



CITY COUNCIL AGENDA REPORT

DATE: March 28, 2011

AGENDA OF: April 5, 2011

DEPARTMENT: WATER DEPARTMENT

SUBJECT: Habitat Conservation Plan Update (WT)

RECOMMENDATION: Motion to authorize the Water Director to enter into negotiations with NOAA Fisheries Service for a permit to bring the City's water operations in the San Lorenzo River, Newell Creek and North Coast streams into compliance with the Endangered Species Act.

BACKGROUND: Since 2002, the City of Santa Cruz (City) has been developing Habitat Conservation Plans (HCP) in order to comply with the State and Federal Endangered Species Acts, which protect threatened and endangered (special status) species.

The City's water supplies come predominantly from flowing sources such as Liddell Spring, Laguna Creek, Majors Creek, Newell Creek, and the San Lorenzo River. These sources also provide habitat for special status species, including but not limited to, coho salmon and steelhead trout (anadromous salmonids). Due to the presence of these special status species or habitat that would support these species, the City must obtain an Incidental Take Permit (Permit) as required under the Endangered Species Act (ESA) that will allow the City to continue operation and maintenance of water diversions. The HCP identifies how the City will minimize or avoid impacts to special status species and is required to obtain the Permit from NOAA Fisheries Service. Consultations with several other federal and state agencies are also required for completion of the permit process.

The benefits of the HCP include protection of special status species and long term certainty regarding water supplies for the life of the Permit (assumed to be 30 years). The costs of the HCP will include impacts to the City and its water supply, such as increased monitoring, operational changes, offsite mitigation and compensation, and reduced water availability. The City could face fines and court-ordered limits on its water operations if it fails to adequately protect special status species and come to agreements with regulators for its permits under the Endangered Species Act.

Though this report focuses on conservation of anadromous salmonids (due to the likelihood that permitting for them will result in impacts to the water supply), other special status species being included in HCPs for the City water system include the Pacific lamprey, Pacific pond turtle,

tidewater goby, California red-legged frog, Mount Hermon June beetle, Zayante band-winged grasshopper and the Ohlone tiger beetle.

In support of developing the HCP, various studies have evaluated the effects of the City's water operations on endangered fish and its habitat. The studies include assessment of coho and steelhead spawning, rearing and passage habitat, habitat surveys for other special status species, water quality assessments of City water sources, extensive hydrologic and geomorphic analysis of City water source streams, implications of climate change on local hydrology, long-term water demand projection refinement, water supply impacts, and development of conservation strategies that include instream flow improvements as well as offsite mitigation measures to compensate for take that may still occur after implementing improvements in stream flow and habitat.

The various studies have sought to determine how much flow is needed at what times of the year to protect the fisheries habitat during all freshwater life phases (such as migration, spawning and rearing) over a range of hydrologic year types.

The City is proposing a phased conservation strategy that improves instream flow for anadromous salmonids while recognizing that the limitations of the existing water supply system do not allow consistent achievement of optimal flows. From a water supply perspective, the studies are assessing the impact of keeping more water in the streams – which results in having less available for the City's water supply and drawing more heavily on the storage in Newell Creek Reservoir (Loch Lomond).

DISCUSSION: These studies show that take is occurring due to the City's long time and current water operations during much of the year and in most water year types. The studies clearly demonstrate that without additional water supply the proposed instream flows are relatively modest and ongoing harm to endangered fish will continue to occur (see Attachment A – Laguna Creek flow prescription comparison). Generally speaking, the impacts are greatest on the North Coast streams during the dry season and during dry water years. However, take is not limited to those conditions. The City is also confronted with wet season instream flow needs to support anadromous salmonid migration and spawning. Additionally, given the renewed focus on the San Lorenzo River for coho salmon recovery, the conservation strategy must address the relatively complex (and formerly lower conservation priority) San Lorenzo watershed in addition to the North Coast streams.

Conservation Strategy:

The City is proposing the following general conservation strategy developed by Hagar Environmental Science. This strategy incorporates Federal and State stream habitat improvement requirements to increase stream flow (which reduces the amount of the City's water supply) with yearly variable rainfall projections and the effects of augmenting the City's dry weather water supply with other sources to compensate for the reduction in water take:

Stream flow "types" are categorized as Tier 1, 2, and 3 for ease of explanation.

- Tier 1 refers to the current flows that would simply maintain current habitat levels. Tier 1 flows fail to meet Federal and State ESA requirements.

- Tier 2 refers to flows that would provide better habitat than now exists
- Tier 3 flows would significantly improve stream flows to provide 80% of optimum flows.

In the near-term, without augmentation of the City's dry weather water supplies, the goal of the conservation strategy is to provide Tier 2 flows in most years (88% of years). Under dry year conditions when Tier 2 flows cannot be met, it may be necessary to resort to Tier 1 flows in some years. If the City does not augment its dry weather water supplies, the City's ability to deliver Tier 2 flows drops dramatically over time to the point of providing improved habitat in less than a quarter of all years (22% of years) by 2030.

In the mid-term, assuming augmentation of the City's dry weather water supplies, the goal is to provide Tier 2 flows in the majority of years (90% of all years), resorting to Tier 1 flows only in critically dry year conditions. This strategy would require additional water supply of 2.5 million gallons per day (mgd) in the dry weather season. However, even with additional water supply, the City's ability to meet Tier 2 flow drops significantly (75% of years) by 2030.

In the long-term (beyond the year 2030), the goal of the Conservation Strategy is to provide Tier 3 flows as often as practicable. When unable to meet Tier 3, Tier 2 will be the fall back. However, there will still be times when even Tier 2 cannot be met and Tier 1 will be provided. If the City has developed at least 2.5 mgd of additional dry weather water supply, Tier 3 flows may be provided in about only one quarter of all years (23% of years). Expansion of the water supply project to 4.5 mgd would allow for Tier 3 flows more often in more than half of all years (56% of years), but would still require fallback to Tier 2 often and Tier 1 occasionally.

During the years that Tier 2 flows can not be met, \$500,000 would be provided by the City to compensate for our authorized take. This would fund offsite mitigation. In years when Tier 2 flows can be met it will still be necessary to fund offsite mitigation but at a lower level. In this case, the annual amount of mitigation compensation would be \$250,000¹. Offsite mitigation may include a range of activities including but not limited to riparian easement acquisition, instream habitat restoration projects, groundwater recharge to restore base flows, etc. Mitigation projects would not be limited to the City's drinking water source watersheds, but would also include other key salmonids watersheds within the County. It is anticipated that the offsite mitigation work would be completed in partnership with the Santa Cruz County Resource Conservation District and other agency partners – leveraging funds to produce more restoration benefit than if the City were to proceed alone.

Tier 3 flows are designed to provide 80% of optimum habitat conditions in most areas during all but critically dry water years. These flow targets more closely approximate regulatory agency goals than do Tier 2 flows, but are not currently possible in almost any hydrologic condition due to water supply limitations. To put the water supply implications of Tier 3 flows into perspective, up to 9 mgd of additional water supply would be required to maintain the Integrated Water Plan (IWP) 15% drought-year peak-season maximum curtailment level (adopted by City Council resolution in 2005) through 2030.

¹ These permit terms have not been finalized and final figures may look somewhat different. However, the concept remains that the more instream flow provided, a smaller amount of offsite mitigation (and therefore, financial support) is necessary to compensate for the City's remaining unmitigated take.

Ability to Achieve Stream Flow Goals

Stream Flow Tiers	Tier Description	Short Term (2011)	Mid-Term (2015)	Long-Term (2030)	Required City Payments for Water Take
<i>Water Supply Augmentation</i>		None	2.5 mgd	2.5 mgd	
TIER 3	80% of optimum flows; Significantly improve habitats	Not Achievable	Achievable few years	Achievable 23% of years	\$0
TIER 2	Higher than status quo flows; Provide better habitat	Achievable 88% of years	Achievable 90% of years	Achievable 75% of years	\$250,000 annually
TIER 1	Status quo flows; Maintain current habitat levels	Achievable 88% of years	Achievable most years	Achievable most years	\$500,000 annually

Supply Impacts:

Impacts to water supply were modeled by Gary Fiske and Associates after updating the water supply model used in the IWP process, Confluence®. Water supply system assumptions were updated to reflect changes such as decreased groundwater availability and reduced leakage rate on the North Coast supply line. Improved inputs such as daily streamflow data was prepared by Balance Hydrologics. Updated water demand forecasts developed for the 2010 Urban Water Management Plan Update and the Water Supply Assessment for the City’s General Plan 2030 were used. The updated forecast is represented as a range now rather than the previous single line projection. Because of this, many model results are presented as a range to reflect the upper and lower water demand forecast, Water supply impacts are evaluated by comparing performance under the various Tiers to the Council adopted IWP.

Without Augmentation of the Water Supply

The water supply implications of providing Tier 1 flows are minimal. Tier 1 flows would maintain existing habitat levels by maintaining current status quo for operations to ensure no

further degradation in habitat and can currently be met in most years (88% of years) with the City’s current water supply system and without exacerbating the magnitude of dry weather shortages (currently about 35% shortage under 1977 drought hydrology). The situation gets worse over time as water demands grow with the frequency of dry weather shortages increasing and the magnitude of drought year shortages growing more severe.

The water supply implications of providing Tier 2 flows vary depending on whether the City’s current water supply is augmented. Tier 2 flows would provide better than existing habitat in North Coast streams and San Lorenzo Lagoon (with priority to Laguna Creek and San Lorenzo Lagoon due to their relatively greater habitat value for anadromous salmonids). A comparison of production by source without any requirement to provide flows for fish habitat vs. provision of Tier 2 flow is shown in the attached graphic (Attachment B).

While this magnitude of instream flows is possible in most years in the near term during wet and average water years, it results in a Critical Water Shortage Emergency (33 – 43% peak-season shortage) which occurs 10% of years. By 2030, the Critical Water Shortage Emergency grows (42 – 50% peak-season shortage) and can occur in 28% of years without the development of 2.5 mgd of additional dry weather water supply.

**Magnitude of Water Shortages Resulting from Stream Flow Goals
Without Augmentation of Water Supply**

Water Shortage Type	Tier 1 Flow		Tier 2 Flow		Tier 3 Flow	
	Near Term	Long Term	Near Term	Long Term	Near Term	Long Term
Critical Emergency: 35 - 50%		43%	43%	50%	Tier 3 Flows Not Achievable without Augmentation	
Severe Emergency: 25 - 35%	35%					
Emergency: 15 - 25%						
Warning: 5 - 15%						
Alert: 0 - 5%						

With Augmentation of the Water Supply

If the water supply system is augmented by 2.5 mgd, water supply shortages are less severe and less frequent. Tier 2 flows with a supplemental supply results in a Water Shortage Emergency (3 – 23% peak-season shortage) occurring in only 3% of years. However, by 2030, these flows result in a Severe Water Shortage Emergency (20 – 28% peak-season shortage) occurring in up to 8% of years. A discussion of the stages of water shortage events and the actions required of

water customers under the various stages is contained in Chapter 3 of the City’s Water Shortage Contingency Plan.

**Magnitude of Water Shortages Resulting from Stream Flow Goals
With Augmentation of Water Supply**

Water Shortage Type	Tier 1 Flow		Tier 2 Flow		Tier 3 Flow	
	<i>Near Term</i>	<i>Long Term</i>	<i>Near Term</i>	<i>Long Term</i>	<i>Near Term</i>	<i>Long Term</i>
Critical Emergency: 35 - 50%					> 50%	> 50%
Severe Emergency: 25 - 35%				28%		
Emergency: 15 - 25%		20%	23%			
Warning: 5 - 15%	15%					
Alert: 0 - 5%						

The primary loss of existing supply will be the City’s highest quality water (North Coast) and will lead to much greater use of Loch Lomond water which is high in organics and will require more than \$25 million in treatment plant improvements immediately to avoid violating water quality standards. To some extent, treatment plant improvements may someday be required, but the change in raw water mix will require treatment improvements much more dramatically and quickly.

Next Steps:

If the City is unsuccessful in negotiating the Permit with NOAA Fisheries Service, NOAA could impose its regulations on our sources unilaterally in which case, it is unknown how much of our supply will be lost, but at best might reflect something similar to Tier 2 flows and be 700 – 1200 million gallons/year (MGY). Under this best scenario, the City can make up much of the lost production from other sources in most years (88% of all years), at least at current demands. In all other years, it will result in water restrictions, some of which will greatly exceed the 15% maximum curtailment level adopted by City Council resolution in 2005. Again, if more than Tier 2 flows are imposed the magnitude and frequency of peak-season shortages will increase.

Remaining steps in the process include coming to agreement with federal regulators on the conservation strategy, assessing the remaining take with this strategy in place, developing a monitoring plan, writing an implementing agreement, soliciting public review, conducting environmental review (NEPA/CEQA), securing long-term funding, and ultimately implementing

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the strategy and obtaining a permit. It is unknown how long the remaining process will take but likely more than a couple of years.

FISCAL IMPACT: The costs of this strategy are estimated to be approximately \$25,000,000 in improvements to the Graham Hill Water Treatment Plant plus \$36,000,000 in offsite mitigations assuming no supplemental dry weather water supply is implemented for a total of approximately \$61,000,000 over an assumed 30 year life of the permit.

If a dry weather supplemental water supply is implemented to provide at least 2.5 mgd, the cost of the strategy is estimated to be approximately \$25,000,000 in improvements to the Graham Hill Water Treatment Plant plus \$14,000,000 in offsite mitigations for a total of approximately \$39,000,000 over an assumed 30 year life of the permit. The cost of a supplemental water supply is being developed separately under the Department's Water Supply Capital Improvement Project.

Submitted by:

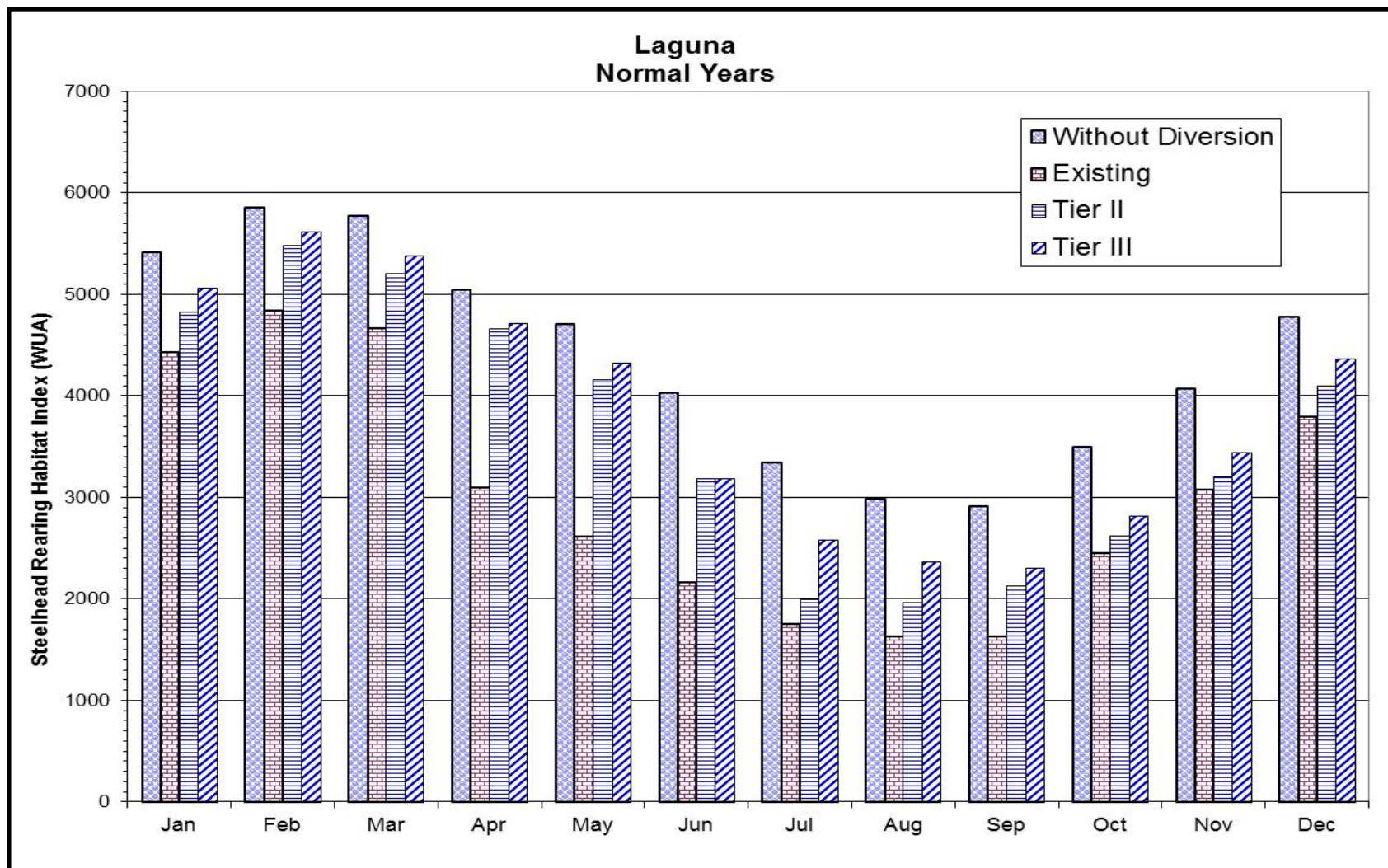
Approved by:

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Attachments: Attachment A - Laguna Creek Flow Prescription Comparison
Attachment B - Average Production by Source

Attachment A: Laguna Creek Instream Flow Prescription Comparison



Attachment B: Average Production by Source

