

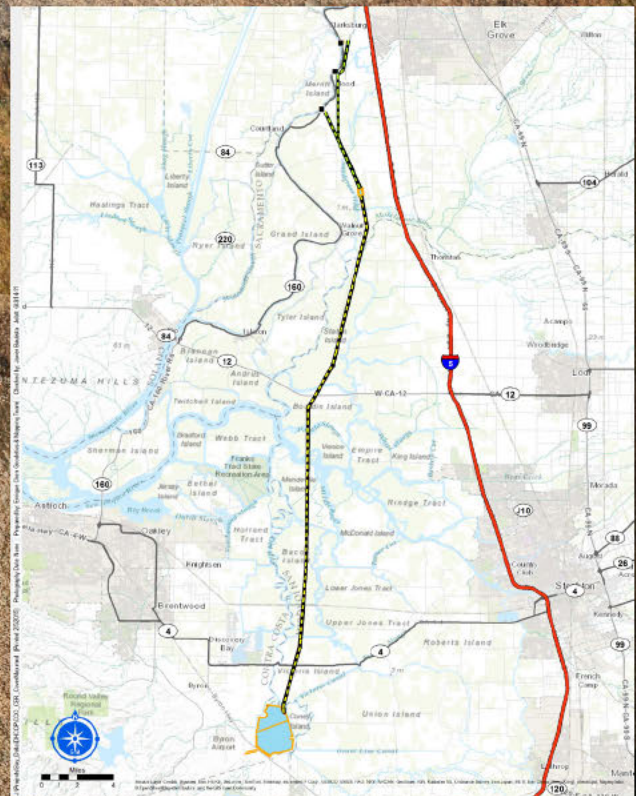
California Department of Water Resources  
Advancing the Bay Delta Conservation Plan  
Delta Habitat Conservation & Conveyance Program



DHCCP Team



**PRELIMINARY**  
**NOT FOR CONSTRUCTION**



**Delta Habitat Conservation & Conveyance Program (DHCCP)**

Final Draft: July 1, 2015

**1**

**Conceptual Engineering Report**

**Modified Pipeline / Tunnel Option – Clifton Court Forebay Pumping Plant  
Volume 1 – Conceptual Engineering Report**

construction traffic exits the state highways, it will transition to county roads. County roads typically have one lane of traffic in each direction, with paved shoulders ranging from under 1 foot to over 3 feet on each side. State highways and county roads will typically carry construction traffic to within a mile of major project work sites.

Construction traffic will also require the use of private roads to access the work sites, including tunnel shaft sites and barge landings. Private roads will carry construction traffic from the nearest state highway or county road through private land to the shaft sites. The private road segments required for access are expected to range in length from under 0.25 mile to over 5 miles. The majority of private access roads identified for use are dirt or gravel access roads on agricultural land. Private levee roads may also be used for construction traffic. The condition of levee roads range from paved to gravel roads.

### 23.3 Barge Traffic and Landing Facilities<sup>2</sup>

Barges may be required for delivery of equipment and materials, hauling fill material, and possibly for muck hauling. The majority of barge trips will probably originate at the Port of Pittsburg or Stockton due to their centralized locations relative to the proposed alignment. If necessary, alternate departure points include the Ports of Sacramento and Rio Vista. However, current lock functionality issues may limit the practicality of using the Port of Sacramento. Barge routes and landing sites will be selected by the construction contractor and will be expected to comply with the following criteria:

- Maximize continuous waterway access between departure port and shaft site.
- Use of existing barge landings where possible.
- Minimum water depth of 6 feet.

Loading and offloading construction equipment and materials from barges in the Delta can be accomplished by the use of a barge landing or by pushing ramp barges up against levees and unloading directly onto the levee. Boat ramps are not desirable for barge activities because the gradual slope of such ramps cause barges to bottom out during the loading process.

Currently, there are no barge landings in the vicinity of the proposed intake sites or launch, retrieval, and intermediate shaft sites, and limited data shown that typical levees in the Bay Delta area are too narrow and/or not stable enough to support substantial or frequent loading and unloading operations. For these reasons, a loading/unloading facility will need to be developed along the waterways near the launch shaft sites to facilitate barge delivery of heavy TBM components, routine barge delivery of heavy tunnel lining segments or fill soils, or barge export of tunnel spoils. Improvements will be required and could include:

- Construction of a working pad on the land side of the levee to support cranes and/or barge unloading ramps or bridges, as well as to serve as a staging and unloading area.
- Construction of a backfilled sheet pile wall to serve as a marginal wharf where barges could be moored for loading and unloading.
- Construction of on-land or in-water mooring dolphins to secure the barges during loading and unloading.

Loading and unloading of the barges could be performed by one or more alternatives at each facility. These could include:

- Crane Barge
- Ramps
- Tracked or Fixed-Base Crane
- Conveyor.

<sup>2</sup> Portions of this section were adapted from the draft *Construction Access* technical memorandum prepared by CDM Smith for Metropolitan Water District of Southern California dated August 2012 (CDM Smith, 2012).

In general, more extensive barge landing facilities may be required for loading and unloading large quantities of fill material or tunnel muck. Specific design of these facilities will be required. All such facilities that affect levees will be designed, constructed, and operated in full compliance with all permits and environmental regulations, as well as the requirements of the CVFPB, USACE, and the local district with jurisdiction of the specific levee.

It is most critical to remove all heavy equipment from the levee as soon as possible to avoid compromising the structural integrity of the levees. For this reason, it is recommended that a dirt road, including an earthen ramp, be constructed on the landside of all levee unloading points if an existing ramp is not within the immediate vicinity. This will allow for all heavy equipment and materials to be removed from the levee immediately after unloading. Spoils from shaft construction could be used to construct these ramps.

## 23.4 Laydown and Construction Staging Areas

Laydown and construction staging areas will be needed for all elements of the proposed construction. Sufficient space will be required adjacent to the project sites to allow contractors to set up field offices, provide employee parking, and stage the materials and equipment needed for the work.

Each construction site will also include some combination of required processing operations, including concrete batch plants, pug mills, soil mixing facilities, and cement storage. Batch plants will be established at specific sites (see Volume 3 – Map Book), along with fine and coarse aggregate stockpiles, to produce concrete needed for the work. Pug mills will be provided for roller compacted concrete and other processed soil materials used at the various sites. Soil mixing facilities may be needed for some aspects of muck disposal and for ground improvement activities. Cement and required admixtures will be stored at each site as needed to support concrete, slurry walls, ground improvement, soil mixing, and other similar needs.

All soil and concrete processing facilities, as well as all materials storage, will be established with suitable grading and best practices to minimize surface water and local area impacts. Also, all storage and processing areas will be properly contained if required for environmental and regulatory compliance.

Material stockpiles and handling areas are expected to be used to support the concrete and soil processing features described above. These stockpiles will be used at the staging areas for all tunnel, forebay, and intake construction contracts. Contracts with significant earthwork elements, such as the intake, forebays and pumping plants, will also require earth material processing at each site. Specifically, the following construction and construction staging areas are anticipated:

- The full area enclosed by the relocated Highway 160 and river will be used for construction and construction staging at the intake sites.
- The full area enclosed by the forebay and the tunnel muck disposal area will be used for construction and construction staging at the IF site.
- The full area enclosed by the surge shafts and pumping plants and associated muck disposal areas.
- Construction and construction staging areas for the tunnel shafts and associated muck disposal areas as shown on the Concept Drawings.
- The area enclosed by the footprint of the BTF and the adjacent borrow/disposal site will be used for construction and construction staging.

Construction and construction staging for power supplies and other support features, such as access roads, will be developed in greater detail during preliminary engineering and final design.

Laydown and staging areas for all construction sites will need to be accessible in all weather conditions for as long as such construction is ongoing. Laydown and staging areas may require security fences, gates, and/or cameras.

## 23.5 Temporary and Permanent Footprint

Construction of the MPTO/CCO components will result in temporary construction and permanent facility footprints. Table 23-1 summarizes the projected footprint acreage for each MPTO/CCO component and a project total. Major assumptions involved in the generation of construction footprints include the following:

- Disposal areas for tunnel muck, as well as unsuitable and excess excavated material, are included with the “During Construction Acreage” because these areas are expected to be reclaimed for other uses on a permanent basis.
- Borrow areas currently identified for the MPTO/CCO are included with the “During Construction Acreage.”
- Offsite borrow areas cannot be estimated at this time and are not included.
- Offsite materials and equipment staging, fabrication, and storage sites cannot be estimated at this time and are not included.
- Small, miscellaneous minor access roads and small barge landing acreages are not included because they are expected to be within the accuracy limits of the larger acreages presented.
- No footprint areas are included for the subsurface portions of the tunneled sections of the MPTO/CCO because the tunnels will not result in surface impacts in these areas.
- No footprint areas are included for the electrical transmission and distribution system because the exact location and impact area for these facilities is not known at this time. Ongoing system impact studies are expected to further define these areas.
- No footprint areas are included for the fiber optic communication system because the exact location and impact area for these facilities is not known at this time. If the fiber optic lines are placed within the tunnels and radio or microwave communications are used between the project area and operations centers in Sacramento, no additional impact area would result. If surface-installed fiber optic conduit systems are used, the impact area would be consistent with those of the electrical system in the project area and would mostly use existing transportation and utility corridors for connections to the remote operations centers.

Table 23-1: Projected Construction and As-Constructed Footprint for MPTO/CCO Facility Components

Facility Component	(Temporary) During Construction Acreage <sup>a</sup>	(Permanent) As-constructed Acreage <sup>b</sup>
<b>Intake Facilities</b>		
Intake No. 2	37 acres	167 acres
Intake No. 3	60 acres	98 acres
Intake No. 5	55 acres	101 acres
<b>Intake Subtotal</b>	<b>152 acres</b>	<b>366 acres</b>
<b>North Tunnels<sup>e</sup></b>	<b>323 acres</b>	<b>237 acres</b>
<b>Intermediate Forebay</b>		
IF (Including Overflow Containment Area)	8 acres	243 acres
Main Substation	31 acres	0 acres
IF Reusable Tunnel Material Disposal Area	0 acres	405 acres
<b>Intermediate Forebay Subtotal</b>	<b>39 acres</b>	<b>648 acres</b>
<b>Main Tunnels<sup>c,e</sup></b>	<b>276 acres</b>	<b>2,749 acres</b>
<b>Clifton Court Forebay<sup>d</sup></b>	<b>2,145 acres</b>	<b>2,121 acres</b>
<b>Overall MPTO/CCO Project</b>	<b>2,935 acres</b>	<b>6,121 acres</b>

<sup>a</sup> Includes borrow material, and control structures work area

<sup>b</sup> Includes re-usable tunnel material

<sup>c</sup> Refer to Chapter 11 for a detailed breakdown of Main Tunnel sites

<sup>d</sup> Includes Clifton Court Forebay Pumping Plant

<sup>e</sup> Permanent acreages include tunnel subsurface impacts

Notes:

CCF = Clifton Court Forebay

IF = Intermediate Forebay