

## Triggers

### **Portfolio 1.1 and 1.2 – In lieu recharge/Indirect Potable Reuse of purified recycled water to Loch Lomond**

The trigger to move from Plan A to Plan B occurs if, after 8 years from the time of Plan A initiation,<sup>1</sup> the program fails to return 4 mgd for 180 peak season days and 3 mgd during 3 consecutive years for 180 days each year, as described in more detail below. However, the trigger may be invoked earlier if the Plan fails to proceed from one critical stage of development to another.

The basic strategy behind this trigger is that in order to ensure that in lieu recharge will produce an adequate and reliable supplemental supply for Santa Cruz (as well as helping to restore regional aquifers), early demonstration of the ability to get water back in the quantities needed is required. Providing several performance benchmarks allows for ongoing demonstration of progress to the quantity goal. One of the implications of this trigger is that it is likely that, in order to meet the performance targets, the City will need to take more water out than it will have put have “put in” through in lieu recharge. This means that agreements with other regional water providers and the ability to demonstrate no adverse impacts on other public or private pumpers will be important.

The complete sequence of benchmarks and performance measures for establishing feasibility is:

- Agreements covering the terms and conditions of providing in lieu water and for sending water back to Santa Cruz must be in place with Scotts Valley Water District and the Soquel Creek Water District within 1 year of completing any required CEQA process, or if CEQA is not required, then within 1 year of completing all regulatory review processes;
- Within the 8 year window, all infrastructure improvements for interties with Scotts Valley and any improvements to the Santa Cruz system must be in place;
- Relevant water rights issues must be resolved or, in the event that performance benchmarks for returned flows are being met and water rights issues are determined to be resolvable within no more than an additional 2 years, the additional time may be allocated;
- Demonstration of the ability to reliably produce the following volumes of water available back to Santa Cruz<sup>2</sup>, within the designated timeframes and for the following durations:
  - Within 3 years from initiation of the technical feasibility demonstration work , reliably able to return no less than 2 mgd of water to Santa Cruz for 180 days;
  - Within 6 years from initiation of the technical feasibility demonstration work , reliably able to return no less than 3 mgd of water to Santa Cruz for 180 days, and 2 mgd of water for 180 days per year for 3 years in a row;

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<sup>1</sup> Initiation of the feasibility demonstration phase is marked by the completion of the CEQA/regulatory review phase and with the start of providing in lieu service to Soquel Creek Water District using existing infrastructure.

<sup>2</sup> The benchmarks for return flows indicated in the proposed performance criteria in this section are specifically intended to demonstrate incremental progress toward the larger goal. These interim performance goals are also specifically designed to address trigger criterion #2, Avoiding Negative Consequences.

- Within 8 years from initiation of the technical feasibility demonstration work , reliably able to return no less than 5 mgd of water to Santa Cruz for 180 days and 4 mgd of water for 180 days per year for 3 years in a row;
- Performance at any benchmark year that is within 90% of the target shall be deemed to be compliant with the required benchmark;
- During the feasibility assessment of in lieu recharge, no unanticipated and non-mitigatable adverse impacts to other public or private wells, to groundwater levels or to the aquifer itself are identified as being associated with the in lieu recharge program and/or groundwater withdrawals for return to Santa Cruz.

If any of these performance measures is not met, proceed to Plan B.

## **Portfolio 2 – ASR/DPR**

The trigger to move from Plan A to Plan B occurs if, after 7 years from the time of Plan A initiation,<sup>3</sup> the program fails to demonstrate that ASR is feasible by

1. Producing a minimum of 2 mgd for 180 days by the end of 7 years and
2. At the end of 7 years having a peer review panel of hydrogeologists and water resources engineers and scientists conclude from a review of all pilot testing and demonstration well results that there is a 90% or better chance full scale implementation of ASR will produce 5 mgd for 180 peak season days (900 MGY) and for multiple dry years in a row without adverse effects to other public or private pumpers using the aquifer. If the peer review panel cannot make this determination based on the data available, but can reach a determination of partial performance, this input shall be considered planning for implementation of Plan B.

The trigger may be invoked earlier if any of the performance benchmarks for Plan A is not reached.

The basic strategy behind this trigger is that certain performance indicators of ASR feasibility, for example, being able to extract a minimum of 70% of the water injected into a well, need to be met during the pilot testing phase of the work. Additional performance indicators also need to be met as the work transitions from pilot testing to demonstration of performance. At the end of this exploratory and proving up phase, and prior to initiation of full scale implementation, an independent, third party peer review of results will be used to determine whether to proceed with further investments in ASR technology.

The complete sequence of performance measures for establishing feasibility is:

- ASR Performance Benchmarks:

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<sup>3</sup> Initiation of the feasibility demonstration phase is marked by the completion of the CEQA/regulatory review phase and with the start of ASR pilot testing.

- Within 4 years, at least 70% of the water injected into each pilot and/or demonstration well can be recovered during the 18 month window following injection;
- Within 7 years, at least 2 mgd for 180 days is being produced from demonstration ASR wells;
- Groundwater levels at and in the local vicinity of each ASR injection well are behaving in a manner aligned with groundwater model projections and are documented to be rising and improving aquifer conditions;
- There are no adverse effects of ASR on other public or private pumpers using the groundwater resource, on the groundwater resource or on the aquifer itself;
- Performance at any benchmark year that is within 90% of the target shall be deemed to be compliant with the required benchmark;
- The full complement of real property and rights of way required for the full scale implementation of ASR has been identified, and is obtainable without the exercise of eminent domain;
- Relevant water rights issues must be resolved or, in the event that performance benchmarks for returned flows are being met and water rights issues are determined to be resolvable within no more than an additional 2 years, the additional time may be allocated; and
- Agreements covering the terms and conditions of any regional financial participation in the aquifer recovery aspects of ASR for Scotts Valley and/or Soquel Creek water districts and the Soquel Creek

If any of these performance measures is not met, proceed to Plan B.

### **Portfolio 3 – ASR with Sea Water Barrier/DPR**

The trigger to move from Plan A to Plan B occurs if, after 11 years from the time of Plan A initiation,<sup>4</sup> the program fails to demonstrate that ASR is feasible by

1. producing a minimum of 3 mgd for 180 days by the end of 10 years and
2. having a peer review panel of hydrogeologists and water resources engineers and scientists conclude from a review of all pilot testing results that there is a 90% or better chance full scale implementation of ASR will produce 5 mgd for 180 peak season days (900 MGY) and for multiple dry years in a row without adverse effects to other public or private pumpers using the aquifer. If the peer review panel cannot make this determination based on the data available, but can reach a determination of partial performance, this input shall be considered planning for implementation of Plan B.

The trigger may be invoked earlier if any of the performance benchmarks for Plan A is not reached.

The basic strategy behind this trigger is that certain performance indicators of ASR feasibility, for example, being able to extract a minimum of 70% of the water injected into a well, need to be met during the pilot testing phase of the work. Additional performance indicators also need to be met as the

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<sup>4</sup> Initiation of the feasibility demonstration phase is marked by the completion of the CEQA/regulatory review phase and with the start of ASR pilot testing.

work transitions from pilot testing to demonstration of performance. At the end of this exploratory and proving up phase, and prior to initiation of full scale implementation, an independent, third party peer review of results will be used to determine whether to proceed with further investments in ASR technology.

The complete sequence of performance measures for establishing feasibility is:

- Within 12 months of completion of the sea water barrier system (using purified wastewater) monitoring results are demonstrating that it is working effectively to control salt water intrusion into the Purisima aquifer;
- ASR Performance Benchmarks
  - Within 5 years, at least 70% of the water injected into each pilot and/or demonstration well can be recovered during the 18 month window following injection;
  - Within 7 years, at least 2 mgd for 180 days is being produced from ASR wells and an additional 2 mgd of native groundwater can be provided when needed to meet Santa Cruz's dry and critically dry year demands;
  - Within 10 years, at least 3 mgd for 180 days is being produced from ASR wells and an additional 2 mgd of native groundwater can be provided when needed to meet Santa Cruz's dry and critically dry year demands;
  - Groundwater levels at and in the local vicinity of each ASR injection well are behaving in a manner aligned with groundwater model projections and are documented to be rising and improving aquifer conditions;
  - Performance at any benchmark year that is within 90% of the target shall be deemed to be compliant with the required benchmark;
- At the end of 7 years, a peer review panel of hydrogeologists and water resources engineers and scientists conclude at the end of all pilot testing efforts that there is a 90% or better chance full scale implementation of ASR will produce 5 mgd for 180 peak season days (900 MGY) and for multiple dry years in a row without adverse effects to other public or private pumpers using the aquifer.
- The full complement of real property and rights of way required for the full scale implementation of ASR has been identified by the end of year 4, and acquired by the end of year 8 without exercising eminent domain;
- Relevant water rights issues must be resolved or, in the event that performance benchmarks for returned flows are being met and water rights issues are determined to be resolvable within no more than an additional 2 years, the additional time may be allocated; and
- Agreements covering the terms and conditions of any regional financial participation in the aquifer recovery aspects of ASR and/or for the sea water barrier for Scotts Valley and/or Soquel Creek water districts and the Soquel Creek Water District within 1 year of completing any required CEQA/regulatory processes.

If any of these performance measures is not met, proceed to Plan B.

## **Portfolios 4.1 and 4.2 – ASR with Desal/Desal from either DeepWater Desal or a Local Desal Plant**

The trigger to move from Plan A to Plan B occurs if, after 11 years from the time of Plan A initiation,<sup>5</sup> the program fails to demonstrate that ASR is feasible. Feasibility for ASR is established in 3 phases based on the following benchmarks.

1. producing a minimum of 3 mgd for 180 days by the end of 10 years and
2. having a peer review panel of hydrogeologists and water resources engineers and scientists conclude from a review of all pilot testing results that there is a 90% or better chance full scale implementation of ASR will produce 5 mgd for 180 peak season days (900 MGY) and for multiple dry years in a row without adverse effects to other public or private pumpers using the aquifer. If the peer review panel cannot make this determination based on the data available, but can reach a determination of partial performance, this input shall be considered planning for implementation of Plan B.

The trigger may be invoked earlier if Plan A fails to proceed from one critical stage of development to another.

The basic strategy behind this trigger is that certain performance indicators of ASR feasibility, for example, being able to extract a minimum of 70% of the water injected into a well, need to be met during the pilot testing phase of the work. Additional performance indicators also need to be met as the work transitions from pilot testing to demonstration of performance. At the end of this exploratory and proving up phase, and prior to initiation of full scale implementation, an independent, third party peer review of results will be used to determine whether to proceed with further investments in ASR technology.

The complete sequence of performance measures for establishing feasibility is:

- Desal water is available and in use in Santa Cruz by no later than the end of the 2020.
- Performance Benchmarks for ASR
  - Within 7 years, at least 2 mgd for 180 days is being produced from ASR wells and an additional 2 mgd of desal water can be provided when needed to meet Santa Cruz's dry and critically dry year demands;
  - Within 10 years, at least 3 mgd for 180 days is being produced from ASR wells and an additional 2 mgd of desal water can be provided when needed to meet Santa Cruz's dry and critically dry year demands;
  - Groundwater levels at and in the local vicinity of each ASR injection well are behaving in a manner aligned with groundwater model projections and are documented to be rising and improving aquifer conditions;
  - Performance at any benchmark year that is within 90% of the target shall be deemed to be compliant with the required benchmark;

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<sup>5</sup> Initiation of the feasibility demonstration phase is marked by the completion of the CEQA/regulatory review phase and with the start of ASR pilot testing.

- By the end of 7 years, having a peer review panel of hydrogeologists and water resources engineers and scientists conclude from a review of all pilot testing results that there is a 90% or better chance full scale implementation of ASR will produce 5 mgd for 180 peak season days (900 MGY) and for multiple dry years in a row without adverse effects to other public or private pumpers using the aquifer. If the peer review panel cannot make this determination based on the data available, but can reach a determination of partial performance, this input shall be considered planning for the planning and ongoing operation of Plan B;
- Relevant water rights issues must be resolved or, in the event that performance benchmarks for returned flows are being met and water rights issues are determined to be resolvable within no more than an additional 2 years, the additional time may be allocated;
- The full complement of real property and rights of way required for the full scale implementation of ASR has been identified by the end of year 4, and acquired by the end of year 8 without exercising eminent domain;
- Agreements covering the terms and conditions of any regional financial participation in the aquifer recovery aspects of ASR and/or desalination projects for Scotts Valley and/or Soquel Creek water districts are in place within 1 year of completing any required CEQA/regulatory processes.

If any of these performance measures is not met, proceed to Plan B.