

# **Appendix D**

## **EERP Flow Rating Data**

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## DO-1 SJR at Channel Point

**Location:** 37.9630°N -121.3650°W

**Water District or Organization:** Rough and Ready Island is operated by the CA Department of Water Resources and is in San Joaquin County.

**Station Description:** The CDEC station at Rough and Ready Island (station ID: RRI) is operated by the CA Department of Water Resources and the data is collected by satellite. Flow data is directly from the CDEC website.

EC and stage data in this report are taken directly from the CDEC website for RRI.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	100 $\mu$ S/cm (Values below 100 $\mu$ S/cm were deleted.)
Maximum EC:	

## DO-2 SJR at Dos Reis Park

**Location:** 37.9350°N -121.3290°W

**Water District or Organization:** San Joaquin River at Garwood Bridge is operated by USGS and is in San Joaquin County.

**Station Description:** The CDEC station at San Joaquin River at Garwood Bridge (station ID: SJG) is operated by USGS. Flow and stage data in this report are taken directly from the CDEC website.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	None
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	10/23/2007
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-3 SJR at Old River

**Location:** 37.8100°N -121.3230°W

**Water District or Organization:** San Joaquin River below Old River near Lathrop is operated by the CA Department of Water Resources and is located in San Joaquin County.

**Station Description:** The CDEC station at San Joaquin River below Old River near Lathrop (station ID: SJL) is operated by the CA Department of Water Resources, and the data is collected by satellite. Flow, EC and stage data in this report are directly taken from the CDEC website for SJL.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	10/18/2007
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-4 San Joaquin River at Mossdale Bridge

**Location:** 37.7860°N -121.3060°W

**Water District or Organization:** San Joaquin River at Mossdale Bridge is operated by the CA Dept of Water Resources/Central District and is in San Joaquin County, near Manteca.

**Station Description:** The CDEC station for San Joaquin River at Mossdale Bridge (station ID: MSD) is operated by the CA Department of Water Resources/Central District. Flow, EC, and stage data in this report are directly taken from the CDEC website for MSD.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	10/18/2007
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-5 San Joaquin River near Vernalis

**Location:** 37.667°N -121.267°W

**Water District or Organization:** San Joaquin River near Vernalis is operated by USGS and the CA Department of Water Resources, and is located in San Joaquin County, near Modesto.

**Station Description:** The CDEC station at San Joaquin River near Vernalis (station ID: VNS) is operated by USGS and the CA Department of Water Resources. The data is collected in dual path. Flow and stage data in this report are directly from the CDEC website for VNS, EC from VER station.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-6 San Joaquin River at Maze Blvd

**Location:** 37.641°N -121.229°W

**Water District or Organization:** San Joaquin River at Maze Blvd is operated by the CA Department of Water Resources and is located in Stanislaus County, at the Maze Blvd Bridge over the San Joaquin River.

**Station Description:** The CDEC station at San Joaquin River at maze Blvd (CDEC station ID is MRB) is operated by the CA Department of Water Resources; data is collected by satellite. Flow, EC, and stage data in this report are directly from the CDEC website for MRB.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-7 San Joaquin River near Patterson

**Location:** 37.494°N -121.081°W

**Water District or Organization:** San Joaquin River near Patterson is operated by the CA Dept of Water Resources and is located in Stanislaus County, near Patterson.

**Station Description:** The CDEC station at San Joaquin River near Patterson (station ID: SJP) is operated by the CA Department of Water Resources; data is collected by satellite. Flow, EC, and stage data in this report are directly from the CDEC website for SJP.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-8 San Joaquin River near Crows Landing

**Location:** 37.432°N -121.012°W

**Water District or Organization:** San Joaquin River near Crows Landing is operated by USGS and located in Stanislaus County, near Crows Landing.

**Station Description:** The CDEC station at San Joaquin River near Crows Landing (station ID: SCL) is operated by USGS. Data collection is by satellite. Flow, EC, and stage values in this report are directly from the CDEC website for SCL.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-9 San Joaquin River at Fremont Ford Bridge

**Location:** 37.310°N -120.930°W

**Water District or Organization:** San Joaquin River at Fremont Ford Bridge is operated by USGS and is located in Merced County, near Gustine.

**Station Description:** The CDEC station at San Joaquin River at Fremont Ford Bridge (station ID: FFB) is operated by USGS. Data is collected by satellite. Flow, EC, and stage values in this report are directly from the CDEC website for FFB.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-10 SJR at Lander Ave (Near Stevinson)

**Location:** 37.295°N -120.851°W

**Water District or Organization:** San Joaquin River near Stevinson is operated by the CA Department of Water Resources, and is located in Merced County, near Stevinson.

**Station Description:** The CDEC station at San Joaquin River near Stevinson (station ID: SJS) is operated by the CA Department of Water Resources. Data is collected by satellite. Flow, EC, and stage data in this report are directly taken from the CDEC website for SJS.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	01/08/08
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-13 Stanislaus River at Ripon

**Location:** 37.7300°N -121.10811°W

**Water District or Organization:** Stanislaus River at Ripon is operated by USGS and is located in San Joaquin County, near Ripon.

**Station Description:** The CDEC station at Stanislaus River at Ripon (station ID: RIP) is operated by USGS. Data is collected by satellite. Flow and stage data in this report are directly from the CDEC website for RIP.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	None
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-15 Tuolumne River at Modesto

**Location:** 37.6500°N -121.0010°W

**Water District or Organization:** Tuolumne River at Modesto is operated by the CA Department of Water Resources and is located in Stanislaus County, near Modesto.

**Station Description:** The CDEC station at Tuolumne River at Modesto (station ID: MOD) is operated by the CA Department of Water Resources. Data collection is by satellite. Flow, EC, and stage data in this report are directly from the CDEC website for MOD.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-17 Merced River near Stevinson

**Location:** 37.3710°N -120.9310°W

**Water District or Organization:** Merced River near Stevinson is operated by the CA Department of Water Resources and is located in Merced County, near Stevinson.

**Station Description:** The CDEC station at Merced River near Stevinson (station ID: MST) is operated by the CA Department of Water Resources. Data is collected by satellite. Flow, EC, and stage data in this report are directly from the CDEC website for MST.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-18 Mud Slough near Gustine

**Location:** 37.263°N -120.906°W

**Water District or Organization:** Mud Slough near Gustine is operated by USGS and is located in Merced County, near Gustine.

**Station Description:** The CDEC station at Mud Slough near Gustine (station ID: MSG) is operated by the USGS; data is collected by satellite. Flow, EC, and stage data in this report are directly from the CDEC website for MSG.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-19 Salt Slough at Lander Ave

**Location:** 37.248°N -120.852°W

**Water District or Organization:** Salt Slough at Highway 165 near Stevinson is operated by USGS and is located in Merced County, near Stevinson.

**Station Description:** The CDEC station at Salt Slough at Highway 165 near Stevinson (station ID: SSH) is operated by the USGS; data is collected by satellite. Flow, EC, and stage data in this report are directly from the CDEC website for SSH.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-20 Los Banos Creek at Hwy140

**Location:** 37.276°N -120.956°W

**Water District or Organization:** Los Banos Creek at Highway 140 is operated by the Kesterson unit of the San Luis National Wildlife Refuge

**Station Description:** Station is located in Kesterson unit just south east of Highway 140.

### Station Rating Variables:

Logger:	Campbell CR10X
Conductivity Probe:	Campbell EC
Velocity Sensor:	Sontek Argonaut SL
Stage Sensor:	Sontek Argonaut SL
Stage Sensor (Bubbler):	Design Analysis H350 XL
Battery:	Sealed 12V photovoltaic gel
Power:	40W Solar Panel and 20W solar panel
Communications:	GOES Transmission
Stage to Flow Relationship:	
Bubbler:	Flow = $3.8335x^2 + 6.5477(\text{stage}) - 8.0518$ $r^2 = 0.9948$ Calibration good, using old data
Flow Calculation:	Flow = $.0294((24.702 * \text{stage} - 15.687) * \text{Sontek velocity})^2 + 1.3156((24.702 * \text{stage} - 15.687) * \text{Sontek velocity}) + 1.4037$ Sontek flow based on offset corrected stage of 0.59.
TDS or Salt Calculation:	mg/L = EC * (0.640) * 1000
Expected Boundaries for Data (QA):	(data outside these boundaries are rejected or flagged)
	High    Low
EC:	4        0.5      mS/cm
Flow:	150     0        CFS
Sontek Stage	7.0     0.7      feet
Bubbler Stage:	7        0        feet
Bubbler Stage Offset:	0.59 feet
Sontek Offset:	approx 1.1 ft

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**DO-20 Los Banos Creek QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
LosBanos Creek	1/9/2006	11:00	G2P17	SG	Bridge and all equipment attached to it was washed out. stage reading taken from photo
LosBanos Creek	7/28/2006	na	F6P43	SG	
LosBanos Creek	9/19/2006	11:30	G2P76	SG	EC meter not installed
LosBanos Creek	12/1/2006	12:15	G2P86	SG	
LosBanos Creek	12/21/2006	9:00	F10P86	SG	
LosBanos Creek	2/14/2007	9:52	G2P94	SG	
LosBanos Creek	3/12/2007	9:29	G2P96	SG	Too deep to rate
LosBanos Creek	4/5/2007	14:50	G2P102	SG	
LosBanos Creek	5/1/2007	9:10	G2P104	SG	

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**DO-20 Los Banos Creek QA data**


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Reference			Measured Variables							
Site	Date	Time	Bubbler reading	Staff Gauge Stage	IIRC Weirstick reading	EC QA from handheld meter ( $\mu\text{S}/\text{cm}$ )	Pre-cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Post-Cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Temp QA from handheld meter ( $^{\circ}\text{F}$ )	Temp from Logger ( $^{\circ}\text{F}$ )
LosBanos Creek	1/9/2006	11:00	na	5.80	na	1467	1357	na	51.6	50.92
LosBanos Creek	7/28/2006	na	na	2.00	na	na	na	na	na	na
LosBanos Creek	9/19/2006	11:30	2.23	2.26	na	796.6	na	na	71.4	na
LosBanos Creek	12/1/2006	12:15	3.11	3.12	na	915.3	869	890	49.3	47.6
LosBanos Creek	12/21/2006	9:00	3.03	3.04	na	1098	1042	1089	43.9	43.3
LosBanos Creek	2/14/2007	9:52	2.59	2.60	na	1644	1534	1631	54.3	54
LosBanos Creek	3/12/2007	9:29	4.26	4.30	na	2084	2029	2029	61.5	61.7
LosBanos Creek	4/5/2007	14:50	1.33	1.36	na	2228	2124	2231	73.4	72.9
LosBanos Creek	5/1/2007	9:10	1.31	1.36	na	1836	1738	1848	63.7	63.9

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**DO-20 Los Banos Creek QA data**

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<b>Reference</b>			<b>Constants</b>		
Site	Date	Time	Structure/ Equipment	Bubbler to staff gauge offset	Rating Quality
LosBanos Creek	1/9/2006	11:00	stream/bubbler		fair
LosBanos Creek	7/28/2006	na	stream/bubbler		fair
LosBanos Creek	9/19/2006	11:30	stream/bubbler	0.030	fair
LosBanos Creek	12/1/2006	12:15	stream/bubbler	0.010	fair
LosBanos Creek	12/21/2006	9:00	stream/bubbler	0.010	fair
LosBanos Creek	2/14/2007	9:52	stream/bubbler	0.010	fair
LosBanos Creek	3/12/2007	9:29	stream/bubbler	0.040	fair
LosBanos Creek	4/5/2007	14:50	stream/bubbler	0.030	fair
LosBanos Creek	5/1/2007	9:10	stream/bubbler	0.050	fair

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**DO-20 Los Banos Creek QA data**


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Reference			Calculations							
Site	Date	Time	QA Average Velocity (ft/s)	QA Area (ft <sup>2</sup> )	Bubbler Calculated Area (ft <sup>2</sup> )	QA Flow (CFS)	Bubbler Calculated Flow (CFS)	Pre- Cleaning EC (% of QA)	Post- Cleaning EC (% of QA)	Temp (% of QA)
LosBanos Creek	1/9/2006	11:00						92.50		98.68
LosBanos Creek	7/28/2006	na	0.48	17.44		9.95				
LosBanos Creek	9/19/2006	11:30	0.68	29.58	26.16	22.88	25.61			
LosBanos Creek	12/1/2006	12:15			49.32		49.39			
LosBanos Creek	12/21/2006	9:00	0.87	46.45	47.22	42.56	46.98	94.90	99.18	98.63
LosBanos Creek	2/14/2007	9:52	n/a	n/a	35.63	n/a	34.62	93.31	99.21	99.45
LosBanos Creek	3/12/2007	9:29	n/a	n/a	79.60	n/a	89.41	97.36	97.36	100.33
LosBanos Creek	4/5/2007	14:50	n/a	n/a	2.46	n/a	7.44	95.33	100.13	99.32
LosBanos Creek	5/1/2007	9:10	n/a	n/a	1.94	n/a	7.10	94.66	100.65	100.31

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## DO-21 Orestimba Creek at River Rd

**Location:** 37.414°N -121.015°W

**Water District or Organization:** Orestimba Creek at River Road near Crows Landing is operated by USGS and is located in Stanislaus County near Crows Landing.

**Station Description:** The CDEC station at Orestimba Creek at River Road near Crows Landing (station ID: OCL) is operated by USGS and data is collected by satellite. Flow, EC, and stage data in this report are directly from the CDEC website for OCL.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website
Stage to Flow Relationship:	Rating unknown, data is direct from CDEC.
Estimated data quality:	good
Date updated or calculated:	1/9/2008
Flow Calculation:	Rating unknown, data is direct from CDEC.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-22 MID Lateral 4 to SJR

**Location:** 37.63057°N -121.15888°W

**Water District or Organization:** Modesto Irrigation District

**Station Description:** Flow data is from Modesto Irrigation District's Lateral 4 site (from SCADA files when available or Spills files when not). Data is direct from Mike Niemi.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	None
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Mike Niemi, Water Resources Specialist, Modesto Irrigation District.
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	8/6/2007
Flow Calculation:	Rating unknown
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-23 MID Lateral 5 to Tuolumne

**Location:** 37.61452°N -121.14339°W

**Water District or Organization:** Modesto Irrigation District

**Station Description:** Flow data is from Modesto Irrigation District's Lateral 5 site, from SCADA files (if available; if not, from Spills files). Data is direct from Mike Niemi.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	None
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Mike Niemi, Water Resources Specialist, Modesto Irrigation District.
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	2/9/2007
Flow Calculation:	Rating unknown
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-24 MID Lateral 6 to Stanislaus River

**Location:** 37.70383°N -121.14143°W

**Water District or Organization:** Modesto Irrigation District

**Station Description:** Flow data is from Modesto Irrigation District's Lateral 6 site (from SCADA files when available, and Spills files otherwise). Data is direct from Mike Niemi.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	None
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Mike Niemi, Water Resources Specialist, Modesto Irrigation District.
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	10/30/2007
Flow Calculation:	Rating unknown
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-25 MID Miller Lake to Stanislaus River

**Location:** 37.66619°N -121.19553°W

**Water District or Organization:** Modesto Irrigation District

**Station Description:** Flow data is from Modesto Irrigation District's Miller Lake site, obtained from SCADA files. Data is direct from Mike Niemi.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	None
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Mike Niemi, Water Resources Specialist, Modesto Irrigation District.
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	1/8/2008
Flow Calculation:	Rating unknown except flow from 8/30/07 on is from bubbler. $Flow = 3.33 * 14.5 * (stage^{1.5})$
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-26 TID Highline Spill

**Location:** 37.38921°N -120.80568°W

**Water District or Organization:** Turlock Irrigation District

**Station Description:** Flow data is from Turlock Irrigation District site Highline Spill. Data is direct from Keith Larson.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Keith Larson, Water Resources Analyst, Turlock Irrigation District
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	2/05/2008
Flow Calculation:	Rating unknown
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-27 TID Lateral 2

**Location:** 37.56522°N -121.13836°W

**Water District or Organization:** Turlock Irrigation District

**Station Description:** Flow data is from Turlock Irrigation District Lower Lateral 2 Spill Site. Data is direct from Keith Larson

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Keith Larson, Water Resources Analyst, Turlock Irrigation District
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	2/05/08
Flow Calculation:	Rating unknown
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-28 TID Westport Drain Flow Station

**Location:** 37.542°N -121.094°W

**Water District or Organization:** Turlock Irrigation District

**Station Description:** Flow data is from Turlock Irrigation District Westport Drain. Data is direct from Keith Larson.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Keith Larson, Water Resources Analyst, Turlock Irrigation District
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	
Flow Calculation:	Rating unknown
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	0 $\mu\text{S/cm}$
Maximum EC:	916 $\mu\text{S/cm}$

## DO-29 TID Harding Drain

**Location:** 37.46427°N -121.03093°W

**Water District or Organization:** Turlock Irrigation District

**Station Description:** Flow data is from Turlock Irrigation District Lateral 5 Drain (Harding Drain at Carpenter Rd.). Data is direct from Keith Larson.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	None
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Keith Larson, Water Resources Analyst, Turlock Irrigation District
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	
Flow Calculation:	Rating unknown
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-30 TID Lateral 6 & 7 at Levee

**Location:** 37.39767°N -120.95957°W

**Water District or Organization:** Turlock Irrigation District

**Station Description:** Flow data is calculated by adding values from Turlock Irrigation District Lateral 6 and Lateral 7 sites. Data is direct from Keith Larson.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Keith Larson, Water Resources Analyst, Turlock Irrigation District
Stage to Flow Relationship:	Rating unknown
Estimated data quality:	Unknown
Date updated or calculated:	
Flow Calculation:	Rating unknown
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	0 $\mu\text{S/cm}$
Maximum EC:	1779 $\mu\text{S/cm}$

## DO-31 New Jerusalem Drain

**Location:** 37.72669°N -121.29963°W

**Water District or Organization:** New Jerusalem Drainage District/Banta Carbona Irrigation District

**Station Description:** Data is direct from Jeremy Hanlon with University of the Pacific. Bubbler data before 01/31/06 was not useful, Swagelok fitting installed backward allowing air leak. Swagelok corrected on Jan. 31, 2007. Mace Unit operational with data, bubbler data used preferentially

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Velocity Sensor:	MACE Agriflo
Stage Sensor (Bubbler):	DA Bubbler
Battery:	Sealed 12V photovoltaic gel and 6V for Mace unit
Power:	Solar
Communications:	GOES Transmission
Structure description:	Square concrete culvert.
Structure shape:	Square with round pipes entering and exiting.
Staff gage stability:	No staff gage, hand-held gage used.
Width of structure:	Culvert 5 ft by 5 feet, pipes are 3.5feet diameter.
Depth of structure:	Bottom of culvert 0.5 feet below pipe opening
Board width:	5 feet
Board height:	Each board 30 inches with a total of 2.5 feet
Bubbler depth from top of board:	-3.278 according to bubbler reading
Bubbler off-set:	1.064 feet
Stage to Flow Relationship:	
Estimated quality:	good
Date update or calculated:	11/14/07

Bubbler staff gauge relationship:

Regression: Bubbler stage =  $0.9633 * (QA \text{ stage}) + 1.1603$   $r^2 = 0.9922$

Gage flow relationship:

Ideal weir equation:  $3.33 * W * H^{1.5}$

Regression: (bubbler flow) =  $0.8485 * (\text{weirstick flow}) + 0.517$   $r^2=0.9951$

Flow Calculation:

Flow =  $3.33 * (5) * (\text{bubbler value} - 3.278)^{1.5}$

Secondary Flow is from Mace Agriflo. Unit calculates flow from internal formula based on culvert dimensions and velocity.

Expected Boundaries for Data (QA):

Maximum flow in summer:	12	CFS
Maximum flow:	12	CFS
Minimum flow in summer:	3	CFS
Minimum flow:	0.5	CFS
Maximum EC:	3	mS/cm
Minimum EC:	1	mS/cm

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**DO-31 New Jerusalem Drain QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
New Jerusalem	1/11/2006	11:04	TT011106P95	WS	Bubbler line was found to be leaking.
New Jerusalem	1/31/2006	8:30	F5P83	WS	Bubbler line was repaired.
New Jerusalem	2/8/2006	12:37	TT020806P105	WS	
New Jerusalem	3/8/2006	11:17	TT030806	WS	
New Jerusalem	4/4/2006	na	na	WS	The notebook was lost and data could not be entered.
New Jerusalem	5/9/2006	11:20	TT050906P135	WS	The river backed up into site causing the weir to be flooded.
New Jerusalem	6/6/2006	8:20	TT060606P145	WS	
New Jerusalem	7/21/2006	12:00	TT072106Pxx	WS	
New Jerusalem	8/22/2006	na	TT082206Pxx	WS	
New Jerusalem	9/28/2006	13:00	TT092806P19	WS	
New Jerusalem	10/3/2006	11:15	F9P133N7	WS	
New Jerusalem	10/27/2006	12:00	TT102706P27	WS	
New Jerusalem	11/17/2006	11:30	TT111706P36	WS	
New Jerusalem	12/8/2006	11:00	TT120806P45	WS	
New Jerusalem	1/19/2007	12:00	F11P83	WS	
New Jerusalem	2/13/2007	10:00	TTP61	WS	
New Jerusalem	3/6/2007	12:00	TTP69	WS	
New Jerusalem	4/13/2007	13:15	F12P3N3	WS	
New Jerusalem	5/22/2007	13:30	F12P65N1	WS	
New Jerusalem	6/19/2007	14:00	F12P130	WS	
New Jerusalem	8/14/2007	12:45	F14P122	WS	
New Jerusalem	9/11/2007	13:00	F15P57	WS	
New Jerusalem	10/9/2007	13:00	F15P123	WS	
New Jerusalem	11/1/2007	14:15	F15P145	WS	

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**DO-31 New Jerusalem Drain QA data**

Reference		Measured Variables								
Site	Date	Time	Bubbler reading	Staff Gauge Stage	ITRC Weirstick reading	EC QA from handheld meter (µS/cm)	Pre-cleaning EC from logger (µS/cm)	Post-Cleaning EC from logger (µS/cm)	Temp QA from handheld meter (°C)	Temp from Logger (°F)
New Jerusalem	1/11/2006	11:04	2.864	7.30	na	2340	2417		17.9	64.3
New Jerusalem	1/31/2006	8:30	3.427		0.15	na	na	na	na	na
New Jerusalem	2/8/2006	12:37	3.419	na	0.1	2420	2400		17.3	63.28
New Jerusalem	3/8/2006	11:17	4.618	3.50	na	2321	2395		16.58	62.11
New Jerusalem	4/4/2006	na	na	na	na	na	na	na	na	na
New Jerusalem	5/9/2006	11:20	12.514	na	na	2297	2266		17.06	62.8
New Jerusalem	6/6/2006	8:20	7.46	na	na	2553	2432		17.5	63.61
New Jerusalem	7/21/2006	12:00	4.084	3.00	2.5	2479	2419		18.48	65.37
New Jerusalem	8/22/2006	na	na	na	na	2507	2523		18.83	66
New Jerusalem	9/28/2006	13:00	na	na	na	2468	2404		19.07	66.35
New Jerusalem	10/3/2006	11:15	3.665	na	0.8	na	na		na	na
New Jerusalem	10/27/2006	12:00	3.666	na	0.79	2529	2477		19.74	66.61
New Jerusalem	11/17/2006	11:30	3.452	2.40	0.19	2494	2599		19.12	66.4
New Jerusalem	12/8/2006	11:00	3.433	na	0.15	2575	2517		18.11	65.32
New Jerusalem	1/19/2007	12:00	3.418	2.33	0.12	2245	2409	2424	17.01	62.92
New Jerusalem	2/13/2007	10:00	3.494	2.43	0.27	2418	2537	2476	16.65	62.28
New Jerusalem	3/6/2007	12:00	3.44	2.35	0.15	2567	2562	2569	16.59	61.97
New Jerusalem	4/13/2007	13:15	3.725	2.64	1	2424	2443	2468	17.06	62.76
New Jerusalem	5/22/2007	13:30	3.941	2.85	2.1	2334	2304		na	na
New Jerusalem	6/19/2007	14:00	4.036	2.99	2.5	2127	2157	2217	18.79	65.74
New Jerusalem	8/14/2007	12:45	3.945	2.90	1.9	2448	2250	2478	18.81	65.75
New Jerusalem	9/11/2007	13:00	3.79	2.75	1.3	2268	2257	2267	19.08	66.31
New Jerusalem	10/9/2007	13:00	3.587	2.55	0.5	2352	2487	2372	19.32	66.68
New Jerusalem	11/1/2007	14:15	3.486	2.43	0.3	2344	2456	2197	19.19	66.45

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**DO-31 New Jerusalem Drain QA data**

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<b>Reference</b>		<b>Constants</b>					
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
New Jerusalem	1/11/2006	11:04	Weir/bubbler	5	4.436		good
New Jerusalem	1/31/2006	8:30	Weir/bubbler	5	-3.427	3.300	good
New Jerusalem	2/8/2006	12:37	Weir/bubbler	5		3.322	good
New Jerusalem	3/8/2006	11:17	Weir/bubbler	5	-1.118		good
New Jerusalem	4/4/2006	na	Weir/bubbler	5			good
New Jerusalem	5/9/2006	11:20	Weir/bubbler	5			good
New Jerusalem	6/6/2006	8:20	Weir/bubbler	5			good
New Jerusalem	7/21/2006	12:00	Weir/bubbler	5	-1.084	3.258	good
New Jerusalem	8/22/2006	na	Weir/bubbler	5			good
New Jerusalem	9/28/2006	13:00	Weir/bubbler	5			good
New Jerusalem	10/3/2006	11:15	Weir/bubbler	5		3.279	good
New Jerusalem	10/27/2006	12:00	Weir/bubbler	5		3.283	good
New Jerusalem	11/17/2006	11:30	Weir/bubbler	5	-1.052	3.304	good
New Jerusalem	12/8/2006	11:00	Weir/bubbler	5		3.306	good
New Jerusalem	1/19/2007	12:00	Weir/bubbler	5	-1.088	3.309	good
New Jerusalem	2/13/2007	10:00	Weir/bubbler	5	-1.064	3.307	good
New Jerusalem	3/6/2007	12:00	Weir/bubbler	5	-1.090	3.313	good
New Jerusalem	4/13/2007	13:15	Weir/bubbler	5	-1.085	3.277	good
New Jerusalem	5/22/2007	13:30	Weir/bubbler	5	-1.091	3.206	good
New Jerusalem	6/19/2007	14:00	Weir/bubbler	5	-1.046	3.210	good
New Jerusalem	8/14/2007	12:45	Weir/bubbler	5	-1.045	3.257	good
New Jerusalem	9/11/2007	13:00	Weir/bubbler	5	-1.040	3.256	good
New Jerusalem	10/9/2007	13:00	Weir/bubbler	5	-1.037	3.305	good
New Jerusalem	11/1/2007	14:15	Weir/bubbler	5	-1.056	3.285	good

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**DO-31 New Jerusalem Drain QA data**

<b>DO-31 New Jerusalem Drain QA data</b>								
<b>Reference</b>	<b>Calculations</b>							
Site	Date	Time	Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
New Jerusalem	1/11/2006	11:04				103.29	0.00	100.12
New Jerusalem	1/31/2006	8:30	0.13	0.75	0.96			
New Jerusalem	2/8/2006	12:37	0.10	0.50	0.88	99.17	0.00	100.22
New Jerusalem	3/8/2006	11:17			25.83	103.19	0.00	100.43
New Jerusalem	4/4/2006	na						
New Jerusalem	5/9/2006	11:20			467.35	98.65	0.00	100.15
New Jerusalem	6/6/2006	8:20			142.39	95.26	0.00	100.17
New Jerusalem	7/21/2006	12:00	0.83	12.50	12.05	97.58	0.00	100.16
New Jerusalem	8/22/2006	na				100.64	0.00	100.16
New Jerusalem	9/28/2006	13:00				97.41	0.00	100.04
New Jerusalem	10/3/2006	11:15	0.39	4.00	4.01			
New Jerusalem	10/27/2006	12:00	0.38	3.95	4.02	97.94	0.00	98.63
New Jerusalem	11/17/2006	11:30	0.15	0.95	1.21	104.21	0.00	99.98
New Jerusalem	12/8/2006	11:00	0.13	0.75	1.02	97.75	0.00	101.12
New Jerusalem	1/19/2007	12:00	0.11	0.60	0.87	107.31	107.97	100.48
New Jerusalem	2/13/2007	10:00	0.19	1.35	1.67	104.92	102.40	100.50
New Jerusalem	3/6/2007	12:00	0.13	0.75	1.09	99.81	100.08	100.17
New Jerusalem	4/13/2007	13:15	0.45	5.00	4.98	100.78	101.82	100.08
New Jerusalem	5/22/2007	13:30	0.74	10.50	8.99	98.71	0.00	
New Jerusalem	6/19/2007	14:00	0.83	12.50	10.99	101.41	104.23	99.88
New Jerusalem	8/14/2007	12:45	0.69	9.50	9.07	91.91	101.23	99.84
New Jerusalem	9/11/2007	13:00	0.53	6.50	6.10	99.51	99.96	99.95
New Jerusalem	10/9/2007	13:00	0.28	2.50	2.86	105.74	100.85	99.86
New Jerusalem	11/1/2007	14:15	0.20	1.50	1.58	104.78	93.73	99.86

## DO-33 Hospital Creek

**Location:** 37.61029°N -121.23082°W

**Water District or Organization:** SJVDA, Summers Engineering, Inc., and Tetra Tech

**Station Description:** Station is at the intersection of River Road and Hospital Creek. Data provided by Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Velocity Sensor:	None
Stage Sensor:	None
Stage Sensor (Bubbler):	DA Bubbler
Battery:	Sealed 12V photovoltaic gel
Power:	Solar
Communications:	GOES Transmission
Structure description:	Concrete box with removable boards
Structure shape:	Rectangular box
Structure materials:	Concrete set in stream bed of clay and gravel
Staff gage stability:	Fixed to concrete structure
Width of structure:	approx 6 feet
Depth of structure:	2 x 12 inch board
Board width:	4.45 feet
Board height:	1.1 feet
Bubbler depth from top of board:	1.1 feet
Stage to Flow Relationship:	
Estimated quality:	good
Date data update or calculated:	1/11/2007
Observed stage vs. Bubbler stage:	Regression: Bubbler stage = 1.0295 * (QA stage) - 0.0024 r <sup>2</sup> = 0.9937

Observed stage vs. QA Flow:	Regression: $\text{Flow} = 16.885 * (\text{QA stage}^{1.8444})$ $r^2 = 0.9925$
Weir Stick Flow vs Bubbler Flow:	Regression: $\text{Flow} = 0.9524 (\text{Bubbler flow}) - 0.1742$ $r^2 = 0.9734$
Ideal Weir equation:	$\text{Flow} = 14.819 * (\text{Bubbler stage}^{1.5})$
Flow Calculation:	$\text{Flow} = 3.33 * 4.45 * ((\text{bubbler stage} - \text{offset})^{1.5})$
TDS or Salt Calculation:	$\text{Salt mg/l} = \text{EC} * 0.64$
Expected Boundaries for Data (QA):	
Minimum flow:	0.00 CFS
Maximum flow:	16.91 CFS
Minimum EC:	0 $\mu\text{S/cm}$
Maximum EC:	1966 $\mu\text{S/cm}$

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**DO-33 Hospital Creek QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Hospital Creek	1/11/2006	10:35	TT011106P94	WS	
Hospital Creek	2/8/2006	12:15	TT020806P104	WS	
Hospital Creek	3/8/2006	10:51	TT030806P114	WS	
Hospital Creek	4/4/2006	12:45	TT040406P124	WS	
Hospital Creek	5/9/2006	10:55	TT050906P134	WS	
Hospital Creek	6/6/2006	8:45	TT060606P144	WS	
Hospital Creek	7/21/2006	11:25	TT072106Pxx	WS	
Hospital Creek	8/22/2006	11:45	TT082206Pxx	WS	EC was changing rapidly, post-cleaning value questionable.
Hospital Creek	9/28/2006	12:30	TT092806P18	WS	EC was changing rapidly, post-cleaning value questionable.
Hospital Creek	10/27/2006	11:30	TT102706P26	WS	
Hospital Creek	11/17/2006	11:00	TT111706P35	WS	
Hospital Creek	12/8/2006	10:30	TT120806P45	WS	
Hospital Creek	1/19/2007	10:30	TTP53	WS	
Hospital Creek	2/13/2007	9:30	TTP60	WS	
Hospital Creek	3/6/2007	11:30	TTP68	WS	
Hospital Creek	4/13/2007	13:00	TTP78	WS	
Hospital Creek	5/29/2007	12:00	F12P79N3	WS	
Hospital Creek	6/19/2007	13:30	F12P130N1	WS	
Hospital Creek	7/10/2007	16:15	F14P28	WS	
Hospital Creek	8/14/2007	12:15	F14P122	WS	
Hospital Creek	9/11/2007	12:30	F15P57	WS	
Hospital Creek	10/9/2007	12:21	F15P123	WS	
Hospital Creek	11/1/2007	13:45	F15P145	WS	

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**DO-33 Hospital Creek QA data**


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Reference			Measured Variables							
Site	Date	Time	Bubbler reading	Staff Gauge Stage	IIRC Weirstick reading	EC QA from handheld meter (µS/cm)	Pre-cleaning EC from logger (µS/cm)	Post-Cleaning EC from logger (µS/cm)	Temp QA from handheld meter (°C)	Temp from Logger (°F)
Hospital Creek	1/11/2006	10:35	-0.002	0.01	No flow	163	186	168	9.22	48.6
Hospital Creek	2/8/2006	12:15	-0.154	Dry	No flow	na	0	2	na	62.48
Hospital Creek	3/8/2006	10:51	0.007	na	na	361	355	356	9.6	49.16
Hospital Creek	4/4/2006	12:45	0.18	0.19	0.25	205	202	212	12.77	59.3
Hospital Creek	5/9/2006	10:55	0.365	NA	NA	188	296	192	18.42	65.68
Hospital Creek	6/6/2006	8:45	0.178	0.19	0.2	198	213	195	18.95	66.4
Hospital Creek	7/21/2006	11:25	0.57	0.57	1.8	488	497	318	28.27	99.3
Hospital Creek	8/22/2006	11:45	0.363	0.32	0.65	514	527	545	22.26	71.73
Hospital Creek	9/28/2006	12:30	0.43	0.42	0.9	584	577	610	19.94	67.61
Hospital Creek	10/27/2006	11:30	0.118	0.12	0.1	575	573	593	11.61	52.49
Hospital Creek	11/17/2006	11:00	0.018	0.02	0	1177	1258		15.35	59.66
Hospital Creek	12/8/2006	10:30	0.015	0.02	0	635	661		7.18	46.928
Hospital Creek	1/19/2007	10:30	0.216	0.21	0.3	574	625	624	3.18	37.93
Hospital Creek	2/13/2007	9:30	0.019	0.01	0	304	312	312	10.24	51.35
Hospital Creek	3/6/2007	11:30	0.496	0.49	1.35	455	462	491	15.52	58.65
Hospital Creek	4/13/2007	13:00	0.391	0.39	0.85	1140	989	1170	18.73	65.32
Hospital Creek	5/29/2007	12:00	0.394	0.4	1	1059	760	1085	22.57	72.22
Hospital Creek	6/19/2007	13:30	0.441	0.46	1.3	717	664	776	28.51	83.42
Hospital Creek	7/10/2007	16:15	0.377	0.40	0.9	1210	1235	1316	26.96	80.69
Hospital Creek	8/14/2007	12:15	0.49	0.48	1.4	1093	759	1104	24.76	77.23
Hospital Creek	9/11/2007	12:30	0.285	0.28	0.6	1147	1113	1163	22.84	72.49
Hospital Creek	10/9/2007	12:21	0.015	na	No Flow	1332	1352	1358	17.05	62.82
Hospital Creek	11/1/2007	13:45	0.025	0.03	0	631		647	17.31	63.87

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**DO-33 Hospital Creek QA data**

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<b>Reference</b>		<b>Constants</b>					
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
Hospital Creek	1/11/2006	10:35	Weir/bubbler	4.45	0.012		good
Hospital Creek	2/8/2006	12:15	Weir/bubbler	4.45			good
Hospital Creek	3/8/2006	10:51	Weir/bubbler	4.45			good
Hospital Creek	4/4/2006	12:45	Weir/bubbler	4.45	0.010	0.002	good
Hospital Creek	5/9/2006	10:55	Weir/bubbler	4.45			good
Hospital Creek	6/6/2006	8:45	Weir/bubbler	4.45	0.012	0.025	good
Hospital Creek	7/21/2006	11:25	Weir/bubbler	4.45	0.000	-0.094	good
Hospital Creek	8/22/2006	11:45	Weir/bubbler	4.45	-0.043	0.027	good
Hospital Creek	9/28/2006	12:30	Weir/bubbler	4.45	-0.010	0.012	good
Hospital Creek	10/27/2006	11:30	Weir/bubbler	4.45	0.002	0.021	good
Hospital Creek	11/17/2006	11:00	Weir/bubbler	4.45	0.002	0.018	good
Hospital Creek	12/8/2006	10:30	Weir/bubbler	4.45	0.005	0.015	good
Hospital Creek	1/19/2007	10:30	Weir/bubbler	4.45	-0.006	0.015	good
Hospital Creek	2/13/2007	9:30	Weir/bubbler	4.45	-0.009	0.019	good
Hospital Creek	3/6/2007	11:30	Weir/bubbler	4.45	-0.006	-0.052	good
Hospital Creek	4/13/2007	13:00	Weir/bubbler	4.45	-0.001	-0.011	good
Hospital Creek	5/29/2007	12:00	Weir/bubbler	4.45	0.006	-0.054	good
Hospital Creek	6/19/2007	13:30	Weir/bubbler	4.45	0.019	-0.093	good
Hospital Creek	7/10/2007	16:15	Weir/bubbler	4.45	0.023	-0.041	good
Hospital Creek	8/14/2007	12:15	Weir/bubbler	4.45	-0.010	-0.071	good
Hospital Creek	9/11/2007	12:30	Weir/bubbler	4.45	-0.005	-0.034	good
Hospital Creek	10/9/2007	12:21	Weir/bubbler	4.45			good
Hospital Creek	11/1/2007	13:45	Weir/bubbler	4.45	0.005	0.025	good

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**DO-33 Hospital Creek QA data**


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Reference Site	Date	Time	Calculations					
			Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Hospital Creek	1/11/2006	10:35				114.11	103.07	100.01
Hospital Creek	2/8/2006	12:15						
Hospital Creek	3/8/2006	10:51				98.34	98.61	99.76
Hospital Creek	4/4/2006	12:45	0.18	1.11	0.99	98.54	103.41	107.85
Hospital Creek	5/9/2006	10:55			3.07	157.45	102.13	100.80
Hospital Creek	6/6/2006	8:45	0.15	0.89	0.98	107.58	98.48	100.44
Hospital Creek	7/21/2006	11:25	0.66	8.01	6.13	101.84	65.16	119.80
Hospital Creek	8/22/2006	11:45	0.34	2.89	3.04	102.53	106.03	99.53
Hospital Creek	9/28/2006	12:30	0.42	4.01	3.96	98.80	104.45	99.58
Hospital Creek	10/27/2006	11:30	0.10	0.45	0.49	99.65	103.13	99.23
Hospital Creek	11/17/2006	11:00	0.00	0.00	0.00	106.88	0.00	100.05
Hospital Creek	12/8/2006	10:30	0.00	0.00	0.00	104.09	0.00	104.46
Hospital Creek	1/19/2007	10:30	0.20	1.34	1.34	108.89	108.71	100.55
Hospital Creek	2/13/2007	9:30	0.00	0.00	0.00	102.63	102.63	101.82
Hospital Creek	3/6/2007	11:30	0.55	6.01	4.94	101.54	107.91	97.85
Hospital Creek	4/13/2007	13:00	0.40	3.78	3.42	86.75	102.63	99.40
Hospital Creek	5/29/2007	12:00	0.45	4.45	3.46	71.77	102.46	99.44
Hospital Creek	6/19/2007	13:30	0.53	5.79	4.12	92.61	108.23	100.12
Hospital Creek	7/10/2007	16:15	0.42	4.01	3.23	102.07	108.76	100.20
Hospital Creek	8/14/2007	12:15	0.56	6.23	4.85	69.44	101.01	100.86
Hospital Creek	9/11/2007	12:30	0.32	2.67	2.08	97.04	101.39	99.15
Hospital Creek	10/9/2007	12:21			0.00	101.50	101.95	100.21
Hospital Creek	11/1/2007	13:45	0.00	0.00	0.01	0.00	102.54	101.13

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## DO-34 Ingram Creek

**Location:** 37.60026°N -121.2251°W

**Water District or Organization:** SJVDA

**Station Description:** Station is at the intersection of River Road and Ingram Creek. Data is provided from Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Stage Sensor (Bubbler):	Design Analysis Bubbler
Battery:	Sealed photovoltaic gel
Power:	Solar
Communications:	GOES Transmission
Structure description:	Concrete bridge, weir entire width
Structure shape:	Rectangle
Structure materials:	Concrete with wood boards
Staff gage stability:	Set in concrete and attached to structure
Width of structure:	10 feet
Depth of structure:	1.1 feet above base
Board (Weir) width:	10 feet
Board (Weir) height:	1.1 feet above base
Bubbler depth from top of board:	Bubbler set to board height
Bubbler off-set	0 feet
Stage to Flow Relationship:	
Estimated quality:	good
Date data update or calculated:	1/24/2008
Date QA rating updated:	1/24/2008
Bubbler to weir offset:	0.021
Observed stage vs. Bubbler stage:	Regression: Bubbler stage = 0.9853 (QA stage) + 0.0036 r <sup>2</sup> = 0.9985

Weir Stick Flow vs Bubbler Flow:

Regression:  $\text{Flow} = 1.1215 (\text{Bubbler flow}) - 1.0605 r^2 = 0.9915$

Flow Calculation:

$\text{Flow} = 3.33 * 10 * ((\text{Bubbler stage} - \text{offset})^{1.5})$

Expected Boundaries for Data (QA):

Minimum flow:

0.00 CFS

Maximum flow:

30.00 CFS

Minimum EC:

400  $\mu\text{S}/\text{cm}$

Maximum EC:

2,100  $\mu\text{S}/\text{cm}$

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**DO-34 Ingram Creek QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Ingram Creek	1/11/2006	10:35	TT011106P93	WS	
Ingram Creek	2/8/2006	11:45	TT020806P102	WS	
Ingram Creek	3/8/2006	10:25	TT030806P113	WS	
Ingram Creek	4/4/2006	12:30	TT040406P123	WS	
Ingram Creek	5/9/2006	10:30	TT050906P133	WS	
Ingram Creek	6/6/2006	9:10	TT060606P143	WS	
Ingram Creek	7/21/2006	11:00	TT072106Pxx	WS	
Ingram Creek	8/22/2006	11:30	TT082206Pxx	WS	
Ingram Creek	9/28/2006	12:15	TT092806P17	WS	
Ingram Creek	10/27/2006	11:00	TT102806P25	WS	
Ingram Creek	11/17/2006	10:30	TT111716P34	WS	
Ingram Creek	12/8/2006	10:00	TT120806P43	WS	
Ingram Creek	1/19/2007	10:15	TTP52	WS	
Ingram Creek	2/13/2007	9:30	TTP59	WS	
Ingram Creek	3/6/2007	11:15	TTP67	WS	
Ingram Creek	4/13/2007	13:00	TTP76	WS	
Ingram Creek	5/29/2007	11:46	F12P79N1	WS	
Ingram Creek	6/18/2007	13:00	F12P129	WS	
Ingram Creek	7/10/2007	16:00	F14P28	WS	
Ingram Creek	8/14/2007	12:00	F14P122	WS	
Ingram Creek	9/11/2007	12:00	F15P57	WS	
Ingram Creek	10/9/2007	12:05	F15P123	WS	
Ingram Creek	11/1/2007	13:15	F15P145	WS	

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**DO-34 Ingram Creek QA data**

Reference			Measured Variables							
Site	Date	Time	Bubbler reading	Staff Gauge Stage	IIRC Weirstick reading	EC QA from handheld meter (µS/cm)	Pre-cleaning EC from logger (µS/cm)	Post-Cleaning EC from logger (µS/cm)	Temp QA from handheld meter (°C)	Temp from Logger (°F)
Ingram Creek	1/11/2006	10:35	0.073	0.08	0.01	1926	1346	1601	11.98	57.97
Ingram Creek	2/8/2006	11:45	0.083	0.10	0.04	1332	1908	1338	13.08	57.36
Ingram Creek	3/8/2006	10:25	0.08	0.08	0.03	1664	1437	1631	10.7	53.22
Ingram Creek	4/4/2006	12:30	0.1597	0.16	0.15	550	722	573	15.95	60.542
Ingram Creek	5/9/2006	10:30	0.35	0.33	0.6	269	351	270	17.81	76.505
Ingram Creek	6/6/2006	9:10	0.441	0.47	1.1	559	433	553	19.58	66.84
Ingram Creek	7/21/2006	11:00	0.6486	0.66	1.8	818	696	819	27.4	94.978
Ingram Creek	8/22/2006	11:30	0.697	0.72	2.2	825	780	859	23.77	74.1
Ingram Creek	9/28/2006	12:15	0.182	na	na	914	702	848	19.62	68.78
Ingram Creek	10/27/2006	11:00	0.134	0.14	0.08	906	449	848	14.31	57.34
Ingram Creek	11/17/2006	10:30	0.124	0.12	0.08	1443	1440		16.3	61.42
Ingram Creek	12/8/2006	10:00	0.269	0.26	0.3	774	735		7.53	45.154
Ingram Creek	1/19/2007	10:15	0.1	0.09	0.04	1868	1756	1866	7.28	42.14
Ingram Creek	2/13/2007	9:30	0.104	0.10	0.04	1389	1452	1488	11.53	49.91
Ingram Creek	3/6/2007	11:15	0.169	0.17	0.06	606	660	650	14.88	58.81
Ingram Creek	4/13/2007	13:00	0.469	na	na	1179	1035	1279	18.11	64.29
Ingram Creek	5/29/2007	11:46	0.4076	0.41	0.9	1232	787	1230	18.11	64.29
Ingram Creek	6/18/2007	13:00	0.522	0.53	1.3	746	793	703	29.02	84.27
Ingram Creek	7/10/2007	16:00	0.6046	0.62	1.7	1049	1126	1079	28.42	81.24
Ingram Creek	8/14/2007	12:00	0.523	0.51	1.3	1129	1054	1144	24.75	77.12
Ingram Creek	9/11/2007	12:00	0.1266	0.13	0.1	1170	1109	1167	24.23	74.69
Ingram Creek	10/9/2007	12:05	0.102	0.10	0.08	1427	1326	1460	17.23	63.18
Ingram Creek	11/1/2007	13:15	0.124	0.12	0.1	945		955	16.84	62.38

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**DO-34 Ingram Creek QA data**

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<b>Reference</b>							
Site	Date	Time	Constants Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
Ingram Creek	1/11/2006	10:35	Weir/bubbler	10	0.007	0.052	good
Ingram Creek	2/8/2006	11:45	Weir/bubbler	10	0.012	0.031	good
Ingram Creek	3/8/2006	10:25	Weir/bubbler	10	0.000	0.037	good
Ingram Creek	4/4/2006	12:30	Weir/bubbler	10	0.000	0.033	good
Ingram Creek	5/9/2006	10:30	Weir/bubbler	10	-0.020	0.031	good
Ingram Creek	6/6/2006	9:10	Weir/bubbler	10	0.029	-0.037	good
Ingram Creek	7/21/2006	11:00	Weir/bubbler	10	0.011	-0.015	good
Ingram Creek	8/22/2006	11:30	Weir/bubbler	10	0.023	-0.062	good
Ingram Creek	9/28/2006	12:15	Weir/bubbler	10			good
Ingram Creek	10/27/2006	11:00	Weir/bubbler	10	0.006	0.051	good
Ingram Creek	11/17/2006	10:30	Weir/bubbler	10	-0.004	0.041	good
Ingram Creek	12/8/2006	10:00	Weir/bubbler	10	-0.009	0.068	good
Ingram Creek	1/19/2007	10:15	Weir/bubbler	10	-0.010	0.048	good
Ingram Creek	2/13/2007	9:30	Weir/bubbler	10	-0.004	0.052	good
Ingram Creek	3/6/2007	11:15	Weir/bubbler	10	0.001	0.100	good
Ingram Creek	4/13/2007	13:00	Weir/bubbler	10			good
Ingram Creek	5/29/2007	11:46	Weir/bubbler	10	0.002	-0.010	good
Ingram Creek	6/18/2007	13:00	Weir/bubbler	10	0.008	-0.012	good
Ingram Creek	7/10/2007	16:00	Weir/bubbler	10	0.015	-0.034	good
Ingram Creek	8/14/2007	12:00	Weir/bubbler	10	-0.013	-0.011	good
Ingram Creek	9/11/2007	12:00	Weir/bubbler	10	0.003	0.030	good
Ingram Creek	10/9/2007	12:05	Weir/bubbler	10	-0.002	0.019	good
Ingram Creek	11/1/2007	13:15	Weir/bubbler	10	-0.004	0.027	good

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**DO-34 Ingram Creek QA data**

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Reference Site	Date	Time	Calculations					
			Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Ingram Creek	1/11/2006	10:35	0.02	0.10	0.68	69.89	83.13	108.23
Ingram Creek	2/8/2006	11:45	0.05	0.40	0.83	143.24	100.45	103.27
Ingram Creek	3/8/2006	10:25	0.04	0.30	0.78	86.36	98.02	103.82
Ingram Creek	4/4/2006	12:30	0.13	1.50	2.17	131.27	104.18	99.72
Ingram Creek	5/9/2006	10:30	0.32	6.00	6.95	130.48	100.37	119.43
Ingram Creek	6/6/2006	9:10	0.48	11.00	9.82	77.46	98.93	99.40
Ingram Creek	7/21/2006	11:00	0.66	18.00	17.47	85.09	100.12	116.80
Ingram Creek	8/22/2006	11:30	0.76	22.00	19.46	94.55	104.12	99.08
Ingram Creek	9/28/2006	12:15			2.63	76.81	92.78	102.17
Ingram Creek	10/27/2006	11:00	0.08	0.80	1.67	49.56	93.60	99.28
Ingram Creek	11/17/2006	10:30	0.08	0.80	1.49	99.79	0.00	100.13
Ingram Creek	12/8/2006	10:00	0.20	3.00	4.70	94.96	0.00	99.12
Ingram Creek	1/19/2007	10:15	0.05	0.40	1.08	94.00	99.89	93.43
Ingram Creek	2/13/2007	9:30	0.05	0.40	1.15	104.54	107.13	94.61
Ingram Creek	3/6/2007	11:15	0.07	0.60	2.35	108.91	107.26	100.04
Ingram Creek	4/13/2007	13:00			10.76	87.79	108.48	99.52
Ingram Creek	5/29/2007	11:46	0.42	9.00	8.73	63.88	99.84	99.52
Ingram Creek	6/18/2007	13:00	0.53	13.00	12.63	106.30	94.24	100.04
Ingram Creek	7/10/2007	16:00	0.64	17.00	15.73	107.34	102.86	97.70
Ingram Creek	8/14/2007	12:00	0.53	13.00	12.67	93.36	101.33	100.74
Ingram Creek	9/11/2007	12:00	0.10	1.00	1.54	94.79	99.74	98.78
Ingram Creek	10/9/2007	12:05	0.08	0.80	1.12	92.92	102.31	100.26
Ingram Creek	11/1/2007	13:15	0.10	1.00	1.49	0.00	101.06	100.11

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## DO-35 Westley Wasteway Flow Station

**Location:** 37.55818°N -121.16375°W

**Water District or Organization:**

**Station Description:** Station is northeast of the intersection of Cox and Frank Cox road. Data is provided by Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Velocity Sensor:	n/a
Stage Sensor (Bubbler):	DA Bubbler
Battery:	Sealed 12V photovoltaic gel
Power:	Solar
Communications:	GOES Transmission
Structure description:	Flashboard riser/Sharp crested weir
Structure shape:	Rectangular
Structure materials:	Concrete/wood
Staff gage stability:	2-inch iron pipe set 2-feet deep, good stability
Width of structure:	4.33 ft
Depth of structure:	n/a
Board width:	4.33 feet
Board height:	approx. 4 feet
Bubbler depth from top of board:	approx 0.85 feet
Bubbler off-set	3.645
Stage to Flow Relationship:	
Estimated quality:	good
Date data update or calculated:	1/24/2008
Date QA rating updated:	11/1/2007
Observed stage vs. Bubbler stage:	Regression: Bubbler stage = 0.928 * (QA stage) + 0.2929 r <sup>2</sup> = 0.9724

Observed stage vs. QA Flow:	Regression: Observed stage = $8.5459 * (QA \text{ flow}) - 31.078$ $r^2 = 0.9376$
Weir Stick Flow vs Bubbler Flow:	Regression: Flow = $0.7948 * (\text{Bubbler flow}) + 0.4668$ $r^2 = 0.8968$
Flow Calculation:	Flow = $3.33 * 4.33 * ((\text{Bubbler stage} - \text{offset})^{1.5})$
Expected Boundaries for Data (QA):	
Minimum flow:	0.00 CFS
Maximum flow:	45.00 CFS
Minimum EC:	200 $\mu\text{S/cm}$
Maximum EC:	2,000 $\mu\text{S/cm}$

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**DO-35 Westley Wasteway QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Westley WW	1/11/2006	9:40	TT011106P92	WS	
Westley WW	2/8/2006	10:45	TT020806P102	WS	
Westley WW	3/8/2006	10:00	TT030806P112	WS	
Westley WW	5/9/2006	10:00	TT050906P132	WS	
Westley WW	6/6/2006	9:30	TT060606P142	WS	
Westley WW	8/1/2006	na	F10P48	WS	
Westley WW	8/22/2006	11:00	TT082206Pxx	WS	
Westley WW	9/5/2006	9:00	F10P77	WS	
Westley WW	9/28/2006	11:45	TT092806P16	WS	
Westley WW	10/3/2006	10:00	F9P133	WS	
Westley WW	10/27/2006	10:30	TT102806P24	WS	
Westley WW	11/17/2006	10:00	TT111706P33	WS	
Westley WW	12/8/2006	9:45	TT1208006P42	WS	
Westley WW	1/19/2007	10:00	TTP51	WS	
Westley WW	3/6/2007	10:45	TTP66	WS	
Westley WW	4/13/2007	12:30	TTP75	WS	
Westley WW	5/29/2007	11:30	F12P78N2	WS	
Westley WW	6/19/2007	12:45	F12P129N2	WS	
Westley WW	7/10/2007	15:30	F14P28	WS	
Westley WW	8/14/2007	11:30	F14P122	WS	
Westley WW	9/11/2007	11:30	F15P56	WS	There was heavy silt buildup around bubbler.
Westley WW	10/9/2007	11:40	FF15P122	WS	
Westley WW	11/1/2007	12:15	F15P144	WS	

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**DO-35 Westley Wasteway QA data**


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Reference			Measured Variables							
Site	Date	Time	Bubbler reading	Staff Gauge Stage	ITRC Weirstick reading	EC QA from handheld meter (µS/cm)	Pre-cleaning EC from logger (µS/cm)	Post-Cleaning EC from logger (µS/cm)	Temp QA from handheld meter (°C)	Temp from Logger (°F)
Westley WW	1/11/2006	9:40	1.714	na	na	190	na	na	9.15	na
Westley WW	2/8/2006	10:45	0.587	na	na	356	na	na	7.51	na
Westley WW	3/8/2006	10:00	0.073	0.29	na	257	275	259	7.61	45.71
Westley WW	5/9/2006	10:00	0.53	0.80	na	230	415	350	19.36	60.25
Westley WW	6/6/2006	9:30	2.158	1.69	na	413	318	390	22.22	73.06
Westley WW	8/1/2006	na	na	3.70	1	na	na	na	na	na
Westley WW	8/22/2006	11:00	na	na	0.75	614	na	na	26.95	na
Westley WW	9/5/2006	9:00	3.89	3.89	0.5	450	449	455	65	65.76
Westley WW	9/28/2006	11:45	3.968	na	na	440	451	438	21.52	69.86
Westley WW	10/3/2006	10:00	3.689	3.69	0.1	na	na	na	na	na
Westley WW	10/27/2006	10:30	3.787	3.78	0.29	389	511	456	9.95	49.3
Westley WW	11/17/2006	10:00	3.836	3.83	0.5	443	634	425	15.52	58.23
Westley WW	12/8/2006	9:45	3.717	3.68	0.1	517	1176	575	5.39	39.92
Westley WW	1/19/2007	10:00	3.707	3.69	0.1	655	938	720	1.32	35.17
Westley WW	3/6/2007	10:45	3.832	3.83	0.4	542	594	545	12.2	52.41
Westley WW	4/13/2007	12:30	3.98	3.94	0.7	1082	1062	1070	21.21	57.69
Westley WW	5/29/2007	11:30	3.741	3.74	0.15	1296	1068	1325	27.13	76.04
Westley WW	6/19/2007	12:45	3.761	3.76	0.2	453	688	505	32.52	89.94
Westley WW	7/10/2007	15:30	3.962	3.96	0.8	1213	1159	1280	28.93	84.06
Westley WW	8/14/2007	11:30	3.75	3.70	0.1	918	949	895	26.02	79.5
Westley WW	9/11/2007	11:30	4.03	3.90	0.5	1232	959	1254	24.39	70.71
Westley WW	10/9/2007	11:40	3.956	3.90	0.5	607	628	614	15.43	60.76
Westley WW	11/1/2007	12:15	4.17	4.20	1	560		592	17.38	63.95

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**DO-35 Westley Wasteway QA data**


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<b>Reference</b>							
<b>Site</b>	<b>Date</b>	<b>Time</b>	<b>Constants</b>	<b>Width of</b>	<b>Bubbler to staff</b>	<b>Top of weir offset</b>	<b>Rating</b>
			<b>Structure/ Equipment</b>	<b>weir (ft)</b>	<b>gauge offset</b>		<b>Quality</b>
Westley WW	1/11/2006	9:40	Weir/bubbler	4.33			poor
Westley WW	2/8/2006	10:45	Weir/bubbler	4.33			poor
Westley WW	3/8/2006	10:00	Weir/bubbler	4.33	0.217		poor
Westley WW	5/9/2006	10:00	Weir/bubbler	4.33	0.270		poor
Westley WW	6/6/2006	9:30	Weir/bubbler	4.33	-0.468		poor
Westley WW	8/1/2006	na	Weir/bubbler	4.33			poor
Westley WW	8/22/2006	11:00	Weir/bubbler	4.33			poor
Westley WW	9/5/2006	9:00	Weir/bubbler	4.33	-0.005	3.608	fair
Westley WW	9/28/2006	11:45	Weir/bubbler	4.33			fair
Westley WW	10/3/2006	10:00	Weir/bubbler	4.33	0.001	3.592	fair
Westley WW	10/27/2006	10:30	Weir/bubbler	4.33	-0.007	3.591	fair
Westley WW	11/17/2006	10:00	Weir/bubbler	4.33	-0.006	3.554	fair
Westley WW	12/8/2006	9:45	Weir/bubbler	4.33	-0.037	3.620	fair
Westley WW	1/19/2007	10:00	Weir/bubbler	4.33	-0.017	3.610	good
Westley WW	3/6/2007	10:45	Weir/bubbler	4.33	-0.002	3.589	good
Westley WW	4/13/2007	12:30	Weir/bubbler	4.33	-0.040	3.626	good
Westley WW	5/29/2007	11:30	Weir/bubbler	4.33	-0.001	3.614	good
Westley WW	6/19/2007	12:45	Weir/bubbler	4.33	0.000	3.608	good
Westley WW	7/10/2007	15:30	Weir/bubbler	4.33	-0.002	3.576	good
Westley WW	8/14/2007	11:30	Weir/bubbler	4.33	-0.050	3.653	good
Westley WW	9/11/2007	11:30	Weir/bubbler	4.33	-0.130	3.748	fair
Westley WW	10/9/2007	11:40	Weir/bubbler	4.33	-0.056	3.674	good
Westley WW	11/1/2007	12:15	Weir/bubbler	4.33	0.030	3.722	good

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**DO-35 Westley Wasteway QA data**

Reference Site	Date	Time	Calculations						
			Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)	
Westley WW	1/11/2006	9:40							
Westley WW	2/8/2006	10:45							
Westley WW	3/8/2006	10:00				107.00	100.78	100.03	
Westley WW	5/9/2006	10:00				180.43	152.17	90.13	
Westley WW	6/6/2006	9:30				77.00	94.43	101.48	
Westley WW	8/1/2006	na	0.45	4.33					
Westley WW	8/22/2006	11:00	0.37	3.25					
Westley WW	9/5/2006	9:00	0.28	2.17	2.37	99.78	101.11	101.17	
Westley WW	9/28/2006	11:45			3.35	102.50	99.55	98.76	
Westley WW	10/3/2006	10:00	0.10	0.43	0.45				
Westley WW	10/27/2006	10:30	0.20	1.26	1.26	131.36	117.22	98.78	
Westley WW	11/17/2006	10:00	0.28	2.17	1.76	143.12	95.94	97.15	
Westley WW	12/8/2006	9:45	0.10	0.43	0.65	227.47	111.22	95.73	
Westley WW	1/19/2007	10:00	0.10	0.43	0.22	143.21	109.92	102.31	
Westley WW	3/6/2007	10:45	0.24	1.73	1.17	109.59	100.55	97.13	
Westley WW	4/13/2007	12:30	0.35	3.03	2.80	98.15	98.89	82.21	
Westley WW	5/29/2007	11:30	0.13	0.65	0.43	82.41	102.24	94.07	
Westley WW	6/19/2007	12:45	0.15	0.87	0.57	151.88	111.48	99.34	
Westley WW	7/10/2007	15:30	0.39	3.46	2.57	95.55	105.52	99.98	
Westley WW	8/14/2007	11:30	0.10	0.43	0.49	103.38	97.49	100.84	
Westley WW	9/11/2007	11:30	0.28	2.17	3.44	77.84	101.79	93.16	
Westley WW	10/9/2007	11:40	0.28	2.17	2.50	103.46	101.15	101.65	
Westley WW	11/1/2007	12:15	0.45	4.33	5.48		105.71	101.05	

## DO-36 Del Puerto Creek Flow Station

**Location:** 37.53947°N -121.1221°W

### Water District or Organization:

**Station Description:** Site is located northeast of intersection of Cox Road and Condit Ave. Data is provided by Jeremy Hanlon with the University of the Pacific. Bubbler failure in mid 2007 caused loss of flow and stage data from July 2007 to November 2007.

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Velocity Sensor:	None
Stage Sensor:	bubbler only
Stage Sensor (Bubbler):	Design Analysis Bubbler
Battery:	Sealed 12V photovoltaic gel
Power:	Solar
Communications:	GOES Transmission
Structure description:	Open streambed
Structure shape:	Lopsided "V", steeper right bank (South)
Structure materials:	Gravel and clay
Staff gage stability:	Two inch metal pipe set 3 feet into ground.
Width of structure:	n/a
Depth of structure:	n/a
Board width:	n/a
Board height:	n/a
Bubbler depth from top of board:	n/a
Bubbler off-set	0.18 feet until 11/1/07, then 0.5 feet
Stage to Flow Relationship:	
Estimated quality:	fair
Date data update or calculated:	1/18/2008
Date QA rating updated:	1/18/2008

Observed stage vs. Bubbler stage: Regression: Bubbler stage = 1.0428 \* (QA stage) - 0.2003  $r^2 = 0.9941$

Flow Calculation:

Bubbler stage vs. QA Flow: Regression: Flow = 19.326 (Bubbler stage) - 6.465  $r^2 = 0.9789$

Expected Boundaries for Data (QA):

Minimum flow: 0.00 CFS

Maximum flow: 40.00 CFS Highest QA flow was 17.81. Anything over this value is extrapolated from rating curve and may or may not be valid.

Minimum EC: 200  $\mu\text{S}/\text{cm}$

Maximum EC: 2,000  $\mu\text{S}/\text{cm}$

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**DO-36 Del Puerto Creek QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Del Puerto	1/11/2006	9:05	TT011106P91	SG	Bubbler flow takes into account different offset.
Del Puerto	2/8/2006	10:00	TT020806P101	SG	Bubbler adjusted to match staff gauge.
Del Puerto	3/8/2006	9:02	TT030806P111	SG	
Del Puerto	4/4/2006	na	TT040406P121	SG	No Access to site due to weather. Backwater conditions.
Del Puerto	5/9/2006	9:40	TT050906	SG	No Access to site due to weather. Backwater conditions.
Del Puerto	6/6/2006	10:10	TT060606P141	SG	No Access to site due to weather. Backwater conditions.
Del Puerto	7/21/2006	10:15	TT072106PXX	SG	
Del Puerto	8/22/2006	9:00	TT082206Pxx	SG	
Del Puerto	9/28/2006	11:00	TT092806P15	SG	
Del Puerto	10/27/2006	9:00	TT102706P23	SG	
Del Puerto	11/17/2006	9:30	TT111706P31	SG	
Del Puerto	12/8/2006	9:20	TT120806P41	SG	
Del Puerto	1/19/2007	9:25	TTP50	SG	
Del Puerto	2/13/2007	9:30		SG	No Access to site due to weather
Del Puerto	3/6/2007	10:05	TTP65	SG	
Del Puerto	4/13/2007	11:40	TTP74	SG	
Del Puerto	5/29/2007	10:45	F12P78N1	SG	
Del Puerto	6/18/2007	12:04	F12P129	SG	
Del Puerto	7/10/2007	14:45	F14P27	SG	
Del Puerto	8/14/2007	10:30	F14P121	SG	
Del Puerto	9/11/2007	10:15	F15P56	SG	Bubbler line is clogged, needs to be repaired.
Del Puerto	10/9/2007	10:10	F15P122	SG	Bubbler line is clogged, needs to be repaired.
Del Puerto	11/1/2007	12:00	F15P144	SG	Bubbler line was repaired and moved up by 0.318ft.
Del Puerto	12/13/2007	na		SG	No Access to site due to weather

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**DO-36 Del Puerto Creek QA data**

Reference		Measured Variables								
Site	Date	Time	Bubbler reading	Staff Gauge Stage	ITRC Weirstick reading	EC QA from handheld meter (µS/cm)	Pre-cleaning EC from logger (µS/cm)	Post-Cleaning EC from logger (µS/cm)	Temp QA from handheld meter (°C)	Temp from Logger (°F)
Del Puerto	1/11/2006	9:05	2.329	1.93	na	533	534	538	8.47	47.54
Del Puerto	2/8/2006	10:00	1.155	0.60	na	425	414	416	9.16	48.65
Del Puerto	3/8/2006	9:02	0.167	0.46	na	814	793	830	9.53	49.02
Del Puerto	4/4/2006	na	2.22	na	na	na	463	463	na	na
Del Puerto	5/9/2006	9:40	7.088	na	na	304	600	600	16.9	65.24
Del Puerto	6/6/2006	10:10	5.025	5.23	na	472	620	473	20.16	68.83
Del Puerto	7/21/2006	10:15	0.992	1.25	na	1096	923	1117	23.92	74.66
Del Puerto	8/22/2006	9:00	0.916	1.15	na	703	623	727	21.24	70.57
Del Puerto	9/28/2006	11:00	0.533	na	na	591	581	583	17.81	64.02
Del Puerto	10/27/2006	9:00	0.739	0.99	na	954	919	964	12.59	54.82
Del Puerto	11/17/2006	9:30	0.574	0.80	na	572	571	604	14.32	57.96
Del Puerto	12/8/2006	9:20	0.455	0.7	na	1060	1063	1079	12.43	54.51
Del Puerto	1/19/2007	9:25	0.578	0.75	na	513	546	494	3.79	39.01
Del Puerto	2/13/2007	9:30	na	na	na	na	na	na	na	na
Del Puerto	3/6/2007	10:05	0.726	0.89	na	777	726	817	13.2	55.05
Del Puerto	4/13/2007	11:40	1.32	1.49	na	1334	1356	1348	14.5	57.32
Del Puerto	5/29/2007	10:45	0.61	0.68	na	1345	1254	1375	21.06	68.75
Del Puerto	6/18/2007	12:04	1.122	1.22	na	949	907	908	24.25	75.01
Del Puerto	7/10/2007	14:45	0.827	0.79	na	1399	1477	1488	25.03	77.01
Del Puerto	8/14/2007	10:30	2.101	1.25	na	1100	977	1101	21.04	69.83
Del Puerto	9/11/2007	10:15	2.269	0.72	na	1332	939	1347	20.44	68.79
Del Puerto	10/9/2007	10:10	3.043	1.14	na	1370	1071	1383	15.49	59.84
Del Puerto	11/1/2007	12:00	0.115	0.62	na	749	802	755	14.62	58.22
Del Puerto	12/13/2007	na	na	na	na	na	na	na	na	na

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**DO-36 Del Puerto Creek QA data**

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<b>Reference</b>			<b>Constants</b>		
Site	Date	Time	Structure/ Equipment	Bubbler to staff gauge offset	Rating Quality
Del Puerto	1/11/2006	9:05	stream/bubbler	-0.399	good
Del Puerto	2/8/2006	10:00	stream/bubbler	-0.555	good
Del Puerto	3/8/2006	9:02	stream/bubbler	0.293	good
Del Puerto	4/4/2006	na	stream/bubbler		good
Del Puerto	5/9/2006	9:40	stream/bubbler		good
Del Puerto	6/6/2006	10:10	stream/bubbler	0.205	good
Del Puerto	7/21/2006	10:15	stream/bubbler	0.258	good
Del Puerto	8/22/2006	9:00	stream/bubbler	0.234	good
Del Puerto	9/28/2006	11:00	stream/bubbler		good
Del Puerto	10/27/2006	9:00	stream/bubbler	0.251	good
Del Puerto	11/17/2006	9:30	stream/bubbler	0.226	good
Del Puerto	12/8/2006	9:20	stream/bubbler	0.245	good
Del Puerto	1/19/2007	9:25	stream/bubbler	0.172	good
Del Puerto	2/13/2007	9:30	stream/bubbler	na	good
Del Puerto	3/6/2007	10:05	stream/bubbler	0.164	good
Del Puerto	4/13/2007	11:40	stream/bubbler	0.170	poor
Del Puerto	5/29/2007	10:45	stream/bubbler	0.070	poor
Del Puerto	6/18/2007	12:04	stream/bubbler	0.098	poor
Del Puerto	7/10/2007	14:45	stream/bubbler	-0.037	poor
Del Puerto	8/14/2007	10:30	stream/bubbler	-0.851	poor
Del Puerto	9/11/2007	10:15	stream/bubbler	-1.549	poor
Del Puerto	10/9/2007	10:10	stream/bubbler	-1.903	poor
Del Puerto	11/1/2007	12:00	stream/bubbler	0.505	fair
Del Puerto	12/13/2007	na	stream/bubbler	-0.399	good

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**DO-36 Del Puerto Creek QA data**

Reference Site	Date	Time	Calculations				Pre-Cleaning EC	Post-Cleaning EC	Temp (% of QA)
			QA Ave Velocity (ft/s)	QA Area (ft <sup>2</sup> )	QA Flow (CFS)	Calculated Flow 19.326x-6.465 (from 11/1/07 on there is a .318 offset) (CFS)			
Del Puerto	1/11/2006	9:05	0.00			42.82	100.19	100.94	100.62
Del Puerto	2/8/2006	10:00	0.00		2.82	2.95	97.41	97.88	100.33
Del Puerto	3/8/2006	9:02	0.00	1.33	2.19	1.98	97.42	101.97	99.73
Del Puerto	4/4/2006	na	0.00			95.52			
Del Puerto	5/9/2006	9:40	0.00			1023.98	197.37	197.37	104.52
Del Puerto	6/6/2006	10:10	0.00			509.13	131.36	100.21	100.79
Del Puerto	7/21/2006	10:15	2.27	6.85	16.93	18.32	84.22	101.92	99.47
Del Puerto	8/22/2006	9:00	2.12	7.32	17.42	15.62	88.62	103.41	100.48
Del Puerto	9/28/2006	11:00	0.00			5.71	98.31	98.65	99.94
Del Puerto	10/27/2006	9:00	1.98	5.50	10.37	10.28	96.33	101.05	100.29
Del Puerto	11/17/2006	9:30	1.41	3.78	6.07	6.48	99.83	105.59	100.32
Del Puerto	12/8/2006	9:20	1.37	2.97	4.14	4.44	100.28	101.79	100.25
Del Puerto	1/19/2007	9:25	1.09	3.20	4.13	4.71	106.43	96.30	100.48
Del Puerto	2/13/2007	9:30	na	na	na	na	na	na	na
Del Puerto	3/6/2007	10:05	1.64	4.39	7.65	7.57	93.44	105.15	98.73
Del Puerto	4/13/2007	11:40	1.55	10.90	17.81	19.05	101.65	101.05	98.66
Del Puerto	5/29/2007	10:45	0.88	2.71	2.99	5.32	93.23	102.23	98.34
Del Puerto	6/18/2007	12:04	1.97	8.23	16.94	15.22	95.57	95.68	99.15
Del Puerto	7/10/2007	14:45	1.16	3.86	5.20	9.52	105.58	106.36	99.94
Del Puerto	8/14/2007	10:30	1.16	8.21	10.64	34.14	88.82	100.09	99.94
Del Puerto	9/11/2007	10:15	1.04	3.00	3.37	37.39	70.50	101.13	100.00
Del Puerto	10/9/2007	10:10	1.59	7.54	12.54	52.34	78.18	100.95	99.93
Del Puerto	11/1/2007	12:00	1.59	7.54	2.33	1.90	107.08	100.80	99.84
Del Puerto	12/13/2007	na	na	na	na	na	na	na	na

## DO-38 Marshall Road Drain

**Location:** 37.43605°N -121.036°W

**Water District or Organization:**

**Station Description:** Station is at the bend in Marshall Road. Data provided by Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Velocity Sensor:	Unidata Starflow
Stage Sensor (Primary):	Design Analysis Bubbler
Stage Sensor (Secondary):	Unidata Starflow
Battery:	Sealed 12V photovoltaic gel
Power:	Solar
Communications:	GOES Transmission
Structure description:	Concrete culvert, square
Structure shape:	Square
Structure materials:	Concrete
Staff gage stability:	No staff gage, measure with hand-held gage.
Width of structure:	Culvert 3 ft by 3 feet
Depth of structure:	Bottom of culvert 0.4 feet below pipe opening.
Board width:	4.67 feet
Board height:	approx 1.56 feet
Bubbler depth from top of board:	At floor of box, approx. 1.56 feet
Bubbler off-set	1.545 feet
Stage to Flow Relationship:	
Estimated quality:	good
Date data update or calculated:	1/24/2008
Date QA rating updated:	1/25/2008

Observed stage vs. Bubbler stage:	Regression: $\text{Bubbler stage} = 0.9381 * (\text{QA stage}) + 0.0468 r^2 = 0.8365$
Bubbler stage vs. QA Flow:	Regression: $\text{Flow} = 19.029 * (\text{Bubbler stage})^2 - 54.839 * (\text{Bubbler stage}) + 38.929 r^2 = 0.9814$
Weir Stick Flow vs Bubbler Flow:	$\text{Flow} = 0.0524 (\text{Weir stick flow})^2 + 0.8633 * (\text{Weir stick flow})$
Ideal Weir equation:	$\text{Flow} = 3.33 * 4.66 * (\text{Bubbler stage}-\text{offset})^{1.5}$
Flow Calculation:	$\text{Flow} = (3.33 * 4.66 * ((\text{Bubbler stage}-1.545)^{1.5}))^2 * 0.0524 + 0.8633 * (3.33 * 4.66 * (\text{Bubbler stage}-1.545)^{1.5}) r^2 = 0.9814$
Expected Boundaries for Data (QA):	
Minimum flow for year:	0.00 CFS
Maximum flow for year:	10.20 CFS Flow values above this are beyond calibration curve and based solely on extrapolated calculation.
Minimum EC:	200 $\mu\text{S/cm}$ Values below this were recorded while the sensor was out of the water.
Maximum EC:	2,000 $\mu\text{S/cm}$

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**DO-38 Marshall Road Drain QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Marshall Road	1/11/2006	8:15	TT011106P88	WS	
Marshall Road	2/8/2006	8:20	TT020806P97	WS	
Marshall Road	3/8/2006	8:00	TT030806P107	WS	Added an 8" board to weir structure.
Marshall Road	4/4/2006	8:30	TT040406P117	WS	
Marshall Road	5/9/2006	8:00	TT050906P127	WS	Bubbler line had a leak and was repaired. A weirboard became dislodged and floated out because the weir was submerged.
Marshall Road	6/6/2006	11:00	TT060606P137	WS	
Marshall Road	7/21/2006	9:00	TT072106Pxx	WS	
Marshall Road	8/22/2006	8:30	TT082206Pxx	WS	
Marshall Road	9/28/2006	9:45	TT092806P12	WS	
Marshall Road	10/3/2006	8:30	F9P133N2	WS	
Marshall Road	10/27/2006	8:30	TT102706P20	WS	
Marshall Road	11/17/2006	8:45	TT111706P28	WS	
Marshall Road	12/8/2006	8:15	TT120806P38	WS	
Marshall Road	1/19/2007	8:15	TTP47	WS	
Marshall Road	2/13/2007	8:30	TTP56	WS	
Marshall Road	3/6/2007	8:45	TTP62	WS	
Marshall Road	4/13/2007	9:15	TTP70	WS	
Marshall Road	5/22/2007	9:30	F12P64N2	WS	
Marshall Road	6/19/2007	9:00	F12P127N4	WS	
Marshall Road	7/10/2007	11:30	F14P26	WS	
Marshall Road	8/14/2007	8:30	F14P120	WS	
Marshall Road	9/11/2007	8:45	F15P55	WS	
Marshall Road	10/9/2007	8:30	F15P121	WS	

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**DO-38 Marshall Road Drain QA data**


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Reference		Measured Variables								
Site	Date	Time	Bubbler reading	Staff Gauge Stage	ITRC Weirstick reading	EC QA from handheld meter ( $\mu\text{S}/\text{cm}$ )	Pre-cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Post-Cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Temp QA from handheld meter ( $^{\circ}\text{C}$ )	Temp from Logger ( $^{\circ}\text{F}$ )
Marshall Road	1/11/2006	8:15	0.98	na	0	547	564	523	10.67	51.29
Marshall Road	2/8/2006	8:20	1.007	0.99	0.02	885	935	890	13.09	55.31
Marshall Road	3/8/2006	8:00	0.991	na	na	305	316	308	12.49	55.03
Marshall Road	4/4/2006	8:30	1.398	1.74	0.35	182	200	196	13.81	57.84
Marshall Road	5/9/2006	8:00	3.923	na	na	712	858	623	17.99	65.86
Marshall Road	6/6/2006	11:00	1.94	1.94	0.9	187	123	185	20.96	69.66
Marshall Road	7/21/2006	9:00	2.15	2.18	na	816	285	816	23.92	75.12
Marshall Road	8/22/2006	8:30	2.051	2.05	1.3	639	436	695	19.96	68
Marshall Road	9/28/2006	9:45	1.708	na	na	638	678	645	18.64	65.76
Marshall Road	10/3/2006	8:30	1.958	1.94	0.9	na	na	na	na	na
Marshall Road	10/27/2006	8:30	1.874	1.86	0.6	665	680	675	12.38	54.12
Marshall Road	11/17/2006	8:45	1.662	1.65	0.08	446	478		14.56	58.78
Marshall Road	12/8/2006	8:15	1.597	1.56	na	1300	1341		10.7	51.64
Marshall Road	1/19/2007	8:15	1.677	1.65	0.1	988	1074	1082	8.46	47.74
Marshall Road	2/13/2007	8:30	1.84	1.60	0.4	522	547	556	12.9	54.62
Marshall Road	3/6/2007	8:45	1.7	1.58	0.02	663	709	701	14.45	58.25
Marshall Road	4/13/2007	9:15	1.827	1.82	0.5	1387	1343	1568	11.94	53.56
Marshall Road	5/22/2007	9:30	2.127	1.95	1.8	858	584	874	na	61.63
Marshall Road	6/19/2007	9:00	1.854	1.83	0.8	680	741	721	21.83	71.08
Marshall Road	7/10/2007	11:30	2.19	2.20	2.2	1302	809	1393	23.74	74.69
Marshall Road	8/14/2007	8:30	1.892	1.86	0.7	1286	980	1310	20.96	69.52
Marshall Road	9/11/2007	8:45	1.8	1.73	0.4	1152	1166	1147	22.27	71.98
Marshall Road	10/9/2007	8:30	1.624	1.60	0.07	1253	1282	1264	17.3	63.15

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**DO-38 Marshall Road Drain QA data**

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<b>Reference</b>				<b>Constants</b>			
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
Marshall Road	1/11/2006	8:15	Weir/bubbler	4.6		0.980	poor
Marshall Road	2/8/2006	8:20	Weir/bubbler	4.6	-0.017	0.974	poor
Marshall Road	3/8/2006	8:00	Weir/bubbler	4.6			poor
Marshall Road	4/4/2006	8:30	Weir/bubbler	4.6	0.342	1.175	poor
Marshall Road	5/9/2006	8:00	Weir/bubbler	4.6			poor
Marshall Road	6/6/2006	11:00	Weir/bubbler	4.6	0.000	1.522	good
Marshall Road	7/21/2006	9:00	Weir/bubbler	4.6	0.030		good
Marshall Road	8/22/2006	8:30	Weir/bubbler	4.6	-0.001	1.517	good
Marshall Road	9/28/2006	9:45	Weir/bubbler	4.6			good
Marshall Road	10/3/2006	8:30	Weir/bubbler	4.6	-0.018	1.540	good
Marshall Road	10/27/2006	8:30	Weir/bubbler	4.6	-0.014	1.555	good
Marshall Road	11/17/2006	8:45	Weir/bubbler	4.6	-0.012	1.579	good
Marshall Road	12/8/2006	8:15	Weir/bubbler	4.6	-0.037		good
Marshall Road	1/19/2007	8:15	Weir/bubbler	4.6	-0.027	1.580	good
Marshall Road	2/13/2007	8:30	Weir/bubbler	4.6	-0.240	1.597	good
Marshall Road	3/6/2007	8:45	Weir/bubbler	4.6	-0.120	1.667	good
Marshall Road	4/13/2007	9:15	Weir/bubbler	4.6	-0.007	1.545	good
Marshall Road	5/22/2007	9:30	Weir/bubbler	4.6	-0.177	1.463	good
Marshall Road	6/19/2007	9:00	Weir/bubbler	4.6	-0.024	1.468	good
Marshall Road	7/10/2007	11:30	Weir/bubbler	4.6	0.010	1.431	good
Marshall Road	8/14/2007	8:30	Weir/bubbler	4.6	-0.032	1.538	good
Marshall Road	9/11/2007	8:45	Weir/bubbler	4.6	-0.070	1.557	good
Marshall Road	10/9/2007	8:30	Weir/bubbler	4.6	-0.024	1.548	good

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**DO-38 Marshall Road Drain QA data**


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Reference Site	Date	Time	Calculations Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Marshall Road	1/11/2006	8:15	0.00	0.00	0.00	103.11	95.61	100.16
Marshall Road	2/8/2006	8:20	0.03	0.09	0.07	105.65	100.56	99.55
Marshall Road	3/8/2006	8:00			0.02	103.61	100.98	101.01
Marshall Road	4/4/2006	8:30	0.22	1.61	4.14	109.89	107.69	101.73
Marshall Road	5/9/2006	8:00			77.34	120.51	87.50	102.30
Marshall Road	6/6/2006	11:00	0.42	4.14	3.88	65.78	98.93	99.90
Marshall Road	7/21/2006	9:00			7.30	34.93	100.00	100.09
Marshall Road	8/22/2006	8:30	0.53	5.98	5.60	68.23	108.76	100.11
Marshall Road	9/28/2006	9:45			1.05	106.27	101.10	100.32
Marshall Road	10/3/2006	8:30	0.42	4.14	4.14			
Marshall Road	10/27/2006	8:30	0.32	2.76	2.96	102.26	101.50	99.70
Marshall Road	11/17/2006	8:45	0.08	0.37	0.65	107.17	0.00	100.98
Marshall Road	12/8/2006	8:15			0.18	103.15	0.00	100.74
Marshall Road	1/19/2007	8:15	0.10	0.46	0.73	108.70	109.51	101.08
Marshall Road	2/13/2007	8:30	0.24	1.84	2.45	104.79	106.51	98.91
Marshall Road	3/6/2007	8:45	0.03	0.09	0.93	106.94	105.73	100.41
Marshall Road	4/13/2007	9:15	0.28	2.30	2.29	96.83	113.05	100.13
Marshall Road	5/22/2007	9:30	0.66	8.28	6.80	68.07	101.86	
Marshall Road	6/19/2007	9:00	0.39	3.68	2.63	108.97	106.03	99.70
Marshall Road	7/10/2007	11:30	0.76	10.12	7.93	62.14	106.99	99.94
Marshall Road	8/14/2007	8:30	0.35	3.22	3.13	76.21	101.87	99.70
Marshall Road	9/11/2007	8:45	0.24	1.84	1.97	101.22	99.57	99.85
Marshall Road	10/9/2007	8:30	0.08	0.32	0.34	102.31	100.88	100.02

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## DO-40 Patterson Irrigation District

**Location:** 37.49716°N -121.08280°W

**Water District or Organization:** Patterson Irrigation District.

**Station Description:** Station is owned and operated by Patterson Irrigation District. Data provided from John Sweigard (General Manager of Patterson Irrigation District) and Chris Linneman (Summers Engineering).

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Chris Linneman
Stage to Flow Relationship:	Rating unknown.
Estimated data quality:	Unknown
Date updated or calculated:	08/17/2007
Flow Calculation:	Rating unknown.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-41 West Stanislaus Irrigation District Diversion

**Location:** 37.58438°N -121.20053°W

**Water District or Organization:** West Stanislaus Irrigation District.

**Station Description:** West Stanislaus Irrigation District Diversion. Data provided by Chris Linneman from Ron Roos.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Ron Roos and Chris Linneman
Stage to Flow Relationship:	Rating unknown.
Estimated data quality:	Unknown
Date updated or calculated:	02/05/2008
Flow Calculation:	Rating unknown.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-44 San Luis Drain End

**Location:** 37.2609°N -120.9052°W

**Water District or Organization:** Grasslands Bypass Project and the San Francisco Estuary Institute

**Station Description:** Data provided from Chris Linneman with Summers Engineering.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Chris Linneman (Summers Engineering).
Stage to Flow Relationship:	Rating unknown.
Estimated data quality:	Unknown
Date updated or calculated:	7/27/2007
Flow Calculation:	Rating unknown.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-45 Volta Wasteway

**Location:** 37.105°N -120.936°W

**Water District or Organization:** Grassland Water District.

**Station Description:** Site is an open channel streambed with a Sontek Doppler meter. Data provided by Lara Sparks (Fish and Game and Grassland Water District) and Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Campbell CR10x
Conductivity Probe:	Campbell
Velocity Sensor:	Sontek SL
Stage Sensor:	Sontek SL
Stage Sensor (Bubbler):	n/a
Battery:	12V
Power:	Solar
Communications:	GOES
Stage to Flow Relationship:	
Estimated quality:	Poor
Date data update or calculated:	11/7/2007
Date QA rating updated:	7/20/2007
Observed stage vs. Sontek stage:	QA stage = $0.9551 * (\text{Sontek stage}) + 1.7415$ $r^2 = 0.9334$
Observed stage vs. QA Flow:	Regression: Flow = $10.249 * (e^{0.1686(\text{stage})})$ $r^2 = 0.9052$
Flow Calculation:	Flow = (Sontek Calculated Area) * Velocity
TDS or Salt Calculation:	salt mg/l = EC*0.64
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

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**DO-45 Volta Wasteway QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Volta WW	1/9/2006	13:45	G2P20	SG	Staff gauge loose and moving.
Volta WW	2/2/2006	11:45	G2P27	SG	
Volta WW	3/1/2006	12:00	G2P34	SG	
Volta WW	5/8/2006	12:45	G2P53	SG	
Volta WW	6/9/2006	9:00	G2P57	SG	
Volta WW	7/6/2006	10:15	G2P63	SG	
Volta WW	7/28/2006		F10P44	SG	
Volta WW	8/31/2006	13:45	G2P72	SG	
Volta WW	9/21/2006	11:00	G2P76	SG	
Volta WW	10/10/2006	8:15	G2P76	SG	
Volta WW	11/30/2006	13:45	G2P85	SG	
Volta WW	12/21/2006	12:15	G2P90	SG	
Volta WW	2/14/2007	12:12	G2P95	SG	
Volta WW	3/12/2007	12:11	G2P97	SG	Tried to rate, but water was too high to wade.
Volta WW	4/5/2007	13:50	G2P102	SG	
Volta WW	5/1/2007	12:09	G2P105	SG	
Volta WW	5/29/2007	15:32	G2P108	SG	
Volta WW	6/22/2007	13:59	G2P113	SG	
Volta WW	7/20/2007	7:55	G2P115	SG	Staff gauge loose and moving.

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**DO-45 Volta Wasteway QA data**


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Reference			Measured Variables							
Site	Date	Time	Sontek reading	Staff Gauge Stage	ITRC Weirstick reading	EC QA from handheld meter ( $\mu\text{S}/\text{cm}$ )	Pre-cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Post-Cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Temp QA from handheld meter ( $^{\circ}\text{F}$ )	Temp from Logger ( $^{\circ}\text{F}$ )
Volta WW	1/9/2006	13:45	1.91	na	na	2023	1928		54.9	54.41
Volta WW	2/2/2006	11:45	2.44	3.93	na	956.5	999		58.3	57.04
Volta WW	3/1/2006	12:00	2.32	3.81	na	1218	1397		60	57.61
Volta WW	5/8/2006	12:45	0.088	1.83	na	744.5	715		72.7	71.9
Volta WW	6/9/2006	9:00	na	2.04	na	896.7	910		70.7	70.5
Volta WW	7/6/2006	10:15	0.82	2.51	na	714.2	706		73.8	73.7
Volta WW	7/28/2006			2.62	na	na	na		na	na
Volta WW	8/31/2006	13:45	2.21	4.20	na	441.1	431		77.2	76.5
Volta WW	9/21/2006	11:00	3.11	4.98	na	398	388		68.2	67.67
Volta WW	10/10/2006	8:15	2.68	4.60	na	385.7	437		62.4	64.94
Volta WW	11/30/2006	13:45	2.81	4.04	na	741.6	717		51.1	51.8
Volta WW	12/21/2006	12:15	2.7	4.09	na	700.8	695		47.5	47.4
Volta WW	2/14/2007	12:12	3.07	4.19	na	1533	2501	1761	56.3	55.3
Volta WW	3/12/2007	12:11	2.66	4.27	na	1190	2329	1306	67.1	64.7
Volta WW	4/5/2007	13:50	0.38	2.18	na	1549	1545	1606	69.6	68.8
Volta WW	5/1/2007	12:09	1.04	2.92	na	547.4	540	543	68.5	68.2
Volta WW	5/29/2007	15:32	0.89	2.80	na	716.9	711	729	74.3	74
Volta WW	6/22/2007	13:59	0.8	2.64	na	600.5	591	617	80.2	80.4
Volta WW	7/20/2007	7:55	0.47	2.34	na	1207	1198	1198	73.6	74

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**DO-45 Volta Wasteway QA data**

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<b>Reference</b>	<b>Constants</b>				
Site	Date	Time	Structure/ Equipment	Bubbler to staff gauge offset	Rating Quality
Volta WW	1/9/2006	13:45	stream/bubbler		poor
Volta WW	2/2/2006	11:45	stream/bubbler	1.490	poor
Volta WW	3/1/2006	12:00	stream/bubbler	1.490	poor
Volta WW	5/8/2006	12:45	stream/bubbler	1.742	poor
Volta WW	6/9/2006	9:00	stream/bubbler		poor
Volta WW	7/6/2006	10:15	stream/bubbler	1.690	poor
Volta WW	7/28/2006		stream/bubbler	2.620	poor
Volta WW	8/31/2006	13:45	stream/bubbler	1.990	poor
Volta WW	9/21/2006	11:00	stream/bubbler	1.870	poor
Volta WW	10/10/2006	8:15	stream/bubbler	1.920	poor
Volta WW	11/30/2006	13:45	stream/bubbler	1.230	poor
Volta WW	12/21/2006	12:15	stream/bubbler	1.390	poor
Volta WW	2/14/2007	12:12	stream/bubbler	1.120	poor
Volta WW	3/12/2007	12:11	stream/bubbler	1.610	poor
Volta WW	4/5/2007	13:50	stream/bubbler	1.800	poor
Volta WW	5/1/2007	12:09	stream/bubbler	1.880	poor
Volta WW	5/29/2007	15:32	stream/bubbler	1.910	poor
Volta WW	6/22/2007	13:59	stream/bubbler	1.840	poor
Volta WW	7/20/2007	7:55	stream/bubbler	1.870	poor

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**DO-45 Volta Wasteway QA data**

Reference			Calculations								
Site	Date	Time	QA Ave Velocity (ft/s)	QA Area (ft <sup>2</sup> )	QA Flow (CFS)	Sontek Area (ft <sup>2</sup> )	Sontek Velocity (ft/s)	Sontek Flow (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Volta WW	1/9/2006	13:45	0.08	139.40	14.56	156.92	0.10	15.69	95.30	0.00	99.11
Volta WW	2/2/2006	11:45	0.10	172.12	20.38	182.98	0.13	23.79			
Volta WW	3/1/2006	12:00				177.08			114.70	0.00	96.02
Volta WW	5/8/2006	12:45	0.14	79.72	14.49	67.35	0.27	18.18			
Volta WW	6/9/2006	9:00							101.48	0.00	99.72
Volta WW	7/6/2006	10:15				103.33					
Volta WW	7/28/2006		0.12	101.93	14.92	63.02	0.23	14.49			
Volta WW	8/31/2006	13:45									
Volta WW	9/21/2006	11:00									
Volta WW	10/10/2006	8:15									
Volta WW	11/30/2006	13:45									
Volta WW	12/21/2006	12:15									
Volta WW	2/14/2007	12:12	n/a	n/a	n/a	213.95	0.13	27.81	163.14	114.87	98.22
Volta WW	3/12/2007	12:11	n/a	n/a	n/a	193.79	0.15	29.07	195.71	109.75	96.42
Volta WW	4/5/2007	13:50	n/a	n/a	n/a	81.70	0.25	20.43	99.74	103.68	98.85
Volta WW	5/1/2007	12:09	n/a	n/a	n/a	114.15	0.76	86.75	98.65	99.20	99.56
Volta WW	5/29/2007	15:32	n/a	n/a	n/a	106.78	0.4	42.71	99.18	101.69	99.60
Volta WW	6/22/2007	13:59	n/a	n/a	n/a	102.35	0.23	23.54	98.42	102.75	100.25
Volta WW	7/20/2007	7:55	n/a	n/a	n/a	86.13	0.18	15.50	99.25	99.25	100.54

## DO-46 Mud Slough at Gun Club Road

**Location:** 37.23145°N -120.89923°W

**Water District or Organization:** Grassland Water District

**Station Description:** Data provided by Lara Sparks (Fish and Game and Grassland Water District) and Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Stage to Flow Relationship:	
Estimated quality:	Good
Date data update or calculated:	8/17/2007
Date QA rating updated:	12/21/2006
Observed stage vs. Keller stage:	Regression: Keller stage = 0.9581 * (QA stage) + 0.7616 r <sup>2</sup> = 0.9995
Keller stage vs. QA Flow:	Regression: QA Flow = 13.906 * (Keller stage) <sup>2</sup> - 29.417 * (Keller stage) + 15.483 r <sup>2</sup> = 0.9998
QA Flow vs. calculated Flow:	Regression: QA Flow = 0.8429 * (Calculated flow) - 0.042 r <sup>2</sup> = 0.9996
TDS or Salt Calculation:	salt mg/l = EC * 0.64
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

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**DO-46 Mud Slough at Gun Club Road QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Mud Slough at Gun Club Rd.	1/9/2006	12:45	G2P19	SG	Water level is above top of staff gauge, staff reading is an estimate.
Mud Slough at Gun Club Rd.	2/2/2006	10:30	G2P25	SG	
Mud Slough at Gun Club Rd.	3/1/2006	9:45	G2P32	SG	Water level is above top of staff gauge, staff reading is an estimate.
Mud Slough at Gun Club Rd.	4/19/2006	12:15	G2P42	SG	
Mud Slough at Gun Club Rd.	5/8/2006	11:15	G2P48	SG	
Mud Slough at Gun Club Rd.	6/9/2006	12:15	G2P59	SG	
Mud Slough at Gun Club Rd.	7/9/2006	11:30	G2P63	SG	
Mud Slough at Gun Club Rd.	7/28/2006	10:30	F10P44	SG	
Mud Slough at Gun Club Rd.	8/31/2006	12:45	G2P71	SG	
Mud Slough at Gun Club Rd.	11/30/2006	14:45	G2P85	SG	
Mud Slough at Gun Club Rd.	12/21/2006	11:00	G2P90	SG	

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**DO-46 Mud Slough at Gun Club Road QA data**


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Reference			Measured Variables						
Site	Date	Time	Keller reading	Staff Gauge Stage	EC QA from handheld meter ( $\mu\text{S}/\text{cm}$ )	Pre-cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Post-Cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Temp QA from handheld meter ( $^{\circ}\text{F}$ )	Temp from Logger ( $^{\circ}\text{F}$ )
Mud Slough at Gun Club Rd.	1/9/2006	12:45	4.116	3.50	1468	1548	1476	52.7	52.75
Mud Slough at Gun Club Rd.	2/2/2006	10:30	2.739	2.06	1963	2055	2055	56.3	56.35
Mud Slough at Gun Club Rd.	3/1/2006	9:45	4.111	3.45	1585	1573	1560	55.8	55.86
Mud Slough at Gun Club Rd.	4/19/2006	12:15	1.9	1.15	2740	2711	2687	64.4	63.89
Mud Slough at Gun Club Rd.	5/8/2006	11:15	1.249	0.48	3350	3291	3314	73.2	75.1
Mud Slough at Gun Club Rd.	6/9/2006	12:15	1.568	0.87	2013	1988	1986	79.7	78.4
Mud Slough at Gun Club Rd.	7/9/2006	11:30	1.375	0.66	1155	1135	1003	77.2	77.1
Mud Slough at Gun Club Rd.	7/28/2006	10:30	1.155	0.41	na	na	Na	na	na
Mud Slough at Gun Club Rd.	8/31/2006	12:45	0.742	-0.02	1064	1098	1049	82.9	83.4
Mud Slough at Gun Club Rd.	11/30/2006	14:45	3.36	2.76	1139	1174	1170	49.1	48.75
Mud Slough at Gun Club Rd.	12/21/2006	11:00	3.27	2.64	1275	1338	1335	44.8	44.9

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**DO-46 Mud Slough at Gun Club Road QA data**

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<b>Reference</b>			<b>Constants</b>		
Site	Date	Time	Structure/ Equipment	Keller to staff gauge offset	Rating Quality
Mud Slough at Gun Club Rd.	1/9/2006	12:45	stream/Sontek/Keller Transducer	-0.616	good
Mud Slough at Gun Club Rd.	2/2/2006	10:30	stream/Sontek/Keller Transducer	-0.679	good
Mud Slough at Gun Club Rd.	3/1/2006	9:45	stream/Sontek/Keller Transducer	-0.661	good
Mud Slough at Gun Club Rd.	4/19/2006	12:15	stream/Sontek/Keller Transducer	-0.75	good
Mud Slough at Gun Club Rd.	5/8/2006	11:15	stream/Sontek/Keller Transducer	-0.769	good
Mud Slough at Gun Club Rd.	6/9/2006	12:15	stream/Sontek/Keller Transducer	-0.698	good
Mud Slough at Gun Club Rd.	7/9/2006	11:30	stream/Sontek/Keller Transducer	-0.715	good
Mud Slough at Gun Club Rd.	7/28/2006	10:30	stream/Sontek/Keller Transducer	-0.745	good
Mud Slough at Gun Club Rd.	8/31/2006	12:45	stream/Sontek/Keller Transducer	-0.762	good
Mud Slough at Gun Club Rd.	11/30/2006	14:45	stream/Sontek/Keller Transducer	-0.6	good
Mud Slough at Gun Club Rd.	12/21/2006	11:00	stream/Sontek/Keller Transducer	-0.63	good

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<b>DO-46 Mud Slough at Gun Club Road QA data</b>											
<b>Reference</b>			<b>Calculations</b>								
Site	Date	Time	QA Ave Velocity (ft/s)	QA Area (ft <sup>2</sup> )	QA Flow (CFS)	Keller Area (ft <sup>2</sup> )	Sontek Velocity (ft/s)	Sontek/Keller Flow (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Mud Slough at Gun Club Rd.	1/9/2006	12:45				97.78	0.82	67.54	105.45	0.00	100.09
Mud Slough at Gun Club Rd.	2/2/2006	10:30	0.61	57.20	39.11	58.46	0.81	39.87	104.69	0.00	100.09
Mud Slough at Gun Club Rd.	3/1/2006	9:45				97.64	1.26	103.65	99.24	0.00	100.11
Mud Slough at Gun Club Rd.	4/19/2006	12:15				34.50	0.81	23.51	98.94	0.00	99.21
Mud Slough at Gun Club Rd.	5/8/2006	11:15	0.05	15.00	1.00	15.90	0.1	1.30	98.24	0.00	102.60
Mud Slough at Gun Club Rd.	6/9/2006	12:15				25.01	0.25	5.23	98.76	0.00	98.37
Mud Slough at Gun Club Rd.	7/9/2006	11:30				19.50	0.17	2.75	98.27	0.00	99.87
Mud Slough at Gun Club Rd.	7/28/2006	10:30	-0.03	14.40	-0.45	13.22	-0.09	-1.04			
Mud Slough at Gun Club Rd.	8/31/2006	12:45				1.43	0.38	0.41	103.20	0.00	100.60
Mud Slough at Gun Club Rd.	11/30/2006	14:45				76.19	1.11	71.24	103.07	0.00	99.29
Mud Slough at Gun Club Rd.	12/21/2006	11:00	0.77	74.60	68.06	73.62	1.09	67.60	104.94	0.00	100.22

## DO-47 Delta Mendota Canal at Highway 140

**Location:** 37.24588°N -121.0773°W

**Water District or Organization:** Delta-Mendota Canal Company

**Station Description:** Flow is from taken from DMC Check 13 at O'Neill Forebay (MP 70.01) which is about 12 miles downstream of sample site. Data direct from Chris Linneman.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Data from Chris Linneman
Stage to Flow Relationship:	Rating unknown.
Estimated data quality:	Unknown
Date updated or calculated:	Unknown
Flow Calculation:	Rating unknown.
TDS or Salt Calculation:	$TDS = SpCond * 0.5317 + 21$
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-48 FC-5 Grassland Area Farmers

**Location:** 36.92428°N -120.65411°W

**Water District or Organization:** Grassland Area Farmers

**Station Description:** Data provided by Chris Linneman (Summers Engineering).

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Chris Linneman
Stage to Flow Relationship:	Rating unknown.
Estimated data quality:	Unknown
Date updated or calculated:	
Flow Calculation:	Rating unknown.
Expected Boundaries for Data (QA):	
Minimum flow for year:	
Maximum flow for year:	
Minimum EC:	
Maximum EC:	

## DO-49 PE-14 Grassland Area Farmers

**Location:** 36.93884°N -120.63555°W

**Water District or Organization:** Grassland Area Farmers

**Station Description:** Data provided by Chris Linneman (Summers Engineering).

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	Unknown
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	Chris Linneman
Stage to Flow Relationship:	Rating unknown.
Estimated data quality:	Unknown
Date updated or calculated:	
Flow Calculation:	Rating unknown.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

## DO-53 Salt Slough at Wolfsen Road Bridge

**Location:** 37.1290°N -120.9197°W

**Water District or Organization:** San Luis National Wildlife Refuge

**Station Description:** Stream is an open channel with a Sontek Doppler meter.

### Station Rating Variables:

Logger:	Campbell CR10X
Conductivity Probe:	Campbell EC
Velocity Sensor:	Sontek Argonaut SL
Stage Sensor:	Sontek Argonaut SL
Battery:	Sealed 12V photovoltaic gel
Power:	40W Solar Panel
Communications:	None
Stage to Flow Relationship:	$\text{Sontek Area} = 77.521 * (\text{Sontek pressure} + \text{offset}) - 62.933$
Sontek stage and velocity data:	$\text{Flow} = (\text{Area} * \text{Velocity}) * 0.6422 - 2.6455$
Estimated data quality:	Fair
TDS or Salt Calculation:	$\text{TDS or Salt mg/L} = \text{EC} * (0.640) * 1000$
Expected Boundaries for Data (QA):	(data outside these boundaries are rejected or flagged)
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

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**DO-53 Salt Slough at Wolfsen Road QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Salt Slough at Wolfsen	1/31/2006	13:10	F5p84	SG	
Salt Slough at Wolfsen	7/11/2006	11:05	F9p14n1-2	SG	
Salt Slough at Wolfsen	7/28/2006	13:00	F10p45n1	SG	
Salt Slough at Wolfsen	9/14/2006	12:55	F9p104n1	SG	
Salt Slough at Wolfsen	12/14/2006	13:00	F11p65n2	SG	

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**DO-53 Salt Slough at Wolfsen Road QA data**


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Reference			Measured Variables							
Site	Date	Time	Staff Gauge Stage	Sontek Pressure	Sontek Vertical Beam	EC QA from handheld meter ( $\mu\text{S}/\text{cm}$ )	Pre-cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Post-Cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Temp QA from handheld meter ( $^{\circ}\text{C}$ )	Temp from Logger ( $^{\circ}\text{F}$ )
Salt Slough at Wolfsen	1/31/2006	13:10	2.93	0.537	1.13		1528	1528		55.33
Salt Slough at Wolfsen	7/11/2006	11:05	2.79	0.319	0.98	826	719	719	26.33	79.2
Salt Slough at Wolfsen	7/28/2006	13:00	2.99	0.406	1.2		874	874		81.1
Salt Slough at Wolfsen	9/14/2006	12:55	2.23	-0.023	0.43	1214	1000	1000	22.77	72.3
Salt Slough at Wolfsen	12/14/2006	13:00	2.00	0.213	0.37	2033	1944	1944	12.5	54.43

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**DO-53 Salt Slough at Wolfsen Road QA data**

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<b>Reference</b>			<b>Constants</b>			
Site	Date	Time	Structure/ Equipment	Sontek pressure to staff gauge offset	Sontek vertical beam to staff gauge offset	Rating Quality
Salt Slough at Wolfsen	1/31/2006	13:10	Natural streambed/Sontek	1.691	1.800	fair
Salt Slough at Wolfsen	7/11/2006	11:05	Natural streambed/Sontek	2.054	1.810	fair
Salt Slough at Wolfsen	7/28/2006	13:00	Natural streambed/Sontek	2.053	1.790	fair
Salt Slough at Wolfsen	9/14/2006	12:55	Natural streambed/Sontek	2.283	1.800	fair
Salt Slough at Wolfsen	12/14/2006	13:00	Natural streambed/Sontek	1.509	1.630	fair

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**DO-53 Salt Slough at Wolfsen Road QA data**

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Reference Site	Date	Time	Calculations								
			QA Ave Vel. (ft/s)	QA Area (ft <sup>2</sup> )	QA Flow (CFS)	Sontek Area (ft <sup>2</sup> )	Sontek Vel. (ft/s)	Sontek Flow (0.6422 * Sontek flow) (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Salt Slough at Wolfsen	1/31/2006	13:10	0.803	176.60	172.18	164.20	1.5	155.53			172.91
Salt Slough at Wolfsen	7/11/2006	11:05	1.027	142.20	158.49	153.35	1.81	175.61	87.05	87.05	99.76
Salt Slough at Wolfsen	7/28/2006	13:00	0.891	166.56	188.25	168.85	1.74	186.04			253.44
Salt Slough at Wolfsen	9/14/2006	12:55	0.606	108.60	85.88	109.94	1.2	82.08	82.37	82.37	99.06
Salt Slough at Wolfsen	12/14/2006	13:00	0.579	95.10	47.53	92.11	0.94	52.96	95.62	95.62	99.87

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## DO-57 Ramona Lake at Levee

**Location:** 37.47881°N -121.06850°W

**Water District or Organization:** SJVDA and Twin Oaks Irrigation District

**Station Description:** Station is on top of levee at the exit of Ramona Lake. The weir structure is at the bottom of a man hole. Data is provided by Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Velocity Sensor:	na
Stage Sensor:	Bubbler only
Stage Sensor (Bubbler):	Design Analysis Bubbler
Battery:	Sealed 12V photovoltaic gel
Power:	Solar
Communications:	GOES Transmission
Structure description:	Concrete culvert, square
Structure shape:	Square
Structure materials:	Concrete
Staff gage stability:	No staff gage, measure with hand-held gage.
Width of structure:	5.5 feet
Depth of structure:	Pipe enters culvert 0.4 feet from the bottom.
Board width:	5.08 feet
Board height:	approx 2.5 feet
Bubbler to QA offset:	0.013 feet
Bubbler to top of weir offset:	2.329 feet
Stage to Flow Relationship:	
Estimated quality:	good
Date data update or calculated:	1/25/2008
Date QA rating updated:	1/25/2008

Observed stage vs. Bubbler stage:	Regression: OA stage = $0.9237 * (\text{Bubbler stage}) + 0.191$ $r^2 = 0.9863$
Bubbler stage vs. QA Flow:	Flow = $19.014 * (\text{Bubbler stage})^2 - 86.496 * (\text{Bubbler stage}) + 98.257$ $r^2 = 0.9977$
Weir Stick Flow vs Bubbler Flow	Weir stick flow = $1.0764 * (\text{Bubbler flow})$
Ideal Weir equation	$3.33 * 5.08 * (\text{Bubbler stage} - \text{offset})^{1.5}$
Flow Calculation:	Flow = $3.33 * 5.08 * (\text{Bubbler stage} - 2.33)^{1.5}$ $r^2 = 0.9933$
Expected Boundaries for Data (QA):	
Minimum flow:	0.00 CFS
Maximum flow:	49.00 CFS Values above 12.9 are beyond QA calibration and based on ideal weir equation.
Minimum EC:	257 $\mu\text{S/cm}$ Values below this were recorded while the sensor was out of the water.
Maximum EC:	2,141 $\mu\text{S/cm}$

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**DO-57 Ramona Lake QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Ramona Lake	4/13/2007	10:05	F12P2	WS	Installed monitoring equipment at site.
Ramona Lake	5/22/2007	11:25	F12P64	WS	
Ramona Lake	6/19/2007	11:15	F12P128N5	WS	
Ramona Lake	7/10/2007	13:00	F14P26	WS	
Ramona Lake	8/14/2007	9:30	F14P121	WS	
Ramona Lake	9/11/2007	9:30	F15P55	WS	
Ramona Lake	10/9/2007	9:30	F15P121	WS	
Ramona Lake	11/1/2007	10:30	F15P143	WS	

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**DO-57 Ramona Lake QA data**


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Reference		Measured Variables								
Site	Date	Time	Bubbler reading	Staff Gauge Stage	IIRC Weirstick reading	EC QA from handheld meter ( $\mu\text{S}/\text{cm}$ )	Pre-cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Post-Cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Temp QA from handheld meter ( $^{\circ}\text{C}$ )	Temp from Logger ( $^{\circ}\text{F}$ )
Ramona Lake	4/13/2007	10:05	3.025	2.96	2.1					
Ramona Lake	5/22/2007	11:25	3.065	3.00	2.4	1161		1167		
Ramona Lake	6/19/2007	11:15	3.062	3.06	2.2	1147	1201		24.34	75.75
Ramona Lake	7/10/2007	13:00	2.299	2.30	0	1578	1644	1349	24.98	77.03
Ramona Lake	8/14/2007	9:30	2.452	2.51	0.1	1594	1294	1606	22.9	73.21
Ramona Lake	9/11/2007	9:30	2.402	2.40	0	1368	1122	1357	21.98	71.52
Ramona Lake	10/9/2007	9:30	2.606	2.62	0.4	1399	645	1372	11.91	53.47
Ramona Lake	11/1/2007	10:30	2.516	2.47	0.2	1157	1139	1143	13.35	55.44

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**DO-57 Ramona Lake QA data**

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<b>Reference</b>		<b>Constants</b>					
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
Ramona Lake	4/13/2007	10:05	Weir/bubbler	5.08	-0.065	2.290	good
Ramona Lake	5/22/2007	11:25	Weir/bubbler	5.08	-0.065	2.261	good
Ramona Lake	6/19/2007	11:15	Weir/bubbler	5.08	-0.002	2.303	good
Ramona Lake	7/10/2007	13:00	Weir/bubbler	5.08	0.001	2.299	good
Ramona Lake	8/14/2007	9:30	Weir/bubbler	5.08	0.058	2.355	good
Ramona Lake	9/11/2007	9:30	Weir/bubbler	5.08	-0.002	2.402	good
Ramona Lake	10/9/2007	9:30	Weir/bubbler	5.08	0.014	2.363	good
Ramona Lake	11/1/2007	10:30	Weir/bubbler	5.08	-0.046	2.363	good

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**DO-57 Ramona Lake QA data**

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<b>Reference</b>		<b>Calculations</b>						
Site	Date	Time	Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Ramona Lake	4/13/2007	10:05	0.74	10.67	9.91			0.00
Ramona Lake	5/22/2007	11:25	0.80	12.19	10.77	0.00	100.52	0.00
Ramona Lake	6/19/2007	11:15	0.76	11.18	10.70	104.71	0.00	99.92
Ramona Lake	7/10/2007	13:00	0.00	0.00	0.00	104.18	85.49	100.09
Ramona Lake	8/14/2007	9:30	0.10	0.51	0.77	81.18	100.75	99.99
Ramona Lake	9/11/2007	9:30	0.00	0.00	0.36	82.02	99.20	99.94
Ramona Lake	10/9/2007	9:30	0.24	2.03	2.52	46.10	98.07	100.06
Ramona Lake	11/1/2007	10:30	0.15	1.02	1.41	98.44	98.79	98.95

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## DO-60 Moffit 1 South

**Location:** 37.221°N -120.832°W

**Water District or Organization:** San Luis National Wildlife Refuge

**Station Description:** Station is located in the SLNWR. Weir structure is just upstream of culvert. The bubbler is in the pond upstream of the weir.

### Station Rating Variables:

Logger:	Campbell CR10X
Conductivity Probe:	Campbell EC
Stage Sensor (Bubbler):	Design Analysis H350 XL
Battery:	Sealed 12V photovoltaic gel
Power:	40W Solar Panel
Communications:	GOES Transmission
Board length:	44 inches
Bubbler Stage Offset:	0.109 feet
Stage to Flow Relationship:	
Estimated Quality:	Poor
Bubbler Flow:	$Flow = 6.0618 * (\text{Bubbler stage})^2 - 32.929 * (\text{Bubbler stage}) + 42.744$ $r^2 = 0.9829$
Flow Calculation:	$Flow = 3.33 * 3.67 * (\text{Bubbler stage} - 3.38)^{1.5}$ $12.84 * (\text{Bubbler stage}) - 42.913$ $r^2 = 0.9713$
TDS or Salt Calculation:	$TDS \text{ or Salt mg/L} = EC * (0.640) * 1000$ Using data not corrected for temperature (EC)
Expected Boundaries for Data (QA):	(data outside these boundaries are rejected or flagged)
Minimum flow:	0.00 CFS
Maximum flow:	30 CFS
Minimum EC:	0.2 mS/cm Values below 0.1 were removed as these are a sensor malfunction.
Maximum EC:	3.5 mS/cm
Minimum Bubbler Stage:	2.38 feet If the stage is less than 2.38 the bubbler cannot accurately measure flow.

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**DO-60 Moffit 1 South QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Moffit 1 South	1/17/2006	10:00	F5p69n1	WS	
Moffit 1 South	3/2/2006	9:00	F5p93n1	WS	
Moffit 1 South	3/2/2006	9:00	F5p93n1	WS	
Moffit 1 South	3/30/2006	10:00	F8p45n1	WS	
Moffit 1 South	4/27/2006	8:00	F8p69n1	WS	
Moffit 1 South	07/11/06	7:00	F9p11n1	WS	
Moffit 1 South	09/14/06	9:00	F9P99n1	WS	
Moffit 1 South	9/28/2006	9:00	F9p126n1	WS	
Moffit 1 South	10/12/2006	9:00	F9p144n1	WS	
Moffit 1 South	10/26/2006	9:00	F11p12n1	WS	
Moffit 1 South	11/2/2006	9:00	F11p23n1	WS	
Moffit 1 South	11/16/2006	9:00	F11p40n1	WS	
Moffit 1 South	12/14/2006	9:00	F11p60n1	WS	

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**DO-60 Moffit 1 South QA data**


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Reference			Measured Variables							
Site	Date	Time	Bubbler reading	Staff Gauge Stage	ITRC Weirstick reading	EC QA from handheld meter ( $\mu\text{S}/\text{cm}$ )	Pre-cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Post-Cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Temp QA from handheld meter ( $^{\circ}\text{C}$ )	Temp from Logger ( $^{\circ}\text{F}$ )
Moffit 1 South	1/17/2006	10:00	3.76	3.91	1.2	1.224	1.151	1.293	8.5	47.21
Moffit 1 South	3/2/2006	9:00	4.2	4.26	3.05	1.315	1.247	1.337	12.35	54.06
Moffit 1 South	3/2/2006	9:00	4.2	4.22	2.9	1.315	1.247	1.337	12.35	54.06
Moffit 1 South	3/30/2006	10:00	4.07	4.21	2.8	1.164	1.053	1.052	13.11	55.87
Moffit 1 South	4/27/2006	8:00	2.89	2.98	0	1.464	1.127	1.127	17.14	62.99
Moffit 1 South	07/11/06	7:00	2.43	n/a	0	n/a	0.005	0.005	n/a	69.55
Moffit 1 South	09/14/06	9:00	2.45	n/a	0	n/a	0.005	0.005	n/a	67.88
Moffit 1 South	9/28/2006	9:00	2.44	n/a	0	n/a	0.005	0.005	n/a	62.8
Moffit 1 South	10/12/2006	9:00	2.43	n/a	0	n/a	0.005	0.005	n/a	59.67
Moffit 1 South	10/26/2006	9:00	2.43	n/a	0	n/a	0.005	0.005	n/a	49.18
Moffit 1 South	11/2/2006	9:00	2.43	n/a	0	1.114	0.005	0.005	12.77	55.28
Moffit 1 South	11/16/2006	9:00	2.43	2.64	0	0.584	0.005	0.005	12.13	53.4
Moffit 1 South	12/14/2006	9:00	3.11	3.2	0	0.679	0.619	0.619	10.01	49.64

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**DO-60 Moffit 1 South QA data**

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<b>Reference</b>		<b>Constants</b>					
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
Moffit 1 South	1/17/2006	10:00	Weir/bubbler	3.67	0.150	3.254	fair
Moffit 1 South	3/2/2006	9:00	Weir/bubbler	3.67	0.060	3.257	fair
Moffit 1 South	3/2/2006	9:00	Weir/bubbler	3.67	0.020	3.288	fair
Moffit 1 South	3/30/2006	10:00	Weir/bubbler	3.67	0.140	3.179	fair
Moffit 1 South	4/27/2006	8:00	Weir/bubbler	3.67	0.090	2.890	fair
Moffit 1 South	07/11/06	7:00	Weir/bubbler	3.67		2.430	fair
Moffit 1 South	09/14/06	9:00	Weir/bubbler	3.67		2.450	fair
Moffit 1 South	9/28/2006	9:00	Weir/bubbler	3.67		2.440	fair
Moffit 1 South	10/12/2006	9:00	Weir/bubbler	3.67		2.430	fair
Moffit 1 South	10/26/2006	9:00	Weir/bubbler	3.67		2.430	fair
Moffit 1 South	11/2/2006	9:00	Weir/bubbler	3.67		2.430	fair
Moffit 1 South	11/16/2006	9:00	Weir/bubbler	3.67	0.210	2.430	fair
Moffit 1 South	12/14/2006	9:00	Weir/bubbler	3.67	0.090	3.110	fair

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**DO-60 Moffit 1 South QA data**

Reference			Calculations						
Site	Date	Time	Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler calculated Flow from stage to weirstick relationship (12.84*(bubbler stage+offset)- 42.913) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre- Cleaning EC ( % of QA)	Post- Cleaning EC ( % of QA)	Temp ( % of QA)
Moffit 1 South	1/17/2006	10:00	0.51	4.40	6.76	4.58	94.04	105.64	99.81
Moffit 1 South	3/2/2006	9:00	0.94	11.19	12.41	11.50	94.83	101.67	99.69
Moffit 1 South	3/2/2006	9:00	0.91	10.64	12.41	11.50	94.83	101.67	99.69
Moffit 1 South	3/30/2006	10:00	0.89	10.28	10.74	9.24	90.46	90.38	100.49
Moffit 1 South	4/27/2006	8:00	0.00	0.00	0.00	0.00	76.98	76.98	100.22
Moffit 1 South	07/11/06	7:00	0.00	0.00	0.00	0.00			
Moffit 1 South	09/14/06	9:00	0.00	0.00	0.00	0.00			
Moffit 1 South	9/28/2006	9:00	0.00	0.00	0.00	0.00			
Moffit 1 South	10/12/2006	9:00	0.00	0.00	0.00	0.00			
Moffit 1 South	10/26/2006	9:00	0.00	0.00	0.00	0.00			
Moffit 1 South	11/2/2006	9:00	0.00	0.00	0.00	0.00	0.45	0.45	100.53
Moffit 1 South	11/16/2006	9:00	0.00	0.00	0.00	0.00	0.86	0.86	99.19
Moffit 1 South	12/14/2006	9:00	0.00	0.00	0.00	0.00	91.16	91.16	99.24

## DO-61 Deadmans Slough

**Location:** 37.21530°N -120.83209°W

**Water District or Organization:** San Luis National Wildlife Refuge

**Station Description:** Site has two weir structures. Undefined structure makes it impossible to rate. Beaver activity often clogs weir structure.

### Station Rating Variables:

Logger:	Campbell CR10X
Conductivity Probe:	Campbell EC
Velocity Sensor:	none installed
Pipe Stage Sensor:	none installed
Stage Sensor (Bubbler):	Design Analysis H350 XL
Battery:	Sealed 12V photovoltaic gel
Power:	40W Solar Panel
Communications:	GOES Transmission
Weir Board Length:	4.35 feet and 4.3 feet
Weir Height:	7.5 feet
Stage to Flow Relationship:	
Flow Calibration:	Non-existent
Flow rating:	Undefined structure makes it impossible to rate. Water begins to flow out of pond at approximately 7.5 feet stage.
TDS or Salt Calculation:	$TDS \text{ or Salt mg/L} = EC * (0.640) * 1000$ Using data not corrected for temperature (EC)
Expected Boundaries for Data (QA):	(data outside these boundaries are rejected or flagged)
Minimum flow:	0 CFS
Maximum flow:	30 CFS
Minimum EC:	0.2 mS/cm Values below 0.1 were removed as sensor errors.
Maximum EC:	3.5 mS/cm

## DO-62 Mallard Slough

**Location:** 37.19182°N -120.82399°W

**Water District or Organization:** San Luis National Wildlife Refuge

**Station Description:** Bubbler is in the pond upstream of weir structure. Starflow unit is in the pipe downstream of weir structure. Poor flow calculation from debris buildup.

### Station Rating Variables:

Logger:	Campbell CR10X
Conductivity Probe:	Campbell EC
Velocity Sensor:	Unidata Starflow
Stage Sensor:	Unidata Starflow
Stage Sensor (Bubbler):	Design Analysis H350 XL
Battery:	Sealed 12V photovoltaic gel
Power:	40W Solar Panel
Communications:	GOES Transmission
Weir Board length:	4.7 feet
Bubbler Stage Offset:	-0.587 feet
Top of boards:	1.4 feet as measured by the bubbler
Starflow Stage Offset:	Approximately 1 inch
Stage to Flow Relationship:	
Estimated Quality:	Fair
Starflow Flow:	Area = $-0.2312 * (\text{Depth in pipe})^3 + 1.3941 * (\text{Depth in pipe})^2 + 1.2753 * (\text{Depth in pipe})$ Flow = Area * Velocity Outside of pipe and area should = 12.556 sq ft
Bubbler Flow:	Flow = $17.882 * (\text{Bubbler stage}) - 27.599$ $r^2 = 0.9708$
Flow Calculation:	Starflow Flow = Area * Velocity
TDS or Salt Calculation:	TDS or Salt mg/L = EC * (0.640) * 1000 Using data corrected for temperature (EC)

Expected Boundaries for Data (QA): (data outside these boundaries are rejected or flagged)

Minimum flow:	0	CFS
Maximum flow:	30	CFS
Minimum EC:	0.2	mS/cm
Maximum EC:	3.5	mS/cm
Minimum Starflow stage:	0.08	feet
Maximum Starflow stage:	3.0	feet If the Starflow depth is greater than 4 feet the Starflow is measuring pressure.
Minimum Bubbler stage:	1.4	feet If the stage is less than 1.4 the bubbler cannot accurately measure flow.

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**DO-62 Mallard Slough QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Mallard	1/17/2006	10:15	F5p69n5	WS	
Mallard	1/26/2006	10:50	F5p78n2	WS	
Mallard	1/26/2006	10:50	F5p78n2	WS	
Mallard	1/26/2006	10:50	F5p78n2	WS	
Mallard	1/26/2006	10:50	F5p78n2	WS	
Mallard	3/2/2006	10:25	F5p64n1	WS	
Mallard	3/30/2006	10:00	F8p46n3	WS	
Mallard	4/27/2006	10:17	F8p70n3	WS	
Mallard	7/11/2006	10:09	F9p12n1	WS	
Mallard	9/14/2006	9:57	F9p100n1	WS	
Mallard	9/28/2006	9:43	F9p127n5	WS	
Mallard	10/12/2006	9:41	F9p145n1	WS	
Mallard	10/26/2006	9:50	F11p13n1	WS	
Mallard	11/2/2006	10:05	F11p24n1	WS	
Mallard	11/16/2006	9:53	F11p41n1	WS	
Mallard	12/14/2006	10:06	F11p61n1	WS	

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**DO-62 Mallard Slough QA data**


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Reference			Measured Variables							
Site	Date	Time	Bubbler reading	Staff Gauge Stage	IIRC Weirstick reading	EC QA from handheld meter (mS/cm)	Pre-cleaning EC from logger (mS/cm)	Post-Cleaning EC from logger (mS/cm)	Temp QA from handheld meter (°C)	Temp from Logger (°F)
Mallard	1/17/2006	10:15	2.11	1.34	1.9	1.593	1.07	1.541	na	46.98
Mallard	1/26/2006	10:50	2.32	1.65	2.7	1.668	1.532	1.532	8.28	45.78
Mallard	1/26/2006	10:50	2.12	1.28	2.45	na	1.532	1.532	na	45.78
Mallard	1/26/2006	10:50	2.03	1.18	2	na	1.532	1.532	na	45.78
Mallard	1/26/2006	10:50	1.77	0.9	1	na	1.532	1.532	na	45.78
Mallard	3/2/2006	10:25	3.22	2.38	7	1.857	1.728	1.728	11.61	52.88
Mallard	3/30/2006	10:00	2.32	1.58	na	1.542	1.581	1.58	12.66	54.86
Mallard	4/27/2006	10:17	2.91	2.59	na	1.964	1.862	2.067	16.1	60.68
Mallard	7/11/2006	10:09	2.52	2.43	na	2.93	0.564	3.098	21.68	71.7
Mallard	9/14/2006	9:57	0.65	na	na	na	0.028	0.035	na	70.4
Mallard	9/28/2006	9:43	0.65	na	na	na	0.008	0.008	na	67.04
Mallard	10/12/2006	9:41	0.65	na	na	na	0.007	0.008	na	63.83
Mallard	10/26/2006	9:50	1.05	0.43	na	5.847	6.252	6.261	10.83	56.44
Mallard	11/2/2006	10:05	1.6	na	na	3.667	3.765	3.773	12.12	51.93
Mallard	11/16/2006	9:53	2.07	1.7	na	1.055	1.114	1.126	12.09	53.31
Mallard	12/14/2006	10:06	2.08	2.02	na	1.132	1.107	1.107	8.99	47.42

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**DO-62 Mallard Slough QA data**

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<b>Reference</b>	<b>Constants</b>						
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
Mallard	1/17/2006	10:15	Weir/bubbler/starflow	4.7	-0.770	1.422	fair
Mallard	1/26/2006	10:50	Weir/bubbler/starflow	4.7	-0.670	1.450	fair
Mallard	1/26/2006	10:50	Weir/bubbler/starflow	4.7	-0.840	1.305	fair
Mallard	1/26/2006	10:50	Weir/bubbler/starflow	4.7	-0.850	1.318	fair
Mallard	1/26/2006	10:50	Weir/bubbler/starflow	4.7	-0.870	1.322	fair
Mallard	3/2/2006	10:25	Weir/bubbler/starflow	4.7	-0.840	1.579	fair
Mallard	3/30/2006	10:00	Weir/bubbler/starflow	4.7	-0.740		fair
Mallard	4/27/2006	10:17	Weir/bubbler/starflow	4.7	-0.320		fair
Mallard	7/11/2006	10:09	Weir/bubbler/starflow	4.7	-0.090		fair
Mallard	9/14/2006	9:57	Weir/bubbler/starflow	4.7	na		fair
Mallard	9/28/2006	9:43	Weir/bubbler/starflow	4.7	na		fair
Mallard	10/12/2006	9:41	Weir/bubbler/starflow	4.7	na		fair
Mallard	10/26/2006	9:50	Weir/bubbler/starflow	4.7	-0.620		fair
Mallard	11/2/2006	10:05	Weir/bubbler/starflow	4.7	na		fair
Mallard	11/16/2006	9:53	Weir/bubbler/starflow	4.7	-0.370		fair
Mallard	12/14/2006	10:06	Weir/bubbler/starflow	4.7	-0.060		fair

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**DO-62 Mallard Slough QA data**

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Reference		Calculations						
Site	Date	Time	Starflow Level	Starflow Vel. (ft/s)	Starflow Flow (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Mallard	1/17/2006	10:15	1.263	0.18	0.61	67.17	96.74	
Mallard	1/26/2006	10:50	1.408	0.141	0.55	91.85	91.85	97.60
Mallard	1/26/2006	10:50	1.408	0.141	0.55			
Mallard	1/26/2006	10:50	1.408	0.141	0.55			
Mallard	1/26/2006	10:50	1.453	0.41	1.68			
Mallard	3/2/2006	10:25	3.645	0.345	4.13	93.05	93.05	99.97
Mallard	3/30/2006	10:00	3.274	0.157	1.73	102.53	102.46	100.13
Mallard	4/27/2006	10:17	3.127	6.516	68.75	94.81	105.24	99.51
Mallard	7/11/2006	10:09	1.476	0.266	1.11	19.25	105.73	100.95
Mallard	9/14/2006	9:57	0.637	0.217	0.29			
Mallard	9/28/2006	9:43	0.738	0.217	0.35			
Mallard	10/12/2006	9:41	1.188	0.217	0.67			
Mallard	10/26/2006	9:50	1.522	0.217	0.95	106.93	107.08	109.61
Mallard	11/2/2006	10:05	1.568	0.217	0.98	102.67	102.89	96.50
Mallard	11/16/2006	9:53	1.975	0.121	0.75	105.59	106.73	99.16
Mallard	12/14/2006	10:06	0.682	0.095	0.14	97.79	97.79	98.42

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**DO-62 Mallard Slough QA data**


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Reference		Calculations				
Site	Date	Time	Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler calculated Flow from stage to weirstick relationship (17.882*(bubbler stage)- 27.599) (CFS)	Bubbler calculated Flow from (3.33 * Weir width * bubbler stage-weir height)^1.5) (CFS)
Mallard	1/17/2006	10:15	0.69	8.93	10.13	9.36
Mallard	1/26/2006	10:50	0.87	12.69	13.89	13.81
Mallard	1/26/2006	10:50	0.81	11.52	10.31	9.56
Mallard	1/26/2006	10:50	0.71	9.40	8.70	7.83
Mallard	1/26/2006	10:50	0.45	4.70	4.05	3.52
Mallard	3/2/2006	10:25	1.64	32.90	29.98	38.43
Mallard	3/30/2006	10:00			13.89	13.81
Mallard	4/27/2006	10:17			24.44	29.04
Mallard	7/11/2006	10:09			17.46	18.55
Mallard	9/14/2006	9:57			0.00	0.00
Mallard	9/28/2006	9:43			0.00	0.00
Mallard	10/12/2006	9:41			0.00	0.00
Mallard	10/26/2006	9:50			0.00	0.00
Mallard	11/2/2006	10:05			1.01	1.40
Mallard	11/16/2006	9:53			9.42	8.58
Mallard	12/14/2006	10:06			9.60	8.78

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## DO-63 Inlet C Canal

**Location:** 37.17224°N -20.76142°W

**Water District or Organization:** San Luis National Wildlife Refuge

**Station Description:** Station is at the inlet of the water source for the SLNWR. Flow is based on three propeller meters the district uses.

### Station Rating Variables:

Logger:	Campbell CR10X
Conductivity Probe:	Campbell EC
Flow sensor	District installed propeller meters
Battery:	Sealed 12V photovoltaic gel
Power:	40W Solar Panel
Communications:	Raven 1X cellular modem
Stage to Flow Relationship:	
Flow calculation:	Taken directly from meter in CFS. There is no stage measurement at this site because data is logged directly from the propeller meters.
Flow Calculation:	Flow taken directly from meter in CFS.
TDS or Salt Calculation:	$TDS \text{ or Salt mg/L} = EC * (0.640) * 1000$ Using data not corrected for temperature (EC).
Expected Boundaries for Data (QA):	(data outside these boundaries are rejected or flagged)
Minimum flow:	0 CFS
Maximum flow:	90 CFS
Minimum EC:	0.2 mS/cm
Maximum EC:	2 mS/cm

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**DO-63 Inlet C Canal QA data**

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WS = Weir Stick FM= Propeller Flow Meter

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Inlet C Canal	1/17/2006	10:00	F5p70n1	FM	Logger propeller meter values around -20 are invalid and correspond to a missing propeller meter.
Inlet C Canal	1/26/2006	12:37	F5p80n10	FM	
Inlet C Canal	3/2/2006	11:20	F5p95n2	FM	
Inlet C Canal	3/30/2006	11:01	F8p47n1	FM	
Inlet C Canal	4/27/2006	11:06	F8p71n5	FM	
Inlet C Canal	7/11/2006	9:00	F9p12n5	FM	
Inlet C Canal	9/14/2006	11:17	F9p101n3	FM	
Inlet C Canal	9/28/2006	10:37	F9p128n7	FM	
Inlet C Canal	10/12/2006	11:00	F9p148n1	FM	
Inlet C Canal	10/26/2006	12:02	F11p16n1	FM	
Inlet C Canal	11/2/2006	12:07	F11p27n1	FM	
Inlet C Canal	11/16/2006	11:54	F11p44n1	FM	
Inlet C Canal	12/14/2006	11:56	F11p64n1	FM	

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**DO-63 Inlet C Canal QA data**

Reference			Measured Variables								
Site	Date	Time	Staff Gauge Stage	ITRC Weirstick reading			EC QA from handheld meter ( $\mu\text{S}/\text{cm}$ )	Pre-cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Post-Cleaning EC from logger ( $\mu\text{S}/\text{cm}$ )	Temp QA from handheld meter ( $^{\circ}\text{C}$ )	Temp from Logger ( $^{\circ}\text{F}$ )
				East	Mid	West					
Inlet C Canal	1/17/2006	10:00	na	na	na	na	1791	1888	1888	na	47.93
Inlet C Canal	1/26/2006	12:37	na	0.4	na	2.3	572	529	529	10.37	49.08
Inlet C Canal	3/2/2006	11:20	na	na	na	1.8	927	967	967	13.43	55.12
Inlet C Canal	3/30/2006	11:01	na	na	na	na	390	445	445	14.25	57.25
Inlet C Canal	4/27/2006	11:06	na	na	na	na	na	458	458	na	65.4
Inlet C Canal	7/11/2006	9:00	na	na	na	na	569	598	598	25.59	77.1
Inlet C Canal	9/14/2006	11:17	6.01	na	na	na	767	855	855	21.41	70.3
Inlet C Canal	9/28/2006	10:37	5.86	na	na	na	507	525	525	20.53	69.6
Inlet C Canal	10/12/2006	11:00	na	na	na	na	428	462	462	18.19	65.03
Inlet C Canal	10/26/2006	12:02	5.3	na	na	na	357	378	378	15.14	60.01
Inlet C Canal	11/2/2006	12:07	5.68	na	na	na	373	395	395	16.07	60.49
Inlet C Canal	11/16/2006	11:54	na	na	na	na	393	420	420	15	58.73
Inlet C Canal	12/14/2006	11:56	na	na	na	na	1551	1652	1652	12.02	53.21

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**DO-63 Inlet C Canal QA data**

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<b>Reference</b>			<b>Measured Variables</b>					
Site	Date	Time	Logger East pipe Propeller Meter (CFS)	Logger Middle pipe Propeller Meter (CFS)	Logger West pipe Propeller Meter (CFS)	Analog East pipe Propeller Meter (CFS)	Analog Middle pipe Propeller Meter (CFS)	Analog West pipe Propeller Meter (CFS)
Inlet C Canal	1/17/2006	10:00	11.66	-0.086	11.48	11	0	12
Inlet C Canal	1/26/2006	12:37	1.358	-0.068	13.26	3	0	12
Inlet C Canal	3/2/2006	11:20	-0.279	-0.056	10.2	2	0	11
Inlet C Canal	3/30/2006	11:01	-19.99	-0.081	20.84	na	0	22
Inlet C Canal	4/27/2006	11:06	-19.98	-0.07	-0.305	0	0	0
Inlet C Canal	7/11/2006	9:00	20.34	0.013	-0.288	22	0	0
Inlet C Canal	9/14/2006	11:17	-0.363	-0.02	28.31	0	0	30
Inlet C Canal	9/28/2006	10:37	-20.01	-0.069	32.21	0	na	32
Inlet C Canal	10/12/2006	11:00	50.39	12.76	46.62	50	12	50
Inlet C Canal	10/26/2006	12:02	35.43	-0.088	33.36	40	0	30
Inlet C Canal	11/2/2006	12:07	45.19	-0.036	-20	48	0	na
Inlet C Canal	11/16/2006	11:54	44.97	-0.097	-20	50	0	na
Inlet C Canal	12/14/2006	11:56	7.18	-0.076	-19.98	8	0	na

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**DO-63 Inlet C Canal QA data**

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<b>Reference</b>	<b>Constants</b>				
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Rating Quality
Inlet C Canal	1/17/2006	10:00	Weir/Propeller Meter	5.5	Good
Inlet C Canal	1/26/2006	12:37	Weir/Propeller Meter	5.5	Good
Inlet C Canal	3/2/2006	11:20	Weir/Propeller Meter	5.5	Good
Inlet C Canal	3/30/2006	11:01	Weir/Propeller Meter	5.5	Good
Inlet C Canal	4/27/2006	11:06	Weir/Propeller Meter	5.5	Good
Inlet C Canal	7/11/2006	9:00	Weir/Propeller Meter	5.5	Good
Inlet C Canal	9/14/2006	11:17	Weir/Propeller Meter	5.5	Good
Inlet C Canal	9/28/2006	10:37	Weir/Propeller Meter	5.5	Good
Inlet C Canal	10/12/2006	11:00	Weir/Propeller Meter	5.5	Good
Inlet C Canal	10/26/2006	12:02	Weir/Propeller Meter	5.5	Good
Inlet C Canal	11/2/2006	12:07	Weir/Propeller Meter	5.5	Good
Inlet C Canal	11/16/2006	11:54	Weir/Propeller Meter	5.5	Good
Inlet C Canal	12/14/2006	11:56	Weir/Propeller Meter	5.5	Good

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**DO-63 Inlet C Canal QA data**

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Reference			Calculations						
Site	Date	Time	Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	QA Sum Flow from Analog (East Pipe + Middle Pipe + West Pipe) (CFS)	Sum Flow from Logger (East Pipe + Middle Pipe + West Pipe) (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Inlet C Canal	1/17/2006	10:00			23.00	23.05	105.42	105.42	
Inlet C Canal	1/26/2006	12:37	0.78	14.85	15.00	14.55	92.48	92.48	96.87
Inlet C Canal	3/2/2006	11:20	0.66	9.90	13.00	9.87	104.31	104.31	98.12
Inlet C Canal	3/30/2006	11:01			22.00	20.76	114.10	114.10	99.31
Inlet C Canal	4/27/2006	11:06			0.00	-0.38			
Inlet C Canal	7/11/2006	9:00			22.00	20.07	105.10	105.10	98.77
Inlet C Canal	9/14/2006	11:17			30.00	27.93	111.47	111.47	99.66
Inlet C Canal	9/28/2006	10:37			32.00	32.14	103.55	103.55	100.94
Inlet C Canal	10/12/2006	11:00			112.00	109.77	107.94	107.94	100.44
Inlet C Canal	10/26/2006	12:02			70.00	68.70	105.88	105.88	101.28
Inlet C Canal	11/2/2006	12:07			48.00	45.15	105.90	105.90	99.28
Inlet C Canal	11/16/2006	11:54			50.00	44.87	106.87	106.87	99.54
Inlet C Canal	12/14/2006	11:56			8.00	7.10	106.51	106.51	99.21

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## DO-64 Moran Drain

**Location:** 37.43547°N -121.0355°W

**Water District or Organization:** SJVDA

**Station Description:** Station is at the bend in Marshall Road. Data provided by Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Velocity Sensor:	Starflow
Stage Sensor (Primary):	DA Bubbler
Stage Sensor (Secondary):	Starflow
Battery:	Sealed 12V photovoltaic gel
Power:	Solar
Communications:	GOES Transmission
Structure description:	Square concrete culvert
Structure shape:	Square
Structure materials:	Concrete
Staff gage stability:	No staff gage, measure with hand-held gage
Width of structure:	Culvert is 3 feet by 3 feet.
Depth of structure:	Pipe enters culvert 0.4 feet from bottom.
Board width:	4.67 feet
Board height:	11.25 inches; 0.9375 feet
Bubbler depth from top of board:	Bubbler is 0.258 feet off the bottom.
Bubbler offset	0.888 feet
Bubbler to weir offset:	0.893 feet
Stage to Flow Relationship:	
Estimated quality:	Poor
	Calibration points bunched at one end and weir was frequently submerged.

Date update or calculated:	01/25/08
Observed stage vs. Bubbler stage:	Regression: QA stage = 1.0375 * (Bubbler stage) - 0.0535 r <sup>2</sup> = 0.9991
Weir Stick Flow vs. Bubbler Flow:	Flow = 1.0584 * (Bubbler flow)
Gage flow relationship:	Regression: Flow = 19.264 * (Staff gauge) - 21.249 r <sup>2</sup> = 0.9068
Flow Calculation:	Flow = 3.33 * 4.67 * ((Bubbler stage - offset) <sup>1.5</sup> ) r <sup>2</sup> = 0.8753
Expected Boundaries for Data (QA):	
Maximum flow:	31.2 CFS The maximum QA flow was 7.25 CFS, anything above this is extrapolated using weir equation and bubbler stage. If the stage is greater than 2.5 feet the weir is submerged.
Minimum flow:	0 CFS
Maximum EC:	1876 mS/cm
Minimum EC:	100 mS/cm

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**DO-64 Moran Drain QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Moran Drain	1/11/2006	8:15	TT011106P89	WS	The site was dry.
Moran Drain	2/8/2006	8:30	TT020806P99	WS	The site was dry.
Moran Drain	3/8/2006	8:00	TT030806P109	WS	The site was dry.
Moran Drain	4/4/2006	8:30	TT040406P119	WS	The site was dry.
Moran Drain	5/9/2006	8:00	TT050906P129	WS	
Moran Drain	6/6/2006	11:00	TT060606P139	WS	
Moran Drain	7/21/2006	9:30	TT072106Pxx	WS	
Moran Drain	8/22/2006	8:30	TT082206Pxx	WS	
Moran Drain	9/28/2006	10:00	TT092806P14	WS	EC QA only.
Moran Drain	10/3/2006	8:45	F9P133N4	WS	Flow QA only.
Moran Drain	10/27/2006	8:45	TT102706P22	WS	The site was dry.
Moran Drain	11/17/2006	8:45	TT111706P30	WS	The site was dry.
Moran Drain	12/8/2006	8:15	TT120806P40	WS	Top of weir measured at 0.95ft.
Moran Drain	1/19/2007	8:15	TTP47	WS	
Moran Drain	2/13/2007	8:30	TTP56	WS	
Moran Drain	3/6/2007	8:45	TTP62	WS	
Moran Drain	4/13/2007	9:15	TTP70	WS	
Moran Drain	5/22/2007	9:30	F12P64N2	WS	
Moran Drain	6/19/2007	9:00	F12P127N4	WS	Partially submerged weir.
Moran Drain	7/10/2007	11:30	F14P26	WS	Partially submerged weir.
Moran Drain	8/14/2007	8:30	F14P120	WS	Fully submerged structure, downstream field flooded.
Moran Drain	9/11/2007	8:45	F15P55	WS	
Moran Drain	10/9/2007	8:20	F15P121	WS	The site was dry.
Moran Drain	11/1/2007	9:35	F15P143	WS	The site was dry.

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**DO-64 Moran Drain QA data**


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Reference Site	Date	Time	Measured Variables							
			Bubbler reading	Staff Gauge Stage	ITRC Weirstick reading	EC QA from handheld meter ( $\mu$ S/cm)	Pre- cleaning EC from logger ( $\mu$ S/cm)	Post- Cleaning EC from logger ( $\mu$ S/cm)	Temp QA from handheld meter ( $^{\circ}$ C)	Temp from Logger ( $^{\circ}$ F)
Moran Drain	1/11/2006	8:15	0.127	0.00	na	na	na	na	na	na
Moran Drain	2/8/2006	8:30	0.127	0.00	na	na	na	na	na	na
Moran Drain	3/8/2006	8:00	0.128	0.00	na	na	na	na	na	na
Moran Drain	4/4/2006	8:30	0.126	0.00	na	na	na	na	na	na
Moran Drain	5/9/2006	8:00	2.075	na	na	207	214		16.69	62.17
Moran Drain	6/6/2006	11:00	1.103	1.10	0.3	197	195		20.68	69.42
Moran Drain	7/21/2006	9:30	1.319	1.29	na	371	371		25.71	77.94
Moran Drain	8/22/2006	8:30	1.32	1.32	1.8	441	471		20.41	68.29
Moran Drain	9/28/2006	10:00	1.146	na	na	446	337		18.56	65.51
Moran Drain	10/3/2006	8:45	1.15	1.15	0.5	na	na	na	na	na
Moran Drain	10/27/2006	8:45	0.127	0.00	na	na	na	na	na	na
Moran Drain	11/17/2006	8:45	0.127	0.00	na	na	na	na	na	na
Moran Drain	12/8/2006	8:15	0.128	0.00	na	na	na	na	na	na
Moran Drain	1/19/2007	8:15	0.128	0.00	na	na	na	na	na	na
Moran Drain	2/13/2007	8:30	0.127	0.00	na	na	na	na	na	na
Moran Drain	3/6/2007	8:45	0.126	0.00	na	na	na	na	na	na
Moran Drain	4/13/2007	9:15	0.126	0.00	na	na	na	na	na	na
Moran Drain	5/22/2007	9:30	1.271	1.24	0.8	973	823	981	na	71.42
Moran Drain	6/19/2007	9:00	1.551	1.58	2.1	904	783	951	21.41	70.04
Moran Drain	7/10/2007	11:30	1.49	1.50	1.6	868	634	921	23.35	74.56
Moran Drain	8/14/2007	8:30	2.679	2.72		909	907	919	19.17	66.36
Moran Drain	9/11/2007	8:45	1.315	1.31	0.6	1115	516	1105	19.9	67.91
Moran Drain	10/9/2007	8:20	0.127	na	na	na	na	na	na	na
Moran Drain	11/1/2007	9:35	0.127	na	na	na	na	na	na	na

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**DO-64 Moran Drain QA data**

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<b>Reference</b>		<b>Constants</b>					
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
Moran Drain	1/11/2006	8:15	Weir/bubbler	4.6	-0.127		good
Moran Drain	2/8/2006	8:30	Weir/bubbler	4.6	-0.127		good
Moran Drain	3/8/2006	8:00	Weir/bubbler	4.6	-0.128		good
Moran Drain	4/4/2006	8:30	Weir/bubbler	4.6	-0.126		good
Moran Drain	5/9/2006	8:00	Weir/bubbler	4.6			good
Moran Drain	6/6/2006	11:00	Weir/bubbler	4.6	-0.003	0.902	good
Moran Drain	7/21/2006	9:30	Weir/bubbler	4.6	-0.029		good
Moran Drain	8/22/2006	8:30	Weir/bubbler	4.6	0.000	0.656	good
Moran Drain	9/28/2006	10:00	Weir/bubbler	4.6			good
Moran Drain	10/3/2006	8:45	Weir/bubbler	4.6	0.000	0.868	good
Moran Drain	10/27/2006	8:45	Weir/bubbler	4.6	-0.127		good
Moran Drain	11/17/2006	8:45	Weir/bubbler	4.6	-0.127		good
Moran Drain	12/8/2006	8:15	Weir/bubbler	4.6	-0.128		good
Moran Drain	1/19/2007	8:15	Weir/bubbler	4.6	-0.128		good
Moran Drain	2/13/2007	8:30	Weir/bubbler	4.6	-0.127		good
Moran Drain	3/6/2007	8:45	Weir/bubbler	4.6	-0.126		good
Moran Drain	4/13/2007	9:15	Weir/bubbler	4.6	-0.126		good
Moran Drain	5/22/2007	9:30	Weir/bubbler	4.6	-0.031	0.885	good
Moran Drain	6/19/2007	9:00	Weir/bubbler	4.6	0.029	0.816	good
Moran Drain	7/10/2007	11:30	Weir/bubbler	4.6	0.010	0.877	good
Moran Drain	8/14/2007	8:30	Weir/bubbler	4.6	0.041		good
Moran Drain	9/11/2007	8:45	Weir/bubbler	4.6	-0.005	0.996	good
Moran Drain	10/9/2007	8:20	Weir/bubbler	4.6			good
Moran Drain	11/1/2007	9:35	Weir/bubbler	4.6			good

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**DO-64 Moran Drain QA data**


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Reference Site	Date	Time	Calculations					
			Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Moran Drain	1/11/2006	8:15						
Moran Drain	2/8/2006	8:30						
Moran Drain	3/8/2006	8:00						
Moran Drain	4/4/2006	8:30						
Moran Drain	5/9/2006	8:00			18.28	103.38	0.00	100.21
Moran Drain	6/6/2006	11:00	0.20	1.38	0.92	98.98	0.00	100.28
Moran Drain	7/21/2006	9:30			3.43	100.00	0.00	99.57
Moran Drain	8/22/2006	8:30	0.66	8.28	3.45	106.80	0.00	99.35
Moran Drain	9/28/2006	10:00			1.33	75.56	0.00	100.16
Moran Drain	10/3/2006	8:45	0.28	2.30	1.37			
Moran Drain	10/27/2006	8:45						
Moran Drain	11/17/2006	8:45						
Moran Drain	12/8/2006	8:15						
Moran Drain	1/19/2007	8:15						
Moran Drain	2/13/2007	8:30						
Moran Drain	3/6/2007	8:45						
Moran Drain	4/13/2007	9:15						
Moran Drain	5/22/2007	9:30	0.39	3.68	3.56	84.58	100.82	
Moran Drain	6/19/2007	9:00	0.74	9.66	8.18	86.62	105.20	99.29
Moran Drain	7/10/2007	11:30	0.61	7.36	7.07	73.04	106.11	100.72
Moran Drain	8/14/2007	8:30			36.56	99.78	101.10	99.78
Moran Drain	9/11/2007	8:45	0.32	2.76	4.20	46.28	99.10	100.13
Moran Drain	10/9/2007	8:20						
Moran Drain	11/1/2007	9:35						

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## DO-65 Spanish Grant Drain

**Location:** 37.43576°N -121.0358°W

**Water District or Organization:** SJVDA

**Station Description:** Station is at the bend in Marshall Road. Data provided by Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Design Analysis
Conductivity Probe:	YSI 600
Velocity Sensor:	Starflow
Stage Sensor (Primary):	DA Bubbler
Stage Sensor (Secondary):	Starflow
Battery:	Sealed 12V photovoltaic gel
Power:	Solar
Communications:	GOES Transmission
Structure description:	Square concrete culvert.
Structure shape:	Square
Structure materials:	Concrete
Staff gage stability:	No staff gage, measure with hand-held gage.
Width of structure:	Culvert is 3 feet by 3 feet.
Depth of structure:	Pipe enters culvert 0.4 feet from bottom.
Board width:	4.67 feet
Board height:	11.25 inches; 0.9375 feet
Bubbler offset from top of board:	2.412
Stage to Flow Relationship:	
Estimated quality:	Fair
Date update or calculated:	01/25/08
Bubbler vs. QA stage	Regression: $QA \text{ stage} = 0.8329 * (\text{Bubbler stage}) + 0.1519 r^2 = 0.5803$

Gage flow relationship:	Regression: $\text{Flow} = 12.945 * (\text{QA stage}) - 26.452$ $r^2 = 0.5831$
Weir Stick Flow vs. Bubbler Flow:	Regression: $\text{Weir stick} = 1.0523 * (\text{Bubbler flow})$ $r^2 = 0.9495$
Flow Calculation:	$3.33 * 4.67 * ((\text{Bubbler stage} - 2.412)^{1.5})$
Expected Boundaries for Data (QA):	
Maximum flow:	69.39 CFS The highest flow during a QA rating is 23.92 CFS, any flow above this is extrapolated using the weir equation and bubbler stage.
Minimum flow:	0 CFS
Maximum EC:	3682 mS/cm
Minimum EC:	249 mS/cm

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**DO-65 Spanish Grant Drain QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
Spanish Grant	1/11/2006	8:00	TT011106P87	WS	
Spanish Grant	2/8/2006	8:31	TT020806P98	WS	
Spanish Grant	3/8/2006	8:15	TT030806P108	WS	Installed a new 8" weirboard.
Spanish Grant	4/4/2006	8:25	TT040406P118	WS	
Spanish Grant	5/9/2006	8:00	TT050906P128	WS	
Spanish Grant	6/6/2006	10:50	TT060606P138	WS	
Spanish Grant	7/21/2006	9:15	TT072106Pxx	WS	Weir was submerged. At least one board was lost.
Spanish Grant	8/22/2006	8:30	TT082206Pxx	WS	Installed a new 6" weirboard.
Spanish Grant	9/28/2006	9:45	TT092806P13	WS	
Spanish Grant	10/3/2006	8:30	F9P133	WS	
Spanish Grant	10/27/2006	8:40	TT102706P21	WS	
Spanish Grant	11/17/2006	8:50	TT111706P29	WS	
Spanish Grant	12/8/2006	8:15	TT120806P39	WS	
Spanish Grant	1/19/2007	8:15	TTP47	WS	
Spanish Grant	2/13/2007	8:30	TTP56	WS	
Spanish Grant	3/6/2007	8:45	TTP62	WS	
Spanish Grant	4/13/2007	9:15	TTP70	WS	
Spanish Grant	5/22/2007	9:30	F12P64N2	WS	
Spanish Grant	6/19/2007	9:00	F12P127N4	WS	
Spanish Grant	7/10/2007	11:30	F14P26	WS	
Spanish Grant	8/14/2007	8:30	F14P120	WS	Heavy sediment buildup in structure.
Spanish Grant	9/11/2007	8:45	F15P55	WS	
Spanish Grant	10/9/2007	8:20	F12P121	WS	
Spanish Grant	11/1/2007	9:30	F15P143	WS	

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**DO-65 Spanish Grant Drain QA data**

Reference			Measured Variables							
Site	Date	Time	Bubbler reading	Staff Gauge Stage	ITRC Weirstick reading	EC QA from handheld meter (µS/cm)	Pre-cleaning EC from logger (µS/cm)	Post-Cleaning EC from logger (µS/cm)	Temp QA from handheld meter (°C)	Temp from Logger (°F)
Spanish Grant	1/11/2006	8:00	1.325	1.26	1.2	621	293	636	10.72	51.49
Spanish Grant	2/8/2006	8:31	1.063	1.00	0.04	1362	1398		12.45	55.04
Spanish Grant	3/8/2006	8:15	1.021	na	na	1533	1352		12.16	54.03
Spanish Grant	4/4/2006	8:25	1.811	1.60	0.25	223	210		13.94	57.3
Spanish Grant	5/9/2006	8:00	5.144	na	na	515	524		17.22	63.14
Spanish Grant	6/6/2006	10:50	3.105	na	na	400	606		21.94	68.84
Spanish Grant	7/21/2006	9:15	2.135	1.90	na	650	653		24.22	75.88
Spanish Grant	8/22/2006	8:30	1.698	na	na	747	451	754	20.45	68.71
Spanish Grant	9/28/2006	9:45	2.82	na	na	1263	1123		19.49	67.03
Spanish Grant	10/3/2006	8:30	3.061	2.91	1.8	na	na	na	na	na
Spanish Grant	10/27/2006	8:40	2.66	2.55	0.45	994	1043		12.97	55.74
Spanish Grant	11/17/2006	8:50	3.084	3.00	1.8	345	411		14.21	57.95
Spanish Grant	12/8/2006	8:15	2.543	2.45	0.1	1712	1961		12.02	53.8
Spanish Grant	1/19/2007	8:15	2.485	1.65	0.1	1223	1387	1301	8.52	47.92
Spanish Grant	2/13/2007	8:30	2.432	2.38	0.02	2030	2402	2082	12.3	54.34
Spanish Grant	3/6/2007	8:45	2.562	2.51	0.2	596	673	634	12.67	54.9
Spanish Grant	4/13/2007	9:15	3	2.95	1.7	1081	1143	1144	12.49	54.56
Spanish Grant	5/22/2007	9:30	3.184	2.91	2.7	1093	971	1127	na	59.82
Spanish Grant	6/19/2007	9:00	3.168	2.80	2.1	1164	1058	1244	21.32	69.4
Spanish Grant	7/10/2007	11:30	3.617	3.14	5.2	1019	1093	1101	23.33	73.83
Spanish Grant	8/14/2007	8:30	3.47	3.03	3.2	1289	1118	1271	19.56	67.15
Spanish Grant	9/11/2007	8:45	3.1035	2.31	1.3	1620	1353	1300	20.26	68.37
Spanish Grant	10/9/2007	8:20	2.583	2.16	0.08	2200	1312	2244	18.3	64.07
Spanish Grant	11/1/2007	9:30	2.713	2.75	0.6	1097	2063	1062	16.71	61.99

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**DO-65 Spanish Grant Drain QA data**


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<b>Reference</b>		<b>Constants</b>					
Site	Date	Time	Structure/ Equipment	Width of weir (ft)	Bubbler to staff gauge offset	Top of weir offset	Rating Quality
Spanish Grant	1/11/2006	8:00	Weir/bubbler	4.6	-0.065	0.819	good
Spanish Grant	2/8/2006	8:31	Weir/bubbler	4.6	-0.063	1.011	good
Spanish Grant	3/8/2006	8:15	Weir/bubbler	4.6			good
Spanish Grant	4/4/2006	8:25	Weir/bubbler	4.6	-0.211	1.633	good
Spanish Grant	5/9/2006	8:00	Weir/bubbler	4.6			good
Spanish Grant	6/6/2006	10:50	Weir/bubbler	4.6			good
Spanish Grant	7/21/2006	9:15	Weir/bubbler	4.6	-0.235		good
Spanish Grant	8/22/2006	8:30	Weir/bubbler	4.6			good
Spanish Grant	9/28/2006	9:45	Weir/bubbler	4.6			good
Spanish Grant	10/3/2006	8:30	Weir/bubbler	4.6	-0.151	2.397	good
Spanish Grant	10/27/2006	8:40	Weir/bubbler	4.6	-0.110	2.397	good
Spanish Grant	11/17/2006	8:50	Weir/bubbler	4.6	-0.084	2.420	good
Spanish Grant	12/8/2006	8:15	Weir/bubbler	4.6	-0.093	2.446	good
Spanish Grant	1/19/2007	8:15	Weir/bubbler	4.6	-0.835	2.388	good
Spanish Grant	2/13/2007	8:30	Weir/bubbler	4.6	-0.052	2.399	good
Spanish Grant	3/6/2007	8:45	Weir/bubbler	4.6	-0.052	2.409	good
Spanish Grant	4/13/2007	9:15	Weir/bubbler	4.6	-0.050	2.361	good
Spanish Grant	5/22/2007	9:30	Weir/bubbler	4.6	-0.274	2.314	good
Spanish Grant	6/19/2007	9:00	Weir/bubbler	4.6	-0.368	2.433	good
Spanish Grant	7/10/2007	11:30	Weir/bubbler	4.6	-0.477	2.271	good
Spanish Grant	8/14/2007	8:30	Weir/bubbler	4.6	-0.440	2.496	good
Spanish Grant	9/11/2007	8:45	Weir/bubbler	4.6	-0.794	2.569	good
Spanish Grant	10/9/2007	8:20	Weir/bubbler	4.6	-0.423	2.500	good
Spanish Grant	11/1/2007	9:30	Weir/bubbler	4.6	0.037	2.394	good

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**DO-65 Spanish Grant Drain QA data**


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Reference Site	Date	Time	Calculations					
			Stage above boards back calculated from ITRC Weirstick	Weirstick Flow Calculated from (weirstick reading * board width) (CFS)	Bubbler Calculated Flow from weir equation (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)
Spanish Grant	1/11/2006	8:00	0.51	5.52	2.84	47.18	102.42	100.38
Spanish Grant	2/8/2006	8:31	0.05	0.18	0.24	102.64	0.00	101.16
Spanish Grant	3/8/2006	8:15			0.05	88.19	0.00	100.26
Spanish Grant	4/4/2006	8:25	0.18	1.15	1.18	94.17	0.00	100.36
Spanish Grant	5/9/2006	8:00			100.90	101.75	0.00	100.23
Spanish Grant	6/6/2006	10:50			27.44	151.50	0.00	96.29
Spanish Grant	7/21/2006	9:15			5.50	100.46	0.00	100.38
Spanish Grant	8/22/2006	8:30			0.27	60.37	100.94	99.85
Spanish Grant	9/28/2006	9:45			4.17	88.92	0.00	99.92
Spanish Grant	10/3/2006	8:30	0.66	8.28	8.23			
Spanish Grant	10/27/2006	8:40	0.26	2.07	2.03	104.93	0.00	100.71
Spanish Grant	11/17/2006	8:50	0.66	8.28	8.29	119.13	0.00	100.65
Spanish Grant	12/8/2006	8:15	0.10	0.46	0.66	114.54	0.00	100.31
Spanish Grant	1/19/2007	8:15	0.10	0.46	0.25	113.41	106.38	101.23
Spanish Grant	2/13/2007	8:30	0.03	0.09	0.02	118.33	102.56	100.37
Spanish Grant	3/6/2007	8:45	0.15	0.92	0.82	112.92	106.38	100.17
Spanish Grant	4/13/2007	9:15	0.64	7.82	6.77	105.74	105.83	100.14
Spanish Grant	5/22/2007	9:30	0.87	12.42	10.23	88.84	103.11	
Spanish Grant	6/19/2007	9:00	0.74	9.66	9.91	90.89	106.87	98.61
Spanish Grant	7/10/2007	11:30	1.35	23.92	20.06	107.26	108.05	99.78
Spanish Grant	8/14/2007	8:30	0.97	14.72	16.48	86.73	98.60	99.91
Spanish Grant	9/11/2007	8:45	0.53	5.98	8.66	83.52	80.25	99.86
Spanish Grant	10/9/2007	8:20	0.08	0.37	1.01	59.64	102.00	98.66
Spanish Grant	11/1/2007	9:30	0.32	2.76	2.43	188.06	96.81	99.86

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## DO-68 S. Lake Basin

**Location:** 37.255°N -120.191°W

**Water District or Organization:** Grasslands Water District

**Station Description:** Data provided by Lara Sparks (Fish and Game and Grassland Water District) and Jeremy Hanlon with the University of the Pacific.

### Station Rating Variables:

Logger:	Campbell CR10x
Conductivity Probe:	Campbell
Velocity Sensor:	Sontek SL
Stage Sensor:	Sontek pressure sensor
Stage Sensor (Bubbler):	n/a
Battery:	12V
Power:	Solar
Communications:	GOES and direct downloads
Stage to Flow Relationship:	Flow is calculated from sontek pressure sensor and QA ratings area relationship.
Flow Calculation:	Regression: $\text{Flow} = 12.738 * (\text{Sontek Pressure} * 2.3067) - 3.5292$ $r^2 = 0.7184$
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	
Maximum flow:	
Minimum EC:	
Maximum EC:	

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**DO-68 S-Lake Drain QA data**

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WS = Weir Stick

SG = Staff Gauge

**Reference**

Site	Date	Time	Notebook Reference	Method	Comments
S-Lake Drain	1/9/2006	12:15	G2P18	SG	
S-Lake Drain	2/2/2006	9:30	G2P23	SG	Staff gauge was moved to the footbridge.
S-Lake Drain	3/1/2006	10:45	G2P33	SG	
S-Lake Drain	4/19/2006	13:19	G2P43	SG	
S-Lake Drain	5/8/2006	10:30	G2P46	SG	
S-Lake Drain	6/9/2006	13:30	G2P61	SG	
S-Lake Drain	7/6/2006	12:15	G2P64	SG	
S-Lake Drain	7/28/2006	9:30	G2P66	SG	
S-Lake Drain	8/31/2006	12:00	G2P70	SG	
S-Lake Drain	9/19/2006	10:45	G2P75	SG	
S-Lake Drain	10/10/2006	10:45	G2P77	SG	
S-Lake Drain	10/31/2006	15:30	G2P79	SG	
S-Lake Drain	12/1/2006	11:45	G2P86	SG	
S-Lake Drain	12/21/2006	10:15	G2P89	SG	
S-Lake Drain	2/14/2007	10:30	G2P94	SG	
S-Lake Drain	3/12/2007	10:00	G2P96	SG	
S-Lake Drain	4/4/2007	11:15	G2P101	SG	
S-Lake Drain	5/1/2007	10:15	G2P104	SG	
S-Lake Drain	5/29/2007	14:00	G2P107	SG	
S-Lake Drain	6/22/2007	12:15	G2P111	SG	
S-Lake Drain	7/20/2007	9:30	G2P116	SG	

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**DO-68 S-Lake Drain QA data**

Reference			Measured Variables						
Site	Date	Time	Sontek reading	Staff Gauge Stage	EC QA from handheld meter (μS/cm)	Pre-cleaning EC from logger (μS/cm)	Post-Cleaning EC from logger (μS/cm)	Temp QA from handheld meter (°F)	Temp from Logger (°F)
S-Lake Drain	1/9/2006	12:15	4.47	6.05	1389	1334	1335	53.1	50.29
S-Lake Drain	2/2/2006	9:30	1.36	3.11	1926	1956	1954	55.4	54.84
S-Lake Drain	3/1/2006	10:45	3.3	5.06	1761	1719	1770	55	55.03
S-Lake Drain	4/19/2006	13:19	4.02	5.78	2062	3030	3029	66.7	59.76
S-Lake Drain	5/8/2006	10:30	3.17	4.94	859.8	2446	2366	72	66.61
S-Lake Drain	6/9/2006	13:30	2.3	4.09	1539	2195	2190	81.5	68.92
S-Lake Drain	7/6/2006	12:15		1.22	3045	2844	2902	80.6	82
S-Lake Drain	7/28/2006	9:30	-0.45	1.90	1771	2290	2553	79.3	78.3
S-Lake Drain	8/31/2006	12:00		0.98	2635	2268	2220	81.3	76.7
S-Lake Drain	9/19/2006	10:45	-0.78	1.56	1180	1216	1186	68.2	68.89
S-Lake Drain	10/10/2006	10:45	0.668	2.95	654.8	662	662	66.6	66.81
S-Lake Drain	10/31/2006	15:30	1.58	3.77	965.2	955	953	61.2	61.41
S-Lake Drain	12/1/2006	11:45	1.45	3.26	1130	1115	1115	48	47.1
S-Lake Drain	12/21/2006	10:15	1.55	3.36	1390	1401	1384	44.2	43.8
S-Lake Drain	2/14/2007	10:30	2.39	3.12	1631	1616	1612	54.3	54.6
S-Lake Drain	3/12/2007	10:00	2.76	3.78	1889	1884	1887	62.6	62.9
S-Lake Drain	4/4/2007	11:15	0.75	1.75	2880	3104	3112	64.9	65
S-Lake Drain	5/1/2007	10:15	na	1.26	3676	4985	5035	64.6	65.6
S-Lake Drain	5/29/2007	14:00	0.49	1.76	2067	1754	1755	80.6	80.8
S-Lake Drain	6/22/2007	12:15	na	0.98	2759	1855	1854	83.8	83.4
S-Lake Drain	7/20/2007	9:30	na	1.25	3589	1735	3819	69.8	69.9

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**DO-68 S-Lake Drain QA data**

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<b>Reference</b>	<b>Constants</b>				
Site	Date	Time	Structure/ Equipment	Sontek to staff gauge offset	Rating Quality
S-Lake Drain	1/9/2006	12:15	stream/Sontek/Keller Transducer	1.580	fair
S-Lake Drain	2/2/2006	9:30	stream/Sontek/Keller Transducer	1.750	fair
S-Lake Drain	3/1/2006	10:45	stream/Sontek/Keller Transducer	1.760	fair
S-Lake Drain	4/19/2006	13:19	stream/Sontek/Keller Transducer	1.760	fair
S-Lake Drain	5/8/2006	10:30	stream/Sontek/Keller Transducer	1.770	fair
S-Lake Drain	6/9/2006	13:30	stream/Sontek/Keller Transducer	1.790	fair
S-Lake Drain	7/6/2006	12:15	stream/Sontek/Keller Transducer	na	fair
S-Lake Drain	7/28/2006	9:30	stream/Sontek/Keller Transducer	2.350	fair
S-Lake Drain	8/31/2006	12:00	stream/Sontek/Keller Transducer	na	fair
S-Lake Drain	9/19/2006	10:45	stream/Sontek/Keller Transducer	2.340	fair
S-Lake Drain	10/10/2006	10:45	stream/Sontek/Keller Transducer	2.282	fair
S-Lake Drain	10/31/2006	15:30	stream/Sontek/Keller Transducer	2.190	fair
S-Lake Drain	12/1/2006	11:45	stream/Sontek/Keller Transducer	1.810	fair
S-Lake Drain	12/21/2006	10:15	stream/Sontek/Keller Transducer	1.810	fair
S-Lake Drain	2/14/2007	10:30	stream/Sontek/Keller Transducer	0.730	poor
S-Lake Drain	3/12/2007	10:00	stream/Sontek/Keller Transducer	1.020	poor
S-Lake Drain	4/4/2007	11:15	stream/Sontek/Keller Transducer	1.000	poor
S-Lake Drain	5/1/2007	10:15	stream/Sontek/Keller Transducer		poor
S-Lake Drain	5/29/2007	14:00	stream/Sontek/Keller Transducer	1.270	poor
S-Lake Drain	6/22/2007	12:15	stream/Sontek/Keller Transducer		poor
S-Lake Drain	7/20/2007	9:30	stream/Sontek/Keller Transducer		poor

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**DO-68 S-Lake Drain QA data**

Reference Site	Date	Time	Calculations									
			QA Ave Velocity (ft/s)	QA Area (ft <sup>2</sup> )	QA Flow (CFS)	Sontek /Keller Area (ft <sup>2</sup> )	Sontek Velocity (ft/s)	Sontek/Keller Flow (CFS)	Pre-Cleaning EC (% of QA)	Post-Cleaning EC (% of QA)	Temp (% of QA)	
S-Lake Drain	1/9/2006	12:15						0.31		96.04	0.00	94.71
S-Lake Drain	2/2/2006	9:30	0.52	51.20	31.31	49.87		0.6	29.92	101.56	0.00	98.99
S-Lake Drain	3/1/2006	10:45						0.51		100.51	0.00	100.05
S-Lake Drain	4/19/2006	13:19								146.94	0.00	89.60
S-Lake Drain	5/8/2006	10:30						0.21		284.48	0.00	92.51
S-Lake Drain	6/9/2006	13:30						0.11		142.63	0.00	84.56
S-Lake Drain	7/6/2006	12:15						na		93.40	0.00	101.74
S-Lake Drain	7/28/2006	9:30	0.04	19.05	0.74	19.28		0.1	1.93	129.31	0.00	98.74
S-Lake Drain	8/31/2006	12:00						na		86.07	0.00	94.34
S-Lake Drain	9/19/2006	10:45						na		103.05	0.00	101.01
S-Lake Drain	10/10/2006	10:45						0.54		101.10	0.00	100.32
S-Lake Drain	10/31/2006	15:30						0.4		98.94	0.00	100.34
S-Lake Drain	12/1/2006	11:45						0.35		98.67	0.00	98.13
S-Lake Drain	12/21/2006	10:15	0.51	55.10	33.65	56.20		0.5	28.10	100.79	0.00	99.10
S-Lake Drain	2/14/2007	10:30						0.5		99.08	0.00	100.55
S-Lake Drain	3/12/2007	10:00	0.27	66.91	21.85	63.75		0.29	31.67	99.74	0.00	100.48
S-Lake Drain	4/4/2007	11:15						0.08		107.78	0.00	100.15
S-Lake Drain	5/1/2007	10:15						na		135.61	0.00	101.55
S-Lake Drain	5/29/2007	14:00						0.13		84.86	0.00	100.25
S-Lake Drain	6/22/2007	12:15						na		67.23	0.00	99.52
S-Lake Drain	7/20/2007	9:30						na		106.41	0.00	100.14

## DO-84 SJR at Garwood Bridge/Highway 4

**Location:** 37.9350°N -121.3290°W

**Water District or Organization:** San Joaquin River at Garwood Bridge is operated by USGS and is in San Joaquin County.

**Station Description:** The CDEC station at San Joaquin River at Garwood Bridge (station ID: SJG) is operated by USGS. Flow and stage data in this report are taken directly from the CDEC website.

### Station Rating Variables:

Logger:	Unknown
Conductivity Probe:	None
Velocity Sensor:	Unknown
Stage Sensor:	Unknown
Stage Sensor (Bubbler):	Unknown
Battery:	Unknown
Power:	Unknown
Communications:	CDEC website.
Stage to Flow Relationship:	Rating unknown.
Estimated data quality:	Unknown
Date updated or calculated:	2/9/2007
Flow Calculation:	Rating unknown.
TDS or Salt Calculation:	Not calculated.
Expected Boundaries for Data (QA):	
Minimum flow:	-3,562 CFS
Maximum flow:	16,089 CFS
Minimum EC:	512.56 $\mu$ S/cm
Maximum EC:	512.56 $\mu$ S/cm
	EC was recorded at time of sampling.