

January 16, 2018

Raimere Fitzpatrick
El Paso County Planning and Community Development
2880 International Circle, Suite 110
Colorado Springs, CO 80910

RE: Grant Subdivision Drainage Letter

The purpose of this drainage letter is to satisfy requirements of the El Paso County Planning and Community Development division pertaining to the proposed minor subdivision of the Grant Property. This letter was prepared in accordance with Section 8.4.5 Drainage Considerations and Standards for Subdivision Design, Improvements, and Dedications of the 2016 Land Development Code.

Property Description:

The Grant Property (Site) is located at 1315 Walsen Rd, Colorado Springs, El Paso County, Colorado. The Site is located in the southwest one-quarter (SW1/4) of the northeast one-quarter (NE1/4) of Section 22, Township 12 South (T12S), Range 66 West (R66W), El Paso County Assessor's schedule number 6205000029. The existing property is 41 acres. The proposed minor subdivision will divide the property from north to south into one 11-acre parcel on the west and one 30-acre parcel on the east. The proposed access to each parcel will be from Walsen Rd. on a shared driveway in the northwest corner of the site as shown on the Grant Subdivision plat provided separate from this letter. Smith Creek travels through the northern portion of the property and the shared driveway splits after the Smith Creek crossing. The 11-acre parcel contains an existing single-family residence, barn, gravel driveway, water well, and septic system. The 30-acre parcel of land is bare land with no proposed improvements at this time. In order to estimate future impacts to stormwater runoff on the Site, a single-family residence and driveway were assumed for future development.

Existing Drainage Characteristics:

The drainage characteristics for the Site were determined from the 2002 Smith Creek Drainage Basin Planning Study (2002 Drainage Report) by JR Engineering which was adopted by El Paso County in 2003. The Grant Property is located outside the 100-year flood plain as shown on the map included with this letter. According to the 2002 Drainage Report, the 100-yr floodplain is narrow and mostly contained within the stream channel for this section of Smith Creek. The Smith Creek drainage area is shown in the preliminary design drawings prepared by JR Engineering for the 2002 Drainage Report. Sheet 4 of the preliminary design drawings shows the drainage area for Smith Creek and the Grant property. The preliminary design drawings are attached for reference. The existing drainage channel size varies on the Grant property. The channel width is at its greatest at the northern boundary at approximately 70 ft and narrows to an average width of 55 ft throughout the Grant property. An 80-ft easement, as shown on the Grant Subdivision plat, is proposed to meet the requirements of the ECM 3.3.3.K.1.

The major drainage characteristics include the conveyance of water (via sheet-flow) northwest across the site into the stream channel of Smith Creek which then flows into one (1) existing 36-inch CMP culvert. A small portion of the Site is located north of Smith Creek and drains southwest into Smith Creek.

MS 17-005

According to the NRCS Soil Resource Report, the on-site soils are classified as a combination of Omaha-Crowfoot complex and Pring coarse sandy loam, both of which are in hydrologic soil group "B". Both are well-drained soils with medium to low surface runoff. A copy of the NRCS Soil Resource Report will be submitted separate of this Drainage Letter.

The table below shows the runoff coefficients for the existing site which were taken from Table 5-1 of the El Paso County Drainage Criteria Manual (DCM) and Table 6-6 of the City of Colorado Springs DCM.

Site Composition (SF)		C ₅	C ₁₀	C ₁₀₀
Roof (House-11-acre parcel)	2,639	0.73	0.9	0.95
Roof (Barn-11-acre parcel)	500	0.73	0.9	0.95
Paved Driveway (11-acre parcel)	17,400	0.9	0.9	0.95
Native	1,721,861	0.08	0.2	0.25
Total	1,742,400	.09	0.21	0.26

The following table displays the peak runoff flow rate for the existing site and the corresponding rainfall intensity used to calculate it. The rainfall intensity was found using Figure 5-1 of the El Paso County DCM. The runoff was calculated using the Rational Method and the time of concentration was calculated to be approximately 28.8 minutes.

	5-year	10-year	100-year
Intensity (in/hr)	2.49	3.00	4.50
Q (CFS)	8.90	24.99	46.49

Proposed Drainage Characteristics:

The proposed drainage from this site will generally remain the same as the existing drainage. The 30-acre parcel will likely be developed in the future. These developments may include a single-family residence and driveway in accordance with the local zoning. The table below contains the runoff coefficients from the proposed site improvements which were also taken from Table 5-1 of the El Paso County DCM and Table 6-6 of the City of Colorado Springs DCM.

Site Composition (SF)		C ₅	C ₁₀	C ₁₀₀
Roof (House-11-acre parcel)	2,639	0.73	0.9	0.95
Roof (Barn-11-acre parcel)	500	0.73	0.9	0.95
Roof (Proposed House-30-acre parcel)	3,000	0.73	0.9	0.95
Paved Driveway (11-acre parcel)	17,400	0.9	0.9	0.95
Paved Driveway (Proposed-30-acre parcel)	17,500	0.9	0.9	0.95
Native	1,701,461	0.08	0.2	0.25
Total	1,742,400	0.10	0.22	0.27

The following table displays the peak runoff flow rate for the proposed site and the corresponding rainfall intensity used to calculate it. The rainfall intensity was also found using Figure 5-1 of the El Paso County DCM. The runoff was calculated using the Rational Method and the time of concentration was calculated to be approximately 28.6 minutes. The time of concentration reduced due to the increased runoff coefficient for the proposed site development.

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	5-year	10-year	100-year
Intensity (in/hr)	2.51	3.00	4.50
Q (CFS)	9.91	25.98	47.97
Difference (CFS)	1.01	0.99	1.48

These calculations project a slight increase of 1.01, 0.99 and 1.48 cfs in the 5-, 10- and 100-year peak flows, respectively. This is primarily due to the increased impervious area for the proposed development.

Existing Culvert Evaluation:

The existing driveway crossing over Smith Creek has one (1) 36-inch corrugated metal pipe (CMP) culvert. The culvert is 24-feet in length with a slope of 2.24%. The entire Smith Creek drainage basin is 5.48 square miles. The culvert has a drainage area of approximately 4.02 square miles. The culvert is located at Station 156+00 on Reach 5 of Smith Creek as shown in the 2002 Drainage Report. The hydrologic analysis data from the 2002 Drainage Report was used to evaluate the existing culvert. Below is a table summarizing the 2-, 5-, 10-, 50-, and 100-year storm event peak runoff flow rates. The future flows are based on the proposed future development in the Smith Creek Drainage Basin.

Storm Event	Existing Flows, cfs	Future Flows, cfs
2-year	66	65
5-year	268	270
10-year	464	504
50-year	1219	1240
100-yr	1770	2019

The existing culvert was evaluated using Manning's Equation and found to be capable of passing 53 cubic feet per second (cfs) at a velocity of 7.5 feet per second (fps). The calculations are included as an attachment. Based on these calculations and the peak runoff flowrates calculated in the 2002 Drainage Report, the existing culvert is unable to pass a 2-year or greater storm event without increasing the headwater depth above the allowable height. The existing culvert does not appear to be designed to pass any minor storm events, and inundation of the driveway may occur during a minor and major storm event.

The El Paso County DCM culvert criteria for streets permits an allowable culvert headwater depth (AHW) ratio (Hw/D) for design flows with clear opening 50 square feet or less of no greater than 1.5 without County approval. The existing driveway crossing was evaluated for the 5-yr and 10-yr storm events. The culvert size necessary for each storm event was selected using the discharge capacity curves on Figure 9-14 in the DCM for a standard circular corrugated metal pipe with headwall entrance. Below is a summary of the culvert sizing results. The calculations are included as an attachment.

Storm Event	AHW, ft	Culvert Dia., inches	Hw/D	Design Discharge (per culvert), cfs	L/100So	Resulting Headwater Depth, ft
5-yr	6.75	54	1.5	140	14	6.0
10-yr	7.50	60	1.5	172	16	6.3

The existing driveway crossing would require two (2) 54-inch CMP culverts at a 1.70% slope to pass a 5-yr storm event (estimated future flow of 270 cfs) and maintain a velocity less than 10 fps. In order to pass a 10-yr storm event (estimated future flow of 504 cfs) and maintain a velocity less than 10 fps, the

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existing driveway crossing would require three (3) 60-inch CMP culverts at a 1.48% slope. Additional configurations (culvert size, number, slope, outlet energy dissipaters) could be evaluated in the event the culvert was to be replaced. The existing culvert is not proposed to be replaced at this time unless required by the County.

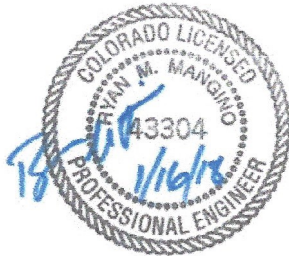
Habitat Conservation:

Field observations confirmed the downstream invert of the existing culvert is near the natural channel bottom which allows upstream migration of fish and other animal species, including the Preble's Meadow Jumping Mouse. Native vegetation, including willows, shrubs, grasses, and trees are abundant surrounding this area of Smith Creek which provides a natural habitat for the Preble's Meadow Jumping Mouse and other "listed" species. The proposed access to the 30-acre parcel will be from a shared driveway over Smith Creek. The portion of the shared driveway over Smith Creek is existing. Based on these observations, the minor subdivision will have negligible adverse impact to the "listed" species and their habitat.

Drainage Fees:

The Site is in the Smith Creek Drainage Basin of Monument Creek (Basin Number FOMO4000). The Smith Creek Basin 2017 fees are \$6,633.00 per impervious acre. The proposed minor subdivision has 41 acres of land (an 11-acre and 30-acre parcel). Per the El Paso County Resolution 99-383, a fee reduction of 25% for lots 2.5 acre and larger may be applied. The 11-acre parcel is approximately 4.3% impervious resulting in a fee of \$2,353.00. The impervious acreage for the 11-acre parcel is based on the existing structures and driveway. The 30-acre parcel is approximately 1.6% impervious resulting in a fee of \$2,388.00. The estimated impervious acreage for the 30-acre parcel is based on a 3,000 sf single-family residence and 17,500 sf driveway. The total drainage fees for the Site are \$4,741.00 for 41-acres of land.

Respectfully,
JDS-Hydro Consultants, Inc.



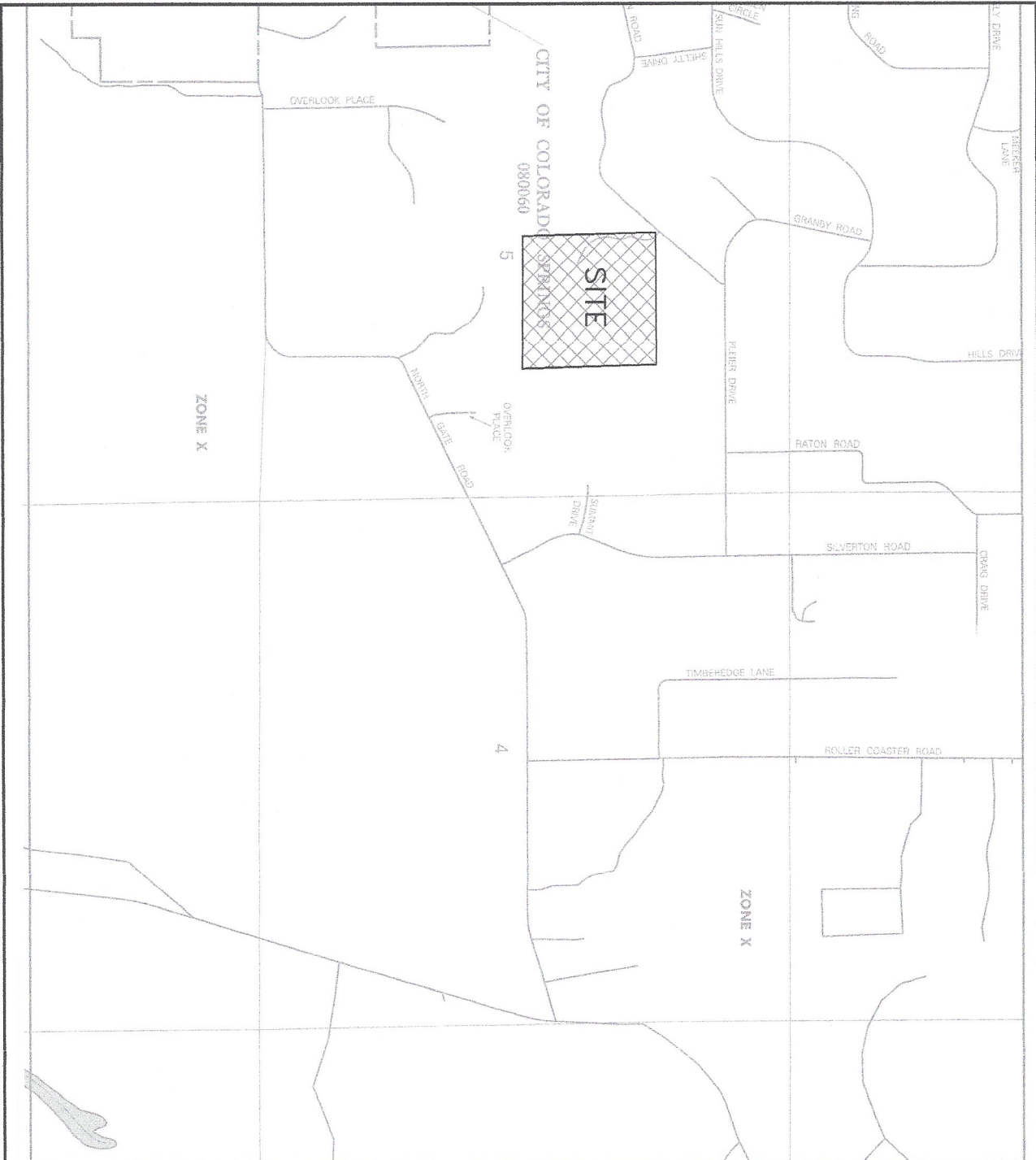
Ryan M. Mangino, P.E.

Enclosures

- Attachment A - Floodplain Map (FIRM)*
- Attachment B - Culvert Calculations*
- Attachment C - Preliminary Design Drawings (2002 Drainage Report)*
- Attachment D - El Paso County Drainage Report Signature Block*

MS 17-005

***ATTACHMENT A –
Floodplain Map (FIRM)***



FIRM
FLOOD INSURANCE RATE MAP

**EL PASO COUNTY,
 COLORADO AND
 INCORPORATED AREAS**

PANEL 295 OF 1300
 (SEE MAP INDEX FOR PANELS NOT PRINTED)

NATIONAL FLOOD INSURANCE PROGRAM

Federal Emergency Management Agency

MAP NUMBER
 08041C0295 F

EFFECTIVE DATE:
 MARCH 17, 1997

APPROXIMATE SCALE IN FEET
 1000
 0 1000

N

CONTRACT NUMBER: 27901
 COUNTY: EL PASO
 CITY: COLORADO SPRINGS
 PROJECT: FLOODPLAIN MAP

DRAWN BY: JDS
 CHECKED BY: JDS
 DATE: 06-03-17

PROJECT NO: 27901
 SCALE: AS NOTED
 DATE: 06-03-17
 DESIGN: JDS
 DRAWN: JDS
 CHECKED: JDS
 REVISIONS:

***ATTACHMENT B –
Culvert Calculations***

Culvert Evaluation: Existing 36-inch CMP (Flowing Full)

Manning's Formula

$$Q=(1.486/n)AR_h^{2/3}S^{1/2}$$

$$V=(1.486/n)R_h^{2/3}S^{1/2}$$

$$Q=V*A$$

$$R=A/P$$

A=cross sectional area

P=wetter perimeter

S=slope of channel

n=Manning's roughness coefficient

Diameter= 36 inches
 n (CMP)= 0.025 Mannings coeff
 Length= 24 feet
 Invert (Upstream)= 15.58 feet
 Invert (Downstream)= 16.14 feet
 Slope= 0.023 in/in
 L/100S= 10

			Solution to Manning's Equation	
Area, ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	Velocity, ft/s	Flow, cfs
7.07	9.42	0.75	7.49	53.0

Culvert Evaluation: 5-yr Storm Event, Two 54-inch CMPs (Flowing Full)

Manning's Formula

$$Q=(1.486/n)AR_h^{2/3}S^{1/2}$$

$$V=(1.486/n)R_h^{2/3}S^{1/2}$$

$$Q=V*A$$

$$R=A/P$$

A=cross sectional area

P=wetter perimeter

S=slope of channel

n=Manning's roughness coefficient

Diameter= 54 inches
 n (CMP)= 0.024 Mannings coeff
 Length= 24 feet
 Slope= 0.017 in/in
 L/100S= 14

			Solution to Manning's Equation	
Area, ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	Velocity, ft/s	Flow, cfs
15.90	14.14	1.13	8.73	138.9

277.8 2 - 54" CMPs

Culvert Evaluation: 10-yr Storm Event, Three 60-inch CMPs (Flowing Full)

Manning's Formula

$$Q = (1.486/n)AR_h^{2/3}S^{1/2}$$

$$V = (1.486/n)R_h^{2/3}S^{1/2}$$

$$Q = V \cdot A$$

$$R = A/P$$

A=cross sectional area

P=wetter perimeter

S=slope of channel

n=Manning's roughness coefficient

Diameter= 60 inches
 n (CMP)= 0.024 Mannings coeff
 Length= 24 feet
 Slope= 0.0148 in/in
 L/100S= 16

			Solution to Manning's Equation	
Area, ft ²	Wetted Perimeter, ft	Hydraulic Radius, ft	Velocity, ft/s	Flow, cfs
19.63	15.71	1.25	8.74	171.6

514.9 3 - 60" CMPs

*ATTACHMENT C –
2002 Drainage Report Preliminary Design Drawings*

SMITH CREEK DRAINAGE BASIN PLANNING STUDY

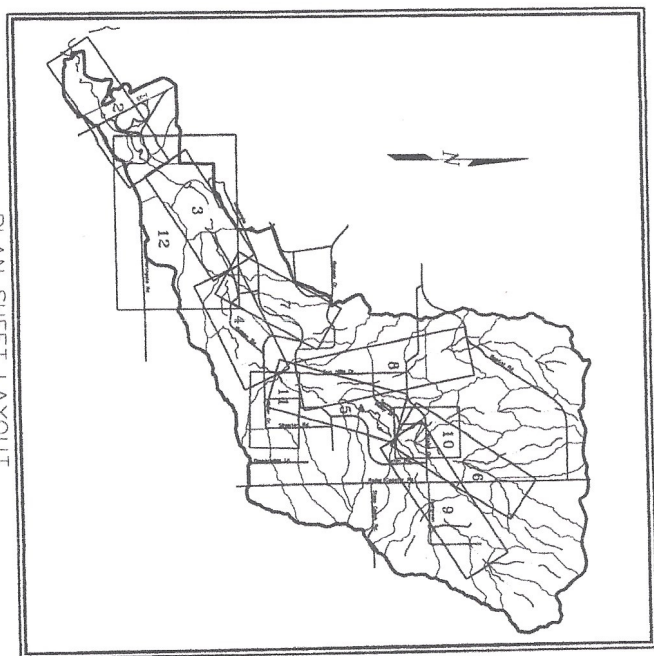
CITY OF COLORADO SPRINGS, COUNTY OF EL PASO, STATE OF COLORADO

PRELIMINARY PLAN

AUGUST 2002

LEGEND FOR PLAN AND PROFILE SHEETS

- PLAN**
- 100-YEAR FUTURE FLOODPLAIN
 - 100-YEAR EXISTING FLOODPLAIN
 - EXISTING THALWEG (FROM FMS MAPPING)
 - ZONE OF SHALLOW FLOOD UNITS
 - EXISTING ROAD EMBANKMENT
 - PROPOSED ROAD EMBANKMENT
 - EXISTING ROAD EMBANKMENT
 - 100-YEAR FUTURE WATER SURFACE PROFILE
 - 100-YEAR EXISTING WATER SURFACE PROFILE
 - 100-YEAR EXISTING WATER SURFACE PROFILE
 - CHECK STRUCTURES
 - ROUTING ELEMENTS USED IN MODELING
 - DESIGN POINTS USED IN MODELING
 - DETENTION POUNDS USED IN MODELING
- PROFILE**
- EXISTING STREAM BED
 - EXISTING STREAM BED
 - EXISTING STREAM BED
 - PROPOSED ROAD EMBANKMENT
 - EXISTING ROAD EMBANKMENT
 - 100-YEAR FUTURE WATER SURFACE PROFILE
 - 100-YEAR EXISTING WATER SURFACE PROFILE
 - 100-YEAR EXISTING WATER SURFACE PROFILE
 - CHECK STRUCTURES
 - ROUTING ELEMENTS USED IN MODELING
 - DESIGN POINTS USED IN MODELING
 - DETENTION POUNDS USED IN MODELING



PLAN SHEET LAYOUT
SCALE: N.T.S.

PREPARED BY:



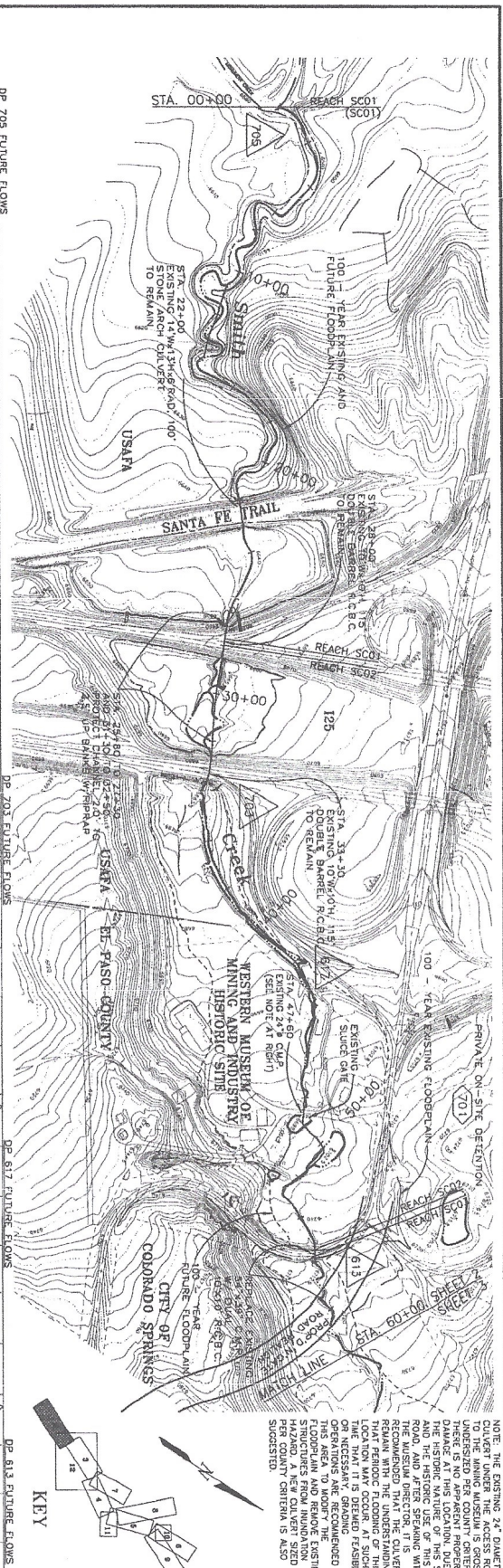
430 Arapahoe Drive • Colorado Springs, CO 80907
719-530-2503 • fax 719-528-6613
www.jr-engineering.com

SHEET NO.	TITLE
1	TITLE SHEET
2-11	PLAN AND PROFILE SHEETS
12	PLAN VIEW - CITY IMPROVEMENTS
13	DETAIL SHEET

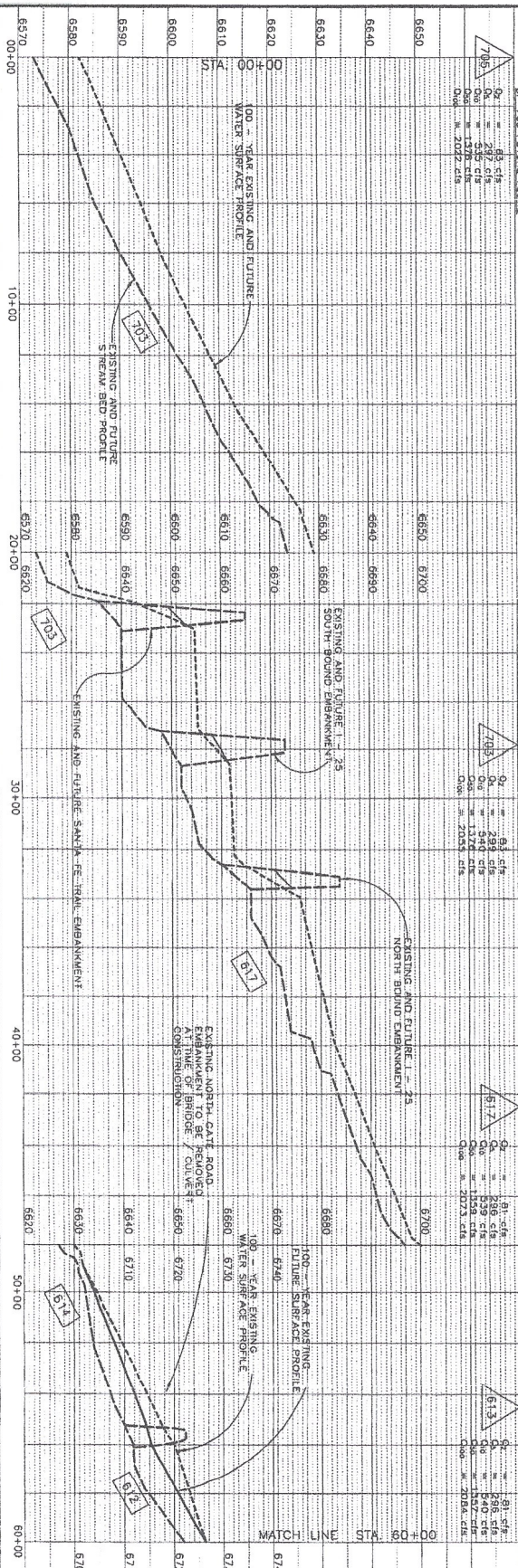
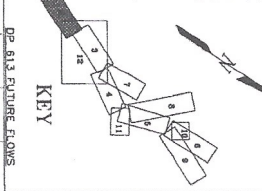
GENERAL NOTES:

- 1) THESE DRAWINGS ARE FOR URBAN PLANNING PURPOSES AND REPRESENT PRELIMINARY ENGINEERING RECOMMENDATIONS TO THIS DRAINAGE BASIN. THE CITY OF COLORADO SPRINGS, COUNTY OF EL PASO, STATE OF COLORADO, AND FEDERAL AGENCIES HAVING JURISDICTION OVER THE AREA BEING DEVELOPED, THESE DRAWINGS SHALL NOT BE USED FOR CONSTRUCTION DURING FINAL DESIGN.
- 2) UTILITIES SHOWN ARE BASED ON INFORMATION SUPPLIED BY LOCAL UTILITY DISTRICTS AND DEPTHS DURING FINAL DESIGN.
- 3) DRAINAGE FACILITIES ARE PROPOSED ON THE PLANS AND ARE BASED ON FUTURE HYDROLOGIC CALCULATIONS FOR THIS MASTER PLAN.
- 4) EXISTING DRAINAGE SYSTEM LOCATIONS ARE SCHEMATICALLY DEPICTED ON THE DRAWINGS.
- 5) REGIONAL DETENTION POND SIZES SHOWN ARE APPROXIMATE AND SHOULD BE VERIFIED DURING FINAL DESIGN. THE FINAL DESIGN OF ALL OPERATIONS INCLUDING EROSION CONTROL REQUIREMENTS, EROSION PROTECTION, AND SURFACE RELIEF ROUTES.
- 6) BRIDGE PROPOSED PROTECTION SHOULD BE PLACED AT ALL CHUTEWAYS, BRIDGES, STREAM SEWER OUTLETS AND CERAMIC INLETS, AND ALL OTHER LOCATIONS WHERE CONDITIONS DEVIATE THIS ACCORDANCE WITH COLORADO DEPARTMENT OF TRANSPORTATION STANDARDS.
- 7) VEGETATION AND WINDMILLS SHOULD BE INCLUDED FOR ALL CHANNEL CROSSINGS IN ACCORDANCE WITH COLORADO DEPARTMENT OF TRANSPORTATION STANDARDS.
- 8) THIS PLAN DOES NOT INDICATE LIMITS OF EXISTING WETLANDS OR EXISTING PERMITS DERIVED FROM THE US ARMY CORPS OF ENGINEERING. BOTH WILL NEED TO BE ESTABLISHED AND PERMITS OBTAINED PRIOR TO CONSTRUCTION OF ANY FACILITIES. THESE DRAWINGS ARE A PLANNING TOOL AND NOT TO BE USED AS FINAL CONSTRUCTION DOCUMENTS.

<p>SMITH CREEK DRAINAGE BASIN PLANNING STUDY</p> <p>COVER SHEET</p>	<table border="1"> <tr> <td>H-SCALE</td> <td>NTS</td> <td>No.</td> <td>REVISED PER AGENCY COMMENTS</td> <td>PCS 03/20/02</td> </tr> <tr> <td>V-SCALE</td> <td>NTS</td> <td>1</td> <td>REVISED PER COUNTY COMMENTS</td> <td>MFS 07/16/02</td> </tr> <tr> <td>DATE</td> <td>6/29/01</td> <td></td> <td></td> <td></td> </tr> <tr> <td>DRAWN BY</td> <td>MSD</td> <td></td> <td></td> <td></td> </tr> <tr> <td>CHECKED BY</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	H-SCALE	NTS	No.	REVISED PER AGENCY COMMENTS	PCS 03/20/02	V-SCALE	NTS	1	REVISED PER COUNTY COMMENTS	MFS 07/16/02	DATE	6/29/01				DRAWN BY	MSD				CHECKED BY					<p style="text-align: center;">J-R ENGINEERING A Subsidiary of Verdun</p> <p style="font-size: small;">430 Arapahoe Drive • Colorado Springs, CO 80907 719-530-2503 • fax 719-528-6613 www.jr-engineering.com</p>	<p style="text-align: center;">PREPARED FOR PICOLAN, INC. ATTN: STEVE SHARKEY 90 S. CASCADE AVE., STE. #1300 COLORADO SPRINGS, CO 80903 (719) 381-8441</p>	<p style="font-size: x-small;">UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, J-R ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES SPECIFIED BY WRITTEN AUTHORIZATION.</p>
H-SCALE	NTS	No.	REVISED PER AGENCY COMMENTS	PCS 03/20/02																									
V-SCALE	NTS	1	REVISED PER COUNTY COMMENTS	MFS 07/16/02																									
DATE	6/29/01																												
DRAWN BY	MSD																												
CHECKED BY																													



NOTE: THE EXISTING 24" DIAMETER CULVERT UNDER THE ACCESS ROAD UNDERSIZED PER COUNTY CRITERIA. THERE IS AN APPARENT PROPERTY LINE ON THE WESTERN MUSEUM OF MAN AND INDUSTRY HISTORIC SITE. THE HISTORIC NATURE OF THIS SITE AND THE HISTORIC USE OF THIS ROAD AND ADJACENT SPREADING WITH RECOMMENDED THAT THE CULTVERT REMAIN WITH THE UNDERSTANDING THAT IT IS DEEMED FEASIBLE. OVER ACCESS ARE RECOMMENDED IN THIS AREA TO ADAPT THE FLOODPLAIN AND REMOVE EXISTING HAZARD A NEW CULVERT SIZE SUGGESTED.



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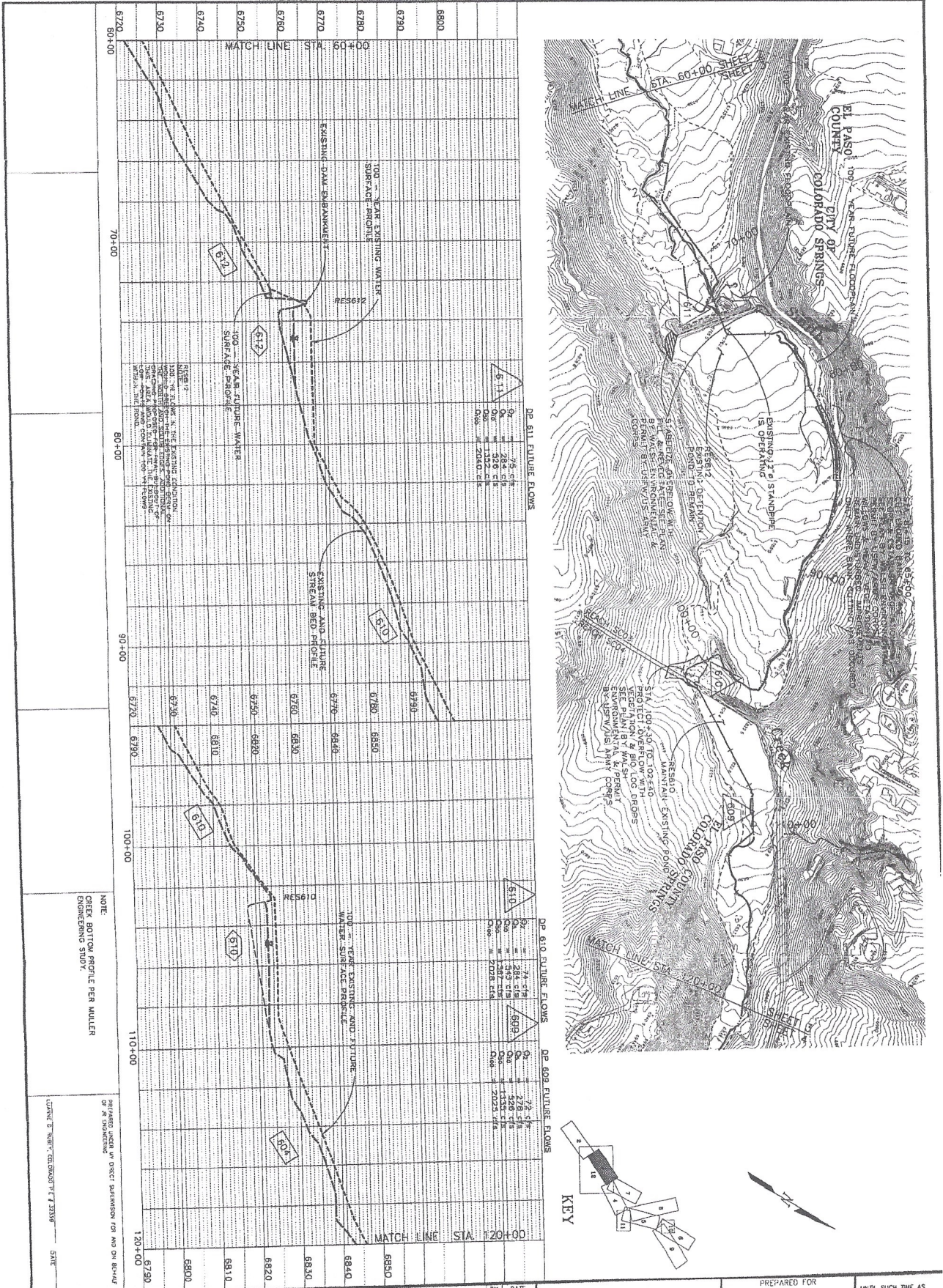
<p>SMITH CREEK DRAINAGE BASIN PLANNING STUDY</p> <p>PRELIMINARY PLAN AND PROFILE</p> <p>STA 00+00 TO STA 60+00</p>		<p>11--SCALE NTS</p> <p>V--SCALE NTS</p> <p>DATE 6/29/01</p> <p>DESIGNED BY MSD</p> <p>DRAWN BY</p> <p>CHECKED BY</p>	<p>NO. REVISION</p> <p>1 REVISED PER AGENCY COMMENTS</p> <p>2 REVISED PER COUNTY COMMENTS</p>	<p>BY DATE</p> <p>ACS 03/20/02</p> <p>MPS 07/16/02</p>	<p>PREPARED FOR</p> <p>PICOLAN, INC.</p> <p>ATTN: STEVE SHARKEY</p> <p>90 S. CASCADE AVE., STE. #1300</p> <p>COLORADO SPRINGS, CO 80903</p> <p>(719) 381-8441</p>	<p>UNTL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.</p>
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J-R ENGINEERING
A Subsidiary of Westcon

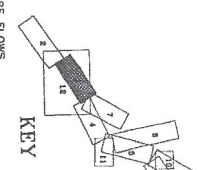
400 Arrowhead Drive • Colorado Springs, CO 80907
719-593-2525 • Fax: 719-593-6820
www.jr-engineering.com

NOTE: CREEK BOTTOM PROFILE PER MILLER ENGINEERING STUDY

DESIGNED BY: JAMES W. SHARKEY, P.E., CIVIL ENGINEER
DRAWN BY: JAMES W. SHARKEY, P.E., CIVIL ENGINEER
CHECKED BY: JAMES W. SHARKEY, P.E., CIVIL ENGINEER



<p>SMITH CREEK DRAINAGE BASIN PLANNING STUDY</p> <p>PRELIMINARY PLAN AND PROFILE</p> <p>STA 60+00 TO STA 120+00</p>		<p>H-SCALE NTS</p> <p>V-SCALE NTS</p> <p>DATE 6/29/01</p> <p>DESIGNED BY</p> <p>DRAWN BY MSD</p> <p>CHECKED BY</p>	<p>NO. REVISION</p> <p>1 REVISED PER AGENCY COMMENTS</p> <p>2 REVISED PER COUNTY COMMENTS</p>	<p>BY DATE</p> <p>ACS 03/20/02</p> <p>MFS 07/16/02</p>	<p>PREPARED FOR</p> <p>PICOLAN, INC.</p> <p>ATTN: STEVE SHARKEY</p> <p>90 S. CASCADE AVE., STE. #1300</p> <p>COLORADO SPRINGS, CO 80903</p> <p>(719) 381-8441</p>	<p>UNLESS SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, AN ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.</p>
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NOTE: CHECK BOTTOM PROFILE PER MILLER ENGINEERING STUDY.

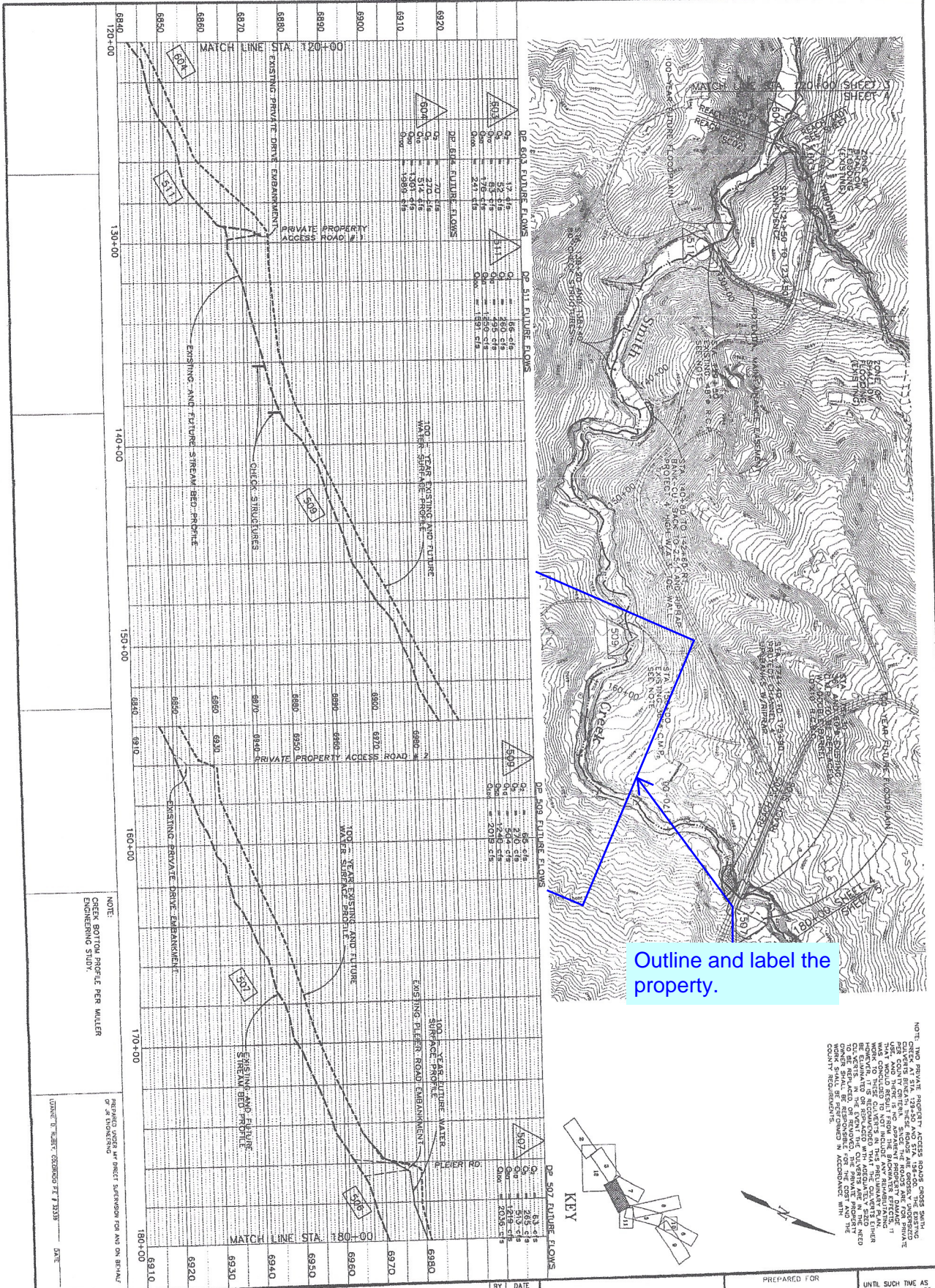
DESIGNED BY: J. T. SHARKEY, P.E.

DRAWN BY: MSD

CHECKED BY:

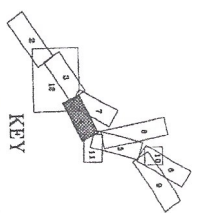
JR ENGINEERING
A Subsidiary of WSP

400 Arapahoe Drive • Colorado Springs, CO 80901
761-593-2500 • Fax 761-596-6603
www.jr-engineering.com

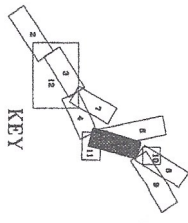
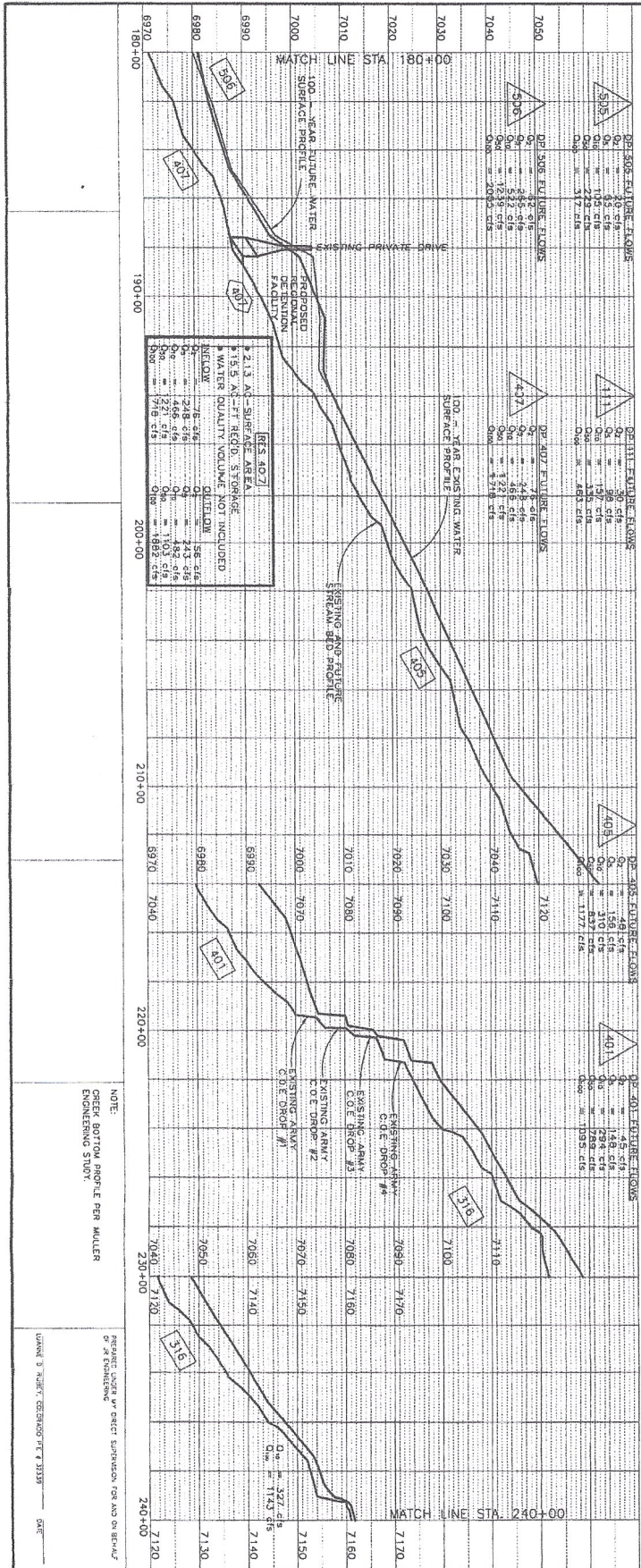


Outline and label the property.

NOTE: THIS DRAWING IS FOR INFORMATION ONLY. THE EXISTING CONDITIONS AT STA. 120+00 AND STA. 180+00 ARE BASED ON THE DATA PROVIDED BY THE CLIENT. THE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS AND PHOTOGRAPHIC SURVEYS AT THE ABOVE STATIONS. THE EXISTING CONDITIONS AT OTHER STATIONS WERE OBTAINED FROM THE CLIENT'S RECORD DRAWINGS. THE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS AND PHOTOGRAPHIC SURVEYS AT THE ABOVE STATIONS. THE EXISTING CONDITIONS AT OTHER STATIONS WERE OBTAINED FROM THE CLIENT'S RECORD DRAWINGS. THE ENGINEER HAS CONDUCTED VISUAL INSPECTIONS AND PHOTOGRAPHIC SURVEYS AT THE ABOVE STATIONS. THE EXISTING CONDITIONS AT OTHER STATIONS WERE OBTAINED FROM THE CLIENT'S RECORD DRAWINGS.



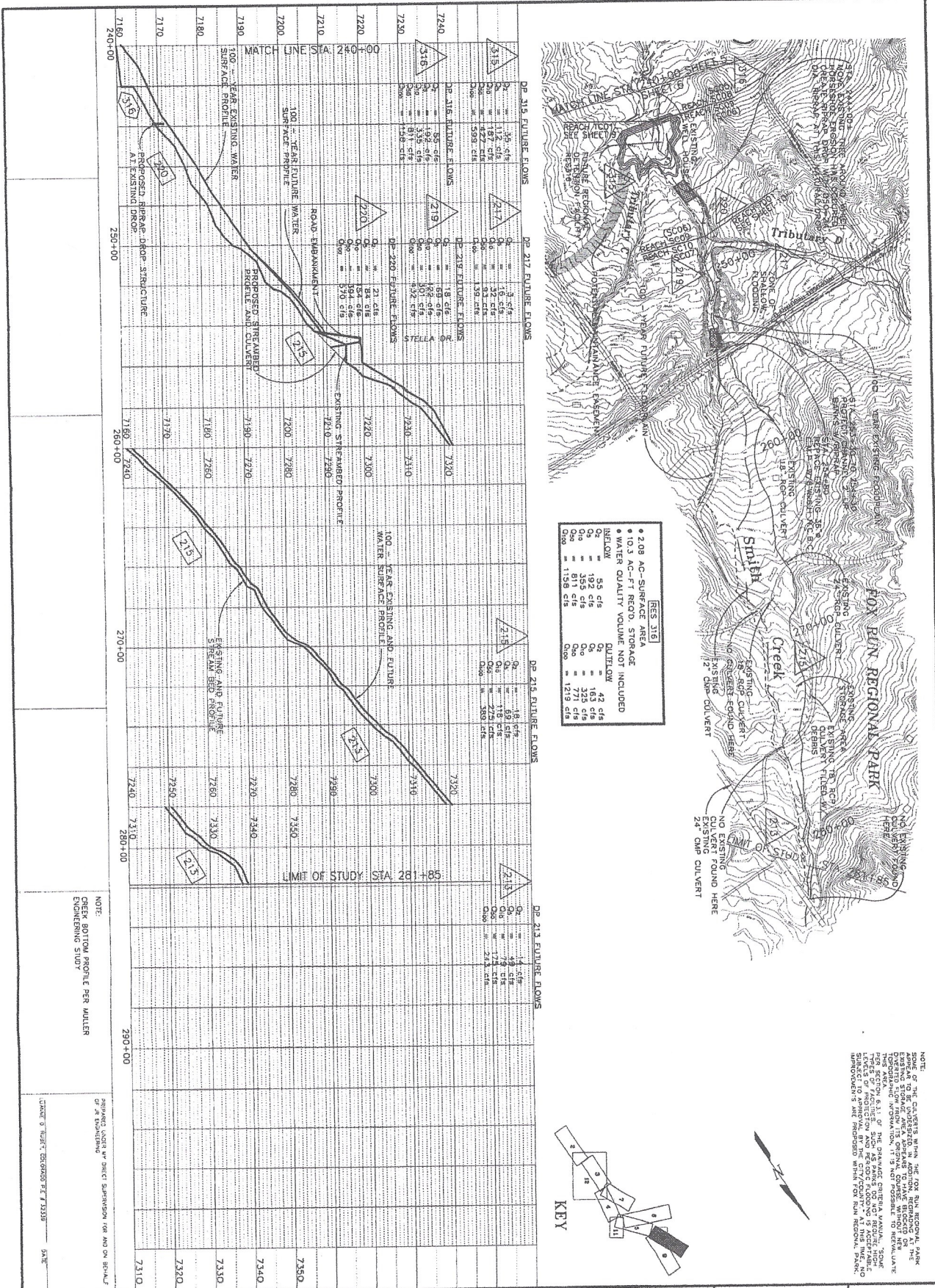
SHEET 4 OF 13 JOB NO. 8984.90	SMITH CREEK DRAINAGE BASIN PLANNING STUDY		PREPARED FOR PICOLAN, INC. ATTN: STEVE SHARKEY 80 S. CASCADE AVE., STE. #1300 COLORADO SPRINGS, CO 80903 (719) 381-8441		UNTIL SUCH TIME AS APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, JR ENGINEER APPROVES THEIR USE ONLY FOR THE PURPOSES SPECIFIED BY WRITTEN AUTHORIZATION.
	PRELIMINARY PLAN AND PROFILE STA 120+00 TO STA 180+00		JR ENGINEERING A Subsidiary of Wetters 430 Arapahoe Drive - Colorado Springs, CO 80907 719-593-2500 Fax 719-593-0570 www.jrengineering.com		



NOTE:
CREEK BOTTOM PROFILE PER MULLER ENGINEERING STUDY

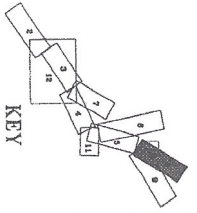
REVISIONS:
1. REVISED PER AGENCY COMMENTS
2. REVISED PER COUNTY COMMENTS

<p>SMITH CREEK DRAINAGE BASIN PLANNING STUDY</p> <p>PRELIMINARY PLAN AND PROFILE</p> <p>STA 180+00 TO STA 240+00</p>	<p>DESIGNED BY: MSD</p> <p>DRAWN BY: MSD</p> <p>CHECKED BY:</p>	<p>SCALE: NTS</p> <p>DATE: 6/29/01</p>	<p>BY: DATE</p> <p>1 ACS 03/20/02</p> <p>2 MFS 07/16/02</p>	<p>PREPARED FOR: PICOLAN, INC.</p> <p>ATTN: STEVE SHARKEY</p> <p>30 S. CASCADE AVE., STE. #1300</p> <p>COLORADO SPRINGS, CO 80903</p> <p>(719) 381-8441</p>	<p>UNTIL SUCH TIME AS THE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES OF ENGINEERING APPROVES THEIR USE FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.</p>
	<p>OWNER: ROBERT GERSHBERG P.F. #11318</p> <p>DATE:</p>	<p>PROJECT: 5 OF 13</p> <p>DWG NO: 89956 30</p>	<p>J&R ENGINEERING</p> <p>A Subsidiary of Weston</p> <p>430 Arapahoe Drive • Colorado Springs, CO 80907</p> <p>719-595-5555 • Fax: 719-595-5555</p> <p>www.jrengineering.com</p>	<p>UNITS: SUCH TIME AS THE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES OF ENGINEERING APPROVES THEIR USE FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.</p>	



Station	Profile Type	Proposed Elevation	Existing Elevation	Notes
7180	100'-YEAR FUTURE WATER SURFACE PROFILE	7180	7180	
7170	100'-YEAR FUTURE WATER SURFACE PROFILE	7170	7170	
7160	100'-YEAR FUTURE WATER SURFACE PROFILE	7160	7160	
7200	100'-YEAR FUTURE WATER SURFACE PROFILE	7200	7200	
7210	100'-YEAR FUTURE WATER SURFACE PROFILE	7210	7210	
7220	100'-YEAR FUTURE WATER SURFACE PROFILE	7220	7220	
7230	100'-YEAR FUTURE WATER SURFACE PROFILE	7230	7230	
7240	100'-YEAR FUTURE WATER SURFACE PROFILE	7240	7240	
7250	100'-YEAR FUTURE WATER SURFACE PROFILE	7250	7250	
7260	100'-YEAR FUTURE WATER SURFACE PROFILE	7260	7260	
7270	100'-YEAR FUTURE WATER SURFACE PROFILE	7270	7270	
7280	100'-YEAR FUTURE WATER SURFACE PROFILE	7280	7280	
7290	100'-YEAR FUTURE WATER SURFACE PROFILE	7290	7290	
7300	100'-YEAR FUTURE WATER SURFACE PROFILE	7300	7300	
7310	100'-YEAR FUTURE WATER SURFACE PROFILE	7310	7310	
7320	100'-YEAR FUTURE WATER SURFACE PROFILE	7320	7320	
7330	100'-YEAR FUTURE WATER SURFACE PROFILE	7330	7330	
7340	100'-YEAR FUTURE WATER SURFACE PROFILE	7340	7340	
7350	100'-YEAR FUTURE WATER SURFACE PROFILE	7350	7350	
7360	100'-YEAR FUTURE WATER SURFACE PROFILE	7360	7360	
7370	100'-YEAR FUTURE WATER SURFACE PROFILE	7370	7370	
7380	100'-YEAR FUTURE WATER SURFACE PROFILE	7380	7380	
7390	100'-YEAR FUTURE WATER SURFACE PROFILE	7390	7390	
7400	100'-YEAR FUTURE WATER SURFACE PROFILE	7400	7400	

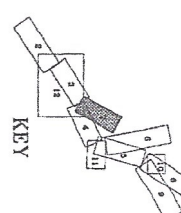
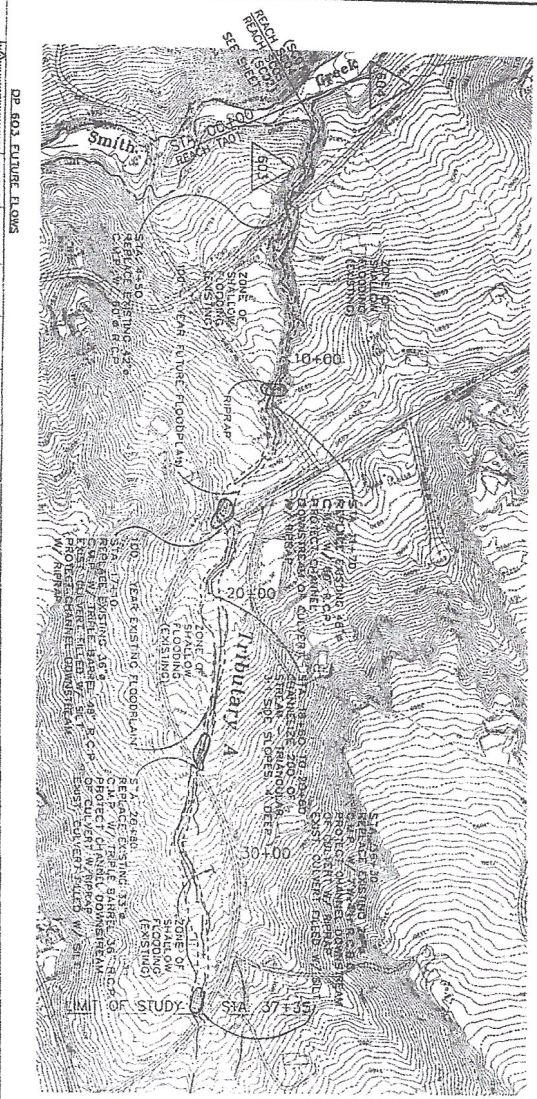
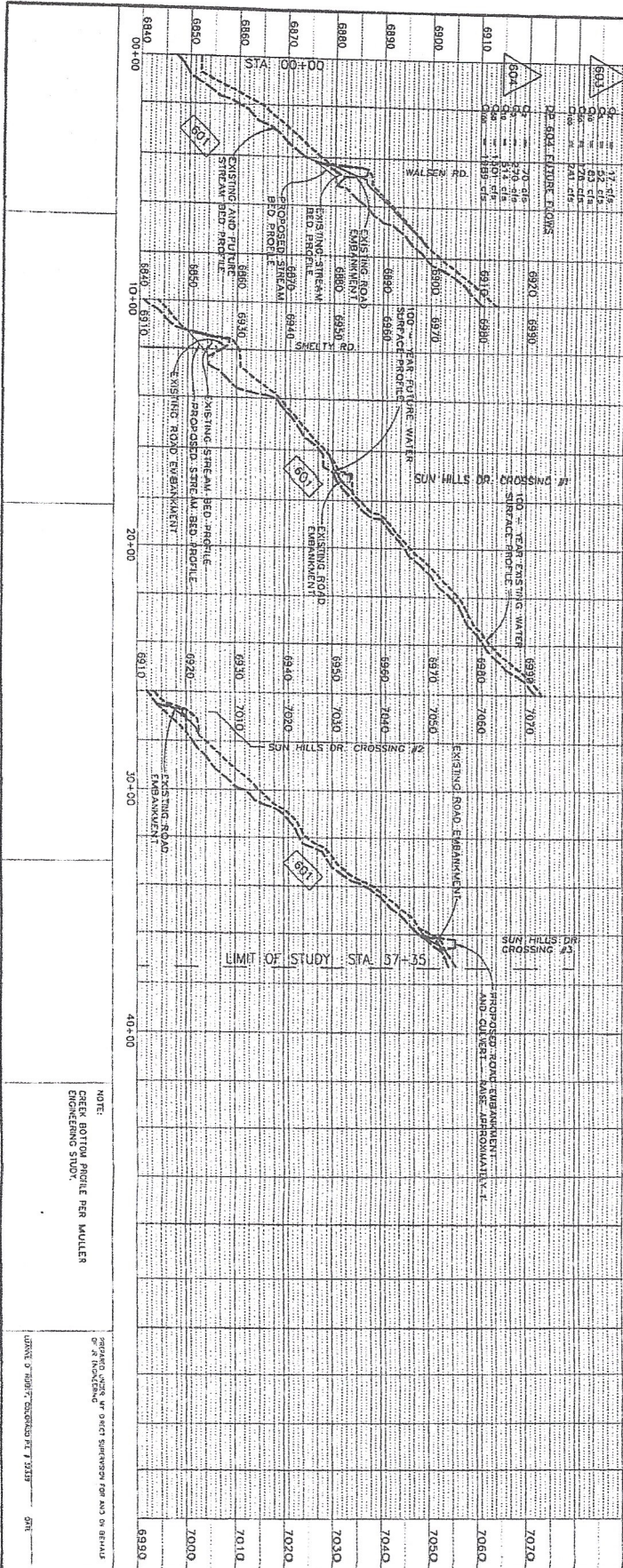
RES 316
 2.08 AC-SURFACE AREA
 10.3 AC-FT REQ'D. STORAGE
 WATER QUALITY VOLUME NOT INCLUDED
 DUTYFLOW 42 cfs
 Q₂ = 163 cfs
 Q₅₀ = 325 cfs
 Q₁₀₀ = 771 cfs
 Q₁₅₀ = 1158 cfs



NOTE:
 GREEN BOTTOM PROFILE PER MILLER
 ENGINEERING STUDY

PREPARED UNDER DIRECT SUPERVISION FOR AND ON BEHALF OF THE ENGINEERING FIRM
 ENGINEERING FIRM

SMITH CREEK DRAINAGE BASIN PLANNING STUDY PRELIMINARY PLAN AND PROFILE STA 240+00 TO STA 281+85	H-SCALE NTS V-SCALE NTS DATE 6/28/01 DESIGNED BY DRAWN BY MSO CHECKED BY	No. REVISION 1 REVISED PER AGENCY COMMENTS 2 REVISED PER COUNTY COMMENTS	BY DATE ACS 05/28/02 MS 07/16/02
	PREPARED FOR PICOLAN, INC. ATTN: STEVE SHARKEY 90 S. CASCADE AVE., STE. #1300 COLORADO SPRINGS, CO 80903 (719) 381-8441		



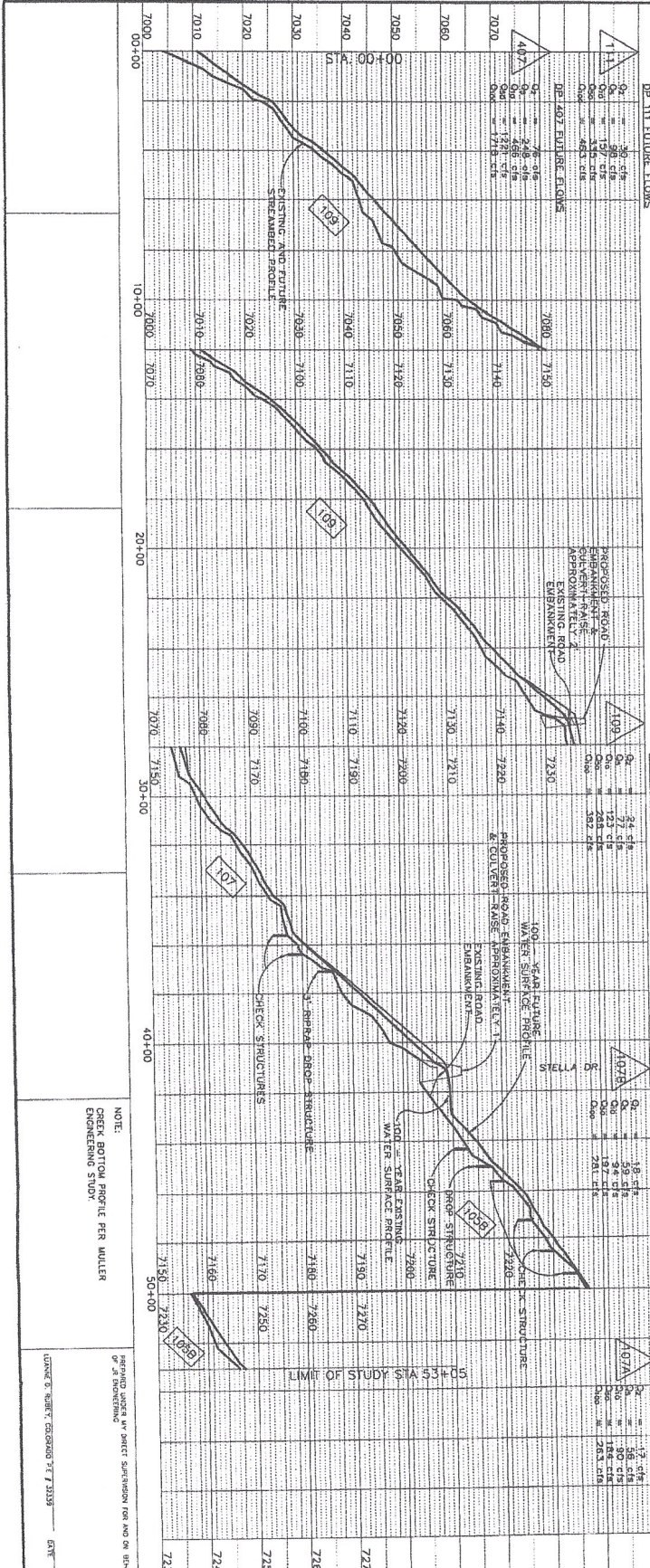
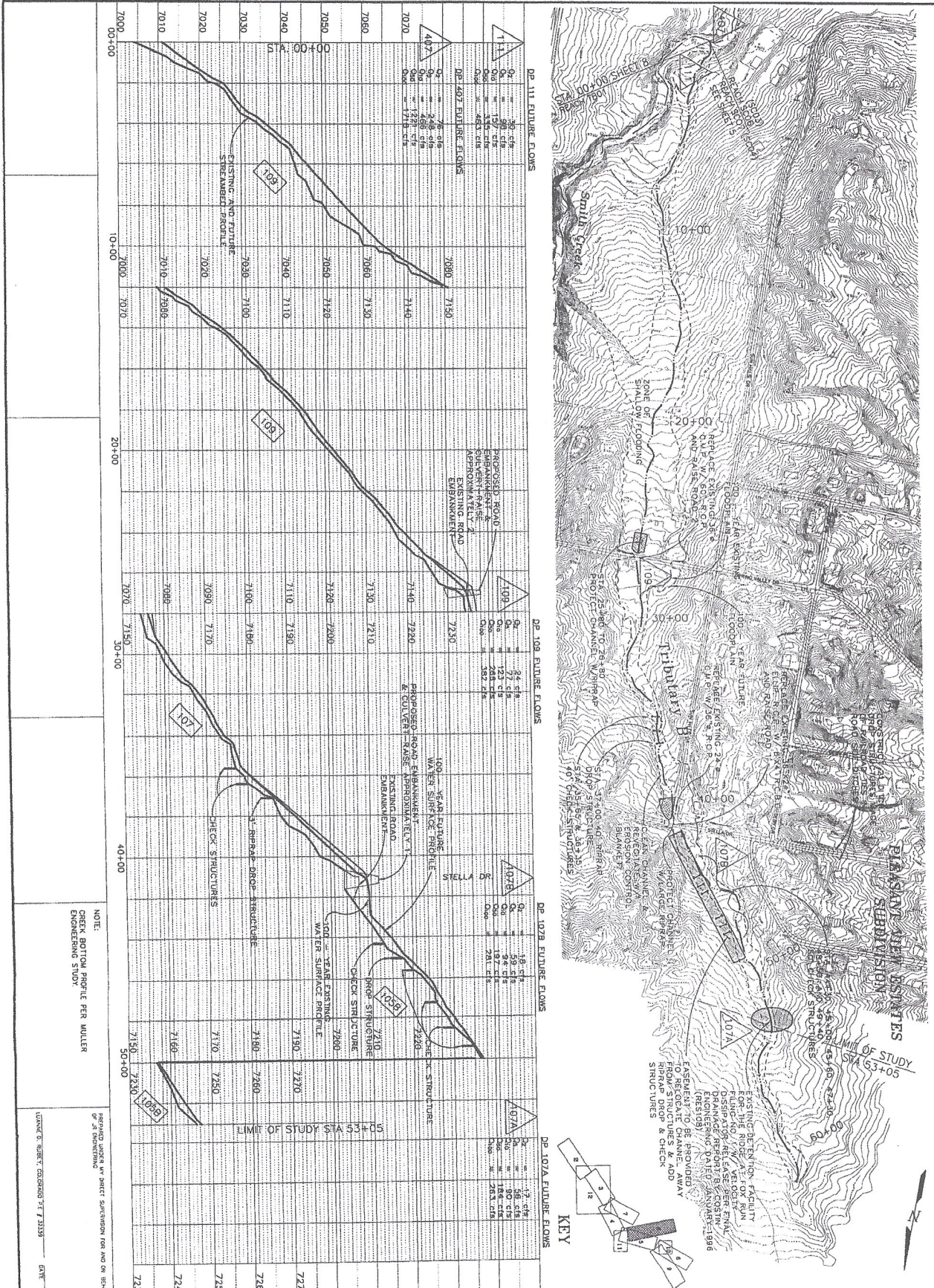
NOTE:
 CREEK BOTTOM PROFILE PER MULLER
 ENGINEERING STUDY.

SHEET 7 OF 13 JOB NO. 0886.80	SMITH CREEK DRAINAGE BASIN PLANNING STUDY		H-SCALE NTS	No. REVISION	BY DATE
	PRELIMINARY PLAN AND PROFILE STA 00+00 TO STA 37+35		V-SCALE NTS	1 REVISED PER AGENCY COMMENTS 2 REVISED PER COUNTY COMMENTS	AGS 03/20/02 MFS 07/16/02
	DESIGNED BY	DATE	8/29/01		
	DRAWN BY	MSD			
	CHECKED BY				

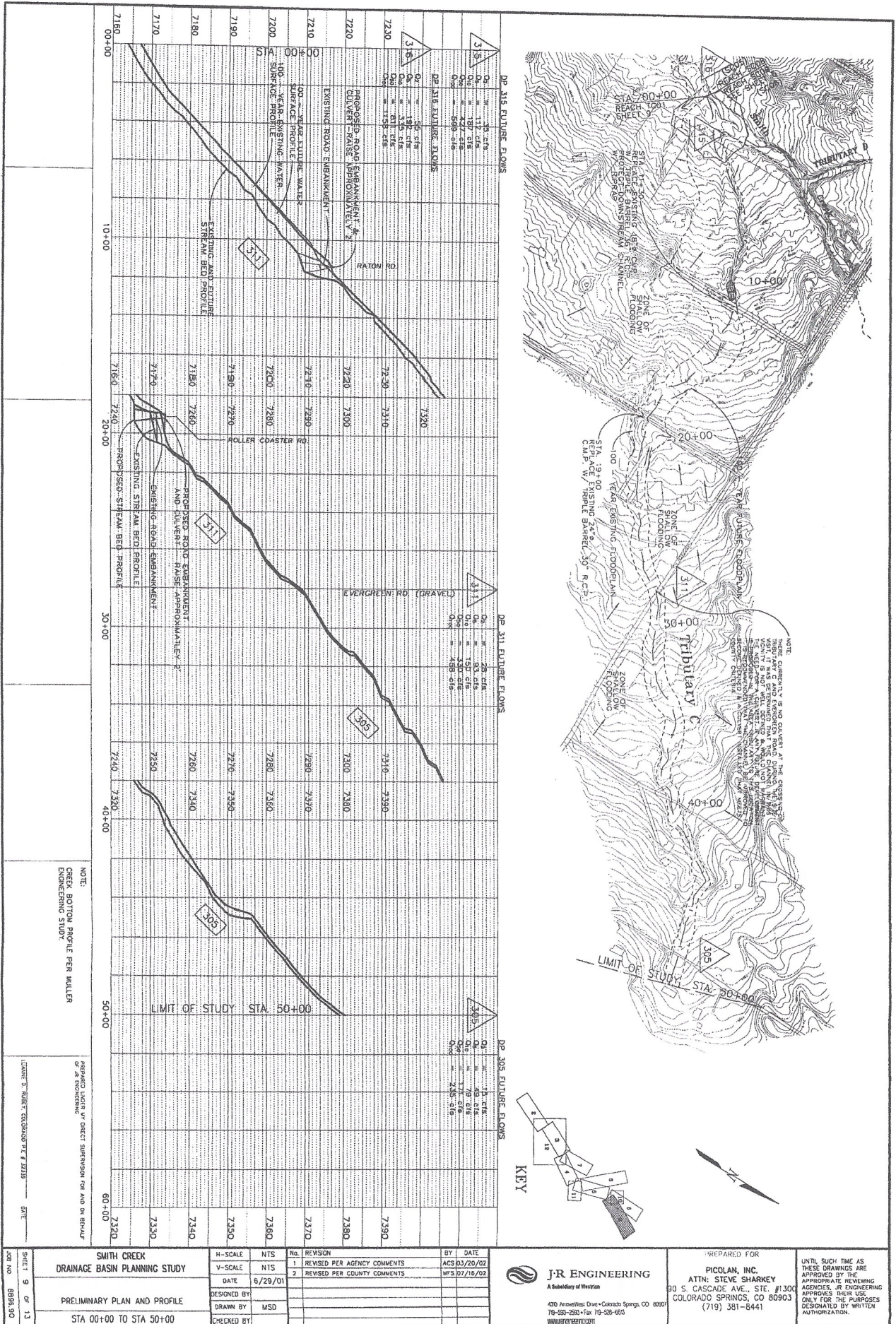
PREPARED FOR
PICOLAN, INC.
 ATTN: STEVE SHARKEY
 30 S CASCADE AVE., STE. #1300
 COLORADO SPRINGS, CO 80903
 (719) 381-8441

J-R ENGINEERING
 A Subsidiary of Weston
 430 Arapahoe Drive-Castle Rock, CO 80109
 763-521-2211-Fax 763-521-663
 www.jrengineering.com

UNTS, SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE RELVING AGENCIES, J-R ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.



SHEET 8 OF 13 JOB NO. 89956.90	SMITH CREEK DRAINAGE BASIN PLANNING STUDY		H-SCALE V-SCALE DATE DESIGNED BY DRAWN BY CHECKED BY	NTS NTS 6/29/01 WSO	NO. REVISION 1 REVISED PER AGENCY COMMENTS 2 REVISED PER COUNTY COMMENTS	BY DATE ACS 03/20/02 MFS 07/16/02	PREPARED FOR PICOLAN, INC. ATTN: STEVE SHARKEY 30 S. CASCADE AVE., STE. #1300 COLORADO SPRINGS, CO 80903 (719) 381-8441	UNLESS SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, AN ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.
	PRELIMINARY PLAN AND PROFILE STA 00+00 TO STA 60+00		NOTE: CREEK BOTTOM PROFILE PER MILLER ENGINEERING STUDY.			J-R ENGINEERING A Subsidiary of Trivantis 4320 Arroyo Verde Drive - Colorado Springs, CO 80909 719-523-2600 • Fax 719-529-6663 www.jr-engineering.com		



Station	Profile Elevation	Notes
00+00	7160	EXISTING AND FUTURE STREAM BED PROFILE
10+00	7170	EXISTING AND FUTURE STREAM BED PROFILE
20+00	7180	EXISTING AND FUTURE STREAM BED PROFILE
30+00	7190	EXISTING AND FUTURE STREAM BED PROFILE
40+00	7200	EXISTING AND FUTURE STREAM BED PROFILE
50+00	7210	EXISTING AND FUTURE STREAM BED PROFILE
60+00	7220	EXISTING AND FUTURE STREAM BED PROFILE
70+00	7230	EXISTING AND FUTURE STREAM BED PROFILE
80+00	7240	EXISTING AND FUTURE STREAM BED PROFILE
90+00	7250	EXISTING AND FUTURE STREAM BED PROFILE
100+00	7260	EXISTING AND FUTURE STREAM BED PROFILE
110+00	7270	EXISTING AND FUTURE STREAM BED PROFILE
120+00	7280	EXISTING AND FUTURE STREAM BED PROFILE
130+00	7290	EXISTING AND FUTURE STREAM BED PROFILE
140+00	7300	EXISTING AND FUTURE STREAM BED PROFILE
150+00	7310	EXISTING AND FUTURE STREAM BED PROFILE
160+00	7320	EXISTING AND FUTURE STREAM BED PROFILE

Point	Flow	Profile Elevation	Notes
316	1.75 CFS	7160	DP 316 FUTURE FLOWS
318	1.87 CFS	7170	DP 318 FUTURE FLOWS
319	2.27 CFS	7180	DP 319 FUTURE FLOWS
320	2.99 CFS	7190	DP 320 FUTURE FLOWS
305	2.55 CFS	7200	DP 305 FUTURE FLOWS
306	2.79 CFS	7210	DP 306 FUTURE FLOWS
307	2.85 CFS	7220	DP 307 FUTURE FLOWS

Point	Flow	Profile Elevation	Notes
305	2.55 CFS	7230	DP 305 FUTURE FLOWS
306	2.79 CFS	7240	DP 306 FUTURE FLOWS
307	2.85 CFS	7250	DP 307 FUTURE FLOWS

Point	Flow	Profile Elevation	Notes
305	2.55 CFS	7260	DP 305 FUTURE FLOWS
306	2.79 CFS	7270	DP 306 FUTURE FLOWS
307	2.85 CFS	7280	DP 307 FUTURE FLOWS

Point	Flow	Profile Elevation	Notes
305	2.55 CFS	7290	DP 305 FUTURE FLOWS
306	2.79 CFS	7300	DP 306 FUTURE FLOWS
307	2.85 CFS	7310	DP 307 FUTURE FLOWS

Point	Flow	Profile Elevation	Notes
305	2.55 CFS	7320	DP 305 FUTURE FLOWS

SMITH CREEK DRAINAGE BASIN PLANNING STUDY

PRELIMINARY PLAN AND PROFILE

STA 00+00 TO STA 50+00

NOTE: GENERAL NOTES TO BE OBSERVED BY THE CONTRACTOR. THESE DRAWINGS AND FUTURE ROAD PROFILE, SHALL BE THE BASIS FOR THE CONTRACTOR'S OBLIGATION TO CONSTRUCT AND MAINTAIN THE ROAD AND SHALL BE SUBJECT TO THE APPROVAL OF THE COUNTY ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM THE APPROPRIATE AGENCIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING VEGETATION AND LANDSCAPE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING WATERWAYS AND FLOODING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING HISTORIC AND CULTURAL RESOURCES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING ENVIRONMENTAL SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING ANIMAL AND BIRD HABITATS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING PLANT AND ANIMAL COMMUNITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SOILS AND ROCKS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING GEOLOGICALLY SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SEISMICALLY SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING CLIMATE SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AIR QUALITY SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING NOISE SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING VISUAL QUALITY SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING CULTURAL RESOURCE SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING HISTORIC AND CULTURAL RESOURCES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING ENVIRONMENTAL SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING ANIMAL AND BIRD HABITATS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING PLANT AND ANIMAL COMMUNITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SOILS AND ROCKS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING GEOLOGICALLY SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING SEISMICALLY SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING CLIMATE SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING AIR QUALITY SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING NOISE SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING VISUAL QUALITY SENSITIVE AREAS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING CULTURAL RESOURCE SENSITIVE AREAS.

DATE: 6/29/01

DESIGNED BY: MSD

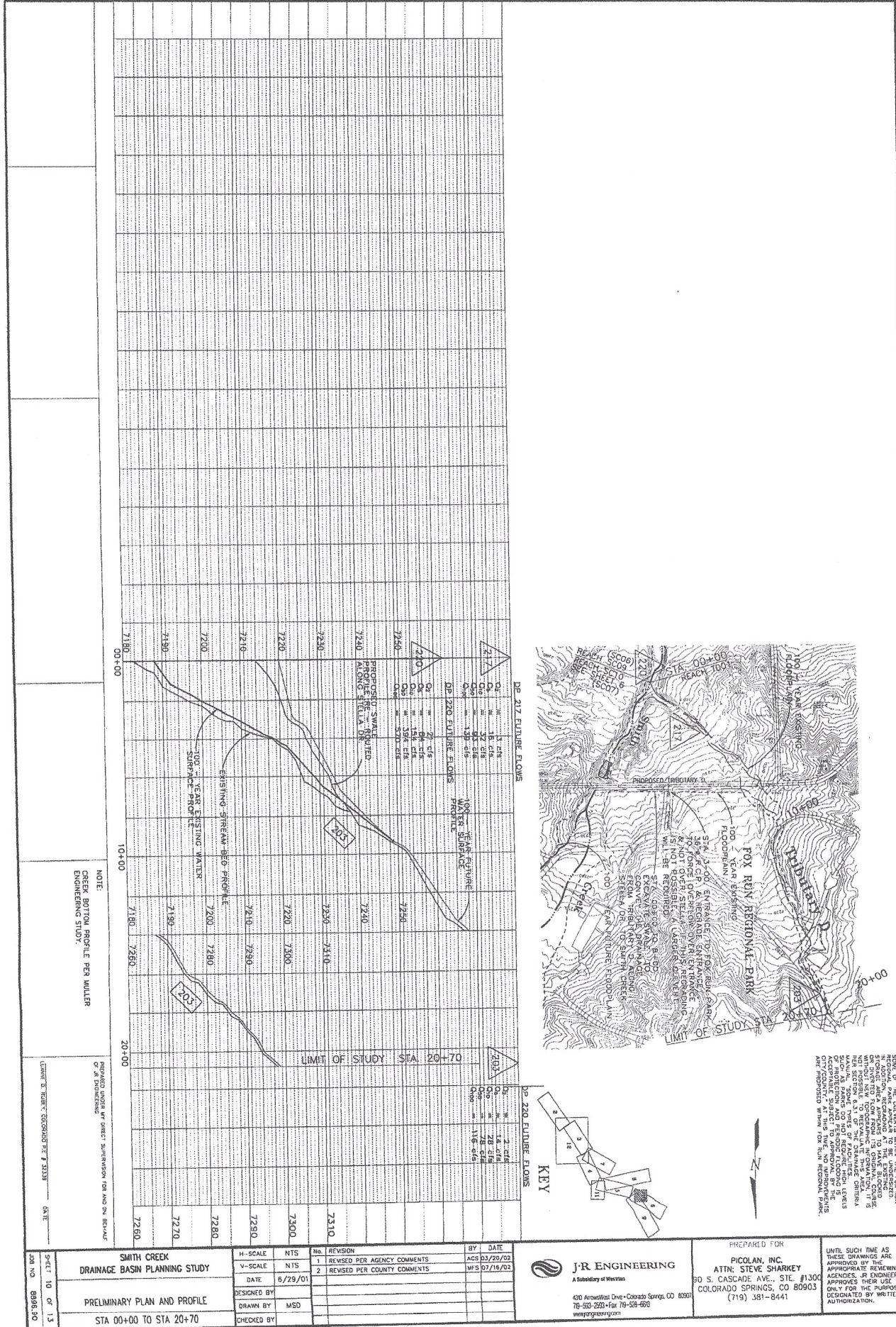
CHECKED BY:

BY DATE: ACS 03/20/02, MFS 07/16/02

J.R. ENGINEERING
A Subsidiary of Weisberg
439 Arapahoe Drive - Colorado Springs, CO 80907
719-535-2650 • Fax 719-539-6650
WWW.JRENG.COM

PREPARED FOR: PICOLAN, INC. ATTN: STEVE SHARKEY
30 S. CASCADE AVE., STE. #1306
COLORADO SPRINGS, CO 80903
(719) 381-8441

UNTL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REMEDIATING AGENCY, OR ENGINEERING AGENCIES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.



NOTE:
CHECK PLOTTER PROFILE PER MILLER
ENGINEERING STUDIO.

PREPARED UNDER DIRECT SUPERVISION FOR AND ON BEHALF
OF DRINKER

LIMIT OF RIGHT: 60:000000 PER J 32139 6A 11'

**SMITH CREEK
DRAINAGE BASIN PLANNING STUDY**

PRELIMINARY PLAN AND PROFILE
STA 00+00 TO STA 20+70

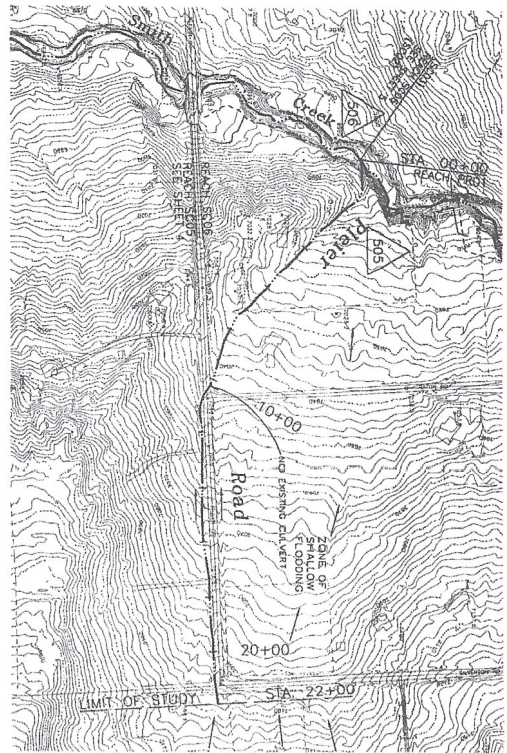
H-SCALE	NTS	No. REVISION	BY DATE
V-SCALE	NTS	1 REVISED PER AGENCY COMMENTS	ACS 03/20/02
DATE	6/29/01	2 REVISED PER COUNTY COMMENTS	MPB 07/19/02
DESIGNED BY			
DRAWN BY	MSD		
CHECKED BY			

J-R ENGINEERING
A Subsidiary of Wiersma

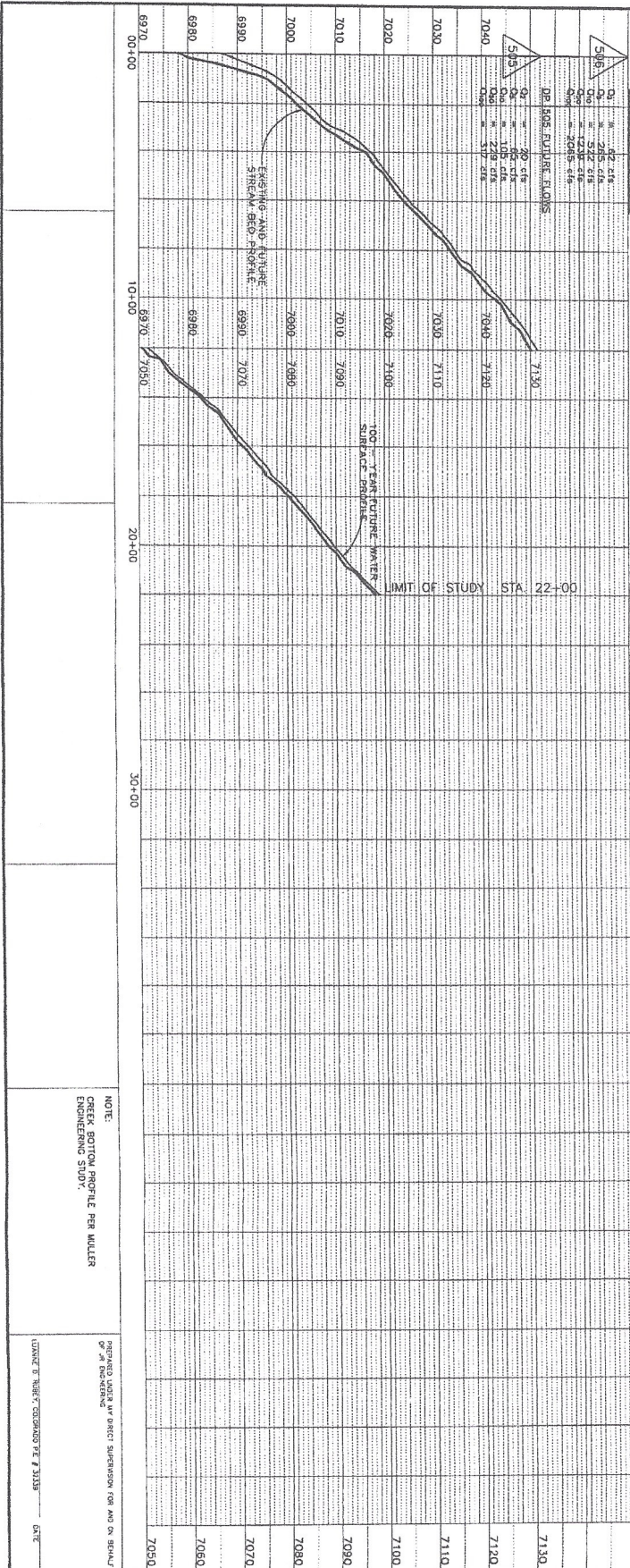
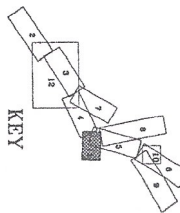
410 Arroyo West Drive - Colorado Springs, CO 80909
76-33-2201 Fax 76-528-666
www.jrengineer.com

PREPARED FOR
PICOLAN, INC.
ATTN: STEVE SHARKEY
80 S. CASCADE AVE., STE #1300
COLORADO SPRINGS, CO 80903
(719) 381-8441

UNLESS SUCH TIME AS
APPROVED BY THE ENGINEERING
AGENCIES, J-R ENGINEERING
APPROVES THEIR USE
ONLY FOR THE PURPOSES
DESIGNATED BY WRITTEN
AUTHORIZATION.



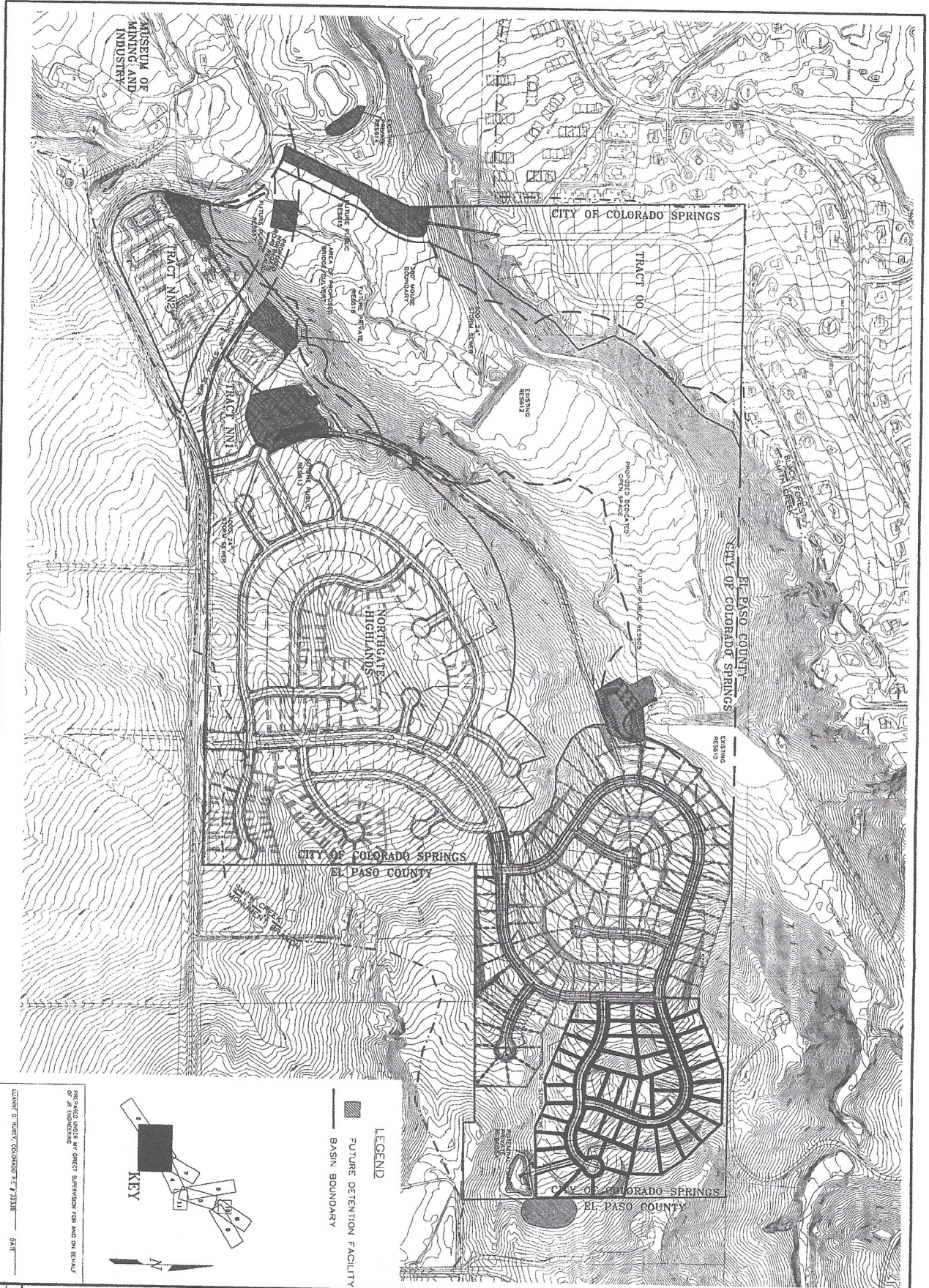
NOTE: DRAINAGE IS SHALLOW AND SCATTERED THROUGHOUT THE BASIN OF WHICH WARE SMALL AND UNDESIRABLE. AS WAY IMPROVEMENTS SUGGESTED ON THE PLAN FOR THIS TRIBUTARY, NO FLOODPLAIN OR PRUDENT LINE DETERMINATION COULD BE MADE ON THE FLEET ROAD TRIBUTARY DUE TO THE WIDESPREAD, SHALLOW NATURE OF THE FLOODING IN THIS AREA.



NOTE: PROFILE PER MILLER ENGINEERING STUDY.

FORWARD UNDER MY DIRECT SUPERVISION FOR AND ON BEHALF OF AN ENGINEER

SHEET 11 OF 13 DR 00 8895 30	SMITH CREEK DRAINAGE BASIN PLANNING STUDY	PREPARED FOR PICOLAN, INC. ATTN: STEVE SHARKEY 90 S. CASCADE AVE., STE. #1300 COLORADO SPRINGS, CO 80903 (719) 381-8441	UNL. SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REMOVING AGENCIES, JR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.
	PRELIMINARY PLAN AND PROFILE STA 00+00 TO STA 22+00	J-R ENGINEERING A Subsidiary of Waterloo 400 Arrowhead Drive • Colorado Springs, CO 80907 719-593-2854 • Fax 719-593-4653 www.jr-engineering.com	NO. REVISION 1 REVISED PER AGENCY COMMENTS 2 REVISED PER COUNTY COMMENTS



LEGEND
 ■ FUTURE DETENTION FACILITY
 — BASIN BOUNDARY

KEY

PREPARED UNDER AN AGENT'S SUPERVISION FOR AND ON BEHALF OF A CLIENT

DATE: _____

**SMITH CREEK
 DRAINAGE BASIN PLANNING STUDY**

SHEET 12 OF 13

PLAN VIEW - CITY IMPROVEMENTS

H-SCALE	NTS	No.	REVISION	BY	DATE
V-SCALE	NTS	1	REVISED PER AGENCY COMMENTS	ACS	03/20/02
DATE	6/6/01	2	REVISED PER COUNTY COMMENTS	MFS	07/16/02
DESIGNED BY					
DRAWN BY	MSD				
CHECKED BY					

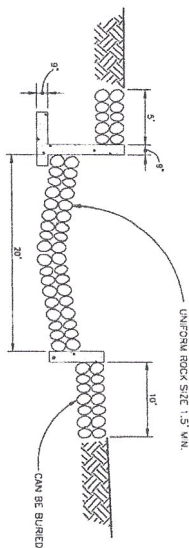
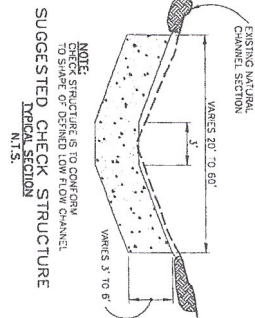
J-R ENGINEERING
 A Subsidiary of Weather

430 Annivesari Circle • Colorado Springs, CO 80901
 719-593-2260 • Fax: 719-528-6602
 www.jr-engineering.com

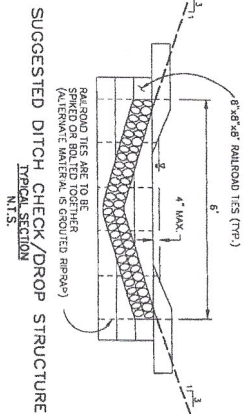
PREPARED FOR
PICOLAN, INC.
 ATTN: STEVE SHARKEY
 90 S. CASCADE AVE., S.E., #300
 COLORADO SPRINGS, CO 80903
 (719) 381-8441

UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES, OR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.

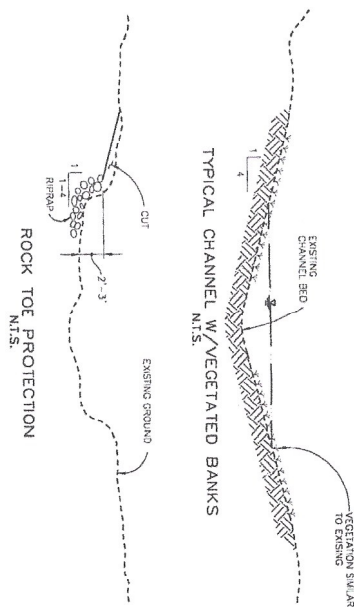
SUGGESTED CHECK STRUCTURE DESIGN



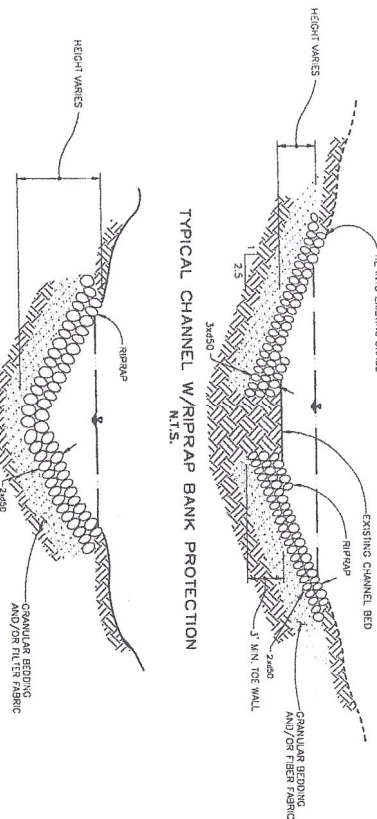
- STRUCTURE WIDTH WILL VARY
- SHALL HAVE LOW FLOW CHANNEL



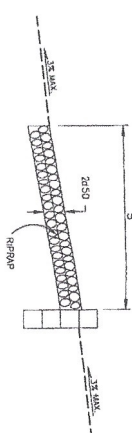
TYPICAL CHANNEL W/VEGETATED BANKS



TYPICAL CHANNEL W/RIPPRAP BANK PROTECTION



TYPICAL CHANNEL W/RIPPRAP BED PROTECTION



SUGGESTED DITCH CHECK/DROP STRUCTURE




JOB NO. 8856-90	SHEET 13 OF 13	SMITH CREEK DRAINAGE BASIN PLANNING STUDY		H-SCALE	N/A	No.	BY	DATE
		V-SCALE	N/A	DATE	6/29/01	DESIGNED BY		
DETAIL SHEET		DRAWN BY	MSD	CHECKED BY		J-R ENGINEERING A Subsidiary of Wetson 410 Arroyo Vista Drive • Colorado Springs, CO 80907 719-593-2590 • Fax 719-528-6600 www.jr-engineering.com		
		PREPARED FOR		PICOLAN, INC. ATTN: STEVE SHARKEY 90 S. CASCADE AVE., STE. #1300 COLORADO SPRINGS, CO 80903 (719) 381-8441		UNTIL SUCH TIME AS THESE DRAWINGS ARE APPROVED BY THE APPROPRIATE REVIEWING AGENCIES OR ENGINEERING APPROVES THEIR USE ONLY FOR THE PURPOSES DESIGNATED BY WRITTEN AUTHORIZATION.		

***ATTACHMENT D –
El Paso County Drainage Report Signature Block***

Drainage Reports

Design Engineer's Statement:

The attached drainage plan and report were prepared under my direction and supervision and are correct to the best of my knowledge and belief. Said drainage report has been prepared according to the criteria established by the County for drainage reports and said report is in conformity with the applicable master plan of the drainage basin. I accept responsibility for any liability caused by any negligent acts, errors or omissions on my part in preparing this report.



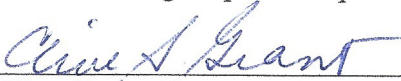
Ryan M. Mangino, PE #43304



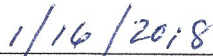
Date

Owner/Developer's Statement:

I, the owner/developer have read and will comply with all of the requirements specified in this drainage report and plan.



Clive Grant, Owner
1315 Walsen Road, Colorado Springs, CO 80921



Date

El Paso County:

Filed in accordance with the requirements of the Drainage Criteria Manual, Volumes 1 and 2, El Paso County Engineering Criteria Manual and Land Development Code as amended.

Jennifer Irvine, P.E.
County Engineer / ECM Administrator

Date

Conditions: