THE UPPER PROVO RIVER.

1. Heading in the mountains that divide the Provo drainage from that of the Weber, Bear, and Duchesne watersheds, the Provo flows in a general southwesterly direction some 36 miles through the mountains, and Woodland bottoms where it enters the Heber or Provo Valley; thence it bears almost due south about 11 miles across the Heber Valley again enters the mountains and through the Provo Canyon into the Utah Valley. In the first 19 miles it receives the following: tributaries, Soapstone joining about 10 miles below the head; North Fork about 14 miles; Shingle Creek about 15 miles; South Fork about 18 miles and Little South Fork about 19 miles below the head; these last two joining near the Stewart Ranch, they are the principal feeders. There are some minor ones below; namely: Bench Creek, Bridge Hollow, and Webb Hollow. The tributaries Soapstone, North Fork, Shingle Creek, South Fork, and Little South Fork contribute water the entire year. The waters of Bench Creek, Bridge Hollow and Webb Hollow do not reach the river during the low water season being diverted on the lands above.

2. Along the river between the Head of the Heber Valley and Stewarts Ranch some 20 miles, farming is carried on; above Stewarts Ranch there is no land cultivated.

3. Heber Valley comprises an area of approximately 24,000 acres, and is about eleven miles long North the South. The larger cultivated area is on the east side of the river. The soil on this side of the river is principally a gravelly and sandy loam with a coarse gravel sub-soil. A large portion of the cultivated area on the west side of the river is underlaid with

pot rock very close to the surface is some places being exposed. The slope is toward the river from both sides and to the south. The principal crops are hay and grain.

4. The Wasatch dam may properly be considered as the head of the Heber Valley; between this point and Stewart's Ranch about 20 miles are numerous farms scattered along the river bottoms; I have no definate knowledge of the area of cultivated land between these points; it is about 2,000 acres devoted almost entirely to meadow hay. The soil is similiar to that of all our canyon valleys, being coarse and gravelly.

5. Some 2,500 acres of cultivated land on the Kamas Bench is irrigated from the Provo River. The soil is similiar to that of the Heber Valley; the principal crops are hay and grain.

6. The fact probably has been clearly established that irrigation in the Utah Valley is dependent on that of the Heber Valley is also true of the Heber Valley getting the benefits from irrigation on the lands above. Unfortunately the press of other work this season would not permit of any extensive work being done to determine the amount of this seepage return to the river before it reached the Heber Valley.

7. Of the water applied on the bottom lands and upon the lands under the Sunrise canal, the larger portion probably returns to the river. This may not be true of the water applied on the Kamas Bench by the Washington and South Kamas canals, as this bench is between the Provo and the Weber and it is my opinion that some of the seepage return from these lands goes to the Weber.

8. Investigations should be made to determine

the portion of seepage from the lands under these canals to the Provo River. The amount of seepage return from the entire farming district above the Heber Valley approximated 16 second feet in August this year.

9. There are two power plants on the river in the district; the Murdock plant of the Utah Power & Light Company and the plant of the Heber Light & Power Company. The Murdock plant is located some 8 miles above Heber and taps the river with a wooden stave pipe line about 3½ miles in length. Water for this pipe line is diverted by means of a concrete dam. The pipe line is in good condition and no water is wasted between the intake and the point of return.

10. The plant of the Heber Light & Power Company is about 4 miles above Heber and diverts water from the river about one mile above. This water is conveyed by a canal and a rectangular wooden flume. The flume is in very bad repair and allows considerable leakage before it reaches the plant. This leakage from the flume varies as the volume of the water conveyed is increased or decreased but the minimum is at least 5 second feet. This season this water was collected into two streams and taken to the river.

11. The principal canals diverting water from the Provo in the Wasatch divisions are the Wasatch, North Field, Timpanogos, South Kamas, Washington and Sunrise. Of these the Wasatch is the largest with a maximum capacity in 1915 of 111 second feet. This canal diverts water from the river at the Wasatch Dam about 4 miles north of Heber and flows in a generally south-easterly direction along the east side of the Heber Valley 7 miles. This canal supplies the water used for irrigation in the town of Heber. The area now

irrigated is reported to be 2500 acres. The Wasatch Extension conveys its water through this canal.

12. The North Field canal also diverts water at the Wasatch dam. The 1915 capacity was 105 second feet. It flows almost due south and irrigates what is locally known as the "North Field" some 3000 acres devoted to meadow hay. When haying begins which is usually about July 25th the water is shut off the field until the crop is up.

13. The Timpanogos canal draws its water through the flume of the Heber Light & Power Company. This canal flows south-east along the east side of the valley at a higher elevation than the Wasatch canal. There is reported 2000 acres under this canal. The 1915 capacity was 70 second feet.

14. The South Kamas and Washington canals divert water from the river at Woodland, 20 miles above Heber and flow north-westerly. This water is carried to the Kamas Bench. I have no definate knowledge of the amount of land under these canals; it is reported 2500 acres. The 1915 capacity of the South Kamas canal was 35 second feet; that of the Washington was 30 second feet. Under the terms of the "Fulton" decree a waste ditch has been constructed to carry the waste water from the lands under these canals back to the Provo River.

14. The Sunrise Canal taps the river about 3 miles above Woodland and carries water on to what is locally known as the "Bench". There is reported 500 acres on this bench. The approximate capacity of the canal is 15 second feet.

15. The balance of the diversions in this district are small and have not been accustomed to rotation by

schedules. An attempt was made to have water taken from all these small diversions on rotation or schedule this season; in some instances the owners did not care to adopt this system. These that adopted this method found it much more satisfactory than trying to irrigate with a small stream flowing constantly.

16. In cases where the amount of water alloted under the Fulton decree is small and it is impractible to use this small amount as continous flow. These small diversions tapping the river are a constant source of trouble in their present condition; regulation of them is almost an impossibility, because of the fact that most of them divert water from the stream by means of brush and straw dams and have no headgates in the ditches to regulate the discharge.

17. The Wasatch Division from Heber to the head of the river is about 40 miles. There are a total of 52 diversions; these are in the first 20 miles above Heber. To cover this district and maintain proper regulation of all diversions in their present condition is nearly an impossibility; Installation of headgates and a method of transportation will greatly aid in bringing satisfactory results.

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