RESERVOIRS

Brian Henderson-Sellers

Department of Civil Engineering University of Salford

support of so-1 this add to of the board builder of



Contents

Prej	face	ix
4ck	cnowledgements	х
1.	Introduction: Storage of Water for Potable Supply	1
	Small Communities and Water Supply–Large Communities and Water Supply–Water Consumption–Sources of WaterSummary	
2.	The History of Water Supply	11
	Dams in History–Water for Transport–Water for Power–Water Supply–Upland and Lowland Reservoirs–Alternatives for the Future–Summary	
3.	Reservoir Size	20
	Data and Extrapolation-Synthetic or Design Drought-Mass-curve Technique-Summary	
4.	Dam Design	32
	Geological Survey-Types of Dam-Overflows-Erosion-Summary	
5.	Economics	42
	Costs and Benefits-Running Costs-Metering-Consumer Surplus and Marginal Utility-Summary	
6.	Management of Reservoirs	51
	Supply Networks—Distribution Problems—Local Distribution— Summary	
7.	Temperature and Current Structure	59
	The Thermocline-Annual Stratification Cycle-Diel Variation- Temperature Structure-Surface Energy Budget-Current	

viii	CONTENTS		
8.	Biochemical Cycles and the Quality of Stored Water	2	72
	Chemical Properties of Water-The Role of Oxygen-D and Re-aeration-Nutrients-Nitrogen and Phosphorus Eutrophication and Some Remedies-Summary		
9.	Freshwater Ecology	â	80
	Ecosystems-Fish and Other Consumers-Photosynthe Bacteria-Water Quality-Summary	tic Plants-	
10.	Numerical Modelling		90
	A Numerical Model-Types of Model-Finite Difference Simulations-Programming-Summary	es—Lake	
11.	Flood Routing through Reservoirs	1	01
	Flood Attenuation-Hydrographs-Flood Routing-Nu Example-Summary	merical	
12.	Water Quality, Treatment, Conservation and Re-use	1:	10
	Water Quality-Water Treatment-Water Conservation- Re-use-Summary	-Water	
Bibl	iography	11	16
Glossary of Terms			19
Inde		mmuk-susanian 12	23