

What's In The Box?

Hikers crossing the bridge near the Garland Park ranger station often pause to examine a curious machine in a clear plexiglass box near the handrail on the downstream side. Inside is a river gage.



Garland Park Bridge Gaging Station

The gage measures the level of the river by means of a float inside the corrugated metal pipe that descends into the river. The float rises and falls with changes in river level. The float and its metal line are connected to a graphic recorder. An ink pen moves left to right in eight days, drawing a continuous trace of river-level changes over time.

Periodic measurements of river flow are made by District staff throughout the year in order to calibrate the gage. Such measurements include river width, depth, and velocity. These measurements are used to develop a relationship between river level (in feet) and the rate of flow (in cubic feet per second.)

Information collected by District staff at the Garland Park gage and others along the river, is used to monitor groundwater pumping, assess river flooding, and optimize water production from the Carmel River for human needs while minimizing impacts to fish, birds, mammals, and streamside vegetation.

The mission of the Monterey Peninsula Water Management District is to promote or provide for long-term sustainable water supply, and to manage and protect water resources for the benefit of the community and the environment.

Carmel River Water Flows Uphill

ASR Storage Season Begins

The 2013 Aquifer Storage and Recovery (ASR) injection operations began on December 3, 2012 following a rollicking series of storms the first weekend in December. Carmel River water was moved up the hill from Valley Greens Drive in the Carmel Valley, through the Segunda Pipeline within the Tehama subdivision and cascaded down the other side through Monterra Ranch, to find its way to injection wells up General Jim Moore Boulevard and into the Seaside Groundwater Basin. Diversions from the river continued through January 16, 2013 when injection operations were temporarily curtailed pending resumption of rainy weather that would create adequate Carmel River flows above minimum regulatory "bypass flow" requirements.

This year to date, a total of 295 acre-feet (AF), enough to serve 1,450 homes for a year, has been injected into storage for subsequent recovery later this year during the dry season. This exceeds the 131 AF that were injected during the entire previous injection season, which was a dry year.

Beginning in 1998 through 2007 the District had been injecting Carmel River source water into the Seaside Basin as part of an ASR feasibility testing program. Subsequently, the District and Cal-Am have been cooperatively implementing permanent ASR operations at the Santa Margarita (Water Project 1) facility under a jointly held water right issued by the State Water Resources Control Board in 2008. More recently, beginning

in 2012, permanent ASR operations were initiated at a second ASR facility being developed by Cal-Am with assistance from the District at the nearby Seaside Middle School (Water Project 2) facility. There are two ASR wells at each facility, for a total of four ASR wells thus far. Since the beginning of the pilot program, a total of 4,772 AF has been injected and temporarily stored for use in offsetting impacts associated with Cal-Am's Carmel River production during low-flow, high-demand periods.

This year provided learning opportunities that will affect future operations in order to better maximize ASR use. Several factors contributed to the

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Joe Oliver, MPWMD Water Resources Manager, collects data at ASR Well # 3. Enough water to serve 1,450 homes for a year has been stored for later use by the ASR project.



Carmel River Lagoon -- District staff monitor water level and temperature to assess conditions for migrating steelhead fish.



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\$500 Rebates and a Smile!

Rebates of up to \$500 are available for replacing an old washing machine with a water efficient model, and rebates of up to \$200 cover the cost of high efficiency or ultra high efficiency toilets! Take advantage of rebates to upgrade your home or business inside and out. Since these rebates essentially pay for the new equipment, don't delay!

Replacing old fixtures and appliances with water efficient ones is smart. You save money on your water bills and electric bills, and the community saves water. Old washing machines use as much as 48 gallons of water per load; newer high efficiency washers use less than 14 gallons per load, saving as much as 34 gallons per load! As our water rates continue to escalate, take advantage of the rebate program to save your share.

Rebates are also available for outdoor irrigation system upgrades. Now is an excellent time to update your landscape. Rebates are available for lawn removal (pre qualification is required), new irrigation system controllers, soil moisture sensors,



Friendly and knowledgeable District staff are ready to issue your rebate. From left to right Gabriella Ayala, Michael Boles, Debbie Martin and Stephanie Kister.

water efficient sprinkler nozzles, graywater irrigation systems and rainwater storage tanks.

Rebates are offered by MPWMD, in partnership with California American Water and the Seaside Municipal Water District. If you have questions, call the MPWMD at 831-658-5601 or check our website at www.montereywaterinfo.org.

5,341 Steelhead Cared For at Sleepy Hollow Facility



MPWMD staff removed 5,341 steelhead cared for at the Sleepy Hollow fish rearing facility and returned them to the Carmel River so they can swim downstream to the ocean.

ASR Season Begins

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actual injection volume falling below the available ASR well capacity. These factors included a major Carmel River source well (Canada well) being offline due to an equipment failure that could not be accessed for repair due to wet conditions, temporary "spikes" in Cal-Am system demand that at times reduced the amounts that could be diverted to the ASR wells for injection, and the unanticipated loss of production from several of Cal-Am's upper Carmel River source wells due to sub-freezing temperatures during the cold weather earlier in January 2013.

The District is hoping that the month of March comes in like a lion and stays like a lion, perhaps through April or May.

Protection of the Carmel River steelhead fish is a year-round effort. Crucial to fish survival for future generations is the care and feeding of steelhead at the District's Sleepy Hollow fish facility on the Carmel River. In December 2012, District staff removed 5,341 healthy, lively steelhead from the Sleepy Hollow facility and returned them to the river so they could swim to the ocean and continue their natural life cycle.

For these steelhead, the journey to the fish facility began in summer and fall when Carmel river water levels were low. District staff rescued fish stranded in shallow water and moved them to safety at the fish facility, a man-made river channel that provides cool, fast running water and plenty of food for the fish to thrive and grow. Later, in December when Carmel river water levels were high enough for fish to swim downstream, the steelhead were taken out of the facility and returned to the river.

Steelhead removed from the facility are slightly larger than fish raised entirely in the wild. This is good for long-term steelhead survival, as larger fish are more likely to swim to the ocean and then return to the Carmel River one to three years later to breed.

