Memorandum

Date: March 24, 2010
To: Hasan Abdullah, EBMUD
From: David Fee, URS
      Seth Gentzler, PE  URS
      Fan Lau, URS
Subject: Bay Area Regional Desalination Project
         Existing Facilities Evaluation Task 3 Submittal: Facility Scenarios – FINAL

1.0 INTRODUCTION

As proposed under the Bay Area Regional Desalination Project (BARDP) Existing Facilities Evaluation Scope of Work, URS has evaluated existing facilities and assets (i.e., water rights, NPDES permits, incidental take permits) in the vicinity of eastern Contra Costa County that could potentially be utilized by the BARDP. A list of facilities and assets were extracted from documents provided by East Bay Municipal Utility District (EBMUD) and Contra Costa Water District (CCWD), internet resources, and other readily available references. Key pieces of information for each facility and asset were then collected in an inventory, included in this memorandum as Attachment A. Facilities highlighted in green were recommended for further study and are considered to be feasible alternatives for the BARDP. The remaining facilities were either not recommended for immediate study (highlighted in yellow), or else not considered feasible alternatives for the reasons shown in the inventory (highlighted in orange and blue).

This memorandum documents the assumptions, criteria, and analysis used to determine combinations of existing facilities that are most feasible for operation of a desalination plant that maximizes the use of existing facilities to reduce impacts and costs associated with the construction of new facilities.

1.1 STATEMENT OF LIMITATIONS

This memorandum is a preliminary document and is not to be used as the basis for detailed design, construction or remedial action, or as a basis for major capital decisions.

This memorandum has been prepared based on certain key assumptions made by URS which substantially affect the content of this memorandum. These assumptions, although thought to be reasonable and appropriate, may not prove to be true in the future. The scenario development and associated cost implications are conditioned upon these assumptions, which are listed in Section 2.0.

Background information, design basis, and other data have been furnished to URS by EBMUD, CCWD, and third parties, which URS has used in preparing this report. URS has relied on this information as furnished, and is neither responsible for nor has confirmed the accuracy of this information.
2.0 ASSUMPTIONS AND CRITERIA

Assumptions and criteria that pertain to specific types of facilities, such as intakes and conveyance pipelines, are listed in the subsections below. However, in general, the following assumptions apply to this study:

- The study area is eastern Contra Costa County.
- Storage facilities are not considered in the study at this time.

2.1 INTAKE

Selection of potential existing intakes for inclusion in the facility scenarios are based on the following assumptions and criteria:

- The intake must withdraw surface water within the project vicinity (between the San Joaquin River and Suisun Bay in eastern Contra Costa County).
- The intake capacity selected for this study is 25 mgd. This capacity is the approximate one pump intake capacity for the Mallard Slough Intake pump station, which is owned by CCWD, who is a project partner.
- The cost of installing fish screens that conform to U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS), and California Department of Fish and Game (CDFG) criteria will need to be taken into account for potential intakes that are not already in conformance.

Based on the above assumptions and criteria, the intakes listed in Table 2-1 and shown on Figure 2-1 were considered as feasible alternatives. Additional intakes that were evaluated, but not considered feasible for the BARDP are shown in Attachment A.

Table 2-1. Intakes in consideration for BARDP

<table>
<thead>
<tr>
<th>Intake</th>
<th>Owner</th>
<th>Fish screen conformance</th>
<th>Total capacity</th>
<th>Available capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallard Slough Intake Pump Station(1)</td>
<td>CCWD</td>
<td>Yes</td>
<td>25 mgd with one pump; 40 mgd with both pumps in operation. Water rights information associated with this intake is listed in Attachment B.</td>
<td>Up to 40 mgd subject to existing water rights, terms and conditions</td>
</tr>
<tr>
<td>Mirant Pittsburg Power Plant Intake</td>
<td>Mirant</td>
<td>No</td>
<td>1,561 mgd</td>
<td>Mirant currently operates the intake only 10 days per year; there would be an opportunity to modify the operations and permit for desalination(2)</td>
</tr>
</tbody>
</table>

(1) Documentation of CCWD’s Mallard Slough water rights are provided in Attachment B
(2) Pending further coordination with Mirant
Figure 2-1. Existing facilities
2.2 PLANT SITE
Selection of potential plant sites for inclusion in the facility scenarios are based on the following assumptions and criteria:

- Preliminary information suggest that a 25 mgd desalination plant may require up to 8 acres of land, thus it is assumed that 10 acres would be sufficient for this study.
- The plant site would ideally be located at or in close proximity to a potential intake (see Section 2.1).
- Property ownership is not considered a deciding factor for a plant site, as it is assumed that an agreement could be made with the property owner for the BARDP to purchase the land.
- The cost of land acquisition will need to be taken into account for potential plant sites not currently owned by a BARDP Partner Agency.
- The cost of connecting the plant site to a power source will need to be taken into account for potential plant sites not currently connected.
- The cost of leveling or improving the land will need to be taken into account for potential plant sites that are not already relatively flat or clear.

Based on the above assumptions and criteria, the plant sites listed in Table 2-2 and shown on Figure 2-1 were considered as feasible alternatives.

<table>
<thead>
<tr>
<th>Site</th>
<th>Owner</th>
<th>Available area</th>
<th>Power connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>At Mallard Slough Intake Pump Station</td>
<td>CCWD</td>
<td>Limited area owned by CCWD, exact acreage unknown at this time</td>
<td>Yes</td>
</tr>
<tr>
<td>At Mirant Pittsburg Power Plant</td>
<td>Mirant</td>
<td>Available area for lease or purchase, exact acreage unknown at this time&lt;sup&gt;(1)&lt;/sup&gt;</td>
<td>Yes</td>
</tr>
<tr>
<td>Near Clyde or nearby locations</td>
<td>Unknown</td>
<td>Available area for purchase, exact acreage unknown at this time</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<sup>(1)</sup> Pending further coordination with Mirant

2.3 PRODUCT WATER CONVEYANCE
Selection of existing facilities for potential product water conveyance for inclusion in the facility scenarios are based on the following assumptions and criteria:

- The conveyance must directly connect or aid in the connection of a potential intake to either the EBMUD conveyance system (via the Mokelumne Aqueduct) or a CCWD conveyance system (e.g., Multi-Purpose Pipeline or Contra Costa Canal).
- It is considered preferable to connect to a treated water conveyance facility, since product water discharged to an untreated conveyance system would require further treatment, resulting in additional treatment costs.
- The conveyance capacity must be at least 20 mgd, as a desalination plant with a 25-mgd intake would generate approximately 20 mgd of product water. Ideally, the unused portion of the conveyance capacity would allow for 20 mgd to be used by the BARDP. However, use records have not yet been made available for this study. Nonetheless, it is assumed that a purchase agreement can be negotiated with the conveyance owner/operator for a share of the conveyance capacity.
- The type of conveyance is not considered a deciding factor, as it is assumed that other types of conveyance facilities (e.g., untreated water, wastewater, fuel) could be converted into a product water conveyance system.
conveyance. The cost of slip-lining a pipeline, or other means of conversion, will need to be taken into account in the cost analysis.

- The condition of the conveyance is not considered a deciding factor, as it is assumed that the conveyance could rehabilitated, upgraded, or improved for use by the BARDP. The cost of improvements will need to be taken into account.
- If there are existing customers on a treated water conveyance line in consideration for the BARDP, then the costs associated with maintaining service will need to be taken into account.

Based on the above assumptions and criteria, the conveyances listed in Table 2-3 and shown on Figure 2-1 were considered as feasible alternatives.

**Table 2-3. Product water conveyances in consideration for BARDP**

<table>
<thead>
<tr>
<th>Treated water conveyance</th>
<th>Owner</th>
<th>Type</th>
<th>Diameter / Material</th>
<th>Total capacity (1)</th>
<th>Available capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mallard Slough Pipeline (MSP)</td>
<td>CCWD</td>
<td>Untreated water</td>
<td>33-inch / steel pipe, cement-lined, cement-coated</td>
<td>38.4 mgd</td>
<td>Unknown at this time; dependent on current customer demand and pipeline condition</td>
</tr>
<tr>
<td>Multi-Purpose Pipeline (MPP)</td>
<td>CCWD</td>
<td>Treated water</td>
<td>42-inch / welded steel</td>
<td>62.1 mgd</td>
<td>Detailed analysis required, as capacity depends on season, CCWD system operations and distribution system constraints</td>
</tr>
<tr>
<td>Mallard Slough Discharge Line (connecting the Mallard Slough Intake Pump Station to the Contra Costa Canal)</td>
<td>CCWD</td>
<td>Untreated water</td>
<td>36-inch / welded steel</td>
<td>45.7 mgd</td>
<td>Varies seasonally</td>
</tr>
<tr>
<td>MSP Transfer Lateral (a.k.a., Nichols Wasteway Lateral)</td>
<td>CCWD</td>
<td>Untreated water</td>
<td>12-inch / PVC</td>
<td>5.1 mgd</td>
<td>Varies depending on season and customer demand</td>
</tr>
</tbody>
</table>

(1) Approximate maximum capacity assuming velocity criteria of 10 ft/s
2.4 REJECT WATER CONVEYANCE

Selection of existing facilities for potential reject water (i.e., brine, backwash, and other wastewater) conveyance for inclusion in the facility scenarios are based on the following assumptions and criteria:

- The conveyance alignment should aid in the connection of a potential plant to a potential outfall. If the conveyance does not directly connect to a potential plant or outfall, the cost of installing a connection (e.g., turnout, pipeline extension, etc.) will need to be taken into account.
- The conveyance capacity must be a minimum of 5 mgd. Ideally, the unused portion of the conveyance capacity would allow for 5 mgd to be used by the BARDP. However, use records have not yet been made available for this study. Nonetheless, it is assumed that a purchase agreement can be negotiated with the conveyance owner/operator for a share of the conveyance capacity.
- Only abandoned or non-critical (i.e., idle) conveyances are considered for reject water discharge. The type of conveyance is not considered a deciding factor, as it is assumed that a non-wastewater (e.g., untreated water, treated water, fuel) conveyance could be converted into a wastewater conveyance. The cost of slip-lining a pipeline, or other means of conversion, will need to be taken into account.
- The condition of the conveyance is not considered a deciding factor, as it is assumed that the conveyance could be rehabilitated, upgraded, or improved for use by the BARDP. The cost of improvements will need to be taken into account.
- If there are existing customers on a conveyance line in consideration for the BARDP, then the costs associated with maintaining service will need to be taken into account.

Based on the above assumptions and criteria, the intakes listed in Table 2-4 and shown in Figure 2-1 were considered as feasible alternative.

<table>
<thead>
<tr>
<th>Reject water conveyance</th>
<th>Owner</th>
<th>Type</th>
<th>Diameter</th>
<th>Total capacity</th>
<th>Available capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mirant Fuel Line (idle)</td>
<td>Shell Fuel</td>
<td>Fuel</td>
<td>10 inches</td>
<td>3.3 mgd</td>
<td>Currently idle, so total capacity is available</td>
</tr>
<tr>
<td>Shell Fuel Line (idle)</td>
<td>Shell (formerly PG&amp;E)</td>
<td>Fuel</td>
<td>16 inches</td>
<td>Unknown at this time</td>
<td>Currently idle, so total capacity is available</td>
</tr>
</tbody>
</table>

2.5 OUTFALL

Selection of potential outfalls for inclusion in the facility scenarios are based on the following assumptions and criteria:

- The outfall must discharge in the vicinity of the project area (between the San Joaquin River and Suisun Bay in eastern Contra Costa County).
- The outfall must have an active National Pollutant Discharge Elimination System (NPDES) permit so as to avoid costs and delays related to permitting.
- The permitted outfall capacity, or discharge, must be at least 5 mgd. Ideally, the unused portion of the outfall capacity would allow for 5 mgd to be used by the BARDP. However, use records have not yet been made available for this study. Nonetheless, it is assumed that a purchase agreement can be negotiated with the intake owner/operator for a share of the outfall.

Based on the above assumptions and criteria, the outfalls listed in Table 2-5 and shown on Figure 2-1 were determined to be feasible.
Table 2-5. Outfalls in consideration for BARDP

<table>
<thead>
<tr>
<th>Outfall</th>
<th>Owner</th>
<th>NPDES permit</th>
<th>Permitted capacity</th>
<th>Available capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delta Diablo Sanitation District (DDSD) Wastewater Treatment Plant (WWTP) outfall</td>
<td>DDSD</td>
<td>NPDES No. CA0038547 (Order No. R2-2003-0114)</td>
<td>16.5 mgd average dry weather flow (ADWF)</td>
<td>Unknown at this time</td>
</tr>
<tr>
<td>Central Contra Costa Sanitation District (CCCSD) WWTP outfall</td>
<td>CCCSD</td>
<td>NPDES No. CA0037648 (Order No. R2-2007-0008)</td>
<td>53.8 mgd ADWF</td>
<td>Unknown at this time</td>
</tr>
<tr>
<td>Mirant Pittsburg Power Plant outfall(1)</td>
<td>Mirant</td>
<td>NPDES No. CA0004880 (Order No. R2-2002-0072)</td>
<td>658 mgd annual average flow</td>
<td>Mirant currently operates the outfall only 10 days per year; there would be an opportunity to modify the operations and permit for desalination(2)</td>
</tr>
<tr>
<td>USS-POSCO processing facility outfall</td>
<td>USS-POSCO</td>
<td>NPDES No. CA0005002 (Order No. R2-2006-0029)</td>
<td>28 mgd</td>
<td>Unknown at this time</td>
</tr>
</tbody>
</table>

(1) The outfall and permitted capacity described in this table correspond to the discharge of once-through cooling water from Units 1 through 6.
(2) Pending further coordination with Mirant

3.0  FACILITY SCENARIOS

Five facility scenarios were developed for this study. The combinations of facilities and their associated advantages and disadvantages are summarized in the tables below. In some scenarios, new facilities would have to be built to take advantage of a certain plant site, intake, or outfall. Each facility scenario is accompanied by a map (see Figures 3-1 through 3-5).

The facility scenarios are numbered by plant site, then by outfall if there is more than one facility scenario per plant site. Thus, each facility scenario with starting with the number 1 corresponds to a plant site at the Mirant Pittsburg Power Plant property adjacent to the Mallard Slough Intake Pump Station. Since there are three such facility scenarios, each of these facility scenarios are also differentiated by a letter corresponding to the different outfalls—A corresponds to the Mirant Pittsburg Power Plant outfall, B corresponds to the DDSD WWTP outfall, and C corresponds to the CCCSD WWTP outfall. There is only one facility scenario with a plant site at Clyde, and this is Facility Scenario 2. Similarly, there is only one facility scenario with a plant site directly at the Mirant Pittsburg Power Plant, and this is Facility Scenario 3.
<table>
<thead>
<tr>
<th>Facility type</th>
<th>Name</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
<td>Mallard Slough Intake Pump Station</td>
<td>Owned/operated by CCWD, a BARDP Partner Agency; fish screens already in conformance; permitted for 25 mgd flow rate</td>
<td>-</td>
</tr>
<tr>
<td>Plant site</td>
<td>Mirant Pittsburg Power Plant property</td>
<td>Large acreage adjacent to Mallard Slough Intake Pump Station</td>
<td>Not owned by a BARDP Partner Agency; requires an untreated water conveyance between intake and plant site (see below)</td>
</tr>
<tr>
<td>Untreated water conveyance</td>
<td>Approximately 1,400-linear feet (lf) new construction</td>
<td>-</td>
<td>Need to construct new conveyance connecting intake to plant</td>
</tr>
<tr>
<td>Product water conveyance(s)</td>
<td>Mallard Slough Discharge Line + MPP</td>
<td>Owned/operated by CCWD, a BARDP Partner Agency; connection to MPP avoids having to re-treat water; potential to reroute to Contra Costa Canal via existing connection with Mallard Slough Discharge Line</td>
<td>Need to connect Mallard Slough Discharge Line to MPP</td>
</tr>
<tr>
<td>Reject water conveyance(s)</td>
<td>Shell Fuel Line + approximately 5,700-lf new construction</td>
<td>Currently idle</td>
<td>Not owned/operated by a BARDP Partner Agency; need to construct new conveyances connecting plant to Shell Fuel Line, and connecting Shell Fuel Line to Mirant Pittsburg outfall</td>
</tr>
<tr>
<td>Outfall</td>
<td>Mirant Pittsburg Power Plant outfall</td>
<td>Large capacity (658 mgd permitted annual average flow); existing winding channel could be used for reject water mixing</td>
<td>Not owned/operated by a BARDP Partner Agency; reject water discharged upstream of Plant intake.</td>
</tr>
</tbody>
</table>

Figure 3-1. Facility Scenario 1A map
### Table 3-2. Facility Scenario 1B Summary

<table>
<thead>
<tr>
<th>Facility type</th>
<th>Name</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
<td>Mallard Slough Intake Pump Station</td>
<td>Owned/operated by CCWD, a BARDP Partner Agency; fish screens already in conformance; permitted for 25 mgd flow rate</td>
<td>-</td>
</tr>
<tr>
<td>Plant site</td>
<td>Mirant Pittsburg Power Plant property</td>
<td>Large acreage adjacent to Mallard Slough Intake Pump Station</td>
<td>Not owned by a BARDP Partner Agency; requires an untreated water conveyance between intake and plant site (see below)</td>
</tr>
<tr>
<td>Untreated water conveyance</td>
<td>Approximately 1,400-lf new construction</td>
<td>-</td>
<td>Need to construct new conveyance connecting intake to plant</td>
</tr>
<tr>
<td>Product water conveyance(s)</td>
<td>Mallard Slough Discharge Line + MPP</td>
<td>Owned/operated by CCWD, a BARDP Partner Agency; connection to MPP avoids having to re-treat water; potential to reroute to Contra Costa Canal via existing connection with Mallard Slough Discharge Line</td>
<td>Need to connect Mallard Slough Discharge Line to MPP</td>
</tr>
<tr>
<td>Reject water conveyance(s)</td>
<td>Shell Fuel Line + Mirant Fuel Line + approximately 2,400-lf new construction</td>
<td>Both existing lines are currently idle</td>
<td>Existing lines not owned/operated by a BARDP Partner Agency; need to expand capacity of the Mirant Fuel Line and connect it to the Shell Fuel Line to create a continuous conveyance; need to construct new conveyances connecting plant to Shell Fuel Line, and connecting Mirant Fuel Line to Mirant Pittsburg outfall</td>
</tr>
<tr>
<td>Outfall</td>
<td>DDSD WWTP outfall</td>
<td>-</td>
<td>Not owned/operated by a BARDP Partner Agency; reject water discharged upstream of Plant intake.</td>
</tr>
</tbody>
</table>

Figure 3-2. Facility Scenario 1B map
## Table 3-3. Facility Scenario 1C Summary

<table>
<thead>
<tr>
<th>Facility type</th>
<th>Name</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
<td>Mallard Slough Intake Pump Station</td>
<td>Owned/operated by CCWD, a BARDP Partner Agency; fish screens already in conformance; permitted for 25 mgd flow rate</td>
<td></td>
</tr>
<tr>
<td>Plant site</td>
<td>Mirant Pittsburg Power Plant property</td>
<td>Large acreage adjacent to Mallard Slough Intake Pump Station</td>
<td>Not owned by a BARDP Partner Agency; requires an untreated water conveyance between intake and plant site (see below)</td>
</tr>
<tr>
<td>U$treated water$</td>
<td>Approximately 1,400-lf new construction</td>
<td></td>
<td>Need to construct new conveyance connecting intake to plant</td>
</tr>
<tr>
<td>$Product water$</td>
<td>Mallard Slough Discharge Line + MPP</td>
<td>Owned/operated by CCWD, a BARDP Partner Agency; connection to MPP avoids having to re-treat water; potential to reroute to Contra Costa Canal via existing connection with Mallard Slough Discharge Line</td>
<td>Need to connect Mallard Slough Discharge Line to MPP</td>
</tr>
<tr>
<td>$Reject water$</td>
<td>Shell Fuel Line + approximately 31,400-lf new construction</td>
<td>Shell Fuel Line currently idle</td>
<td>Shell Fuel Line not owned/operated by a BARDP Partner Agency; need to construct new conveyances connecting plant to Shell Fuel Line, and connecting Shell Fuel Line to CCCSD WWTP outfall</td>
</tr>
<tr>
<td>Outfall</td>
<td>CCCSD WWTP outfall</td>
<td>Reject water discharged downstream of the intake</td>
<td>Not owned/operated by a BARDP Partner Agency</td>
</tr>
</tbody>
</table>

![Figure 3-3. Facility Scenario 1C map](image-url)
Table 3-4. Facility Scenario 2 Summary

<table>
<thead>
<tr>
<th>Facility type</th>
<th>Name</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
<td>Mallard Slough Intake Pump Station</td>
<td>Owned/operated by CCWD, a BARDP Partner Agency; fish screens already in conformance; permitted for 25 mgd flow rate</td>
<td></td>
</tr>
<tr>
<td>Plant site</td>
<td>Clyde</td>
<td>Power connection close by; Mokelumne Aqueduct and CCWD conveyance facilities converge near site</td>
<td>Requires an untreated water conveyance between intake and plant site (see below); insufficient acreage owned by a BARDP Partner Agency</td>
</tr>
<tr>
<td>Untreated water</td>
<td>Mallard Slough Pipeline</td>
<td>Owned/operated by CCWD, a BARDP Partner Agency</td>
<td>Would require improvements to portions of the line to convey 20 mgd; potable water service to CCWD customer would need to be maintained</td>
</tr>
<tr>
<td>conveyance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product water</td>
<td>New connection(s) to existing facilities</td>
<td>Plant would be located in close proximity to Contra Costa Canal, Mokelumne Aqueduct, or MPP, requiring minimal new conveyance facilities</td>
<td></td>
</tr>
<tr>
<td>conveyance(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reject water</td>
<td>Approximately 24,700-lf new construction</td>
<td>-</td>
<td>Need to construct new conveyance connecting plant to CCCSD WWTP outfall</td>
</tr>
<tr>
<td>conveyance(s)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outfall</td>
<td>CCCSD WWTP outfall</td>
<td>Reject water discharged downstream of the intake</td>
<td>Not owned/operated by a BARDP Partner Agency</td>
</tr>
</tbody>
</table>

Figure 3-4. Facility Scenario 2 map
### Table 3-5. Facility Scenario 3 Summary

<table>
<thead>
<tr>
<th>Facility type</th>
<th>Name</th>
<th>Advantages</th>
<th>Disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intake</td>
<td>Mirant Pittsburg Power Plant intake</td>
<td>Large capacity; could potentially accommodate a 71-mgd desalination plant</td>
<td>Not owned/operated by a BARDP Partner Agency; need to install fish screens and apply for permits (water extraction and intake)</td>
</tr>
<tr>
<td>Plant site</td>
<td>Mirant Pittsburg Power Plant</td>
<td>Large acreage</td>
<td>Not owned by a BARDP Partner Agency</td>
</tr>
<tr>
<td>Product water conveyance(s)</td>
<td>Approximately 15,400-ft new construction + Mallard Slough Discharge Line + MPP</td>
<td>Existing conveyances owned/operated by CCWD, a BARDP Partner Agency; avoids having to re-treat water; potential to reroute to Contra Costa Canal via existing connection with Mallard Slough Discharge Line</td>
<td>Need to construct new conveyance connecting the Mirant Pittsburg Power Plant intake to Mallard Slough Discharge Line; need to connect Mallard Slough Discharge Line to MPP, potentially eliminating current connection to Contra Costa Canal</td>
</tr>
<tr>
<td>Reject water conveyance(s)</td>
<td>Not applicable</td>
<td>Intake and outfall are located at the same site (Mirant Pittsburg Power Plant)</td>
<td>-</td>
</tr>
<tr>
<td>Outfall</td>
<td>Mirant Pittsburg Power Plant outfall</td>
<td>No new construction needed to convey reject water to a different site; an existing cooling/mixing canal may be available for BARDP use; large capacity (658 mgd permitted annual average flow) may help minimize impacts of discharge on meeting NDPES requirements</td>
<td>Not owned/operated by a BARDP Partner Agency</td>
</tr>
</tbody>
</table>

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Figure 3-5. Facility Scenario 3 map
4.0 RECOMMENDATIONS FOR FUTURE WORK

Additional information is required to develop a preferred alternative or scenario. We recommend that several tasks be completed as part of the BARDP following this Existing Facilities Evaluation:

1. **Continue information requests:** Coordinate with existing facility owners/operators identified in the facility tables in Section 2. Request that they provide updated information, or else verify assumptions used in this study.

2. **Conduct water quality and hydraulic studies:** Determine if there is sufficient hydraulic mixing and dilution capacity at the outfalls to meet NPDES permit requirements.

3. **Consider other existing facilities:** The USS-POSCO processing facility outfall was not included in the Facility Scenarios described in this study. The BARDP did not initially prioritize this outfall as it had not been considered in previous studies of local or regional desalination plants. However, it may be worth investigating further as an alternative.

4. **Investigate water exchange opportunities:** Existing inter-ties between EBMUD and CCWD may offer opportunities to offset CCWD’s demand for Delta water and/or improve CCWD’s water quality by mixing supplies.

5. **Examine potential impacts on Delta pumping:** There is concern that desalination could indirectly affect Delta pumping by increasing the imbalance between Delta outflow and Delta pumping. This issue applies to the BARDP as a whole, and is not unique to a Facility Scenario.
Attachment A
Existing Facility Inventory
<table>
<thead>
<tr>
<th>No.</th>
<th>Facility</th>
<th>Reference(s)</th>
<th>Owner (Operator in parentheses if different from Owner)</th>
<th>Location</th>
<th>Map, digital imagery, or coordinates</th>
<th>Description</th>
<th>Use</th>
<th>Conveyance</th>
<th>Need for acquisition/modification</th>
<th>Cost estimate for upgrade/modification/retrofit</th>
<th>Overall press</th>
<th>Other notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pittsburg Power Plant</td>
<td>RMC 2008,</td>
<td>Mirant Delta LLC, Pittsburg, California</td>
<td>Pittsburg</td>
<td>[see ExistingInfraStructure-ECCSite.ppt PG&amp;E 16&quot; Abandoned Line]</td>
<td>Water intake from SL, delta first point of entry, 42&quot; diameter; assuming velocity criteria of 10 ft/s, maximum capacity is approximately 5.1 mgd</td>
<td>Existing Facilities Inventory for BARDP</td>
<td>By Fan Lau, URS, August 2009 (revised November 2009, January 2010, March 2010)</td>
<td>Recommended for further study</td>
<td>Recommended for further study</td>
<td>Recommended for further study</td>
<td>Mostly owned</td>
</tr>
<tr>
<td>2</td>
<td>Mallard Slough Pipeline PPC 2008</td>
<td>RMC 2008, 2009, 2010, 2013</td>
<td></td>
<td>Mallard Slough at Pittsburg Bay Pipe line</td>
<td>[see ExistingInfraStructure-ECCSite.ppt PG&amp;E 16&quot; Abandoned Line]</td>
<td>Water intake from SL, delta first point of entry, 42&quot; diameter; assuming velocity criteria of 10 ft/s, maximum capacity is approximately 5.1 mgd</td>
<td>Existing Facilities Inventory for BARDP</td>
<td>By Fan Lau, URS, August 2009 (revised November 2009, January 2010, March 2010)</td>
<td>Recommended for further study</td>
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<td>Mostly owned</td>
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<td>5</td>
<td>Mallard Slough Pipeline PPC 2008</td>
<td>RMC 2008, 2009, 2010, 2013</td>
<td></td>
<td>Mallard Slough at Pittsburg Bay Pipe line</td>
<td>[see ExistingInfraStructure-ECCSite.ppt PG&amp;E 16&quot; Abandoned Line]</td>
<td>Water intake from SL, delta first point of entry, 42&quot; diameter; assuming velocity criteria of 10 ft/s, maximum capacity is approximately 5.1 mgd</td>
<td>Existing Facilities Inventory for BARDP</td>
<td>By Fan Lau, URS, August 2009 (revised November 2009, January 2010, March 2010)</td>
<td>Recommended for further study</td>
<td>Recommended for further study</td>
<td>Recommended for further study</td>
<td>Mostly owned</td>
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<tr>
<td>No.</td>
<td>Facility</td>
<td>Reference(s)</td>
<td>Site</td>
<td>Geography of facility</td>
<td>Infrastructure owner (Operator)</td>
<td>Owner (Operator) Location</td>
<td>Current use (capacity)</td>
<td>Equipment/Structures</td>
<td>Need for improvement/upgrade/retrofit</td>
<td>Cost estimate for improvement/upgrade/retrofit</td>
<td>Outfall/ diversion to existing treatment facilities</td>
<td>Overall pros</td>
</tr>
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<td>16</td>
<td>DOW Raw Water Service Line</td>
<td>DDSD 2005a, DDSD 2005b</td>
<td>DOW</td>
<td>Antioch, Oakley</td>
<td>Mirant Delta, LLC</td>
<td>Antioch, City of Antioch</td>
<td>Intake</td>
<td>7 mgd</td>
<td>Clean, treat, and prepare for use with potable water</td>
<td>$250,000 to $1,575,000 per tank</td>
<td>Not recommended for immediate study</td>
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<td>17</td>
<td>Mirant Antioch Power Plant</td>
<td>DDSD 2005a, DDSD 2005b</td>
<td>Mirant</td>
<td>Antioch, City of Antioch</td>
<td>Mirant Delta, LLC</td>
<td>Antioch, City of Antioch, Mirant Delta, LLC</td>
<td>Intake</td>
<td>8 mgd</td>
<td>Clean, treat, and prepare for use with potable water</td>
<td>$250,000 to $1,575,000 per tank</td>
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<tr>
<td>21</td>
<td>Antioch water distribution system</td>
<td>DDSD 2001, DDSS 2000</td>
<td>Antioch</td>
<td>Antioch</td>
<td>not specified</td>
<td>not specified</td>
<td>Intake</td>
<td>1,500 gpm water each</td>
<td>Not recommended for immediate study</td>
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<tr>
<td>Facility Name</td>
<td>Facility Type</td>
<td>Current Use</td>
<td>Potential Use</td>
<td>Future Use</td>
<td>Need for Improvement</td>
<td>Cost Estimate</td>
<td>Applicability by Location</td>
<td>Notes</td>
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<td>DDSD recycled water distribution system</td>
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<td>Rejected (not appropriate to combine recycled and RO product water together)</td>
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<tr>
<td>City of Pittsburg wastewater collection system</td>
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<td></td>
<td></td>
<td>Rejected (wastewater collection system in operation not appropriate for domestic water use)</td>
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<tr>
<td>ISD wastewater storage and disposal system</td>
<td></td>
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<td></td>
<td></td>
<td>Rejected (still not appropriate to combine wastewater storage and disposal system with recycled water)</td>
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<tr>
<td>DDSD Delta intake in Old River, just South of Richmond Bridge</td>
<td></td>
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<td>Rejected (wastewater collection system in operation not appropriate for domestic water use)</td>
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<tr>
<td>DDSD Delta intake in Rock Slough diversions at Point Richmond West Pumping Plant</td>
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<td>Rejected (wastewater collection system in operation not appropriate for domestic water use)</td>
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<td>ISD wastewater storage and disposal system</td>
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<td>Rejected (not appropriate to combine wastewater storage and disposal system with recycled water)</td>
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<td>Rejected (wastewater collection system in operation not appropriate for domestic water use)</td>
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<td>DDSD recycled water storage reservoir</td>
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<td>Rejected (wastewater collection system in operation not appropriate for domestic water use)</td>
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<td>ISD wastewater storage and disposal system</td>
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<td></td>
<td>Rejected (still not appropriate to combine wastewater storage and disposal system with recycled water)</td>
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<tr>
<td>City of Antioch wastewater collection system</td>
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<td>Rejected (wastewater collection system in operation not appropriate for domestic water use)</td>
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<td>ISD wastewater storage and disposal system</td>
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<td>Rejected (not appropriate to combine wastewater storage and disposal system with recycled water)</td>
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<td>Rejected (wastewater collection system in operation not appropriate for domestic water use)</td>
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<td>DDSD recycled water storage reservoir</td>
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<td></td>
<td>Rejected (wastewater collection system in operation not appropriate for domestic water use)</td>
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</table>

**Note:** The table above contains information on various facilities and their associated water management practices. The content includes details such as facility names, types, current and potential uses, future needs, cost estimates, and applicability by location. The notes column provides additional context for why certain facilities were rejected or deemed inappropriate for specific uses.
<table>
<thead>
<tr>
<th>Asset No.</th>
<th>Asset</th>
<th>Reference(s)</th>
<th>Permitting/genesis</th>
<th>Permitting entity</th>
<th>Location</th>
<th>Map or coordinates</th>
<th>Permitted flow or concentration</th>
<th>Other applicable restrictions</th>
<th>Current discharge/intake/concentration</th>
<th>History of violations</th>
<th>Overall pros</th>
<th>Overall cons</th>
<th>Applicability to evaluation</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>CCCSD NPDES permit</td>
<td>RMC 2009, Order No. R2-2007-0006, SWRCB 2009</td>
<td>SF Bay RWQCB (Order No. R2-2007-0006, NPDES No. CA0373481)</td>
<td>CCCSD</td>
<td>Suisun Bay at Martinez</td>
<td>Lat: 38° 02', 44&quot; N, Long: 121° 59', 55&quot; W</td>
<td>53.8 mgd</td>
<td>See permit for effluent limitations on conventional (CBOD5, TSS, pH, O&amp;G, enterococci bacteria) and toxic (Cu, Pb, Hg, cyanide, acrylonitrile, dioxin, TEG) pollutants</td>
<td>Repeated tox, pH, temp, Cu violations within the past 5 years. See CIWQS Facility At a Glance Report.</td>
<td></td>
<td></td>
<td>Recommended for further study</td>
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<td>2</td>
<td>CCWD diversion at Mallard Slough</td>
<td>DDS 2005b</td>
<td>SWRCB</td>
<td>CCWD</td>
<td>From Mallard Slough tributary to Suisun Bay</td>
<td>Lat: 38° 02', 44&quot; N, Long: 121° 59', 55&quot; W</td>
<td>44.880 AFY</td>
<td></td>
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<tr>
<td>3</td>
<td>DDS 2005b</td>
<td>SWRCB 2009, Order No. R2-2003-0114</td>
<td>SF Bay RWQCB (Order No. R2-2003-0114, NPDES No. CA0385474)</td>
<td>DDS</td>
<td>New York Slough at Antioch</td>
<td>Lat: 38º 02' 00&quot;, Long: 121º 52' 15&quot;</td>
<td>16.5 mgd ADWF (see permit for concentrations)</td>
<td></td>
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<td>4</td>
<td>Mirant Pittsburg Power Plant NPDES permit</td>
<td>SWRCB 2009</td>
<td>SF Bay RWQCB (Order No. R2-2002-0012, NPDES No. CA0048880)</td>
<td>Mirant Delta, LC</td>
<td>Pittsburg</td>
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</tr>
<tr>
<td>5</td>
<td>CCWD agreement with CCCSD to purchase kuvora irrigation water</td>
<td>RMC 2009</td>
<td>CCWD</td>
<td></td>
<td></td>
<td></td>
<td>4,200 AFY + 4,000 AFY</td>
<td></td>
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<tr>
<td>6</td>
<td>CCWD/CIP contract with USBR for Delta water rights</td>
<td>RMC 2009</td>
<td>CCWD</td>
<td></td>
<td></td>
<td></td>
<td>195,000 AFY</td>
<td></td>
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<tr>
<td>7</td>
<td>City of Antioch San Joaquin River pre-1914 water rights</td>
<td>RMC 2009</td>
<td>City of Antioch (WTP)</td>
<td>From San Joaquin River, tributary to Suisun Bay</td>
<td></td>
<td></td>
<td>No legal limitation, but limited by water quality (chloride must be &lt;150 mg/L). No legal limits.</td>
<td></td>
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<tr>
<td>8</td>
<td>DOW Chemical Company NPDES permit</td>
<td>SWRCB 2009</td>
<td>SF Bay RWQCB (Order No. R2-2006-0001, NPDES No. CA004910)</td>
<td>DOW</td>
<td>Pittsburg</td>
<td>Lat: 38º 02' 00&quot;, Long: 121º 52' 15&quot;</td>
<td>45,000 gpd (see permit for concentrations)</td>
<td></td>
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<tr>
<td>9</td>
<td>GWF Power Plant NPDES permit</td>
<td>SWRCB 2009</td>
<td>SF Bay RWQCB (Order No. R3-2005-0016, NPDES No. CA029105)</td>
<td>GWF Power Systems L.P.</td>
<td>Pittsburg</td>
<td>Lat: 38º 02' 00&quot;, Long: 121º 52' 15&quot;</td>
<td>45,000 gpd of blowdown (see permit for concentrations)</td>
<td>(see permit)</td>
<td></td>
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<td>10</td>
<td>Occidental lake permits</td>
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</tr>
<tr>
<td>11</td>
<td>Mirant Contra Costa/Antioch diversion</td>
<td>DDS 2005b</td>
<td></td>
<td>Antioch</td>
<td></td>
<td></td>
<td>Diversion restricted at a maximum from May 1 to July 15</td>
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<td>12</td>
<td>Mirant Pittsburg Power Plant diversion</td>
<td>DDS 2005b</td>
<td></td>
<td>Pittsburg</td>
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<tr>
<td>13</td>
<td>USS-POSCO processing facility NPDES permit</td>
<td>SWRCB 2009</td>
<td>SF Bay RWQCB (Order No. R2-2006-0002, NPDES No. CA005002)</td>
<td>USS-POSCO Industries</td>
<td>Pittsburg</td>
<td>Lat: 38° 01', 48&quot; N, Long: 121° 51', 32&quot; W</td>
<td>28 mgd (see permit for concentrations)</td>
<td></td>
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<tr>
<td>14</td>
<td>DDS NPDES permit</td>
<td>RMC 2009</td>
<td>Central Valley RWQCB (Order No. R5-2008-0057, NPDES No. CA0058265)</td>
<td>DDS</td>
<td>Oakley, discharge to SJR at north end of Jersey Island</td>
<td></td>
<td>3.3 mgd (ADWF)</td>
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Existing Assets Inventory for BARDSP

By Fan Lau, URS, August 2009 (revised September 2009)
<table>
<thead>
<tr>
<th>Abbreviated citation</th>
<th>Full reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pers comm 2009</td>
<td>Personal communication between Emily Corwin, CCWD, and Andrea Ricci, Mirant Pittsburg Power Plant regarding current Mirant Pittsburg Power Plant operations and potential involvement with BARDP, November 16, 2009.</td>
</tr>
</tbody>
</table>
Attachment B
CCWD Mallard Slough Intake
Water Rights Information
CONTRA COSTA WATER DISTRICT
Interoffice Memorandum

Date: May 14, 1993

To: File

From: Richard Denton

Subject: Mallard Slough Licenses, Permits and Agreements

District and its predecessor, California Water Service Company, has been diverting water from Mallard Slough since 1930.

License for Diversion and Use of Water, License # 10514
License dated August 12, 1975
Application # 5941 (filed November 19, 1928)
Water Right Permit to Appropriate Water # 3167
Municipal and industrial uses
   (a) 39.3 cfs January 1 to December 31
   (b) 3,780 acre-feet/year to storage
   (c) Total diversion and storage £ 14,880 acre-feet
   (d) Total put to beneficial use £ 13,690 acre-feet

Permit for Diversion and Use of Water, Permit # 19856
Permit dated July 3, 1986
Application # 27893 (filed September 28, 1983)
Municipal and industrial uses
   (a) 39.3 cfs August 1 to December 31
   (b) Total diversion £ 11,900 acre-feet
   (c) No diversion allowed when supplemental project (SWP & CVP) water being released (excluding carriage water!)

DWR/CCWD Agreement, Mallard Slough Water Quality
April 21, 1967 (began October 1, 1967)
Based on water year (October through September)
Reimbursement request to DWR should be completed early January
Mean tidal cycle surface zone water quality of 100 mg/l chlorides
Average number of days of availability = 142
Median period = January 15 through June 5, inclusive

\[ E = \frac{(142-D)}{3} \times \frac{(R + P)}{142} \]

where

\( E \) is entitlement in acre-feet,
\( D \) is number of days during year that usable river water is available at Mallard Slough,
\( R \) is total Mallard Slough diversion (8:00 am on January 15 to 8:00 am) on June 6, and
\( P \) is total pumping at Rock Slough (8:00 am on January 15 to 8:00 am on June 6.

\[ M = E \times (C_w + C_e - 4.90) \]

where

\( M \) is the amount in dollars to be paid by the State,
\( C_w \) is cost of substitute water
\( C_e \) is cost of electrical power.

Total Mallard Slough diversion limited to 26,780 acre-feet/year

39.3 cfs for 365 days = 28,452 acre-feet
STATE OF CALIFORNIA
THE RESOURCES AGENCY
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

License for Diversion and Use of Water

APPLICATION 5941 PERMIT 3187 LICENSE 10314

This is to certify, that

was made proof as of April 23, 1971 (the date of inspection) to the satisfaction of the State Water Resources Control Board of a right to the use of the water of

HALLARD SLough in CONTRA COSTA COUNTY

tributary to Suisun Bay

for the purpose of MUNICIPAL AND INDUSTRIAL USES under Permit 3167 of the Board and that the right to the use of this water has been perfected in accordance with the laws of California, the Regulations of the Board and the permit terms; that the priority of this right dates from June 13, 1924, and that the amount of water to which this right is entitled and hereby confirmed is limited to the amount actually beneficially used for the stated purposes and shall not exceed (A) THIRTY-NINE AND THREE-TENTHS (39.3) CUBIC FEET PER SECOND BY DIRECT DIVERSION, TO BE DIVERTED FROM JANUARY 1 TO DECEMBER 31 OF EACH YEAR; and (B) THREE THOUSAND SEVEN HUNDRED EIGHTY (3,780) ACRE-FEET PER ANNUM BY STORAGE, TO BE COLLECTED FROM JANUARY 1 TO DECEMBER 31 OF EACH YEAR. THE TOTAL AMOUNT OF WATER TO BE TAKEN FROM THE SOURCE (DIRECT DIVERSION PLUS COLLECTION TO STORAGE) SHALL NOT EXCEED 14,880 ACRE-FEET PER CALENDAR YEAR. THE TOTAL AMOUNT OF WATER TO BE PLACED TO BENEFICIAL USE SHALL NOT EXCEED 13,000 ACRE-FEET PER CALENDAR YEAR.

THE POINT OF DIVERSION OF SUCH WATER IS LOCATED:

AT HALLARD SLough PUMPING PLANT, BEING NORTH 5,000 FEET AND EAST 1,400 FEET FROM NE CORNER OF SECTION 14, T26N, R1W, HOSAH, BEING WITHIN SE1/4 OF SW1/4 OF SECTION 1, T26N, R1W, HOSAH.

A DESCRIPTION OF LANDS OR THE PLACE WHERE SUCH WATER IS PUT TO BENEFICIAL USE IS AS FOLLOWS:

WITHIN THE ULTIMATE WATER SERVICE AREA OF CONTRA COSTA COUNTY WATER DISTRICT, AS SHOWN ON MAP FILED WITH STATE WATER RESOURCES CONTROL BOARD.

This license should not be construed as conferring in licensee an easement upon or right of way across lands of the State of California or an easement upon or right of way across lands subject to easement of the State of California.
Licensee shall allow representatives of the Board and other parties, as may be authorized from time to time by the Board, reasonable access to project works to determine compliance with the terms of this license.

All rights and privileges under this license, including method of diversion, method of use and quantity of water diverted are subject to the continuing authority of the Board in accordance with law and in the interest of the public welfare to prevent waste, unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

When not using and retiring the water, the Board may be authorized by stipulation or by special order to retire the water not used in accordance with the requirements of the Board, to prevent unreasonable use, unreasonable method of use or unreasonable method of diversion of said water.

Section 1625. Each license shall be in such form and contain such terms as may be prescribed by the Board.

Section 1626. All licenses shall be under the terms and conditions of this division (of the Water Code).

Section 1627. A license shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in conformity with this division (of the Water Code) but no longer.

Section 1628. Every license shall include the enumeration of conditions therein which in substance shall include all of the provisions of this article and the statement that any appropriator of water to whom a license is issued takes the license subject to the conditions therein expressed.

Section 1629. Every licensee, if he accepts a license does so under the conditions precedent that no value whatsoever in excess of the actual amount paid to the State therefor at all time be assigned to or claimed for any license granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), in respect to the regulation by any competent public authority of the services or the price of the services to be rendered by any licensee or by the holder of any rights granted or acquired under the provisions of this division (of the Water Code) or in respect to any valuation for purposes of sale to or purchase, whether through condemnation proceedings or otherwise, by the State or any city, county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, of the rights and property of any licensee, or the possessor of any rights granted, issued, or acquired under the provisions of this division (of the Water Code).

Section 1630. At any time after the expiration of twenty years after the granting of a license, the State or any city, county, municipal water district, irrigation district, lighting district, or any political subdivision of the State shall have the right to purchase the works and property occupied and used under the license and the works built or constructed for the enjoyment of the rights granted under the license.

Section 1631. In the event that the State, or any city, county, municipal water district, irrigation district, lighting district, or political subdivision of the State so desiring to purchase and the owner of the works and property cannot agree upon the purchase price, the price shall be determined in such manner as is now or may hereafter be provided by law for determining the value of property taken in eminent domain proceedings.

Dated: AUG 12 1975

STATE WATER RESOURCES CONTROL BOARD

Chief, Division of Water Rights
STATE OF CALIFORNIA
STATE WATER RESOURCES CONTROL BOARD
DIVISION OF WATER RIGHTS

PERMIT FOR DIVERSION AND USE OF WATER

PERMIT 19856

Application 27893 of Contra Costa Water District
P.O. Box 120 Concord, California 94524

Filed on September 28, 1983, has been approved by the State Water Resources Control Board SUBJECT TO VESTED RIGHTS and to the limitations and conditions of this Permit.

Permittee is hereby authorized to divert and use water as follows:

1. Source: Mallard Slough
   Tributary to: Suisun Bay

2. Location of point of diversion:

<table>
<thead>
<tr>
<th>Mallard Slough Pump Station</th>
<th>Section</th>
<th>Township</th>
<th>Range</th>
<th>Base and Meridian</th>
</tr>
</thead>
<tbody>
<tr>
<td>North 5,900 feet and East 1,400 feet from NE corner of Section 14</td>
<td>1</td>
<td>2N</td>
<td>1W</td>
<td>MD</td>
</tr>
</tbody>
</table>

   County of Contra Costa

3. Purpose of use:

<table>
<thead>
<tr>
<th>Municipal and Industrial</th>
<th>4. Place of use:</th>
<th>Section</th>
<th>Township</th>
<th>Range</th>
<th>Base and Meridian</th>
<th>Acres</th>
</tr>
</thead>
<tbody>
<tr>
<td>Within the water service area of Contra Costa Water District as shown on map filed with the State Water Resources Control Board.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The place of use is shown on map filed with the State Water Resources Control Board.
5. The water appropriated shall be limited to the quantity which can be
beneficially used and shall not exceed 39.3 cubic feet per second to be
diverted from August 1 to December 31 of each year. The maximum amount
diverted under this permit shall not exceed 11,900 acre-feet per year.

6. The amount authorized for appropriation may be reduced in the license if
investigation warrants.

7. Complete application of the water to the authorized use shall be made by
December 1, 2000.

8. Progress reports shall be submitted promptly by permittee when requested
by the State Water Resources Control Board until license is issued.

9. Permittee shall allow representatives of the State Water Resources Control
Board and other parties as may be authorized from time to time by said Board,
reasonable access to project works to determine compliance with the terms of
this permit.

10. Pursuant to California Water Code Sections 100 and 275, and the common law
public trust doctrine, all rights and privileges under this permit and under
any license issued pursuant thereto, including method of diversion, method of use
of water diverted, are subject to the continuing authority of
the State Water Resources Control Board in accordance with law and in the
interest of the public welfare to protect public trust uses and to prevent
waste, unreasonable use, unreasonable method of use or unreasonable method of
diversion of said water.

The continuing authority of the Board may be exercised by imposing specific
requirements over and above those contained in this permit with a view to
eliminating waste of water and to meeting the reasonable water requirements of
permittee without unreasonable draft on the source. Permits may be required
to implement a water conservation plan, features of which may include but not
necessarily be limited to: (1) reusing or reclaiming the water allocated; (2)
using water reclaimed by another entity instead of all or part of the water
allocated; (3) restricting diversions so as to eliminate agricultural tailwater
or to reduce return flow; (4) suppressing evaporation losses from water
surfaces; (5) controlling phreatophytic growth; and (6) installing, maintaining,
and operating efficient water measuring devices to assure compliance with
the quantity limitations of this permit and to determine accurately water use
as against reasonable water requirements for the authorized project. No action
will be taken pursuant to this paragraph unless the Board determines, after
notice to affected parties and opportunity for hearing, that such specific
requirements are physically and economically feasible and are appropriate to the
particular situation.

The continuing authority of the Board also may be exercised by imposing further
limitations on the diversion and use of water by the permittee in order to
protect public trust uses. No action will be taken pursuant to this paragraph
unless the Board determines, after notice to affected parties and opportunity for
hearing, that such action is consistent with California Constitution
Article X, Section 2; is consistent with the public interest and is necessary
to preserve or restore the uses protected by the public trust.

11. The quantity of water diverted under this permit and under any license
issued pursuant thereto is subject to modification by the State Water Resources
Control Board if, after notice to the permittee and an opportunity for hearing,
the Board finds that such modification is necessary to meet water quality
objectives in water quality control plans which have been or hereafter may be
established or modified pursuant to Division 7 of the Water Code. No action
will be taken pursuant to this paragraph unless the Board finds that (1)
adequate waste discharge requirements have been prescribed and are in effect
with respect to all waste discharges which have any substantial effect upon
water quality in the area involved, and (2) the water quality objectives cannot
be achieved solely through the control of waste discharges.

12. Permittee shall consult with the Division of Water Rights and, within one
year from the date of this permit shall submit to the State Water Resources
Control Board its Urban Water Management Plan as prepared and adopted in
compliance with Section 10610, et seq. of the California Water Code,
supplemented by an additional information that may be required by the Board.
All cost-effective measures identified in the Urban Water Management Plan and as supplemented, shall be implemented in accordance with the schedule for implementation found therein.

13. This permit is subject to prior rights. Permittee is put on notice that during some years water will not be available for diversion during portions or all of the season authorized herein. The annual variations in demands and hydrologic conditions in the Sacramento-San Joaquin Delta are such that in any year of water scarcity the season of diversion authorized herein may be reduced or completely eliminated on order of this Board made after notice to interested parties and opportunity for hearing.

14. No diversion is authorized by this permit when satisfaction of inbasin entitlements requires release of supplemental Project water by the Central Valley Project or the State Water Project. 

A. In basin entitlements are defined as all rights to divert water from streams tributary to the Sacramento-San Joaquin Delta or the Delta for use within the respective basins of origin or the Legal Delta, unavoidable natural requirements for riparian habitat and conveyance losses, and flows required by the State Water Resources Control Board for maintenance of water quality and fish and wildlife. Export diversions and Project carriage water are specifically excluded from the definition of inbasin entitlements.

B. Supplemental Project water is defined as water imported to the basin by the projects, and water released from Project storage, which is in excess of export diversions, Project carriage water, and Project inbasin deliveries.

The State Water Resources Control Board shall notify the permittee of curtailment of diversion under this term after it finds that supplemental Project water has been released or will be released. The Board will advise the permittee of the probability of imminent curtailment of diversion as far in advance as practicable based on anticipated requirements for supplemental Project water provided by the Project operators.

15. The State Water Resources Control Board reserves jurisdiction over this permit to change the season of diversion to conform to later findings of the Board concerning protection of beneficial uses of water in San Francisco Bay and Suisun Marsh. Action to change the season of diversion will be taken only after notice to interested parties and opportunity for hearing.

16. Permittee shall, when required by the Department of Fish and Game under applicable provisions of the Fish and Game code comply with such modifications to the diversion structure including fish exclusion provisions as may be necessary to protect fishlife.

17. This permit shall not be construed as conferring upon the permittee an easement upon or right-of-way across lands of the State of California or an easement upon or a right-of-way across lands subject to easement of the State of California.

This permit is issued and permittee takes it subject to the following provisions of the Water Code:

Section 1390. A permit shall be effective for such time as the water actually appropriated under it is used for a useful and beneficial purpose in accordance with this division (of the Water Code), but no longer.

Section 1391. Every permit shall include the reservation of conditions therein which in substance shall include all of the provisions of this article and the statement that any appropriation of water to whom a permit is issued shall be subject to the conditions therein expressed.

Section 1392. Every permit, if he accepts a permit, does so under the conditions precedent that no value whatever is accruable to the actual amount paid to the State thereafter shall at any time be assigned to or claimed by any permit granted or issued under the provisions of this division (of the Water Code), or for any rights granted or acquired under the provisions of this division (of the Water Code), or for any application for any rights granted or acquired under the provisions of this division (of the Water Code) or for any right of way for purposes of sink in or purchase, whether through condemnation proceedings or otherwise, by the State or any city, city and county, municipal water district, irrigation district, lighting district, or any political subdivision of the State, to the use, the right and property of any permittee, or the possession of any right granted, issued, or acquired under the provisions of this division (of the Water Code).

Date: JULY 3 1986

STATE WATER RESOURCES CONTROL BOARD

L. D. Johnson

Chief, Division of Water Rights
AGREEMENT

THIS AGREEMENT made this 21 day of April, 1967,
between the STATE OF CALIFORNIA, acting by and through its Department
of Water Resources, hereinafter referred to as the "State", and CONTRA
COSTA COUNTY WATER DISTRICT, a public body organized and existing
pursuant to Division 12 of the Water Code of the State of California, hereinafter referred to as the "District",

WITNESSETH:

WHEREAS, since 1930 the District and its predecessor, California Water Service Company, have been diverting water from Mallard Slough on Suisun Bay in Contra Costa County pursuant to Water Right Permit to Appropriate Water number 3167 issued on Application number 5941 filed on November 19, 1928. Said diversions have been for direct beneficial use and to storage for later beneficial use within the service area of the Treated Water Division of the District when the water in Mallard Slough had a chloride ion content (mean tidal cycle surface zone) of 100 parts per million or less and was not otherwise polluted to make it unsuitable for treatment for municipal and domestic use (hereinafter referred to as usable river water), and

WHEREAS, the average number of days per water year (October 1 to September 30, hereinafter referred to as "year") that usable river water has been available to the District at said point of diversion is 142 and the median period of said availability is from January 15 to June 5, both days inclusive, and

WHEREAS, during each day usable river water has been and will in the
future be available to the District the quantity thereof has been and will be adequate to meet the water requirements of the District from that point of diversion during such day, and

WHEREAS, in the future the average number of days per year that usable river water will be available to the District will decrease and such decrease will be due in part to the operation of the State Water Resources Development System as defined in Section 12931 of the Water Code, and

WHEREAS, it is contemplated that the Contra Costa Canal, supplemented by the Kellogg Unit or other facilities to be constructed by the Bureau of Reclamation, will meet the District's future water requirements which are not met by usable river water. If such facilities are not constructed by the Bureau of Reclamation, water supply facilities will have to be constructed by another agency or agencies to meet the District's future requirements including a substitute water supply equal to the District's water deficiency entitlement as defined in this agreement;

NOW, THEREFORE, the parties agree as follows:

1. The term of this agreement shall begin on the first day of October, 1967, and shall continue in effect until terminated by either party by written notice to the other party given at least 12 months prior to the effective date of such termination. The effective date of termination shall be the last day of a year (September 30) and no termination shall be effective prior to September 30, 2007.

2. The State shall reimburse the District in the manner hereinafter provided for any decrease in availability to the District of usable river water
in Mallard Slough during the term of this agreement caused by operation of
the State Water Resources Development System. Such decrease in avail-
ability of usable river water is hereinafter referred to as the District's "water
deficiency entitlement".

3. The quantity of the District's water deficiency entitlement shall
be determined for each year during the term of this agreement by the for-
mula
\[ E = \frac{(142 - D)(R + P)}{3} \]
for such year in acre-feet, \( D \) is the number of days during such year that
usable river water is available to the District at Mallard Slough, \( R \) is the
total quantity of water in acre-feet diverted by the District from Mallard
Slough from 8:00 A.M. on January 15 to 8:00 A.M. on June 6 and \( P \) is the
total quantity of water in acre-feet purchased by the District and introduced
into its facilities in the vicinity of Chenery Reservoir from 8:00 A.M. on
January 15 to 8:00 A.M. on June 6. If in any year \( D \) exceeds 142, the District
shall have no water deficiency entitlement for such year and the amount of
such excess shall offset any water deficiency entitlement of the District for
an equal number of days in the next succeeding year or years when \( D \) is less
than 142.

4. For the purpose of computing the District's water deficiency
entitlement, the District will at its expense measure the chloride ion content
of water in Mallard Slough at such intervals as shall be reasonably necessary
and shall make the results of such measurements available to the State. The
State may at its expense verify the accuracy of the District's measurements
and any error thus disclosed shall be corrected by the District.
5. Each year during the term of this agreement that the District has a water deficiency entitlement it shall purchase a quantity of substitute water equal thereto from the Contra Costa Canal as supplemented by the Kellogg Unit or other facilities constructed by the Bureau of Reclamation to meet the District's requirement, but if sufficient water is not available to the District from such source it shall purchase said quantity of substitute water from a project or projects constructed by another agency or agencies to meet the District's future water requirements. For the purposes of this agreement, substitute water shall be deemed to have been purchased during the period beginning at 8:00 A.M. on January 15 and ending at 8:00 A.M. on June 6 of such year and the price paid by the District for substitute water shall be deemed to be the average price per acre-foot paid by the District for all untreated water purchased by it for introduction into its facilities in the vicinity of Chenery Reservoir during said period without deduction for any discount, allowance or rebate that may hereafter be made or allowed by the U. S. Bureau of Reclamation in the event the District hereafter undertakes, to any extent to operate and maintain any facilities of the U. S. Bureau of Reclamation not operated and maintained by the District as of the date of this agreement.

6. Each year during the term of this agreement that the District purchases substitute water for its water deficiency entitlement, the State will pay the District an amount of money computed in accordance with the formula \( M = E(Cw + Ce - $4.90) \) where \( M \) is the amount in dollars to be paid by the State, \( E \) is the District's water deficiency entitlement for such year determined in
the manner provided in Section 3 hereof, \(C_w\) is the amount per acre-foot paid by the District for substitute water delivered to the District as provided in Section 5 hereof, and \(C_e\) is the average amount (if any) per acre-foot paid by the District for electric energy to transport substitute water from the point of delivery thereof to the District to the District's facilities in the vicinity of Chenery Reservoir. The State shall pay said amount to the District not later than October 31 of the following year. Such payments are hereby determined to be reasonable costs of the annual maintenance and operation of the State Water Resources Development System and shall be disbursed from the California Water Resources Development Bond Fund pursuant to subsection (b) (1) of Section 12937 of the Water Code.

7. The District, in consideration of the payments by the State herein provided, releases the State from liability for any decrease in the availability to the District of usable river water at Mallard Slough caused by operation of the State Water Resources Development System during the term of this agreement.

8. The obligations of the State herein shall not be affected by any modification or discontinuance of the District's Mallard Slough pumping plant or Chenery Reservoir.

9. Nothing herein shall be deemed to be a release or waiver of any right of the District to purchase supplemental water supplies from the State with the priorities established by Water Code Section 11460, 12201 to 12204 inclusive, and 12931.
IN WITNESS WHEREOF the parties hereto have executed this agreement by their respective officers thereunto duly authorized on the date first above written.

Approved as to legal form and sufficiency:

STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES

By P. A. Towner /s/ Chief Counsel

By William R. Gianelli /s/ Director

ATTEST:

CONTRA COSTA COUNTY WATER DISTRICT

By Ralph D. Bollman /s/ President

B. M. McCloskey /s/ Secretary