SPRINKLER IRRIGATION DESIGN

SOILS INFORMATION:

SOIL_____SLOPE_____

MAX. DE PTH_____FT._____INTAKE RATE_____IN/HR,

AVAILABLE WATER HOLDING CAPACITY _____IN/FT. (AWC)

CROP INFORMATION:

CROP_____EFFECTIVE ROOT ZONE DEPTH_____FT.

PEAK DAILY CONSUMPTIVE USE_____IN/DAY

WATER SUPPLY:

SOURCE_____AMOUNT AVAILABLE_____GPM_____CFS_____AC/FT.

DELIVERY SCHEDULE_____QUALITY OF WATER_____

DESIGN AND LAYOUT:

MAXIMUM DAYS PER IRRIGATION CYCLE = (can be less but not more than)

AWC_____IN. x 50% divided by _____IN/DAY PEAK DAILY CONSUMPTIVE USE =

_____IRRIGATION CYCLE DAYS

SPRINKLER SPACING ON LATERAL_____FT. LATERAL SPACING ON MAINLINE_____FT.

HOURS OF OPERATION PER SET_____HRS .

NET APPLICATION = _____DAYS/IRR. CYCLE x _____IN. PEAK CONSUMPTIVE USE/DAY =

_____IN/NET

GROSS APPLICATION _____IN. NET divided by _____ % IRR. SYSTEM EFFICIENCY = _____IN. GROSS

PRECIPITATION RATE = _____IN. GROSS divided by _____HRS/SET = _____IN/HR. PRECIPITATION RATE

G.P.M. PER SPRINKLER = USE CALCULATOR or

$$\frac{\text{PR. RATE x AREA COVERED/SPRINKLER (sprinkler spacings multiplied ex. 40x60 SQ. FT.)}}{96.3} = \_\_\_\_\_\text{GPM}$$

TOTAL GPM :_____GPM/SPRINKLER x_____ TOTAL HEADS IN OPERATION = _____TOTAL GPM

MINER'S INCHES NEEDED: TOTAL GPM divided by 11.22 GPM/MINER'S INCH = _____MINER'S INCH

PIPE SIZING AND FRICTION LOSS MAINLINE AND LATERALS:

MAINLINE: MATERIAL TYPE, PRESSURE RATING_____

LENGTH (FT)	GPM	DIAMETER (IN)	VEL. (FT/SEC)	FRICTION PSI/100' x 2.31'/PSI =	FEET
_____	____	_____	_____	_____	_____
_____	____	_____	_____	_____	_____
_____	____	_____	_____	_____	_____

HEAD LOSS DUE TO FRICTION _____FT

RISE, FALL, NONE (Circle One) IN MAINLINE _____FT.

LATERALS: MATERIAL TYPE AND PRESSURE RATING _____

LENGTH (FT)	NO. SPRINKLERS/LATERAL	LATERAL DISCHARGE GPM	DIAMETER (INCHES)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

PRESUURE LOSS IN LATERAL DUE TO FRICTION _____PSI

(PRESSURE LOSS NOT TO EXCEED 20% OF THE OPERATING PRESSURE)

PRESSURE REQUIRED (AT MAINLINE) TO OPERATE LATERAL _____PSI

TOTAL DYNAMIC HEAD:

PRESSURE REQUIRED AT LATERAL _____PSI x 2.31'/PSI = _____FT.

FRICTION LOSS IN MAINLINE _____FT.

ELEVATION DIFFERENCE BETWEEN PUMP AND HIGHEST POINT OF LATERAL LINE _____FT.

LIFT AT WELL OR WATER SOURCE _____FT.

MISCELLANEOUS VALVES – FITTINGS _____FT.

TOTAL HEAD _____FT.

PUMP REQUIREMENTS:

CAPACITY _____GPM AT TOTAL HEAD _____ FT.

$$\frac{\text{GPM x TOTAL HEAD FT}}{\text{3960 x PUMP EFFICIENCY \%}} = \frac{(\quad)(\quad)}{(3960)(\quad)} = \text{_____ BRAKE HORSE POWER}$$

_____INCH CHECK VALVE _____INCH PRESSURE RELIEF VALVE

_____NUMBER _____INCH AIR VACUUM RELEASE VALVES