EX.OUT"**

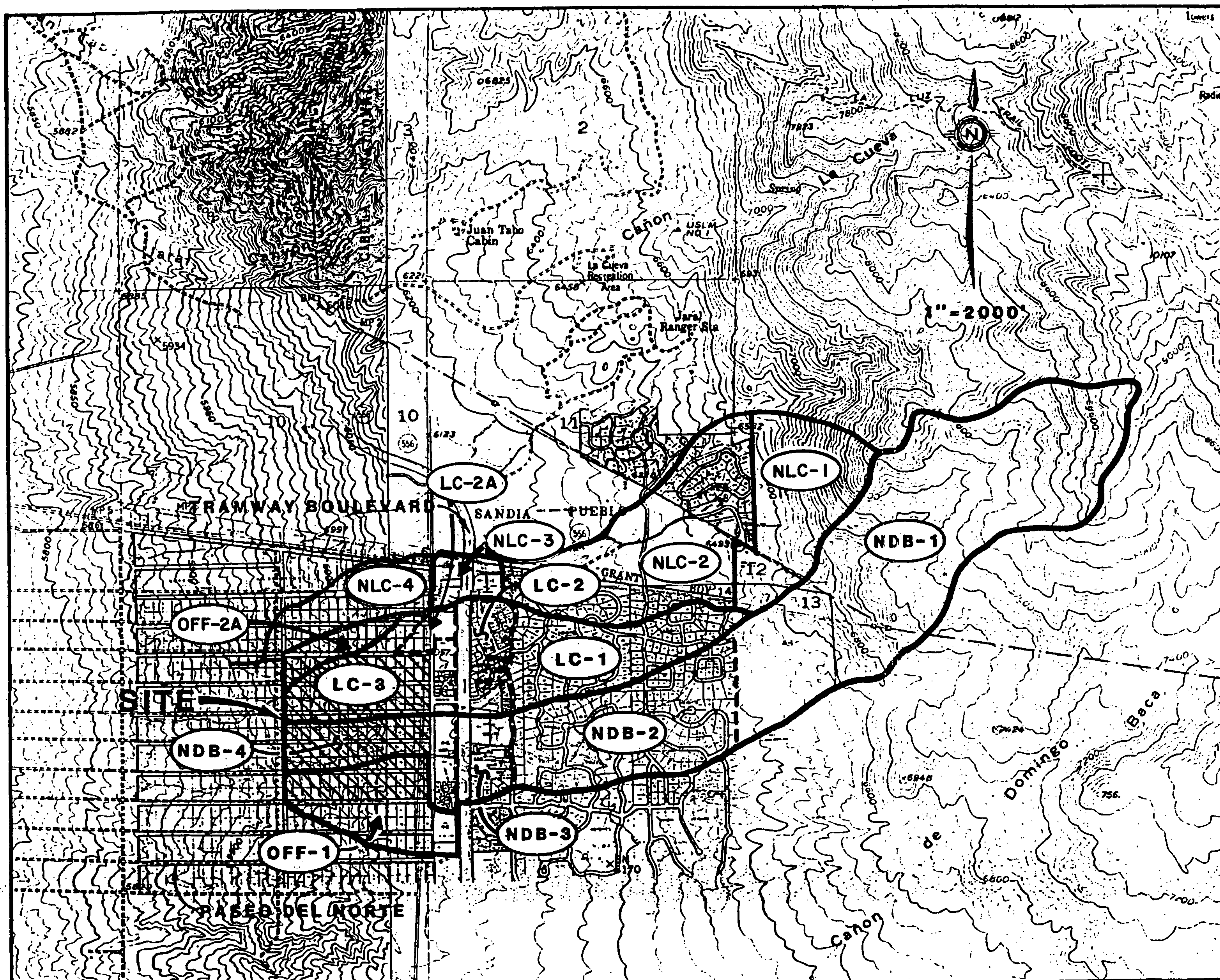
***THESE AREAS ARE TO BE USED IN FINAL DESIGN ANALYSIS.**

OFFSITE BASIN MAP FOR PRIMROSE POINTE SUBDIVISION

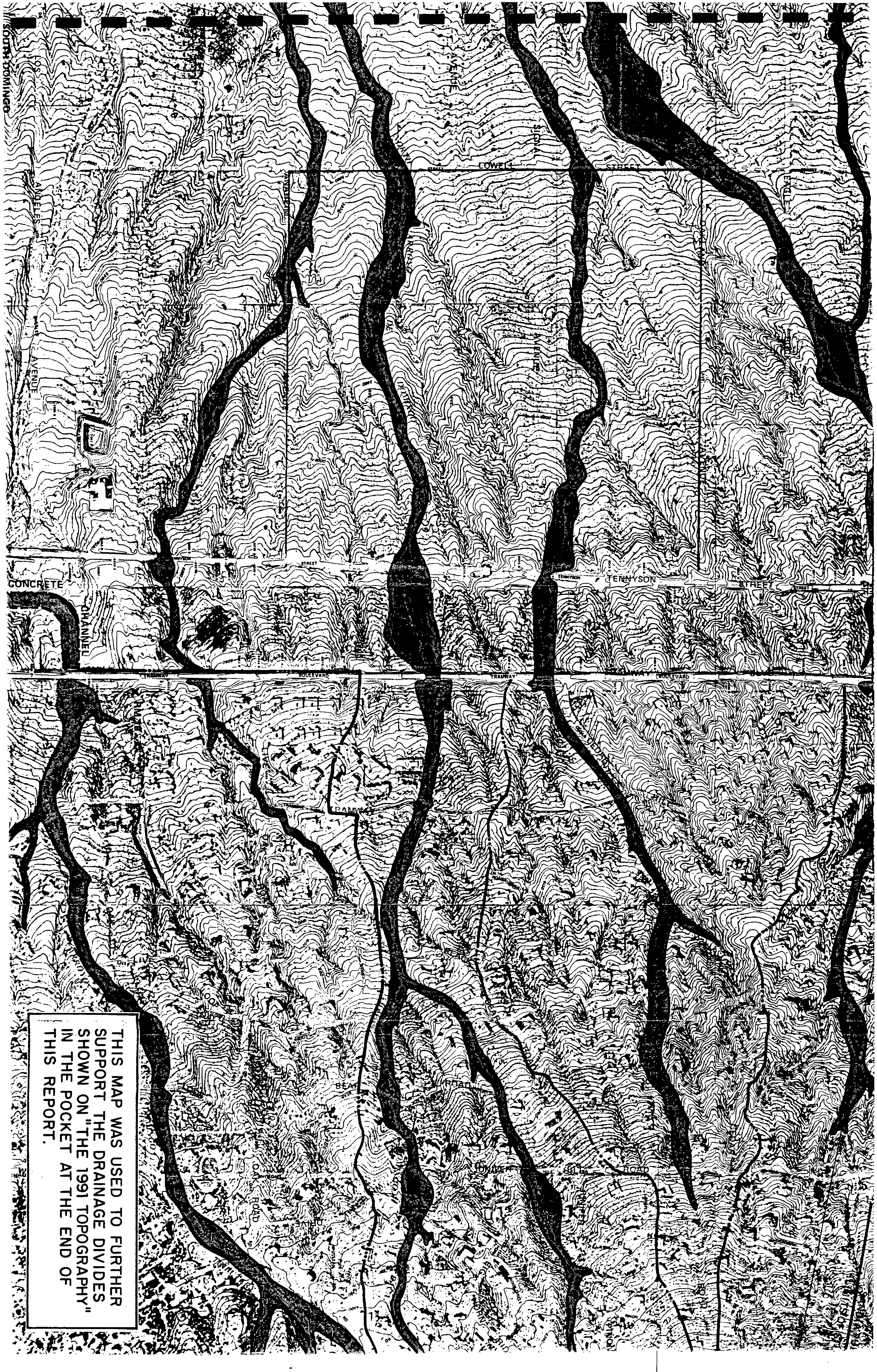
REVISED NOV. 30, 1992

LEGEND

- NDB-3 BASIN DESIGNATOR
- BASIN BOUNDARY
- SUB-BASIN BOUNDARY



NOTE:
PLATTING SHOWN IS REFLECTIVE OF THE
1988 BERNALILLO COUNTY ZONE ATLAS



THIS MAP WAS USED TO FURTHER
SUPPORT THE DRAINAGE DIVIDES
SHOWN ON "THE 1991 TOPOGRAPHY"
IN THE POCKET AT THE END OF
THIS REPORT.

DRAINAGE AREA SUMMARY*

PAGE 1 OF 2

EXISTING CONDITIONS			DEVELOPED CONDITIONS		
AREA#	AREA OFF-SITE (SQ. MI.)	AREA ON-SITE (SQ.MI.)	AREA#	AREA OFF-SITE (SQ. MI.)	AREA ON-SITE (SQ.MI.)
NLC-1	0.1865		NLC-1	0.1865	
NLC-2	0.3484		NLC-2	0.3484	
NLC-3	0.0368		NLC-3	0.0368	
NLC-4	0.0522		NLC-4	0.0522	
SUBTOTAL	0.6239		SUBTOTAL	0.6239	
OFF-2A	0.0316		OFF-2A	0.0316	
OFF-2		0.0135	OFF-2		0.0042
			LC-3A	0.0161	0.0030
SUBTOTAL	0.0316	0.0135	SUBTOTAL	0.0477	0.0072
LC-1	0.1524		LC-1	0.1524	
LC-2	0.0682		LC-2	0.0682	
LC-2A	0.0172		LC-2A	0.0172	
LC-3A	0.0161		A-1		0.0109
SLC-A	0.0186		A-2		0.0159
LC-3		0.1106	A-3		0.0150
			A-4		0.0092
			A-5		0.0079
			A-6		0.0140
			A-7		0.0043
			A-8		0.0030
			A-9		0.0020
			SLC-A	0.0186	
			A-10		0.0153
			A-11		0.0047
SUBTOTAL	0.2725	0.1106	SUBTOTAL	0.2564	0.1022

*These areas are to be used in final design analysis.

DRAINAGE AREA SUMMARY*

PAGE 2 OF 2

EXISTING CONDITIONS			DEVELOPED CONDITIONS		
AREA#	AREA OFF-SITE (SQ. MI.)	AREA ON-SITE (SQ.MI.)	AREA#	AREA OFF-SITE (SQ. MI.)	AREA ON-SITE (SQ.MI.)
NDB-1	0.6557	0.0707	NDB-1	0.6557	
NDB-2	0.1915		NDB-2	0.1915	
NDB-3	0.0462		NDB-3	0.0462	
NDB-4			B-5		0.0282
			B-10		0.0028
			B-9		0.0084
			B-8		0.0072
			B-7		0.0088
			B-13-B		0.0060
			B-13-A		0.0022
			B-2		0.0158
			B-12		0.0013
			B-2A		0.0096
			B-1		0.0073
			B-4		0.0036
			B-3		0.0069
			B-11		0.0011
SUBTOTAL	0.8934	0.0707	SUBTOTAL	0.8934	0.1092
OFF-1A	0.0795	0.0552	NDB-A	0.0116	0.0007
OFF-A			104.09		0.0034
			104.03		0.0089
			104.08		0.0017
			OFF-1A	0.0672	
			104.07		0.0040
			B-6		0.0117
			104.12		0.0013
SUBTOTAL	0.0795	0.0552	SUBTOTAL	0.0788	0.0317
TOTAL	1.9009	0.2500	TOTAL	1.9002	0.2503

*These areas are to be used in final design analysis.

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**NORTH DOMINGO BACA
EXISTING 2 YEAR FLOWS**

```
START                                TIME=0.0
*****COMPUTE HYDROGRAPHS FOR NORTH DOMINGO BACA ARROYO - EXISTING CONDITION
S
*      FILE NDB2EX.DAT
* BASIN DESIGNATION = NDB-1 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 101.0 DA=0.6557 SQ MI
                    PER A=.0 PER B=15.0 PER C=85.0 PER D=0.0 TP= -0.15
                    RAIN ONE= 0.98 RAIN SIX= 1.26
COMPUTE RATING CURVE RC=1 VS NO=1 NO SEGS=1 MIN ELEV=400 FT
                    MAX ELEV=410 FT CH SLP=0.07 FP
                    SLP= 0.07 N=0.03 DIST=200 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 410.0 100 400.0 200 410.0
COMPUTE TRAVEL TIME ID=6 REACH NO=1 NO VS=1 L=4000 FT SLP=0.07
ROUTE              ID=6 HYD NO= 101.1 INFLOW ID=1
* BASIN DESIGNATION = NDB-2 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 102.0 DA=0.1915 SQ MI
                    PER A=65.0 PER B=6.0 PER C=12.0 PER D=17.0 TP= -0.14
                    RAIN=-1.
ADD HYD              ID=2 HYD NO= 301.0 ID=1 ID=6
* COMBINED HYDROGRAPH FROM NDB-1 & NDB-2
COMPUTE RATING CURVE RC=2 VS NO=2 NO SEGS=1 MIN ELEV=300 FT
                    MAX ELEV=310 FT CH SLP=0.04 FP
                    SLP= 0.04 N=0.03 DIST=200 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 310.0 100 300.0 200 310.0
COMPUTE TRAVEL TIME ID=6 REACH NO=2 NO VS=2 L=900 FT SLP=0.04
ROUTE              ID=6 HYD NO= 102.1 INFLOW ID=2
* BASIN DESIGNATION = NDB-3 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 103.0 DA=0.0462 SQ MI
                    PER A=10.0 PER B=7.0 PER C=26.0 PER D=57.0 TP= -0.1333
                    RAIN=-1.
ADD HYD              ID=2 HYD NO= 303.0 ID=1 ID=6
PRINT HYD            ID=2 CODE=10
* COMBINED FROM NDB-1, NDB-2 & NDB-3
COMPUTE RATING CURVE RC=3 VS NO=3 NO SEGS=1 MIN ELEV=200 FT
                    MAX ELEV=210 FT CH SLP=0.045 FP
                    SLP= 0.045 N=0.027 DIST=100 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 210.0 45 205.0 50 200.0 55 205.0
                      100 210.0
COMPUTE TRAVEL TIME ID=6 REACH NO=3 NO VS=3 L=2950 FT SLP=0.045
ROUTE              ID=6 HYD NO= 303.1 INFLOW ID=2
PRINT HYD            ID=6 CODE=10
* BASIN DESIGNATION = NDB-4 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 104.0 DA=0.0707 SQ MI
                    PER A=54.0 PER B=46.0 PER C=00.0 PER D=00.0 TP= -0.1333
                    RAIN=-1.
PRINT HYD            ID=1 CODE=10
ADD HYD              ID=2 HYD NO= 303.4 ID=1 ID=6
* COMBINED FROM NDB-1, NDB-2, NDB-3 & NDB-4
PRINT HYD            ID=2 CODE=10
FINISH
```

RUN DATE (MON/DAY/YR) -02/02/1993
USER NO.- J HUGHES.S92

COMMAND			HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE - 1
NOTATION												
START												
COMPUTE	NM	HYD	101.00	-	1	.65570	297.16	8.561	.24480	1.533	.708	TIME=
ROUTE			101.10	1	6	.65570	230.81	8.561	.24480	1.600	.550	PER IMP=
COMPUTE	NM	HYD	102.00	-	1	.19150	55.61	2.136	.20914	1.533	.454	PER IMP=
ADD	HYD		301.00	1 & 6	2	.84720	275.42	10.697	.23674	1.600	.508	17.00
ROUTE			102.10	2	6	.84720	271.69	10.697	.23674	1.633	.501	
COMPUTE	NM	HYD	103.00	-	1	.04620	45.75	1.608	.65272	1.500	1.547	PER IMP=
ADD	HYD		303.00	1 & 6	2	.89340	300.23	12.305	.25825	1.600	.525	57.00
ROUTE			303.10	2	6	.89340	273.65	12.305	.25825	1.667	.479	
COMPUTE	NM	HYD	104.00	-	1	.07070	7.47	.195	.05177	1.533	.165	PER IMP=
ADD	HYD		303.40	1 & 6	2	.96410	277.91	12.500	.24311	1.667	.450	.00
FINISH												

AHYMO PROGRAM (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992
RUN DATE (MON/DAY/YR) = 02/02/1993
START TIME (HR:MIN:SEC) = 08:03:06 USER NO.= J_HUGHES.S92
INPUT FILE = NDB2EX.DAT

START TIME=0.0

*****COMPUTE HYDROGRAPHS FOR NORTH DOMINGO BACA ARROYO - EXISTING CONDITION
* FILE NDB2EX.DAT

* BASIN DESIGNATION = NDB-1 (EXISTING CONDITIONS)
COMPUTE NM HYD ID-1 HYD NO= 101.0 DA=0.6557 SQ MI
PER A=.0 PER B=15.0 PER C=85.0 PER D=0.0 TP= -0.15
RAIN ONE= 0.98 RAIN SIX= 1.26

COMPUTED RAINFALL DISTRIBUTION WITH DT=0.033333 HOURS

.0000	.0022	.0044	.0067	.0090	.0113	.0137
.0162	.0187	.0213	.0240	.0267	.0294	.0323
.0352	.0382	.0413	.0445	.0478	.0512	.0547
.0584	.0622	.0661	.0701	.0744	.0788	.0834
.0883	.0934	.0988	.1015	.1044	.1075	.1142
.1291	.1520	.1849	.2298	.2888	.3641	.4578
.5722	.6779	.7221	.7595	.7928	.8230	.8509
.8767	.9009	.9235	.9448	.9649	.9839	1.0019
1.0190	1.0351	1.0504	1.0650	1.0788	1.0824	1.0858
1.0890	1.0922	1.0952	1.0981	1.1010	1.1037	1.1064
1.1090	1.1115	1.1140	1.1164	1.1188	1.1211	1.1233
1.1255	1.1277	1.1298	1.1319	1.1340	1.1360	1.1379
1.1399	1.1418	1.1437	1.1455	1.1474	1.1492	1.1510
1.1527	1.1544	1.1561	1.1578	1.1595	1.1611	1.1628
1.1644	1.1660	1.1675	1.1691	1.1706	1.1721	1.1736
1.1751	1.1766	1.1780	1.1795	1.1809	1.1823	1.1837
1.1851	1.1865	1.1879	1.1892	1.1905	1.1919	1.1932
1.1945	1.1958	1.1971	1.1984	1.1996	1.2009	1.2021
1.2034	1.2046	1.2058	1.2070	1.2082	1.2094	1.2106
1.2118	1.2130	1.2141	1.2153	1.2164	1.2176	1.2187
1.2198	1.2209	1.2220	1.2231	1.2242	1.2253	1.2264
1.2275	1.2286	1.2296	1.2307	1.2317	1.2328	1.2338
1.2349	1.2359	1.2369	1.2379	1.2389	1.2399	1.2409
1.2419	1.2429	1.2439	1.2449	1.2459	1.2469	1.2478
1.2488	1.2497	1.2507	1.2517	1.2526	1.2535	1.2545
1.2554	1.2563	1.2573	1.2582	1.2591	1.2600	

K = .165812HR TP = .150000HR K/TP RATIO = 1.105413 SHAPE CONSTANT, N = 3.198376
UNIT PEAK = 1301.0 CFS UNIT VOLUME = 1.000 B = 297.62 P60 = .98000
AREA = .655700 SQ MI IA = .37250 INCHES INF = .89300 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

COMPUTE RATING CURVE RC=1 VS NO=1 NO SEGS=1 MIN ELEV=400 FT
MAX ELEV=410 FT CH SLP=0.07 FP
SLP= 0.07 N=0.03 DIST=200 FT
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 410.0 100 400.0 200 410.0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
400.00	.0	.0
400.53	2.8	14.9
401.05	11.1	94.3
401.58	24.9	278.1
402.11	44.3	599.0
402.63	69.2	1086.1
403.16	99.7	1766.1
403.68	135.7	2664.1
404.21	177.3	3803.6
404.74	224.4	5207.2
405.26	277.0	6896.4
405.79	335.2	8892.1
406.32	398.9	11214.3
406.84	468.1	13882.7
407.37	542.9	16916.0
407.89	623.2	20333.0
408.42	709.1	24151.5
408.95	800.5	28389.3
409.47	897.5	33063.7
410.00	1000.0	38191.5

COMPUTE TRAVEL TIME ID=6 REACH NO=1 NO VS=1 L=4000 FT SLP=0.07

TRAVEL TIME TABLE REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.526	2.770	14.86	.2071
1.053	11.080	94.34	.1305
1.579	24.930	278.15	.0996
2.105	44.320	599.03	.0822
2.632	69.250	1086.11	.0708
3.158	99.719	1766.14	.0627
3.684	135.729	2664.10	.0566
4.210	177.279	3803.61	.0518
4.737	224.369	5207.19	.0479
5.263	276.998	6896.42	.0446
5.789	335.168	8892.09	.0419
6.316	398.877	11214.34	.0395
6.842	468.127	13882.66	.0375
7.368	542.916	16916.04	.0357
7.895	623.246	20332.96	.0341
8.421	709.115	24151.49	.0326
8.947	800.525	28389.29	.0313
9.474	897.474	33063.66	.0302
10.000	999.963	38191.55	.0291

ROUTE ID=6 HYD NO= 101.1 INFLOW ID=1
* BASIN DESIGNATION = NDB-2 (EXISTING CONDITIONS)
COMPUTE NM HYD ID=1 HYD NO= 102.0 DA=0.1915 SQ MI
PER A=65.0 PER B=6.0 PER C=12.0 PER D=17.0 TP= -0.14
RAIN=-1.

K = .089203HR TP = .140000HR K/TP RATIO = .637161 SHAPE CONSTANT, N = 5.844435
UNIT PEAK = 107.81 CFS UNIT VOLUME = 1.000 B = 463.64 P60 = .98000
AREA = .032555 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .176567HR TP = .140000HR K/TP RATIO = 1.261191 SHAPE CONSTANT, N = 2.830995
UNIT PEAK = 303.97 CFS UNIT VOLUME = .9995 B = 267.74 P60 = .98000
AREA = .158945 SQ MI IA = .59578 INCHES INF = 1.51819 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

ADD HYD ID=2 HYD NO= 301.0 ID=1 ID=6
* COMBINED HYDROGRAPH FROM NDB-1 & NDB-2
COMPUTE RATING CURVE RC=2 VS NO=2 NO SEGS=1 MIN ELEV=300 FT
MAX ELEV=310 FT CH SLP=0.04 FP
SLP= 0.04 N=0.03 DIST=200 FT
DIST ELEV DIST ELEV DIST ELEV DIST ELEV

0 310.0 100 300.0 200 310.0

RATING CURVE VALLEY SECTION 2.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
300.00	.0	.0
300.53	2.8	11.2
301.05	11.1	71.3
301.58	24.9	210.3
302.11	44.3	452.8
302.63	69.2	821.0
303.16	99.7	1335.1
303.68	135.7	2013.9
304.21	177.3	2875.3
304.74	224.4	3936.3
305.26	277.0	5213.2
305.79	335.2	6721.8
306.32	398.9	8477.2
306.84	468.1	10494.3
307.37	542.9	12787.3
307.89	623.2	15370.3
308.42	709.1	18256.8
308.95	800.5	21460.3
309.47	897.5	24993.8
310.00	1000.0	28870.1

COMPUTE TRAVEL TIME ID=6 REACH NO=2 NO VS=2 L=900 FT SLP=0.04

TRAVEL TIME TABLE

REACH= 2.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.462	2.432	11.23	.0541
.976	9.876	71.32	.0346
1.482	22.372	210.26	.0266
1.985	39.902	452.82	.0220
2.488	62.466	821.03	.0190
2.991	90.062	1335.08	.0169
3.494	122.691	2013.87	.0152
3.996	160.354	2875.26	.0139
4.498	203.049	3936.26	.0129
5.001	250.777	5213.20	.0120
5.499	303.363	6721.79	.0113
5.998	360.977	8477.24	.0106
6.497	423.625	10494.30	.0101
6.997	491.308	12787.32	.0096
7.497	564.025	15370.27	.0092
7.998	641.776	18256.81	.0088
8.499	724.561	21460.29	.0084
9.000	812.379	24993.78	.0081
9.501	905.230	28870.09	.0078

ROUTE ID=6 HYD NO= 102.1 INFLOW ID=2
* BASIN DESIGNATION = NDB-3 (EXISTING CONDITIONS)
COMPUTE NM HYD ID=1 HYD NO= 103.0 DA=0.0462 SQ MI
PER A=10.0 PER B=7.0 PER C=26.0 PER D=57.0 TP= -0.1333
RAIN=-1.

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 103.97 CFS UNIT VOLUME = .9993 B = 526.28 P60 = .98000
AREA = .026334 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .132665HR TP = .133300HR K/TP RATIO = .995236 SHAPE CONSTANT, N = 3.547403
UNIT PEAK = 48.253 CFS UNIT VOLUME = 1.000 B = 323.77 P60 = .98000
AREA = .019866 SQ MI IA = .44419 INCHES INF = 1.09372 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

ADD HYD ID=2 HYD NO= 303.0 ID=1 ID=6
PRINT HYD ID=2 CODE=10

HYDROGRAPH FROM AREA 303.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	282.1	3.333	4.4	5.000	.8	6.667	.0
.333	.0	2.000	84.6	3.667	2.4	5.333	.8	7.000	.0
.667	.0	2.333	31.5	4.000	1.5	5.667	.9	7.333	.0
1.000	.0	2.667	16.0	4.333	1.0	6.000	1.0		
1.333	19.6	3.000	8.4	4.667	.8	6.333	.2		

RUNOFF VOLUME = .25825 INCHES = 12.3052 ACRE-FEET
PEAK DISCHARGE RATE = 300.23 CFS AT 1.600 HOURS BASIN AREA = .8934 SQ. MI.

* COMBINED FROM NDB-1, NDB-2 & NDB-3
COMPUTE RATING CURVE RC=3 VS NO=3 NO SEGS=1 MIN ELEV=200 FT
MAX ELEV=210 FT CH SLP=0.045 FP
SLP= 0.045 N=0.027 DIST=100 FT
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 210.0 45 205.0 50 200.0 55 205.0
100 210.0

RATING CURVE VALLEY SECTION 3.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
200.00	.0	.0
200.53	.3	1.1
201.05	1.1	6.7
201.58	2.5	19.7
202.11	4.4	42.5
202.63	6.9	77.1
203.16	10.0	125.3
203.68	13.6	189.0
204.21	17.7	269.9
204.74	22.4	369.4
205.26	28.3	431.2
205.79	38.5	550.2
206.32	53.7	790.9
206.84	74.0	1160.0
207.37	99.2	1674.2
207.89	129.4	2352.1
208.42	164.5	3212.4
208.95	204.7	4273.2
209.47	249.9	5552.2
210.00	300.0	7066.5

COMPUTE TRAVEL TIME ID=6 REACH NO=3 NO VS=3 L=2950 FT SLP=0.045

TRAVEL TIME TABLE
REACH= 3.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.204	.245	1.05	.1901
.534	1.336	6.69	.1635
.913	3.240	19.73	.1345
1.205	5.729	42.50	.1105
1.548	9.284	77.06	.0987
1.852	13.282	125.31	.0869
2.169	18.200	189.01	.0789
2.491	23.909	269.86	.0726
2.797	30.180	369.44	.0669
3.050	35.007	431.18	.0665
3.353	43.595	550.18	.0649
3.739	58.365	790.92	.0605
4.170	78.623	1160.03	.0555
4.625	104.161	1674.22	.0510
5.096	134.877	2352.11	.0470
5.579	170.837	3212.38	.0436
6.070	212.002	4273.22	.0407
6.566	258.353	5552.23	.0381
7.067	309.881	7066.49	.0359

ROUTE ID=6 HYD NO= 303.1 INFLOW ID=2
PRINT HYD ID=6 CODE=10

HYDROGRAPH FROM AREA 303.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	273.6	3.333	6.0	5.000	.8	6.667	.2
.333	.0	2.000	110.7	3.667	3.4	5.333	.8	7.000	.0
.667	.0	2.333	40.6	4.000	2.0	5.667	.8	7.333	.0
1.000	.0	2.667	20.0	4.333	1.3	6.000	.9	7.667	.0
1.333	6.0	3.000	10.9	4.667	.9	6.333	.5		

RUNOFF VOLUME = .25825 INCHES = 12.3052 ACRE-Feet
PEAK DISCHARGE RATE = 273.65 CFS AT 1.667 HOURS BASIN AREA = .8934 SQ. MI.

* BASIN DESIGNATION = NDB-4 (EXISTING CONDITIONS)
COMPUTE NM HYD ID=1 HYD NO= 104.0 DA=0.0707 SQ MI
PER A=54.0 PER B=46.0 PER C=00.0 PER D=00.0 TP= -0.1333
RAIN=-1.

K = .164850HR TP = .133300HR K/TP RATIO = 1.236681 SHAPE CONSTANT, N = 2.881233
UNIT PEAK = 144.26 CFS UNIT VOLUME = .9995 B = 271.99 P60 = .98000
AREA = .070700 SQ MI IA = .58100 INCHES INF = 1.47680 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 104.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.0	2.667	.2	4.000	.0		
.333	.0	1.667	4.3	3.000	.1	4.333	.0		
.667	.0	2.000	.7	3.333	.0	4.667	.0		
1.000	.0	2.333	.3	3.667	.0	5.000	.0		

RUNOFF VOLUME = .05177 INCHES = .1952 ACRE-Feet
PEAK DISCHARGE RATE = 7.47 CFS AT 1.533 HOURS BASIN AREA = .0707 SQ. MI.

ADD HYD ID=2 HYD NO= 303.4 ID=1 ID=6
* COMBINED FROM NDB-1, NDB-2, NDB-3 & NDB-4
PRINT HYD ID=2 CODE=10

HYDROGRAPH FROM AREA 303.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	277.9	3.333	6.0	5.000	.8	6.667	.2
.333	.0	2.000	111.4	3.667	3.4	5.333	.8	7.000	.0
.667	.0	2.333	40.9	4.000	2.0	5.667	.8	7.333	.0
1.000	.0	2.667	20.2	4.333	1.3	6.000	.9	7.667	.0
1.333	6.0	3.000	11.0	4.667	.9	6.333	.5		

RUNOFF VOLUME = .24311 INCHES = 12.5004 ACRE-Feet
PEAK DISCHARGE RATE = 277.91 CFS AT 1.667 HOURS BASIN AREA = .9641 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:03:09

**NORTH DOMINGO BACA
EXISTING 10 YEAR FLOWS**

```
START                                TIME=0.0
*****COMPUTE HYDROGRAPHS FOR NORTH DOMINGO BACA ARROYO - EXISTING CONDITION
S
*      FILE NDB10EX.DAT
* BASIN DESIGNATION = NDB-1 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 101.0 DA=0.6557 SQ MI
                    PER A=.0 PER B=15.0 PER C=85.0 PER D=0.0 TP= -0.15
                    RAIN ONE= 1.50 RAIN SIX= 1.93
COMPUTE RATING CURVE RC=1 VS NO=1 NO SEGS=1 MIN ELEV=400 FT
                    MAX ELEV=410 FT CH SLP=0.07 FP
                    SLP= 0.07 N=0.03 DIST=200 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 410.0 100 400.0 200 410.0
COMPUTE TRAVEL TIME ID=6 REACH NO=1 NO VS=1 L=4000 FT SLP=0.07
ROUTE              ID=6 HYD NO= 101.1 INFLOW ID=1
* BASIN DESIGNATION = NDB-2 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 102.0 DA=0.1915 SQ MI
                    PER A=65.0 PER B=6.0 PER C=12.0 PER D=17.0 TP= -0.14
                    RAIN=-1.
ADD HYD              ID=2 HYD NO= 301.0 ID=1 ID=6
* COMBINED HYDROGRAPH FROM NDB-1 & NDB-2
COMPUTE RATING CURVE RC=2 VS NO=2 NO SEGS=1 MIN ELEV=300 FT
                    MAX ELEV=310 FT CH SLP=0.04 FP
                    SLP= 0.04 N=0.03 DIST=200 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 310.0 100 300.0 200 310.0
COMPUTE TRAVEL TIME ID=6 REACH NO=2 NO VS=2 L=900 FT SLP=0.04
ROUTE              ID=6 HYD NO= 102.1 INFLOW ID=2
* BASIN DESIGNATION = NDB-3 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 103.0 DA=0.0462 SQ MI
                    PER A=10.0 PER B=7.0 PER C=26.0 PER D=57.0 TP= -0.1333
                    RAIN=-1.
ADD HYD              ID=2 HYD NO= 303.0 ID=1 ID=6
PRINT HYD            ID=2          CODE=10
* COMBINED FROM NDB-1, NDB-2 & NDB-3
COMPUTE RATING CURVE RC=3 VS NO=3 NO SEGS=1 MIN ELEV=200 FT
                    MAX ELEV=210 FT CH SLP=0.045 FP
                    SLP= 0.045 N=0.027 DIST=100 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 210.0 45 205.0 50 200.0 55 205.0
                      100 210.0
COMPUTE TRAVEL TIME ID=6 REACH NO=3 NO VS=3 L=2950 FT SLP=0.045
ROUTE              ID=6 HYD NO= 303.1 INFLOW ID=2
PRINT HYD            ID=6          CODE=10
* BASIN DESIGNATION = NDB-4 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 104.0 DA=0.0707 SQ MI
                    PER A=54.0 PER B=46.0 PER C=00.0 PER D=00.0 TP= -0.1333
                    RAIN=-1.
PRINT HYD            ID=1          CODE=10
ADD HYD              ID=2 HYD NO= 303.4 ID=1 ID=6
* COMBINED FROM NDB-1, NDB-2, NDB-3 & NDB-4
PRINT HYD            ID=2          CODE=10
FINISH
```

RUN DATE (MON/DAY/YR) -02/02/1993
USER NO.- J HUGHES.S92

COMMAND			HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE - 1 NOTATION
START												
COMPUTE	NM	HYD	101.00	-	1	.65570	786.43	23.271	.66543	1.533	1.874	TIME= .00
ROUTE			101.10	1	6	.65570	675.17	23.271	.66543	1.600	1.609	PER IMP= .00
COMPUTE	NM	HYD	102.00	-	1	.19150	170.29	5.701	.55820	1.533	1.389	PER IMP= 17.00
ADD HYD			301.00	1 & 6	2	.84720	818.73	28.972	.64119	1.567	1.510	
ROUTE			102.10	2	6	.84720	820.02	28.972	.64119	1.600	1.512	
COMPUTE	NM	HYD	103.00	-	1	.04620	80.89	2.928	1.18817	1.500	2.736	PER IMP= 57.00
ADD HYD			303.00	1 & 6	2	.89340	876.77	31.899	.66948	1.600	1.533	
ROUTE			303.10	2	6	.89340	806.91	31.899	.66948	1.633	1.411	
COMPUTE	NM	HYD	104.00	-	1	.07070	48.25	1.304	.34587	1.533	1.066	PER IMP= .00
ADD HYD			303.40	1 & 6	2	.96410	837.85	33.203	.64575	1.633	1.358	
FINISH												

AHYMO PROGRAM (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992
RUN DATE (MON/DAY/YR) = 02/02/1993
START TIME (HR:MIN:SEC) = 08:14:31 USER NO.- J_HUGHES.S92
INPUT FILE = NDB10EX.DAT

START TIME-0.0

*****COMPUTE HYDROGRAPHS FOR NORTH DOMINGO BACA ARROYO - EXISTING CONDITION

* FILE NDB10EX.DAT

* BASIN DESIGNATION - NDB-1 (EXISTING CONDITIONS)

COMPUTE NM HYD ID-1 HYD NO= 101.0 DA=0.6557 SQ MI
PER A=.0 PER B=15.0 PER C=85.0 PER D=0.0 TP= -0.15
RAIN ONE= 1.50 RAIN SIX= 1.93

COMPUTED RAINFALL DISTRIBUTION WITH DT=0.033333 HOURS

.0000	.0034	.0068	.0103	.0138	.0175	.0212
.0250	.0289	.0328	.0369	.0411	.0454	.0498
.0543	.0589	.0637	.0686	.0737	.0789	.0843
.0899	.0957	.1018	.1080	.1146	.1214	.1285
.1360	.1438	.1522	.1563	.1607	.1655	.1757
.1985	.2336	.2839	.3527	.4430	.5582	.7016
.8767	1.0385	1.1063	1.1635	1.2144	1.2606	1.3033
1.3429	1.3798	1.4145	1.4471	1.4779	1.5070	1.5345
1.5606	1.5853	1.6087	1.6310	1.6522	1.6576	1.6628
1.6678	1.6726	1.6773	1.6818	1.6861	1.6903	1.6944
1.6984	1.7023	1.7061	1.7098	1.7134	1.7169	1.7204
1.7237	1.7271	1.7303	1.7335	1.7367	1.7397	1.7428
1.7457	1.7487	1.7516	1.7544	1.7572	1.7600	1.7627
1.7654	1.7680	1.7707	1.7732	1.7758	1.7783	1.7808
1.7833	1.7857	1.7881	1.7905	1.7928	1.7952	1.7975
1.7997	1.8020	1.8042	1.8064	1.8086	1.8108	1.8130
1.8151	1.8172	1.8193	1.8214	1.8234	1.8255	1.8275
1.8295	1.8315	1.8334	1.8354	1.8373	1.8393	1.8412
1.8431	1.8450	1.8468	1.8487	1.8505	1.8524	1.8542
1.8560	1.8578	1.8596	1.8613	1.8631	1.8649	1.8666
1.8683	1.8700	1.8717	1.8734	1.8751	1.8768	1.8784
1.8801	1.8817	1.8834	1.8850	1.8866	1.8882	1.8898
1.8914	1.8930	1.8946	1.8961	1.8977	1.8992	1.9008
1.9023	1.9038	1.9053	1.9068	1.9083	1.9098	1.9113
1.9128	1.9143	1.9157	1.9172	1.9186	1.9201	1.9215
1.9229	1.9244	1.9258	1.9272	1.9286	1.9300	

K = .131909HR TP = .150000HR K/TP RATIO = .879397 SHAPE CONSTANT, N = 4.036507
UNIT PEAK = 1563.2 CFS UNIT VOLUME = 1.000 B = 357.60 P60 = 1.5000
AREA = .655700 SQ MI IA = .37250 INCHES INF = .89300 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

COMPUTE RATING CURVE RC-1 VS NO-1 NO SEGS-1 MIN ELEV-400 FT
MAX ELEV-410 FT CH SLP=0.07 FP
SLP= 0.07 N=0.03 DIST=200 FT
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 410.0 100 400.0 200 410.0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
400.00	.0	.0
400.53	2.8	14.9
401.05	11.1	94.3
401.58	24.9	278.1
402.11	44.3	599.0
402.63	69.2	1086.1
403.16	99.7	1766.1
403.68	135.7	2664.1
404.21	177.3	3803.6
404.74	224.4	5207.2
405.26	277.0	6896.4
405.79	335.2	8892.1
406.32	398.9	11214.3
406.84	468.1	13882.7
407.37	542.9	16916.0
407.89	623.2	20333.0
408.42	709.1	24151.5
408.95	800.5	28389.3
409.47	897.5	33063.7
410.00	1000.0	38191.5

COMPUTE TRAVEL TIME ID-6 REACH NO-1 NO VS-1 L=4000 FT SLP=0.07

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.526	2.770	14.86	.2071
1.053	11.080	94.34	.1305
1.579	24.930	278.15	.0996
2.105	44.320	599.03	.0822
2.632	69.250	1086.11	.0708
3.158	99.719	1766.14	.0627
3.684	135.729	2664.10	.0566
4.210	177.279	3803.61	.0518
4.737	224.369	5207.19	.0479
5.263	276.998	6896.42	.0446
5.789	335.168	8892.09	.0419
6.316	398.877	11214.34	.0395
6.842	468.127	13882.66	.0375
7.368	542.916	16916.04	.0357
7.895	623.246	20332.96	.0341
8.421	709.115	24151.49	.0326
8.947	800.525	28389.29	.0313
9.474	897.474	33063.66	.0302
10.000	999.963	38191.55	.0291

ROUTE ID-6 HYD NO= 101.1 INFLOW ID=1

* BASIN DESIGNATION - NDB-2 (EXISTING CONDITIONS)

COMPUTE NM HYD ID-1 HYD NO= 102.0 DA=0.1915 SQ MI
PER A=65.0 PER B=6.0 PER C=12.0 PER D=17.0 TP= -0.14
RAIN=-1.

K = .081352HR TP = .140000HR K/TP RATIO = .581085 SHAPE CONSTANT, N = 6.551057
UNIT PEAK = 116.17 CFS UNIT VOLUME = .9998 B = 499.58 P60 = 1.5000
AREA = .032555 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .159212HR TP = .140000HR K/TP RATIO = 1.137226 SHAPE CONSTANT, N = 3.113108
UNIT PEAK = 330.28 CFS UNIT VOLUME = 1.000 B = 290.92 P60 = 1.5000
AREA = .158945 SQ MI IA = .59578 INCHES INF = 1.51819 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

ADD HYD ID-2 HYD NO= 301.0 ID-1 ID=6

* COMBINED HYDROGRAPH FROM NDB-1 & NDB-2

COMPUTE RATING CURVE RC-2 VS NO-2 NO SEGS-1 MIN ELEV-300 FT
MAX ELEV-310 FT CH SLP=0.04 FP
SLP= 0.04 N=0.03 DIST=200 FT
DIST ELEV DIST ELEV DIST ELEV DIST ELEV

0 310.0 100 300.0 200 310.0

RATING CURVE VALLEY SECTION 2.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
300.00	.0	.0
300.53	2.8	11.2
301.05	11.1	71.3
301.58	24.9	210.3
302.11	44.3	452.8
302.63	69.2	821.0
303.16	99.7	1335.1
303.68	135.7	2013.9
304.21	177.3	2875.3
304.74	224.4	3936.3
305.26	277.0	5213.2
305.79	335.2	6721.8
306.32	398.9	8477.2
306.84	468.1	10494.3
307.37	542.9	12787.3
307.89	623.2	15370.3
308.42	709.1	18256.8
308.95	800.5	21460.3
309.47	897.5	24993.8
310.00	1000.0	28870.1

COMPUTE TRAVEL TIME ID=6 REACH NO=2 NO VS=2 L=900 FT SLP=0.04

TRAVEL TIME TABLE

REACH= 2.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.462	2.432	11.23	.0541
.976	9.876	71.32	.0346
1.482	22.372	210.26	.0266
1.985	39.902	452.82	.0220
2.488	62.466	821.03	.0190
2.991	90.062	1335.08	.0169
3.494	122.691	2013.87	.0152
3.996	160.354	2875.26	.0139
4.498	203.049	3936.26	.0129
5.001	250.777	5213.20	.0120
5.499	303.363	6721.79	.0113
5.998	360.977	8477.24	.0106
6.497	423.625	10494.30	.0101
6.997	491.308	12787.32	.0096
7.497	564.025	15370.27	.0092
7.998	641.776	18256.81	.0088
8.499	724.561	21460.29	.0084
9.000	812.379	24993.78	.0081
9.501	905.230	28870.09	.0078

ROUTE ID=6 HYD NO= 102.1 INFLOW ID=2
* BASIN DESIGNATION = NDB-3 (EXISTING CONDITIONS)
COMPUTE NM HYD ID=1 HYD NO= 103.0 DA=0.0462 SQ MI
PER A=10.0 PER B=7.0 PER C=26.0 PER D=57.0 TP= -0.1333
RAIN=-1.

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 103.97 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 1.5000
AREA = .026334 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .126422HR TP = .133300HR K/TP RATIO = .948404 SHAPE CONSTANT, N = 3.727089
UNIT PEAK = 50.156 CFS UNIT VOLUME = .9999 B = 336.54 P60 = 1.5000
AREA = .019866 SQ MI IA = .44419 INCHES INF = 1.09372 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

ADD HYD ID=2 HYD NO= 303.0 ID=1 ID=6
PRINT HYD ID=2 CODE=10

HYDROGRAPH FROM AREA 303.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	755.7	3.333	8.1	5.000	1.4	6.667	.1
.333	.0	2.000	190.0	3.667	4.3	5.333	1.4	7.000	.0
.667	.0	2.333	62.1	4.000	2.6	5.667	1.5	7.333	.0
1.000	4.4	2.667	31.2	4.333	1.8	6.000	1.5		
1.333	34.1	3.000	15.9	4.667	1.5	6.333	.2		

RUNOFF VOLUME = .66948 INCHES = 31.8991 ACRE-Feet
PEAK DISCHARGE RATE = 876.77 CFS AT 1.600 HOURS BASIN AREA = .8934 SQ. MI.

* COMBINED FROM NDB-1, NDB-2 & NDB-3
COMPUTE RATING CURVE RC=3 VS NO=3 NO SEGS=1 MIN ELEV=200 FT
MAX ELEV=210 FT CH SLP=0.045 FP
SLP= 0.045 N=0.027 DIST=100 FT
DIST ELEV DIST ELEV DIST ELEV DIST ELEV
0 210.0 45 205.0 50 200.0 55 205.0
100 210.0

RATING CURVE VALLEY SECTION 3.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
200.00	.0	.0
200.53	.3	1.1
201.05	1.1	6.7
201.58	2.5	19.7
202.11	4.4	42.5
202.63	6.9	77.1
203.16	10.0	125.3
203.68	13.6	189.0
204.21	17.7	269.9
204.74	22.4	369.4
205.26	28.3	431.2
205.79	38.5	550.2
206.32	53.7	790.9
206.84	74.0	1160.0
207.37	99.2	1674.2
207.89	129.4	2352.1
208.42	164.5	3212.4
208.95	204.7	4273.2
209.47	249.9	5552.2
210.00	300.0	7066.5

COMPUTE TRAVEL TIME ID-6 REACH NO-3 NO VS-3 L-2950 FT SLP=0.045

TRAVEL TIME TABLE
REACH= 3.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.204	.245	1.05	.1901
.534	1.336	6.69	.1635
.913	3.240	19.73	.1345
1.205	5.729	42.50	.1105
1.548	9.284	77.06	.0987
1.852	13.282	125.31	.0869
2.169	18.200	189.01	.0789
2.491	23.909	269.86	.0726
2.797	30.180	369.44	.0669
3.050	35.007	431.18	.0665
3.353	43.595	550.18	.0649
3.739	58.365	790.92	.0605
4.170	78.623	1160.03	.0555
4.625	104.161	1674.22	.0510
5.096	134.877	2352.11	.0470
5.579	170.837	3212.38	.0436
6.070	212.002	4273.22	.0407
6.566	258.353	5552.23	.0381
7.067	309.881	7066.49	.0359

ROUTE ID-6 HYD NO= 303.1 INFLOW ID-2
PRINT HYD ID-6 CODE=10

HYDROGRAPH FROM AREA 303.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	797.4	3.333	10.7	5.000	1.5	6.667	.2
.333	.0	2.000	246.4	3.667	5.8	5.333	1.4	7.000	.1
.667	.0	2.333	79.3	4.000	3.4	5.667	1.4	7.333	.0
1.000	1.6	2.667	37.7	4.333	2.2	6.000	1.5	7.667	.0
1.333	13.6	3.000	20.0	4.667	1.7	6.333	.8		

RUNOFF VOLUME = .66948 INCHES = 31.8991 ACRE-FEET
PEAK DISCHARGE RATE = 806.91 CFS AT 1.633 HOURS BASIN AREA = .8934 SQ. MI.

* BASIN DESIGNATION = NDB-4 (EXISTING CONDITIONS)
COMPUTE NM HYD ID-1 HYD NO= 104.0 DA=0.0707 SQ MI
PER A=54.0 PER B=46.0 PER C=00.0 PER D=00.0 TP= -0.1333
RAIN=-1.

K = .156175HR TP = .133300HR K/TP RATIO = 1.171602 SHAPE CONSTANT, N = 3.027420
UNIT PEAK = 150.66 CFS UNIT VOLUME = .9997 B = 284.05 P60 = 1.5000
AREA = .070700 SQ MI IA = .58100 INCHES INF = 1.47680 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID-1 CODE=10

PARTIAL HYDROGRAPH 104.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.0	2.667	1.0	4.000	.1	5.333	.0
.333	.0	1.667	25.1	3.000	.5	4.333	.0		
.667	.0	2.000	4.2	3.333	.2	4.667	.0		
1.000	.0	2.333	2.1	3.667	.1	5.000	.0		

RUNOFF VOLUME = .34587 INCHES = 1.3042 ACRE-FEET
PEAK DISCHARGE RATE = 48.25 CFS AT 1.533 HOURS BASIN AREA = .0707 SQ. MI.

ADD HYD ID-2 HYD NO= 303.4 ID-1 ID-6
* COMBINED FROM NDB-1, NDB-2, NDB-3 & NDB-4
PRINT HYD ID-2 CODE=10

HYDROGRAPH FROM AREA 303.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	822.5	3.333	11.0	5.000	1.5	6.667	.2
.333	.0	2.000	250.6	3.667	6.0	5.333	1.4	7.000	.1
.667	.0	2.333	81.3	4.000	3.5	5.667	1.4	7.333	.0
1.000	1.6	2.667	38.7	4.333	2.3	6.000	1.5	7.667	.0
1.333	13.6	3.000	20.5	4.667	1.7	6.333	.8		

RUNOFF VOLUME = .64575 INCHES = 33.2033 ACRE-FEET
PEAK DISCHARGE RATE = 837.85 CFS AT 1.633 HOURS BASIN AREA = .9641 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:14:33

**NORTH DOMINGO BACA
EXISTING 100 YEAR FLOWS**

```
START                                TIME=0.0
*****COMPUTE HYDROGRAPHS FOR NORTH DOMINGO BACA ARROYO - EXISTING CONDITION
S
*      FILE NDB100EX.DAT
* BASIN DESIGNATION = NDB-1 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 101.0 DA=0.6557 SQ MI
                    PER A=.0 PER B=15.0 PER C=85.0 PER D=0.0 TP= -0.15
                    RAIN ONE= 2.25 RAIN SIX= 2.90
COMPUTE RATING CURVE RC=1 VS NO=1 NO SEGS=1 MIN ELEV=400 FT
                    MAX ELEV=410 FT CH SLP=0.07 FP
                    SLP= 0.07 N=0.03 DIST=200 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 410.0 100 400.0 200 410.0
COMPUTE TRAVEL TIME ID=6 REACH NO=1 NO VS=1 L=4000 FT SLP=0.07
ROUTE              ID=6 HYD NO= 101.1 INFLOW ID=1
* BASIN DESIGNATION = NDB-2 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 102.0 DA=0.1915 SQ MI
                    PER A=65.0 PER B=6.0 PER C=12.0 PER D=17.0 TP= -0.14
                    RAIN=-1.
ADD HYD             ID=2 HYD NO= 301.0 ID=1 ID=6
* COMBINED HYDROGRAPH FROM NDB-1 & NDB-2
COMPUTE RATING CURVE RC=2 VS NO=2 NO SEGS=1 MIN ELEV=300 FT
                    MAX ELEV=310 FT CH SLP=0.04 FP
                    SLP= 0.04 N=0.03 DIST=200 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 310.0 100 300.0 200 310.0
COMPUTE TRAVEL TIME ID=6 REACH NO=2 NO VS=2 L=900 FT SLP=0.04
ROUTE              ID=6 HYD NO= 102.1 INFLOW ID=2
* BASIN DESIGNATION = NDB-3 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 103.0 DA=0.0462 SQ MI
                    PER A=10.0 PER B=7.0 PER C=26.0 PER D=57.0 TP= -0.1333
                    RAIN=-1.
ADD HYD             ID=2 HYD NO= 303.0 ID=1 ID=6
PRINT HYD           ID=2 CODE=10
* COMBINED FROM NDB-1, NDB-2 & NDB-3
COMPUTE RATING CURVE RC=3 VS NO=3 NO SEGS=1 MIN ELEV=200 FT
                    MAX ELEV=210 FT CH SLP=0.045 FP
                    SLP= 0.045 N=0.027 DIST=100 FT
                    DIST ELEV DIST ELEV DIST ELEV DIST ELEV
                      0 210.0 45 205.0 50 200.0 55 205.0
                      100 210.0
COMPUTE TRAVEL TIME ID=6 REACH NO=3 NO VS=3 L=2950 FT SLP=0.045
ROUTE              ID=6 HYD NO= 303.1 INFLOW ID=2
PRINT HYD           ID=6 CODE=10
* BASIN DESIGNATION = NDB-4 (EXISTING CONDITIONS)
COMPUTE NM HYD      ID=1 HYD NO= 104.0 DA=0.0707 SQ MI
                    PER A=54.0 PER B=46.0 PER C=00.0 PER D=00.0 TP= -0.1333
                    RAIN=-1.
PRINT HYD           ID=1 CODE=10
ADD HYD             ID=2 HYD NO= 303.4 ID=1 ID=6
* COMBINED FROM NDB-1, NDB-2, NDB-3 & NDB-4
PRINT HYD           ID=2 CODE=10
FINISH
```

RUN DATE (MON/DAY/YR) -02/02/1993
USER NO.- J HUGHES.S92

[illegible]

AHYMO PROGRAM (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992
RUN DATE (MON/DAY/YR) = 02/02/1993
START TIME (HR:MIN:SEC) = 08:15:34 USER NO.= J_HUGHES.S92
INPUT FILE = NDB100EX.DAT

START

TIME=0.0

*****COMPUTE HYDROGRAPHS FOR NORTH DOMINGO BACA ARROYO - EXISTING CONDITION

* FILE NDB100EX.DAT

* BASIN DESIGNATION - NDB-1 (EXISTING CONDITIONS)

COMPUTE NM HYD ID=1 HYD NO= 101.0 DA=0.6557 SQ MI
PER A=.0 PER B=15.0 PER C=85.0 PER D=0.0 TP= -0.15
RAIN ONE= 2.25 RAIN SIX= 2.90

COMPUTED RAINFALL DISTRIBUTION WITH DT=0.033333 HOURS

.0000	.0051	.0103	.0156	.0210	.0266	.0322
.0380	.0439	.0500	.0562	.0625	.0691	.0757
.0826	.0897	.0969	.1044	.1121	.1201	.1284
.1369	.1457	.1549	.1644	.1743	.1847	.1956
.2069	.2189	.2315	.2378	.2444	.2515	.2668
.3010	.3536	.4292	.5323	.6679	.8407	1.0558
1.3183	1.5611	1.6627	1.7485	1.8249	1.8943	1.9582
2.0176	2.0731	2.1251	2.1740	2.2202	2.2638	2.3051
2.3442	2.3812	2.4164	2.4498	2.4815	2.4897	2.4975
2.5051	2.5123	2.5192	2.5260	2.5325	2.5388	2.5450
2.5510	2.5568	2.5625	2.5681	2.5735	2.5788	2.5840
2.5891	2.5941	2.5990	2.6038	2.6085	2.6131	2.6177
2.6222	2.6266	2.6309	2.6352	2.6394	2.6436	2.6477
2.6517	2.6557	2.6597	2.6636	2.6674	2.6712	2.6749
2.6787	2.6823	2.6859	2.6895	2.6931	2.6966	2.7000
2.7035	2.7069	2.7102	2.7136	2.7169	2.7201	2.7234
2.7266	2.7298	2.7329	2.7361	2.7392	2.7422	2.7453
2.7483	2.7513	2.7543	2.7572	2.7602	2.7631	2.7660
2.7688	2.7717	2.7745	2.7773	2.7801	2.7828	2.7856
2.7883	2.7910	2.7937	2.7964	2.7990	2.8016	2.8043
2.8069	2.8095	2.8120	2.8146	2.8171	2.8196	2.8222
2.8246	2.8271	2.8296	2.8320	2.8345	2.8369	2.8393
2.8417	2.8441	2.8465	2.8488	2.8512	2.8535	2.8558
2.8582	2.8605	2.8627	2.8650	2.8673	2.8695	2.8718
2.8740	2.8762	2.8784	2.8806	2.8828	2.8850	2.8872
2.8893	2.8915	2.8936	2.8958	2.8979	2.9000	

K = .113210HR TP = .150000HR K/TP RATIO = .754731 SHAPE CONSTANT, N = 4.783422
UNIT PEAK = 1767.8 CFS UNIT VOLUME = 1.000 B = 404.40 P60 = 2.2500
AREA = .655700 SQ MI IA = .37250 INCHES INF = .89300 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

COMPUTE RATING CURVE RC-1 VS NO-1 NO SEGS=1 MIN ELEV=400 FT

MAX ELEV=410 FT CH SLP=0.07 FP
SLP= 0.07 N=0.03 DIST=200 FT
DIST ELEV DIST ELEV DIST ELEV
0 410.0 100 400.0 200 410.0

RATING CURVE VALLEY SECTION 1.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
400.00	.0	.0
400.53	2.8	14.9
401.05	11.1	94.3
401.58	24.9	278.1
402.11	44.3	599.0
402.63	69.2	1086.1
403.16	99.7	1766.1
403.68	135.7	2664.1
404.21	177.3	3803.6
404.74	224.4	5207.2
405.26	277.0	6896.4
405.79	335.2	8892.1
406.32	398.9	11214.3
406.84	468.1	13882.7
407.37	542.9	16916.0
407.89	623.2	20333.0
408.42	709.1	24151.5
408.95	800.5	28389.3
409.47	897.5	33063.7
410.00	1000.0	38191.5

COMPUTE TRAVEL TIME ID=6 REACH NO=1 NO VS=1 L=4000 FT SLP=0.07

TRAVEL TIME TABLE

REACH= 1.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.526	2.770	14.86	.2071
1.053	11.080	94.34	.1305
1.579	24.930	278.15	.0996
2.105	44.320	599.03	.0822
2.632	69.250	1086.11	.0708
3.158	99.719	1766.14	.0627
3.684	135.729	2664.10	.0566
4.210	177.279	3803.61	.0518
4.737	224.369	5207.19	.0479
5.263	276.998	6896.42	.0446
5.789	335.168	8892.09	.0419
6.316	398.877	11214.34	.0395
6.842	468.127	13882.66	.0375
7.368	542.916	16916.04	.0357
7.895	623.246	20332.96	.0341
8.421	709.115	24151.49	.0326
8.947	800.525	28389.29	.0313
9.474	897.474	33063.66	.0302
10.000	999.963	38191.55	.0291

ROUTE ID=6 HYD NO= 101.1 INFLOW ID=1

* BASIN DESIGNATION - NDB-2 (EXISTING CONDITIONS)

COMPUTE NM HYD ID=1 HYD NO= 102.0 DA=0.1915 SQ MI
PER A=65.0 PER B=6.0 PER C=12.0 PER D=17.0 TP= -0.14
RAIN=-1.

K = .077022HR TP = .140000HR K/TP RATIO = .550155 SHAPE CONSTANT, N = 7.021334
UNIT PEAK = 121.45 CFS UNIT VOLUME = 1.000 B = 522.26 P60 = 2.2500
AREA = .032555 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .141773HR TP = .140000HR K/TP RATIO = 1.012661 SHAPE CONSTANT, N = 3.485835
UNIT PEAK = 362.50 CFS UNIT VOLUME = 1.000 B = 319.29 P60 = 2.2500
AREA = .158945 SQ MI IA = .59578 INCHES INF = 1.51819 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

ADD HYD ID=2 HYD NO= 301.0 ID=1 ID=6

* COMBINED HYDROGRAPH FROM NDB-1 & NDB-2

COMPUTE RATING CURVE RC-2 VS NO=2 NO SEGS=1 MIN ELEV=300 FT

MAX ELEV=310 FT CH SLP=0.04 FP
SLP= 0.04 N=0.03 DIST=200 FT
DIST ELEV DIST ELEV DIST ELEV DIST ELEV

0 310.0 100 300.0 200 310.0

RATING CURVE VALLEY SECTION 2.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
300.00	.0	.0
300.53	2.8	11.2
301.05	11.1	71.3
301.58	24.9	210.3
302.11	44.3	452.8
302.63	69.2	821.0
303.16	99.7	1335.1
303.68	135.7	2013.9
304.21	177.3	2875.3
304.74	224.4	3936.3
305.26	277.0	5213.2
305.79	335.2	6721.8
306.32	398.9	8477.2
306.84	468.1	10494.3
307.37	542.9	12787.3
307.89	623.2	15370.3
308.42	709.1	18256.8
308.95	800.5	21460.3
309.47	897.5	24993.8
310.00	1000.0	28870.1

COMPUTE TRAVEL TIME ID=6 REACH NO=2 NO VS=2 L=900 FT SLP=0.04

TRAVEL TIME TABLE

REACH= 2.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.462	2.432	11.23	.0541
.976	9.876	71.32	.0346
1.482	22.372	210.26	.0266
1.985	39.902	452.82	.0220
2.488	62.466	821.03	.0190
2.991	90.062	1335.08	.0169
3.494	122.691	2013.87	.0152
3.996	160.354	2875.26	.0139
4.498	203.049	3936.26	.0129
5.001	250.777	5213.20	.0120
5.499	303.363	6721.79	.0113
5.998	360.977	8477.24	.0106
6.497	423.625	10494.30	.0101
6.997	491.308	12787.32	.0096
7.497	564.025	15370.27	.0092
7.998	641.776	18256.81	.0088
8.499	724.561	21460.29	.0084
9.000	812.379	24993.78	.0081
9.501	905.230	28870.09	.0078

ROUTE ID=6 HYD NO= 102.1 INFLOW ID=2
* BASIN DESIGNATION = NDB-3 (EXISTING CONDITIONS)
COMPUTE NM HYD ID=1 HYD NO= 103.0 DA=0.0462 SQ MI
PER A=10.0 PER B=7.0 PER C=26.0 PER D=57.0 TP= -0.1333
RAIN=-1.

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 103.97 CFS UNIT VOLUME = .9993 B = 526.28 P60 = 2.2500
AREA = .026334 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

K = .125744HR TP = .133300HR K/TP RATIO = .943315 SHAPE CONSTANT, N = 3.747970
UNIT PEAK = 50.373 CFS UNIT VOLUME = .9999 B = 338.00 P60 = 2.2500
AREA = .019866 SQ MI IA = .44419 INCHES INF = 1.09372 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

ADD HYD ID=2 HYD NO= 303.0 ID=1 ID=6
PRINT HYD ID=2 CODE=10

HYDROGRAPH FROM AREA 303.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	1449.7	3.333	12.9	5.000	2.4	6.667	.1
.333	.0	2.000	429.3	3.667	6.8	5.333	2.3	7.000	.0
.667	1.6	2.333	129.8	4.000	4.1	5.667	2.3	7.333	.0
1.000	9.1	2.667	51.9	4.333	3.0	6.000	2.4		
1.333	85.5	3.000	25.7	4.667	2.6	6.333	.4		

RUNOFF VOLUME = 1.38943 INCHES = 66.2032 ACRE-Feet
PEAK DISCHARGE RATE = 1787.13 CFS AT 1.567 HOURS BASIN AREA = .8934 SQ. MI.

* COMBINED FROM NDB-1, NDB-2 & NDB-3
COMPUTE RATING CURVE RC=3 VS NO=3 NO SEGS=1 MIN ELEV=200 FT
MAX ELEV=210 FT CH SLP=0.045 FP
SLP= 0.045 N=0.027 DIST=100 FT
DIST ELEV DIST ELEV DIST ELEV
0 210.0 45 205.0 50 200.0 55 205.0
100 210.0

RATING CURVE VALLEY SECTION 3.0

WATER SURFACE ELEV	FLOW AREA SQ FT	FLOW RATE CFS
200.00	.0	.0
200.53	.3	1.1
201.05	1.1	6.7
201.58	2.5	19.7
202.11	4.4	42.5
202.63	6.9	77.1
203.16	10.0	125.3
203.68	13.6	189.0
204.21	17.7	269.9
204.74	22.4	369.4
205.26	28.3	431.2
205.79	38.5	550.2
206.32	53.7	790.9
206.84	74.0	1160.0
207.37	99.2	1674.2
207.89	129.4	2352.1
208.42	164.5	3212.4
208.95	204.7	4273.2
209.47	249.9	5552.2
210.00	300.0	7066.5

COMPUTE TRAVEL TIME ID=6 REACH NO=3 NO VS=3 L=2950 FT SLP=0.045

TRAVEL TIME TABLE
REACH= 3.0

WATER DEPTH FEET	AVERAGE AREA SQ.FT.	FLOW RATE CFS	TRAVEL TIME HRS
.204	.245	1.05	.1901
.534	1.336	6.69	.1635
.913	3.240	19.73	.1345
1.205	5.729	42.50	.1105
1.548	9.284	77.06	.0987
1.852	13.282	125.31	.0869
2.169	18.200	189.01	.0789
2.491	23.909	269.86	.0726
2.797	30.180	369.44	.0669
3.050	35.007	431.18	.0665
3.353	43.595	550.18	.0649
3.739	58.365	790.92	.0605
4.170	78.623	1160.03	.0555
4.625	104.161	1674.22	.0510
5.096	134.877	2352.11	.0470
5.579	170.837	3212.38	.0436
6.070	212.002	4273.22	.0407
6.566	258.353	5552.23	.0381
7.067	309.881	7066.49	.0359

ROUTE ID=6 HYD NO= 303.1 INFLOW ID=2
PRINT HYD ID=6 CODE=10

HYDROGRAPH FROM AREA 303.10

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	1586.6	3.333	16.4	5.000	2.5	6.667	.3
.333	.0	2.000	518.3	3.667	9.0	5.333	2.4	7.000	.1
.667	.3	2.333	164.3	4.000	5.2	5.667	2.3	7.333	.0
1.000	6.3	2.667	63.9	4.333	3.6	6.000	2.4	7.667	.0
1.333	31.0	3.000	31.4	4.667	2.8	6.333	1.2	8.000	.0

RUNOFF VOLUME = 1.38943 INCHES = 66.2032 ACRE-FEET
PEAK DISCHARGE RATE = 1676.63 CFS AT 1.633 HOURS BASIN AREA = .8934 SQ. MI.

* BASIN DESIGNATION = NDB-4 (EXISTING CONDITIONS)
COMPUTE NM HYD ID=1 HYD NO= 104.0 DA=0.0707 SQ MI
PER A=54.0 PER B=46.0 PER C=00.0 PER D=00.0 TP= -0.1333
RAIN=-1.

K = .147421HR TP = .133300HR K/TP RATIO = 1.105937 SHAPE CONSTANT, N = 3.196926
UNIT PEAK = 157.79 CFS UNIT VOLUME = 1.000 B = 297.50 P60 = 2.2500
AREA = .070700 SQ MI IA = .58100 INCHES INF = 1.47680 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033333

PRINT HYD ID=1 CODE=10

PARTIAL HYDROGRAPH 104.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	10.5	2.667	2.5	4.000	.1		
.333	.0	1.667	66.7	3.000	1.2	4.333	.1		
.667	.0	2.000	11.7	3.333	.5	4.667	.0		
1.000	.0	2.333	5.2	3.667	.3	5.000	.0		

RUNOFF VOLUME = .92184 INCHES = 3.4759 ACRE-FEET
PEAK DISCHARGE RATE = 114.87 CFS AT 1.500 HOURS BASIN AREA = .0707 SQ. MI.

ADD HYD ID=2 HYD NO= 303.4 ID=1 ID=6
* COMBINED FROM NDB-1, NDB-2, NDB-3 & NDB-4
PRINT HYD ID=2 CODE=10

HYDROGRAPH FROM AREA 303.40

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.667	1653.3	3.333	16.9	5.000	2.5	6.667	.3
.333	.0	2.000	530.0	3.667	9.2	5.333	2.4	7.000	.1
.667	.3	2.333	169.6	4.000	5.4	5.667	2.3	7.333	.0
1.000	6.3	2.667	66.4	4.333	3.6	6.000	2.4	7.667	.0
1.333	41.6	3.000	32.5	4.667	2.8	6.333	1.2	8.000	.0

RUNOFF VOLUME = 1.35514 INCHES = 69.6791 ACRE-FEET
PEAK DISCHARGE RATE = 1767.50 CFS AT 1.600 HOURS BASIN AREA = .9641 SQ. MI.

FINISH

NORMAL PROGRAM FINISH

END TIME (HR:MIN:SEC) = 08:15:36

APPENDIX B

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- 4. FIGURE C, TYPICAL DROP STRUCTURE DETAIL AND CALCULATIONS (MOVED TO BACK POCKET AS PART OF FEBRUARY 1993 REVISION)**
- 5. FIGURE D, TEMPORARY ARROYO CROSSING DIP SECTION (TYP)**
- 6. "NDB-PRE-SUPER," HEC-2 MODEL OF LOWER NORTH DOMINGO BACA ARROYO UNDER EXISTING CONDITIONS (SUPERCRITICAL)**
- 7. "NDB-PRE-SUB," SAME AS 6 ABOVE (BUT SUBCRITICAL)**
- 8. "NDB-POST-SUPER," HEC-2 MODEL OF PROPOSED NORTH DOMINGO BACA CHANNEL (SUPERCRITICAL)**
- 9. "SLC-PRE-SUPER," HEC-2 MODEL OF LOWER ON-SITE TRIBUTARY OF THE LA CUEVA ARROYO UNDER EXISTING CONDITIONS (SUPERCRITICAL)**
- 10. "SLC-PRE-SUB," SAME AS 9 ABOVE (BUT SUBCRITICAL)**
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- 12. TYPICAL CHANNEL DESIGN CALCULATIONS**
- 13. ~~TYPICAL DROP STRUCTURE DETAIL AND CALCULATION~~ (MOVED TO POCKET AT END OF REPORT FEBRUARY 1993)**
- 14. HYDRAULIC JUMP CALCULATIONS (DELETED BECAUSE NO SUSTAINED SUBCRITICAL FLOW IS INDICATED BY THE HEC-2 CALCULATIONS; UNPREDICTABLE JUMPS THAT WILL RESULT FROM SUPERCRITICAL FLOW AT OR NEAR CRITICAL VELOCITY ARE DEALT WITH IN THE CHANNEL DESIGN CALCULATION BY USING SEQUENT DEPTH INSTEAD OF NORMAL DEPTH)**
- 15. "SUBCRITICAL FLOW AND HYDRAULIC JUMP CALCULATION PROCEDURE" (DELETED)**
- 16. FIGURE E (VOIDED WITH CHANGE IN DROP STRUCTURE TYPE AND REVISED PROFILE WITH NO SUBCRITICAL FLOW AND NO HYDRAULIC JUMP)**
- 17. FIGURE F (REPLACED WITH TYPICAL DROP STRUCTURE DETAIL AND CALCULATIONS AT THE END OF THIS REPORT, FEBRUARY 1993)**

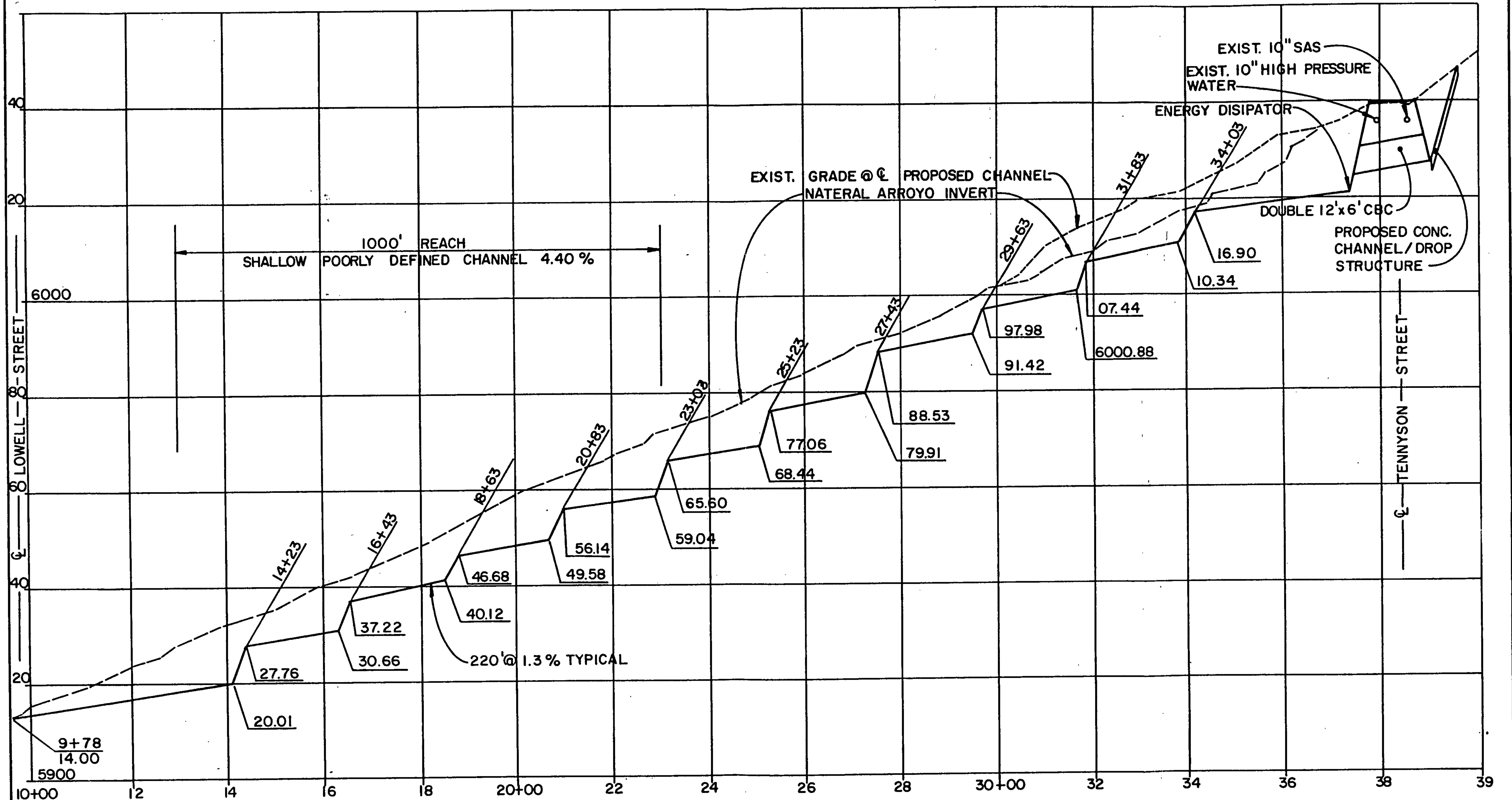
APPENDIX B

I. HYDRAULIC ANALYSIS PROCEDURE

FEMA does not treat the currently mapped flood plains for the two on-site arroyos as detailed and cannot provide any previous hydraulic analysis to serve as a starting point for this study. To address the "Master Plan Level" comments, the Corps of Engineers computer program HEC-2 was used to model pre- and post-development conditions on the two arroyos. Existing geometry was based on the City of Albuquerque topography, which will be field-surveyed prior to the next step in the final design process. The existing 2-year, 10-year, 100-year flows were used for all profiles because (1) no further upstream development (than already as assumed) is anticipated, and (2) this development will provide on-site detention such that there will be no increase in peak flows resulting from this development (see revised AHYMO runs included in Appendix A). Ten percent was added to the flows from the hydrology to account for sediment bulking.

The proposed channel geometry is based on the typical arroyo cross sections as presented in the previous Master Drainage Management Plan as revised September, 1990. Drop structure spacing and heights are illustrated on Profiles of the North Domingo Baca and the South La Cueva Arroyo on Figures A and B, respectively. A generic detail of the drop structures, Figure C, shows the typical locations of the HEC-2 cross sections which also corresponds with the more detailed profile Figure E at the end of this Appendix. As modeled in these HEC-2 runs, the drop structures are Saint Anthony Falls-type (including the end sill) but the final design will utilize chute baffle-type drop structures as shown on the "typical drop structure detail and calculations" in a pocket at the end of this report.

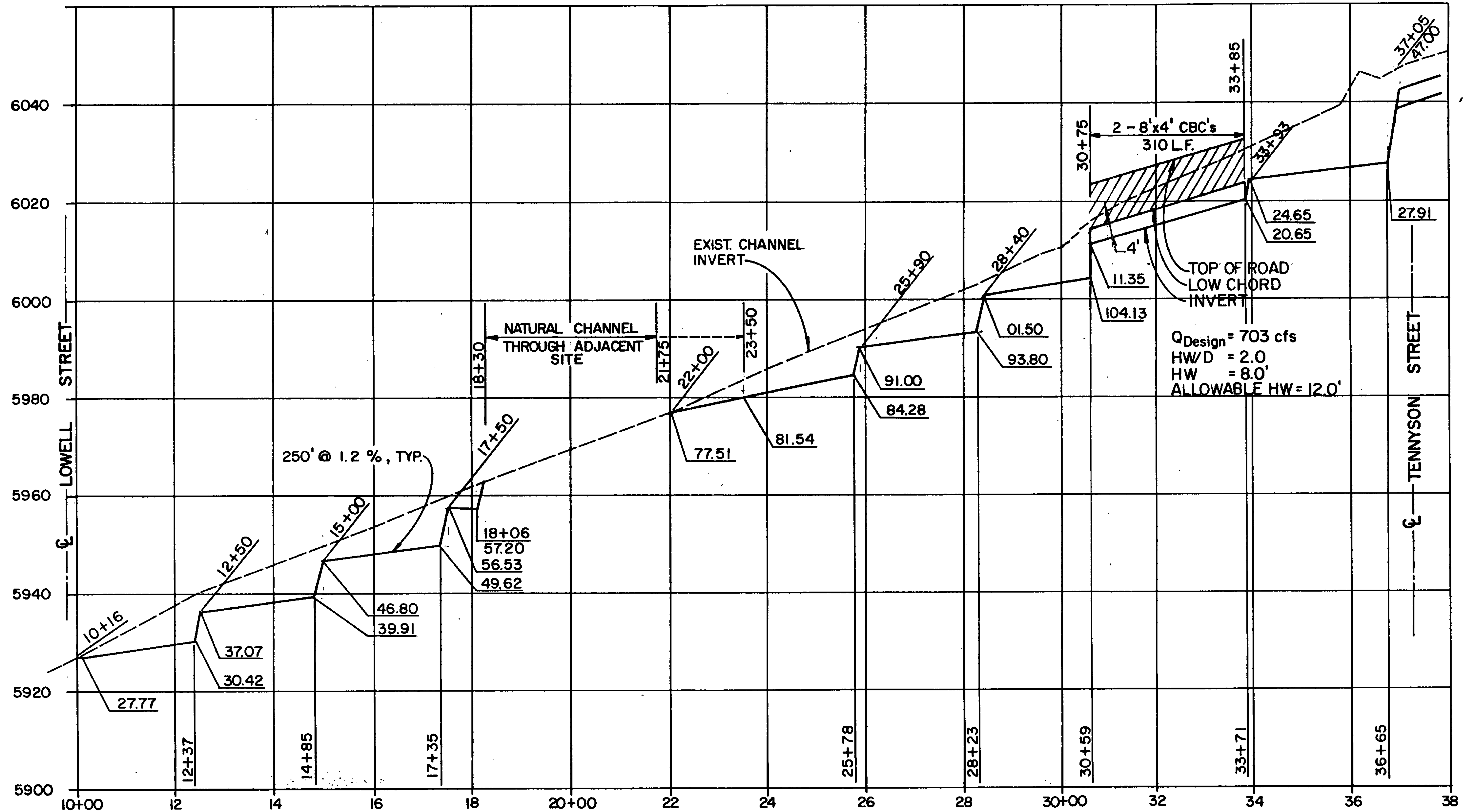
FIGURE "A"



DOMINGO BACA ARROYO

SCALE: 1" = 200', HORIZ.
1" = 20' VERT.

FIGURE "B"



SOUTH LA CUEVA ARROYO

SCALE: 1" = 200', HORIZ.

1" = 20' VERT.

1818
1818

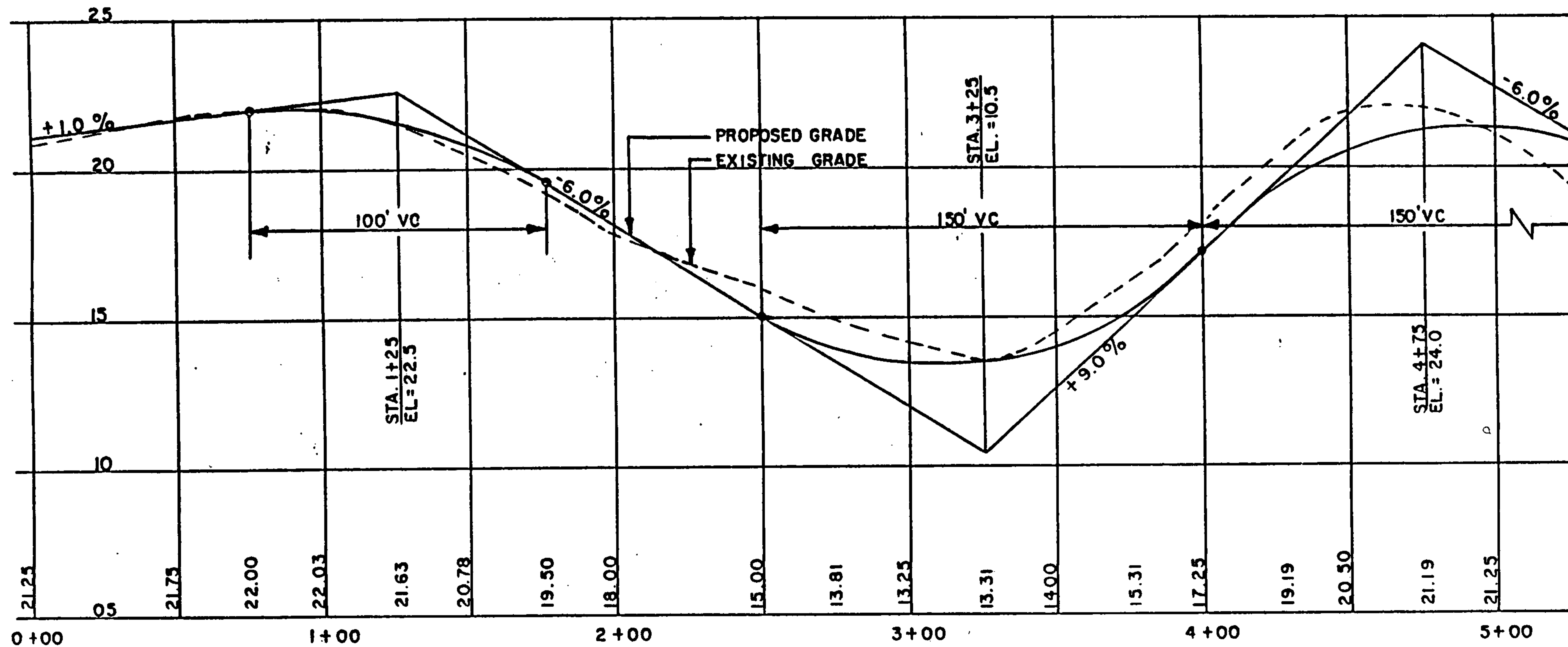
FIGURE C

**IS REPLACED WITH THE "TYPICAL DROP STRUCTURE DETAIL AND CALCULATIONS" AT
THE END OF THIS REPORT**

FIGURE "D"

SCALE:
HORIZ. = 1" = 50'
VERT. = 1" = 5'

K=10 — 15 MPH SAG
20 MPH CREST



LOWELL STREET

TEMPORARY ARROYO CROSSING DIP SECTION (TYP.)

* HEC-2 WATER SURFACE PROFILES *
* *
* Version 4.6.2; May 1991 *
* *
* RUN DATE 14SEP92 TIME 14:42:27 *

* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104

NDB-PRE-SUPER

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PAGE 1

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HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

T1 PRIMROSE POINTE N. DOMINGO BACA - EX. COND.
T2 FLOODPLAIN ANALYSIS
T3 100 YR. PRE-DEVELOPMENT

J1 ICHECK INQ NINV IDIR STRT METRIC HVINS Q WSEL FQ
2.0 1.0 -1.0 5937.
J2 NPROF IPLOT PRFVS XSECV XSECH FN ALLDC IBW CHNIM ITRACE
1.0 -1. -1.

J5 LPRNT NUMSEC *****REQUESTED SECTION NUMBERS*****
-10.0 -10.

J6 IHLEQ ICOPY SUBDIV STRTDS RMILE
1.0

NC	0.06	0.06	0.06	.1	.3					
QT	3.	2025.	909.	272.						
X1	10	11	150	319	200	250	250	0	0	0
X4	1.	5937.	150.							
GR	5940.7	1	5940	90	5936	170	5935.4	190	5936	202
GR	5937.9	230	5936	255	5935.5	262	5936	270	5940	315
GR	5941.8	375								
X1	11	10	100	415	185	270	250			
X4	1.	5933.	100.							
GR	5935.4	1	5934	50	5934	80	5932	119	5928	155
GR	5927.5	175	5927.8	195	5927.3	255	5928	313	5932	415
X1	12	9	105	340	80	10	65			
X4	1.	5922.	105.							
GR	5928	1	5918	140	5917.5	155	5918	170	5918	180
GR	5917.5	205	5918	230	5918	255	5922	340		
NC	0.02	0.02	0.02	0.10	0.30					
X1	9.94	18.00	100.00	490.00	37.00	37.00	37.00	0.866	5900.30	
GR	22.03	100.00	21.63	125.00	20.78	150.00	19.50	175.00	18.00	200.00
GR	16.50	225.00	15.00	250.00	13.81	275.00	13.25	300.00	13.20	310.00
GR	13.31	325.00	14.00	350.00	15.31	375.00	17.25	400.00	19.19	425.00
GR	20.50	450.00	21.19	475.00	21.30	490.00				

1 14SEP92 14:42:27

PAGE 2

X1	9.57			45.00	90.00	65.00				
NC	0.06	0.06	0.06	.1	.3					
X1	8.65	10.00	90.00	178.00	110.00	55.00	95.00	5900.00		
GR	20.50	0.00	20.00	25.00	18.00	55.00	14.00	90.00	11.00	105.00
GR	11.00	138.00	13.50	178.00	11.50	210.00	13.00	240.00	16.00	330.00
X1	7.70	10.00	0.00	135.00	180.00	180.00	180.00	5900.		
GR	14.00	0.00	10.00	60.00	7.00	80.00	7.00	100.00	8.00	120.00
GR	9.50	135.00	9.00	150.00	10.00	160.00	12.00	215.00	14.00	270.00
X1	5.90	9.00	110.00	183.00	100.00	180.00	160.00	5900.00		
GR	5.70	0.00	3.30	64.00	3.20	110.00	2.00	140.00	1.00	144.00
GR	1.00	166.00	2.00	170.00	4.00	183.00	6.00	285.00		
X1	4.30	11.00	170.00	257.00						
GR	5902	0.00	5900.00	45.00	5898.50	53.00	5900.00	70.00	5900.00	95.00

GR 5898 150.00 5897.00 170.00 5895.30 190.00 5895.30 220.00 5901.00 257.00
GR 5902 300.00
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PAGE 3

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR
DETAILS.

1 14SEP92 14:42:27

PAGE 4

T1 PRIMROSE POINTE N. DOMINGO BACA - EX. COND.
T2 FLOODPLAIN ANALYSIS
T3 10 YR. PRE-DEVELOPMENT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3.0		1.0	-1.0				5937.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.0		-1.				-1.			

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR
DETAILS.

1 14SEP92 14:42:27

PAGE 5

T1 PRIMROSE POINTE N. DOMINGO BACA - EX. COND.
T2 FLOODPLAIN ANALYSIS
T3 2 YR. PRE-DEVELOPMENT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		4.0		1.0	-1.0				5937.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.0		-1.				-1.			

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR
DETAILS.

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PAGE 6

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HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

00 YR. PRE-DEVELOPMENT

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	10.000	.00	.00	.00	5935.40	2025.00	5938.33	5938.33	5939.17	416.83	7.46	280.00	99.19
*	10.000	.00	.00	.00	5935.40	909.00	5937.50	5937.50	5938.08	486.67	6.09	150.92	41.20
*	10.000	.00	.00	.00	5935.40	272.00	5936.67	5936.67	5937.01	608.46	4.68	58.15	11.03
*	11.000	250.00	.00	.00	5927.30	2025.00	5929.30	5929.30	5930.04	475.64	6.91	293.24	92.85
*	11.000	250.00	.00	.00	5927.30	909.00	5928.63	5928.63	5929.10	548.10	5.49	165.60	38.83
*	11.000	250.00	.00	.00	5927.30	272.00	5928.07	5928.07	5928.30	708.19	3.83	71.06	10.22
*	12.000	250.00	.00	.00	5917.50	2025.00	5919.82	5919.82	5920.64	444.60	7.27	278.63	96.04
*	12.000	250.00	.00	.00	5917.50	909.00	5919.04	5919.04	5919.57	517.20	5.86	155.12	39.97
*	12.000	250.00	.00	.00	5917.50	272.00	5918.38	5918.38	5918.65	654.15	4.11	66.16	10.63
	9.940	65.00	.00	.00	5913.50	2025.00	5915.58	5916.44	5918.40	221.70	13.47	150.35	136.00
	9.940	65.00	.00	.00	5913.50	909.00	5914.87	5915.48	5916.94	280.45	11.54	78.76	54.28
	9.940	65.00	.00	.00	5913.50	272.00	5914.26	5914.59	5915.41	359.29	8.59	31.66	14.35
*	9.570	37.00	.00	.00	5913.50	2025.00	5916.17	5916.45	5917.47	73.05	9.17	220.80	236.93
*	9.570	37.00	.00	.00	5913.50	909.00	5915.50	5915.50	5916.14	53.71	6.45	140.91	124.03
*	9.570	37.00	.00	.00	5913.50	272.00	5914.60	5914.60	5914.96	64.99	4.80	56.66	33.74
*	8.650	65.00	.00	.00	5911.00	2025.00	5913.55	5913.88	5914.81	702.30	9.63	230.80	76.41
*	8.650	65.00	.00	.00	5911.00	909.00	5912.84	5913.06	5913.68	672.01	7.80	128.51	35.07
*	8.650	65.00	.00	.00	5911.00	272.00	5912.04	5912.13	5912.52	675.83	5.68	50.64	10.46
*	7.700	95.00	.00	.00	5907.00	2025.00	5910.73	5910.73	5911.74	332.18	8.36	258.94	111.11
*	7.700	95.00	.00	.00	5907.00	909.00	5909.57	5909.57	5910.33	383.40	7.05	133.30	46.42
*	7.700	95.00	.00	.00	5907.00	272.00	5908.32	5908.32	5908.80	548.19	5.56	48.91	11.62
*	5.900	180.00	.00	.00	5901.00	2025.00	5904.59	5904.71	5905.57	352.05	8.58	277.10	107.93
*	5.900	180.00	.00	.00	5901.00	909.00	5903.81	5903.81	5904.41	324.85	6.51	155.91	50.43
*	5.900	180.00	.00	.00	5901.00	272.00	5902.56	5902.56	5903.06	527.69	5.68	47.90	11.84

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K	
4.300	160.00	.00	.00	5895.30	2025.00	5898.82	5898.99	5900.08	371.19	9.30	235.23	105.11	
4.300	160.00	.00	.00	5895.30	909.00	5897.66	5897.69	5898.54	420.86	7.56	123.23	44.31	
4.300	160.00	.00	.00	5895.30	272.00	5896.50	5896.50	5896.98	538.05	5.53	49.18	11.73	

1	14SEP92	14:42:27											PAGE	8
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00 YR. PRE-DEVELOPMENT
SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	10.000	2025.00	5938.33	.00	.00	1.33	172.66	.00
*	10.000	909.00	5937.50	-.82	.00	.50	135.95	.00
*	10.000	272.00	5936.67	-.83	.00	-.33	86.65	.00
*	11.000	2025.00	5929.30	.00	-9.03	.00	202.74	250.00
*	11.000	909.00	5928.63	-.67	-8.87	.00	179.71	250.00
*	11.000	272.00	5928.07	-.56	-8.60	.00	160.54	250.00
*	12.000	2025.00	5919.82	.00	-9.48	.00	169.54	250.00
*	12.000	909.00	5919.04	-.78	-9.59	.00	146.05	250.00
*	12.000	272.00	5918.38	-.65	-9.69	.00	126.47	250.00
	9.940	2025.00	5915.58	.00	-4.24	.00	111.83	65.00
	9.940	909.00	5914.87	-.71	-4.16	.00	88.11	65.00
	9.940	272.00	5914.26	-.61	-4.12	.00	66.42	65.00
*	9.570	2025.00	5916.17	.00	.59	.00	127.07	37.00
*	9.570	909.00	5915.50	-.67	.62	.00	109.19	37.00
*	9.570	272.00	5914.60	-.89	.34	.00	78.92	37.00
*	8.650	2025.00	5913.55	.00	-2.62	.00	164.52	65.00
*	8.650	909.00	5912.84	-.71	-2.66	.00	119.84	65.00
*	8.650	272.00	5912.04	-.80	-2.57	.00	74.06	65.00
*	7.700	2025.00	5910.73	.00	-2.82	.00	130.90	95.00
*	7.700	909.00	5909.57	-1.16	-3.27	.00	92.79	95.00
*	7.700	272.00	5908.32	-1.25	-3.72	.00	51.93	95.00
*	5.900	2025.00	5904.59	.00	-6.13	.00	183.63	180.00
*	5.900	909.00	5903.81	-.79	-5.76	.00	131.22	180.00
*	5.900	272.00	5902.56	-1.24	-5.75	.00	47.75	180.00
	4.300	2025.00	5898.82	.00	-5.77	.00	120.53	160.00
*	4.300	909.00	5897.66	-1.16	-6.15	.00	78.45	160.00
*	4.300	272.00	5896.50	-1.16	-6.06	.00	51.92	160.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO-	10.000	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.000	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.000	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.000	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.000	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.000	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	11.000	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.000	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.000	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	11.000	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.000	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.000	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.000	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.000	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.000	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.000	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.000	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.000	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO-	9.570	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	9.570	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.570	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.570	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	9.570	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.570	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.570	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO-	8.650	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	8.650	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	8.650	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	7.700	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	7.700	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	7.700	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	7.700	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	7.700	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	7.700	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	7.700	PROFILE-	3	CRITICAL DEPTH ASSUMED

CAUTION SECNO- 7.700 PROFILE- 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO- 7.700 PROFILE- 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO- 5.900 PROFILE- 2 CRITICAL DEPTH ASSUMED
CAUTION SECNO- 5.900 PROFILE- 2 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO- 5.900 PROFILE- 2 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO- 5.900 PROFILE- 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO- 5.900 PROFILE- 3 PROBABLE MINIMUM SPECIFIC ENERGY

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PAGE 10

CAUTION SECNO- 5.900 PROFILE- 3 20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO- 4.300 PROFILE- 3 CRITICAL DEPTH ASSUMED
CAUTION SECNO- 4.300 PROFILE- 3 PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO- 4.300 PROFILE- 3 20 TRIALS ATTEMPTED TO BALANCE WSEL

1*****
* HEC-2 WATER SURFACE PROFILES *
* *
* Version 4.6.2; May 1991 *
* *
* RUN DATE 14SEP92 TIME 14:42:51 *

* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104

NDB - PRE-SUB

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PAGE 1

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HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

T1 PRIMROSE POINTE N. DOMINGO BACA - EX. COND.
T2 FLOODPLAIN ANALYSIS
T3 100 YR. PRE-DEVELOPMENT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		2.0			.033				5898.50	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.0		-1.				-1.			

J5 LPRNT NUMSEC *****REQUESTED SECTION NUMBERS*****
-10.0 -10.

J6 IHLEQ ICOPY SUBDIV STRTDS RMILE
1.0

QT	3.0	2025.	909.	272.						
NC	0.06	0.06	0.06	.1	.3					
X1	4.30	11.00	170.00	257.00						
GR	5902	0.00	5900.00	45.00	5898.50	53.00	5900.00	70.00	5900.00	95.00
GR	5898	150.00	5897.00	170.00	5895.30	190.00	5895.30	220.00	5901.00	257.00
GR	5902	300.00								
X1	5.90	9.00	110.00	183.00	100.00	180.00	160.00		5900.00	
GR	5.70	0.00	3.30	64.00	3.20	110.00	2.00	140.00	1.00	144.00
GR	1.00	166.00	2.00	170.00	4.00	183.00	6.00	285.00		
X1	7.70	10.00	0.00	135.00	180.00	180.00	180.00		5900.	
GR	14.00	0.00	10.00	60.00	7.00	80.00	7.00	100.00	8.00	120.00
GR	9.50	135.00	9.00	150.00	10.00	160.00	12.00	215.00	14.00	270.00
X1	8.65	10.00	90.00	178.00	110.00	55.00	95.00		5900.00	
GR	20.50	0.00	20.00	25.00	18.00	55.00	14.00	90.00	11.00	105.00
GR	11.00	138.00	13.50	178.00	11.50	210.00	13.00	240.00	16.00	330.00
NC	0.02	0.02	0.02	0.10	0.30					
X1	9.57	18.00	100.00	490.00	45.00	90.00	65.00	0.866	5900.30	
GR	22.03	100.00	21.63	125.00	20.78	150.00	19.50	175.00	18.00	200.00
GR	16.50	225.00	15.00	250.00	13.81	275.00	13.25	300.00	13.20	310.00
GR	13.31	325.00	14.00	350.00	15.31	375.00	17.25	400.00	19.19	425.00
GR	20.50	450.00	21.19	475.00	21.30	490.00				

1 14SEP92 14:42:51

PAGE 2

X1	9.94			37.00	37.00	37.00				
NC	0.06	0.06	0.06							
X1	12	9	105	340	80	10	65			
X4	1.	5922.	105.							
GR	5928	1	5918	140	5917.5	155	5918	170	5918	180
GR	5917.5	205	5918	230	5918	255	5922	340		
X1	11	10	100	415	185	270	250			
X4	1.	5933.	100.							
GR	5935.4	1	5934	50	5934	80	5932	119	5928	155
GR	5927.5	175	5927.8	195	5927.3	255	5928	313	5932	415
X1	10	11	150	319	200	250	250	0	0	0
X4	1.	5937.	150.							
GR	5940.7	1	5940	90	5936	170	5935.4	190	5936	202

GR 5937.9 230 5936 255 5935.5 262 5936 270 5940 315
GR 5941.8 375
1 14SEP92 14:42:51 PAGE 3

1HLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR
DETAILS.

1 14SEP92 14:42:51 PAGE 4

T1 PRIMROSE POINTE N. DOMINGO BACA - EX. COND.
T2 FLOODPLAIN ANALYSIS
T3 10 YR. PRE-DEVELOPMENT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3.0			.033				5898.50	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.0		-1.				-1.			

1HLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR
DETAILS.

1 14SEP92 14:42:51 PAGE 5

T1 PRIMROSE POINTE N. DOMINGO BACA - EX. COND.
T2 FLOODPLAIN ANALYSIS
T3 2 YR. PRE-DEVELOPMENT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		4.0			.033				5898.50	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.0		-1.				-1.			

1HLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR
DETAILS.

1 14SEP92 14:42:51 PAGE 6

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

THIS RUN EXECUTED 14SEP92 14:42:53

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

00 YR. PRE-DEVELOPMENT

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	4.300	.00	.00	.00	5895.30	2025.00	5899.00	5899.00	5900.05	294.48	8.56	258.28	118.00
	4.300	.00	.00	.00	5895.30	909.00	5897.79	5897.68	5898.54	334.10	7.00	133.96	49.73
	4.300	.00	.00	.00	5895.30	272.00	5896.68	5896.50	5897.01	325.28	4.64	58.59	15.08
*	5.900	160.00	.00	.00	5901.00	2025.00	5904.72	5904.72	5905.55	283.11	7.96	301.80	120.35
*	5.900	160.00	.00	.00	5901.00	909.00	5903.81	5903.81	5904.41	320.05	6.47	156.80	50.81
	5.900	160.00	.00	.00	5901.00	272.00	5902.65	5902.56	5903.08	437.68	5.26	51.68	13.00
*	7.700	180.00	.00	.00	5907.00	2025.00	5910.73	5910.73	5911.74	329.94	8.33	259.64	111.48
	7.700	180.00	.00	.00	5907.00	909.00	5909.64	5909.56	5910.33	334.56	6.74	140.09	49.70
	7.700	180.00	.00	.00	5907.00	272.00	5908.59	5908.31	5908.87	253.55	4.27	63.76	17.08
	8.650	95.00	.00	.00	5911.00	2025.00	5913.92	5913.87	5914.70	346.74	7.56	293.39	108.75
*	8.650	95.00	.00	.00	5911.00	909.00	5913.07	5913.06	5913.63	390.71	6.35	158.00	45.99
	8.650	95.00	.00	.00	5911.00	272.00	5912.12	5912.12	5912.50	486.98	5.05	57.41	12.33
*	9.570	65.00	.00	.00	5913.50	2025.00	5916.45	5916.45	5917.41	47.48	7.89	256.76	293.89
*	9.570	65.00	.00	.00	5913.50	909.00	5915.49	5915.49	5916.14	53.89	6.46	140.75	123.83
*	9.570	65.00	.00	.00	5913.50	272.00	5914.60	5914.60	5914.96	65.63	4.82	56.47	33.57
*	9.940	37.00	.00	.00	5913.50	2025.00	5916.99	5916.44	5917.56	22.62	6.07	333.72	425.82
*	9.940	37.00	.00	.00	5913.50	909.00	5915.94	5915.48	5916.29	22.11	4.74	191.66	193.30
*	9.940	37.00	.00	.00	5913.50	272.00	5914.94	5914.60	5915.09	20.11	3.20	85.13	60.66
*	12.000	65.00	.00	.00	5917.50	2025.00	5919.81	5919.81	5920.64	452.07	7.31	277.05	95.24
*	12.000	65.00	.00	.00	5917.50	909.00	5919.03	5919.03	5919.57	528.94	5.90	153.98	39.52
*	12.000	65.00	.00	.00	5917.50	272.00	5918.38	5918.38	5918.65	669.86	4.14	65.67	10.51
	11.000	250.00	.00	.00	5927.30	2025.00	5929.49	5929.30	5930.06	321.83	6.06	334.11	112.88
*	11.000	250.00	.00	.00	5927.30	909.00	5928.83	5928.64	5929.15	299.20	4.51	201.54	52.55
	11.000	250.00	.00	.00	5927.30	272.00	5928.23	5928.07	5928.35	272.75	2.84	95.84	16.47

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14SEP92	14:42:51											PAGE	7
SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K	
10.000	250.00	.00	.00	5935.40	2025.00	5938.34	5938.33	5939.17	407.65	7.41	282.11	100.30	
10.000	250.00	.00	.00	5935.40	909.00	5937.56	5937.51	5938.07	421.22	5.78	159.13	44.29	
10.000	250.00	.00	.00	5935.40	272.00	5936.76	5936.67	5937.02	436.94	4.14	65.68	13.01	

1	14SEP92	14:42:51											PAGE	8
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00 YR. PRE-DEVELOPMENT
SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	4.300	2025.00	5899.00	.00	.00	.50	129.85	.00
	4.300	909.00	5897.79	-1.21	.00	-.71	81.99	.00
	4.300	272.00	5896.68	-1.11	.00	-1.82	55.13	.00
*	5.900	2025.00	5904.72	.00	5.72	.00	193.79	160.00
*	5.900	909.00	5903.81	-.91	6.02	.00	131.45	160.00
	5.900	272.00	5902.65	-1.17	5.97	.00	50.18	160.00
*	7.700	2025.00	5910.73	.00	6.01	.00	131.13	180.00
	7.700	909.00	5909.64	-1.09	5.83	.00	94.00	180.00
	7.700	272.00	5908.59	-1.05	5.94	.00	56.50	180.00
	8.650	2025.00	5913.92	.00	3.19	.00	177.33	95.00
*	8.650	909.00	5913.07	-.85	3.43	.00	133.84	95.00
	8.650	272.00	5912.12	-.95	3.54	.00	79.10	95.00
*	9.570	2025.00	5916.45	.00	2.52	.00	134.12	65.00
*	9.570	909.00	5915.49	-.95	2.42	.00	109.14	65.00
*	9.570	272.00	5914.60	-.89	2.48	.00	78.83	65.00
*	9.940	2025.00	5916.99	.00	.55	.00	148.08	37.00
*	9.940	909.00	5915.94	-1.05	.44	.00	121.06	37.00
*	9.940	272.00	5914.94	-1.00	.34	.00	90.58	37.00
*	12.000	2025.00	5919.81	.00	2.82	.00	169.26	65.00
*	12.000	909.00	5919.03	-.78	3.09	.00	145.82	65.00
*	12.000	272.00	5918.38	-.65	3.44	.00	126.35	65.00
	11.000	2025.00	5929.49	.00	9.69	.00	209.58	250.00
*	11.000	909.00	5928.83	-.66	9.80	.00	186.49	250.00
	11.000	272.00	5928.23	-.60	9.85	.00	165.78	250.00
	10.000	2025.00	5938.34	.00	8.84	.00	173.04	250.00
	10.000	909.00	5937.56	-.78	8.73	.00	139.47	250.00
	10.000	272.00	5936.76	-.80	8.53	.00	91.65	250.00

1	14SEP92	14:42:51											PAGE	9
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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO-	4.300	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	5.900	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	5.900	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	5.900	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	5.900	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	7.700	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	7.700	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	8.650	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	8.650	PROFILE-	3	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.570	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.570	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.570	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.570	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.570	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.570	PROFILE-	3	MINIMUM SPECIFIC ENERGY
WARNING SECNO-	9.940	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	9.940	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	9.940	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	12.000	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.000	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.000	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	3	MINIMUM SPECIFIC ENERGY
WARNING SECNO-	11.000	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

* HEC-2 WATER SURFACE PROFILES *
* *
* Version 4.6.2; May 1991 *
* *
* RUN DATE 14SEP92 TIME 14:40:47 *

* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104

NDB POST SUPER

X X XXXXXX XXXXX XXXXX
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THIS RUN EXECUTED 14SEP92 14:40:47

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

T1 PRIMROSE POINTE N. DOMINGO BACA
T2 FLOODPLAIN ANALYSIS (SUPPERCRITICAL)
T3 100 YR. POST-DEVELOPMENT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	2.0			1.0	-1.0				6041.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.0		-1.				-1.			

J5 LPRNT NUMSEC *****REQUESTED SECTION NUMBERS*****
-10.0 -10.0

J6 IHLEQ ICOPY SUBDIV STRTDS RMILE
1.0

NC	0.02	0.02	0.02	0.6	0.8					
QT	3.0	2025.	909.	272.						
X1	37.4	4.0	0.0	65.0	20.0	20.0	20.0			
GR	6043.	0.00	6038.00	0.00	6038.00	65.00	6043.00	65.00		
NC	0.03	0.03	0.03	1.00	0.30					
X1	37.20	6.00	0.00	67.00	12.00	12.00	12.00		6030.20	
X4	1.	-1.	33.5							
GR	6.00	0.00	4.25	4.00	0.00	21.00	0.00	46.00	4.25	63.00
GR	6.00	67.00								
X1	37.08	4.00	0.00	73.00	10.00	10.00	10.00		6030.20	
X4	1.	-1.38	36.5							
GR	5.62	0.00	-0.38	24.00	-0.38	49.00	5.62	73.00		
X1	36.98				17.00	17.00	17.00		-0.31	
X1	36.81				25.00	25.00	25.00		-0.53	
X1	36.56	4.00	0.00	61.00	25.00	25.00	25.00		6027.36	
X4	1.	-0.22	30.5							
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00		

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PAGE 2

X1	36.31	4.00	0.00	45.00	8.00	8.00	8.00		6027.36	
X4	1.	-1.00	22.5							
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00		
X1	36.23	8.00	0.00	67.00	13.00	13.00	13.00		6027.36	
X4	1.	-1.00	33.5							
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50
GR	1.00	54.50	3.00	61.00	5.00	67.00				
X1	36.10	4.00	1.00	66.00	25.00	25.00	25.00		6020.80	
X4	1.	-1.00	33.5							
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00		
NC				60	80					
X1	35.85	5.00	0.00	79.00	20.00	20.00	20.00		6019.45	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00
X1	35.65	5.0	0.00	97.00	26.00	26.00	26.00		6019.17	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00

NC				.10	.30						
X1	35.39				26.00	26.00	26.00			-0.36	
X1	35.13				26.00	26.00	26.00			-0.36	
X1	34.87				26.00	26.00	26.00			-0.36	
X1	34.61				25.00	25.00	25.00			-0.36	
X1	34.36	4.00	0.00	61.00	25.00	25.00	25.00			6017.58	
X4	1.	-0.22	30.5								
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00			
X1	34.11	4.00	0.00	45.00	8.00	8.00	8.00			6018.01	
X4	1.	-1.00	22.5								
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00			
X1	34.03	8.00	0.00	67.00	13.00	13.00	13.00			6017.90	
X4	1.	-1.00	33.5								
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50	
GR	1.00	54.50	3.00	61.00	5.00	67.00					
X1	33.90	4.00	0.00	66.00	25.00	25.00	25.00			6011.34	
X4	1.	-1.00	33.5								
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00			
NC				.60	.80						
X1	33.65	5.00	0.00	79.00	20.00	20.00	20.00			6009.99	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00	

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PAGE 3

X1	33.45	5.00	0.00	97.00	26.00	26.00	26.00			6009.71	
GR	10.00	0.00	1.00	36.00	0.00	48.5	1.00	61.00	10.00	97.00	
NC				.10	.30						
X1	33.19				26.00	26.00	26.00			-0.36	
X1	32.93				26.00	26.00	26.00			-0.36	
X1	32.67				26.00	26.00	26.00			-0.36	
X1	32.41				25.00	25.00	25.00			-0.36	
X1	32.16	4.00	0.00	61.00	25.00	25.00	25.00			6008.12	
X4	1.	-0.22	30.5								
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00			
X1	31.91	4.00	0.00	45.00	8.00	8.00	8.00			6008.55	
X4	1.	-1.00	22.5								
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00			
X1	31.83	8.00	0.00	67.00	13.00	13.00	13.00			6008.44	
X4	1.	-1.00	33.5								
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50	
GR	1.00	54.50	3.00	61.00	5.00	67.00					
X1	31.70	4.00	0.00	66.00	25.00	25.00	25.00			6001.88	
X4	1.	-1.00	33.5								
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00			
NC				.60	.80						
X1	31.45	5.00	0.00	79.00	20.00	20.00	20.00			6000.53	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00	
X1	31.25	5.00	0.00	97.00	26.00	26.00	26.00			6000.25	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00	

NC				.10	.30						
X1	30.99				26.00	26.00	26.00			-0.36	
X1	30.73				26.00	26.00	26.00			-0.36	
X1	30.47				26.00	26.00	26.00			-0.36	
X1	30.21				25.00	25.00	25.00			-0.36	
X1	29.96	4.00	0.00	61.00	25.00	25.00	25.00			5998.66	
X4	1.	-0.22	30.5								
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00			

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PAGE 4

X1	29.71	4.00	0.00	45.00	8.00	8.00	8.00			5999.09	
X4	1.	-1.00	22.5								
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00			
X1	29.63	8.00	0.00	67.00	13.00	13.00	13.00			5998.98	
X4	1.	-1.00	33.5								
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50	
GR	1.00	54.50	3.00	61.00	5.00	67.00					
X1	29.50	4.00	0.00	66.00	25.00	25.00	25.00			5992.42	
X4	1.	-1.00	33.5								
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00			
NC				.60	.80						
X1	29.25	5.00	0.00	79.00	20.00	20.00	20.00			5991.07	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00	
X1	29.05	5.00	0.00	97.00	26.00	26.00	26.00			5990.79	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00	
NC				.10	.30						
X1	28.79				26.00	26.00	26.00			-0.36	

X1	28.53				26.00	26.00	26.00		-0.36	
X1	28.27				26.00	26.00	26.00		-0.36	
X1	28.01				25.00	25.00	25.00		-0.36	
X1	27.76	4.00	0.00	61.00	25.00	25.00	25.00		5989.20	
X4	1.	-0.22	30.5							
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00		
X1	27.51	4.00	0.00	45.00	8.00	8.00	8.00		5989.64	
X4	1.	-1.00	22.5							
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00		
X1	27.43	8.00	0.00	67.00	17.00	17.00	17.00		5989.53	
X4	1.	-1.00	33.5							
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50
GR	1.00	54.50	3.00	61.00	5.00	67.00				
X1	27.26	4.00	1.00	66.00	25.00	25.00	25.00		5980.91	
X4	1.	-1.00	33.5							
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00		
NC				.60	.80					
X1	27.01	5.00	0.00	79.00	20.00	20.00	20.00		5979.56	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00
1	14SEP92	14:40:47								PAGE 5

X1	26.81	5.00	0.00	97.00	22.00	22.00	22.00		5979.28	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00
NC				.10	.30					
X1	26.59				26.00	26.00	26.00		-0.31	
X1	26.33				26.00	26.00	26.00		-0.36	
X1	26.07				26.00	26.00	26.00		-0.36	
X1	25.81				25.00	25.00	25.00		-0.36	
X1	25.56	4.00	0.00	61.00	25.00	25.00	25.00		5977.74	
X4	1.	-0.22	30.5							
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00		
X1	25.31	4.00	0.00	45.00	8.00	8.00	8.00		5978.12	
X4	1.	-1.00	22.5							
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00		
X1	25.23	8.00	0.00	67.00	17.00	17.00	17.00		5978.06	
X4	1.	-1.00	33.5							
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50
GR	1.00	54.50	3.00	61.00	5.00	67.00				
X1	25.06	4.00	1.00	66.00	25.00	25.00	25.00		5969.44	
X4	1.	-1.00	33.5							
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00		
NC				.60	.80					
X1	24.81	5.00	0.00	79.00	20.00	20.00	20.00		5968.09	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00
X1	24.61	5.00	0.00	97.00	22.00	22.00	22.00		5967.81	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00
NC				.10	.30					
X1	24.39				26.00	26.00	26.00		-0.31	
X1	24.13				26.00	26.00	26.00		-0.36	
X1	23.87				26.00	26.00	26.00		-0.36	
X1	23.61				25.00	25.00	25.00		-0.36	
X1	23.36	4.00	0.00	61.00	25.00	25.00	25.00		5966.28	
X4	1.	-0.22	30.5							
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00		
1	14SEP92	14:40:47								PAGE 6

X1	23.11	4.00	0.00	45.00	8.00	8.00	8.00		5966.71	
X4	1.	-1.00	22.5							
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00		
X1	23.03	8.00	0.00	67.00	13.00	13.00	13.00		5966.60	
X4	1.	-1.00	33.5							
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50
GR	1.00	54.50	3.00	61.00	5.00	67.00				
X1	22.90	4.00	1.00	66.00	25.00	25.00	25.00		5960.04	
X4	1.	-1.00	33.5							
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00		
NC				.60	.80					
X1	22.65	5.00	0.00	79.00	20.00	20.00	20.00		5958.69	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00
X1	22.45	5.00	0.00	97.00	26.00	26.00	26.00		5958.41	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00
NC				.10	.30					
X1	22.19				26.00	26.00	26.00		-0.36	
X1	21.93				26.00	26.00	26.00		-0.36	

X1	21.67				26.00	26.00	26.00		-0.36	
X1	21.41				25.00	25.00	25.00		-0.36	
X1	21.16	4.00	0.00	61.00	25.00	25.00	25.00		5956.82	
X4	1.00	-0.22	30.5							
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00		
X1	20.91	4.00	0.00	45.00	8.00	8.00	8.00		5957.25	
X4	1.00	-1.00	22.5							
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00		
X1	20.83	8.00	0.00	67.00	13.00	13.00	13.00		5957.14	
X4	1.00	-1.00	33.5							
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50
GR	1.00	54.50	3.00	61.00	5.00	67.00				
X1	20.70	4.00	1.00	66.00	25.00	25.00	25.00		5950.58	
X4	1.00	-1.00	33.5							
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00		
NC				.60	.80					
X1	20.45	5.00	0.00	79.00	20.00	20.00	20.00		5949.23	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00
1	14SEP92	14:40:47								PAGE 7

X1	20.25	5.00	0.00	97.00	26.00	26.00	26.00		5948.95	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00
NC				.10	.30					
X1	19.99				26.00	26.00	26.00		-0.36	
X1	19.73				26.00	26.00	26.00		-0.36	
X1	19.47				26.00	26.00	26.00		-0.36	
X1	19.21				25.00	25.00	25.00		-0.36	
X1	18.96	4.00	0.00	61.00	25.00	25.00	25.00		5947.36	
X4	1.00	-0.22	30.5							
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00		
X1	18.71	4.00	0.00	45.00	8.00	8.00	8.00		5947.79	
X4	1.00	-1.00	22.5							
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00		
X1	18.63	8.00	0.00	67.00	13.00	13.00	13.00		5947.68	
X4	1.00	-1.00	33.5							
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50
GR	1.00	54.50	3.00	61.00	5.00	67.00				
X1	18.50	4.00	1.00	66.00	25.00	25.00	25.00		5941.12	
X4	1.00	-1.00	33.5							
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00		
NC				.60	.80					
X1	18.25	5.00	0.00	79.00	20.00	20.00	20.00		5939.77	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00
X1	18.05	5.00	0.00	97.00	26.00	26.00	26.00		5939.49	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00
NC				.10	.30					
X1	17.79				26.00	26.00	26.00		-0.36	
X1	17.53				26.00	26.00	26.00		-0.36	
X1	17.27				26.00	26.00	26.00		-0.36	
X1	17.01				25.00	25.00	25.00		-0.36	
X1	16.76	4.00	0.00	61.00	25.00	25.00	25.00		5937.90	
X4	1.00	-0.22	30.5							
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00		
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X1	16.51	4.00	0.00	45.00	8.00	8.00	8.00		5938.33	
X4	1.00	-1.00	22.5							
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00		
X1	16.43	8.00	0.00	67.00	13.00	13.00	13.00		5938.22	
X4	1.00	-1.00	33.5							
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50
GR	1.00	54.50	3.00	61.00	5.00	67.00				
X1	16.30	4.00	1.00	66.00	25.00	25.00	25.00		5931.66	
X4	1.00	-1.00	33.5							
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00		
NC				.60	.80					
X1	16.05	5.00	0.00	79.00	20.00	20.00	20.00		5930.31	
GR	10.00	0.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	79.00
X1	15.85	5.00	0.00	97.00	26.00	26.00	26.00		5930.03	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00
NC				.10	.30					
X1	15.59				26.00	26.00	26.00		-0.36	
X1	15.33				26.00	26.00	26.00		-0.36	
X1	15.07				26.00	26.00	26.00		-0.36	
X1	14.81				25.00	25.00	25.00		-0.36	

X1	14.56	4.00	0.00	61.00	25.00	25.00	25.00		5928.44	
X4	1.	-0.22	30.5							
GR	6.78	0.00	0.78	18.00	0.78	43.00	6.78	61.00		
X1	14.31	4.00	0.00	45.00	8.00	8.00	8.00		5928.87	
X4	1.	-1.00	22.5							
GR	5.00	0.00	0.00	10.00	0.00	35.00	5.00	45.00		
X1	14.23	8.00	0.00	67.00	16.00	16.00	16.00		5928.76	
X4	1.	-1.00	33.5							
GR	6.78	0.00	3.00	6.00	1.00	12.50	0.00	18.50	0.00	48.50
GR	1.00	54.50	3.00	61.00	5.00	67.00				
NC				60	80					
X1	14.07	4.00	1.00	66.00	25.00	25.00	25.00		5921.01	
X4	1.	-1.00	33.5							
GR	10.00	1.00	0.00	21.00	0.00	46.00	10.00	66.00		
X1	13.80	5.00	9.00	70.00	25.00	25.00	25.00		5919.63	
GR	10.00	9.00	1.00	27.00	0.00	39.50	1.00	52.00	10.00	70.00

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NC				10	30					
X1	13.55	5.	0.	97.	28.00	28.00	28.00		5919.27	
GR	10.00	0.00	1.00	36.00	0.00	48.50	1.00	61.00	10.00	97.00
X1	13.27				26.00	26.00	26.00		-0.36	
X1	13.01				26.00	26.00	26.00		-0.36	
X1	12.75				26.00	26.00	26.00		-0.36	
X1	12.49				26.00	26.00	26.00		-0.37	
X1	12.23				26.00	26.00	26.00		-0.36	
X1	11.97				26.00	26.00	26.00		-0.36	
X1	11.71				26.00	26.00	26.00		-0.37	
X1	11.45				26.00	26.00	26.00		-0.36	
X1	11.19				26.00	26.00	26.00		-0.37	
X1	10.93				26.00	26.00	26.00		-0.36	
X1	10.67	5.	0.	86.	26.	26.	26.		5915.25	
GR	6.	0.	1.	20.	0.	43.	1.	66.	6.	86.
X1	10.42	5.	0.	99.	24.	24.	24.		5914.89	
GR	6.	0.	1.	20.	0.	49.5	1.	79.	6.	99.
X1	10.16	5.	0.	111.	22.	22.	22.		5914.53	
GR	6.	0.	1.	20.	0.	55.5	1.	91.	6.	111.
NC	0.02	0.02	0.02	0.10	0.30					
X1	9.94	18.00	100.00	490.00	37.00	37.00	37.00	0.866	5900.30	
GR	22.03	100.00	21.63	125.00	20.78	150.00	19.50	175.00	18.00	200.00
GR	16.50	225.00	15.00	250.00	13.81	275.00	13.25	300.00	13.20	310.00
GR	13.31	325.00	14.00	350.00	15.31	375.00	17.25	400.00	19.19	425.00
GR	20.50	450.00	21.19	475.00	21.30	490.00				
X1	9.57				45.00	90.00	65.00			
NC	0.06	0.06	0.06							
X1	8.65	10.00	90.00	178.00	110.00	55.00	95.00		5900.00	
GR	20.50	0.00	20.00	25.00	18.00	55.00	14.00	90.00	11.00	105.00
GR	11.00	138.00	13.50	178.00	11.50	210.00	13.00	240.00	16.00	330.00
X1	7.70	10.00	0.00	135.00	180.00	180.00	180.00		5900.	
GR	14.00	0.00	10.00	60.00	7.00	80.00	7.00	100.00	8.00	120.00
GR	9.50	135.00	9.00	150.00	10.00	160.00	12.00	215.00	14.00	270.00

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X1	5.90	9.00	110.00	183.00	100.00	180.00	160.00		5900.00	
GR	5.70	0.00	3.30	64.00	3.20	110.00	2.00	140.00	1.00	144.00
GR	1.00	166.00	2.00	170.00	4.00	183.00	6.00	285.00		
X1	4.30	11.00	170.00	257.00						
GR	5902	0.00	5900.00	45.00	5898.50	53.00	5900.00	70.00	5900.00	95.00
GR	5898	150.00	5897.00	170.00	5895.30	190.00	5895.30	220.00	5901.00	257.00
GR	5902	300.00								

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1 IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

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PAGE 12

T1	PRIMROSE POINTE N. DOMINGO BACA									
T2	FLOODPLAIN ANALYSIS (SUPERCRITICAL)									
T3	10 YR. POST-DEVELOPMENT									
J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
		3.0		1.0	-1.0				6041.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE

2.0

-1.

-1.

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR
DETAILS.

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T1 PRIMROSE POINTE N. DOMINGO BACA
T2 FLOODPLAIN ANALYSIS (SUPERCRITICAL)
T3 2 YR. POST-DEVELOPMENT

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	4.0			1.0	-1.0				6041.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.0		-1.				-1.			

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF
PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR
DETAILS.

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THIS RUN EXECUTED 14SEP92 14:41:04

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

00 YR. POST-DEVELOPMENT

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	37.400	.00	.00	.00	6038.00	2025.00	6041.10	6041.10	6042.67	45.58	10.04	201.67	299.95
*	37.400	.00	.00	.00	6038.00	909.00	6039.81	6039.81	6040.74	52.37	7.71	117.88	125.62
*	37.400	.00	.00	.00	6038.00	272.00	6038.81	6038.81	6039.22	65.76	5.16	52.75	33.54
*	37.200	20.00	.00	.00	6029.20	2025.00	6032.37	6034.52	6041.01	902.64	23.59	85.85	67.40
*	37.200	20.00	.00	.00	6029.20	909.00	6031.20	6032.81	6038.59	1443.09	21.82	41.66	23.93
*	37.200	20.00	.00	.00	6029.20	272.00	6030.28	6031.21	6035.66	3006.77	18.61	14.62	4.96
	37.080	12.00	.00	.00	6028.82	2025.00	6032.13	6034.15	6039.71	749.87	22.08	91.70	73.95
*	37.080	12.00	.00	.00	6028.82	909.00	6031.00	6032.44	6036.65	976.01	19.07	47.66	29.10
	37.080	12.00	.00	.00	6028.82	272.00	6030.15	6030.83	6032.75	991.44	12.95	21.00	8.64
	36.980	10.00	.00	.00	6028.51	2025.00	6031.92	6033.83	6038.79	654.68	21.04	96.25	79.14
	36.980	10.00	.00	.00	6028.51	909.00	6030.83	6032.12	6035.50	740.93	17.34	52.43	33.39
	36.980	10.00	.00	.00	6028.51	272.00	6029.98	6030.52	6031.76	558.09	10.71	25.41	11.51
	36.810	17.00	.00	.00	6027.98	2025.00	6031.56	6033.30	6037.51	535.92	19.59	103.38	87.47
	36.810	17.00	.00	.00	6027.98	909.00	6030.50	6031.59	6034.14	519.46	15.32	59.33	39.88
	36.810	17.00	.00	.00	6027.98	272.00	6029.63	6030.00	6030.87	327.87	8.96	30.36	15.02
	36.560	25.00	.00	.00	6027.14	2025.00	6031.09	6032.66	6036.11	374.02	17.98	112.60	104.71
	36.560	25.00	.00	.00	6027.14	909.00	6029.89	6030.82	6032.87	353.45	13.85	65.63	48.35
	36.560	25.00	.00	.00	6027.14	272.00	6028.79	6029.16	6030.06	320.67	9.05	30.07	15.19
	36.310	25.00	.00	.00	6026.36	2025.00	6030.76	6032.14	6035.13	265.59	16.78	120.71	124.26
	36.310	25.00	.00	.00	6026.36	909.00	6029.31	6030.13	6032.01	273.47	13.18	68.99	54.97
	36.310	25.00	.00	.00	6026.36	272.00	6028.03	6028.39	6029.28	297.21	8.98	30.29	15.78
	36.230	8.00	.00	.00	6026.36	2025.00	6029.68	6031.18	6034.76	470.70	18.10	111.87	93.34
	36.230	8.00	.00	.00	6026.36	909.00	6028.70	6029.60	6031.68	468.21	13.87	65.54	42.01
	36.230	8.00	.00	.00	6026.36	272.00	6027.86	6028.21	6028.99	348.26	8.50	32.01	14.58

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	36.100	13.00	.00	.00	6019.80	2025.00	6023.04	6025.56	6033.34	922.08	25.75	78.64	66.69
*	36.100	13.00	.00	.00	6019.80	909.00	6021.80	6023.57	6029.93	1438.93	22.87	39.74	23.96
*	36.100	13.00	.00	.00	6019.80	272.00	6020.88	6021.83	6026.35	3040.79	18.77	14.49	4.93
*	35.850	25.00	.00	.00	6019.45	2025.00	6023.93	6024.98	6027.39	221.31	14.93	135.67	136.12
*	35.850	25.00	.00	.00	6019.45	909.00	6022.93	6023.15	6024.42	129.79	9.78	92.97	79.79
*	35.850	25.00	.00	.00	6019.45	272.00	6021.47	6021.47	6022.15	125.01	6.61	41.14	24.33
*	35.650	20.00	.00	.00	6019.17	2025.00	6023.56	6024.49	6026.66	215.88	14.12	143.40	137.82
	35.650	20.00	.00	.00	6019.17	909.00	6022.75	6022.78	6023.95	108.05	8.79	103.36	87.45
	35.650	20.00	.00	.00	6019.17	272.00	6021.12	6021.19	6021.85	147.99	6.84	39.77	22.36
	35.390	26.00	.00	.00	6018.81	2025.00	6023.52	6024.13	6025.99	157.67	12.60	160.70	161.27
*	35.390	26.00	.00	.00	6018.81	909.00	6022.23	6022.43	6023.62	132.42	9.46	96.12	78.99
	35.390	26.00	.00	.00	6018.81	272.00	6020.79	6020.82	6021.47	132.93	6.59	41.26	23.59

*	35.130	26.00	.00	.00	6018.45	2025.00	6023.74	6023.79	6025.44	95.19	10.49	193.11	207.55
	35.130	26.00	.00	.00	6018.45	909.00	6021.83	6022.06	6023.26	138.78	9.62	94.52	77.16
	35.130	26.00	.00	.00	6018.45	272.00	6020.46	6020.48	6021.12	128.63	6.52	41.73	23.98
	34.870	26.00	.00	.00	6018.09	2025.00	6023.11	6023.43	6025.13	120.21	11.42	177.36	184.70
	34.870	26.00	.00	.00	6018.09	909.00	6021.67	6021.70	6022.87	108.25	8.80	103.30	87.37
	34.870	26.00	.00	.00	6018.09	272.00	6020.06	6020.12	6020.77	141.75	6.74	40.36	22.85
	34.610	26.00	.00	.00	6017.73	2025.00	6022.68	6023.05	6024.80	127.75	11.67	173.48	179.16
	34.610	26.00	.00	.00	6017.73	909.00	6021.15	6021.35	6022.54	132.34	9.45	96.14	79.02
	34.610	26.00	.00	.00	6017.73	272.00	6019.73	6019.75	6020.40	130.98	6.56	41.47	23.77
*	34.360	25.00	.00	.00	6017.36	2025.00	6022.89	6022.89	6024.70	90.02	10.81	187.38	213.43
*	34.360	25.00	.00	.00	6017.36	909.00	6021.04	6021.04	6022.30	101.92	8.98	101.21	90.04
*	34.360	25.00	.00	.00	6017.36	272.00	6019.34	6019.39	6020.06	137.59	6.83	39.84	23.19
*	34.110	25.00	.00	.00	6017.01	2025.00	6022.77	6022.77	6024.81	89.46	11.44	177.00	214.10
*	34.110	25.00	.00	.00	6017.01	909.00	6020.78	6020.78	6022.14	100.61	9.37	97.01	90.62
*	34.110	25.00	.00	.00	6017.01	272.00	6019.04	6019.04	6019.74	122.45	6.73	40.41	24.58
*	34.030	8.00	.00	.00	6016.90	2025.00	6020.51	6021.71	6024.45	323.52	15.93	127.14	112.58
*	34.030	8.00	.00	.00	6016.90	909.00	6019.38	6020.14	6021.85	350.50	12.60	72.13	48.55
*	34.030	8.00	.00	.00	6016.90	272.00	6018.42	6018.75	6019.52	339.92	8.43	32.28	14.75
*	33.900	13.00	.00	.00	6010.34	2025.00	6013.68	6016.10	6023.16	816.16	24.70	81.98	70.88
*	33.900	13.00	.00	.00	6010.34	909.00	6012.37	6014.10	6020.20	1360.20	22.46	40.48	24.65
*	33.900	13.00	.00	.00	6010.34	272.00	6011.41	6012.37	6016.89	3040.79	18.77	14.49	4.93
*	33.650	25.00	.00	.00	6009.99	2025.00	6014.43	6015.51	6017.98	229.26	15.11	133.98	133.74
*	33.650	25.00	.00	.00	6009.99	909.00	6013.47	6013.69	6014.96	130.42	9.79	92.81	79.60
*	33.650	25.00	.00	.00	6009.99	272.00	6012.02	6012.02	6012.69	123.23	6.58	41.33	24.50
*	33.450	20.00	.00	.00	6009.71	2025.00	6014.01	6015.03	6017.31	235.55	14.57	138.95	131.94
	33.450	20.00	.00	.00	6009.71	909.00	6013.29	6013.32	6014.49	108.05	8.79	103.36	87.45
	33.450	20.00	.00	.00	6009.71	272.00	6011.66	6011.73	6012.39	148.16	6.84	39.75	22.35

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	33.190	26.00	.00	.00	6009.35	2025.00	6014.00	6014.67	6016.58	168.03	12.90	157.03	156.22
	33.190	26.00	.00	.00	6009.35	909.00	6012.77	6012.97	6014.16	132.59	9.46	96.08	78.94
	33.190	26.00	.00	.00	6009.35	272.00	6011.35	6011.37	6012.01	127.33	6.50	41.87	24.10
*	32.930	26.00	.00	.00	6008.99	2025.00	6014.28	6014.33	6015.99	95.03	10.48	193.22	207.72
	32.930	26.00	.00	.00	6008.99	909.00	6012.37	6012.60	6013.80	137.99	9.60	94.72	77.38
	32.930	26.00	.00	.00	6008.99	272.00	6010.98	6011.02	6011.66	135.69	6.64	40.97	23.35
	32.670	26.00	.00	.00	6008.63	2025.00	6013.64	6013.96	6015.68	121.09	11.45	176.89	184.02
	32.670	26.00	.00	.00	6008.63	909.00	6012.21	6012.24	6013.41	108.58	8.81	103.18	87.24
	32.670	26.00	.00	.00	6008.63	272.00	6010.60	6010.66	6011.30	139.64	6.70	40.57	23.02
	32.410	26.00	.00	.00	6008.27	2025.00	6013.20	6013.59	6015.34	129.73	11.74	172.51	177.79
	32.410	26.00	.00	.00	6008.27	909.00	6011.69	6011.89	6013.08	132.59	9.46	96.08	78.94
	32.410	26.00	.00	.00	6008.27	272.00	6010.27	6010.29	6010.94	131.58	6.57	41.40	23.71
*	32.160	25.00	.00	.00	6007.90	2025.00	6013.43	6013.43	6015.24	89.98	10.81	187.40	213.47
*	32.160	25.00	.00	.00	6007.90	909.00	6011.58	6011.58	6012.84	101.80	8.98	101.26	90.09
	32.160	25.00	.00	.00	6007.90	272.00	6009.88	6009.93	6010.60	136.97	6.82	39.90	23.24
*	31.910	25.00	.00	.00	6007.55	2025.00	6013.32	6013.32	6015.35	89.25	11.43	177.15	214.35
*	31.910	25.00	.00	.00	6007.55	909.00	6011.31	6011.31	6012.68	101.25	9.39	96.80	90.34
*	31.910	25.00	.00	.00	6007.55	272.00	6009.58	6009.58	6010.28	122.58	6.73	40.39	24.57
*	31.830	8.00	.00	.00	6007.44	2025.00	6011.05	6012.25	6014.99	323.52	15.93	127.14	112.58
*	31.830	8.00	.00	.00	6007.44	909.00	6009.92	6010.68	6012.39	350.82	12.61	72.11	48.53
*	31.830	8.00	.00	.00	6007.44	272.00	6008.96	6009.29	6010.06	339.92	8.43	32.28	14.75
*	31.700	13.00	.00	.00	6000.88	2025.00	6004.22	6006.64	6013.70	816.16	24.70	81.98	70.88
*	31.700	13.00	.00	.00	6000.88	909.00	6002.91	6004.64	6010.74	1360.20	22.46	40.48	24.65
*	31.700	13.00	.00	.00	6000.88	272.00	6001.95	6002.91	6007.43	3040.79	18.77	14.49	4.93
*	31.450	25.00	.00	.00	6000.53	2025.00	6005.09	6006.05	6008.36	204.25	14.50	139.61	141.69
*	31.450	25.00	.00	.00	6000.53	909.00	6004.01	6004.23	6005.50	130.42	9.79	92.81	79.60
*	31.450	25.00	.00	.00	6000.53	272.00	6002.56	6002.56	6003.23	123.23	6.58	41.33	24.50
*	31.250	20.00	.00	.00	6000.25	2025.00	6004.82	6005.60	6007.54	181.02	13.25	152.85	150.51
	31.250	20.00	.00	.00	6000.25	909.00	6003.83	6003.86	6005.03	108.05	8.79	103.36	87.45
	31.250	20.00	.00	.00	6000.25	272.00	6002.20	6002.27	6002.93	147.99	6.84	39.77	22.36
*	30.990	26.00	.00	.00	5999.89	2025.00	6005.20	6005.24	6006.89	94.41	10.45	193.69	208.41
	30.990	26.00	.00	.00	5999.89	909.00	6003.31	6003.51	6004.70	132.50	9.46	96.10	78.97
	30.990	26.00	.00	.00	5999.89	272.00	6001.89	6001.90	6002.55	127.76	6.50	41.82	24.06
	30.730	26.00	.00	.00	5999.53	2025.00	6004.53	6004.86	6006.58	121.83	11.47	176.50	183.46
	30.730	26.00	.00	.00	5999.53	909.00	6002.94	6003.13	6004.35	135.30	9.53	95.38	78.15
	30.730	26.00	.00	.00	5999.53	272.00	6001.51	6001.56	6002.20	136.31	6.65	40.91	23.30
	30.470	26.00	.00	.00	5999.17	2025.00	6004.09	6004.49	6006.24	130.13	11.75	172.32	177.52
	30.470	26.00	.00	.00	5999.17	909.00	6002.56	6002.78	6003.99	138.34	9.61	94.63	77.28
	30.470	26.00	.00	.00	5999.17	272.00	6001.18	6001.20	6001.85	131.72	6.57	41.39	23.70

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	30.210	26.00	.00	.00	5998.81	2025.00	6003.72	6004.14	6005.89	132.73	11.84	171.08	175.77
	30.210	26.00	.00	.00	5998.81	909.00	6002.22	6002.42	6003.62	134.36	9.51	95.62	78.42
	30.210	26.00	.00	.00	5998.81	272.00	6000.78	6000.83	6001.49	142.08	6.74	40.33	22.82
*	29.960	25.00	.00	.00	5998.44	2025.00	6003.97	6003.97	6005.78	89.78	10.80	187.56	213.71
*	29.960	25.00	.00	.00	5998.44	909.00	6002.13	6002.13	6003.38	101.80	8.98	101.26	90.09
	29.960	25.00	.00	.00	5998.44	272.00	6000.45	6000.46	6001.15	129.65	6.69	40.64	23.89

*	29.710	25.00	.00	.00	5998.09	2025.00	6003.86	6003.86	6005.89	89.28	11.43	177.13	214.32
*	29.710	25.00	.00	.00	5998.09	909.00	6001.85	6001.85	6003.22	101.25	9.39	96.80	90.34
*	29.710	25.00	.00	.00	5998.09	272.00	6000.10	6000.12	6000.82	127.17	6.82	39.91	24.12
*	29.630	8.00	.00	.00	5997.98	2025.00	6001.59	6002.79	6005.53	323.52	15.93	127.14	112.58
*	29.630	8.00	.00	.00	5997.98	909.00	6000.46	6001.22	6002.93	350.82	12.61	72.11	48.53
*	29.630	8.00	.00	.00	5997.98	272.00	5999.50	5999.83	6000.60	339.37	8.42	32.29	14.76
*	29.500	13.00	.00	.00	5991.42	2025.00	5994.76	5997.18	6004.24	816.16	24.70	81.98	70.88
*	29.500	13.00	.00	.00	5991.42	909.00	5993.45	5995.18	6001.28	1360.20	22.46	40.48	24.65
*	29.500	13.00	.00	.00	5991.42	272.00	5992.49	5993.45	5997.96	3040.79	18.77	14.49	4.93
*	29.250	25.00	.00	.00	5991.07	2025.00	5995.63	5996.59	5998.90	204.25	14.50	139.61	141.69
*	29.250	25.00	.00	.00	5991.07	909.00	5994.55	5994.77	5996.04	130.42	9.79	92.81	79.60
*	29.250	25.00	.00	.00	5991.07	272.00	5993.10	5993.10	5993.77	123.23	6.58	41.33	24.50
*	29.050	20.00	.00	.00	5990.79	2025.00	5995.36	5996.14	5998.08	181.02	13.25	152.85	150.51
*	29.050	20.00	.00	.00	5990.79	909.00	5994.37	5994.40	5995.57	108.05	8.79	103.36	87.45
*	29.050	20.00	.00	.00	5990.79	272.00	5992.74	5992.81	5993.47	147.99	6.84	39.77	22.36
*	28.790	26.00	.00	.00	5990.43	2025.00	5995.74	5995.78	5997.43	94.41	10.45	193.69	208.41
*	28.790	26.00	.00	.00	5990.43	909.00	5993.85	5994.05	5995.24	132.50	9.46	96.10	78.97
*	28.790	26.00	.00	.00	5990.43	272.00	5992.43	5992.44	5993.09	127.76	6.50	41.82	24.06
*	28.530	26.00	.00	.00	5990.07	2025.00	5995.07	5995.40	5997.12	121.83	11.47	176.50	183.46
*	28.530	26.00	.00	.00	5990.07	909.00	5993.48	5993.67	5994.89	135.30	9.53	95.38	78.15
*	28.530	26.00	.00	.00	5990.07	272.00	5992.05	5992.10	5992.74	136.31	6.65	40.91	23.30
*	28.270	26.00	.00	.00	5989.71	2025.00	5994.63	5995.03	5996.78	130.13	11.75	172.32	177.52
*	28.270	26.00	.00	.00	5989.71	909.00	5993.10	5993.32	5994.53	138.34	9.61	94.63	77.28
*	28.270	26.00	.00	.00	5989.71	272.00	5991.72	5991.74	5992.39	131.72	6.57	41.39	23.70
*	28.010	26.00	.00	.00	5989.35	2025.00	5994.26	5994.68	5996.43	132.73	11.84	171.08	175.77
*	28.010	26.00	.00	.00	5989.35	909.00	5992.76	5992.96	5994.16	134.36	9.51	95.62	78.42
*	28.010	26.00	.00	.00	5989.35	272.00	5991.32	5991.37	5992.03	142.08	6.74	40.33	22.82
*	27.760	25.00	.00	.00	5988.98	2025.00	5994.51	5994.51	5996.32	89.78	10.80	187.56	213.71
*	27.760	25.00	.00	.00	5988.98	909.00	5992.67	5992.67	5993.92	101.80	8.98	101.26	90.09
*	27.760	25.00	.00	.00	5988.98	272.00	5990.99	5991.00	5991.69	129.65	6.69	40.64	23.89
*	27.510	25.00	.00	.00	5988.64	2025.00	5994.41	5994.41	5996.44	89.28	11.43	177.13	214.32
*	27.510	25.00	.00	.00	5988.64	909.00	5992.40	5992.40	5993.77	101.25	9.39	96.80	90.34
*	27.510	25.00	.00	.00	5988.64	272.00	5990.67	5990.67	5991.37	122.05	6.72	40.45	24.62

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	27.430	8.00	.00	.00	5988.53	2025.00	5992.14	5993.34	5996.08	323.52	15.93	127.14	112.58
*	27.430	8.00	.00	.00	5988.53	909.00	5991.01	5991.77	5993.48	350.82	12.61	72.11	48.53
*	27.430	8.00	.00	.00	5988.53	272.00	5990.05	5990.38	5991.15	338.28	8.41	32.33	14.79
*	27.260	17.00	.00	.00	5979.91	2025.00	5983.06	5985.67	5994.20	1036.05	26.79	75.59	62.91
*	27.260	17.00	.00	.00	5979.91	909.00	5981.84	5983.67	5991.03	1738.84	24.33	37.36	21.80
*	27.260	17.00	.00	.00	5979.91	272.00	5980.95	5981.94	5987.17	3733.86	20.01	13.59	4.45
*	27.010	25.00	.00	.00	5979.56	2025.00	5984.10	5985.09	5987.42	208.86	14.62	138.51	140.12
*	27.010	25.00	.00	.00	5979.56	909.00	5983.02	5983.24	5984.53	132.70	9.85	92.25	78.91
*	27.010	25.00	.00	.00	5979.56	272.00	5981.58	5981.58	5982.26	123.78	6.59	41.27	24.45
*	26.810	20.00	.00	.00	5979.28	2025.00	5983.81	5984.60	5986.60	187.66	13.42	150.87	147.82
*	26.810	20.00	.00	.00	5979.28	909.00	5982.84	5982.89	5984.04	107.99	8.79	103.38	87.47
*	26.810	20.00	.00	.00	5979.28	272.00	5981.21	5981.29	5981.95	150.79	6.88	39.52	22.15
*	26.590	22.00	.00	.00	5978.97	2025.00	5983.80	5984.29	5986.09	142.90	12.16	166.55	169.40
*	26.590	22.00	.00	.00	5978.97	909.00	5982.37	5982.59	5983.76	132.50	9.46	96.10	78.97
*	26.590	22.00	.00	.00	5978.97	272.00	5980.98	5980.98	5981.64	127.05	6.49	41.90	24.13
*	26.330	26.00	.00	.00	5978.61	2025.00	5983.49	5983.94	5985.71	136.06	11.94	169.55	173.60
*	26.330	26.00	.00	.00	5978.61	909.00	5982.18	5982.21	5983.40	109.23	8.83	102.96	86.97
*	26.330	26.00	.00	.00	5978.61	272.00	5980.58	5980.63	5981.28	141.10	6.73	40.42	22.90
*	26.070	26.00	.00	.00	5978.25	2025.00	5983.13	5983.58	5985.35	136.97	11.97	169.14	173.03
*	26.070	26.00	.00	.00	5978.25	909.00	5981.64	5981.87	5983.06	135.64	9.54	95.30	78.05
*	26.070	26.00	.00	.00	5978.25	272.00	5980.25	5980.27	5980.92	130.98	6.56	41.47	23.77
*	25.810	26.00	.00	.00	5977.89	2025.00	5982.77	5983.22	5984.99	136.48	11.96	169.36	173.33
*	25.810	26.00	.00	.00	5977.89	909.00	5981.31	5981.50	5982.70	133.26	9.48	95.90	78.74
*	25.810	26.00	.00	.00	5977.89	272.00	5979.87	5979.92	5980.56	139.80	6.71	40.55	23.00
*	25.560	25.00	.00	.00	5977.52	2025.00	5983.06	5983.06	5984.86	89.58	10.79	187.71	213.95
*	25.560	25.00	.00	.00	5977.52	909.00	5981.21	5981.21	5982.46	101.40	8.96	101.40	90.27
*	25.560	25.00	.00	.00	5977.52	272.00	5979.53	5979.54	5980.23	130.81	6.71	40.52	23.78
*	25.310	25.00	.00	.00	5977.12	2025.00	5982.89	5982.89	5984.92	89.28	11.43	177.13	214.32
*	25.310	25.00	.00	.00	5977.12	909.00	5980.88	5980.88	5982.25	101.20	9.39	96.81	90.36
*	25.310	25.00	.00	.00	5977.12	272.00	5979.04	5979.16	5979.86	153.21	7.24	37.55	21.97
*	25.230	8.00	.00	.00	5977.06	2025.00	5980.69	5981.87	5984.57	316.39	15.81	128.11	113.85
*	25.230	8.00	.00	.00	5977.06	909.00	5979.56	5980.30	5981.97	338.19	12.45	72.99	49.43
*	25.230	8.00	.00	.00	5977.06	272.00	5978.59	5978.92	5979.65	317.36	8.23	33.04	15.27
*	25.060	17.00	.00	.00	5968.44	2025.00	5971.60	5974.19	5982.70	1030.76	26.74	75.72	63.07
*	25.060	17.00	.00	.00	5968.44	909.00	5970.37	5972.20	5979.54	1730.86	24.30	37.41	21.85
*	25.060	17.00	.00	.00	5968.44	272.00	5969.49	5970.47	5975.70	3723.06	20.00	13.60	4.46
*	24.810	25.00	.00	.00	5968.09	2025.00	5972.79	5973.62	5975.78	180.35	13.87	145.96	150.79
*	24.810	25.00	.00	.00	5968.09	909.00	5971.55	5971.77	5973.06	132.70	9.85	92.25	78.91
*	24.810	25.00	.00	.00	5968.09	272.00	5970.11	5970.11	5970.79	124.46	6.60	41.20	24.38

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
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*	24.610	20.00	.00	.00	5967.81	2025.00	5972.58	5973.15	5974.95	149.28	12.35	163.93	165.74
	24.610	20.00	.00	.00	5967.81	909.00	5971.37	5971.42	5972.58	108.64	8.81	103.16	87.21
	24.610	20.00	.00	.00	5967.81	272.00	5969.76	5969.82	5970.48	148.68	6.85	39.71	22.31
*	24.390	22.00	.00	.00	5967.50	2025.00	5972.78	5972.83	5974.49	95.74	10.51	192.70	206.96
*	24.390	22.00	.00	.00	5967.50	909.00	5970.95	5971.12	5972.30	128.16	9.35	97.25	80.29
*	24.390	22.00	.00	.00	5967.50	272.00	5969.48	5969.51	5970.16	133.08	6.60	41.24	23.58
	24.130	26.00	.00	.00	5967.14	2025.00	5972.17	5972.48	5974.18	119.48	11.39	177.75	185.26
	24.130	26.00	.00	.00	5967.14	909.00	5970.51	5970.75	5971.95	138.61	9.61	94.57	77.21
	24.130	26.00	.00	.00	5967.14	272.00	5969.16	5969.17	5969.81	128.20	6.51	41.77	24.02
	23.870	26.00	.00	.00	5966.78	2025.00	5971.72	5972.10	5973.85	128.54	11.70	173.09	178.61
	23.870	26.00	.00	.00	5966.78	909.00	5970.36	5970.39	5971.56	108.58	8.81	103.18	87.24
	23.870	26.00	.00	.00	5966.78	272.00	5968.74	5968.81	5969.46	143.74	6.77	40.17	22.69
	23.610	26.00	.00	.00	5966.42	2025.00	5971.32	5971.75	5973.50	133.38	11.86	170.78	175.34
	23.610	26.00	.00	.00	5966.42	909.00	5969.84	5970.04	5971.23	132.59	9.46	96.08	78.94
	23.610	26.00	.00	.00	5966.42	272.00	5968.41	5968.44	5969.09	131.87	6.57	41.37	23.69
*	23.360	25.00	.00	.00	5966.06	2025.00	5971.60	5971.60	5973.40	89.55	10.79	187.73	213.99
*	23.360	25.00	.00	.00	5966.06	909.00	5969.75	5969.75	5971.00	101.52	8.97	101.36	90.22
*	23.360	25.00	.00	.00	5966.06	272.00	5968.07	5968.09	5968.76	127.37	6.65	40.88	24.10
*	23.110	25.00	.00	.00	5965.71	2025.00	5971.48	5971.48	5973.51	89.25	11.43	177.15	214.35
*	23.110	25.00	.00	.00	5965.71	909.00	5969.48	5969.48	5970.84	100.56	9.37	97.03	90.65
*	23.110	25.00	.00	.00	5965.71	272.00	5967.72	5967.74	5968.44	127.44	6.82	39.88	24.09
*	23.030	8.00	.00	.00	5965.60	2025.00	5969.21	5970.41	5973.15	323.52	15.93	127.14	112.58
*	23.030	8.00	.00	.00	5965.60	909.00	5968.08	5968.84	5970.55	350.50	12.60	72.13	48.55
*	23.030	8.00	.00	.00	5965.60	272.00	5967.12	5967.45	5968.22	336.65	8.40	32.38	14.82
*	22.900	13.00	.00	.00	5959.04	2025.00	5962.38	5964.80	5971.86	816.16	24.70	81.98	70.88
*	22.900	13.00	.00	.00	5959.04	909.00	5961.07	5962.80	5968.90	1360.20	22.46	40.48	24.65
*	22.900	13.00	.00	.00	5959.04	272.00	5960.11	5961.07	5965.58	3040.79	18.77	14.49	4.93
*	22.650	25.00	.00	.00	5958.69	2025.00	5963.25	5964.21	5966.52	204.25	14.50	139.61	141.69
*	22.650	25.00	.00	.00	5958.69	909.00	5962.17	5962.39	5963.66	130.42	9.79	92.81	79.60
*	22.650	25.00	.00	.00	5958.69	272.00	5960.71	5960.71	5961.39	124.18	6.60	41.23	24.41
*	22.450	20.00	.00	.00	5958.41	2025.00	5962.98	5963.76	5965.70	181.02	13.25	152.85	150.51
*	22.450	20.00	.00	.00	5958.41	909.00	5961.99	5962.02	5963.19	108.05	8.79	103.36	87.45
*	22.450	20.00	.00	.00	5958.41	272.00	5960.36	5960.43	5961.09	148.16	6.84	39.75	22.35
*	22.190	26.00	.00	.00	5958.05	2025.00	5963.36	5963.40	5965.05	94.41	10.45	193.69	208.41
*	22.190	26.00	.00	.00	5958.05	909.00	5961.47	5961.67	5962.86	132.50	9.46	96.10	78.97
*	22.190	26.00	.00	.00	5958.05	272.00	5960.05	5960.06	5960.71	127.76	6.50	41.82	24.06
	21.930	26.00	.00	.00	5957.69	2025.00	5962.69	5963.02	5964.74	121.83	11.47	176.50	183.46
	21.930	26.00	.00	.00	5957.69	909.00	5961.10	5961.29	5962.51	135.30	9.53	95.38	78.15
	21.930	26.00	.00	.00	5957.69	272.00	5959.68	5959.72	5960.36	136.15	6.65	40.92	23.31

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	21.670	26.00	.00	.00	5957.33	2025.00	5962.25	5962.65	5964.40	130.13	11.75	172.32	177.52
	21.670	26.00	.00	.00	5957.33	909.00	5960.72	5960.94	5962.15	138.34	9.61	94.63	77.28
	21.670	26.00	.00	.00	5957.33	272.00	5959.33	5959.36	5960.01	135.22	6.63	41.02	23.39
	21.410	26.00	.00	.00	5956.97	2025.00	5961.88	5962.30	5964.05	132.73	11.84	171.08	175.77
	21.410	26.00	.00	.00	5956.97	909.00	5960.38	5960.58	5961.78	134.36	9.51	95.62	78.42
	21.410	26.00	.00	.00	5956.97	272.00	5958.93	5959.00	5959.64	143.40	6.77	40.20	22.71
*	21.160	25.00	.00	.00	5956.60	2025.00	5962.13	5962.13	5963.94	89.78	10.80	187.56	213.71
*	21.160	25.00	.00	.00	5956.60	909.00	5960.28	5960.28	5961.54	101.80	8.98	101.26	90.09
*	21.160	25.00	.00	.00	5956.60	272.00	5958.60	5958.62	5959.30	130.81	6.71	40.52	23.78
*	20.910	25.00	.00	.00	5956.25	2025.00	5962.02	5962.02	5964.05	89.28	11.43	177.13	214.32
*	20.910	25.00	.00	.00	5956.25	909.00	5960.01	5960.01	5961.38	101.25	9.39	96.80	90.34
*	20.910	25.00	.00	.00	5956.25	272.00	5958.28	5958.29	5958.98	121.79	6.72	40.48	24.65
*	20.830	8.00	.00	.00	5956.14	2025.00	5959.75	5960.95	5963.69	323.52	15.93	127.14	112.58
*	20.830	8.00	.00	.00	5956.14	909.00	5958.62	5959.38	5961.09	350.82	12.61	72.11	48.53
*	20.830	8.00	.00	.00	5956.14	272.00	5957.66	5957.99	5958.76	338.82	8.42	32.31	14.78
*	20.700	13.00	.00	.00	5949.58	2025.00	5952.92	5955.34	5962.40	816.16	24.70	81.98	70.88
*	20.700	13.00	.00	.00	5949.58	909.00	5951.61	5953.34	5959.44	1360.20	22.46	40.48	24.65
*	20.700	13.00	.00	.00	5949.58	272.00	5950.65	5951.61	5956.12	3040.79	18.77	14.49	4.93
*	20.450	25.00	.00	.00	5949.23	2025.00	5953.79	5954.75	5957.06	204.25	14.50	139.61	141.69
*	20.450	25.00	.00	.00	5949.23	909.00	5952.71	5952.93	5954.20	130.42	9.79	92.81	79.60
*	20.450	25.00	.00	.00	5949.23	272.00	5951.26	5951.26	5951.93	123.23	6.58	41.33	24.50
*	20.250	20.00	.00	.00	5948.95	2025.00	5953.52	5954.30	5956.24	181.02	13.25	152.85	150.51
*	20.250	20.00	.00	.00	5948.95	909.00	5952.53	5952.56	5953.73	108.05	8.79	103.36	87.45
*	20.250	20.00	.00	.00	5948.95	272.00	5950.90	5950.97	5951.63	147.99	6.84	39.77	22.36
*	19.990	26.00	.00	.00	5948.59	2025.00	5953.90	5953.94	5955.59	94.41	10.45	193.69	208.41
*	19.990	26.00	.00	.00	5948.59	909.00	5952.01	5952.21	5953.40	132.50	9.46	96.10	78.97
*	19.990	26.00	.00	.00	5948.59	272.00	5950.59	5950.60	5951.25	127.76	6.50	41.82	24.06
	19.730	26.00	.00	.00	5948.23	2025.00	5953.23	5953.56	5955.28	121.83	11.47	176.50	183.46
	19.730	26.00	.00	.00	5948.23	909.00	5951.64	5951.83	5953.05	135.30	9.53	95.38	78.15
	19.730	26.00	.00	.00	5948.23	272.00	5950.21	5950.26	5950.90	136.31	6.65	40.91	23.30
	19.470	26.00	.00	.00	5947.87	2025.00	5952.79	5953.19	5954.94	130.13	11.75	172.32	177.52
	19.470	26.00	.00	.00	5947.87	909.00	5951.26	5951.48	5952.69	138.34	9.61	94.63	77.28
	19.470	26.00	.00	.00	5947.87	272.00	5949.88	5949.90	5950.55	131.72	6.57	41.39	23.70
	19.210	26.00	.00	.00	5947.51	2025.00	5952.42	5952.84	5954.59	132.73	11.84	171.08	175.77
	19.210	26.00	.00	.00	5947.51	909.00	5950.92	5951.12	5952.32	134.36	9.51	95.62	78.42
	19.210	26.00	.00	.00	5947.51	272.00	5949.48	5949.53	5950.19	142.08	6.74	40.33	22.82
*	18.960	25.00	.00	.00	5947.14	2025.00	5952.67	5952.67	5954.48	89.78	10.80	187.56	213.71
*	18.960	25.00	.00	.00	5947.14	909.00	5950.82	5950.82	5952.08	101.80	8.98	101.26	90.09
*	18.960	25.00	.00	.00	5947.14	272.00	5949.15	5949.16	5949.85	129.65	6.69	40.64	23.89

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	18.710	25.00	.00	.00	5946.79	2025.00	5952.56	5952.56	5954.59	89.28	11.43	177.13	214.32
*	18.710	25.00	.00	.00	5946.79	909.00	5950.55	5950.55	5951.92	101.25	9.39	96.80	90.34
	18.710	25.00	.00	.00	5946.79	272.00	5948.80	5948.83	5949.52	127.03	6.81	39.93	24.13
*	18.630	8.00	.00	.00	5946.68	2025.00	5950.29	5951.49	5954.23	323.52	15.93	127.14	112.58
*	18.630	8.00	.00	.00	5946.68	909.00	5949.16	5949.92	5951.63	350.82	12.61	72.11	48.53
*	18.630	8.00	.00	.00	5946.68	272.00	5948.20	5948.53	5949.30	338.82	8.42	32.31	14.78
*	18.500	13.00	.00	.00	5940.12	2025.00	5943.46	5945.88	5952.94	816.16	24.70	81.98	70.88
*	18.500	13.00	.00	.00	5940.12	909.00	5942.15	5943.88	5949.98	1360.20	22.46	40.48	24.65
*	18.500	13.00	.00	.00	5940.12	272.00	5941.19	5942.15	5946.67	3040.79	18.77	14.49	4.93
*	18.250	25.00	.00	.00	5939.77	2025.00	5944.33	5945.29	5947.60	204.25	14.50	139.61	141.69
*	18.250	25.00	.00	.00	5939.77	909.00	5943.25	5943.47	5944.74	130.42	9.79	92.81	79.60
*	18.250	25.00	.00	.00	5939.77	272.00	5941.80	5941.80	5942.47	123.23	6.58	41.33	24.50
*	18.050	20.00	.00	.00	5939.49	2025.00	5944.06	5944.84	5946.78	181.02	13.25	152.85	150.51
	18.050	20.00	.00	.00	5939.49	909.00	5943.07	5943.10	5944.27	108.05	8.79	103.36	87.45
	18.050	20.00	.00	.00	5939.49	272.00	5941.44	5941.51	5942.17	147.99	6.84	39.77	22.36
*	17.790	26.00	.00	.00	5939.13	2025.00	5944.44	5944.48	5946.13	94.41	10.45	193.69	208.41
*	17.790	26.00	.00	.00	5939.13	909.00	5942.55	5942.75	5943.94	132.50	9.46	96.10	78.97
*	17.790	26.00	.00	.00	5939.13	272.00	5941.13	5941.14	5941.79	127.76	6.50	41.82	24.06
*	17.530	26.00	.00	.00	5938.77	2025.00	5943.77	5944.10	5945.82	121.83	11.47	176.50	183.46
*	17.530	26.00	.00	.00	5938.77	909.00	5942.18	5942.37	5943.59	135.30	9.53	95.38	78.15
*	17.530	26.00	.00	.00	5938.77	272.00	5940.75	5940.80	5941.44	136.31	6.65	40.91	23.30
*	17.270	26.00	.00	.00	5938.41	2025.00	5943.33	5943.73	5945.48	130.13	11.75	172.32	177.52
*	17.270	26.00	.00	.00	5938.41	909.00	5941.80	5942.02	5943.23	138.34	9.61	94.63	77.28
*	17.270	26.00	.00	.00	5938.41	272.00	5940.42	5940.44	5941.09	131.72	6.57	41.39	23.70
*	17.010	26.00	.00	.00	5938.05	2025.00	5942.96	5943.38	5945.13	132.73	11.84	171.08	175.77
*	17.010	26.00	.00	.00	5938.05	909.00	5941.46	5941.66	5942.86	134.36	9.51	95.62	78.42
*	17.010	26.00	.00	.00	5938.05	272.00	5940.02	5940.07	5940.73	142.08	6.74	40.33	22.82
*	16.760	25.00	.00	.00	5937.68	2025.00	5943.21	5943.21	5945.02	89.78	10.80	187.56	213.71
*	16.760	25.00	.00	.00	5937.68	909.00	5941.36	5941.36	5942.62	101.80	8.98	101.26	90.09
*	16.760	25.00	.00	.00	5937.68	272.00	5939.69	5939.70	5940.39	129.65	6.69	40.64	23.89
*	16.510	25.00	.00	.00	5937.33	2025.00	5943.10	5943.10	5945.13	89.28	11.43	177.13	214.32
*	16.510	25.00	.00	.00	5937.33	909.00	5941.09	5941.09	5942.46	101.25	9.39	96.80	90.34
*	16.510	25.00	.00	.00	5937.33	272.00	5939.34	5939.37	5940.06	127.03	6.81	39.93	24.13
*	16.430	8.00	.00	.00	5937.22	2025.00	5940.83	5942.03	5944.77	323.52	15.93	127.14	112.58
*	16.430	8.00	.00	.00	5937.22	909.00	5939.70	5940.46	5942.17	350.82	12.61	72.11	48.53
*	16.430	8.00	.00	.00	5937.22	272.00	5938.74	5939.07	5939.84	338.82	8.42	32.31	14.78
*	16.300	13.00	.00	.00	5930.66	2025.00	5934.00	5936.42	5943.48	816.16	24.70	81.98	70.88
*	16.300	13.00	.00	.00	5930.66	909.00	5932.69	5934.42	5940.52	1360.20	22.46	40.48	24.65
*	16.300	13.00	.00	.00	5930.66	272.00	5931.73	5932.69	5937.21	3040.79	18.77	14.49	4.93

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	16.050	25.00	.00	.00	5930.31	2025.00	5934.87	5935.83	5938.14	204.25	14.50	139.61	141.69
*	16.050	25.00	.00	.00	5930.31	909.00	5933.79	5934.01	5935.28	130.42	9.79	92.81	79.60
*	16.050	25.00	.00	.00	5930.31	272.00	5932.34	5932.34	5933.01	123.23	6.58	41.33	24.50
*	15.850	20.00	.00	.00	5930.03	2025.00	5934.60	5935.38	5937.32	180.68	13.24	152.96	150.65
*	15.850	20.00	.00	.00	5930.03	909.00	5933.61	5933.64	5934.81	108.05	8.79	103.36	87.45
*	15.850	20.00	.00	.00	5930.03	272.00	5931.98	5932.05	5932.71	148.16	6.84	39.75	22.35
*	15.590	26.00	.00	.00	5929.67	2025.00	5934.97	5935.02	5936.67	94.57	10.46	193.57	208.24
*	15.590	26.00	.00	.00	5929.67	909.00	5933.09	5933.29	5934.48	132.59	9.46	96.08	78.94
*	15.590	26.00	.00	.00	5929.67	272.00	5931.67	5931.69	5932.33	127.19	6.49	41.89	24.12
*	15.330	26.00	.00	.00	5929.31	2025.00	5934.31	5934.64	5936.36	121.73	11.47	176.56	183.54
*	15.330	26.00	.00	.00	5929.31	909.00	5932.69	5932.92	5934.12	137.99	9.60	94.72	77.38
*	15.330	26.00	.00	.00	5929.31	272.00	5931.29	5931.33	5931.98	137.25	6.67	40.81	23.22
*	15.070	26.00	.00	.00	5928.95	2025.00	5933.87	5934.27	5936.02	130.58	11.77	172.10	177.21
*	15.070	26.00	.00	.00	5928.95	909.00	5932.53	5932.56	5933.73	108.58	8.81	103.18	87.24
*	15.070	26.00	.00	.00	5928.95	272.00	5930.97	5930.98	5931.63	128.20	6.51	41.77	24.02
*	14.810	26.00	.00	.00	5928.59	2025.00	5933.50	5933.91	5935.67	132.79	11.84	171.05	175.73
*	14.810	26.00	.00	.00	5928.59	909.00	5932.01	5932.21	5933.40	133.09	9.47	95.95	78.79
*	14.810	26.00	.00	.00	5928.59	272.00	5930.56	5930.61	5931.27	143.07	6.76	40.23	22.74
*	14.560	25.00	.00	.00	5928.22	2025.00	5933.76	5933.76	5935.56	89.51	10.79	187.76	214.04
*	14.560	25.00	.00	.00	5928.22	909.00	5931.90	5931.90	5933.16	101.80	8.98	101.26	90.09
*	14.560	25.00	.00	.00	5928.22	272.00	5930.23	5930.25	5930.92	129.08	6.68	40.70	23.94
*	14.310	25.00	.00	.00	5927.87	2025.00	5933.64	5933.64	5935.67	89.22	11.43	177.17	214.39
*	14.310	25.00	.00	.00	5927.87	909.00	5931.63	5931.63	5933.00	101.25	9.39	96.80	90.34
*	14.310	25.00	.00	.00	5927.87	272.00	5929.88	5929.91	5930.60	126.75	6.81	39.95	24.16
*	14.230	8.00	.00	.00	5927.76	2025.00	5931.37	5932.57	5935.31	323.52	15.93	127.14	112.58
*	14.230	8.00	.00	.00	5927.76	909.00	5930.24	5931.00	5932.71	350.82	12.61	72.11	48.53
*	14.230	8.00	.00	.00	5927.76	272.00	5929.28	5929.61	5930.38	338.82	8.42	32.31	14.78
*	14.070	16.00	.00	.00	5920.01	2025.00	5925.71	5925.77	5927.81	93.65	11.63	174.15	209.25
*	14.070	16.00	.00	.00	5920.01	909.00	5923.73	5923.77	5925.14	105.65	9.53	95.39	88.44
*	14.070	16.00	.00	.00	5920.01	272.00	5921.14	5922.04	5925.69	2257.90	17.10	15.91	5.72
*	13.800	25.00	.00	.00	5919.63	2025.00	5925.17	5925.41	5927.45	105.12	12.11	167.16	197.51
*	13.800	25.00	.00	.00	5919.63	909.00	5923.23	5923.41	5924.78	121.17	9.99	91.01	82.58
*	13.800	25.00	.00	.00	5919.63	272.00	5921.66	5921.66	5922.36	123.24	6.75	40.32	24.50

*	13.550	25.00	.00	.00	5919.27	2025.00	5923.55	5924.62	5926.91	242.02	14.72	137.60	130.17
	13.550	25.00	.00	.00	5919.27	909.00	5922.31	5922.89	5924.30	220.01	11.33	80.25	61.28
	13.550	25.00	.00	.00	5919.27	272.00	5921.14	5921.29	5921.97	180.62	7.32	37.16	20.24
*	13.270	28.00	.00	.00	5918.91	2025.00	5923.62	5924.23	5926.10	158.54	12.63	160.38	160.83
*	13.270	28.00	.00	.00	5918.91	909.00	5922.48	5922.52	5923.69	108.38	8.80	103.25	87.32
*	13.270	28.00	.00	.00	5918.91	272.00	5920.93	5920.93	5921.58	124.92	6.45	42.15	24.34

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	13.010	26.00	.00	.00	5918.55	2025.00	5923.84	5923.89	5925.55	95.31	10.49	193.02	207.42
	13.010	26.00	.00	.00	5918.55	909.00	5921.98	5922.17	5923.36	131.26	9.43	96.42	79.34
	13.010	26.00	.00	.00	5918.55	272.00	5920.50	5920.57	5921.22	145.93	6.81	39.96	22.52
*	12.750	26.00	.00	.00	5918.19	2025.00	5923.21	5923.53	5925.23	120.47	11.43	177.22	184.50
	12.750	26.00	.00	.00	5918.19	909.00	5921.59	5921.80	5923.00	136.25	9.55	95.15	77.88
	12.750	26.00	.00	.00	5918.19	272.00	5920.21	5920.21	5920.86	125.91	6.47	42.03	24.24
*	12.490	26.00	.00	.00	5917.82	2025.00	5922.75	5923.14	5924.90	130.41	11.76	172.18	177.32
	12.490	26.00	.00	.00	5917.82	909.00	5921.16	5921.43	5922.63	144.31	9.75	93.22	75.67
	12.490	26.00	.00	.00	5917.82	272.00	5919.79	5919.84	5920.50	144.07	6.78	40.14	22.66
*	12.230	26.00	.00	.00	5917.46	2025.00	5922.35	5922.78	5924.55	134.56	11.90	170.23	174.57
	12.230	26.00	.00	.00	5917.46	909.00	5921.02	5921.07	5922.23	108.64	8.81	103.16	87.21
	12.230	26.00	.00	.00	5917.46	272.00	5919.46	5919.48	5920.13	132.02	6.58	41.36	23.67
*	11.970	26.00	.00	.00	5917.10	2025.00	5921.99	5922.43	5924.19	135.28	11.92	169.90	174.10
	11.970	26.00	.00	.00	5917.10	909.00	5920.50	5920.72	5921.89	133.26	9.48	95.90	78.74
	11.970	26.00	.00	.00	5917.10	272.00	5919.07	5919.13	5919.77	140.28	6.72	40.50	22.96
	11.710	26.00	.00	.00	5916.73	2025.00	5921.58	5922.06	5923.83	139.06	12.04	168.21	171.72
	11.710	26.00	.00	.00	5916.73	909.00	5920.12	5920.34	5921.54	136.25	9.55	95.15	77.88
	11.710	26.00	.00	.00	5916.73	272.00	5918.71	5918.74	5919.41	138.52	6.69	40.68	23.11
	11.450	26.00	.00	.00	5916.37	2025.00	5921.65	5921.70	5923.37	96.17	10.53	192.39	206.49
	11.450	26.00	.00	.00	5916.37	909.00	5919.77	5919.98	5921.19	136.25	9.55	95.15	77.88
	11.450	26.00	.00	.00	5916.37	272.00	5918.37	5918.40	5919.05	134.61	6.62	41.08	23.44
	11.190	26.00	.00	.00	5916.00	2025.00	5920.98	5921.34	5923.05	124.34	11.56	175.19	181.60
	11.190	26.00	.00	.00	5916.00	909.00	5919.34	5919.61	5920.82	144.87	9.76	93.09	75.52
	11.190	26.00	.00	.00	5916.00	272.00	5917.94	5918.03	5918.67	149.56	6.86	39.63	22.24
*	10.930	26.00	.00	.00	5915.64	2025.00	5920.58	5920.97	5922.72	129.05	11.72	172.84	178.26
*	10.930	26.00	.00	.00	5915.64	909.00	5919.21	5919.26	5920.41	107.47	8.78	103.56	87.68
*	10.930	26.00	.00	.00	5915.64	272.00	5917.66	5917.66	5918.31	125.77	6.47	42.05	24.25
*	10.670	26.00	.00	.00	5915.25	2025.00	5918.25	5919.40	5921.93	358.15	15.38	131.64	107.00
*	10.670	26.00	.00	.00	5915.25	909.00	5917.26	5917.98	5919.62	411.07	12.31	73.84	44.83
*	10.670	26.00	.00	.00	5915.25	272.00	5916.46	5916.77	5917.52	451.93	8.23	33.04	12.79
	10.420	26.00	.00	.00	5914.89	2025.00	5917.54	5918.57	5920.88	371.31	14.65	138.23	105.09
	10.420	26.00	.00	.00	5914.89	909.00	5916.80	5917.30	5918.49	309.79	10.43	87.16	51.65
*	10.420	26.00	.00	.00	5914.89	272.00	5916.27	5916.27	5916.69	139.69	5.21	52.19	23.01
	10.160	24.00	.00	.00	5914.53	2025.00	5917.00	5917.87	5919.88	347.76	13.61	148.77	108.59
	10.160	24.00	.00	.00	5914.53	909.00	5916.36	5916.74	5917.70	259.83	9.29	97.84	56.39
	10.160	24.00	.00	.00	5914.53	272.00	5915.68	5915.79	5916.21	249.69	5.84	46.59	17.21
	9.940	22.00	.00	.00	5913.50	2025.00	5915.42	5916.44	5919.07	320.33	15.33	132.11	113.14
	9.940	22.00	.00	.00	5913.50	909.00	5914.86	5915.49	5917.01	296.81	11.77	77.22	52.76
	9.940	22.00	.00	.00	5913.50	272.00	5914.25	5914.59	5915.45	381.13	8.77	31.01	13.93

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	9.570	37.00	.00	.00	5913.50	2025.00	5915.83	5916.44	5917.80	132.77	11.29	179.44	175.74
*	9.570	37.00	.00	.00	5913.50	909.00	5915.49	5915.49	5916.14	54.65	6.49	140.06	122.96
*	9.570	37.00	.00	.00	5913.50	272.00	5914.59	5914.59	5914.96	67.63	4.87	55.89	33.08
*	8.650	65.00	.00	.00	5911.00	2025.00	5913.57	5913.87	5914.80	678.23	9.52	233.53	77.76
*	8.650	65.00	.00	.00	5911.00	909.00	5912.84	5913.05	5913.69	671.22	7.80	128.57	35.09
*	8.650	65.00	.00	.00	5911.00	272.00	5912.04	5912.12	5912.52	673.30	5.67	50.71	10.48
*	7.700	95.00	.00	.00	5907.00	2025.00	5910.73	5910.73	5911.74	330.96	8.34	259.32	111.31
*	7.700	95.00	.00	.00	5907.00	909.00	5909.57	5909.57	5910.33	383.76	7.05	133.25	46.40
*	7.700	95.00	.00	.00	5907.00	272.00	5908.31	5908.31	5908.80	555.74	5.59	48.68	11.54
*	5.900	180.00	.00	.00	5901.00	2025.00	5904.59	5904.71	5905.57	353.51	8.59	276.66	107.70
*	5.900	180.00	.00	.00	5901.00	909.00	5903.81	5903.81	5904.41	323.13	6.49	156.23	50.57
*	5.900	180.00	.00	.00	5901.00	272.00	5902.56	5902.56	5903.06	536.59	5.72	47.58	11.74
	4.300	160.00	.00	.00	5895.30	2025.00	5898.82	5898.99	5900.07	370.03	9.29	235.53	105.27
*	4.300	160.00	.00	.00	5895.30	909.00	5897.66	5897.69	5898.54	422.68	7.57	123.03	44.21
*	4.300	160.00	.00	.00	5895.30	272.00	5896.50	5896.50	5896.98	538.05	5.53	49.18	11.73

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00 YR. POST-DEVELOPMENT
SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	37.400	2025.00	6041.10	.00	.00	.10	65.00	.00
*	37.400	909.00	6039.81	-1.29	.00	-1.19	65.00	.00
*	37.400	272.00	6038.81	-1.00	.00	-2.19	65.00	.00

*	37.200	2025.00	6032.37	.00	-8.73	.00	42.41	20.00
*	37.200	909.00	6031.20	-1.17	-8.61	.00	33.04	20.00
*	37.200	272.00	6030.28	-.92	-8.53	.00	25.67	20.00
	37.080	2025.00	6032.13	.00	-.24	.00	43.50	12.00
*	37.080	909.00	6031.00	-1.13	-.20	.00	34.46	12.00
	37.080	272.00	6030.15	-.85	-.13	.00	27.59	12.00
	36.980	2025.00	6031.92	.00	-.21	.00	44.33	10.00
	36.980	909.00	6030.83	-1.09	-.16	.00	35.55	10.00
	36.980	272.00	6029.98	-.85	-.17	.00	28.84	10.00
	36.810	2025.00	6031.56	.00	-.37	.00	45.60	17.00
	36.810	909.00	6030.50	-1.06	-.34	.00	37.07	17.00
	36.810	272.00	6029.63	-.87	-.35	.00	30.18	17.00
	36.560	2025.00	6031.09	.00	-.46	.00	42.73	25.00
	36.560	909.00	6029.89	-1.20	-.60	.00	35.53	25.00
	36.560	272.00	6028.79	-1.10	-.84	.00	28.91	25.00
	36.310	2025.00	6030.76	.00	-.33	.00	38.61	25.00
	36.310	909.00	6029.31	-1.45	-.58	.00	32.82	25.00
	36.310	272.00	6028.03	-1.28	-.76	.00	27.70	25.00
	36.230	2025.00	6029.68	.00	-1.08	.00	50.55	8.00
	36.230	909.00	6028.70	-.98	-.62	.00	44.19	8.00
	36.230	272.00	6027.86	-.83	-.17	.00	36.17	8.00
*	36.100	2025.00	6023.04	.00	-6.63	.00	33.97	13.00
*	36.100	909.00	6021.80	-1.24	-6.89	.00	29.03	13.00
*	36.100	272.00	6020.88	-.93	-6.99	.00	25.32	13.00
*	35.850	2025.00	6023.93	.00	.89	.00	45.86	25.00
*	35.850	909.00	6022.93	-1.00	1.13	.00	39.88	25.00
*	35.850	272.00	6021.47	-1.46	.59	.00	31.12	25.00
*	35.650	2025.00	6023.56	.00	-.36	.00	52.15	20.00
	35.650	909.00	6022.75	-.81	-.18	.00	45.59	20.00
	35.650	272.00	6021.12	-1.63	-.35	.00	32.58	20.00
*	35.390	2025.00	6023.52	.00	-.04	.00	54.74	26.00
*	35.390	909.00	6022.23	-1.29	-.52	.00	44.30	26.00
*	35.390	272.00	6020.79	-1.44	-.33	.00	32.94	26.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	35.130	2025.00	6023.74	.00	.21	.00	59.29	26.00
	35.130	909.00	6021.83	-1.91	-.40	.00	44.02	26.00
	35.130	272.00	6020.46	-1.36	-.33	.00	33.05	26.00
	34.870	2025.00	6023.11	.00	-.63	.00	57.12	26.00
	34.870	909.00	6021.67	-1.44	-.16	.00	45.58	26.00
	34.870	272.00	6020.06	-1.61	-.40	.00	32.72	26.00
	34.610	2025.00	6022.68	.00	-.42	.00	56.57	26.00
	34.610	909.00	6021.15	-1.53	-.52	.00	44.31	26.00
	34.610	272.00	6019.73	-1.42	-.33	.00	32.99	26.00
*	34.360	2025.00	6022.89	.00	.21	.00	52.19	25.00
*	34.360	909.00	6021.04	-1.85	-.11	.00	41.10	25.00
	34.360	272.00	6019.34	-1.71	-.40	.00	30.87	25.00
*	34.110	2025.00	6022.77	.00	-.12	.00	44.06	25.00
*	34.110	909.00	6020.78	-2.00	-.27	.00	36.07	25.00
*	34.110	272.00	6019.04	-1.74	-.30	.00	29.13	25.00
*	34.030	2025.00	6020.51	.00	-2.26	.00	52.48	8.00
*	34.030	909.00	6019.38	-1.13	-1.39	.00	45.15	8.00
*	34.030	272.00	6018.42	-.97	-.62	.00	36.26	8.00
*	33.900	2025.00	6013.68	.00	-6.83	.00	34.36	13.00
*	33.900	909.00	6012.37	-1.31	-7.01	.00	29.13	13.00
*	33.900	272.00	6011.41	-.96	-7.00	.00	25.32	13.00
*	33.650	2025.00	6014.43	.00	.75	.00	45.64	25.00
*	33.650	909.00	6013.47	-.96	1.10	.00	39.86	25.00
*	33.650	272.00	6012.02	-1.45	.60	.00	31.16	25.00
*	33.450	2025.00	6014.01	.00	-.42	.00	51.46	20.00
	33.450	909.00	6013.29	-.73	-.18	.00	45.59	20.00
	33.450	272.00	6011.66	-1.63	-.36	.00	32.57	20.00
	33.190	2025.00	6014.00	.00	-.02	.00	54.20	26.00
*	33.190	909.00	6012.77	-1.23	-.52	.00	44.30	26.00
	33.190	272.00	6011.35	-1.41	-.31	.00	33.09	26.00
*	32.930	2025.00	6014.28	.00	-.29	.00	59.30	26.00
	32.930	909.00	6012.37	-1.91	-.40	.00	44.05	26.00
	32.930	272.00	6010.98	-1.39	-.37	.00	32.87	26.00
	32.670	2025.00	6013.64	.00	-.64	.00	57.05	26.00
	32.670	909.00	6012.21	-1.43	-.16	.00	45.56	26.00
	32.670	272.00	6010.60	-1.60	-.37	.00	32.77	26.00
	32.410	2025.00	6013.20	.00	-.44	.00	56.44	26.00
	32.410	909.00	6011.69	-1.51	-.52	.00	44.30	26.00
	32.410	272.00	6010.27	-1.42	-.33	.00	32.98	26.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	32.160	2025.00	6013.43	.00	.23	.00	52.19	25.00
*	32.160	909.00	6011.58	-1.85	-.11	.00	41.11	25.00

	32.160	272.00	6009.88	-1.71	-.39	.00	30.88	25.00
*	31.910	2025.00	6013.32	-.00	-.11	.00	44.07	25.00
*	31.910	909.00	6011.31	-2.01	-.27	.00	36.05	25.00
*	31.910	272.00	6009.58	-1.73	-.30	.00	29.12	25.00
*	31.830	2025.00	6011.05	-.00	-2.27	.00	52.48	8.00
*	31.830	909.00	6009.92	-1.13	-1.39	.00	45.15	8.00
*	31.830	272.00	6008.96	-.97	-.62	.00	36.26	8.00
*	31.700	2025.00	6004.22	-.00	-6.83	.00	34.36	13.00
*	31.700	909.00	6002.91	-1.31	-7.01	.00	29.13	13.00
*	31.700	272.00	6001.95	-.96	-7.00	.00	25.32	13.00
*	31.450	2025.00	6005.09	-.00	.87	.00	46.37	25.00
*	31.450	909.00	6004.01	-1.09	1.09	.00	39.86	25.00
*	31.450	272.00	6002.56	-1.45	.60	.00	31.16	25.00
*	31.250	2025.00	6004.82	-.00	-.28	.00	53.58	20.00
*	31.250	909.00	6003.83	-.99	-.18	.00	45.59	20.00
*	31.250	272.00	6002.20	-1.63	-.36	.00	32.58	20.00
*	30.990	2025.00	6005.20	-.00	.38	.00	59.36	26.00
*	30.990	909.00	6003.31	-1.89	-.52	.00	44.30	26.00
*	30.990	272.00	6001.89	-1.42	-.31	.00	33.08	26.00
*	30.730	2025.00	6004.53	-.00	-.66	.00	57.00	26.00
*	30.730	909.00	6002.94	-1.60	-.37	.00	44.17	26.00
*	30.730	272.00	6001.51	-1.42	-.38	.00	32.86	26.00
*	30.470	2025.00	6004.09	-.00	-.44	.00	56.41	26.00
*	30.470	909.00	6002.56	-1.54	-.38	.00	44.04	26.00
*	30.470	272.00	6001.18	-1.38	-.34	.00	32.97	26.00
*	30.210	2025.00	6003.72	-.00	-.38	.00	56.23	26.00
*	30.210	909.00	6002.22	-1.50	-.33	.00	44.21	26.00
*	30.210	272.00	6000.78	-1.44	-.40	.00	32.71	26.00
*	29.960	2025.00	6003.97	-.00	.26	.00	52.21	25.00
*	29.960	909.00	6002.13	-1.85	-.10	.00	41.11	25.00
*	29.960	272.00	6000.45	-1.67	-.33	.00	31.03	25.00
*	29.710	2025.00	6003.86	-.00	-.12	.00	44.07	25.00
*	29.710	909.00	6001.85	-2.01	-.27	.00	36.05	25.00
*	29.710	272.00	6000.10	-1.75	-.35	.00	29.06	25.00
*	29.630	2025.00	6001.59	-.00	-2.27	.00	52.48	8.00
*	29.630	909.00	6000.46	-1.13	-1.39	.00	45.15	8.00
*	29.630	272.00	5999.50	-.97	-.60	.00	36.26	8.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	29.500	2025.00	5994.76	-.00	-6.83	.00	34.36	13.00
*	29.500	909.00	5993.45	-1.31	-7.01	.00	29.13	13.00
*	29.500	272.00	5992.49	-.96	-7.00	.00	25.32	13.00
*	29.250	2025.00	5995.63	-.00	.87	.00	46.37	25.00
*	29.250	909.00	5994.55	-1.09	1.09	.00	39.86	25.00
*	29.250	272.00	5993.10	-1.45	.60	.00	31.16	25.00
*	29.050	2025.00	5995.36	-.00	-.28	.00	53.58	20.00
*	29.050	909.00	5994.37	-.99	-.18	.00	45.59	20.00
*	29.050	272.00	5992.74	-1.63	-.36	.00	32.58	20.00
*	28.790	2025.00	5995.74	-.00	.38	.00	59.36	26.00
*	28.790	909.00	5993.85	-1.89	-.52	.00	44.30	26.00
*	28.790	272.00	5992.43	-1.42	-.31	.00	33.08	26.00
*	28.530	2025.00	5995.07	-.00	-.66	.00	57.00	26.00
*	28.530	909.00	5993.48	-1.60	-.37	.00	44.17	26.00
*	28.530	272.00	5992.05	-1.42	-.38	.00	32.86	26.00
*	28.270	2025.00	5994.63	-.00	-.44	.00	56.41	26.00
*	28.270	909.00	5993.10	-1.54	-.38	.00	44.04	26.00
*	28.270	272.00	5991.72	-1.38	-.34	.00	32.97	26.00
*	28.010	2025.00	5994.26	-.00	-.38	.00	56.23	26.00
*	28.010	909.00	5992.76	-1.50	-.33	.00	44.21	26.00
*	28.010	272.00	5991.32	-1.44	-.40	.00	32.71	26.00
*	27.760	2025.00	5994.51	-.00	.26	.00	52.21	25.00
*	27.760	909.00	5992.67	-1.85	-.10	.00	41.11	25.00
*	27.760	272.00	5990.99	-1.67	-.33	.00	31.03	25.00
*	27.510	2025.00	5994.41	-.00	-.11	.00	44.07	25.00
*	27.510	909.00	5992.40	-2.01	-.26	.00	36.05	25.00
*	27.510	272.00	5990.67	-1.73	-.32	.00	29.13	25.00
*	27.430	2025.00	5992.14	-.00	-2.27	.00	52.48	8.00
*	27.430	909.00	5991.01	-1.13	-1.39	.00	45.15	8.00
*	27.430	272.00	5990.05	-.96	-.62	.00	36.28	8.00
*	27.260	2025.00	5983.06	-.00	-9.08	.00	33.61	17.00
*	27.260	909.00	5981.84	-1.22	-9.17	.00	28.70	17.00
*	27.260	272.00	5980.95	-.88	-9.09	.00	25.17	17.00
*	27.010	2025.00	5984.10	-.00	1.04	.00	46.23	25.00
*	27.010	909.00	5983.02	-1.08	1.18	.00	39.77	25.00
*	27.010	272.00	5981.58	-1.44	.63	.00	31.15	25.00
*	26.810	2025.00	5983.81	-.00	-.29	.00	53.28	20.00
*	26.810	909.00	5982.84	-.96	-.18	.00	45.60	20.00
*	26.810	272.00	5981.21	-1.63	-.37	.00	32.52	20.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
26.590	2025.00	5983.80	.00	-.01	.00	55.59	22.00
26.590	909.00	5982.37	-1.43	-.47	.00	44.30	22.00
26.590	272.00	5980.98	-1.39	-.23	.00	33.10	22.00
26.330	2025.00	5983.49	.00	-.31	.00	56.02	26.00
26.330	909.00	5982.18	-1.31	-.19	.00	45.52	26.00
26.330	272.00	5980.58	-1.60	-.40	.00	32.74	26.00
26.070	2025.00	5983.13	.00	-.37	.00	55.96	26.00
26.070	909.00	5981.64	-1.48	-.54	.00	44.16	26.00
26.070	272.00	5980.25	-1.39	-.33	.00	32.99	26.00
25.810	2025.00	5982.77	.00	-.35	.00	55.99	26.00
25.810	909.00	5981.31	-1.47	-.34	.00	44.27	26.00
25.810	272.00	5979.87	-1.44	-.39	.00	32.77	26.00
25.560	2025.00	5983.06	.00	.28	.00	52.23	25.00
25.560	909.00	5981.21	-1.85	-.10	.00	41.13	25.00
25.560	272.00	5979.53	-1.68	-.34	.00	31.00	25.00
25.310	2025.00	5982.89	.00	-.17	.00	44.07	25.00
25.310	909.00	5980.88	-2.00	-.33	.00	36.05	25.00
25.310	272.00	5979.04	-1.84	-.48	.00	28.73	25.00
25.230	2025.00	5980.69	.00	-2.20	.00	52.60	8.00
25.230	909.00	5979.56	-1.13	-1.32	.00	45.28	8.00
25.230	272.00	5978.59	-.97	-.45	.00	36.51	8.00
25.060	2025.00	5971.60	.00	-9.09	.00	33.63	17.00
25.060	909.00	5970.37	-1.23	-9.19	.00	28.71	17.00
25.060	272.00	5969.49	-.88	-9.11	.00	25.18	17.00
24.810	2025.00	5972.79	.00	1.19	.00	47.19	25.00
24.810	909.00	5971.55	-1.24	1.18	.00	39.77	25.00
24.810	272.00	5970.11	-1.44	.62	.00	31.13	25.00
24.610	2025.00	5972.58	.00	-.20	.00	55.21	20.00
24.610	909.00	5971.37	-1.21	-.18	.00	45.56	20.00
24.610	272.00	5969.76	-1.62	-.36	.00	32.56	20.00
24.390	2025.00	5972.78	.00	.20	.00	59.23	22.00
24.390	909.00	5970.95	-1.83	-.43	.00	44.51	22.00
24.390	272.00	5969.48	-1.46	-.27	.00	32.94	22.00
24.130	2025.00	5972.17	.00	-.61	.00	57.18	26.00
24.130	909.00	5970.51	-1.65	-.43	.00	44.02	26.00
24.130	272.00	5969.16	-1.36	-.33	.00	33.07	26.00
23.870	2025.00	5971.72	.00	-.44	.00	56.52	26.00
23.870	909.00	5970.36	-1.37	-.16	.00	45.56	26.00
23.870	272.00	5968.74	-1.61	-.41	.00	32.68	26.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
23.610	2025.00	5971.32	.00	-.40	.00	56.19	26.00
23.610	909.00	5969.84	-1.48	-.52	.00	44.30	26.00
23.610	272.00	5968.41	-1.42	-.33	.00	32.97	26.00
23.360	2025.00	5971.60	.00	.28	.00	52.23	25.00
23.360	909.00	5969.75	-1.85	-.09	.00	41.13	25.00
23.360	272.00	5968.07	-1.67	-.34	.00	31.07	25.00
23.110	2025.00	5971.48	.00	-.12	.00	44.07	25.00
23.110	909.00	5969.48	-2.00	-.27	.00	36.07	25.00
23.110	272.00	5967.72	-1.76	-.36	.00	29.05	25.00
23.030	2025.00	5969.21	.00	-2.27	.00	52.48	8.00
23.030	909.00	5968.08	-1.13	-1.39	.00	45.15	8.00
23.030	272.00	5967.12	-.96	-.60	.00	36.29	8.00
22.900	2025.00	5962.38	.00	-6.83	.00	34.36	13.00
22.900	909.00	5961.07	-1.31	-7.01	.00	29.13	13.00
22.900	272.00	5960.11	-.96	-7.01	.00	25.32	13.00
22.650	2025.00	5963.25	.00	.87	.00	46.37	25.00
22.650	909.00	5962.17	-1.09	1.09	.00	39.86	25.00
22.650	272.00	5960.71	-1.45	.60	.00	31.14	25.00
22.450	2025.00	5962.98	.00	-.28	.00	53.58	20.00
22.450	909.00	5961.99	-.99	-.18	.00	45.59	20.00
22.450	272.00	5960.36	-1.63	-.35	.00	32.57	20.00
22.190	2025.00	5963.36	.00	.38	.00	59.36	26.00
22.190	909.00	5961.47	-1.89	-.52	.00	44.30	26.00
22.190	272.00	5960.05	-1.42	-.31	.00	33.08	26.00
21.930	2025.00	5962.69	.00	-.66	.00	57.00	26.00
21.930	909.00	5961.10	-1.60	-.37	.00	44.17	26.00
21.930	272.00	5959.68	-1.42	-.38	.00	32.86	26.00
21.670	2025.00	5962.25	.00	-.44	.00	56.41	26.00
21.670	909.00	5960.72	-1.54	-.38	.00	44.04	26.00
21.670	272.00	5959.33	-1.39	-.35	.00	32.88	26.00
21.410	2025.00	5961.88	.00	-.38	.00	56.23	26.00
21.410	909.00	5960.38	-1.50	-.33	.00	44.21	26.00
21.410	272.00	5958.93	-1.45	-.39	.00	32.68	26.00
21.160	2025.00	5962.13	.00	.25	.00	52.21	25.00
21.160	909.00	5960.28	-1.85	-.10	.00	41.11	25.00
21.160	272.00	5958.60	-1.69	-.33	.00	31.00	25.00

*	20.910	2025.00	5962.02	.00	-.12	.00	44.07	25.00
*	20.910	909.00	5960.01	-2.01	-.27	.00	36.05	25.00
*	20.910	272.00	5958.28	-1.73	-.32	.00	29.13	25.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	20.830	2025.00	5959.75	.00	-2.27	.00	52.48	8.00
*	20.830	909.00	5958.62	-1.13	-1.39	.00	45.15	8.00
*	20.830	272.00	5957.66	-.97	-.62	.00	36.27	8.00
*	20.700	2025.00	5952.92	.00	-6.83	.00	34.36	13.00
*	20.700	909.00	5951.61	-1.31	-7.01	.00	29.13	13.00
*	20.700	272.00	5950.65	-.96	-7.00	.00	25.32	13.00
*	20.450	2025.00	5953.79	.00	.87	.00	46.37	25.00
*	20.450	909.00	5952.71	-1.09	1.09	.00	39.86	25.00
*	20.450	272.00	5951.26	-1.45	.60	.00	31.16	25.00
*	20.250	2025.00	5953.52	.00	-.28	.00	53.58	20.00
*	20.250	909.00	5952.53	-.99	-.18	.00	45.59	20.00
*	20.250	272.00	5950.90	-1.63	-.36	.00	32.58	20.00
*	19.990	2025.00	5953.90	.00	.38	.00	59.36	26.00
*	19.990	909.00	5952.01	-1.89	-.52	.00	44.30	26.00
*	19.990	272.00	5950.59	-1.42	-.31	.00	33.08	26.00
*	19.730	2025.00	5953.23	.00	-.66	.00	57.00	26.00
*	19.730	909.00	5951.64	-1.60	-.37	.00	44.17	26.00
*	19.730	272.00	5950.21	-1.42	-.38	.00	32.86	26.00
*	19.470	2025.00	5952.79	.00	-.44	.00	56.41	26.00
*	19.470	909.00	5951.26	-1.54	-.38	.00	44.04	26.00
*	19.470	272.00	5949.88	-1.38	-.34	.00	32.97	26.00
*	19.210	2025.00	5952.42	.00	-.38	.00	56.23	26.00
*	19.210	909.00	5950.92	-1.50	-.33	.00	44.21	26.00
*	19.210	272.00	5949.48	-1.44	-.40	.00	32.71	26.00
*	18.960	2025.00	5952.67	.00	.25	.00	52.21	25.00
*	18.960	909.00	5950.82	-1.85	-.10	.00	41.11	25.00
*	18.960	272.00	5949.15	-1.67	-.33	.00	31.03	25.00
*	18.710	2025.00	5952.56	.00	-.12	.00	44.07	25.00
*	18.710	909.00	5950.55	-2.01	-.27	.00	36.05	25.00
*	18.710	272.00	5948.80	-1.75	-.35	.00	29.06	25.00
*	18.630	2025.00	5950.29	.00	-2.27	.00	52.48	8.00
*	18.630	909.00	5949.16	-1.13	-1.39	.00	45.15	8.00
*	18.630	272.00	5948.20	-.96	-.60	.00	36.27	8.00
*	18.500	2025.00	5943.46	.00	-6.83	.00	34.36	13.00
*	18.500	909.00	5942.15	-1.31	-7.01	.00	29.13	13.00
*	18.500	272.00	5941.19	-.96	-7.00	.00	25.32	13.00
*	18.250	2025.00	5944.33	.00	.87	.00	46.37	25.00
*	18.250	909.00	5943.25	-1.09	1.09	.00	39.86	25.00
*	18.250	272.00	5941.80	-1.45	.60	.00	31.16	25.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	18.050	2025.00	5944.06	.00	-.28	.00	53.58	20.00
*	18.050	909.00	5943.07	-.99	-.18	.00	45.59	20.00
*	18.050	272.00	5941.44	-1.63	-.36	.00	32.58	20.00
*	17.790	2025.00	5944.44	.00	.38	.00	59.36	26.00
*	17.790	909.00	5942.55	-1.89	-.52	.00	44.30	26.00
*	17.790	272.00	5941.13	-1.42	-.31	.00	33.08	26.00
*	17.530	2025.00	5943.77	.00	-.66	.00	57.00	26.00
*	17.530	909.00	5942.18	-1.60	-.37	.00	44.17	26.00
*	17.530	272.00	5940.75	-1.42	-.38	.00	32.86	26.00
*	17.270	2025.00	5943.33	.00	-.44	.00	56.41	26.00
*	17.270	909.00	5941.80	-1.54	-.38	.00	44.04	26.00
*	17.270	272.00	5940.42	-1.38	-.34	.00	32.97	26.00
*	17.010	2025.00	5942.96	.00	-.38	.00	56.23	26.00
*	17.010	909.00	5941.46	-1.50	-.33	.00	44.21	26.00
*	17.010	272.00	5940.02	-1.44	-.40	.00	32.71	26.00
*	16.760	2025.00	5943.21	.00	.25	.00	52.21	25.00
*	16.760	909.00	5941.36	-1.85	-.10	.00	41.11	25.00
*	16.760	272.00	5939.69	-1.67	-.33	.00	31.03	25.00
*	16.510	2025.00	5943.10	.00	-.12	.00	44.07	25.00
*	16.510	909.00	5941.09	-2.01	-.27	.00	36.05	25.00
*	16.510	272.00	5939.34	-1.75	-.35	.00	29.06	25.00
*	16.430	2025.00	5940.83	.00	-2.27	.00	52.48	8.00
*	16.430	909.00	5939.70	-1.13	-1.39	.00	45.15	8.00
*	16.430	272.00	5938.74	-.96	-.60	.00	36.27	8.00
*	16.300	2025.00	5934.00	.00	-6.83	.00	34.36	13.00
*	16.300	909.00	5932.69	-1.31	-7.01	.00	29.13	13.00
*	16.300	272.00	5931.73	-.96	-7.00	.00	25.32	13.00
*	16.050	2025.00	5934.87	.00	.87	.00	46.37	25.00
*	16.050	909.00	5933.79	-1.09	1.09	.00	39.86	25.00
*	16.050	272.00	5932.34	-1.45	.60	.00	31.16	25.00
*	15.850	2025.00	5934.60	.00	-.28	.00	53.59	20.00
*	15.850	909.00	5933.61	-.99	-.18	.00	45.59	20.00

15.850	272.00	5931.98	-1.63	-.36	.00	32.57	20.00
15.590	2025.00	5934.97	-.00	.38	.00	59.35	26.00
15.590	909.00	5933.09	-1.89	-.52	.00	44.30	26.00
15.590	272.00	5931.67	-1.41	-.31	.00	33.09	26.00
15.330	2025.00	5934.31	-.00	-.66	.00	57.01	26.00
15.330	909.00	5932.69	-1.62	-.40	.00	44.05	26.00
15.330	272.00	5931.29	-1.40	-.38	.00	32.83	26.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
15.070	2025.00	5933.87	.00	-.45	.00	56.38	26.00
15.070	909.00	5932.53	-1.34	-.16	.00	45.56	26.00
15.070	272.00	5930.97	-1.56	-.32	.00	33.07	26.00
14.810	2025.00	5933.50	-.00	-.37	.00	56.23	26.00
14.810	909.00	5932.01	-1.49	-.52	.00	44.27	26.00
14.810	272.00	5930.56	-1.45	-.41	.00	32.69	26.00
14.560	2025.00	5933.76	-.00	.26	.00	52.23	25.00
14.560	909.00	5931.90	-1.85	-.10	.00	41.11	25.00
14.560	272.00	5930.23	-1.68	-.33	.00	31.04	25.00
14.310	2025.00	5933.64	-.00	-.12	.00	44.07	25.00
14.310	909.00	5931.63	-2.01	-.27	.00	36.05	25.00
14.310	272.00	5929.88	-1.75	-.35	.00	29.06	25.00
14.230	2025.00	5931.37	-.00	-2.27	.00	52.48	8.00
14.230	909.00	5930.24	-1.13	-1.39	.00	45.15	8.00
14.230	272.00	5929.28	-.97	-.60	.00	36.27	8.00
14.070	2025.00	5925.71	-.00	-5.66	.00	43.80	16.00
14.070	909.00	5923.73	-1.98	-6.51	.00	35.89	16.00
14.070	272.00	5921.14	-2.59	-8.13	.00	25.54	16.00
13.800	2025.00	5925.17	-.00	-.54	.00	43.15	25.00
13.800	909.00	5923.23	-1.95	-.51	.00	35.40	25.00
13.800	272.00	5921.66	-1.57	.51	.00	29.11	25.00
13.550	2025.00	5923.55	-.00	-1.63	.00	51.25	25.00
13.550	909.00	5922.31	-1.23	-.91	.00	41.34	25.00
13.550	272.00	5921.14	-1.17	-.52	.00	31.93	25.00
13.270	2025.00	5923.62	-.00	.07	.00	54.69	28.00
13.270	909.00	5922.48	-1.14	.17	.00	45.57	28.00
13.270	272.00	5920.93	-1.55	-.21	.00	33.16	28.00
13.010	2025.00	5923.84	-.00	.22	.00	59.27	26.00
13.010	909.00	5921.98	-1.86	-.51	.00	44.36	26.00
13.010	272.00	5920.50	-1.48	-.43	.00	32.63	26.00
12.750	2025.00	5923.21	-.00	-.63	.00	57.10	26.00
12.750	909.00	5921.59	-1.62	-.39	.00	44.13	26.00
12.750	272.00	5920.21	-1.38	-.29	.00	33.13	26.00
12.490	2025.00	5922.75	-.00	-.46	.00	56.39	26.00
12.490	909.00	5921.16	-1.59	-.43	.00	43.78	26.00
12.490	272.00	5919.79	-1.37	-.42	.00	32.67	26.00
12.230	2025.00	5922.35	-.00	-.40	.00	56.11	26.00
12.230	909.00	5921.02	-1.33	-.14	.00	45.56	26.00
12.230	272.00	5919.46	-1.57	-.33	.00	32.96	26.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
11.970	2025.00	5921.99	-.00	-.36	.00	56.07	26.00
11.970	909.00	5920.50	-1.49	-.52	.00	44.27	26.00
11.970	272.00	5919.07	-1.43	-.39	.00	32.76	26.00
11.710	2025.00	5921.58	-.00	-.41	.00	55.82	26.00
11.710	909.00	5920.12	-1.46	-.38	.00	44.13	26.00
11.710	272.00	5918.71	-1.41	-.36	.00	32.80	26.00
11.450	2025.00	5921.65	-.00	.07	.00	59.19	26.00
11.450	909.00	5919.77	-1.88	-.35	.00	44.13	26.00
11.450	272.00	5918.37	-1.40	-.35	.00	32.90	26.00
11.190	2025.00	5920.98	-.00	-.68	.00	56.82	26.00
11.190	909.00	5919.34	-1.64	-.43	.00	43.75	26.00
11.190	272.00	5917.94	-1.39	-.43	.00	32.54	26.00
10.930	2025.00	5920.58	-.00	-.39	.00	56.48	26.00
10.930	909.00	5919.21	-1.37	-.13	.00	45.63	26.00
10.930	272.00	5917.66	-1.55	-.29	.00	33.13	26.00
10.670	2025.00	5918.25	-.00	-2.33	.00	62.08	26.00
10.670	909.00	5917.26	-.99	-1.95	.00	54.13	26.00
10.670	272.00	5916.46	-.80	-1.19	.00	47.71	26.00
10.420	2025.00	5917.54	-.00	-.71	.00	72.25	26.00
10.420	909.00	5916.80	-.74	-.46	.00	66.36	26.00
10.420	272.00	5916.27	-.54	-.20	.00	62.00	26.00
10.160	2025.00	5917.00	-.00	-.54	.00	82.79	24.00
10.160	909.00	5916.36	-.64	-.44	.00	77.71	24.00
10.160	272.00	5915.68	-.68	-.59	.00	72.24	24.00
9.940	2025.00	5915.42	-.00	-1.58	.00	106.66	22.00
9.940	909.00	5914.86	-.56	-1.50	.00	87.50	22.00
9.940	272.00	5914.25	-.60	-1.43	.00	65.94	22.00

*	9.570	2025.00	5915.83	.00	.41	.00	118.45	37.00
*	9.570	909.00	5915.49	-.34	.63	.00	108.95	37.00
*	9.570	272.00	5914.59	-.90	.34	.00	78.58	37.00
*	8.650	2025.00	5913.57	.00	-2.25	.00	165.10	65.00
*	8.650	909.00	5912.84	-.73	-2.65	.00	119.87	65.00
*	8.650	272.00	5912.04	-.80	-2.55	.00	74.12	65.00
*	7.700	2025.00	5910.73	.00	-2.84	.00	131.02	95.00
*	7.700	909.00	5909.57	-1.16	-3.27	.00	92.78	95.00
*	7.700	272.00	5908.31	-1.26	-3.73	.00	51.86	95.00
*	5.900	2025.00	5904.59	.00	-6.14	.00	183.44	180.00
*	5.900	909.00	5903.81	-.78	-5.76	.00	131.31	180.00
*	5.900	272.00	5902.56	-1.25	-5.75	.00	47.53	180.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	4.300	2025.00	5898.82	.00	-5.77	.00	120.65	160.00
*	4.300	909.00	5897.66	-1.16	-6.15	.00	78.38	160.00
*	4.300	272.00	5896.50	-1.16	-6.06	.00	51.92	160.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO-	37.400	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	37.400	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	37.400	PROFILE-	3	CRITICAL DEPTH ASSUMED
WARNING SECNO-	37.200	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	37.200	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	37.200	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	37.080	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	36.100	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	36.100	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	35.850	PROFILE-	1	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	35.850	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.850	PROFILE-	2	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	35.850	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.850	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.850	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.850	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.650	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.390	PROFILE-	3	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.130	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	34.360	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	34.360	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	34.360	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	34.360	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	34.360	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	34.360	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	34.110	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	34.110	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	34.110	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	34.110	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	34.110	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	34.110	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	34.110	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	34.110	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	34.110	PROFILE-	3	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	34.110	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO-	34.030	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	34.030	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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WARNING SECNO-	34.030	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	33.900	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	33.900	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	33.900	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	33.650	PROFILE-	1	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	33.650	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	33.650	PROFILE-	2	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	33.650	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	33.650	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	33.650	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	33.650	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	33.450	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	33.190	PROFILE-	3	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	32.930	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	32.160	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	32.160	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	32.160	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	32.160	PROFILE-	2	CRITICAL DEPTH ASSUMED

CAUTION	SECNO-	32.160	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	32.160	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	31.910	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	31.910	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	31.910	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	31.910	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	31.910	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	31.910	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	31.910	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	31.910	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	31.910	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING	SECNO-	31.830	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	31.830	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	31.830	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	31.700	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	31.700	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	31.700	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION	SECNO-	31.450	PROFILE-	1	WSEL ASSUMED BASED ON MIN DIFF
CAUTION	SECNO-	31.450	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	31.450	PROFILE-	2	WSEL ASSUMED BASED ON MIN DIFF
CAUTION	SECNO-	31.450	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	31.450	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	31.450	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY

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CAUTION	SECNO-	31.450	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	31.250	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	30.990	PROFILE-	3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	29.960	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	29.960	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	29.960	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	29.960	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	29.960	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	29.960	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	29.710	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	29.710	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	29.710	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	29.710	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	29.710	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	29.710	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING	SECNO-	29.630	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	29.630	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	29.630	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	29.500	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	29.500	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO-	29.500	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION	SECNO-	29.250	PROFILE-	1	WSEL ASSUMED BASED ON MIN DIFF
CAUTION	SECNO-	29.250	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	29.250	PROFILE-	2	WSEL ASSUMED BASED ON MIN DIFF
CAUTION	SECNO-	29.250	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	29.250	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	29.250	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	29.250	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	29.050	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	28.790	PROFILE-	3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	27.760	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	27.760	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	27.760	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	27.760	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	27.760	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	27.760	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	27.510	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO-	27.510	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO-	27.510	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO-	27.510	PROFILE-	2	CRITICAL DEPTH ASSUMED

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CAUTION	SECNO-	20.250	PROFILE-	2	MINIMUM SPECIFIC ENERGY				
CAUTION	SECNO-	19.990	PROFILE-	3	MINIMUM SPECIFIC ENERGY				
CAUTION	SECNO-	18.960	PROFILE-	1	CRITICAL DEPTH ASSUMED				
CAUTION	SECNO-	18.960	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY				
CAUTION	SECNO-	18.960	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL				
CAUTION	SECNO-	18.960	PROFILE-	2	CRITICAL DEPTH ASSUMED				
CAUTION	SECNO-	18.960	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY				
CAUTION	SECNO-	18.960	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL				
CAUTION	SECNO-	18.710	PROFILE-	1	CRITICAL DEPTH ASSUMED				
CAUTION	SECNO-	18.710	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY				
CAUTION	SECNO-	18.710	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL				
CAUTION	SECNO-	18.710	PROFILE-	2	CRITICAL DEPTH ASSUMED				
CAUTION	SECNO-	18.710	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY				
CAUTION	SECNO-	18.710	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL				
WARNING	SECNO-	18.630	PROFILE-	1	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	18.630	PROFILE-	2	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	18.630	PROFILE-	3	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	18.500	PROFILE-	1	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	18.500	PROFILE-	2	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	18.500	PROFILE-	3	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
CAUTION	SECNO-	18.250	PROFILE-	1	WSEL ASSUMED BASED ON MIN DIFF				

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CAUTION	SECNO=	18.250	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	18.250	PROFILE=	2	WSEL ASSUMED BASED ON MIN DIFF
CAUTION	SECNO=	18.250	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	18.250	PROFILE=	3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	18.250	PROFILE=	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	18.250	PROFILE=	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	18.050	PROFILE=	2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	17.790	PROFILE=	3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	16.760	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	16.760	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	16.760	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	16.760	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	16.760	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	16.760	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	16.510	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	16.510	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	16.510	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	16.510	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	16.510	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	16.510	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING	SECNO=	16.430	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	16.430	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	16.430	PROFILE=	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	16.300	PROFILE=	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	16.300	PROFILE=	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING	SECNO=	16.300	PROFILE=	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION	SECNO=	16.050	PROFILE=	1	WSEL ASSUMED BASED ON MIN DIFF
CAUTION	SECNO=	16.050	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	16.050	PROFILE=	2	WSEL ASSUMED BASED ON MIN DIFF
CAUTION	SECNO=	16.050	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	16.050	PROFILE=	3	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	16.050	PROFILE=	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	16.050	PROFILE=	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	15.850	PROFILE=	2	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	15.590	PROFILE=	3	MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	14.560	PROFILE=	1	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	14.560	PROFILE=	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	14.560	PROFILE=	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION	SECNO=	14.560	PROFILE=	2	CRITICAL DEPTH ASSUMED
CAUTION	SECNO=	14.560	PROFILE=	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION	SECNO=	14.560	PROFILE=	2	20 TRIALS ATTEMPTED TO BALANCE WSEL

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WARNING SECNO-	13.550	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	13.270	PROFILE-	2	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	13.270	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	13.270	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	13.270	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	13.270	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	13.010	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.750	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.750	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.750	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.490	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.230	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.970	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	10.930	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	10.930	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.930	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	10.930	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO-	10.670	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	10.670	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	10.670	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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CAUTION SECNO-	10.420	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.420	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	10.420	PROFILE-	3	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	10.420	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO-	9.570	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	9.570	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.570	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.570	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	9.570	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.570	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.570	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO-	8.650	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	8.650	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	8.650	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	7.700	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	7.700	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	7.700	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	7.700	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	7.700	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	7.700	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	7.700	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	7.700	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	7.700	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	5.900	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	5.900	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	5.900	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	5.900	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	5.900	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	5.900	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	4.300	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	4.300	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	4.300	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL

* HEC-2 WATER SURFACE PROFILES *
* *
* Version 4.6.2; May 1991 *
* *
* RUN DATE 14SEP92 TIME 14:43:38 *

* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104

SLC - PRE - SUPER

X X XXXXXX XXXXX
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THIS RUN EXECUTED 14SEP92 14:43:38

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992
T2
T3 100 YR. PRE-DEVELOPED CONDITION, SUPER-CRITICAL PROFILE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	2.		1.	-1.					5933.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.	- 1.				-1.				

J5 LPRNT NUMSEC *****REQUESTED SECTION NUMBERS*****
-10. -10.

J6 IHLEQ ICOPY SUBDIV STRTDS RMILE
1.

NC	.06	.06	.06	.1	.3					
QT	3.	703.	348.	138.						
X1	13.00	5.	0.	110.	50.	50.	50.	33.0	110.	5900.
GR	34.7	0.	31.4	43.	31.7	88.				34.
										135.
X1	12.50	8.	0.	128.	50.	50.	50.			5900.
GR	32.2	0.	29.5	35.	29.5	47.	30.5	71.		29.6
GR	29.5	113.	31.	128.	32.	155.				93.
X1	12.00	9.	0.	115.	50.	50.	50.			5900.
GR	39.5	0.	37.5	28.	37.5	35.	38.5	52.		37.
GR	37.	100.	38.5	115.	39.	138.	39.	160.		80.
X1	11.50	6.	0.	128.	50.	50.	50.			5900.
GR	37.	0.	35.3	31.	35.3	42.	36.	70.		35.9
GR	36.5	128.								102.
X1	11.00	12.	28.	152.	50.	50.	50.			5900.
GR	34.75	0.	34.	28.	32.5	40.	32.5	56.		34.5
GR	34.5	90.	34.	109.	33.9	118.	32.	130.		32.
GR	33.9	152.	33.9	160.						145.

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PAGE 2

X1	10.50	15.	20.	171.	34.	34.	34.			5900.
GR	32.5	0.	32.	20.	30.1	24.	30.1			32.
GR	32.5	75.	31.5	117.	31.5	135.	29.9	42.		29.9
GR	30.5	171.	29.9	184.	29.9	190.	32.	150.		34.
								198.		220.
NC	.02	.02	.02							
X1	10.16	18.	100.	490.	32.	32.	32.			5914.57
GR	22.03	100.	21.63	125.	20.78	150.	19.50	175.		18.00
GR	16.50	225.	15.00	250.	13.81	275.	13.25	300.		13.20
GR	13.31	325.	14.00	350.	15.31	375.	17.25	400.		310.
GR	20.50	450.	21.19	475.	21.30	490.				425.
X1	9.84				34.	34.	34.			
NC	.06	.06	.06							
X1	9.50	5.	0.	90.	75.	75.	75.			5900.
GR	28.	0.	24.	25.	24.	63.	26.7	90.		27.3
										110.
X1	8.75	4.	0.	90.						5900.
GR	24.	0.	21.2	20.	21.2	65.	24.5	90.		

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PAGE 3

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

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T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992
T2
T3 10 YR. PRE-DEVELOPED CONDITION, SUPER-CRITICAL PROFILE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	3.		1.	-1.					-5933.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.		-1.		-1.					

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

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PAGE 5

T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992
T2
T3 2 YR. PRE-DEVELOPED CONDITION, SUPER-CRITICAL PROFILE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	4.		1.	-1.					5933.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.		-1.		-1.					

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

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THIS RUN EXECUTED 14SEP92 14:43:40

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100 YR. PRE-DEVELOPED CO
SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	13.000	.00	.00	.00	5931.40	703.00	5933.17	5933.17	5933.79	484.69	6.29	112.12	31.93
*	13.000	.00	.00	.00	5931.40	348.00	5932.63	5932.63	5933.06	562.73	5.29	65.73	14.67
*	13.000	.00	.00	.00	5931.40	138.00	5932.16	5932.16	5932.43	659.62	4.16	33.19	5.37
*	12.500	50.00	.00	.00	5929.50	703.00	5931.02	5931.02	5931.55	521.94	5.88	119.55	30.77
*	12.500	50.00	.00	.00	5929.50	348.00	5930.58	5930.58	5930.94	600.97	4.80	72.44	14.20
*	12.500	50.00	.00	.00	5929.50	138.00	5930.18	5930.18	5930.41	686.41	3.85	35.82	5.27
*	12.000	50.00	.00	.00	5937.00	703.00	5938.82	5938.82	5939.36	491.02	5.91	120.65	31.73
*	12.000	50.00	.00	.00	5937.00	348.00	5938.34	5938.34	5938.73	592.18	5.01	69.47	14.30
*	12.000	50.00	.00	.00	5937.00	138.00	5937.88	5937.88	5938.14	654.45	4.12	33.53	5.39
*	11.500	50.00	.00	.00	5935.30	703.00	5936.90	5936.90	5937.39	530.33	5.64	124.60	30.53
*	11.500	50.00	.00	.00	5935.30	348.00	5936.50	5936.50	5936.83	633.74	4.61	75.54	13.82
*	11.500	50.00	.00	.00	5935.30	138.00	5936.16	5936.16	5936.36	715.95	3.57	38.69	5.16
*	11.000	50.00	.00	.00	5932.00	703.00	5934.17	5934.21	5934.76	519.10	6.19	115.34	30.86
*	11.000	50.00	.00	.00	5932.00	348.00	5933.55	5933.55	5934.02	554.26	5.54	62.81	14.78
*	11.000	50.00	.00	.00	5932.00	138.00	5933.01	5933.01	5933.32	638.15	4.46	30.97	5.46
*	10.500	50.00	.00	.00	5929.90	703.00	5931.62	5931.63	5932.18	510.06	5.44	119.41	31.13
*	10.500	50.00	.00	.00	5929.90	348.00	5931.03	5931.03	5931.45	563.06	5.15	66.51	14.67
*	10.500	50.00	.00	.00	5929.90	138.00	5930.61	5930.61	5930.85	651.29	3.93	34.78	5.41
	10.160	34.00	.00	.00	5927.77	703.00	5928.88	5929.40	5930.67	324.86	10.74	65.47	39.00
	10.160	34.00	.00	.00	5927.77	348.00	5928.57	5928.93	5929.81	372.34	8.97	38.79	18.03
	10.160	34.00	.00	.00	5927.77	138.00	5928.28	5928.51	5929.06	404.03	7.05	19.58	6.87
*	9.840	32.00	.00	.00	5927.77	703.00	5929.40	5929.40	5929.94	58.37	5.90	119.11	92.01
*	9.840	32.00	.00	.00	5927.77	348.00	5928.93	5928.93	5929.31	64.40	4.94	70.42	43.36
*	9.840	32.00	.00	.00	5927.77	138.00	5928.52	5928.52	5928.75	75.57	3.89	35.48	15.88

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	9.500	34.00	.00	.00	5924.00	703.00	5925.37	5925.90	5927.07	1559.96	10.49	67.02	17.80
*	9.500	34.00	.00	.00	5924.00	348.00	5924.88	5925.25	5926.07	1792.86	8.73	39.85	8.22
*	9.500	34.00	.00	.00	5924.00	138.00	5924.50	5924.70	5925.17	2003.84	6.56	21.03	3.08
*	8.750	75.00	.00	.00	5921.20	703.00	5922.97	5922.97	5923.70	470.79	6.85	102.60	32.40
*	8.750	75.00	.00	.00	5921.20	348.00	5922.34	5922.34	5922.85	537.97	5.69	61.14	15.00
*	8.750	75.00	.00	.00	5921.20	138.00	5921.84	5921.84	5922.13	633.32	4.35	31.74	5.48

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100 YR. PRE-DEVELOPED CO
SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	13.000	703.00	5933.17	.00	.00	.17	94.48	.00
*	13.000	348.00	5932.63	-.54	.00	-.37	76.75	.00
*	13.000	138.00	5932.16	-.47	.00	-.84	62.78	.00
*	12.500	703.00	5931.02	.00	-2.16	.00	113.09	50.00
*	12.500	348.00	5930.58	-.44	-2.05	.00	102.78	50.00
*	12.500	138.00	5930.18	-.40	-1.98	.00	78.19	50.00
*	12.000	703.00	5938.82	.00	7.81	.00	120.45	50.00
*	12.000	348.00	5938.34	-.48	7.76	.00	91.53	50.00
*	12.000	138.00	5937.88	-.46	7.70	.00	63.94	50.00
*	11.500	703.00	5936.90	.00	-1.92	.00	126.18	50.00
*	11.500	348.00	5936.50	-.40	-1.84	.00	118.88	50.00
*	11.500	138.00	5936.16	-.34	-1.72	.00	97.96	50.00
*	11.000	703.00	5934.17	.00	-2.73	.00	111.75	50.00
*	11.000	348.00	5933.55	-.62	-2.95	.00	67.38	50.00
*	11.000	138.00	5933.01	-.54	-3.15	.00	51.28	50.00
*	10.500	703.00	5931.62	.00	-2.55	.00	113.67	50.00
*	10.500	348.00	5931.03	-.59	-2.52	.00	79.72	50.00
*	10.500	138.00	5930.61	-.42	-2.40	.00	71.07	50.00
	10.160	703.00	5928.88	.00	-2.73	.00	91.15	34.00
	10.160	348.00	5928.57	-.32	-2.46	.00	78.35	34.00
	10.160	138.00	5928.28	-.28	-2.32	.00	60.42	34.00
*	9.840	703.00	5929.40	.00	.52	.00	112.29	32.00
*	9.840	348.00	5928.93	-.47	.36	.00	93.30	32.00
*	9.840	138.00	5928.52	-.41	.23	.00	75.89	32.00
*	9.500	703.00	5925.37	.00	-4.04	.00	60.18	34.00
*	9.500	348.00	5924.88	-.48	-4.04	.00	52.34	34.00
*	9.500	138.00	5924.50	-.38	-4.01	.00	46.12	34.00
*	8.750	703.00	5922.97	.00	-2.40	.00	71.03	75.00
*	8.750	348.00	5922.34	-.62	-2.54	.00	61.85	75.00
*	8.750	138.00	5921.84	-.51	-2.67	.00	54.40	75.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO-	13.000	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	13.000	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	13.000	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.500	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.500	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.500	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.500	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.500	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.500	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.500	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.500	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.500	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.000	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.000	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.000	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.000	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	12.000	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	12.000	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	12.000	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	11.500	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.500	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.500	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	11.500	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.500	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.500	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	11.500	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.500	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.500	PROFILE-	3	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	11.500	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	11.000	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.000	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY

CAUTION SECNO-	11.000	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	11.000	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.000	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.000	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	10.500	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.500	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	10.500	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	10.500	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.500	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	10.500	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	9.840	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.840	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY

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CAUTION SECNO-	9.840	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	9.840	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.840	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.840	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	9.840	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.840	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.840	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
WARNING SECNO-	9.500	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	9.500	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	9.500	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	8.750	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	8.750	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	8.750	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	8.750	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	8.750	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	8.750	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	8.750	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	8.750	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	8.750	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL

* HEC-2 WATER SURFACE PROFILES *
* *
* Version 4.6.2; May 1991 *
* *
* RUN DATE 14SEP92 TIME 14:45:14 *

* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104

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PAGE 1

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

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T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992
T2
T3 100 YR. PRE-DEVELOPED CONDITION, SUB-CRITICAL PROFILE

J1 ICHECK INQ NINV IDIR STRT METRIC HVINS Q WSEL FQ
2. -1. 5924.
J2 NPROF IPLOT PRFVS XSECV XSECH FN ALLDC IBW CHNIM ITRACE
1. -1. -1.

J5 LPRNT NUMSEC *****REQUESTED SECTION NUMBERS*****
-10. -10.

J6 IHLEQ ICOPY SUBDIV STRTDS RMILE
1.

NC	.06	.06	.06	.1	.3						
QT	3.	703.	344.	138.							
X1	8.75	4.	0.	90.						5900.	
GR	24.	0.	21.2	20.	21.2	65.	24.5	90.			
X1	9.50	5.	0.	90.	75.	75.	75.			5900.	
GR	28.	0.	24.	25.	24.	63.	26.7	90.	27.3	110.	
NC	.02	.02	.02								
X1	9.84	18.	100.	490.	34.	34.	34.			5914.57	
GR	22.03	100.	21.63	125.	20.78	150.	19.50	175.	18.00	200.	
GR	16.50	225.	15.00	250.	13.81	275.	13.25	300.	13.20	310.	
GR	13.31	325.	14.00	350.	15.31	375.	17.25	400.	19.19	425.	
GR	20.50	450.	21.19	475.	21.30	490.					
X1	10.16				32.	32.	32.				
NC	.06	.06	.06								
X1	10.50	15.	20.	171.	34.	34.	34.			5900.	
GR	32.5	0.	32.	20.	30.1	24.	30.1	42.	32.	52.	
GR	32.5	75.	31.5	117.	31.5	135.	29.9	150.	29.9	161.	
GR	30.5	171.	29.9	184.	29.9	190.	32.	198.	34.	220.	

1 14SEP92 14:45:14

PAGE 2

X1	11.00	12.	28.	152.	50.	50.	50.			5900.	
GR	34.75	0.	34.	28.	32.5	40.	32.5	56.	34.5	80.	
GR	34.5	90.	34.	109.	33.9	118.	32.	130.	32.	145.	
GR	33.9	152.	33.9	160.							
X1	11.50	6.	0.	128.	50.	50.	50.			5900.	
GR	37.	0.	35.3	31.	35.3	42.	36.	70.	35.9	102.	
GR	36.5	128.									
X1	11.00	9.	0.	115.	50.	50.	50.			5900.	
GR	39.5	0.	37.5	28.	37.5	35.	38.5	52.	37.	80.	
GR	37.	100.	38.5	115.	39.	138.	39.	160.			
X1	12.50	8.	0.	128.	50.	50.	50.			5900.	
GR	32.2	0.	29.5	35.	29.5	47.	30.5	71.	29.6	93.	
GR	29.5	113.	31.	128.	32.	155.					
X1	13.00	5.	0.	110.	50.	50.	50.			5900.	
GR	34.7	0.	31.4	43.	31.7	88.	33.0	110.	34.	135.	

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PAGE 3

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

1 14SEP92 14:45:14

PAGE 4

T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992

T2 10 YR. PRE-DEVELOPED CONDITION, SUB-CRITICAL PROFILE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	3.				-1.				5924.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.		-1.			-1.				

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

1 14SEP92 14:45:14

PAGE 5

T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992

T2 2 YR. PRE-DEVELOPED CONDITION, SUB-CRITICAL PROFILE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	4.				-1.				5924.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.		-1.			-1.				

IHLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

1 14SEP92 14:45:14

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HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

THIS RUN EXECUTED 14SEP92 14:45:15

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100 YR. PRE-DEVELOPED CO

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	8.750	.00	.00	.00	5921.20	703.00	5922.97	5922.97	5923.70	474.07	6.87	102.36	32.29
*	8.750	.00	.00	.00	5921.20	344.00	5922.34	5922.34	5922.84	525.67	5.63	61.14	15.00
*	8.750	.00	.00	.00	5921.20	138.00	5921.84	5921.84	5922.13	643.35	4.37	31.58	5.44
	9.500	75.00	.00	.00	5924.00	703.00	5926.08	5925.90	5926.67	337.09	6.17	113.88	38.29
*	9.500	75.00	.00	.00	5924.00	344.00	5925.44	5925.23	5925.80	314.06	4.84	71.11	19.41
	9.500	75.00	.00	.00	5924.00	138.00	5924.88	5924.70	5925.07	279.76	3.45	39.96	8.25
*	9.840	34.00	.00	.00	5927.77	703.00	5929.40	5929.40	5929.94	57.99	5.89	119.38	92.31
*	9.840	34.00	.00	.00	5927.77	344.00	5928.92	5928.92	5929.30	65.47	4.95	69.47	42.51
*	9.840	34.00	.00	.00	5927.77	138.00	5928.52	5928.52	5928.75	75.12	3.88	35.55	15.92
*	10.160	32.00	.00	.00	5927.77	703.00	5929.79	5929.40	5930.07	22.76	4.24	165.99	147.36
*	10.160	32.00	.00	.00	5927.77	344.00	5929.25	5928.92	5929.42	21.24	3.35	102.78	74.64
*	10.160	32.00	.00	.00	5927.77	138.00	5928.77	5928.51	5928.87	20.04	2.48	55.74	30.83
*	10.500	34.00	.00	.00	5929.90	703.00	5931.63	5931.63	5932.18	488.86	5.35	121.30	31.80
*	10.500	34.00	.00	.00	5929.90	344.00	5931.03	5931.03	5931.44	550.19	5.09	66.51	14.67
*	10.500	34.00	.00	.00	5929.90	138.00	5930.61	5930.61	5930.85	659.42	3.94	34.64	5.37
*	11.000	50.00	.00	.00	5932.00	703.00	5934.21	5934.21	5934.76	476.82	5.99	119.54	32.19
	11.000	50.00	.00	.00	5932.00	344.00	5933.59	5933.54	5934.01	480.75	5.25	65.57	15.69
	11.000	50.00	.00	.00	5932.00	138.00	5933.12	5933.01	5933.34	399.09	3.78	36.52	6.91
*	11.500	50.00	.00	.00	5935.30	703.00	5936.89	5936.89	5937.40	547.09	5.70	123.37	30.06
*	11.500	50.00	.00	.00	5935.30	344.00	5936.49	5936.49	5936.82	634.64	4.59	74.90	13.66
*	11.500	50.00	.00	.00	5935.30	138.00	5936.16	5936.16	5936.36	740.38	3.61	38.26	5.07
*	12.000	50.00	.00	.00	5937.00	703.00	5938.99	5938.83	5939.38	310.05	5.09	141.86	39.92
*	12.000	50.00	.00	.00	5937.00	344.00	5938.55	5938.34	5938.78	280.63	3.82	90.11	20.53
*	12.000	50.00	.00	.00	5937.00	138.00	5938.09	5937.87	5938.22	246.64	2.86	48.27	8.79

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	12.500	50.00	.00	.00	5929.50	703.00	5939.42	5931.02	5939.43	.24	.52	1400.29	1427.67
*	12.500	50.00	.00	.00	5929.50	344.00	5938.80	5930.57	5938.80	.07	.27	1303.86	1273.66
*	12.500	50.00	.00	.00	5929.50	138.00	5938.23	5930.18	5938.23	.01	.12	1215.24	1137.75
*	13.000	50.00	.00	.00	5931.40	703.00	5939.42	5933.17	5939.43	.77	.78	931.91	803.67
*	13.000	50.00	.00	.00	5931.40	344.00	5938.80	5932.62	5938.80	.25	.42	847.87	690.56
*	13.000	50.00	.00	.00	5931.40	138.00	5938.23	5932.16	5938.23	.05	.18	770.61	592.21

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100 YR. PRE-DEVELOPED CO

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	8.750	703.00	5922.97	.00	.00	-1.03	70.98	.00
*	8.750	344.00	5922.34	-.62	.00	-1.66	61.85	.00
*	8.750	138.00	5921.84	-.51	.00	-2.16	54.36	.00
*	9.500	703.00	5926.08	.00	3.11	.00	71.73	75.00
*	9.500	344.00	5925.44	-.64	3.09	.00	61.28	75.00
*	9.500	138.00	5924.88	-.55	3.05	.00	52.37	75.00
*	9.840	703.00	5929.40	.00	3.33	.00	112.39	34.00
*	9.840	344.00	5928.92	-.49	3.48	.00	92.89	34.00
*	9.840	138.00	5928.52	-.40	3.63	.00	75.94	34.00
*	10.160	703.00	5929.79	.00	.39	.00	127.01	32.00
*	10.160	344.00	5929.25	-.55	.33	.00	106.30	32.00
*	10.160	138.00	5928.77	-.48	.25	.00	86.76	32.00
*	10.500	703.00	5931.63	.00	1.84	.00	114.55	34.00
*	10.500	344.00	5931.03	-.61	1.78	.00	79.72	34.00
*	10.500	138.00	5930.61	-.42	1.83	.00	71.03	34.00
*	11.000	703.00	5934.21	.00	2.57	.00	115.00	50.00
*	11.000	344.00	5933.59	-.62	2.56	.00	68.59	50.00
*	11.000	138.00	5933.12	-.47	2.51	.00	54.43	50.00
*	11.500	703.00	5936.89	.00	2.68	.00	126.01	50.00
*	11.500	344.00	5936.49	-.40	2.91	.00	118.55	50.00
*	11.500	138.00	5936.16	-.34	3.04	.00	97.69	50.00
*	12.000	703.00	5938.99	.00	2.10	.00	130.59	50.00
*	12.000	344.00	5938.55	-.44	2.06	.00	104.13	50.00
*	12.000	138.00	5938.09	-.46	1.93	.00	76.47	50.00
*	12.500	703.00	5939.42	.00	.44	.00	155.00	50.00
*	12.500	344.00	5938.80	-.62	.25	.00	155.00	50.00
*	12.500	138.00	5938.23	-.57	.14	.00	155.00	50.00
*	13.000	703.00	5939.42	.00	.00	.00	135.00	50.00
*	13.000	344.00	5938.80	-.62	.00	.00	135.00	50.00
*	13.000	138.00	5938.23	-.57	.00	.00	135.00	50.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO-	8.750	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	8.750	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	8.750	PROFILE-	3	CRITICAL DEPTH ASSUMED
WARNING SECNO-	9.500	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	9.840	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.840	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.840	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.840	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	9.840	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	9.840	PROFILE-	3	MINIMUM SPECIFIC ENERGY
WARNING SECNO-	10.160	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	10.160	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	10.160	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	10.500	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.500	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	10.500	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.500	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	10.500	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	10.500	PROFILE-	3	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.000	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.000	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.500	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.500	PROFILE-	1	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.500	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.500	PROFILE-	2	MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	11.500	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	11.500	PROFILE-	3	MINIMUM SPECIFIC ENERGY
WARNING SECNO-	12.000	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	12.000	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING	SECNO-	12.500	PROFILE-	1	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	12.500	PROFILE-	2	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	12.500	PROFILE-	3	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	13.000	PROFILE-	1	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	13.000	PROFILE-	2	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE
WARNING	SECNO-	13.000	PROFILE-	3	CONVEYANCE	CHANGE	OUTSIDE	ACCEPTABLE	RANGE

* HEC-2 WATER SURFACE PROFILES *
* *
* Version 4.6.2; May 1991 *
* *
* RUN DATE 14SEP92 TIME 14:49:04 *

* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104

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HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992
T2
T3 100 YR. DEVELOPED CONDITION, SUPER-CRITICAL PROFILE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	2.		1.	-1.					6050.	
J2	NPROF	IPLOT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	1.		- 1.				-1.			

J5 LPRNT NUMSEC *****REQUESTED SECTION NUMBERS*****
-10. -10.

J6 IHLEQ ICOPY SUBDIV STRTDS RMILE
1.

NC	.02	.02	.02	.1	.3					
QT	3.	703.	348.	138.						
X1	37.05	4.	0.	65.	40.	40.	40.		6047.	
GR	52.	0.	47.	0.	47.	65.	52.	65.		
NC	.035	.035	.035							
X1	36.65	5.	0.	51.	25.	25.	25.		6027.91	
GR	10.	0.	1.00	18.	0.0	25.5	1.00	33.	10.00	51.
X1	36.40	5.	0.	69.	25.	25.	25.		6027.61	
GR	10.	0.	1.00	27.	0.	34.5	1.0	42.	10.0	69.0
X1	36.15	5.	0.	87.	14.	14.	14.		6027.31	
GR	10.	0.	1.00	36.	0.	43.5	1.	51.	10.00	87.
X1	36.01				25.	25.	25.		-0.17	
X1	35.76				25.	25.	25.		-0.30	
X1	35.51				25.	25.	25.		-0.30	

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PAGE 2

X1	35.26				25.	25.	25.		-0.30	
X1	35.01				25.	25.	25.		-0.30	
X1	35.76				25.	25.	25.		-0.30	
X1	34.51	5.	0.	87.	25.	25.	25.		6025.34	
GR	10.0	0.	1.0	36.	0.	43.5	1.0	51.	10.00	87.0
X1	34.26	5.	0.	69.	25.	25.	25.		6025.04	
GR	10.0	0.	1.	27.	0.	34.5	1.	42.	10.0	69.
X1	34.01	5.	0.	51.	8.	8.	8.		6024.74	
GR	10.0	0.	1.	18.	0.	25.5	1.	33.	10.0	51.
X1	33.93	4.	0.	35.	8.	8.	8.		6024.65	
GR	5.0	0.	0.00	10.	0.00	25.	5.0	35.		
NC	0.012	0.012	0.012	.3	.5					
X1	33.85	8.	0.	17.	10.33	10.33	10.33		6020.65	
BT	2.	0.	6032.65	6024.65	17.	6032.65	6024.65			

GR	8.0	0.	0.0	0.	0.0	8.	4.	8.	4.	9.
GR	0.00	9.	0.00	17.	8.0	17.				
X1	33.75				10.33	10.33	10.33		-0.31	
X2							1.			
X1	33.65				10.33	10.33	10.33		-0.31	
X2							1.			
X1	33.54				10.33	10.33	10.33		-0.31	
X2							1.			
X1	33.44				10.33	10.33	10.33		-0.31	
X2							1.			
X1	33.34				10.33	10.33	10.33		-0.31	
X2							1.			
X1	33.23				31.	31.	31.		-0.31	
X2							1.			
X1	32.92				31.	31.	31.		-0.91	
X2							1.			
X1	32.61				31.	31.	31.		-0.91	
X2							1.			

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PAGE 3

X1	32.30				31.	31.	31.		-0.91	
X2							1.			
X1	31.99				31.	31.	31.		-0.91	
X2							1.			
X1	31.68				31.	31.	31.		-0.91	
X2							1.			
X1	31.37				31.	31.	31.		-0.91	
X2							1.			
X1	31.06				31.	31.	31.		-0.91	
X2							1.			
X1	30.75								-0.91	
RC	3.	639.	6013.18	316.	6012.55	16.125.	16.6012.08			
X2							1.			
X1	30.59	5.	0.	51.	25.	25.	25.		6004.13	
X3	10.									
GR	10.0	0.	1.0	18.0	0.0	25.5	1.0	33.	10.0	51.
NC										
X1	30.34	5.	0.	63.6	25.8	25.	25.		6003.83	
GR	10.0	0.	1.0	27.	0.	34.5	1.0	42.	10.0	69.
X1	30.09	5.	0.	87.	10.	10.	10.		6003.53	
GR	10.0	0.	1.	36.	0.	43.5	1.0	51.	10.0	87.
NC				.1						
X1	29.99				3	10.	10.		-0.12	
X1	29.89				10.	10.	10.		-0.12	
X1	29.79				34.	34.	34.		-0.12	
X1	29.45				34.	34.	34.		-0.41	
X1	29.11				13.	13.	13.		-0.41	
X1	28.98	5.	0.	87.	25.	25.	25.		6002.20	
GR	10.0	0.	1.0	36.	0.	43.5	1.	51.	10.0	87.
X1	28.73	5.	0.	69.	25.	25.	25.		6001.80	
GR	10.0	0.	1.0	27.	0.	34.5	1.	42.	10.00	69.
X1	28.48	5.	0.	51.	8.	8.	8.		6001.60	
GR	10.0	0.0	1.0	18.0	0.	25.5	1.0	33.	10.	51.

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PAGE 4

X1	28.40	8.	0.	67.	17.	1	7.	1	7.		6002.50	
X4	1.	-1.0	33.5									
GR	5.0	0.	3.0	6.	1.0	12.5	0.0	18.5	0.0	38.5		
GR	1.0	44.5	3.0	51.	5.0	67.						
X1	28.23	5.	0.	51.	12.	12.	12.		5993.80			
GR	10.0	0.	1.0	18.0	0.0	25.5	1.0	33.	10.00	51.		
NC												
X1	27.98	5.	0.	69.6	25.8	25.	25.		5993.50			
GR	10.0	0.	1.0	27.	0.0	34.5	1.0	42.	10.0	69.		
X1	27.73	5.	0.	87.	10.	10.	10.		5993.20			
GR	10.0	0.	1.	36.	0.	43.5	1.	51.	10.0	87.		
NC				.1								
X1	27.63				3	10.	10.		-0.12			
X1	27.53				10.	10.	10.		-0.12			
X1	27.43				34.	34.	34.		-0.12			
X1	27.09				34.	34.	34.		-0.41			
X1	26.75				27.	27.	27.		-0.41			

X1	26.48	5.	0.	87.	25.	25.	25.		5991.70	
GR	10.0	0.	1.	36.	0.	43.5	1.	51.	10.0	87.
X1	26.23	5.	0.	69.	25.	25.	25.		5991.40	
GR	10.0	0.	1.0	27.	0.	34.5	1.00	42.	10.0	69.
X1	25.98	5.	0.	51.	8.	8.	8.		5991.10	
GR	10.0	0.	1.00	18.	0.00	25.5	1.0	33.	10.0	51.
X1	25.90	8.	0.	67.	12	12.	12.		5992.00	
X4	1.	-1.0	33.5							
GR	5.0	0.	3.0	6.	1.0	12.5	0.0	18.5	0.0	38.5
GR	1.0	44.5	3.0	51.	5.0	67.				
X1	25.78	5.	0.	51.	25.	25.	25.		5984.28	
GR	10.0	0.	1.00	18.	0.00	25.5	1.0	33.	10.0	51.
NC				6	8					
X1	25.53	5.	0.	69.	25.	25.	25.		5983.98	
GR	10.0	0.	1.0	27.	0.	34.5	1.00	42.	10.0	69.
X1	25.28	5.	0.	87.	18.	18.	18.		5983.68	
GR	10.0	0.	1.	36.	0.	43.5	1.	51.	10.0	87.

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NC				.1	3					
X1	25.10				10.	10.	10.		-0.22	
X1	25.00				10.	10.	10.		-0.12	
X1	24.90				34.	34.	34.		-0.12	
X1	24.56				34.	34.	34.		-0.41	
X1	24.22				34.	34.	34.		-0.41	
X1	23.88				38.	38.	38.		-0.41	
NC	0.06	0.06	0.06							
X1	23.50	10.	37.	158.	50.	50.	50.		5900.	
CI	100.	5981.54	0.35	4.	4.	15.				
GR	87.	0.	85.5	37.	84.	55.		65.	83.	77.
GR	83.5	90.	83.4	100.	83.3	130.	86.	150.	88.	158.
X1	23.00	11.	40.	140.	50.	50.	50.		5900.	
CI	100.	5980.20	0.35	4.	4.	15.				
GR	85.7	0.	84.	40.	82.	63.	81.	66.	82.	75.
GR	82.	90.	81.2	100.	81.2	122.	82.	130.	84.	140.
GR	86.	165.								
X1	22.50	10.	20.	115.	50.	50.	50.		5900.	
CI	100.	5978.86	0.35	4.	4.	15.				
GR	84.5	0.	84.0	20.	82.	30.	80.	47.	79.	55.
GR	79.	100.	79.	110.	80.	115.	82.	140.	84.	155.
X1	22.00	10.	0.	127.	50.	50.	50.		5900.	
CI	100.	5977.51	0.35	4.	4.	15.				
GR	81.0	0.	77.	30.	76.	50.	77.	70.	77.	85.
GR	76.7	100.	76.7	110.	78.	117.	80.	127.	80.5	170.
X1	21.50	14.	0.	126.	50.	50.	50.		5900.	
CI	100.	5981.54	0.35	4.	4.	.01				
GR	79.	0.	78.	14.	76.	22.	74.5	35.	74.5	47.
GR	75.8	58.	75.8	80.	74.6	95.	74.6	100.	74.6	111.
GR	76.	115.	77.	126.	78.	150.	79.	190.		
X1	21.00	7.	35.	125.	50.	50.	50.		5901.	
GR	76.7	0.	76.5	35.	71.6	70.	71.6	100.	73.7	125.
GR	74.	135.	76.	200.						
X1	20.50				50.	50.	50.		-2.	
X1	20.00	10.	40.	131.	50.	50.	50.		5900.	
GR	74.2	40.	74.	50.	72.	60.	70.	80.	69.	90.
GR	69.	100.	69.	115.	70.	122.	72.2	131.	72.5	185.

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X1	19.50	10.	25.	138.	50.	50.	50.		5900.	
GR	72.5	25.	72.	50.	70.	70.	68.	96.	67.2	100.
GR	67.2	116.	68.	121.	70.	138.	71.	163.	71.	190.
X1	19.00	9.	60.	140.	50.	50.	50.		5900.	
GR	70.	20.	68.8	60.	68.	73.	66.	80.	65.3	90.
GR	65.3	100.	65.3	120.	66.	128.	68.3	140.		
X1	18.50	10.	45.	120.	20.	20.	20.		5900.	
GR	67.7	45.	66.	66.	64.	90.	63.5	95.	63.5	100.
GR	63.5	117.	64.	120.	66.	145.	66.5	155.	66.5	200.
NC	.035	.035	.035							
X1	18.30				24.	24.	24.		-0.8	
X1	18.06	5.	0.	87.	24.	24.	24.		5957.2	
GR	10.0	0.	1.	36.	0.	43.5	1.	51.	10.0	87.
X1	17.82	5.	0.	69.	24.	24.	24.		5956.93	
GR	10.0	0.	1.0	27.0	0.	34.5	1.	42.	10.0	69.
X1	17.58	4.	0.	35.	8.	8.	8.		5957.63	
X4	1.	-1.0	17.5							
GR	5.0	0.	0.00	10.	0.00	25.	5.0	35.		
X1	17.50	8.	0.	67.	15.	15.	15.		5957.53	

X4	1.	-1.0	33.5								
GR	5.0	0.	3.0	6.	1.0	12.5	0.0	18.5	0.0	38.5	
GR	1.0	44.5	3.0	51.	5.0	67.					
X1	17.35	5.	0.	51.	25.	25.	25.		5949.62		
GR	10.0	0.	1.00	18.	0.0	25.5	1.0	33.	10.0	51.	
NC				.6	.8						
X1	17.10	5.	0.	69.	25.	25.	25.		5949.32		
GR	10.0	0.	1.0	27.	0.	34.5	1.0	42.0	10.0	69.	
X1	16.85	5.	0.	87.	10.	10.	10.		5949.02		
GR	10.0	0.	1.	36.	0.	43.5	1.0	51.0	10.	87.	
NC				.1	.3						
X1	16.75				10.	10.	10.		-0.12		
X1	16.65				10.	10.	10.		-0.12		
X1	16.55				34.	34.	34.		-0.12		
X1	16.21				34.	34.	34.		-0.41		

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X1	15.87				29.	29.	29.		-0.41		
X1	15.58	5.	0.	87.	25.	25.	25.		5947.50		
GR	10.0	0.	1.	36.	0.	43.5	1.0	51.0	10.	87.	
X1	15.33	5.	0.	69.	25.	25.	25.		5947.20		
GR	10.0	0.	1.0	27.	0.	34.5	1.0	42.0	10.0	69.	
X1	15.08	5.	0.	51.	8.	8.	8.		5946.90		
GR	10.0	0.	1.00	18.	0.0	25.5	1.0	33.	10.0	51.	
X1	15.00	8.	0.	67.	15.	15.	15.		5947.80		
X4	1.	-1.0	33.5								
GR	5.0	0.	3.0	6.	1.0	12.5	0.0	18.5	0.0	38.5	
GR	1.0	44.5	3.0	51.	5.0	67.					
X1	14.85	5.	0.	51.	25.0	25.	25.		5939.91		
GR	10.0	0.	1.00	18.	0.0	25.5	1.0	33.	10.0	51.	
NC				.6	.8						
X1	14.60	5.	0.	69.	25.	25.	25.		5939.61		
GR	10.0	0.	1.0	27.	0.	34.5	1.0	42.0	10.0	69.	
X1	14.35	5.	0.	87.	10.	10.	10.		5939.31		
GR	10.0	0.	1.	36.	0.	43.5	1.0	51.0	10.	87.	
NC				.1	.3						
X1	14.25				10.	10.	10.		-0.12		
X1	14.15				10.	10.	10.		-0.12		
X1	14.05				34.	34.	34.		-0.12		
X1	13.71				34.	34.	34.		-0.41		
X1	13.37				29.	29.	29.		-0.41		
X1	13.08	5.	0.	87.	25.	25.	25.		5937.77		
GR	10.0	0.	1.	36.	0.	43.5	1.0	51.0	10.	87.	
X1	12.83	5.	0.	69.	25.	25.	25.		5937.47		
GR	10.0	0.	1.0	27.	0.	34.5	1.0	42.0	10.0	69.	
X1	12.58	5.	0.	51.	8.	8.	8.		5937.17		
GR	10.0	0.	1.00	18.	0.0	25.5	1.0	33.	10.0	51.	
X1	12.50	8.	0.	67.	13.	13.	13.		5938.07		
X4	1.	-1.0	33.5								
GR	5.0	0.	3.0	6.	1.0	12.5	0.0	18.5	0.0	38.5	
GR	1.0	44.5	3.0	51.	5.0	67.					

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NC				.1	.3						
X1	12.37	5.	0.	51.	25.	25.	25.		5930.42		
GR	10.0	0.	1.00	18.	0.0	25.5	1.0	33.	10.0	51.	
NC				.6	.8						
X1	12.12	5.	0.	51.	25.	25.	25.		5930.12		
GR	10.0	0.	1.0	18.	0.	24.5	1.0	33.0	10.0	51.	
NC				.6	.8						
X1	11.87	5.	0.	87.	10.	10.	10.		5929.82		
GR	10.0	0.	1.	36.	0.	43.5	1.0	51.0	10.	87.	
X1	11.77				10.	10.	10.		-0.12		
X1	11.67				10.	10.	10.		-0.12		
X1	11.58	4.	0.	67.	34.	34.	34.		5929.47		
X4	1.0	-1.32	33.5								
GR	5.68	0.	-0.32	24.	-0.32	43.	5.68	67.			
X1	11.24	4.	0.	84.	34.	34.	34.		5929.06		
X4	1.0	-1.32	42.0								
GR	5.68	0.	-0.32	24.	-0.32	60.	5.68	84.			
X1	10.90	4.	0.	101.	24.	24.	24.		5928.65		
X4	1.0	-1.32	50.5								
GR	5.68	0.	-0.32	24.	-0.32	77.	5.68	101.			

X1	10.48				32.	32.	32.				
X1	10.16	18.	100.	490.	32.	32.	32.		5914.57		
GR	22.03	100.	21.63	125.	20.78	150.	19.50	175.	18.00	200.	
GR	16.50	225.	15.00	250.	13.81	275.	13.25	300.	13.20	310.	
GR	13.31	325.	14.00	350.	15.31	375.	17.25	400.	19.19	425.	
GR	20.50	450.	21.19	475.	21.30	490.					
X1	9.84				34.	34.	34.				
NC	.06	.06	.06								
X1	9.50	5.	0.	90.	75.	75.	75.		5900.		
GR	28.	0.	24.	25.	24.	63.	26.7	90.	27.3	110.	
X1	8.75	4.	0.	90.					5900.		
GR	24.	0.	21.2	20.	21.2	65.	24.5	90.			

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1HLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

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T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992
T2
T3 10 YR. DEVELOPED CONDITION, SUPER-CRITICAL PROFILE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	3.		1.	-1.					6050.	
J2	NPROF	IPLT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	2.		-1.				-1.			

1HLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

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T1 SOUTH LA CUEVA ARROYA THROUGH PRIMROSE POINTE, PRELIMINARY JAN. 1992
T2
T3 2 YR. DEVELOPED CONDITION, SUPER-CRITICAL PROFILE

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
	4.		1.	-1.					6050.	
J2	NPROF	IPLT	PRFVS	XSECV	XSECH	FN	ALLDC	IBW	CHNIM	ITRACE
	15.		-1.				-1.			

1HLEQ = 1. THEREFORE FRICTION LOSS (HL) IS CALCULATED AS A FUNCTION OF PROFILE TYPE, WHICH CAN VARY FROM REACH TO REACH. SEE DOCUMENTATION FOR DETAILS.

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THIS RUN EXECUTED 14SEP92 14:49:21

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

100 YR. DEVELOPED CONDIT
SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	37.050	.00	.00	.00	6094.00	703.00	6095.53	6095.53	6096.31	54.33	7.06	99.59	95.38
*	37.050	.00	.00	.00	6094.00	348.00	6094.96	6094.96	6095.44	61.96	5.58	62.37	44.21
*	37.050	.00	.00	.00	6094.00	138.00	6094.52	6094.52	6094.78	74.21	4.09	33.74	16.02
*	36.650	40.00	.00	.00	6027.91	703.00	6029.38	6032.06	6063.50	14679.27	46.88	15.00	5.80
*	36.650	40.00	.00	.00	6027.91	348.00	6028.99	6030.83	6054.05	19413.27	40.18	8.66	2.50
*	36.650	40.00	.00	.00	6027.91	138.00	6028.65	6029.78	6045.97	23482.05	33.40	4.13	.90
*	36.400	25.00	.00	.00	6027.61	703.00	6029.68	6031.61	6040.24	2857.56	26.08	26.96	13.15
*	36.400	25.00	.00	.00	6027.61	348.00	6029.35	6030.48	6033.96	1605.19	17.24	20.19	8.69
*	36.400	25.00	.00	.00	6027.61	138.00	6028.99	6029.48	6030.56	778.25	10.05	13.73	4.95
*	36.150	25.00	.00	.00	6027.31	703.00	6029.91	6031.16	6034.31	934.94	16.82	41.80	22.99
*	36.150	25.00	.00	.00	6027.31	348.00	6029.70	6030.11	6031.15	345.27	9.66	36.02	18.73
*	36.150	25.00	.00	.00	6027.31	138.00	6029.17	6029.17	6029.71	180.10	5.90	23.41	10.28
*	36.010	14.00	.00	.00	6027.14	703.00	6030.12	6030.99	6032.86	491.30	13.30	52.85	31.72
*	36.010	14.00	.00	.00	6027.14	348.00	6029.95	6029.95	6030.77	159.29	7.29	47.71	27.57

*	36.010	14.00	.00	.00	6027.14	138.00	6029.00	6029.00	6029.54	181.49	5.91	23.34	10.24
*	35.760	25.00	.00	.00	6026.84	703.00	6030.69	6030.69	6031.81	144.70	8.49	82.82	58.44
*	35.760	25.00	.00	.00	6026.84	348.00	6029.65	6029.65	6030.48	158.50	7.28	47.80	27.64
*	35.760	25.00	.00	.00	6026.84	138.00	6028.70	6028.70	6029.24	182.19	5.92	23.31	10.22
*	35.510	25.00	.00	.00	6026.54	703.00	6030.40	6030.40	6031.51	143.91	8.47	82.98	58.60
*	35.510	25.00	.00	.00	6026.54	348.00	6029.35	6029.35	6030.18	158.50	7.28	47.80	27.64
*	35.510	25.00	.00	.00	6026.54	138.00	6028.40	6028.40	6028.94	183.60	5.94	23.25	10.18
*	35.260	25.00	.00	.00	6026.24	703.00	6030.09	6030.09	6031.21	144.44	8.48	82.87	58.49
*	35.260	25.00	.00	.00	6026.24	348.00	6029.05	6029.05	6029.88	158.50	7.28	47.80	27.64
*	35.260	25.00	.00	.00	6026.24	138.00	6028.10	6028.10	6028.64	181.03	5.91	23.37	10.26

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	35.010	25.00	.00	.00	6025.94	703.00	6029.79	6029.79	6030.91	144.44	8.48	82.87	58.49
*	35.010	25.00	.00	.00	6025.94	348.00	6028.75	6028.75	6029.58	158.50	7.28	47.80	27.64
*	35.010	25.00	.00	.00	6025.94	138.00	6027.80	6027.80	6028.34	183.84	5.94	23.24	10.18
*	35.760	25.00	.00	.00	6025.64	703.00	6029.49	6029.49	6030.61	144.44	8.48	82.87	58.49
*	35.760	25.00	.00	.00	6025.64	348.00	6028.45	6028.45	6029.28	158.50	7.28	47.80	27.64
*	35.760	25.00	.00	.00	6025.64	138.00	6027.50	6027.50	6028.04	181.26	5.91	23.36	10.25
*	34.510	25.00	.00	.00	6025.34	703.00	6029.19	6029.19	6030.31	144.44	8.48	82.87	58.49
*	34.510	25.00	.00	.00	6025.34	348.00	6028.15	6028.15	6028.97	158.50	7.28	47.80	27.64
*	34.510	25.00	.00	.00	6025.34	138.00	6027.20	6027.20	6027.74	181.26	5.91	23.36	10.25
*	34.260	25.00	.00	.00	6025.04	703.00	6029.03	6029.03	6030.25	141.60	8.87	79.24	59.08
*	34.260	25.00	.00	.00	6025.04	348.00	6027.92	6027.92	6028.80	153.68	7.53	46.21	28.07
*	34.260	25.00	.00	.00	6025.04	138.00	6026.91	6026.91	6027.48	178.87	6.06	22.75	10.32
*	34.010	25.00	.00	.00	6024.74	703.00	6028.89	6028.89	6030.27	141.65	9.43	74.51	59.07
*	34.010	25.00	.00	.00	6024.74	348.00	6027.68	6027.68	6028.65	152.21	7.90	44.06	28.21
*	34.010	25.00	.00	.00	6024.74	138.00	6026.61	6026.61	6027.22	176.53	6.24	22.13	10.39
*	33.930	8.00	.00	.00	6024.65	703.00	6027.31	6028.11	6029.94	371.16	13.02	53.99	36.49
*	33.930	8.00	.00	.00	6024.65	348.00	6026.32	6026.93	6028.30	463.87	11.28	30.85	16.16
*	33.930	8.00	.00	.00	6024.65	138.00	6025.55	6025.94	6026.83	621.04	9.10	15.17	5.54
*	33.850	8.00	6032.65	6024.65	6020.65	703.00	6022.91	6024.52	6028.78	151.04	19.44	36.16	57.20
*	33.850	8.00	6032.65	6024.65	6020.65	348.00	6021.64	6023.10	6029.13	428.09	21.96	15.84	16.82
*	33.850	8.00	6032.65	6024.65	6020.65	138.00	6021.17	6021.97	6025.47	511.00	16.65	8.29	6.10
*	33.750	10.33	6032.65	6024.34	6020.34	703.00	6022.58	6024.21	6028.58	155.99	19.66	35.75	56.29
*	33.750	10.33	6032.65	6024.34	6020.34	348.00	6021.34	6022.78	6028.65	412.30	21.70	16.04	17.14
*	33.750	10.33	6032.65	6024.34	6020.34	138.00	6020.89	6021.66	6024.78	436.44	15.84	8.71	6.61
*	33.650	10.33	6032.65	6024.03	6020.03	703.00	6022.25	6023.90	6028.38	160.77	19.87	35.38	55.44
*	33.650	10.33	6032.65	6024.03	6020.03	348.00	6021.03	6022.48	6028.34	412.30	21.70	16.04	17.14
*	33.650	10.33	6032.65	6024.03	6020.03	138.00	6020.60	6021.35	6024.22	388.16	15.27	9.04	7.00
*	33.540	10.33	6032.65	6023.72	6019.72	703.00	6021.91	6023.59	6028.17	165.64	20.08	35.01	54.62
*	33.540	10.33	6032.65	6023.72	6019.72	348.00	6022.14	6022.16	6023.39	30.45	8.99	38.73	63.06
*	33.540	10.33	6032.65	6023.72	6019.72	138.00	6020.27	6021.04	6024.10	425.45	15.72	8.78	6.69
*	33.440	10.33	6032.65	6023.41	6019.41	703.00	6021.58	6023.28	6027.96	170.27	20.28	34.67	53.87
*	33.440	10.33	6032.65	6023.41	6019.41	348.00	6021.47	6021.85	6023.21	48.65	10.59	32.87	49.89
*	33.440	10.33	6032.65	6023.41	6019.41	138.00	6019.98	6020.73	6023.56	380.81	15.18	9.09	7.07
*	33.340	10.33	6032.65	6023.10	6019.10	703.00	6021.25	6022.97	6027.75	174.75	20.46	34.36	53.18
*	33.340	10.33	6032.65	6023.10	6019.10	348.00	6020.98	6021.54	6023.05	62.37	11.54	30.16	44.07
*	33.340	10.33	6032.65	6023.10	6019.10	138.00	6019.65	6020.42	6023.48	425.45	15.72	8.78	6.69
*	33.230	10.33	6032.65	6022.79	6018.79	703.00	6020.92	6022.66	6027.53	179.04	20.63	34.07	52.54
*	33.230	10.33	6032.65	6022.79	6018.79	348.00	6021.21	6021.23	6022.46	30.43	8.98	38.73	63.08
*	33.230	10.33	6032.65	6022.79	6018.79	138.00	6019.36	6020.11	6022.94	380.81	15.18	9.09	7.07

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	32.920	31.00	6032.65	6021.88	6017.88	703.00	6020.29	6021.75	6025.46	126.13	18.25	38.52	62.60
*	32.920	31.00	6032.65	6021.88	6017.88	348.00	6019.66	6020.32	6021.98	74.00	12.23	28.45	40.46
*	32.920	31.00	6032.65	6021.88	6017.88	138.00	6018.48	6019.20	6021.67	317.39	14.33	9.63	7.75
*	32.610	31.00	6032.65	6020.97	6016.97	703.00	6019.38	6020.84	6024.55	126.13	18.25	38.52	62.60
*	32.610	31.00	6032.65	6020.97	6016.97	348.00	6019.39	6019.41	6020.64	30.43	8.98	38.73	63.08
*	32.610	31.00	6032.65	6020.97	6016.97	138.00	6017.58	6018.29	6020.65	300.15	14.07	9.80	7.97
*	32.300	31.00	6032.65	6020.06	6016.06	703.00	6018.47	6019.93	6023.64	126.13	18.25	38.52	62.60
*	32.300	31.00	6032.65	6020.06	6016.06	348.00	6017.84	6018.50	6020.16	74.00	12.23	28.45	40.46
*	32.300	31.00	6032.65	6020.06	6016.06	138.00	6016.68	6017.38	6019.71	293.46	13.97	9.88	8.06
*	31.990	31.00	6032.65	6019.15	6015.15	703.00	6017.56	6019.02	6022.73	126.13	18.25	38.52	62.60
*	31.990	31.00	6032.65	6019.15	6015.15	348.00	6017.57	6017.59	6018.82	30.43	8.98	38.73	63.08
*	31.990	31.00	6032.65	6019.15	6015.15	138.00	6015.76	6016.47	6018.80	294.19	13.99	9.87	8.05
*	31.680	31.00	6032.65	6018.24	6014.24	703.00	6016.65	6018.11	6021.82	126.13	18.25	38.52	62.60
*	31.680	31.00	6032.65	6018.24	6014.24	348.00	6016.02	6016.68	6018.34	74.00	12.23	28.45	40.46
*	31.680	31.00	6032.65	6018.24	6014.24	138.00	6014.87	6015.56	6017.88	290.55	13.93	9.91	8.10
*	31.370	31.00	6032.65	6017.33	6013.33	703.00	6015.74	6017.20	6020.91	126.13	18.25	38.52	62.60
*	31.370	31.00	6032.65	6017.33	6013.33	348.00	6015.75	6015.77	6017.00	30.43	8.98	38.73	63.08
*	31.370	31.00	6032.65	6017.33	6013.33	138.00	6013.95	6014.65	6016.98	292.00	13.95	9.89	8.08
*	31.060	31.00	6032.65	6016.42	6012.42	703.00	6014.83	6016.29	6020.00	126.13	18.25	38.52	62.60
*	31.060	31.00	6032.65	6016.42	6012.42	348.00	6014.20	6014.86	6016.52	74.00	12.23	28.45	40.46
*	31.060	31.00	6032.65	6016.42	6012.42	138.00	6013.04	6013.74	6016.07	292.73	13.96	9.88	8.07
*	30.750	31.00	6032.65	6015.51	6011.51	703.00	6013.31	6015.38	6022.59	292.71	24.45	28.75	41.09
*	30.750	31.00	6032.65	6015.51	6011.51	348.00	6012.61	6013.95	6018.64	307.00	19.70	17.66	19.86

	30.750	31.00	6032.65	6015.51	6011.51	138.00	6012.11	6012.83	6015.28	314.96	14.29	9.66	7.78
*	30.590	16.00	.00	.00	6004.13	703.00	6006.09	6008.30	6019.75	440.01	29.67	23.70	33.51
*	30.590	16.00	.00	.00	6004.13	348.00	6005.48	6007.06	6016.41	634.98	26.53	13.12	13.81
*	30.590	16.00	.00	.00	6004.13	138.00	6005.04	6006.00	6012.87	957.08	22.45	6.15	4.46
*	30.340	25.00	.00	.00	6003.83	703.00	6007.83	6007.87	6009.11	15.41	9.38	79.56	179.07
*	30.340	25.00	.00	.00	6003.83	348.00	6006.70	6006.73	6007.63	16.97	7.93	46.02	84.48
*	30.340	25.00	.00	.00	6003.83	138.00	6005.03	6005.70	6007.64	185.57	12.97	10.70	10.13
*	30.090	25.00	.00	.00	6003.53	703.00	6006.86	6007.40	6008.71	33.47	10.89	64.55	121.51
*	30.090	25.00	.00	.00	6003.53	348.00	6005.97	6006.34	6007.31	36.67	9.31	37.37	57.47
*	30.090	25.00	.00	.00	6003.53	138.00	6005.18	6005.39	6006.00	38.47	7.29	18.94	22.25
	29.990	10.00	.00	.00	6003.41	703.00	6006.70	6007.28	6008.66	36.44	11.24	62.57	116.46
	29.990	10.00	.00	.00	6003.41	348.00	6005.78	6006.23	6007.26	41.76	9.76	35.65	53.85
	29.990	10.00	.00	.00	6003.41	138.00	6004.99	6005.27	6005.95	47.31	7.84	17.60	20.06
	29.890	10.00	.00	.00	6003.29	703.00	6006.51	6007.14	6008.61	39.87	11.61	60.54	111.34
	29.890	10.00	.00	.00	6003.29	348.00	6005.61	6006.09	6007.21	46.31	10.13	34.34	51.14
	29.890	10.00	.00	.00	6003.29	138.00	6004.83	6005.14	6005.88	54.78	8.25	16.72	18.65

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	29.790	10.00	.00	.00	6003.17	703.00	6006.33	6007.02	6008.55	43.18	11.96	58.79	106.98
	29.790	10.00	.00	.00	6003.17	348.00	6005.45	6005.98	6007.15	50.49	10.46	33.29	48.98
	29.790	10.00	.00	.00	6003.17	138.00	6004.67	6005.02	6005.82	61.49	8.60	16.06	17.60
	29.450	34.00	.00	.00	6002.76	703.00	6005.80	6006.61	6008.36	52.49	12.84	54.73	97.03
	29.450	34.00	.00	.00	6002.76	348.00	6004.94	6005.57	6006.93	62.82	11.31	30.76	43.91
	29.450	34.00	.00	.00	6002.76	138.00	6004.18	6004.62	6005.55	79.79	9.42	14.66	15.45
	29.110	34.00	.00	.00	6002.35	703.00	6005.30	6006.20	6008.14	60.39	13.52	52.00	90.47
	29.110	34.00	.00	.00	6002.35	348.00	6004.45	6005.16	6006.67	73.24	11.95	29.11	40.66
	29.110	34.00	.00	.00	6002.35	138.00	6003.74	6004.21	6005.25	91.24	9.87	13.99	14.45
	28.980	13.00	.00	.00	6002.20	703.00	6005.12	6006.06	6008.05	62.92	13.72	51.22	88.63
	28.980	13.00	.00	.00	6002.20	348.00	6004.30	6005.01	6006.57	75.57	12.09	28.78	40.03
	28.980	13.00	.00	.00	6002.20	138.00	6003.57	6004.06	6005.13	94.81	10.00	13.80	14.17
	28.730	25.00	.00	.00	6001.80	703.00	6004.82	6005.80	6007.88	58.99	14.04	50.07	91.53
	28.730	25.00	.00	.00	6001.80	348.00	6003.90	6004.67	6006.36	76.74	12.59	27.63	39.72
	28.730	25.00	.00	.00	6001.80	138.00	6003.15	6003.67	6004.86	104.13	10.50	13.14	13.52
	28.480	25.00	.00	.00	6001.60	703.00	6004.89	6005.77	6007.67	44.27	13.37	52.56	105.66
	28.480	25.00	.00	.00	6001.60	348.00	6003.79	6004.53	6006.15	64.48	12.32	28.24	43.34
	28.480	25.00	.00	.00	6001.60	138.00	6002.99	6003.48	6004.59	89.44	10.15	13.60	14.59
*	28.400	8.00	.00	.00	6001.50	703.00	6003.78	6004.86	6007.51	107.64	15.50	45.36	67.76
*	28.400	8.00	.00	.00	6001.50	348.00	6003.15	6003.93	6006.02	136.24	13.59	25.60	29.81
	28.400	8.00	.00	.00	6001.50	138.00	6002.63	6003.14	6004.46	157.45	10.87	12.70	11.00
*	28.230	7.00	.00	.00	5993.80	703.00	5995.91	5997.97	6006.67	309.38	26.31	26.72	39.97
*	28.230	7.00	.00	.00	5993.80	348.00	5995.20	5996.73	6005.08	544.74	25.23	13.79	14.91
*	28.230	7.00	.00	.00	5993.80	138.00	5994.69	5995.67	6003.34	1094.31	23.61	5.85	4.17
	27.980	12.00	.00	.00	5993.50	703.00	5995.57	5997.49	6006.10	334.80	26.05	26.99	38.42
*	27.980	12.00	.00	.00	5993.50	348.00	5996.34	5996.37	5997.26	19.21	7.70	45.20	79.40
*	27.980	12.00	.00	.00	5993.50	138.00	5995.35	5995.37	5995.94	21.75	6.14	22.49	29.59
*	27.730	25.00	.00	.00	5993.20	703.00	5997.01	5997.05	5998.17	17.87	8.64	81.33	166.31
	27.730	25.00	.00	.00	5993.20	348.00	5995.66	5996.00	5996.96	34.90	9.15	38.04	58.91
	27.730	25.00	.00	.00	5993.20	138.00	5994.84	5995.06	5995.70	40.82	7.44	18.55	21.60
	27.630	10.00	.00	.00	5993.08	703.00	5996.65	5996.95	5998.12	24.73	9.74	72.15	141.37
	27.630	10.00	.00	.00	5993.08	348.00	5995.47	5995.90	5996.91	40.31	9.64	36.11	54.81
	27.630	10.00	.00	.00	5993.08	138.00	5994.64	5994.95	5995.64	50.12	8.00	17.25	19.49
	27.530	10.00	.00	.00	5992.96	703.00	5996.40	5996.81	5998.07	29.33	10.37	67.76	129.81
	27.530	10.00	.00	.00	5992.96	348.00	5995.30	5995.77	5996.86	44.98	10.03	34.70	51.89
	27.530	10.00	.00	.00	5992.96	138.00	5994.47	5994.82	5995.57	57.78	8.41	16.41	18.15
	27.430	10.00	.00	.00	5992.84	703.00	5996.17	5996.70	5998.02	33.76	10.92	64.35	121.00
	27.430	10.00	.00	.00	5992.84	348.00	5995.13	5995.65	5996.80	49.21	10.36	33.59	49.61
	27.430	10.00	.00	.00	5992.84	138.00	5994.33	5994.70	5995.50	63.45	8.69	15.88	17.32

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	27.090	34.00	.00	.00	5992.43	703.00	5995.57	5996.30	5997.85	44.60	12.10	58.10	105.26
	27.090	34.00	.00	.00	5992.43	348.00	5994.61	5995.23	5996.58	61.88	11.25	30.93	44.24
	27.090	34.00	.00	.00	5992.43	138.00	5993.85	5994.29	5995.24	80.92	9.46	14.58	15.34
	26.750	34.00	.00	.00	5992.02	703.00	5995.04	5995.87	5997.65	53.79	12.96	54.24	95.85
	26.750	34.00	.00	.00	5992.02	348.00	5994.13	5994.83	5996.33	72.43	11.91	29.23	40.89
	26.750	34.00	.00	.00	5992.02	138.00	5993.41	5993.87	5994.93	92.07	9.90	13.94	14.38
	26.480	27.00	.00	.00	5991.70	703.00	5994.65	5995.55	5997.47	59.96	13.49	52.13	90.79
	26.480	27.00	.00	.00	5991.70	348.00	5993.78	5994.51	5996.11	78.52	12.26	28.39	39.27
	26.480	27.00	.00	.00	5991.70	138.00	5993.07	5993.56	5994.67	98.55	10.13	13.62	13.90
	26.230	25.00	.00	.00	5991.40	703.00	5994.50	5995.40	5997.33	52.83	13.49	52.10	96.72
	26.230	25.00	.00	.00	5991.40	348.00	5993.51	5994.27	5995.91	73.97	12.43	27.99	40.46
	26.230	25.00	.00	.00	5991.40	138.00	5992.76	5993.27	5994.41	99.01	10.32	13.37	13.87
	25.980	25.00	.00	.00	5991.10	703.00	5994.38	5995.26	5997.21	45.52	13.51	52.04	104.19
	25.980	25.00	.00	.00	5991.10	348.00	5993.25	5994.03	5995.73	69.39	12.64	27.54	41.78
	25.980	25.00	.00	.00	5991.10	138.00	5992.46	5992.98	5994.16	98.56	10.48	13.17	13.90
*	25.900	8.00	.00	.00	5991.00	703.00	5993.27	5994.35	5997.05	109.77	15.60	45.06	67.10
*	25.900	8.00	.00	.00	5991.00	348.00	5992.64	5993.44	5995.60	141.85	13.79	25.23	29.22

	25.900	8.00	.00	.00	5991.00	138.00	5992.12	5992.64	5994.03	167.26	11.10	12.44	10.67
*	25.780	12.00	.00	.00	5984.28	703.00	5986.46	5988.45	5996.23	268.70	25.07	28.04	42.89
*	25.780	12.00	.00	.00	5984.28	348.00	5985.73	5987.21	5994.64	465.50	23.96	14.53	16.13
*	25.780	12.00	.00	.00	5984.28	138.00	5985.20	5986.15	5992.81	922.07	22.14	6.23	4.54
*	25.530	25.00	.00	.00	5983.98	703.00	5987.95	5987.99	5989.19	17.09	8.96	78.49	170.07
*	25.530	25.00	.00	.00	5983.98	348.00	5986.82	5986.84	5987.74	19.27	7.71	45.15	79.28
*	25.530	25.00	.00	.00	5983.98	138.00	5985.19	5985.85	5987.70	184.54	12.72	10.85	10.16
	25.280	25.00	.00	.00	5983.68	703.00	5987.06	5987.55	5988.82	31.50	10.65	66.00	125.25
	25.280	25.00	.00	.00	5983.68	348.00	5986.14	5986.49	5987.44	34.97	9.15	38.02	58.85
*	25.280	25.00	.00	.00	5983.68	138.00	5985.29	5985.54	5986.18	43.22	7.59	18.17	20.99
	25.100	18.00	.00	.00	5983.46	703.00	5986.71	5987.33	5988.74	38.10	11.42	61.55	113.88
	25.100	18.00	.00	.00	5983.46	348.00	5985.80	5986.28	5987.35	44.31	9.97	34.89	52.28
	25.100	18.00	.00	.00	5983.46	138.00	5984.97	5985.33	5986.07	57.69	8.40	16.42	18.17
	25.000	10.00	.00	.00	5983.34	703.00	5986.53	5987.19	5988.68	41.42	11.78	59.69	109.23
	25.000	10.00	.00	.00	5983.34	348.00	5985.65	5986.15	5987.29	48.37	10.29	33.80	50.04
	25.000	10.00	.00	.00	5983.34	138.00	5984.83	5985.19	5986.00	63.45	8.69	15.88	17.32
	24.900	10.00	.00	.00	5983.22	703.00	5986.38	5987.07	5988.63	43.92	12.03	58.43	106.08
	24.900	10.00	.00	.00	5983.22	348.00	5985.50	5986.03	5987.23	52.07	10.57	32.92	48.23
	24.900	10.00	.00	.00	5983.22	138.00	5984.69	5985.08	5985.93	68.90	8.94	15.43	16.63
	24.560	34.00	.00	.00	5982.81	703.00	5985.83	5986.66	5988.43	53.50	12.93	54.35	96.11
	24.560	34.00	.00	.00	5982.81	348.00	5984.97	5985.61	5987.00	64.68	11.43	30.44	43.27
	24.560	34.00	.00	.00	5982.81	138.00	5984.22	5984.67	5985.65	84.44	9.60	14.37	15.02

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
	24.220	34.00	.00	.00	5982.40	703.00	5985.34	5986.25	5988.21	61.20	13.59	51.74	89.86
	24.220	34.00	.00	.00	5982.40	348.00	5984.50	5985.21	5986.75	74.56	12.03	28.92	40.30
	24.220	34.00	.00	.00	5982.40	138.00	5983.78	5984.26	5985.33	94.81	10.00	13.80	14.17
	23.880	34.00	.00	.00	5981.99	703.00	5984.87	5985.84	5987.97	68.10	14.13	49.76	85.19
	23.880	34.00	.00	.00	5981.99	348.00	5984.05	5984.80	5986.46	82.27	12.46	27.92	38.37
	23.880	34.00	.00	.00	5981.99	138.00	5983.35	5983.85	5984.99	102.67	10.28	13.42	13.62
*	23.500	38.00	.00	.00	5981.54	703.00	5983.53	5984.14	5985.67	989.56	11.75	59.84	22.35
*	23.500	38.00	.00	.00	5981.54	348.00	5983.12	5983.59	5984.64	737.07	9.91	35.13	12.82
*	23.500	38.00	.00	.00	5981.54	138.00	5982.43	5982.76	5983.52	584.37	8.38	16.47	5.71
*	23.000	50.00	.00	.00	5980.20	703.00	5982.68	5982.68	5983.37	168.03	6.68	105.32	54.23
*	23.000	50.00	.00	.00	5980.20	348.00	5982.09	5982.09	5982.57	196.50	5.57	62.53	24.83
*	23.000	50.00	.00	.00	5980.20	138.00	5981.45	5981.45	5981.80	206.63	4.72	29.22	9.60
*	22.500	50.00	.00	.00	5978.86	703.00	5980.13	5980.58	5981.61	502.45	9.77	72.07	31.36
*	22.500	50.00	.00	.00	5978.86	348.00	5979.70	5979.99	5980.65	553.69	7.81	44.54	14.79
*	22.500	50.00	.00	.00	5978.86	138.00	5979.40	5979.53	5979.88	558.10	5.56	24.83	5.84
	22.000	50.00	.00	.00	5976.00	703.00	5977.60	5977.99	5978.89	563.46	9.12	77.09	29.62
	22.000	50.00	.00	.00	5976.00	348.00	5977.31	5977.51	5978.00	477.25	6.66	52.25	15.93
	22.000	50.00	.00	.00	5976.00	138.00	5977.07	5977.14	5977.38	428.26	4.53	30.49	6.67
*	21.500	50.00	.00	.00	5974.50	703.00	5976.28	5976.37	5976.96	216.89	6.61	106.36	47.73
*	21.500	50.00	.00	.00	5974.50	348.00	5975.88	5975.90	5976.29	222.14	5.15	67.57	23.35
	21.500	50.00	.00	.00	5974.50	138.00	5975.28	5975.33	5975.64	283.33	4.81	28.66	8.20
	21.000	50.00	.00	.00	5972.60	703.00	5974.30	5974.66	5975.54	326.89	8.94	78.66	38.88
	21.000	50.00	.00	.00	5972.60	348.00	5973.70	5973.98	5974.65	411.48	7.85	44.35	17.16
	21.000	50.00	.00	.00	5972.60	138.00	5973.24	5973.39	5973.80	445.00	5.98	23.07	6.54
	20.500	50.00	.00	.00	5970.60	703.00	5972.20	5972.65	5973.67	414.78	9.72	72.30	34.52
	20.500	50.00	.00	.00	5970.60	348.00	5971.71	5971.98	5972.64	391.41	7.71	45.13	17.59
	20.500	50.00	.00	.00	5970.60	138.00	5971.28	5971.39	5971.77	363.09	5.59	24.69	7.24
*	20.000	50.00	.00	.00	5969.00	703.00	5971.11	5971.25	5972.09	197.91	7.93	88.62	49.97
	20.000	50.00	.00	.00	5969.00	348.00	5970.42	5970.51	5971.11	217.49	6.63	52.47	23.60
	20.000	50.00	.00	.00	5969.00	138.00	5969.82	5969.87	5970.24	249.70	5.18	26.63	8.73
	19.500	50.00	.00	.00	5967.20	703.00	5969.48	5969.85	5970.78	312.09	9.15	76.86	39.79
	19.500	50.00	.00	.00	5967.20	348.00	5968.85	5969.09	5969.76	309.79	7.68	45.29	19.77
	19.500	50.00	.00	.00	5967.20	138.00	5968.22	5968.36	5968.82	313.12	6.19	22.29	7.80
	19.000	50.00	.00	.00	5965.30	703.00	5966.72	5967.29	5968.59	539.82	10.98	64.01	30.26
	19.000	50.00	.00	.00	5965.30	348.00	5966.24	5966.61	5967.46	601.86	8.85	39.34	14.19
	19.000	50.00	.00	.00	5965.30	138.00	5965.88	5966.06	5966.51	606.23	6.41	21.53	5.60
*	18.500	50.00	.00	.00	5963.50	703.00	5965.64	5965.83	5966.65	211.17	8.33	94.78	48.38
*	18.500	50.00	.00	.00	5963.50	348.00	5965.10	5965.11	5965.69	166.10	6.27	60.47	27.00
*	18.500	50.00	.00	.00	5963.50	138.00	5964.45	5964.45	5964.82	189.95	4.95	28.81	10.01

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	18.300	20.00	.00	.00	5962.70	703.00	5964.51	5964.98	5966.01	376.26	10.14	73.48	36.24
*	18.300	20.00	.00	.00	5962.70	348.00	5963.94	5964.29	5965.05	414.83	8.60	42.15	17.09
*	18.300	20.00	.00	.00	5962.70	138.00	5963.44	5963.65	5964.13	469.62	6.70	20.83	6.37
*	18.060	24.00	.00	.00	5957.20	703.00	5959.81	5961.06	5964.16	923.33	16.74	41.99	23.14
*	18.060	24.00	.00	.00	5957.20	348.00	5959.02	5960.02	5962.75	1287.30	15.50	22.45	9.70
*	18.060	24.00	.00	.00	5957.20	138.00	5958.38	5959.06	5961.14	1852.10	13.32	10.36	3.21
*	17.820	24.00	.00	.00	5956.93	703.00	5960.49	5960.92	5962.27	237.77	10.72	65.61	45.59
*	17.820	24.00	.00	.00	5956.93	348.00	5959.64	5959.80	5960.72	205.50	8.36	41.64	24.28
*	17.820	24.00	.00	.00	5956.93	138.00	5958.79	5958.79	5959.37	180.21	6.08	22.69	10.28
*	17.580	24.00	.00	.00	5956.63	703.00	5960.80	5960.80	5962.16	137.93	9.35	75.23	59.86
*	17.580	24.00	.00	.00	5956.63	348.00	5959.55	5959.55	5960.54	155.19	7.95	43.76	27.93

*	17.580	24.00	.00	.00	5956.63	138.00	5958.50	5958.50	5959.11	176.53	6.24	22.13	10.39
*	17.500	8.00	.00	.00	5956.53	703.00	5959.03	5959.88	5961.74	569.27	13.20	53.24	29.46
*	17.500	8.00	.00	.00	5956.53	348.00	5958.43	5958.96	5960.17	575.63	10.58	32.90	14.50
*	17.500	8.00	.00	.00	5956.53	138.00	5957.88	5958.17	5958.81	499.15	7.70	17.91	6.18
*	17.350	15.00	.00	.00	5949.62	703.00	5951.98	5953.77	5959.62	1599.80	22.18	31.70	17.58
*	17.350	15.00	.00	.00	5949.62	348.00	5951.22	5952.54	5957.52	2345.62	20.14	17.28	7.19
*	17.350	15.00	.00	.00	5949.62	138.00	5950.67	5951.50	5955.21	3811.73	17.11	8.07	2.24
*	17.100	25.00	.00	.00	5949.32	703.00	5953.31	5953.31	5954.53	141.60	8.87	79.24	59.08
*	17.100	25.00	.00	.00	5949.32	348.00	5952.19	5952.19	5953.08	154.03	7.54	46.17	28.04
*	17.100	25.00	.00	.00	5949.32	138.00	5951.18	5951.18	5951.76	180.67	6.09	22.68	10.27
*	16.850	25.00	.00	.00	5949.02	703.00	5952.66	5952.89	5954.03	190.93	9.40	74.77	50.88
*	16.850	25.00	.00	.00	5949.02	348.00	5951.80	5951.84	5952.65	164.80	7.38	47.12	27.11
*	16.850	25.00	.00	.00	5949.02	138.00	5950.87	5950.87	5951.42	184.08	5.94	23.23	10.17
*	16.750	10.00	.00	.00	5948.90	703.00	5952.75	5952.75	5953.87	144.96	8.49	82.76	58.39
*	16.750	10.00	.00	.00	5948.90	348.00	5951.72	5951.72	5952.53	156.68	7.25	48.00	27.80
*	16.750	10.00	.00	.00	5948.90	138.00	5950.76	5950.76	5951.30	179.64	5.89	23.43	10.30
*	16.650	10.00	.00	.00	5948.78	703.00	5952.64	5952.64	5953.75	142.79	8.45	83.22	58.83
*	16.650	10.00	.00	.00	5948.78	348.00	5951.58	5951.58	5952.41	160.21	7.31	47.61	27.49
*	16.650	10.00	.00	.00	5948.78	138.00	5950.64	5950.64	5951.18	182.90	5.93	23.28	10.20
*	16.550	10.00	.00	.00	5948.66	703.00	5952.52	5952.52	5953.63	143.74	8.47	83.02	58.64
*	16.550	10.00	.00	.00	5948.66	348.00	5951.47	5951.47	5952.29	157.59	7.27	47.90	27.72
*	16.550	10.00	.00	.00	5948.66	138.00	5950.52	5950.52	5951.06	182.19	5.92	23.31	10.22
*	16.210	34.00	.00	.00	5948.25	703.00	5952.11	5952.11	5953.22	144.00	8.47	82.97	58.58
*	16.210	34.00	.00	.00	5948.25	348.00	5951.06	5951.06	5951.88	157.98	7.27	47.86	27.69
*	16.210	34.00	.00	.00	5948.25	138.00	5950.10	5950.10	5950.65	183.60	5.94	23.25	10.18
*	15.870	34.00	.00	.00	5947.84	703.00	5951.69	5951.69	5952.81	144.52	8.48	82.85	58.48
*	15.870	34.00	.00	.00	5947.84	348.00	5950.65	5950.65	5951.47	158.76	7.28	47.77	27.62
*	15.870	34.00	.00	.00	5947.84	138.00	5949.70	5949.70	5950.24	181.03	5.91	23.37	10.26

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	15.580	29.00	.00	.00	5947.50	703.00	5951.36	5951.36	5952.47	143.57	8.46	83.06	58.67
*	15.580	29.00	.00	.00	5947.50	348.00	5950.32	5950.32	5951.13	157.33	7.26	47.93	27.74
*	15.580	29.00	.00	.00	5947.50	138.00	5949.36	5949.36	5949.90	181.03	5.91	23.37	10.26
*	15.330	25.00	.00	.00	5947.20	703.00	5951.19	5951.19	5952.41	142.00	8.88	79.16	59.00
*	15.330	25.00	.00	.00	5947.20	348.00	5950.08	5950.08	5950.96	153.91	7.53	46.18	28.05
*	15.330	25.00	.00	.00	5947.20	138.00	5949.07	5949.07	5949.64	178.65	6.06	22.76	10.32
*	15.080	25.00	.00	.00	5946.90	703.00	5951.05	5951.05	5952.43	141.65	9.43	74.51	59.07
*	15.080	25.00	.00	.00	5946.90	348.00	5949.84	5949.84	5950.81	152.43	7.90	44.04	28.19
*	15.080	25.00	.00	.00	5946.90	138.00	5948.77	5948.77	5949.38	178.68	6.26	22.04	10.32
*	15.000	8.00	.00	.00	5946.80	703.00	5949.30	5950.15	5952.01	569.82	13.21	53.23	29.45
*	15.000	8.00	.00	.00	5946.80	348.00	5948.70	5949.23	5950.44	575.63	10.58	32.90	14.50
*	15.000	8.00	.00	.00	5946.80	138.00	5948.15	5948.43	5949.08	499.15	7.70	17.91	6.18
*	14.850	15.00	.00	.00	5939.91	703.00	5942.27	5944.06	5949.90	1595.42	22.16	31.73	17.60
*	14.850	15.00	.00	.00	5939.91	348.00	5941.51	5942.83	5947.80	2338.71	20.12	17.30	7.20
*	14.850	15.00	.00	.00	5939.91	138.00	5940.95	5941.79	5945.49	3800.83	17.09	8.07	2.24
*	14.600	25.00	.00	.00	5939.61	703.00	5943.60	5943.60	5944.82	141.60	8.87	79.24	59.08
*	14.600	25.00	.00	.00	5939.61	348.00	5942.49	5942.49	5943.37	153.56	7.53	46.22	28.08
*	14.600	25.00	.00	.00	5939.61	138.00	5941.47	5941.47	5942.05	181.12	6.09	22.66	10.25
*	14.350	25.00	.00	.00	5939.31	703.00	5942.95	5943.18	5944.32	190.93	9.40	74.77	50.88
*	14.350	25.00	.00	.00	5939.31	348.00	5942.10	5942.13	5942.94	165.21	7.39	47.08	27.07
*	14.350	25.00	.00	.00	5939.31	138.00	5941.17	5941.17	5941.71	181.73	5.91	23.33	10.24
*	14.250	10.00	.00	.00	5939.19	703.00	5943.04	5943.04	5944.16	144.96	8.49	82.76	58.39
*	14.250	10.00	.00	.00	5939.19	348.00	5942.01	5942.01	5942.82	156.04	7.24	48.07	27.86
*	14.250	10.00	.00	.00	5939.19	138.00	5941.05	5941.05	5941.59	182.43	5.92	23.30	10.22
*	14.150	10.00	.00	.00	5939.07	703.00	5942.93	5942.93	5944.04	142.79	8.45	83.22	58.83
*	14.150	10.00	.00	.00	5939.07	348.00	5941.87	5941.87	5942.70	160.74	7.32	47.55	27.45
*	14.150	10.00	.00	.00	5939.07	138.00	5940.93	5940.93	5941.47	181.03	5.91	23.37	10.26
*	14.050	10.00	.00	.00	5938.95	703.00	5942.81	5942.81	5943.92	143.74	8.47	83.02	58.64
*	14.050	10.00	.00	.00	5938.95	348.00	5941.76	5941.76	5942.58	158.50	7.28	47.80	27.64
*	14.050	10.00	.00	.00	5938.95	138.00	5940.80	5940.80	5941.35	183.84	5.94	23.24	10.18
*	13.710	34.00	.00	.00	5938.54	703.00	5942.40	5942.40	5943.51	144.00	8.47	82.97	58.58
*	13.710	34.00	.00	.00	5938.54	348.00	5941.35	5941.35	5942.17	158.50	7.28	47.80	27.64
*	13.710	34.00	.00	.00	5938.54	138.00	5940.40	5940.40	5940.94	181.26	5.91	23.36	10.25
*	13.370	34.00	.00	.00	5938.13	703.00	5941.98	5941.98	5943.10	144.52	8.48	82.85	58.48
*	13.370	34.00	.00	.00	5938.13	348.00	5940.94	5940.94	5941.76	158.50	7.28	47.80	27.64
*	13.370	34.00	.00	.00	5938.13	138.00	5939.99	5939.99	5940.53	181.26	5.91	23.36	10.25
*	13.080	29.00	.00	.00	5937.77	703.00	5941.63	5941.63	5942.74	143.57	8.46	83.06	58.67
*	13.080	29.00	.00	.00	5937.77	348.00	5940.58	5940.58	5941.40	158.50	7.28	47.80	27.64
*	13.080	29.00	.00	.00	5937.77	138.00	5939.63	5939.63	5940.17	181.26	5.91	23.36	10.25

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRWS	EG	10*KS	VCH	AREA	.01K
*	12.830	25.00	.00	.00	5937.47	703.00	5941.46	5941.46	5942.68	142.00	8.88	79.16	59.00
*	12.830	25.00	.00	.00	5937.47	348.00	5940.35	5940.35	5941.23	153.68	7.53	46.21	28.07
*	12.830	25.00	.00	.00	5937.47	138.00	5939.34	5939.34	5939.91	178.87	6.06	22.75	10.32
*	12.580	25.00	.00	.00	5937.17	703.00	5941.32	5941.32	5942.70	141.65	9.43	74.51	59.07
*	12.580	25.00	.00	.00	5937.17	348.00	5940.11	5940.11	5941.08	152.21	7.90	44.06	28.21

*	12.580	25.00	.00	.00	5937.17	138.00	5939.04	5939.04	5939.65	176.53	6.24	22.13	10.39
*	12.500	8.00	.00	.00	5937.07	703.00	5939.57	5940.42	5942.28	569.82	13.21	53.23	29.45
*	12.500	8.00	.00	.00	5937.07	348.00	5938.97	5939.50	5940.71	575.63	10.58	32.90	14.50
*	12.500	8.00	.00	.00	5937.07	138.00	5938.42	5938.71	5939.35	499.15	7.70	17.91	6.18
*	12.370	13.00	.00	.00	5930.42	703.00	5932.78	5934.57	5940.39	1589.61	22.13	31.77	17.63
*	12.370	13.00	.00	.00	5930.42	348.00	5932.02	5933.34	5938.34	2359.53	20.18	17.25	7.16
*	12.370	13.00	.00	.00	5930.42	138.00	5931.46	5932.29	5936.09	3934.41	17.28	7.99	2.20
*	12.120	25.00	.00	.00	5930.12	703.00	5934.28	5934.28	5935.65	139.13	9.37	75.00	59.60
*	12.120	25.00	.00	.00	5930.12	348.00	5933.06	5933.06	5934.03	152.01	7.89	44.08	28.23
*	12.120	25.00	.00	.00	5930.12	138.00	5931.99	5931.99	5932.60	177.20	6.24	22.10	10.37
*	11.870	25.00	.00	.00	5929.82	703.00	5933.23	5933.67	5934.94	258.28	10.51	66.90	43.74
*	11.870	25.00	.00	.00	5929.82	348.00	5932.42	5932.64	5933.49	228.08	8.31	41.86	23.04
*	11.870	25.00	.00	.00	5929.82	138.00	5931.67	5931.67	5932.22	185.27	5.95	23.17	10.14
*	11.770	10.00	.00	.00	5929.70	703.00	5933.57	5933.57	5934.67	142.19	8.43	83.35	58.96
*	11.770	10.00	.00	.00	5929.70	348.00	5932.51	5932.51	5933.33	159.82	7.30	47.66	27.53
*	11.770	10.00	.00	.00	5929.70	138.00	5931.56	5931.56	5932.10	179.64	5.89	23.43	10.30
*	11.670	10.00	.00	.00	5929.58	703.00	5933.43	5933.43	5934.55	144.70	8.49	82.82	58.44
*	11.670	10.00	.00	.00	5929.58	348.00	5932.39	5932.39	5933.21	158.37	7.28	47.81	27.65
*	11.670	10.00	.00	.00	5929.58	138.00	5931.44	5931.44	5931.98	182.90	5.93	23.28	10.20
*	11.580	10.00	.00	.00	5928.15	703.00	5930.90	5931.71	5933.41	461.39	12.71	55.31	32.73
*	11.580	10.00	.00	.00	5928.15	348.00	5930.06	5930.71	5932.10	612.12	11.45	30.39	14.07
*	11.580	10.00	.00	.00	5928.15	138.00	5929.38	5929.83	5930.87	907.93	9.80	14.08	4.58
*	11.240	34.00	.00	.00	5927.74	703.00	5930.36	5930.45	5931.38	170.70	8.08	86.97	53.81
*	11.240	34.00	.00	.00	5927.74	348.00	5929.66	5929.66	5930.29	168.56	6.39	54.46	26.80
*	11.240	34.00	.00	.00	5927.74	138.00	5929.01	5929.01	5929.39	201.24	4.90	28.14	9.73
*	10.900	34.00	.00	.00	5927.33	703.00	5929.27	5929.57	5930.47	297.86	8.79	79.94	40.73
*	10.900	34.00	.00	.00	5927.33	348.00	5928.79	5928.93	5929.49	281.83	6.71	51.89	20.73
*	10.900	34.00	.00	.00	5927.33	138.00	5928.43	5928.43	5928.72	212.18	4.35	31.74	9.47
*	10.480	24.00	.00	.00	5927.33	703.00	5929.58	5929.58	5930.36	154.67	7.11	98.91	56.53
*	10.480	24.00	.00	.00	5927.33	348.00	5928.93	5928.93	5929.46	178.99	5.81	59.94	26.01
*	10.480	24.00	.00	.00	5927.33	138.00	5928.42	5928.42	5928.72	220.87	4.40	31.35	9.29
*	10.160	32.00	.00	.00	5927.77	703.00	5929.41	5929.41	5929.94	175.77	5.87	119.82	53.02
*	10.160	32.00	.00	.00	5927.77	348.00	5928.93	5928.93	5929.31	197.60	4.94	70.38	24.76
*	10.160	32.00	.00	.00	5927.77	138.00	5928.51	5928.51	5928.75	233.51	3.90	35.37	9.03

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	9.840	32.00	.00	.00	5927.77	703.00	5929.40	5929.40	5929.94	178.77	5.90	119.11	52.58
*	9.840	32.00	.00	.00	5927.77	348.00	5928.92	5928.92	5929.31	198.72	4.95	70.24	24.69
*	9.840	32.00	.00	.00	5927.77	138.00	5928.51	5928.51	5928.75	237.75	3.93	35.14	8.95
*	9.500	34.00	.00	.00	5924.00	703.00	5925.45	5925.90	5926.93	1262.81	9.76	72.04	19.78
*	9.500	34.00	.00	.00	5924.00	348.00	5924.93	5925.25	5925.99	1515.23	8.26	42.14	8.94
*	9.500	34.00	.00	.00	5924.00	138.00	5924.52	5924.70	5925.13	1757.67	6.29	21.94	3.29
*	8.750	75.00	.00	.00	5921.20	703.00	5922.97	5922.97	5923.70	469.86	6.85	102.67	32.43
*	8.750	75.00	.00	.00	5921.20	348.00	5922.35	5922.35	5922.85	531.60	5.67	61.39	15.09
*	8.750	75.00	.00	.00	5921.20	138.00	5921.84	5921.84	5922.13	643.35	4.37	31.58	5.44

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SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	37.050	703.00	6095.53	.00	.00	45.53	65.00	.00
*	37.050	348.00	6094.96	-.57	.00	44.96	65.00	.00
*	37.050	138.00	6094.52	-.44	.00	44.52	65.00	.00
*	36.650	703.00	6029.38	.00	-.66.15	.00	16.88	40.00
*	36.650	348.00	6028.99	-.39	-.65.97	.00	15.31	40.00
*	36.650	138.00	6028.65	-.33	-.65.87	.00	11.13	40.00
*	36.400	703.00	6029.68	.00	.31	.00	21.41	25.00
*	36.400	348.00	6029.35	-.34	.36	.00	19.42	25.00
*	36.400	138.00	6028.99	-.35	.34	.00	17.31	25.00
*	36.150	703.00	6029.91	.00	.23	.00	27.82	25.00
*	36.150	348.00	6029.70	-.21	.35	.00	26.10	25.00
*	36.150	138.00	6029.17	-.53	.18	.00	21.90	25.00
*	36.010	703.00	6030.12	.00	.20	.00	30.83	14.00
*	36.010	348.00	6029.95	-.17	.25	.00	29.47	14.00
*	36.010	138.00	6029.00	-.95	-.17	.00	21.88	14.00
*	35.760	703.00	6030.69	.00	.58	.00	37.82	25.00
*	35.760	348.00	6029.65	-1.04	-.30	.00	29.49	25.00
*	35.760	138.00	6028.70	-.95	-.30	.00	21.86	25.00
*	35.510	703.00	6030.40	.00	-.30	.00	37.85	25.00
*	35.510	348.00	6029.35	-1.04	-.30	.00	29.49	25.00
*	35.510	138.00	6028.40	-.96	-.30	.00	21.84	25.00
*	35.260	703.00	6030.09	.00	-.30	.00	37.83	25.00
*	35.260	348.00	6029.05	-1.04	-.30	.00	29.49	25.00
*	35.260	138.00	6028.10	-.95	-.29	.00	21.88	25.00
*	35.010	703.00	6029.79	.00	-.30	.00	37.83	25.00
*	35.010	348.00	6028.75	-1.04	-.30	.00	29.49	25.00

*	35.010	138.00	6027.80	-.96	-.31	.00	21.84	25.00
*	35.760	703.00	6029.49	.00	-.30	.00	37.83	25.00
*	35.760	348.00	6028.45	-1.04	-.30	.00	29.49	25.00
*	35.760	138.00	6027.50	-.95	-.29	.00	21.88	25.00
*	34.510	703.00	6029.19	.00	-.30	.00	37.83	25.00
*	34.510	348.00	6028.15	-1.04	-.30	.00	29.49	25.00
*	34.510	138.00	6027.20	-.95	-.30	.00	21.88	25.00
*	34.260	703.00	6029.03	.00	-.16	.00	32.95	25.00
*	34.260	348.00	6027.92	-1.12	-.23	.00	26.26	25.00
*	34.260	138.00	6026.91	-1.01	-.29	.00	20.20	25.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	34.010	703.00	6028.89	.00	-.15	.00	27.59	25.00
*	34.010	348.00	6027.68	-1.21	-.24	.00	22.75	25.00
*	34.010	138.00	6026.61	-1.06	-.29	.00	18.49	25.00
*	33.930	703.00	6027.31	.00	-1.58	.00	25.63	8.00
*	33.930	348.00	6026.32	-.98	-1.35	.00	21.72	8.00
*	33.930	138.00	6025.55	-.78	-1.07	.00	18.61	8.00
*	33.850	703.00	6022.91	.00	-4.40	.00	16.00	8.00
*	33.850	348.00	6021.64	-1.27	-4.68	.00	16.00	8.00
*	33.850	138.00	6021.17	-.47	-4.38	.00	16.00	8.00
*	33.750	703.00	6022.58	.00	-.33	.00	16.00	10.33
*	33.750	348.00	6021.34	-1.23	-.30	.00	16.00	10.33
*	33.750	138.00	6020.89	-.46	-.28	.00	16.00	10.33
*	33.650	703.00	6022.25	.00	-.33	.00	16.00	10.33
*	33.650	348.00	6021.03	-1.21	-.31	.00	16.00	10.33
*	33.650	138.00	6020.60	-.43	-.29	.00	16.00	10.33
*	33.540	703.00	6021.91	.00	-.34	.00	16.00	10.33
*	33.540	348.00	6022.14	-.23	1.11	.00	16.00	10.33
*	33.540	138.00	6020.27	-1.87	-.33	.00	16.00	10.33
*	33.440	703.00	6021.58	.00	-.33	.00	16.00	10.33
*	33.440	348.00	6021.47	-.11	-.67	.00	16.00	10.33
*	33.440	138.00	6019.98	-1.48	-.29	.00	16.00	10.33
*	33.340	703.00	6021.25	.00	-.33	.00	16.00	10.33
*	33.340	348.00	6020.98	-.26	-.48	.00	16.00	10.33
*	33.340	138.00	6019.65	-1.34	-.33	.00	16.00	10.33
*	33.230	703.00	6020.92	.00	-.33	.00	16.00	10.33
*	33.230	348.00	6021.21	-.29	.23	.00	16.00	10.33
*	33.230	138.00	6019.36	-1.85	-.29	.00	16.00	10.33
*	32.920	703.00	6020.29	.00	-.63	.00	16.00	31.00
*	32.920	348.00	6019.66	-.63	-1.55	.00	16.00	31.00
*	32.920	138.00	6018.48	-1.18	-.88	.00	16.00	31.00
*	32.610	703.00	6019.38	.00	-.91	.00	16.00	31.00
*	32.610	348.00	6019.39	.01	-.27	.00	16.00	31.00
*	32.610	138.00	6017.58	-1.81	-.90	.00	16.00	31.00
*	32.300	703.00	6018.47	.00	-.91	.00	16.00	31.00
*	32.300	348.00	6017.84	-.63	-1.55	.00	16.00	31.00
*	32.300	138.00	6016.68	-1.16	-.90	.00	16.00	31.00
*	31.990	703.00	6017.56	.00	-.91	.00	16.00	31.00
*	31.990	348.00	6017.57	.01	-.27	.00	16.00	31.00
*	31.990	138.00	6015.76	-1.81	-.92	.00	16.00	31.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	31.680	703.00	6016.65	.00	-.91	.00	16.00	31.00
*	31.680	348.00	6016.02	-.63	-1.55	.00	16.00	31.00
*	31.680	138.00	6014.87	-1.15	-.89	.00	16.00	31.00
*	31.370	703.00	6015.74	.00	-.91	.00	16.00	31.00
*	31.370	348.00	6015.75	.01	-.27	.00	16.00	31.00
*	31.370	138.00	6013.95	-1.80	-.92	.00	16.00	31.00
*	31.060	703.00	6014.83	.00	-.91	.00	16.00	31.00
*	31.060	348.00	6014.20	-.63	-1.55	.00	16.00	31.00
*	31.060	138.00	6013.04	-1.16	-.91	.00	16.00	31.00
*	30.750	703.00	6013.31	.00	-1.52	.00	16.00	31.00
*	30.750	348.00	6012.61	-.69	-1.58	.00	16.00	31.00
*	30.750	138.00	6012.11	-.50	-.93	.00	16.00	31.00
*	30.590	703.00	6006.09	.00	-7.22	.00	18.83	16.00
*	30.590	348.00	6005.48	-.60	-7.13	.00	16.43	16.00
*	30.590	138.00	6005.04	-.44	-7.07	.00	13.58	16.00
*	30.340	703.00	6007.83	.00	1.74	.00	33.01	25.00
*	30.340	348.00	6006.70	-1.13	1.21	.00	26.21	25.00
*	30.340	138.00	6005.03	-1.67	-.01	.00	16.23	25.00
*	30.090	703.00	6006.86	.00	-.97	.00	33.73	25.00
*	30.090	348.00	6005.97	-.90	-.73	.00	26.51	25.00
*	30.090	138.00	6005.18	-.79	.15	.00	20.20	25.00
*	29.990	703.00	6006.70	.00	-.17	.00	33.26	10.00
*	29.990	348.00	6005.78	-.92	-.19	.00	25.99	10.00
*	29.990	138.00	6004.99	-.79	-.19	.00	19.66	10.00

29.890	703.00	6006.51	.00	-.19	.00	32.77	10.00
29.890	348.00	6005.61	-.90	-.17	.00	25.58	10.00
29.890	138.00	6004.83	-.78	-.17	.00	19.30	10.00
29.790	703.00	6006.33	.00	-.18	.00	32.34	10.00
29.790	348.00	6005.45	-.88	-.16	.00	25.25	10.00
29.790	138.00	6004.67	-.78	-.16	.00	19.02	10.00
29.450	703.00	6005.80	.00	-.54	.00	31.32	34.00
29.450	348.00	6004.94	-.86	-.51	.00	24.44	34.00
29.450	138.00	6004.18	-.76	-.49	.00	18.43	34.00
29.110	703.00	6005.30	.00	-.50	.00	30.61	34.00
29.110	348.00	6004.45	-.85	-.49	.00	23.89	34.00
29.110	138.00	6003.74	-.71	-.44	.00	18.13	34.00
28.980	703.00	6005.12	.00	-.18	.00	30.41	13.00
28.980	348.00	6004.30	-.82	-.15	.00	23.78	13.00
28.980	138.00	6003.57	-.73	-.17	.00	18.05	13.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
28.730	703.00	6004.82	.00	-.30	.00	27.13	25.00
28.730	348.00	6003.90	-.92	-.40	.00	21.60	25.00
28.730	138.00	6003.15	-.75	-.42	.00	17.11	25.00
28.480	703.00	6004.89	.00	.07	.00	24.20	25.00
28.480	348.00	6003.79	-1.10	-.10	.00	19.77	25.00
28.480	138.00	6002.99	-.81	-.16	.00	16.55	25.00
* 28.400	703.00	6003.78	.00	-1.11	.00	33.85	8.00
* 28.400	348.00	6003.15	-.63	-.64	.00	27.83	8.00
28.400	138.00	6002.63	-.52	-.36	.00	21.56	8.00
* 28.230	703.00	5995.91	.00	-7.87	.00	19.46	7.00
* 28.230	348.00	5995.20	-.71	-7.95	.00	16.59	7.00
* 28.230	138.00	5994.69	-.51	-7.94	.00	13.24	7.00
27.980	703.00	5995.57	.00	-.34	.00	21.42	12.00
* 27.980	348.00	5996.34	.77	1.14	.00	26.03	12.00
* 27.980	138.00	5995.35	-.98	.67	.00	20.12	12.00
* 27.730	703.00	5997.01	.00	1.44	.00	37.50	25.00
27.730	348.00	5995.66	-1.35	-.67	.00	26.71	25.00
27.730	138.00	5994.84	-.83	-.52	.00	20.04	25.00
27.630	703.00	5996.65	.00	-.37	.00	35.49	10.00
27.630	348.00	5995.47	-1.18	-.19	.00	26.13	10.00
27.630	138.00	5994.64	-.83	-.19	.00	19.52	10.00
27.530	703.00	5996.40	.00	-.24	.00	34.48	10.00
27.530	348.00	5995.30	-1.11	-.17	.00	25.70	10.00
27.530	138.00	5994.47	-.82	-.17	.00	19.17	10.00
27.430	703.00	5996.17	.00	-.23	.00	33.68	10.00
27.430	348.00	5995.13	-1.04	-.16	.00	25.35	10.00
27.430	138.00	5994.33	-.80	-.14	.00	18.95	10.00
27.090	703.00	5995.57	.00	-.60	.00	32.16	34.00
27.090	348.00	5994.61	-.96	-.52	.00	24.49	34.00
27.090	138.00	5993.85	-.77	-.48	.00	18.39	34.00
26.750	703.00	5995.04	.00	-.53	.00	31.19	34.00
26.750	348.00	5994.13	-.91	-.49	.00	23.93	34.00
26.750	138.00	5993.41	-.72	-.44	.00	18.11	34.00
26.480	703.00	5994.65	.00	-.39	.00	30.64	27.00
26.480	348.00	5993.78	-.87	-.35	.00	23.65	27.00
26.480	138.00	5993.07	-.71	-.34	.00	17.97	27.00
26.230	703.00	5994.50	.00	-.14	.00	27.57	25.00
26.230	348.00	5993.51	-.99	-.26	.00	21.70	25.00
26.230	138.00	5992.76	-.76	-.31	.00	17.19	25.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
25.980	703.00	5994.38	.00	-.13	.00	24.11	25.00
25.980	348.00	5993.25	-1.13	-.27	.00	19.63	25.00
25.980	138.00	5992.46	-.79	-.30	.00	16.44	25.00
* 25.900	703.00	5993.27	.00	-1.10	.00	33.79	8.00
* 25.900	348.00	5992.64	-.63	-.60	.00	27.67	8.00
25.900	138.00	5992.12	-.52	-.33	.00	21.41	8.00
* 25.780	703.00	5986.46	.00	-6.81	.00	19.73	12.00
* 25.780	348.00	5985.73	-.74	-6.92	.00	16.77	12.00
* 25.780	138.00	5985.20	-.53	-6.92	.00	13.67	12.00
* 25.530	703.00	5987.95	.00	1.49	.00	32.82	25.00
* 25.530	348.00	5986.82	-1.13	1.09	.00	26.02	25.00
* 25.530	138.00	5985.19	-1.63	-.01	.00	16.28	25.00
25.280	703.00	5987.06	.00	-.89	.00	34.07	25.00
25.280	348.00	5986.14	-.92	-.67	.00	26.71	25.00
* 25.280	138.00	5985.29	-.85	.10	.00	19.89	25.00
25.100	703.00	5986.71	.00	-.35	.00	33.01	18.00
25.100	348.00	5985.80	-.91	-.34	.00	25.75	18.00
25.100	138.00	5984.97	-.83	-.31	.00	19.18	18.00
25.000	703.00	5986.53	.00	-.18	.00	32.56	10.00
25.000	348.00	5985.65	-.88	-.16	.00	25.41	10.00

25.000	138.00	5984.83	-.82	-.14	.00	18.95	10.00
24.900	703.00	5986.38	.00	-.15	.00	32.25	10.00
24.900	348.00	5985.50	-.89	-.15	.00	25.13	10.00
24.900	138.00	5984.69	-.81	-.14	.00	18.76	10.00
24.560	703.00	5985.83	.00	-.55	.00	31.22	34.00
24.560	348.00	5984.97	-.86	-.52	.00	24.33	34.00
24.560	138.00	5984.22	-.76	-.47	.00	18.30	34.00
24.220	703.00	5985.34	.00	-.49	.00	30.54	34.00
24.220	348.00	5984.50	-.85	-.48	.00	23.83	34.00
24.220	138.00	5983.78	-.72	-.44	.00	18.05	34.00
23.880	703.00	5984.87	.00	-.48	.00	30.02	34.00
23.880	348.00	5984.05	-.82	-.45	.00	23.49	34.00
23.880	138.00	5983.35	-.70	-.43	.00	17.88	34.00
* 23.500	703.00	5983.53	.00	-1.34	.00	72.04	38.00
* 23.500	348.00	5983.12	-.41	-.93	.00	43.70	38.00
* 23.500	138.00	5982.43	-.69	-.92	.00	22.10	38.00
* 23.000	703.00	5982.68	.00	-.85	.00	78.15	50.00
* 23.000	348.00	5982.09	-.58	-1.02	.00	68.52	50.00
* 23.000	138.00	5981.45	-.64	-.97	.00	42.52	50.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	22.500	703.00	5980.13	.00	-2.54	.00	70.54	50.00
*	22.500	348.00	5979.70	-.43	-2.39	.00	64.24	50.00
*	22.500	138.00	5979.40	-.31	-2.06	.00	60.12	50.00
	22.000	703.00	5977.60	.00	-2.53	.00	89.39	50.00
	22.000	348.00	5977.31	-.29	-2.39	.00	85.74	50.00
	22.000	138.00	5977.07	-.25	-2.33	.00	82.40	50.00
*	21.500	703.00	5976.28	.00	-1.32	.00	97.36	50.00
*	21.500	348.00	5975.88	-.40	-1.43	.00	91.61	50.00
	21.500	138.00	5975.28	-.60	-1.79	.00	51.59	50.00
	21.000	703.00	5974.30	.00	-1.98	.00	62.42	50.00
	21.000	348.00	5973.70	-.61	-2.18	.00	50.89	50.00
	21.000	138.00	5973.24	-.46	-2.04	.00	42.17	50.00
	20.500	703.00	5972.20	.00	-2.10	.00	60.45	50.00
	20.500	348.00	5971.71	-.48	-1.98	.00	51.18	50.00
	20.500	138.00	5971.28	-.43	-1.96	.00	42.90	50.00
*	20.000	703.00	5971.11	.00	-1.09	.00	57.60	50.00
	20.000	348.00	5970.42	-.69	-1.29	.00	47.94	50.00
	20.000	138.00	5969.82	-.60	-1.46	.00	39.12	50.00
	19.500	703.00	5969.48	.00	-1.63	.00	56.79	50.00
	19.500	348.00	5968.85	-.63	-1.58	.00	43.21	50.00
	19.500	138.00	5968.22	-.63	-1.60	.00	29.64	50.00
	19.000	703.00	5966.72	.00	-2.76	.00	54.26	50.00
	19.000	348.00	5966.24	-.48	-2.61	.00	50.14	50.00
	19.000	138.00	5965.88	-.37	-2.35	.00	44.80	50.00
*	18.500	703.00	5965.64	.00	-1.08	.00	70.05	50.00
*	18.500	348.00	5965.10	-.54	-1.14	.00	56.80	50.00
*	18.500	138.00	5964.45	-.65	-1.43	.00	40.92	50.00
	18.300	703.00	5964.51	.00	-1.13	.00	62.16	20.00
*	18.300	348.00	5963.94	-.56	-1.16	.00	48.26	20.00
*	18.300	138.00	5963.44	-.51	-1.01	.00	35.83	20.00
*	18.060	703.00	5959.81	.00	-4.69	.00	27.87	24.00
*	18.060	348.00	5959.02	-.79	-4.92	.00	21.55	24.00
*	18.060	138.00	5958.38	-.64	-5.06	.00	16.45	24.00
*	17.820	703.00	5960.49	.00	.67	.00	30.37	24.00
*	17.820	348.00	5959.64	-.85	.62	.00	25.19	24.00
*	17.820	138.00	5958.79	-.84	.41	.00	20.18	24.00
*	17.580	703.00	5960.80	.00	.32	.00	27.69	24.00
*	17.580	348.00	5959.55	-1.25	-.08	.00	22.70	24.00
*	17.580	138.00	5958.50	-1.05	-.29	.00	18.49	24.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	17.500	703.00	5959.03	.00	-1.77	.00	35.33	8.00
*	17.500	348.00	5958.43	-.60	-1.12	.00	30.82	8.00
*	17.500	138.00	5957.88	-.55	-.62	.00	24.29	8.00
*	17.350	703.00	5951.98	.00	-7.05	.00	20.46	15.00
*	17.350	348.00	5951.22	-.76	-7.21	.00	17.41	15.00
*	17.350	138.00	5950.67	-.56	-7.22	.00	15.15	15.00
*	17.100	703.00	5953.31	.00	1.33	.00	32.95	25.00
*	17.100	348.00	5952.19	-1.12	.97	.00	26.25	25.00
*	17.100	138.00	5951.18	-1.01	.52	.00	20.18	25.00
*	16.850	703.00	5952.66	.00	-.66	.00	36.07	25.00
*	16.850	348.00	5951.80	-.85	-.39	.00	29.31	25.00
*	16.850	138.00	5950.87	-.93	-.31	.00	21.83	25.00
*	16.750	703.00	5952.75	.00	.09	.00	37.80	10.00
*	16.750	348.00	5951.72	-1.03	-.09	.00	29.55	10.00
*	16.750	138.00	5950.76	-.96	-.11	.00	21.91	10.00

*	16.650	703.00	5952.64	.00	-.11	.00	37.90	10.00
*	16.650	348.00	5951.58	-1.06	-.13	.00	29.44	10.00
*	16.650	138.00	5950.64	-.95	-.13	.00	21.85	10.00
*	16.550	703.00	5952.52	.00	-.13	.00	37.86	10.00
*	16.550	348.00	5951.47	-1.04	-.11	.00	29.52	10.00
*	16.550	138.00	5950.52	-.96	-.12	.00	21.86	10.00
*	16.210	703.00	5952.11	.00	-.41	.00	37.85	34.00
*	16.210	348.00	5951.06	-1.04	-.41	.00	29.51	34.00
*	16.210	138.00	5950.10	-.96	-.41	.00	21.84	34.00
*	15.870	703.00	5951.69	.00	-.41	.00	37.82	34.00
*	15.870	348.00	5950.65	-1.04	-.41	.00	29.48	34.00
*	15.870	138.00	5949.70	-.95	-.40	.00	21.88	34.00
*	15.580	703.00	5951.36	.00	-.33	.00	37.87	29.00
*	15.580	348.00	5950.32	-1.04	-.33	.00	29.53	29.00
*	15.580	138.00	5949.36	-.96	-.34	.00	21.88	29.00
*	15.330	703.00	5951.19	.00	-.17	.00	32.94	25.00
*	15.330	348.00	5950.08	-1.11	-.24	.00	26.25	25.00
*	15.330	138.00	5949.07	-1.01	-.29	.00	20.20	25.00
*	15.080	703.00	5951.05	.00	-.14	.00	27.59	25.00
*	15.080	348.00	5949.84	-1.21	-.24	.00	22.74	25.00
*	15.080	138.00	5948.77	-1.07	-.30	.00	18.47	25.00
*	15.000	703.00	5949.30	.00	-1.74	.00	35.33	8.00
*	15.000	348.00	5948.70	-.60	-1.14	.00	30.82	8.00
*	15.000	138.00	5948.15	-.55	-.61	.00	24.29	8.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	14.850	703.00	5942.27	.00	-7.03	.00	20.46	15.00
*	14.850	348.00	5941.51	-.76	-7.19	.00	17.42	15.00
*	14.850	138.00	5940.95	-.56	-7.20	.00	15.15	15.00
*	14.600	703.00	5943.60	.00	1.33	.00	32.95	25.00
*	14.600	348.00	5942.49	-1.12	.97	.00	26.26	25.00
*	14.600	138.00	5941.47	-1.02	.52	.00	20.17	25.00
*	14.350	703.00	5942.95	.00	-.66	.00	36.07	25.00
*	14.350	348.00	5942.10	-.85	-.39	.00	29.30	25.00
*	14.350	138.00	5941.17	-.93	-.30	.00	21.87	25.00
*	14.250	703.00	5943.04	.00	.09	.00	37.80	10.00
*	14.250	348.00	5942.01	-1.03	-.08	.00	29.57	10.00
*	14.250	138.00	5941.05	-.96	-.12	.00	21.86	10.00
*	14.150	703.00	5942.93	.00	-.11	.00	37.90	10.00
*	14.150	348.00	5941.87	-1.06	-.14	.00	29.43	10.00
*	14.150	138.00	5940.93	-.94	-.12	.00	21.88	10.00
*	14.050	703.00	5942.81	.00	-.13	.00	37.86	10.00
*	14.050	348.00	5941.76	-1.05	-.11	.00	29.49	10.00
*	14.050	138.00	5940.80	-.96	-.13	.00	21.84	10.00
*	13.710	703.00	5942.40	.00	-.41	.00	37.85	34.00
*	13.710	348.00	5941.35	-1.04	-.41	.00	29.49	34.00
*	13.710	138.00	5940.40	-.95	-.40	.00	21.88	34.00
*	13.370	703.00	5941.98	.00	-.41	.00	37.82	34.00
*	13.370	348.00	5940.94	-1.04	-.41	.00	29.49	34.00
*	13.370	138.00	5939.99	-.95	-.41	.00	21.88	34.00
*	13.080	703.00	5941.63	.00	-.35	.00	37.87	29.00
*	13.080	348.00	5940.58	-1.05	-.36	.00	29.49	29.00
*	13.080	138.00	5939.63	-.95	-.36	.00	21.88	29.00
*	12.830	703.00	5941.46	.00	-.17	.00	32.94	25.00
*	12.830	348.00	5940.35	-1.11	-.23	.00	26.26	25.00
*	12.830	138.00	5939.34	-1.01	-.29	.00	20.20	25.00
*	12.580	703.00	5941.32	.00	-.14	.00	27.59	25.00
*	12.580	348.00	5940.11	-1.21	-.24	.00	22.75	25.00
*	12.580	138.00	5939.04	-1.06	-.29	.00	18.49	25.00
*	12.500	703.00	5939.57	.00	-1.74	.00	35.33	8.00
*	12.500	348.00	5938.97	-.60	-1.14	.00	30.82	8.00
*	12.500	138.00	5938.42	-.55	-.62	.00	24.29	8.00
*	12.370	703.00	5932.78	.00	-6.79	.00	20.47	13.00
*	12.370	348.00	5932.02	-.76	-6.95	.00	17.41	13.00
*	12.370	138.00	5931.46	-.56	-6.97	.00	15.13	13.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	12.120	703.00	5934.28	.00	1.50	.00	27.66	25.00
*	12.120	348.00	5933.06	-1.23	1.04	.00	22.75	25.00
*	12.120	138.00	5931.99	-1.07	.54	.00	18.49	25.00
*	11.870	703.00	5933.23	.00	-1.06	.00	34.29	25.00
*	11.870	348.00	5932.42	-.81	-.64	.00	27.84	25.00
*	11.870	138.00	5931.67	-.74	-.32	.00	21.81	25.00
*	11.770	703.00	5933.57	.00	.34	.00	37.93	10.00
*	11.770	348.00	5932.51	-1.06	.09	.00	29.45	10.00
*	11.770	138.00	5931.56	-.94	-.11	.00	21.91	10.00
*	11.670	703.00	5933.43	.00	-.13	.00	37.82	10.00
*	11.670	348.00	5932.39	-1.04	-.11	.00	29.50	10.00

*	11.670	138.00	5931.44	-.96	-.13	.00	21.85	10.00
*	11.580	703.00	5930.90	.00	-2.53	.00	33.07	10.00
*	11.580	348.00	5930.06	-.84	-2.33	.00	26.37	10.00
*	11.580	138.00	5929.38	-.69	-2.06	.00	20.84	10.00
*	11.240	703.00	5930.36	.00	-.54	.00	48.98	34.00
*	11.240	348.00	5929.66	-.70	-.41	.00	43.35	34.00
*	11.240	138.00	5929.01	-.65	-.36	.00	38.19	34.00
	10.900	703.00	5929.27	.00	-1.09	.00	60.53	34.00
	10.900	348.00	5928.79	-.48	-.87	.00	56.70	34.00
*	10.900	138.00	5928.43	-.36	-.59	.00	53.79	34.00
*	10.480	703.00	5929.58	.00	.31	.00	62.99	24.00
*	10.480	348.00	5928.93	-.65	.14	.00	57.83	24.00
*	10.480	138.00	5928.42	-.51	-.01	.00	53.73	24.00
*	10.160	703.00	5929.41	.00	-.17	.00	112.54	32.00
*	10.160	348.00	5928.93	-.48	-.01	.00	93.28	32.00
*	10.160	138.00	5928.51	-.41	.09	.00	75.80	32.00
*	9.840	703.00	5929.40	.00	-.01	.00	112.29	32.00
*	9.840	348.00	5928.92	-.48	.00	.00	93.22	32.00
*	9.840	138.00	5928.51	-.41	.00	.00	75.64	32.00
*	9.500	703.00	5925.45	.00	-3.95	.00	61.52	34.00
*	9.500	348.00	5924.93	-.52	-4.00	.00	53.04	34.00
*	9.500	138.00	5924.52	-.41	-3.99	.00	46.44	34.00
*	8.750	703.00	5922.97	.00	-2.48	.00	71.05	75.00
*	8.750	348.00	5922.35	-.62	-2.58	.00	61.90	75.00
*	8.750	138.00	5921.84	-.51	-2.68	.00	54.36	75.00

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SUMMARY OF ERRORS AND SPECIAL NOTES

CAUTION SECNO-	37.050	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	37.050	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	37.050	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	36.650	PROFILE-	1	SLOPE TOO STEEP
WARNING SECNO-	36.650	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	36.650	PROFILE-	2	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	36.650	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	36.650	PROFILE-	2	SLOPE TOO STEEP
CAUTION SECNO-	36.650	PROFILE-	3	WSEL ASSUMED BASED ON MIN DIFF
CAUTION SECNO-	36.650	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	36.650	PROFILE-	3	SLOPE TOO STEEP
WARNING SECNO-	36.400	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	36.400	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	36.400	PROFILE-	3	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	36.150	PROFILE-	1	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO-	36.150	PROFILE-	2	CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
CAUTION SECNO-	36.150	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	36.150	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	36.150	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	36.010	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	36.010	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	36.010	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	36.010	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	36.010	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	36.010	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.760	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.760	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.760	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.760	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.760	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.760	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.760	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.760	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.760	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.510	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.510	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.510	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.510	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.510	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.510	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.510	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.510	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.510	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.260	PROFILE-	1	CRITICAL DEPTH ASSUMED

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CAUTION SECNO-	35.260	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.260	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.260	PROFILE-	2	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.260	PROFILE-	2	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.260	PROFILE-	2	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.260	PROFILE-	3	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.260	PROFILE-	3	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.260	PROFILE-	3	20 TRIALS ATTEMPTED TO BALANCE WSEL
CAUTION SECNO-	35.010	PROFILE-	1	CRITICAL DEPTH ASSUMED
CAUTION SECNO-	35.010	PROFILE-	1	PROBABLE MINIMUM SPECIFIC ENERGY
CAUTION SECNO-	35.010	PROFILE-	1	20 TRIALS ATTEMPTED TO BALANCE WSEL

CAUTION SECNO-

8.750 PROFILE- 3 20 TRIALS ATTEMPTED TO BALANCE WSEL

TYPICAL CHANNEL DESIGN CALCULATIONS

$$Q_{100} = 1730 \text{ cfs}$$

Adding 10% for sediment bulking the design flow is:

$$Q_{\text{Design}} = 1903 \text{ cfs}$$

Typical North Domingo Baca Channel Section with 4:1 sides, 25' wide bottom with 1' depressed invert:

$$\text{Critical Depth} = 5.17'$$

$$\text{Minimum Specific Energy} = 6.79'$$

$$\text{Critical Velocity} = 10.21 \text{ fps}$$

$$n = 0.03 \text{ (may be different for riprap sections)}$$

$$S_o = 0.014$$

$$\text{Normal Depth} = 4.71'$$

$$\text{Area} = 160.44$$

$$\text{Normal Velocity} = 11.86' \text{ fps}$$

$$\text{Top width} = 54.70$$

$$\text{Normal Specific Energy} = 6.89'$$

$$Fr = 1.22$$

$$\text{Sequent Depth} = 5.74' \text{ (to get the same specific energy of 6.89' - by trial and error)}$$

$$\text{Freeboard} = 0.7 [2.0 + 0.025 (11.86) (4.71)^{.33}] = 1.75'$$

$$\text{Superelevation} = 1.3 \frac{(11.86)^2 (54.70)}{32.2 (500')} = 0.62'$$

$$\text{Required Depth} = 5.74' + 1.75' = \underline{7.49'}$$

$$\text{Depth of outer bank of curve} = 7.49' + .62' = \underline{8.11'}$$

HYDRAULIC JUMP CALCULATIONS

THESE CALCULATIONS WERE VOIDED BECAUSE NO SUSTAINED SUBCRITICAL FLOW IS INDICATED BY THE HEC-2 CALCULATIONS - UNPREDICTABLE JUMPS THAT WILL RESULT FROM SUPERCRITICAL FLOW AT OR NEAR CRITICAL VELOCITY ARE DEALT WITH IN THE CHANNEL DESIGN CALCULATION BY USING SEQUENT DEPTH INSTEAD OF NORMAL DEPTH.

CNO	SUPERCritical		SUBCRITICAL		ACTUAL DIF. EG	DIF. EG NEEDED TO JUMP	JUMP OCCOURES JUST UP FROM HERE AND IS FOLLOWED BY SUBCRITICAL FLOW
	DEPTH	EG	DEPTH	EG			
12.03	3.50	5925.38	4.59	5924.49	0.89	0.02	
12.03	2.38	5923.00	3.09	5922.44	0.56	0.01	
12.03	1.56	5920.69	1.77	5920.62	0.07	0.00	
11.97	3.44	5924.75	5.63	5922.08	2.67	0.16	
11.97	2.11	5922.26	3.92	5919.96	2.30	0.16	
11.97	1.11	5919.72	2.28	5917.94	1.78	0.12	
11.85	3.63	5923.51	5.64	5921.98	1.53	0.10	
11.85	2.49	5920.75	3.93	5919.86	0.89	0.08	
11.85	1.59	5917.95	2.28	5917.84	0.11	0.00	
11.75	3.90	5922.74	5.64	5921.90	0.84	0.06	
11.75	2.83	5920.00	3.93	5919.78	0.22	0.03	
11.75	1.92	5917.67	2.28	5917.76	-0.09	0.00	2 YR.
11.65	4.25	5922.11	5.64	5921.82	0.00	0.03	
11.65	3.33	5919.61	3.93	5919.70	-0.09	0.00	10 YR.
11.65	1.93	5917.59	2.28	5917.68	-0.09	0.00	
11.55	4.81	5921.68	5.64	5921.82	-0.06	0.01	100 YR.
11.55	3.44	5919.52	3.93	5919.70	-0.10	0.00	
11.55	1.94	5917.51	2.28	5917.60	-0.09	0.00	
11.45	5.08	5921.56	5.64	5921.66	-0.10	0.00	
11.45	3.45	5919.44	3.93	5919.54	-0.10	0.00	
11.45	1.93	5917.43	2.28	5917.52	-0.09	0.00	
11.19	5.09	5921.35	3.93	5921.45	-0.10	0.00	
11.19	3.45	5919.23	3.90	5919.33	-0.10	0.00	
11.19	1.94	5917.22	2.29	5917.31	-0.09	0.00	
10.93	5.09	5921.15	5.08	5921.15	-0.00	-0.00	
10.93	3.45	5919.02	3.45	5919.02	0.00	0.00	
10.93	1.93	5917.01	1.93	5917.01	0.00	0.00	

NOTE: NEGATIVE DIFFERENCES IN ENERGY GRADE LINE ELEVATION ARE ACTUALLY THE DIFFERENCE BETWEEN CRITICAL DEPTH AND THE CALCULATED DEPTH IN THE SUBCRITICAL PROFILE; SINCE, THE SUPERCritical PROFILE DEFAULTED TO ASSUMED CRITICAL DEPTH AT THE NEXT SECTION BELOW THE HYDRAULIC JUMP. THUS: DUE TO THE EXTREMELY HIGH ENERGY NEEDED FOR THE JUMP, THE JUMP WILL TYPICALLY OCCUR JUST BEFORE THE FIRST SECTION IN THE SUBCRITICAL PROFILE WHERE THE CRITICAL DEPTH ASSUMPTION IS MADE!!!

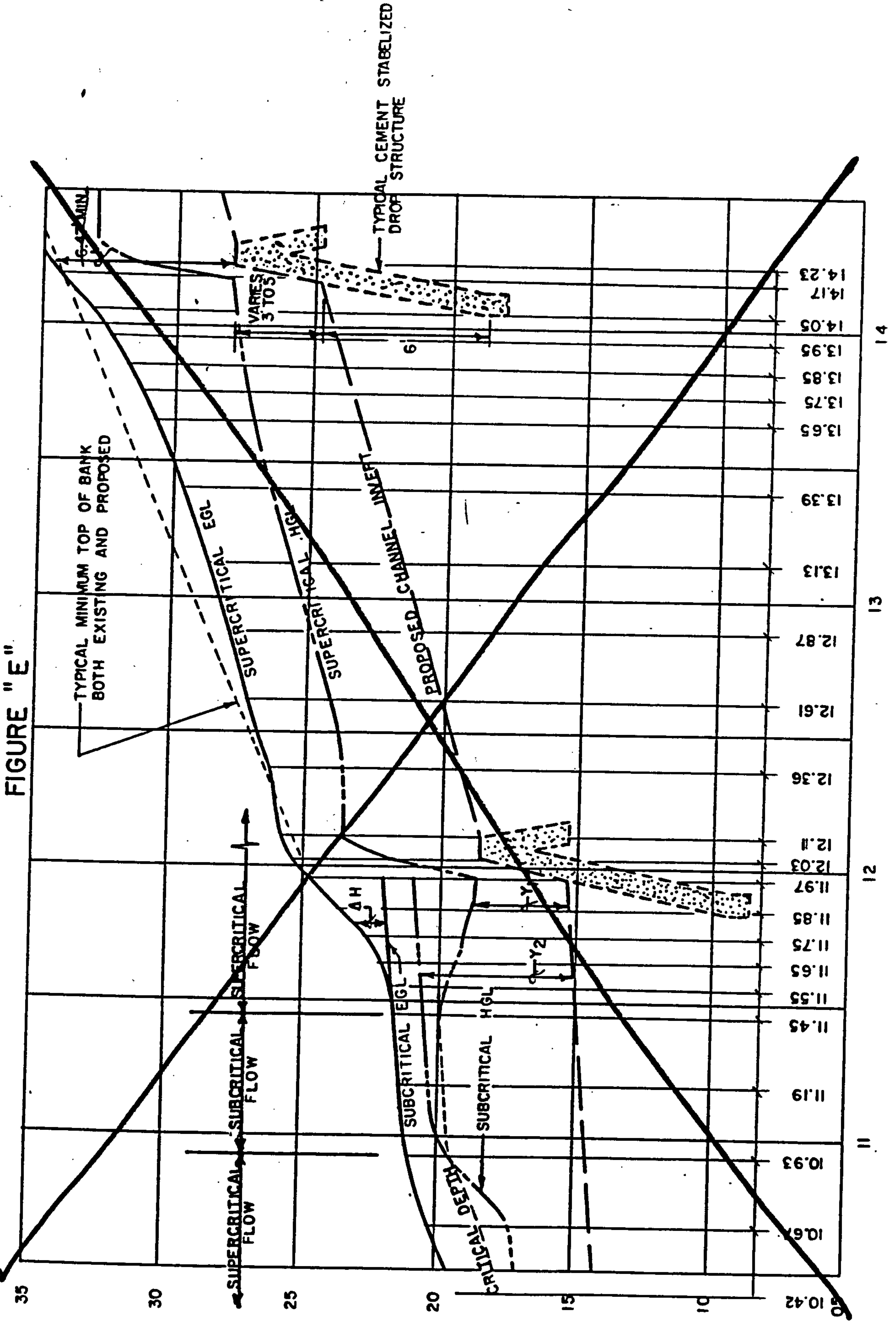
SUBCRITICAL FLOW AND HYDRAULIC JUMP CALCULATION PROCEDURE

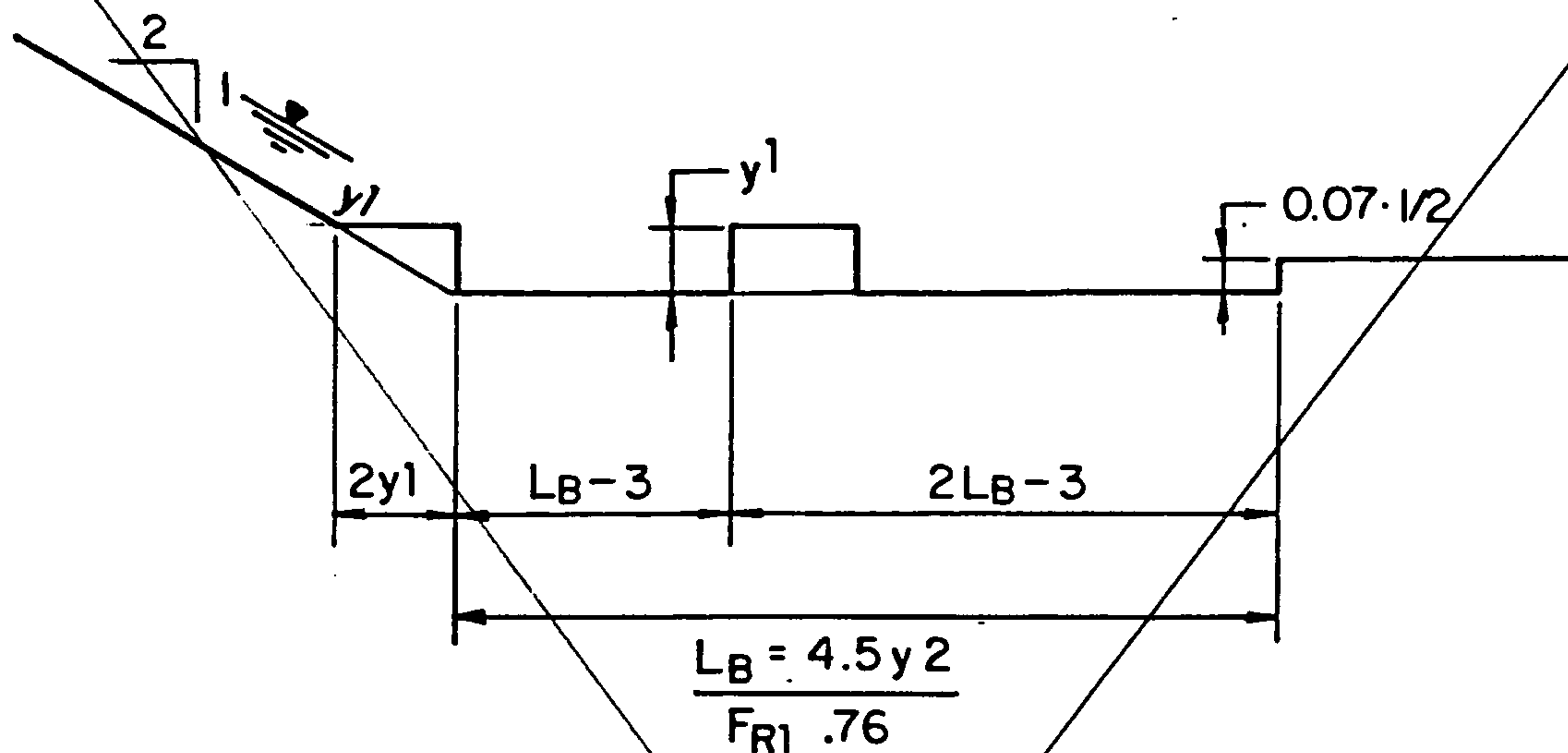
The only place that subcritical flow was calculated in the HEC-2 models for the proposed conditions is in the lowest reach of the Domingo Baca Arroyo. Both subcritical and supercritical flow was calculated for several sections in a row, thus indicating the presence of a hydraulic jump. HEC-2 does not calculate the jump so the necessary hydraulic parameters from the HEC-2 runs were placed into a spreadsheet on the following page where the energy expended in a hydraulic jump is calculated with the following equation and compared to the difference in the HEC-2 energy grade lines to determine the location of the jump. The energy expended in a hydraulic jump is:

$$\Delta H = (Y_2 - Y_1)^3 / (4 \times Y_2 \times Y_1)$$

The variables are illustrated on the page following Figure E. The approaching supercritical flow depth calculations, and the existing subcritical flow depth are represented by variables Y_1 and Y_2 , respectively.

FIGURE "E"





For most of the Drops on the North Domingo Baca:

End sill height = 0.87' and

$L_B = 25.0'$

For the drops at sections 25 + 23, 27 + 43, and 34 + 03;

End sill height = 0.97' and

$L_B = 25.9'$

NOTE: TYPICAL DROP STRUCTURE DETAILS AND CALCULATIONS WERE MOVED TO A POCKET AT THE END OF THIS REPORT AS PART OF THE FEBRUARY 1993 REVISION.

FIGURE F

**IS REPLACED WITH THE TYPICAL DROP STRUCTURE DETAIL AND CALCULATIONS
AT THE END OF THIS REPORT**

APPENDIX C

- 1. SEDIMENT TRANSPORT CONTINUITY ANALYSIS PROCEDURE**
- 2. SEDIMENT TRANSPORT CONTINUITY ANALYSIS CALCULATIONS**
- 3. SCOUR CALCULATIONS (DELETED WITH CHANGE TO ENERGY DISSIPATING DROP STRUCTURES)**

SEDIMENT TRANSPORT CONTINUITY ANALYSIS PROCEDURE

The following equation from Simons, Li & Associates, Design Guidelines and Criteria, June 1981, was employed in the following tables to calculate Q_1 , Q_2 , Q_3 , Q_4 , and Q_5 for VF sand, F sand, M sand, Coarse sand, and VC sand, respectively.

$$Q_i = W \times q_s$$

$$q_s = C_1 Y^{C_2} V^{C_3}$$

where:

W = width of flow taken from HEC-2 "Topwid"

q_s = sediment transport capacity

Y = flow depth taken from HEC-2 "Depth"

V = flow velocity taken from HEC-2 "CHV"

C_1 , C_2 , C_3 = constants for each grain size, as indicated at the top of the following tables.

By field inspection, the typical grain size in these arroyos was estimated as being "Coarse sand" so the "Total Q" was set equal to " Q_4 " at all locations. The HEC-2 multiple profile results for the 100-year, 10-year, and 2-year flows for both of the on-site arroyos was loaded into the following spreadsheets so that the continuity of sediment transport through the site could be examined to identify potential degradational and depositional reaches. (As with the HEC-2 runs, it is helpful to have the On-site Drainage Plate and the arroyo profiles handy as a reference, since they both illustrate the stationing of the two arroyos and thus the cross section locations.) The column "Delta Q" was added to identify the change in sediment transport capacity between the current section and the previous one. Negative changes indicate potential degradation unless the channel at the current section is hard-lined. Positive changes indicate potential deposition areas unless the upstream section was lined. The final design will include similar continuity analysis with more refined calculations and improved continuity.

SOUTH LA CUEVA ARROYO; 100 YR., 10 YR., & 2 YR. EVENTS
SEDIMENT TRANSPORT RATE CALCULATIONS

SECNO	VCH (fps)	DEPTH (ft)	WIDTH (ft)	VERY FINE (1)	FINE (2)	MEDIUM (3)	COARSE (4)	VERY COARSE (5)	TOTAL Q (cfs)	DELTA Q (cfs)	SECNO
				C 1 5.85E-05 3.200	C 2 2.14E-05 3.590	C 3 6.47E-06 4.050	C 4 2.90E-06 4.360	C 5 2.37E-06 -0.440 4.440			
37.05	7.06	1.53	65.00	Q(1) 3.08	Q(2) 2.21	Q(3) 1.45	Q(4) 1.05	Q(5) 0.75	1035.77	-1034.73	37.05
37.05	5.58	0.96	65.00	0.89	0.64	0.43	0.34	0.32	445.50	-445.16	
37.05	4.09	0.52	65.00	0.17	0.13	0.09	0.07	0.11	175.48	-132.11	
36.65	46.88	1.47	16.88	327.87	497.37	785.76	1035.77	886.52	1035.77	-1034.73	36.65
36.65	40.18	1.08	15.31	131.74	200.34	323.59	445.50	464.32	445.50	-445.16	
36.65	33.40	0.74	11.13	35.78	54.66	90.91	132.18	175.48	132.18	-132.11	
36.40	26.08	2.07	21.41	90.90	102.34	111.33	110.57	71.57	110.57	925.21	36.40
36.40	17.24	1.74	19.42	18.30	18.16	17.21	15.83	11.15	15.83	429.67	
36.40	10.05	1.38	17.31	2.28	1.92	1.52	1.27	1.00	1.27	130.91	
36.15	16.82	2.60	27.82	36.79	33.33	27.66	22.41	12.00	22.41	88.15	36.15
36.15	9.66	2.39	26.10	5.36	3.98	2.63	1.84	1.00	1.84	13.99	
36.15	5.90	1.86	21.90	0.72	0.46	0.26	0.17	0.10	0.17	1.10	
36.01	13.30	2.98	30.83	22.16	17.82	12.74	9.22	4.42	9.22	13.20	36.01
36.01	7.29	2.81	29.47	2.91	1.87	1.03	0.63	0.30	0.63	1.20	
36.01	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	-0.00	
35.76	8.49	3.85	37.82	8.44	5.41	2.91	1.70	0.66	1.70	7.52	35.76
35.76	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
35.76	5.92	1.86	21.86	0.72	0.47	0.26	0.17	0.11	0.17	-0.00	
35.51	8.47	3.86	37.85	8.40	5.38	2.89	1.68	0.65	1.68	0.01	35.51
35.51	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
35.51	5.94	1.85	21.84	0.73	0.47	0.27	0.17	0.11	0.17	-0.00	
35.26	8.48	3.85	37.83	8.41	5.39	2.90	1.69	0.66	1.69	-0.01	35.26
35.26	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
35.26	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
35.01	8.48	3.85	37.83	8.41	5.39	2.90	1.69	0.66	1.69	0.00	35.01
35.01	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
35.01	5.94	1.85	21.84	0.73	0.47	0.27	0.17	0.11	0.17	-0.00	
35.76	8.48	3.85	37.83	8.41	5.39	2.90	1.69	0.66	1.69	0.00	35.76
35.76	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
35.76	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
34.51	8.48	3.85	37.83	8.41	5.39	2.90	1.69	0.66	1.69	0.00	34.51
34.51	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
34.51	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
34.26	8.87	3.99	32.95	8.78	5.68	3.09	1.81	0.69	1.81	-0.12	34.26
34.26	7.53	2.88	26.26	2.95	1.91	1.06	0.65	0.31	0.65	-0.02	
34.26	6.06	1.87	20.20	0.72	0.47	0.27	0.18	0.11	0.18	-0.01	
34.01	9.43	4.15	27.59	9.31	6.12	3.38	1.99	0.74	1.99	-0.19	34.01
34.01	7.90	2.94	22.75	3.05	2.00	1.13	0.70	0.32	0.70	-0.05	
34.01	6.24	1.87	18.49	0.73	0.48	0.28	0.18	0.11	0.18	-0.01	
33.93	13.02	2.66	25.63	15.29	12.48	9.14	6.80	3.51	6.80	-4.80	33.93
33.93	11.28	1.67	21.72	5.05	4.28	3.38	2.76	1.93	2.76	-2.06	
33.93	9.10	0.90	18.61	1.14	1.01	0.87	0.80	0.84	0.80	-0.62	
33.85	19.44	2.26	16.00	29.07	28.66	26.53	23.44	13.96	23.44	-16.64	33.85
33.85	21.96	0.99	16.00	18.20	22.25	27.94	32.73	34.49	32.73	-29.98	
33.85	16.65	0.52	16.00	3.84	4.81	6.45	8.39	13.39	8.39	-7.60	
33.75	19.66	2.24	16.00	29.85	29.62	27.63	24.56	14.73	24.56	-1.13	33.75
33.75	21.70	1.00	16.00	17.70	21.50	26.77	31.15	32.56	31.15	-1.58	
33.75	15.84	0.55	16.00	3.47	4.21	5.43	6.85	10.47	6.85	-1.55	
33.65	19.87	2.22	16.00	30.60	30.55	28.71	25.67	15.50	25.67	-1.11	33.65
33.65	21.70	1.00	16.00	17.70	21.50	26.77	31.15	32.56	31.15	0.00	
33.65	15.27	0.57	16.00	3.20	3.80	4.77	5.88	8.76	5.88	-0.96	
33.54	20.08	2.19	16.00	31.20	31.36	29.74	26.79	16.34	26.79	-1.12	33.54
33.54	8.99	2.42	16.00	2.65	1.90	1.21	0.83	0.44	0.83	-0.33	
33.54	15.72	0.55	16.00	3.39	4.10	5.27	6.62	10.12	6.62	-0.74	
33.44	20.28	2.17	16.00	31.90	32.25	30.81	27.91	17.15	27.91	-1.12	33.44
33.44	10.59	2.06	16.00	3.78	3.00	2.16	1.62	0.98	1.62	-0.80	
33.44	15.18	0.57	16.00	3.14	3.72	4.66	5.73	8.53	5.73	-0.89	
33.34	20.46	2.15	16.00	32.50	33.03	31.77	28.94	17.91	28.94	-1.03	33.34
33.34	11.54	1.89	16.00	4.55	3.80	2.92	2.31	1.49	2.31	-0.69	
33.34	15.72	0.55	16.00	3.39	4.10	5.27	6.62	10.12	6.62	-0.89	
33.23	20.63	2.13	16.00	33.05	33.76	32.69	29.94	18.65	29.94	-1.00	33.23
33.23	8.98	2.42	16.00	2.64	1.90	1.21	0.82	0.44	0.82	-1.49	
33.23	15.18	0.57	16.00	3.14	3.72	4.66	5.73	8.53	5.73	-0.89	
32.92	18.25	2.41	16.00	25.39	24.11	21.26	18.07	10.25	18.07	11.87	32.92
32.92	12.23	1.78	16.00	5.15	4.45	3.57	2.93	1.98	2.93	-2.11	
32.92	14.33	0.60	16.00	2.76	3.16	3.79	4.52	6.46	4.52	-1.22	
32.61	18.25	2.41	16.00	25.39	24.11	21.26	18.07	10.25	18.07	0.00	32.61
32.61	8.98	2.42	16.00	2.64	1.90	1.21	0.82	0.44	0.82	-2.11	
32.61	14.07	0.61	16.00	2.65	3.00	3.55	4.19	5.91	4.19	-0.33	
32.30	18.25	2.41	16.00	25.39	24.11	21.26	18.07	10.25	18.07	0.00	32.30
32.30	12.23	1.78	16.00	5.15	4.45	3.57	2.93	1.98	2.93	-2.11	
32.30	13.97	0.62	16.00	2.63	2.96	3.48	4.07	5.69	4.07	-0.11	
31.99	18.25	2.41	16.00	25.39	24.11	21.26	18.07	10.25	18.07	0.00	31.99
31.99	8.98	2.42	16.00	2.64	1.90	1.21	0.82	0.44	0.82	-2.11	
31.99	13.99	0.61	16.00	2.60	2.94	3.47	4.08	5.76	4.08	-0.01	
31.68	18.25	2.41	16.00	25.39	24.11	21.26	18.07	10.25	18.07	0.00	31.68
31.68	12.23	1.78	16.00	5.15	4.45	3.57	2.93	1.98	2.93	-2.11	
31.68	13.93	0.63	16.00	2.65	2.97	3.47	4.04	5.58	4.04	-0.04	
31.37	18.25	2.41	16.00	25.39	24.11	21.26	18.07	10.25	18.07	0.00	31.37
31.37	8.98	2.42	16.00	2.64	1.90	1.21	0.82	0.44	0.82	-2.11	
31.37	13.95	0.62	16.00	2.62	2.95	3.46	4.05	5.65	4.05	-0.01	
31.06	18.25	2.41	16.00	25.39	24.11	21.26	18.07	10.25	18.07	0.00	31.06
31.06	12.23	1.78	16.00	5.15	4.45	3.57	2.93	1.98	2.93	-2.11	
31.06	13.96	0.62	16.00	2.62	2.96	3.47	4.06	5.67	4.06	-0.01	
30.75	24.45	1.80	16.00	47.78	53.97	59.45	60.31	42.71	60.31	-42.25	30.75
30.75	19.70	1.10	16.00	14.34	16.46	19.04	20.91	20.33	20.91	-17.97	
30.75	14.29	0.60	16.00	2.73	3.13	3.75	4.46	6.38	4.46	-0.40	
30.59	29.67	1.96	18.83	114.12	136.62	160.32	168.42	114.31	168.42	-108.11	30.59
30.59	26.53	1.35	16.43	47.24	58.39	72.85	82.54	71.52	82.54	-61.64	
30.59	22.45	0.91	13.58	15.18	19.05	24.79	29.98	33.50	29.98	-25.52	
30.34	9.38	4.00	33.01	10.54	6.97	3.88	2.31	0.88	2.31	166.11	30.34
30.34	7.93	2.87	26.21	3.46	2.29	1.31	0.81	0.38	0.81	81.73	
30.34	12.97	1.20	16.23	4.18	4.00	3.72	3.50	3.10	3.50	-26.48	
30.09	10.89	3.33	33.73	14.36	10.44	6.58	4.33	1.89	4.33	-2.02	30.09
30.09	9.31	2.44	26.51	4.94	3.60	2.32	1.60	0.85	1.60	-0.78	
30.09	7.29	1.65	20.20	1.15	0.82	0.53	0.38	0.26	0.38	-3.12	
29.99	11.24	3.29	33.26	15.47	11.42	7.33	4.89	2.16	4.89	-0.56	29.99
29.99	9.76	2.37	25.99	5.47	4.08	2.71	1.91	1.04	1.91	-0.31	
29.99	7.84	1.58	19.66	1.35	1.00	0.68	0.50	0.36	0.50	-0.12	

Explains
columns
Formulas??

SECNO	VCH (fps)	DEPTH (ft)	WIDTH (ft)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	TOTAL Q (cfs)	DELTA Q (cfs)	SECNO
29.89	11.61	3.22	32.77	16.53	12.41	8.14	5.52	2.48	5.52	-0.63	29.89
29.89	10.13	2.32	25.58	5.93	4.51	3.07	2.20	1.22	2.20	-0.29	
29.89	8.25	1.54	19.30	1.51	1.16	0.81	0.61	0.44	0.61	-0.11	
29.79	11.96	3.16	32.34	17.59	13.41	8.97	6.17	2.82	6.17	-0.65	29.79
29.79	10.46	2.28	25.25	6.37	4.92	3.42	2.49	1.40	2.49	-0.29	
29.79	8.60	1.50	19.02	1.66	1.29	0.93	0.72	0.53	0.72	-0.11	
29.45	12.84	3.04	31.32	20.54	16.22	11.34	8.07	3.80	8.07	-1.90	29.45
29.45	11.31	2.18	24.44	7.56	6.08	4.43	3.35	1.96	3.35	-0.86	
29.45	9.42	1.42	18.43	2.03	1.66	1.27	1.03	0.79	1.03	-0.30	
29.11	13.52	2.95	30.61	22.95	18.61	13.45	9.81	4.74	9.81	-1.74	29.11
29.11	11.95	2.10	23.89	8.47	7.02	5.31	4.12	2.48	4.12	-0.77	
29.11	9.87	1.39	18.13	2.27	1.90	1.49	1.23	0.97	1.23	-0.20	
28.98	13.72	2.92	30.41	23.64	19.32	14.10	10.36	5.04	10.36	-0.55	28.98
28.98	12.09	2.10	23.78	8.75	7.28	5.54	4.32	2.60	4.32	-0.19	
28.98	10.00	1.37	18.05	2.32	1.96	1.55	1.29	1.03	1.29	-0.06	
28.73	14.04	3.02	27.13	23.52	19.26	14.06	10.31	4.91	10.31	-0.06	28.73
28.73	12.59	2.10	21.60	9.05	7.65	5.93	4.68	2.83	4.68	-0.36	
28.73	10.50	1.35	17.11	2.53	2.18	1.78	1.51	1.22	1.51	-0.22	
28.48	13.37	3.29	24.20	19.61	15.49	10.77	7.58	3.40	7.58	-2.72	28.48
28.48	12.32	2.19	19.77	8.08	6.71	5.08	3.93	2.31	3.93	-0.74	
28.48	10.15	1.39	16.55	2.27	1.91	1.52	1.27	1.00	1.27	-0.24	
28.40	15.50	2.28	33.85	30.06	27.09	22.53	18.51	10.76	18.51	-10.93	28.40
28.40	13.59	1.65	27.83	11.59	10.60	9.15	7.94	5.69	7.94	-4.00	
28.40	10.87	1.13	21.56	2.96	2.68	2.34	2.12	1.93	2.12	-0.85	
28.23	26.31	2.11	19.46	86.68	97.55	105.93	104.90	67.07	104.90	-86.39	28.23
28.23	25.23	1.40	16.59	42.18	50.75	61.19	67.53	56.86	67.53	-59.60	
28.23	23.61	0.89	13.24	16.99	21.85	29.29	36.22	41.25	36.22	-34.09	
27.98	26.05	2.07	21.42	90.61	101.96	110.86	110.07	71.24	110.07	-5.17	27.98
27.98	7.70	2.84	26.03	3.10	2.03	1.15	0.71	0.34	0.71	-66.82	
27.98	6.14	1.85	20.12	0.74	0.49	0.28	0.18	0.11	0.18	-36.03	
27.73	8.64	3.81	37.50	8.75	5.66	3.08	1.81	0.71	1.81	-108.25	27.73
27.73	9.15	2.46	26.71	4.75	3.43	2.19	1.49	0.79	1.49	-0.78	
27.73	7.44	1.64	20.04	1.21	0.87	0.57	0.41	0.28	0.41	-0.23	
27.63	9.74	3.57	35.49	11.36	7.80	4.57	2.85	1.18	2.85	-1.04	27.63
27.63	9.64	2.39	26.13	5.33	3.95	2.61	1.82	0.99	1.82	-0.33	
27.63	8.00	1.56	19.52	1.41	1.06	0.73	0.55	0.39	0.55	-0.13	
27.53	10.37	3.44	34.48	12.98	9.20	5.62	3.61	1.54	3.61	-0.76	27.53
27.53	10.03	2.34	25.70	5.82	4.41	2.98	2.12	1.17	2.12	-0.30	
27.53	8.41	1.51	19.17	1.57	1.21	0.86	0.66	0.48	0.66	-0.12	
27.43	10.92	3.33	33.68	14.46	10.53	6.65	4.38	1.91	4.38	-0.77	27.43
27.43	10.36	2.29	25.35	6.23	4.79	3.31	2.40	1.34	2.40	-0.28	
27.43	8.69	1.49	18.95	1.70	1.33	0.96	0.75	0.56	0.75	-0.09	
27.09	12.10	3.14	32.16	18.04	13.83	9.32	6.45	2.96	6.45	-2.07	27.09
27.09	11.25	2.19	24.49	7.48	6.00	4.36	3.28	1.91	3.28	-0.88	
27.09	9.46	1.42	18.39	2.06	1.68	1.29	1.04	0.80	1.04	-0.29	
26.75	12.96	3.02	31.19	20.93	16.61	11.69	8.36	3.96	8.36	-1.91	26.75
26.75	11.91	2.11	23.93	8.44	6.97	5.26	4.07	2.44	4.07	-0.79	
26.75	9.90	1.39	18.11	2.29	1.92	1.51	1.25	0.98	1.25	-0.20	
26.48	13.49	2.95	30.64	22.81	18.48	13.34	9.72	4.69	9.72	-1.37	26.48
26.48	12.26	2.08	23.65	9.01	7.55	5.80	4.55	2.76	4.55	-0.48	
26.48	10.13	1.37	17.97	2.41	2.04	1.63	1.36	1.08	1.36	-0.12	
26.23	13.49	3.10	27.57	21.61	17.33	12.32	8.85	4.13	8.85	-0.87	26.23
26.23	12.43	2.11	21.70	8.77	7.37	5.67	4.45	2.68	4.45	-0.10	
26.23	10.32	1.36	17.19	2.43	2.07	1.67	1.41	1.13	1.41	-0.05	
25.98	13.51	3.27	24.11	20.07	15.93	11.16	7.89	3.55	7.89	-0.96	25.98
25.98	12.64	2.15	19.63	8.54	7.19	5.54	4.35	2.59	4.35	-0.10	
25.98	10.48	1.36	16.44	2.44	2.10	1.70	1.44	1.15	1.44	-0.03	
25.90	15.60	2.27	33.79	30.49	27.57	23.03	18.98	11.08	18.98	-11.09	25.90
25.90	13.79	1.64	27.67	12.00	11.05	9.62	8.40	6.05	8.40	-4.05	
25.90	11.10	1.12	21.41	3.12	2.85	2.52	2.30	2.11	2.30	-0.86	
25.78	25.07	2.18	19.73	77.91	85.47	89.88	86.84	54.10	86.84	-67.86	25.78
25.78	23.96	1.45	16.77	37.49	43.89	51.13	54.96	45.00	54.96	-46.56	
25.78	22.14	0.92	13.67	14.79	18.41	23.73	28.48	31.55	28.48	-26.17	
25.53	8.96	3.97	32.82	8.98	5.84	3.19	1.88	0.72	1.88	-84.96	25.53
25.53	7.71	2.84	26.02	3.11	2.04	1.15	0.71	0.34	0.71	-54.25	
25.53	12.72	1.21	16.20	3.95	3.75	3.45	3.22	2.83	3.22	-25.26	
25.28	10.65	3.38	34.07	13.71	9.86	6.12	3.98	1.72	3.98	-2.11	25.28
25.28	9.15	2.46	26.71	4.75	3.43	2.19	1.49	0.79	1.49	-0.78	
25.28	7.59	1.61	19.89	1.25	0.92	0.61	0.44	0.31	0.44	-2.77	
25.10	11.42	3.25	33.01	15.95	11.87	7.71	5.19	2.31	5.19	-1.20	25.10
25.10	9.97	2.34	25.75	5.72	4.32	2.91	2.07	1.14	2.07	-0.58	
25.10	8.40	1.51	19.18	1.56	1.21	0.86	0.66	0.48	0.66	-0.21	
25.00	11.78	3.19	32.56	17.04	12.89	8.54	5.83	2.64	5.83	-0.64	25.00
25.00	10.29	2.31	25.41	6.17	4.72	3.24	2.34	1.30	2.34	-0.27	
25.00	8.69	1.49	18.95	1.70	1.33	0.96	0.75	0.56	0.75	-0.09	
24.90	12.03	3.16	32.25	17.87	13.66	9.16	6.31	2.88	6.31	-0.48	24.90
24.90	10.57	2.28	25.13	6.56	5.09	3.55	2.59	1.46	2.59	-0.25	
24.90	8.94	1.47	18.76	1.81	1.44	1.06	0.84	0.63	0.84	-0.09	
24.56	12.93	3.02	31.22	20.79	16.49	11.59	8.28	3.92	8.28	-1.97	24.56
24.56	11.43	2.17	24.33	7.74	6.26	4.59	3.48	2.04	3.48	-0.89	
24.56	9.60	1.41	18.30	2.13	1.75	1.35	1.10	0.86	1.10	-0.27	
24.22	13.59	2.94	30.54	23.20	18.86	13.67	10.00	4.84	10.00	-1.72	24.22
24.22	12.03	2.10	23.83	8.63	7.17	5.44	4.23	2.55	4.23	-0.75	
24.22	10.00	1.38	18.05	2.34	1.97	1.56	1.30	1.02	1.30	-0.19	
23.88	14.13	2.88	30.02	25.28	20.96	15.57	11.59	5.71	11.59	-1.59	23.88
23.88	12.46	2.06	23.49	9.34	7.89	6.12	4.84	2.96	4.84	-0.61	
23.88	10.28	1.36	17.88	2.49	2.13	1.71	1.44	1.15	1.44	-0.15	
23.50	11.75	1.99	72.04	22.89	19.04	14.52	11.40	7.11	11.40	-0.20	23.50
23.50	9.91	1.58	43.70	6.33	5.17	3.91	3.11	2.24	3.11	-1.73	
23.50	8.38	0.89	22.10	1.03	0.88	0.74	0.66	0.69	0.66	-0.78	
23.00	6.68	2.48	78.15	5.12	3.27	1.80	1.11	0.57	1.11	-10.29	23.00
23.00	5.57	1.89	68.52	1.89	1.19	0.65	0.41	0.25	0.41	-2.70	
23.00	4.72	1.25	42.52	0.45	0.29	0.17	0.11	0.09	0.11	-0.55	
22.50	9.77	1.27	70.54	7.78	6.60	5.30	4.48	3.74	4.48	-3.37	22.50
22.50	7.81	0.84	64.24	2.25	1.90	1.56	1.39	1.51	1.39	-0.98	
22.50	5.56	0.54	60.12	0.45	0.36	0.29	0.27	0.38	0.27	-0.15	
22.00	9.12	1.60	89.39	10.06	7.92	5.75	4.45	3.15	4.45	-0.04	22.00
22.00	6.66	1.31	85.74	2.87	2.08	1.39	1.03	0.82	1.03	-0.36	
22.00	4.53	1.07	82.40	0.65	0.42	0.25	0.18	0.16	0.18	-0.09	
21.50	6.61	1.78	97.36	4.37	2.97	1.80	1.22	0.78	1.22	-3.23	21.50
21.50	5.15	1.38	91.61	1.42	0.92	0.54	0.36	0.27	0.36	-0.67	
21.50	4.81	0.78	51.59	0.36	0.25	0.17	0.13	0.15	0.13	-0.04	
21.00	8.94	1.70	62.42	7.02	5.42	3.82	2.89	1.96	2.89	-1.67	21.00
21.00	7.85	1.10	50.89	2.40	1.92	1.46	1.20	1.09	1.20	-0.84	
21.00	5.98	0.64	42.17	0.47	0.38	0.30	0.27	0.34	0.27	-0.13	

SECNO	VCH (fps)	DEPTH (ft)	WIDTH (ft)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	TOTAL Q (cfs)	DELTA Q (cfs)	SECNO
20.50	9.72	1.60	60.45	8.34	6.74	5.03	3.97	2.83	3.97	-1.08	20.50
20.50	7.71	1.11	51.18	2.30	1.83	1.37	1.12	1.01	1.12	0.08	
20.50	5.59	0.68	42.90	0.41	0.32	0.24	0.21	0.25	0.21	0.06	20.00
20.00	7.93	2.11	57.60	5.53	3.90	2.44	1.66	0.97	1.66	2.31	
20.00	6.63	1.42	47.94	1.72	1.22	0.79	0.58	0.43	0.58	0.54	
20.00	5.18	0.82	39.12	0.36	0.26	0.18	0.14	0.15	0.14	0.07	
19.50	9.15	2.28	56.79	9.34	6.85	4.47	3.12	1.74	3.12	-1.45	19.50
19.50	7.68	1.65	43.21	2.90	2.12	1.41	1.02	0.70	1.02	-0.45	
19.50	6.19	1.02	29.64	0.60	0.45	0.31	0.24	0.23	0.24	-0.10	
19.00	10.98	1.42	54.26	9.77	8.47	6.94	5.89	4.60	5.89	-2.77	19.00
19.00	8.85	0.94	50.14	2.95	2.56	2.15	1.93	1.96	1.93	-0.90	
19.00	6.41	0.58	44.80	0.57	0.48	0.40	0.38	0.52	0.38	-0.13	
18.50	8.33	2.14	70.05	7.98	5.72	3.64	2.52	1.45	2.52	-3.38	18.50
18.50	6.27	1.60	56.80	1.93	1.31	0.80	0.55	0.38	0.55	1.38	
18.50	4.95	0.95	40.92	0.38	0.26	0.17	0.13	0.12	0.13	0.25	
18.30	10.14	1.81	62.16	11.17	8.94	6.56	5.06	-3.32	5.06	-2.54	18.30
18.30	8.60	1.24	48.26	3.45	2.80	2.13	1.75	1.47	1.75	-1.20	
18.30	6.70	0.74	35.83	0.67	0.55	0.44	0.39	0.45	0.39	-0.26	
18.06	16.74	2.61	27.87	36.44	32.93	27.24	22.01	11.75	22.01	-16.96	18.06
18.06	15.50	1.82	21.55	15.14	14.28	12.72	11.16	7.57	11.16	-9.42	
18.06	13.32	1.18	16.45	4.53	4.40	4.17	3.97	3.57	3.97	-3.58	
17.82	10.72	3.56	30.37	13.17	9.39	5.76	3.70	1.54	3.70	18.31	17.82
17.82	8.36	2.71	25.19	3.71	2.54	1.51	0.97	0.48	0.97	10.19	
17.82	6.08	1.86	20.18	0.73	0.47	0.27	0.18	0.11	0.18	3.79	
17.58	9.35	4.17	27.69	9.14	5.98	3.29	1.93	0.72	1.93	1.77	17.58
17.58	7.95	2.92	22.70	3.08	2.03	1.15	0.72	0.33	0.72	0.26	
17.58	6.24	1.87	18.49	0.73	0.48	0.28	0.18	0.11	0.18	-0.00	
17.50	13.20	2.50	35.33	20.65	17.16	12.89	9.80	5.29	9.80	-7.87	17.50
17.50	10.58	1.90	30.82	6.67	5.38	3.96	3.05	1.95	3.05	-2.34	
17.50	7.70	1.35	24.29	1.33	1.02	0.72	0.55	0.44	0.55	-0.37	
17.35	22.18	2.36	20.46	59.29	61.02	59.22	53.80	31.45	53.80	-44.00	17.35
17.35	20.14	1.60	17.41	24.73	26.52	27.69	27.40	20.69	27.40	-24.34	
17.35	17.11	1.05	15.15	8.24	9.04	9.94	10.59	10.51	10.59	-10.03	
17.10	8.87	3.99	32.95	8.78	5.68	3.09	1.81	0.69	1.81	52.00	17.10
17.10	7.54	2.88	26.25	2.96	1.92	1.07	0.66	0.31	0.66	26.74	
17.10	6.09	1.86	20.18	0.73	0.48	0.27	0.18	0.11	0.18	10.41	
16.85	9.40	3.64	36.07	10.52	7.09	4.07	2.49	1.01	2.49	-0.69	16.85
16.85	7.38	2.78	29.31	2.98	1.93	1.07	0.66	0.32	0.66	-0.01	
16.85	5.94	1.85	21.83	0.72	0.47	0.27	0.17	0.11	0.17	0.01	
16.75	8.49	3.85	37.80	8.43	5.40	2.91	1.70	0.66	1.70	0.79	16.75
16.75	7.25	2.82	29.55	2.88	1.85	1.02	0.62	0.29	0.62	0.04	
16.75	5.89	1.86	21.91	0.71	0.46	0.26	0.17	0.10	0.17	0.01	
16.65	8.45	3.86	37.90	8.35	5.34	2.87	1.67	0.65	1.67	0.03	16.65
16.65	7.31	2.81	29.44	2.93	1.89	1.04	0.64	0.30	0.64	-0.02	
16.65	5.93	1.86	21.85	0.73	0.47	0.27	0.17	0.11	0.17	-0.00	
16.55	8.47	3.86	37.86	8.41	5.38	2.89	1.68	0.65	1.68	-0.02	16.55
16.55	7.27	2.81	29.52	2.89	1.86	1.02	0.63	0.30	0.63	0.01	
16.55	5.92	1.86	21.86	0.72	0.47	0.26	0.17	0.11	0.17	0.00	
16.21	8.47	3.86	37.85	8.40	5.38	2.89	1.68	0.65	1.68	0.00	16.21
16.21	7.27	2.81	29.51	2.89	1.86	1.02	0.63	0.30	0.63	0.00	
16.21	5.94	1.85	21.84	0.73	0.47	0.27	0.17	0.11	0.17	-0.00	
15.87	8.48	3.85	37.82	8.41	5.38	2.90	1.69	0.66	1.69	-0.01	15.87
15.87	7.28	2.81	29.48	2.90	1.86	1.03	0.63	0.30	0.63	-0.00	
15.87	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
15.58	8.46	3.86	37.87	8.38	5.36	2.88	1.68	0.65	1.68	0.01	15.58
15.58	7.26	2.82	29.53	2.89	1.85	1.02	0.62	0.29	0.62	0.01	
15.58	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
15.33	8.88	3.99	32.94	8.81	5.70	3.10	1.81	0.69	1.81	-0.14	15.33
15.33	7.53	2.88	26.25	2.95	1.91	1.06	0.65	0.31	0.65	-0.03	
15.33	6.06	1.87	20.20	0.72	0.47	0.27	0.18	0.11	0.18	-0.01	
15.08	9.43	4.15	27.59	9.31	6.12	3.38	1.99	0.74	1.99	-0.18	15.08
15.08	7.90	2.94	22.74	3.04	2.00	1.13	0.70	0.32	0.70	-0.05	
15.08	6.26	1.87	18.47	0.73	0.48	0.28	0.18	0.11	0.18	-0.01	
15.00	13.21	2.50	35.33	20.70	17.21	12.93	9.84	5.30	9.84	-7.84	15.00
15.00	10.58	1.90	30.82	6.67	5.38	3.96	3.05	1.95	3.05	-2.35	
15.00	7.70	1.35	24.29	1.33	1.02	0.72	0.55	0.44	0.55	-0.37	
14.85	22.16	2.36	20.46	59.12	60.82	59.00	53.59	31.33	53.59	-43.76	14.85
14.85	20.12	1.60	17.42	24.67	26.44	27.60	27.29	20.61	27.29	-24.24	
14.85	17.09	1.04	15.15	8.13	8.93	9.84	10.51	10.50	10.51	-9.96	
14.60	8.87	3.99	32.95	8.78	5.68	3.09	1.81	0.69	1.81	51.79	14.60
14.60	7.53	2.88	26.26	2.95	1.91	1.06	0.65	0.31	0.65	26.64	
14.60	6.09	1.86	20.17	0.73	0.48	0.27	0.18	0.11	0.18	10.33	
14.35	9.40	3.64	36.07	10.52	7.09	4.07	2.49	1.01	2.49	-0.69	14.35
14.35	7.39	2.79	29.30	3.00	1.94	1.08	0.67	0.32	0.67	-0.01	
14.35	5.91	1.86	21.87	0.72	0.46	0.26	0.17	0.11	0.17	0.01	
14.25	8.49	3.85	37.80	8.43	5.40	2.91	1.70	0.66	1.70	0.79	14.25
14.25	7.24	2.82	29.57	2.87	1.84	1.01	0.62	0.29	0.62	0.05	
14.25	5.92	1.86	21.86	0.72	0.47	0.26	0.17	0.11	0.17	-0.00	
14.15	8.45	3.86	37.90	8.35	5.34	2.87	1.67	0.65	1.67	-0.03	14.15
14.15	7.32	2.80	29.43	2.93	1.89	1.05	0.64	0.31	0.64	-0.03	
14.15	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
14.05	8.47	3.86	37.86	8.41	5.38	2.89	1.68	0.65	1.68	-0.02	14.05
14.05	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.01	
14.05	5.94	1.85	21.84	0.73	0.47	0.27	0.17	0.11	0.17	-0.00	
13.71	8.47	3.86	37.85	8.40	5.38	2.89	1.68	0.65	1.68	0.00	13.71
13.71	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
13.71	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
13.37	8.48	3.85	37.82	8.41	5.38	2.90	1.69	0.66	1.69	-0.01	13.37
13.37	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
13.37	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
13.08	8.46	3.86	37.87	8.38	5.36	2.88	1.68	0.65	1.68	0.01	13.08
13.08	7.28	2.81	29.49	2.90	1.87	1.03	0.63	0.30	0.63	0.00	
13.08	5.91	1.86	21.88	0.72	0.46	0.26	0.17	0.11	0.17	0.00	
12.83	8.88	3.99	32.94	8.81	5.70	3.10	1.81	0.69	1.81	-0.14	12.83
12.83	7.53	2.88	26.26	2.95	1.91	1.06	0.65	0.31	0.65	-0.02	
12.83	6.06	1.87	20.20	0.72	0.47	0.27	0.18	0.11	0.18	-0.01	
12.58	9.43	4.15	27.59	9.31	6.12	3.38	1.99	0.74	1.99	-0.18	12.58
12.58	7.90	2.94	22.75	3.05	2.00	1.13	0.70	0.32	0.70	-0.05	
12.58	6.24	1.87	18.49	0.73	0.48	0.28	0.18	0.11	0.18	-0.01	
12.50	13.21	2.50	35.33	20.70	17.21	12.93	9.84	5.30	9.84	-7.84	12.50
12.50	10.58	1.90	30.82	6.67	5.38	3.96	3.05	1.95	3.05	-2.35	
12.50	7.70	1.35	24.29	1.33	1.02	0.72	0.55	0.44	0.55	-0.37	
12.37	22.13	2.36	20.47	58.89	60.55	58.71	53.30	31.15	53.30	-43.47	12.37
12.37	20.18	1.60	17.41	24.89	26.71	27.92	27.63	20.87	27.63	-24.58	
12.37	17.28	1.04	15.13	8.41	9.27	10.28	11.02	11.01	11.02	-10.46	

SECNO	VCH (fps)	DEPTH (ft)	WIDTH (ft)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	TOTAL Q (cfs)	DELTA Q (cfs)	SECNO
12.12	9.37	4.16	27.66	9.17	6.01	3.31	1.95	0.72	1.95	51.36	12.12
12.12	7.89	2.94	22.75	3.03	1.99	1.13	0.70	0.32	0.70	26.94	
12.12	6.24	1.87	18.49	0.73	0.48	0.28	0.18	0.11	0.18	10.83	
11.87	10.51	3.41	34.29	13.35	9.53	5.87	3.79	1.63	3.79	-1.85	11.87
11.87	8.31	2.60	27.84	3.86	2.65	1.59	1.04	0.52	1.04	-0.34	
11.87	5.95	1.85	21.81	0.73	0.47	0.27	0.17	0.11	0.17	0.01	
11.77	8.43	3.87	37.93	8.32	5.31	2.84	1.65	0.64	1.65	2.14	11.77
11.77	7.30	2.81	29.45	2.92	1.88	1.04	0.64	0.30	0.64	0.40	
11.77	5.89	1.86	21.91	0.71	0.46	0.26	0.17	0.10	0.17	0.01	
11.67	8.49	3.85	37.82	8.44	5.41	2.91	1.70	0.66	1.70	-0.04	11.67
11.67	7.28	2.81	29.50	2.90	1.87	1.03	0.63	0.30	0.63	0.01	
11.67	5.93	1.86	21.85	0.73	0.47	0.27	0.17	0.11	0.17	-0.00	
11.58	12.71	2.75	33.07	18.91	15.19	10.89	7.96	4.01	7.96	-6.26	11.58
11.58	11.45	1.91	26.37	7.39	6.14	4.68	3.69	2.36	3.69	-3.06	
11.58	9.80	1.23	20.84	2.25	1.92	1.56	1.33	1.14	1.33	-1.16	
11.24	8.08	2.62	48.98	6.25	4.25	2.51	1.62	0.81	1.62	6.34	11.24
11.24	6.39	1.92	43.35	1.89	1.25	0.73	0.48	0.29	0.48	3.21	
11.24	4.90	1.27	38.19	0.46	0.30	0.18	0.12	0.09	0.12	1.21	
10.90	8.79	1.94	60.53	7.40	5.52	3.72	2.69	1.66	2.69	-1.07	10.90
10.90	6.71	1.46	56.70	2.17	1.55	1.00	0.72	0.53	0.72	-0.25	
10.90	4.35	1.10	53.79	0.38	0.24	0.14	0.10	0.08	0.10	0.02	
10.48	7.11	2.25	62.99	4.56	3.04	1.77	1.15	0.63	1.15	1.54	10.48
10.48	5.81	1.60	57.83	1.54	1.02	0.60	0.40	0.28	0.40	0.32	
10.48	4.40	1.09	53.73	0.39	0.25	0.15	0.10	0.09	0.10	-0.00	
10.16	5.87	1.64	112.54	3.17	2.09	1.23	0.82	0.55	0.82	0.32	10.16
10.16	4.94	1.16	93.28	1.06	0.70	0.42	0.30	0.25	0.30	0.11	
10.16	3.90	0.74	75.80	0.25	0.17	0.10	0.08	0.09	0.08	0.02	
9.84	5.90	1.63	112.29	3.20	2.12	1.25	0.84	0.57	0.84	-0.02	9.84
9.84	4.95	1.15	93.22	1.05	0.70	0.42	0.30	0.25	0.30	-0.00	
9.84	3.93	0.74	75.64	0.26	0.17	0.11	0.08	0.09	0.08	-0.00	
9.50	9.76	1.45	61.52	7.77	6.41	4.94	4.02	3.06	4.02	-3.18	9.50
9.50	8.26	0.93	53.04	2.47	2.09	1.71	1.50	1.53	1.50	-1.21	
9.50	6.29	0.52	46.44	0.49	0.42	0.36	0.35	0.52	0.35	-0.27	
8.75	6.85	1.77	71.05	3.55	2.45	1.51	1.04	0.67	1.04	2.98	8.75
8.75	5.67	1.15	61.90	1.08	0.76	0.49	0.36	0.31	0.36	1.15	
8.75	4.37	0.64	54.36	0.22	0.16	0.11	0.09	0.11	0.09	0.26	

NORTH DOMINGO BACA ARROYO, 100 YR., 10 YR., & 2 YR. EVENTS
SEDIMENT TRANSPORT RATE CALCULATIONS

SECNO	VCH (fps)	DEPTH (ft)	WIDTH (ft)	VERY FINE (1)	FINE (2)	MEDIUM (3)	COARSE (4)	VERY COARSE (5)	TOTAL Q (cfs)	DELTA Q (cfs)	SECNO
				C 1 5.85E-05 3.200	C 2 2.14E-05 0.837 3.590	C 3 6.47E-06 0.535 4.050	C 4 2.90E-06 0.239 4.360	C 5 2.37E-06 -0.440 4.440			
37.40	10.04	3.10	65.00	19.80	14.15	8.78	5.76	2.63	5.76		37.40
37.40	7.71	1.81	65.00	4.86	3.50	2.26	1.60	1.03	1.60		
37.40	5.16	0.81	65.00	0.58	0.42	0.29	0.23	0.25	0.23		
37.20	23.59	3.17	42.41	203.45	202.00	184.50	156.57	75.28	156.57	-150.81	37.20
37.20	21.82	2.00	33.04	76.49	80.89	81.91	77.77	50.80	77.77	-76.16	
37.20	18.61	1.08	25.67	18.82	21.19	24.03	26.06	25.54	26.06	-25.83	
37.08	22.08	3.31	43.50	176.63	169.42	148.15	121.61	56.48	121.61	34.96	37.08
37.08	19.07	2.18	34.46	56.70	55.91	51.85	46.02	28.05	46.02	31.75	
37.08	12.95	1.33	27.59	7.87	7.38	6.65	6.06	5.01	6.06	20.00	
36.98	21.04	3.41	44.33	159.10	148.85	126.17	101.14	45.85	101.14	20.47	36.98
36.98	17.34	2.32	35.55	46.03	43.19	37.62	31.83	18.46	31.83	14.19	
36.98	10.71	1.47	28.84	4.97	4.24	3.40	2.83	2.15	2.83	3.22	
36.81	19.59	3.58	45.60	136.98	123.42	99.76	77.09	33.62	77.09	24.04	36.81
36.81	15.32	2.52	37.07	35.19	30.94	24.83	19.73	10.71	19.73	12.10	
36.81	8.96	1.65	30.18	3.31	2.58	1.84	1.40	0.97	1.40	1.43	
36.56	17.98	3.95	42.73	108.06	92.30	69.62	50.89	20.62	50.89	26.21	36.56
36.56	13.85	2.75	35.53	26.75	22.21	16.57	12.44	6.31	12.44	7.29	
36.56	9.05	1.65	28.91	3.28	2.56	1.83	1.40	0.97	1.40	-0.00	
36.31	16.78	4.40	38.61	87.58	71.23	50.38	34.91	13.07	34.91	15.97	36.31
36.31	13.18	2.95	32.82	22.68	18.21	13.00	9.41	4.54	9.41	3.03	
36.31	8.98	1.67	27.70	3.10	2.41	1.71	1.30	0.89	1.30	0.10	
36.23	18.10	3.32	50.55	109.00	96.69	77.10	59.45	27.12	59.45	-24.54	36.23
36.23	13.87	2.34	44.19	28.26	24.26	19.02	14.98	8.48	14.98	-5.57	
36.23	8.50	1.50	36.17	3.04	2.36	1.69	1.30	0.96	1.30	-0.00	
36.10	25.75	3.24	33.97	220.65	225.70	213.20	184.72	88.12	184.72	-125.27	36.10
36.10	22.87	2.00	29.03	78.11	84.14	87.06	83.87	54.99	83.87	-68.89	
36.10	18.77	1.08	25.32	19.08	21.56	24.53	26.68	26.16	26.68	-25.37	
35.85	14.93	4.48	45.86	72.93	56.47	37.65	25.03	9.17	25.03	159.69	35.85
35.85	9.78	3.48	39.88	12.60	8.71	5.16	3.24	1.36	3.24	80.63	
35.85	6.61	2.02	31.12	1.59	1.06	0.62	0.40	0.24	0.40	26.28	
35.65	14.12	4.39	52.15	67.93	51.68	33.78	22.21	8.21	22.21	2.82	35.65
35.65	8.79	3.58	45.59	10.54	6.95	3.88	2.34	0.96	2.34	0.90	
35.65	6.84	1.95	32.50	1.79	1.21	0.72	0.48	0.29	0.48	-0.08	
35.39	12.60	4.71	54.74	53.28	38.23	23.22	14.43	5.04	14.43	7.78	35.39
35.39	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.76	
35.39	6.59	1.98	32.94	1.64	1.09	0.64	0.42	0.25	0.42	0.07	
35.13	10.49	5.29	59.29	36.23	23.63	12.74	7.23	2.30	7.23	7.20	35.13
35.13	9.62	3.38	44.02	12.79	8.84	5.24	3.30	1.42	3.30	-0.20	
35.13	6.52	2.01	33.05	1.61	1.06	0.62	0.40	0.24	0.40	0.02	
34.87	11.42	5.02	57.12	43.37	29.56	16.83	9.96	3.31	9.96	-2.73	34.87
34.87	8.80	3.58	45.58	10.58	6.97	3.90	2.35	0.96	2.35	0.95	
34.87	6.74	1.97	32.72	1.74	1.17	0.69	0.46	0.27	0.46	-0.06	
34.61	11.67	4.95	56.57	45.37	31.27	18.06	10.80	3.63	10.80	-0.84	34.61
34.61	9.45	3.42	44.31	12.31	8.43	4.94	3.09	1.31	3.09	-0.73	
34.61	6.56	2.00	32.99	1.63	1.08	0.63	0.41	0.24	0.41	0.05	
34.36	10.81	5.53	52.19	36.76	24.05	12.97	7.33	2.27	7.33	3.47	34.36
34.36	8.98	3.68	41.10	10.47	6.92	3.87	2.33	0.94	2.33	0.75	
34.36	6.83	1.98	30.87	1.72	1.16	0.69	0.46	0.27	0.46	-0.05	
34.11	11.44	5.76	44.06	38.82	25.74	14.07	8.00	2.42	8.00	-0.67	34.11
34.11	9.37	3.77	36.07	10.80	7.22	4.09	2.48	0.98	2.48	-0.15	
34.11	6.73	2.03	29.13	1.59	1.06	0.62	0.41	0.24	0.41	0.05	
34.03	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.09	34.03
34.03	12.60	2.48	45.15	22.55	18.43	13.59	10.21	5.51	10.21	-7.73	
34.03	8.43	1.52	36.26	3.01	2.32	1.65	1.26	0.92	1.26	-0.86	
33.90	24.70	3.34	34.36	201.62	201.66	185.18	156.96	73.10	156.96	-120.88	33.90
33.90	22.46	2.03	29.13	75.13	80.11	81.84	78.05	50.59	78.05	-67.84	
33.90	18.77	1.07	25.32	18.89	21.39	24.41	26.62	26.27	26.62	-25.35	
33.65	15.11	4.44	45.64	74.72	58.23	39.14	26.19	9.66	26.19	130.77	33.65
33.65	9.79	3.48	39.86	12.63	8.73	5.17	3.25	1.37	3.25	74.80	
33.65	6.58	2.03	31.16	1.58	1.04	0.61	0.40	0.23	0.40	26.22	
33.45	14.57	4.30	51.46	72.53	56.09	37.44	25.00	9.40	25.00	1.18	33.45
33.45	8.79	3.58	45.59	10.54	6.95	3.88	2.34	0.96	2.34	0.91	
33.45	6.84	1.95	32.57	1.79	1.21	0.73	0.48	0.29	0.48	-0.09	
33.19	12.90	4.65	54.20	56.13	40.75	25.11	15.78	5.57	15.78	9.22	33.19
33.19	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.76	
33.19	6.50	2.00	33.09	1.59	1.05	0.61	0.40	0.24	0.40	0.09	
32.93	10.48	5.29	59.30	36.12	23.56	12.69	7.20	2.29	7.20	8.58	32.93
32.93	9.60	3.38	44.05	12.72	8.78	5.20	3.28	1.40	3.28	-0.18	
32.93	6.64	1.99	32.87	1.68	1.12	0.66	0.43	0.26	0.43	-0.04	
32.67	11.45	5.01	57.05	43.59	29.75	16.97	10.05	3.34	10.05	-2.86	32.67
32.67	8.81	3.58	45.56	10.61	7.00	3.92	2.36	0.97	2.36	0.91	
32.67	6.70	1.97	32.77	1.71	1.14	0.68	0.45	0.27	0.45	-0.01	
32.41	11.74	4.93	56.44	45.95	31.77	18.42	11.05	3.72	11.05	-1.00	32.41
32.41	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.74	
32.41	6.57	2.00	32.98	1.64	1.09	0.63	0.41	0.25	0.41	0.03	
32.16	10.81	5.53	52.19	36.76	24.05	12.97	7.33	2.27	7.33	3.72	32.16
32.16	8.98	3.69	41.11	10.50	6.94	3.88	2.33	0.94	2.33	0.77	
32.16	6.82	1.98	30.88	1.71	1.15	0.69	0.46	0.27	0.46	-0.04	
31.91	11.43	5.77	44.07	38.79	25.71	14.04	7.97	2.41	7.97	-0.64	31.91
31.91	9.39	3.76	36.05	10.83	7.25	4.12	2.50	0.99	2.50	-0.16	
31.91	6.73	2.03	29.12	1.59	1.06	0.62	0.41	0.24	0.41	0.05	
31.83	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.11	31.83
31.83	12.61	2.48	45.15	22.61	18.48	13.63	10.24	5.53	10.24	-7.75	
31.83	8.43	1.52	36.26	3.01	2.32	1.65	1.26	0.92	1.26	-0.86	
31.70	24.70	3.34	34.36	201.62	201.66	185.18	156.96	73.10	156.96	-120.88	31.70
31.70	22.46	2.03	29.13	75.13	80.11	81.84	78.05	50.59	78.05	-67.81	
31.70	18.77	1.07	25.32	18.89	21.39	24.41	26.62	26.27	26.62	-25.35	
31.45	14.50	4.56	46.37	68.41	52.18	34.14	22.37	8.08	22.37	134.59	31.45
31.45	9.79	3.48	39.86	12.63	8.73	5.17	3.25	1.37	3.25	74.80	
31.45	6.58	2.03	31.16	1.58	1.04	0.61	0.40	0.23	0.40	26.22	
31.25	13.25	4.57	53.58	59.37	43.70	27.41	17.46	6.25	17.46	4.91	31.25
31.25	8.79	3.58	45.59	10.54	6.95	3.88	2.34	0.96	2.34	0.91	
31.25	6.84	1.95	32.58	1.79	1.21	0.73	0.48	0.29	0.48	-0.09	
30.99	10.45	5.31	59.36	35.97	23.41	12.58	7.12	2.26	7.12	10.34	30.99
30.99	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.76	
30.99	6.50	2.00	33.08	1.59	1.05	0.61	0.40	0.24	0.40	0.09	
30.73	11.47	5.00	57.00	43.71	29.86	17.06	10.12	3.37	10.12	-3.00	30.73
30.73	9.53	3.41	44.17	12.57	8.64	5.09	3.19	1.36	3.19	-0.09	
30.73	6.65	1.98	32.86	1.68	1.12	0.66	0.43	0.26	0.43	-0.04	

SECNO	VCH (fps)	DEPTH (ft)	WIDTH (ft)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	TOTAL Q (cfs)	DELTA Q (cfs)	SECNO
30.47	11.75	4.92	56.41	45.95	31.80	18.46	11.08	3.74	11.08	-0.96	30.47
30.47	9.61	3.38	44.04	12.76	8.81	5.22	3.29	1.41	3.29	-0.10	
30.47	6.57	2.01	32.97	1.65	1.09	0.63	0.41	0.25	0.41	0.02	
30.21	11.84	4.91	56.23	46.84	32.52	18.95	11.41	3.86	11.41	-0.33	30.21
30.21	9.51	3.41	44.21	12.50	8.58	5.05	3.16	1.35	3.16	0.13	
30.21	6.74	1.97	32.71	1.74	1.17	0.69	0.46	0.27	0.46	-0.04	
29.96	10.80	5.53	52.21	36.67	23.98	12.92	7.30	2.26	7.30	4.11	29.96
29.96	8.98	3.69	41.11	10.50	6.94	3.88	2.33	0.94	2.33	0.83	
29.96	6.69	2.01	31.03	1.64	1.09	0.64	0.42	0.25	0.42	0.04	
29.71	11.43	5.77	44.00	38.72	25.67	14.02	7.96	2.40	7.96	-0.66	29.71
29.71	9.39	3.76	36.05	10.83	7.25	4.12	2.50	0.99	2.50	-0.16	
29.71	6.82	2.01	29.06	1.64	1.10	0.65	0.43	0.26	0.43	-0.01	
29.63	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.12	29.63
29.63	12.61	2.48	45.15	22.61	18.48	13.63	10.24	5.53	10.24	-7.75	
29.63	8.42	1.52	36.26	3.00	2.31	1.64	1.26	0.92	1.26	-0.83	
29.50	24.70	3.34	34.36	201.62	201.66	185.18	156.96	73.10	156.96	-120.88	29.50
29.50	22.46	2.03	29.13	75.13	80.11	81.84	78.05	50.59	78.05	-67.81	
29.50	18.77	1.07	25.32	18.89	21.39	24.41	26.62	26.27	26.62	-25.36	
29.25	14.50	4.56	46.37	68.41	52.18	34.14	22.37	8.08	22.37	134.59	29.25
29.25	9.79	3.48	39.86	12.63	8.73	5.17	3.25	1.37	3.25	74.80	
29.25	6.58	2.03	31.16	1.58	1.04	0.61	0.40	0.23	0.40	26.22	
29.05	13.25	4.57	53.58	59.37	43.70	27.41	17.46	6.25	17.46	4.91	29.05
29.05	8.79	3.58	45.59	10.54	6.95	3.88	2.34	0.96	2.34	0.91	
29.05	6.84	1.95	32.58	1.79	1.21	0.73	0.48	0.29	0.48	-0.09	
28.79	10.45	5.31	59.36	35.97	23.41	12.58	7.12	2.26	7.12	10.34	28.79
28.79	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.76	
28.79	6.50	2.00	33.08	1.59	1.05	0.61	0.40	0.24	0.40	0.09	
28.53	11.47	5.00	57.00	43.71	29.86	17.06	10.12	3.37	10.12	-3.00	28.53
28.53	9.53	3.41	44.17	12.57	8.64	5.09	3.19	1.36	3.19	-0.09	
28.53	6.65	1.98	32.86	1.68	1.12	0.66	0.43	0.26	0.43	-0.04	
28.27	11.75	4.92	56.41	45.95	31.80	18.46	11.08	3.74	11.08	-0.96	28.27
28.27	9.61	3.38	44.04	12.76	8.81	5.22	3.29	1.41	3.29	-0.10	
28.27	6.57	2.01	32.97	1.65	1.09	0.63	0.41	0.25	0.41	0.02	
28.01	11.84	4.91	56.23	46.84	32.52	18.95	11.41	3.86	11.41	-0.33	28.01
28.01	9.51	3.41	44.21	12.50	8.58	5.05	3.16	1.35	3.16	0.13	
28.01	6.74	1.97	32.71	1.74	1.17	0.69	0.46	0.27	0.46	-0.04	
27.76	10.80	5.53	52.21	36.67	23.98	12.92	7.30	2.26	7.30	4.11	27.76
27.76	8.98	3.69	41.11	10.50	6.94	3.88	2.33	0.94	2.33	0.83	
27.76	6.69	2.01	31.03	1.64	1.09	0.64	0.42	0.25	0.42	0.04	
27.51	11.43	5.77	44.07	38.79	25.71	14.04	7.97	2.41	7.97	-0.67	27.51
27.51	9.39	3.76	36.05	10.83	7.25	4.12	2.50	0.99	2.50	-0.16	
27.51	6.72	2.03	29.13	1.58	1.05	0.62	0.41	0.24	0.41	0.02	
27.43	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.11	27.43
27.43	12.61	2.48	45.15	22.61	18.48	13.63	10.24	5.53	10.24	-7.75	
27.43	8.41	1.52	36.28	2.99	2.30	1.63	1.25	0.91	1.25	-0.85	
27.26	26.79	3.15	33.61	240.65	251.41	243.93	215.74	105.23	215.74	-179.65	27.26
27.26	24.33	1.93	28.70	90.71	100.82	108.50	107.67	72.69	107.67	-97.43	
27.26	20.01	1.04	25.17	22.37	26.12	30.97	34.74	35.13	34.74	-33.48	
27.01	14.62	4.54	46.23	69.70	53.39	35.11	23.10	8.37	23.10	192.64	27.01
27.01	9.85	3.46	39.77	12.77	8.86	5.28	3.33	1.41	3.33	104.35	
27.01	6.59	2.02	31.15	1.58	1.05	0.61	0.40	0.23	0.40	34.34	
26.81	13.42	4.53	53.28	60.94	45.16	28.57	18.31	6.60	18.31	4.78	26.81
26.81	8.79	3.56	45.60	10.48	6.92	3.87	2.34	0.96	2.34	0.99	
26.81	6.88	1.93	32.52	1.81	1.23	0.74	0.50	0.30	0.50	-0.10	
26.59	12.16	4.83	55.59	49.57	34.90	20.69	12.62	4.32	12.62	5.69	26.59
26.59	9.46	3.40	44.30	12.28	8.42	4.94	3.10	1.32	3.10	-0.76	
26.59	6.49	2.01	33.10	1.59	1.05	0.61	0.39	0.23	0.39	0.10	
26.33	11.94	4.88	56.02	47.63	33.22	19.47	11.78	4.00	11.78	0.85	26.33
26.33	8.83	3.57	45.52	10.65	7.03	3.94	2.38	0.98	2.38	0.71	
26.33	6.73	1.97	32.74	1.73	1.16	0.69	0.45	0.27	0.45	-0.06	
26.07	11.97	4.88	55.96	47.96	33.49	19.65	11.89	4.04	11.89	-0.12	26.07
26.07	9.54	3.39	44.16	12.54	8.63	5.09	3.20	1.37	3.20	-0.82	
26.07	6.56	2.00	32.99	1.63	1.08	0.63	0.41	0.24	0.41	0.04	
25.81	11.96	4.88	55.99	47.86	33.40	19.59	11.86	4.03	11.86	0.04	25.81
25.81	9.48	3.42	44.27	12.43	8.52	5.00	3.13	1.33	3.13	0.07	
25.81	6.71	1.98	32.77	1.72	1.15	0.68	0.45	0.27	0.45	-0.04	
25.56	10.79	5.54	52.23	36.64	23.94	12.89	7.28	2.25	7.28	4.58	25.56
25.56	8.96	3.69	41.13	10.43	6.89	3.85	2.31	0.93	2.31	0.81	
25.56	6.71	2.01	31.00	1.66	1.11	0.65	0.43	0.25	0.43	0.02	
25.31	11.43	5.77	44.07	38.79	25.71	14.04	7.97	2.41	7.97	-0.69	25.31
25.31	9.39	3.76	36.05	10.83	7.25	4.12	2.50	0.99	2.50	-0.19	
25.31	7.24	1.92	28.73	1.87	1.30	0.80	0.55	0.34	0.55	-0.12	
25.23	15.81	3.63	52.6	80.73	66.71	48.65	35.04	14.88	35.04	-27.07	25.23
25.23	12.45	2.50	45.28	21.95	17.83	13.04	9.74	5.23	9.74	-7.24	
25.23	8.23	1.53	36.51	2.82	2.16	1.51	1.15	0.83	1.15	-0.60	
25.06	26.74	3.16	33.63	240.15	250.55	242.64	214.28	104.28	214.28	-179.24	25.06
25.06	24.30	1.93	28.71	90.39	100.41	108.00	107.13	72.31	107.13	-97.40	
25.06	20.00	1.05	25.18	22.57	26.30	31.08	34.75	34.92	34.75	-33.61	
24.81	13.87	4.70	47.19	62.32	46.44	29.49	18.89	6.66	18.89	195.38	24.81
24.81	9.85	3.46	39.77	12.77	8.86	5.28	3.33	1.41	3.33	103.80	
24.81	6.60	2.02	31.13	1.59	1.05	0.61	0.40	0.24	0.40	34.35	
24.61	12.35	4.77	55.21	51.07	36.26	21.74	13.37	4.63	13.37	5.52	24.61
24.61	8.81	3.56	45.56	10.55	6.97	3.91	2.36	0.97	2.36	0.97	
24.61	6.85	1.95	32.56	1.80	1.22	0.73	0.49	0.30	0.49	-0.09	
24.39	10.51	5.28	59.23	36.34	23.73	12.81	7.28	2.32	7.28	6.10	24.39
24.39	9.35	3.45	44.51	12.07	8.21	4.77	2.97	1.25	2.97	-0.61	
24.39	6.60	1.98	32.94	1.64	1.09	0.64	0.42	0.25	0.42	0.07	
24.13	11.39	5.03	57.18	43.14	29.36	16.69	9.86	3.27	9.86	-2.58	24.13
24.13	9.61	3.37	44.02	12.71	8.78	5.21	3.29	1.41	3.29	-0.32	
24.13	6.51	2.02	33.07	1.61	1.06	0.61	0.40	0.24	0.40	0.02	
23.87	11.70	4.94	56.52	45.61	31.48	18.21	10.91	3.67	10.91	-1.05	23.87
23.87	8.81	3.58	45.56	10.61	7.00	3.92	2.36	0.97	2.36	0.92	
23.87	6.77	1.96	32.68	1.75	1.18	0.70	0.47	0.28	0.47	-0.07	
23.61	11.86	4.90	56.19	46.96	32.64	19.05	11.48	3.89	11.48	-0.58	23.61
23.61	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.74	
23.61	6.57	1.99	32.97	1.63	1.08	0.63	0.41	0.25	0.41	0.05	
23.36	10.79	5.54	52.23	36.64	23.94	12.89	7.28	2.25	7.28	4.20	23.36
23.36	8.97	3.69	41.13	10.47	6.91	3.87	2.32	0.93	2.32	0.78	
23.36	6.65	2.01	31.07	1.61	1.07	0.63	0.41	0.24	0.41	0.00	
23.11	11.43	5.77	44.07	38.79	25.71	14.04	7.97	2.41	7.97	-0.69	23.11
23.11	9.37	3.77	36.07	10.80	7.22	4.09	2.48	0.98	2.48	-0.15	
23.11	6.82	2.01	29.05	1.64	1.10	0.65	0.43	0.25	0.43	-0.02	
23.03	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.11	23.03
23.03	12.60	2.48	45.15	22.55	18.43	13.59	10.21	5.51	10.21	-7.73	
23.03	8.40	1.52	36.29	2.98	2.29	1.63	1.25	0.91	1.25	-0.82	

SECNO	VCH (fps)	DEPTH (ft)	WIDTH (ft)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	TOTAL Q (cfs)	DELTA Q (cfs)	SECNO
22.90	24.70	3.34	34.36	201.62	201.66	185.18	156.96	73.10	156.96	-120.88	22.90
22.90	22.46	2.03	29.13	75.13	80.11	81.84	78.05	50.59	78.05	-67.81	
22.90	18.77	1.07	25.32	18.89	21.39	24.41	26.62	26.27	26.62	-25.36	
22.65	14.50	4.56	46.37	68.41	52.18	34.14	22.37	8.08	22.37	134.59	22.65
22.65	9.79	3.48	39.86	12.63	8.73	5.17	3.25	1.37	3.25	74.80	
22.65	6.60	2.02	31.14	1.59	1.05	0.61	0.40	0.24	0.40	26.22	
22.45	13.25	4.57	53.58	59.37	43.70	27.41	17.46	6.25	17.46	4.91	22.45
22.45	8.79	3.58	45.59	10.54	6.95	3.88	2.34	0.96	2.34	0.91	
22.45	6.84	1.95	32.57	1.79	1.21	0.73	0.48	0.29	0.48	-0.09	
22.19	10.45	5.31	59.36	35.97	23.41	12.58	7.12	2.26	7.12	10.34	22.19
22.19	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.76	
22.19	6.50	2.00	33.08	1.59	1.05	0.61	0.40	0.24	0.40	0.09	
21.93	11.47	5.00	57.00	43.71	29.86	17.06	10.12	3.37	10.12	-3.00	21.93
21.93	9.53	3.41	44.17	12.57	8.64	5.09	3.19	1.36	3.19	-0.09	
21.93	6.65	1.98	32.86	1.68	1.12	0.66	0.43	0.26	0.43	-0.04	
21.67	11.75	4.92	56.41	45.95	31.80	18.46	11.08	3.74	11.08	-0.96	21.67
21.67	9.61	3.38	44.04	12.76	8.81	5.22	3.29	1.41	3.29	-0.10	
21.67	6.63	1.99	32.88	1.67	1.11	0.65	0.43	0.26	0.43	0.00	
21.41	11.84	4.91	56.23	46.84	32.52	18.95	11.41	3.86	11.41	-0.33	21.41
21.41	9.51	3.41	44.21	12.50	8.58	5.05	3.16	1.35	3.16	0.13	
21.41	6.77	1.96	32.68	1.75	1.18	0.70	0.47	0.28	0.47	-0.04	
21.16	10.80	5.53	52.21	36.67	23.98	12.92	7.30	2.26	7.30	4.11	21.16
21.16	8.98	3.69	41.11	10.50	6.94	3.88	2.33	0.94	2.33	0.83	
21.16	6.71	2.00	31.00	1.65	1.10	0.65	0.43	0.25	0.43	0.04	
20.91	11.43	5.77	44.07	38.79	25.71	14.04	7.97	2.41	7.97	-0.67	20.91
20.91	9.39	3.76	36.05	10.83	7.25	4.12	2.50	0.99	2.50	-0.16	
20.91	6.72	2.03	29.13	1.58	1.05	0.62	0.41	0.24	0.41	0.02	
20.83	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.11	20.83
20.83	12.61	2.48	45.15	22.61	18.48	13.63	10.24	5.53	10.24	-7.75	
20.83	8.42	1.52	36.27	3.00	2.31	1.64	1.26	0.92	1.26	-0.85	
20.70	24.70	3.34	34.36	201.62	201.66	185.18	156.96	73.10	156.96	-120.88	20.70
20.70	22.46	2.03	29.13	75.13	80.11	81.84	78.05	50.59	78.05	-67.81	
20.70	18.77	1.07	25.32	18.89	21.39	24.41	26.62	26.27	26.62	-25.36	
20.45	14.50	4.56	46.37	68.41	52.18	34.14	22.37	8.08	22.37	134.59	20.45
20.45	9.79	3.48	39.86	12.63	8.73	5.17	3.25	1.37	3.25	74.80	
20.45	6.58	2.03	31.16	1.58	1.04	0.61	0.40	0.23	0.40	26.22	
20.25	13.25	4.57	53.58	59.37	43.70	27.41	17.46	6.25	17.46	4.91	20.25
20.25	8.79	3.58	45.59	10.54	6.95	3.88	2.34	0.96	2.34	0.91	
20.25	6.84	1.95	32.58	1.79	1.21	0.73	0.48	0.29	0.48	-0.09	
19.99	10.45	5.31	59.36	35.97	23.41	12.58	7.12	2.26	7.12	10.34	19.99
19.99	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.76	
19.99	6.50	2.00	33.08	1.59	1.05	0.61	0.40	0.24	0.40	0.09	
19.73	11.47	5.00	57.00	43.71	29.86	17.06	10.12	3.37	10.12	-3.00	19.73
19.73	9.53	3.41	44.17	12.57	8.64	5.09	3.19	1.36	3.19	-0.09	
19.73	6.65	1.98	32.86	1.68	1.12	0.66	0.43	0.26	0.43	-0.04	
19.47	11.75	4.92	56.41	45.95	31.80	18.46	11.08	3.74	11.08	-0.96	19.47
19.47	9.61	3.38	44.04	12.76	8.81	5.22	3.29	1.41	3.29	-0.10	
19.47	6.57	2.01	32.97	1.65	1.09	0.63	0.41	0.25	0.41	0.02	
19.21	11.84	4.91	56.23	46.84	32.52	18.95	11.41	3.86	11.41	-0.33	19.21
19.21	9.51	3.41	44.21	12.50	8.58	5.05	3.16	1.35	3.16	0.13	
19.21	6.74	1.97	32.71	1.74	1.17	0.69	0.46	0.27	0.46	-0.04	
18.96	10.80	5.53	52.21	36.67	23.98	12.92	7.30	2.26	7.30	4.11	18.96
18.96	8.98	3.69	41.11	10.50	6.94	3.88	2.33	0.94	2.33	0.83	
18.96	6.69	2.01	31.03	1.64	1.09	0.64	0.42	0.25	0.42	0.04	
18.71	11.43	5.77	44.07	38.79	25.71	14.04	7.97	2.41	7.97	-0.67	18.71
18.71	9.39	3.76	36.05	10.83	7.25	4.12	2.50	0.99	2.50	-0.16	
18.71	6.81	2.01	29.06	1.63	1.09	0.65	0.43	0.25	0.43	-0.01	
18.63	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.11	18.63
18.63	12.61	2.48	45.15	22.61	18.48	13.63	10.24	5.53	10.24	-7.75	
18.63	8.42	1.52	36.27	3.00	2.31	1.64	1.26	0.92	1.26	-0.83	
18.50	24.70	3.34	34.36	201.62	201.66	185.18	156.96	73.10	156.96	-120.88	18.50
18.50	22.46	2.03	29.13	75.13	80.11	81.84	78.05	50.59	78.05	-67.81	
18.50	18.77	1.07	25.32	18.89	21.39	24.41	26.62	26.27	26.62	-25.36	
18.25	14.50	4.56	46.37	68.41	52.18	34.14	22.37	8.08	22.37	134.59	18.25
18.25	9.79	3.48	39.86	12.63	8.73	5.17	3.25	1.37	3.25	74.80	
18.25	6.58	2.03	31.16	1.58	1.04	0.61	0.40	0.23	0.40	26.22	
18.05	13.25	4.57	53.58	59.37	43.70	27.41	17.46	6.25	17.46	4.91	18.05
18.05	8.79	3.58	45.59	10.54	6.95	3.88	2.34	0.96	2.34	0.91	
18.05	6.84	1.95	32.58	1.79	1.21	0.73	0.48	0.29	0.48	-0.09	
17.79	10.45	5.31	59.36	35.97	23.41	12.58	7.12	2.26	7.12	10.34	17.79
17.79	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.76	
17.79	6.50	2.00	33.08	1.59	1.05	0.61	0.40	0.24	0.40	0.09	
17.53	11.47	5.00	57.00	43.71	29.86	17.06	10.12	3.37	10.12	-3.00	17.53
17.53	9.53	3.41	44.17	12.57	8.64	5.09	3.19	1.36	3.19	-0.09	
17.53	6.65	1.98	32.86	1.68	1.12	0.66	0.43	0.26	0.43	-0.04	
17.27	11.75	4.92	56.41	45.95	31.80	18.46	11.08	3.74	11.08	-0.96	17.27
17.27	9.61	3.38	44.04	12.76	8.81	5.22	3.29	1.41	3.29	-0.10	
17.27	6.57	2.01	32.97	1.65	1.09	0.63	0.41	0.25	0.41	0.02	
17.01	11.84	4.91	56.23	46.84	32.52	18.95	11.41	3.86	11.41	-0.33	17.01
17.01	9.51	3.41	44.21	12.50	8.58	5.05	3.16	1.35	3.16	0.13	
17.01	6.74	1.97	32.71	1.74	1.17	0.69	0.46	0.27	0.46	-0.04	
16.76	10.80	5.53	52.21	36.67	23.98	12.92	7.30	2.26	7.30	4.11	16.76
16.76	8.98	3.69	41.11	10.50	6.94	3.88	2.33	0.94	2.33	0.83	
16.76	6.69	2.01	31.03	1.64	1.09	0.64	0.42	0.25	0.42	0.04	
16.51	11.43	5.77	44.07	38.79	25.71	14.04	7.97	2.41	7.97	-0.67	16.51
16.51	9.39	3.76	36.05	10.83	7.25	4.12	2.50	0.99	2.50	-0.16	
16.51	6.81	2.01	29.06	1.63	1.09	0.65	0.43	0.25	0.43	-0.01	
16.43	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.11	16.43
16.43	12.61	2.48	45.15	22.61	18.48	13.63	10.24	5.53	10.24	-7.75	
16.43	8.42	1.52	36.27	3.00	2.31	1.64	1.26	0.92	1.26	-0.83	
16.30	24.70	3.34	34.36	201.62	201.66	185.18	156.96	73.10	156.96	-120.88	16.30
16.30	22.46	2.03	29.13	75.13	80.11	81.84	78.05	50.59	78.05	-67.81	
16.30	18.77	1.07	25.32	18.89	21.39	24.41	26.62	26.27	26.62	-25.36	
16.05	14.50	4.56	46.37	68.41	52.18	34.14	22.37	8.08	22.37	134.59	16.05
16.05	9.79	3.48	39.86	12.63	8.73	5.17	3.25	1.37	3.25	74.80	
16.05	6.58	2.03	31.16	1.58	1.04	0.61	0.40	0.23	0.40	26.22	
15.85	13.24	4.57	53.59	59.24	43.59	27.33	17.40	6.23	17.40	4.97	15.85
15.85	8.79	3.58	45.59	10.54	6.95	3.88	2.34	0.96	2.34	0.91	
15.85	6.84	1.95	32.57	1.79	1.21	0.73	0.48	0.29	0.48	-0.09	
15.59	10.46	5.30	59.35	36.00	23.45	12.62	7.15	2.27	7.15	10.26	15.59
15.59	9.46	3.42	44.30	12.35	8.46	4.96	3.10	1.32	3.10	-0.76	
15.59	6.49	2.00	33.09	1.58	1.04	0.60	0.39	0.23	0.39	0.09	
15.33	11.47	5.00	57.01	43.72	29.87	17.06	10.12	3.37	10.12	-2.97	15.33
15.33	9.60	3.38	44.05	12.72	8.78	5.20	3.28	1.40	3.28	-0.18	
15.33	6.67	1.98	32.83	1.69	1.13	0.67	0.44	0.26	0.44	-0.05	

SECNO	VCH (fps)	DEPTH (ft)	WIDTH (ft)	Q(1) (cfs)	Q(2) (cfs)	Q(3) (cfs)	Q(4) (cfs)	Q(5) (cfs)	TOTAL Q (cfs)	DELTA Q (cfs)	SECNO
15.07	11.77	4.92	56.38	46.18	31.97	18.57	11.16	3.76	11.16	-1.04	15.07
15.07	8.81	3.58	45.56	10.61	7.00	3.92	2.36	0.97	2.36	0.91	
15.07	6.51	2.02	33.07	1.61	1.06	0.61	0.40	0.24	0.40	0.04	
14.81	11.84	4.91	56.23	46.84	32.52	18.95	11.41	3.86	11.41	-0.26	14.81
14.81	9.47	3.42	44.27	12.39	8.48	4.98	3.11	1.32	3.11	-0.75	
14.81	6.76	1.97	32.69	1.75	1.18	0.70	0.46	0.28	0.46	-0.06	
14.56	10.79	5.54	52.23	36.64	23.94	12.89	7.28	2.25	7.28	4.13	14.56
14.56	8.98	3.69	41.11	10.50	6.94	3.88	2.33	0.94	2.33	0.78	
14.56	6.68	2.01	31.04	1.64	1.09	0.64	0.42	0.25	0.42	0.04	
14.31	11.43	5.77	44.07	38.79	25.71	14.04	7.97	2.41	7.97	-0.69	14.31
14.31	9.39	3.76	36.05	10.83	7.25	4.12	2.50	0.99	2.50	-0.16	
14.31	6.81	2.01	29.06	1.63	1.09	0.65	0.43	0.25	0.43	-0.01	
14.23	15.93	3.61	52.48	82.04	68.08	49.90	36.08	15.39	36.08	-28.11	14.23
14.23	12.61	2.48	45.15	22.61	18.48	13.63	10.24	5.53	10.24	-7.75	
14.23	8.42	1.52	36.27	3.00	2.31	1.64	1.26	0.92	1.26	-0.83	
14.07	11.63	5.70	43.80	40.23	26.91	14.87	8.52	-2.60	8.52	27.56	14.07
14.07	9.53	3.72	35.89	11.18	7.55	4.33	2.65	1.06	2.65	7.60	
14.07	17.10	1.13	25.54	14.97	16.16	17.38	18.12	17.10	18.12	-16.86	
13.80	12.11	5.54	43.15	43.80	29.94	17.00	9.94	3.10	9.94	-1.42	13.80
13.80	9.99	3.60	35.40	12.40	8.58	5.08	3.18	1.31	3.18	-0.53	
13.80	6.75	2.03	29.11	1.60	1.07	0.63	0.41	0.24	0.41	17.71	
13.55	14.72	4.28	51.25	74.28	57.73	38.77	26.01	9.82	26.01	-16.06	13.55
13.55	11.33	3.04	41.34	18.17	13.67	9.02	6.17	2.88	6.17	-2.99	
13.55	7.32	1.87	31.93	2.09	1.46	0.92	0.63	0.40	0.63	-0.22	
13.27	12.63	4.71	54.69	53.64	38.52	23.42	14.56	5.09	14.56	11.44	13.27
13.27	8.80	3.57	45.57	10.54	6.96	3.89	2.35	0.96	2.35	3.82	
13.27	6.45	2.02	33.16	1.57	1.03	0.59	0.39	0.23	0.39	0.25	
13.01	10.49	5.29	59.27	36.21	23.62	12.73	7.22	2.30	7.22	7.34	13.01
13.01	9.43	3.43	44.36	12.28	8.39	4.91	3.06	1.30	3.06	-0.71	
13.01	6.81	1.95	32.63	1.77	1.20	0.71	0.48	0.29	0.48	-0.09	
12.75	11.43	5.02	57.10	43.48	29.64	16.89	9.99	3.32	9.99	-2.77	12.75
12.75	9.55	3.40	44.13	12.61	8.67	5.12	3.21	1.37	3.21	-0.15	
12.75	6.47	2.02	33.13	1.58	1.04	0.60	0.39	0.23	0.39	0.09	
12.49	11.76	4.93	56.39	46.16	31.94	18.53	11.12	3.75	11.12	-1.13	12.49
12.49	9.75	3.34	43.78	13.12	9.13	5.47	3.47	1.50	3.47	-0.26	
12.49	6.78	1.97	32.67	1.77	1.19	0.71	0.47	0.28	0.47	-0.08	
12.23	11.90	4.89	56.11	47.30	32.93	19.26	11.63	3.94	11.63	-0.51	12.23
12.23	8.81	3.56	45.56	10.55	6.97	3.91	2.36	0.97	2.36	1.11	
12.23	6.58	2.00	32.96	1.65	1.09	0.64	0.42	0.25	0.42	0.05	
11.97	11.92	4.89	56.07	47.52	33.11	19.38	11.71	3.97	11.71	-0.08	11.97
11.97	9.48	3.40	44.27	12.35	8.47	4.98	3.12	1.33	3.12	-0.76	
11.97	6.72	1.97	32.76	1.72	1.15	0.68	0.45	0.27	0.45	-0.04	
11.71	12.04	4.85	55.82	48.43	33.93	20.00	12.15	4.15	12.15	-0.44	11.71
11.71	9.55	3.39	44.13	12.57	8.65	5.11	3.21	1.37	3.21	-0.09	
11.71	6.69	1.98	32.8	1.71	1.14	0.67	0.44	0.27	0.44	0.01	
11.45	10.53	5.28	59.19	36.54	23.88	12.90	7.33	2.34	7.33	4.82	11.45
11.45	9.55	3.40	44.13	12.61	8.67	5.12	3.21	1.37	3.21	-0.00	
11.45	6.62	2.00	32.90	1.68	1.11	0.65	0.43	0.25	0.43	0.02	
11.19	11.56	4.98	56.82	44.49	30.52	17.51	10.42	3.48	10.42	-3.09	11.19
11.19	9.76	3.33	43.75	13.11	9.14	5.48	3.49	1.51	3.49	-0.27	
11.19	6.86	1.94	32.54	1.80	1.22	0.73	0.49	0.30	0.49	-0.06	
10.93	11.72	4.94	56.48	45.82	31.65	18.33	10.98	3.69	10.98	-0.56	10.93
10.93	8.78	3.57	45.63	10.48	6.91	3.86	2.33	0.95	2.33	1.16	
10.93	6.47	2.02	33.13	1.58	1.04	0.60	0.39	0.23	0.39	0.10	
10.67	15.38	3.00	62.08	71.54	60.80	46.38	35.04	16.90	35.04	-24.06	10.67
10.67	12.31	2.01	54.13	20.17	17.05	13.25	10.52	6.54	10.52	-8.19	
10.67	8.23	1.21	47.71	2.89	2.32	1.74	1.42	1.21	1.42	-1.03	
10.42	14.65	2.65	72.25	62.64	53.56	41.48	32.02	16.74	32.02	3.01	10.42
10.42	10.43	1.91	66.36	13.80	11.05	8.08	6.18	3.93	6.18	4.33	
10.42	5.21	1.38	62.00	1.00	0.65	0.38	0.26	0.19	0.26	1.16	
10.16	13.61	2.47	82.79	52.71	44.43	33.97	26.17	14.26	26.17	5.85	10.16
10.16	9.29	1.83	77.71	10.67	8.24	5.78	4.33	2.80	4.33	1.86	
10.16	5.84	1.15	72.24	1.39	0.98	0.64	0.48	0.41	0.48	-0.22	
9.94	15.33	1.92	106.66	76.48	71.06	61.93	53.34	34.83	53.34	-27.17	9.94
9.94	11.77	1.36	87.50	18.82	16.92	14.49	12.73	10.29	12.73	-8.41	
9.94	8.77	0.75	65.94	2.98	2.69	2.41	2.31	2.73	2.31	-1.83	
9.57	11.29	2.33	118.45	39.03	30.95	22.10	16.35	9.13	16.35	36.99	9.57
9.57	6.49	1.99	108.95	5.18	3.42	1.98	1.30	0.77	1.30	11.44	
9.57	4.87	1.09	78.58	0.80	0.53	0.32	0.23	0.20	0.23	2.08	
8.65	9.52	2.57	165.10	34.90	25.39	16.27	11.09	5.72	11.09	5.26	8.65
8.65	7.80	1.84	119.87	9.46	6.81	4.41	3.12	1.99	3.12	-1.82	
8.65	5.67	1.04	74.12	1.16	0.83	0.55	0.42	0.38	0.42	-0.19	
7.70	8.34	3.73	131.02	26.72	17.11	9.22	5.40	2.14	5.40	5.69	7.70
7.70	7.05	2.57	92.78	7.50	4.85	2.71	1.68	0.85	1.68	1.44	
7.70	5.59	1.31	51.86	0.99	0.67	0.41	0.29	0.23	0.29	0.13	
5.90	8.59	3.59	183.44	39.51	25.80	14.26	8.53	3.47	8.53	-3.12	5.90
5.90	6.49	2.81	131.31	8.94	5.50	2.88	1.70	0.80	1.70	-0.01	
5.90	5.72	1.56	47.53	1.17	0.77	0.46	0.31	0.21	0.31	-0.02	
4.30	9.29	3.52	120.65	32.71	22.11	12.74	7.85	3.26	7.85	0.67	4.30
4.30	7.57	2.36	78.38	7.28	4.93	2.92	1.90	1.02	1.90	-0.20	
4.30	5.53	1.20	51.92	0.87	0.60	0.38	0.27	0.23	0.27	0.04	

General scour - degradation sediment carrying capacity at North Domingo Baca

2 year (dominant discharge)

6 cfs is consistent capacity except at very bottom of drops where 45 cfs $\pm$ is expected.

For portion of arroyo upstream of project:

$$qs \text{ (very fine)} = 5.85 \times 10^{-5} (0.86)^{1.04} (5.19)^{3.20} = 0.010$$

$$qs \text{ (fine)} = 2.14 \times 10^{-5} (0.86)^{0.837} (5.19)^{3.59} = 0.007$$

$$qs \text{ (medium)} = 6.47 \times 10^{-6} (0.86)^{0.635} (5.19)^{4.02} = 0.005$$

$$qs \text{ (coarse)} = 2.90 \times 10^{-6} (0.86)^{0.239} (5.19)^{4.36} = 0.005$$

$$qs \text{ (very coarse)} = 2.37 \times 10^{-6} (0.86)^{-0.44} (5.19)^{4.44} = 0.004$$

$$\Sigma = 0.031$$

which equates to = 2.014 cfs

Because of consistency, it is reasonable to say that flow approaches normal very soon.

$Q_z \approx 200$ cfs

$dn = 1.91'$

$V_n = 4.02$ fps

$FF = 0.64$

$WP = 40.80'$

$AREA = 49.71$ ft²

$$qs \text{ (very fine)} = 5.85 \times 10^{-5} (1.91)^{1.04} (4.02)^{3.20} = 0.010$$

$$qs \text{ (fine)} = 2.14 \times 10^{-5} (1.91)^{0.837} (4.02)^{3.59} = 0.005$$

$$qs \text{ (medium)} = 6.47 \times 10^{-6} (1.91)^{0.635} (4.02)^{4.05} = 0.003$$

$$qs \text{ (coarse)} = 2.90 \times 10^{-6} (1.91)^{0.239} (4.02)^{4.36} = 0.001$$

$$qs \text{ (very coarse)} = 2.37 \times 10^{-6} (1.91)^{-0.44} (4.02)^{4.44} = 0.001$$

$$\Sigma = 0.020 \text{ cfs/ft}$$

which equates to = 0.816 cfs

By interpolation - Equivalent slope = .011% . . . results in 4' of drop

LOCAL SCOUR

Use eqn. 3-10 in Denver ~ S, L, ASSOC. REF.

$D_{90} = 12.5$ MM

$$S = 3.75 \left(\frac{(7)^2 (5)^5}{(12.5)^2} \right)^{-2} = -3 \frac{1}{2}'$$

From 8/29/90 analysis - degradation for equivalent slope = 3.1'

Local Scour $\approx 2 \frac{1}{2}'$

Total degradation = 5 $\frac{1}{2}' \pm$

APPENDIX D

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- 1. RCE LETTER OF APRIL 29, 1992**
- 2. CSC LETTER OF SEPTEMBER 15, 1992**
- 3. AMAFCA LETTER OF NOVEMBER 9, 1992**
- 4. CSC LETTER OF NOVEMBER 27, 1992**

RCE **RESOURCE CONSULTANTS & ENGINEERS, INC.**

A KLH Engineering Group Company

April 29, 1992

Mr. Cliff Anderson
Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect Avenue NE
Albuquerque, New Mexico 87107

Re: Review of Primrose Point Master Drainage Management Plan prepared by Community Sciences Corp, 1992 (RCE Job Number 90-554)

Dear Cliff:

Per your request, we have performed a brief review of the referenced Master Drainage Management Plan with respect to prudent limit and sediment transport issues and offer the following comments:

1. Significant revisions have been made to both the hydrologic and hydraulic analyses compared to the original Master Drainage Management Plan, dated June 1990. The basic design of the proposed channels for the South La Cueva and North Domingo Baca arroyos has changed very little. The design for these channels is based on estimates of the equilibrium slope that will develop under post-project conditions. A series of grade control structures and bank protection are proposed to prevent excessive degradation and channel instability.
2. The revised hydrologic analysis has resulted in a significant increase in the flood peak discharges. Para. G.1.b., page 5 states that flows for the new analysis were not increased to account for sediment bulking since "AHYMO is calibrated to simulate arroyo flows in the Albuquerque area, thus it should already accounting (sic.) for sediment bulking to some extent" and "the flows used in the model are already much higher than the flows currently accepted by FEMA in the FIS." Our evaluation did not address the reasonableness of the revised clear water flows. With regard to sediment bulking, however, AHYMO is strictly a clear water simulation, predicting the amount of water reaching and passing through the channel based on the rainfall distribution and watershed characteristics. Unless an artificial adjustment is made, it has no mechanism to account for the amount of sediment being carried by the flow. As far as we can tell no such adjustment was made. The results must, therefore, be interpreted as clear water flows.
3. The revised hydraulic analysis was performed using the HEC-2 model which, if applied properly, should improve the accuracy of the results compared to the normal depth calculations used in the original analysis. From a very brief review of the HEC-2 files contained in the report, we find no critical problems that would invalidate the results for the flows analyzed. A more thorough review could be performed if you deem appropriate.
4. The equilibrium slope estimates were based on the 2-year flood peak. A check of the results for the North Domingo Baca channel using the procedure and equations in the Draft Sediment and Erosion Design Guide (RCE, 1992, Section 3.4.3) indicates that the results are reasonable assuming that the estimate of the hydraulic conditions in the upstream supply reach are correct. (We have no data to check this.) It is our experience, however, that the dominant or channel forming discharge for ephemeral streams is usually greater than the 2-year flood. For example, the 10-year

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flood peak was used in the Unser Bridge/Calabacillas Arroyo Study (RCI, 1989). The higher discharge will result in a somewhat flatter equilibrium slope which will increase the required drop height at each of the drop structures. Our very rough computations indicate that the equilibrium slope for the North Domingo Baca channel would decrease from ~1.8% based on the 2-year flood peak to ~1.4% for the 10-year flood peak which would result in approximately 1 foot of additional degradation at the upstream end of a 225 foot reach between grade control structures.

5. In the sediment transport computations, values of the bed material transport have been computed using the HEC-2 results for the supercritical runs for each of five sediment size ranges based on relationships presented in SLA, 1981. The total bed material transport has been computed by simply adding the results obtained from each of these relations. The results from each equation, however, assume that 100% of the material is in each size range, thus the estimated total bed material loads reported by CSC are incorrect. To obtain the correct total bed material load from this series of equations, each of the five values should be multiplied by the percentage of material in that size range before making the addition, or

$$Q_s = W \sum (q_{si} \Delta \%$$

where q_{si} is the bed material transport rate per unit width of channel for each of the sediment size ranges, and $\Delta \%$ is the percentage of material in that size range. To obtain a more accurate estimate of the sediment load, it may be appropriate to adjust the bed material load for the presence of a high concentration of suspended load. This procedure is discussed in the Draft Design Guide (RCE, 1992).

6. It is our opinion that the potential scour depths used to establish the burial depth for the apron of the grade control structures and bank protection will be much greater than is indicated by CSC's computations. According to the plan, combined scour depths of 7.5 and 5.5 feet were estimated for North Domingo Baca and South La Cueva, respectively. These estimates were apparently based on the degradation depth associated with flattening of the channel slope from the design grade to the estimated equilibrium slope plus the potential local scour at the toe of the structure. We believe that these estimates are in error because:
 - a. The drop height across each structure was based on the drop that will exist when the structure is built. The design scour calculations should be based on the anticipated drop height when the channel has reached its equilibrium slope, which will be up to 3.5 feet greater than the final construction grade. This condition will create a total drop height of up to 8 to 9 feet.
 - b. The local scour depth at the toe of the structures was estimated based on the 2-year flood peak discharge. The scour depth should be computed based on the design flood discharge (usually 100-year flood peak for FEMA purposes).

Based on the above, the potential local scour at the toe of the drops having constructed heights of 3 to 5 feet will be approximately 10 to 12 feet below the equilibrium grade, for a total scour of 12 to 15 feet below the final construction grade.

7. It is our experience that grade control structures exceeding 3 to 5 feet in drop height are quite expensive to construct due to the high local scour depths and structural requirements to prevent

overturning and failure. In most cases, a concrete sloping drop with energy dissipator (e.g. baffle blocks) is usually necessary for these conditions. For this reason, it is recommended that the spacing between the grade control structures be set so that the drop height does not exceed about 5 feet based on the equilibrium channel slope.

8. The above comments also apply to the grade control structures below Tennyson Street, which will have 7.5 and 9 feet of drop to the construction grade according the channel profiles.
9. In paragraph G.1.g, page 6, it is stated that "downstream geometry is included in the HEC-2 runs and they indicate that this development will have no significant adverse impact on the downstream properties." This may be true with respect to rigid boundary hydraulic conditions since the development presumably does not substantially alter the runoff hydrographs (an assumption on our part that should be verified considering overbank flooding, changes in flow path, etc. for existing conditions). It does not, however, address the impact of sedimentation on downstream properties. Since the flows are more concentrated in a more efficient channel under project conditions, the sediment load from the project area will probably increase substantially, at least until the proposed channel has adjusted to its equilibrium grade. This may result in aggradation and loss of channel capacity in the arroyos downstream of the project site.
10. From Figure C in Appendix B of the revised plan, it appears that bank protection will be provided for approximately 50 feet upstream of the grade control structures, but only a short distance on the downstream side. (Bank protection is provided for a greater distance downstream of some of the structures on the outside of the bend.) As noted in the previous review, bank erosion is very likely within a distance of 5 to 10 times the depth of the local scour hole in that location. For this reason, it is recommended that at least 50 feet of bank protection be provided on both banks on the downstream side of the structures, regardless of the orientation of the channel.
11. We would like to reiterate our concern about the appropriateness of Miramat lining for bank protection in this environment. *Amer*

If you have questions about these comments or feel it is appropriate for us to perform a more detailed review of the hydraulic and sediment transport computations, please do not hesitate to contact us.

Sincerely,

RESOURCE CONSULTANTS & ENGINEERS, INC.



Robert A. Mussetter, Ph.D., P.E.
Vice President

RAM:bbv
190554\ANDERSON.LTR

September 15, 1992

REFERENCE: Primrose Pointe Subdivision - Master Drainage Management Plan

To Whom It May Concern:

The September 15, 1992 revisions to this Addendum are the result of concerns expressed in the following three references:

- A. The final grading and drainage design for Phases I and II.
- B. A few verbal comments received from AMAFCA.
- C. The April 29, 1992 comments from Resource Consultants and Engineers, Inc.

The first of these three concerns was addressed with revisions to the on-site drainage plate, located in the pocket at the end of this report. After having completed the topographic survey and the computer lot layout and grading for Phases I and II, it was discovered that the existing drainage and grading at Tennyson was different than originally assumed and there was not room for the pond in Phase II. Therefore, curb and gutter and storm sewer were added to the on-site drainage plate at Tennyson, a roadside ditch was added the full length of Anaheim, and the drainage divides and infrastructure were revised to reflect the final grading and drainage plan for those two phases. The size, type, and location of that drainage infrastructure is subject to change and is in the process of being documented in a detailed "Phase I and II Drainage Report."

The second of the above three sources of concern, AMAFCA, related to the following three concerns.

- a. "The Master Plan needs to address phasing of infrastructure." This was addressed by adding the phased limits to the on-site drainage plate. A note was also added to that plate that states "Phases are to be developed in numerical sequence. Any phase developed out of sequence will be required to provide such adjacent drainage improvements as required by the County and AMAFCA."
- b. "The main branch of the La Cueva Arroyo passes through the intersection of Lowell and Oakland, as mentioned in earlier comments from AMAFCA." This concern has been addressed by adding the limits of the flood plain to the on-site drainage plate. Also added to that plate was a temporary arroyo-crossing dip section, a flood control berm, a revised storm sewer and ditch layout, and a drainage easement. A note was added to that plate which states "Final design of Phase V is to include a detailed flood plain study (including field surveyed x-sections and HEC-2 split flow analysis) of the area upstream of the intersection of Lowell Street and the La Cueva Arroyo to insure the adequacy of the storm drainage infrastructure on Oakland Avenue."
- c. As is the case with all developments, the potential for adverse downstream impact must be mitigated. Although AMAFCA cited no specific deficiencies with the Master Drainage Plan, they did make reference to the fact that adverse downstream impact might be caused by "increased storm water runoff" or by "increased sediment

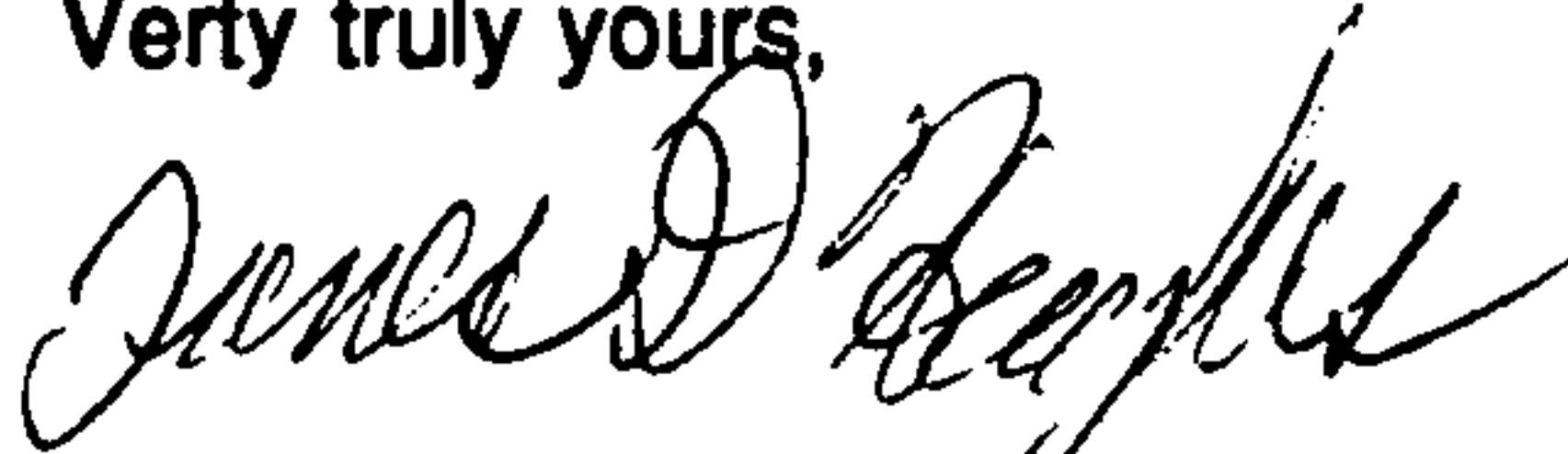
transport" from the more defined arroyos. In response to their concerns, Paragraph D on Page 4 was modified and the changes underlined. Additionally, to prevent increased downstream sedimentation, the improved arroyos are to be constructed at the 10-year equilibrium slope, with energy dissipators at the bottom of each drop structure, as recommended by Resource Consultants and Engineers, Inc. in their latest, April 29, 1992, set of comments (enclosed).

That third source of concerns, RCEI, resulted in extensive changes in this report. They were addressed as follows:

1. This comment is informational in nature, and required no revisions.
2. This comment was addressed by changing design flows throughout this report, as indicated by the underlined sentence in Paragraph B on page 5, which states "The pre-developed flows were increased by 10% to account for sediment bulking in the channel analysis."
3. With regard to the detailed review of the HEC-2 models as contained herein, the final designs will include the revised HEC-2 models as necessary and will be reviewed for a conditional letter of map amendment by FEMA prior to construction. Although these models have been revised to reflect the geometry of this latest conceptual design, they do not really deserve any in depth review at this time, since they are subject to change with the final design.
4. A summary of the equilibrium slope calculations will be provided with the final design. The underlined portion of Paragraph C on Page 5 further addresses this comment.
5. Based on field inspection, the only bed material on this site and upstream from this site is coarse sand. The calculations in Appendix C were adjusted to account for the proposed initial construction of the equilibrium slope and the total sediment loadings were adjusted, based on the above referenced field observations. Final design will include consideration of the procedures outlined in the recent draft design guide.
6. Local scour at the toe of the drop structures would have resulted in construction 15' or more below finished grade and 30' downstream from each of the drop structures. To avoid this extensive construction, energy dissipators are now located at the toe of each drop structure, thus eliminating the need to address concerns about local scour. The description at the end of Appendix B, Hydraulic Analysis Procedure, was modified as indicated and typical channel design calculations were added to the end of that Appendix.
7. The recommended adjustment to the spacing of the drop structure would have required the expensive addition of several additional structures. This comment was resolved with the addition of the energy dissipators.
8. This comment was addressed with the addition of the energy dissipators.
9. Since the arroyos are to be constructed initially to the equilibrium slope, aggradation and loss of channel capacity in the arroyos downstream of the project site are no longer expected to be problems.

10. As recommended, 50' of bank protection is to be provided on both banks on the downstream side of the drop structures. See revised Figure C at the beginning of Appendix B and the revised Hydraulic Analysis Procedure at the end of Appendix B.
11. All channel linings, where required, are now to be soil/cement stabilized instead of Miromat, as now indicated on the on-site drainage plate at the end of this report.

Very truly yours,



James D. Hughes, P.E.

JDH:pem

CSC#207-03-060 - 207-03AF.REP

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Albuquerque
Metropolitan
Arroyo
Flood
Control
Authority

2600 PROSPECT N.E. - ALBUQUERQUE, N. M. 87107

TELEPHONE (505) 884-2215

10/12/92

November 9, 1992

James D. Hughes
Community Sciences Corporation
P.O. Box 1328
Corrales, NM 87048

RE: Addendum No. 3 to the Master Drainage Management Plan for Primrose Pointe,
revised September 15, 1992 by Community Sciences Corporation (D-22)

Dear Mr. Hughes:

The enclosed comments by AMAFCA and its consultant, Resource Consultants and Engineers, (RCE) were prepared in response to the above-referenced plan addendum. AMAFCA has reviewed the enclosed letter from RCE and believes their comments need to be addressed in the Master Drainage Management Plan submittal. The following additional comments expand on the specific comments by RCE:

No. 1 through 3 No additional comments.

No. 4 The existing condition without construction of houses based on existing platting, may represent the level of protection required for downstream properties. The use of an assumed density based on existing platting should not be referenced as an existing condition. In addition, the use of a development assumption based on existing platting as a standard for developed conditions may not be sufficient to meet a legal requirement of not increasing flows, rates, volumes and location of discharge at downstream properties. We strongly recommend that you use the existing conditions as a basis for comparison of development conditions. Any alternate approach will likely require hold harmless agreements by reviewing agencies (City/County/AMAFCA). The actual point of proposed discharge must be considered when evaluating existing conditions. Concentration of flows and collection of multiple discharge points into a single discharge point will likely require further mitigation measures.

No. 5 No additional comments.

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No. 6 If more standard designs are not utilized for the grade control structures, physical model studies will need to be conducted to verify the design. The University of New Mexico Civil Engineering/AMAFCA Open Channel Test Facility is a local facility which can, at generally reasonable fees, conduct such physical model studies.

No. 7 and Recommendations No. 1, 2 and 3 No additional comments.

AMAFCA has the following supplemental comments that need to be addressed by the plan:

No. 8 Item No. 11 of your cover letter references use of soil cement stabilization instead of Miromat. Please note that minimum criteria for soil cement has not been incorporated into the Development Process Manual (DPM). AMAFCA has developed standards for use of soil cement on its projects, and will generally support design of facilities based on these standards. The following basic criteria are applicable under AMAFCA's requirements:

- a. Minimum thickness of soil cement at 24 inches, measured perpendicular to face of structure.
- b. Soil cement to be placed in horizontal layers (not over 12 inches in thickness) with each layer being a minimum of 8 feet wide.
- c. Minimum compressed strength of soil cement to be 1,000 psi.
- d. Cement content of 7 to 10 percent depending on strength of mix design (including freeze/thaw and wet/dry stability).
- e. Soil cement to be prepared using a batch plant process with soil, cement, and water quantities rigidly controlled.

The in-situ mixing of portland cement with native soil will not generally produce a reliable product suitable for AMAFCA approval, and should not be relied upon for design of critical storm conveyance facilities. A portable soil cement plant, meeting current AMAFCA specifications for soil cement production would be suitable. Soil cement channels will have infiltration properties similar to reinforced concrete and effects of loss of channel infiltration will need to be evaluated if downstream capacity is not through an improved conveyance facility.

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No. 9 There is a flood zone for a branch of the La Cueva Arroyo at the northwest corner of the property. This flood zone also impacts the access to the property at Oakland and Lowell streets. A flood control berm is proposed in this area but the street access requirements are not addressed by the plan. Paragraph II.A (Page 3) does not adequately address this issue, and this off-site flow does not appear to be addressed by the drainage analysis.

No. 10 The delineation of off-site contributing watersheds on City of Albuquerque or Bernalillo County ortho-topo area maps at a scale of 1" = 200' or 1" = 500' is required even for a single building permit approval adjacent to a flood zone. Only where such mapping does not exist is use of U.S.G.S. mapping acceptable for off-site basins. With a subdivision of this importance, we can find no justification for waiving this requirement. Your response in Paragraph II.B (Page 3) is therefore not acceptable for plan approval.

No. 11 Your response in paragraph II.D (Page 3) does not serve to clarify the use of existing conditions, when the "existing condition" analysis, as submitted, is based on future development conditions. See our comment No. 4, for further details.

No. 12 Your response in Paragraph II.E (Page 4) identifies that basins LC-3A, offsite 2A and offsite 1A are located on the on-site drainage map. Will this drainage map be revised to show all these offsite basin boundaries? Any construction of street improvements which is required for development of the subdivision must be included in the drainage analysis, even though the drainage may be diverted away from the subdivided lots.

No. 13 Your response in Paragraph II.F (Page 4) does not explain why the total area of sub-basins (on-site plus off-site) under existing conditions is different than the total area under developed conditions.

No. 14 The freeboard criteria for channels is in addition to computed water surface elevation, including the water surface based on expected hydraulic jump conditions (ie: from natural channel variation or grade control structures). Paragraph 2.b.2 (Page 7) does not fully address this requirement. Please note that the FEMA requirements for freeboard are somewhat different than DPM criteria. In particular, when channel embankments are above the surrounding terrain, it is our understanding that FEMA will consider such channel embankments to be levee sections and require levee freeboard criteria.

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No. 15 The Master Drainage Management Plan proposes two dip section crossings on Lowell Street, NE and one dip section at Tennyson Street, NE. The plan states that "the all-weather C.B.C. crossing would then be installed at a later date, with public funding." The intersection of Oakland and Lowell is also a dip section crossing as proposed. The Bernalillo County Storm Drainage Ordinance (90-6) does not allow dip crossings on collector streets, and Lowell and Tennyson Streets are identified as collectors on the Long Range Major Street Plan. As stated in our letter to Susan F. Connors, dated December 4, 1990, "AMAFCA discourages the use of dip crossing sections and does not endorse actions which would increase traffic volumes at existing dip crossings." The County Public Works Department, Transportation Section, will need to establish which streets are required to be constructed to County standards to serve this development. Flow across roads will need to be designed in accordance with the Bernalillo County Street Standards. We will need written conformation from Bernalillo County on which streets and street segments are required for each phase of the development. If public funding is required to construct drainage crossings, we will need confirmation from the public agencies that such public funding is appropriate and will be available in sufficient time to serve the development.

No. 16 Maintenance of all drainage facilities must be addressed by the master plan. AMAFCA's Drainage Policy Resolution states that "AMAFCA shall have maintenance responsibility for the North and South Diversion Channels and other facilities constructed using AMAFCA funds" and that the "City of Albuquerque and/or Bernalillo County within the area of their governmental jurisdiction, shall have maintenance and operation responsibilities for drainage and flood control facilities within their geographic boundaries that are not otherwise assigned..." These statements are also contained in the County's Drainage Policy Resolution No. 684. We understand that this developer may be requesting that some drainage facilities be maintained by AMAFCA. Any acceptance of facilities for maintenance by AMAFCA will require approval by AMAFCA's Board of Directors based on their evaluation of the appropriateness to AMAFCA's goals and ability of AMAFCA to accept such a responsibility. Design criteria for AMAFCA maintenance is likely to be more severe than for privately maintained facilities in order to minimize maintenance costs. A financial consideration may also be a part of such acceptance. We note that private maintenance of major drainage facilities is allowed by the County Storm Drainage Ordinance provided adequate guarantees and indemnifications are supplied.

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No. 17 As stated in our December 4, 1990 letter to Susan Connors, "AMAFCA and Bernalillo County evaluation of the Master Drainage Management Plan must be based on an engineering analysis of the drainage under existing conditions and the effects of the proposed development on the upstream and downstream property". With the "hydraulic", "lateral migration" and "erosion and deposition" analysis that is required for the Master Plan Level analysis, the effects on downstream property needs to be addressed at each proposed discharge point. Such analysis should include nuisance water, minor storms, major storms, and must consider sedimentation, erosion, scour, and concentration of flows. The plan should clearly identify any charges which are likely to occur and propose mitigation measures for any potential damages. If downstream changes will result from the development, mitigation measures should be identified by the plan. If no downstream changes to sedimentation, erosion, flow paths, or flood areas will result from the development, this should also be stated in the plan, along with an explanation of why such a conclusion is reasonable.

Please let us know if you have any further questions regarding the comments presented by AMAFCA, including those by RCE. We will be pleased to meet with you to clarify any items that require further explanation.

Sincerely,
AMAFCA



Clifford E. Anderson, P.E. & L.S.
Drainage Engineer

CEA:ij

copy: Norm McNew, Acting Director, Bernalillo County PWD
Robert Foglesong, Surface Water Hydrologist, Bernalillo County PWD
Gilbert Aldaz, City/County Floodplain Administrator
Fred Aguirre, Hydrologist, City of Albuquerque PWD
Susan Connors, Senior Planner, Albuquerque/Bernalillo Co. Planning Dept.
S & S Assoc. c/o Larry Stroup, 6201 Uptown Blvd., NE, Ste 203
Commissioner Patricia Cassidy, Bernalillo County Commission
Darryl Millet, President, North Albuquerque Acres Neighborhood Assn.

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RCE **RESOURCE CONSULTANTS & ENGINEERS, INC.**
A KLH Engineering Group Company

October 30, 1992

Mr. Cliff Anderson
Albuquerque Metropolitan Arroyo
Flood Control Authority
2600 Prospect, NE
Albuquerque, New Mexico 87107

Re: "Revised Addendum No.3 to the Master Drainage Management Plan for Primrose Pointe" by Community Sciences Corporation, dated September 15, 1992. Fourth Supplemental Agreement to "Prudent Limit and Sediment Transport Studies and Review" (Agreement dated, October 1, 1990) (RCE Job Number 90-554.02)

Dear Cliff:

Per your request, we have reviewed the referenced revision to the Primrose Pointe Master Drainage Management Plan (MDMP), concentrating primarily on issues related to flooding and erosion along the main arroyos. We offer the following comments regarding the MDMP:

1. The primary modification to the plan reflected in the recent revision involves increasing the flood peak flows by 10 percent to account for sediment bulking and modification of the grade control structures along the two main arroyos crossing the site. The new grade control plan calls for energy dissipator structures designed using the Saint Anthony Falls criteria. The more elaborate design is being used in an attempt to limit the size of the local scour hole downstream of the structures.
2. The assumption of 10 percent bulking for the peak flows appears to be reasonable (and probably somewhat conservative) based on other analyses that we have performed in this general area. For example, we estimate the peak bulking factor for the 100-year storm on the tributary to La Cueva arroyo just north of Primrose Pointe to be about 6 percent (RCE, 1992a). A bulking factor of 10 percent corresponds to a concentration by weight of about 210,000 ppm which is somewhat high, but not unreasonable for conditions in this area. It is our understanding that the flood maps for northeast Albuquerque are being updated using a bulking factor of 17 percent. This corresponds to a concentration of about 380,000 ppm, a value that seems quite high based on the characteristics of the watershed and sediment in this area. Since this value has apparently been accepted by FEMA, they may question the lower value used in this MDMP.
3. The hydraulic analyses were performed using the existing conditions AHYMO results, bulked by the 10 percent factor. The discharge used in the HEC-2 model for the entire reach of North Domingo Baca through Primrose Pointe corresponds to the bulked peak discharge at the downstream end of the development. Based on the AHYMO output, the discharge at the upstream side of the

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development is about 8.5 percent less than the total at the downstream side. It may be reasonable to reduce the upstream flows to reflect the reduced drainage area at that location. If the same assumption was made for South La Cueva, a similar adjustment could be made. The smaller flows may allow a less conservative channel design. The effects of fully developed conditions on the runoff generated within the development should, however, be considered in the analysis which may offset the difference.

4. With respect to the AHYMO analysis, your original comments questioned the assumption of 20 percent impervious area for the on-site basins for existing conditions. The MDMP states that this is reasonable since the area is "already subdivided for that density of development." This statement does not seem to address your question. Is there a 20 percent impervious area in the on-site basins based on the actual amount of development at this time? If this value is high for existing conditions, the results are not conservative since the difference between existing and developed conditions flows will be underestimated. (The on-site drainage area represents slightly less than 10 percent of the total for North Domingo Baca and about 35 percent of the total for South La Cueva.)
5. The existing conditions hydraulic analysis included only a short section of the two arroyos at the downstream side of the development (from ~500 feet downstream to ~600 feet upstream of Lowell Street on North Domingo Baca and ~140 feet downstream to ~285 feet upstream of Lowell Street on South La Cueva. No hydraulic analysis was presented for the existing arroyos within and upstream of the development. To analyze the change in sediment loading to the arroyo downstream of the development, it may be necessary to perform a hydraulic analysis for a longer reach of the existing arroyo within the development.
6. The developed conditions hydraulic analysis included the reach of both arroyos from the downstream side of Tennyson Street to the lower limit of the existing conditions model, as discussed above. These models reflect the proposed grade control plan and reduced gradient which is intended to approximate the equilibrium slope of the channel. Eleven grade control structures with heights varying from about 6.5 to 8.6 feet are proposed along North Domingo Baca, with a channel gradient of about 1.3 percent between structures. Eight grade control structures with heights varying from approximately 6 to 7.7 feet are proposed on South La Cueva, with a channel gradient of about 1.2 percent between structures. (We assume that a structure is intended on South La Cueva at the downstream end of the unimproved channel at Station 18+30. If this assumption is incorrect, a structure will be necessary at this location if the proposed plan is implemented to prevent degradation within the unimproved channel which could cause damage to the adjacent parcel and will result in an excessive drop at the next upstream structure.) A 310 foot length of box culvert is also proposed on South La Cueva to pass flows under Alameda Avenue. The grade control structures are in essentially the same location as the March 1992 plan. (A structure originally proposed at Station 12+30 on North Domingo Baca has been eliminated.) Our review of the proposed grade control plan raises the following concerns:
 - a. The exact basis for the equilibrium slope estimates is unclear. The equilibrium slope is the estimated slope to which the channel will adjust based on the sediment supply to the reach from upstream. From the information provided in the original MDMP (CSC, 1990) and the two revisions, the basis for the sediment supply estimates is not clear. For this development, it would be necessary to estimate the amount of bed material that will be delivered to the arroyo at the downstream side of Tennyson Street. This requires consideration of arroyo conditions upstream of Tramway Boulevard and between Tramway and Tennyson Street. It also requires consideration of the amount of bed material that will actually pass through the culverts under those streets, since backwater and sediment

trapping is a distinct possibility. Using the estimated sediment supply, the relationships presented in the draft Erosion and Sediment Design Guide (RCE, 1992) can then be used to estimate the equilibrium slope.

As stated in our previous comments (RCE, 4/29/92), the estimated equilibrium slope appears to be reasonable in a qualitative sense, but we are unable to verify it quantitatively since we have no information regarding the upstream conditions.

The above comment is a matter of some concern since the proposed channel is to be constructed to the estimated equilibrium slope. Normally, grade controls are placed to provide protection from excessive degradation as the channel adjusts to the upstream supply. Under the proposed conditions, if the constructed slope is too flat, deposition will occur in the channel between the structures, resulting in flow deflection and potentially severe bank erosion or channel avulsion. This condition may cause significant changes in the alignment and location of unprotected reaches of the arroyo. For this reason, we recommend that the improved channel be constructed to a slope that is steeper than the estimated equilibrium slope to allow natural adjustment and avoid problems if the estimate is in error, a very real possibility, given the lack of information regarding the upstream supply and the inherent uncertainty in sediment transport computations. Please note, however, that the grade control structures should be designed for the estimated equilibrium slope since this is the best available estimate of the ultimate condition of the channel.

- b. The configuration of the proposed channel may have a significant effect on the amount of sediment delivered to reaches of the two arroyos downstream of the development. If the sediment supply is reduced significantly by the proposed channel, severe erosion of the downstream channel is likely. In addition, flow over the dip crossing at Lowell Street may result in a large scour hole on the downstream side of the street with potential for damages to the street and adjacent property.
- c. According to the recent addendum to the MDMP, the proposed grade control structures are based on the Saint Anthony Falls (SAF) design criteria. We believe the proposed design is inappropriate for the application proposed here for the following reasons:
 - i. In order for the structures to perform properly, two critical conditions must be met. First, there must be adequate tailwater depth and secondly, the flow must pass through critical depth at the crest of the structure.
 - (1) The tailwater is necessary to create a hydraulic jump within the stilling basin, dissipating the energy before releasing the flow into the natural channel downstream. In fact, even with proper tailwater, a scour hole will usually develop downstream of the end sill of the stilling basin due to a secondary roller that develops in that area. Attachment 1 is an excerpt from a physical model study performed by the Corps of Engineers, Waterways Experiment Station (WES, 1967) on a similar type structure illustrating this concept. Most structures of this type require tailwater depth between about 1.25 to 2.2 times the critical depth of flow over the crest. (The original model study for the SAF structure recommended a value of 2.15.) Given that normal depth in the channel between structures is

supercritical (considering rigid boundary conditions), it is unlikely that adequate tailwater will occur. In the absence of the tailwater, severe erosion of the downstream bed and banks will result.

- (2) A subcritical approach velocity, which allows the flow to pass through critical depth at the approximate crest of the structure, is important to obtain a proper nappe trajectory of the downstream side of the structure. With a supercritical approach velocity, the main portion of the flow may overshoot the baffle blocks, limiting the effectiveness of the energy dissipation and, again, resulting in severe erosion of the downstream channel. This is a matter of particular concern at the outlet of the box culverts (Station 30+75) on South La Cueva.
- ii. The design criteria and testing of the Saint Anthony Falls grade control structure (as well as most other energy dissipation structures) is based on vertical side walls rather than the sloping side walls indicated in Figure C in Addendum 3 of the MDMP. We are concerned that the sloping side walls will allow a significant percentage of the flow to bypass the baffle blocks along the sides of the channel with this type of design, again limiting the effectiveness of the structure. We are aware of no studies that involve energy dissipators with sloping side walls. If CSC does not have verification, through previous studies that this configuration will function as intended, either a model study should be performed to verify the design (or provide a basis for modifications that will cause the structure to function as intended) or a more standard design with vertical side walls should be used.
- iii. As we discussed in our previous comments (RCE, 4/29/92), structures of this type are very expensive in comparison to simpler sill-type grade control structures. For safety reasons, if structures of this type are to be used, a sloping downstream face is recommended. We strongly recommend that a realistic construction cost estimate for the proposed plan be developed and compared to the cost of reducing the amount of developable land within the site. It is probable that the latter approach would result in a more cost effective overall design for the development. We understand that an attempt is being made here to provide a "naturalistic" arroyo, to the extent possible, in view of AMAFCA and the City of Albuquerque's Prudent Limit Policy. On close inspection of the proposed plan, however, it is apparent that very little naturalistic arroyo will remain after the proposed structures and bank protection are installed. The structures are spaced at approximately 220 foot intervals along North Domingo Baca and 250 foot intervals along South La Cueva arroyos. For the proposed design, the total length of arroyo with bank protection at each structure is approximately 125 feet. In addition, the plan calls for bank protection along the outsides of bends. North Domingo Baca will, therefore, have bank protection on over two-thirds of the total bank length and South La Cueva will have nearly half of the total bank length protected. Based on the discussion in the previous paragraph regarding the scour hole downstream of the stilling basin, bank protection should be extended at least another 25 feet downstream of the stilling basin to prevent erosion of the banks and possible failure of the structure. In addition, a review of the proposed protection at bends indicates

several areas where additional protection will be needed (e.g., the right bank of N. Domingo Baca from Stations 22+00 to 24+00 and Stations 28+50 to 30+00, the left bank of S. La Cueva from Stations 19+50 to 20+00, and the right bank of S. La Cueva from Stations 28+00 to 29+00).

7. The inlet conditions at the two 8-foot wide by 4-foot high box culverts on S. La Cueva may be unacceptable with a 4-foot drop immediately upstream. According to the profile, the toe of the drop intersects the invert of the box culverts. Conditions at this location will be highly unstable in the absence of debris; inlet losses to the culverts are very uncertain for the proposed conditions. If debris is present, plugging and overtopping may result. The drop structure should be moved at least 50 feet upstream of the box culvert inlet to provide a good transition into the culverts.

Considering the above discussion, it is our opinion that significant modification of the proposed design will be required. It would probably be possible to overcome the design deficiencies related to the individual energy dissipator structures by constricting the flow or otherwise creating a backwater condition upstream of each structure to force the flow through critical depth at the crest and by pre-forming the scour hole at the end of the stilling basin. A model test may indicate appropriate dimensions for the structure so that the supercritical entrance flow could be accommodated without creating the backwater condition. As discussed above, in view of the costs associated with these structures, however, we are skeptical that it would be economically feasible. The primary problem relates to the relatively flat equilibrium slope used as the basis for the design. (This is not to say that the estimate is wrong; we are simply unable to verify it based on the available data.) In view of this conclusion, we have the following recommendations:

1. A more thorough evaluation of the equilibrium slope should be made, to include sediment transport conditions in the arroyos upstream of Tramway Road, as well as the transport capacity of the culverts under Tramway Road and Tennyson Street. From a geomorphic perspective, the area immediately downstream of Tramway Road appears to be a depositional zone under natural conditions. (See Section 2.1.2., RCE, 1992b) As an example, our analysis of the tributary of La Cueva arroyo just north of Primrose Pointe (RCE, 4/29/92) indicated that the reach downstream of Tennyson Street is slightly aggradational, assuming no sediment trapping on the upstream side of Tramway Road. There are, however, some severally incised arroyos on the downstream side of Tramway Road in this area, most likely due to the interruption of bed material transport by the road crossings and increased runoff and reduced sediment supply due to upstream development. If sufficient sediment supply is available from upstream and the road crossings do not trap sediment, the extreme degradation indicated by the equilibrium slope analysis may be less than indicated by CSC's equilibrium slope analysis. If the road crossings are part of the problem, it may be more economical to improve them to prevent sediment trapping than to install the additional channel stabilization necessary to compensate for the loss of sediment supply.
2. If the sediment supply estimate made by CSC is realistic, it may be more cost effective to reduce the number of grade control structures and allow a wider erosion buffer along the arroyos. The Prudent Line associated with this erosion buffer can be estimated using the procedures in the Sediment and Erosion Design Guide (RCE, 1992b). In general, this will involve an evaluation of the historical erosion width of the arroyo, evaluation of the anticipated arroyo width and alignment at the fifth stage of arroyo evolution (see Figures 1.2 and 3.1, RCE, 1992b) and an estimate of the cumulative distance that the bank line could migrate over a 30 year period plus the response to a 100 year storm.
3. If neither of the above considerations yields an acceptable result, it may be necessary to construct a fully lined arroyo through the development. The impact of a lined arroyo on downstream reaches

must be considered if this option is selected. Although the current hydrology procedures do not explicitly consider infiltration losses within the channel, this may be a consideration with respect to impacts of the development on downstream property. If a pervious lining (e.g., riprap, etc.), infiltration losses will be roughly the same as under existing conditions. If an impervious lining (e.g., concrete or soil cement) were used the infiltration losses within the channel would be significantly reduced, which may create downstream problems, particularly under low-flow conditions. The changed hydraulic and sediment transport conditions associated with the lined arroyo must also be considered and accommodated to prevent instability in the arroyo downstream of the development.

For any of the options, it will, of course be necessary to insure adequate channel capacity for the bulked 100-year peak flow through the development. In addition, special care should be taken at the outlet of all local drainage structures discharging into the arroyos to ensure that unacceptable erosion does not occur.

Please feel free to contact me if you have questions or need further clarification of the above comments.

Sincerely,

RESOURCE CONSULTANTS & ENGINEERS, INC.



Robert A. Mussetter, Ph.D., P.E.
Vice President

RAM:bbv

Enclosure

\\CORRES\\ANDERSON.LTR

REFERENCES

Community Sciences Corporation, 1990, "Master Drainage Management Plan for Primrose Pointe," revised September 1990.

Resource Consultants & Engineers, Inc., 1992a, "Prudent Line Analysis, LaCueva Arroyo and Watershed between Tennyson Street and Modesto Avenue," prepared for AMAFCA.

Resource Consultants & Engineers, Inc., 1992b, "Sediment and Erosion Design Guide," prepared for AMAFCA.

U.S. Army Engineer Waterways Experiment Station, 1967, Drop Structure for Gering Valley Project, Scottsbluff County, Nebraska, Tech. Rpt. No. 2-760.

PART III: TEST AND RESULTS

13. Fig. 5 is a sketch showing typical flow conditions in the drop

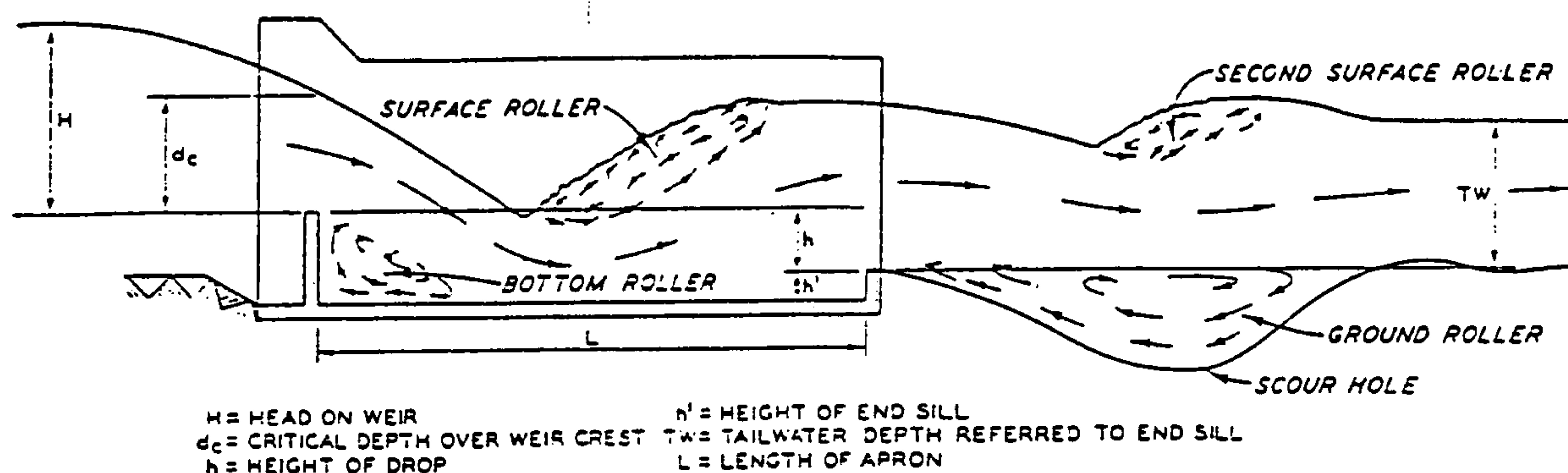


Fig. 5. Definition sketch for typical flow conditions in drop structure

structure. Dissipation of energy occurs not only in the surface roller on the apron, but also in the rollers downstream from the end sill. Thus, the scour hole is a necessary feature for adequate energy dissipation and must be either preformed or allowed to develop.

14. The drop structure on which the majority of the development tests were conducted was 33 ft wide at the weir and had a height of drop of 5 ft. Observations were made at discharges up to a maximum of 6000 cfs (182 cfs per ft of weir).

Abutment Walls

15. Initial observations revealed that a simple square abutment resulted in concentration of flow in the center of the structure that made energy dissipation difficult (see photograph 1a). In development of an abutment design, primary considerations were adequate distribution of flow across the structure in the interest of energy dissipation, and walls of minimum dimensions in the interest of economy; added capacity due to reduced drawdown was not a requirement. Several abutment designs consisting of angled and curved walls were tested. The considerations stated above were best met by an abutment formed by a curved wall of radius $0.6d_c$.

November 27, 1992

Mr. Clifford E. Anderson, P.E. & L.S.
Drainage Engineer
AMAFCA
2600 Prospect NE
Albuquerque, NM 87107

Subject: Primrose Pointe Master Drainage Management Plan

Reference: Your letter of November 9, 1992 and Robert Mussetter's letter to you of October 30, 1992

Dear Cliff:

As we have discussed, the Master Plan level comments are to be addressed by adding an extensive set of notes which outline, first of all, the scope of the final design analysis, and secondly, the alternatives that are to be used to solve each possible problem in the final design. The Master Plan will then be used in the approval process to identify the generally worded infrastructure list at preliminary plat stage. Drainage items on infrastructure lists are typically prefaced with the words "per design," which will allow the details of the design to be worked out during the final plat and construction plan approval phase. Once the construction plans are approved, bonding of the specific drainage items can be estimated by detailed quantity takeoff from the approved construction plans. That bonded amount is then posted with the County, and the plat is recorded, with the guarantee that the improvements can be built by the County if the developer fails to perform the construction.

Less expensive energy dissipator drop structures, which eat up more land, are not an option at this point because land values are so high. Yes, this design did originally start out as a naturalistic arroyo approach, but it has now evolved into a more expensive, much more structured channel. That evolution has taken place with appropriate consideration of the various economic aspects. Since concrete-lined channels through this development are not what was approved at the special use and site plan public hearings, they are certainly not a consideration at this point.

The design which the owners and I have selected to carry forward through both Master Plan and final Drainage Plan approvals is an equilibrium slope design with chute baffle energy dissipators. Part 2 of the Units I and II drainage report examines both the hydraulics and sediment transport capacity of both the upstream and downstream locations of the North Domingo Baca Arroyo. We expect the design of the South La Cueva Arroyo and the design at the other two minor discharge points along Lowell Street to be similar in content and scope of engineering analysis to that which is presented for the North Domingo Baca Arroyo. The Einstein method of suspended bed load transport will be added to the equilibrium design calculation in Part 2 of the Units I and II Final Drainage Report. The chute baffle design, with transitions upstream and downstream, is to be worked into the Master Drainage Plan in conceptual form, replacing the Saint Anthony Falls energy dissipator detail, and a detailed design is to be added to Part 2 of the Final Drainage Report.

Following are the responses to the comments as they have been addressed in the Master Plan. Please bear with me in this effort to make one last comprehensive revision. I have tried to address every detail.

SURVEYING
LAND PLANNING
CIVIL ENGINEERING
DEVELOPMENT CONSULTANTS

Mr. Clifford E. Anderson, P.E. & L.S.
November 27, 1992
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Responding to Comment No. 2, even though you say that FEMA has accepted the 17 percent bulking factor in the past, you warn that we will have to present an extremely convincing argument supporting anything less. The 10 percent bulking factor, as used in the Master Drainage Plan, will be further reduced to three times the total sediment yield as calculated in the final design document, or five percent, whichever is greater. That will be presented to FEMA as a thoroughly documented, conservative estimate.

In response to Comment No. 3, flows in the North Domingo Baca are the result of the large slug of water from the upstream watershed and are not significantly affected by flow contributions or storage losses in this reach of stream under consideration. Since developed flows from this site are to be the same or less than existing, the use of existing flows for hydraulic analysis is only slightly conservative, and using more detailed variations in design flows will result in no change to the final design. The fact that developed flows will be equal to or less than existing flows is expanded upon in Note No. 1 in the Master Drainage summary.

Responding to Comment No. 4 (see Master Drainage Plan Summary Note No. 1). Paragraph II.D. in Addendum No. 3 has also been reworded.

In response to Comment No. 5, regarding downstream impact due to changes in sediment discharge at the four proposed points, Note No. 2 has been added to the On-Site Drainage Plate.

Comment No. 6 covers several aspects of the Drainage Plan. As expanded upon by AMAFCA, non-standard designs will require scale model studies. By going to the chute type baffle, as previously discussed, a more standard design will be implemented and documented as necessary by final design calculations.

The assumption that there is a drop structure at Station 18+30 on the South La Cueva Arroyo is essentially correct. This structure will need to be more of a grade control structure, to be located at the upstream end of a transition into a chute type baffle energy dissipator drop structure located at Station 17+50. The purpose of this grade control structure is to prevent head cutting in the natural upstream channel which might otherwise result from the improved downstream section. This grade control structure is conceptually illustrated on the South La Cueva Arroyo Profile, Figure B, and will consequently have to be a consideration of the Phase IV final design.

Comment No. 6.a. is to be addressed by adding Note No. 3 to the On-Site Drainage Plate.

Comment No. 6.b. dovetails with Comment No. 5 above, which was addressed by adding Note No. 2 to the Off-Site Drainage Plate.

Comment No. 6.c. is to be addressed at the Master Plan level (as previously indicated) by replacing the Saint Anthony Falls energy dissipators with chute baffle type (a conceptual detail of which is in a pocket at the end of Addendum #3).

Regarding Comment No. 6.c.iii., additional bank stabilization has been added to the Master Drainage Plan around the outside edges of the bends, as you suggested.

Comment No. 7 expressed concerns over the concept of a drop being located at the entrance end of the double 8 x 4 concrete box culverts under Alameda Avenue on the South La Cueva Arroyo. Those box culverts were designed using inlet control nomographs to conservatively account for the potentially unstable situation at the entrance. This conservative approach was taken because it is not expected that FEMA will approve supercritical flow through a culvert unless a more expensive trapezoidal section is used. To clarify the adequacy of this conceptually designed culvert, inlet control calculations and profiles of the low chord and top of road will be added to Figure No. B in Addendum No. 3.

In response to Comment No. 8, Note No. 5 was added to the On-Site Drainage Plate.

Comment No. 8 goes further, to suggest that infiltration should be evaluated in the channels. Since both of the major arroyos through this site are to have sand bottoms, they will retain most of their infiltration characteristics. Decreased infiltration due to the lining of the banks of the two arroyos will be accounted for in the post-development hydrology as groundcover Type D, for impervious surfaces. Low flows from the on-site impervious areas are to be captured in the BMP ponds, thus preventing small flows from even entering the channels; and cross section ZZ on the Master Plan has been modified to include a pervious bed material (see modified details). Additionally, the impervious storm sewer system at the northwest corner of this site was eliminated by extending section ZZ east along Oakland Avenue.

Comment No. 9 specifically addresses the drainage through the intersection of Oakland Avenue and Lowell Street. The wording of Paragraph II.A. on page 3 of this Addendum has been changed.

Comment No. 10 was addressed by modifying Paragraph II.B. on page 3 of this Addendum and by adding a supplemental drainage area map in a new pocket at the end of this Addendum.

Comment No. 11 was addressed previously. See the proposed response to Comment No. 4.

Comment No. 12 was addressed by revising the wording of Paragraph II.E., page 4 of this Addendum.

Comment No. 13 is addressed by the addition of a table at the beginning of Appendix A which summarizes the drainage areas for both pre- and post-development, thus clearly indicating that the total for pre-development is the same as that for post-development. The wordy explanation in Paragraph F on page 4 of this Addendum was revised to merely reference the new table.

Comment No. 14 is to be addressed by revising Note No. 2.b.2. on page 7 of this Addendum.

Comment No. 15 has already been partially addressed by the approved site plan, which states "Interim paving where required by the street ordinance (including drainage facilities) will be constructed by the developers for Lowell Street, Tennyson Street, and Alameda Boulevard where they are adjacent to the proposed development (one-half paving, by phases, or 24' width). Additionally, the developers will pave a connection southerly on Lowell to Paseo del Norte and will assure paving continuity easterly to Tramway Boulevard (via Cedar Hill and Live

Oak). Rural standard paving may be required on Oakland Avenue, Anaheim Avenue, Lowell Street, and Tennyson Street, as part of the local street development policies (installed with adjacent phases of development)." Tentative plans are to revise the note on the North Domingo Baca Arroyo crossing at Lowell Street to read "Temporary arroyo crossing dip section with Phase I to be replaced by a drainage structure meeting requirements of all applicable ordinances as part of Phase III." The note on the South La Cueva Arroyo is to be revised to read "Temporary arroyo crossing dip section with Phase IV to be replaced by a drainage structure meeting requirements of all applicable ordinances as part of Phase V." The note for the dip section at the intersection of Oakland and Lowell will be modified to say "Crossing dip sections flush with existing grade or drainage structure as may be required by the County with final design of Phase V, meeting requirements of all applicable ordinances including upstream and downstream improvements as necessary to prevent erosion and maintain existing levels of sediment transport capacity." The triple asterisks on the culvert callouts of both the North Domingo Baca crossing of Tennyson and the South La Cueva crossing of Alameda Avenue are to be removed, along with the triple asterisk footnote. Note No. II.A. of Addendum No. 3, page 3, is to be revised as previously mentioned. These tentative modifications to the Master Drainage Plan are as discussed with Bob Foglesong on November 18, 1992.

Comment No. 16 is addressed by adding a note to the Master Drainage Plan, as follows:

Maintenance:

- (a) The detention ponds are to be maintained by the homeowners association, including landscaping and the outfall structures.
- (b) The County will be responsible for maintenance of the streets, roadside ditches, culverts, and storm sewer systems within and adjacent to this development.
- (c) All temporary drainage facilities will be maintained by the developer.
- (d) The improved channel of the North Domingo Baca Arroyo and the South La Cueva Arroyo will be maintained by the homeowners association if arrangements are not worked out with AMAFCA to provide that maintenance.
- (e) As a condition of the site plan approval, both AMAFCA and the County will be allowed access to homeowner association-maintained facilities for the purposes of

inspection. Additional provisions are to be made prior to final plat approval which will allow both AMAFCA and the County to serve notice to the homeowners association that maintenance operations are needed within the homeowners association facilities. If the homeowners association fails to perform the required maintenance within 90 days from receipt of notice, the County or AMAFCA may enter the premises, perform the needed maintenance, and assess the homeowners association for the associated cost.

Comment No. 17 is to be addressed by adding a note to the Master Drainage Plan which states:

Mr. Clifford E. Anderson, P.E. & L.S.
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"No downstream changes to sedimentation, erosion, flow paths, or flood areas will result from the development which will not be contained in the previously mentioned off-site, downstream easements. This conclusion is reasonable because this development will provide sufficient on-site detention ponds to prevent increased downstream flows and it will provide for the transition of concentrated flows back to natural conditions at the downstream edge of the site. Further, it will take steps to match the existing sediment discharge rates from this site."

The following two comments will also be added to the Master Drainage Plan:

"Phases are to be developed in numerical sequence. Any phase developed out of sequence will be required to provide such adjacent drainage improvements as required by the County and AMAFCA."

"This is a conceptual drainage plan. The size, type, and location of drainage structures is subject to change during final design in accordance with the detailed drainage report to be provided with each phase as required by County ordinances and policies."

Please bear with me in my attempt to see that all of the details are addressed on this Master Drainage Plan. This is just a first shot at providing responses to the Master Plan comments. If this level of response is not going to be sufficient for Master Plan approval, please let me know now, before I waste more valuable time in actually making these changes.

Please feel free to call me with further discussion or comment at 897-0000.

Very truly yours,

James D. Hughes, P.E.

CC: Mr. Bob Foglesong

JDH:pm

CSC#207-04-030 - 207-04AK.REP



City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 2, 1993

Bob Hendrix, Branch Chief
Region VI, Federal Center
800 North Loop 288
Denton, Texas 76201-3698

RE: REQUEST FOR CONDITIONAL LETTER OF MAP REVISION FOR
PRIMROSE POINTE SUBDIVISION, CITY OF ALBUQUERQUE, NEW MEXICO
COMMUNITY NO. 350002

Dear Mr. Hendrix::

The purpose of this letter is to request a C.L.O.M.R. for the above referenced site. The request is a privately funded project, for a residential subdivision, approved by the County and AMAFCA. Enclosed with this letter is the following information:

1. The new implemented detailed application and certification forms for requesting revisions to the National Flood Insurance Program (NFIP) maps. Along with the forms is a detailed technical and NFIP-related considerations in a fashion that should facilitate an efficient review.
2. A check for \$3780.00 to begin your review.

The referenced subdivision is proposing to place fill in the existing floodplain and is also proposing a structural wall to protect the fill embankment from scour, as required by local drainage ordinances. Since the forms are relatively new it was not clear whether this CLOMR should have been submitted as a structural improvement or forms based on fill. A more conservative approach was taken and the forms were based on a structural improvement, with the intent that this would expedite FEMA's technical review.

Our Community would greatly appreciate your expeditious cursory review and

*Did Not
Send, per
CSC request
6/02/93
use for
future submission*

PUBLIC WORKS DEPARTMENT

Bob Hendrix
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your forwarding of this document to Headquarters for their technical review. If you should have any questions concerning this submittal, please do not hesitate to call me at (505) 768-2650.

Cordially,

Gilbert Aldaz, P.E. & L.S.
City/County Floodplain Administrator

xc: William R. Locke, Chief, Risk Studies Div.
Doug Hughes, Community Science Corp.

(WP+1596)