

descriptions of boundaries of designated critical habitat):

a. Jemez Canyon Reach—5 mi (8 km) of the Jemez River from the Jemez Canyon Dam to the upstream boundary of Santa Ana Pueblo, which is not included. This reach of river is manipulated by releases from Jemez Canyon Dam. Releases from this reservoir are determined by downstream needs and flood events occurring in the Jemez River. Silvery minnows historically occupied this reach of the Jemez River and have recently been collected there (Sublette *et al.* 1990; Corps 2001). The water within this reach is continuous to the confluence with the Rio Grande and currently contains the primary constituent elements (described above) during all or a part of the year. Although this reach currently provides suitable habitat for the silvery minnow, we believe that it is important to ensure that special management actions are implemented within this river reach. We also conclude that this area is essential to the conservation of the silvery minnow, because the additional loss of any habitat that is currently occupied could increase the likelihood of extinction (Hoagstrom and Brooks 2000, Service 1999). Moreover, if the species or habitat were severely impacted within this reach, the continued existence of silvery minnows in downstream reaches would be affected (*i.e.*, the extirpation of fish within this reach would create a very unstable population within the downstream reaches). Thus, we designate the upstream section of the Jemez River as critical habitat for the silvery minnow.

b. Cochiti Reservoir Dam to Angostura Diversion Dam (Cochiti Reach)—21 mi (34 km) of river immediately downstream of Cochiti Reservoir to the Angostura Diversion Dam, not including the lands of Santo Domingo Pueblo. This reach is somewhat braided and is dominated by clear water releases from Cochiti Reservoir (Richard 2001). Since Cochiti Reservoir was filled, the downstream substrate has changed from a coarse sand to a gravel/cobble/sand substrate (Hoagstrom and Brooks 2000; Baird 2001; Richard 2001). Silvery minnows were collected immediately downstream of Cochiti Dam in 1988 (Platanía 1993). Although the Cochiti reach has not been monitored since the mid-1990s (Platanía 1995; Hoagstrom and Brooks 2000), it is believed that silvery minnow may still be present within this reach, but reduced in abundance (*e.g.*, Dudley and Platanía 2002a). For example, silvery minnows were documented near the Angostura Diversion Dam in 2001 (Platanía and

Dudley 2001, 2002a; Service 2001c). In this reach, water releases from Cochiti Reservoir have scoured sand from the stream channel and reduced the downstream temperatures (Bestgen and Platanía 1991; Platanía 1991; (July 20, 1994) 59 FR 36988; Service 1999; Hoagstrom 2000). These effects (*e.g.*, low water temperatures) may inhibit or prevent reproduction among Rio Grande Basin cyprinids (minnows) (Platanía and Altenbach 1998), but it is unknown if water temperatures have affected silvery minnow reproduction within this reach. Although reservoirs can modify river flows and habitat (*e.g.*, the downstream river reaches have increased in depth and water velocity) (Hoagstrom 2000), we believe this river reach is essential to the conservation of the silvery minnow because we believe it is still occupied by the species and contributes to its survival in downstream reaches (because the eggs and larvae of the silvery minnow drift in the water column and may be transported downstream depending on river flows and habitat conditions). We reviewed aerial photographs from 1997 and other information, and have determined that the river through this reach is braided in areas and contains many side channels (*e.g.*, Richard 2001). We also spoke with the Corps and have concluded that there is a high potential to increase the amount of suitable habitat (*e.g.*, debris piles, low velocity backwaters, side channels) within the entire reach, but particularly in the proximity of the confluences of Galisteo Creek and the Rio Grande and the Sante Fe River and the Rio Grande (D. Kreiner, U.S. Army Corps of Engineers, pers. comm. 2001). Thus, we conclude special management is needed in this reach. We conclude that this area contains suitable habitat for the silvery minnow and contains the primary constituent elements (described above) during all or part of the year. Therefore, this reach is designated as critical habitat.

c. Angostura Diversion Dam to Isleta Diversion Dam (Angostura Reach)—38 mi (61 km) (of river immediately downstream of the Angostura Diversion Dam to the Isleta Diversion Dam, not including the lands of Santa Ana and Sandia Pueblos. Silvery minnows and suitable habitat are still present throughout this reach of the river, although their abundance appears to be low (Dudley and Platanía 2001, 2002a, 2002b; Service 2002). This reach is relatively wide at 183 m (600 ft) and the substrate is mostly coarse sand to gravel (Baird 2001). The river bank within this reach is dominated by bank stabilization

(*e.g.*, jetty jacks), which has led to the floodplain being predominantly disconnected from the river. Bank stabilization devices and other flood control operations (*e.g.*, channelization) have led to flows that seldom exceed channel capacity, such that the river dynamics that likely provided backwater habitat for the silvery minnow no longer function naturally. These river processes historically shaped and reshaped the river, constantly redefining the physical habitat and complexity of the river. Historical large flow events allowed the river to meander, thereby creating and maintaining the mosaic of habitats necessary for the survival of the silvery minnow and other native fish (Middle Rio Grande Biological Interagency Team 1993). We conclude that the creation and maintenance of these habitats is essential to the conservation of the silvery minnow. We believe that special management is necessary in this and other downstream reaches within the middle Rio Grande to create and maintain the habitat complexity (*e.g.*, backwater areas, braided channels) that was historically present but may not be currently present in these river reaches. This reach currently contains the primary constituent elements (described above) during all or a part of the year. Thus, we designate this reach as critical habitat.

d. Isleta Diversion Dam to San Acacia Diversion Dam (Isleta Reach)—56 mi (90 km) of river downstream of the Isleta Diversion Dam to the San Acacia Diversion Dam, not including the lands of Isleta Pueblo. The river bank within this reach is also dominated by bank stabilization (*e.g.*, jetty jacks), and the floodplain is predominantly disconnected from the river. The substrate is mostly sand and silt and there are many permanent islands within the river channel (J. Smith, pers. comm. 2001). This reach provides continuous water flow in most years with infrequent periods of low or no flow (Service 2001b). Nevertheless, flows vary markedly in magnitude, from high spring to low summer flows. The variable flow regime is a result of irrigation demand, irrigation returns (*e.g.*, augmented flow), precipitation, temperature, and sediment transport. This reach also contains numerous arroyos and small tributaries that provide water and sediment during rainstorm events, which may periodically augment river flows (Service 2001b; J. Smith, pers. comm. 2001). Silvery minnows and suitable habitat are still present throughout this reach of the river; however, abundance