

Technical Data Notebook  
for

**Poquito Valley Flood Hazard Study**  
**Re-Study of Lonesome**  
**Valley Wash and Tributaries**  
Yavapai County, Arizona



November 27, 2012

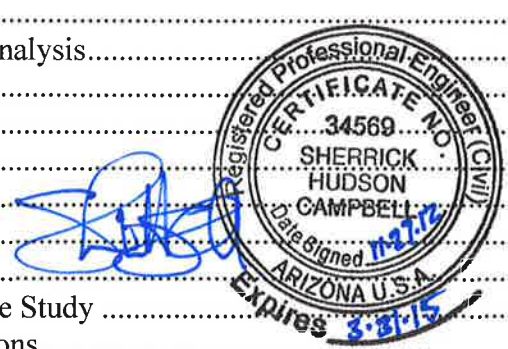
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## TABLE OF CONTENTS

<b>SECTION 1.0 INTRODUCTION .....</b>	<b>1</b>
1.1 Purpose of Study .....	1
1.2 Authority of Study .....	2
1.3 Location of Study Reach .....	2
1.5 Study Results .....	8
<b>SECTION 2.0 ADWR/FEMA FORMS .....</b>	<b>9</b>
2.1 Study Document Abstract for FEMA Submittals .....	9
2.2 FEMA Forms .....	10
<b>SECTION 3.0 SURVEY AND MAPPING INFORMATION .....</b>	<b>26</b>
3.1 Field Survey Information.....	26
3.2 Mapping .....	26
3.3 Datum Conversion.....	26
<b>SECTION 4.0 HYDROLOGY.....</b>	<b>28</b>
4.1 Method Description .....	28
4.2 Parameter Estimation.....	28
4.2.1 Drainage Area Boundaries.....	28
4.2.2 Watershed Work Maps .....	30
4.2.3 Gage Data .....	30
4.2.4 Statistical Parameters.....	30
4.2.5 Precipitation.....	30
4.2.6 Physical Parameters .....	30
4.3 Problems Encountered During Study .....	31
4.3.1 Special Problems and Solutions.....	31
4.3.2 Modeling Warning and Error Messages .....	31
4.4 Calibration .....	31
4.5 Final Results .....	31
4.5.1 Hydrologic Analysis Results .....	31
4.5.2 Verification of Results.....	31
<b>SECTION 5.0 HYDRAULICS .....</b>	<b>33</b>
5.1 Method Description .....	33
5.2 Work Study Maps .....	33
5.3 Parameter Estimation.....	33
5.3.1 Roughness Coefficients .....	33
5.3.2 Expansion and Contraction Coefficients .....	33
5.4 Cross Section Description.....	34
5.5 Modeling Considerations.....	34
5.5.1 Hydraulic Jump and Drop Analysis.....	34
5.5.2 Bridges and Culverts.....	34
5.5.3 Levees and Dikes .....	34
5.5.4 Islands and Flow Splits.....	35
5.5.5 Ineffective Flow Areas .....	35
5.5.6 Supercritical Flow.....	35
5.6 Floodway Modeling.....	35
5.7 Problems Encountered During the Study .....	35
5.7.1 Special Problems and Solutions.....	35



5.7.2 Modeling Warning and Error Messages .....	35
5.8 Calibration .....	36
5.9 Final Results .....	36
5.9.1 Hydraulic Analysis Results.....	36
5.9.2 Verification and Results .....	36
<b>SECTION 6.0 EROSION AND SEDIMENT TRANSPORT .....</b>	<b>37</b>
<b>SECTION 7.0 DRAFT FIS REPORT DATA .....</b>	<b>38</b>
7.1 Summary of Discharges.....	38
7.2 Floodway Data.....	38
7.3 Annotated Flood Insurance Rate Maps.....	39
7.4 Flood Profiles.....	39

**APPENDICES**

- Appendix A – References
- Appendix B – General Documentation and Correspondence
- Appendix C – Manning’s Roughness Coefficient Analysis
- Appendix D – Hydraulic Analysis Supporting Documentation
- Appendix E – Flood Profiles (NAVD 88)

**EXHIBITS**

- Exhibit 1 – Vicinity Map
- Exhibit 2 - Study Area Map
- Exhibit 3 – Effective FEMA Flood Insurance Rate Map (FIRM) Panel
- Exhibit 4 – Hydrology Exhibit
- Exhibit 5 – Work Study Maps
- Exhibit 6 – Annotated Flood Insurance Rate Map (FIRM) Panel



## SECTION 1.0 INTRODUCTION

### *1.1 Purpose of Study*

The Poquito Valley Study Area, herein referred to as the Study Area is an approximately twenty one (21) square mile area located in the currently unincorporated area of Yavapai County, Arizona. The majority of the Study Area is currently mapped as being within FEMA Zone “X” with a large portion currently mapped as being located within a Special Flood Hazard Area (SFHA) designated as Zone “A”.

The purpose of this study is to identify the watershed that drains toward Lonesome Valley Wash and its tributaries within the Study area, estimate the 100-year peak flows, and prepare a detailed floodplain re-delineation of fourteen (14) miles of effective approximate FEMA Flood Zone “A” SFHA. An approximate 8 mile portion of the proposed SFHA resulting from the detailed floodplain re-delineation will consist of floodplain and floodway delineations. The balance will consist of a floodplain delineation only.

The function of this report is to provide the technical documentation to support the detailed floodplain re-delineation. The Yavapai County Flood Control District may utilize this study as a regulatory tool within the community to manage development within the floodplains that lie within the Study Area.

A Letter of Map Revision (LOMR) was issued by FEMA on February 8, 2008 in response to the *Poquito Valley Flood Hazard Study* dated June 15, 2007. This Technical Data Notebook (TDN) serves as an update to these previously issued documents and is submitted in response to FEMA’s request for Base Flood Elevations referenced to the North American Vertical Datum of 1988 (NAVD 88).

## **1.2 Authority of Study**

Cardno WRG (WRG) was contracted with Yavapai County Flood Control District to prepare a detailed floodplain re-delineation of approximately fourteen (14) miles of effective approximate Flood Zone “A” Special Flood Hazard Areas for the watershed identified to drain toward Lonesome Valley Wash within the Study Area.

Yavapai County has recently contracted with Cardno to provide this updated TDN.

## **1.3 Location of Study Reach**

The Study Area is an approximately twenty one (21) square mile area located north of the Town of Prescott Valley and is immediately north of State Highway 89A just north of the Yavapai County Fairgrounds in Yavapai County, Arizona. Antelope Village and The Viewpoint North which are existing residential subdivisions lie near the southwest corner of the Study Area and are expected to drain towards the Study Area. State Highway 89A generally acts as the southern drainage boundary for the Study Area. The land to the north, east, and west of the Study Area consists mainly of undeveloped rangeland.

More specifically, the Study Area is located within all of or a portion of Sections 35 and 36 of Township 16 North, Range 1 West, Sections 31 and 32 of Township 16 North, Range 1 East, Sections 1, 2, 11, 12, 13, 14, 24, and 25 of Township 15 North, Range 1 West, and Sections 5, 6, 7, 8, 17, 18, 19, 20, and 30 of Township 15 North, Range 1 East of the Gila and Salt River Meridian. See Exhibit 1 – *Vicinity Map* for the general vicinity of the project.

The Study Area itself is located west of the Hickey Mountain and Black Hills Area of the Prescott National Forest. The Study Area currently consists of low density residential housing and undeveloped rangeland. The general topography

**REACH 100 - DETAILED FLOODPLAIN DELINEATION**

Description	Cross Section	Water Surface Elevations (ft.)	
		Effective <sup>(1)</sup> (NGVD 29)	Proposed/Revised (NAVD 88)
Section 5, T15N, R1E	4.888	5118.63	5121.40
	4.774	5108.18	5110.94
	4.660	5100.28	5103.10
	4.547	5091.93	5094.70
	4.433	5081.40	5084.21
	4.320	5072.64	5075.42
	4.206	5063.72	5066.52
	4.092	5055.29	5058.03
	3.979	5048.79	5051.57
	3.865	5039.79	5042.59
Section 31, T16N, R1E	3.751	5032.12	5034.88
	3.725	5031.27	5034.04
	3.638	5021.42	5024.18
	3.524	5013.49	5016.25
	3.410	5006.15	5008.95
	3.297	4998.17	5000.93
	3.183	4990.10	4992.86
	3.070	4982.60	4985.35
	2.956	4974.84	4977.60
2.842	4966.25	4969.03	
Section 36, T16N, R1W	2.729	4959.19	4961.96
	2.616	4952.33	4955.09
	2.497	4944.04	4946.79
	2.384	4936.76	4939.52
	2.270	4929.19	4931.96
	2.157	4922.82	4925.57
	2.037	4915.96	4918.73
	1.928	4908.68	4911.42
	1.815	4902.48	4905.26
Section 35, T16N, R1W	1.701	4895.98	4898.75
	1.587	4889.13	4891.89
	1.474	4882.65	4885.41
	1.441	4880.71	4883.47
	1.360	4876.01	4878.76
	1.246	4869.04	4871.80
Section 2, T15N, R1W	1.133	4862.65	4865.40
	1.019	4855.89	4858.66
	0.906	4849.43	4852.18
	0.792	4843.40	4846.17
	0.678	4838.09	4840.83
	0.584	4833.19	4835.96

Notes:

1. The effective water surface elevaiton are from the June 27, 2008 LOMR.

**REACH 200 - DETAILED FLOODPLAIN DELINEATION**

DESCRIPTION	CROSS SECTION	Water Surface Elevations (ft.)	
		Effective <sup>(1)</sup> (NGVD 29)	Proposed/Revised (NAVD 88)
Section 5, T15N, R1E	3.907	5090.88	5093.63
	3.832	5085.58	5088.33
	3.756	5079.98	5082.73
	3.680	5073.16	5075.91
	3.627	5070.16	5072.91
	3.603	5068.58	5071.33
	3.526	5062.69	5065.44
	3.445	5056.57	5059.32
	3.366	5050.49	5053.24
	3.290	5044.78	5047.53
Section 8, T15N, R1E	3.213	5039.34	5042.09
	3.137	5034.11	5036.86
	3.056	5028.23	5030.98
Section 7, T15N, R1E	2.979	5022.66	5025.41
	2.903	5017.77	5020.52
	2.825	5010.12	5012.87
	2.747	5006.70	5009.45
	2.670	5001.72	5004.47
	2.589	4997.00	4999.75
	2.510	4995.15	4997.90
	2.436	4992.71	4995.46
	2.360	4980.12	4982.87
	2.284	4975.18	4977.93
	2.213	4971.89	4974.64
	2.208	4970.56	4973.31
	2.201	4967.69	4970.44
	2.135	4963.90	4966.65
	2.063	4956.61	4959.36
	1.982	4952.05	4954.80
Section 12, T15N, R1W	1.907	4945.97	4948.72
	1.813	4940.02	4942.77
	1.756	4936.33	4939.08
	1.680	4931.31	4934.06
	1.603	4926.76	4929.51
	1.579	4926.01	4928.76
	1.562	4924.73	4927.48
	1.554	4924.13	4926.88
	1.526	4920.83	4923.58
	1.449	4915.40	4918.15
	1.385	4915.13	4917.88
	1.3849	4915.13	4917.88
	1.376	4912.79	4915.54
	1.296	4907.80	4910.55
Section 11, T15N, R1W	1.217	4902.87	4905.62
	1.139	4898.78	4901.53
	1.060	4895.55	4898.30
	0.985	4891.50	4894.25
	0.910	4887.52	4890.27
	0.834	4883.58	4886.33
	0.758	4879.75	4882.50
	0.683	4875.52	4878.27
	0.607	4870.75	4873.50
	0.529	4865.71	4868.46
Section 11, T15N, R1W	0.451	4860.94	4863.69
	0.370	4857.33	4860.08
	0.293	4853.92	4856.67
	0.190	4848.99	4851.74

Notes:

1. The effective water surface elevation are from the June 27, 2008 LOMR.

**REACH 320 - DETAILED FLOODPLAIN DELINEATION**

DESCRIPTION	CROSS SECTION	Water Surface Elevations (ft.)	
		Effective <sup>(1)</sup> (NGVD 29)	Proposed/Revised (NAVD 88)
Section 18, T15N, R1E	1.663	4922.51	4925.25
	1.577	4919.16	4921.90
	1.482	4915.37	4918.11
	1.407	4912.20	4914.94
	1.313	4908.62	4911.36
Section 13, T15N, R1W	1.237	4905.31	4908.05
	1.161	4902.25	4904.99
	1.086	4900.30	4903.04
	1.039	4897.81	4900.56
	1.010	4896.25	4898.99
	0.935	4893.98	4896.72
	0.858	4891.67	4894.41
	0.781	4888.22	4890.96
	0.704	4884.20	4886.95
	0.628	4881.09	4883.82
	0.545	4877.94	4880.68
	0.466	4874.70	4877.44
	0.385	4872.90	4875.64

**REACH 330 - DETAILED FLOODPLAIN DELINEATION**

Section 13, T15N, R1W	0.196	4896.64	4899.39
	0.143	4893.54	4896.29
	0.083	4890.24	4892.99

**REACH 340 - DETAILED FLOODPLAIN DELINEATION**

Section 24, T15N, R1W	0.740	4900.00	4902.75
	0.679	4897.98	4900.73
Section 13, T15N, R1W	0.602	4895.22	4897.97
	0.525	4893.08	4895.83
	0.449	4890.63	4893.38

**REACH 350 - DETAILED FLOODPLAIN DELINEATION**

Section 13, T15N, R1W	0.373	4887.28	4890.03
	0.296	4884.18	4886.93
	0.237	4881.90	4884.65

**REACH 360 - DETAILED FLOODPLAIN DELINEATION**

Section 13, T15N, R1W	0.325	4870.29	4873.03
	0.243	4868.63	4871.37

Notes:

1. The effective water surface elevaiton are from the June 27, 2008 LOMR.



**REACH 400 - DETAILED FLOODPLAIN DELINEATION**

DESCRIPTION	CROSS SECTION	Water Surface Elevations (ft.)	
		Effective <sup>(1)</sup> (NGVD 29)	Proposed/Revised (NAVD 88)
SECTION 25, T15N, R1W	11.293	4901.87	4904.62
	11.234	4899.82	4902.57
	11.142	4897.80	4900.55
	11.066	4896.79	4899.54
	10.990	4895.45	4898.20

**REACH 405 - DETAILED FLOODPLAIN DELINEATION**

SECTION 24, T15N, R1W	0.379	4910.43	4913.18
	0.303	4906.60	4909.35
SECTION 25, T15N, R1W	0.223	4903.72	4906.47
	0.139	4899.37	4902.12

**REACH 410 - DETAILED FLOODPLAIN DELINEATION**

SECTION 25, T15N, R1W	10.914	4894.44	4897.19
SECTION 24, T15N, R1W	10.838	4893.22	4895.97
	10.762	4892.60	4895.35
	10.685	4891.70	4894.45
	10.608	4890.41	4893.16
	10.532	4888.63	4891.38
	10.456	4887.32	4890.07
	10.379	4885.46	4888.21
	10.302	4883.67	4886.42
	10.224	4881.86	4884.61
	10.149	4880.58	4883.33
	10.067	4878.90	4881.65
	9.989	4876.95	4879.70
	9.913	4875.75	4878.50
	9.837	4873.94	4876.69
9.761	4872.41	4875.16	
SECTION 14, T15N, R1W	9.684	4869.97	4872.72
	9.606	4868.60	4871.35
	9.529	4866.36	4869.11
	9.453	4865.42	4868.17
	9.378	4864.49	4867.24
	9.302	4864.21	4866.96
	9.229	4864.03	4866.78

**REACH 430 - DETAILED FLOODPLAIN DELINEATION**

SECTION 14, T15N, R1W	9.197	4862.99	4865.74
	9.146	4859.59	4862.34
	9.071	4858.04	4860.79
	8.995	4856.76	4859.51
	8.928	4855.64	4858.39

Notes:

1. The effective water surface elevaiton are from the June 27, 2008 LOMR.

**REACH 500 - DETAILED FLOODPLAIN DELINEATION**

DESCRIPTION	CROSS SECTION	Water Surface Elevations (ft.)	
		Effective <sup>(1)</sup> (NGVD 29)	Proposed/Revised (NAVD 88)
SECTION 14, T15N, R1W	0.721	4874.05	4876.80
	0.639	4871.39	4874.14
	0.563	4869.76	4872.51
	0.489	4868.13	4870.88
	0.417	4865.91	4868.66
	0.342	4863.78	4866.53
	0.258	4860.40	4863.15

**REACH 600 - DETAILED FLOODPLAIN DELINEATION**

SECTION 14, T15N, R1W	8.872	4854.41	4857.16
	8.798	4852.93	4855.68
	8.722	4851.04	4853.79
	8.64	4849.00	4851.75
	8.561	4848.70	4851.45
SECTION 11, T15N, R1W	8.484	4848.41	4851.16
	8.407	4848.10	4850.85
	8.347	4845.73	4848.48

**REACH 610 - DETAILED FLOODPLAIN DELINEATION**

SECTION 11, T15N, R1W	8.285	4843.82	4846.57
	8.221	4841.65	4844.40
	8.13	4839.72	4842.47
	8.05	4837.81	4840.56
	7.968	4836.52	4839.27
	7.885	4834.58	4837.33
	7.809	4832.72	4835.47

Notes:

1. The effective water surface elevaiton are from the June 27, 2008 LOMR.

## **SECTION 3.0 SURVEY AND MAPPING INFORMATION**

### ***3.1 Field Survey Information***

Elevations based on the National Geodetic Vertical Datum (NGVD) of 1929 were obtained for three (3) elevation reference marks installed as a part of this study, and an additional six (6) existing monuments for the purposes of this study. These elevation reference marks are indicated on Exhibit 5 – *Work Study Maps*, as POQERM1-9.

Invert elevations and adjacent roadway center line elevations for a dipped culvert crossing at Coyote Springs Road, south of Plum Creek Road were also obtained for the purposes of this study.

### ***3.2 Mapping***

The topographic mapping used for the purposes of this study is that provided by the Yavapai County Flood Control District. The topographic mapping was prepared by Vertical Mapping Resources, Inc. under contract with the Yavapai County Flood Control District and consists of a 2' contour interval. The topographic mapping is reported to be on the NGVD 29 vertical datum, and the NAD83 State plane horizontal datum.

### ***3.3 Datum Conversion***

A Letter of Map Revision (LOMR) was issued by FEMA on February 8, 2008 based on the revised analysis presented in the *Poquito Valley Flood Hazard Study* dated June 15, 2007, preceding this updated TDN. As mentioned, Base Flood Elevations presented in the *Poquito Valley Flood Hazard Study* dated June 15, 2007, were based on NGVD 29 vertical datum. Subsequent to issuance of the LOMR, FEMA has requested that the Base Flood Elevations yielded by the hydraulic analysis presented in the original LOMR request be presented in

reference to NAVD 88. To comply with this request, the elevation data values within the HEC-RAS model were adjusted in reference to NAVD 88 and the HEC-RAS model was re-executed. Datum conversion factor values were adjusted based on the values presented in Table 8 – Vertical Datum Conversions found in the FIS for Yavapai County Dated September 3, 2010. The values used are reproduced below in Table 3.3.1 – *Vertical Datum Conversion Factors*.

*Table 3.3.1 Vertical Datum Conversion Factors*

<b>Stream Name</b>	<b>Conversion Factor</b>
Lonesome Valley Wash	2.75
Lonesome Valley Wash Tributary Reach 100	2.76
Lonesome Valley Wash Tributary Reach 200	2.75
Lonesome Valley Wash Tributary Reach 300	2.75
Lonesome Valley Wash Tributary Reach 330	2.75
Lonesome Valley Wash Tributary Reach 350	2.75
Lonesome Valley Wash Tributary Reach 360	2.74
Lonesome Valley Wash Tributary Reach 405	2.75