

付 図

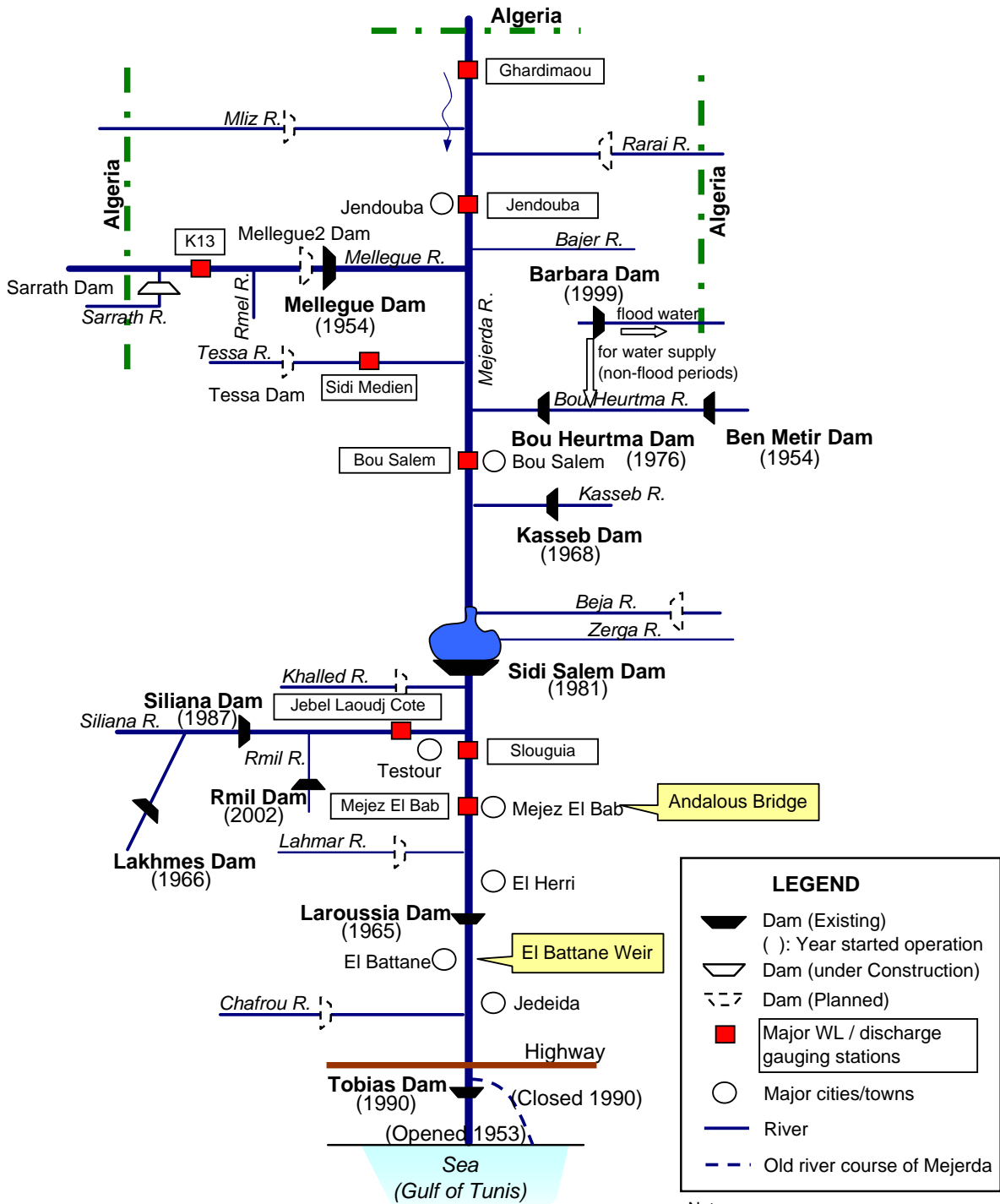


図4.1.1 主な流量観測所、支川、ダム、都市の位置

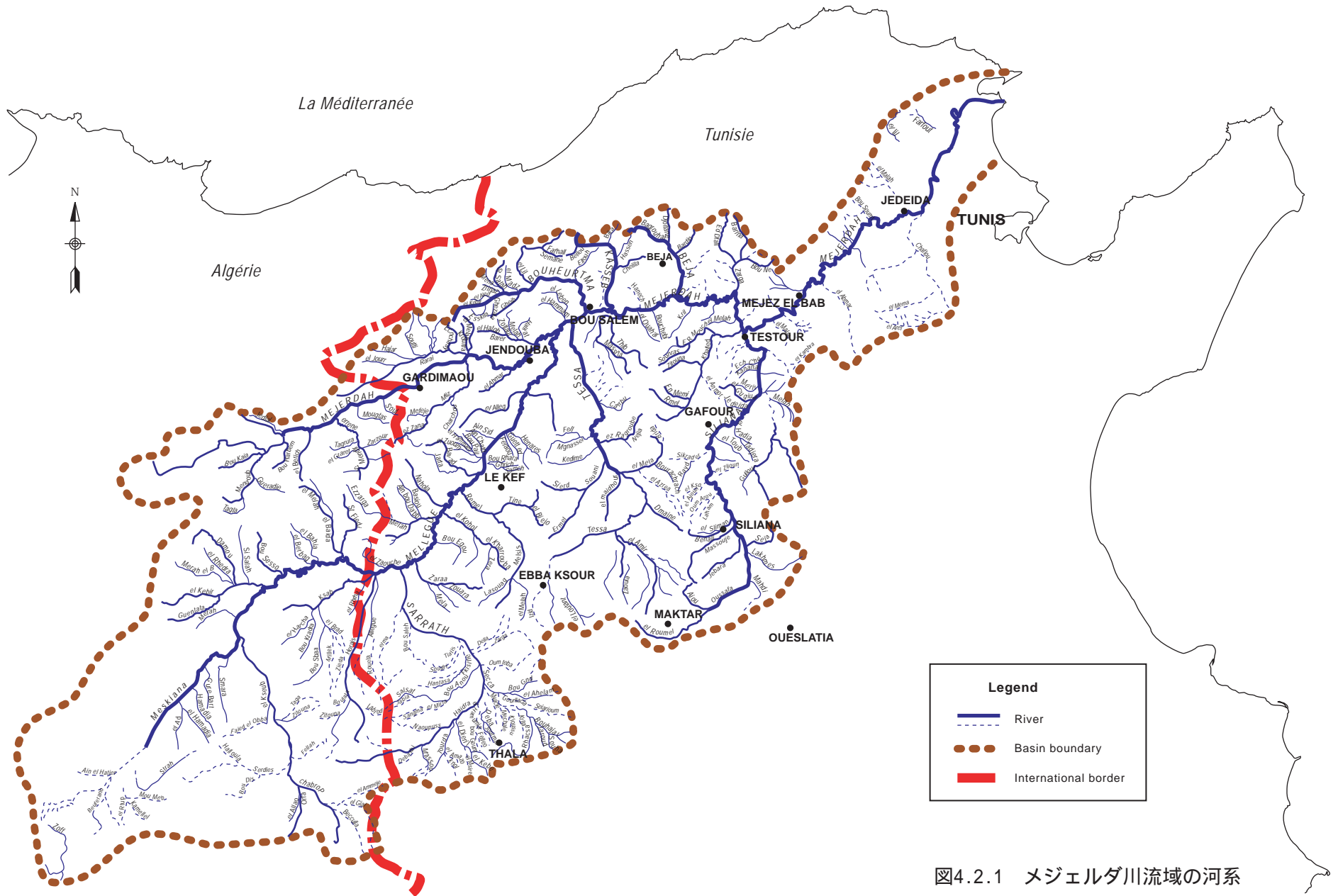
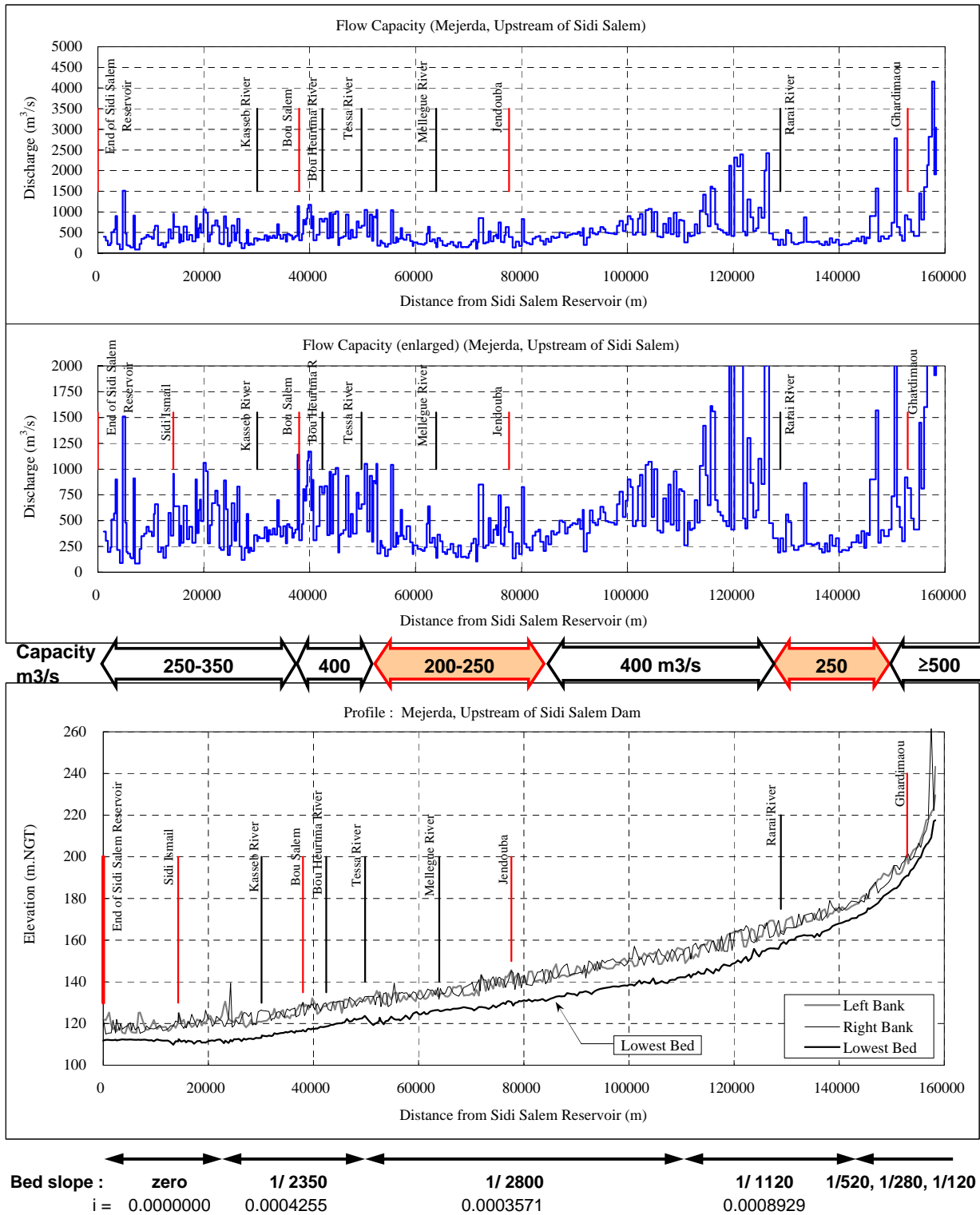


図4.2.1 メジェルダ川流域の河系



Topographic Survey Applied : Survey in 2007 by JICA Study Team

図4.2.2 現況の河道縦断および通水能力（メジェルダ川、シディサレムダム上流）

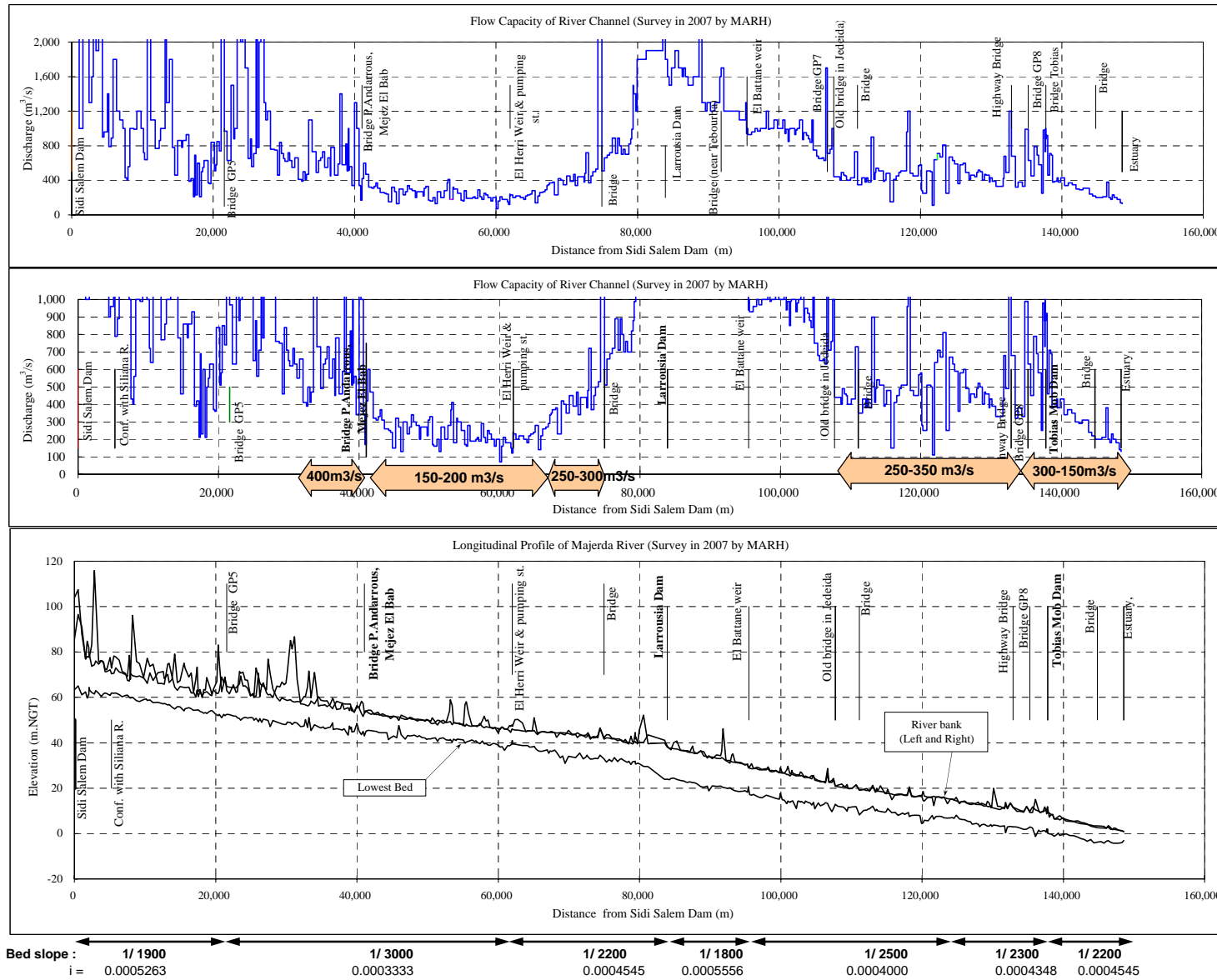


図4. 2. 3 現況の河道縦断および通水能力 (メジェルダ川、シディサレムダム下流)

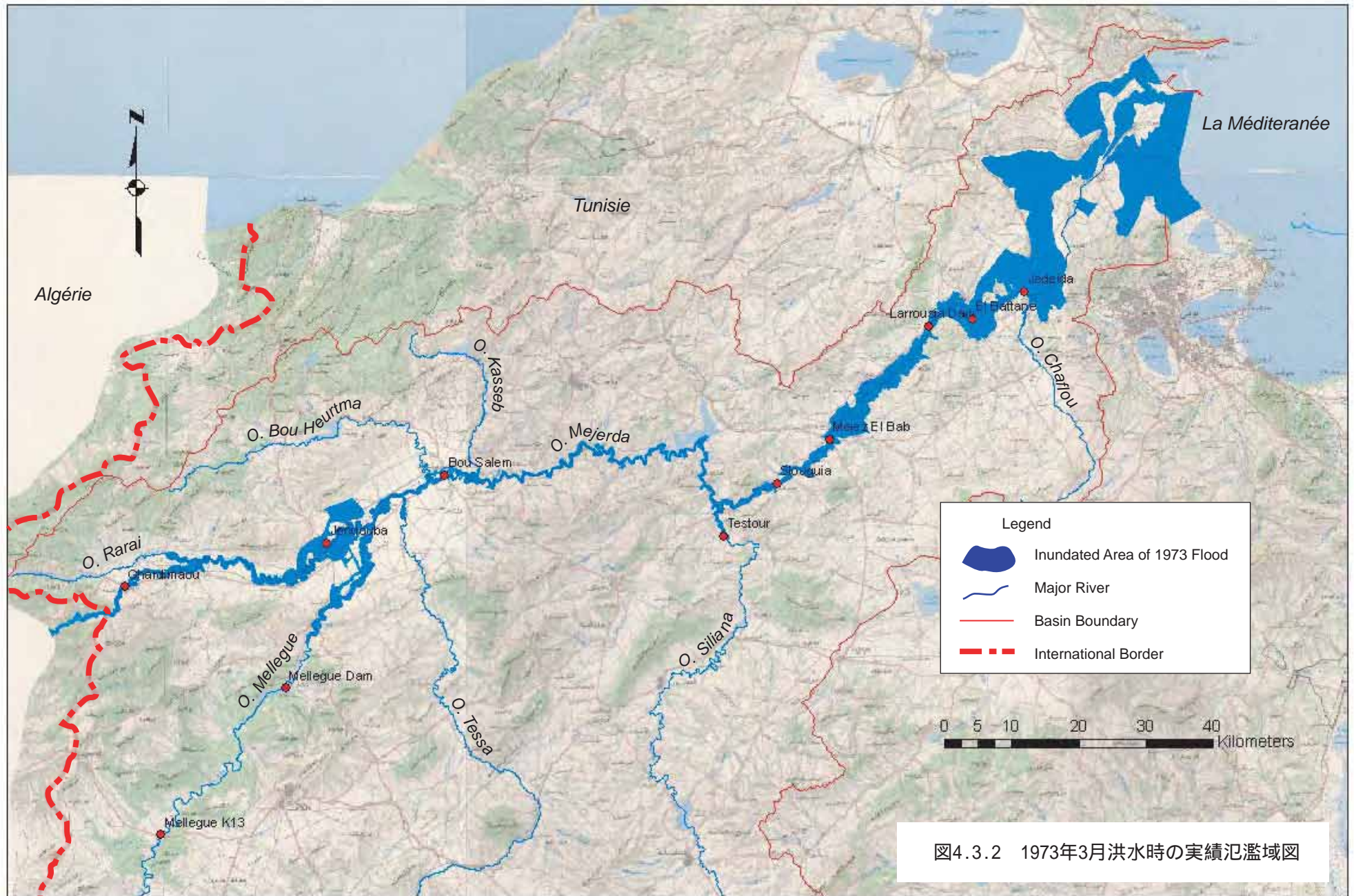


図4.3.2 1973年3月洪水時の実績氾濫域図

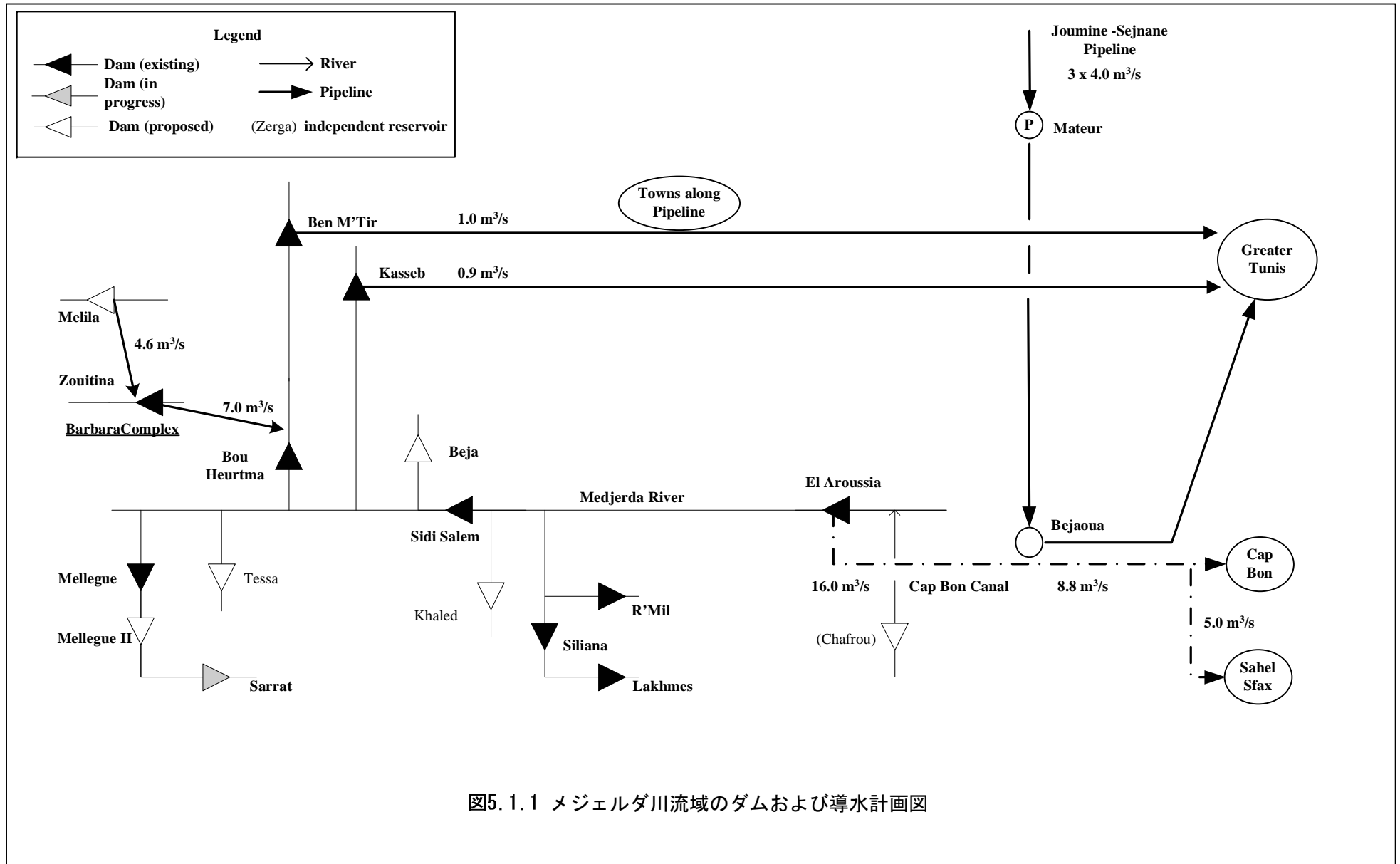


図5.1.1 メジェルダ川流域のダムおよび導水計画図

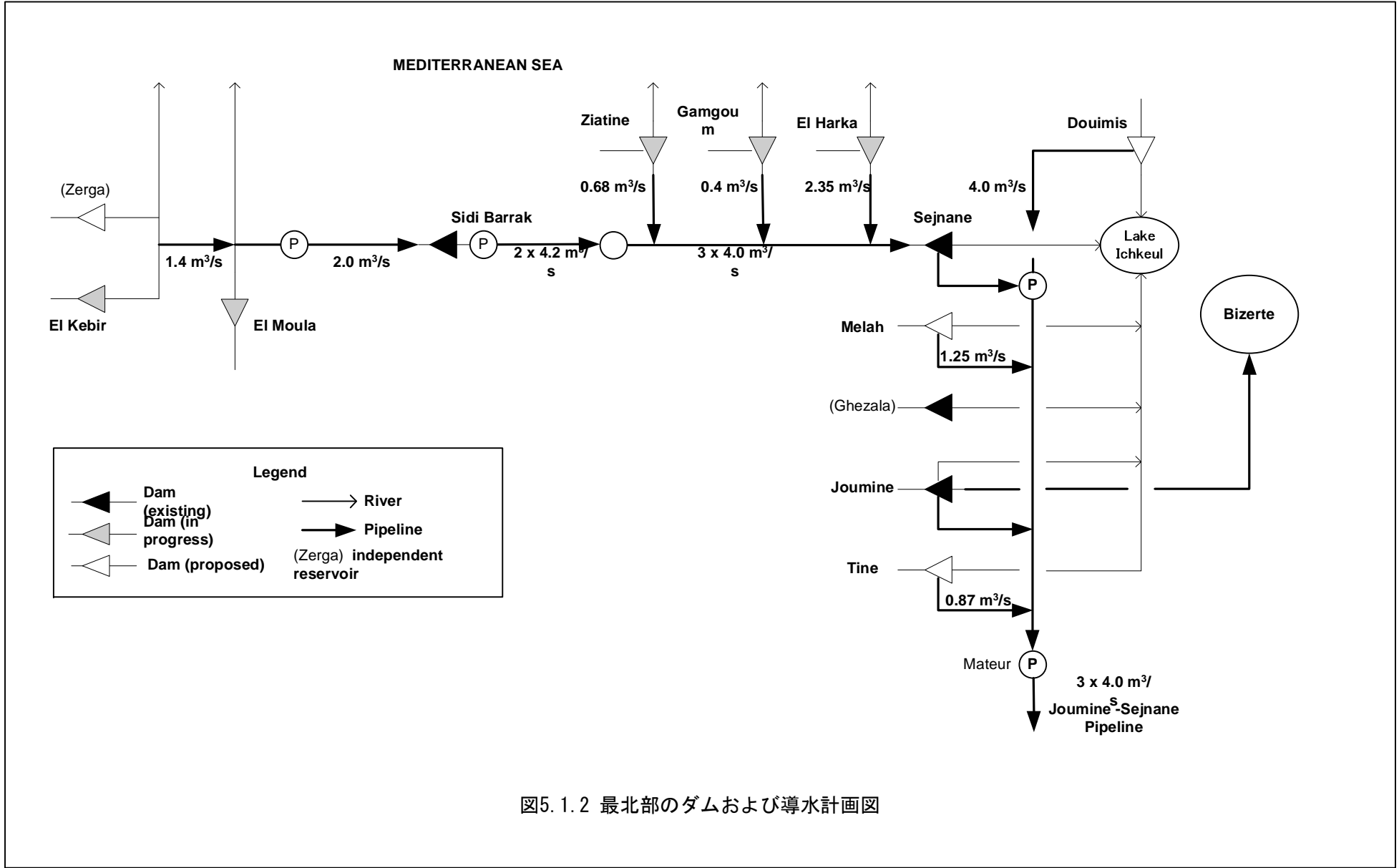


図5.1.2 最北部のダムおよび導水計画図

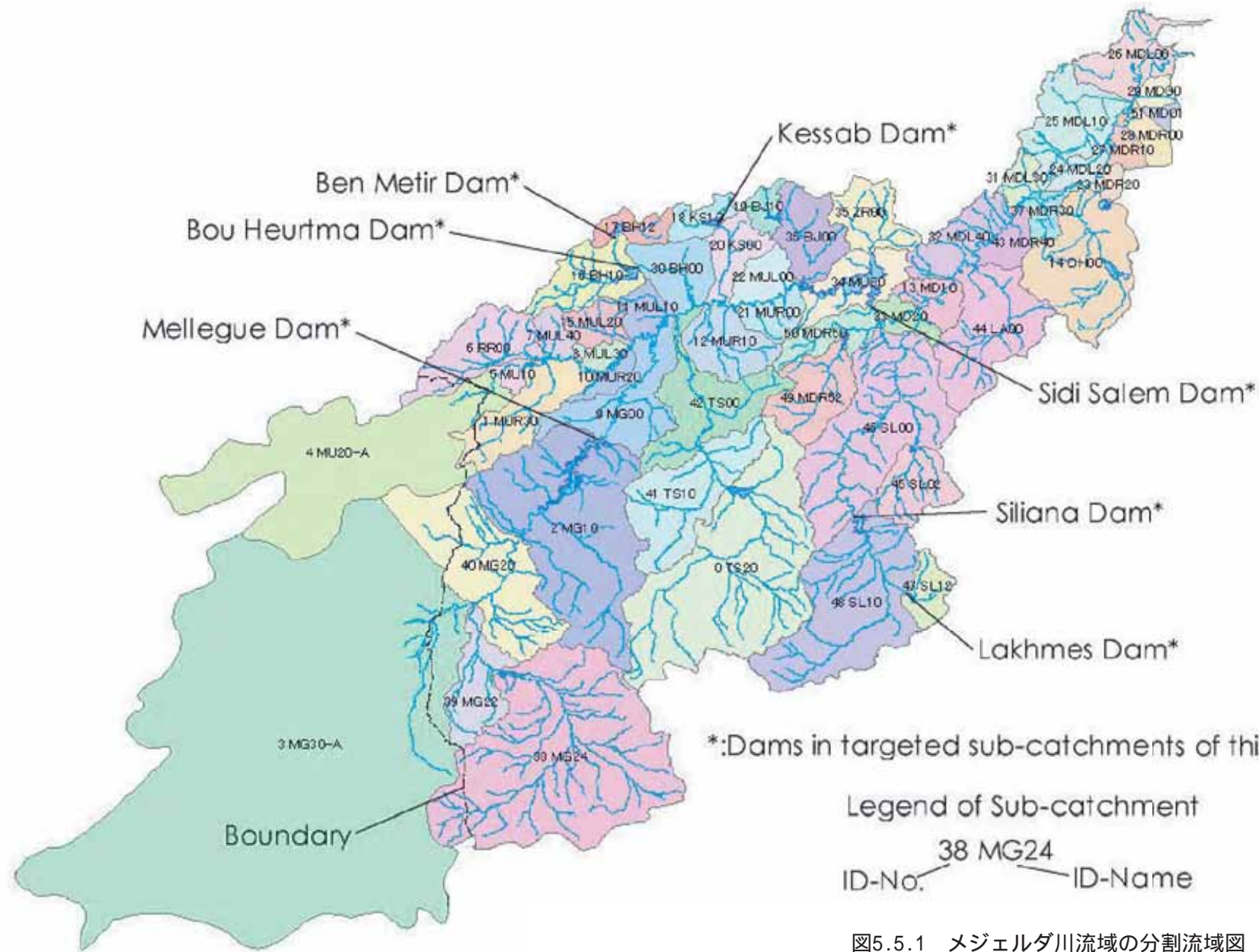


図5.5.1 メジェルダ川流域の分割流域図

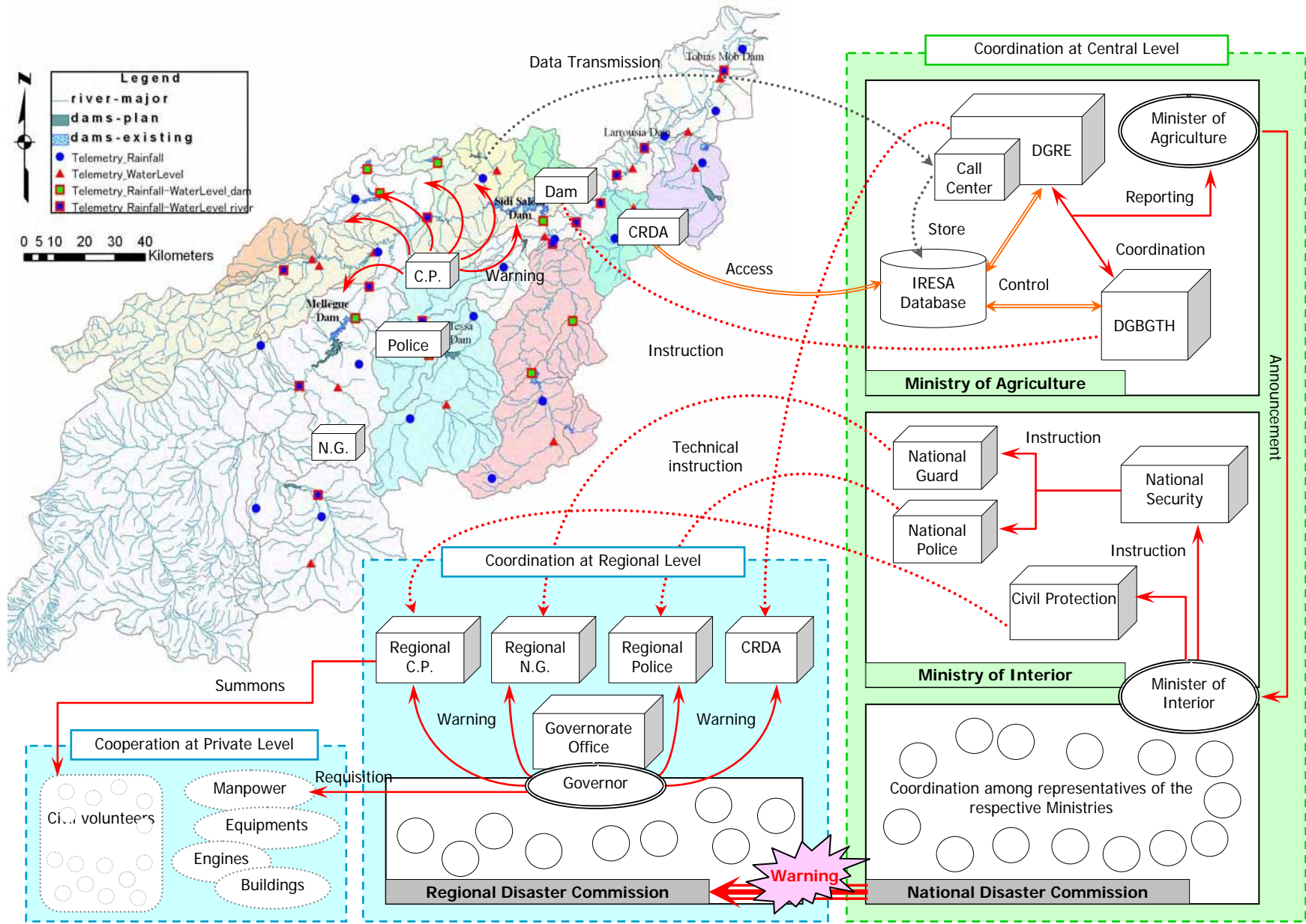


図5.6.1 メジエルダ川流域の洪水予警報システム

Source: Interviews with MARH

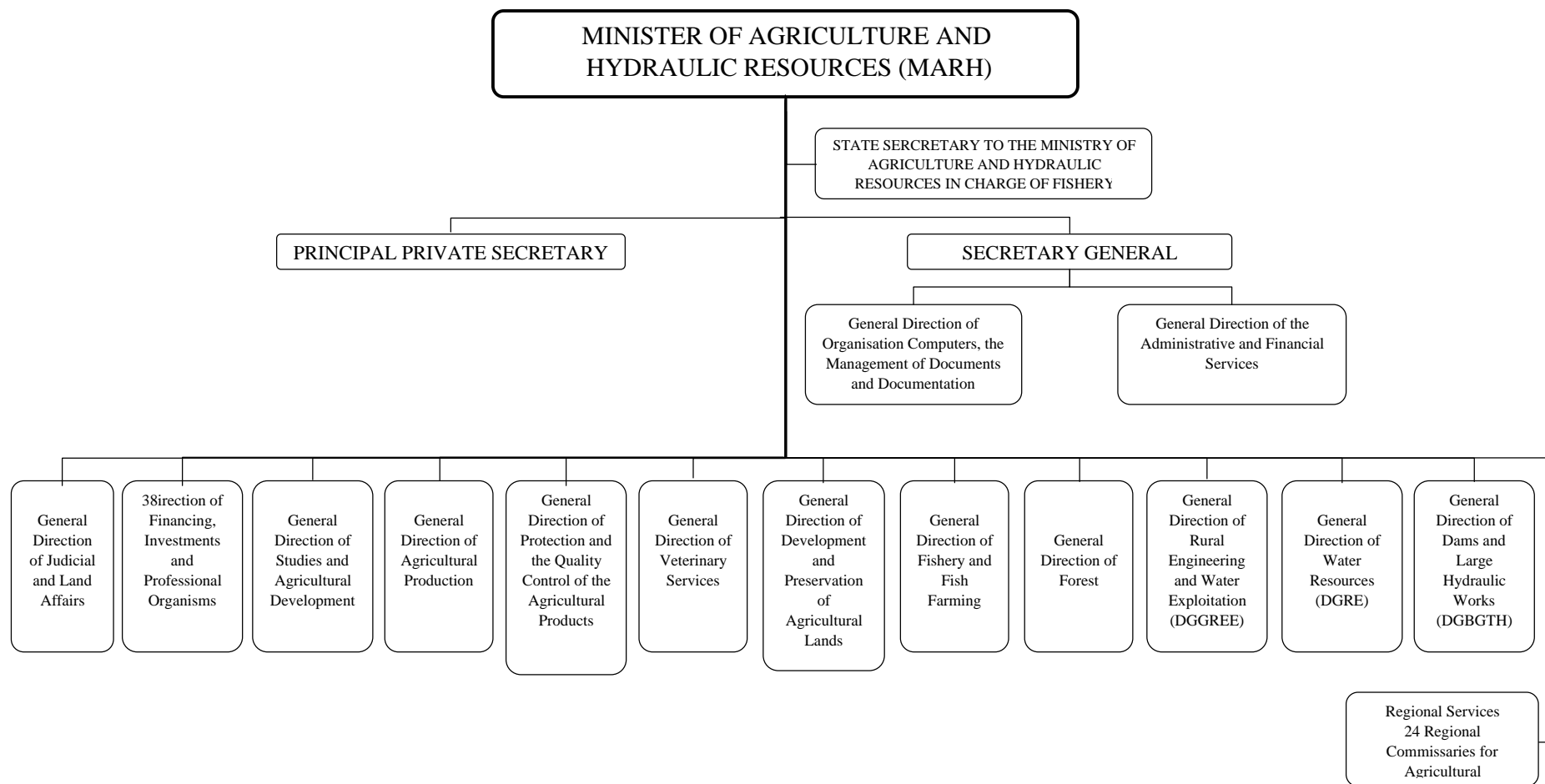
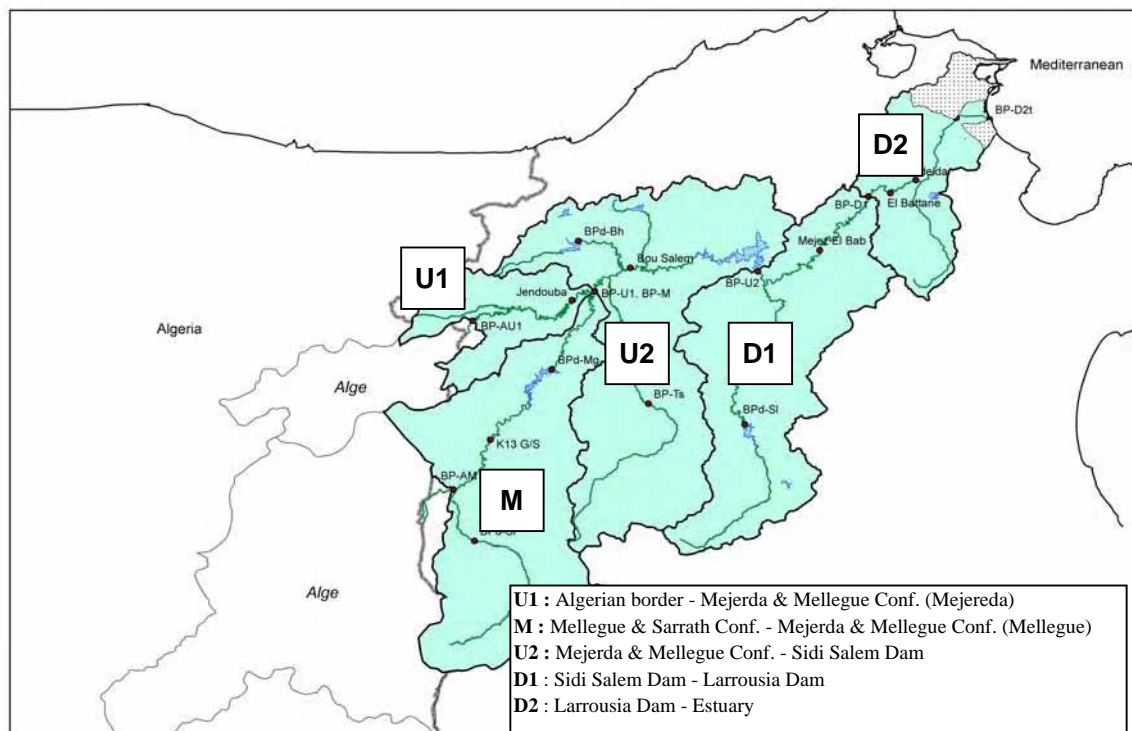


図5.8.1 農業・水資源省の組織図



Overall Division of Study Area for Flood Control Planning

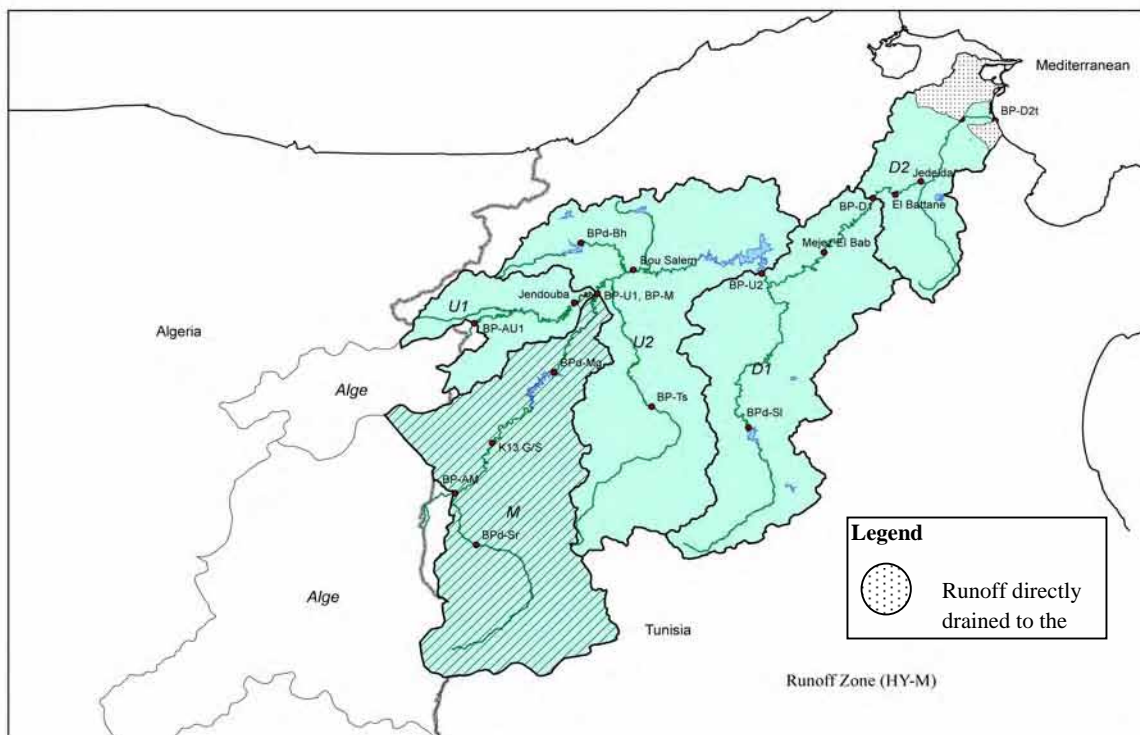
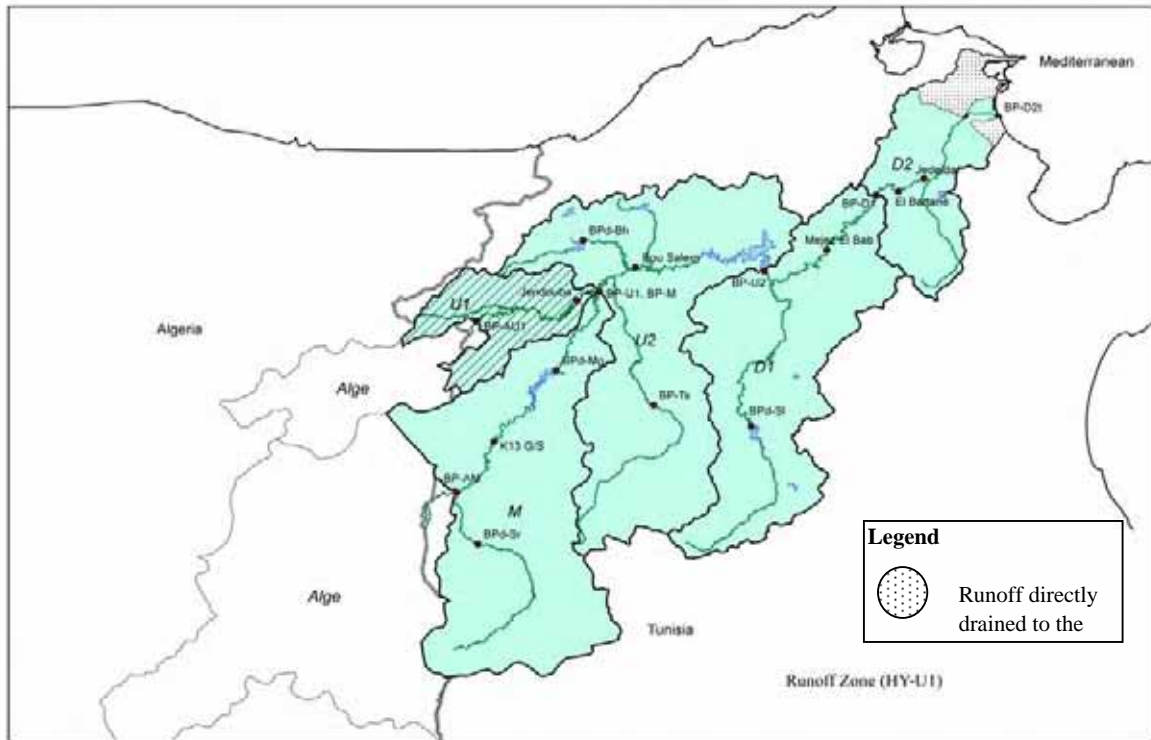
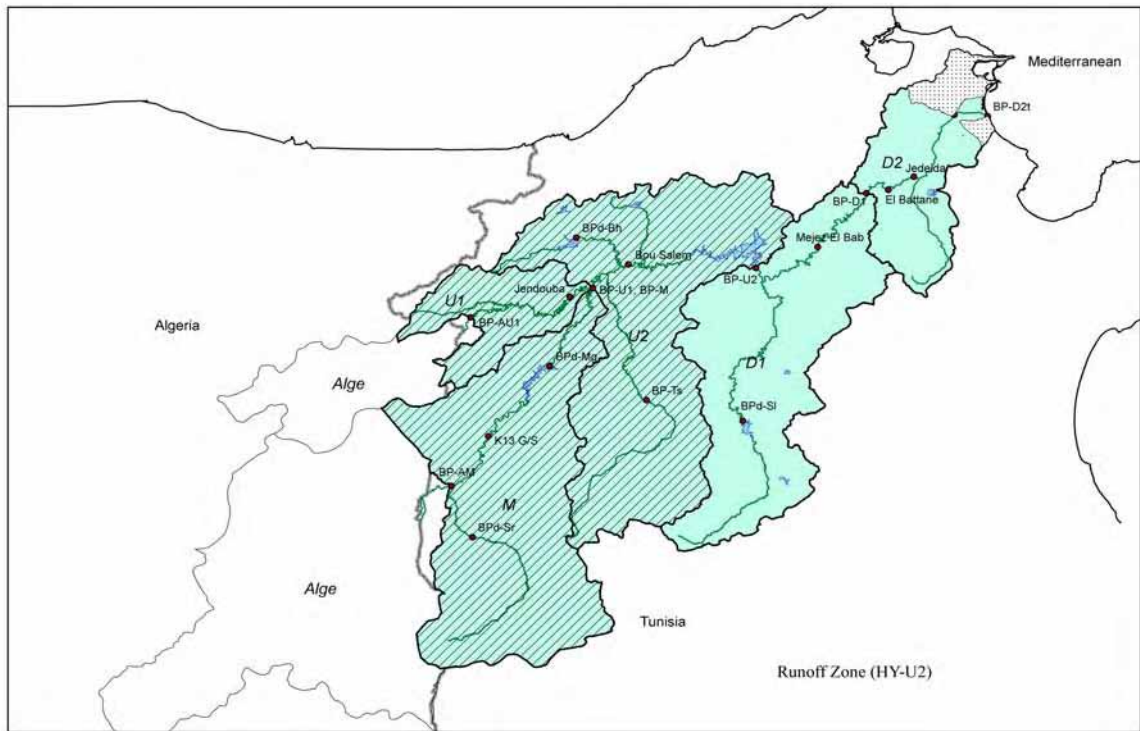


図7.2.1 流域平均雨量算出のゾーン区分 (1/3)

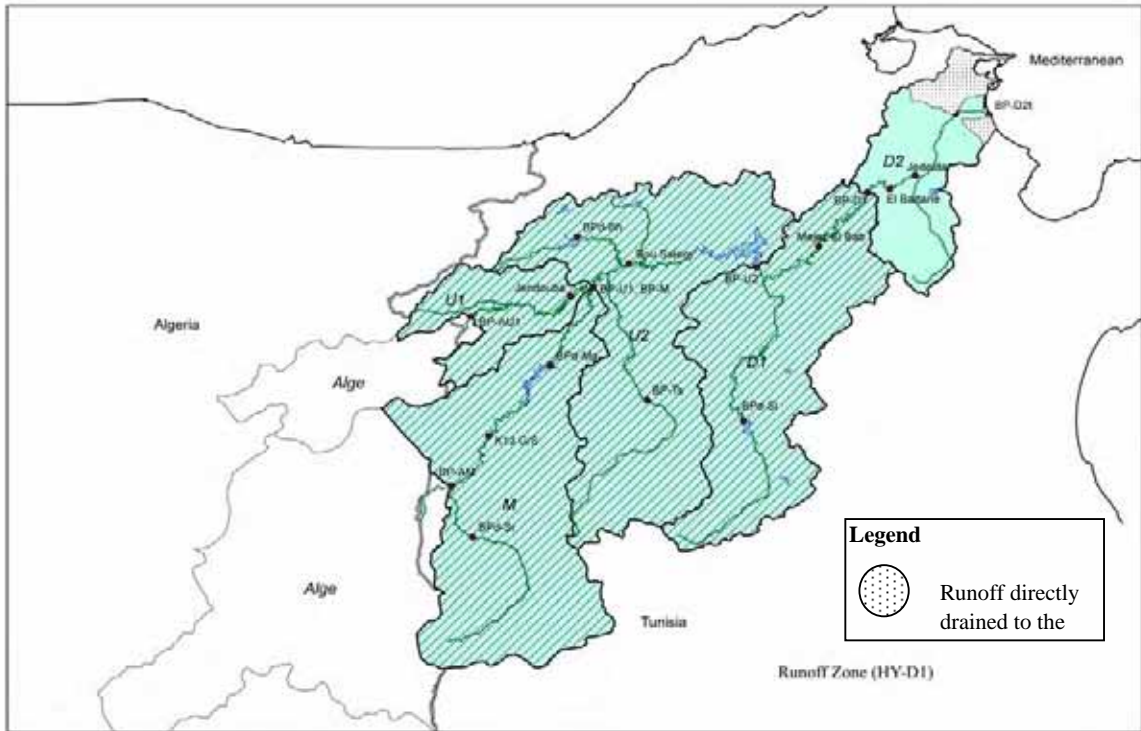


Runoff Zone: HY-U1 (1154 km²)
 Base Point: BP-U1 Mejerda & Mellegue Conf.

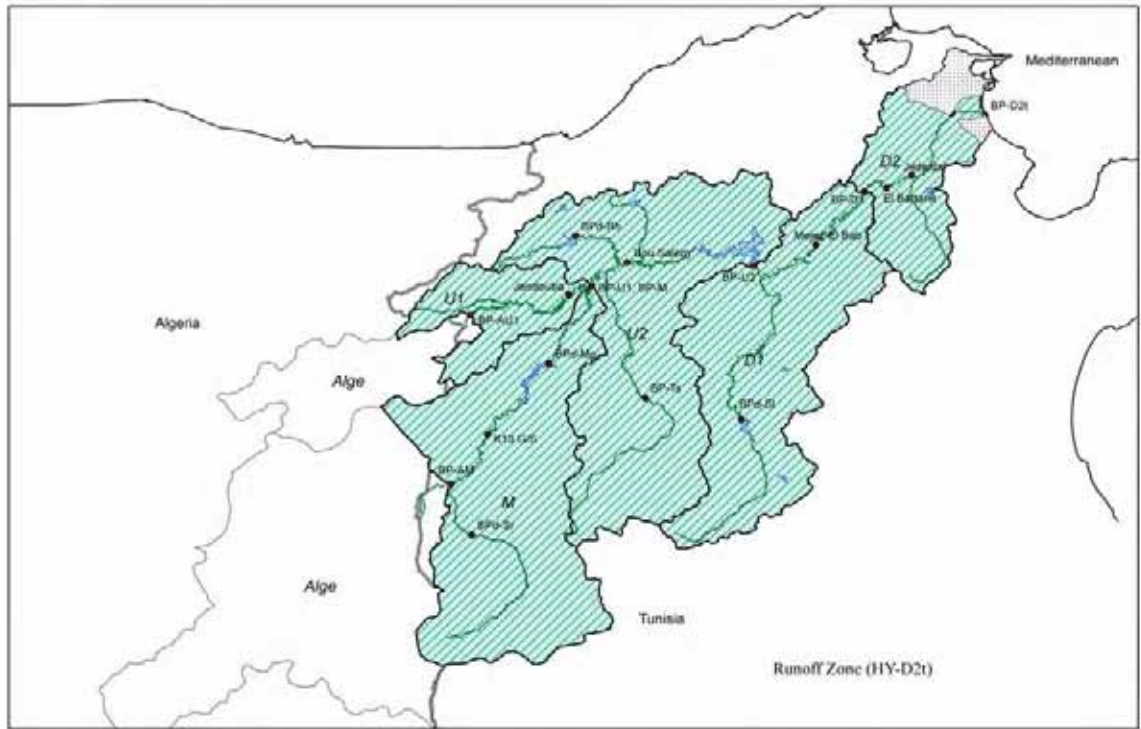


Runoff Zone: HY-U2 (10414 km²)
 Base Point: BP-U2 Sidi Salem Dam

図7.2.1 流域平均雨量算出のゾーン区分 (2/3)



Runoff Zone:	HY-D1	(14172 km²)
Base Point:	BP-D1	Larrousia Dam



Runoff Zone:	HY-D2t	(15645 km²)
Base Point:	BP-D2	Estuary

図7.2.1 流域平均雨量算出のゾーン区分(3/3)

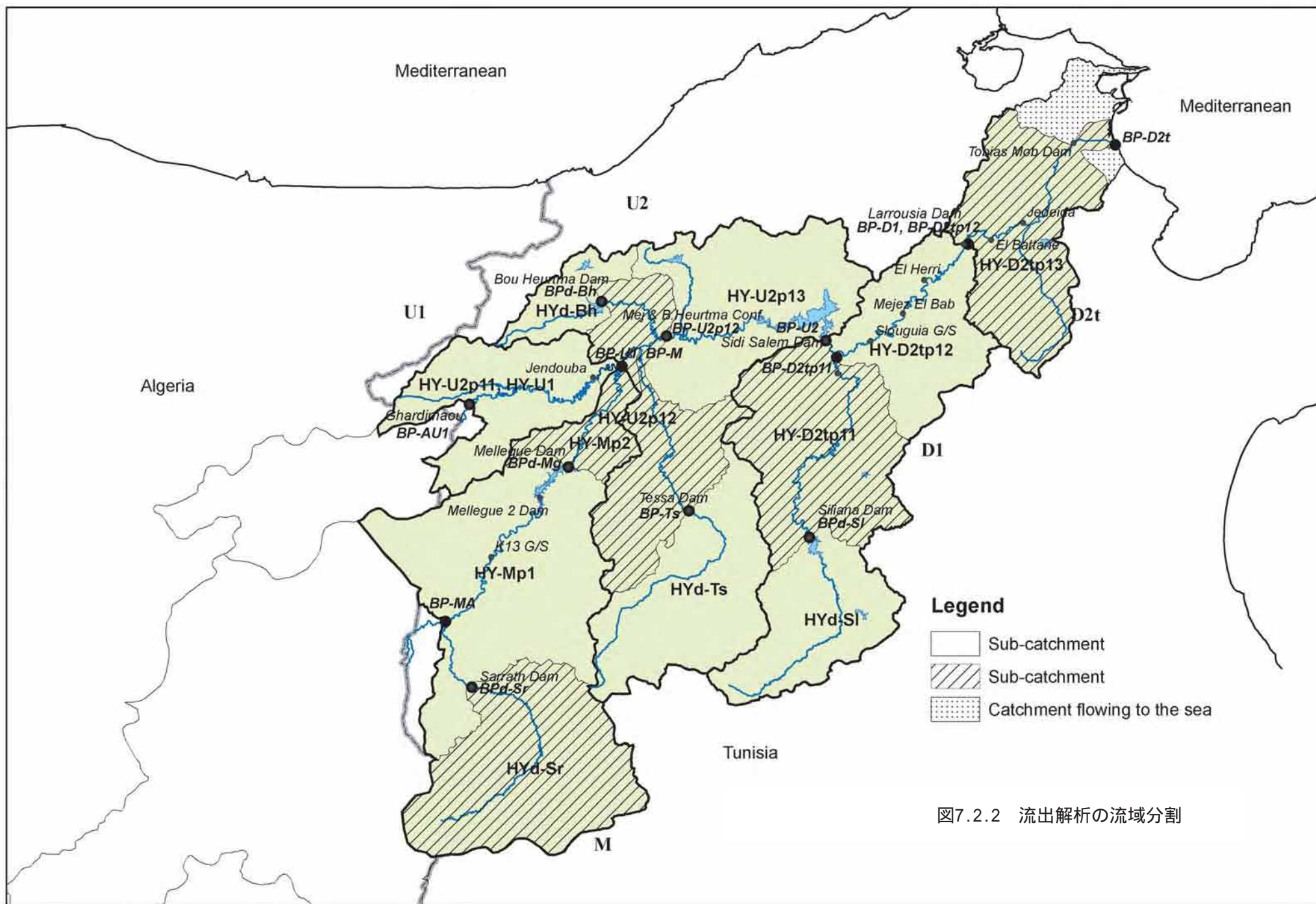
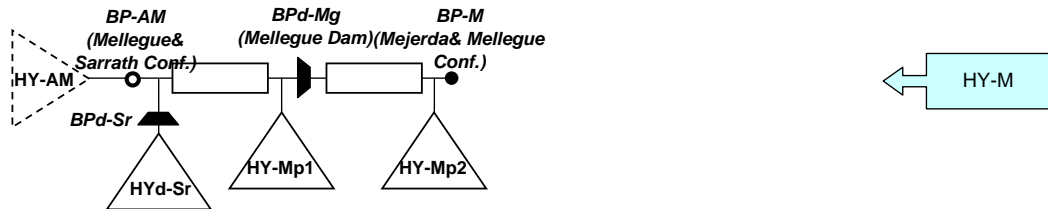


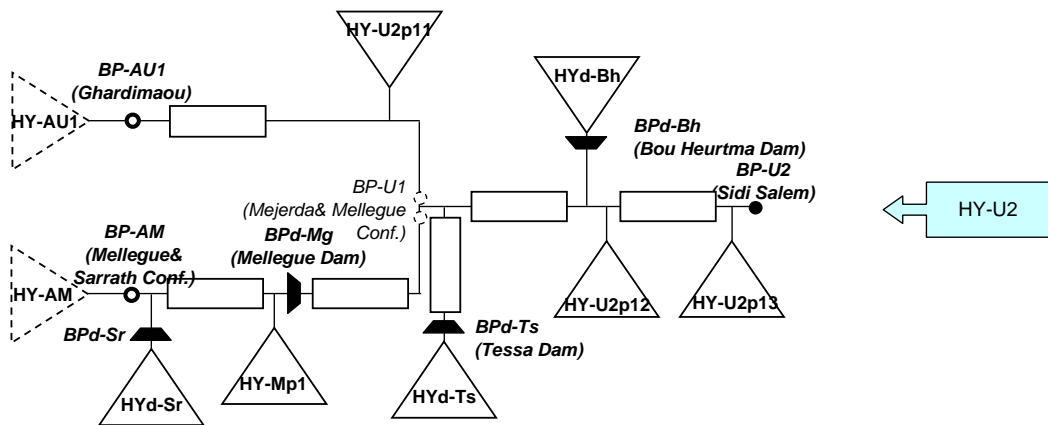
図7.2.2 流出解析の流域分割



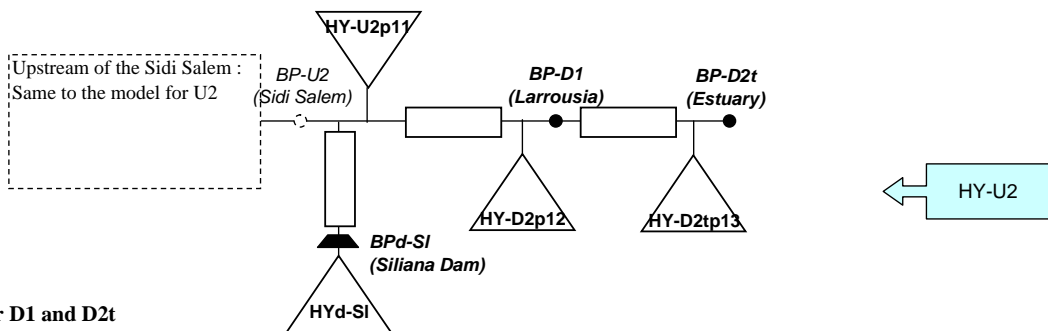
Probable Flood for U1



Design Flood for M



Design Flood for U2



Design Flood for D1 and D2t

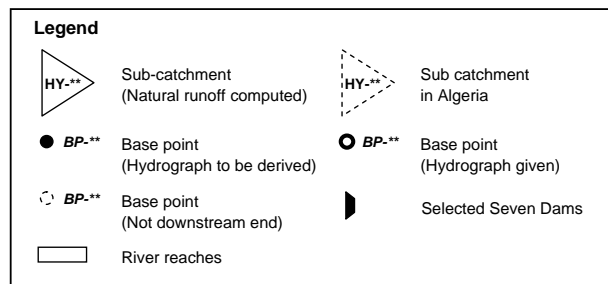
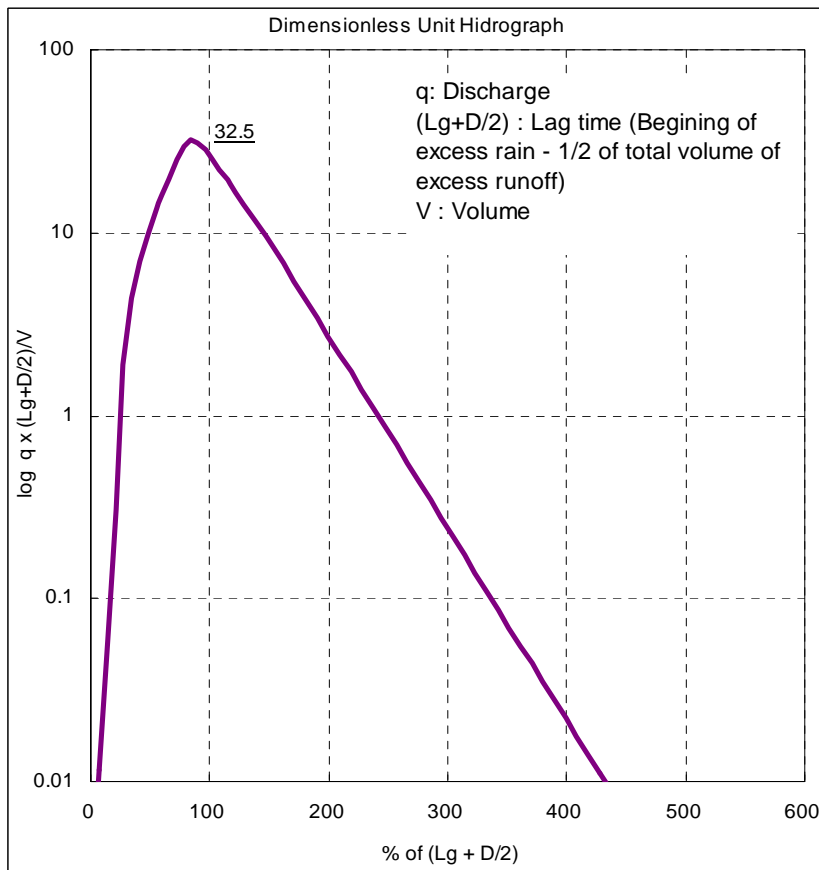
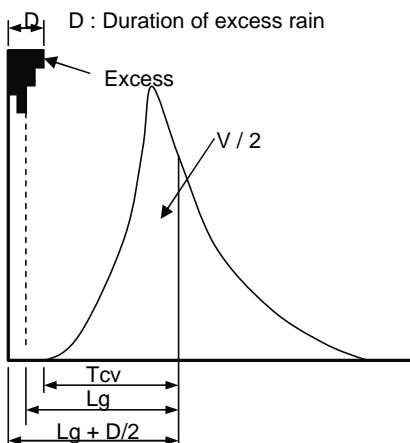


図7.2.3 確率洪水解析モデル図



(1) Dimensionless unit hydrograph applied



Lg+D/2 can be taken equal to Tcv when rainfall data availability is limited.

Instead of Lg+D/2 (Time from the centre of the excess rain to time of occurrence of on-half volume of hydrograph, Tcv (time from the beginning of rise of net hydrograph to time of occurrence of on-half volume of hydrograph) can be applied . The lag time can be explained by the following equation.

$$T_{cv} = C \times (L \times L_{ca} / \sqrt{Sst})^{0.38}$$

where; Tcv: Lag time. Time from the beginning of rise of net hydrograph to time of occurrence of on-half volume of hydrograph .

C: Constant, 0.72 for foothill drainage area

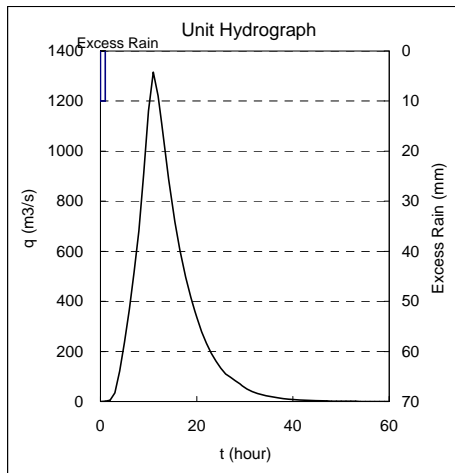
L: Mainstream length from outlet to watershed

Lca: Mainstream length from outlet to watershed centroid

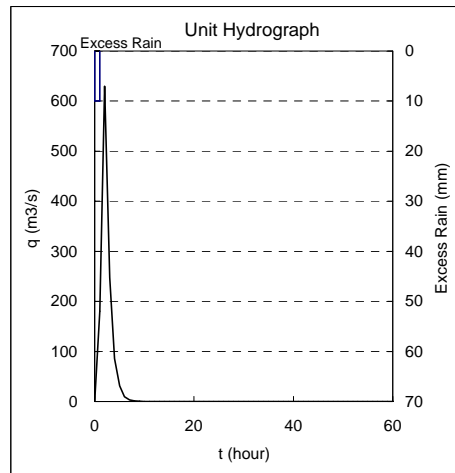
Sst: Overall slope of mainstream

(2) Definition of Tcv and (Lg+D/2)

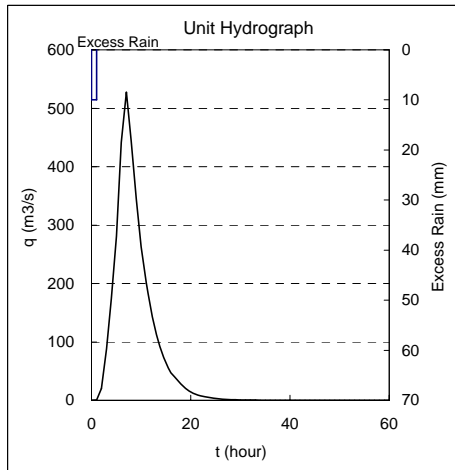
图7.2.4 無次元單位圖



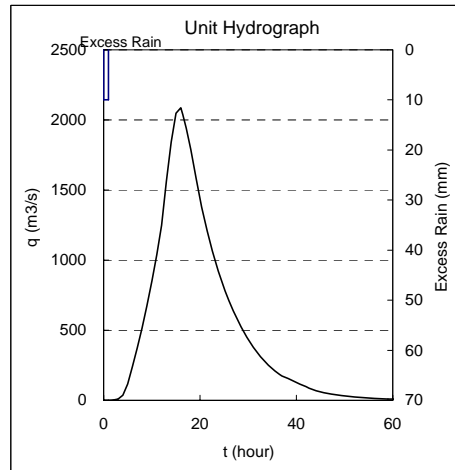
Unit Excess Rain : 10 mm
 Unit rainfall duration: 1 hr
 qmax : 527 m3/s
Runoff Zone : HY-U1 (1154 km2)
 Base point : BP-U1 Mejerda & Mellgue Conf.



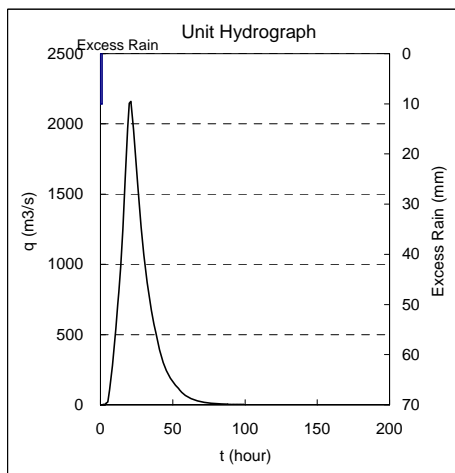
Unit Excess Rain : 10 mm
 Unit rainfall duration: 1 hr
 qmax : 983 m3/s
Runoff Zone : HY-U2p12 (1664 km2)
 Base point : BP-U2up Mejerda & BouH. Conf.



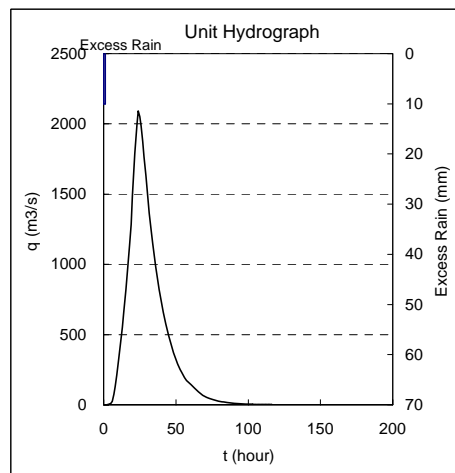
Unit Excess Rain : 10 mm
 Unit rainfall duration: 1 hr
 qmax : 653 m3/s
Runoff Zone : HY-U2p13 (1630 km2)
 Base point : BP-D2 Sidi Salem Dam



Unit Excess Rain : 10 mm
 Unit rainfall duration: 1 hr
 qmax : 1053 m3/s
Runoff Zone : HY-D2tp11 (1626 km2)
 Base point : BP-D1up2 Mejerda & Siliana Conf.



Unit Excess Rain : 10 mm
 Unit rainfall duration: 1 hr
 qmax : 441 m3/s
Runoff Zone : HY-D2tp12 (1092 km2)
 Base point : BP-D1 Larrousia Dam



Unit Excess Rain : 10 mm
 Unit rainfall duration: 1 hr
 qmax : 678 m3/s
Runoff Zone : HY-D2tp13 (1473 km2)
 Base point : BP-D2 Estuary

图7.2.5 各流域单位图の例

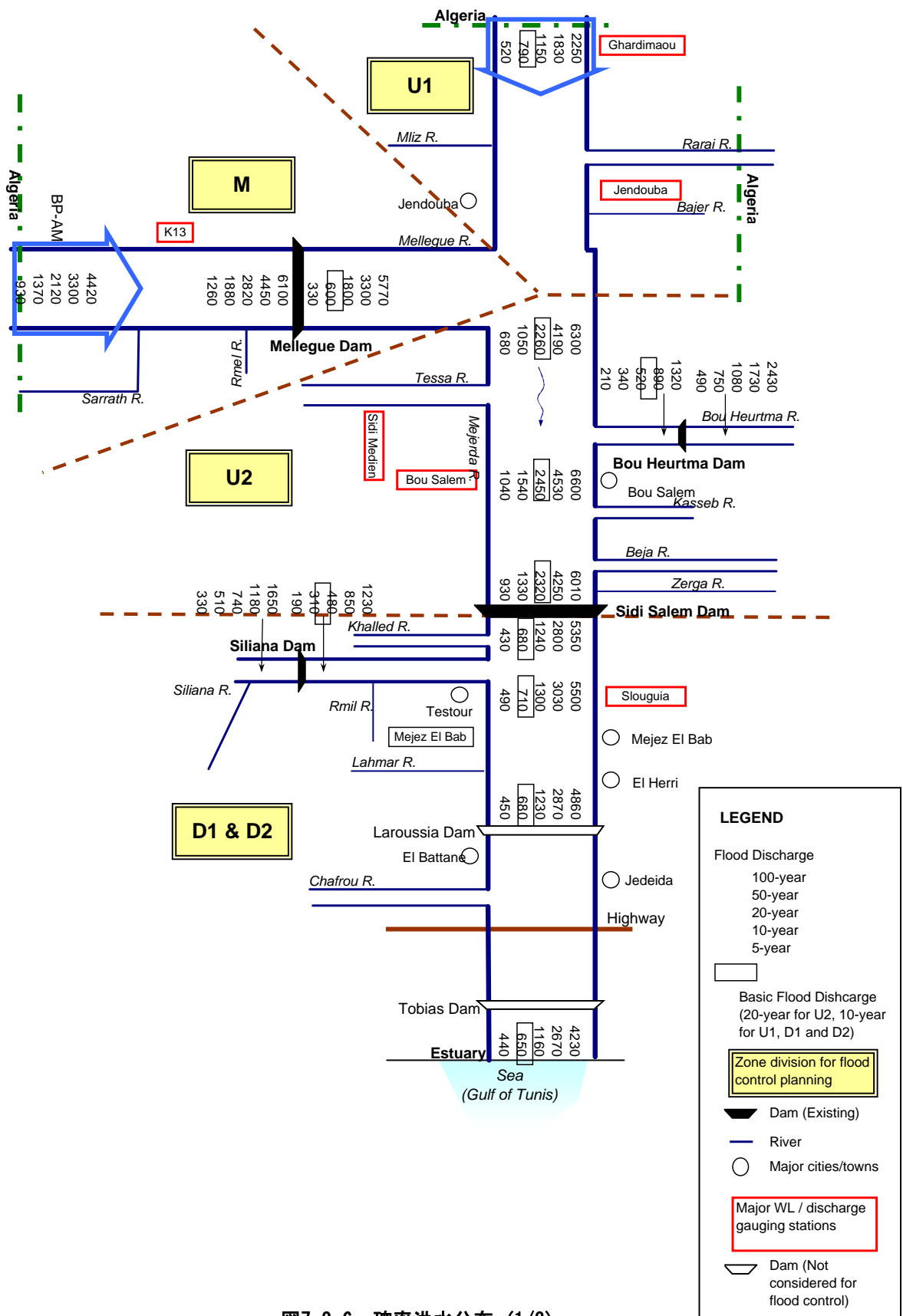


図7.2.6 確率洪水分布 (1/3)
 (事業実施前：現況 (現況の標準的な貯水池運用))

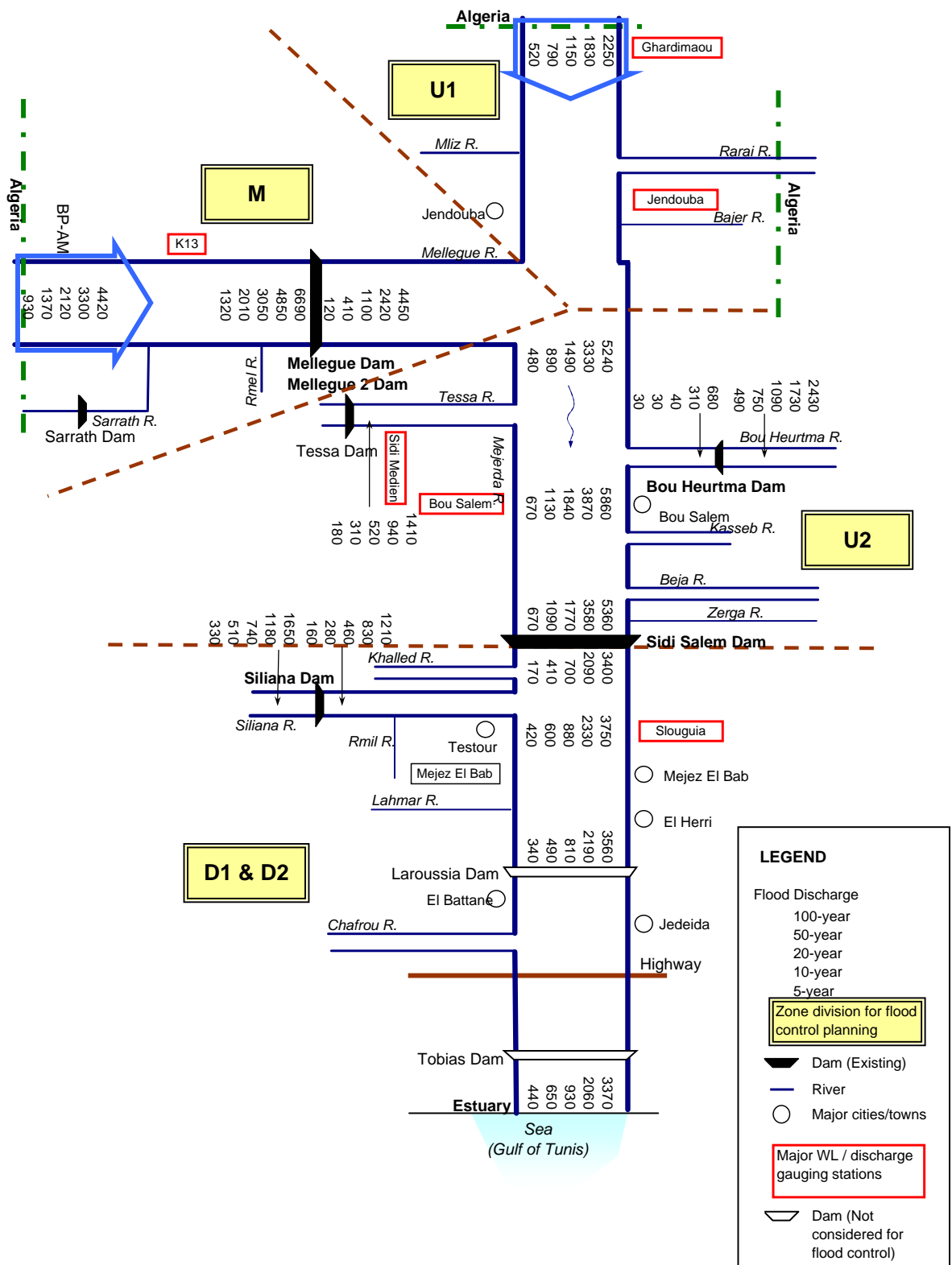


図7.2.6 確率洪水分布 (2/3)
 (事業実施後：改善後の貯水池運用 (2030年))

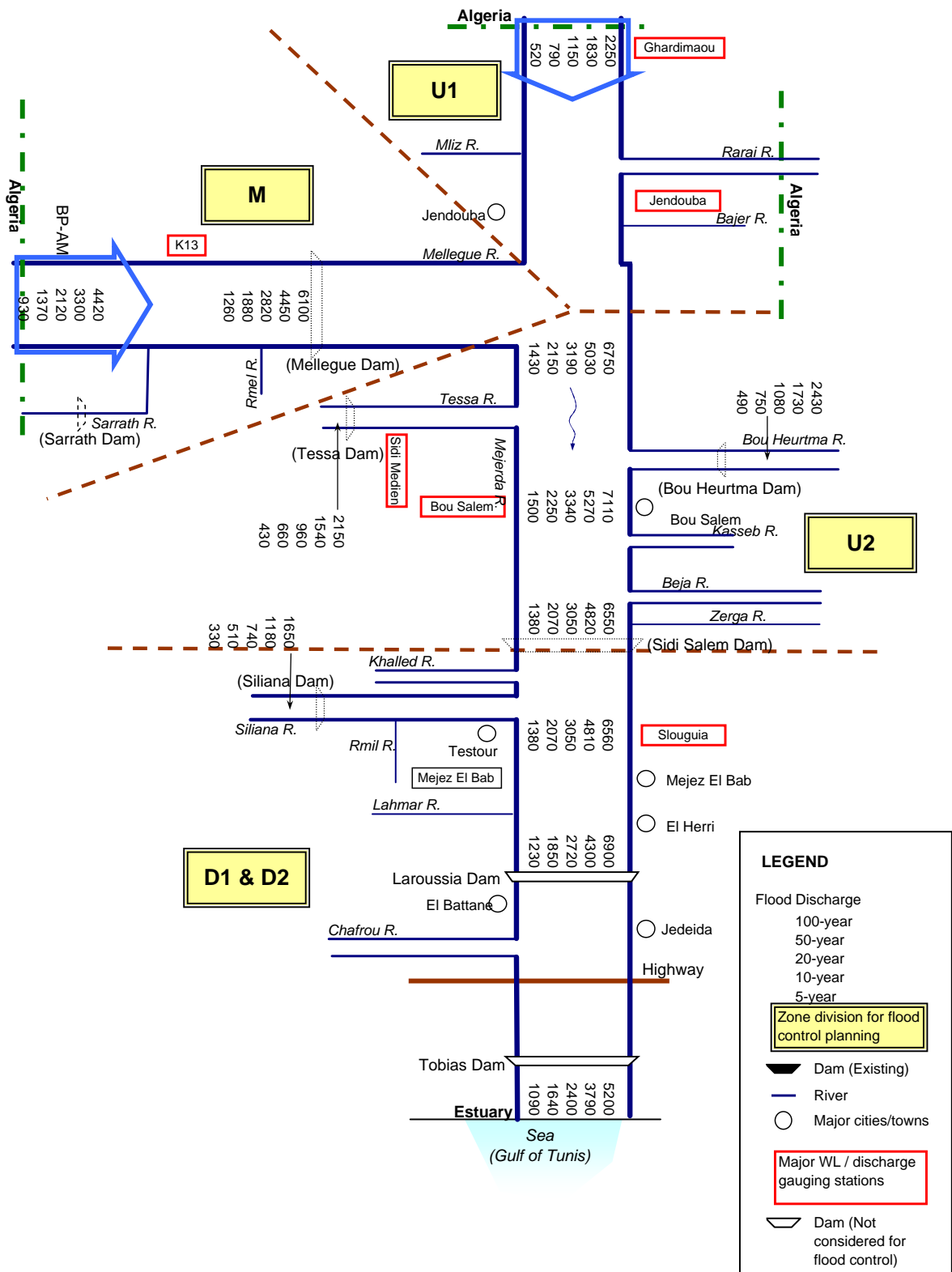


図7.2.6 確率洪水分布 (3/3)
(ダムなし)

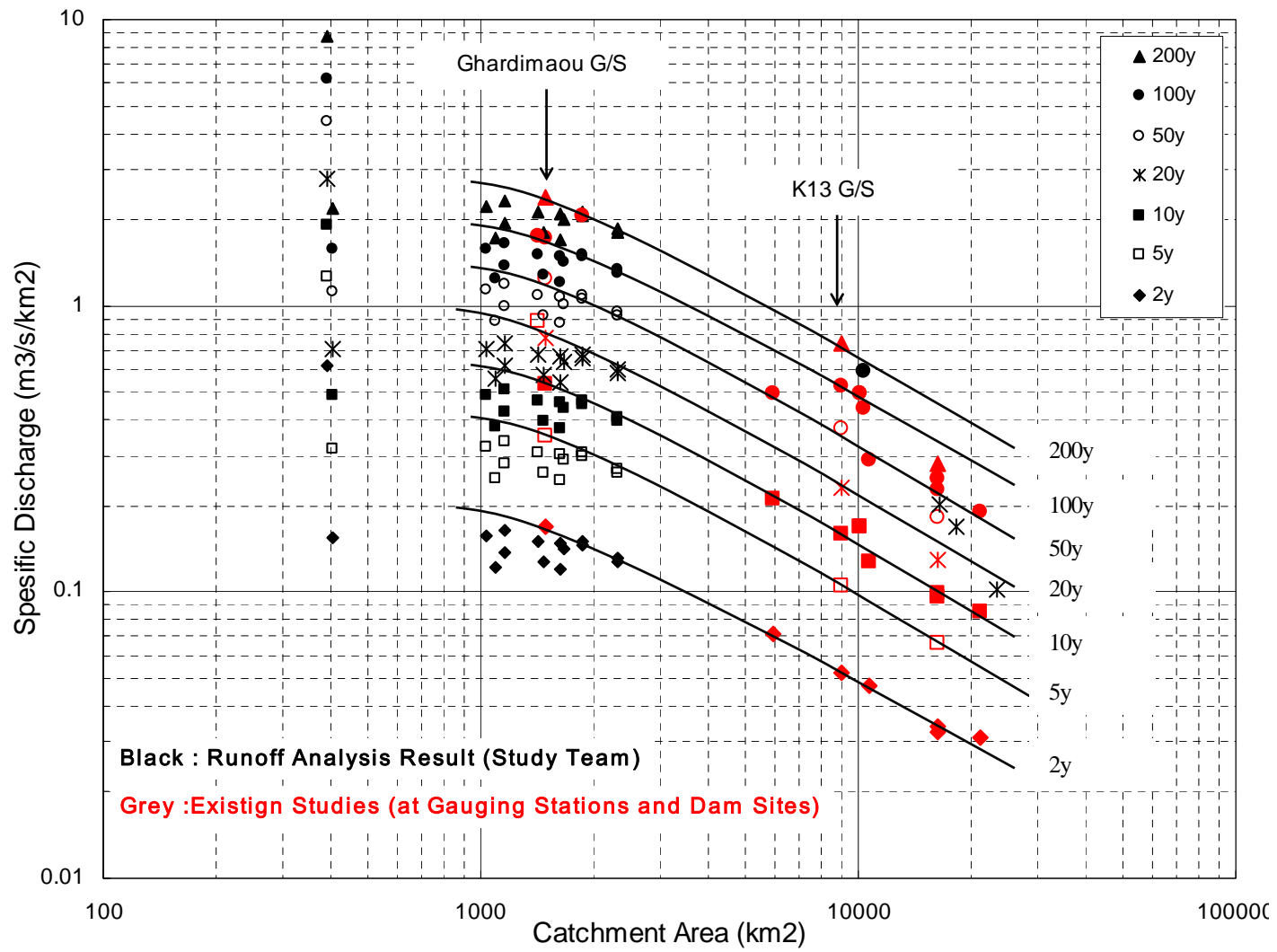
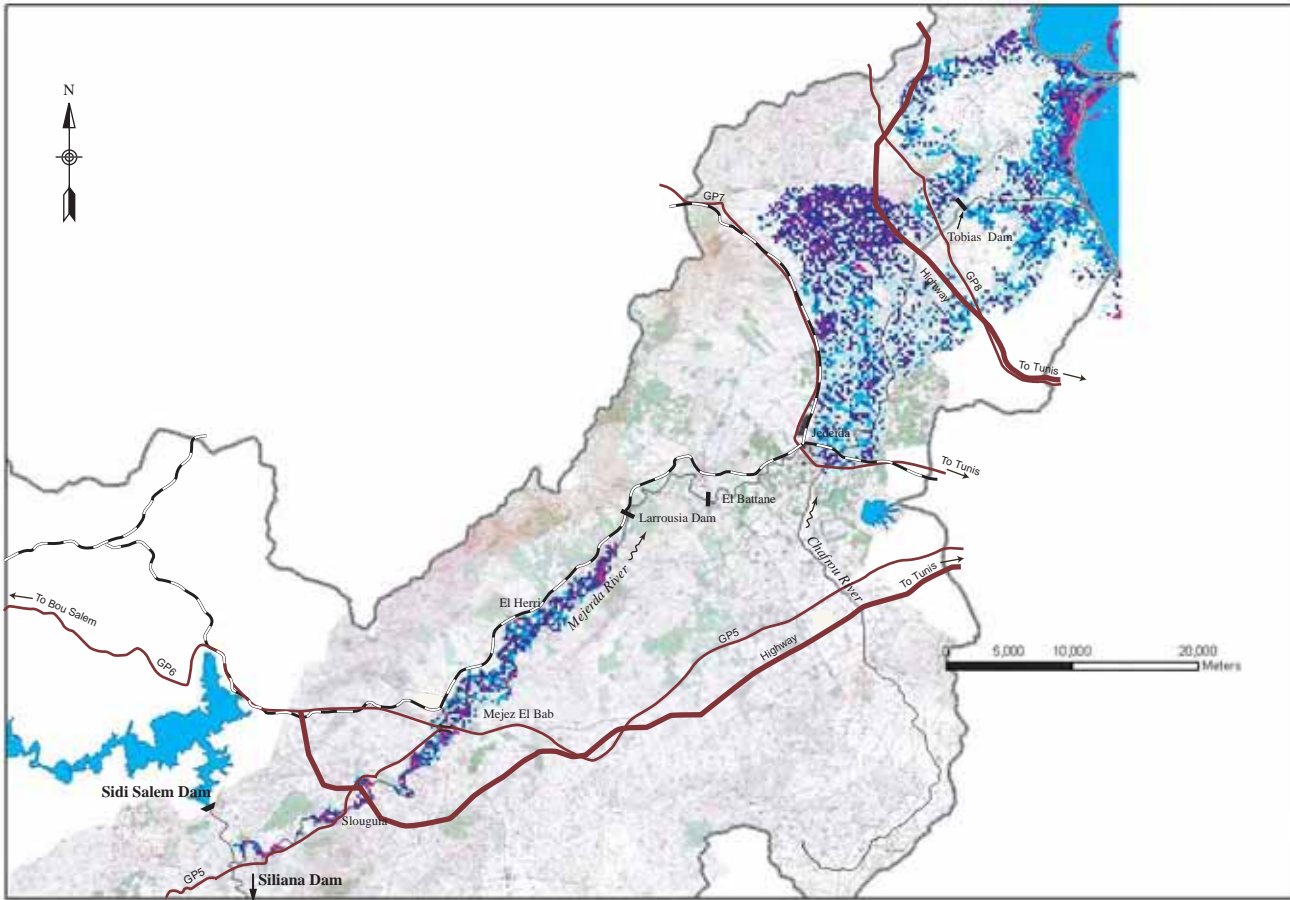
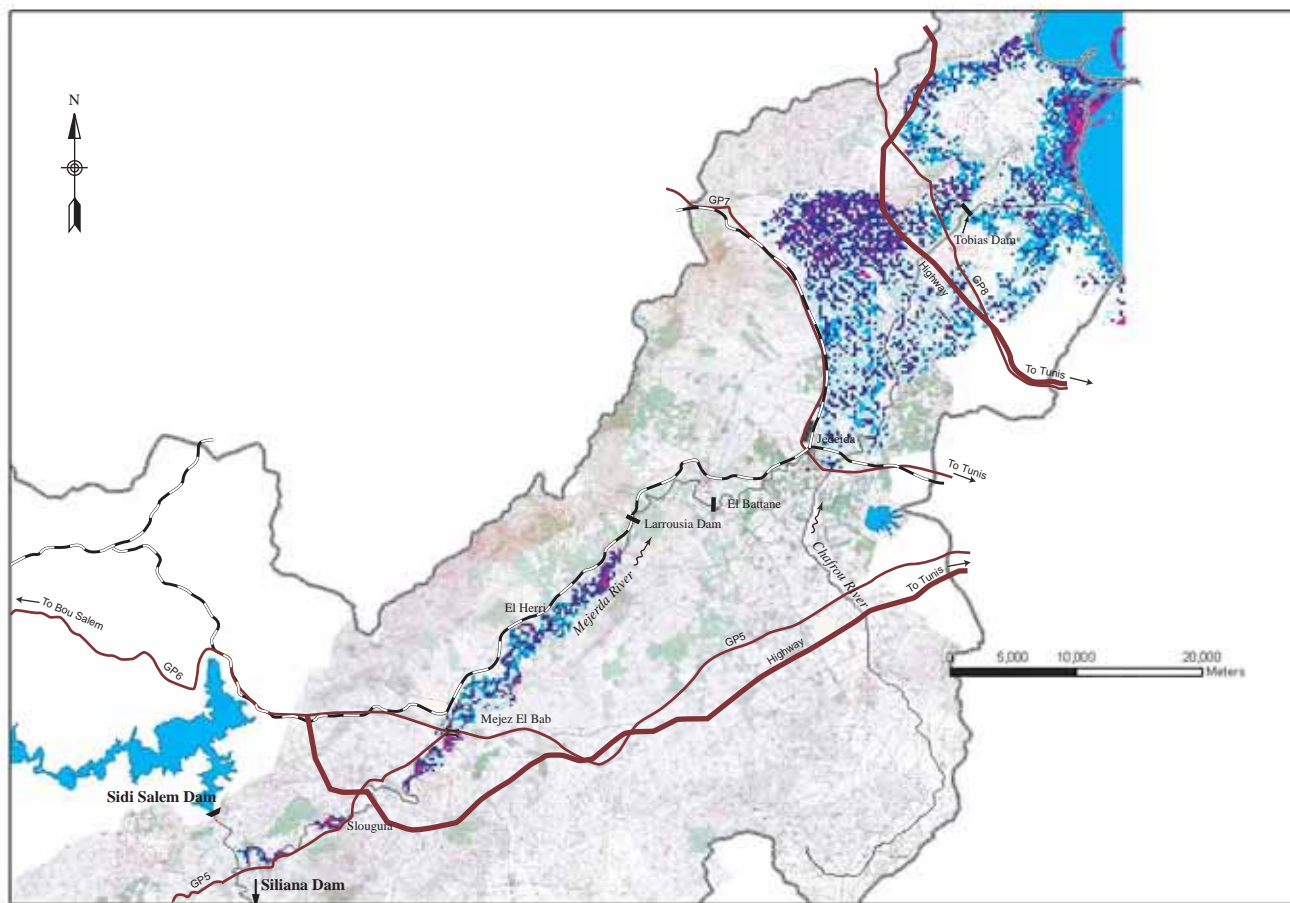


图7.2.7 比流量



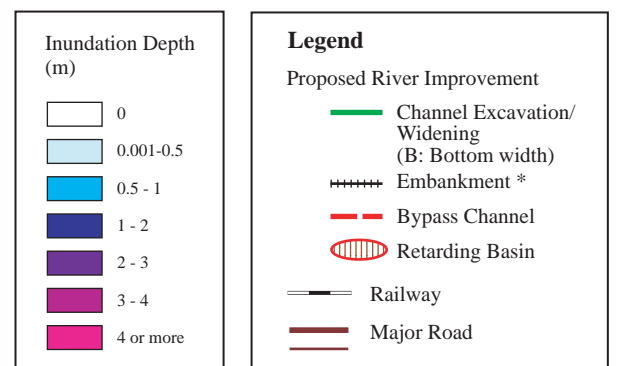
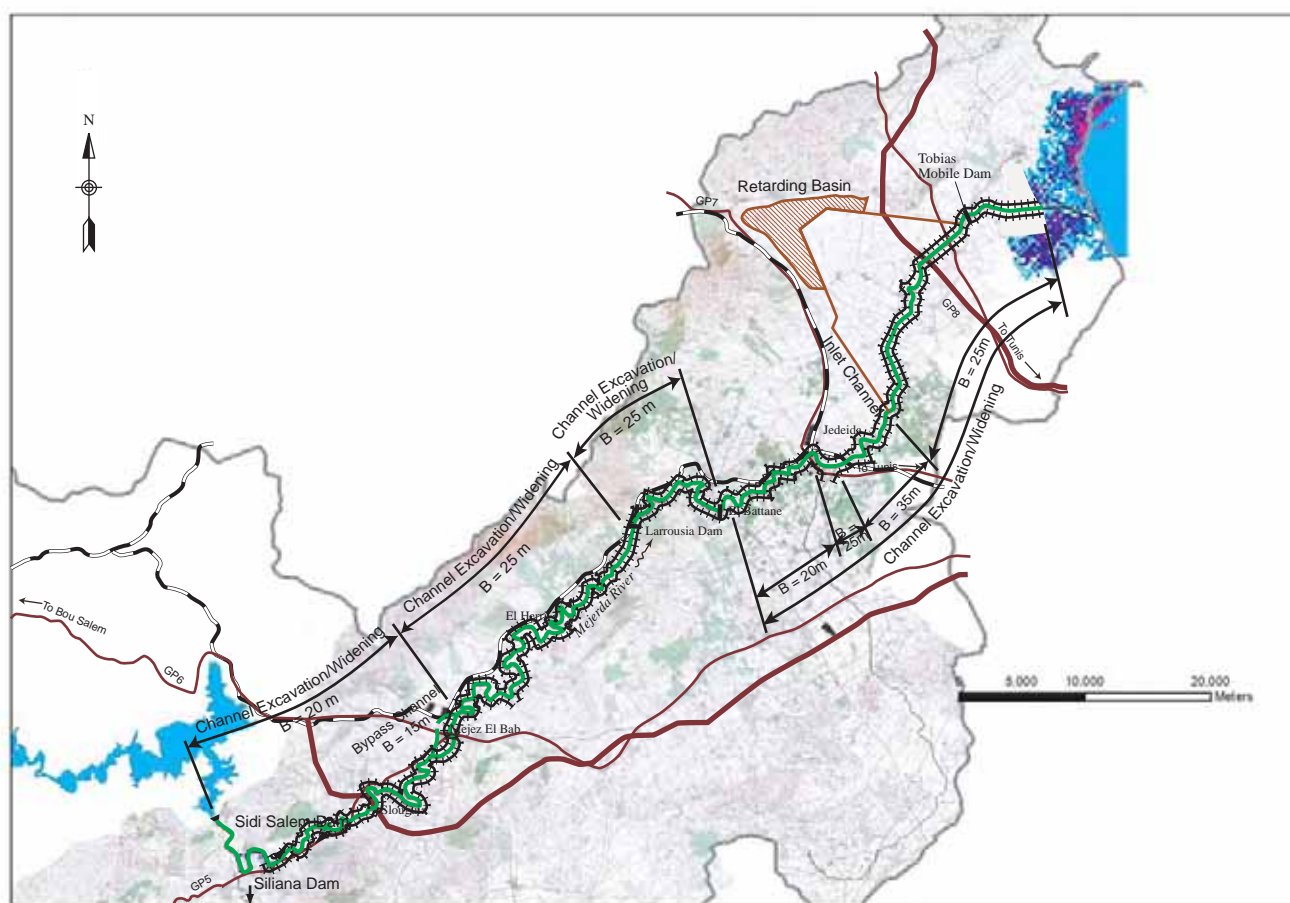
**BEFORE PROJECT
(Present Condition)**

With
Present standard dam operation of
selected existing dams :
Sidi Salem Dam
Siliana Dam



**AFTER PROJECT (Step 1)
(Improved Dam Operation)**

With
Improved Dam Operation (2030) of
selected dams :
Sidi Salem Dam
Siliana Dam

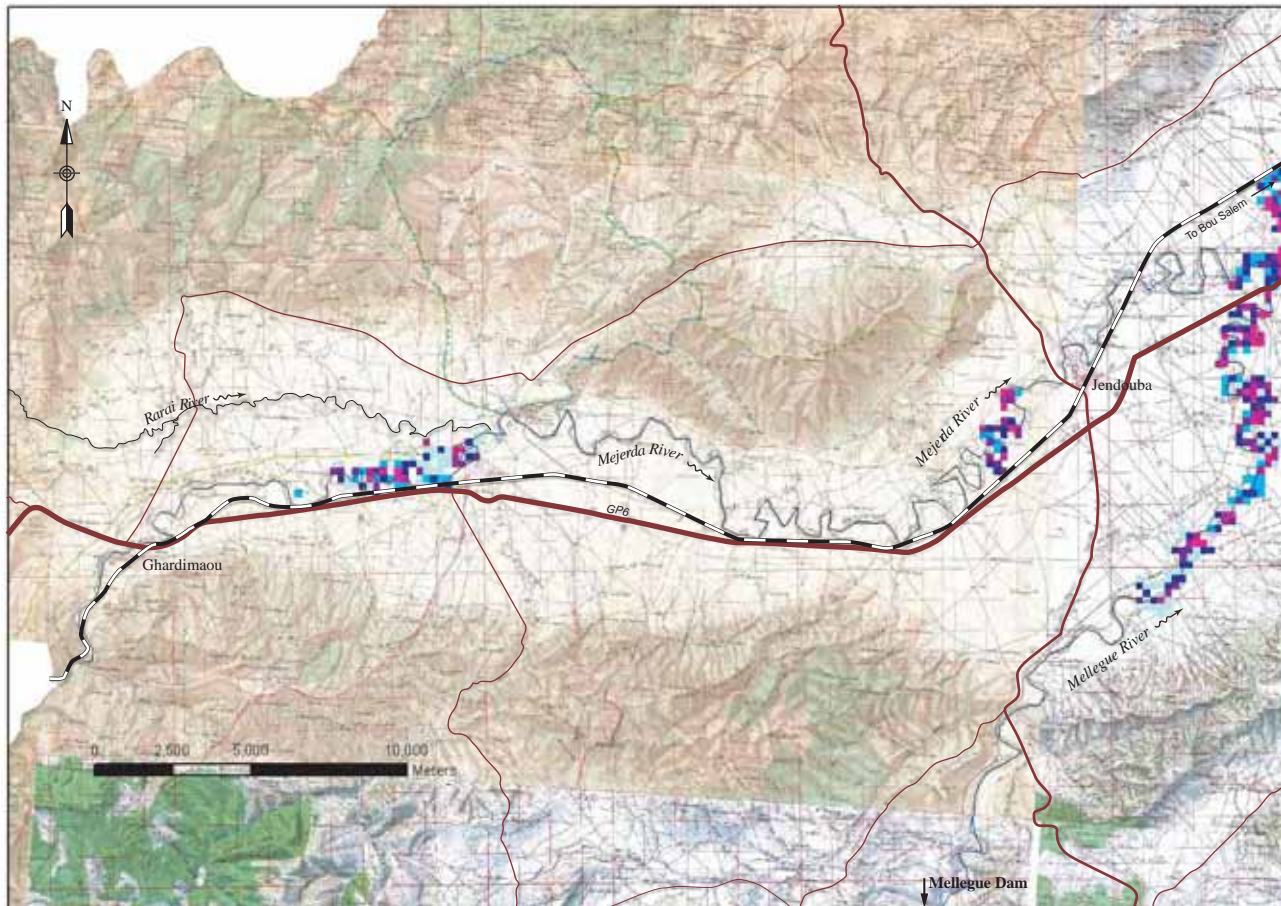


* : Not all reaches along this symbol require embankment.
Embankments are to be partially installed on reaches
whose bank elevation is lower than design water level.

**AFTER PROJECT (Step 2)
(Improved Dam Operation
+ River Improvement)**

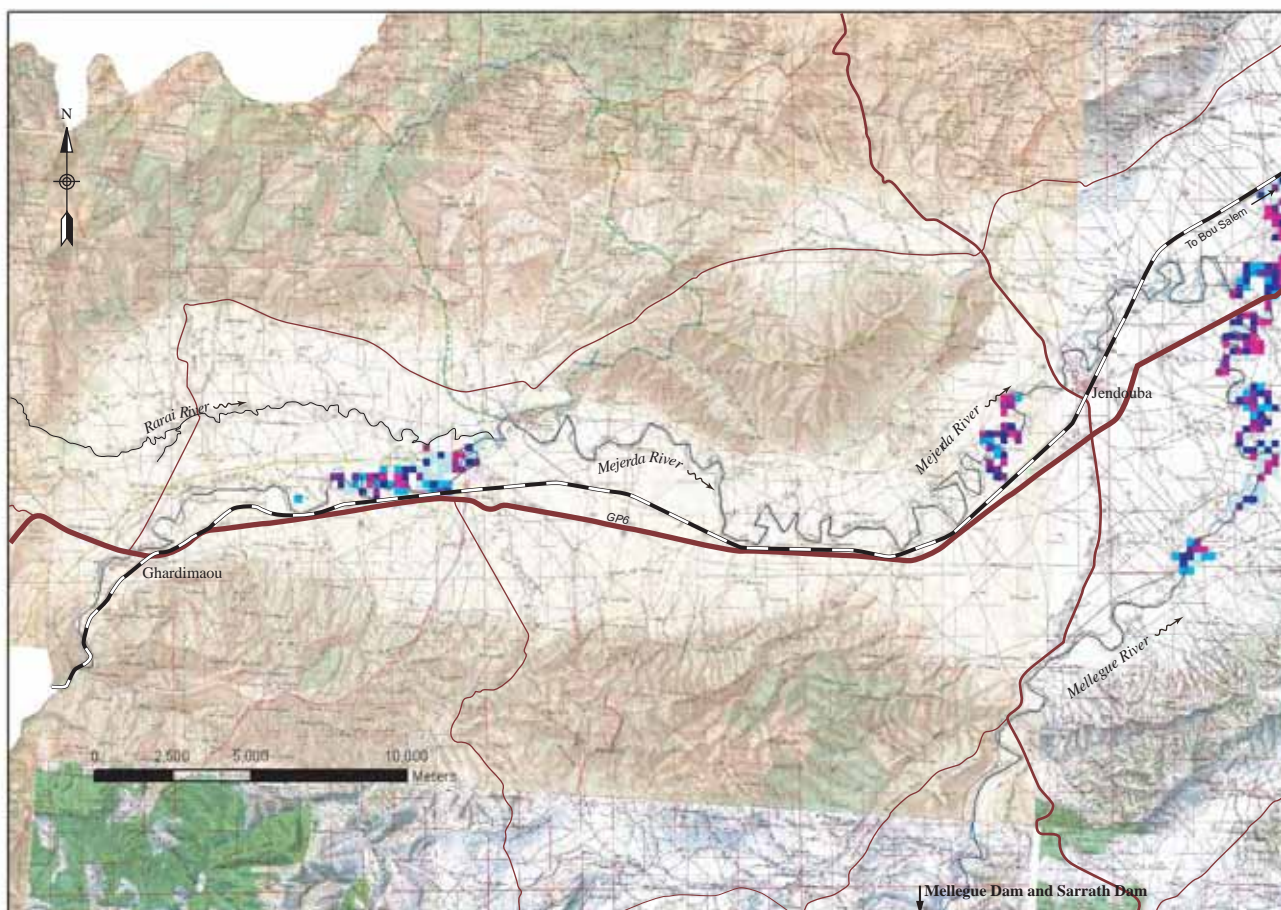
With
Improved Dam Operation (2030) of
selected dams :
Sidi Salem Dam
Siliana Dam
River Improvement :
Channel excavation/widening
Embankment
Bypass channel
Retarding basin

図7.3.1 事業実施前、実施後の氾濫(1/3) : ゾーンD1およびD2 (計画洪水: 10年確率)



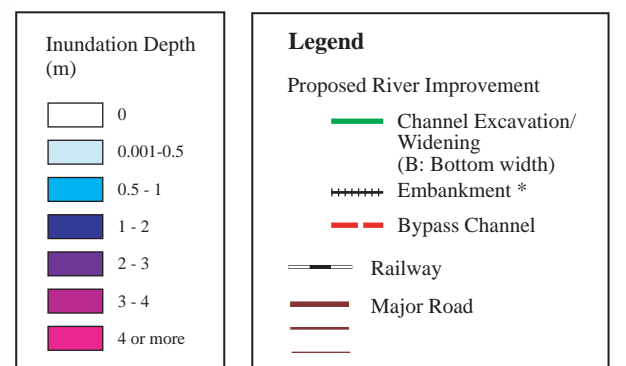
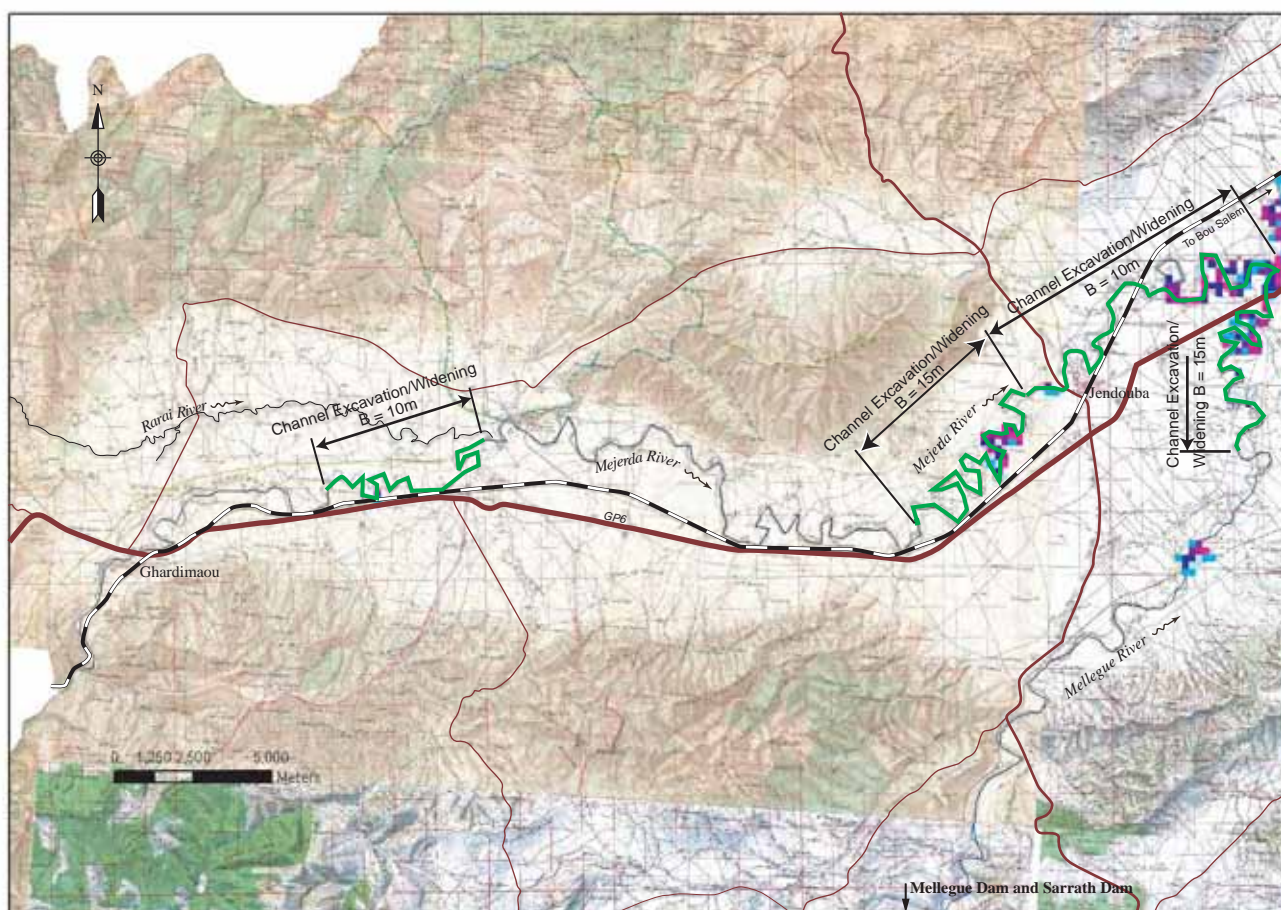
**BEFORE PROJECT
(Present Condition)**

With
Present standard dam operation of
selected existing dams :
Mellegue Dam



**AFTER PROJECT (Step 1)
(Improved Dam Operation)**

With
Improved Dam Operation (2030) of
selected dams :
Mellegue Dam
Sarrath Dam

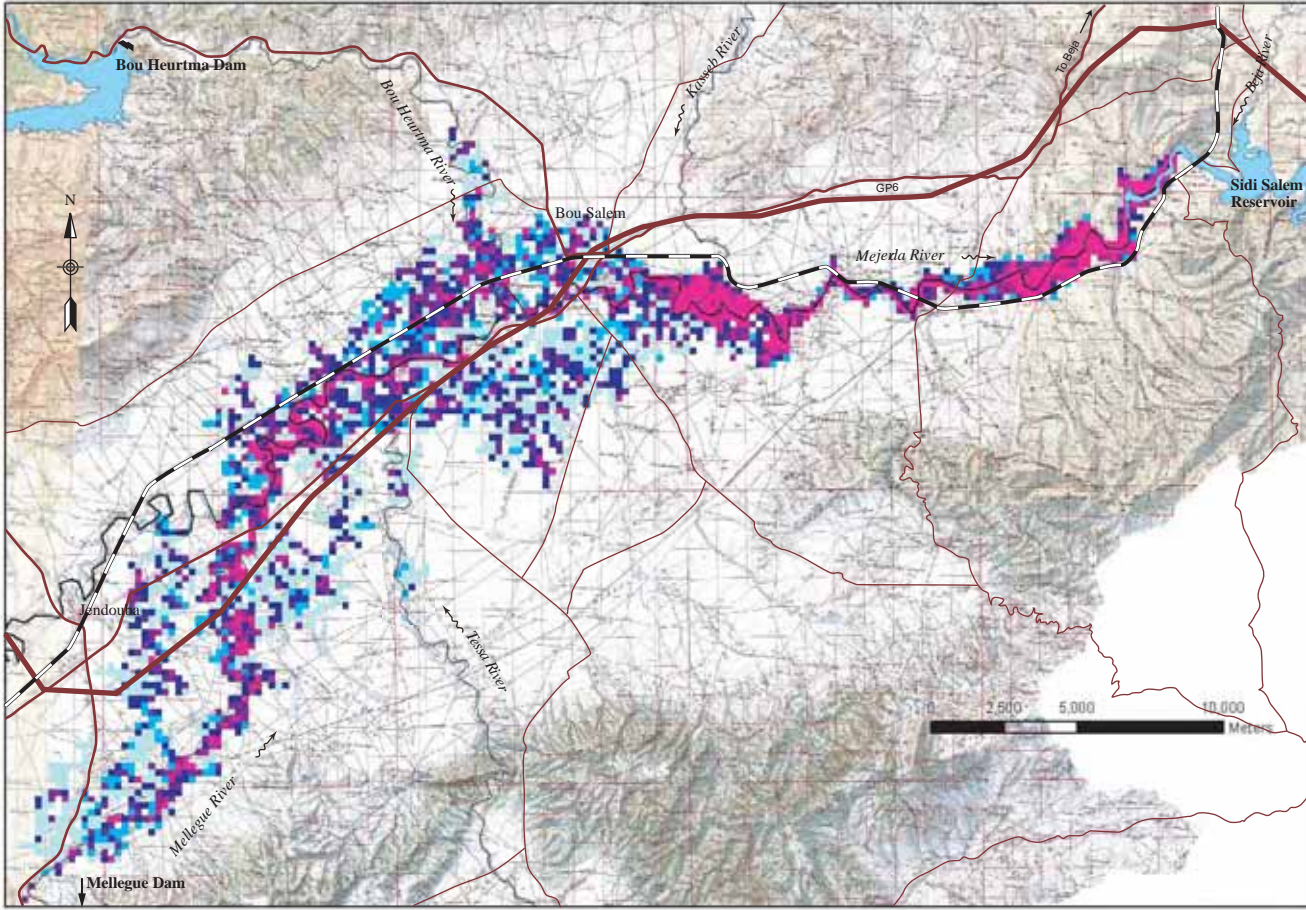


* : Not all reaches along this symbol require embankment. Embankments are to be partially installed on reaches whose bank elevation is lower than design water level.

**AFTER PROJECT (Step 2)
(Improved Dam Operation
+ River Improvement)**

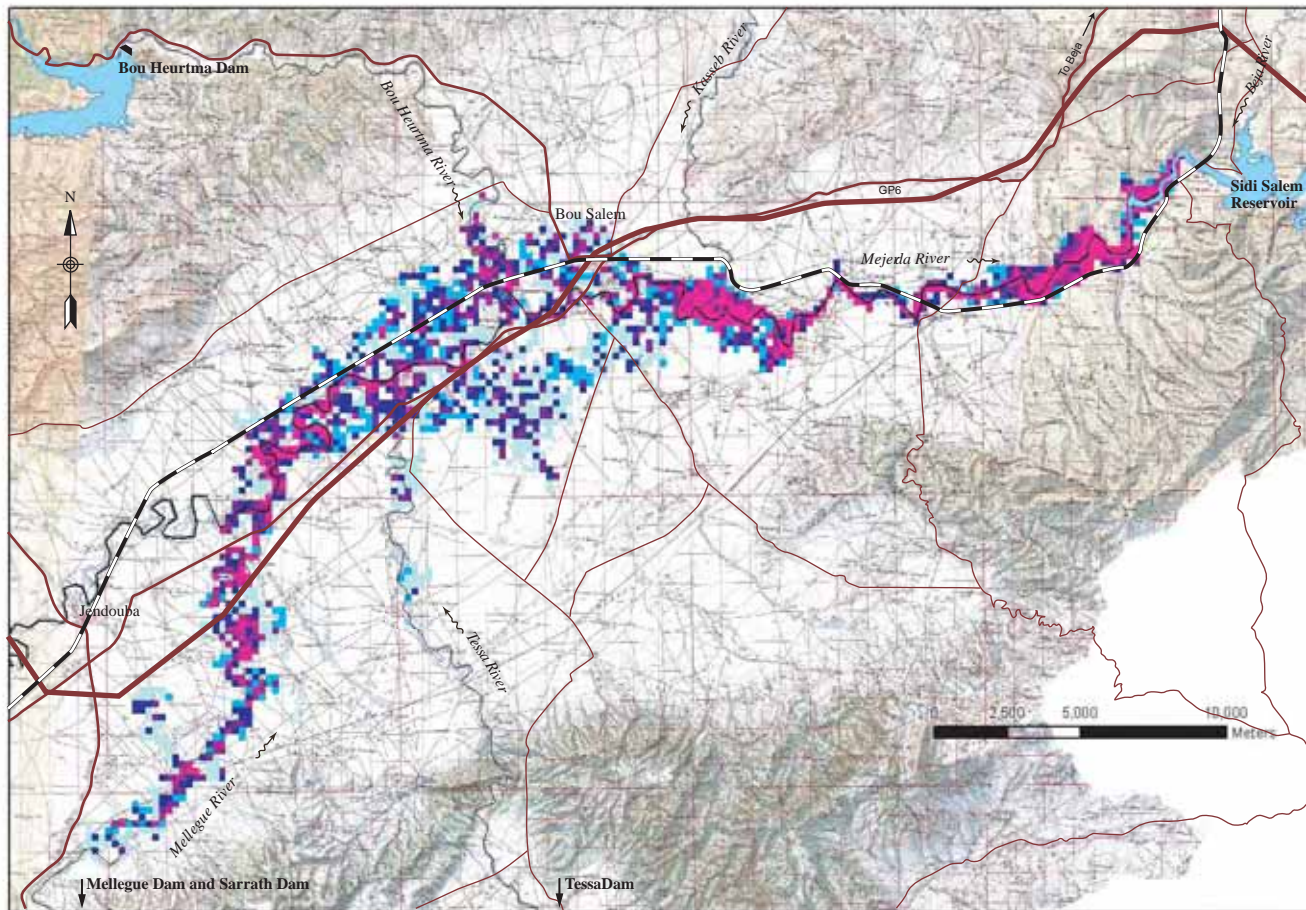
With
Improved Dam Operation (2030) of
selected dams :
Mellegue Dam
Sarrath Dam
River Improvement :
Channel excavation/widening

図7.3.1 事業実施前、実施後の氾濫 (2/3) : ゾーンU1およびM (計画洪水: 10年確率)



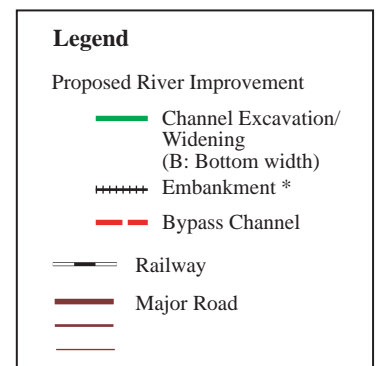
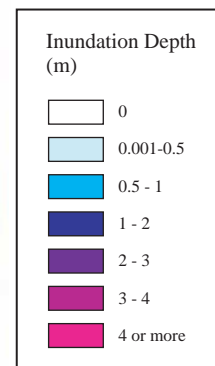
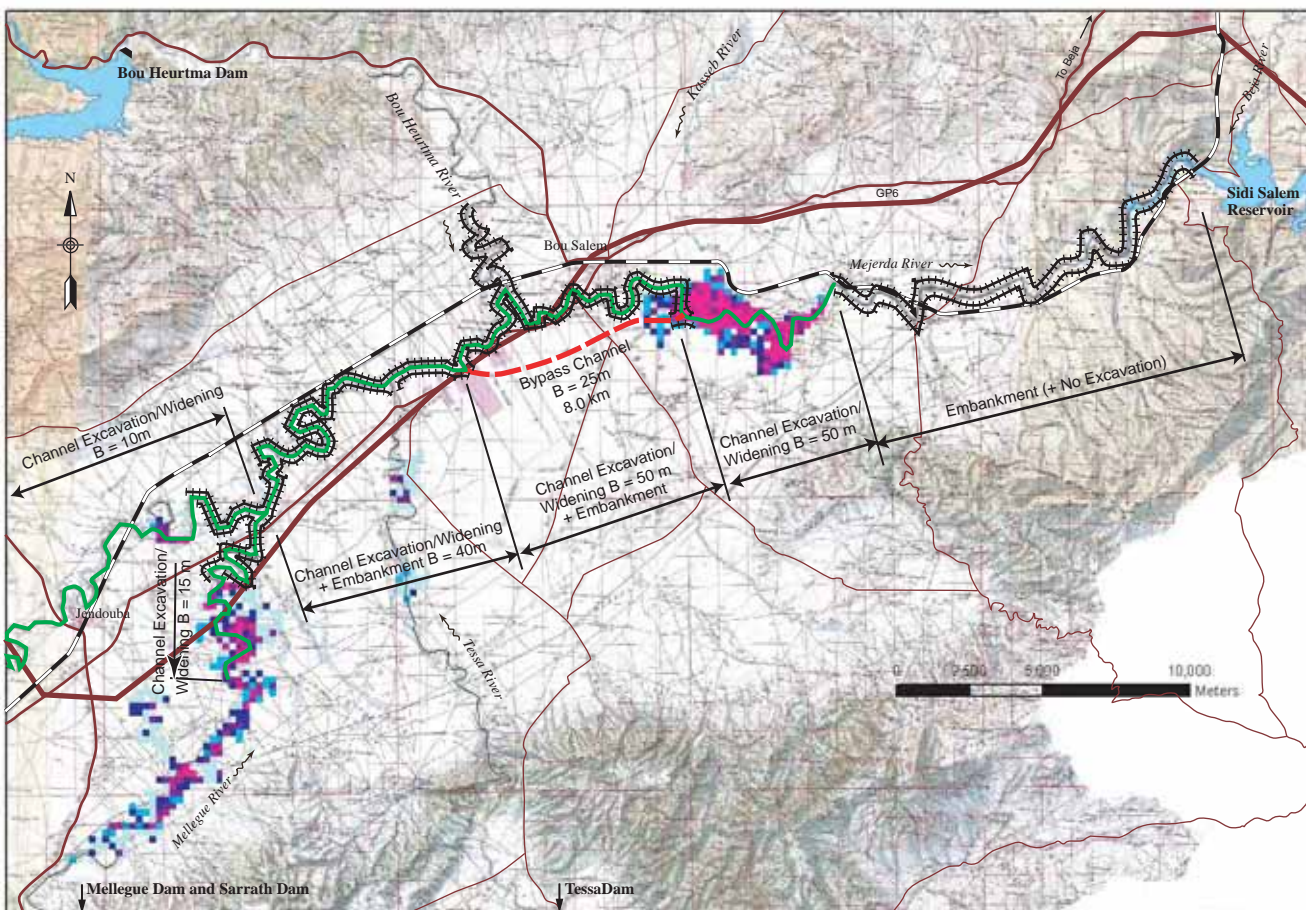
**BEFORE PROJECT
(Present Condition)**

With
Present standard dam operation of
selected existing dams :
Mellegue Dam
Bou Heurtma Dam



**AFTER PROJECT (Step 1)
(Improved Dam Operation)**

With
Improved Dam Operation (2030) of
selected dams :
Mellegue Dam
Bou Heurtma Dam
Tessa Dam
Sarrath Dam



*: Not all reaches along this symbol require embankment. Embankments are to be partially installed on reaches whose bank elevation is lower than design water level.

**AFTER PROJECT (Step 2)
(Improved Dam Operation
+ River Improvement)**

With
Improved Dam Operation (2030) of
selected dams :
Mellegue Dam
Bou Heurtma Dam
Tessa Dam
Sarrath Dam
River Improvement :
Channel excavation/widening
Embankment
Bypass channel

図7.3.1 事業実施前、実施後の氾濫 (3/3) : ゾーンU2 (計画洪水: 20年確率)

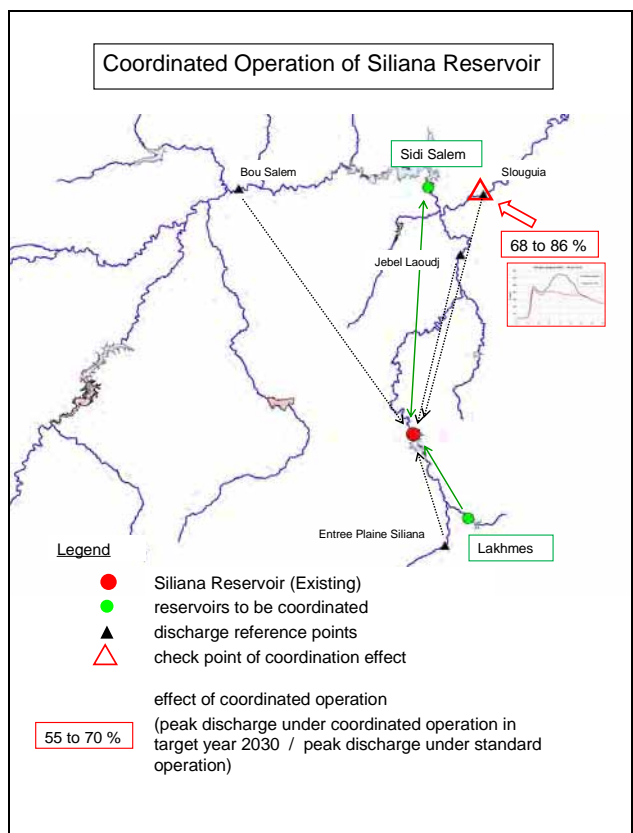
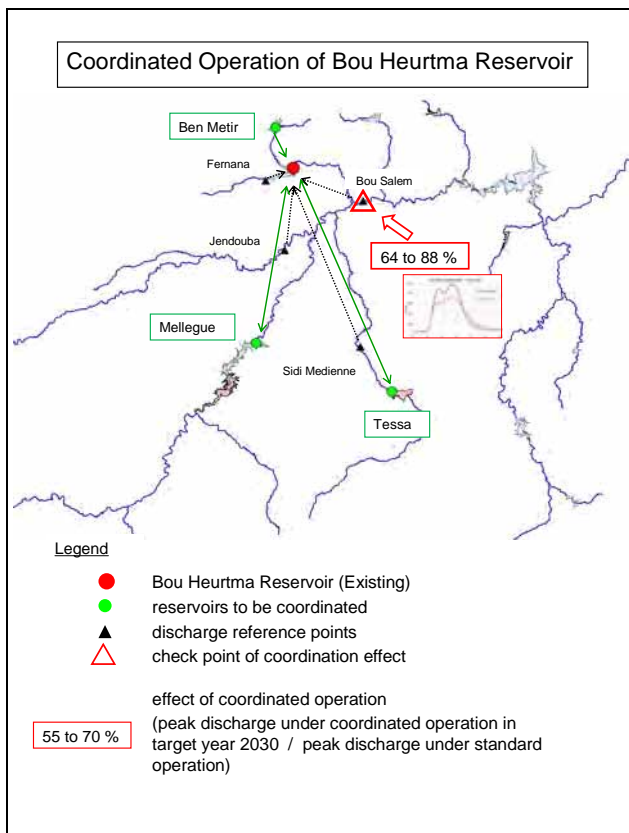
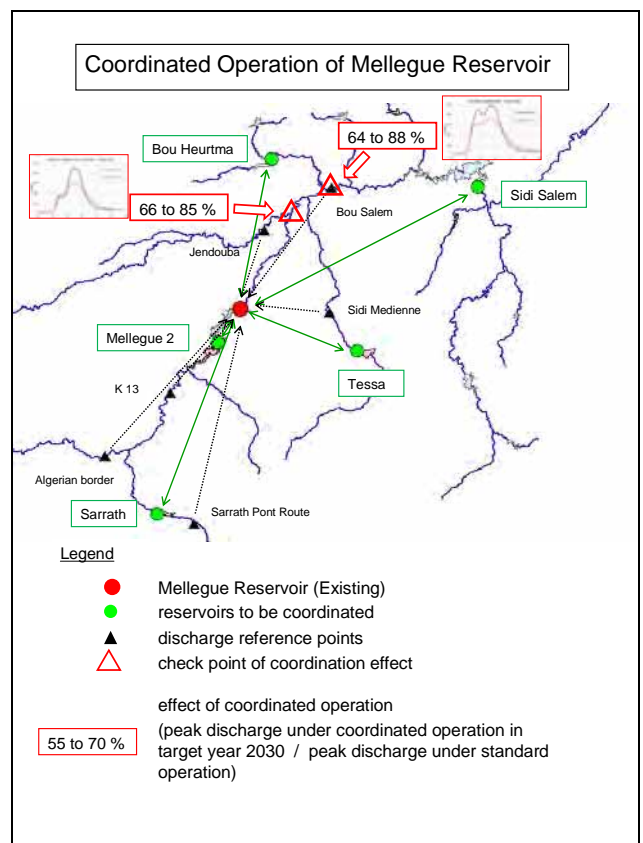
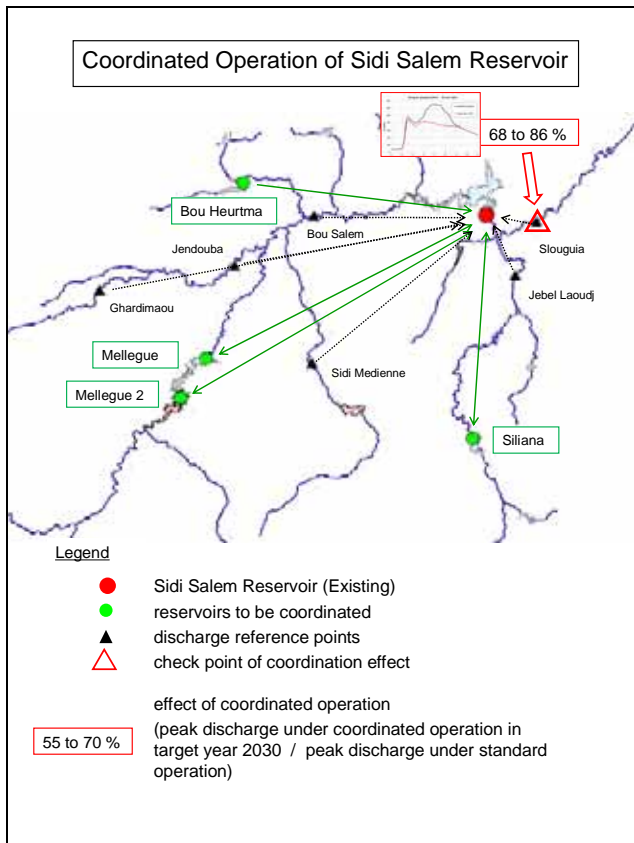


図 8. 2. 1 ダム連携運用の基本計画 (1/2)

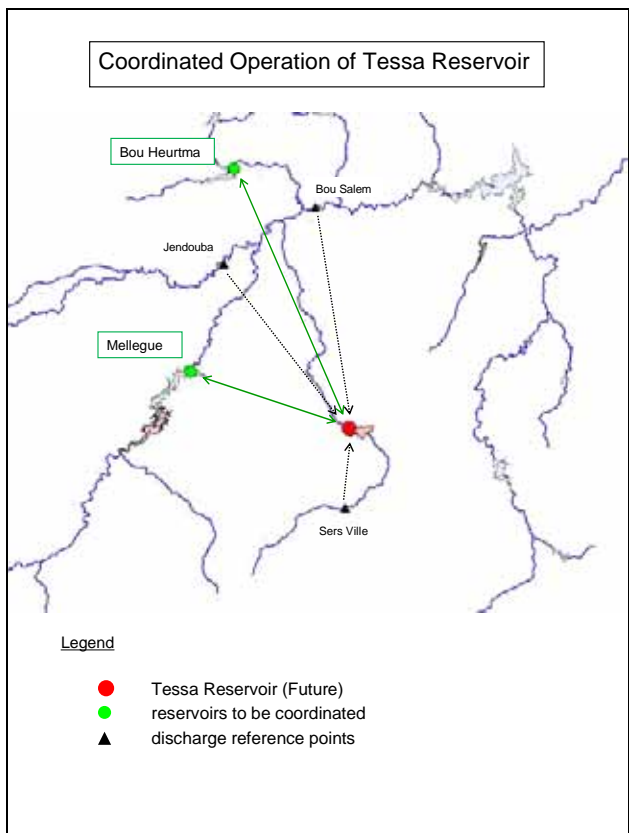
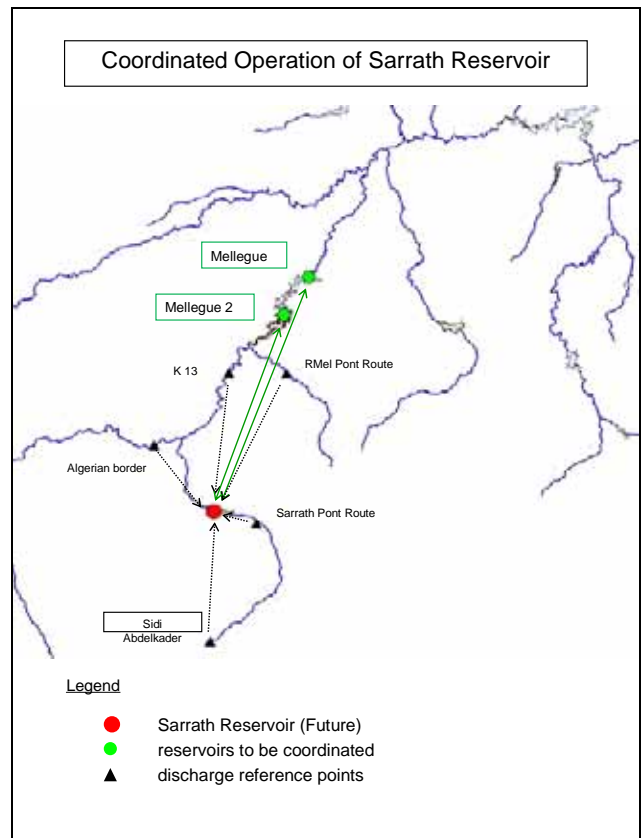
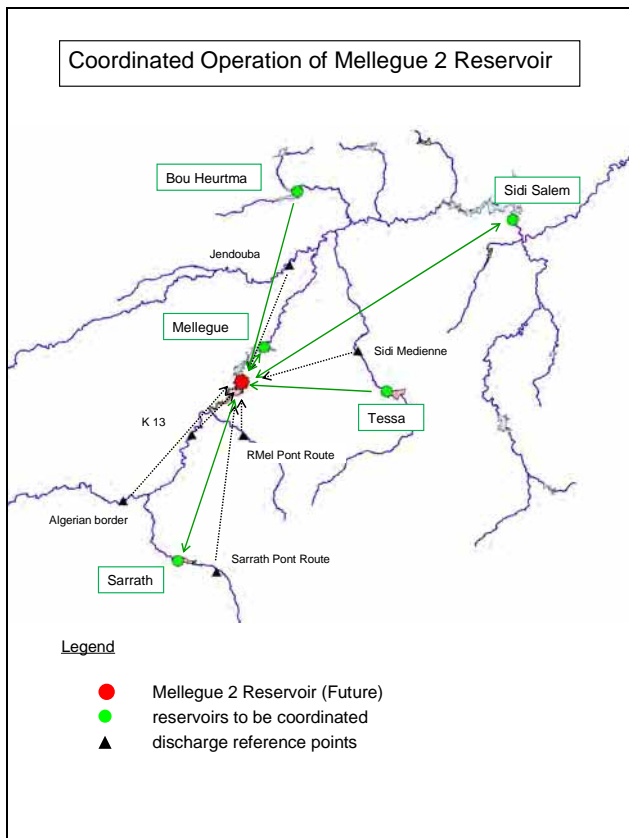


図 8.2.1 ダム連携運用の基本計画 (2/2)

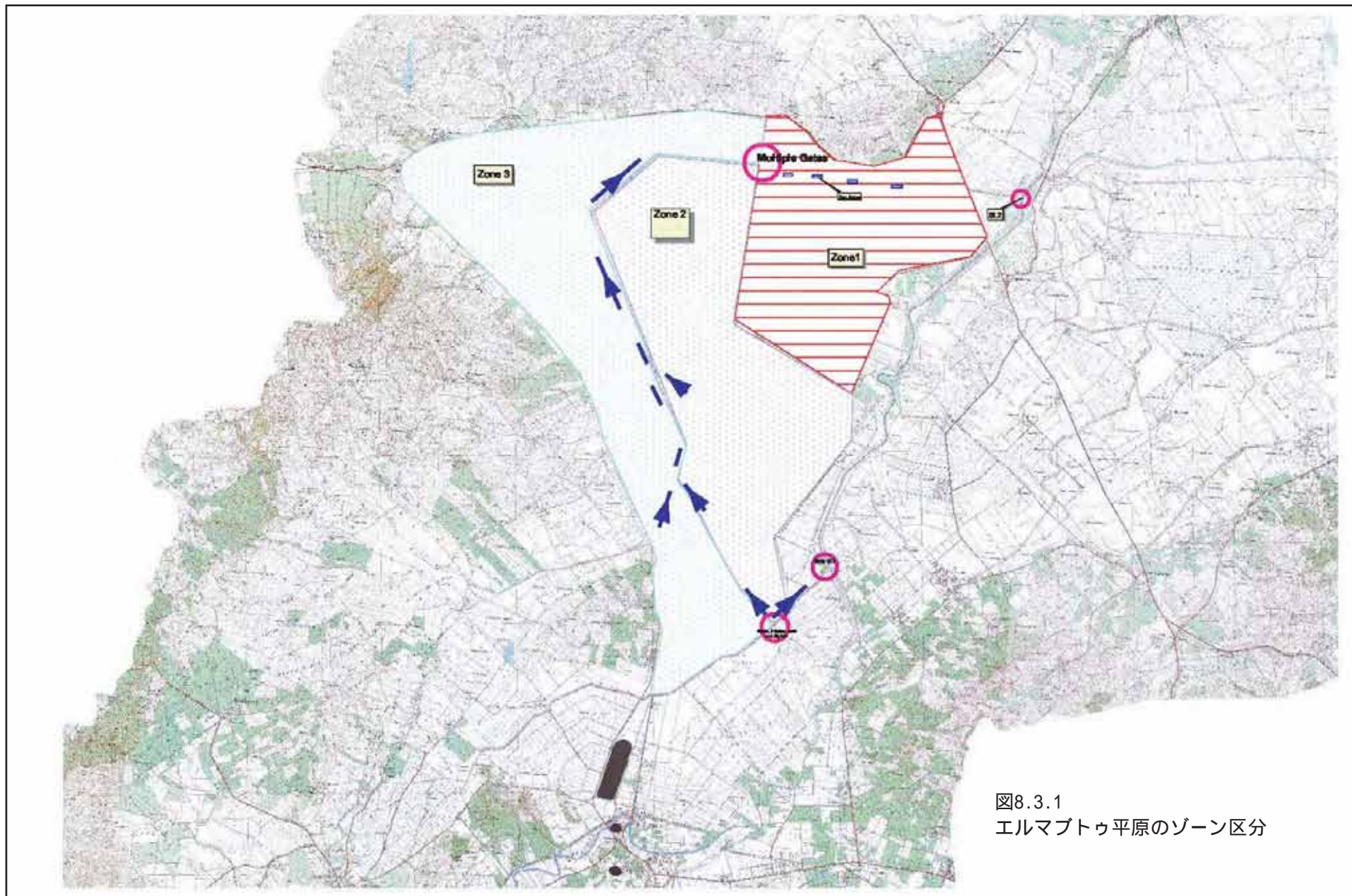


図8.3.1
エルマブトゥ平原のゾーン区分



図8.3.2 エルマブトゥ水路の現況樋門



図8.3.3 エルマプトゥ水路の現況樋門

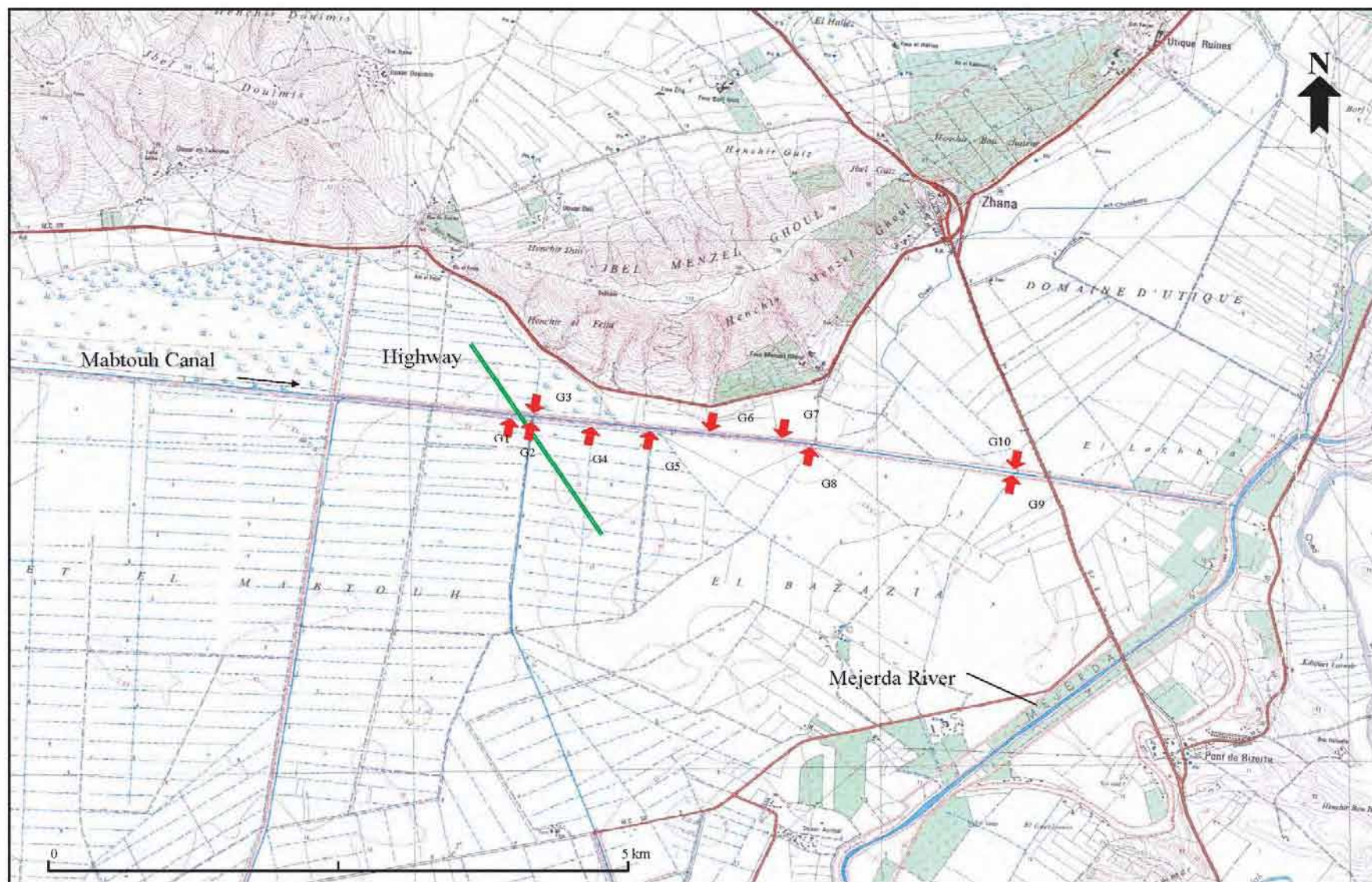


図8.3.4 エルマブトゥ水路現況樋門の位置図