

#	Training Modules and Topics	Focus groups	Duration days (theory)	Duration days (practical)	Participants	Courses	Implemented by	MRRD contact person
1	Hydrogeology I							
1.1	Groundwater Investigation: Geological, hydrological and meteorological studies. Origin, occurrence of groundwater, collection of water sources data. Exploratory drilling, selection of drilling sites, decide which type of drilling rigs. Well field protection, zoning, EIA.	Graduates in hydrogeology and technicians	3	2	15	2	Dr. Najaf	Safi/Taib
1.2	Geophysical survey (VES, IP, well logging)	Geophysicists, technicians, water engineers	5	2	20	2	de Jong	Safi/Taib
1.3	Well drilling methods and types, drilling supervision and analyzing lithology, drilling penetration rate, rig action, lithological logging, well design, designing of gravel packing. Well problems and failure, well maintenance, camera inspection.	Hydrogeologists, technicians, drilling group	2	2	47	2	de Jong, Hassan, Assadullah	Safi
1.4	Water well design, completion and development. Based on drilling lithological log, time log, drilling action log and geophysical logger, analyze and select pipes and filter intervals, use of software for well design. Well assembly, lowering of assembly, gravelpacking. Development of well, compressor development and testing with air or overpumping.	Hydrogeologists technicians, drilling group	3	1	20	2	de Jong	Safi
1.5	Well Hydraulics: Testing water wells for drawdown and yields, Converging flow, Cone of depression, Equilibrium well formula, non Equilibrium formula, multiple step drawdown test, aquifer performance test.	Hydrogeologists, technicians, pumping group	3	2	20	2	de Jong	Safi
1.6	Hydricchemistry, interpretation of data		2	5	10	2		Safi
1.7	Planning and implementation of Provincial hydrogeological surveys	Hydrogeologists, planners of hydrogeo. Surveys,	3	2	18	2	D. Banks	Safi
1.8	Geophysical Borehole logging, planning and operating equipment	Hydrogeologists, technicians, from org. with well logg. Equipment	2	5	10	2	de Jong	Safi
1.9	Geophysical borehole logging, interpretation of data	Hydrogeologists, technicians, students,	2	5	10	2	de Jong	Safi
1.10	Geophysical borehole logging, interpretation of data, testpumping	Junior staff and students	2	2	25	2	Dacaar, Hassan	Safi
2	Hydrogeology II		Σ 16	9	122	10		
2.1	Interpretation of hydrochemical and microbiological data. Understanding chemical, physical and microbiological quality of water.	Hydrogeologists and chemist	2	3	10	2	Hassan and Jawed	
2.2	Preparing of thematic maps, using software	Engineers, technicians, hydrogeologists	2	3	10	2	Hassan and Jawed	
2.3	Well Construction and GPS reading-in the province	Engineers, technicians, hydrogeologists	3	2	10	1	Dacaar/ Hassan	
2.4	Geophysical Investigation and Siting-practical-in the province	Engineers, technicians, hydrogeologists	2	3	15	1	Dacaar/ Hassan	
2.5	Water Quality Testing, Test Pumping and Data Collection-in the province	Engineers, technicians, hydrogeologists	2	3	15	2	Dacaar/ Hassan	
3	Training methods		Σ 11	14	60	8		
3.1	Training of trainers methods	Trainers MRRD, NGOS, others	2	1	20	1	DACAAR/ WETC	
3.2	Best practice in preparing training material and manuals	Trainers MRRD, NGOS, others	2	1	20	1	DACAAR/ WETC	
4	GIS-MIS for hydrogeological information		Σ 4	2	40	2		
4.1	ArcGIS Software Introduction	Staff at RGIS unit, MRRD and Dacaar	3	0	10	1	Supplier of ArcGIS	Zarinkhail
4.2	ArcGIS Databases	Staff at RGIS unit, MRRD and Dacaar	2	0	10	1	Supplier of ArcGIS	Zarinkhail
4.3	ArcGIS Spatial analyses	Staff at RGIS unit, MRRD and Dacaar	2	0	10	1	Supplier of ArcGIS	Zarinkhail
4.4	RGIS viewer, administration	Staff at RGIS unit, MRRD	3	0	5	1	RGS unit	Zarinkhail
4.5	RGS Viewer, how to use	Staff at RGIS unit, MRRD, Dacaar, Unicef	1	0	10	1	RGS unit	Zarinkhail
4.6	RGIS design and GIS in general. Overall introduction to its actual content and how it is planned	Managers and staff at RGIS unit, MRRD, Dacaar, Unicef who wish to be introduced to the RGIS and GIS concept	1	0	10	1	RGS unit	Zarinkhail
4.7	Data Management. Comprehensive theoretical issues related to data management of spatial data. Topics related to standardization and modeling specifically, and provide hands-on training	RGIS staff and selected staff at MRRD, Dacaar and Unicef	5	0	5	1	RGS unit	Zarinkhail
4.8	Data Capturing. Comprehensive theoretical training on topics related to data capturing, geo-referencing, and data conversion. Examples from hydrology and hands-on training are preferable.	Committed Managers, RGIS staff also at district level, DACCAR and UNICEF personnel	1	0	10	1	RGS unit	Zarinkhail
4.9	Cartography. Comprehensive theoretical training on topics related to cartography, included practical example and hands-on training.	Committed personnel working with GIS analysis and map output at RGIS, MRRD and DACCAR	2	0	10	1	de Jong	Zarinkhail
4.10	Remote Sensing, GIS	Committed personnel working with GIS analysis and map output at RGIS, MRRD and DACCAR	2	0	10	1	de Jong Barat	Zarinkhail
5	Water and sanitation		Σ 22	0	90	10		
5.1	Planning water supply and sanitation using water atlas	Hydrogeologists, water engineers, government, consult students	2	0	20	2	Norplan and MRRD	Naim
5.2	Conceptual design of water and sanitation based on sustainability and affordability. Assessment of water technology to use in ground water areas with potential saline waters.	National, prov. engineers, hydrogeologists	3	0	20	2	Stoveland	Naim
5.3	Planning and implementation of O&M for rural water supplies	Hydrogeologists, Water engineers, Gov., consultants, students	3	0	15	2	DACAAR/ WETC	Naim
5.4	Social aspects of Water and Sanitation, WASH policy, gender issues	Water engineers, Gov., consultants, students	3	0	15	3	DACAAR/ WETC	Logarwal
5.5	Water supply network design using software like WaterCad, WaterGEMS from Bentley or EPANET.	Water engineers, design, MRRD	4	0	5	1	Regional expert	Naim
5.6	Training in use of total station for water/wastewater, network survey	Surveyors, engineers, MRRD	0	2	7	2	Local expert Naseri	Naim
5.7	Water testing Quality Control	Laboratory personnel planning or conducting routine water analyses	2	1	15	2	Stoveland	
6	National- International Technical Conference		Σ 37	0	180	21		
	Hydrogeology in Afghanistan (use- conservation - regulation or resources) Practices and best practices , Nationally and internationally	Politicians, senior govt. decisionmakers, Academics, specialists, technical usersin public and private sector.org.	1		100	1	Ministries/ University	
	GIS tools in use in Afghanistan, GIS - Web maps, Hydrogeology and other uses in different organizations, Practices and best practices , Nationally and internationally	Politicians, senior govt. decisionmakers, Academics, sepcialists, technical usersin public and private	1		100	1	Ministries/ University	
6	Post graduate training		Σ 17	3	97	14		
6.1	Candidates for degrees in hydrogeology	Scholarships Afghan candidates	18 months		Applic.		Universities	
6.2	Candidates for higher degrees in hydrogeology	Scholarships Afghan candidates	40 months		Applic.		Universities	
24	Total summary of training parameters		70	28	409	44		