EXHIBIT 15-C

# Monterey Peninsula Water Management District

## 95-10 Project Constraints Analysis

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Assumptions: 50% recovery
Plant operation 90% of time
1 gpm = 1.6129 AF/yr

**Table 1.** Summary of Feed Water Collection Well Alternatives

| Alt | Location Owner | Description | Well Type | Details | Flow Rate | Public property? | Potable Water (AF/yr) |
|---|---|---|---|---|---|---|---|
| 1 | Sand City Desal Site- Sand City | South of Tioga Avenue. Project facilities located in vicinity of Sand City collection and disposal wells. | HDD | 1,500 ft | 3,000 gpm | Y | 2,200 |
| 2 | | | Radial | 2 wells | 6,000 gpm | Y | 4,400 |
| 3 | | | Conv. (Shallow) | 15 wells | 7,500 gpm | Y | 5,400 |
| 4 | Sand City - Malibu Development LLC | North of Tioga Avenue. Property slated for re-development, though no identified active plans. | HDD | 500 ft | 1,000 gpm | N | 700 |
| 5 | | | Radial | 1 well | 3,000 gpm | N | 2,200 |
| 6 | | | Conv. (Shallow) | 2 wells | 1,000 gpm | N | 700 |
| 7 | Sand City - Sand City Re-Development Agency | Property owned by Sand City Re-development Agency. An EIR is underway for a resort planned at this site. | HDD | 500 ft | 1,000 gpm | N | 700 |
| 8 | | | Radial | 2 wells | 6,000 gpm | N | 4,400 |
| 9 | | | Conv. (Shallow). | 7 wells | 3,500 gpm | N | 2,500 |
| 10 | Sand City - Monterey Peninsula Regional Parks District | Property owned by Monterey Peninsula Regional Parks District. | HDD | 1,000 ft | 2,000 gpm | Y | 1,500 |
| 11 | | | Radial | 1 well | 3,000 gpm | Y | 2,200 |
| 12 | | | Conv. (Shallow) | 5 wells | 2,500 gpm | Y | 1,800 |
| 13 | Sand City – SNG Development Corporation | Property owned by SNG. Property slated for re-development. | HDD | 600 ft | 1,200 gpm | N | 900 |
| 14 | | | Radial | 2 wells | 6,000 gpm | N | 4,400 |
| 15 | | | Conv. (Shallow) | 6 wells | 3,000 gpm | N | 2,200 |
| 16 | Former Fort Ord: Bunker Site- DPR | Approximate northern extent of Seaside Basin. Former ammunition supply bunkers. Slated for development as a camping area. | HDD | 1,000 ft | 2,000 gpm | Y | 1,500 |
| 17 | | | Radial | 2 wells | 6,000 gpm | Y | 4,400 |
| 18 | | | Conv. (Shallow) | 8 wells | 4,000 gpm | Y | 2,900 |
| 19 | Former Fort Ord: MW-1- DPR | Location of Seaside Basin Sentinel Well # 1, and test boring location in 2004 CDM study. | Radial | 1 well | 3,000 gpm | Y | 2,200 |
| 20 | | | Conv. (Shallow) | 2 wells | 1,000 gpm | Y | 700 |
| 21 | | | HDD | 1,000 ft | 2,000 gpm | Y | 1,500 |
| 22 | Former Fort Ord: Stilwell- DPR | Former site of Stillwell Hall. Planned parking area and trail access point. | Radial | 1 well | 3,000 gpm | Y | 2,200 |
| 23 | | | Conv. (Shallow) | 4 wells | 2,000 gpm | Y | 1,500 |
| 24 | | | Conv. (180') | 2 wells | 4,000 gpm | Y | 2,900 |
| 25 | Former Fort Ord: WWTP DPR | Site of former Fort Ord Wastewater Treatment Plant. | Conv. (180') | 2 wells | 4,000 gpm | Y | 2,900 |

move forward, the team identified alternatives that were generally ranked higher, and had consistent scores.

In general, HDD options performed poorly when compared with radial and conventional well alternatives because of their higher drilling and siting complexity, their higher cost and lower yield. Also, sites at former Fort Ord generally performed better than sites in the Sand City area, due to potential land use constraints and potential impacts to the Sand City project currently under construction.

The four criteria used for the screening analysis were weighted by the consulting team and MPWMD staff based on their perceived relative importance. The relative weights, which sum to 100 percent, reflect the team's collective opinions about the relative importance of each criterion. The two technical criteria, siting and drilling complexity and cost, total 30 percent, with policy and regulatory issues totaling 70 percent.

A sensitivity analysis was performed to determine the effect of changing the relative weights of the criteria to the alternatives ranking. The sensitivity analysis was performed assigning 70 percent to technical criteria and 30 percent to policy and regulatory criteria. The sensitivity analysis found that these changes had relatively little impact on alternatives, with the following exceptions:

- Alternative 3, conventional wells at Sand City, has a high score for ranking, with regard to flow, or without regard to flow. This reflects the fact that the most significant issues on this project are policy-related, due to potential impacts to the Sand City desalination project.
- Alternatives 17 and 22, radial wells at former Fort Ord, significantly fall in the rankings, due to the more difficult construction issues and higher relative cost for construction of these wells at former Fort Ord, where the water table is much deeper due to the presence of the coastal bluffs.

# Formulation of Potential Projects

Based on the results of the screening, alternatives at three different sites were evaluated for project pairing. These alternatives are summarized below:

- **Alt 17 or 18: Fort Ord, Bunker Site.** Developed with either radial wells (6,000 gpm) or conventional wells (4,000 gpm).
- **Alt 25: Fort Ord, Former Wastewater Treatment Plant Site.** Developed with conventional wells in the 180-foot aquifer (4,000 gpm).
- **Alt 22, 23 or 24: Fort Ord, former Stilwell Hall Site.** Developed with radial wells (3,000 gpm), conventional wells in the Dune Sands aquifer (2,000 gpm), or conventional wells in the 180-foot aquifer (4,000 gpm).

As discussed in the beginning of this report, MPWMD is seeking a project with a production capacity of 8,400 AF/year, or 7.5 mgd. For a production capacity of

Potable Water yield, based on "WTP Capacity"
1 MGD = 1,120.1 AF/yr

7.5 mgd, 15 mgd (10,400 gpm) of feed water collector capacity is required. Additional capacity must also be included, assuming that at least one well is out of service at any given time for maintenance. Table 5 summarizes four possible combinations of the alternatives that could be developed into a project.

**Table 5.** Potential Projects and Capacities

| Project | Alternatives in Project | Total Capacity | Firm Capacity (1) | WTP Capacity | Notes | Potable Water (AF/yr) |
|---|---|---|---|---|---|---|
| *Projects in the Dune Sands Aquifer* | | | | | | |
| **Example Project 1** | | | | | | |
| | Alt 18: Conventional Wells at Bunker Site | 4,000 | | | Least implementation issues of all projects evaluated. | |
| | Totals (gpm) | **4,000** | **3500** | | | |
| | Totals (mgd) | **5.8** | **5.0** | **2.5** | | 2,800 |
| **Example Project 2** | | | | | | |
| | Alt 18: Conventional Wells at Bunker Site | 4,000 | | | Potential inter-basin transfer issues for wells at Stilwell. | |
| | Alt 23: Conventional Wells at Stilwell Site | 2,000 | | | | |
| | Totals (gpm) | **6,000** | **5,500** | | | |
| | Totals (mgd) | **8.6** | **7.9** | **4.0** | | 4,500 |
| *Projects in the Dune Sands Aquifer and 180-foot Aquifer* | | | | | | |
| **Example Project 3** | | | | | | |
| | Alt 18: Conventional Wells at Bunker/Dune Sands | 4,000 | | | Potential inter-basin transfer issues for wells at Stilwell and WWTP | |
| | Alt 24: Conventional Wells at Stilwell/180-foot Aquifer | 4,000 | | | | |
| | Alt 25: Conventional Wells at WWTP/180-foot Aquifer | 4,000 | | | | |
| | Totals (gpm) | **12,000** | **10,000** | | | |
| | Totals (mgd) | **17.3** | **14.4** | **7.2** | | 8,100 |
| **Example Project 4** | | | | | | |
| | Alt 18: Conventional Wells at Bunker/Dune Sands | 4,000 | | | Potential inter-basin transfer issues for wells at Stilwell and WWTP | |
| | Alt 22: Radial Well at Stilwell/Dune Sands | 3,000 | | | | |
| | Alt 24: Conventional Wells at Stilwell/180-foot Aquifer | 4,000 | | | | |
| | Alt 25: Conventional Wells at WWTP/180-foot Aquifer | 4,000 | | | | |
| | Totals (gpm) | **15,000** | **12,000** | | | |
| | Totals (mgd) | **21.6** | **17.3** | **8.7** | | 9,700 |

(1) Computed assuming the largest well out of service as a standby

As the table shows, the only way to assemble projects to meet the 7.5 mgd production goal for the project is with wells drilled in the 180-foot aquifer, paired with shallow wells at the Bunker Site. No pairing of conventional or radial wells at the sites using the Dune Sands aquifer would provide sufficient collector well capacity to meet the project production goal of 7.5 mgd.

# 4 Findings and Next Steps

## Findings

The ICF Jones & Stokes/CDM team has identified the following feed water development findings for the 95-10 Project:

- A project with an estimated WTP production capability of up to 8,400 AFY (7.5 mgd) is technically feasible, with wells installed on former Fort Ord, making use of the Dune Sands aquifer and the 180-foot aquifer of the Salinas Groundwater Basin. Initial conversations with MCWRA indicate that inter-basin transfer of water from the 180-foot aquifer would be extremely politically sensitive and would ultimately require State legislature approval to amend the MCWRA Act, which could significantly lengthen the project implementation timeline.
- If the 180-foot aquifer is not used as a source for feed water, the anticipated project yield is less than 8,400 AFY. Depending on project configuration, a project with an estimated WTP production capability of 2,800 AFY (2.5 mgd) to 4,400 AFY (4.0 mgd) is technically feasible.
- All of the options evaluated presented institutional and land use obstacles of far greater significance than technical concerns. While none of the agencies interviewed identified issues that would preclude a project at this stage, successful implementation of any project option will require aggressive and collaborative discussion and negotiations with land use, resource, and regulatory agencies.
- The analysis found that projects at or in the vicinity of the Sand City desalination project currently under construction are technically viable and could have a production capability of 6,000 AFY (5.0 mgd) or more with the least cost. However, in a meeting and subsequent conversations with Sand City staff, they expressed strong objections to siting any desalination facilities within the city limits. Their objections included potential for impacts to the Sand City desalination project and incompatibility with planned development at potential project sites. Therefore, none of the projects in Sand City were recommended for further consideration.