Santa Barbara County

Hydrologic FWS & Transition to ALERT-2
Geographical Setting

- SB County covers ~2800 Sq. Miles
- Except for Coastal & Valley areas....

...... much of the County is comprised of rugged mountain terrain

- ...... which creates access & installation challenges
- Typically without power & wired communications infrastructure
- Many County sites are inaccessible during winter storm months
Regional Cooperation necessary for effective ALERT systems operations
(Radio Frequencies, Data Routing)
Santa Barbara County ALERT Network

Base Stations (x2), Repeaters (x4) & Transmitters (x87)
S. Barbara County Gauge Distribution

Hydrologic Gauge Sites = 107
(Rainfall, Stream, Weather, Reservoir)

- Self Recording x 20
- ALERT (Real-time) x 87
- Rain x 67
- Stream x 14
- Wthr x (9)
- Rsvr x 6

Cooperator/Observer Sites = 0

Not all are ALERT......yet
Gauges report through Repeaters (none direct), enabling SB & SLO data to NWS
Fewer Remaining Standpipe Installations

Inconvenient to access instrumentation

Excavations likely require Archaeological assessment

…..but a lower door panel improves access

……and standpipes also afford protection at remote sites from say, Bears
....and protection from other lesser known local hazards
Many Custom Gauge Enclosures

- ALERT Rain 0.01” (Cater)
- ALERT Rain 0.01” (Guadalupe)
- ALERT Rain 0.01”, w/snow, soil (Fig Mtn)
- ALERT Stream Radar (Goleta Slough)
- ALERT Stream Radar (Sisquoc River @ Goleta)
- ALERT Rain 0.01” (Surf)
ALERT Rain Gauge Sites

ALERT Rain 0.01" (Goleta FS)

ALERT Rain 0.01" (San Marcos Pass)

Rain 0.01" Gauge Calibration

TB 0.01" w/ Sealed Optical Data Logger

ALERT Rain 0.01" (San Marcos Pass)
(Common Short ALERT Gauge)
ALERT Stream Gauge Sites

ALERT Stream PT (M.Ygnacio Creek)
ALERT Stream Bubbler (Mission Creek)
ALERT Stream Radar (Montecito Creek)
ALERT Stream Radar (SY River - Tepusquet)
ALERT Reservoir Gauge Sites

CACHUMA RESERVOIR
(ALERT Encoder & PT, Rain, and Gate Opening Inclinometers x4)

GIBRALTAR RESERVOIR
(ALERT Encoder & Bubbler, Rain, and Gate Opening Inclinometers x4)

TWITCHELL RESERVOIR
(ALERT Bubbler water level, Rain)

JAMESON RESERVOIR
(ALERT PT water level, Rain)
ALERT Weather Gauge Sites

ALERT Weather (SBCC)
(Rain, Wind, Temp, RH, BP, Solar Radiation)

ALERT Weather (West Big Pine)
(Rain, Wind, Temp, RH, BP)
ALERT Soil Moisture Gauge Site

ALERT Rain, Snow Catch, Soil Moisture Sensors x5 (Figueroa Mountain)

Santa Barbara County
Real-Time Web Cameras (Cell based)

Cachuma Reservoir Camera

Sisquoc River @Garey Camera

San Pedro Creek Camera

Flood Warning System &

Sycamore Creek Camera
Santa Barbara County Hydrology Website

> Hydrology Report / Mobile APP

> Real-time ALERT
(Rainfall, Streams, Reservoirs, Weather, Soil Moisture)

> Historical Data & Analysis
(SDD, Multi-year Trends, Extreme Events)

> Rainfall & Reservoir Summary
(Updated Daily During Rain Events)

> Remote Real-time Cameras
Historical Data & Analysis
Real-time Rainfall, Stream, Reservoir Data

Santa Barbara County
Real-time Rainfall, River-Stream, and Reservoir Data

Data contained at this site are from Automated sensors, are provisional, and have not been verified for accuracy.

The County of Santa Barbara does not warrant the accuracy of the data and is not responsible for damages resulting from its use.

Official Rainfall Records can be accessed on this page (*Historical Rainfall* under the *Links* tab).

The County of Santa Barbara Hydrology Section is responsible for editing the website content.

Rainfall Map 1 hr 3 hr 6 hr 12 hr 24 hr 48 hr
Reservoir Map Current Levels

[Image of rainfall and reservoir data]
Real-time “Rain Gauge” Map
# NWS SHEF Feed (Implemented)

(Standard Hydrometeorological Exchange Format)

- National NWS standard required for Hydrometeorological Data.
- Enables ALERT data to be sent directly over the Internet to a network folder within the NWS Server system.
- S.Barbara ALERT Data SHEF feed to NWS implemented Aug. 2015
- Also sending SLO County SHEF feed to NWS (interim measure until SLO County upgrades base station software)
ALERT-2
A Regional Multi-Agency Initiative

So. Cal. Regional Counties
DWR Grant Funding for ALERT-2

- Santa Barbara County was a participant (and recipient) in the multi-agency (x6) DWR FER Grant process (Round #1), with Ventura County as the Lead Applicant”.
- Counties not included in the DWR Grant Round #1 (but in So Cal Regional ALERT Network) were still required to be involved – from a regional network design perspective (including SLO, LA, Riverside)
- Santa Barbara County is currently awaiting feedback on the Round #2 DWR Grant application funding – also coordinated through Ventura County.
- Although the DWR Grant(s) are a valuable funding source for ALERT-2 progression, Santa Barbara County is not limited by the DWR Grant funding to fully implement ALERT-2.
County ALERT Network Expansion (and resulting demands upon System)

- 10 Years ago, Santa Barbara County had 57 ALERT Sites.
- Today, Santa Barbara County has 87 ALERT Sites, with 270 reporting Sensors – a 50+% increase in sites. (avg. +3/yr)
- The resulting ALERT transmission traffic has significantly increased over that period of time
- Most of the expansion was associated with precipitation gauge sites, that were upgraded from “Self Recording w/Data Logger” or (eliminated) “Observer/Cooperator” sites.
- 90% of all our Precip sites are now 0.01” high resolution gauges, but as ALERT are often set to report on 0.02” intervals to minimize transmission contention (with electronic on-site logging at 0.01”)
- The benefits of ALERT-2 will be significant with our expanded ALERT traffic – especially during intense storm events.
ALERT-2 Implementation
STEP 1 – Base Station (x2) Software Upgrade to accept ALERT-2 (& A-1)

(Completed July 2013)
STEP 2 – Base Station Receiver/Decoder Upgrade to accept ALERT-2 (& A-1)
Completed July 2014 (x1) & July 2015 (x2)
STEP 3 – ALERT-2 Transmitter (Rain Gauge) / A-2 Initial System Test (Completed August 2015)

Santa Barbara County

Flood Warning System & Transition to ALERT-2

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STEP 4 – ALERT-2 Primary Repeater Upgrade (A-1 Conc. & A-2 Rpr)  
(June 2016 - Anticipated)
STEP 5 – ALERT-2 Repeaters (x4) Upgrade (A-1 Conc. & A-2 Rptr)  
(July 2016 – Anticipated)
STEP 6 – ALERT-2 Transmitter Upgrade (x87) – Phased in over 4 years (2016 to 2019 - Anticipated)
Questions?

Thank You