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ARCADIA AREA STORM DRAINAGE SYSTEM

PHOENIX, ARIZONA

REPORT ON THE

ARIZONA CANAL RELIEF GATES INTO THE ACDC

PREPARED FOR

THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

December 1996

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ARCADIA AREA STORM DRAINAGE SYSTEM
PHOENIX, ARIZONA

REPORT ON THE
ARIZONA CANAL RELIEF GATES INTO THE ACDC

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EXECUTIVE SUMMARY

In order to provide a possible means of relief to the Arizona Canal during flooding conditions within the study area of the Arcadia Storm Drainage System, a gate structure to release flows from the Arizona Canal to the Arizona Canal Diversion Channel (ACDC) is proposed to be constructed. The Arizona Canal Relief Gates are proposed to be constructed and operated based upon design criteria established and agreed upon by the Salt River Project, the U.S. Army Corps of Engineers and the Flood Control District of Maricopa County.

Location of the Arizona Canal Relief Gates will be at the Cudia City Wash inlet into to the ACDC. Alternative locations for the Relief Gates were considered, including upstream of the Cudia City Wash weir, immediately upstream of the ACDC box culvert entrance and discharging directly into the ACDC box culvert. Based on performance and economics of the alternative locations, the location of immediately upstream of the ACDC box culvert inlet was selected.

Preliminary Corps of Engineers design criteria for the ACDC permits Arizona Canal releases to the ACDC only at flows of 4700 cfs or less. With flows at or below the 4700 cfs level, no tail water from the ACDC will affect operations of the Relief Gates; therefore they have been designed for free discharge conditions. Salt River Project criteria for the operation of the Relief Gates requires that, in order to provide 0.5 feet of freeboard at the 1-8.0 check structure (at 32nd Street) with a level pool, the Relief Gates shall discharge the 1000 cfs at an upstream elevation of 1245.50.

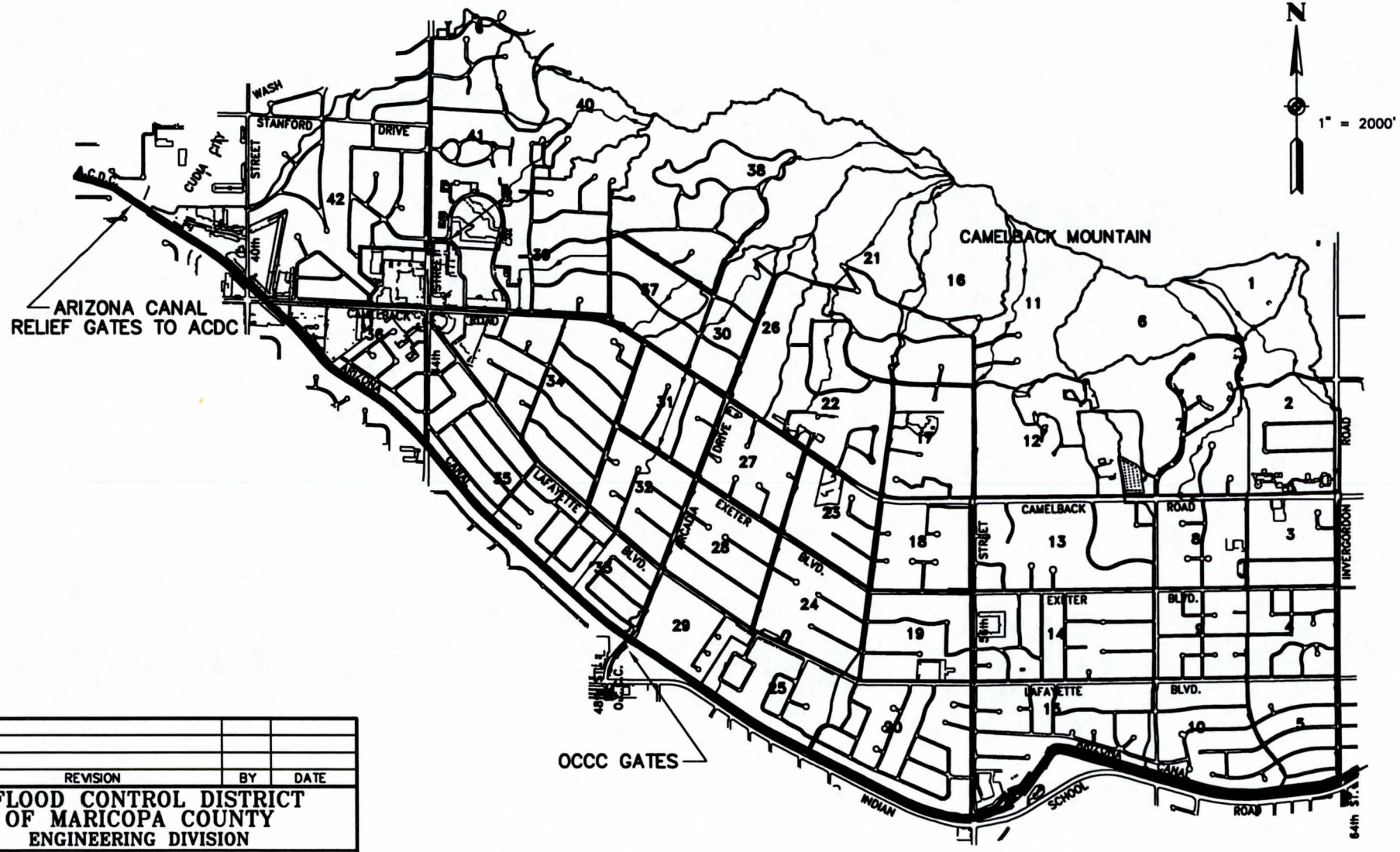
The recommended design of the Relief Gates is to provide two 15 foot wide radial gates set an invert elevation of 1239.0 and with a top of gate elevation of elevation 1249.0, above the highwater elevations of both the Arizona Canal and of the ACDC at design discharges. Appurtenances provided for the Relief Gates are to include inlet structure, fish grate, stop log grooves, culvert crossing of the Arizona Canal maintenance road, outlet structure to the ACDC and manual and automatic controls.

Probable cost of the Arizona Canal Relief Gates is estimated to be about $762,000 based on the preliminary gate design.

1. INTRODUCTION

In order to provide relief to the Arizona Canal during flooding conditions within the study area of the Arcadia Storm Drainage System, a gate structure to release flows from the Arizona Canal to the Arizona Canal Diversion Channel (ACDC) is proposed to be constructed. The Arizona Canal Relief Gates are proposed to be constructed and operated based upon design criteria established and agreed upon by the Salt River Project and by the U.S. Army Corps of Engineers and the Flood Control District of Maricopa County.

The Relief Gates are to be located in the vicinity of the Cudia City Wash inlet to the ACDC. The following figure, entitled Location Map, shows the general location of the Arcadia Area Drainage System project and of the Arizona Canal Relief Gates. Below is presented the criteria used in locating the Relief Gates and in their preliminary design. The probable construction cost of the Relief Gates is also estimated.



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
ENGINEERING DIVISION

ARCADIA AREA DRAINAGE STUDY PROJECT NO. 94-21

	BY	DATE
DESIGNED	J. DAVEY	8/21/95
DRAWN	S. MULHERN	8/21/95
CHECKED	KJ	

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LOCATION MAP — SHEET 1

2. GATE LOCATION

The general location of the proposed gate is to be near the Cudia City Wash entrance to the ACDC. At about 38th Street, Cudia City Wash enters the Cudia City Wash Sedimentation Basin, flows over a spillway with low flow outlet, and then transitions into the box culvert section of the ACDC.

The Arizona Canal Relief Gates may be placed such as to discharge to the ACDC at one of three general locations:

1.) Discharging from the Arizona Canal directly into the Cudia City Wash Sedimentation Basin;
2.) Discharging to the reach between the Sedimentation Basin Spillway and the ACDC Box Culvert;
3.) Discharging directly to the ACDC Box Culvert.

Evaluation of these three alternatives and a recommendation for the location of the Relief Gates are presented below.

1.) Discharging into the Cudia City Wash Sedimentation Basin. The alternative of discharging directly into the Cudia City Wash Sedimentation Basin has the advantage of being able to utilize some of the storage of the sedimentation basin to dissipate peak discharges. The major disadvantage of the alternative is that the spillway crest elevation (1243.0) is at about the same elevation as the invert of the Arizona Canal (about elevation 1242.8) and the hydraulic grade line of the Cudia City Wash flows over the Sedimentation Basin spillway quickly exceed the grade lines of the Arizona Canal. The elevations of flows above 2000 cfs over the spillway are above the normal water surface elevation of the Arizona Canal.

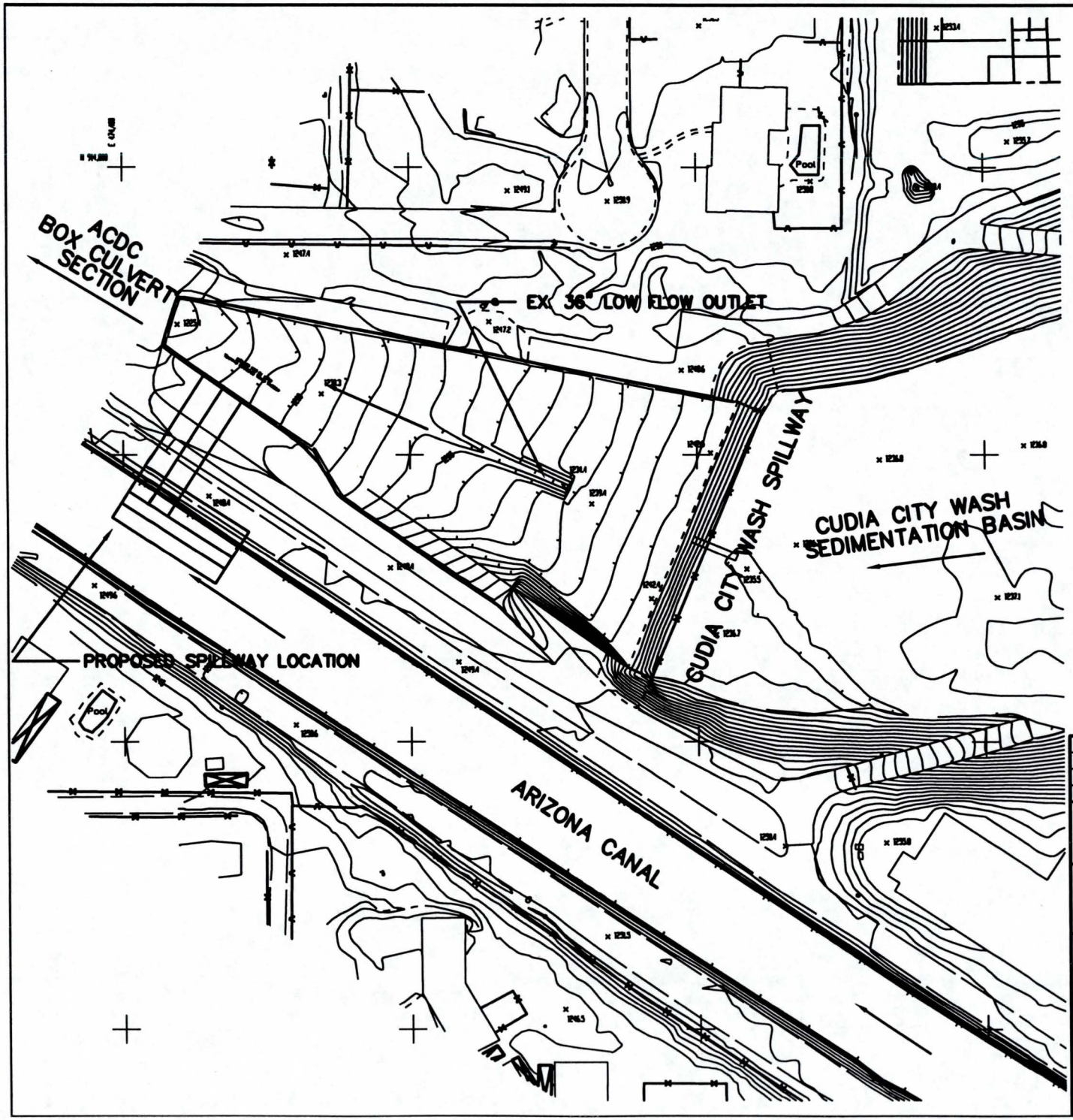
As the high hydraulic grade line of flows over the spillway will adversely affect discharges from the Arizona Canal and as such a gradient endangers the Arizona Canal by increasing the chance of backflows into it from the ACDC, the alternative of locating the Relief Gates at the Cudia City Wash sedimentation basin is not recommended.

2.) Discharging to the reach between the Sedimentation Basin Spillway and the ACDC Box Culvert. Once flows from Cudia City Wash cross the Sedimentation Basin spillway, water surface elevations drop from elevation 1250.3 at peak discharges (6700 cfs) to elevations slightly greater than elevation 1248 where the box culvert begin. Such elevations allow a greater operating range before the ACDC water surface elevation exceeds that in the Arizona Canal. The highwater elevation in the ACDC is also closer to the top of bank elevation of the Arizona Canal, thus reducing danger from backflows into the canal.

Locating the Relief Gates at this location will require sawcutting and removal of a section of the retaining wall along the south side of the entrance channel to the ACDC.

3.) Discharging directly to the ACDC Box Culvert. This alternative, in which the Relief Gates would discharge to the box culvert section of the ACDC and would have favorable hydraulics similar to location 2 above. It would, however, require additional structural work to tie into the box culvert as opposed to tieing in to the retaining walls of the entrance section. It would also have the disadvantage of not having the flows visible for manual operation of the gates as the connection at the entrance section would.

Based on the above discussions, location of the gate at either Alternative 2 or 3 as described above are preferred hydraulically. Due to the additional costs of tieing into the box culvert section versus the entrance section and to the advantage of being able to observe both Arizona Canal and ACDC flows during manual operations, Alternative 2 - Discharging to the Reach between the Sedimentation Basin Spillway and the Box Culvert Entrance - is recommended. This is show in the figure entitled Arizona Canal Spillway Location Map.



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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
ENGINEERING DIVISION

ARCADIA AREA
DRAINAGE STUDY
PROJECT NO. FCD 94-21

	BY	DATE
DESIGNED	JVD	3/25/96
DRAWN	SRM	3/25/96
CHECKED	KRJ	

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AZ. CANAL SPILLWAY LOCATION MAP

SHEET 1

3. PRELIMINARY GATE DESIGN

A preliminary design of the Arizona Canal relief gates has been prepared. The gate has been sized for 1000 cubic feet per second (cfs), a flow rate equivalent to the capacity of the existing gates at the Old Cross Cut Channel further upstream. 1000 cfs is also approximately the bank-full capacity of the Arizona Canal in the reach above the proposed location of the Relief Gates and the allowable discharge to the ACDC as submitted to the Corps of Engineers.

Preliminary design considerations for the relief gates include selection of gate type, hydraulic analysis for sizing the gates, design of the inlet to the gate structure with fish grating and design of the gate structure, the box culvert across the Arizona Canal O&M road and the entrance to the ACDC entrance channel. The preliminary design of the gate is shown in the following figures.

3.1. Gate Selection

The two gate types considered for use as the Relief Gates are radial gates and vertical lift gates. Radial gates are the most common type used by Salt River Project and offer the advantages of ease of operation and the ability to be quickly closed in the case of emergency. Vertical lift gates on the other hand are a much heavier duty type of gate in comparison to radial gates but also require more substantial motor operators and do not open or close quickly or easily when operated manually.

Based on the advantages of radial gates being common in the SRP canal system and the relative ease of operation of radial gates in comparison to a vertical lift gates, it is recommended that radial gates be used for the Arizona Canal Relief Gates. As it is possible, however, that adverse hydraulic grades from the ACDC to the Arizona Canal can exist at very high ACDC flows, it must be stressed that the radial gates must be properly maintained and operated in order to prevent backflows from the ACDC to the Arizona Canal.

3.2. Hydraulic Design

As discussed above, the design capacity of the Relief Gates is to be 1000 cfs. A hydraulic analysis of the gates under their conditions of operation needs to be performed in order to adequately arrive at the preliminary sizes of the gates.

Conditions under which the Arizona Canal Relief Gates into the ACDC may be operated are given in the Conceptual Report prepared by the Flood Control District of Maricopa County entitled Arcadia Area Predesign Study - Arizona Canal Releases into ACDC, dated 6/6/95. The Conceptual Report is included as Appendix I. Per the Conceptual Report, discharges from the Arizona Canal into the ACDC are not allowed at ACDC flows of 4700 cfs or less. At such flows, however, the water surface elevation in the ACDC is below elevation 1240. Therefore, by keeping the gate sill of the Relief Gates above elevation

1240, the gates will discharge freely without tailwater effecting their hydraulics. (Note: Final allowable discharges to the ACDC may be less than the 4700 cfs but such would not affect the gate sizing.)

Based on the constraints of operation of the Conceptual Report and the above discussion confirming the gates will freely discharge under these conditions, the Relief Gates were sized using Salt River Project's design guideline entitled WCPM 11.04 - Canal Radial Gate Structure Design.

Hydraulic calculations used in the sizing of the gates are presented in the tables on the following pages. In addition to the free discharge design basis discussed above, the upstream water surface elevation on the gates is needed. Per Salt River Project, an elevation of 1245.5 is to be used in order to provide sufficient downstream capacity for conveying flows downstream during closure of the gate. This elevation is the normal operating water surface elevation at the next downstream check structure from the proposed gate location (the 1-8.0 structure, located upstream of 32nd Street) and was used as a level pool elevation from the 1-8.0 check to the Relief Gates by SRP in their simulation of gate operation using the MIKE 11 hydraulic model. Mike 11 is a one-dimensional unsteady flow hydraulic model developed by the Danish Hydraulic Institute and used by SRP for simulation of unsteady flows in canal system.

Table 1 present the calculations made in sizing the Relief Gates. Calculations were made using the radial gate free discharge equation, although with a fully open gate structure, such would operate more like a weir structure. As a cross check, flows computed with the radial gate formula were cross checked with flows computed over an ogee-crest spillway of similar dimensions and find to be slightly less (which would be appropriate.) Sizing the spillway gates and trashrack for an entrance loss of 0.5 feet (for an effective upstream elevation of 1245.0), a 30 foot gate opening width is needed. Two 15-foot wide gates are recommended. Alternatively, three 10 foot gates could be used or equivalent (it is recommended to use similar gates such that motor operators, stop logs, etc., could be interchanged.)

(Note that the use of a standard canal radial gate structure equation for sizing the gates and their inlet may be oversimplified for the proposed geometry of the Relief Gates. Final sizing should include a much more rigorous approach, possibly including hydraulic model analysis (as was done at the OCCC gate structure.) Complications affecting the gate sizing include the spatially varied flow resulting from the "side-channel spillway" style of layout for the gates and from the turbulence caused by flows passing through the fish grate at an angle perpendicular to the main flow of the canal. As sized herein, however, it was attempted to size the gates conservatively, with turbulent losses accounted for in the fish grate sizing and with the design water surface elevation being the minimum (level pool) elevation of the spatially varied flow across the gates and inlet.)

Effects of operation of the Relief Gates upon flows in the Arizona Canal were evaluated using the steady state hydraulics computer program HEC-2. Results of its use are

included in Appendix II. Using HEC-2 data of the Arizona Canal as supplied by SRP, a water surface elevation of 1245.50 was assumed at the nearest cross-section to the proposed gate location and the water surface profile computed upstream at flows of 100, 500, 700, 850, 1000 and 1200 cfs. It was found that with the gate maintaining the design water surface elevation, only minimal backwater upstream of the gates was produced (with flows approaching critical depth at higher flow rates) and a lower water surface elevation than without the gate was present upstream to and past the OCCC gates. Of significance, it was found that the lower elevations kept flows of 1000 cfs below elevations of the spillways along the Arizona Canal as compared to discharges of 1000 cfs without the gates present. Flows of 1200 cfs resulted in overbank flows but to a lesser degree than without the gates.

3.3 Inlet and Fish Grate

An efficient and adequately sized inlet to the Relief Gates is required in order for the gates to discharge the full design flows. Also, as the Arizona Canal is stocked with the non-native White Amur fish which may not be released outside of the SRP canal system, grating must be provided to prevent the White Amur from entering the ACDC channel.

The inlet and fish grate combine to cause a loss of hydraulic head at the gate structure. As discussed above, a headloss of 0.5 feet at the gates has been used for sizing of the gates and as such the inlet and fish grate will need to be sized such that this loss is not exceeded. Losses that will combine for the 0.5 feet are the inlet loss associated with flows entering the inlet transition and the loss through the fish grate. The inlet loss has been estimated at 0.5 times the velocity head and the fish grate loss, using rectangular bars at two inches on center, is estimated to be 0.55 times the velocity head (per Corps of Engineers Design Chart 010-7). Note that as the flows through the inlet and fish grate are at right angles to the canal, and with the downstream level pool assumed, that flow will impact the fish grate at from 0 to 90 degrees (assumed to average 45 degrees) and in turn the velocity component used in the loss calculations is 1.41 times the velocity parallel to the Relief Gates. As discussed above, these estimates of hydraulic losses should be refined upon final design.

Based on the estimated loss coefficients, a grated inlet length of 78 feet clear opening is needed (about 85 feet total length, including structural supports.)

3.4 Box Culvert and ACDC Entrance Section

From the Gates to the ACDC, a concrete channel must be provided, including a box culvert section for the maintenance roadway of the north bank of the Arizona Canal. The box culvert needs to be about 20 feet wide for maintenance vehicles and also to provide for a work area immediately downstream of the gates.

From the box culverts to the ACDC, a rectangular concrete channel is proposed, with walls at the height of the ACDC retaining walls and with floor sloping sufficiently to prevent

backwater conditions from inhibiting free discharges from the gates. Final design should consider energy dissipation at the outlet to the ACDC in order to prevent adverse effects on ACDC flows (i.e., creating additional losses) and possible erosion of the ACDC channel.

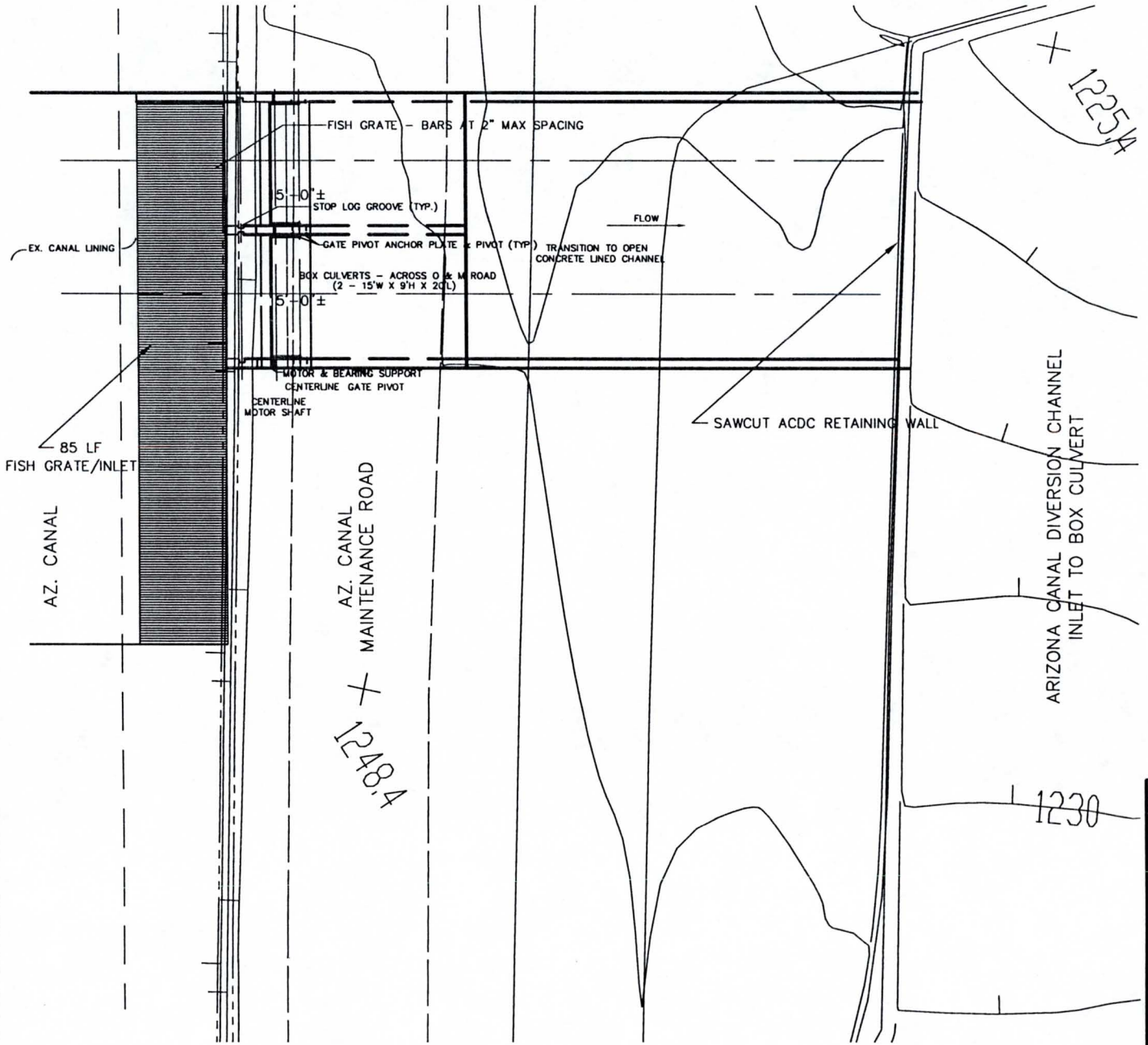
3.5 Gate Motors and Controls

Operation of the proposed Arizona Canal Relief Gates will provide emergency spills of water from the Arizona Canal to the ACDC. As such, the selection and design of motors and controls for its operation should be based upon providing maximum reliability under all operating conditions, including provisions for emergency backup operations and manual operations.

Gate motors, gear boxes and appurtenances necessary for the raising and lowering of the gates should be sized based upon final design of the radial gates. Provisions should be included for use of an emergency generator (preferably maintained onsite with automatic transfer switch) for operations of the gates during power outages. The gates must also be capable of being operated by hand in case without power.

Controls of the gate motors should include remote-local switching and also automatic-manual switching. Local control is needed for times of manned operation of the gates as well as for routine maintenance. Remote control by way of SRP's telemetry system is also desired such that manned operation of the gates is unnecessary.

Operation of the gate will necessarily have some manual input, if for nothing else than to initiate the gate opening and gate closing sequencing. It is envisioned that the basic decision making process for gate operation will revolve around SRP making a manual decision to drain the Arizona Canal to the ACDC (based on criteria discussed separately in the Operations Procedure). Little automatic operation of the gates during flow releases would appear to be possible, other than perhaps a level control if such is advantageous. Closure of the gates, however could be accomplished either manually by a remote or local operator based on changes in flow conditions, or it could be automatic based on local data received on flows in the ACDC or remote information based on raingage data or downstream ACDC flows received by SRP at its central control station.



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FLOOD CONTROL DISTRICT
OF MARICOPA COUNTY
ENGINEERING DIVISION

ARCADIA AREA
DRAINAGE STUDY
PROJECT NO. FCD 94-21

	BY	DATE
DESIGNED	JVD	3/25/96
DRAWN	SRM	3/25/96

JAMES DAVEY AND ASSOCIATES
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220 S. 3RD AVENUE
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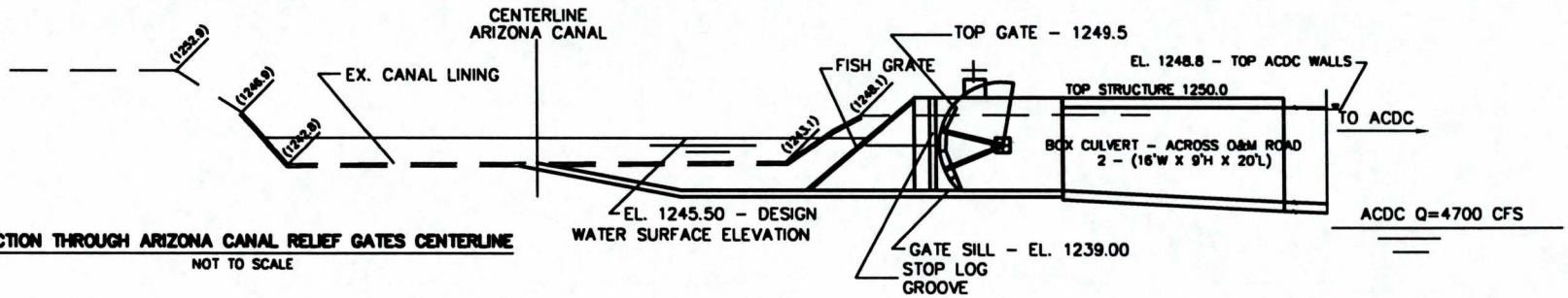
AZ. CANAL RELIEF GATES
PLAN VIEW

SHEET 1



SECTION THROUGH ARIZONA CANAL RELIEF GATES CENTERLINE

NOT TO SCALE

SCALE 1" = 20'

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AZ. CANAL RELIEF GATES PROFILE

SHEET 1

Table 1

J. Davey
03/26/96

Spillway Gate Sizing - Per Salt River Project WCPM 11.04 Methodology

1. Freeflow Discharge From Gate

Freeflow discharge is the valid design criteria as, per criteria established in the Arcadia Area Predesign Study - Arizona Canal releases into the ACDC - Conceptual Report, dated 6/6/95, no releases from the Arizona may be made with ACDC flows greater than 4700 cfs. At ACDC flows of 4700 cfs, the Cudia City Wash water surface elevation is below elevation 1240, the elevation at which the gate sill will be set.

The equation used by SRP for freeflow discharge from a radial gate is -

$$Q = 3.2507 * W * (A \wedge 0.159) * (B \wedge 0.717) * (H \wedge 0.624)$$

Where :
Q = Discharge, cfs
W = Width of Gate Opening, feet
A = Trunnion Height, feet
B = Gate Opening, feet
H = Available Head (upstream), feet

The accuracy of the equation is limited by maximum and minimum gate criteria; however, as the purpose of this use is to size the gate for discharge of a set amount at full gate rather than for accurate measurement purposes, it should be adequate. The results are cross-checked against sample calculations of flow over an ogee-crest spillway, with the radial gate flows being slightly more conservative than the free flow over a spillway.

AZ Canal Water Surface Elevation (feet MSL)	Gate Sill Elevation (feet MSL) (Assumed)	H (feet)	A (feet)	B (feet)	W (Assumed) (feet)	Q (cfs)
AZ Canal Q = 1000 cfs (Maximum Discharge)						
1245.00	1240.00	5.00	5.00	4.50	30	1011
1245.00	1240.00	5.00	5.00	3.50	30	844
1245.00	1240.00	5.00	5.00	3.00	30	756
1245.00	1240.00	5.00	5.00	2.50	30	663
1245.00	1240.00	5.00	5.00	2.00	30	565
1245.00	1240.00	5.00	5.00	1.50	30	460
1245.00	1240.00	5.00	5.00	1.00	30	344
1245.00	1240.00	5.00	5.00	0.50	30	209
1245.00	1240.00	5.00	5.00	0.00	30	0

(1245.5 less 0.5' headloss)

Check: of gate Size using Weir Flow over an Ogee Crest
Weir Flow - Q=CLH^1.5
H = 5, L = 30, C = 3.5
=> Q = 1173
1096 > 1011 by 16 percent - OK (reasonable - ogee crest flow should be highe

Summary

Use Two 15' Wide Radial Gates

Table 2

J. Davey
03/26/96

Radial Gates Entrance Channel Sizing

Az. Canal Invert Elev. = 1242.8 to 1243.1
Design Water Surface Elevation =
1245.5

Design Criteria

- Max. Headloss of 0.50' Across Entrance
- Assume 1/2 of Entrance Area Clogged
- Fish Grate Bars at 2" On-Center Present
- K-Fish Grate = 0.55 (Assuming 1/2" bars at 2" on-center, per USACOE HDC 010-7)
- K-Entrance = 0.50
- Flow at an Average of 45-Degrees to Grate - Therefore use velocity component of 1.4 times velocity perpendicular to grate.

Headloss = (0.50 +0.55)*(V*1.41)^2 / 64.4 .LT. 0.50'
V = (0.50 * 64.4 / (0.50+0.55)) ^(1/2)/(1.41)
=> V-Design = 3.93 fps

Entrance Area = Q / V * 2
= 1000 cfs / V-Design * 2
= 509 sq. ft.

Note : for Unclogged Grate -
V= 3.93/2 = 1.97 fps and HL = 0.13'

Length of Entrance at a Depth of:

1.5 feet =	339
2.0 feet =	255
2.5 feet =	204
3.0 feet =	170
3.5 feet =	145
4.0 feet =	127
4.5 feet =	113
5.0 feet =	102
5.5 feet =	93
6.0 feet =	85
6.5 feet =	78

Minimize Length of Grate - Use depth of 5.5'
At 6.5' depth, invert is at elevation (1245.5 - 6.5) = 1239. Use 78 lineal feet of grated inlet to gates.

4. ENGINEER'S ESTIMATE OF ARIZONA CANAL RELIEF GATES COST

The probable cost of construction of the Arizona Canal Relief Gates has been estimated based on the preliminary design presented above. As with any cost estimate based on a preliminary design, changes made during final design of the gates could substantially change the construction costs.

The Engineer's Estimate of the probable cost of the gates is shown in the following table. The estimate is $762,000, including a 25 percent overall contingency and an additional 15 percent for engineering and administrative expense. Accuracy of the costs is estimated at plus or minus 20 percent. Much variability in costs could be expected due to the time constraints and other limitations of working in the Arizona Canal with its limited "water outs". Further uncertainty in the estimate is due to the difficulties that may be encountered in the connection to the ACDC channel.

J. Davey
03/26/96

Engineer's Estimate of the Arizona Canal Relief Gates to the ACDC Construction Costs

ITEM	DESCRIPTION	APPROXIMATE QUANTITY	UNIT	UNIT COST	PROBABLE TOTAL COST*
1	15' Wide x 9' High Radial Gates	2	Each	$25,000	$50,000
2	Gate Motors and Controls	2	Each	$15,000	$30,000
3	Instrumentation	1	Lump Sum	$25,000	$25,000
4	Emergency Generator	1	Each	$40,000	$40,000
5	Fish Grate	85	Lineal Feet	$250	$21,000
6	Concrete Work for Fish Grate	70	Cubic Yards	$800	$56,000
7	Concrete Work for Gate Structure	72	Cubic Yards	$800	$58,000
8	Concrete Box Culvert	132	Cubic Yards	$800	$106,000
9	Sawcut ACDC Walls	54	Lineal Feet	$400	$22,000
10	Concrete Entrance to ACDC	127	Cubic Yards	$800	$102,000
11	ACDC Energy Dissipator	1	Lump Sum	$20,000	$20,000
	Subtotal				$530,000
	25% Contingency				$133,000
	Subtotal				$663,000
	15% For Engineering and Administration				$99,000
	TOTAL				$762,000

* - rounded to nearest $1000

Arcadia Area Predesign Study
Arizona Canal Releases into ACDC
Conceptual Report

6/6/95

1. Background: As a part of the Arcadia Predesign Study, the Flood Control District of Maricopa County (FCDMC) is exploring the possibility of Arizona Canal discharging a maximum flow of 1,000 cfs into the ACDC at the Cudia City Wash Detention Basin. The Salt River Project (SRP) currently has the right to release 1,000 cfs into the Old Cross Cut Canal at 48th Street. Transfer of the Arizona Canal releases to the ACDC will provide an opportunity to better utilize the Old Cross Cut capacity for the drainage of floodwater from the Arcadia Area.

2. Project Formulation: Develop criteria for safe maximum release of 1000 cfs from the Arizona Canal into the ACDC at approximately the Cudia City Wash Detention Basin, without exceeding the design capacity of the ACDC. This criteria is developed with the cooperation and guidance from the Los Angeles District office of the Corps of Engineers. During the design phase of this project, details for implementation of these criteria will be developed.

3. Available Gages: Table 1 identifies the gages to be used in developing the release criteria (see figure 1):

TABLE 1

Gage* #	Type	Location	Comments
4808	Stage	Cudia City Basin Outlet	Pressure Transducer
4813	Stage	ACDC @ 14th Street	"
4823	Stage	ACDC @ 43rd Avenue	"
4635	Precip.	Tatum Wash (40th Street at Shea)	Tipping Bucket
4790	Precip.	Cudia City Wash (Tatum and Lincoln)	"
4800	Precip.	Dreamy Draw Dam	"
4830	Precip	Cave Creek Detention Basin	"
4833	Stage	Cave Creek at Sweet Water	Pressure Transducer
proposed	Stage	ACDC at 7th Street	Pressure Transducer

*All gages are owned and operated by FCDMC. All gages are telemetered and the information will be available to the Salt River Project.

4. Release Criteria:

Two criteria will dictate the amount of releases from the Arizona Canal into the ACDC:

1. The amount of rainfall in the drainage area of ACDC above 16th Street (9.9 square miles).

2. The measured discharges in the ACDC at the following locations:

   a) Cudia City Wash Sediment Basin outlet (including any releases from the Arizona Canal),CP-101. ACDC design discharge at this location is 6,700 cfs.

   b) ACDC at 16th Street, CP-105. The design discharge at this location is 9,000 cfs.

   c) ACDC at 43rd Avenue, CP-1018. The design discharge at this location is 27,000 cfs.

The detailed criteria and corresponding allowable releases from the Arizona Canal are included in Table 2.

FCDMC gages will be used to estimate the flows in the ACDC as well as measuring the rainfall in the drainage area of the ACDC at 16th Street. It is the intention of the Flood Control District to provide SRP full and direct access to the information provided by these gages, for the operation of the release gates. Issues regarding the access to this information will be addressed at the design phase of the project.

4.1 Rainfall in the Drainage Area Above 16th Street:

Criteria 1 requires that the preceding one hour rainfall in the 9.9 square mile drainage area be measured and used for deciding how much, if any, releases can be allowed from the Arizona Canal:

Preceding 1-hr Rain (inches)	Allowable Discharge (cfs)
≥ 1.61	0
≤1.45	1000

These 1.61 and 1.45 inch, one hour, depths are based on the estimated amount of hourly rainfall required over several hours to produce peak discharges of 9,000 cfs and 8,000 cfs respectively, at CP-105 (16th Street). The design capacity at this location is 9,000 cfs.

The rainfall for the drainage area above CP-105 will be measured utilizing the information received from gages 4635, 4790 and 4800. To obtain an average precipitation for the drainage area, following weighing factors are to be used:

4790 @ 50% 4800 @ 30% 4635 @ 20%

Gage 4790 covers more of the drainage area and therefore was given a higher factor.

4.2 ACDC Maximum Discharge Requirements:

Cudia City to 14th Street: CP-105 is actually at 16th Street with slightly smaller drainage area than the 14th Street gage drainage area. For the purposes of this report, the gage at 14th Street will be used to measure flows at CP-105. The travel time between the release point for the Arizona Canal (CP-101) and the 14th Street gage (CP-105) is estimated to be 0.5 hours (see Appendix). In other words, by the time releases are discontinued at CP-101, it will take about 0.5 hours for the Arizona Canal waters to be evacuated from this reach of ACDC to provide room for stormwater to be conveyed in the ACDC. Based on the rainfall amounts used to design the ACDC at CP-105, the maximum 0.5 hour rainfall in the storm that produces the 100-year flood is estimated to be 1.2 inches. Should this drainage area receive 1.2 inches of rainfall in a 0.5 hour period, the flows in the ACDC are estimated to increase by 3000 cfs and 3200 cfs, at CP-101 and CP-105 respectively. Therefore the difference between the design capacity and the 0.5 hour maximum discharge can be used for conveying preceding runoff, including any releases from the Arizona Canal (see also Table 2):

Concentration Point	Discharge from 1.2" in 0.5 hrs (cfs)	ACDC design discharge (cfs)	Maximum allowable discharge (cfs)
CP-101 (Cudia City)	3000	6700	3700
CP-105 (14th Street)	3200	9000	5800

Based on the allowable discharges, the step releases are calculated and presented in Table 2. Extra releases are allowed at Cudia City Wash if ACDC at 14th Street is not fully utilized.

14th Street to 43rd Avenue: The 72 square mile drainage area above the 43rd Avenue gage (CP-1018) includes the areas below the Dreamy Draw Dam and the Cave Buttes Dam. The travel time between the release point at CP-101 and CP-1018 is estimated to be 1.5 hours (see Appendix). The maximum 1.5 hour rainfall used for the design of ACDC at CP-1018 is estimated to be 1.62 inches. Should this drainage area receive 1.62 inches of rainfall in 1.5 hours, the peak discharge at CP-1018 (including maximum discharge from Cave Buttes and Dreamy Draw Dams) is estimated to be 16,000 cfs. The design discharge for ACDC at CP-1018 is 27,000 cfs. Therefore the difference between the design capacity and the 1.5 hour maximum discharge can be used for conveying previous stormwater, including any releases from the Arizona Canal (see also Table 2):

Concentration Point	Discharge from 1.62" in 1.5 hrs (cfs)	ACDC design discharge (cfs)	Maximum allowable discharge (cfs)
CP-1018	16,000	27,000	11,000

5. SRP Operations:

To operate the proposed release gates for Arizona Canal at the Cudia City Sediment Detention Basin, SRP will require some time to evacuate its canals before closing the release gates. Other spill sites available to SRP in this reach of Arizona Canal are at the Indian Bend Wash, New Cross Cut Canal, Old Cross Cut Canal and other sites downstream of the Cudia City Basin.

The criteria developed in this report requires SRP to immediately close the gates when a zero (0) release criteria is reached. The Flood Control District and SRP are currently working together to develop procedures to provide SRP with enough lead time to operate its gates using the criteria set forth in this report, while fulfilling its customer's demands for water downstream. These procedures will employ the use of information from other rain gages in the area, Doppler Radar, and possibly local Quantitative Precipitation Forecast for this area. Results of these efforts will be provide during the design and implementation phase of the project.

Table 2

Arizona Canal Releases into ACDC at Cudia City Wash Sediment Basin					
Location	Discharge (cfs)	Precipitation In the Past One Hour (inches)	Allowable Arizona Canal Releases (cfs)	Gages Monitored: Precipitation	Comments
Rainfall Criteria					
14th Street	N/A	≥ 1.61	0	4790 @ 50% 4800 @ 30% 4635 @ 20%	produces 9,000 cfs @ max. 1.61 "/hr
14th Street	N/A	≤ 1.45	1000		produces 8,000 cfs @ max 1.45 "/hr
Runoff Criteria					
Discharge at Cudia City Wash Detention Basin (cfs)	ACDC Discharge at 14th Street (cfs)	ACDC Discharge at 43rd Avenue (cfs)	Allowable Arizona Canal Releases (cfs)	Gages Monitored: Stage (stream)	Comments
N/A	N/A	> 11,000	0	4823	max. Q @ CP-1018
N/A	> 5,800	N/A	0	4813	max. Q @ CP-105
> 4,700	N/A	N/A	0	4808	max Q @ CP-101
> 3,700	> 5,800	N/A	0	4808, 4813	
< 4,450	< 4,800	< 11,000	250	4808, 4813, 4823	
< 4,200	< 4,800	< 11,000	500	4808, 4813, 4823	
< 3,950	< 4,800	< 11,000	750	4808, 4813, 4823	
< 3,700	< 5,550	< 11,000	250	4808, 4813, 4823	
< 3,700	< 5,300	< 11,000	500	4808, 4813, 4823	
< 3,700	< 5,050	< 11,000	750	4808, 4813, 4823	
< 3,700	< 4,800	< 11,000	1000	4808, 4813, 4823	
< 3,450	< 5,800	< 11,000	250	4808, 4813, 4823	
< 3,200	< 5,800	< 11,000	500	4808, 4813, 4823	
< 2,950	< 5,800	< 11,000	750	4808, 4813, 4823	
< 2,700	< 5,800	< 11,000	1000	4808, 4813, 4823	

June 6, 1995

HEC-2 Results for the Operation of the Arizona Canal Relief Gates

PREPARED FOR

THE FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

December 1996

Registered Professional Engineer (Civil)
CERTIFICATE NO.
20902
JAMES V.
DAVEY
Date Signed
ARIZONA, U.S.A.

JAMES DAVEY AND ASSOCIATES

CONSULTING CIVIL ENGINEERS - WATER RESOURCES SPECIALISTS

204 S. 1st AVENUE
YUMA, ARIZONA 85364
(520) 782-7926

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1*********************************************
 *  HEC-2 WATER SURFACE PROFILES             *
 *                                           *
 *  Version   4.6.2;  May 1991               *
 *                                           *
 *  RUN DATE    25MAR96    TIME   21:48:13   *
 *********************************************
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*****************************************
*  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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X     X  XXXXXXX   XXXXX              XXXXX
X     X  X        X     X            X     X
X     X  X        X                        X
XXXXXXX  XXXX     X          XXXXX    XXXXX
X     X  X        X                  X
X     X  X        X     X            X
X     X  XXXXXXX   XXXXX              XXXXXXX
```

1

25MAR96 21:48:13 PAGE 1

THIS RUN EXECUTED 25MAR96 21:48:13

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*************************************
 HEC-2 WATER SURFACE PROFILES

 Version   4.6.2;  May 1991
*************************************
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T1      CANAL 1 (ARIZONA) FROM RADIAL GATE 1-8.0 TO GATE 1-5.0 (ARIZONA FALLS)
T2
T3      1-8.0 TO 1-5.0          17.1E-9.5N TO 20.2E-7.75N          AZ0800.DAT

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

      0         2         0         0         0         0         0                 1245.5      0

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

      1         0        -1         0         0         0        -1                            0

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

J5  LPRNT     NUMSEC                    ********REQUESTED SECTION NUMBERS********

    -10       -10

NC    0.030     0.030     0.018       .1        .3
QT        6       100       500      700       850      1000      1200
X1    84600         9        25     91.9       600       600       600
X2              1246.9
X3                                   18.0    1252.9      92.0    1248.2
GR  1252.9         0    1252.9      18.0    1248.4      25.0    1246.9      26.4    1242.8        30
GR  1243.1      83.9    1246.5      88.9    1248.1      91.9    1248.2     123.2

X1    85200         9        25     91.6       600       600       600
```

X2		1247.0								
X3				21.4	1249.4	96.0	1250.6			
GR	1249.6	0	1249.4	21.4	1248.2	25	1247.0	26.2	1242.7	28.5
GR	1243.0	87.1	1246.9	90.0	1249.0	91.6	1250.6	96.0		
X1	85800	9	25	90.3	600	600	600			
X2		1247.0								
X3				20.1	1250.1	94.7	1251.5			
GR	1250.2	0	1250.1	20.1	1248.3	25	1247.0	26.6	1243.0	33
GR	1243.6	79.3	1247.1	86.3	1249.6	90.3	1251.5	94.7		
X1	85850	0	0	0	50	50	50			
X3				20.1	1250.1	94.7	1251.5			

X1	85899	10	31.5	96.8	49	49	49			
X3				30	1250.1	98.7	1251.5			
GR	1251.7	20	1250.1	30	1248.8	31	1248.3	31.5	1243.1	37
GR	1243.1	90.5	1248.8	96.0	1249.6	96.8	1251.5	98.7	1251.7	99
NC				0.3	0.5					
X1	85901	18	31.5	96.8	2	2	2			
X2				1248.8	1251.7					
X3				30	1250.1	98.7	1251.5			
GR	1251.7	20	1250.1	30	1248.8	31	1248.3	31.5	1243.1	37
GR	1243.1	50.5	1248.9	50.6	1248.9	51.5	1243.1	51.6	1243.1	75.5
GR	1248.9	75.6	1248.9	76.5	1243.1	76.6	1243.1	90.5	1248.8	96.0
GR	1249.6	96.8	1251.5	98.7	1251.7	99				
NC				0.1	0.3					
X1	85991	18	30.7	96.4	90	90	90			
X2				1248.8	1251.7					
X3				28	1251.9	98.5	1251.3			
GR	1251.9	28	1251.7	28.1	1249.1	30.7	1248.8	31	1243.1	37
GR	1243.1	50.5	1248.9	50.6	1248.9	51.5	1243.1	51.6	1243.1	75.5
GR	1248.9	75.6	1248.9	76.5	1243.1	76.6	1243.1	90.5	1248.8	96.0
GR	1249.2	96.4	1251.3	98.5	1251.7	99				
X1	85993	10	30.7	96.4	2	2	2			
X3				28	1251.9	98.5	1251.3			
GR	1251.9	28	1251.7	28.1	1249.1	30.7	1248.8	31	1243.1	37
GR	1243.1	90.5	1248.8	96.0	1249.2	96.4	1251.3	98.5	1251.7	99.0
NC				0.3	0.5					
X1	86069	8	25	95.1	76	76	76			
X2		1247.3								
X3				20.3	1251.9	98.8	1251.3			
GR	1251.9	20.2	1249.1	25.0	1247.3	27.4	1243.0	33.1	1243.0	86.8
GR	1247.3	92.5	1249.2	95.1	1251.3	98.8				
NC				0.1	0.3					
X1	86169	0	0	0	100	100	100			
X2		1247.3								
X3				20.3	1251.9	98.8	1251.3			
X1	86228	8	25	95.1	59	59	59			
X3				20.3	1251.9	98.8	1251.3			
GR	1251.9	20.2	1249.1	25	1247.3	27.4	1242.8	33.1	1242.8	86.8
GR	1247.3	92.5	1247.7	95.1	1248.2	98.8				
X1	86231	10	30.1	74.1	3	3	3			
X3				28	1251.8	75.6	1251.3			

GR	1251.8	20	1251.8	28	1249.9	30	1249.1	30.1	1242.8	30.2
GR	1242.8	74	1249.2	74.1	1249.9	74.2	1251.3	75.6	1251.8	80

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NC				0.3	0.5					
X1	86233	18	30.1	74.1	2	2	2			
X2				1249.9	1251.8					
X3				28	1251.8	75.6	1251.3			
GR	1251.8	20	1251.8	28	1249.9	30	1249.1	30.1	1242.8	30.2
GR	1242.8	44	1249.9	44.1	1249.9	45.0	1242.8	45.1	1242.8	59.0
GR	1249.9	59.1	1249.9	60.0	1242.8	60.1	1242.8	74.0	1249.2	74.1
GR	1249.9	74.2	1251.3	75.6	1251.8	80				
NC				0.1	0.3					
X1	86381	18	28.7	74.1	148	148	148			
X2				1249.9	1251.8					
X3				28	1251.8	74.5	1250.2			
GR	1251.8	20	1251.8	28	1251.2	28.7	1249.9	30	1242.8	30.1
GR	1242.8	44	1249.9	44.1	1249.9	45.0	1242.8	45.1	1242.8	59.0
GR	1249.9	59.1	1249.9	60.0	1242.8	60.1	1242.8	74.0	1249.3	74.1
GR	1249.9	74.2	1250.2	74.5	1251.8	80				
X1	86383	10	28.7	74.1	2	2	2			
X3				28	1251.8	74.5	1250.2			
GR	1251.8	20	1251.8	28	1251.2	28.7	1249.9	30	1242.8	30.1
GR	1242.8	74	1249.3	74.1	1249.9	74.2	1250.2	74.5	1251.8	80
NC				0.3	0.5					
X1	86433	8	25	86.1	50	50	50			
X2		1247.2								
X3				20.6	1251.9	91.1	1250.2			
GR	1251.9	20.5	1251.2	25	1247.1	29	1243.0	33.1	1243.0	77.7
GR	1247.2	83.3	1249.3	86.1	1250.2	91.1				
NC				0.1	0.3					
X1	86486	0	0	0	53	53	53			
X2		1247.2								
X3				20.6	1251.9	91.1	1250.2			
X1	87000	9	25	86.4	514	514	514			
X2		1247.4								
X3				17.5	1252.9	90.5	1251.1			
GR	1252.8	0	1252.9	17.5	1249.6	25.0	1247.4	26.6	1243.1	29.0
GR	1242.6	81.9	1247.4	84.5	1249.6	86.4	1251.1	90.5		
X1	87600	9	25	90.4	600	600	600			
X2		1247.5								
X3				17.0	1253.2	95.5	1252.0			
GR	1253.4	0	1253.2	17.0	1249.6	25	1247.5	26.6	1243.0	29.0
GR	1243.3	85.9	1247.5	88.1	1249.9	90.4	1252.0	95.5		
X1	88200	9	25	89.4	600	600	600			
X2		1247.7								
X3				18.0	1253.0	92.7	1250.8			
GR	1253.2	0	1253.0	18.0	1249.6	25	1247.7	26.8	1244.0	28.5
GR	1242.9	83.7	1247.6	87.1	1249.8	89.4	1250.8	92.7		

1

X1	88800	9	25	92.2	600	600	600

X2		1247.8									
X3				19.0	1252.3	95.2	1250.4				
GR	1252.0	0	1252.3	19.0	1249.7	25.0	1247.8	27.0	1244.1	29.0	
GR	1243.5	87.2	1247.8	90.5	1249.6	92.2	1250.4	95.2			
X1	89350	8	25	87.1	550	550	550				
X2		1248.0									
X3				20.5	1251.1	91.5	1250.7				
GR	1251.1	20.4	1249.7	25	1248.0	26.8	1243.5	31.2	1243.5	80.7	
GR	1248.0	85.1	1249.9	87.1	1250.7	91.5					
X1	89403	14	31.4	83.7	53	53	53				
X3				30	1251.1	84.2	1250.7				
GR	1251.4	20	1251.1	30	1250.0	31.1	1249.7	31.4	1244.6	35.9	
GR	1244.6	47.6	1243.3	47.7	1243.3	68.2	1245.0	68.3	1245.0	80.8	
GR	1249.9	83.7	1250.0	83.8	1250.7	84.2	1251.4	90			
NC				0.3	0.5						
X1	89405	18	31.4	83.7	2	2	2				
X2				1250.0	1251.4						
X3				30	1251.1	84.2	1250.7				
GR	1251.4	20	1251.1	30	1250.0	31.1	1249.7	31.4	1244.6	35.9	
GR	1244.6	46.6	1250.1	46.7	1250.1	47.6	1243.3	47.7	1243.3	67.2	
GR	1250.1	67.3	1250.1	68.2	1245.0	68.3	1245.0	80.8	1249.9	83.7	
GR	1250.0	83.8	1250.7	84.2	1251.4	90					
NC				0.1	0.3						
X1	89525	17	31.1	83.7	120	120	120				
X2				1250.0	1251.4						
X3				29.4	1251.8	84.8	1251.0				
GR	1251.8	29.3	1251.4	29.7	1250.0	31.1	1244.6	35.9	1244.6	46.6	
GR	1250.1	46.7	1250.1	47.6	1243.3	47.7	1243.3	67.2	1250.1	67.3	
GR	1250.1	68.2	1245.0	68.3	1245.0	80.8	1249.9	83.7	1250.0	83.8	
GR	1251.0	84.8	1251.8	90							
X1	89527	13	31.1	83.7	2	2	2				
X3				29.4	1251.8	84.8	1251.0				
GR	1251.8	29.3	1251.4	29.7	1250.0	31.1	1244.6	35.9	1244.6	47.6	
GR	1243.3	47.7	1243.3	68.2	1245.0	68.3	1245.0	80.8	1249.9	83.7	
GR	1250.0	83.8	1251.0	84.8	1251.4	90					
NC				0.3	0.5						
X1	89557	8	25	86.5	30	30	30				
X2		1248.0									
X3				20.1	1251.8	90	1251.0				
GR	1251.8	20	1250.0	25	1248.0	27.0	1243.5	31.5	1243.5	80.1	
GR	1248.0	84.3	1249.9	86.5	1251.0	90					

NC				0.1	0.3						
X1	89600	0	0	0	43	43	43				
X2		1248.0									
X3				20.1	1251.8	90	1251.0				
X1	90000	9	25	91.3	400	400	400				
X2		1248.0									
X3				19.0	1253.0	94.3	1250.9				
GR	1252.3	0	1253.0	19.0	1250.2	25	1248.0	27.9	1243.7	32.5	
GR	1243.6	85.7	1248.1	89.3	1249.7	91.3	1250.9	94.3			
X1	90600	9	25	94.1	600	600	600				
X2		1248.2									

X3				18.5	1253.6	96.2	1250.8			
GR	1253.1	0	1253.6	18.5	1250.3	25.0	1248.2	27.4	1244.0	32.7
GR	1244.1	87.3	1248.1	91.6	1250.2	94.1	1250.8	96.2		
X1	91200	9	25	91.8	600	600	600			
X2		1248.4								
X3				18.6	1254.2	94.1	1251.0			
GR	1254.1	3.1	1254.2	18.6	1250.3	25.0	1248.4	27.0	1243.8	31.8
GR	1244.6	85.1	1248.3	89.3	1250.3	91.8	1251.0	94.1		
X1	91800	9	25	88.7	600	600	600			
X2		1248.5								
X3				18.5	1253.9	91.1	1251.3			
GR	1253.6	0	1253.9	18.5	1250.3	25	1248.5	27	1244.1	31.5
GR	1244.5	82.1	1248.5	86.3	1250.6	88.7	1251.3	91.1		
X1	92400	9	25	89.0	600	600	600			
X2		1248.6								
X3				18.5	1254.4	92.1	1251.9			
GR	1254.0	0	1254.4	18.5	1250.7	25	1248.5	27.7	1244.5	31.5
GR	1244.3	84.5	1248.6	86.6	1250.9	89.0	1251.9	92.1		
X1	93000	9	25	85.1	600	600	600			
X2		1248.8								
X3				19.0	1255.0	89.1	1253.0			
GR	1254.9	0	1255.0	19.0	1251.4	25	1248.7	27.3	1245.2	31.5
GR	1244.0	79.6	1248.8	82.7	1251.4	85.1	1253.0	89.1		
X1	93414	9	25	84.0	414	414	414			
X2		1248.9								
X3				22.7	1253.4	86.5	1252.4			
GR	1253.7	6.6	1253.4	22.7	1251.6	25	1248.9	27.7	1244.4	31.8
GR	1244.4	77.4	1248.9	81.4	1251.7	84.0	1252.4	86.5		
X1	93463	0	0	0	49	49	49			
X3				22.7	1253.4	86.5	1252.4			

X1	93513	12	32.1	79.9	50	50	50			
X3				30	1253.4	80.0	1252.4			
GR	1253.9	20	1253.4	30	1252.6	32	1251.6	32.1	1247.1	32.2
GR	1244.1	34.2	1244.4	78.4	1246.5	79.8	1251.7	79.9	1252.4	80.0
GR	1252.6	80.1	1253.9	90						
NC				0.3	0.5					
X1	93515	16	32.1	79.9	2	2	2			
X2				1252.6	1253.9					
X3				30	1253.4	80.0	1252.4			
GR	1253.9	20	1253.4	30	1252.6	32	1251.6	32.1	1247.1	32.2
GR	1244.1	34.2	1244.1	55.7	1252.6	55.8	1252.6	57.0	1244.4	57.1
GR	1244.4	78.4	1246.5	79.8	1251.7	79.9	1252.4	80.0	1252.6	80.1
GR	1253.9	90								
NC				0.1	0.3					
X1	93551	16	32.1	79.9	36	36	36			
X2				1252.6	1253.9					
X3				30	1253.3	82.0	1253.7			
GR	1253.9	20	1253.3	30	1252.6	32	1251.7	32.1	1247.1	32.2
GR	1244.1	34.2	1244.1	55.7	1252.6	55.8	1252.6	57.0	1244.4	57.1
GR	1244.4	78.4	1246.5	79.8	1251.7	79.9	1252.6	80.0	1253.7	82.0
GR	1253.9	90								

X1	93553	12	32.1	79.9	2	2	2			
X3				30	1253.3	82.0	1253.7			
GR	1253.9	20	1253.3	30	1252.6	32	1251.7	32.1	1247.1	32.2
GR	1244.1	34.2	1244.4	78.4	1246.5	79.8	1251.7	79.9	1252.6	80.0
GR	1253.7	82.0	1253.9	90						
NC				0.3	0.5					
X1	93559	8	10.2	59.3	6	6	6			
X3				10.2	1254.0	59.4	1254.0			
GR	1254.0	10.0	1254.0	10.1	1254.0	10.2	1244.3	10.3	1244.3	59.2
GR	1254.0	59.3	1254.0	59.4	1254.0	59.5				
X1	93581	11	10.2	75.5	22	22	22			
X3				10.1	1252.9	77.4	1253.5			
GR	1252.9	10	1252.9	10.1	1252.9	10.2	1239.0	16.5	1238.0	17.5
GR	1238.2	38.5	1244.3	43.5	1244.3	43.5	1244.3	70.5	1251.0	75.5
GR	1253.5	77.4								
X1	93612	8	25.0	90.4	31	31	31			
X3				22.1	1253.8	92.3	1253.5			
GR	1253.8	22	1253.7	25	1252.9	25.5	1239.0	35.0	1238.0	35.1
GR	1238.5	81.0	1251.0	90.4	1253.5	92.3				
X1	93622	6	25.0	81.5	10	10	10			
X3				23.2	1253.5	83.4	1253.5			
GR	1253.5	23.1	1251.0	25.0	1239.0	34.0	1239.0	72.5	1251.0	81.5
GR	1253.5	83.4								

1

X1	93672	6	25.0	84.6	50	50	50			
X3				23.0	1253.5	86.4	1253.5			
GR	1253.5	22.9	1251.0	25.0	1244.0	30.3	1244.0	79.3	1251.0	84.6
GR	1253.5	86.4								
X1	93887	9	14	75	215	215	215			
X2		1249.4								
X3				10.1	1253.9	81.0	1254.5			
GR	1253.9	10	1251.6	14	1249.4	16	1244.0	23.0	1244.0	46
GR	1243.6	69.0	1249.4	73.0	1251.6	75.0	1254.5	81.0		
X1	94487	9	16	74	600	600	600			
X2		1249.3								
X3				10.1	1254.5	79.0	1254.8			
GR	1254.5	10	1251.7	16.0	1249.3	18	1243.7	23.	1243.6	46.0
GR	1243.5	68.0	1249.3	71	1251.9	74	1254.8	79		
X1	95087	9	16	74	600	600	600			
X2		1249.7								
X3				10.1	1254.4	81.0	1255.7			
GR	1254.4	10	1252.3	16	1249.7	17	1243.9	23	1243.9	46
GR	1244.1	69	1249.7	72	1252.4	74	1255.7	81		
X1	95687	9	13	72	600	600	600			
X2		1249.7								
X3				10.1	1252.7	78	1255.6			
GR	1252.7	10	1252.5	13	1249.7	15	1244.3	22	1244.6	43
GR	1244.4	65	1249.7	70	1252.6	72	1255.6	78		
X1	96287	9	15	77	600	600	600			
X2		1250.2								
X3				10.1	1254.5	85	1256.7			
GR	1254.5	10	1252.4	15	1250.2	17	1245.7	23	1245.4	47

GR	1245.4	71	1250.2	74	1252.8	77	1256.7	85.0			
X1	96887	9	12	74	600	600	600				
X2		1250.3									
X3				10.1	1253.6	83	1256.5				
GR	1253.6	10	1252.8	12	1250.3	15	1245.9	21	1245.8	46	
GR	1245.9	70	1250.3	72	1252.9	74	1256.5	83			
X1	97487	9	13	74	600	600	600				
X2		1250.6									
X3				10.1	1254.4	83	1256.7				
GR	1254.4	10	1252.9	13	1250.6	16	1246.2	23	1246.2	46	
GR	1246.2	70	1250.6	72	1252.8	74	1256.7	83			
X1	98087	9	14	74	600	600	600				
X2		1250.9									
X3				10.1	1254.9	81	1256.5				
GR	1254.9	10	1253.2	14	1250.9	17	1246.5	24	1246.4	47	
GR	1246.6	70	1250.9	72	1253.3	74	1256.5	81			

X1	98687	9	15	79	600	600	600				
X2		1251.1									
X3				10.1	1255.5	85	1256.3				
GR	1255.5	10	1253.3	15	1251.1	17	1246.7	22	1246.8	48	
GR	1246.4	74	1251.1	76	1253.7	79	1256.3	85			
X1	99117	0	0	0	430	430	430				
X3				10.1	1255.5	85	1256.3				
X1	99165	10	19	80.4	48	48	48				
X3				17	1256.1	84	1257.7				
GR	1258.0	10	1256.1	17	1253.9	19	1253.9	20	1246.4	20.1	
GR	1246.4	80.2	1253.9	80.3	1254.0	80.4	1257.7	84.0	1258.0	85.0	
NC				0.3	0.5						
X1	99167	18	19	80.4	2	2	2				
X2				1253.9	1256.0						
X3				17	1256.1	84.0	1257.7				
GR	1258.0	10	1256.1	17	1253.9	19	1253.9	20	1246.4	20.1	
GR	1246.4	39.5	1253.9	39.6	1253.9	40.5	1246.4	40.6	1246.4	60.1	
GR	1253.9	60.2	1253.9	61.1	1246.4	61.2	1246.4	80.2	1253.9	80.3	
GR	1254.0	80.4	1257.7	84.0	1258.0	85					
NC				0.1	0.3						
X1	99251	0	0	0	84	84	84				
X2				1253.9	1256.0						
X3				17	1256.1	84.0	1257.7				
X1	99253	10	19	80.4	2	2	2				
X3				17	1256.1	84	1257.7				
GR	1258.0	10	1256.1	17	1253.9	19	1253.9	20	1246.4	20.1	
GR	1246.4	80.2	1253.9	80.3	1254.0	80.4	1257.7	84.0	1258.0	85	
NC				0.3	0.5						
X1	99287	9	18	80	34	34	34				
X2		1251.5									
X3				10.1	1256.1	90	1257.7				
GR	1256.1	10	1256.9	18	1251.5	22	1246.7	31	1246.6	53	
GR	1246.6	75	1251.5	78	1254.0	80	1257.7	90			
NC				0.1	0.3						

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X1    99317        15        25        88        30        30        30
X2               1251.0
X3                                    12    1259.4        99    1258.9
GR   1259.4        12    1254.0        25    1252.2     26.7   1250.99      27.8    1248.5        31
GR   1246.8      32.3    1246.7        44    1246.8        55    1246.9        67    1247.2        78
GR   1248.4        80    1250.9      83.4    1251.8        85    1253.9        88    1258.9        99
1
   25MAR96      21:48:13                                                                          PAGE    9


X1    99737         7        37        94       420       420       420
X3                                    10.1    1266.8       112    1264.9
GR   1266.8        10    1254.9        37    1246.6        46    1246.8        64    1246.4        84
GR   1256.4        94    1264.9       112

X1    99861        10        14      51.1       124       124       124
X3                                    10.1    1259.2        55    1259.2
GR   1259.2        10    1255.2        14    1246.5      14.1    1246.5        32    1255.2      32.1
GR   1255.2      33.0    1246.5      33.1    1246.5        51    1255.2      51.1    1259.2        55
1
   25MAR96      21:48:13                                                                          PAGE   10

T1      CANAL 1 (ARIZONA) FROM RADIAL GATE 1-8.0 TO 1-5.0 (ARIZONA FALLS)
T2
T3      1-8.0 TO 1-5.0          17.1E-9.5N TO 20.2E-7.75N       AZ0800.DAT

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                3                                                                   1245.5

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     2                  -1                                      -1

1
   25MAR96      21:48:13                                                                          PAGE   11

T1      CANAL 1 (ARIZONA) FROM RADIAL GATE 1-8.0 TO 1-5.0 (ARIZONA FALLS)
T2
T3      1-8.0 TO 1-5.0          17.1E-9.5N TO 20.2E-7.75N       AZ0800.DAT

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                4                                                                   1245.5

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

     3                  -1                                      -1

1
   25MAR96      21:48:13                                                                          PAGE   12

T1      CANAL 1 (ARIZONA) FROM RADIAL GATE 1-8.0 TO 1-5.0 (ARIZONA FALLS)
T2
T3      1-8.0 TO 1-5.0          17.1E-9.5N TO 20.2E-7.75N       AZ0800.DAT

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                5                                                                   1245.5

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE
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     4                    -1                                        -1

1
   25MAR96       21:48:13                                                                                    PAGE   13

 T1       CANAL 1 (ARIZONA) FROM RADIAL GATE 1-8.0 TO 1-5.0 (ARIZONA FALLS)
 T2
 T3       1-8.0 TO 1-5.0            17.1E-9.5N TO 20.2E-7.75N        AZ0800.DAT

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 6                                                                          1245.5

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     5                     -1                                        -1

1
   25MAR96       21:48:13                                                                                    PAGE   14

 T1       CANAL 1 (ARIZONA) FROM RADIAL GATE 1-8.0 TO 1-5.0 (ARIZONA FALLS)
 T2
 T3       1-8.0 TO 1-5.0            17.1E-9.5N TO 20.2E-7.75N        AZ0800.DAT

 J1  ICHECK     INQ        NINV       IDIR       STRT       METRIC     HVINS      Q          WSEL       FQ

                 7                                                                          1245.5

 J2  NPROF      IPLOT      PRFVS      XSECV      XSECH      FN         ALLDC      IBW        CHNIM      ITRACE

     6                     -1                                        -1


1
   25MAR96       21:48:13                                                                                    PAGE   15


                                                                                THIS RUN EXECUTED 25MAR96     21:48:28
 ************************************
  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

 1-8.0 TO 1-5.0

 SUMMARY PRINTOUT TABLE  150

       SECNO      XLCH       ELTRD      ELLC       ELMIN      Q          CWSEL      CRIWS      EG         10*KS      VCH        AREA       .01K

    84600.000      .00        .00        .00      1242.80    100.00     1245.50    1243.42    1245.51      .22       .69       144.88     211.17
    84600.000      .00        .00        .00      1242.80    500.00     1245.50    1244.32    1245.68     5.61      3.45       144.88     211.17
    84600.000      .00        .00        .00      1242.80    700.00     1245.50    1244.66    1245.86    10.99      4.83       144.88     211.17
```

	84600.000	.00	.00	.00	1242.80	850.00	1245.50	1244.89	1246.03	16.20	5.87	144.88	211.17
	84600.000	.00	.00	.00	1242.80	1000.00	1245.50	1245.12	1246.24	22.43	6.90	144.88	211.17
	84600.000	.00	.00	.00	1242.80	1200.00	1245.50	1245.39	1246.57	32.29	8.28	144.88	211.17
	85200.000	600.00	.00	.00	1242.70	100.00	1245.51	1243.30	1245.52	.17	.62	160.54	242.37
	85200.000	600.00	.00	.00	1242.70	500.00	1245.81	1244.15	1245.93	3.00	2.79	179.02	288.53
*	85200.000	600.00	.00	.00	1242.70	700.00	1246.08	1244.48	1246.28	4.43	3.58	195.73	332.65
*	85200.000	600.00	.00	.00	1242.70	850.00	1246.32	1244.70	1246.57	5.17	4.03	210.70	373.99
*	85200.000	600.00	.00	.00	1242.70	1000.00	1246.58	1244.91	1246.88	5.61	4.40	227.41	422.07
*	85200.000	600.00	.00	.00	1242.70	1200.00	1246.97	1245.17	1247.33	5.83	4.76	252.14	496.80
*	85800.000	600.00	.00	.00	1243.00	100.00	1245.52	1243.81	1245.54	.46	.89	111.83	147.51
	85800.000	600.00	.00	.00	1243.00	500.00	1246.00	1244.80	1246.20	5.98	3.62	137.94	204.49
	85800.000	600.00	.00	.00	1243.00	700.00	1246.35	1245.16	1246.65	7.76	4.44	157.65	251.28
	85800.000	600.00	.00	.00	1243.00	850.00	1246.62	1245.42	1247.00	8.50	4.89	173.66	291.47
	85800.000	600.00	.00	.00	1243.00	1000.00	1246.91	1245.65	1247.34	8.86	5.25	190.60	335.94
	85800.000	600.00	.00	.00	1243.00	1200.00	1247.31	1245.94	1247.80	8.97	5.61	213.80	400.57
	85850.000	50.00	.00	.00	1243.00	100.00	1245.53	1243.82	1245.54	.46	.89	111.89	147.62
	85850.000	50.00	.00	.00	1243.00	500.00	1246.03	1244.80	1246.23	5.77	3.58	139.50	208.08
	85850.000	50.00	.00	.00	1243.00	700.00	1246.39	1245.16	1246.69	7.45	4.38	159.79	256.54
	85850.000	50.00	.00	.00	1243.00	850.00	1246.68	1245.42	1247.04	8.05	4.81	176.82	299.61
	85850.000	50.00	.00	.00	1243.00	1000.00	1246.97	1245.65	1247.38	8.41	5.16	193.87	344.75
	85850.000	50.00	.00	.00	1243.00	1200.00	1247.37	1245.94	1247.84	8.46	5.50	217.99	412.68
	85899.000	49.00	.00	.00	1243.10	100.00	1245.53	1243.57	1245.54	.27	.74	135.92	192.68
	85899.000	49.00	.00	.00	1243.10	500.00	1246.13	1244.48	1246.26	3.23	2.92	171.30	278.12
	85899.000	49.00	.00	.00	1243.10	700.00	1246.53	1244.83	1246.73	4.18	3.58	195.43	342.23
	85899.000	49.00	.00	.00	1243.10	850.00	1246.83	1245.05	1247.08	4.65	3.97	213.93	394.33
	85899.000	49.00	.00	.00	1243.10	1000.00	1247.14	1245.28	1247.43	4.95	4.30	232.63	449.40
	85899.000	49.00	.00	.00	1243.10	1200.00	1247.55	1245.55	1247.89	5.15	4.65	258.28	528.63

1

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
85901.000	2.00	1251.70	1248.80	1243.10	100.00	1245.53	1243.59	1245.54	.36	.76	131.01	167.53
85901.000	2.00	1251.70	1248.80	1243.10	500.00	1246.12	1244.52	1246.27	4.46	3.03	164.99	236.68
85901.000	2.00	1251.70	1248.80	1243.10	700.00	1246.52	1244.87	1246.74	5.92	3.72	188.33	287.78
85901.000	2.00	1251.70	1248.80	1243.10	850.00	1246.83	1245.11	1247.09	6.68	4.12	206.25	328.77
85901.000	2.00	1251.70	1248.80	1243.10	1000.00	1247.13	1245.34	1247.44	7.27	4.46	224.04	370.82
85901.000	2.00	1251.70	1248.80	1243.10	1200.00	1247.54	1245.61	1247.90	7.73	4.82	248.84	431.49
85991.000	90.00	1251.70	1248.80	1243.10	100.00	1245.54	1243.59	1245.54	.36	.76	131.13	167.78
85991.000	90.00	1251.70	1248.80	1243.10	500.00	1246.17	1244.52	1246.31	4.33	3.00	166.67	240.27
85991.000	90.00	1251.70	1248.80	1243.10	700.00	1246.58	1244.87	1246.79	5.69	3.67	190.86	293.50
85991.000	90.00	1251.70	1248.80	1243.10	850.00	1246.89	1245.11	1247.15	6.42	4.06	209.11	335.47
85991.000	90.00	1251.70	1248.80	1243.10	1000.00	1247.21	1245.33	1247.50	6.89	4.38	228.19	380.85
85991.000	90.00	1251.70	1248.80	1243.10	1200.00	1247.62	1245.61	1247.97	7.34	4.74	253.35	442.81
85993.000	2.00	.00	.00	1243.10	100.00	1245.54	1243.57	1245.55	.27	.73	136.31	193.58
85993.000	2.00	.00	.00	1243.10	500.00	1246.18	1244.48	1246.31	3.08	2.87	173.95	284.97
85993.000	2.00	.00	.00	1243.10	700.00	1246.60	1244.82	1246.79	3.95	3.52	199.10	352.41
85993.000	2.00	.00	.00	1243.10	850.00	1246.92	1245.05	1247.15	4.31	3.88	219.07	409.29
85993.000	2.00	.00	.00	1243.10	1000.00	1247.23	1245.27	1247.51	4.59	4.19	238.42	466.97
85993.000	2.00	.00	.00	1243.10	1200.00	1247.66	1245.55	1247.97	4.78	4.53	264.66	549.03
86069.000	76.00	.00	.00	1243.00	100.00	1245.54	1243.47	1245.55	.23	.69	144.89	210.36
86069.000	76.00	.00	.00	1243.00	500.00	1246.22	1244.37	1246.33	2.56	2.68	186.34	312.47
86069.000	76.00	.00	.00	1243.00	700.00	1246.66	1244.71	1246.83	3.24	3.26	214.48	389.02
86069.000	76.00	.00	.00	1243.00	850.00	1246.99	1244.95	1247.19	3.58	3.61	235.36	449.24
86069.000	76.00	.00	.00	1243.00	1000.00	1247.31	1245.16	1247.55	3.81	3.90	256.30	512.34
86069.000	76.00	.00	.00	1243.00	1200.00	1247.74	1245.43	1248.02	3.98	4.22	284.66	601.74

86169.000	100.00	.00	.00	1243.00	100.00	1245.54	1243.47	1245.55	.23	.69	145.09	210.80
86169.000	100.00	.00	.00	1243.00	500.00	1246.25	1244.37	1246.36	2.47	2.65	188.57	318.33
86169.000	100.00	.00	.00	1243.00	700.00	1246.70	1244.71	1246.86	3.13	3.23	216.76	395.45
86169.000	100.00	.00	.00	1243.00	850.00	1247.03	1244.95	1247.23	3.46	3.57	237.89	456.74
86169.000	100.00	.00	.00	1243.00	1000.00	1247.36	1245.16	1247.59	3.69	3.86	259.04	520.80
86169.000	100.00	.00	.00	1243.00	1200.00	1247.79	1245.43	1248.06	3.86	4.17	287.55	611.11
86228.000	59.00	.00	.00	1242.80	100.00	1245.54	1243.27	1245.55	.18	.64	156.85	239.01
86228.000	59.00	.00	.00	1242.80	500.00	1246.28	1244.18	1246.37	1.99	2.48	201.70	354.62
86228.000	59.00	.00	.00	1242.80	700.00	1246.74	1244.51	1246.88	2.58	3.04	230.35	435.94
86228.000	59.00	.00	.00	1242.80	850.00	1247.07	1244.75	1247.25	2.86	3.37	252.57	502.61
86228.000	59.00	.00	.00	1242.80	1000.00	1247.40	1244.96	1247.61	3.11	3.65	274.07	567.09
86228.000	59.00	.00	.00	1242.80	1200.00	1247.84	1245.24	1248.08	3.35	3.95	303.74	655.89
86231.000	3.00	.00	.00	1242.80	100.00	1245.54	1243.34	1245.55	.31	.83	120.32	180.08
86231.000	3.00	.00	.00	1242.80	500.00	1246.23	1244.39	1246.40	3.81	3.33	150.24	256.06
86231.000	3.00	.00	.00	1242.80	700.00	1246.65	1244.79	1246.92	5.17	4.14	168.88	307.75
* 86231.000	3.00	.00	.00	1242.80	850.00	1246.96	1245.06	1247.30	5.98	4.66	182.57	347.62
* 86231.000	3.00	.00	.00	1242.80	1000.00	1247.27	1245.32	1247.67	6.64	5.10	195.98	388.18
* 86231.000	3.00	.00	.00	1242.80	1200.00	1247.67	1245.65	1248.16	7.31	5.61	213.72	443.98

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
86233.000	2.00	1251.80	1249.90	1242.80	100.00	1245.54	1243.36	1245.55	.45	.87	114.36	148.38
86233.000	2.00	1251.80	1249.90	1242.80	500.00	1246.22	1244.44	1246.41	5.90	3.50	143.06	205.87
86233.000	2.00	1251.80	1249.90	1242.80	700.00	1246.64	1244.85	1246.93	8.29	4.36	160.58	243.10
86233.000	2.00	1251.80	1249.90	1242.80	850.00	1246.95	1245.14	1247.32	9.80	4.90	173.58	271.59
86233.000	2.00	1251.80	1249.90	1242.80	1000.00	1247.25	1245.41	1247.70	11.19	5.38	185.79	298.98
86233.000	2.00	1251.80	1249.90	1242.80	1200.00	1247.64	1245.74	1248.19	12.65	5.92	202.56	337.44
86381.000	148.00	1251.80	1249.90	1242.80	100.00	1245.55	1243.36	1245.56	.45	.87	114.85	149.20
86381.000	148.00	1251.80	1249.90	1242.80	500.00	1246.31	1244.44	1246.49	5.46	3.40	147.01	214.03
86381.000	148.00	1251.80	1249.90	1242.80	700.00	1246.78	1244.85	1247.05	7.48	4.20	166.52	255.92
86381.000	148.00	1251.80	1249.90	1242.80	850.00	1247.11	1245.14	1247.46	8.75	4.70	180.68	287.32
86381.000	148.00	1251.80	1249.90	1242.80	1000.00	1247.44	1245.40	1247.85	9.83	5.14	194.60	318.95
86381.000	148.00	1251.80	1249.90	1242.80	1200.00	1247.88	1245.74	1248.37	11.04	5.64	212.75	361.16
86383.000	2.00	.00	.00	1242.80	100.00	1245.55	1243.34	1245.56	.31	.83	120.73	180.86
86383.000	2.00	.00	.00	1242.80	500.00	1246.33	1244.38	1246.50	3.44	3.22	155.36	269.63
86383.000	2.00	.00	.00	1242.80	700.00	1246.81	1244.78	1247.06	4.53	3.97	176.30	328.81
86383.000	2.00	.00	.00	1242.80	850.00	1247.16	1245.06	1247.46	5.16	4.44	191.53	374.20
86383.000	2.00	.00	.00	1242.80	1000.00	1247.50	1245.32	1247.86	5.65	4.84	206.50	420.57
86383.000	2.00	.00	.00	1242.80	1200.00	1247.94	1245.65	1248.38	6.16	5.31	225.98	483.42
86433.000	50.00	.00	.00	1243.00	100.00	1245.55	1243.53	1245.56	.33	.82	121.36	175.25
86433.000	50.00	.00	.00	1243.00	500.00	1246.37	1244.55	1246.52	3.23	3.06	163.20	278.35
86433.000	50.00	.00	.00	1243.00	700.00	1246.88	1244.94	1247.09	3.93	3.68	190.45	353.29
86433.000	50.00	.00	.00	1243.00	850.00	1247.25	1245.19	1247.50	4.25	4.04	210.57	412.13
86433.000	50.00	.00	.00	1243.00	1000.00	1247.62	1245.44	1247.91	4.45	4.33	230.72	473.80
86433.000	50.00	.00	.00	1243.00	1200.00	1248.10	1245.74	1248.43	4.59	4.66	257.63	560.13
86486.000	53.00	.00	.00	1243.00	100.00	1245.55	1243.53	1245.56	.32	.82	121.44	175.43
86486.000	53.00	.00	.00	1243.00	500.00	1246.39	1244.55	1246.53	3.15	3.04	164.52	281.84
86486.000	53.00	.00	.00	1243.00	700.00	1246.90	1244.93	1247.11	3.85	3.65	191.67	356.77
86486.000	53.00	.00	.00	1243.00	850.00	1247.27	1245.19	1247.52	4.17	4.01	211.91	416.14
86486.000	53.00	.00	.00	1243.00	1000.00	1247.64	1245.44	1247.93	4.37	4.31	232.18	478.38
86486.000	53.00	.00	.00	1243.00	1200.00	1248.12	1245.74	1248.46	4.51	4.63	259.19	565.26
87000.000	514.00	.00	.00	1242.60	100.00	1245.57	1243.33	1245.58	.20	.68	147.93	225.13
87000.000	514.00	.00	.00	1242.60	500.00	1246.56	1244.25	1246.66	1.78	2.45	203.80	374.54

87000.000	514.00	.00	.00	1242.60	700.00	1247.13	1244.60	1247.26	2.20	2.96	236.22	472.38
87000.000	514.00	.00	.00	1242.60	850.00	1247.53	1244.83	1247.69	2.42	3.28	259.41	546.69
87000.000	514.00	.00	.00	1242.60	1000.00	1247.91	1245.05	1248.11	2.58	3.54	282.13	622.31
87000.000	514.00	.00	.00	1242.60	1200.00	1248.42	1245.34	1248.65	2.74	3.85	311.72	725.30
87600.000	600.00	.00	.00	1243.00	100.00	1245.58	1243.60	1245.59	.24	.71	141.68	202.03
87600.000	600.00	.00	.00	1243.00	500.00	1246.68	1244.48	1246.77	1.82	2.41	207.19	370.95
87600.000	600.00	.00	.00	1243.00	700.00	1247.26	1244.81	1247.39	2.15	2.88	243.03	477.45
87600.000	600.00	.00	.00	1243.00	850.00	1247.68	1245.04	1247.84	2.31	3.16	268.68	558.68
87600.000	600.00	.00	.00	1243.00	1000.00	1248.08	1245.26	1248.26	2.43	3.41	293.61	641.01
87600.000	600.00	.00	.00	1243.00	1200.00	1248.60	1245.52	1248.81	2.54	3.68	325.93	752.92

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
88200.000	600.00	.00	.00	1242.90	100.00	1245.60	1243.89	1245.61	.39	.82	121.61	160.28
88200.000	600.00	.00	.00	1242.90	500.00	1246.79	1244.79	1246.89	2.28	2.61	191.25	330.79
88200.000	600.00	.00	.00	1242.90	700.00	1247.39	1245.13	1247.54	2.58	3.07	227.66	435.75
88200.000	600.00	.00	.00	1242.90	850.00	1247.82	1245.36	1247.99	2.72	3.35	253.50	515.52
88200.000	600.00	.00	.00	1242.90	1000.00	1248.22	1245.58	1248.42	2.81	3.59	278.51	596.04
88200.000	600.00	.00	.00	1242.90	1200.00	1248.74	1245.86	1248.98	2.90	3.86	310.51	704.29
88800.000	600.00	.00	.00	1243.50	100.00	1245.62	1244.25	1245.64	.61	.93	108.10	128.45
88800.000	600.00	.00	.00	1243.50	500.00	1246.93	1245.10	1247.04	2.55	2.66	188.18	313.27
88800.000	600.00	.00	.00	1243.50	700.00	1247.55	1245.43	1247.70	2.74	3.08	227.29	422.78
88800.000	600.00	.00	.00	1243.50	850.00	1247.99	1245.66	1248.16	2.82	3.34	254.86	506.06
88800.000	600.00	.00	.00	1243.50	1000.00	1248.40	1245.87	1248.60	2.87	3.55	281.45	590.35
88800.000	600.00	.00	.00	1243.50	1200.00	1248.93	1246.13	1249.15	2.90	3.80	315.69	704.85
89350.000	550.00	.00	.00	1243.50	100.00	1245.66	1244.00	1245.67	.47	.90	111.06	145.57
89350.000	550.00	.00	.00	1243.50	500.00	1247.06	1244.95	1247.17	2.21	2.65	188.70	336.42
89350.000	550.00	.00	.00	1243.50	700.00	1247.69	1245.31	1247.84	2.50	3.11	225.01	442.33
89350.000	550.00	.00	.00	1243.50	850.00	1248.13	1245.56	1248.31	2.65	3.39	250.62	522.30
89350.000	550.00	.00	.00	1243.50	1000.00	1248.55	1245.79	1248.75	2.75	3.63	275.28	602.95
89350.000	550.00	.00	.00	1243.50	1200.00	1249.07	1246.09	1249.31	2.85	3.91	306.73	710.78
* 89403.000	53.00	.00	.00	1243.30	100.00	1245.65	1244.20	1245.68	1.94	1.44	69.60	71.76
* 89403.000	53.00	.00	.00	1243.30	500.00	1247.00	1245.67	1247.22	6.07	3.75	133.32	202.98
* 89403.000	53.00	.00	.00	1243.30	700.00	1247.62	1246.07	1247.90	6.28	4.29	163.36	279.43
* 89403.000	53.00	.00	.00	1243.30	850.00	1248.05	1246.33	1248.38	6.32	4.61	184.53	337.98
* 89403.000	53.00	.00	.00	1243.30	1000.00	1248.45	1246.58	1248.82	6.33	4.88	204.86	397.50
* 89403.000	53.00	.00	.00	1243.30	1200.00	1248.97	1246.90	1249.39	6.29	5.19	231.02	478.46
89405.000	2.00	1251.40	1250.00	1243.30	100.00	1245.64	1244.23	1245.68	2.44	1.52	65.72	64.06
89405.000	2.00	1251.40	1250.00	1243.30	500.00	1246.99	1245.73	1247.23	8.44	3.95	126.70	172.16
89405.000	2.00	1251.40	1250.00	1243.30	700.00	1247.61	1246.13	1247.92	9.11	4.50	155.44	231.86
89405.000	2.00	1251.40	1250.00	1243.30	850.00	1248.03	1246.41	1248.39	9.45	4.84	175.72	276.50
89405.000	2.00	1251.40	1250.00	1243.30	1000.00	1248.44	1246.68	1248.84	9.70	5.12	195.24	321.16
89405.000	2.00	1251.40	1250.00	1243.30	1200.00	1248.95	1246.99	1249.41	10.00	5.46	219.79	379.43
89525.000	120.00	1251.40	1250.00	1243.30	100.00	1245.67	1244.23	1245.71	2.32	1.50	66.81	65.69
89525.000	120.00	1251.40	1250.00	1243.30	500.00	1247.11	1245.73	1247.33	7.51	3.79	131.83	182.45
89525.000	120.00	1251.40	1250.00	1243.30	700.00	1247.73	1246.13	1248.03	8.21	4.34	161.17	244.25
89525.000	120.00	1251.40	1250.00	1243.30	850.00	1248.17	1246.41	1248.51	8.58	4.68	181.80	290.21
89525.000	120.00	1251.40	1250.00	1243.30	1000.00	1248.58	1246.68	1248.96	8.86	4.96	201.56	335.93
89525.000	120.00	1251.40	1250.00	1243.30	1200.00	1249.10	1246.99	1249.53	9.13	5.28	227.09	397.15
89527.000	2.00	.00	.00	1243.30	100.00	1245.68	1244.20	1245.71	1.85	1.42	70.67	73.54
89527.000	2.00	.00	.00	1243.30	500.00	1247.14	1245.67	1247.33	5.22	3.58	139.80	218.74
89527.000	2.00	.00	.00	1243.30	700.00	1247.77	1246.06	1248.03	5.46	4.10	170.84	299.66
89527.000	2.00	.00	.00	1243.30	850.00	1248.21	1246.33	1248.51	5.54	4.41	192.58	361.12
89527.000	2.00	.00	.00	1243.30	1000.00	1248.62	1246.58	1248.96	5.58	4.69	213.43	423.41

89527.000	2.00	.00	.00	1243.30	1200.00	1249.15	1246.89	1249.54	5.58	5.00	240.22	507.91

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
*	89557.000	30.00	.00	.00	1243.50	100.00	1245.71	1244.01	1245.72	.45	.89	111.89	148.78
*	89557.000	30.00	.00	.00	1243.50	500.00	1247.27	1244.97	1247.37	1.89	2.54	197.11	363.27
*	89557.000	30.00	.00	.00	1243.50	700.00	1247.94	1245.33	1248.08	2.16	2.98	234.83	476.46
*	89557.000	30.00	.00	.00	1243.50	850.00	1248.40	1245.59	1248.56	2.30	3.25	261.26	560.95
*	89557.000	30.00	.00	.00	1243.50	1000.00	1248.83	1245.82	1249.02	2.40	3.49	286.59	645.75
*	89557.000	30.00	.00	.00	1243.50	1200.00	1249.38	1246.11	1249.60	2.49	3.76	319.25	760.21
	89600.000	43.00	.00	.00	1243.50	100.00	1245.71	1244.01	1245.72	.45	.89	112.15	149.34
	89600.000	43.00	.00	.00	1243.50	500.00	1247.28	1244.97	1247.38	1.87	2.53	197.94	365.68
	89600.000	43.00	.00	.00	1243.50	700.00	1247.95	1245.33	1248.09	2.13	2.97	235.74	479.31
	89600.000	43.00	.00	.00	1243.50	850.00	1248.41	1245.59	1248.57	2.27	3.24	262.20	564.05
	89600.000	43.00	.00	.00	1243.50	1000.00	1248.84	1245.82	1249.03	2.37	3.48	287.57	649.10
	89600.000	43.00	.00	.00	1243.50	1200.00	1249.39	1246.11	1249.61	2.47	3.75	320.26	763.83
	90000.000	400.00	.00	.00	1243.60	100.00	1245.73	1244.13	1245.74	.46	.87	114.42	147.08
	90000.000	400.00	.00	.00	1243.60	500.00	1247.36	1245.03	1247.45	1.68	2.38	210.00	385.37
	90000.000	400.00	.00	.00	1243.60	700.00	1248.05	1245.38	1248.17	1.88	2.78	251.60	510.77
	90000.000	400.00	.00	.00	1243.60	850.00	1248.52	1245.61	1248.66	1.99	3.03	280.51	603.06
	90000.000	400.00	.00	.00	1243.60	1000.00	1248.96	1245.84	1249.12	2.05	3.24	308.88	697.97
	90000.000	400.00	.00	.00	1243.60	1200.00	1249.51	1246.12	1249.70	2.12	3.48	344.73	823.61
	90600.000	600.00	.00	.00	1244.00	100.00	1245.76	1244.52	1245.78	.84	1.04	96.43	109.41
	90600.000	600.00	.00	.00	1244.00	500.00	1247.47	1245.41	1247.57	2.04	2.49	200.50	350.27
	90600.000	600.00	.00	.00	1244.00	700.00	1248.16	1245.74	1248.29	2.15	2.86	244.72	477.80
	90600.000	600.00	.00	.00	1244.00	850.00	1248.64	1245.97	1248.79	2.19	3.08	275.53	573.92
	90600.000	600.00	.00	.00	1244.00	1000.00	1249.08	1246.19	1249.25	2.22	3.28	304.92	670.65
	90600.000	600.00	.00	.00	1244.00	1200.00	1249.64	1246.46	1249.83	2.24	3.50	342.53	801.04
	91200.000	600.00	.00	.00	1243.80	100.00	1245.81	1244.67	1245.83	1.07	1.13	88.53	96.86
	91200.000	600.00	.00	.00	1243.80	500.00	1247.59	1245.57	1247.70	2.23	2.59	193.04	335.16
	91200.000	600.00	.00	.00	1243.80	700.00	1248.29	1245.93	1248.43	2.33	2.97	235.89	458.21
	91200.000	600.00	.00	.00	1243.80	850.00	1248.77	1246.16	1248.93	2.38	3.20	265.90	551.28
	91200.000	600.00	.00	.00	1243.80	1000.00	1249.21	1246.38	1249.39	2.41	3.40	294.45	644.65
	91200.000	600.00	.00	.00	1243.80	1200.00	1249.77	1246.66	1249.98	2.43	3.63	331.00	770.59
	91800.000	600.00	.00	.00	1244.10	100.00	1245.88	1244.79	1245.90	1.27	1.21	82.35	88.83
	91800.000	600.00	.00	.00	1244.10	500.00	1247.72	1245.73	1247.84	2.40	2.70	185.18	322.48
	91800.000	600.00	.00	.00	1244.10	700.00	1248.43	1246.08	1248.58	2.52	3.09	226.40	440.97
	91800.000	600.00	.00	.00	1244.10	850.00	1248.91	1246.32	1249.08	2.58	3.33	254.96	529.47
	91800.000	600.00	.00	.00	1244.10	1000.00	1249.35	1246.55	1249.55	2.62	3.54	282.13	618.12
	91800.000	600.00	.00	.00	1244.10	1200.00	1249.91	1246.84	1250.13	2.65	3.79	316.85	737.37
	92400.000	600.00	.00	.00	1244.30	100.00	1245.96	1244.88	1245.98	1.24	1.19	83.87	89.74
	92400.000	600.00	.00	.00	1244.30	500.00	1247.87	1245.79	1247.98	2.18	2.60	192.02	338.27
	92400.000	600.00	.00	.00	1244.30	700.00	1248.58	1246.14	1248.72	2.32	3.00	233.56	459.98
	92400.000	600.00	.00	.00	1244.30	850.00	1249.07	1246.38	1249.23	2.39	3.24	262.46	550.30
	92400.000	600.00	.00	.00	1244.30	1000.00	1249.51	1246.60	1249.70	2.44	3.45	289.65	639.62
	92400.000	600.00	.00	.00	1244.30	1200.00	1250.08	1246.88	1250.29	2.50	3.70	324.34	759.40

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25MAR96 21:48:13

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
93000.000	600.00	.00	.00	1244.00	100.00	1246.04	1245.08	1246.07	1.92	1.41	70.92	72.15
93000.000	600.00	.00	.00	1244.00	500.00	1248.00	1246.07	1248.13	2.76	2.88	173.85	300.89

93000.000	600.00	.00	.00	1244.00	700.00	1248.72	1246.45	1248.89	2.88	3.29	212.95	412.58
93000.000	600.00	.00	.00	1244.00	850.00	1249.20	1246.70	1249.40	2.93	3.54	239.99	496.42
93000.000	600.00	.00	.00	1244.00	1000.00	1249.65	1246.94	1249.87	2.97	3.77	265.55	579.92
93000.000	600.00	.00	.00	1244.00	1200.00	1250.21	1247.24	1250.47	3.01	4.03	297.98	691.50
93414.000	414.00	.00	.00	1244.40	100.00	1246.11	1244.93	1246.14	1.21	1.24	80.52	91.09
93414.000	414.00	.00	.00	1244.40	500.00	1248.12	1245.93	1248.23	2.30	2.75	181.56	330.00
93414.000	414.00	.00	.00	1244.40	700.00	1248.84	1246.31	1249.00	2.49	3.18	219.79	443.48
93414.000	414.00	.00	.00	1244.40	850.00	1249.33	1246.57	1249.51	2.60	3.45	246.05	527.06
93414.000	414.00	.00	.00	1244.40	1000.00	1249.78	1246.82	1249.99	2.69	3.69	270.89	610.08
93414.000	414.00	.00	.00	1244.40	1200.00	1250.34	1247.12	1250.59	2.77	3.97	302.44	720.56
93463.000	49.00	.00	.00	1244.40	100.00	1246.12	1244.93	1246.14	1.18	1.23	81.11	92.16
93463.000	49.00	.00	.00	1244.40	500.00	1248.13	1245.93	1248.25	2.26	2.74	182.56	332.82
93463.000	49.00	.00	.00	1244.40	700.00	1248.85	1246.31	1249.01	2.45	3.17	220.89	446.89
93463.000	49.00	.00	.00	1244.40	850.00	1249.34	1246.57	1249.52	2.56	3.44	247.19	530.80
93463.000	49.00	.00	.00	1244.40	1000.00	1249.79	1246.82	1250.00	2.65	3.68	272.07	614.10
93463.000	49.00	.00	.00	1244.40	1200.00	1250.36	1247.12	1250.60	2.74	3.95	303.64	724.86
93513.000	50.00	.00	.00	1244.10	100.00	1246.13	1244.79	1246.15	.96	1.17	85.22	102.16
93513.000	50.00	.00	.00	1244.10	500.00	1248.14	1245.81	1248.26	2.18	2.76	180.85	338.36
93513.000	50.00	.00	.00	1244.10	700.00	1248.86	1246.20	1249.02	2.48	3.25	215.42	444.82
93513.000	50.00	.00	.00	1244.10	850.00	1249.34	1246.48	1249.54	2.66	3.56	238.66	521.43
93513.000	50.00	.00	.00	1244.10	1000.00	1249.79	1246.73	1250.02	2.83	3.85	259.96	594.92
93513.000	50.00	.00	.00	1244.10	1200.00	1250.35	1247.03	1250.62	3.03	4.19	286.27	689.63
93515.000	2.00	1253.90	1252.60	1244.10	100.00	1246.13	1244.80	1246.15	1.13	1.21	82.76	94.27
93515.000	2.00	1253.90	1252.60	1244.10	500.00	1248.14	1245.85	1248.26	2.81	2.85	175.55	298.53
93515.000	2.00	1253.90	1252.60	1244.10	700.00	1248.86	1246.25	1249.03	3.27	3.35	209.01	386.81
93515.000	2.00	1253.90	1252.60	1244.10	850.00	1249.34	1246.52	1249.55	3.58	3.67	231.45	449.22
93515.000	2.00	1253.90	1252.60	1244.10	1000.00	1249.79	1246.77	1250.03	3.86	3.96	252.29	509.19
93515.000	2.00	1253.90	1252.60	1244.10	1200.00	1250.34	1247.09	1250.63	4.19	4.31	278.22	586.24
93551.000	36.00	1253.90	1252.60	1244.10	100.00	1246.13	1244.80	1246.15	1.12	1.21	82.90	94.51
93551.000	36.00	1253.90	1252.60	1244.10	500.00	1248.15	1245.85	1248.27	2.79	2.84	175.80	299.16
93551.000	36.00	1253.90	1252.60	1244.10	700.00	1248.87	1246.25	1249.04	3.26	3.35	209.25	387.47
93551.000	36.00	1253.90	1252.60	1244.10	850.00	1249.35	1246.52	1249.56	3.57	3.67	231.69	449.89
93551.000	36.00	1253.90	1252.60	1244.10	1000.00	1249.80	1246.77	1250.04	3.85	3.96	252.52	509.88
93551.000	36.00	1253.90	1252.60	1244.10	1200.00	1250.36	1247.09	1250.65	4.18	4.31	278.45	586.93
93553.000	2.00	.00	.00	1244.10	100.00	1246.13	1244.79	1246.15	.95	1.17	85.48	102.67
93553.000	2.00	.00	.00	1244.10	500.00	1248.15	1245.82	1248.27	2.17	2.76	181.14	339.22
93553.000	2.00	.00	.00	1244.10	700.00	1248.88	1246.21	1249.04	2.46	3.24	215.81	446.05
93553.000	2.00	.00	.00	1244.10	850.00	1249.37	1246.47	1249.56	2.65	3.56	238.94	522.37
93553.000	2.00	.00	.00	1244.10	1000.00	1249.82	1246.72	1250.05	2.81	3.84	260.41	596.48
93553.000	2.00	.00	.00	1244.10	1200.00	1250.38	1247.03	1250.65	3.00	4.18	287.12	692.75

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SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
93559.000	6.00	.00	.00	1244.30	100.00	1246.13	1244.80	1246.15	.90	1.12	89.64	105.63
93559.000	6.00	.00	.00	1244.30	500.00	1248.17	1245.78	1248.28	2.06	2.65	189.01	348.52
93559.000	6.00	.00	.00	1244.30	700.00	1248.90	1246.15	1249.05	2.35	3.12	224.64	456.97
93559.000	6.00	.00	.00	1244.30	850.00	1249.39	1246.40	1249.57	2.53	3.42	248.52	534.82
93559.000	6.00	.00	.00	1244.30	1000.00	1249.84	1246.64	1250.05	2.66	3.69	271.31	612.61
93559.000	6.00	.00	.00	1244.30	1200.00	1250.41	1246.95	1250.66	2.84	4.01	299.03	711.52
* 93581.000	22.00	.00	.00	1238.00	100.00	1246.16	1238.97	1246.16	.03	.38	264.44	542.68
* 93581.000	22.00	.00	.00	1238.00	500.00	1248.28	1240.60	1248.30	.25	1.28	391.47	995.18
* 93581.000	22.00	.00	.00	1238.00	700.00	1249.04	1241.20	1249.08	.35	1.60	438.67	1183.62
* 93581.000	22.00	.00	.00	1238.00	850.00	1249.56	1241.61	1249.61	.42	1.81	470.83	1317.50
* 93581.000	22.00	.00	.00	1238.00	1000.00	1250.04	1242.01	1250.10	.48	2.00	501.01	1446.89

*	93581.000	22.00	.00	.00	1238.00	1200.00	1250.63	1242.48	1250.71	.55	2.23	538.98	1614.64
*	93612.000	31.00	.00	.00	1238.00	100.00	1246.16	1238.78	1246.16	.01	.25	403.35	1122.66
*	93612.000	31.00	.00	.00	1238.00	500.00	1248.29	1239.78	1248.31	.09	.95	527.19	1665.93
*	93612.000	31.00	.00	.00	1238.00	700.00	1249.07	1240.17	1249.09	.14	1.22	573.57	1883.64
*	93612.000	31.00	.00	.00	1238.00	850.00	1249.59	1240.43	1249.62	.17	1.40	605.92	2039.65
*	93612.000	31.00	.00	.00	1238.00	1000.00	1250.07	1240.68	1250.11	.21	1.57	635.87	2186.88
*	93612.000	31.00	.00	.00	1238.00	1200.00	1250.67	1241.00	1250.72	.26	1.78	673.64	2376.33
	93622.000	10.00	.00	.00	1239.00	100.00	1246.16	1239.59	1246.16	.02	.32	314.06	814.60
	93622.000	10.00	.00	.00	1239.00	500.00	1248.29	1240.71	1248.31	.16	1.18	422.57	1257.76
	93622.000	10.00	.00	.00	1239.00	700.00	1249.06	1241.14	1249.10	.24	1.51	463.55	1437.69
	93622.000	10.00	.00	.00	1239.00	850.00	1249.58	1241.43	1249.62	.30	1.73	491.61	1564.44
	93622.000	10.00	.00	.00	1239.00	1000.00	1250.06	1241.70	1250.12	.35	1.93	518.09	1686.51
	93622.000	10.00	.00	.00	1239.00	1200.00	1250.66	1242.05	1250.73	.42	2.18	551.23	1842.53
*	93672.000	50.00	.00	.00	1244.00	100.00	1246.15	1244.50	1246.17	.48	.91	109.30	143.66
*	93672.000	50.00	.00	.00	1244.00	500.00	1248.26	1245.46	1248.34	1.28	2.25	222.65	442.09
*	93672.000	50.00	.00	.00	1244.00	700.00	1249.03	1245.83	1249.13	1.46	2.64	265.42	580.18
*	93672.000	50.00	.00	.00	1244.00	850.00	1249.54	1246.08	1249.67	1.56	2.88	294.67	681.16
*	93672.000	50.00	.00	.00	1244.00	1000.00	1250.02	1246.32	1250.17	1.64	3.10	322.26	780.86
*	93672.000	50.00	.00	.00	1244.00	1200.00	1250.61	1246.61	1250.79	1.73	3.36	357.16	912.67
	93887.000	215.00	.00	.00	1243.60	100.00	1246.16	1244.42	1246.18	.47	.92	109.18	146.58
	93887.000	215.00	.00	.00	1243.60	500.00	1248.29	1245.42	1248.37	1.28	2.26	221.13	441.98
	93887.000	215.00	.00	.00	1243.60	700.00	1249.06	1245.80	1249.17	1.46	2.65	263.70	578.42
	93887.000	215.00	.00	.00	1243.60	850.00	1249.57	1246.05	1249.70	1.57	2.90	292.98	678.69
	93887.000	215.00	.00	.00	1243.60	1000.00	1250.05	1246.29	1250.20	1.65	3.12	320.66	778.13
	93887.000	215.00	.00	.00	1243.60	1200.00	1250.65	1246.59	1250.83	1.74	3.37	355.75	909.81
	94487.000	600.00	.00	.00	1243.50	100.00	1246.19	1244.13	1246.20	.32	.82	121.23	177.41
	94487.000	600.00	.00	.00	1243.50	500.00	1248.37	1245.15	1248.44	1.07	2.17	230.31	483.84
	94487.000	600.00	.00	.00	1243.50	700.00	1249.15	1245.54	1249.25	1.27	2.58	270.93	620.38
	94487.000	600.00	.00	.00	1243.50	850.00	1249.67	1245.80	1249.79	1.40	2.85	298.69	718.37
	94487.000	600.00	.00	.00	1243.50	1000.00	1250.15	1246.04	1250.30	1.51	3.08	324.96	814.39
	94487.000	600.00	.00	.00	1243.50	1200.00	1250.75	1246.36	1250.93	1.63	3.35	358.29	941.00

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	95087.000	600.00	.00	.00	1243.90	100.00	1246.21	1244.47	1246.22	.47	.93	108.06	145.78
	95087.000	600.00	.00	.00	1243.90	500.00	1248.43	1245.47	1248.51	1.22	2.25	222.17	451.88
	95087.000	600.00	.00	.00	1243.90	700.00	1249.22	1245.85	1249.33	1.40	2.65	264.54	590.61
	95087.000	600.00	.00	.00	1243.90	850.00	1249.75	1246.12	1249.88	1.51	2.90	293.42	691.58
	95087.000	600.00	.00	.00	1243.90	1000.00	1250.24	1246.36	1250.39	1.60	3.12	320.52	791.48
	95087.000	600.00	.00	.00	1243.90	1200.00	1250.85	1246.66	1251.03	1.69	3.38	354.56	922.54
*	95687.000	600.00	.00	.00	1244.30	100.00	1246.25	1245.02	1246.27	1.18	1.25	79.97	91.89
	95687.000	600.00	.00	.00	1244.30	500.00	1248.51	1246.05	1248.62	1.88	2.60	192.55	364.22
	95687.000	600.00	.00	.00	1244.30	700.00	1249.31	1246.44	1249.45	2.01	2.98	235.21	494.16
	95687.000	600.00	.00	.00	1244.30	850.00	1249.84	1246.71	1250.00	2.07	3.21	264.51	590.61
	95687.000	600.00	.00	.00	1244.30	1000.00	1250.34	1246.96	1250.52	2.12	3.42	292.06	687.34
	95687.000	600.00	.00	.00	1244.30	1200.00	1250.95	1247.28	1251.16	2.17	3.67	326.70	815.11
*	96287.000	600.00	.00	.00	1245.40	100.00	1246.37	1245.98	1246.45	9.23	2.29	43.75	32.92
	96287.000	600.00	.00	.00	1245.40	500.00	1248.64	1246.96	1248.79	3.53	3.11	160.92	266.26
	96287.000	600.00	.00	.00	1245.40	700.00	1249.44	1247.32	1249.62	3.27	3.42	204.67	387.25
	96287.000	600.00	.00	.00	1245.40	850.00	1249.97	1247.58	1250.18	3.16	3.62	234.62	478.03
	96287.000	600.00	.00	.00	1245.40	1000.00	1250.47	1247.81	1250.69	3.11	3.81	262.28	566.97
	96287.000	600.00	.00	.00	1245.40	1200.00	1251.08	1248.11	1251.33	3.04	4.03	298.09	688.69
	96887.000	600.00	.00	.00	1245.80	100.00	1246.85	1246.35	1246.91	6.26	2.01	49.67	39.95

96887.000	600.00	.00	.00	1245.80	500.00	1248.86	1247.31	1249.02	4.01	3.22	155.41	249.67
96887.000	600.00	.00	.00	1245.80	700.00	1249.64	1247.67	1249.83	3.66	3.53	198.43	365.96
96887.000	600.00	.00	.00	1245.80	850.00	1250.17	1247.92	1250.38	3.50	3.73	228.06	454.05
96887.000	600.00	.00	.00	1245.80	1000.00	1250.66	1248.16	1250.89	3.39	3.90	256.14	542.82
96887.000	600.00	.00	.00	1245.80	1200.00	1251.27	1248.45	1251.53	3.29	4.12	291.61	661.67
97487.000	600.00	.00	.00	1246.20	100.00	1247.22	1246.71	1247.29	6.24	2.04	49.09	40.02
97487.000	600.00	.00	.00	1246.20	500.00	1249.11	1247.70	1249.29	4.81	3.44	145.49	227.90
97487.000	600.00	.00	.00	1246.20	700.00	1249.87	1248.07	1250.09	4.41	3.77	185.61	333.18
97487.000	600.00	.00	.00	1246.20	850.00	1250.38	1248.33	1250.63	4.19	3.97	214.02	415.13
97487.000	600.00	.00	.00	1246.20	1000.00	1250.86	1248.57	1251.13	4.03	4.15	241.12	498.35
97487.000	600.00	.00	.00	1246.20	1200.00	1251.46	1248.87	1251.76	3.87	4.36	275.32	609.74
98087.000	600.00	.00	.00	1246.40	100.00	1247.57	1247.00	1247.63	5.16	1.94	51.58	44.01
98087.000	600.00	.00	.00	1246.40	500.00	1249.40	1248.00	1249.59	4.95	3.49	143.11	224.76
98087.000	600.00	.00	.00	1246.40	700.00	1250.13	1248.37	1250.36	4.61	3.85	181.67	325.89
98087.000	600.00	.00	.00	1246.40	850.00	1250.63	1248.63	1250.89	4.44	4.07	208.69	403.54
98087.000	600.00	.00	.00	1246.40	1000.00	1251.11	1248.87	1251.39	4.32	4.27	234.05	481.05
98087.000	600.00	.00	.00	1246.40	1200.00	1251.70	1249.18	1252.01	4.16	4.49	267.18	588.40
98687.000	600.00	.00	.00	1246.40	100.00	1247.84	1247.16	1247.88	3.32	1.62	61.73	54.85
98687.000	600.00	.00	.00	1246.40	500.00	1249.71	1248.08	1249.85	3.52	3.03	164.84	266.56
98687.000	600.00	.00	.00	1246.40	700.00	1250.44	1248.43	1250.61	3.36	3.38	207.02	381.62
98687.000	600.00	.00	.00	1246.40	850.00	1250.94	1248.67	1251.14	3.29	3.60	236.10	468.60
98687.000	600.00	.00	.00	1246.40	1000.00	1251.41	1248.89	1251.63	3.22	3.79	264.02	556.88
98687.000	600.00	.00	.00	1246.40	1200.00	1251.99	1249.18	1252.24	3.16	4.01	299.42	675.09

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
99117.000	430.00	.00	.00	1246.40	100.00	1247.97	1247.15	1248.00	2.34	1.45	68.75	65.36
99117.000	430.00	.00	.00	1246.40	500.00	1249.87	1248.08	1250.00	2.95	2.87	174.31	291.15
99117.000	430.00	.00	.00	1246.40	700.00	1250.59	1248.43	1250.75	2.92	3.23	216.50	409.33
99117.000	430.00	.00	.00	1246.40	850.00	1251.09	1248.67	1251.27	2.91	3.46	245.50	497.93
99117.000	430.00	.00	.00	1246.40	1000.00	1251.56	1248.89	1251.77	2.90	3.66	273.39	587.47
99117.000	430.00	.00	.00	1246.40	1200.00	1252.14	1249.18	1252.38	2.87	3.88	309.01	708.27
* 99165.000	48.00	.00	.00	1246.40	100.00	1248.00	1246.84	1248.01	.93	1.05	95.58	103.87
99165.000	48.00	.00	.00	1246.40	500.00	1249.93	1247.69	1250.02	1.75	2.35	212.50	378.10
99165.000	48.00	.00	.00	1246.40	700.00	1250.66	1248.01	1250.78	1.88	2.73	256.46	509.88
99165.000	48.00	.00	.00	1246.40	850.00	1251.16	1248.23	1251.30	1.96	2.97	286.61	607.77
99165.000	48.00	.00	.00	1246.40	1000.00	1251.64	1248.44	1251.79	2.01	3.17	315.06	705.23
99165.000	48.00	.00	.00	1246.40	1200.00	1252.22	1248.71	1252.41	2.08	3.42	350.42	832.82
99167.000	2.00	1256.00	1253.90	1246.40	100.00	1248.00	1246.85	1248.01	1.12	1.08	92.57	94.35
99167.000	2.00	1256.00	1253.90	1246.40	500.00	1249.93	1247.72	1250.02	2.45	2.44	205.10	319.57
99167.000	2.00	1256.00	1253.90	1246.40	700.00	1250.66	1248.05	1250.78	2.75	2.83	247.59	421.93
99167.000	2.00	1256.00	1253.90	1246.40	850.00	1251.16	1248.28	1251.31	2.93	3.07	276.76	496.17
99167.000	2.00	1256.00	1253.90	1246.40	1000.00	1251.63	1248.49	1251.80	3.09	3.29	304.30	568.80
99167.000	2.00	1256.00	1253.90	1246.40	1200.00	1252.22	1248.76	1252.41	3.28	3.54	338.54	662.14
99251.000	84.00	1256.00	1253.90	1246.40	100.00	1248.01	1246.85	1248.02	1.11	1.07	93.03	95.09
99251.000	84.00	1256.00	1253.90	1246.40	500.00	1249.95	1247.72	1250.04	2.42	2.43	205.93	321.50
99251.000	84.00	1256.00	1253.90	1246.40	700.00	1250.68	1248.05	1250.81	2.72	2.82	248.48	424.15
99251.000	84.00	1256.00	1253.90	1246.40	850.00	1251.18	1248.28	1251.33	2.91	3.06	277.66	498.52
99251.000	84.00	1256.00	1253.90	1246.40	1000.00	1251.66	1248.49	1251.82	3.06	3.28	305.22	571.26
99251.000	84.00	1256.00	1253.90	1246.40	1200.00	1252.25	1248.76	1252.44	3.26	3.53	339.48	664.73
99253.000	2.00	.00	.00	1246.40	100.00	1248.01	1246.84	1248.02	.90	1.04	96.56	105.62
99253.000	2.00	.00	.00	1246.40	500.00	1249.96	1247.69	1250.04	1.72	2.34	213.65	381.36
99253.000	2.00	.00	.00	1246.40	700.00	1250.69	1248.01	1250.81	1.86	2.72	257.69	513.77
99253.000	2.00	.00	.00	1246.40	850.00	1251.20	1248.23	1251.33	1.92	2.95	288.25	613.23

	99253.000	2.00	.00	.00	1246.40	1000.00	1251.67	1248.44	1251.83	1.98	3.16	316.79	711.31
	99253.000	2.00	.00	.00	1246.40	1200.00	1252.26	1248.70	1252.44	2.04	3.41	352.26	839.64
*	99287.000	34.00	.00	.00	1246.60	100.00	1248.00	1247.16	1248.04	2.58	1.58	63.21	62.31
*	99287.000	34.00	.00	.00	1246.60	500.00	1249.93	1248.19	1250.09	3.52	3.15	158.74	266.38
	99287.000	34.00	.00	.00	1246.60	700.00	1250.66	1248.57	1250.86	3.54	3.55	197.37	372.16
	99287.000	34.00	.00	.00	1246.60	850.00	1251.16	1248.83	1251.38	3.52	3.78	224.66	453.16
	99287.000	34.00	.00	.00	1246.60	1000.00	1251.63	1249.08	1251.88	3.48	3.98	250.99	536.28
	99287.000	34.00	.00	.00	1246.60	1200.00	1252.22	1249.40	1252.50	3.41	4.22	284.29	649.41
	99317.000	30.00	.00	.00	1246.70	100.00	1248.00	1247.38	1248.05	4.39	1.85	54.02	47.73
	99317.000	30.00	.00	.00	1246.70	500.00	1249.93	1248.38	1250.10	4.15	3.30	151.52	245.46
	99317.000	30.00	.00	.00	1246.70	700.00	1250.66	1248.77	1250.87	3.99	3.67	190.81	350.30
	99317.000	30.00	.00	.00	1246.70	850.00	1251.16	1249.03	1251.40	3.89	3.89	218.62	430.99
	99317.000	30.00	.00	.00	1246.70	1000.00	1251.64	1249.27	1251.90	3.79	4.07	245.50	513.68
	99317.000	30.00	.00	.00	1246.70	1200.00	1252.23	1249.58	1252.51	3.68	4.29	279.73	625.78

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	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	99737.000	420.00	.00	.00	1246.40	100.00	1248.15	1247.24	1248.20	2.62	1.67	59.82	61.77
	99737.000	420.00	.00	.00	1246.40	500.00	1250.09	1248.35	1250.28	4.09	3.46	144.46	247.27
	99737.000	420.00	.00	.00	1246.40	700.00	1250.81	1248.77	1251.05	4.23	3.93	178.04	340.55
	99737.000	420.00	.00	.00	1246.40	850.00	1251.31	1249.06	1251.58	4.29	4.22	201.41	410.61
	99737.000	420.00	.00	.00	1246.40	1000.00	1251.77	1249.33	1252.08	4.30	4.46	224.10	482.22
	99737.000	420.00	.00	.00	1246.40	1200.00	1252.35	1249.67	1252.70	4.35	4.76	252.21	575.48
	99861.000	124.00	.00	.00	1246.50	100.00	1248.18	1247.12	1248.23	2.50	1.65	60.57	63.27
	99861.000	124.00	.00	.00	1246.50	500.00	1250.13	1248.31	1250.36	6.10	3.84	130.11	202.40
	99861.000	124.00	.00	.00	1246.50	700.00	1250.83	1248.77	1251.14	7.12	4.51	155.38	262.40
	99861.000	124.00	.00	.00	1246.50	850.00	1251.31	1249.09	1251.68	7.75	4.92	172.60	305.33
	99861.000	124.00	.00	.00	1246.50	1000.00	1251.75	1249.38	1252.19	8.31	5.30	188.75	346.93
*	99861.000	124.00	.00	.00	1246.50	1200.00	1252.31	1249.76	1252.82	9.00	5.75	208.78	400.06

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1-8.0 TO 1-5.0

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	84600.000	100.00	1245.50	.00	.00	-1.40	59.80	.00
	84600.000	500.00	1245.50	.00	.00	-1.40	59.80	.00
	84600.000	700.00	1245.50	.00	.00	-1.40	59.80	.00
	84600.000	850.00	1245.50	.00	.00	-1.40	59.80	.00
	84600.000	1000.00	1245.50	.00	.00	-1.40	59.80	.00
	84600.000	1200.00	1245.50	.00	.00	-1.40	59.80	.00
	85200.000	100.00	1245.51	.00	.01	-1.49	61.97	600.00
	85200.000	500.00	1245.81	.30	.31	-1.19	62.35	600.00
*	85200.000	700.00	1246.08	.27	.58	-.92	62.70	600.00
*	85200.000	850.00	1246.32	.24	.82	-.68	63.00	600.00
*	85200.000	1000.00	1246.58	.27	1.08	-.42	63.34	600.00
*	85200.000	1200.00	1246.97	.39	1.47	-.03	63.84	600.00
*	85800.000	100.00	1245.52	.00	.01	-1.48	54.19	600.00
	85800.000	500.00	1246.00	.47	.19	-1.00	55.90	600.00
	85800.000	700.00	1246.35	.35	.27	-.65	57.15	600.00

85800.000	850.00	1246.62	.28	.31	-.38	58.15	600.00
85800.000	1000.00	1246.91	.29	.33	-.09	59.19	600.00
85800.000	1200.00	1247.31	.40	.33	.31	60.40	600.00
85850.000	100.00	1245.53	.00	.00	.00	54.19	50.00
85850.000	500.00	1246.03	.51	.03	.00	56.00	50.00
85850.000	700.00	1246.39	.36	.05	.00	57.29	50.00
85850.000	850.00	1246.68	.29	.06	.00	58.35	50.00
85850.000	1000.00	1246.97	.29	.06	.00	59.39	50.00
85850.000	1200.00	1247.37	.40	.06	.00	60.59	50.00
85899.000	100.00	1245.53	.00	.01	.00	58.41	49.00
85899.000	500.00	1246.13	.60	.09	.00	59.63	49.00
85899.000	700.00	1246.53	.40	.14	.00	60.44	49.00
85899.000	850.00	1246.83	.30	.15	.00	61.05	49.00
85899.000	1000.00	1247.14	.30	.17	.00	61.67	49.00
85899.000	1200.00	1247.55	.41	.18	.00	62.51	49.00
85901.000	100.00	1245.53	.00	.00	.00	56.39	2.00
85901.000	500.00	1246.12	.59	.00	.00	57.64	2.00
85901.000	700.00	1246.52	.40	-.01	.00	58.48	2.00
85901.000	850.00	1246.83	.30	-.01	.00	59.11	2.00
85901.000	1000.00	1247.13	.30	-.01	.00	59.74	2.00
85901.000	1200.00	1247.54	.41	-.01	.00	60.60	2.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
85991.000	100.00	1245.54	.00	.00	.00	56.38	90.00
85991.000	500.00	1246.17	.63	.04	.00	57.68	90.00
85991.000	700.00	1246.58	.42	.06	.00	58.55	90.00
85991.000	850.00	1246.89	.31	.07	.00	59.20	90.00
85991.000	1000.00	1247.21	.31	.08	.00	59.87	90.00
85991.000	1200.00	1247.62	.42	.08	.00	60.74	90.00
85993.000	100.00	1245.54	.00	.00	.00	58.41	2.00
85993.000	500.00	1246.18	.64	.01	.00	59.70	2.00
85993.000	700.00	1246.60	.42	.02	.00	60.54	2.00
85993.000	850.00	1246.92	.32	.03	.00	61.21	2.00
85993.000	1000.00	1247.23	.31	.03	.00	61.84	2.00
85993.000	1200.00	1247.66	.42	.03	.00	62.69	2.00
86069.000	100.00	1245.54	.00	.00	-1.76	60.43	76.00
86069.000	500.00	1246.22	.68	.04	-1.08	62.22	76.00
86069.000	700.00	1246.66	.44	.06	-.64	63.41	76.00
86069.000	850.00	1246.99	.33	.07	-.31	64.28	76.00
86069.000	1000.00	1247.31	.32	.08	.01	65.14	76.00
86069.000	1200.00	1247.74	.43	.09	.44	66.30	76.00
86169.000	100.00	1245.54	.00	.00	-1.76	60.44	100.00
86169.000	500.00	1246.25	.71	.03	-1.05	62.32	100.00
86169.000	700.00	1246.70	.45	.04	-.60	63.51	100.00
86169.000	850.00	1247.03	.33	.04	-.27	64.38	100.00
86169.000	1000.00	1247.36	.33	.04	.06	65.25	100.00
86169.000	1200.00	1247.79	.43	.05	.49	66.42	100.00
86228.000	100.00	1245.54	.00	.00	.00	60.65	59.00
86228.000	500.00	1246.28	.73	.03	.00	62.50	59.00
86228.000	700.00	1246.74	.46	.04	.00	63.65	59.00
86228.000	850.00	1247.07	.34	.04	.00	64.52	59.00
86228.000	1000.00	1247.40	.33	.05	.00	65.91	59.00
86228.000	1200.00	1247.84	.44	.05	.00	69.47	59.00

86231.000	100.00	1245.54	.00	.00	.00	43.89	3.00
86231.000	500.00	1246.23	.68	-.05	.00	43.91	3.00
86231.000	700.00	1246.65	.42	-.09	.00	43.92	3.00
* 86231.000	850.00	1246.96	.31	-.11	.00	43.93	3.00
* 86231.000	1000.00	1247.27	.30	-.14	.00	43.94	3.00
* 86231.000	1200.00	1247.67	.40	-.17	.00	43.95	3.00
86233.000	100.00	1245.54	.00	.00	.00	41.84	2.00
86233.000	500.00	1246.22	.68	-.01	.00	41.90	2.00
86233.000	700.00	1246.64	.42	-.01	.00	41.94	2.00
86233.000	850.00	1246.95	.31	-.02	.00	41.96	2.00
86233.000	1000.00	1247.25	.30	-.02	.00	41.99	2.00
86233.000	1200.00	1247.64	.40	-.03	.00	42.03	2.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
86381.000	100.00	1245.55	.00	.01	.00	41.94	148.00
86381.000	500.00	1246.31	.77	.10	.00	42.00	148.00
86381.000	700.00	1246.78	.46	.14	.00	42.04	148.00
86381.000	850.00	1247.11	.34	.17	.00	42.07	148.00
86381.000	1000.00	1247.44	.33	.20	.00	42.10	148.00
86381.000	1200.00	1247.88	.43	.23	.00	42.14	148.00
86383.000	100.00	1245.55	.00	.00	.00	43.98	2.00
86383.000	500.00	1246.33	.79	.02	.00	44.00	2.00
86383.000	700.00	1246.81	.48	.03	.00	44.02	2.00
86383.000	850.00	1247.16	.35	.04	.00	44.03	2.00
86383.000	1000.00	1247.50	.34	.05	.00	44.04	2.00
86383.000	1200.00	1247.94	.44	.06	.00	44.05	2.00
86433.000	100.00	1245.55	.00	.00	-1.65	50.55	50.00
86433.000	500.00	1246.37	.82	.04	-.83	52.45	50.00
86433.000	700.00	1246.88	.51	.07	-.32	53.65	50.00
86433.000	850.00	1247.25	.37	.09	.05	54.51	50.00
86433.000	1000.00	1247.62	.37	.12	.42	55.36	50.00
86433.000	1200.00	1248.10	.48	.16	.90	56.47	50.00
86486.000	100.00	1245.55	.00	.00	-1.65	50.56	53.00
86486.000	500.00	1246.39	.84	.02	-.81	52.51	53.00
86486.000	700.00	1246.90	.51	.02	-.30	53.70	53.00
86486.000	850.00	1247.27	.37	.03	.07	54.57	53.00
86486.000	1000.00	1247.64	.37	.03	.44	55.42	53.00
86486.000	1200.00	1248.12	.48	.03	.92	56.53	53.00
87000.000	100.00	1245.57	.00	.02	-1.83	55.89	514.00
87000.000	500.00	1246.56	1.00	.17	-.84	56.98	514.00
87000.000	700.00	1247.13	.56	.22	-.28	57.60	514.00
87000.000	850.00	1247.53	.40	.25	.13	58.10	514.00
87000.000	1000.00	1247.91	.39	.27	.51	58.72	514.00
87000.000	1200.00	1248.42	.50	.29	1.02	59.52	514.00
87600.000	100.00	1245.58	.00	.01	-1.92	59.48	600.00
87600.000	500.00	1246.68	1.09	.11	-.82	60.63	600.00
87600.000	700.00	1247.26	.59	.14	-.24	61.25	600.00
87600.000	850.00	1247.68	.42	.15	.18	61.81	600.00
87600.000	1000.00	1248.08	.40	.17	.58	62.50	600.00
87600.000	1200.00	1248.60	.51	.18	1.10	63.38	600.00
88200.000	100.00	1245.60	.00	.02	-2.10	57.88	600.00
88200.000	500.00	1246.79	1.19	.11	-.91	59.29	600.00

88200.000	700.00	1247.39	.61	.13	-.31	60.01	600.00
88200.000	850.00	1247.82	.43	.14	.12	60.65	600.00
88200.000	1000.00	1248.22	.41	.14	.52	61.47	600.00
88200.000	1200.00	1248.74	.52	.15	1.04	62.49	600.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
88800.000	100.00	1245.62	.00	.03	-2.18	60.64	600.00
88800.000	500.00	1246.93	1.30	.14	-.87	62.35	600.00
88800.000	700.00	1247.55	.62	.16	-.25	63.16	600.00
88800.000	850.00	1247.99	.43	.17	.19	63.85	600.00
88800.000	1000.00	1248.40	.41	.18	.60	64.68	600.00
88800.000	1200.00	1248.93	.53	.18	1.13	65.73	600.00
89350.000	100.00	1245.66	.00	.03	-2.34	53.71	550.00
89350.000	500.00	1247.06	1.40	.13	-.94	56.46	550.00
89350.000	700.00	1247.69	.63	.14	-.31	57.71	550.00
89350.000	850.00	1248.13	.44	.15	.13	58.59	550.00
89350.000	1000.00	1248.55	.42	.15	.55	59.47	550.00
89350.000	1200.00	1249.07	.53	.15	1.07	60.58	550.00
* 89403.000	100.00	1245.65	.00	-.01	.00	46.21	53.00
* 89403.000	500.00	1247.00	1.36	-.06	.00	48.20	53.00
* 89403.000	700.00	1247.62	.62	-.07	.00	49.11	53.00
* 89403.000	850.00	1248.05	.43	-.08	.00	49.75	53.00
* 89403.000	1000.00	1248.45	.41	-.09	.00	50.34	53.00
* 89403.000	1200.00	1248.97	.52	-.11	.00	51.10	53.00
89405.000	100.00	1245.64	.00	.00	.00	44.11	2.00
89405.000	500.00	1246.99	1.35	-.01	.00	46.19	2.00
89405.000	700.00	1247.61	.61	-.01	.00	47.14	2.00
89405.000	850.00	1248.03	.43	-.02	.00	47.80	2.00
89405.000	1000.00	1248.44	.40	-.02	.00	48.42	2.00
89405.000	1200.00	1248.95	.51	-.02	.00	49.20	2.00
89525.000	100.00	1245.67	.00	.03	.00	44.15	120.00
89525.000	500.00	1247.11	1.43	.12	.00	46.37	120.00
89525.000	700.00	1247.73	.63	.13	.00	47.34	120.00
89525.000	850.00	1248.17	.43	.13	.00	48.01	120.00
89525.000	1000.00	1248.58	.41	.14	.00	48.65	120.00
89525.000	1200.00	1249.10	.52	.15	.00	49.45	120.00
89527.000	100.00	1245.68	.00	.00	.00	46.25	2.00
89527.000	500.00	1247.14	1.46	.03	.00	48.42	2.00
89527.000	700.00	1247.77	.63	.04	.00	49.36	2.00
89527.000	850.00	1248.21	.44	.04	.00	50.01	2.00
89527.000	1000.00	1248.62	.41	.05	.00	50.62	2.00
89527.000	1200.00	1249.15	.53	.05	.00	51.40	2.00
* 89557.000	100.00	1245.71	.00	.03	-2.29	52.86	30.00
* 89557.000	500.00	1247.27	1.57	.14	-.73	55.89	30.00
* 89557.000	700.00	1247.94	.67	.17	-.06	57.18	30.00
* 89557.000	850.00	1248.40	.46	.19	.40	58.16	30.00
* 89557.000	1000.00	1248.83	.43	.21	.83	59.09	30.00
* 89557.000	1200.00	1249.38	.55	.23	1.38	60.27	30.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH

89600.000	100.00	1245.71	.00	.00	-2.29	52.87	43.00
89600.000	500.00	1247.28	1.57	.01	-.72	55.92	43.00
89600.000	700.00	1247.95	.67	.01	-.05	57.21	43.00
89600.000	850.00	1248.41	.46	.01	.41	58.19	43.00
89600.000	1000.00	1248.84	.43	.01	.84	59.13	43.00
89600.000	1200.00	1249.39	.55	.01	1.39	60.31	43.00
90000.000	100.00	1245.73	.00	.02	-2.27	57.07	400.00
90000.000	500.00	1247.36	1.64	.08	-.64	60.12	400.00
90000.000	700.00	1248.05	.68	.10	.05	61.41	400.00
90000.000	850.00	1248.52	.47	.11	.52	62.58	400.00
90000.000	1000.00	1248.96	.44	.12	.96	63.73	400.00
90000.000	1200.00	1249.51	.56	.12	1.51	65.16	400.00
90600.000	100.00	1245.76	.00	.03	-2.44	58.59	600.00
90600.000	500.00	1247.47	1.71	.10	-.73	62.60	600.00
90600.000	700.00	1248.16	.69	.12	-.04	64.24	600.00
90600.000	850.00	1248.64	.47	.12	.44	65.35	600.00
90600.000	1000.00	1249.08	.44	.13	.88	66.40	600.00
90600.000	1200.00	1249.64	.56	.13	1.44	67.70	600.00
91200.000	100.00	1245.81	.00	.05	-2.59	56.76	600.00
91200.000	500.00	1247.59	1.78	.12	-.81	60.64	600.00
91200.000	700.00	1248.29	.70	.13	-.11	62.16	600.00
91200.000	850.00	1248.77	.48	.13	.37	63.26	600.00
91200.000	1000.00	1249.21	.45	.13	.81	64.29	600.00
91200.000	1200.00	1249.77	.56	.13	1.37	65.59	600.00
91800.000	100.00	1245.88	.00	.07	-2.62	53.86	600.00
91800.000	500.00	1247.72	1.84	.13	-.78	57.68	600.00
91800.000	700.00	1248.43	.70	.14	-.07	59.15	600.00
91800.000	850.00	1248.91	.48	.14	.41	60.21	600.00
91800.000	1000.00	1249.35	.45	.14	.85	61.22	600.00
91800.000	1200.00	1249.91	.56	.14	1.41	62.48	600.00
92400.000	100.00	1245.96	.00	.08	-2.64	55.18	600.00
92400.000	500.00	1247.87	1.91	.15	-.73	57.94	600.00
92400.000	700.00	1248.58	.71	.15	-.02	58.98	600.00
92400.000	850.00	1249.07	.48	.16	.47	60.07	600.00
92400.000	1000.00	1249.51	.45	.16	.91	61.09	600.00
92400.000	1200.00	1250.08	.56	.17	1.48	62.36	600.00
93000.000	100.00	1246.04	.00	.09	-2.76	50.42	600.00
93000.000	500.00	1248.00	1.96	.13	-.80	54.06	600.00
93000.000	700.00	1248.72	.72	.13	-.08	55.37	600.00
93000.000	850.00	1249.20	.48	.14	.40	56.21	600.00
93000.000	1000.00	1249.65	.45	.14	.85	57.01	600.00
93000.000	1200.00	1250.21	.56	.14	1.41	58.01	600.00

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SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
93414.000	100.00	1246.11	.00	.07	-2.79	48.67	414.00
93414.000	500.00	1248.12	2.00	.12	-.78	52.28	414.00
93414.000	700.00	1248.84	.72	.12	-.06	53.58	414.00
93414.000	850.00	1249.33	.49	.12	.43	54.51	414.00
93414.000	1000.00	1249.78	.45	.13	.88	55.38	414.00
93414.000	1200.00	1250.34	.56	.13	1.44	56.47	414.00
93463.000	100.00	1246.12	.00	.01	.00	48.70	49.00
93463.000	500.00	1248.13	2.01	.01	.00	52.31	49.00

93463.000	700.00	1248.85	.72	.01	.00	53.61	49.00
93463.000	850.00	1249.34	.49	.01	.00	54.55	49.00
93463.000	1000.00	1249.79	.45	.02	.00	55.42	49.00
93463.000	1200.00	1250.36	.56	.02	.00	56.51	49.00
93513.000	100.00	1246.13	.00	.01	.00	46.70	50.00
93513.000	500.00	1248.14	2.01	.01	.00	47.65	50.00
93513.000	700.00	1248.86	.72	.01	.00	47.68	50.00
93513.000	850.00	1249.34	.48	.00	.00	47.70	50.00
93513.000	1000.00	1249.79	.45	.00	.00	47.72	50.00
93513.000	1200.00	1250.35	.56	-.01	.00	47.75	50.00
93515.000	100.00	1246.13	.00	.00	.00	45.35	2.00
93515.000	500.00	1248.14	2.01	.00	.00	46.35	2.00
93515.000	700.00	1248.86	.72	.00	.00	46.39	2.00
93515.000	850.00	1249.34	.48	-.01	.00	46.43	2.00
93515.000	1000.00	1249.79	.45	-.01	.00	46.46	2.00
93515.000	1200.00	1250.34	.56	-.01	.00	46.49	2.00
93551.000	100.00	1246.13	.00	.00	.00	45.35	36.00
93551.000	500.00	1248.15	2.02	.01	.00	46.35	36.00
93551.000	700.00	1248.87	.72	.01	.00	46.39	36.00
93551.000	850.00	1249.35	.48	.01	.00	46.43	36.00
93551.000	1000.00	1249.80	.45	.01	.00	46.45	36.00
93551.000	1200.00	1250.36	.56	.02	.00	46.49	36.00
93553.000	100.00	1246.13	.00	.00	.00	46.71	2.00
93553.000	500.00	1248.15	2.02	.01	.00	47.65	2.00
93553.000	700.00	1248.88	.73	.01	.00	47.68	2.00
93553.000	850.00	1249.37	.49	.01	.00	47.70	2.00
93553.000	1000.00	1249.82	.45	.02	.00	47.72	2.00
93553.000	1200.00	1250.38	.56	.02	.00	47.75	2.00
93559.000	100.00	1246.13	.00	.00	.00	48.94	6.00
93559.000	500.00	1248.17	2.03	.01	.00	48.98	6.00
93559.000	700.00	1248.90	.73	.02	.00	48.99	6.00
93559.000	850.00	1249.39	.49	.02	.00	49.00	6.00
93559.000	1000.00	1249.84	.46	.03	.00	49.01	6.00
93559.000	1200.00	1250.41	.57	.03	.00	49.03	6.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	93581.000	100.00	1246.16	.00	.02	.00	58.63	22.00
*	93581.000	500.00	1248.28	2.12	.11	.00	61.17	22.00
*	93581.000	700.00	1249.04	.77	.15	.00	62.09	22.00
*	93581.000	850.00	1249.56	.51	.17	.00	62.71	22.00
*	93581.000	1000.00	1250.04	.48	.20	.00	63.29	22.00
*	93581.000	1200.00	1250.63	.60	.23	.00	64.00	22.00
*	93612.000	100.00	1246.16	.00	.00	.00	56.65	31.00
*	93612.000	500.00	1248.29	2.13	.02	.00	59.71	31.00
*	93612.000	700.00	1249.07	.77	.02	.00	60.81	31.00
*	93612.000	850.00	1249.59	.52	.03	.00	61.57	31.00
*	93612.000	1000.00	1250.07	.48	.03	.00	62.27	31.00
*	93612.000	1200.00	1250.67	.60	.04	.00	63.13	31.00
	93622.000	100.00	1246.16	.00	.00	.00	49.24	10.00
	93622.000	500.00	1248.29	2.13	.00	.00	52.44	10.00
	93622.000	700.00	1249.06	.77	-.01	.00	53.60	10.00
	93622.000	850.00	1249.58	.52	-.01	.00	54.38	10.00
	93622.000	1000.00	1250.06	.48	-.01	.00	55.10	10.00

	93622.000	1200.00	1250.66	.60	-.01	.00	56.00	10.00
*	93672.000	100.00	1246.15	.00	-.01	.00	52.27	50.00
*	93672.000	500.00	1248.26	2.11	-.03	.00	55.46	50.00
*	93672.000	700.00	1249.03	.76	-.03	.00	56.61	50.00
*	93672.000	850.00	1249.54	.51	-.04	.00	57.39	50.00
*	93672.000	1000.00	1250.02	.48	-.04	.00	58.11	50.00
*	93672.000	1200.00	1250.61	.60	-.05	.00	59.01	50.00
	93887.000	100.00	1246.16	.00	.01	-3.24	50.56	215.00
	93887.000	500.00	1248.29	2.13	.03	-1.11	54.78	215.00
	93887.000	700.00	1249.06	.77	.03	-.34	56.31	215.00
	93887.000	850.00	1249.57	.52	.03	.17	57.30	215.00
	93887.000	1000.00	1250.05	.48	.03	.65	58.17	215.00
	93887.000	1200.00	1250.65	.60	.04	1.25	59.26	215.00
	94487.000	100.00	1246.19	.00	.03	-3.11	48.62	600.00
	94487.000	500.00	1248.37	2.18	.08	-.93	51.68	600.00
	94487.000	700.00	1249.15	.78	.09	-.15	52.78	600.00
	94487.000	850.00	1249.67	.52	.10	.37	53.73	600.00
	94487.000	1000.00	1250.15	.48	.10	.85	54.69	600.00
	94487.000	1200.00	1250.75	.60	.10	1.45	55.89	600.00
	95087.000	100.00	1246.21	.00	.02	-3.49	49.52	600.00
	95087.000	500.00	1248.43	2.22	.07	-1.27	53.02	600.00
	95087.000	700.00	1249.22	.79	.08	-.48	54.26	600.00
	95087.000	850.00	1249.75	.53	.08	.05	55.06	600.00
	95087.000	1000.00	1250.24	.49	.09	.54	55.61	600.00
	95087.000	1200.00	1250.85	.61	.10	1.15	56.30	600.00

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	95687.000	100.00	1246.25	.00	.04	-3.45	47.25	600.00
	95687.000	500.00	1248.51	2.26	.08	-1.19	52.32	600.00
	95687.000	700.00	1249.31	.80	.09	-.39	54.11	600.00
	95687.000	850.00	1249.84	.53	.09	.14	55.20	600.00
	95687.000	1000.00	1250.34	.49	.09	.64	55.89	600.00
	95687.000	1200.00	1250.95	.61	.10	1.25	56.76	600.00
*	96287.000	100.00	1246.37	.00	.13	-3.83	49.51	600.00
	96287.000	500.00	1248.64	2.27	.13	-1.56	53.94	600.00
	96287.000	700.00	1249.44	.80	.13	-.76	55.51	600.00
	96287.000	850.00	1249.97	.53	.13	-.23	56.56	600.00
	96287.000	1000.00	1250.47	.49	.13	.27	57.53	600.00
	96287.000	1200.00	1251.08	.61	.13	.88	58.80	600.00
	96887.000	100.00	1246.85	.00	.48	-3.45	50.72	600.00
	96887.000	500.00	1248.86	2.01	.22	-1.44	54.38	600.00
	96887.000	700.00	1249.64	.78	.20	-.66	55.80	600.00
	96887.000	850.00	1250.17	.53	.19	-.13	56.76	600.00
	96887.000	1000.00	1250.66	.49	.19	.36	57.70	600.00
	96887.000	1200.00	1251.27	.61	.18	.97	58.90	600.00
	97487.000	100.00	1247.22	.00	.37	-3.38	49.09	600.00
	97487.000	500.00	1249.11	1.89	.25	-1.49	52.95	600.00
	97487.000	700.00	1249.87	.76	.23	-.73	54.48	600.00
	97487.000	850.00	1250.38	.51	.21	-.22	55.54	600.00
	97487.000	1000.00	1250.86	.48	.21	.26	56.57	600.00
	97487.000	1200.00	1251.46	.60	.20	.86	57.89	600.00
	98087.000	100.00	1247.57	.00	.35	-3.33	48.16	600.00

98087.000	500.00	1249.40	1.83	.29	-1.50	51.92	600.00
98087.000	700.00	1250.13	.73	.27	-.77	53.42	600.00
98087.000	850.00	1250.63	.50	.25	-.27	54.45	600.00
98087.000	1000.00	1251.11	.47	.24	.21	55.42	600.00
98087.000	1200.00	1251.70	.59	.23	.80	56.68	600.00
98687.000	100.00	1247.84	.00	.27	-3.26	53.91	600.00
98687.000	500.00	1249.71	1.87	.31	-1.39	56.82	600.00
98687.000	700.00	1250.44	.73	.30	-.66	57.96	600.00
98687.000	850.00	1250.94	.50	.30	-.16	58.74	600.00
98687.000	1000.00	1251.41	.47	.30	.31	59.63	600.00
98687.000	1200.00	1251.99	.59	.30	.89	60.85	600.00
99117.000	100.00	1247.97	.00	.13	.00	54.11	430.00
99117.000	500.00	1249.87	1.90	.16	.00	57.08	430.00
99117.000	700.00	1250.59	.72	.15	.00	58.22	430.00
99117.000	850.00	1251.09	.50	.15	.00	58.99	430.00
99117.000	1000.00	1251.56	.47	.15	.00	59.96	430.00
99117.000	1200.00	1252.14	.59	.15	.00	61.17	430.00

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	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
*	99165.000	100.00	1248.00	.00	.03	.00	60.14	48.00
	99165.000	500.00	1249.93	1.94	.07	.00	60.19	48.00
	99165.000	700.00	1250.66	.73	.07	.00	60.21	48.00
	99165.000	850.00	1251.16	.50	.08	.00	60.23	48.00
	99165.000	1000.00	1251.64	.47	.08	.00	60.24	48.00
	99165.000	1200.00	1252.22	.59	.08	.00	60.26	48.00
	99167.000	100.00	1248.00	.00	.00	.00	58.03	2.00
	99167.000	500.00	1249.93	1.93	.00	.00	58.18	2.00
	99167.000	700.00	1250.66	.73	.00	.00	58.24	2.00
	99167.000	850.00	1251.16	.50	.00	.00	58.28	2.00
	99167.000	1000.00	1251.63	.47	-.01	.00	58.32	2.00
	99167.000	1200.00	1252.22	.59	-.01	.00	58.37	2.00
	99251.000	100.00	1248.01	.00	.01	.00	58.03	84.00
	99251.000	500.00	1249.95	1.95	.02	.00	58.18	84.00
	99251.000	700.00	1250.68	.73	.02	.00	58.24	84.00
	99251.000	850.00	1251.18	.50	.03	.00	58.28	84.00
	99251.000	1000.00	1251.66	.47	.03	.00	58.32	84.00
	99251.000	1200.00	1252.25	.59	.03	.00	58.37	84.00
	99253.000	100.00	1248.01	.00	.00	.00	60.14	2.00
	99253.000	500.00	1249.96	1.95	.01	.00	60.19	2.00
	99253.000	700.00	1250.69	.73	.01	.00	60.21	2.00
	99253.000	850.00	1251.20	.50	.01	.00	60.23	2.00
	99253.000	1000.00	1251.67	.47	.01	.00	60.24	2.00
	99253.000	1200.00	1252.26	.59	.02	.00	60.26	2.00
*	99287.000	100.00	1248.00	.00	-.01	-3.50	47.32	34.00
*	99287.000	500.00	1249.93	1.93	-.03	-1.57	52.10	34.00
	99287.000	700.00	1250.66	.73	-.03	-.84	53.91	34.00
	99287.000	850.00	1251.16	.50	-.04	-.34	55.16	34.00
	99287.000	1000.00	1251.63	.47	-.04	.13	56.21	34.00
	99287.000	1200.00	1252.22	.59	-.04	.72	57.11	34.00
	99317.000	100.00	1248.00	.00	.00	-3.00	47.97	30.00
	99317.000	500.00	1249.93	1.93	.00	-1.07	52.95	30.00
	99317.000	700.00	1250.66	.73	.00	-.34	54.87	30.00
	99317.000	850.00	1251.16	.50	.00	.16	56.24	30.00

99317.000	1000.00	1251.64	.47	.00	.64	57.51	30.00
99317.000	1200.00	1252.23	.59	.00	1.23	58.94	30.00
99737.000	100.00	1248.15	.00	.15	.00	41.42	420.00
99737.000	500.00	1250.09	1.94	.16	.00	45.48	420.00
99737.000	700.00	1250.81	.72	.15	.00	47.00	420.00
99737.000	850.00	1251.31	.49	.14	.00	48.02	420.00
99737.000	1000.00	1251.77	.46	.13	.00	49.00	420.00
99737.000	1200.00	1252.35	.58	.12	.00	50.18	420.00

SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
99861.000	100.00	1248.18	.00	.03	.00	35.88	124.00
99861.000	500.00	1250.13	1.94	.03	.00	35.97	124.00
99861.000	700.00	1250.83	.70	.01	.00	36.00	124.00
99861.000	850.00	1251.31	.48	.00	.00	36.02	124.00
99861.000	1000.00	1251.75	.45	-.02	.00	36.04	124.00
* 99861.000	1200.00	1252.31	.56	-.04	.00	36.07	124.00

SUMMARY OF ERRORS AND SPECIAL NOTES

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WARNING SECNO=  85200.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  85200.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  85200.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  85200.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=  85800.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=  86231.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  86231.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  86231.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=  89403.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89403.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89403.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89403.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89403.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89403.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=  89557.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89557.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89557.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89557.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89557.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  89557.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=  93581.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  93581.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  93581.000  PROFILE=  3  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  93581.000  PROFILE=  4  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  93581.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  93581.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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WARNING SECNO=  93612.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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WARNING SECNO=  93672.000  PROFILE=  5  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=  95687.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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WARNING SECNO=  96287.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

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WARNING SECNO=  99287.000  PROFILE=  1  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
WARNING SECNO=  99287.000  PROFILE=  2  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO=  99861.000  PROFILE=  6  CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE
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