

## **Agenda Item 6a. Planning Process: Review of Existing Surface Water Supplies in Region F**

This agenda item is to review and discuss existing surface water supplies in Region F. Under regional planning rules and guidelines, surface water supplies must be evaluated using WAM Run 3 (strict priority order). In Region F, under WAM Run 3, most surface water supplies have no availability. Only O.H. Ivie and Lake Brownwood have firm yields. Subordination of the lower basin senior water rights to the upper basin (Region F) rights is a major water management strategy in the Region F Plan. Subordination will be reevaluated as part of this plan as part of the Task 5A authorization.

### **Attachments:**

1. Memorandum on Existing Surface Water Supplies in the Rio Grande Basin in Region F
2. Comparison of the 2016 Plan Existing Surface Water Supplies and the 2016 Plan Subordination Supplies

**TO:** File

**CC:** Simone Kiel, Jon Albright and Lissa Gregg

**FROM:** Jeremy Rice

**SUBJECT:** Water Availability in the Rio Grande River Basin

**DATE:** March 6, 2018

**PROJECT:** CMD17216

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### **Introduction**

This memorandum discusses the surface water availability from the Rio Grande River Basin in Region F. There were several changes made to the Rio Grande Water Availability Model (WAM) to reflect current operations and water supply. The main changes are summarized below.

- Modified the WAM to allow water rights located at the springs to have access to the flows. This is a correction to an error in the WAM.
- Modified the WAM to direct excess flows (flows not diverted directly from the creek) to Lake Balmorhea for storage in accordance with the Lake Balmorhea water right. The storage would then be modeled as backup for the run of river diversions.
- Modeled the Toyah Creek watershed (includes Lake Balmorhea) to reflect actual operations (upstream to downstream and senior to the rest of the basin).
- Updated the capacity for Red Bluff Reservoir for 2020 and 2070 sediment conditions.
- Modeled Red Bluff Reservoir as a standalone reservoir. Removed backups from Red Bluff Reservoir for downstream diversion by run-of-river water rights.

### **Lake Balmorhea**

Excess water from the San Solomon and Griffin Springs in Pecos County is diverted to Lake Balmorhea for storage and diversion. This portion of the Pecos River was modeled in upstream to downstream order by changing the priority dates to the most senior in the WAM. The calculated firm yield of Lake Balmorhea is 18,800 acre-feet per year. A traditional safe yield analysis (safe yield diversion equals minimum storage) was not determined because the reservoir storage is much smaller than the yield (7,400 acre-feet).

### Red Bluff Reservoir

In 2013, the TWDB conducted a volumetric survey, however due to the low water levels an area-capacity-elevation curve all the way to the conservation storage was not calculated. Using the published sedimentation rate in the 2013 TWDB survey and the 1986 survey, 2020 and 2070 sediment conditions were updated from the 2016 RWP.

The total permitted diversion from Red Bluff Reservoir is 292,520 acre-feet per year. This includes multiple run-of-river diversion points downstream of the reservoir. To assess the yield of Red Bluff, releases from Red Bluff were no longer modeled and only diversion directly from Red Bluff reservoir were considered. The firm and safe yields of Red Bluff Reservoir are shown in Table 1.

**Table 1: Red Bluff Reservoir Yield.**

|            | Yield (Ac-Ft/Yr) |        |        |        |        |        |
|------------|------------------|--------|--------|--------|--------|--------|
|            | 2020             | 2030   | 2040   | 2050   | 2060   | 2070   |
| Firm Yield | 38,630           | 38,548 | 38,466 | 38,384 | 38,302 | 38,220 |
| Safe Yield | 30,050           | 29,980 | 29,910 | 29,840 | 29,770 | 29,700 |

### Pecos Run of River

Forty-eight (48) water right records were identified that are associated with run-of-river irrigation. FNI defines the reliable supply for irrigation from a run-of-river supply to be the minimum annual diversion. A summary of results is included in **Table 2**.

**Table 2: Pecos River Basin Run-of-River Minimum Annual Diversions.**

| WUG                        | Minimum Annual Diversion (Acre-Feet) |
|----------------------------|--------------------------------------|
| Ward County - Irrigation   | 881                                  |
| Pecos County - Irrigation  | 18,672                               |
| Reeves County - Irrigation | 573                                  |
| <b>Total</b>               | <b>20,126</b>                        |

2016 Plan Existing Surface Water Supplies vs. Subordination Supplies

