

**Basin Management Objective
Butte County
Sub-Inventory Unit – LLANO SECO**

Butte County Water Advisory Committee Member – David Sieperda

Contact Information

Phone Number: (530) 342-0839

Email Address: davesieperda@pulsarco.com

Description of the Llano Seco Sub-Inventory Unit –

The Llano Seco Sub-Inventory Unit (SIU) covers an area of about 18,400 acres in the southwestern portion of the West Butte Inventory Unit. It is bordered by the M&T and Angel Slough SIUs to the north, Durham Dayton and Western Canal SIUs to the east, Glenn County the south, and the Sacramento River to the west. This SIU corresponds roughly to the water service area associated with Rancho Llano Seco. Land uses within the Llano Seco SIU consist of a mixture of row crops, grain, pasture and native riparian supported by both surface water and groundwater. In a normal year, about 6% of the Llano Seco SIU is in summer agricultural production supported by groundwater.

Management Objective –

Observe and maintain the current and future groundwater surface elevation at a level which will provide an economical and adequate water supply to this area's crops and homes. This basin management objective is intended to be flexible to future land and water uses in this relatively undeveloped portion of Butte County. We will begin monitoring a well, located fairly close to the Sacramento River for water levels and water quality in 2007 which should give us an even better understanding of groundwater levels and quality in this area of Butte County.

Geologic Formations Identified In Sub-Inventory Unit –

Geologic formations in the Llano Seco SIU, from youngest (shallowest) to oldest (deepest), include:

- Quaternary Alluvium
- Basin Deposits
- Tehama Formation
- Tuscan Unit C (Upper Tuscan)

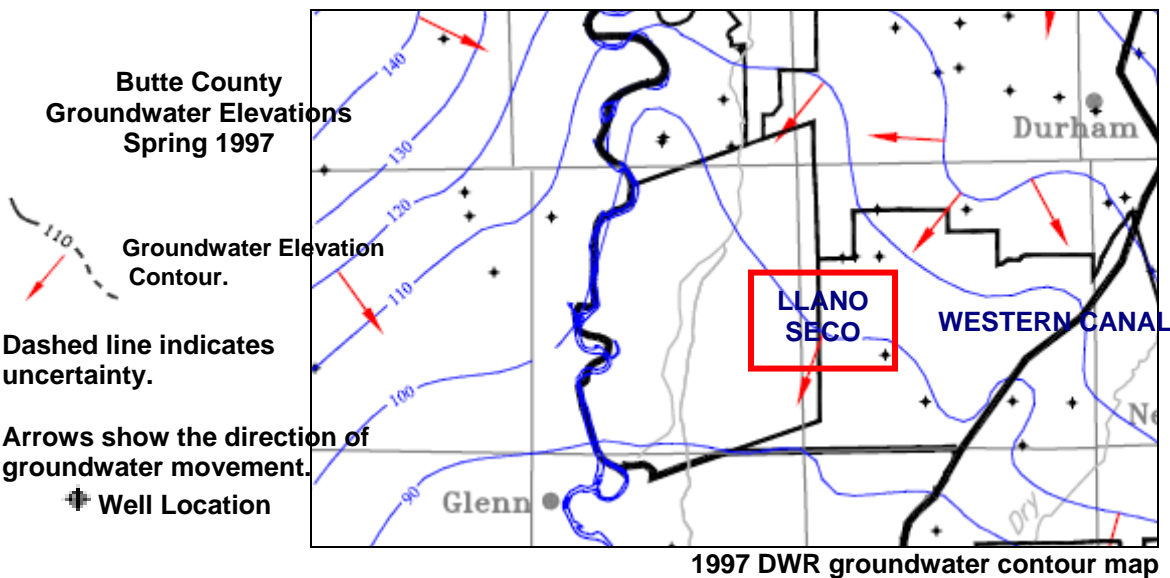
Fresh Water-bearing Units. In the Sacramento Valley Region of Butte County, fresh groundwater-bearing units include, from youngest (shallowest) to oldest (deepest), the Modesto, Riverbank, Laguna, Tehama and Tuscan Formations. Those included in the Llano Seco SIU are:

- Tehama Formation

Tuscan Unit C (Upper Tuscan)

Groundwater Flow in the Llano Seco Sub-Inventory Unit –

The below figure is a cropped segment of a map prepared by DWR Northern District. It shows the groundwater elevation contours in your sub-inventory unit with arrows indicating the direction of groundwater movement. This graphic indicates that the regional pattern of spring groundwater movement in the Llano Seco SIU is in a south-to-southwesterly direction, at a gradient of about 2 feet per mile, toward the Sacramento River and Angel Slough.



BMO Key Wells Selected for Groundwater Level Monitoring –

Well ID	Aquifer System	Well Type	Stage 1 & 2 Alert Elev. (ft)	Stage 3 Alert Elev. (ft)
20N01E18L01M	Lower Tuscan	Monitoring	104.00	99.00
20N01E18L02M	Upper Tuscan	Monitoring	99.29	94.29
20N01E18L03M	Alluvial	Monitoring	99.57	94.57
21N01W35K02M	Alluvial	Irrigation	97.09	92.09

Well ID	Aquifer System	Well Type	Total Depth (ft)	Top Perf (ft)	Bottom Perf (ft)	Geologic Formation at Top Perf.	Geologic Formation at Bottom Perf.	Aquifer Type
20N01E18L01M	Lower Tuscan	Monitoring	1000	767	894	Tuscan B	Tuscan B	Confined

20N01E18L02M	Upper Tuscan	Monitoring	581	509	562	Tuscan C	Tuscan C	Confined
20N01E18L03M	Alluvial	Monitoring	173	99	109	Basin Dep/Tuscan C	Tuscan C	Semi-Confined
21N01W35K02M	Alluvial	Irrigation	270	75	270	Basin Deposits	Tuscan C	Semi-Confined

BMO Key Wells Selected for Groundwater Quality Monitoring–

Butte County Department of Water and Resource staff will begin sampling ph, temperature and EC on a well located in the Llano Seco Sub Area in August 2008. This well has not been monitored in the past, so a State Well Number will be assigned prior to the sampling date, and the first sample will be done in August 2008.

BMO Key Well(s) Selected for Land Subsidence Monitoring–

Land Subsidence is continuously monitored by the Department of Water Resources and Butte County Water and Resource Conservation at the closest extensometers in the Western Canal Water District and M&T Ranch sub-inventory units.

BMO Alert Stage Definitions and Compliance Methodologies–

The Llano Seco Sub-Inventory Unit will use the following guidelines in the management of the groundwater resources. The groundwater level and land subsidence management objectives are intended to trigger predetermined voluntary Ground Water Management Actions, as defined in the accompanying staff report, to remedy declining ground water levels that are not recovering to compliance levels for each index well. The groundwater quality BMO management actions will be defined in the 2009 document.

Groundwater Levels – Specific Depth

Stage 1 & 2: The Stage 1 & 2 alert levels were determined by taking the average spring groundwater elevation minus five feet.

Stage 3: The Stage 3 alert level is determined by taking the average spring groundwater elevation minus ten feet.

Groundwater Quality –

This domestic well chosen for groundwater quality trend monitoring has not been monitored in the past, so an official well number will be assigned and the first sample will be done in August 2008.

Land Subsidence –

Land Subsidence will be monitored at the closest extensometers located in the M&T and Western Canal sub inventory units. Maximum annual inelastic land subsidence shall not exceed 0.01 feet per year.

Stage 1: is reached when the annual elastic subsidence exceeds the average annual elastic subsidence measured over the period of record of the extensometer.

Stage 2: is reached when the annual elastic subsidence exceeds the maximum recorded elastic subsidence over the period of record for the extensometer.

Stage 3: is when inelastic subsidence is detected. Inelastic subsidence shall be detected by comparing reading from the extensometer taken on March 1 of each year against previous March 1 measurements.

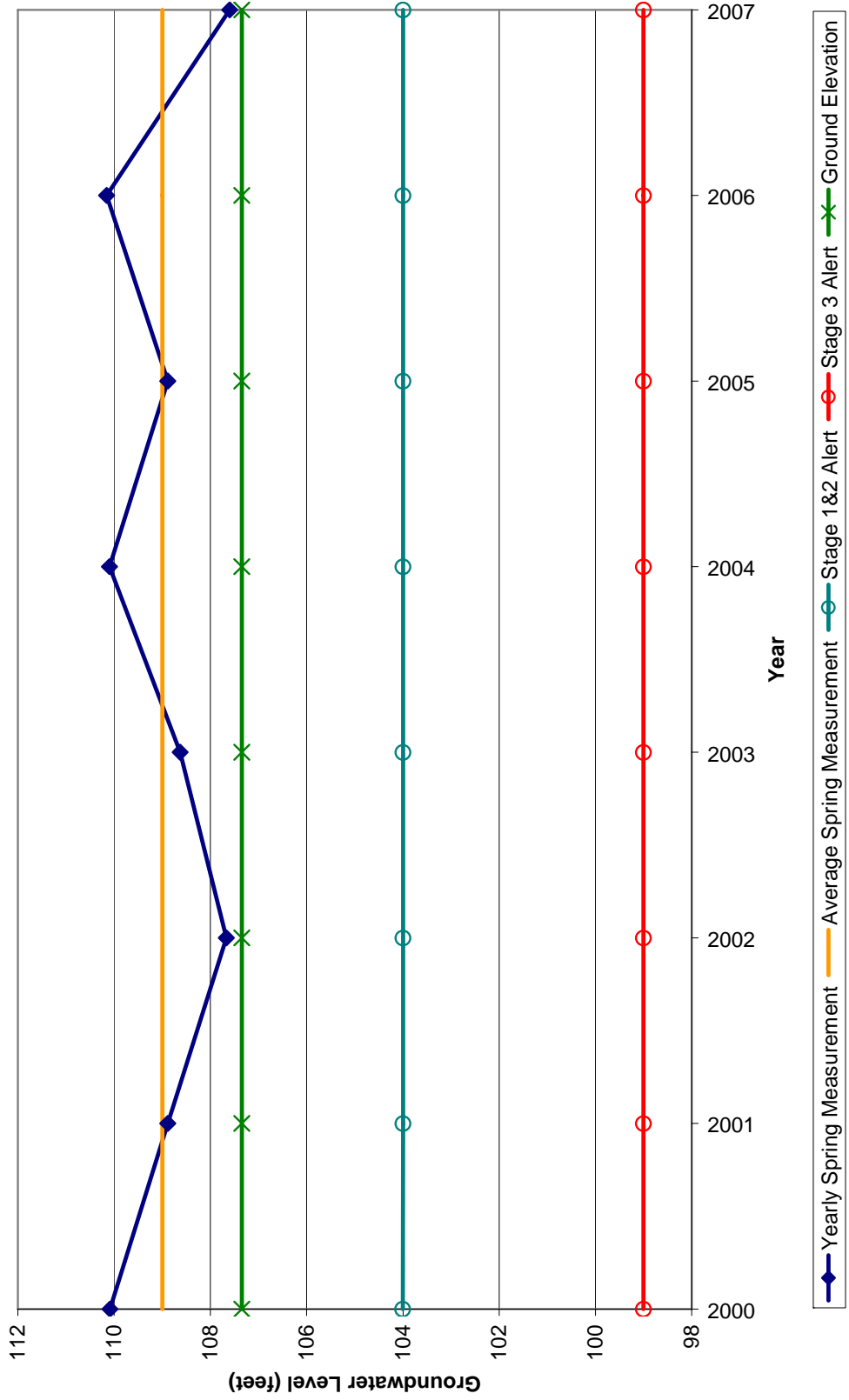
Future Monitoring Recommendations –

Two additional wells located within the SIU will be added to the monitoring network in 2008. Once both wells have been assigned State Well Numbers and measurements taken, that data will be available for review from the BMO Information Center. Groundwater elevation and water quality trend monitoring data will be presented in this BMO once enough years of data have been collected for analyzation.

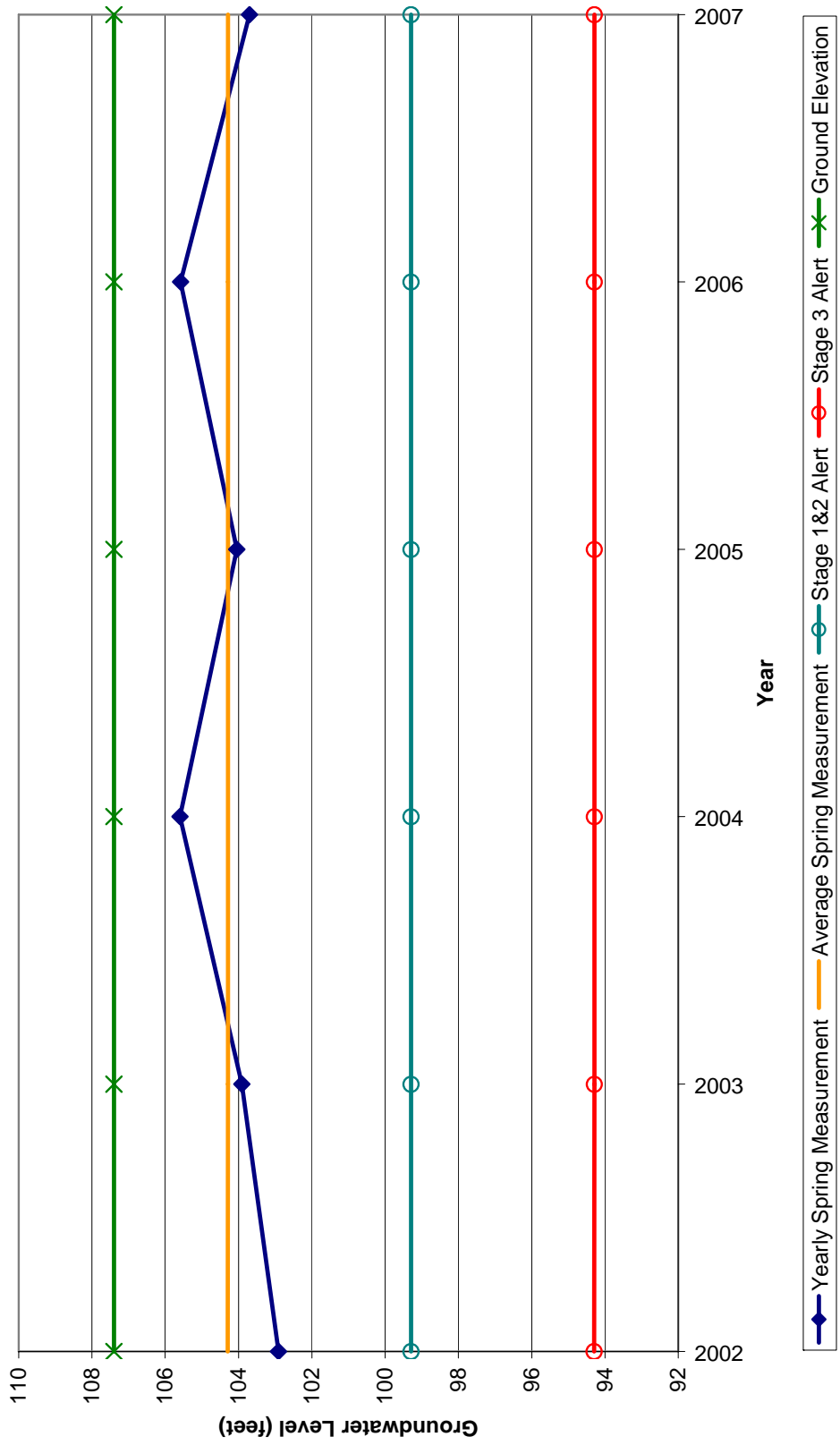
Supporting Data –

Hydrographs depicting yearly spring level measurements, including 2007 data, with established alert levels.

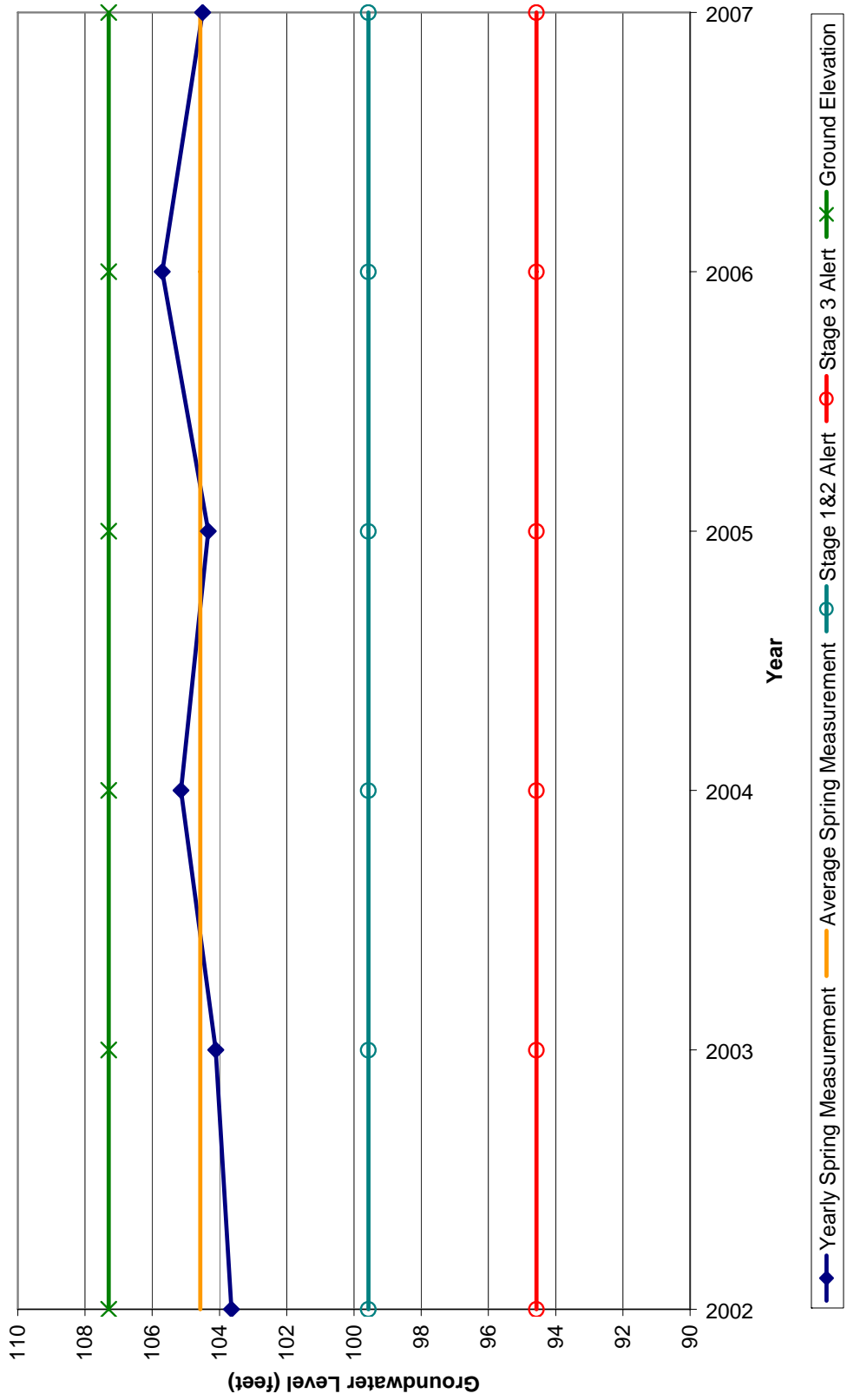
Spring Groundwater Levels
Liano Seco - 20N01E18L01



Spring Groundwater Levels
Llano Seco - 20N01E18L02



Spring Groundwater Levels
Liano Seco - 20N01E18L03



**Spring Groundwater Levels
Llano Seco - 21N01W35K02**

