

# RECLAMATION

*Managing Water in the West*

## **Draft Environmental Assessment Orchard Mesa Irrigation District Canal System Improvement Project**

**Upper Colorado River Endangered Fish Recovery Program  
Western Colorado Area Office  
Upper Colorado Region**



**July 2013**

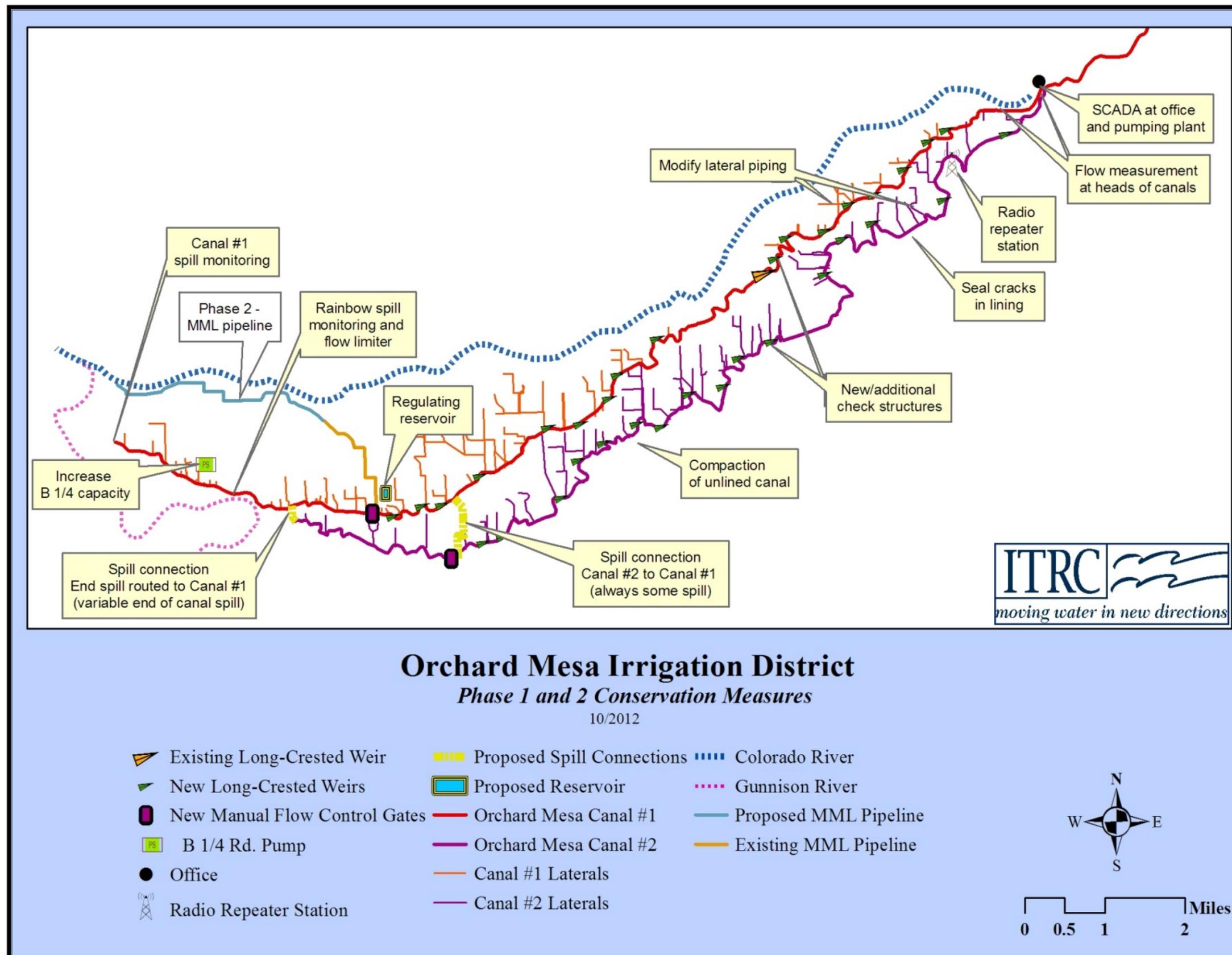


Figure 1-Project Map (from ITRC 2012)

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## CHAPTER 1 – INTRODUCTION

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### **PROPOSED ACTION**

On behalf of the Upper Colorado River Basin Endangered Fish Recovery Program (Recovery Program), Reclamation proposes to construct system improvements for the Orchard Mesa Irrigation District (OMID) Division of the Grand Valley Project. The improvements will provide a more reliable water supply throughout the canal system and generate an estimated 17,000 ac-ft. of water savings per year. The savings result from reduced main canal and lateral spills, recovering spills from main canals in urban areas, and elimination of spills from the Mutual Mesa Lateral (MML). Conserved water would then be redirected to the Grand Valley Power Plant (power plant) to increase hydropower generation and river flows in the 15-Mile Reach<sup>1</sup>. Existing water shortages to urban and agricultural water users would also be reduced. Reclamation and OMID will enter into an agreement for operations and maintenance of the system improvements.

### **NEED FOR AND PURPOSE OF ACTION**

The U.S. Fish and Wildlife Service identified the need for additional flows within the 15-Mile Reach (Service 1999) and the Upper Colorado River Endangered Fish Recovery Program (Recovery Program) has identified the proposed project as a source to contribute additional flows. The purpose of the project is to assist in recovery of four endangered fishes. Reclamation prepared this EA in cooperation with other federal and state agencies to comply with the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), and related U.S. Department of the Interior policies and regulations. If, based on this analysis, Reclamation concludes the proposed action would have no significant impact on the human environment; preparation of an Environmental Impact Statement would not be required before the action could be implemented.

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<sup>1</sup> The 15-Mile Reach is the portion of the Colorado River defined as from River Mile 171 to River Mile 185 (Grand Valley Irrigation Company Diversion Dam near Palisade, Colorado to the confluence with the Gunnison River).

## **BACKGROUND INFORMATION**

### **Upper Colorado River Basin Endangered Fish Recovery Program**

In 1988, the Governors of Colorado, Utah and Wyoming; the Secretary of the Interior; and the Administrator of Western Area Power Administration entered into a cooperative agreement to initiate the Recovery Program. The Recovery Program is an interagency partnership created to recover the endangered Colorado pikeminnow, razorback sucker, humpback chub and bonytail while allowing continued and future water development.

Recovery Program elements include:

- Habitat management including identifying and acquiring instream flows, changing operations of Federal dams, and operating other reservoirs in a coordinated manner to benefit endangered fish.
- Habitat development including restoring floodplain/wetland habitats, constructing fish passageways around dams and other barriers in the river, and constructing fish screens in major canal diversions.
- Native fish propagation and genetic management involving establishing facilities to hold adult brood stock to prevent extinction of these rare fish and maintain their genetic resources; develop rearing ponds; conduct research to improve survival of endangered fish raised in captivity and stocked in the wild; and support appropriate stocking and reintroduction efforts.
- Managing non-native species and sport fishing in habitat considered “critical” to endangered fish. This also involves educating and distributing information to anglers to reduce accidental capture of endangered fish.
- Research, monitoring, and data management provides information about what these fish need to survive, grow, and reproduce in the wild. Efforts include compiling data on the number, sizes, and locations of endangered fish; monitoring endangered fish population trends; and making river Flow Recommendations.

### **15-Mile Reach of the Colorado River**

The 15-Mile Reach is a reach of the Colorado River that extends from the confluence of the Gunnison River upstream 15 miles to the Grand Valley Irrigation Company Diversion Dam near Palisade, Colorado (See Figure 1). The Colorado River from the confluence to the Utah State Line is commonly referred to as the 18-Mile Reach. The Service issued a programmatic biological opinion (PBO) (Service 1999) which addressed Reclamation’s operations and depletions, other depletions, and Recovery Program actions in the Upper Colorado River above the confluence with the Gunnison River. The Service found that the 15-Mile Reach is affected more than any of the other reaches by water depletions because it is located downstream of several large diversions and upstream of the Gunnison River. The PBO states:

“Extremely low water conditions that occur during the late summer and early fall months reduce habitat for Colorado pikeminnow and razorback sucker. Reduced flows during spring runoff reduce the ability for many habitats to be created and maintained. Therefore, many of the recovery actions are targeted for the 15-Mile Reach. Colorado pikeminnow and razorback sucker occur in the 15-Mile Reach, humpback chub and bonytail currently are not known to occur there. The 15-Mile Reach is a particularly important section of the river for Colorado pikeminnow and razorback sucker; it is critical to recovery of each species’ Colorado River populations.”

## **SCOPING**

A scoping letter was mailed to interested parties on November 25, 2009 and an open house was held at the Mesa View Elementary School on December 3, 2009 to discuss and review the proposed project.

Alternatives evaluated in this EA are limited to the Proposed Action and No Action alternatives. The alternatives are discussed in Chapter 2. During scoping, Reclamation identified the following potential issues and concerns which are discussed in greater detail in Chapter 3.

### **Water Resources**

**Water Rights**—Reduce canal spills while protecting Orchard Mesa Irrigation District Water Users, Impacts to water rights on the Colorado River and along affected tributary washes

**Water Quality**—Water quality impacts and Clean Water Act compliance

### **Land and Vegetation Resources**

**Construction Easements**—Obtain temporary construction easements; minimize disturbance to residents

**Riparian and Wetlands**—Reduced spills in washes, drains and along the river corridor could result in reduction of riparian and wetland habitat types.

**Jurisdictional Wetlands**—The Proposed Action will affect surface and subsurface hydrology supplied to wetland areas along the project alignment. As an irrigation maintenance project, the Proposed Action is exempt from requiring a Section 404 Permit pursuant to the Clean Water Act (33 USC 1344). The applicable U.S. Army Corps of Engineers exemptions for Farm or Stock Pond or Irrigation Ditch Construction and Maintenance. A copy of the Exemption Summary and the ACOE Guidance Letter are provided as Attachment B.

**Weed Management**—Concerns with weed management

**Hydropower**—Impacts to power production at the power plant

**Cultural Resources**—Avoid or mitigate adverse impacts to historic characteristics of the canal system

**Economic**—Concerns with potential property devaluation

**Threatened and Endangered Species**—Contribute to progress of the Recovery Program

## CHAPTER 2—PROPOSED ACTION AND ALTERNATIVES

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Alternatives evaluated in this draft environmental assessment include the No Action and Proposed Action Alternatives.

### **NO ACTION ALTERNATIVE**

Under the No Action Alternative, Reclamation would not implement canal system improvements on the Orchard Mesa Irrigation District (OMID) system. Seasonal water shortages would continue to occur on the lower end of the system and water savings would not contribute flows needed for the 15-Mile Reach to assist in recovery of the endangered fishes.

### **PROPOSED ACTION**

Under the Proposed Action, Reclamation would construct system improvements for the OMID component of the Grand Valley Project. The improvements would 1) provide a more reliable water supply throughout the canal system and throughout the irrigation season, and 2) produce an estimated 17,000 ac-ft. of water savings per year. Conserved water would be redirected to the Grand Valley Power Plant resulting in increased hydropower generation and increased flows in the 15-Mile Reach.

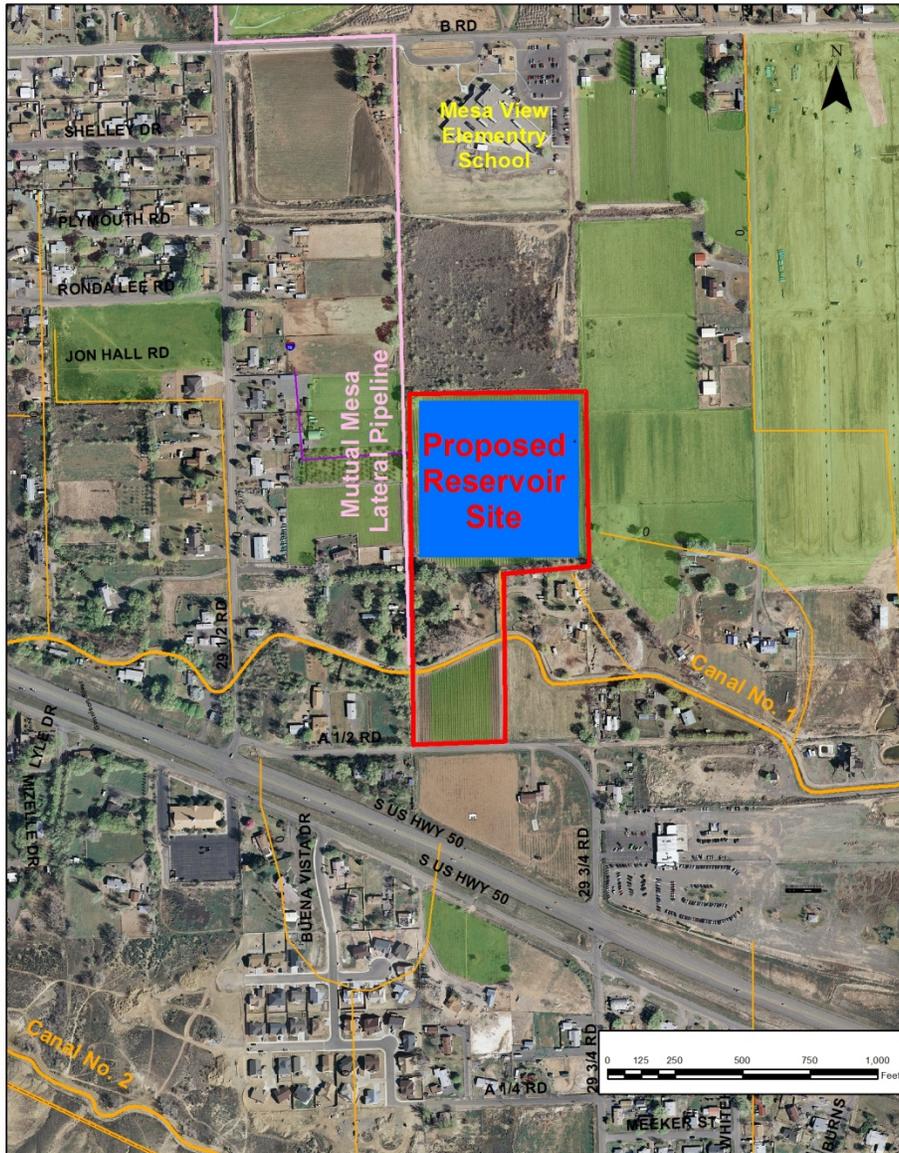
Proposed Improvements include:

- Construction of a new 80-100 ac-ft. regulating reservoir on approximately 15 acres of land on central Orchard Mesa (**Regulating Reservoir**),
- Improve water level control in Orchard Mesa Canals No. 1 & 2 (**Check Structures and Other Improvements**),
- Installation of simple remote monitoring system and electronic flow meters (**SCADA System**),
- Increased pump capacity at existing B ¼ Rd Pump (**B ¼ Pump**),
- Construction of interties between the Canals No. 1 and No. 2 to help balance flows in the irrigation system and upgrades to canal end spills (**Interties and Upgrades to Canal End Spills**),
- Reduced canal and lateral seepage (**Lining and Piping**), and
- Improved operational procedures (**Improved Operations**),

Additional descriptions of the proposed improvements are as follows:

#### **Regulating Reservoir**

A regulating reservoir would be built adjacent to Canal No. 1 at a property recently acquired



**Figure 1-Proposed OMID Regulating Reservoir**

from the Colorado River Water Conservation District (CRWCD) shown in Figure 1. Reclamation will construct an 80-100 ac-ft. regulating reservoir. The reservoir would be lined to prevent seepage and fenced for safety. To form the reservoir embankments, approximately 52,000 cubic yards of compacted fill material will be placed. Fill material will be excavated from the bottom of the reservoir. The reservoir will have an east-west dike dividing the reservoir in half eliminating the need for a tall embankment on the north end of the reservoir. The reservoir would have the ability to receive and store water from Canal No. 1. As needed, water

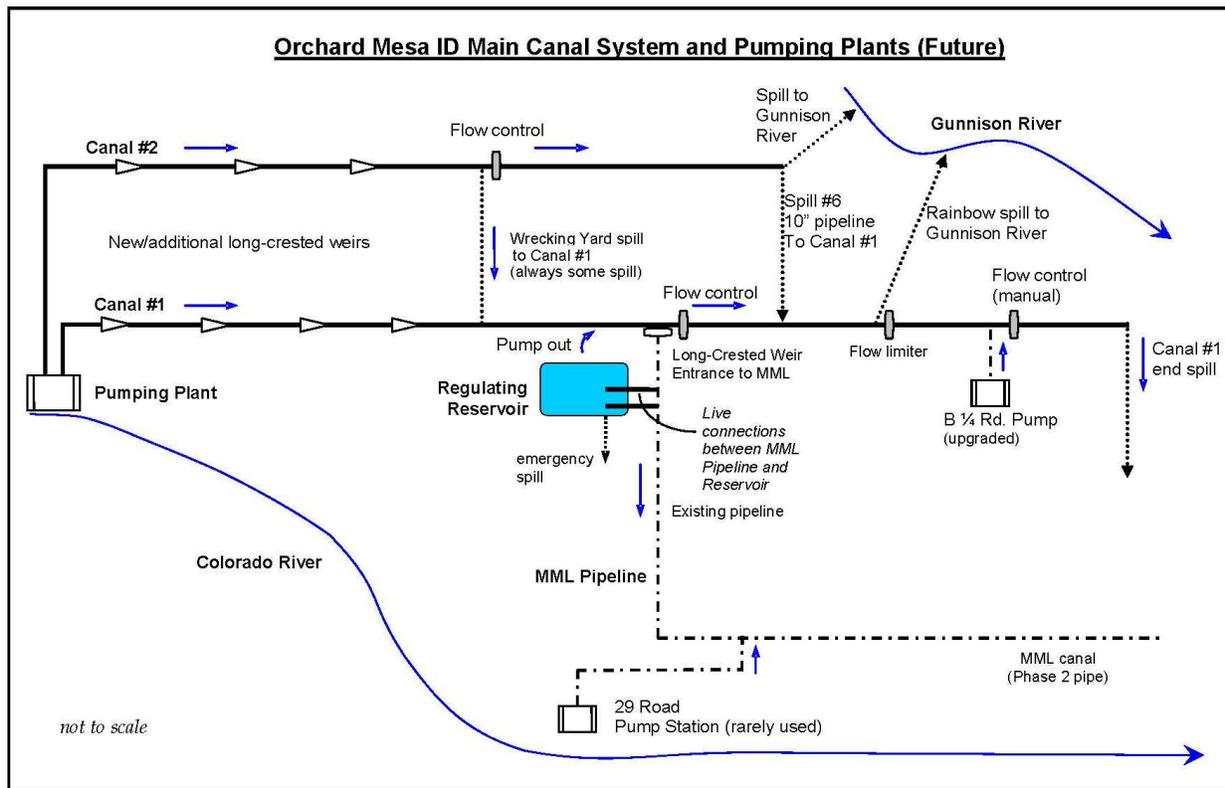


Figure 2-Control Strategy for OMID (from ITRC 2012)

would then be put back into the canal system to meet peak demands. Figure 2 illustrates the operational strategy for regulating reservoir.

### Check Structures and Other Canal Improvements

The proposed check structure improvements will involve upgrading existing check structures and the construction of new check structures at selected locations in Orchard Mesa canals No. 1 & 2 north of U.S. Highway 6 & 50. The check structures will improve the water level control by keeping the water level more constant at varying canal flows.

Present operations require the canals be kept full to provide sufficient water elevation to make water deliveries at each turnout. If canal flow is reduced, the lower water surface elevation is not sufficient to provide water at turnouts for irrigators to take and use their allocated water. Likewise, if canal flows are constant and irrigation demands decrease, water must be spilled back to either the Colorado or Gunnison rivers at various points along each canal.

Other canal improvements include improving some individual canal deliveries and raising reaches of the canal bank.

### Check Structures

Two types of long-crested weirs structures (V-Type and Straight Line weirs) are being considered for use on Orchard Mesa Canals No.1 and No. 2. Figure 3 illustrates the two types of long-crested weirs. The Straight Line structure is approximately twice the length of the V-type structure. A total of 17 long-crested weir check structures would be constructed in Canal No. 1 and 16 in Canal No. 2. The approximate locations of these structured are shown in Figure 4.

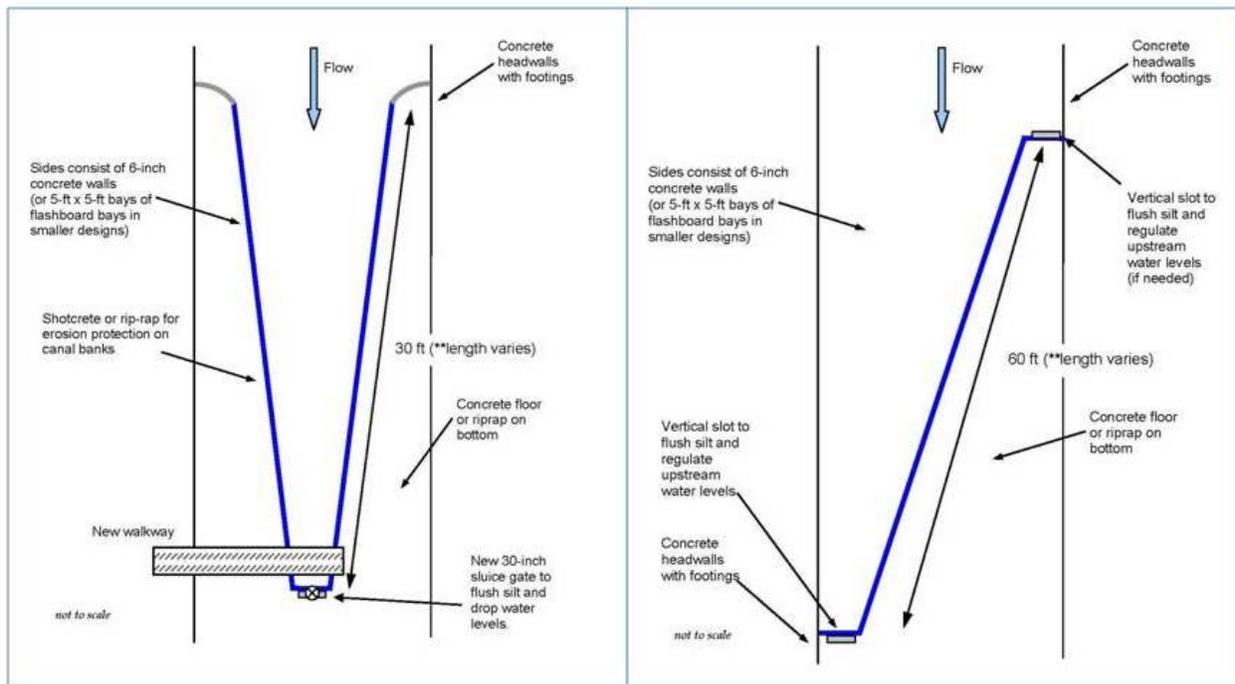
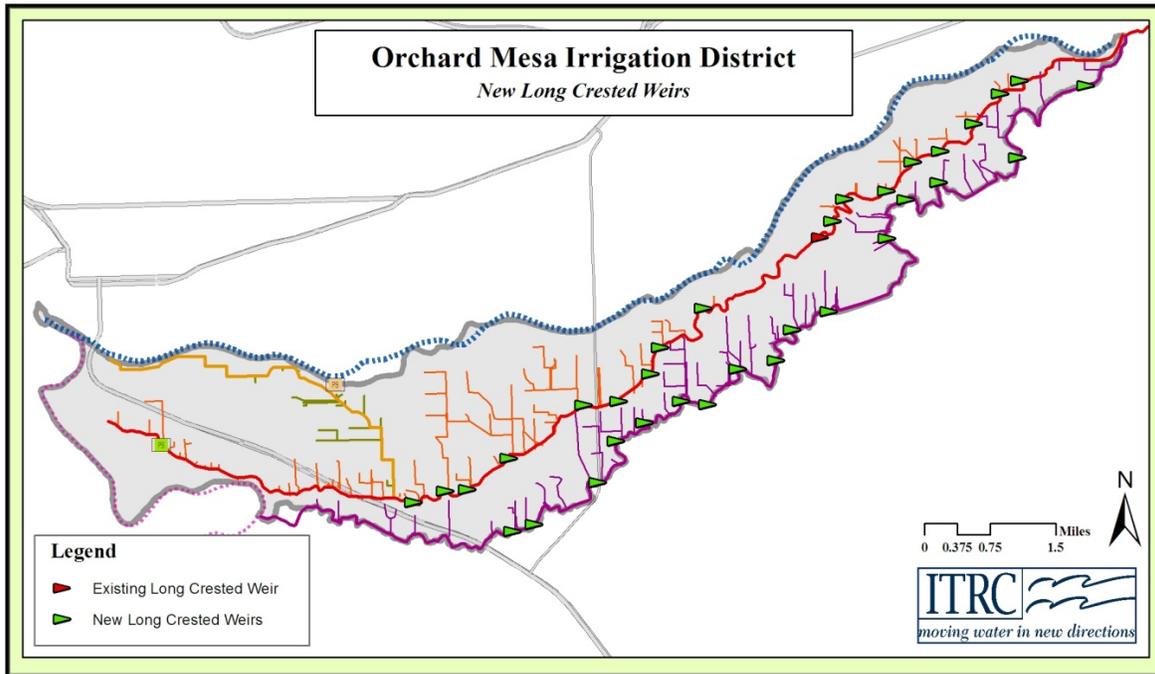


Figure 3-V-Type and Straight Line Weir Concepts

### Other Canal Improvements

Other canal improvements include:

- 1) Raising canal banks in 7 sections within Canal No. 1 and 5 sections within Canal No. 2 to address insufficient freeboard. This involves placing additional fill material along the canal bank to increase the elevation up to 1 foot. The lengths of the canal bank raising will be between 200 ft. and 500 ft., with the exception of one site. That section includes a 2,500 ft. section of Canal No. 1 near U.S. Highway 50; other locations may be identified during project development and will be addressed at that time.
- 2) Installing a “bump” structure in Canal No.1 and two “bump” structures in Canal No. 2. “Bumps” are used in areas where there is adequate freeboard and riprap. The bumps are created by placing concrete blocks in the bottom of the canal to raise water levels during low flows which enables adjacent turnouts to be serviced.



**Figure 4-Approximate Locations of New Long-Crested Weirs<sup>2</sup>**

- 3) Relocate two turnouts by installing the turnout gate upstream of the new long-crested weir, and supplying the turnout with a new pipeline in the canal bank (Turnouts 1-61 and 1-63) to provide adequate water delivery elevation;
- 4) Raise the existing turnout box at (2-39) to provide adequate freeboard;
- 5) Modify turnouts in delivery boxes on Canal No. 1 at Turnout 1-58-B and Turnouts 2-16 to 2-21 on Canal No.2 in order to minimize existing restrictions. Modifications may include replacing cut-throat flumes with ramp flumes or some other measuring device to minimize restrictions.

The approximate locations for the other proposed canal improvements are shown below in Figure 5.

<sup>2</sup> Figure from ITRC 2012.

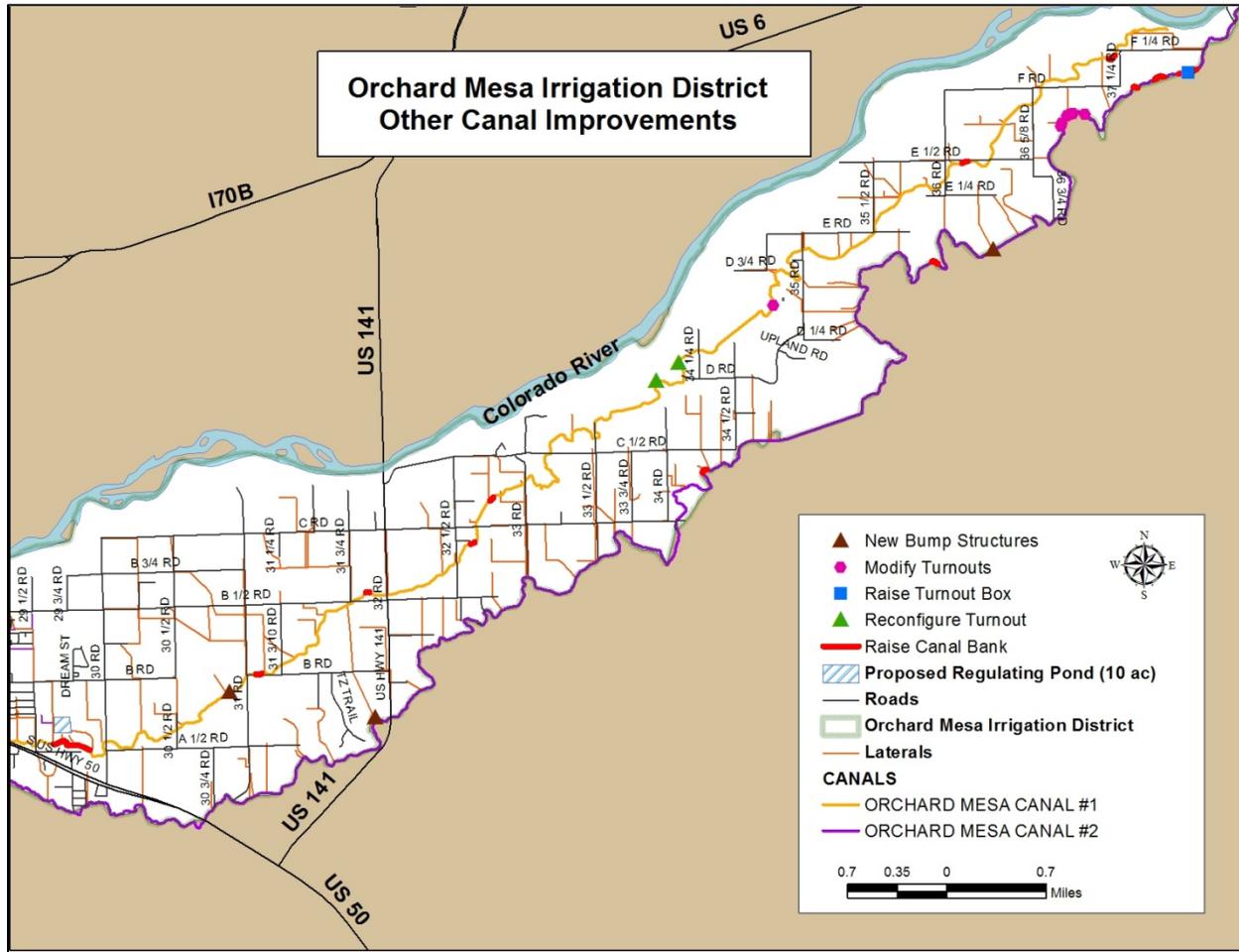


Figure 5-Other Canal Improvements

### **B ¼ Pump Facility Improvements**

OMID operates an existing pump facility (B ¼ Pump) which pumps water from an irrigation drain back to Canal No. 1 (Figure 6). The pump has a capacity of 1800 gallons per minute (gpm) and is manually adjusted by a ditch rider about twice a week. Proposed improvements to the B ¼ Pump includes the following:

1. Increase the motor from 50 hp to 100 hp and increase the pump size from 1800 gpm to 3600 gpm (8 cfs).
2. Increase the pipeline size from 12 in to 18 in.
3. Install a variable frequency drive so that the pump flow rate can be adjusted automatically to maintain a constant water level upstream of the new sluice gate in Canal No. 1.
4. Install an automatic trash screen at the B ¼ Pump to minimize labor and keep the pump intake clean.



**Figure 6-B 1/4 Road Pump**

5. Install a sluice gate in Canal No. 1 with a 15 foot long-crested weir approximately 300 foot downstream to regulate flow down the remaining portion of Canal No. 1.
6. Raise and reline approximately 1000 feet of both banks of Canal No. 1 upstream of the new flow control gate. The banks will be raised by about 1 foot.
7. Improve conditions around the pump house.

### **SCADA System**

Supervisory Control and Data Acquisition (SCADA) is a valuable tool in enhancing water management. The only automated control proposed will be done on the VFD pumps used to pump water from the reservoir into Canal No. 1 and B ¼ pump (see Table 1). The proposed SCADA system will improve the reliability and flexibility of water deliveries throughout the service area. The proposed SCADA sites and their functions are shown below in Table 1.

**Table 1-Proposed OMID SCADA**

No.	Location (Name)	Automatic Control	Remote Manual Control	Remote Monitoring	Base Station	Radio System
1	Regulating Reservoir and Canal #1	√	√	√		
2	B 1/4 Road Pump Station and Discharge	√	√	√		
3	Head of Canal #1			√		
4	Head of Canal #2			√		
5	Wrecking Yard Spill			√		
6	Canal #2 End Spill (Spill #6)			√		
7	Canal #1 Rainbow Spill			√		
8	Canal #1 End Spill			√		
9	Office and Mobile Base Station				√	
10	Radio Repeater Station					√

### **Interties and Upgrades to Canal End Spills**

A canal intertie allows for the transfer of water from one canal directly to another canal and functions similarly to a canal spill. An existing spill from Canal No. 2 to Canal No. 1 near Hwy 50 (Wrecking Yard Spill) will be realigned to north of Hwy 50 and a new flow control gate installed. The spill at the end of Canal No. 2 will also be rerouted to Canal No. 1 via the existing Spill No. 6 pipeline along Rainbow Drive (Rainbow Intertie). With modifications to the Wrecking Yard Spill and the new pipeline/drain ditch connection to the regulating reservoir, the spill at the end of Canal No. 2 will be reduced by about 2 to 3 cfs.

The proposed modifications to the two canal end spills and canal interties are as follows.

#### **Wrecking Yard Spill**

- Construct a new long crested weir spill box in Canal No. 2 just upstream of Hwy 50. The existing spill gates south of Hwy 50 will be abandoned.
- Install a new pipeline north of Hwy 50 from the new spill box along an existing drain ditch to provide operation flexibility to deliver up to 15 cfs from Canal No. 2 to Canal No. 1 and to the new regulating reservoir.

### Upgrades to Canal No. 2 End Spill

- Modify the existing End spill on Canal No. 2 to reroute spills to Canal No. 1 via the Rainbow Intertie. The existing concrete lining will be removed and the canal reshaped into a rectangular cross-section for about 150 feet upstream and 15 feet downstream of the spill.
- Install a new long crested weir immediately downstream of the side inlet to the Rainbow spill pipeline.

### Rainbow Spill

- Install a measuring flume (Replogle flume) to measure the flow rate approaching the spill points.
- Install a SCADA system consisting of a water level sensor, data radio, and solar power system to allow field personnel to remotely monitor any spill that occurs.
- Install a new flow limiting structure immediately downstream of the Rainbow Spill in Canal No. 1.

### Upgrades Canal No. 1 End Spill

The spill at the end of Canal No. 1 will continue to be routed to Duck Pond. With Modifications to the operations of the lower portion of Canal No. 1, spills flows at Duck Pond will be reduced. Proposed modifications to Canal No. 1 End Spill include:

- Install a measuring flume (Replogle flume) approximately 50 feet upstream of the end spill.
- Modify and reshape Canal No. 1 for about 100 feet upstream and 50 feet downstream of the flume. This involves removing existing lining and reshaping the canal into a rectangular cross-section.
- Install a SCADA system consisting of a water level sensor, data radio, and solar power system to allow field personnel to remotely monitor any spill that occurs similar to that described in the upgrades to the Rainbow Spill.

### **Lining and Piping**

Most of Canal No. 2 is lined in one form or another, but about 40,000 feet of the lining is in very poor condition. To address leakage, it is proposed that cracks in the lining be cleaned and sealed with an elastomeric compound.

Most of Canal No. 1 is unlined and proposed improvements include the use of a vibratory compactor to help reduce seepage. The canal sides and bottom will be compacted to a depth of 18-24 inches using an excavator with a vibratory compactor head. There may be a need to repeat

this process due to freeze/thaw conditions. If this process needs to be repeated, OMID would be provided the necessary equipment to re-compact the canal prism.

Laterals that deliver water from Canal No. 1 and No. 2 are currently operated and maintained by the water users served by the individual laterals. In most cases, the laterals are open earth ditches. As part of the improvements, individual laterals that organize into legal entities and provide rights-of-way would be replaced with pressured pipelines. This would be done on a voluntary basis as funding for the overall project allows. The effect of these actions would be to eliminate seepage losses and spills back to the Colorado and Gunnison rivers. Laterals replaced with pressurized pipelines would also facilitate improved on-farm irrigation efficiency. Because the participating laterals have not yet been identified, each lateral will need to be evaluated on an individual basis to determine if existing NEPA and Historic Preservation Act compliance is adequate or if additional inventories are needed.

### **Improved Operations**

Finally, water conservation is highly dependent on OMID's operations. Significant water conservation can only be obtained if OMID operates the system to avoid/minimize operational spills from the district-operated canal system and the laterals. The proposed improvements previously described, provide the foundation for more efficient on-farm management in the future.

### **Other Improvement Considered but Eliminated**

Piping the remaining 15,000 feet of open ditch of the Mutual Mesa Lateral (MML pipeline extension) was also proposed. The pipeline is described as Phase 2 in the Irrigation Training and Research Center planning report (ITRC 2012). The estimated cost of piping the remaining open ditch was greater than \$3 million, with an estimated savings of about 745 AF/year. However, based on improved operation and maintenance, the effects of piping of the MML are included in this environmental analysis and OMID may elect to construct the pipeline at a later time as additional funds become available.

A new pump station at Duck Pond Park to recycle drainage water into the downstream end of the proposed MML extension was also considered. It was anticipated that an additional 9 cfs could be re-circulated and pumped back to the upstream regulating reservoir. This feature was eliminated from further consideration because the additional power costs associated with operating the pumps would likely be a disincentive for OMID to utilize the pumps to their maximum potential. The initial construction costs associated with this feature were just under \$1 million.

Finally, piping sections of Canals No. 1 and No. 2 near the downstream ends was considered. However, at a cost of about \$5.3 million and a predicted savings of 1,000 AF, this improvement was considered cost prohibitive.

## CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

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This chapter discusses resources that may be affected by actions taken to construct, operate and maintain the OMID Canal System improvements. During preparation of this environmental assessment, issues and concerns were identified from public scoping, discussions with OMID, resource agencies, and other interested parties (see Chapter 4, Consultation and Coordination, for further details).

For each resource, the potentially affected area and/or interests are identified, existing conditions described, and impacts predicted under the No Action and Proposed Action Alternatives. This chapter is concluded with a summary comparison of the alternatives and a list of mitigation measures.

### **GRAND VALLEY PROJECT**

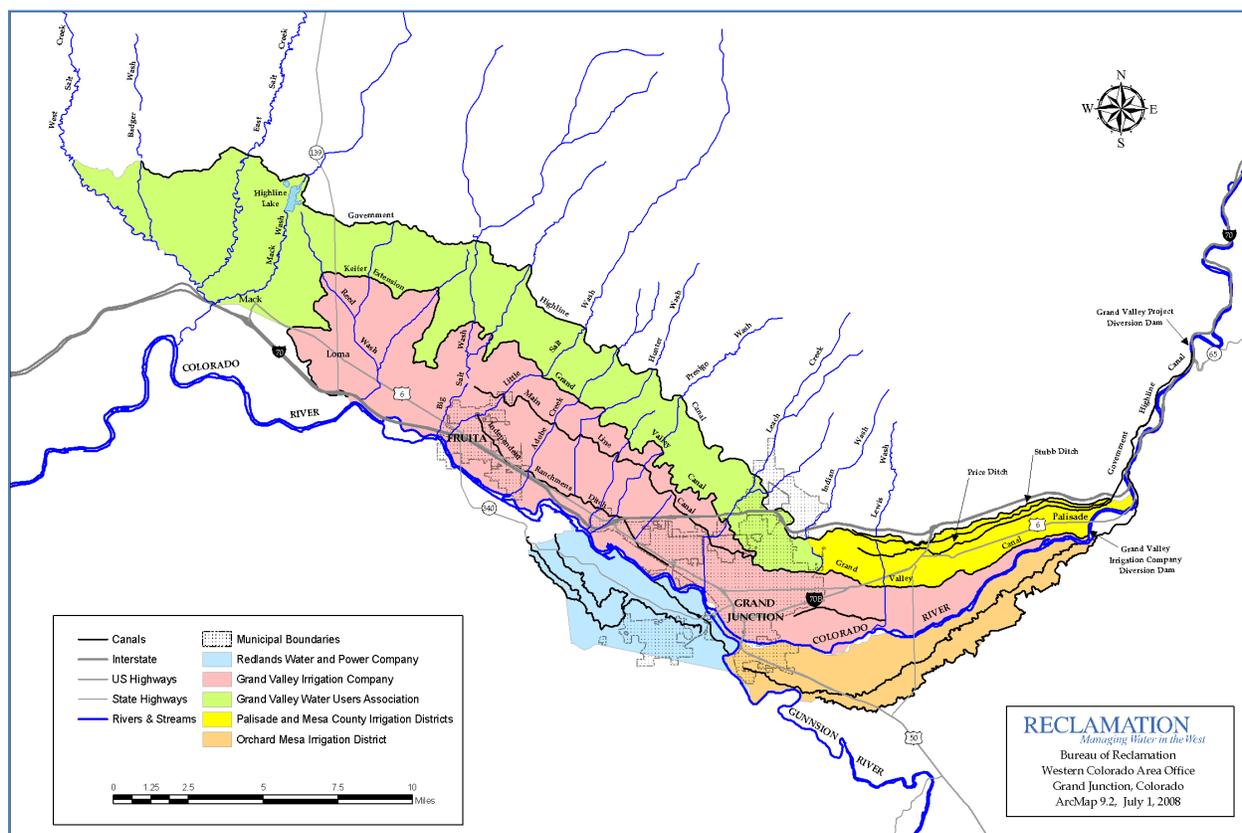
The Grand Valley Project is located in west-central Colorado in the Colorado River Basin. Water is furnished to about 33,368 acres of land along the Colorado River in the vicinity of Grand Junction.

Soon after passage of the Reclamation Act in 1902, an evaluation of the proposed Government Highline Canal, now part of the Grand Valley Project was requested by local citizens. In 1905, the Grand Valley Water Users Association (GVWUA) was organized to cooperate with the Reclamation Service in developing a project. After investigation, the Reclamation Service proposed a project consisting of a diversion dam and distribution canal to irrigate lands at higher valley levels than those being operated by private interests.

The Grand Valley Project was one of the projects examined and reported upon favorably by a board of Army Engineers in accordance with the act of June 25, 1910 (36 Stat. 835) and approved by the President on January 5, 1911. The Grand Valley Project was constructed primarily for agricultural and provides irrigation water to the GVWUA, OMID, Palisade Irrigation District (PID), and Mesa County Irrigation District (MCID) (Figure 5).

### **ORCHARD MESA IRRIGATION DISTRICT**

OMID was organized in 1904 and became part of the federal Grand Valley Project in 1922. OMID provides water for approximately 6,700 landowners and 9,200 acres south of the Colorado River from east of Palisade to Grand Junction. OMID's water, along with the Grand Valley Water Users Association, Palisade Irrigation District, and Mesa County Irrigation Districts' water, is diverted from the Colorado River into the Government Highline Canal at the Grand Valley Project Diversion Dam (Figure 7). Approximately 4.6 miles downstream of the



**Figure 7-Grand Valley Irrigation Entities**

diversion dam, OMID's water splits from the Government Highline Canal and travels under the Colorado River via the Colorado River Siphon.

The Colorado River Siphon conveys water from the Government Highline Canal to the head of the 3.5-mile-long Orchard Mesa Power Canal on the east side of the river. The siphon is reinforced concrete with a capacity of about 800 cubic feet per second. Orchard Mesa Pumping Plant lifts water from the Orchard Mesa Power Canal to the distribution system. The plant contains four pump units: two pumps have a combined design capacity of 100 cubic feet per second (cfs) and a lift of 41 feet to Canal No. 1 and the other two pumps have a combined design capacity of 75 cfs with a lift of 130 feet to Canal No. 2. Water is then conveyed to laterals, which in turn, deliver the water for on-farm use. With exception of the MML, all laterals are privately owned and operated. The canals have capacities of 90 and 70 cfs, respectively, and a combined length of 31.6 miles.

## GRAND VALLEY POWER PLANT

The power plant is about one mile south of Palisade, Colorado at the lower end of the Orchard Mesa Power Canal adjacent to the Orchard Mesa Pumping Plant. It operates under a maximum head of 79 feet and has a capacity of 3 Megawatts (MW). The plant was constructed by the

United States with funds advanced by Public Service Company of Colorado (PSCC). Between 1931 and 2011, PSCC operated the plant under a lease agreement with the United States, the Grand Valley Water Users Association, and OMID. On February 17, 2011, the Lease of Power Privilege (Contract No. 0-07-40-P0180) was amended, removing PSCC as a party to the contract. The operation and maintenance responsibility of the power plant were assumed by GVVUA and OMID.

## **WATER RIGHTS AND USE**

The Colorado River and its tributaries provide municipal and industrial water to about 33 million people and irrigation to nearly 4 million acres of land in the United States. The Colorado River's headwaters originate in the Rocky Mountains of Colorado and Wyoming and the River travels southwesterly for approximately 1,450 miles through the states of Colorado, New Mexico, Utah, Arizona, Nevada and California.

### **Existing Conditions:**

Average annual streamflow below Grand Junction including the Gunnison River, averaged 4.9 million acre-feet from 1975 to 2005 (CDWR 2007). The Colorado River is the major source of irrigation water in the Grand Valley of Western Colorado. Diversions into the Government Highline Canal average 770,000 acre-feet per year. Transmountain Diversions are also a major water use in the Upper Colorado River as shown in Table 2.

**Table 2-Upper Colorado Transmountain Diversions**

<b>Diversion</b>	<b>Acre-Feet per Year</b>	<b>Uses</b>
Colorado-Big Thompson (Reclamation)	232,000	Irrigation and Municipal
Moffat Tunnel (Denver)	57,000	Municipal
Robert's Tunnel (Denver)	58,600	Municipal
Fryingpan-Arkansas Project (Reclamation)	51,000	Irrigation and Municipal
Independence Pass Diversion	38,500	Irrigation and M&I
Homestake Division (Colorado Spring & Aurora)	24,000	Municipal

Figure 8 represents a timeline of key water developments in the Upper Colorado River Basin in Colorado (CDWR 2007). Two large systems provide the majority of irrigation water for the Grand Valley, the Grand Valley Project and Grand Valley Irrigation Company (GVIC). These two systems provide irrigation water for an estimated 65,500 acres utilizing relatively senior water rights. The amount of water available for diversion for these two systems combined with PID and MCID is typically represented by the flow in the Colorado River at the Cameo stream gage and the flows of Plateau Creek; the cumulative demands are often referred to as the Cameo Demand.

Year	Project
1880	(1882) Grand Valley Irrigation Canal
1885	
1890	(1890) Grand River Ditch
1895	
1890	
1895	
1900	
1910	
1915	(1915) Grand Valley Project
1920	(1919) Orchard Mesa Irrigation District
1925	
1930	
1935	(1935) Independence Pass Transmountain Diversion
	(1936) Frazer River Collection System
	(1938) Colorado-Big Thompson Project
1940	(1940) Williams Fork Diversion Project
1945	(1948) Continental-Hoosier Diversion System
1950	
1955	(1959) Williams Fork Reservoir
1960	(1961) Homestake Diversion Project
	(1963) Colibrán Project
	(1964) Blue River Diversion System
1965	(1968) Silt Project
1970	(1972) Fryngpan-Arkansas Project
1975	
1980	
1985	
1990	
1995	(1995) Wolford Mountain Reservoir
2000	
2005	
2010	

Figure 8-Major Water Development on the Colorado River in Colorado.

Grand Valley Irrigation Company

GVIC owns and operates the Grand Valley Irrigation Canal which diverts a portion of the Colorado River near the town of Palisade, Colorado. GVIC provides irrigation water for about 27,720 acres on the north side of the river and the main canal has a capacity of approximately 650 cfs. GVIC owns two direct flow water rights for 520.81 cfs and 119.47 cfs (Table 3). The larger right is one of the most senior water rights in the entire Upper Colorado River basin.

Grand Valley Project

The Grand Valley Project was constructed by Reclamation in 1915 and delivers water to the federally owned irrigation system operated by the GVWUA and OMID. The project also delivers water to two other irrigation systems, Palisade (PID) and Mesa County Irrigation (MCID) districts. The capacity of the initial reach of the Government Highline Canal is estimated to be about 1,620 cfs and the Grand Valley Project serves about 42,000 acres. GVWUA holds a large senior water right in the amount of 730 cfs (Table 3).

**Table 3-Summary of Significant Colorado River Water Rights in the Grand Valley**

Name	Amount (cfs)	Appropriation Date	Admin. Number	Use
Grand Valley Canal (GVIC)	520.81	08/22/1882	22729.11922	Irrigation
Palisade Irrigation District <sup>1</sup>	80.0	10/01/1889	22729.14519	Irrigation
OMID <sup>1,2</sup>	10.2	10/01/1900	22729.18536	Irrigation
Mesa County Irrigation District <sup>1</sup>	40.0	07/01/1903	22729.19544	Irrigation
OMID <sup>1,2</sup>	450.0	10/25/1907	22729.21116	Irrigation/Power
Government Highline Canal (Grand Valley Project)	730.0	02/27/1908	22729.21241	Irrigation
Government Highline Canal <sup>3</sup> (Grand Valley Project)	400.0	02/27/1908	30895.21241	Power/Commercial
Grand Valley Canal (GVIC)	119.47	04/26/1914	30895.23491	Irrigation
Palisade Irrigation District <sup>1,4</sup>	23.5	06/01/1918	2283.78	Irrigation

<sup>1</sup>Diverted through the Government Highline Canal.

<sup>2</sup>Of 460.2 cfs owned by OMID, approximately 272 cfs used at Pumping Plant and 188.2 cfs used for irrigation.

<sup>3</sup>During the irrigation season, the 400 cfs water right for the Power Plant is effectively limited to 309.8 cfs. This water right is decreed for 800 cfs during the non-irrigation season.

<sup>4</sup>This water right can only be diverted when space is available in the Government Highline Canal. It is generally not considered part of the Cameo Demand.

OMID services approximately 9,200 acres. Water is conveyed from the Government Highline Canal to the Orchard Mesa Power Canal via a siphon under the Colorado River. During the irrigation season, approximately 310 cfs is delivered to the power plant. The United States' power right is decreed at 800 cfs but by stipulation is limited to 400 cfs during the irrigation season. The power right is further limited to about 310 cfs at times when OMID is diverting its full decreed amount of 460 cfs and GVWUA, PID and MCID are diverting their full entitlement of 850 cfs.

Of the remaining water in the Orchard Mesa Power Canal, 17.2 cfs is delivered to the Vinelands area and the balance is delivered to the OMID Pumping Plant where hydraulic pumps are used to lift irrigation water to higher lands in the OMID service area south of the Colorado River. Typically, the OMID pumping plant requires 272 cfs to lift about 171 cfs to the irrigated lands. The water rights owned by the OMID total about 460 cfs and are summarized in Table 3.

### Orchard Mesa Check

The Orchard Mesa Check (Check) is a structure below the common afterbay of the OMID Pumping Plant and the Grand Valley Power Plant. The operation of the Check provides the ability to raise the water level in the common afterbay to a level which causes water to flow through the bypass channel and return to the Colorado River upstream of the GVIC Diversion Dam.

The check operated on an informal basis without a decreed right since around 1926 to manage flows in the Colorado River for the benefit of the United States, GVWUA, and OMID. To formalize operation of the check in 1991, these entities filed an application in Colorado State Water Court (Water Division 5, Case No. 91CW247) and it is informally known as the Orchard

Mesa Check Case. Resolution of the case resulted in a negotiated Stipulation and Agreement entered into on September 4, 1996. A brief summary of the Decree Provisions from the agreement follows. Please review the Decree for additional detail regarding the stipulations.

- (1) Except as provided elsewhere in the agreement, the United States agrees to not exercise the Power Right from April 1 through October 31 of each year so as to place an administrative call which results in the curtailment of diversions by upstream water rights.
- (2) During the months of April through October, when Grand Valley Project diversions under the irrigation rights are less than 1,310 cfs, the power right may be exercised so as to maintain a total call of 1,310 cfs at the Grand Valley Project diversion dam.
- (3) At any time during the months of April through October, when diversion by the GVIC are less than 400 cfs, the Power Right may be exercised for up to the amount that diversion by such GVIC rights are less than 400 cfs.
- (4) If the Orchard Mesa Check is physically inoperable due to an Act of God or an emergency situation beyond the control of the Co-Applicants, the United States may exercise the Power Right to the full decreed amount for a period not to exceed a total of 14 days during the April 1 through October 31 period in any given year or until the Orchard Mesa Check becomes operable, whichever occurs first. For purposes of this provision, an emergency situation shall not be deemed to occur if the Orchard Mesa Check is inoperable due to lack of funding or the non-performance of ordinary maintenance.
- (5) Any calls of the power right may be made only when and to the extent the power right is in priority, there is capacity in the power canal, and all water called there under is delivered to and through the power plant.
- (6) The priority date of the power rights shall be considered to be August 3, 1934. The United States agrees not to seek administration under a more senior priority, which the United States asserts is decreed as February 27, 1908.
- (7) No provisions of the stipulation and agreement affect the right of the United States to call for the 800 cfs power right from November 1 through March 31.
- (8) During April 1 through October 31 and conditions below are met, diversions by Historic Users Pool (HUP) beneficiaries shall not be curtailed by any administrative call by water rights listed in the stipulation.

- a. The Check is operable.
- b. There is at least 66,000 af available for releases for the benefit of HUP beneficiaries when Green Mountain Reservoir ceases to be in-priority for its initial fill under the Blue River Decrees.
- c. The Shoshone Rights continue to be exercised.

**No Action:** The No Action Alternative would not directly affect on water rights and uses. However, existing and future uses rely on significant progress towards down-listing and delisting the endangered fish and cover depletions under the 15-Mile Reach PBO and the umbrella of the Recovery Program. Failure to meet sufficient progress could result in the need for development and implementation of additional recovery actions.

**Proposed Action:** Under the Proposed Action, implementation of the proposed OMID system improvements would conserve an average of 17,000 acre feet per year in irrigation demand, while improving the equitable distribution and reliability of water service (ITRC2012). The project will also reduce the amount of water needed for pumping to lift water from the power canal to Canals No. 1 & 2. However, the water to operate the pumps already contributes to the 15-Mile Reach unless the Check is in operation. Both project savings are illustrated in Table 4 below.

**Table 4-Potential Reduction in OMID Diversion Demand**

Month	Average Reduction in Irrigation Demand		Average Reduction in Hydraulic Pumping	
	acre feet	cfs	acre feet	cfs
April	2,242	37.7	3,699	62.2
May	2,159	35.1	3,562	57.9
June	1,511	25.4	2,493	41.9
July	1,679	27.3	2,770	45.1
August	2,207	35.9	3,642	59.2
September	3,080	51.8	5,083	85.4
October	4,121	67.0	6,800	110.6
<b>Annual</b>	<b>17,000</b>	<b>40.1</b>	<b>28,050</b>	<b>66.1</b>

During most periods, the reduction in irrigation demand will result in increased flows in the 15-Mile Reach. Under most conditions, water not needed for irrigation demand or hydraulic pumping would be returned to the 15-Mile Reach through the Grand Valley Power Plant. However, under certain low flow conditions, the saved water may be used by OMID or may accrue to other irrigation water users in the Grand Valley instead of the 15-Mile Reach.

A Grand River Consulting Corporation report (2008) assumed that OMID conservation elements would reduce irrigation demand by an average of 40 cfs and reduce hydraulic pumping demands by 66 cfs, for a total reduction in OMID diversions of 106 cfs. The design capacity of the OMID Power Canal is about 860 cfs while the cumulative demand for OMID and Grand Valley Power

Plant is about 850 cfs during the irrigation season. As a result, the capacity of the canal can physically limit the amount of water that can be supplied to OMID and the Grand Valley Power Plant. The OMID water right is senior to the power plant, and the OMID demands are satisfied first as previously shown in Table 3. Diversions to the power plant are limited by the amount of physical capacity that exists in either the Government Highline Canal or the OMID Power Canal, above and beyond the water demands of more senior Cameo water rights. As OMID demands are reduced by the proposed canal improvements, additional capacity will exist in both the Government Highline Canal and the OMID Power Canal, and diversions to the power plant will increase so long as the water rights for the power plant are in-priority.

Pursuant to the Check Stipulations, the total amount of water that can be called by the Cameo Demand is limited to 1,950 cfs, so long as the three conditions are met. The United States agreed that the power plant will not place an administrative call when all the other Cameo water rights are diverting their decreed capacities. However, the power plant may place a call to the extent that the collective irrigation rights that are delivered through the Government Highline Canal are less than 1,310 cfs. If the OMID irrigation demand is reduced by 106 cfs, the power plant could use the 106 cfs and the total water right call associated with the Cameo Demand would remain at 1,950 cfs (Grand River Consulting Corp).

The proposed OMID improvement may allow the additional diversion of water (over and above historical amounts) by upstream water rights that are junior to the OMID water right but are senior to the power plant. The Grand River Consulting Corp. Report (2008) concluded that as long as the Shoshone Call is not altered, those rights upstream of Shoshone will be curtailed prior to the time of a Cameo Call either with or without the OMID improvements.

However, two water rights (GVWUA 730 cfs and Busk-Ivanhoe System 180 cfs) may benefit from a reduced demand by the OMID water right (Table 5). The Busk-Ivanhoe transmountain diversion project, operated by the cities of Pueblo and Aurora collects surplus water from the headwaters of Ivanhoe Creek, and historically has delivered it through the Busk-Ivanhoe Tunnel. Both water rights could potentially divert water during those periods when the calling Cameo right is the GVWUA 730 right. The senior OMID right reduced by 106 cfs may benefit the GVWUA 730 cfs right by increasing the supply available by 106 cfs and concurrently reducing demand on the Green Mountain HUP Pool. Also if the reduction in OMID demand causes the GVWUA 730 cfs right to be fully satisfied, the river call would switch to the more junior power plant right and the Busk Ivanhoe Project would come into priority and would be able to divert additional water. A summary of potential benefits to these water users is listed below (Grand River Consulting Corp. 2008).

- The irrigation water supply available at the Grand Valley Diversion Dam will increase by the amount of the total OMID demand reduction (106 cfs)
- The increased irrigation supply will allow either a reduction in Green Mountain Reservoir HUP irrigation releases, or a reduction in the amount of water diverted by the Orchard Mesa Check.

**Table 5- Key Colorado River Basin Water Rights in Relation to a Change in Cameo Call that may occur w/ OMID Improvements.**

Structure	Owner	Amount (cfs)	Previous Adj. Date	Primary Calling Water Right	Remarks
Shoshone Power Plant	PSCC	1250.0	12/5/1905	N/A	
Grand Valley Canal	GVIC	520.81	3/25/1912	N/A	
Grand Valley Project	PID	80.0	3/25/1912	N/A	
Grand Valley Project	OMID	102.0	3/25/1912	N/A	
Grand Valley Project	MCID	40.0	3/25/1912	N/A	
<b>Grand Valley Project</b>	<b>GVWUA</b>	<b>730.0</b>	<b>3/25/1912</b>	<b>N/A</b>	<b>Existing: Calling right in driest periods, will receive additional supply when short of water</b>
<i>Busk Ivanhoe Project</i>	<i>Pueblo/Aurora</i>	<i>35.0</i>	<i>9/28/1927</i>	<i>Cameo</i>	In driest periods only, may stay in-priority a few weeks longer.
<i>Busk Ivanhoe Project</i>	<i>Pueblo/Aurora</i>	<i>50.0</i>	<i>9/28/1927</i>	<i>Cameo</i>	
<i>Busk Ivanhoe Project</i>	<i>Pueblo/Aurora</i>	<i>25.0</i>	<i>9/28/1927</i>	<i>Cameo</i>	
<i>Busk Ivanhoe Project</i>	<i>Pueblo/Aurora</i>	<i>70.0</i>	<i>9/28/1927</i>	<i>Cameo</i>	
Fremont No. 1 Ditch	Climax	65.0	1/9/1930	Shoshone	Only affected if Shoshone Call is reduced in later summer months
Fremont No. 2 Ditch	Climax	35.0	1/9/1930	Shoshone	
Fremont No. 2 Ditch	Climax	25.0	1/9/1930	Shoshone	
Clinton Creek Ditch	Climax	50.0	1/9/1930	Shoshone	
Boreas No. 2 Ditch	Englewood	16.0	8/22/1932	Shoshone	
Con-Hoosier System	Colorado Springs	40.0	8/22/1932	Shoshone	
Con-Hoosier System	Colorado Springs	10.0	8/22/1932	Shoshone	
Con-Hoosier System	Colorado Springs	20.0	8/22/1932	Shoshone	
Con-Hoosier System	Colorado Springs	17.0	8/22/1932	Shoshone	
Fraser River Div Project	Denver Water	910.0	7/9/1934	Shoshone	
Fraser River Div Project	Denver Water	370.0	7/9/1934	Shoshone	
Williams Fork Div Project	Denver Water	620.0	7/9/1934	Shoshone	
Warren E Wurtz Ditch	Pueblo BOWW	85.0	8/2/1934	Shoshone	
Columbine Ditch	Pueblo BOWW	60.0	8/2/1934	Shoshone	
<b>Grand Valley Project</b>	<b>USA</b>	<b>800.0</b>	<b>8/3/1934</b>	<b>N/A</b>	<b>Future w/OMID: Potential calling right in some dry periods</b>
<b>Grand Valley Canal</b>	<b>GVIC</b>	<b>119.4</b>	<b>8/3/1934</b>	<b>N/A</b>	<b>Existing &amp; Future: Calling Cameo right in moderately dry periods.</b>
Grand Valley Project	PID	23.5	8/3/1934	N/A	
Ind Pass System	Twin Lakes	625.0	9/18/1934	Cameo	No Change: Junior to Cameo Call in either scenario

PSCC: Public Service Company of Colorado; GVIC: Grand Valley Irrigation Company; PID: Palisade Irrigation District; OMID: Orchard Mesa Irrigation District; GVWUA: Grand Valley Water Users Association;

- Additional water retained in the HUP will reduce potential irrigation shortages later in the year and may provide as much as 19,000 acre-feet of additional irrigation supply in critical dry years such as 1977 or 2002.
- For the Busk Ivanhoe system, diversion records reflect late summer diversions by the project do not exceed 2 cfs and are typically less than 1 cfs. It is estimated that on a worst case the basis the change in a Cameo Call may keep the Buck Ivanhoe system in priority for several additional weeks in a dry year such as 1977 or 2002, during which time the project may realize additional diversion of less than 100 acre-feet. In most cases, the Busk Ivanhoe Project is in-priority year round and the potential change in priority date of a Cameo Call will not change the amount of water diverted by the project.

In addition, the OMID improvements may provide additional water supplies to the Grand Valley Irrigators during critically dry periods when the Green Mountain Reservoir HUP may not have adequate water to meet all irrigation demands. In a dry year, when the GVWUA call is on for approximately 90 days, over 19,000 acre feet of additional water may be available for irrigation use (Grand River Consulting Corp. 2008).

In conclusion, there may be times during dry conditions where operation of the improvements may benefit other water rights. However, outside of dry conditions, the improvements will generally benefit the 15 Mile Reach with additional flow.

## WATER QUALITY

### Existing Conditions:

Generally, the water quality entering the 15-Mile Reach of the Colorado River is good. However as irrigation return flows from the Grand Valley enter the Colorado River via tributaries and drains, water quality begins to diminish. Selenium levels are elevated in the 15-Mile Reach tributaries and drains. The Gunnison River and irrigation return flows downstream of the 15-Mile Reach continue to diminish water quality. Segments of the Colorado and Gunnison rivers in Table 6 are listed as impaired because of elevated selenium and iron concentrations (CDPHE 2012).

In addition, Reclamation conducted water quality monitoring within the Orchard Mesa Irrigation System from June 2010 through January 2011. A summary of the data collected is presented in Tables 7 to 10.

**Table 6-2010 Colorado's 303 (d) List of Impaired Waters**

WBID	Segment Description	Portion	Colorado's Monitoring & Evaluation Parameter(s)	Clean Water Act Section 303 (d) Impairment	303 (d) Priority
COGULG02	Gunnison River, Uncompahgre River to Colorado River	all	sediment	<i>E. coli</i>	H
COLCOLC02b	Colorado River, Rapid Creek to Gunnison River	Humphrey Backwater area		Se	M
	Colorado River, Rapid Creek to Gunnison River	all	Sediment, Se		
COLCLC13b	Tributaries to Colorado River from Government Highline Canal to Salt Creek	all		Se	M
		Indian Wash	Fe (Trec)		

**No Action:** Under the No Action Alternative, no change to existing water quality trends is predicted. Generally, water quality samples at each site are within acceptable ranges and meet existing water quality standards.

**Proposed Action:** At various times as needed by irrigation demand, OMID will pump up to 8 cfs from an irrigation drain at the existing B ¼ Pump. These return flows, combined with other drainage, currently pass through Duck Pond Park and end up in the Gunnison River. Under the proposed actions, the pump at the B ¼ Pump would be doubled to a maximum pumping capacity of 8 cfs. The drainage area for the B ¼ Pump is primarily agricultural and residential. As presented in Tables 7 through 10, water quality was monitored between April 2010 and January 2011 at selected sites within the OMID boundaries. Water quality is within an acceptable range; however selenium and copper concentrations are elevated in several months at the Chipeta Golf Course and Duck Pond Park. Neither of these locations contribute flows directly to the B ¼ Pump. It should be noted that if, in the future, land uses upstream of the pump change substantially, changes in water quality may also occur. If this drainage area becomes more urban and/or industrial in the future, water quality may be impacted and suspending pumping at the B ¼ Pump for 24 hours after a rainfall event to maintain the water

quality in the lower reach of Canal No. 1 may be appropriate to allow surface runoff to flow through the system prior to resuming pump operations.

**Table 7-Water Quality Measurements at the OMID Pump Forbay\***

PARAMETER	SAMPLE DATE						
	6/8/10	7/19/10	8/17/10	9/22/10	10/26/10	12/10/10	1/28/11
Arsenic (Total)	0.000	0.000	0.000	0.000	0.012	0.000	0.00
Barium (Total)	0.08	0.11	0.23	0.24	0.29	0.14	0.12
Cadmium (Total)	0.0006	0.0000	0.0000	0.0000	0.0025	0.0000	0.0000
Chromium (Total)	0.002	0.000	0.003	0.000	0.007	0.002	0.000
Fluoride	0.21	0.22	0.32	0.40	0.67	0.23	0.34
Lead (Total)	0.012	0.002	0.003	0.000	0.021	0.003	0.006
Mercury (Total)	0.00000	0.00000	0.00000	0.0000	0.00000	0.00000	0.00000
Nitrate	0.57	0.21	0.24	0.26	0.57	0.30	0.38
Selenium (Total)	0.000	0.000	0.000	0.000	0.000	0.002	0.002
Silver (Total)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Color (Cp/Pt Unit)	3	0	0	1	0	2	2
pH	7.20	7.7	8.4	7.90	7.8	7.8	7.8
Conductivity (umhos)	260	870	950	1040	1100	1200	1450
Sodium	14	90	98	109	93.0	150	145
Calcium	33	57	83	66	62	68	75
Magnesium	7	14	14	13.1	18	27	21
Potassium	1.6	3.3	3.6	4.1	4.2	4.3	5.0
Chloride	14	108	162	153	119	184	212
Sulfate	36	100	103	129	94	150	137
Alkalinity (Phenol.)	0	0	12	0	0	0	0
Alkalinity (Total)	80	120	129	133	141	152	155
Bicarbonate	97	145	127	161	170	184	187
Carbonate	0	0	14	0	0	0	0
Dissolved Solids	192	490	562	610	913	688	864
Hardness	111	199	264	218	231	280	271
Turbidity (NTU)	110	3.3	11.0	8.2	920	5.10	22
Boron (Total)	0.00	0.07	0.00	0.00	0.03	0.06	0.01
Copper (Total)	0.013	0.000	0.001	0.007	0.020	0.007	0.91
Iron (Total)	5.41	0.24	0.65	0.23	30.8	0.24	0.104
Manganese (Total)	0.286	0.023	0.046	0.024	0.725	0.012	0.008
Molybdenum (Total)	0.003	0.003	0.003	0.005	0.002	0.003	0.00
Ammonia	1.05	0.00	0.02	0.01	0.03	0.00	0.00
Phosphate	0.01	0.00	0.00	0.00	0.00	0.00	0.01
Zinc (Total)	0.235	0.019	0.013	0.047	0.10	0.01	0.03

\*Measured in mg/l unless otherwise noted.

Table 8-Water Quality Measurements at the OMID Canal No.1 at Mutual Mesa Lateral\*

PARAMETER	SAMPLE DATE				
	6/8/10	7/19/10	8/17/10	9/22/10	10/26/10
Arsenic (Total)	0.000	0.000	0.000	0.000	0.000
Barium (Total)	0.11	0.12	0.25	0.26	0.28
Cadmium (Total)	0.0006	0.0000	0.0002	0.0000	0.0004
Chromium (Total)	0.000	0.000	0.007	0.001	0.002
Fluoride	0.24	0.30	0.33	0.41	0.49
Lead (Total)	0.003	0.001	0.003	0.000	0.009
Mercury (Total)	0.00000	0.00000	0.00000	0.00000	0.00000
Nitrate	0.64	0.25	0.39	0.36	0.47
Selenium (Total)	0.000	0.000	0.000	0.000	0.000
Silver (Total)	0.0000	0.0000	0.0000	0.0000	0.0000
Color (Cp/Pt Unit)	3	0	0	0	2
pH	7.20	7.80	8.20	7.8	7.70
Conductivity (umhos)	420	970	1020	1180	1330
Sodium	17.0	91	100	110	100
Calcium	50	68	79	86	106
Magnesium	9	14	17	18	19
Potassium	2.0	3.3	4.2	4.1	4.0
Chloride	24	108	123	145	132
Sulfate	85	145	160	164	209
Alkalinity (Phenol.)	0	0	0	0	0
Alkalinity (Total)	90	124	129	129	145
Bicarbonate	109	150	156	156	175
Carbonate	0	0	0	0	0
Dissolved Solids	284	588	696	686	856
Hardness	157	227	267	287	342
Turbidity (NTU)	130	10.0	53.5	20.5	400
Boron (Total)	0.00	0.03	0.00	0.00	0.01
Copper (Total)	0.011	0.004	0.000	0.010	0.004
Iron (Total)	7.10	0.43	2.72	1.03	21.3
Manganese (Total)	0.257	0.035	0.040	0.033	0.261
Molybdenum (Total)	0.005	0.003	0.005	0.003	0.002
Ammonia	0.23	0.06	0.02	0.00	0.03
Phosphate	0.01	0.01	0.02	0.01	0.00
Zinc (Total)	0.140	0.022	0.030	0.045	0.05

\*Measured in mg/l unless otherwise noted.

Table 9-Water Quality Measurements at the Orchard Mesa Golf Course\*

PARAMETER	SAMPLE DATE						
	6/8/10	7/19/10	8/17/10	9/22/10	10/26/10	12/10/01	1/28/11
Arsenic (Total)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Barium (Total)	0.09	0.13	0.23	0.34	0.27	0.06	0.08
Cadmium (Total)	0.0000	0.0000	0.0002	0.0000	0.0002	0.0000	0.0000
Chromium (Total)	0.000	0.000	0.004	0.001	0.001	0.002	0.000
Fluoride	0.45	0.48	0.43	0.51	0.61	0.93	1.31
Lead (Total)	0.001	0.000	0.001	0.000	0.013	0.001	0.000
Mercury (Total)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Nitrate	0.61	0.52	0.45	0.49	0.76	2.21	2.08
Selenium (Total)	0.002	0.004	0.002	0.002	0.002	0.008	0.023
Silver (Total)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Color (Cp/Pt Unit)	2	0	0	2	0	5	0
pH	7.60	7.70	8.10	7.70	7.70	7.80	7.50
Conductivity (umhos)	1020	1460	1340	1640	2010	3420	3540
Sodium	45	104	102	125	125	210	170
Calcium	127	159	143	155	213	655	634
Magnesium	24	28	28	52.8	38	126	128
Potassium	2.0	4.0	4.1	4.1	4.5	3.9	4.9
Chloride	52	112	119	138	138	174	169
Sulfate	317	363	328	470	568	2170	1880
Alkalinity (Phenol.)	0	0	0	0	0	0	0
Alkalinity (Total)	117	157	149	155	177	225	233
Bicarbonate	141	190	180	188	214	272	282
Carbonate	0	0	0	0	0	0	0
Dissolved Solids	702	1010	920	974	1310	2980	2780
Hardness	415	511	471	603	684	2150	2100
Turbidity (NTU)	76.0	10.2	42.0	18.0	130	11.0	3.00
Boron (Total)	0.00	0.07	0.00	0.00	0.07	0.02	0.19
Copper (Total)	0.005	0.000	0.002	0.003	0.001	0.038	0.000
Iron (Total)	3.58	0.81	1.89	0.80	5.44	0.71	0.39
Manganese (Total)	0.114	0.039	0.113	0.038	0.145	0.165	0.021
Molybdenum (Total)	0.003	0.005	0.004	0.005	0.002	0.013	0.011
Ammonia	0.00	0.07	0.07	0.00	0.05	0.05	0.00
Phosphate	0.01	0.01	0.00	0.10	0.01	0.00	0.01
Zinc (Total)	0.140	0.027	0.023	0.086	0.04	0.02	0.03

\*Measured in mg/l unless otherwise noted.

Table 10-Water Quality Measurements at Duck Pond Park\*

PARAMETER	SAMPLE DATE								
	4/5/10	4/5/10	6/8/10	7/19/10	8/17/10	9/22/10	10/26/10	12/10/11	1/28/11
Arsenic (Total)	0.0000	0.000 <sup>-</sup>	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Barium (Total)	0.80	0.75 <sup>+</sup>	0.15	0.13	0.22	0.26	0.19	0.03	0.08
Cadmium (Total)	0.0000	0.0000 <sup>+</sup>	0.0000	0.0000	0.0006	0.0000	0.0004	0.0000	0.0000
Chromium (Total)	0.000	0.000 <sup>+</sup>	0.000	0.000	0.003	0.001	0.002	0.000	0.000
Fluoride	---	1.23	0.38	0.39	0.38	0.53	0.74	1.25	1.02
Lead (Total)	0.000	0.000 <sup>+</sup>	0.004	0.002	0.002	0.000	0.007	0.003	0.003
Mercury (Total)	0.00000	0.00000 <sup>+</sup>	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Nitrate	---	2.50	0.70	0.30	0.45	0.49	1.24	2.57	2.82
Selenium (Total)	0.012	0.008 <sup>+</sup>	0.000	0.002	0.000	0.002	0.000	0.002	0.009
Silver (Total)	0.0000	0.0000 <sup>+</sup>	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Color (Cp/Pt Unit)	---	2	1	0	0	0	0	5	2
pH	---	7.70	7.50	7.70	8.10	7.80	7.60	8.00	7.60
Conductivity (umhos)	---	4400	920	1120	1260	1490	2060	3900	4500
Sodium	---	300	46	95	105	125	135	300	285
Calcium	---	544	101	102	113	89	237	560	507
Magnesium	---	297	23	21	26	19	13	152	160
Potassium	---	7.7	2.1	3.5	4.2	4.3	5.5	5.2	5.9
Chloride	---	232	48	112	123	138	127	191	200
Sulfate	---	2360	261	223	280	270	575	1910	1780
Alkalinity (Phenol.)	---	0	0	0	0	0	0	0	0
Alkalinity (Total)	---	237	117	116	149	147	173	254	302
Bicarbonate	---	287	142	140	180	178	209	307	365
Carbonate	---	0	0	0	0	0	0	0	0
Dissolved Solids	---	3740	620	704	860	926	1410	3490	3590
Hardness	---	2580	346	340	388	298	644	2020	1920
Turbidity (NTU)	---	3.6	82.0	9.2	35.0	16.0	170	1.05	1.40
Boron (Total)	0.85	0.68 <sup>+</sup>	0.03	0.06	0.00	0.01	0.12	0.02	0.47
Copper (Total)	0.000	0.000 <sup>+</sup>	0.005	0.002	0.027	0.004	0.000	0.020	0.013
Iron (Total)	0.34	0.00 <sup>+</sup>	4.22	0.43	2.73	0.83	5.29	0.21	0.48
Manganese (Total)	0.400	0.388 <sup>+</sup>	0.223	0.041	0.110	0.058	0.268	0.356	0.409
Molybdenum (Total)	0.026	0.018 <sup>+</sup>	0.002	0.002	0.005	0.006	0.003	0.015	0.015
Ammonia	---	0.15	0.07	0.13	0.07	0.00	0.05	0.05	0.00
Phosphate	---	0.01	0.02	0.01	0.00	0.01	0.02	0.00	0.00
Zinc (Total)	0.007	0.007 <sup>+</sup>	0.154	0.039	0.033	0.058	0.04	0.02	0.04

\*Measured in mg/l unless otherwise noted. <sup>+</sup>Dissolved Measurement

## LAND USE AND RIGHT OF WAY

**Existing Conditions:** Both the City of Grand Junction and Mesa County regulate land uses within the OMID. OMID can generally be divided into three distinct areas. A majority of the upper two-thirds of the OMID service area is comprised of small-acreage farms which average less than 10 acres in size (Figure 9). OMID service area transitions from rural to urban with residential, commercial and industrial being the predominate land use types in the lower one-third portion of the OMID District. The upper-third consists mostly of agricultural lands which are dominated by orchards, while the middle-third of the district is predominately

characterized as irrigated pasture and residential. The primary use of OMID water in the lower-third is for household lawns and gardens (most of which is within the City of Grand Junction).

Mesa County is responsible for establishing zoning districts for the unincorporated areas of Mesa County. Within the OMID service area, both Mesa County and City of Grand Junction have authority for land use zoning. Figure 10 summarizes both Mesa County and City of Grand Junction zoning types. For ease of interpretation, both entities' data has been summarized into the following categories (Mesa County 2013, City of Grand Junction 2009):

**Rural Zoning Districts-**The rural zoning districts are intended to primarily provide for protection and continuation of agriculture and forestry and the preservation of environmentally sensitive lands. The zoning class also includes very low-density-single-family residential developments.

**Urban Residential Zoning Districts-**Urban Residential zoning districts are generally appropriate for application in the Urban Development Boundary of the Grand Junction Comprehensive Plan, in Rural Communities where sewer is available, and near municipalities. This includes single and multi-family housing densities as low as 1 unit per 5 acres, to high as, 24 units per acre.

**Business Districts-**Business zoning districts are zoned and either light (B-1) or concentrated (B-2). Only B-1 districts occur within the project area. B-1 districts are intended to accommodate low-intensity neighborhood service and office uses that are compatible with the sale and character of residential neighborhoods. There are no currently zoned B-2 districts within this OMID service area.

**Commercial Districts-**Commercial zoning districts include limited commercial (C-1) and general commercial (C-2) districts. C-1 districts are intended to accommodate retail, service, and office uses conducted entirely indoors. C-2 districts include moderate to high-intensity commercial uses, which may include outdoor display or storage. Within the OMID, the majority of C-1 districts and all of C-2 district are adjacent to Highway 50.

**Industrial Districts-**Industrial zoning districts include both limited (I-1) and general (I-2) districts. There are no I-1 districts within the OMID service area and all I-2 districts are located along the Gunnison River. I-2 districts are intended to accommodate areas of heavy and concentrated fabrication, manufacturing, and industrial uses.

**Planned Unit Development Districts-**Planned Unit Development Districts (PUD) are intended to encourage innovative land planning and site design concepts that implement and are consistent with the Mesa County Master Plan. PUD's also include mobile home parks, recreation parks, fairgrounds, and golf courses. Within the City of Grand Junction boundaries, the City zones parks, open space, schools, libraries, recreation facilities, and other public facilities as a Community Services and Recreation zoning district.

The Orchard Mesa Open Land Overlay District is a special PUD that includes irrigated lands on Orchard Mesa and is applicable to tracts of land 10 acres or larger and require developers to maintain a minimum of 50% open space and a maximum of density of 1 dwelling per 2.5 acres.

Right-of-way for construction, operation and maintenance of existing OMID facilities is held by either OMID and/or the Bureau of Reclamation. OMID has existing recorded easements for some facilities, while Reclamation holds right-of-way under the Canal Act of 1890 (26 Stat.391, 43 USC § 945). The Canal Act expressly reserved to the federal government an easement of right-of-way across lands to allow construction of canals and ditches to provide irrigation to the arid west.

### **Impacts**

**No Action:** The No Action Alternative would have no effect on existing land uses and existing rights-of-ways.

**Proposed Action:** Land uses in unincorporated Mesa County are regulated by the Mesa County Land Development Code (Mesa County 2013) and future land use goals, policies and guidelines managing growth in Mesa County are guided by the Mesa County Master Plan (Mesa County 2000). Land uses within the City of Grand Junction are regulated by the City of Grand Junction Zoning and Development Code (2010) and future land use goals, policies and guidelines are contained in the City of Grand Junction Comprehensive Plan (City of Grand Junction 2009).

The proposed action complements both City and County long-range plans by improving the existing irrigation delivery system on Orchard Mesa and supporting existing agriculture, which compliments current and future land uses in the lower-third of the OMID service area, by allowing OMID to accommodate daily and hourly fluctuations in irrigation demands in an urban residential setting. The proposed action would convert approximately 10 acres of irrigated field into a permanent regulating reservoir. OMID would operate and maintain the regulating reservoir to respond to changes in irrigation demands in the lower OMID delivery system.

It is anticipated that the majority of construction activities can be accomplished using the existing public and canal operation & maintenance roads. In a few cases, additional right-of-way may be needed to allow for the relocation or construction of new facilities if not included under current right of way (i.e. portions of the Wrecking Yard Intertie and B ¼ Pump Station pipeline). New right of way will be handled on a case by case basis and would be negotiated and acquired by OMID or Reclamation. If damage occurs to existing crops, buildings, or structures during construction, payment will be made by the United States to the landowner on the basis of an appraisal approved by the United States, or the United States will, at its option, restore the property to the condition which existed prior to construction.

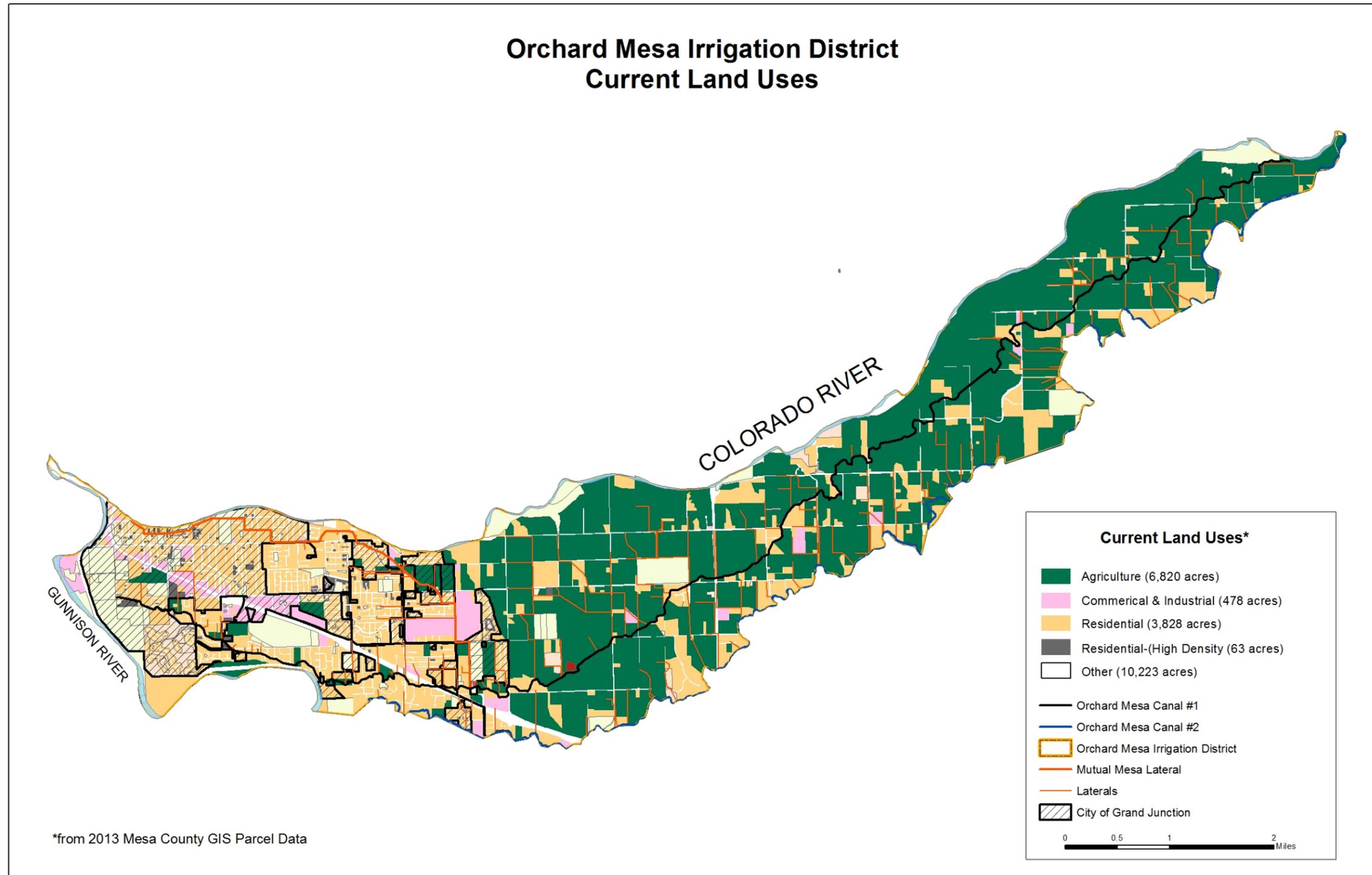


Figure 9-OMID Irrigation District Land Use Classifications

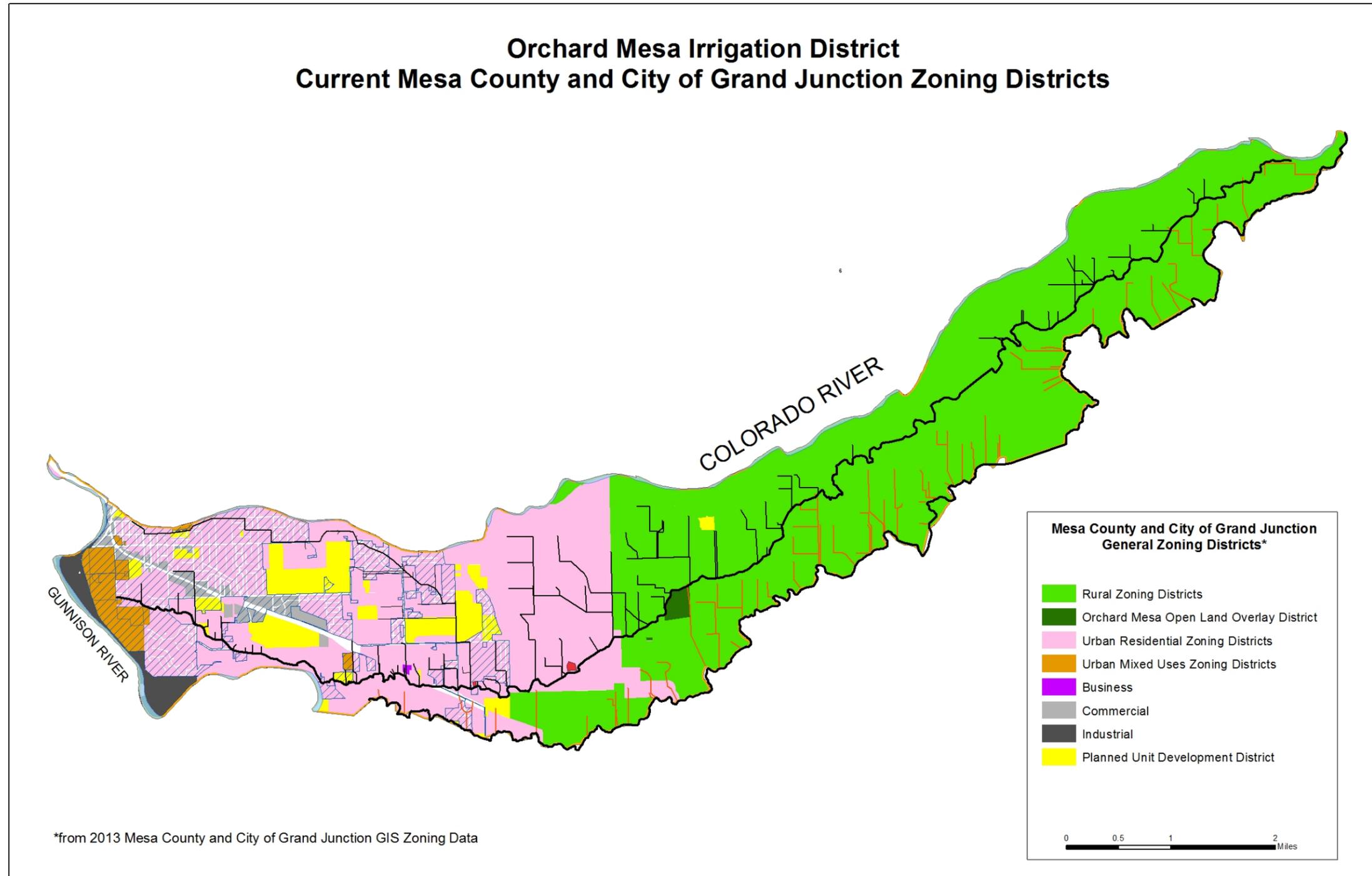


Figure 10-Mesa County and City of Grand Junction Zoning

## FISH AND WILDLIFE RESOURCES

**Existing Conditions:** Fish and wildlife resources common to the project area primarily include species that have adapted to a rural/urban environment. As previously identified in the Land Use Section, those areas that are more rural in nature tend to support more and diverse fish and wildlife resources. As noise and disturbances increase and areas become more urban, fish and wildlife resources become less abundant and less diverse. As can be expected, areas along rivers and streams support the largest numbers and diversity of wildlife. Agricultural lands in the project area are important source of food and shelter for wildlife.

There are two wildlife areas within the OMID service area that serve as important refuges for wildlife species in the Grand Valley. The Tilman Bishop State Wildlife Area is approximately 101 acres of Colorado River bottomland located on the south bank of the Colorado River near the Town of Palisade. The property was dedicated in 2006 and is managed by Colorado Parks and Wildlife and offers hunting, fishing and wildlife viewing opportunities. Public access is prohibited during the nesting and migrating period, from March 15 through July 15.

The Orchard Mesa Wildlife Area is approximately 153 acres of bottomland located along the south bank of the Colorado River between 29 1/2 Road and 31 Road. It was purchased in 1996 by Reclamation and developed to meet fish and wildlife habitat replacement for the Grand Valley Unit of the Colorado River Basin Salinity Control Program and the Upper Colorado River Endangered Fish Recovery Program. This wildlife area is managed to maintain replacement habitat under a contract with the Western Colorado Wildlife Habitat Association. Hunting and fishing opportunities are similar to the Tilman Bishop Wildlife Area. Public access is also restricted from March 15 through July 31.

Common wildlife species in the project area include mule deer, mourning dove, Canada goose, black billed magpie, Gambel's quail and beaver. Attachment C lists the common riparian species found within the Grand Valley. Dominant native fish species include flannel-mouth sucker, bluehead sucker and roundtail chub. Non-native fish species include largemouth bass and channel catfish. Endangered Colorado River fishes are discussed in the next section.

**No Action:** The No Action Alternative is predicted to have no additional effects on fish and wildlife species. As rural areas become more urbanized, wildlife use is expected to decrease with habitat fragmentation. In dry and normal spring runoff years, the 15-Mile Reach of the Colorado River would continue to experience prolonged periods of low flows which limit aquatic habitat and connectivity between the 18-Mile Reach of the Colorado River, the Gunnison River and the Colorado River upstream of Palisade.

**Proposed Action:** The proposed action will result in some reduced fish and wildlife habitat associated with reduced spills and seepage from Canals No. 1 and No. 2. As water conservation increases, drainages and associated seeps are predicted to contribute and receive less water to support riparian and wetland type habitats, but some spills are projected to continue

as well as on-farm tail water. Impacts to these artificial habitats will be offset with the benefit of additional flows in the 15-mile reach of the Colorado River. An estimated 17,000 acre-feet will be returned to the Colorado River via the Grand Valley Power Plant. This would directly benefit the riverine system and fish species in the Colorado River by increasing base flows in the Colorado River.

## **THREATENED AND ENDANGERED SPECIES**

This section focuses on potential impacts to threatened, endangered and other sensitive species that may be affected by the proposed action. Table 11 lists the species that may occur within the project area or may be affected by the proposed action.

The OMID service area is within the range of several threatened, endangered, or candidate species. Species with potential to occur within the project area include the razorback sucker, Colorado pikeminnow, bonytail, and yellow-billed cuckoo. The project area does not provide suitable habitat for the other species listed in Table 11.

Of the four listed Colorado River fishes: Colorado pikeminnow, razorback sucker and bonytail are likely to occur in vicinity of the project area. Portions of the Colorado River and its 100-year floodplain are included as designated critical habitat for these species. Reclamation previously consulted with the Fish and Wildlife Service regarding Reclamation's operations and depletions in the Upper Colorado River above the confluence with the Gunnison River and included the OMID portion of the Grand Valley Project and the portion of the Colorado River commonly referred to as the "15-mile Reach". The Fish and Wildlife Service issued a programmatic biological opinion (PBO) in December 1999 for Reclamation's operations and depletions, other depletions, and funding and implementation of recovery program actions in the upper Colorado River above the confluence with the Gunnison River (Service 1999).

The 15-mile PBO included numerous actions aimed at recovery of the four listed Colorado River fishes. Augmentation of late summer and fall base flows in the 15-Mile Reach during July, August, and September were identified as important because this reach can be extremely dewatered due to agricultural diversions (Service 1999).

**No Action:** Under the No Action Alternative, Reclamation would not implement efficiency improvements on the OMID system to meet requirements of the 15-Mile Reach PBO. The Recovery Program would need to explore other alternatives to meet these requirements to provide addition flows to the 15-mile Reach. The No Action Alternative is predicted to have no direct effect on other listed or candidate species.

**Proposed Action:** The major benefit of the proposed action would be to provide an estimated 17,000 acre-feet of water to the 15-mile reach of the Colorado River during the irrigation season. This would provide a direct benefit to the razorback sucker, Colorado pikeminnow and bonytail and designated critical habitat. Therefore, Reclamation has

**Table 11-Threatened and Endangered Species**

Species Name	Status	Habitat Requirement Summary	Range in Project Area?	Habitat in Project Area?
Humpback Chub ( <i>Gila cypha</i> )	Endangered w/ Critical Habitat	Canyon bound river reaches or similar habitats.	No	No
Razorback Sucker ( <i>Xyrauchen texanus</i> )	Endangered w/ Critical Habitat	Colorado and Gunnison River and associated floodplains and backwater habitats.	Yes	Yes
Colorado Pikeminnow ( <i>Ptychocheilus lucius</i> )	Endangered w/ Critical Habitat	Colorado and Gunnison River and associated floodplains and backwater habitats.	Yes	Yes
Bonytail ( <i>Gila elegans</i> )	Endangered w/ Critical Habitat	Colorado and Gunnison River and associated floodplains and backwater habitats.	Yes	Yes
Canada Lynx ( <i>Lynx Canadensis</i> )	Threatened	Spruce/fir/mixed conifer/lodgepole pine forests, or mixed deciduous/conifer.	No	No
Mexican Spotted Owl ( <i>Strix occidentalis lucida</i> )	Threatened	Old growth forests and canyon type habitats	No	No
Colorado hookless cactus ( <i>Sclerocactus glaucus</i> )	Threatened	Alluvial river terraces along the Colorado and Gunnison river; and in the Plateau and Roan Creek drainages in the vicinity of DeBeque, Colorado	Yes	No
Debeque phacelia ( <i>Phacelia submutica</i> )	Threatened	Restricted to barren clay exposures of the Atwell Gulch and Shire members of the Wasatch formation. Generally occurs on moderately steep slopes, benches, and bench tops above the valley floors	No	No
Greenback cutthroat trout ( <i>Oncorhynchus clarki ssp. Stomias</i> )	Threatened	Inhabits cold water streams and cold water lakes with adequate stream spawning habitat present during spring	No	No
Gunnison sage-grouse ( <i>Centrocercus minimus</i> )	Proposed Endangered	Variety of habitats such as large expanses of sagebrush with a diversity of grasses and forbs and healthy wetland and riparian ecosystems.	No	No
North American wolverine ( <i>Gulo gulo luscus</i> )	Proposed Threatened	Prefer high elevations, deep, persistent and reliable spring snow cover.	No	No
Yellow-billed cuckoo ( <i>Coccyzus americanus</i> )	Candidate	Low elevation river corridors with extensive mature and dense cottonwood galleries.	Yes	Yes

determined that the proposed project may affect (beneficial effect) the razorback sucker, Colorado pikeminnow, bonytail and humpback chub and designated critical habitat.

The proposed yellow-billed cuckoo may also use dense riparian cottonwood habitats along the Colorado River within the project area. However, the proposed action is not predicted to directly impact these habitats. Therefore, the proposed action is predicted to have no effect on yellow-billed cuckoo.

Reclamation has requested Fish and Wildlife Service concurrence regarding beneficial affects to the four Colorado River endangered fishes. Results of that consultation will be included in the Final EA.

## UNIQUE GEOGRAPHIC FEATURES

To meet requirements of environmental laws and U.S. Department of the Interior policies, Reclamation specifically addresses potential impacts of any proposed action on unique geographic features—which include prime and unique farmland, wild or scenic rivers, rivers placed on the nationwide river inventory, refuges, floodplains or wetlands.

### Prime and Unique Farmland

The U.S. Department of Agriculture's Natural Resources Conservation Service (NRCS) identifies farmlands of national and statewide importance in the region, based on soil types and irrigation status. It is the policy of NRCS to "maintain and keep current an inventory of the prime farmland and unique farmland of the Nation... The objective of the inventory is to identify the extent and location of important rural lands needed to produce food, feed, fiber, forage, and oilseed crops" (7 CFR 657.2). The Proposed Action crosses two types of USDA-designated important farmland: Prime Farmland if Irrigated (~5,925 acres) and Prime Farmland if Irrigated and Drained (~48 acres)(NRCS 2013). All of these important farmlands occur adjacent and are served by Orchard Mesa Canals No. 1 and No. NRCS defines prime and unique farmlands as follows:

*Prime farmland has the best combination of physical and chemical characteristics for producing food, feed, forage fiber and oilseed crops. Unique farmland is land other than prime farmland that is used for the production of specific high-value food and crops, such as citrus, tree nuts, olives, cranberries, and other fruits and vegetables. It has a special combination of soil quality, location, growing season, and moisture supply required to produce sustained high quality crops when properly managed. In addition, farmlands of statewide importance are lands that nearly meet the requirements for prime farmland and have been identified by state agencies.*

### Wetlands

Wetlands and other "Waters of the United States" are subject to the Clean Water Act (CWA) with regulatory compliance administered by the U.S. Army Corps of Engineers (ACOE) and the Environmental Protection Agency (EPA). 33 CFR 328.3 defines "Water of the United States" as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters subject to the ebb and flow of the tide.
2. All interstate waters including wetlands.
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including such waters:
  - i. Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
  - ii. From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
  - iii. Which are used or could be used for industrial purpose by industries in interstate commerce;

4. All impoundments of waters otherwise defined as water of the United States under the definition;
5. Tributaries of waters identified above;
6. The territorial seas;
7. Wetlands adjacent to water identified above;
8. Water of the United States do not include prior converted cropland. Notwithstanding the determination of an area's status as prior converted cropland by any other federal agency, for the purposes of the Clean Water Act, the final authority regarding CWA jurisdiction remains with the EPA.

Included in Attachment B is a map that displays the available data from the National Wetland Inventory for the OMID service area. The Colorado and Gunnison rivers are clearly considered waters of the United States subject to the CWA. Sink Creek is another major drainage that bisects the East Orchard Mesa Area within the project area. The OMID service area also includes a number of drains constructed under the Orchard Mesa Division of the Grand Valley Project. These drains were constructed to collect tail water and drain agricultural areas back to the rivers.

**No Action:** The No Action Alternative would have no effect on unique geographic features.

**Proposed Action:** Under the Proposed Action Alternative, temporary disturbance to some agriculturally important lands may occur during construction. These lands will be returned to production immediately following construction and restoration of the ground surface. No farmlands will be permanently removed from production as a result of the Proposed Action. The Proposed Action would give OMID and landowners the ability to better manage their irrigation water with efficiencies gained from the improved system. A reduction of salt accumulation in these soils may also occur in some areas with piping earthen laterals, this benefit is also directly related to on-farm improvements such as when converting flood irrigation to gated pipe, sprinkler or micro-drip irrigation. No direct adverse effects on agriculturally significant lands are expected to occur due to implementation of the Proposed Action.

The Colorado and Gunnison rivers, and Sink Creek would be affected by the proposed action. The primary effect of the proposed action on the Colorado River would be increasing the volume of water in the Colorado River by an estimated 17,000 acre-feet during the irrigation season. This would result in increased flows in the Colorado River at critical times to meet requirements of the 15-Mile PBO. Reduced canal spills and decreases in irrigation return flows will also result in reduced return flows via Sink Creek, OMID drains, and other drainages to the Gunnison and Colorado Rivers.

The ACOE in Regulatory Guidance Letter No. 07-02 (ACOE 2007) addressed exemptions for construction or maintenance of Irrigation Ditches and Maintenance of Drainage Ditches under Section 404 of the CWA. Based on the criteria included in the guidance letter, Orchard Mesa

Canals No. 1 and No. 2 and their associated laterals meet the requirements for the exemption under Section 404 of the CWA. In addition, the guidance states that wetlands established solely due to the presence of irrigation water, irrigated fields, or irrigation ditches do not qualify as wetlands for the purposes of applying the 404(f) exemption for construction and maintenance of irrigation ditches and for maintenance of drainage ditches. Where sufficient information is not available to determine the hydrological contribution of irrigation water to a particular wetlands, such wetlands are not removed from consideration as wetlands or waters of the United States. Because all construction activities are limited to the existing OMID canals, lateral, and in uplands sites; no jurisdictional wetland determinations are considered necessary and the proposed project is not predicted to impact jurisdictional wetlands as defined by the ACOE.

The affected reaches of the Colorado and Gunnison rivers are not under study or recommendation for designation as a wild or scenic river. Similarly, no refuge exists in the affected area. However, the proposed action affects spills and return flows to the Colorado and Gunnison rivers and their 100-year floodplains.

## **INDIAN TRUST ASSETS**

Indian trust assets (ITAs) are legal interests in property held by the United States for Indian Tribes or individuals. Reclamation and other Federal agencies share the responsibility to protect these assets. Trust assets may include: lands, minerals, hunting and fishing rights, traditional gathering grounds, and water rights. No Indian trust assets are known to occur in the project area and therefore no impacts are predicted under any of the alternatives.

## **ENVIRONMENTAL JUSTICE**

Executive Order 12898 on Environmental Justice provides that Federal agencies analyze programs to assure that they do not disproportionately adversely affect minority or low income populations or Indian Tribes. The project area is located within Mesa County, Colorado with an estimated total population of 146,723 in 2010 (U.S. Census Bureau 2013). The population estimate for the Orchard Mesa Census Designated Place (CDP) in 2010 was 6,836. Orchard Mesa is an unincorporated area adjacent to the city of Grand Junction and includes a majority of the OMID service area. Ethnic diversity in percent of populations for Mesa County and Orchard Mesa CDP are presented below in Table 12 (2010 U.S. Census Population Finder).

The median household income for the Orchard Mesa CDP from 2007-2011 was \$52,986, compared to \$57,685 for the entire State of Colorado (U.S. Census Bureau 2013). Persons living below poverty level were listed at 12.7%, as compared to 12.5% for the statewide average.

There are no predicted disproportionate impacts to minority or low income populations or Indian Tribes under both the No Action and Proposed alternatives.

**Table 12-Ethnicity of Mesa County and Orchard Mesa CDP**

<b>Ethnicity</b>	<b>Mesa County % of Population</b>	<b>Orchard Mesa CDP % of Population</b>
Caucasian	94%	90.5%
African American	0.9%	0.5%
Asian	0.9%	0.2%
American Indian and Alaskan Native	1.5%	1.5%
Native Hawaiian and Pacific Islander	0.1%	0.2%
Identified by two or more	2.1%	2.7%
Persons of Hispanic or Latino Origin (2011)	13.6%	12.2%
Caucasian persons not of Hispanic Origin (2011)	82.7%	84.7%

## **SOCIOECONMIC CONDITONS**

Implementation of the proposed action would provide a minor amount of local employment. The total estimated costs are about \$16.5 million dollars (contract and non-contract costs) associated with improvements to the OMID delivery system. This would introduce a small amount of money into the local economy, but it is not expected to affect public services such as schools or transportation.

Regionally, the proposed action contributes to the overall success of the Upper Colorado River Endangered Fish Recovery Program. The Recovery Program was initiated in 1988 with the signing of a cooperative agreement by the Governors of Colorado, Utah, and Wyoming, the Secretary of Interior; and the Administrator of Western Area Power Administration. The Recovery Program provides Endangered Species Act compliance for continued operation of federal water and power projects in accordance with project purposes. The program continues to work to recover endangered fish in the Upper Colorado River Basin while water development proceeds in accordance with federal and state laws and interstate compacts. The Upper Colorado River Endangered Fish Recovery Program currently provide ESA compliance for 2,025 federal and non-federal water projects depleting more than 2.8 million acre-feet per year (Recovery Program 2013). The economic benefits to the Upper Basin states supported by the recovery program are substantial.

## **CULTURAL RESOURCES**

**Existing Conditions:** Previous inventories and consultations with the Colorado State Historic Preservation Officer (SHPO) have determined that the Orchard Mesa Canal's No. 1 and

No. 2, Orchard Mesa Pumping Plant and Orchard Mesa Power Canal were eligible for inclusion on the National Register of Historic Places (NRHP).

In 2010, Reclamation contracted with JGMS, Inc. and the Louis Berger Group, Inc. to conduct Class III inventories of the areas potentially affected by the proposed project. JGMS, Inc. prepared a report entitled *Class III Cultural Resource Inventory of the Orchard Mesa System Improvements, Mesa County, Colorado* (JGMS 2011). Additional inventories and recordation were completed in 2011 under a contract with Alpine Archaeological Services, Inc. with the National Fish and Wildlife Foundation (NFWF) on behalf of the Recovery Program. Alpine prepared an additional report entitled *Recordation and Evaluation of the Grand Valley Power Plant (5ME17604) and a Residential Complex (5ME17605)* (Alpine 2012). In 2011 and 2012, site specific locations of the proposed check structure in Canals No. 1 and No. 2 had not been determined. Therefore in 2013, NFWF contracted with Alpine Archaeology to complete additional inventories and recordation of the NRHP eligible Orchard Mesa Canals No. 1 and No. 2.

### **Impacts:**

**No Action:** The No Action Alternative would have no effect on cultural resources.

**Proposed Action:** Reclamation has completed consultation with the Colorado State Historic Preservation Office (SHPO) on eligibility and effects on the Grand Valley Power Plant, Mutual Mesa Lateral and the residential site. Reclamation has also completed consultation on the Grand Valley Pumping Plant and Orchard Mesa Power Canal which had been previously determined eligible. During these consultations, the Grand Valley Power Plant was determined eligible to the NRHP and that the proposed action would not have adverse impacts to the power plant, pumping plant, or power canal. These consultations also conclude that the Mutual Mesa Lateral, the existing Rainbow Intertie, and the residential site (proposed regulating reservoir site) are not eligible to the NRHP. During these consultations, Reclamation also committed to continued consultation on effects to Orchard Mesa Canals No. 1 and No. 2 once additional information became available.

Alpine has completed additional inventories and Reclamation is initiating additional consultation with the SHPO regarding adverse effects to Orchard Mesa Canals No. 1 and No. 2. Once Reclamation completes consultation, it is anticipated that Reclamation would enter into a Memorandum of Agreement with the SHPO and that OMID would sign the agreement as a concurring party to mitigate any adverse impacts to NRHP eligible resources. Results of this consultation will be included in the Final EA.

## **RECREATION RESOURCES**

**Existing Conditions:** Hiking, walking, jogging, biking, river rafting, and bird watching are all popular outdoor recreation activities that occur on a regular basis in the Grand Valley. Mesa County, the cities of Fruita and Grand Junction, town of Palisade, and numerous state,

federal governments and non-profit organizations have developed an extensive trail system along the north bank of the Colorado River (Colorado Riverfront Trail) that extends from Palisade through Grand Junction and ends near Fruita, Colorado. As mentioned in previous sections, Tillman Bishop and Orchard Mesa Wildlife areas also provide important recreations opportunities for hunting and fishing within the OMID service area. There are also other recreational opportunities at local area parks managed by the City of Grand Junction and Mesa County.

**No Action:** The No Action alternative would have no effect on recreation resources.

**Proposed Action:** The proposed action would have no impact on the Colorado Riverfront Trail system as this system is located north of the Colorado River outside the project area. Both Tillman Bishop and Orchard Mesa Wildlife Areas receive some irrigation tailwater via existing drains and canal spills. It is not anticipated that these properties' recreation uses (i.e. hunting, fishing, bird watching) would be affected by reduced canal spills.

The local public parks managed by the city of Grand Junction and Mesa County and the Chipeta Golf Course all use irrigation water provided by the OMID system. Improvements to the delivery system would improve the irrigation supply and reliability, which in turn would have positive impact on recreation uses that rely on irrigation (i.e. grasses for parks and golf courses).

Under the Proposed Action, no adverse impacts to recreation resources are predicted.

## **PUBLIC SAFETY**

This section addresses potential risks, and hazards and safety issues for the general public. It does not address the risks and hazards associated with specific activities (i.e., hunting, rafting).

**No Action:** The No Action Alternative would have no effect on current risks and hazards associated operating and maintaining the OMID system.

**Proposed Action:** Activities associated with existing OMID facilities (i.e. check structures, interties, pumping facilities) are not predicted to change existing public safety hazards association with open canals and laterals.

The design of the new 80-100 acre-foot regulating reservoir incorporates fencing around the facility to provide site security and restrict public access. Because of its proximity to local schools and housing developments, routinely monitoring the reservoir site on a regular basis is needed.

Signs will be posted designating construction sites and warning the general public of the hazards associated with heavy equipment construction.

In addition, appropriate signage should be incorporated to address slow vehicles and large equipment entering construction sites.

## **CUMULATIVE IMPACTS**

Cumulative impacts are impacts on the environment, which result from the incremental impact of the action, when added to other past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Past and present activities that have affected river related resources in the area include irrigation and hydropower generation, urban development, gravel mining and river recreation. Large scale irrigation projects and transmountain diversions (i.e. Colorado Big Thompson Project, Frying Pan-Arkansas Project, Grand Valley Project, Grand Valley Irrigation Company) have significantly impacted water supply and the riverine ecosystem of the Colorado River Basin. The Grand Valley Unit of the Colorado River Basin Salinity Control and the Upper Colorado River Endangered Fish Recovery programs have been implementing actions, which cumulatively have resulted in beneficial impacts on the endangered Colorado River fishes, water quality and the river ecosystem.

Implementation of all or any of these projects has affected and continues to affect the human environment including but not limited to water quality, water rights, socioeconomic, and fish and wildlife resources.

## **SUMMARY AND ENVIRONMENTAL COMMITMENTS**

### Environmental Commitments

This section discusses the environmental commitments and related mitigation developed to protect resources and mitigate adverse impacts to a non-significant level. The following environmental commitments will be implemented as an integral part of the Proposed Action. Environmental commitments include:

1. Construction Activities confined to Surveyed Areas-All construction activities will be confined to within 50 feet of the canals and existing access roads, and within 50 feet of the surveyed extension alignment. The construction footprint for the regulating reservoir will be limited to within the purchased property. All construction activities outside of this corridor may require additional review by Reclamation to determine if the existing surveys and information are adequate to evaluate additional impacts outside this corridor. Additional NEPA/ESA compliance activities may be required if determined by Reclamation.
2. Disturbed Areas-During construction, any topsoil disturbed construction will be saved and then redistributed after completion of construction activities. All disturbed areas will be smoothed, shaped, and contoured to as near their pre-project conditions as practicable. Re-seeding and planting will occur at appropriate times with weed-feed seed mixes per Reclamation and the underlying landowners' specifications.

3. Water Quality-Best Management Practices (BMP's) will be incorporated into all construction contracts and be implemented to minimize erosion and protect water quality of downstream resources. If any dewatering is needed during construction, the construction contractor will be required to obtain required Section 402 permits prior to dewatering.
4. Trenching-During construction of pipelines, trenching and burying pipelines concurrently will be required to minimize entrapment of small wildlife and herpetofauna. Construction of escapement ramps are required if large portions of trenches are left open overnight.
5. Noxious Weed Control- OMID will be required, as part of continued operations and maintenance, to control noxious weeds (Russian knapweed, thistle, etc.) that may become problems in areas disturbed during construction. Weed control in disturbed areas may be funded by the Recovery Program as maintenance.
6. Clean Water Act 404 Permits-It is not anticipated that 404 permits will be needed for construction activities as no jurisdictional wetlands have been identified within the construction footprint. If wetlands can be directly affected by discharge of dredge or fill, additional consultation with the Army Corps will occur to determine if permits are needed to the activity. Construction of check structures and piping within the existing canals and lateral prisms is exempt from CWA. However, any new structures with existing project drains may require CWA 404 permits.
7. Federally Listed Species- In the event that threatened or endangered species are encountered during construction, the construction contractor shall stop construction activities until Reclamation has completed consultation with the Service to ensure that adequate measures are in place to avoid or reduce impacts to the species.
8. Cultural Resources-Reclamation will implement mitigation, if required for sites eligible to the NRHP as documented in a Memorandum of Agreement (MOA) between Reclamation and the SHPO. Conditions included in the MOA would be incorporated as environmental commitments. Also, in the event that additional cultural and/or paleontological resources are discovered during construction, the Construction Contractor shall stop construction activities until Reclamation has completed consultation with the SHPO and appropriate measures are implemented to protect or mitigate the discovered resource.
9. Hazardous Materials-During construction, the use, storage and disposal of hazardous waste materials and wastes on-site will be managed in accordance with all federal, state, and local standards.
10. Operation and Maintenance-Prior to construction, Reclamation and OMID will execute an operation and maintenance contract that identifies operation and maintenance responsibilities (A copy of the contract is included as Attachment D).

The implementation of environmental commitments and mitigation measures would reduce impacts associated with the Proposed Action to insignificant levels. Table 13 summarizes predicted impacts of the No Action and Proposed Action alternatives analyzed in this EA.

Table 13-Summary of Impacts

Resource Issue	Alternatives	
	No Action	Proposed Action
Water Rights and Use	No direct effect on water rights and uses. However, if the Recovery Program fails to meet the requirements of the 15-mile PBO, existing and future water uses could be adversely impacted if the program fails to serve as the Reasonable and Prudent Alternative to avoid jeopardy.	The Proposed Action would annually conserve about 17,000 acre-feet of water, which would be used to meet 15-mile PBO requirements in the Colorado River. Existing water rights would be protected and the proposed action would assist in continuing certainty to water users in the Upper Colorado River Basin who rely on the PBO and Recovery Program for ESA coverage.
Water Quality	No change predicted	No change predicted.
Land Use	No change in existing land use trends or existing right-of-ways.	Temporary disturbances may occur in a few locations where the existing canal and O&M road footprint may be inadequate for canal improvements. Existing right of ways held by Reclamation and OMID are adequate for the majority of the improvements. Ten acres or irrigated land would also be converted to a regulating reservoir.
Fish and Wildlife Resources	No Change in existing trends.	Some reduction in available fish and wildlife habitat associated with canal spills and seeps are predicted. This is compensated by increased habitat associated with increased flows in the 15-Mile reach.
Threatened and Endangered Species	Could limit both Recovery Programs from requirements under the 15Mile PBO.	Beneficial effects to endangered fish are predicted. The proposed action would have no effect on other listed species.
Unique Geographic Features	No effect on unique geographic features.	Some minor temporary disturbances to some agriculturally important lands during construction are predicted. Beneficial effects to the Colorado River. Reduced return flows to Gunnison River and Sink Creek are also predicted.
Indian Trust Assets	No effect.	No effect.
Environmental Justice	No effect.	No effect.
Social and Economic Factors	No effect.	Provide only short-term employment opportunities during construction. No effect to public services.

Cultural Resources	No effect.	Adverse effects to NRHP eligible sites (historic) are predicted to occur. Predicted adverse impacts will be mitigated to a non-significant level (HABSHAER documentation).
Recreation Resources	No effect.	No adverse effects predicted.
Public Safety	No effect.	No change associated with existing facilities. Additional security and maintenance (signing and fencing) needed to address hazards associated with construction and the new regulating reservoir.
Cumulative Effects	No effect.	Beneficial effect predicted and complement actions of the Grand Valley Unit of the CRBSCP and Upper Colorado River Endangered Fish Recovery Program

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## CHAPTER 4-CONSULTATION AND COORDINATION

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### **GENERAL**

Plans for OMID efficiency improvements have been under development for several years. The Irrigation Training & Research Center, California Polytechnic State University was contracted and worked closely with OMID and Reclamation to develop strategies to implement water conservation measures that would result in water savings that could be used to augment flows in the 15-Mile Reach of the Colorado River. These strategies were presented to the Upper Colorado River Endangered Fish Recovery Program to assist in meeting requirements of the 15-Mile Reach PBO and in recovery of the Colorado River endangered fishes (ITRC 2012). The project will be funded with appropriated capital construction funding authorized for the Upper Colorado River Endangered Fish Recovery Program.

Reclamation solicited public comments and held a public scoping meeting at the Mesa View Elementary School on December 3, 2009. Public scoping was based on a draft ITRC report dated December 2007 (ITRC 2007). Issues identified during scoping include effects on property values, weed control, and dust and traffic control during construction. Comments were also received regarding a proposed pumping plant at Duck Pond Park, which has been removed as a project feature and is no longer being considered.

### **CONSULTATION WITH OTHER AGENCIES**

Reclamation consulted with local, federal and state agencies and request assistance in identifying issues and concerns associated with the proposed project. See the distribution list for agencies and organizations consulted during public scoping and development of this draft EA are induced in the Distribution List (see Attachment A).



## REFERENCES

ACOE. 2007. Regulatory Guidance Letter No. 07-02. Subject: Exemptions for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches Under Section 404 of Clean Water Act. U.S. Army Corps of Engineers, July, 4, 2007

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Recovery Program. 2013. Briefing document entitled “2012-2013 Highlights, Upper Colorado River Endangered Fish Program and San Juan Basin Recovery Implementation Program”. U.S. Fish and Wildlife Service, Denver, CO.

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<http://quickfacts.census.gov/qfd/states/08/08077.html>, accessed June 6, 2013.



**ATTACHMENT A**  
**Distribution List**



## DISTRIBUTION LIST

Appendix A contains the distribution list for this environmental assessment.

- Colorado State Representatives
- Colorado State Senator
- U.S. Congressional Delegation
- Army Corps of Engineers, Grand Junction, CO
- U.S. Fish and Wildlife Service, Grand Junction, CO
- U.S. Geological Survey, Grand Junction, CO
- Natural Resource Conservation Service, Grand Junction, CO
- Upper Colorado River Endangered Fish Recovery Program, Denver, CO
- Colorado Division of Water Resources
- Colorado Division of Parks and Wildlife, Grand Junction, CO
- Colorado Water Conservation Board, Denver, CO
- Colorado Department of Transportation, Grand Junction, CO
- Colorado Historical Society, Office of Archaeology and Historic Preservation, Denver, CO
- Colorado Department of Public Health and Environment, Grand Junction, CO
- Colorado River Water Conservation District, Glenwood, CO
- Mesa County, Grand Junction, CO
- City of Grand Junction, Grand Junction, CO
- Orchard Mesa Irrigation District, Palisade, CO
- Grand Valley Water Users Association, Grand Junction, CO
- Grand Valley Irrigation Company, Grand Junction, CO
- Palisade Irrigation District, Palisade, CO
- Mesa County Irrigation District, Clifton, CO
- Redlands Water and Power Company, Grand Junction, CO
- Grand Valley Drainage District, Grand Junction, CO
- Colorado Riverfront Commission, Grand Junction, CO
- Club 20, Grand Junction, CO
- Western Colorado Congress, Grand Junction, CO
- Colorado Environmental Coalition, Grand Junction, CO
- Trout Unlimited, Grand Junction, CO
- Grand Valley Audubon Society, Grand Junction, CO
- Private landowners adjacent to OMID Canals No. 1 and No. 2

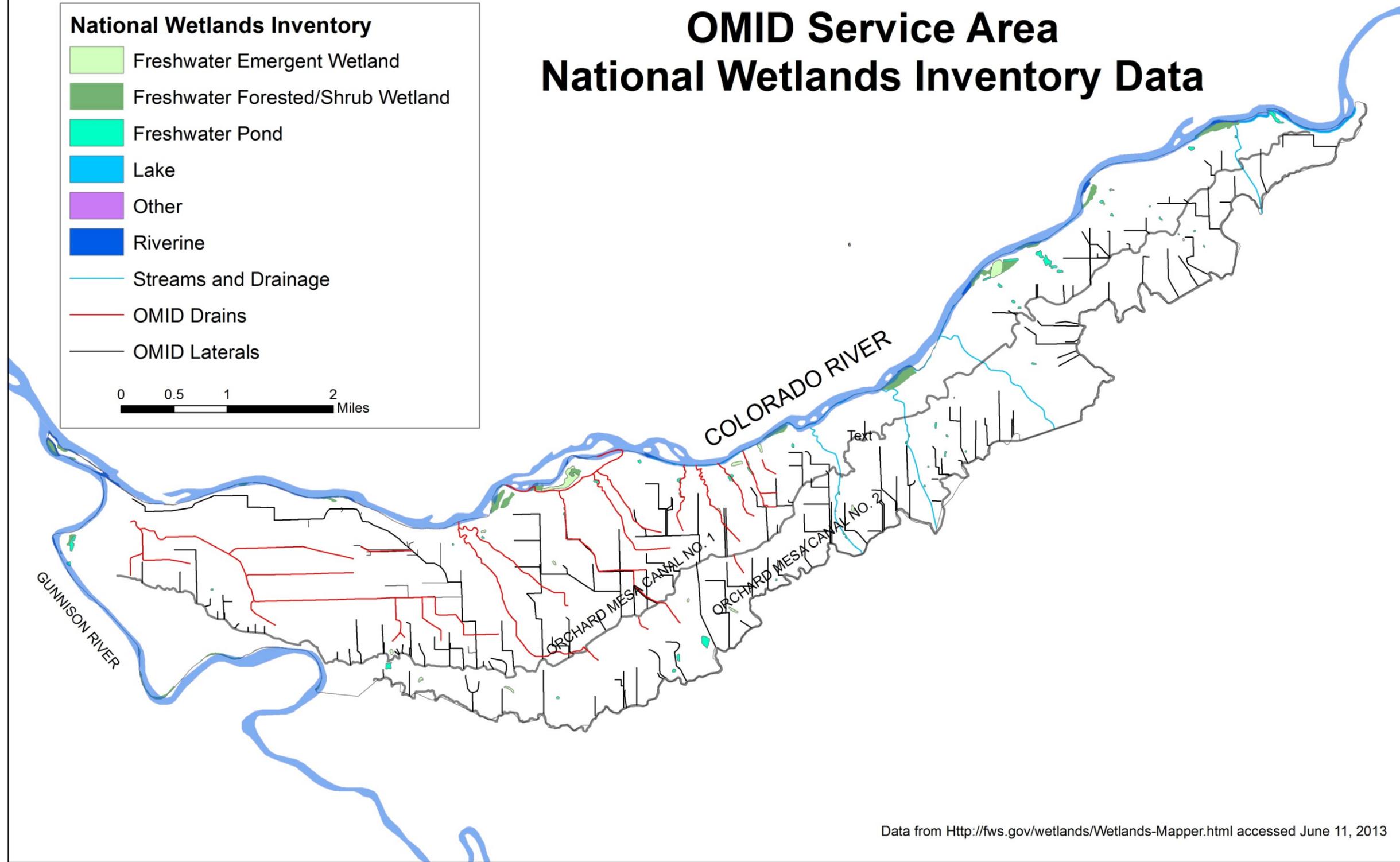
**ATTACHMENT B**  
**National Wetland Inventory**  
**and**  
**Clean Water Act Exemptions**

# OMID Service Area National Wetlands Inventory Data

## National Wetlands Inventory

-  Freshwater Emergent Wetland
-  Freshwater Forested/Shrub Wetland
-  Freshwater Pond
-  Lake
-  Other
-  Riverine
-  Streams and Drainage
-  OMID Drains
-  OMID Laterals

0 0.5 1 2 Miles



Data from <http://fws.gov/wetlands/Wetlands-Mapper.html> accessed June 11, 2013



US Army Corps of Engineers

# Irrigation Exemption Summary

Sacramento District  
1325 J Street  
Sacramento, CA 95814-2922

## FARM OR STOCK POND OR IRRIGATION DITCH CONSTRUCTION OR MAINTENANCE

Pursuant to Section 404 of the Clean Water Act (33 USC 1344) and Federal Regulations (33 CFR 323.4(a)(3)), certain discharges for the construction or maintenance of farm or stock ponds or irrigation ditches have been exempted from requiring a Section 404 permit. Included in the exemption are the construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance (but not the construction) of drainage ditches. Discharges associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption.

A Section 404 permit is required if either of the following occurs:

- (1) Any discharge of dredged or fill material resulting from the above activities which contains any toxic pollutant listed under Section 307 of the Clean Water Act shall be subject to any applicable toxic effluent standard or prohibition, and shall require a permit.
- (2) Any discharge of dredged or fill material into waters of the United States incidental to the above activities must have a permit if it is part of an activity whose purpose is to convert an area of the waters of the United States into a use to which it was not previously subject, where the flow or circulation of waters of the United States may be impaired or the reach of such waters reduced. Where the proposed discharge will result in significant discernible alterations to flow or circulation, the presumption is that flow or circulation may be impaired by such alteration. For example, a permit will be required for the conversion of a wetland from silvicultural to agricultural use when there is a discharge of dredged or fill material into waters of the United States in conjunction with construction of dikes, drainage ditches, or other works or structures used to effect such conversion. A discharge which elevates the bottom of waters of the United States without converting it to dry land does not thereby reduce the reach of, but may alter the flow or circulation of, waters of the United States.

If the proposed discharge satisfies all of the above restrictions, it is automatically exempted and no further permit action from the Corps of Engineers is required. If any of the restrictions of this exemption will not be complied with, a permit is required and should be requested using ENG Form 4345 (Application for a Department of the Army permit). A nationwide permit authorized by the Clean Water Act may be available for the proposed work. State or local approval of the work may also be required.

For general information on the Corps' Regulatory Program please check our web site at [www.spk.army.mil/regulatory](http://www.spk.army.mil/regulatory). For additional information or for a written determination regarding a specific project, please contact the Corps at the following addresses:

Sacramento Main Office-1325 J Street, Room 1480, Sacramento, CA 95814	(916) 557-5250
Redding Field Office-152 Hartnell, Redding, CA 96002	(530) 223-9534
Reno Office-300 Booth Street, Room 2103, Reno, NV 89509	(775) 784-5304
Intermountain Region Main Office-533 West 2600 South, Suite 150, Bountiful, UT 84010	(801) 295-8380
Colorado/Gunnison Basin Office-402 Rood Ave., Room 142, Grand Junction, CO 81501	(970) 243-1199
Durango Office-278 Sawyer Dr., Unit #1, Durango, CO 81301	(970) 375-9506
Frisco Office-301 W Main, Suite 202, P.O. Box 607, Frisco, CO 80443	(970) 668-9676
St. George Office-321 North Mall Drive, Suite L-101, St. George, UT 84790	(435) 986-3979



**US Army Corps  
of Engineers**

# REGULATORY GUIDANCE LETTER

No. 07-02

Date: July 4, 2007

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SUBJECT: Exemptions for Construction or Maintenance of Irrigation Ditches and Maintenance of Drainage Ditches Under Section 404 of Clean Water Act

## **1. Purpose and Applicability.**

The purpose of this Regulatory Guidance Letter (“RGL” or “guidance”) is to provide a reasonable and predictable national approach for conducting exemption determinations for the construction and maintenance of irrigation ditches and the maintenance of drainage ditches consistent with Section 404(f) of the Clean Water Act (CWA) (also known as the Federal Water Pollution Control Act or FWPCA) Pub. L. 92-500, as amended by Pub. L. 95-217, Pub. L. 100-4, Pub. L. 104-66, 33 U.S.C. § 1251, et seq., and with associated regulations (33 C.F.R. 320-330, 40 C.F.R. Part 232). This guidance is intended to clarify when 404(f) exempts from permitting requirements discharges of dredged or fill material into waters of the U.S. associated with the construction and maintenance of irrigation ditches and maintenance of drainage ditches. This RGL was developed and is endorsed by the U.S. Army Corps of Engineers (Corps) and the Environmental Protection Agency (EPA). EPA has the ultimate authority for interpreting the scope of exemptions under CWA Section 404(f).

This document supercedes RGL 87-07, which addresses the Section 404(f)(1)(C) Statutory Exemption for Drainage Ditch Maintenance. Other documents, such as the 1989 MOA addressing 404(f) coordination, are unaffected. As indicated above, this RGL addresses statutory exemptions for both irrigation and drainage ditches. In this effort to provide greater clarity, the following terms are defined for purposes of Subsection 404(f): irrigation ditch, drainage ditch, construction, and maintenance. This document also provides a framework for determining the applicability of the exemptions and the recapture provision. (See Figure 1). While providing greater clarity, both the framework and the definitions are consistent with the agencies’ current practice in interpreting the Section 404(f) exemption.

## **2. Background.**

a. Under Section 404(f)(1)(C) of the CWA (see also 33 CFR 323.4(a)(3) and 40 CFR 232.3(c)(3)), discharges of dredged or fill material associated with construction or maintenance of irrigation ditches, or the maintenance (but not construction) of drainage ditches, are not prohibited by or otherwise subject to regulation under Section 404 of the CWA (i.e., these activities are exempt from the need to obtain a Section 404 permit from the Department of the

Army (DA)). Discharges of dredged or fill material associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant to and functionally related to irrigation ditches are included in the exemption for irrigation ditches.

b. Section 404(f)(2) of the CWA states that “[a]ny discharge of dredged or fill material into the navigable waters incidental to any activity having as its purpose bringing an area of navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired or the reach of such waters be reduced, shall be required to have a permit under this section.” This is commonly referred to as the “recapture provision.” See Section c, below.

c. Under 33 CFR 323.4(c) and 40 CFR 232.3(b), exemptions under 33 CFR 323.4(a)(1-6) and 40 CFR 232.3(c)(1-6) do not apply if the discharge into a water of the U.S. “is part of an activity whose purpose is to convert an area of the waters of the U.S. into a use to which it was not previously subject, where the flow or circulation of waters of the U.S. may be impaired or the reach of such waters reduced. Where the proposed discharge will result in significant discernable alterations to flow or circulation, the presumption is that flow or circulation may be impaired by such alteration.”

d. Under 33 CFR 323.4(a)(1)(iii)(C)(I)(i), “[c]onstruction and maintenance of upland (dryland) facilities such as ditching and tiling, incidental to the planting, cultivating, protecting, or harvesting of crops, involve no discharge of dredged or fill material into waters of the U.S., and as such never require a section 404 permit.”

The CWA Subsection 404(f)(1)(A) exemption for “minor drainage” covers “(t)he discharge of dredged or fill material incidental to connecting upland drainage facilities to waters of the U.S., adequate to effect the removal of excess soil moisture from upland crops.” (See 33 CFR 323.4(a)(1)(iii)(C) (I)(i))

e. The construction and maintenance of irrigation ditches and maintenance of drainage ditches may require the construction and/or maintenance of a farm road. In those circumstances, the Subsection 404(f)(1)(E) exemption for discharges of dredged or fill material associated with the construction or maintenance of farm roads applies where such related farm roads are constructed and maintained in accordance with best management practices (BMPs), 33 CFR 323.4(a)(6) and 40 CFR 232.3(c)(6), to assure that flow and circulation patterns and chemical and biological characteristics of waters of the U.S. are not impaired, that the reach of the waters of the U.S. is not reduced, and that any adverse effect on the aquatic environment will be otherwise minimized. All of the limitations and conditions mandated by the current Section 404(f) regulations relating to farm roads apply.

### **3. Guidance for Ditches.**

General Guidance: Before carrying out ditch maintenance or construction activities, the following issues should be analyzed:

**a. Is there a discharge of dredged or fill material into a water of the U.S.?** To make that determination, the statute, regulations, and guidance provided by the Corps and EPA regarding what areas constitute “waters of the United States” subject to CWA jurisdiction must be consulted and followed. Corps and EPA guidance on the extent of CWA geographic jurisdiction define certain categories of “upland ditches” and “upland swales” that generally are not subject to CWA jurisdiction. Discharges of dredged or fill material into those defined categories of upland ditches and upland swales are not subject to either CWA permitting requirements or the subsection 404(f) exemptions.

**b. Identify the type of ditch and activity, and whether the activity is eligible for the exemptions at Subsection 404(f)(1).** An analysis of the CWA statute and existing EPA and Corps regulations indicates that there are differences between irrigation ditches and drainage ditches for purposes of applying the Subsection 404(f)(1)(C) exemption. The Subsection 404(f)(1)(C) exemption applies to the *construction* and *maintenance* of irrigation ditches, but it applies only to the *maintenance* of drainage ditches.

For purposes of this RGL, wetlands include all wetlands that meet the definition in 33 CFR 328.3. Guidance for applying the regulation is contained in the 1987 Wetland Delineation Manual, and the regional supplements and supplemental guidance, as appropriate, except where the wetland plants were established as a result of the irrigation process. Wetlands established solely due to the presence of irrigation water, irrigated fields, or irrigation ditches do not qualify as wetlands for purposes of applying the 404(f) exemption for construction and maintenance of irrigation ditches and for maintenance of drainage ditches.<sup>1</sup> Where sufficient information is not available to determine the hydrological contribution of irrigation waters to a particular wetlands (i.e., whether the wetland existed at the location prior to the presence of irrigation activities), such wetlands are not removed from consideration as wetlands or waters of the U.S.

For purposes of this RGL, the following definitions apply:

**Definition of “Irrigation Ditch:”** For purposes of this RGL, an irrigation ditch is a man-made feature and/or an upland swale that either conveys water to an ultimate irrigation use or place of use, or that moves and/or conveys irrigation water (e.g., “run-off” from irrigation) away from irrigated lands. Irrigation ditches may include the distribution system or parts thereof, consisting of manmade canals, laterals, ditches, siphons, and/or pipes, or pump systems. If a ditch carries only irrigation water, irrigation return flows, and overland flow (precipitation and/or snowmelt) that moves from an irrigated field either to or away from an area subject to irrigated agriculture (e.g., an irrigated field), that ditch would be considered an irrigation ditch, not a drainage ditch.

Where a natural or man-altered water body is used as part of an irrigation ditch system, such as where the water body is used to transport irrigation water between manmade ditches, that segment generally is not considered an irrigation ditch for purposes of this exemption, except

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<sup>1</sup>As stated in the preamble to the Corps’ Final Rule of November 13, 1986: “. . . we generally do not consider the following waters to be ‘Waters of the United States’ . . . (b) Artificially irrigated areas which would revert to upland if the irrigation ceased.” 51 Federal Register 41217, November 13, 1986. Thus, waters, including wetlands, created as a result of irrigation would not be considered waters of the US even when augmented on occasion by precipitation.

where the Section 404(f)(1) exemption has been determined to apply based on a case-by-case evaluation. Following a case-by-case evaluation, such a natural or man-altered water body may be considered an irrigation ditch eligible for this exemption if it has characteristics suggesting a limited functional role in the broader aquatic ecosystem, such as infrequent or low volume flow, minimal habitat value, or small channel size.

**Definition of “Drainage Ditch:”** For purposes of this RGL, a drainage ditch is a ditch that conveys water (other than irrigation related flows) from one place to another. Where a ditch would have the effect of more than minor drainage<sup>2</sup> of wetlands (other than wetlands established due to the presence of irrigation water), the ditch would be considered a drainage ditch, not an irrigation ditch, even if used for irrigation. However, a ditch that diverts water from an open body of water (e.g., stream, lake, or reservoir) for irrigation purposes is an irrigation ditch, even if a substantial portion of the flow or volume is diverted.

A ditch determined to be either an irrigation ditch or a drainage ditch would then need to be evaluated on a case-by-case basis to determine if the recapture provision of Section 404(f)(2) applies (see below).

**Definition of “Construction:”** For purposes of this RGL, construction includes new work or work that results in an extension or expansion of an existing structure. Ditch construction generally includes, but is not limited to, activities such as:

- Ditch relocation.
- Ditch conversion into pipe.
- Lining, which means placing impervious material such as concrete, clay, or geotextile within the flow perimeter of an open canal, lateral, or ditch with the intent of reducing seepage losses and improving conveyance efficiency. All new lining of ditches, where the ditch had not previously been lined, is considered construction.
- Placement of new control structures.

**Definition of “Maintenance:”** For purposes of this RGL, maintenance includes a repair to an existing structure or feature to keep the ditch in its existing state or proper condition, or to preserve it from failure or decline.<sup>3</sup> Maintenance generally includes, but is not limited to, activities such as:

- Excavation of accumulated sediments back to original contours.
- Re-shaping of the side-slopes.

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<sup>2</sup>See 33 CFR 323.4(a)(1)(iii)(C)(1) and (C)(2).

<sup>3</sup>Maintenance means the physical preservation of the original, as-built configuration of the ditch and appurtenant structures, to restore the original function and the approximate capacity of the ditch. In many cases, accurate historical records are not available to determine the exact “as-built” specifications of the original ditch. In these cases, districts should work closely with the project proponent to establish an appropriate maintenance depth to restore the ditch’s original function and approximate capacity, while meeting the spirit of the exemption and ensuring adequate protection of aquatic resources. Districts should allow maintenance of ditches to be performed to the level of current engineering standards where more graduated side-slopes result in greater stability, so long as those modifications of the ditch will not result in the drainage, degradation, or destruction of additional natural wetlands or other waters of the U.S., as referenced above. Removal of material and re-contouring of the ditch should be in accordance with the historical design and function of that ditch (i.e., the ditch must not be substantially deepened so as to drain additional areas).

- Bank stabilization to prevent erosion where reasonably necessary using best management practices. For maintenance of drainage ditches as defined in this guidance, materials used for stabilization should be compatible with existing bank materials.
- Armoring, lining and/or piping. These activities qualify as maintenance only where a previously armored, lined, or piped section is being repaired and all work occurs within the footprint of the previous work.
- Replacement of existing control structures, where the original function is not changed and original approximate capacity is not increased.

Maintenance is generally viewed as involving activities that keep something in its existing state or proper condition or preserve it from failure or decline. If a drainage ditch has not been serving a drainage function for an extended period of time, drainage ditch re-establishment would be considered construction, not maintenance, and would thus be ineligible for the exemption. However, a ditch that has not been regularly maintained should not automatically be considered ineligible for the ditch maintenance exemption. Some ditches require little or no periodic maintenance to remain functional. Lack of periodic maintenance in these situations does not preclude the ditch from being maintained under the exemption.

**c. The third step is to determine if the Recapture Provision applies:**

Part 1: Is the discharge part of an activity whose purpose is to convert an area of the waters of the U.S. into a use to which it was not previously subject?

The regulations guiding implementation of CWA Section 404(f) specify that a change in use occurs when there is a "conversion of a section 404 wetland to a non-wetland" and in addition "a permit will be required for the conversion of a cypress swamp to some other use or the conversion of a wetland from silvicultural to agricultural use when there is a discharge of dredged or fill material into waters of the United States in conjunction with construction of dikes, drainage ditches or other works or structures used to effect such conversion." 33 C.F.R. 323.4(c).

Part 1 of the test is met if there would be a change of use. For example, any time an irrigation ditch would cut through (or across) a natural or man-altered water body, including wetlands, this would qualify as a change in use and Part 1 of the Section 404(f)(2) test is met.

Part 2: If Part 1 of the test is met, may the activity also impair the flow or circulation of waters of the U.S. or reduce the reach of such waters?

The regulations guiding implementation of the CWA Section 404(f) specify that "(w)here the proposed discharge will result in significant discernible alterations to flow or circulation, the presumption is that flow or circulation may be impaired by such alteration." "A discharge which elevates the bottom of waters of the United States without converting it to dry land does not thereby reduce the reach of, but may alter the flow or circulation of, waters of the United States." 33 C.F.R. 323.4(c).

The determination as to whether construction or maintenance of an irrigation ditch, or maintenance of a drainage ditch, would result in a significant discernible alteration in flow or circulation, or a reduction in reach, of waters of the U.S. should be made on a case-by-case basis using the factors such as the following: (1) whether the proposed construction or maintenance of the ditch would harmfully sever or fragment the wetland or water body; (2) whether the proposed construction or maintenance of the ditch would significantly and discernibly alter flow or circulation or reduce reach through sidecasting into the wetland or waterbody; (3) whether the proposed construction or maintenance of the ditch would harm the wetland or water body by substantially increasing or decreasing water levels; (4) the relative size of the ditch compared to the wetland or water body; and (5) whether the proposed construction or maintenance employs techniques and best management practices designed to minimize impacts and ensure that there is not significant discernible alteration of flow or circulation or reduction of reach.

Because the Section 404(f)(1) exemption for maintenance of irrigation or drainage ditches applies only to maintenance activities that would maintain existing capacity and functionality (not to construction activities), it is unlikely that the recapture provision in Section 404(f)(2) would apply to ditch maintenance activities as defined above. However, if a question arises as to whether ditch maintenance activities would trigger the Section 404(f)(2) recapture provision (e.g., if the maintenance is “incidental” to a larger activity that triggers the provision – see footnote 4 below), this should be evaluated on a case-by-case basis using the factors such as those listed above.

**This recapture provision is a two-part test. If the answers to both parts are “yes,” a (DA) permit is required for the activity. If one part of the test is not satisfied and that activity qualifies for an exemption under 404(f)(1), it is not “recaptured” under 404(f)(2).<sup>4</sup>**

In situations where the potential eligibility of a proposed discharge of dredged or fill material for an exemption under Section 404(f)(1)(C) has been raised to the district, and where the district cannot make a determination due to a lack of pertinent factual information, it is incumbent on those seeking exemption to provide the documentation necessary to establish the facts on a case-by-case basis.

If the proposed activity is not exempt under Section 404(f)(1), the work may be authorized under one or more Nationwide General Permits (NWPs), or under a Regional General Permit (RGP), or pursuant to a Standard Individual Permit. The NWPs can be found at: <http://www.usace.army.mil/cw/cecwo/reg/> and the RGPs can be found on the local Corps District regulatory web pages. Additional guidance on the NWPs/RGPs may be obtained from the local Corps District office.

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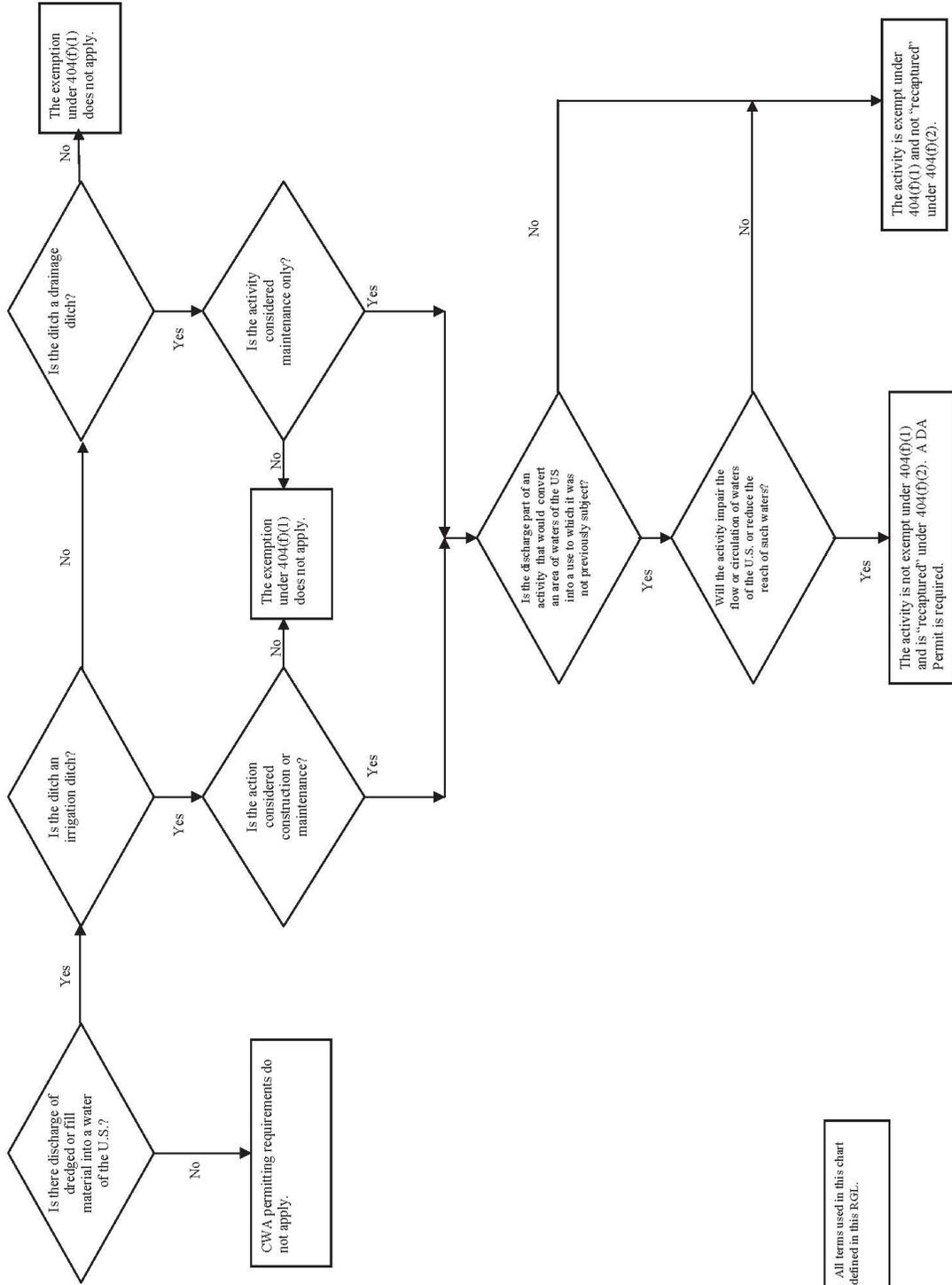
<sup>4</sup>The discharge of dredged or fill material itself does not need to be the sole cause of the destruction of the waters of the United States (e.g., wetlands) or other change in use or the sole cause of the reduction in or impairment of, reach flow, or circulation of such waters. The discharge need only be “incidental to” or “part of” an activity that is intended to or will foreseeably bring about that result.

4. **Duration.** This guidance rescinds and supersedes RGL 87-7. This guidance remains in effect unless revised or rescinded. Additional guidance may be issued in the near future to further define irrigation ditch, drainage ditch, construction, and maintenance.



DON T. RILEY  
Major General, US Army  
Director of Civil Works

**FIGURE 1: FLOWCHART FOR PROCESSING EXEMPTIONS UNDER 404(F)(1) AND 404(F)(2)**



Notes: All terms used in this chart are as defined in the RGL.

# **ATTACHMENT C**

**Contract  
between  
the United States of America  
and  
Orchard Mesa Irrigation District  
for the Operation and Maintenance  
of the  
Orchard Mesa Canal Automation Improvements**

Contract No. 12-WC-40-445

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF RECLAMATION  
GRAND VALLEY PROJECT

CONTRACT  
BETWEEN  
THE UNITED STATES OF AMERICA  
AND  
ORCHARD MESA IRRIGATION DISTRICT

FOR THE OPERATION AND MAINTENANCE  
OF THE  
ORCHARD MESA CANAL AUTOMATION IMPROVEMENTS