

**COLORADO WATER QUALITY CONTROL COMMISSION
STATE OF COLORADO**

WRITTEN TESTIMONY OF THE TOWN OF PALISADE

**IN THE MATTER OF REVISIONS TO REGULATION NO. 33
CLASSIFICATIONS AND NUMERIC STANDARDS FOR THE UPPER
COLORADO RIVER BASIN AND REGULATION NO. 37 FOR THE LOWER
COLORADO RIVER BASIN**

The Town of Palisade (Palisade) submits the following Written Testimony to support its proposal regarding the Lower Colorado Segment 17, Rapid Creek in the Lower Colorado River Basin (Regulation 37).

BACKGROUND

Physiographic Setting

The Palisade watershed is located on the northwest flank of the Grand Mesa with its center approximately 6 miles east-southeast of the Town of Palisade, Colorado (Figure 1). The Palisade watershed area includes approximately 22.9 square miles of terrain extending from the Town water treatment plant near Palisade's lowest diversion point on Rapid Creek, at an elevation of approximately 4,980 ft above mean seal level, to the top of the Grand Mesa encompassing Rapid Creek Reservoirs No. 1 and No. 2 and Palisade Storage Reservoir No. 4 and No. 5 at an elevation of approximately 10,000 ft. Slopes range from less than 4 degrees (6 % grade) to 35 degrees (70% grade). Vertical ledges and cliffs exist in some areas, particularly at the higher elevations where the basalt formation outcrops and caps the Grand Mesa. Most of the terrain in the interior of Rapid Creek Basin is sloped no more than 10 degrees (17 % grade).

The watershed consists of two primary adjoining northwest-trending perennial drainages, Cottonwood Creek and Rapid Creek. Rapid Creek "Basin" qualifies as such because of its broad bowl-like topography that stems from the basalt cliffs that cap the Grand Mesa. Rapid Creek Basin contains several small drainage features that flow approximately 2 miles to the northwest before coalescing to a single, more sharply incised drainage of Rapid Creek at an elevation of approximately 6,800 ft. Conversely, Cottonwood Creek which lies immediately to the southwest of Rapid Creek is identified by a single stream within a much narrower drainage area.

Hydrology

The hydrology of the watershed is characterized by source-water terrain at the highest elevations associated with Tertiary age basalt flows that cap the Grand Mesa; spring discharge areas on the steep and moderately sloped terrain below the mesa's rim associated with basalt rubble, the Tertiary Green River and Wasatch Formations, and prevalent landslide deposits; and the well-developed drainage areas of Rapid and

Cottonwood Creeks in the mid to lower elevations, associated with the Cretaceous-age Mesaverde Group (sandstones, siltstone, and shale).

Conceptually, watershed source water originates as infiltration of precipitation and snowmelt at the watershed's highest elevations. There are no perennial streams that originate and flow from the top of the Grand Mesa to the mid to lower elevations of the watershed. Surface flows do occur from this terrain during runoff events from local, intense thunderstorms and snowmelt periods. As such, the key source waters of the watershed result from discharge of numerous persistent springs located in the mid to upper elevations below the base of basalt (cap) formation. These spring waters have shown persistent flow for many decades and are of exceptional water quality. Rapid Creek and Cottonwood Creek, the two main streams in the watershed exhibit perennial flow in the lower elevations; stream flow in the upper elevations is most common during spring runoff and into mid summer, depending on recent climatic conditions. Discharge quantities and water quality has been maintained to the present day, and has not been interrupted by the minimal construction activities by the Town to develop the water supply system.

Ecology

The ecology of the watershed is quite diverse. Vegetation communities are generally elevation dependent and can be defined from the lower to higher elevations as: sage country (high desert), pinion-juniper woodland, willow-cottonwood (riparian), shrub-mixed conifer-aspen (montane), and spruce-fir (sub-alpine). These zones may overlap within a thousand feet of elevation. General observations indicate that the sage country habitat extends from the lowest elevations to approximately 6,500 ft; pinion-juniper woodland from approximately 6,500 ft to 7,400 ft; shrub-mixed conifer-aspen (montane) from approximately 7,400 ft to 8,400 ft; and spruce-fir (sub-alpine) from approximately 8,400 ft to 10,000 ft. The willow-cottonwood (riparian) community extends over a broader elevation. Cottonwood species, in particular, are more common along the main drainages of Cottonwood and Rapid Creeks in the lower half of the watershed. Upper riparian habitat may see cottonwoods replaced by other species such as river birch and aspen. Note that sage species also exist on portions of the top of the Grand Mesa in open, relatively flat terrain.

Land Use

The Palisade watershed area is relatively pristine in nature. With the exception of structures associated with water supply development, the area is virtually undeveloped and contains no human inhabitants. Land use for the bulk of this area includes the following main categories:

- Watershed management,
- Ranching,

- Wildlife management,
- Minerals management, and
- Recreation and environmental/outdoor education.

Comparatively, watershed management is the most significant land use in the Palisade watershed area. This is apparent by the relatively few public access roads in the watershed area which limits and restricts public use within the watershed boundary, supporting the goal of protecting water resources. The few existing roads experience only limited traffic associated with watershed maintenance and to allow access by adjoining property owners. Historically, the primary access roads are limited to the Rapid Creek Road, the Cottonwood Creek Road, and the “East Basin” Road that accesses the watershed from the Saddleback Ranch area near Barney Hill to the east. Access to the mid to upper elevations of the watershed is gained by way of the “Rapid Creek Basin” Road which branches into several spurs that access springs at the middle to higher elevations. An old 4-wheel drive track, referred to as the Lookout Spring Track, exists in the Rapid Creek Basin extending northward, along contour, from the middle to upper elevation springs and reservoirs in the basin to East Basin Road near the head of Big Wash, south of Chalk Mountain.

The “Lower Basin Road” joins Cottonwood Creek Road to Rapid Creek Road. The road climbs from Cottonwood Creek to just above Cabin Reservoir at the divide between Cottonwood Creek and Rapid Creek drainages. Here, the Rapid Creek Basin Road forks from the Lower Basin Road and trends southeast into the upper part of Rapid Creek Basin. At the intersection of Rapid Creek Road, the Lower Basin Road continues east and southeast gradually climbing up the broad ridge to the head of Big Wash and Tate Creek at an elevation of 7,800 ft. The road continues to the southeast out of the Rapid Creek Basin and serves as the main access road for Saddleback Ranch.

A number of water rights are held by the Town within and outside (Kruzen Springs in the Sink Creek drainage) the watershed. The development of water resources in the watershed can be traced back to the late 1880’s when Norman J. Krusen (Kruzen) filed on the Rapid Creek Ditch and later contracted and built the water system for the City of Grand Junction. Krusen Springs was later named after this pioneer. Approximately 25 springs contribute to the Town’s raw water supply. These springs have been developed over time and structures consist of rough concrete “spring boxes” or collection vaults near the emanation points. Various pipe has been used to convey the captured water to main pipelines and on to storage reservoirs or directly to the Town’s treatment plant. Old wood stave pipe is still present, but not used at some spring sites and is an indicator of the long history of water supply development in the watershed.

Palisade owns seven reservoirs in the watershed two of which are located on the top of Grand Mesa and are not currently operating. With the exception of Cabin Reservoir, most of these storage areas are for seasonal use and do not store quantities larger than 20 acre feet. Cabin Reservoir, expanded and improved to its current configuration in 1982, stores the bulk of water for Palisade with a capacity of approximately 1,020 acre feet.

Table 1 shows the minimum, maximum, and average intake flows for the main water supply structures/sources in the watershed.

Table 1. Summary of Intake Flow Measurements From Cottonwood Creek, Rapid Creek, Kruzen Springs, and the 960 Pipeline (ac-ft/month)

Source	Minimum	Average	Maximum
Cottonwood Creek	0.15	69.4	306.2
Rapid Creek	0.01	27.2	42.7
Kruzen Springs	0.03	11.1	26.6
960 Pipeline	0.94	21.2	114.9

The management of wildlife in the watershed is promoted by the Town on Palisade lands and mostly involves deer and elk habitat conservation through practices that are consistent with watershed protection. Generally these practices involve limiting development, prohibiting hunting and fishing, and attempting to limit or restrict motorized vehicle access. Partial winter road openings have resulted in vandalism of fences and gates. Deer, elk, bear, mountain lion, turkey and other fowl thrive in the watershed

On BLM lands, wildlife has been managed in cooperation with the Colorado Division of Wildlife and U.S. Fish and Game agencies. No official BLM roads are designated as “public access roads”, and consequently lands below the rim of the Grand Mesa in the watershed have seen very little big game hunting. BLM has stated in the *Watershed Plan for the Town of Palisade and City of Grand Junction* that, where practicable, energy development activities will abide by the Colorado Wildlife Federation Guidance for Oil and Gas Development (August 2006). The BLM leasing process also mandates that operators coordinate their activities with the Colorado Division of Wildlife and leases will contain specific wildlife stipulations.

Historically, the most common past minerals management activity in the watershed includes coal and oil and gas, and are most likely to show renewed activity in the future. Two gas wells have been drilled in the watershed in the past. Both wells are located in Section 26 T11S, R97W. Well Lands End Unit #1 was drilled to a total depth of 2,755 f in 1979, and Well Sommerville #1 was reportedly drilled to a total depth of 10,064 ft in 1981; both wells have been abandoned. Underground coal mining at the Cameo Mine, just east of the town of Palisade, was active until approximately 2000 when the mine was shut down due to uneconomical mining conditions. ■

Recreational (hiking, mountain biking and horseback riding) use in the watershed area is considered to be of low frequency and is limited to probably less than 100 user days per year. Trail systems are few in number and currently see minor amounts of traffic. Hunting, shooting, camping, and fishing are not permitted in the watershed. Mountain biking and equestrian use within the watershed district is allowed only on designated routes and the Cotton Creek Road.

In close proximity to Grand Junction, the diverse ecological life zones and habitats and the general pristine and natural character of the watershed present good opportunities for future scientific and educational use purposes.

WATERSHED PROTECTION EFFORTS

In the first half of the twentieth century, the Town was granted the right to control access on the watershed by the Federal Government Representative Wayne Aspinall was a resident of Palisade and a strong advocate of the protection and control of water, especially in the west. To strengthen its source water protection efforts, the Town of Palisade passed a Watershed Protection Ordinance in 1997. A complete copy of the ordinance is included in this packet of supporting material as Attachment 2. Using the authority granted by Congress and by the Town's own ordinance, public access to the watershed has been restricted to ensure the pristine nature of the resource. Hiking, horseback riding and mountain biking are permitted. Hunting, fishing, motorized vehicles of any type are prohibited. Since 2002, grazing has not been allowed on the watershed and is listed among a variety of activities requiring a permit from the Town Board. The Colorado Department of Public Health and Environment conducted a Source Water Assessment and provided a report to the Town in 2004 (Attachment 3). Water and its beneficial use have a long history in Palisade and protecting and maintaining its quality is a priority for the citizens of the Town.

In 2006, the Bureau of Land Management (BLM) made available approximately 12,000 acres of land either directly in or adjacent to the Town's watershed for mineral leasing with the intent of developing natural gas resources. The leases were bid and the highest bid was made by Genesis Gas and Oil out of Kansas City, Missouri. Due in part to protests by the Town and others, the BLM delayed final award of the leases for one year in an effort to create a Community Plan of Development with the leaseholder and the affected landowners and governing bodies. The Town and other stakeholders such as Mesa County and the City of Grand Junction participated in this process and as a result, the Town was able to obtain funding from a grant and the leaseholder to conduct extensive water quality and water quantity studies within the watershed. Much of the data presented in the following summary is a direct result of the study conducted by Western Water and Land. These protection efforts are on ongoing.

Drinking Water Treatment

The Town of Palisade owns and operates a drinking water treatment facility located within the Rapid Creek drainage. The facility is operated under Public Water Supply Identification Number (PWSID) CO-0139600. The plant is approximately two miles to the east of the Town and approximately one mile below and to the west of the confluence of Rapid Creek and Cottonwood Creek. The proposed change in stream

classification to outstanding water is from a point immediately above the confluence of Rapid Creek and Cottonwood Creek, upstream to the point of origin of Rapid and Cottonwood Creeks.

The plant has a treatment capacity of two million gallons per day and has a treated water storage capacity of two and a half million gallons. Raw water is diverted to the plant through two primary pipelines, one in the Rapid Creek drainage and one in the Cottonwood drainage. Sources of supply are various spring boxes, creek intakes and a terminal storage reservoir, Cabin Reservoir. Cabin Reservoir has a storage capacity of approximately 1,000 acre feet of water.

Due to the extremely high quality of the source water, the treatment processes within the treatment plant are very simple and fundamental. Raw water is supplied to the plant by gravity. There are two micro-filtration filtering processes with a capacity of one million gallons per day each. The raw water passes through a 200 micron screen at each of the skids before passing through the 0.1 micron cartridge filters that make up the micro-filtration process. Both the screen and the micro-filters back-flush automatically for cleaning purposes each day. There are 2 levels of higher cleaning that are performed on the micro-filters, enhanced filter maintenance and a clean in place. Due to the very low turbidity of the raw water supply averaging less than 0.3 nephelometric turbidity units (NTU), cleanings are done based on the number of gallons treated by the filter units. No cleaning has ever been performed due to a reduction in the performance of the filters as measured by trans-membrane pressures (TMP).

As the filtered water exits the filters with an average turbidity less than 0.02 NTU, fluoride is added to promote healthy teeth and chlorine in the form of sodium hypochlorite is added as a primary disinfectant. The water is then stored in the storage water and metered as it enters the distribution system. Online process monitors track turbidity, pH and chlorine residual throughout the process. CDPHE regulations mandate monthly and quarterly testing for contaminants. Results of these tests indicate our raw water is extremely low in contaminants and minimal treatment processes are required to meet and exceed State standards.

Water that is utilized during the cleaning cycles is stored in ponds and pumped back to the plant and re-enters the treatment stream on the influent side of the filters as reclaimed water. Water wasted during the cleaning cycle is metered and averages 2.6% of the total treated water produced by the plant. This is approximately half of the national average of 5%.

WATER QUALITY DATA

Water quality data has been collected in the watershed over the years by various investigators and the Town. The bulk of the data has been collected as part of hydrological studies being conducted by Palisade in anticipation of potential gas drilling in the watershed. As part of these studies, a baseline sampling program was initiated in

the spring of 2007. Twenty-six sampling sites were identified for the baseline program and have been sampled in May, August, and November, 2007. An extensive analyte list is associated with this baseline program, including common ions and parameters, metals, inorganic, and organic compounds.

The extensive amount of information prohibits presentation of the data in this statement and a summary is included as Attachment 1. The full data set will be available on line at the Town's website: townofpalisade.org

CONCLUSION

The Town of Palisade proposes that the Water Quality Control Commission designate Lower Colorado River Segment 17 as Outstanding Waters (OW) based on the existing quality of water that exceeds Table Value Standards and "exceptional ecological significance" of this water supply to the Town of Palisade. This high quality source water requires only minimal treatment in terms of cost to the residents of Palisade. Protection of this water quality is imperative in order to continue to provide a drinking water free of pollutants at a low cost to the present and future residents of Palisade. In addition, surface waters of this quality and quantity are not common in western Colorado; the Grand Mesa is the western-most significant source water area between the central Rocky Mountains and eastern Utah. These waters support fish and other aquatic life presently and should be given additional protection to support aquatic life into the future. These waters meet all the requirements for this designation based on Commission Regulations 31.8(2)(a). Furthermore, the evidence demonstrates that the existing land uses are compatible with the OW designation since the current high level of water quality has been attained with these uses in place. It is the Town's intent that this OW designation should not be used to establish additional permit requirements for existing uses within this area.