

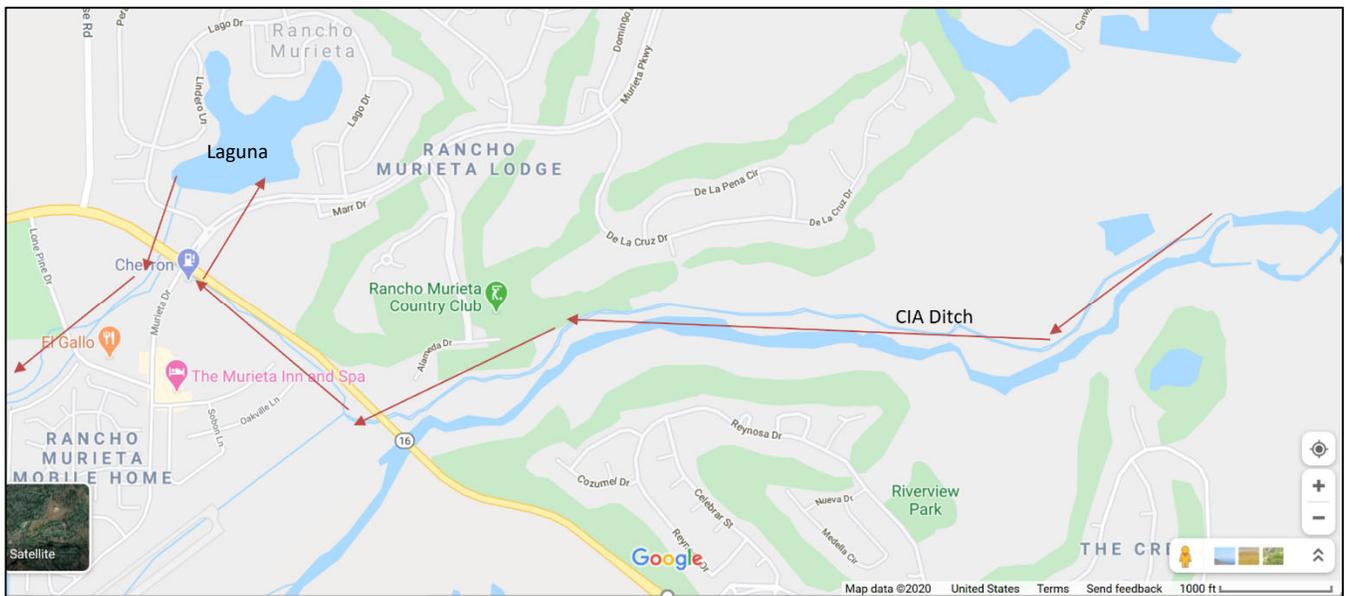
From: Paul Siebensohn, Director of Field Operations

Subject: Laguna Joaquin basin overview

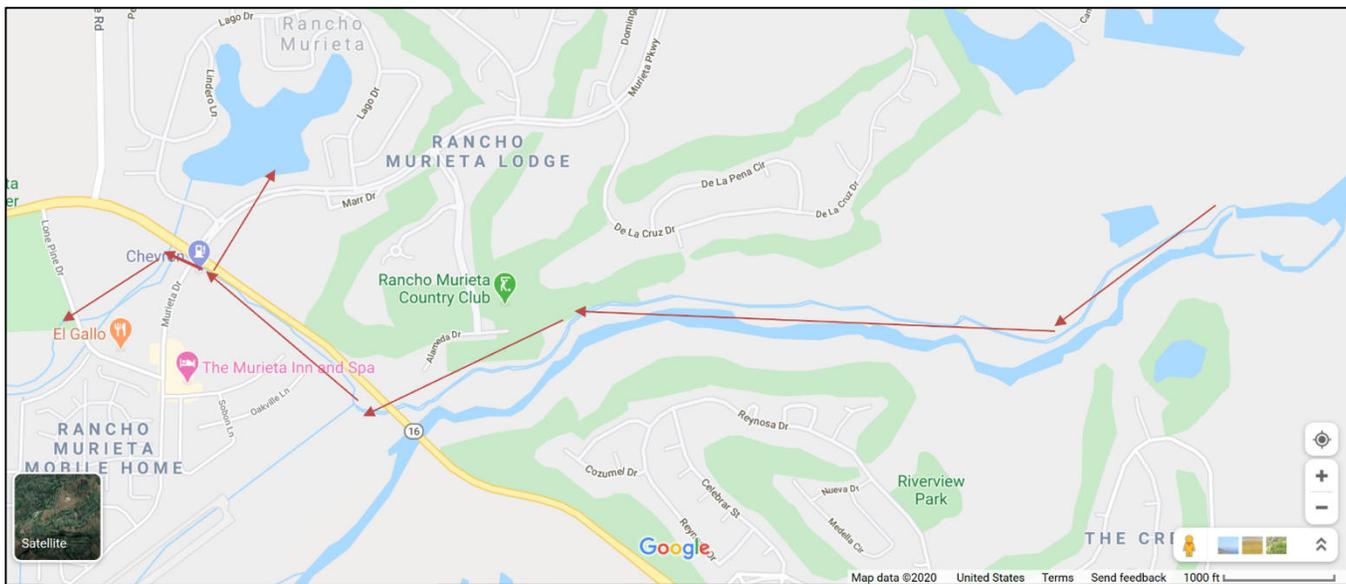
Laguna Joaquin Operations:

For approximately 40 plus years the District would route available water from the Cosumnes River into the CIA ditch, into Laguna Joaquin and back out to the Anderson Ranch. This practice typically allowed Laguna Joaquin to remain full and the water to cycle through it and remain relatively fresh. This practice changed around 2016 as the controlling 2/3 interest in the CIA were adamant that the District no longer continue this practice as they were leasing ranchland for organic farming and had a concern with the water quality out of Laguna Joaquin.

The flow path in and out of Laguna Joaquin prior to 2016 was as shown:



Flow path now, which doesn't allow for flow through and out Laguna Joaquin:



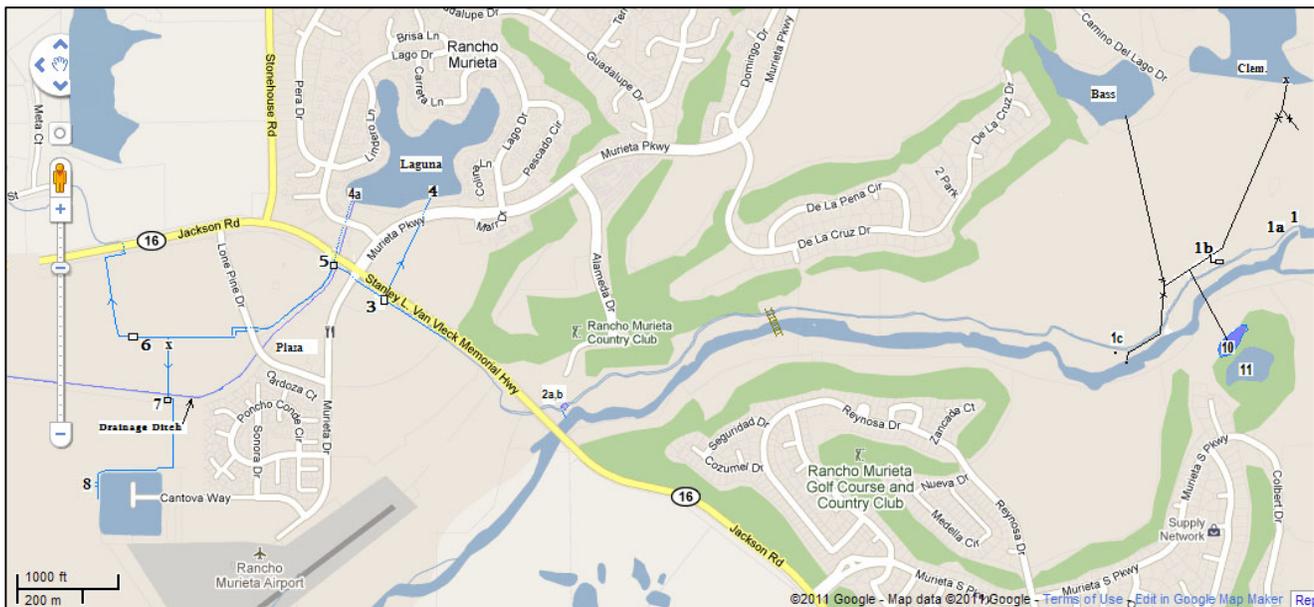
As waters stagnate in Laguna Joaquin, it warms up considerably, dissolved oxygen levels drop and it grows a lot of algae.

Per the 1987 Easement Agreement granted by the RMA to the District, the District is responsible for water quality and control of aquatic growth and for maintaining the water level in Laguna below the high water line; endeavors to keep the water level within a reasonable level of the spillway (*which is weather and water availability dependent*); is responsible for the inlets and outlets and dam; The District recovers its cost for operation and maintenance by direct billing to its customers, which in the case of Laguna is RMA. The District is periodically asked by RMA staff to treat for algae around their pump intake. Currently costs for service are built into the District's Raw Water rate. If the algae is treated too much, or naturally dies off in large quantities due to excessive heat or other factors, the dissolved oxygen levels drop so low that the fish that live within it may die.

The RMA is responsible for controlling the vegetation above the high water line and service roads around all lakes and reservoirs. The District may elect to perform RMA's duties and seek reimbursement for those duties, if the District first notifies the RMA and allows them adequate time to perform those duties.

Water flow into Laguna may be from rainfall, stormwater and over irrigation runoff, and diversion of water flow from the Cosumnes Irrigation Association ditch. In instances of drought, the District and RMA coordinate to determine request that the District provide water from Lake Clementia, through the CIA ditch system to Laguna. This is discussed with the RMA to balance the needs between Clementia and Laguna.

Map of raw water diversions and appurtenances shown below.





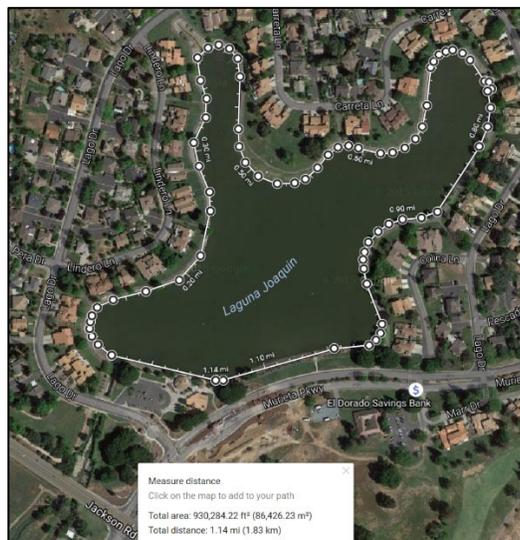
Description:

It is a relatively large body of water located on the North side of the Rancho Murieta community within the gates of the Rancho Murieta Association’s home owners association (RMA). Laguna Joaquin is owned by the RMA, but the Rancho Murieta Community Services District (District) has an Easement for Operation & Maintenance of it.

Laguna Joaquin serves several purposes for the private HOA portions of the community of Rancho Murieta. For the District it is a drainage detention basin serving north side developments Units 1, 2, 3, and 4. For the Cosumnes Irrigation Association (CIA) it may serve as a temporary water storage basin for downstream ranch irrigation. For the RMA and its membership it is a source of water for irrigation of common ground landscaping, an aesthetic amenity, and recreation for fishing.

Size:

Laguna Joaquin	Area 21.53 – 24.07 acres, volume 122 acre-feet Shoreline 1.14 miles long
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Laguna History:

Laguna Joaquin basin was constructed in 1970 by the Operating Engineers to have a place to store water for irrigation of the north golf course areas that were not covered under the riparian water rights.

To build the lake and use the Cosumnes Irrigation Association Ditch to move the water from the Granlee's Dam to the lake, it was agreed that the ranches within the District could store irrigation water for 30 days at a time during the summer months. (This is within water rights allowances as regulatory storage.)

The basin was also used to store drainage runoff water and to store water from the river for golf course irrigation, as time went on more and more water was being passed through the lake from the drainage system. In 1988 the RMCC rebuilt the north course and turned the pump station on Laguna Joaquin over to RMA for common area irrigation.

In 1987 RMCS D and RMA developed an Easement Agreement for various bodies of water and a revised subsequent agreement in 1994. For Laguna it notes that the water users at Laguna Joaquin would pay all RMCS D costs to maintain the water quality or do any cleanup of the lake. As RMA is the only user of the water out of Laguna Joaquin they would pay the cost for any water quality improvements. The RMCS D is granted responsibility for the operations at Laguna while RMA retains right for recreation use.



Photo of Spillway at Laguna Joaquin with staff gauge and drain valve on left side

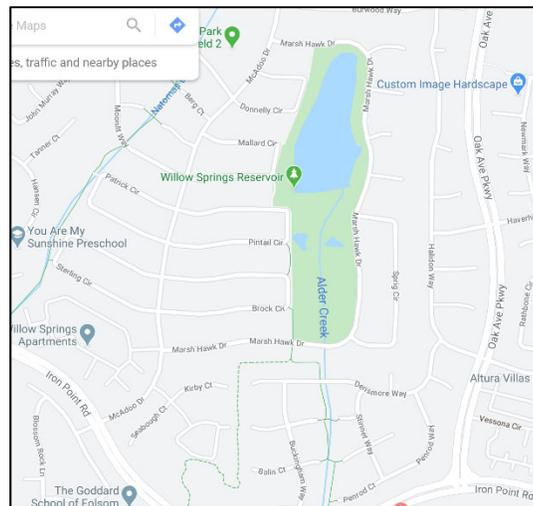
Local Area Review of similar drainage basin and drainages

I conducted a review of area basins and drainage channels as a comparison to Rancho Murieta. (Attachment 2) As can be seen, they are left in their natural states as ephemeral wetlands which allow natural vegetation to provide nutrient uptake of nitrogen and phosphorus, sedimentation, percolation and filtration of drainage waters. The most similar drainage body I reviewed was in

nearby Folsom. It has homes around it and is currently drying up and has pungent odors of decaying vegetation on the north side where the breeze was blowing to.



Photo of Willows Spring reservoir in Folsom drying up as it does every summer



The District Board hired a consultant to conduct a reserve study in 2014 to see at what level the District's infrastructure was funded for replacements. For over a million dollars of drainage assets it noted that the District is 7.6% funded. Since that time \$59,494 was borrowed from the Drainage fund to pay for a what became a District portion of the RMA's Northgate Project.

Regulatory Storage

At the request of the downstream Ranch, the District may store water that has been channeled into Laguna Joaquin for re-release back to the Ranch.

In 1988 The District created and adopted the Storm Drainage & Flood Control Master Plan. (Attachment 1) It provides a description of the system and its operation, responsibilities and maintenance by the District. Also adopted that year was the Drainage Code which set the guidelines for future amendments of the Drainage Code for the District's operation of the storm drainage system.

The storm drainage system for Rancho Murieta is comprised of natural vegetated and manmade swales, extended basins, ponds, pipelines and flood control levees. The key principles that guide the system are:

- To protect life and property and minimize inconvenience to the public,
- To create a realistic balance between inconvenience and protection against a flood hazard,
- To provide adequate measures to protect the natural resources within the community and
- To protect the community's drinking water supplies from urban runoff contamination.

Significant storm drainage facilities within a community include natural drainage courses which convey seasonal run-off, 100 year flood protection levees along the Cosumnes River, perennial storm drainage detention basins and marsh and wetland areas. In addition small to large diameter pipelines and pump stations convey runoff to the ditches and river.

The level of protection provided by the storm drainage system is:

- Protection of developable areas from the 100 -year flood event.
- Street drainage systems are designed for the 10-year storm.
- Culverts, open channels and natural streams are designed for the 100-year storm.
- Finished floor elevation should be a minimum of 1 foot above the 100-year storm water surface.

Maintenance of this system includes those factors that are essential to keep the drainage system in good condition, maintaining an adequate staff to accomplish the work and instituting practices and procedures for maintenance of existing and future structures and facilities.

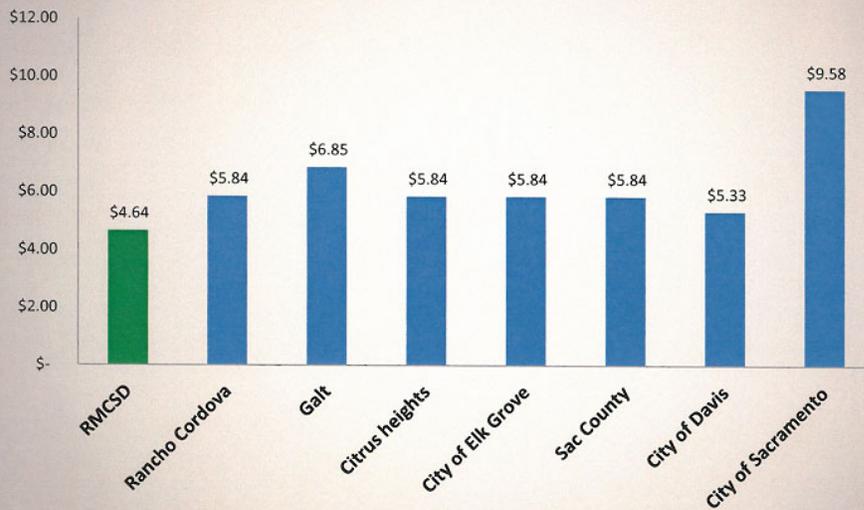
The annual maintenance program includes inspections and periodic maintenance by mechanical equipment of the natural drainage courses and ditches, cleaning of silt, branches, weeds and other debris from ditches, natural courses and pipelines.

Level of Service/Funding:

The District and its Board and staff have historically endeavored to keep of its service rates low and standard of service high. As noted in the District's Storm Drainage & Flood Control Master Plan, "The desired level of service will have the most significant influence on the capital and maintenance costs of the system." As shown in the last drainage rate survey conducted in 2013, the District's drainage rate is the lowest around, and it is uncommon of these other areas provide Midge Fly control, levee operation and maintenance, or multiple aesthetic cuttings of their drainage systems. They all follow the general best management practices (BMPs) of keeping drainage channels and basins in their natural states to catch, filter, and slow down stormwater runoff, update nutrients such as phosphorus and nitrogen which may pollutes waters, and only keeping inlets and outlets of culverts clear, which we do as well during the rainy season.



Drainage Rate Comparison, July 2013



Storm water from urban runoff is one of the leading causes of pollution in creeks, rivers, and lakes. In fields and forests, most rain water is absorbed by the soil and taken up by plants and trees. However, developed areas contain impermeable surfaces like roofs, parking lots, and streets that cause rainwater to runoff (storm water) and collect pollutants. Storm water that flows from those impermeable surfaces and into storm drains or other conveyance structures without first flowing through best management practices (BMPs), such as grass lined swales or detention basins, goes untreated directly into our creeks, rivers, lakes, deltas and eventually, the ocean.

Storm water is a resource and is ultimately part of the hydrologic cycle, along with our potable water, so it is imperative to keep it as clean as possible. Storm water can become polluted by pesticides, paint, fertilizers, pet waste, litter, oil and other automotive fluids, eroded soil and household chemicals. Even small amounts of pollutants that accumulate on roads, parking lots, and sidewalks can be transported into nearby streams and rivers. Identifying sources of storm water pollution and keeping this pollution away from storm drains and ditches is the best and most economical way to keep storm water clean - which ultimately protects our vital water resources. Therefore treating Laguna Joaquin with algacides is not a good option.