－89～F－92に，銅・鉛・亜鉛・カドミウム・ヒ素については表F－93～F－96にそれぞれ取りまとめてある。

調査株の籾わら比，1ha当たり水稲中窒素吸収量及び籾1ton当たり養分吸収量は次に示すとおりである。

	籾／わら	窒素吸収量 (kg／ha)	籾1ton当たり養分吸収量 (kg) 窒素	リン	カリ
ARIS地区定点№2	0.63	80	11.9	1.7	2.4
ARIS地区新定点№4	0.95	147	13.3	2.2	3.3
ARDIS地区定点№10	1.03	257	19.7	1.9	3.3

調査株が吸収した重金属成分のうち，銅を除く4成分については，ARIS及びADRIS両地区の調査水田の間で有意な差は認められなかった。しかし，両地区の調査株部位別平均銅濃度には下記のように明白な差異を生じている。

	葉 (ppm)	茎 (ppm)	玄米 (ppm)	籾殻 (ppm)	根 (ppm)
ARIS地区定点№2	77.9	80.9	6.8	9.6	695
ARIS地区新定点№4	41.2	76.4	7.2	7.9	663
ADRIS地区定点№10	5.1	7.0	3.4	3.8	20

他の重金属成分のうち，特にカドミウムは玄米中に吸着され，食物として摂取されると人体に害を及ぼすことが知られている。ARIS地区における調査株を分析した結果，玄米中のカドミウム濃度は平均して0.02ppm以下，例外的最大値でも0.04ppmにとどまり，ARIS地区産米の品質については問題のないことが明らかになった。

7.2 雨期作水稲

(1) 生育調査

雨期作生育調査水田において農民が実施した耕種法の概要は表F－78に示してあるが，6ケ所の調査水田に4種類の品種が栽培され，施肥量及び施肥時期もすべて異なっている。

各調査水田における生育調査成績は表F－97～F－102に取りまとめてある。ARIS地区内6ケ所の調査水田のうち，定点№6と№12の調査株の分けつは，他の調査株に比べかなり貧弱である。これは施肥量の多寡よりも，むしろ生育期前半の灌漑用

水補給量の不足と生育期後半に頻発した豪雨時の排水不良に関係しているものと推察される。また，対照区のADRIS地区調査水田定点№10においては，1ha当たり尿素肥料施用量が乾期作に比べ150kg減の50kgになったため，分けつ数が少なくなっている。

(2) 収量調査

各生育調査水田における収量調査並びに収量構成要素解析の結果は表F－103～F－105に一括してある。各調査水田で選抜した収量調査代表株の収量構成要素を解析した結果の平均値を以下に取りまとめた。また，ARIS地区内18ケ所で実施した収量調査から得られた収量構成要素解析結果も併せて示してある。なお，これは水口圃場72筆と水尻圃場96筆の平均値である。

	一株穂数	一穂頴花数	登熟歩合	千粒重	登熟籾千粒重
ARIS地区定点№2	15.7	50.1	78.7%	21.5	25.5g
ARIS地区定点№4	18.5	62.2	75.1	17.7	21.1
ARIS地区定点№6	11.9	80.2	60.0	17.4	24.2
ARIS地区定点№8	14.8	96.2	67.6	15.6	19.9
ARIS地区定点№12	10.8	84.7	79.0	13.0	20.8
ADRIS地区定点№10	23.0	49.0	43.0	17.8	20.5
ARIS地区18ケ所					
水口圃場平均値	14.4	54.6	70.6	18.3	21.6
水尻圃場平均値	16.5	60.9	75.5	19.1	23.1

乾期作の収量構成要素解析結果と同様に，ARIS地区内の水口圃場に作付けられている水稲は，水尻圃場作付水稲に比べ，いずれの収量構成要素も下回っている。また，ADRIS地区調査水田の水稲の収量構成要素には，雨期作施肥水準が明瞭に反映している。

生育調査水田の1ha当たり籾収量の分布状態を整理すると，次のようになる。

	最高 (ton／ha)	最低 (ton／ha)	平均 (ton／ha)
ARIS 地区定点 No. 2	5.2	2.4	4.2
ARIS 地区定点 No. 4	4.8	3.3	3.9
ARIS 地区定点 No. 6	4.1	2.6	3.2
ARIS 地区定点 No. 8	5.5	1.5	4.1
ARIS 地区定点 No. 12	5.8	3.5	4.8
ADRIS 地区定点 No. 10	3.2	1.6	2.4

ARIS地区内雨期作実施区域で実施した収量調査の対象水田18ケ所の位置，栽培品種，収穫時期を表F－106に示してある。また，この18ケ所の水田において合計168筆の圃場から試料を選抜し，収量構成要素を解析した。その結果は表F－107～F－114に取りまとめてある。このうち，水口圃場72筆の1ha当たり平均籾収量は3.1ton，最高収量は6.2ton，最低収量は0.5tonであった。一方，水尻圃場96筆の1ha当たり平均籾収量は4.1ton，最高収量は7.0ton，最低収量は2.1tonとなり，水口圃場の収量をいずれも上回っている。

(3) 養分・重金属成分吸収量

乾期作と同様に調査株の養分及び重金属成分の吸収量を分析した。表F－115～F－120に窒素・リン・カリ・ケイ酸の，表F－121～F－126に銅・鉛・亜鉛・カドミウム・ヒ素の分析値をそれぞれ取りまとめてある。

調査株の籾わら比，1ha当たり養分吸収量は下記に示すとおりである。

	籾／わら	窒素吸収量 (kg／ha)	籾1ton当たり養分吸収量 (kg)		
			窒素	リン	カリ
ARIS 地区定点 No. 2	0.78	111	12.2	3.1	3.1
ARIS 地区定点 No. 4	0.74	113	15.7	2.9	2.8
ARIS 地区定点 No. 6	0.98	68	13.3	2.9	3.2
ARIS 地区定点 No. 8	0.72	105	14.3	2.7	3.2
ARIS 地区定点 No. 12	0.80	83	15.3	3.2	2.9
ADRIS 地区定点 No. 10	1.04	110	18.2	3.9	4.0

調査株の重金属成分吸収量は乾期作と同様の傾向を呈している。各生育調査水田における調査株部位別銅平均濃度を取りまとめると，次のようになる。

	葉 (ppm)	茎 (ppm)	玄米 (ppm)	籾殻 (ppm)	根 (ppm)
ARIS 地区定点№ 2	21.6	53.3	6.4	7.6	263
ARIS 地区定点№ 4	30.7	48.5	4.7	5.9	630
ARIS 地区定点№ 6	18.9	52.8	4.8	5.5	255
ARIS 地区定点№ 8	31.8	52.8	5.6	5.3	340
ARIS 地区定点№12	11.9	41.9	6.6	6.1	186
ADRIS地区定点№10	6.6	10.1	4.5	4.7	112

雨期作調査株の玄米中カドミウム濃度は，ARIS地区最上流側の調査水田定点№2で0.3～0.4ppm，同地区内の調査水田においては最大0.2ppm，ADRIS地区調査水田においては0.06ppm以下の範囲にある。

8. 検討対象成分の選定

灌漑用水・土壌・作物に関する現況把握を目的とし，1年間にわたり現地調査を行い，さらに採取した試料の理化学分析を実施した。その結果，現在ARIS地区においてAgno川から取水している灌漑用水に大量の土砂が含まれ，水路埋没，田面への土砂流入などの物理的被害を引き起していることと，さらにこの土砂が相当量の固形銅を含み，灌漑水田の表土中に銅の集積していることが判明した。また，ARIS地区の水稲の葉・茎・根中銅濃度は，同地区の水稲が表土から酸可溶性銅をかなり吸収していることを示している。一方，他の重金属成分のうち，鉛，亜鉛，ヒ素の土壌中濃度は，ARIS地区において灌漑に伴う人為的蓄積が多少認められるが，作物体による吸収量は特に問題視すべき水準に至っていない。また，カドミウムの玄米中濃度は，人体に有害とされる限界を大きく下回っている。

San Roque計画ダムからの放流水の水質予測値によれば，現在Agno川の河川水が搬送している粒径の粗い土砂は貯水池内に全て沈殿するが，計画ダムからの放流水には常時大量の極微粒子懸濁物が含まれるようになることが指摘されている。また，この極微粒子懸濁物は静水状態でも容易に沈殿せず，流水状態では水とほぼ同一の挙動を呈するものと考えられる。さらに，この極微粒子懸濁物には，固形銅が水酸化物の状態で常時相当量含まれることも示唆されている。

以上述べたように，現地調査の結果及びSan Roque計画ダム放流水の水質予測値から，将来の灌漑用水の水質を評価する場合，銅の挙動について検討を加える必要性が生じた。

これを踏まえ，ここで銅を検討対象成分に選定し，次章で灌漑用水とともに計画灌漑地域全域に拡散する極微粒子懸濁物量と，それがもたらす銅の土壌中蓄積量を推定することとする。

9. 将来の灌漑用水の水質とその影響予測

9.1 予測水質

San Roque多目的ダム開発計画事業の実施によって新たに手当てされる水源を利用し，既存灌漑地区を含む70,800haの水田において通年灌漑が可能となる。San Roque計画ダムの下流2km地点にある既設ARIS地区頭着工を統合堰に改築し，ここからSan Roque計画ダム灌漑受益地域全域の灌漑用水を一括して取水する。San Roqueダム計画地点とARIS地区頭着工との間には，Agno川本川の両岸から流入する支流は存在しない。したがって，将来，改築統合堰から灌漑用に取水されるAgno川の河川水の水質は，San Roque計画ダムの発電所並びに洪水吐を経て貯水池から放流される貯留水の水質と同一のものと見做すことができる。

San Roque計画ダムからの放流水の水質予測値によると，灌漑用水中の溶存銅濃度は0.002～0.009mg／ℓの範囲で変動する。一方，灌漑用水中の懸濁物の粒径組成は現況とは全く異なり，5μ以下の粒子で占められるようになる。灌漑用水中の懸濁物濃度は現況の年平均値1,600mg／ℓから，将来は720mg／ℓに低下するものと予測されている。この懸濁物は極めて微細な粒子から成るので，灌漑用水路あるいは水田の水口部分に沈殿することなく，ほとんどが灌漑用水とともに田面全体に拡がり，その一部は排水路へ流去し，またある一部は地下に浸透するが，残りは落水後田面に残留する。この微細懸濁物中の全銅濃度の年平均値は520 ppm，作物体に吸収されやすい酸可溶性銅濃度の年平均値は140 ppmと予測されている。

9.2 影響予測の手法

灌漑用水中に溶存する銅の濃度は0.002～0.009mg／ℓで，作物体が直接吸収しても生理障害を生ずる許容限界0.02mg／ℓと比べて大幅に低い。したがって，溶存銅は懸濁物中の固形銅とともに土壌への負荷源として取り扱うこととする。

灌漑用水によって毎年新たに供給される銅が，土壌中に蓄積する量は次式から求めることができる。すなわち，

年間土壌中蓄積量（g／ha）＝（用水からの負荷量＋用水中の懸濁物からの負荷量＋

流入土砂からの負荷量）×蓄積率×活性化率

ここで，

用水からの年間負荷量（g／ha）＝〔粗用水量（m^3／ha）－有効雨量（m^3／ha）〕×灌漑期平均汚染物質濃度（ppm）

用水中の懸濁物からの年間負荷量（g／ha）＝〔粗用水量（m^3／ha）－有効雨量（m^3／ha）〕×灌漑期平均懸濁物濃度（ppm）×懸濁物中汚染物質濃度（ppm）×10^{-6}

流入土砂からの年間負荷量（g／ha）＝粒径別流入土砂量（ton／ha）×粒径別汚染物質濃度（ppm）

蓄積率：搬送効率と水適用効率の積で表わされる灌漑効率

活性化率：全銅濃度に対する酸可溶性銅濃度の割合

純用水量はELCのフィージビリティ調査で提案された計画作付体系に基づく地区別用水量を用い，この際，本調査の水文部門の検討結果を考慮して，有効雨量に若干の修正を加えた。用水中及び懸濁物中の各銅濃度は本調査の貯水池貯留水水質部門の水質予測値を用い，流入土砂量は同水質部門の検討結果から皆無として取り扱った。蓄積率の仮定に用いた灌漑効率はELCのフィージビリティ調査で提示された値を用い，稲作灌漑の場合は５５％，畑作灌漑の場合は５０％とした。活性化率については，懸濁物中の酸可溶性銅濃度が貯水池貯留水の水質部門の水質予測値に示されており，この値をそのまま使用した。

9.3 銅の土壌中蓄積量

第３章で述べた将来の灌漑計画に基づいて，San Roqueダム計画灌漑地域における作付体系別粗用水量を取りまとめた。これに用いた地域の月別雨量記録を表Ｆ－１２７に，作付体系及び地区別作付面積を表Ｆ－１２８に示してある。これから算定した作付体系別月間粗用水量は表Ｆ－１２９～Ｆ－１３２のとおりである。また，地区別月間粗水量を表Ｆ－１３３～表Ｆ－１３６に一括してある。３０年間の平均月間粗用水量を地区別に整理すると次頁の表のようになる。

San Roque計画ダムから放流水の水質予測値のうち，「平均流量・適値」の組合せRun－1と，「実測流量・最悪値」の組合せRun－４の二つの条件について銅の負荷量を求めた。前者の組合せにおける用水中溶存銅濃度を表Ｆ－１３７，用水中懸濁物濃度を表Ｆ－１３８に，懸濁物中全銅濃度を表Ｆ－１３９に，懸濁物中酸可溶性濃度を表Ｆ－１４０

	ARIS地区 (m^3/ha)	ARIS拡張地区 (m^3/ha)	ADRIS地区 (m^3/ha)	LARIS地区 (m^3/ha)
1月	4,087	3,814	3,303	3,808
2月	3,386	3,317	3,032	3,333
3月	2,136	2,094	2,011	2,109
4月	715	648	668	621
5月	388	310	291	254
6月	1,527	1,568	1,416	1,539
7月	1,548	1,662	1,569	1,673
8月	1,054	1,035	958	1,083
9月	577	577	534	609
10月	444	464	470	486
11月	1,052	818	597	803
12月	2,283	1,993	1,609	1,982
年間	19,199	18,302	16,458	18,300

に示してある。また，後者の組合せに使用した予測水質値は表F－141～F－144に取りまとめてある。

将来San Roque計画ダムからの放流水を灌漑用水として計画灌漑地域の水田に供給を開始した後，用水と用水中懸濁物から水田1haに負荷される銅の量を算出し，蓄積率を勘案して田面に残留する銅の量を求めた。組合せRun－1の条件で算出した結果のうち，ARIS地区については表F－145～F－147，ARIS拡張地区については表F－148～F－150，ADRIS地区については表F－151～F－153，LARIS地区については表F－154～156にそれぞれ示してある。作物に吸収されやすい銅が，灌漑に伴い各地区の水田の表土に毎月蓄積していく量を，30年間の平均値を用いて表わすと次頁の上表のようになる。

組合せRun－4の条件で算定した結果のうち，ARIS地区に関しては表F－157～F－159，ARIS拡張地区に関しては表F－160～F－162，ADRIS地区に関しては表F－163～F－165，LARIS地区に関しては表F－166～168にそれぞれ示してある。作物に吸収されやすい銅の水田表土への月間蓄積量を，30年間の平均値を用いて表わすと次頁の下表のようになる。この条件の場合，渇水年にはある月の計画ダムからの総放流

	ARIS地区 (g/ha)	ARIS拡張地区 (g/ha)	ADRIS地区 (g/ha)	LARIS地区 (g/ha)
1月	226	211	183	211
2月	178	175	160	175
3月	145	142	136	143
4月	140	126	130	121
5月	46	37	35	30
6月	141	145	131	142
7月	142	152	144	153
8月	77	75	70	79
9月	17	17	16	18
10月	17	18	18	18
11月	62	48	35	48
12月	159	139	112	138
合計	1,350	1,286	1,169	1,277

	ARIS地区 (g/ha)	ARIS拡張地区 (g/ha)	ADRIS地区 (g/ha)	LARIS地区 (g/ha)
1月	317	295	255	295
2月	281	275	252	277
3月	286	280	268	281
4月	162	147	151	141
5月	72	58	54	48
6月	219	225	203	218
7月	168	180	170	181
8月	83	83	77	85
9月	38	39	36	40
10月	24	24	25	27
11月	78	59	43	60
12月	193	167	135	167
合計	1,921	1,832	1,670	1,819

量が，計画灌漑地域の総取水量を下回る場合が生ずるが，この時点でも域内の水田の一部は計画どおりに用水供給を受けるものと仮定した。したがって，ここで算定してある銅の土壌中蓄積量は，渇水時でも継続して用水が供給される水田における蓄積量を意味する。

表Ｆ－１６９は，用水中の懸濁物中全銅が土壌中に蓄積する量を，３０年間の平均値を用いて，地区別の月次変化の形で示したものである。

9.4　水質予測値の評価

San Roque 計画ダムからの放流水の水質予測値を農業用利水の立場から評価するに当たり，現地調査及び試料分析を通じて明らかにした土壌中の銅の挙動に着目し，これを指標として所定の評価を行うこととした。将来，San Roque 計画ダムからの放流水を灌漑用水として利用する場合，前述したように，計画灌漑地域において，毎年水田１ ha当たり 1.15～1.35 kg の作物に吸収されやすい銅が蓄積する。また，San Roque 計画ダムの放流水の水質を最悪の条件で予測した場合には，銅の年間蓄積量は１ ha当たり 1.65～1.95 kg に増加する。

末端用水路から水田に流入した極微粒子懸濁物は，水口部分の沈砂区画の有無にかかわらず，田面全体に用水とともに拡散するものと考えられる。この極微粒子懸濁物中の銅が年間負荷量に占める比率は，用水中の溶存銅と比較し，圧倒的に大きい。この形態の銅は水田に流入後，田面から排水路に用水とともに流出する部分を除き，土壌中に残留する。作物体への吸収量及び地下浸透量を無視し，残留量全量が毎年表土に蓄積するものと仮定すると，この蓄積銅は耕起の都度，土壌と混和される。耕起深度を１５ cmとした場合に，毎年新たに水田土壌に負荷される銅の量を土壌中銅濃度に換算すると 0.8 ppm程度となる。

土壌中銅濃度が作物の生育阻害要因となり，減収現象を誘発する水準を，日本の基準と同様に，１２５ ppmとする。計画灌漑地域の現在の土壌中銅濃度に年間増加濃度を累計していくと，Agno 川灌漑地区の場合，最短約１２０年間で上述限界値に達し，最悪の条件では約７５年後となる。他の３地区では約１６０年後に限界値となる。

実際には，地下浸透や収穫後の稲わらの一部が圃場外に持ち出され，銅の年間残留量は想定値を下回ることになるので，上述した基準限界値への到達年数はさらに長くなる。

10. 結　論

ＥＬＣのフィージビリティー調査に基づき，鉱山からの廃さいを全てAgno川支流に排出し，本流に建設されるSan Roque計画ダムの貯水池に流入土砂として収容した場合，計画ダムからの放流水には大量の極微粒子懸濁物が混入し，かつこの懸濁物には相当量の銅が含まれることが予測された。このような水質をもつ灌漑用水を計画灌漑地域に供給すれば，域内水田の全体に極微粒子懸濁物が用水とともに拡散，その大部分が田面に残留する。これに伴い，土壌中銅濃度が毎年継続的に増加していくものと想定される。そして，土壌中銅濃度が作物減収を誘発する許容限界に到達するのは約１２０年ないし１６０年後と推定した。この想定期間はＥＬＣのフィージビリティー調査で見込んだ事業評価期間５０年を上回る。

Table F-1 PRESENT LAND USE IN PROPOSED IRRIGATION DEVELOPMENT AREA

Unit: ha

Crop	ARIS	ARIS Extension	ADRIS	LARIS	Other Area*	Total
(1) Wet Season						
Paddy						
Irrigated	19,490	110	6,570	7,480	1,600	35,250
Rainfed	5,710	22,820	1,830	4,840	8,800	44,000
Corn	640	2,900	—	250	300	4,090
Sugarcane	1,710	370	—	280	2,960	5,320
Total	27,550	26,200	8,400	12,850	13,660	88,660
(2) Dry Season						
Paddy						
Irrigated	7,385	—	600	1,000	600	9,585
Pump Irri.	385	110	—	—	20	515
Corn	60	135	10	2,400	285	2,890
Sugarcane	1,710	370	—	280	2,960	5,320
Cotton	285	400	—	40	50	775
Tobacco	1,250	520	1,470	1,000	300	4,540
Mongo	5,750	675	3,145	25	690	10,285
Vegetables	670	500	60	200	155	1,585
Peanuts	250	550	80	125	425	1,430
Idle	9,795	22,940	3,035	7,780	8,175	51,725
Total	27,550	26,200	8,400	12,850	13,660	88,660

Source; ELC's feasibility study

Table F-2 RECORD ON DESILTING WORKS IN ARIS

Year	Excavated Volume (m^3)	Total Cost (Peso)	Unit Cost (Peso/m^3)
1978	147,575	100,023	0.68
1979	108,065	279,445	2.59
1980	132,587	626,522	4.73
1981	69,777	249,433	3.57
1982	67,481	229,837	3.41
1983	31,787	263,249	8.28

Source; NIA Region 1 Office

Table F-3 RECORD ON IRRIGATED AREAS IN ARIS AND ADRIS

Unit: ha

Year	ARIS		ADRIS	
	Dry Season	Wet Season	Dry Season	Wet Season
1975	4,505	13,545	—	—
1976	5,212	16,278	—	—
1977	3,978	16,593	—	—
1978	4,409	12,394	—	—
1979	4,498	13,742	339	3,330
1980	4,290	13,095	304	3,430
1981	4,017	9,689	574	3,413
1982	4,785	10,036	670	3,657
1983	3,932*	10,318	704	2,640

Source; NIA Region 1 Office
Remarks; This is a schedule.
Actually irrigated (planted) area is reported to be about 2,000 ha.

Table F-4 PROPOSED CROPPING PATTERN FOR IRRIGATION DEVELOPMENT AREA

Unit: %

Pattern	ARIS	ARIS Extension	ADRIS	LARIS
Paddy-Paddy	47	35	25	36
Paddy-Tobacco	8	9	19	18
Paddy-Cotton	16	28	21	21
Paddy-Diversified Crops	17	17	17	17
Paddy-Vegetables-Vegetables	3	5	14	3
Vegetables (3 crops/year)	1	1	4	1
Sugarcane	8	5	—	4
Total	100	100	100	100

Source; ELC's feasibility study

Table F-5 LIST OF MONITORING POINTS FOR OBSERVATION OF IRRIGATION WATER QUALITY IN ARIS AND ADRIS

Monitoring Point		Location	Monitoring Items	Monitoring Period
No.	1.	ARIS, Main Canal, Diversion Point at Lateral A	Water quality & canal discharge	Both seasons
	2.	ARIS, Lateral B, Crossing Point of San Roque Dam Access Road	Water quality, canal discharge & crop growth	Dry season
		ARIS, Lateral D, Nearby Barangay Macalong	Water quality & crop growth	Wet season
	3.	ARIS, Don Moteo Ditch Diversion Point from Main Canal	Water quality & canal discharge	Both seasons
	4.	ARIS, Don Moteo Ditch, Crossing Point of San Roque Dam Access Road	Water quality & crop growth	Both seasons
	5.	ARIS, Lateral F, Diversion Point from Main Canal	Water quality & canal discharge	Wet season
	6.	ARIS, Lateral F, Crossing Point of Urdaneta-Asingan Road	Water quality & crop growth	Wet season
	7.	ARIS, Main Canal, Crossing Point of National Road	Water quality	Wet season
	8.	ARIS, Lateral J, Nearby Barangay Maleen	Water quality, canal discharge & crop growth	Wet season
	9.	ADRIS, Main Canal, Intake Dam	Water quality	Both seasons
	10.	ADRIS, Lateral A-3, Along Tayug-San Nicolas Road	Water quality & crop growth	Both seasons
	11.	ARIS, Lateral D, Diversion Point from Main Canal	Water quality & canal discharge	Wet season
	12.	ARIS, Lateral M, Second Turnout	Water quality & crop growth	Wet season

Table F-6 NUMBER OF SAMPLES ANALYZED BY ITEM IN LABORATORY

Item	Water Samples	Soil Samples				Plant Samples	Total
		A	B	C	D		
Suspended solid	303	–	–	–	–	–	303
Total Cu	303	–	14	–	6	–	323
Total Pb	303	–	14	–	6	–	323
Total Zn	303	–	14	–	6	–	323
Total Cd	303	–	14	–	6	–	323
Total As	39	–	14	–	6	–	59
Extractable Cu	–	–	48	68	30	204	350
Extractable Pb	–	–	48	–	30	204	282
Extractable Zn	–	–	48	–	30	204	282
Extractable Cd	–	–	48	–	30	204	282
Extractable As	–	–	48	–	–	41	89
Soluble Cu	–	249	48	68	30	–	395
Soluble Pb	–	249	48	–	–	–	297
Soiuble Zn	–	249	48	–	–	–	297
Soluble Cd	–	249	48	–	–	–	297
Scluble As	–	249	48	–	–	–	297
Nitrogen	–	–	–	–	–	163	163
Phosphate	–	–	–	–	–	163	163
Potassium	–	–	–	–	–	163	163
Silicate	–	–	–	–	–	163	163

Remarks;

Soil sample A: Surface soils sampled as an inlet portion of paddy field in and around ARIS.

Soil sample B: Soils sampled from 10 master pits in the proposed irrigation development area.

Soil sample C: Surface and subsurface soils sampled at inlet, middle and outlet portions of monitoring paddy field in ARIS and ADRIS.

Soil sample D: Sediments on canal bed at 10 monitoring points in ARIS.

Table F-7 RECORDS ON AVERAGE INTAKE DISCHARGE BY MONTH AT ARIS INTAKE DAM AND MONTHLY EFFECTIVE RAINFALL IN ARIS

Month	Year						
	1978	1979	1980	1981	1982	1983	1984
(1) Average Intake Discharge at ARIS Intake Dam (m^3/s)							
Jan.	5.84	3.74	7.94	4.90	10.15	4.16	0.76
Feb.	9.07	6.39	6.61	5.77	6.50	4.78	1.17
Mar.	6.53	6.39	6.66	7.09	6.66	4.74	1.64
Apr.	7.52	6.32	8.72	6.26	6.66	3.67	1.53
May	6.89	7.36	8.35	8.82	5.63	1.78	6.11
June	5.18	2.32	8.04	7.75	3.98	1.15	2.79
July	6.59	2.32	10.86	9.24	8.99	1.82	4.91
Aug.	3.55	1.97	19.44	10.70	13.62	5.85	1.29
Sept.	3.16	9.32	8.26	14.80	15.36	7.88	8.73
Oct.	5.23	7.97	15.89	14.20	10.51	4.43	4.62
Nov.	5.06	6.32	5.85	10.68	8.15	3.66	—
Dec.	8.27	4.94	7.29	11.44	4.16	0.44	—
(2) Monthly Effective Rainfall in ARIS (mm)							
Jan.	0	0	111	0	0	30	0
Feb.	0	0	0	0	35	0	0
Mar.	0	0	105	0	98	0	0
Apr.	51	0	62	221	47	0	65
May	81	192	197	246	227	43	105
June	272	134	279	513	193	83	129
July	490	378	487	395	504	23	200
Aug.	493	273	220	510	620	144	691
Sept.	488	293	283	197	455	250	635
Oct.	199	160	188	197	187	64	514
Nov.	138	35	0	86	24	0	—
Dec.	0	36	0	89	25	0	—
Year	2,212	1,501	1,932	2,454	2,415	637	2,339

Remarks; — : Not available

Source; NIA Region I Office

Table F-8 DISCHARGE MEASUREMENT RECORD AT MONITORING POINT NO.1 (MAIN CANAL AT STATION 0+320) IN ARIS

Unit: m^3/s

Date		Time	Dis-charge	Weather	Date		Time	Dis-charge	Weather
Dec.	28	8:30	3.15	Fair	July	6	9:00	14.24	Cloudy*
	29	16:00	4.69	Fair		9	9:45	20.11	Fair
Jan.	16	16:00	3.14	Fair		11	10:30	17.94	Fair
	20	8:30	4.69	Fair		13	11:05	18.93	Fair
	23	11:30	4.79	Fair		16	15:25	19.50	Fair
	26	16:00	1.80	Fair		17	9:55	26.89	Fair
	31	16:10	1.89	Fair		23	10:30	23.27	Fair
Feb.	3	16:00	2.88	Fair		25	9:10	26.87	Fair
	6	16:05	1.74	Fair		27	9:20	22.98	Fair
	7	10:05	1.41	Fair		30	10:10	20.81	Fair
	10	9:30	2.24	Cloudy	Aug.	2	10:00	27.01	Cloudy*
		14:15	8.33	Cloudy			13:00	26.65	Cloudy
	14	15:25	6.24	Fair			16:00	27.75	Cloudy
	16	11:00	8.37	Fair			19:00	29.53	Cloudy
	21	14:45	8.62	Fair			22:00	28.02	Cloudy*
	24	14:30	8.02	Fair		3	1:00	28.63	Cloudy*
	28	11:30	7.14	Fair			4:00	26.88	Cloudy*
Mar.	1	11:05	6.52	Fair			7:00	26.43	Cloudy
	9	16:15	5.92	Fair			10:00	25.75	Cloudy*
	12	16:45	7.39	Fair		6	10:00	25.04	Cloudy
	14	15:30	5.89	Fair		8	14:15	23.88	Cloudy
	19	16:55	9.07	Cloudy		13	11:00	27.64	Fair
	23	11:30	4.72	Fair		15	9:10	21.06	Cloudy*
	28	10:45	4.66	Fair		20	10:25	No diversion	
	31	10:35	5.01	Fair		22	10:15	No diversion	
Apr.	12	9:00	6.10	Fair		27	9:45	15.73	Fair
		15:00	8.19	Fair	Sept.	5	9:30	15.39	Fair
	23	10:10	4.40	Fair		6	11:00	11.57	Fair
		13:35	12.20	Fair			14:00	11.65	Fair
	24	10:30	2.27	Fair			17:00	12.95	Cloudy*
		15:10	7.94	Fair			20:00	13.09	Cloudy*
May	8	10:20	3.80	Fair			23:00	13.84	Cloudy
	11	15:35	8.31	Fair		7	2:00	14.08	Cloudy
	15	15:00	7.49	Fair			5:00	13.54	Cloudy
	17	14:40	8.60	Fair			8:00	12.71	Fair
	21	11:25	1.73	Fair			11:00	11.52	Fair
	25	15:05	8.91	Fair		10	9:50	11.34	Fair
	28	14:45	16.32	Fair		12	11:20	16.38	Fair
June	4	14:05	11.39	Fair		17	10:00	7.15	Fair
	6	10:35	4.83	Fair		19	11:15	12.74	Fair
	8	10:00	3.89	Fair		24	11:00	17.02	Fair
	13	11:35	3.24	Fair		26	10:15	17.51	Fair
	15	11:25	24.32	Fair	Oct.	3	11:00	15.56	Fair
	18	11:55	4.50	Fair		5	15:45	22.95	Fair
	20	11:30	24.81	Cloudy		9	13:25	9.59	Fair
	22	11:05	16.29	Cloudy		11	14:45	14.33	Fair
	25	12:15	20.36	Cloudy*		15	9:45	8.48	Fair
	26	13:45	13.37	Cloudy		18	9:35	10.31	Fair
	27	9:45	10.89	Cloudy*		19	10:25	8.28	Cloudy*
	29	10:20	10.81	Cloudy		22	10:15	5.12	Cloudy*
July	2	10:30	19.13	Cloudy		24	10:00	3.58	Cloudy
	4	10:30	10.11	Fair		26	10:45	3.18	Fair
	5	9:00	9.03	Fair		30	12:50	2.21	Fair
		12:00	13.58	Fair		31	10:05	2.01	Fair
		15:00	12.62	Fair	Nov.	6	11:30	5.68	Fair
		18:00	14.27	Cloudy*		8	13:00	10.31	Fair
		21:00	11.91	Cloudy*		12	9:30	16.31	Fair
		24:00	14.66	Cloudy*		14	9:45	15.95	Fair
	6	3:00	14.19	Cloudy*		19	14:45	13.67	Fair
		6:00	13.17	Cloudy*		20	11:10	10.11	Fair

Remarks; Cloudy*: Cloudy with rain shower.

Table F-9 DISCHARGE MEASUREMENT RECORD AT MONITORING POINT NO.2 (LATERAL B AT STATION 0+400 AND LATERAL D AT STATION 0+000) IN ARIS

Unit: m^3/s

Date		Time	Dis-charge	Weather	Date		Time	Dis-charge	Weather
(1) Lateral B at Station 0+400									
Feb.	14	10:25	0.50	Fair	Mar.	14	9:00	0.64	Fair
	16	9:20	0.55	Fair		28	10:20	0.50	Fair
	21	11:00	0.24	Fair	Apr.	24	9:25	0.35	Fair
	24	9:20	0.46	Fair	May	31	9:15	0.25	Fair
	28	10:40	0.25	Fair	June	15	9:40	0.27	Fair
Mar.	1	10:05	0.65	Fair	July	9	10:55	0.18	Fair
	9	10:00	0.56	Fair		11	9:40	0.11	Fair
	12	10:05	0.44	Fair		16	14:45	0.16	Fair
(2) Lateral D at Station 0+000									
July	23	13:25	0.52	Fair	Sept.	13	11:00	0.52	Fair
	25	10:30	0.50	Fair			14:00	0.55	Fair
	27	10:30	0.35	Fair			17:00	0.44	Fair
	30	11:45	0.63	Fair			20:00	0.48	Cloudy*
Aug.	6	11:25	0.29	Cloudy			23:00	0.51	Cloudy
	8	13:00	1.10	Cloudy		14	2:00	0.66	Fair
	9	9:30	0.47	Cloudy			5:00	0.58	Fair
		12:30	0.40	Cloudy			8:00	0.61	Fair
		15:30	0.61	Cloudy*			11:00	0.58	Fair
		18:30	0.55	Cloudy		17	11:10	0.48	Fair
		21:30	0.52	Cloudy		19	9:30	0.42	Fair
	10	0:30	0.60	Cloudy		24	10:00	1.24	Fair
		3:30	0.53	Cloudy		26	11:05	1.15	Fair
		6:30	0.42	Cloudy	Oct.	3	10:15	No diversion	
		9:30	0.42	Cloudy		5	14:10	0.77	Fair
	13	12:30	0.24	Cloudy*		30	11:15	0.12	Fair
	15	10:25	0.20	Cloudy*		31	11:20	0.15	Fair
	20	11:10	No diversion		Nov.	6	9:35	0.17	Fair
	22	11:00	No diversion			8	12:10	1.44	Fair
	27	11:20	0.25	Fair		12	10:35	1.27	Fair
Sept.	5		No diversion			14	11:00	0.34	Fair
	10	11:45	0.46	Fair		19	15:55	0.06	Fair
	12	9:45	0.19	Fair		20	10:10	0.06	Fair

Remarks; Cloudy*: Cloudy with rain shower.

Table F-10 DISCHARGE MEASUREMENT RECORD AT MONITORING POINT NO. 3 (DON MOTEO DITCH AT STATION 0+000) IN ARIS

Unit: m^3/s

Date		Time	Dis-charge	Weather	Date		Time	Dis-charge	Weather
Feb.	14	12:30	0.45	Fair	Aug.	22	10:30	No diversion	
	16	10:05	0.53	Fair		27	10:30	0.48	Fair
	21	10:30	0.58	Fair	Sept.	5	10:10	0.86	Fair
	24	9:55	1.26	Fair		6	11:30	0.80	Fair
	28	11:00	0.43	Fair			14:30	0.85	Fair
Mar.	1	10:30	0.82	Fair			17:30	0.91	Cloudy*
	9	11:00	0.76	Fair			20:30	1.06	Cloudy*
	12	10:45	1.28	Fair			23:30	1.15	Cloudy
	14	9:30	0.91	Fair		7	2:30	1.26	Cloudy
Apr.	23	10:45	0.60	Fair			5:30	1.11	Cloudy
	24	9:50	0.40	Fair			8:30	0.90	Fair
June	15	9:50	1.75	Fair			11:30	0.81	Fair
	22	10:10	0.16	Cloudy*		10	10:15	0.87	Fair
	25	11:50	0.59	Cloudy*		12	11:00	0.98	Fair
July	2	10:10	0.43	Cloudy		17	10:25	No diversion	
	9	10:35	1.58	Fair		19	10:50	0.64	Fair
	11	10:20	1.03	Fair		24	10:40	0.73	Fair
	13	10:35	0.93	Fair		26	9:30	0.78	Fair
	16	15:05	1.21	Fair	Oct.	3	10:35	No diversion	
	23	9:50	1.71	Fair		5	15:20	1.01	Fair
	25	9:30	1.68	Fair		9	13:00	No diversion	
	27	9:40	1.39	Fair		11	14:20	1.11	Fair
	30	10:30	0.89	Fair		15	10:00	No diversion	
Aug.	2	9:25		Cloudy		18	9:55	No diversion	
		12:25	0.89	Cloudy		19	10:55	No diversion	
		15:25	1.48	Cloudy*		22	10:35	No diversion	
		18:25	1.84	Cloudy*		24	10:30	No diversion	
		21:25	1.43	Cloudy*		26	10:25	No diversion	
	3	0:25	1.81	Cloudy*		30	12:30	No diversion	
		3:25	0.89	Cloudy*		31	10:30	No diversion	
		6:25	0.75	Cloudy*	Nov.	6	10:40	0.55	Fair
		9:25	0.73	Cloudy*		8	13:15	0.75	Fair
	6	10:25	1.16	Cloudy*		12	9:55	0.71	Fair
	8	13:55	0.73	Cloudy		14	10:20	0.86	Fair
	13	11:45	0.55	Fair		19	15:20	0.62	Fair
	15	9:25	0.37	Cloudy*		20	10:50	0.39	Fair
	20	10:35	No diversion						

Remarks; Cloudy* : Cloudy with rain shower.

Table F-11 DISCHARGE MEASUREMENT RECORD AT MONITORING POINT NO. 5 (LATERAL F AT STATION 0+000) IN ARIS

Unit: m^3/s

Date	Time	Dis-charge	Weather	Date	Time	Dis-charge	Weather
June 4	13:05	0.61	Fair	Aug. 9	18:00	1.64	Cloudy
6	10:45	0.63	Fair		21:00	2.14	Cloudy
8	9:05	0.64	Fair		24:00	2.36	Cloudy
13	10:15	0.19	Fair	10	3.00	2.18	Cloudy
15	9;25	0.90	Fair		6:00	1.82	Cloudy
18	10:55	0.77	Fair		9:00	1.66	Cloudy
20	9:10	1.12	Cloudy	13	12:45	1.58	Cloudy*
22	9:40	1.13	Cloudy*	15	10:45	1.08	Cloudy
25	11:15	0.89	Cloudy*	20	11:20	No diversion	
26	9:35	1.12	Cloudy	22	11:30	No diversion	
27	8:55	0.92	Cloudy*	27	11:45	1.48	Fair
29	9:35	0.65	Cloudy	Sept. 5		No diversion	
July 2	9:00	0.96	Cloudy	10	12:25	0.68	Fair
4	9:20	0.81	Fair	12	9:25	0.47	Fair
9	11:30	1.07	Fair	13	10:00	0.26	Fair
11	9:20	1.13	Fair		13:00	0.30	Fair
13	10:15	0.08	Fair		16:00	0.28	Fair
16	14:00	0.76	Fair		19:00	0.32	Cloudy
17	8:55	0.61	Fair		22:00	0.37	Cloudy
19	11:00	0.14	Fair	14	1:00	0.54	Cloudy
	14:00	0.11	Fair		4:00	0.48	Fair
	17:00	0.11	Fair		7:00	0.51	Fair
	20:00	0.08	Fair		10:00	0.47	Fair
	23:00	0.08	Fair	17	11:40	0.53	Fair
20	2:00	0.08	Fair	19	8:55	1.74	Fair
	5:00	0.08	Fair	24	9:25	1.55	Fair
	8:00	0.08	Fair	26	11:40	1.16	Fair
	11:00	0.08	Fair	Oct. 3	9:40	0.71	Fair
23	9:00	0.04	Fair	5	13:50	0.65	Fair
25	10:50	0.91	Fair	9	12:15	0.73	Fair
27	10:45	1.49	Fair	11	13:25	0.79	Fair
30	12:05	1.44	Fair	15	10:45	0.85	Fair
Aug. 6	11:55	0.95	Cloudy	18	11:00	0.26	Fair
8	12:40	1.54	Fair	19	13:35	0.08	Cloudy
9	9:00	1.57	Cloudy	22	11:20	No diversion	
	12:00	1.23	Cloudy	24	11:35	0.04	Cloudy
	15:00	1.89	Cloudy*	26	11:00	0.09	Fair

Remarks: Cloudy*: Cloudy with rain shower.

Table F-12 DISCHARGE MEASUREMENT RECORD AT MONITORING POINT NO. 8 (LATERAL J AT STATION 0+000) IN ARIS

Unit: m^3/s

Date	Time	Discharge	Weather	Date	Time	Discharge	Weather
June 4	15:20	0.11	Cloudy	Aug. 17	3:30	0.15	Cloudy
6	14:40	0.11	Fair		6:30	0.13	Cloudy*
8	12:15	0.12	Fair		9:30	0.13	Cloudy*
15	14:10	0.01	Fair	20	12:55	No diversion	
18	13:40	0.13	Cloudy	22	13:15	No diversion	
20	13:45	0.11	Cloudy*	27	12:20	No diversion	
22	13:50	0.11	Cloudy*	Sept. 5		No diversion	
25	15:05	0.10	Cloudy	10	13:45	0.44	Fair
26	17:10	0.13	Cloudy	12	14:15	0.16	Fair
27	13:10	0.08	Cloudy*	17	12:35	0.11	Fair
29	12:35	0.12	Cloudy	19	13:00	0.41	Fair
July 2	13:00	0.13	Cloudy	20	8:45	0.53	Fair
4	13:10	0.17	Fair		11:45	0.49	Fair
9	14:20	0.25	Fair		14:45	0.44	Fair
11	14:05	0.17	Fair		17:45	0.50	Cloudy*
13	12:30	0.28	Fair		20:45	0.52	Cloudy*
16	10:20	0.34	Fair		23:45	0.44	Cloudy
17	11:30	0.36	Fair	21	2:45	0.59	Cloudy
19	9:00	0.25	Fair		5:45	0.62	Fair
	12:00	0.17	Fair		8:45	0.41	Fair
	15:00	0.16	Fair	24	14:20	0.35	Fair
	18:00	0.15	Fair	26	13:40	0.33	Fair
	21:00	0.15	Fair	Oct. 3	14:15	0.31	Fair
	24:00	0.14	Fair	5	10.40	0.14	Fair
20	3:00	0.15	Fair	9	10:35	0.19	Fair
	6:00	0.10	Fair	11	12:15	0.24	Fair
	9:00	0.35	Fair	15	13:05	No diversion	
23	14:30	0.36	Fair	18	13:40	0.11	Fair
25	12:20	0.28	Fair	19	15:30	0.08	Cloudy*
27	12:05	0.40	Fair	22	14:25	0.08	Cloudy
30	13:35	0.32	Fair	24	13:35	0.04	Cloudy
Aug. 6	15:00	0.37	Cloudy	26	14:25	No diversion	
8	15:05	0.33	Fair	30	13:25	No diversion	
13	16:00	0.21	Cloudy	31	13:45	No diversion	
15	11:35	0.17	Cloudy*	Nov. 6	13:35	No diversion	
16	9:30	0.11	Fair	8	14:35	0.18	Fair
	12:30	0.14	Cloudy	12	15:15	0.12	Fair
	15:30	0.12	Cloudy	14	13:25	0.08	Fair
	18:30	0.17	Cloudy	19	16:30	0.16	Fair
	21:30	0.14	Cloudy	20	13:10	0.15	Fair
17	0:30	0.18	Cloudy*				

Remarks; Cloudy*: Cloudy with rain shower.

Table F-13 DISCHARGE MEASUREMENT RECORD AT MONITORING POINT NO.12 (LATERAL M AT STATION 0+000) IN ARIS

Unit: m^3/s

Date	Time	Discharge	Weather	Date	Time	Discharge	Weather
June 4	16:35	0.56	Cloudy	Sept. 24	15:10	0.67	Fair
6	14:45	0.41	Fair	26	15:10	1.49	Cloudy*
8	13:55	0.02	Fair	27	10:00	1.61	Fair
15	15:15	0.14	Fair		13:00	1.53	Fair
18	15:50	0.03	Cloudy		16:00	1.76	Cloudy
20	15:30	0.29	Cloudy		19:00	1.96	Cloudy*
22	14:45	0.38	Cloudy*		22:00	1.98	Cloudy
25	16:00	0.37	Cloudy*	28	1:00	2.08	Cloudy
27	13:45	0.79	Cloudy*		4:00	1.97	Cloudy
July 2	14:25	0.71	Cloudy		7:00	1.83	Cloudy
4	14:50	0.22	Fair		10:00	1.79	Cloudy
9	15:35	0.18	Cloudy	Oct. 3	15:30	No diversion	
11	15:45	0.23	Fair	5	14:30	No diversion	
13	13:25	0.21	Fair	9	15:15	No diversion	
16	12:25	0.24	Fair	11	14:10	No diversion	
25	14:15	No diversion		15	14:15	No diversion	
27	14:00	0.24	Fair	18	15:15	0.56	Fair
30	15:30	0.22	Fair	19	16:00	0.51	Cloudy
Aug. 6	16:05	0.04	Cloudy	22	15:00	0.50	Cloudy
8	16:15	0.58	Cloudy*	24	14:30	0.63	Cloudy
13	17:15	1.00	Cloudy	26	15:15	0.55	Cloudy
15	14:05	1.06	Cloudy*	30	14:30	No diversion	
20		No diversion		31	14:50	No diversion	
22		No diversion		Nov. 6	14:20	No diversion	
27	15:50	1.28	Fair	8	15:05	0.56	Fair
Sept. 5		No diversion		12	12:10	0.44	Fair
10	14:30	No diversion		14	15:50	0.55	Fair
12	15:15	No diversion		19	17:05	0.56	Fair
17	14:10	No diversion		20	13:55	0.56	Fair
19	14:15	No diversion					

Remarks; Cloudy*: Cloudy with rain shower.

Table F-14 DISCHARGE MEASUREMENT RECORD AT MONITORING POINT NO.9 (MAIN CANAL AT STATIONS 0+020) AND 0+700 IN ADRIS

Unit: m^3/s

Date	Discharge	Date	Discharge
(1) At Station 0+200			
Jan. 1 to Jan. 28	0.89	Apr. 1 to Apr. 14	0.62
Jan. 29 to Jan. 31	0.80	Apr. 15 to Apr. 20	0.89
Feb. 1 to Feb. 20	0.89	Apr. 21 to Apr. 23	0.62
Feb. 21 to Feb. 29	0.80	Apr. 24 to Apr. 30	0.89
Mar. 1 to Mar. 31	1.00		
(2) At Station 0+700			
May 1 to May 4	1.00	July 7 to July 10	2.52
May 5 to May 10	1.11	July 11 to July 14	1.42
May 11 to May 12	1.39	July 15 to July 17	1.36
May 13 to May 15	1.11	July 18 to July 30	1.11
May 16	1.00	July 31	1.36
May 17	1.11	Aug. 1 to Aug. 5	0.89
May 18 to May 20	1.39	Aug. 6 to Aug. 7	1.00
May 21	1.11	Aug. 8 to Aug. 14	1.11
May 22 to May 29	1.00	Aug. 15	0.89
June 1 to June 5	1.11	Aug. 16 to Aug. 20	No diversion
June 6 to June 14	1.00	Aug. 21 to Aug. 23	1.11
June 15	0	Aug. 24 to Aug. 28	0.89
June 16 to June 20	1.00	Aug. 29 to Sept. 4	No diversion
June 21 to June 25	1.11	Sept. 5 to Sept. 15	0.89
June 26	0	Sept. 16 to Oct. 20	1.00
June 27 to June 30	1.39	Oct. 21 to Oct. 26	1.11
July 1 to July 6	1.42	Oct. 27 to Oct. 31	No diversion

Table F-15 DISCHARGE MEASUREMENT RECORD AT MONITORING POINT NO. 10 (LATERAL A-3 AT STATION 0+040) IN ADRIS

Unit: m^3/s

Date	Discharge	Date	Discharge
Jan. 1 to Jan. 6	0	Apr. 17 to Apr. 22	0
Jan. 7 to Jan. 9	0.30	Apr. 23 to Apr. 25	0.20
Jan. 10 to Jan. 13	0	Apr. 26 to May 3	0
Jan. 14 to Jan. 16	0.30	May 4 to May 6	0.20
Jan. 17 to Jan. 20	0	May 7 to May 10	0
Jan. 21 to Jan. 23	0.30	May 11 to May 13	0.20
Jan. 24 to Jan. 27	0	May 14 to May 20	0
Jan. 28 to Jan. 30	0.30	May 21 to May 23	0.20
Jan. 31 to Feb. 4	0	May 24 to May 31	0
Feb. 5 to Feb. 7	0.35	June 1 to June 20	0.50
Feb. 8 to Feb. 14	0	June 21 to July 10	0.60
Feb. 15 to Feb. 17	0.35	July 11 to July 31	0.65
Feb. 18 to Feb. 23	0	Aug. 1 to Aug. 7	0.55
Feb. 24 to Feb. 26	0.35	Aug. 8 to Aug. 14	0.65
Feb. 27 to Mar. 3	0	Aug. 15	0.55
Mar. 4 to Mar. 7	0.35	Aug. 16 to Aug. 20	0
Mar. 8 to Mar. 14	0	Aug. 21 to Aug. 23	0.65
Mar. 15 to Mar. 17	0.35	Aug. 24 to Aug. 28	0.55
Mar. 18 to Mar. 23	0	Aug. 29 to Sept. 4	0
Mar. 24 to Mar. 26	0.35	Sept. 5 to Sept. 15	0.60
Mar. 27 to Apr. 4	0	Sept. 16 to Sept. 22	0.48
Apr. 5 to Apr. 7	0.20	Sept. 23 to Oct. 20	0.50
Apr. 8 to Apr. 13	0	Oct. 21 to Oct. 26	0.65
Apr. 14 to Apr. 16	0.20	Oct. 27 to Oct. 31	0

Table F-16 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 1 IN ARIS

Date	Time	Water Trmpera-ture (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
Dec. 26	10:30	23.3	500+	8.1	700	8.0
Jan. 5	10:30	23.2	500+	8.2	690	7.2
12	10:35	25.0	415	8.2	440	8.0
19	14:20	27.5	500+	8.3	1,000	8.0
26	14:30	26.0	500+	8.4	480	9.5
Feb. 8	11:20	24.5	500+	8.2	470	6.7
15	14:40	28.3	500+	8.2	460	5.9
23	14:15	27.4	500+	8.3	450	4.3
Mar. 6	14:15	28.8	500+	8.4	630	6.6
14	9:20	25.6	500+	8.4	480	6.6
22	8:50	24.5	500+	8.3	410	7.3
30	14:50	28.9	500+	8.4	430	6.3
Apr. 3	14:30	29.5	500+	8.2	380	3.6
20	9:30	27.5	400	8.0	400	6.2
25	11:00	28.5	300.	8.0	500	—
May 4	9:30	27.0	275	7.8	460	6.1
11	9:35	26.5	500+	8.0	430	5.4
17	10:00	26.5	500+	8.1	500	4.8
22	9:35	26.5	500+	8.1	350	3.9
31	9:30	26.5	250	—	350	6.3
June 5	10:20	28.0	500+	—	395	7.1
13	10.40	28.5	500+	—	440	6.9
20	8:55	26.0	500+	8.3	450	7.6
25	9:25	26.0	500+	8.8	440	7.1
July 2	9:10	26.0	500+	8.5	440	8.7
9	9:00	25.5	500+	8.5	455	7.5
16	8:45	25.5	500+	8.1	390	7.2
23	9:00	26.0	500+	8.1	420	7.2
30	8:50	26.0	500+	8.4	440	7.1
Aug. 8	8:55	25.5	500+	8.4	350	7.2
13	9:15	25.5	500+	8.4	275	7.5
20	9:10	24.0	500+	8.4	310	7.3
28	9:00	24.0	500+	8.4	310	7.3
Sept. 5	9:00	24.0	260	8.3	290	6.5
10	9:25	24.5	330	—	260	7.8
17	9:05	24.5	290	—	270	7.2
25	10:50	24.5	450	8.2	295	5.9
Oct. 5	11:50	25.5	350	8.0	330	6.6
9	8:40	24.0	500+	8.1	340	7.9
16	8:35	24.5	325	8.3	335	7.0
24	9:35	24.5	500+	8.1	485	6.4
28	8:20	24.0	500+	7.9	275	7.1
Nov. 14	14:40	25.0	100	8.0	275	7.1
21	14:55	26.0	225	8.3	325	7.2

Remarks; Location : At diversion point of Lateral A on Main Canal.
500+ : Over 500 ppm.
— : Not available.

Table F-17 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 2 IN ARIS

Date	Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
Dec. 26	11:00	23.3	500+	8.3	600	8.9
Jan. 5	No water available					
13	9:30	25.3	430	8.1	400	8.0
19	10:20	23.8	240	8.1	500	8.7
26	13:30	25.5	500+	8.4	650	8.1
Feb. 9	13:45	24.4	270	8.5	470	6.6
15	No water available					
23	15:20	31.1	355	8.3	440	4.0
Mar. 6	No water available					
14	No water available					
22	No water available					
30	No water available					
Apr. 3	No water available					
20	10:50	33.0	270	8.2	450	4.6
25	12:20	30.5	350	8.1	500	–
May 4	No water available					
11	10:05	27.0	500+	7.8	460	6.1
17	10:45	28.5	500+	8.1	450	6.5
22	No water available					
31	9:45	27.5	450	—	340	7.4
June 5	No water available					
15	11:25	29.0	500+	–	415	7.3
20	No water available					
25	No water available					
July 2	No water available					
9	10:10	26.5	500+	8.3	450	7.3
16	9:35	26.5	500+	8.0	395	7.2
23	14:10	31.1	500+	8.2	405	6.8
30	11:10	28.0	295	7.9	460	5.4
Aug. 8	11:15	28.0	500+	8.2	345	6.9
13	11:15	28.0	500+	8.3	340	7.3
21	10:40	31.5	350	7.2	640	5.7
28	11:00	26.5	500+	7.6	330	5.4
Sept. 6	13:50	30.0	500+	7.6	330	5.4
10	11:40	30.0	380	—	270	6.6
17	10:35	27.5	150	—	290	6.6
26	No water available					
Oct. 5	15:05	30.0	500+	—	290	6.6
9	Terminated monitoring works					

Remarks; Location : At diversion point from Main Canal on Lateral D, but observed at diversion point on Lateral C between Dec. 26 and Jan. 13

500+ : Over 500 ppm.

— : Not available.

Table F-18 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 3 IN ARIS

Date		Time	Water Temperature (°C)	Turbidity (ppm)	pH	EC (umhos)	DO (mg/l)
Dec.	26	No water available					
Jan.	5	13:40	27.4	500+	8.3	310	5.5
	12	13:30	28.2	500+	8.3	390	7.7
	19	No water available					
	26	No water available					
Feb.	9	14:50	26.8	345	8.5	500	6.5
	15	15:10	28.6	500+	8.1	470	5.6
	23	14:30	27.5	500+	8.3	470	4.3
Mar.	6	14:35	28.6	500+	8.4	650	6.3
	14	9:40	25.7	500+	8.6	480	7.4
	22	9:10	24.9	500+	8.4	410	7.6
	30	15:10	28.9	500+	8.5	440	6.7
Apr.	3	14:55	32.0	500+	8.2	360	3.4
	20	9:50	27.5	345	7.9	400	6.4
	25	11:20	28.5	350	8.1	500	—
May	4	No water available					
	11	9:20	26.0	500+	8.1	420	6.6
	17	10:15	27.5	500+	8.0	500	5.0
	22	No water available					
	31	No water available					
June	5	No water available					
	13	11:40	29.5	500+	—	460	6.2
	20	9:20	26.5	500+	8.3	450	7.5
	25	9:45	26.0	500+	8.8	440	7.5
July	2	9:30	26.0	500+	8.6	440	8.2
	9	9:25	26.0	500+	8.6	460	7.6
	16	9:05	25.5	500+	8.1	395	7.4
	23	9:15	26.0	500+	8.1	430	7.4
	30	9:10	26.0	500+	8.4	445	6.7
Aug.	8	9:20	25.5	500+	8.3	330	7.3
	13	9:55	25.8	500+	8.4	405	7.4
	20	No water available					
	28	9:15	24.5	500+	8.3	290	7.0
Sept.	5	9:20	24.5	255	8.2	290	6.7
	10	9:50	24.5	310	—	260	7.1
	19	10:30	25.0	350	—	290	6.8
	25	11:10	25.0	340	8.2	290	6.7
Oct.	5	12:15	26.0	350	8.0	340	6.2
	9	16:40	26.5	360	8.3	325	6.2
	16	15:20	26.5	280	8.3	295	7.3
	24	No water available					
	29	8:40	24.0	500+	7.8	265	6.6
Nov.	14	14:55	26.0	125	8.0	275	6.7
	21	15:15	26.0	275	8.2	360	7.0

Remarks; Location : At diversion point from Main Canal on Don Moteo Ditch, but observed at diversion point on Lateral D between Dec. 26 and Jan. 26.
500+ : Over 500 ppm.
— : Not available.

Table F-19 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 4 IN ARIS

Date	Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
Dec. 26	No water available					
Jan. 5	No water available					
12	14:30	28.8	500+	8.3	370	7.3
19	No water available					
26	No water available					
Feb. 10	11:15	23.8	500+	8.5	520	6.0
15	15:20	28.7	450	8.2	440	6.9
23	15:50	27.7	500+	8.3	480	3.7
Mar. 6	15:00	28.1	500+	8.3	700	6.4
14	10:10	26.3	500+	8.2	400	7.2
22	9:30	25.1	500+	8.3	430	7.4
30	15:30	29.2	500+	8.4	440	6.6
Apr. 3	15:15	33.3	—	8.2	330	3.1
20	10:10	27.5	440	8.4	450	4.7
25	11:50	28.5	350	8.1	450	—
May 4	No water available					
11	9:50	26.5	500+	8.1	440	6.1
17	10:25	28.0	500+	8.0	500	4.5
22	No water available					
31	No water available					
June 5	No water available					
13	14:10	34.0	500+	—	420	5.8
20	No water available					
25	10:05	26.0	500+	8.7	450	7.3
July 2	9:50	26.0	500+	8.6	445	7.6
9	9:50	26.0	500+	8.4	455	7.2
16	9:25	26.0	500+	8.0	405	6.9
23	9:35	26.0	500+	8.4	420	6.8
30	9:30	26.0	500+	8.4	450	6.5
Aug. 8	9:40	26.0	500	8.2	305	7.0
13	9:35	26.0	400	8.4	385	6.3
20	No water available					
28	9:00	24.5	500+	8.3	290	7.2
Sept. 5	9:40	26.0	270	8.2	290	6.4
10	10:05	25.5	500+	—	270	7.6
19	10:45	25.5	500+	—	190	6.4
25	11:25	25.5	375	8.2	290	6.1
Oct. 5	11:15	27.0	450	7.9	300	6.1
9	16:20	27.5	500+	8.2	360	6.6
16	15:40	27.5	360	8.2	370	6.4
24	No water available					
29	9:00	24.0	500+	—	315	6.8
Nov. 14	15:20	25.5	180	—	265	6.9
21	15:45	26.0	275	8.2	360	7.0

Remarks; Location : On Don Moteo Ditch, but observed at crossing point of Urdaneta-Asingan Road on Lateral D between Dec. 26 and Jan. 26.
500+ : Over 500 ppm.
— : Not available.

Table F-20 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 5 IN ARIS

Date		Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
May	4	11:00	34.0	500+	7.4	460	5.6
	11	10:45	30.5	500+	7.7	405	6.7
	17	No water available					
	22	10:25	27.0	500+	7.9	410	5.4
	31	14:25	32.0	250	—	280	6.6
June	6	13:20	31.5	360	—	330	7.0
	13	15:05	39.0	230	—	550	5.3
	20	10:55	27.5	500+	8.1	275	7.0
	25	10:55	27.0	500+	8.7	455	7.1
July	2	10:30	26.0	500+	8.4	425	7.5
	9	10:40	27.5	500+	8.0	450	6.6
	16	10:10	27.0	500+	8.0	380	6.8
	23	10:15	27.0	500+	8.2	405	7.0
	30	10:25	27.5	500+	8.2	435	6.5
Aug.	8	10:35	26.5	500+	8.2	345	6.9
	13	10:35	26.5	500+	8.4	365	7.6
	20	10:05	27.0	500+	7.9	350	6.3
	28	10:20	25.0	285	8.2	275	7.5
Sept.	6	14:25	29.5	285	—	270	8.3
	10	11:05	27.5	480	—	285	6.9
	17	9:50	26.5	290	—	250	7.0
	26	13:40	27.0	500+	8.3	320	6.9
Oct.	5	14:35	29.0	450	8.2	315	6.0
	9	9:45	25.5	435	8.1	345	6.9
	16	9:50	26.0	250	8.2	290	6.6
	24	10:20	25.0	500+	8.1	440	5.5
	29	10:00	24.5	460	—	290	6.1
Nov.	14	15:50	26.5	190	—	305	7.8

Remarks; Location : At diversion point from Main Canal on Lateral F.
500+ : Over 500 ppm.
— : Not available.

Table F-21 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 6 IN ARIS

Date		Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
May	4	11:30	34.5	500+	7.4	460	5.8
	11	11:05	31.0	330	7.8	365	6.2
	17	No water available					
	22	10:45	27.5	190	8.1	390	5.8
	31	14:50	33.0	100	—	240	5.8
June	6	15:05	33.0	120	—	390	7.2
	13	15:50	36.5	150	—	550	5.5
	20	11:20	28.5	500+	8.0	420	6.5
	25	11:20	27.0	500+	8.5	425	6.7
July	2	11:10	26.5	500+	8.4	435	7.3
	9	11:05	28.5	500+	7.7	425	6.6
	16	10:35	28.5	500+	7.8	385	6.5
	23	14:30	32.5	500+	8.1	405	7.0
	30	11:50	29.0	500+	7.7	420	5.3
Aug.	8	11:45	28.0	500+	7.9	345	6.8
	13	11:40	27.5	500+	8.1	330	7.3
	20	10:50	28.0	500+	8.0	340	6.2
	28	11:30	25.0	500+	8.1	170	6.7
Sept.	6	13:25	31.0	300	—	280	6.7
	10	12:10	30.0	400	—	320	6.6
	17	11:15	27.5	200	—	255	6.9
	26	14:45	29.5	500+	7.5	275	6.9
Oct.	5	15:25	31.0	500+	7.5	310	5.9
	9	10:25	26.0	345	8.1	355	6.9
	16	10:05	26.5	250	8.1	290	6.8
	24	10:40	25.5	330	8.0	500	6.3
	29	10:20	25.0	410	—	325	7.0
Nov.	14	16:10	30.5	135	7.5	325	6.3
	21	Terminated monitoring works					

Remarks; Location : On Lateral F.
500+ : Over 500 ppm.
— : Not available.

Table F-22 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 7 IN ARIS

Date		Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
May	4	12:00	38.5	500+	7.5	400	5.2
	11	12:15	32.5	500+	7.8	390	6.1
	17	11:30	39.0	325	8.1	440	5.5
	22	11:15	27.0	500+	8.1	430	6.3
	31	13:50	32.0	500+	—	320	6.6
June	5	9:50	29.0	500+	—	340	7.3
	15	11:00	30.0	500+	—	390	6.8
	20	10:30	27.5	500+	8.0	395	7.4
	25	8:40	26.0	500+	8.7	450	7.8
July	2	8:20	26.0	500+	8.1	465	8.7
	9	8:15	26.5	500+	8.2	410	7.4
	16	8:05	26.5	500+	7.9	400	7.1
	23	8:15	26.5	500+	8.2	400	7.5
	30	8:05	26.0	500+	8.2	450	7.1
Aug.	8	8:10	26.0	500+	8.3	355	7.3
	13	8:30	27.0	500+	8.3	390	7.4
	20	8:15	26.0	500+	8.0	370	6.6
	28	8:10	25.0	500+	8.1	295	6.7
Sept.	6	14:50	32.0	390	—	270	7.5
	10	8:45	25.5	500+	—	305	6.8
	17	8:20	25.5	500	—	285	7.2
	25	10:00	26.0	410	8.1	340	6.0
Oct.	5	10:50	28.0	500+	7.9	355	6.5
	9	7:55	25.0	500	8.0	325	7.1
	16	7:55	25.5	280	8.1	310	7.2
	24	8:35	24.5	500+	8.2	430	6.2
	29	7:30	24.5	500	8.2	295	6.5
Nov.	14	13:35	27.0	250	7.8	280	6.0
	21	13:50	27.5	270	8.2	420	6.2

Remarks; Location : At crossing point of National Road Route No.7 on Main Canal.
500+ : Over 500 ppm.
— : Not available.

Table F-23 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 8 IN ARIS

Date		Time	Water Temperature (°C)	Turbidity (ppm)	pH	EC (umhos)	DO (mg/l)
May	4	No water available					
	11	No water available					
	17	No water available					
	22	No water available					
	31	15:30	34.5	290	—	310	5.7
June	6	8:55	29.5	275	—	375	7.0
	15	14:10	32.5	310	—	405	6.7
	20	13:30	30.0	500+	8.0	410	7.1
	25	13:55	28.0	500+	8.5	465	6.8
July	2	13:35	27.5	500+	8.7	460	7.8
	9	13:35	31.0	500+	8.0	360	6.5
	16	13:25	30.5	500	7.9	380	6.7
	23	15:00	31.0	500+	8.2	385	7.7
	30	13:45	30.5	500+	7.9	415	5.2
Aug.	8	13:50	38.5	500+	7.9	335	6.6
	13	13:30	28.5	500+	7.9	350	7.8
	21	13:40	37.0	75	7.8	370	6.6
	28	No water available					
Sept.	6	No water available					
	10	14:20	32.0	250	—	280	7.8
	17	13:30	30.5	80	—	270	6.0
	26	15:45	28.0	500+	7.3	290	7.0
Oct.	5	16:45	31.5	500+	8.1	320	6.2
	9	14:30	29.0	410	8.2	355	6.9
	21	10:40	25.0	500+	8.1	370	7.0
	24	13:40	26.0	500+	8.2	390	6.4
	29	No water available					
Nov.	14	16:40	27.0	200	8.2	290	6.6
	21	Terminated monitoring works					

Remarks; Location : On Lateral J.
500+ : Over 500 ppm.
— : Not available.

Table F-24 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 11 IN ARIS

Date		Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
May	4	No water available					
	11	11:40	31.0	500+	7.8	360	6.4
	17	No water available					
	23	11:20	34.0	150	8.3	370	3.9
	31	No water available					
June	6	11:00	32.5	110	—	385	5.4
	15	No water available					
	20	14:40	31.0	500+	7.9	365	7.4
	25	14:50	28.5	500+	8.3	430	6.8
July	2	15:20	29.5	325	8.8	470	6.6
	9	14:10	35.5	245	8.1	360	5.2
	16	No water available					
	23	13:50	29.5	500+	8.2	395	7.4
	30	10:50	27.5	500+	8.2	445	6.1
Aug.	8	10:55	26.5	500+	8.3	360	7.5
	13	10:55	27.0	500+	8.4	380	7.5
	21	No water available					
	28	10:40	24.5	500+	8.0	275	7.2
Sept.	6	14:10	—	500+	—	260	—
	10	11:20	28.0	300	—	270	6.7
	17	10:10	27.5	200	—	195	7.5
	26	13:55	27.5	500+	7.8	270	6.7
Oct.	5	14:50	28.0	320	8.2	320	6.4
	9	Terminated monitoring works					

Remarks; Location : At crossing point of Urdaneta-Dagupan road on Lateral L, but observed at diversion point from Main Canal on Lateral D from July 23 and onward.
500+ : Over 500 ppm.
— : Not available.

Table F-25 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 12 IN ARIS

Date		Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
May	4	No water available					
	11	No water available					
	17	No water available					
	22	No water available					
	31	16:00	34.5	500+	—	310	6.4
June	6	9:55	30.5	450	—	395	6.4
	15	No water available					
	20	No water available					
	25	No water available					
July	2	14:40	29.0	500+	8.7	470	7.7
	9	14:40	35.0	445	8.0	365	5.3
	16	14:20	33.0	500+	7.8	385	6.7
	23	No water available					
	27	15:45	34.0	310	7.8	380	6.4
	30	15:10	32.5	500+	7.8	400	4.8
Aug.	8	15:00	29.5	500+	7.6	345	6.8
	13	14:20	20.0	500+	7.9	380	6.9
	21	No water available					
	28	14:30	26.0	500+	—	270	7.0
Sept.	6	15:35	34.0	500+	—	240	7.1
	10	No water available					
	17	No water available					
	26	16:35	29.0	500+	7.7	345	6.0
Oct.	5	No water available					
	9	15:20	30.5	500+	8.2	310	6.1
	16	17:00	31.0	500+	8.0	285	6.7
	24	15:10	26.5	500+	8.2	410	6.7
	29	No water available					
Nov.	14	17:15	29.5	150	8.0	290	5.8
	21	Terminated moitoring works					

Remarks; Location : On Lateral M.
500+ : Over 500 ppm.
— : Not available.

Table F-26 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 9 IN ADRIS

Date		Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
Jan.	11	14:20	26.2	2	8.9	230	8.2
	20	9:50	24.3	0	8.4	280	8.2
	26	9:50	23.4	0	8.6	240	10.4
Feb.	2	9:30	23.0	15	8.4	290	7.4
	9	9:30	22.2	78	8.3	290	7.7
	15	9:20	24.2	1	8.6	260	6.7
	23	10:05	24.5	9	8.6	270	7.5
Mar.	6	8:50	22.8	68	8.2	230	7.5
	15	9:05	26.9	28	8.2	290	7.2
	23	8:40	25.1	9	8.7	280	7.8
	31	11:50	31.0	18	8.9	250	5.7
Apr.	4	9:30	26.8	9	8.6	270	6.6
	20	12:30	31.0	500+	8.8	290	3.9
	25	9:05	27.0	10	8.1	300	—
May	3	14:30	30.5	40	7.9	275	8.0
	11	—	—	—	—	—	—
	17	—	—	—	—	—	—
	23	14:35	29.5	62	8.3	200	5.2
June	1	9:40	27.5	85	—	195	6.2
	7	9:15	26.5	50	—	240	6.3
	14	9:30	28.0	39	—	245	8.4
	21	9:00	26.0	130	8.6	240	9.6
	26	9:00	24.5	150	8.7	215	6.7
July	3	9:20	24.5	105	8.9	215	6.8
	10	9:15	23.5	215	8.0	205	7.5
	17	9:10	25.5	45	8.4	245	7.5
	24	9:15	25.5	35	8.1	210	7.6
	31	8:55	25.5	60	8.4	150	7.6
Aug.	10	9:10	24.5	170	8.3	200	7.5
	14	9:20	24.5	80	8.0	205	8.5
	22	9:45	25.0	150	7.8	210	6.5
	30	9:40	23.5	500+	—	105	8.2
Sept.	4	13:20	26.5	330	8.2	210	7.1
	11	11:30	27.5	110	—	230	6.6
	18	9:50	25.0	200	—	205	7.1
	26	9:15	25.5	25	8.4	215	6.8
Oct.	7	9:05	25.5	45	8.4	220	7.3
	11	15:40	29.5	75	8.6	215	6.2
	17	14:30	28.5	0	8.4	200	7.8
	25	14:40	26.5	15	8.3	205	7.3
	29	No water available					
Nov.	16	9:30	24.0	25	8.1	225	7.4
	21	Terminated monitoring works					

Remarks; Location : At intake dam on Main Canal.
500+ : Over 500 ppm.
— : Not available.

Table F-27 OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT MONITORING POINT NO. 10 IN ADRIS

Date		Time	Water Temperature (°C)	Turbidity (ppm)	pH	EC (umhos)	DO (mg/l)
Jan.	11	15:30	26.3	105	8.2	240	5.3
	20	11:00	27.8	105	7.8	280	7.4
	26	10:50	24.8	35	7.8	300	6.3
Feb.	2	10:50	23.4	32	8.2	270	6.6
	9	No water available					
	15	No water available					
	23	11:10	24.7	30	8.3	270	6.1
Mar.	6	No water available					
	15	No water available					
	23	No water available					
	31	No water available					
Apr.	4	No water available					
	20	No water available					
	25	No water available					
May	3	No water available					
	11	No water available					
	17	No water available					
	23	No water available					
June	1	10:30	29.0	105	—	205	5.3
	7	9:40	27.0	120	—	245	6.1
	14	9:50	28.5	110	—	240	7.3
	21	9:25	26.5	145	8.4	245	6.7
	26	9:25	24.5	260	8.5	215	7.3
July	3	9:50	25.0	350	8.7	240	7.0
	10	9:40	26.0	130	7.8	235	5.6
	17	9:35	28.0	110	7.8	255	6.5
	24	9:40	28.0	95	7.8	230	6.7
	31	9:20	26.5	185	7.8	220	6.7
Aug.	10	9:30	25.0	210	8.0	210	6.8
	14	9:50	25.5	90	8.0	210	7.6
	22	10:10	26.5	65	7.6	245	6.2
	30	10:20	24.5	—	—	160	7.5
Sept.	4	No water available					
	11	No water available					
	18	10:20	27.0	70	—	220	3.3
	26	9:35	26.0	145	8.0	230	6.1
Oct.	7	No water available					
	11	No water available					
	17	14:55	32.0	5	7.8	215	3.4
	25	15:00	27.5	55	8.1	210	4.3
	29	No water available					
Nov.	16	9:45	25.0	50	7.8	245	5.2
	21	Terminated monitoring works.					

Remarks; Location : On Lateral A.
— : Not available.

Table F-28 **OBSERVATION RECORDS ON IRRIGATION WATER QUALITY AT SELECTED MONITORING POINTS IN ARIS AND INTAKE SITE OF CLEAR WATER IRRIGATION PROJECTS**

Date	Time	Water Temperature (°C)	Turbid-ity (ppm)	pH	EC (umhos)	DO (mg/l)
Monitoring point No. 1 on Main Canal at first structure						
Nov. 21	14:55	26.0	225	8.3	325	7.2
Monitoring point No. 3 on Don Moteo Ditch at diversion point from Main Canal						
Nov. 21	15:55	26.0	275	8.2	360	7.0
Monitoring point No. 4 on Don Moteo Ditch						
Nov. 21	15:45	26.0	275	8.2	360	7.0
Monitoring point No. 7 on Main Canal at crossing point of national road						
Nov. 21	13:50	27.5	270	8.2	420	6.2
Intake site at Casabar Clear Water Irrigation Project						
Nov. 21	14:15	29.5	0	8.2	335	6.5
Intake site at Porgana Clear Water Irrigation Project						
Nov. 21	16:15	28.0	62	7.3	440	5.4
Intake site at Agpaoa Clear Water Irrigation Project						
Nov. 21	16:45	30.5	2	7.0	600	2.5
Intake site at Sinapog Clear Water Irrigation Project						
Nov. 21	17:05	30.0	5	7.4	550	4.7
Intake site at Tagamusing Clear Water Irrigation Project						
Nov. 22	14:50	29.5	14	7.9	550	5.7
Intake site at Angalacan Clear Water Irrigation Scheme						
Nov. 22	15:30	30.0	6	8.1	550	8.9
Sinocalan Intake Dam in ARIS						
Nov. 22	16:05	29.5	44	7.9	520	6.7

Table F-29 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 1 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals				
	Date	Time		Cu	Pb	Zn	Cd	As
1	26/12/83	10:30	1,730	0.015	0.014	0.008	+	+
4	12/01/84	10:35	558	0.014	0.019	0.008	+	+
31	19/01/84	14:40	422	0.009	+	+	+	+
49	08/02/84	11:15	585	+	0.006	+	+	+
56	23/02/84	14:15	503	+	0.014	+	+	+
62	06/03/84	14:15	2,150	0.010	+	+	+	+
84	14/03/84	9:20	737	0.007	+	+	+	+
100	30/03/84	14:50	222	+	+	0.011	+	+
116	25/04/84	9:30	318	0.008	0.020	0.065	0.004	—
133	04/05/84	9:35	357	0.009	0.013	+	0.003	—
137	11/05/84	9:35	880	0.005	0.020	+	0.003	—
145	22/05/84	9:35	662	0.005	+	+	0.003	—
151	05/06/84	10:20	250	+	+	0.014	+	—
172	02/07/84	9:10	387	+	+	0.003	+	—
183	09/07/84	9:00	612	+	+	0.002	+	—
195	23/07/84	9:00	959	+	0.007	0.005	+	—
207	08/08/84	8:55	391	+	+	0.034	+	—
217	18/08/84	10:55	667	0.005	+	0.016	+	—
219	20/08/84	9:10	53	+	+	0.003	+	—
227	05/09/84	9:00	278	+	+	0.008	0.002	—
238	17/09/84	9:05	92	+	+	0.004	0.005	—
250	05/10/84	11:50	694	+	+	0.004	0.007	—
261	16/10/84	8:35	498	+	+	0.002	0.010	—
271	29/10/84	8:20	8,317	+	0.026	0.014	+	—
277	14/11/84	14:40	1,780	+	+	0.022	+	—
287	21/11/84	14:55	612	0.004	+	0.013	+	—

Remarks; + : Trace

Table F-30 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 2 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals				
	Date	Time		Cu	Pb	Zn	Cd	As
2	26/12/83	11:00	170	0.013	0.019	0.009	+	+
5	13/01/84	9:30	425	0.010	0.012	0.008	+	0.024
32	19/01/84	10:20	154	0.009	0.009	0.006	+	+
50	09/02/84	13:45	309	+	+	+	+	+
57	23/02/84	15:20	204	+	+	+	+	+
117	25/04/84	9:50	347	0.007	0.005	0.025	0.003	—
138	11/05/84	10:05	544	0.008	0.020	+	0.003	—
152	15/06/84	11:25	255	+	+	0.013	+	—
184	09/07/84	10:10	1,026	+	+	0.011	+	—
196	23/07/84	14:10	1,416	+	+	0.001	+	—
208	08/08/84	11:15	1,722	0.005	+	0.005	+	—
220	21/08/84	10:40	279	0.019	+	0.001	+	—
228	06/09/84	13:50	175	+	+	0.003	0.003	—
239	17/09/84	10:35	262	+	+	0.011	0.005	—
251	05/10/84	15:05	3,084	+	+	0.004	0.008	—

Remarks; + : Trace

Table F-31 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 3 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals				
	Date	Time		Cu	Pb	Zn	Cd	As
6	12/01/84	13:30	1,130	0.015	0.020	0.008	+	+
51	09/02/84	14:50	422	+	+	+	+	0.016
58	23/02/84	14:30	267	0.004	0.009	+	+	+
63	06/03/84	14:35	811	0.004	+	+	+	+
85	14/03/84	9:40	594	0.004	+	+	+	+
101	30/03/84	15:10	145	+	+	+	+	+
118	25/04/84	10:10	265	0.007	0.008	0.048	0.003	—
139	11/05/84	9:20	578	0.008	0.020	+	0.003	—
153	13/06/84	11:40	909	+	+	0.015	+	—
163	20/06/84	9:20	42	+	+	0.004	+	—
173	02/07/84	9:30	730	+	+	0.003	+	—
185	09/07/84	9:25	780	+	+	0.001	0.001	—
197	23/07/84	9:15	1,278	+	+	0.001	0.001	—
209	08/08/84	9:20	501	+	+	0.018	0.002	—
229	05/09/84	9:20	184	+	+	0.009	0.003	—
240	19/09/84	10:30	357	+	+	0.006	0.005	—
252	05/10/84	12:15	695	+	+	0.005	0.008	—
262	16/10/84	15:20	354	+	+	0.002	0.010	—
272	29/10/84	8:40	2,295	0.006	0.038	0.024	+	—
278	14/11/84	14:55	503	+	+	0.015	+	—
288	21/11/84	15:15	840	+	+	0.012	+	—

Remarks; + : Trace

Table F-32 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 4 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals				
	Date	Time		Cu	Pb	Zn	Cd	As
7	12/01/84	14:30	1,970	0.014	0.016	0.007	+	+
52	10/02/84	11:20	692	+	+	+	+	0.015
53	— do —	11:25	13.9	0.007	0.022	+	+	0.016
54	— do —	11:30	13.2	0.007	+	+	+	+
55	— do —	11:35	11.6	0.009	+	+	+	+
59	23/02/84	14:50	228	0.002	0.012	+	+	+
64	06/03/84	15:00	875	0.007	+	+	+	+
86	14/03/84	10:10	796	0.006	+	+	+	+
102	03/03/84	15:30	349	0.004	0.009	+	+	+
119	25/04/84	10:50	255	0.008	0.013	+	0.003	—
140	11/05/84	9:50	708	0.005	0.008	+	0.003	—
154	13/06/84	14:10	244	+	+	0.012	+	—
164	25/06/84	10:05	540	+	+	0.007	+	—
174	02/07/84	9:50	722	+	+	0.004	+	—
186	09/07/84	9:50	1,282	+	+	0.002	0.001	—
198	23/07/84	9:35	683	+	+	0.007	0.001	—
210	08/08/84	9:40	419	+	+	0.003	0.002	—
230	05/09/84	9:40	296	+	+	0.013	0.003	—
241	19/09/84	10:45	1,627	0.014	+	0.002	0.005	—
253	05/10/84	11:15	287	+	+	0.002	0.008	—
263	16/10/84	15:40	685	+	+	0.003	0.010	—
273	29/10/84	9:00	2,680	0.002	0.037	0.024	+	—
279	14/11/84	15:20	348	+	0.005	0.019	+	—
289	21/11/84	15:45	790	0.002	+	0.014	0.001	—
290	— do —	15:50	160	+	+	0.015	0.001	—
291	— do —	15:55	39	0.002	+	0.013	+	—
292	— do —	16:00	88	+	+	0.020	+	—

Remarks; + : Trace

Table F-33 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 5 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals			
	Date	Time		Cu	Pb	Zn	Cd
134	04/05/84	11:35	1,322	0.009	0.020	+	0.001
141	11/05/84	10:40	944	0.005	0.018	0.007	0.003
146	22/05/84	10:25	992	0.006	0.010	+	0.003
155	06/06/84	13:20	60	+	+	0.023	+
165	20/06/84	9:20	771	+	+	0.008	+
175	02/07/84	10:30	526	+	+	0.003	+
187	09/07/84	10:40	1,242	+	+	0.002	0.001
199	23/07/84	10:15	5,568	+	+	0.003	0.001
211	08/08/84	10:35	555	+	+	0.004	0.002
221	20/08/84	10:05	403	+	+	0.005	0.002
231	06/09/84	14:50	193	+	+	0.008	0.003
242	17/09/84	9:50	204	+	+	0.006	0.006
254	05/10/84	14:35	693	+	+	0.003	0.008
264	16/10/84	9:50	566	+	+	0.001	0.010
274	29/10/84	10:00	692	0.004	0.003	0.011	+
280	14/11/84	15:50	367	0.002	0.016	0.013	+

Remarks; + : Trace

Table F-34 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 6 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals			
	Date	Time		Cu	Pb	Zn	Cd
142	11/05/84	11:00	306	0.009	0.008	0.013	0.003
147	22/05/84	10:45	691	0.006	0.003	0.008	0.003
156	06/06/84	15:05	610	+	+	0.011	+
166	20/06/84	11:20	84	+	+	0.005	+
176	02/07/84	11:10	404	+	+	0.001	+
188	09/07/84	11:05	611	+	+	0.001	0.001
200	27/07/84	14:30	1,696	+	+	0.003	0.001
212	08/08/84	11:45	378	+	+	0.003	0.002
222	20/08/84	10:50	648	+	+	0.003	0.002
232	06/09/84	13:25	173	+	+	0.006	0.004
243	17/09/84	11:15	433	+	+	0.015	0.006
255	05/10/84	15:25	562	+	+	0.003	0.009
265	16/10/84	10:05	353	+	+	0.002	0.011
275	29/10/84	10:20	711	0.010	0.012	0.009	+
281	14/11/84	16:10	216	0.003	0.009	0.013	+

Remarks; + : Trace

Table F-35 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 7 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals			
	Date	Time		Cu	Pb	Zn	Cd
135	04/05/84	12:00	697	0.009	0.013	+	0.003
143	11/05/84	11:50	1,650	0.009	0.013	+	0.003
148	22/05/84	11:20	143	0.009	0.010	+	0.003
157	05/06/84	9:50	260	+	0.018	0.013	+
167	20/06/84	10:30	3,581	+	+	0.001	+
177	02/07/84	8:20	642	+	+	0.001	+
189	09/07/84	8:15	786	+	+	0.005	0.001
201	23/07/84	8:15	3,558	+	+	0.005	0.001
213	08/08/84	8:10	643	+	+	0.005	0.002
223	20/08/84	8:15	331	0.008	+	0.006	0.002
233	06/09/84	14:50	396	+	+	0.017	0.004
244	17/09/84	8:20	429	+	+	0.006	0.006
256	05/10/84	10:50	1,212	+	+	0.003	0.009
266	16/10/84	7:55	492	+	+	0.003	0.011
276	29/10/84	7:30	277	+	0.016	0.019	+
282	14/11/84	13:55	1,181	0.007	0.013	0.009	+
293	21/11/84	13:50	1,193	+	0.003	0.015	+

Remarks; + : Trace

Table F-36 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 8 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals			
	Date	Time		Cu	Pb	Zn	Cd
158	06/06/84	8:55	65	+	+	0.022	+
168	20/06/84	13:30	1,339	+	+	0.001	+
178	02/07/84	13:35	603	+	+	0.001	+
190	09/07/84	13:35	735	+	+	0.006	0.001
202	23/07/84	15:00	1,568	+	+	0.005	0.001
214	08/08/84	13:50	1,484	+	+	0.004	0.002
224	21/08/84	13:40	112	0.026	+	0.024	0.002
237	10/09/84	14:20	226	+	+	0.004	0.005
245	17/09/84	13:30	110	+	+	0.008	0.007
257	05/10/84	16:45	685	+	+	0.003	0.009
267	21/10/84	10:40	1,019	+	+	0.006	0.011
283	14/11/84	16:40	870	+	0.026	0.010	+

Remarks; + : Trace

Table F-37 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 11 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals			
	Date	Time		Cu	Pb	Zn	Cd
144	11/05/84	11:30	1,048	0.008	0.010	+	0.003
150	23/05/84	11:20	215	0.009	0.018	+	0.003
161	06/06/84	11:00	86	+	+	0.014	+
171	20/06/84	14:40	2,547	+	+	0.011	+
181	03/07/84	15:20	245	+	+	0.002	+
193	09/07/84	14:10	269	+	+	0.001	0.001
205	23/07/84	13:50	1,574	+	+	0.003	0.001
235	06/09/84	14:10	204	+	+	0.006	0.004
248	17/09/84	10:10	163	+	+	0.005	0.007
259	05/10/84	14:50	11	+	+	0.003	0.010

Remarks; + : Trace

Table F-38 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 12 IN ARIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals			
	Date	Time		Cu	Pb	Zn	Cd
162	06/06/84	9:55	171	+	+	0.012	+
182	03/07/84	14:40	576	+	+	0.003	+
194	09/07/84	14:40	524	+	+	0.002	0.001
206	27/07/84	15:45	313	+	+	0.002	0.002
218	18/08/84	15:00	361	0.005	+	0.004	0.002
236	06/09/84	15:35	586	+	+	0.015	0.004
249	26/09/84	16:35	1,483	+	+	0.004	0.007
260	09/10/84	15:20	2,372	+	0.015	0.002	0.010
270	16/10/84	17:00	1,443	+	+	0.002	0.002
286	14/11/84	9:45	243	+	+	0.013	+

Remarks; + : Trace

Table F-39 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 9 IN ADRIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals				
	Date	Time		Cu	Pb	Zn	Cd	As
8	11/01/84	14:20	3.9	0.005	0.018	0.007	+	+
33	20/01/84	9:50	1.9	+	+	+	+	+
35	02/02/84	9:35	2.2	+	0.002	0.003	+	0.016
60	23/02/84	10:05	2.3	+	+	0.004	+	+
87	15/03/84	9:05	6.7	+	+	+	+	+
103	31/03/84	11:50	6.0	+	0.030	+	+	+
120	25/04/84	12:30	523	0.005	0.013	+	0.003	—
136	04/05/84	14:45	31	0.002	0.013	+	0.003	—
149	23/05/84	14:35	31	0.007	0.008	+	0.005	—
159	07/06/84	9:15	34	+	+	0.011	+	—
169	21/06/84	9:00	70	+	+	0.004	+	—
179	03/07/84	9:20	84	+	+	0.001	+	—
191	17/07/84	9:10	19	+	+	0.001	0.001	—
203	24/07/84	9:15	68	+	+	0.006	0.001	—
215	10/08/84	9:10	134	+	+	0.003	0.002	—
225	22/08/84	9:45	96	+	+	0.003	0.002	—
234	04/09/84	13:20	88	+	+	0.002	0.004	—
246	18/09/84	9:50	63	+	+	0.008	0.007	—
258	07/10/84	9:05	748	+	+	0.002	0.009	—
268	17/10/84	14:30	7	+	+	0.001	0.011	—
284	16/11/84	9:30	3	+	0.002	0.010	+	—

Remarks; + : Trace

Table F-40 WATER SOLUBLE HEAVY METAL CONTENTS OF CANAL WATER AT MONITORING POINT NO. 10 IN ADRIS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals				
	Date	Time		Cu	Pb	Zn	Cd	As
3	27/12/83	10:30	10.5	0.005	0.026	0.005	+	+
9	11/01/84	15:30	62.2	0.005	0.021	0.009	+	+
34	20/01/84	11:00	63.4	+	+	0.006	+	+
36	02/02/84	10:30	57.9	+	+	0.006	+	+
61	23/02/84	10:30	34.3	+	+	+	+	+
160	07/06/84	9:40	73	+	+	0.012	+	—
170	21/06/84	9:25	65	+	+	0.001	+	—
180	03/07/84	9:50	459	+	+	0.001	+	—
192	17/07/84	9:35	64	+	+	0.003	0.001	—
204	24/07/84	9:40	187	+	+	0.007	0.001	—
216	10/08/84	9:30	91	+	+	0.003	0.002	—
226	22/08/84	10:10	73	+	+	0.004	0.002	—
247	18/09/84	10:20	20	+	+	0.008	0.007	—
269	17/10/84	15:55	9	+	+	0.001	0.012	—
285	16/11/84	9:45	26	+	+	0.019	+	—

Remarks; +: Trace

Table F-41 EFFECT OF RIVER BED DREDGING ON WATER QUALITY OF AGNO RIVER (1/4)

Unit: mg/l

Sample No.	Sampling Point	Sampling Time	Suspended Solid	Water Soluble Heavy Metals Cu	Pb	Zn	Cd
(1) Sampling Date: January 21, 1984							
10	P/E	6:25	652	0.009	0.016	0.010	+
11	I/D	6:45	740	0.023	0.030	0.009	+
12	No. 1	7:30	696	0.012	0.018	0.008	+
13	P/E	8:45	1,260	0.013	0.010	0.006	+
14	I/D	9:05	1,360	0.015	0.013	0.007	+
15	No. 1	9:15	1,260	0.011	0.024	0.006	+
16	P/E	10:30	1,200	0.011	0.014	0.008	+
17	I/D	10:25	957	0.010	0.021	0.008	+
18	No. 1	10:40	1,220	0.011	0.020	0.007	+
19	P/E	13:20	1,180	0.010	0.026	0.009	+
20	I/D	13:00	1,020	0.009	0.014	0.008	+
21	No. 1	13:05	972	0.012	0.022	0.007	+
22	P/E	14:50	1,680	0.014	0.019	0.008	+
23	I/D	15:10	2,080	0.012	0.018	0.007	+
24	No. 1	15:00	1,850	0.007	0.016	0.010	+
25	P/E	16:40	1,810	0.014	0.010	0.008	+
26	I/D	16:55	1,840	0.010	0.008	0.007	+
27	No. 1	16:50	1,930	0.011	0.025	0.009	+
28	P/E	18:20	2,090	0.015	0.020	0.007	+
29	I/D	18:35	2,110	0.010	0.019	0.006	+
30	No. 1	18:45	1,600	0.015	0.010	0.007	+

Remarks; P/E : Point E upstream from bridging site
I/D : ARIS intake dam downstream from bridging site
+ : Trace

Table F-42 EFFECT OF RIVER BED DREDGING ON WATER QUALITY OF AGNO RIVER (2/4)

Unit: mg/l

Sample No.	Sampling Point	Sampling Time	Suspended Solid	Water Soluble Heavy Metals Cu	Pb	Zn	Cd
(1) Sampling Date: February 4, 1984							
37	P/E	7:55	355	0.007	+	0.035	+
38	I/D	8:05	581	0.010	0.006	0.015	+
39	No. 1	8:10	276	0.004	+	0.046	+
40	P/E	10:55	473	0.005	+	0.076	+
41	I/D	11:10	228	0.004	0.029	0.085	+
42	No. 1	11:15	1,520	0.004	0.006	0.091	+
43	P/E	13:55	513	0.005	+	0.112	+
44	I/D	14:05	976	0.005	+	0.110	+
45	No. 1	14:10	900	0.004	+	0.126	+
46	P/E	16:55	1,078	+	0.022	+	+
47	I/D	17:10	797	0.003	+	+	+
48	No. 1	17:15	1,087	0.005	0.009	+	+
(2) Sampling Date : March 2, 1984							
65	P/E	8:00	562	+	+	+	+
66	I/D	8:15	590	+	+	+	+
67	No. 1	8:25	557	+	+	+	+
68	P/E	11:10	825	+	+	+	+
69	I/D	11:15	847	+	+	+	+
70	No. 1	11:25	795	+	+	+	+
71	P/E	14:00	2,950	+	+	+	+
72	I/D	14:15	2,780	+	+	+	+
73	No. 1	14:25	2.460	+	+	+	+
74	P/E	17:00	288	0.004	+	+	+
75	I/D	17:15	231	0.004	+	+	+
76	No. 1	17:25	681	0.003	+	+	+

Remarks; P/E : Point E upstream from bridging site
I/D : ARIS intake dam downstream from bridging site
+ : Trace

Table F-43 EFFECT OF RIVER BED DREDGING ON WATER QUALITY OF AGNO RIVER (3/4)

Unit: mg/l

Sample No.	Sampling Point	Sampling Time	Suspended Solid	Water Soluble Heavy Metals Cu	Pb	Zn	Cd
(1) Sampling Date: March 24, 1984							
88	P/E	7:35	339	0.005	+	+	+
89	I/D	7:50	221	0.005	+	+	+
90	No. 1	7:55	251	0.008	+	+	+
91	P/E	10:25	313	0.008	+	+	+
92	I/D	10:35	315	0.008	+	+	+
93	No. 1	10:45	465	0.004	+	+	+
94	P/E	14:20	96.4	0.004	+	+	+
95	I/D	14:30	338	0.015	0.030	+	+
96	No. 1	14:40	170	0.003	+	+	+
97	P/E	16:24	311	0.005	+	+	+
98	I/D	16:30	302	0.004	+	+	+
99	No. 1	16:50	196	+	+	+	+
(2) Sampling Date : April 10, 1984							
104	P/E	7:15	122	+	+	+	+
105	I/D	7:30	240	0.004	0.015	+	+
106	No. 1	7:40	110	+	+	+	+
107	P/E	11:15	81.6	0.005	+	+	+
108	I/D	11:30	104	+	+	+	+
109	No. 1	11:40	81.3	0.005	+	+	+
110	P/E	13:20	1,310	+	+	+	+
111	I/D	13:30	895	+	+	+	+
112	No. 1	13:40	68.5	0.005	+	+	+
113	P/E	15:30	841	0.005	+	+	+
114	I/D	15:45	615	+	+	+	+
115	No. 1	15:50	951	+	+	+	+

Remarks; P/E : Point E upstream from bridging site
I/D : ARIS intake dam downstream from bridging site
+ : Trace

Table F-44 EFFECT OF RIVER BED DREDGING ON WATER QUALITY OF AGNO RIVER (4/4)

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Water Soluble Heavy Metals			
	Point	Time		Cu	Pb	Zn	Cd
Sampling Date: April 28, 1984							
121	P/E	7:30	146	0.005	0.013	0.004	+
122	I/D	7:40	157	0.009	0.013	0.003	+
123	No. 1	7:50	163	0.005	0.005	0.002	+
124	P/E	10:25	78	0.005	0.008	0.002	+
125	I/D	10:30	116	0.008	0.013	0.003	+
126	No. 1	10:35	161	0.010	0.005	0.003	+
127	P/E	13:05	274	0.009	0.013	0.003	+
128	I/D	13:15	133	0.014	0.013	0.003	0.003
129	No. 1	13:20	312	0.011	0.013	0.002	+
130	I/D	16:20	216	0.018	0.018	0.003	+
131	P/E	16:25	235	0.009	0.013	0.003	+
132	No. 1	16:30	316	0.009	0.013	0.014	+

Remarks:
P/E: Point E upstream from bridging site
I/D: ARIS intake dam downstream from bridging site
+ : Trace

Table F-45 WATER SOLUBLE HEAVY METAL CONTENTS OF IRRIGATION WATER AT INTAKE SITES OF CLEAR WATER IRRIGATION PROJECTS

Unit: mg/l

Sample No.	Sampling		Suspended Solid	Heavy Metals			
	Point	Time		Cu	Pb	Zn	Cd
Intake Site at Casabar Clear Water Irrigation Project							
294	21/11/84	14:15	3	+	+	0.015	+
Intake Site at Porgana Clear Water Irrigation Project							
295	21/11/84	16:15	58	+	+	0.014	0.001
Intake Site at Agpaoa Clear Water Irrigation Project							
296	21/11/84	16:45	11	+	0.002	0.016	0.001
Intake Site at Sinapog Clear Water Irrigation Project							
297	21/11/84	17:05	5	+	+	0.016	0.002
Intake Site at Tagamusing Clear Water Irrigation Project							
298	22/11/84	14:50	9	+	0.003	0.013	0.001
Intake Site at Angalacan Clear Water Irrigation Project							
299	22/11/84	15:30	3	+	+	0.010	0.002
Sinocalan Intake Dam in ARIS							
300	22/11/84	16:05	57	+	+	0.013	0.002

Remarks; +: Trace

Table F-46 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (1/10)

A. General Information

Master Pit No.	:	1
Project	:	San Roque Reservoir
Photo No.	:	111 flight 115
Location	:	Macalong, Asingan, Pangasinan
Landform	:	Alluvial terrace
Relief	:	Nearly level
Land Use	:	Paddy rice
Elevation	:	
Slope	:	0 – 1%
Aspect	:	
Surface Drainage	:	Good
Internal Drainage	:	Excessive
Soil Drainage Class	:	Well drained
Soil Parent Material	:	Recent alluvial deposit
Soil Series/Type	:	San Manuel
Land Class	:	$\frac{1R}{PrllBY}$(2do)

B. Profile Description

Sample No.	Depth (cm)	Profile Description
401	0-26	Light brownish gray (10YR 6/2) dry silty clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; few soft iron and manganese concretions; slightly sticky and slightly plastic when wet; sub-angular blocky structure; many fine to medium roots; common fine to medium tubular interstitial pores; presence of few earthworm burrow; clear irregular horizon boundary.
402	26-54	Dark gray (10YR 4/1) dry clay loam, few fine faint brownish yellow (10YR 6/6) mottles; no concretions, friable, angular blocky structure; common fine to medium pores; common fine roots; clear wavy horizon boundary.
403	54-87	Brown (10YR 4/3) dry sandy loam, no mottles; moderately compact, friable; granular structure; many fine to medium pores; few fine to very fine roots; clear smooth horizon boundary.
404	87-113	Yellowish brown (10YR 5/4) dry loamy sand, single grain structure; absence of plant roots; diffused irregular horizon boundary.
405	113-153	Brown (10YR 4/3) moist loamy fine sand friable, weak granular structure.

Described by: T.C. Anyaya/R.A. Umagat Date: March 29, 1984

Table F-47 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (2/10)

A. General Information

Master Pit No.	:	2
Project	:	San Roque Reservoir
Photo No.	:	064 flight 117
Location	:	Pias, Villasis, Pangasinan
Landform	:	Alluvial terrace
Relief	:	Nearly level
Land Use	:	Tobacco
Elevation	:	
Slope	:	0 — 1%
Surface Drainage	:	Good
Internal Drainage	:	Fair to Good
Soil Drainage Class	:	Fairly drained
Soil Parent Material	:	Recent alluvial deposit
Soil Series/Type	:	San Manuel
Land Class	:	$\frac{1R}{TCllBY}$ (2do)

B. Profile Description

Sample No.	Depth (cm)	Profile Description
406	0-22	Light brownish gray (10YR 6/2) dry silt loam, common fine distinct brownish yellow (10YR 6/8) mottles; no concretions, angular blocky structure; friable, common fine tubular pores, many fine to medium roots; presence of few earthworm burrows; clear smooth horizon boundary.
407	22-48	Grayish brown (10YR 4/2) dry silty clay loam, common fine faint dark yellowish brown (10YR 4/4) mottles; no concretions; prismatic structure, friable, few medium tubular pores; common fine to very fine roots; presence of patchy thin clay cutans along pores lining; diffused smooth horizon boundary.
408	48-81	Very dark grayish brown (10YR 3/2) dry silt loam, few fine faint yellowish brown (10YR 5/4) mottles, no concretions, blocky structure; friable, few fine to very fine roots; common fine to medium interstitial pores; clear irregular horizon boundary.
409	81-120	Grayish brown (10YR 5/2) dry silt loam, common medium distinct yellowish brown (10YR 4/6) mottles; moderately strong angular blocky structure; friable, common fine tubular pores, gradual irregular horizon boundary.
410	120-150	Pale brown (10YR 6/3) moist silt loam, common medium distinct dark yellowish brown (10YR 4/4) mottles; friable, moderately weak granular structure; common fine to medium tubular pores; friable, slightly sticky.

Described by: R.A. Umagat Date: March 29, 1984

Table F-48 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (3/10)

A. General Information

Master Pit No.	:	3
Project	:	San Roque Reservoir
Photo No.	:	
Location	:	Pinmaludpod, Urdaneta, Pnagasinan
Landform	:	Alluvial terrace
Relief	:	Nearly level
Land Use	:	Paddy rice
Elevation	:	
Slope	:	0 — 1%
Aspect	:	
Surface Drainage	:	Fair
Internal Drainage	:	Good
Soil Drainage Class	:	Fairly drained
Soil Parent Material	:	Recent alluvial deposit
Soil Series/Type	:	San Manuel
Land Class	:	$\frac{1R}{PrllBY}$(2do)

B. Profile Description

Sample No.	Depth (cm)	Profile Description
411	0-18	Brown (10YR 5/3) dry silty clay loam, few fine faint reddish brown (5YR 4/3) mottles; slightly sticky, non plastic when wet; sub-angular blocky structure; common fine to medium root penetration; absence of tubular pores; clear smooth horizon boundary.
412	18-52	Dark yellowish brown (10YR 4/4) dry clay loam, common fine distinct reddish brown (5YR 4/4) mottles; slightly sticky slightly plastic when wet; moderately strong sub-angular blocky structure; friable, common fine root penetration; few fine tubular pores; clear irregular horizon boundary.
413	52-79	Brown (10YR 4/3) dry silty clay loam, common distinct yellowish brown (10YR 5/8) mottles, friable when moist; weak sub-angular blocky structure; common fine tubular pores; clear wavy horizon boundary.
414	79-125	Pale brown (10YR 6/3) moist silt loam, common medium distinct yellowish brown (10YR 5/6) mottles; no concretions, non sticky, non plastic; friable, weak granular structure; few fine roots, common fine tubular pores.

Described by: T.C. Anyaya

Date: March 30, 1984

Table F-49 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (4/10)

A. General Information

Master Pit No.	:	4
Project	:	San Roque Reservoir
Photo No.	:	193 Flight 125
Location	:	Flores, San Manuel, Pangasinan
Landform	:	Alluvial terrace
Relief	:	Nearly level
Land Use	:	Paddy rice irrigated
Elevation	:	
Slope	:	0 — 1%
Aspect	:	
Surface Drainage	:	Fair
Internal Drainage	:	Good
Soil Drainage Class	:	Well drained
Soil Parent Material	:	Recent alluvial deposit
Soil Series/Type	:	Umingan
Land Class	:	$\frac{1R}{PrllBy}$(2do)

B. Profile Description

Sample No.	Depth (cm)	Profile Description
415	0-11	Light brownish gray (10YR 6/2) dry silt loam; common fine distinct yellowish brown (10YR 5/8) mottles; few medium coarse to soft black concretion; moderately compact, angular blocky structure; many medium to fine roots; few fine tubular pores; clear smooth horizon boundary.
416	11-52	Gray (10YR 5/1) dry silty clay loam; many medium distinct dark yellowish brown (10YR 4/6) mottles; no concretions, moderately sticky and slightly plastic when wet; moderately strong sub-angular blocky structure; common fine to very fine roots; very few fine pores; diffused smooth horizon boundary.
417	52-75	Dark gray (10YR 4/1) dry silty clay loam, few fine faint yellowish brown (10YR 5/6) mottles; common fine soft black concretions; moderately sticky and slightly plastic when wet; blocky structure; few fine to very fine roots; very few fine pores; abrupt irregular horizon boundary.
418	75-83	Dark grayish brown (10YR 4/2) moist loamy sand; absence of plant roots; granular structure; gradual irregular horizon boundary.
419	83-120	Grayish brown (10YR 5/2) moist coarse sand, single grain structure.

Described by: R.A. Umagat

Date: March 30, 1984

Table F-50 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (5/10)

A. General Information

Master Pit No.	:	5
Project	:	San Roque Reservoir
Photo No.	:	193 Flight 125
Location	:	Malanay, Sta. Barbara, Pangasinan
Landform	:	Alluvial terrace
Relief	:	Nearly level
Land Use	:	Paddy rice
Elevation	:	
Slope	:	0 — 1%
Aspect	:	
Surface Drainage	:	Fair
Internal Drainage	:	Fair
Soil Drainage Class	:	Fairly drained
Soil Parent Material	:	Alluvial deposit
Soil Series/Type	:	Quingua
Land Class	:	$\frac{1R}{PrllBY}$ (2do)

B. Profile Description

Sample No.	Depth (cm)	Profile Description
420	0-18	Brown (10YR 5/3) dry silty clay loam, few fine faint reddish brown (5YR 4/4) mottles; slightly sticky, slightly plastic when wet; strong sub-angular blocky structure; common fine to medium roots; clear irregular horizon boundary.
421	18-42	Dark grayish brown (10YR 4/2) dry clay loam, few fine faint yellowish brown (10YR 5/6) mottles; moderately sticky and plastic when wet; weak sub-angular blocky structure; common fine to very fine roots; clear smooth horizon boundary.
422	42-59	Grayish brown (10YR 5/2) dry clay loam, few fine faint to distinct yellowish brown (10YR 5/6) mottles; no concretions; slightly sticky and slightly plastic when wet; friable when moist, weak sub-angular blocky structure; common fine roots; few fine open tubular pores, abrupt irregular horizon boundary.
423	59-98	Yellowish brown (10YR 5/4) moist silty clay loam; common fine distinct brownish yellow (10YR 6/8) mottles; no concretions; slightly sticky, non plastic; friable weak sub-angular blocky structure; few fine roots, few fine tubular pores; clear irregualr horizon boundary.
424	98-145	Yellowish brown (10YR 5/6) moist, silt loam; common fine distinct brownish yellow (10YR 6/8) mottles; non sticky, non plastic; friable granular structure; few fine tubular pores.

Described by: T.C. Anyaya

Date: April 2, 1984

Table F-51 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (6/10)

A. General Information

Master Pit No.	:	6
Project	:	San Roque Reservoir
Photo No.	:	126 Flight 119
Location	:	Santiago, Binalonan, Pangasinan
Landform	:	Alluvial terrace
Relief	:	Nearly level
Land Use	:	Paddy rice
Elevation	:	
Slope	:	0 — 1%
Aspect	:	
Surface Drainage	:	Fair
Internal Drainage	:	Good
Soil Drainage Class	:	Well drained
Soil Parent Material	:	Recent alluvial deposit
Soil Series/Type	:	San Manuel
Land Class	:	$\frac{1R}{PrlIBY}$ (2do)

B. Profile Description

Sample No.	Depth (cm)	Profile Description
425	0-15	Dark gray (10YR 4/1) dry clay loam, few fine faint yellowish brown (10YR 5/8) mottles; no concretions, sticky and plastic when wet; angular blocky structure; many medium to fine roots; few fine to medium pores; clear wavy horizon boundary.
426	15-64	Very dark grayish brown (10YR 3/2) dry fine sandy clay loam; few fine distinct yellowish brown (10YR 5/6) mottles; slightly sticky, non-plastic when wet; common fine to very fine roots; many fine to medium pores; presence of few earthworm burrows; diffused irregular horizon boundary.
427	64-98	Grayish brown (10YR 5/2) dry sandy clay loam; common fine faint to brownish yellow (10YR 5/6) mottles; no concretions; compact, slightly plastic when wet; sub-angular blocky structure; very few fine roots; common fine to medium tubular pores; presence of few earthworm burrows; patchy thin layers of clay cutans along pores lining; gradual irregular horizon boundary.
428	98-119	Grayish brown (10YR 5/2) dry silty clay loam, few medium distinct brownish yellow (10YR 6/8) mottles; moderately sticky, slightly plastic when wet; sub-angular blocky structure; very few fine roots; presence of few earthworm burrows; common fine to medium pores; diffused smooth horizon boundary.
429	119-150	Dark grayish brown (10YR 4/2) moist loamy sand; granular structure, absence of plant roots.

Described by: R.A. Umagat Date: April 2, 1984

Table F-52 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (7/10)

A. General Information

Master Pit No.	:	7
Project	:	San Roque Reservoir
Photo No.	:	117 Flight 121
Location	:	Unsad, Villasis, Pangasinan
Landform	:	Residual Terrace
Relief	:	Undulating
Land Use	:	Cassava
Elevation	:	
Slope	:	2 — 3%
Aspect	:	
Surface Drainage	:	Good
Internal Drainage	:	Fair to poor
Soil Drainage Class	:	Fairly drained
Soil Parent Material	:	Tuffaceous sandstone
Soil Series/Type	:	Tarlac
Land Class	:	2rt

B. Profile Description

Sample No.	Depth (cm)	Profile Description
430	0-12	Brown (10YR 5/3) dry sandy clay loam, few fine faint brownish yellow (10YR 5/8) mottles; few coarse hard reddish brown concretions; friable, hard and compact; moderately strong sub-angular blocky structure; common medium to fine pores; common medium to fine roots; clear wavy horizon boundary.
431	12-25	Brown (10YR 4/3) sandy clay loam, few fine faint brownish yellow (10YR 5/8) mottles; few fine soft black concretions; sticky, slightly plastic when wet; friable moderately weak angular blocky structure; common fine to very fine roots; few fine to medium tubular pores; clear smooth horizon boundary.
432	25-87	Brown (10YR 5/3) dry fine sandy clay loam; common medium distinct yellowish brown (10YR 4/6) mottles; common fine to medium soft black concretions; sticky, slightly plastic when wet; angular blocky structure; few fine to very fine roots; abrupt smooth horizon boundary.
433	87-110	Dark yellowish brown (10YR 3/4) dry fine sandy clay; common medium distinct to prominent yellowish brown (10YR 4/6) to brownish yellow (10YR 6/8) mottles; common fine to medium black soft concretions; friable, sub-angular blocky structure; very few fine roots, few fine tubular pores.

Described by: R.A. Umagat Date: April 3, 1984

Table F-53 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (8/10)

A. General Information

Master Pit No.	:	8
Project	:	San Roque Reservoir Project
Photo No.	:	033 Flight 123
Location	:	Bo. Mangayaw, Bayambang, Pangasinan
Landform	:	Alluvial terrace
Relief	:	Slightly undulating
Land Use	:	Corn
Elevation	:	
Slope	:	1 — 2%
Aspect	:	
Surface Drainage	:	Fair
Internal Drainage	:	Good
Soil Drainage Class	:	Well drained
Soil Parent Material	:	Recent alluvial deposit
Soil Series/Type	:	Quingua
Land Class	:	$\frac{1R}{CnllBY}$(2do)

B. Profile Description

Sample No.	Depth (cm)	Profile Description
434	0-17	Light yellowish brown (10YR 6/4) dry silt loam; few fine faint reddish brown to yellowish brown (5YR 4/4) to (10YR 5/8) mottles; no concretions, non-sticky non-plastic when wet; weak sub-angular blocky structure; common fine to medium roots; clear irregular horizon boundary.
435	17-47	Dark yellowish brown (10YR 4/4) dry silty clay loam; no mottles and concretions; friable, granular structure; common fine roots, abrupt irregular horizon boundary.
436	47-62	Yellowish brown (10YR 5/4) dry silt loam; no mottles and concretions, friable, granular structure; few to common fine roots; diffused irregular horizon boundary.
437	62-110	Yellowish brown (10YR 5/4) dry fine sandy loam, friable, granular structure; very few fine roots; clear wavy horizon boundary.
438	110-153	Yellowish brown (10YR 5/4) moist very sandy loam, friable, weak granular structure.

Described by: T.C. Anyaya

Date: April 4, 1984

Table F-54 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (9/10)

A. General Information

Master Pit No.	:	9
Project	:	San Roque Reservoir
Photo No.	:	100 Flight 118
Location	:	Salcedo, San Manuel, Pangasinan
Landform	:	Alluvial terrace
Relief	:	Nearly level
Land Use	:	Tobacco
Elevation	:	
Slope	:	0 — 1%
Aspect	:	
Surface Drainage	:	Fair
Internal Drainage	:	Good
Soil Drainage Class	:	Well drained
Soil Parent Material	:	Recent alluvial deposit
Soil Series/Type	:	San Manuel
Land Class	:	$\frac{1R}{TcllBY}$(2do)

B. Profile Description

Sample No.	Depth (cm)	Profile Description
439	0-11	Pale brown (10YR 6/3) dry silty clay loam; no mottles, no concretions; friable, strong sub-angular blocky structure; common to many fine roots; gradual wavy horizon boundary.
440	11-25	Brown (10YR 5/3) dry silty clay loam; common medium distinct reddish yellow (7.5YR 7/8) mottles, friable weak sub-angular blocky structure; common fine to very fine roots; few fine tubular pores; gradual smooth horizon boundary.
441	25-54	Pale brown (10YR 6/3) moist very fine sandy clay loam; common medium distinct yellowish brown (10YR 5/8) mottles; no concretions; non sticky, non plastic; friable weak sub-angular blocky structrure; few to common fine roots; common fine open tubular pores; diffused smooth horizon boundary.
442	54-78	Dark yellowish brown (10YR 5/4) wet very fine sandy loam; few fine faint yellowish brown (10YR 5/8) mottles; no concretions, granular structure; few fine roots; common to many open tubular pores; diffused broken horizon boundary.
443	78-110	Dark yellowish brown (10YR 5/4) wet; loamy fine sand; single grain structure.

Described by: T.C. Anyaya

Date: April 4, 1984

Table F-55 PROFILE DESCRIPTION OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (10/10)

A. General Information

Master Pit No.	: 10		
Project	: San Roque Reservoir		
Photo No.	: 108, Flight 111		
Location	: San Roque, San Nicolas, Pangasinan		
Landform	: Alluvial Terrace		
Relief	: Nearly level		
Land Use	: Paddy rice irrigated		
Elevation	:		
Slope	: 0 — 1%	Soil Parent Material	: Alluvial deposit
Aspect	:	Soil Series/Type	: San Manual
Surface Drainage	: Fair		
Internal Drainage	: Fair	Land Class	: $\frac{1R}{PrlIBy}$(2do)
Soil Drainage Class	: Fairly drained		

B. Profile Description

Sample No.	Depth (cm)	Profile Description
444	0-15	Grayish brown (10YR 5/2) dry silty clay loam; common fine distinct yellowish brown (10YR 5/8) to brownish yellow (10YR 6/8) mottles; no concretions, slightly sticky, moderately strong blocky structure; many medium to fine roots, few fine to medium pores; clear wavy horizon boundary.
445	15-37	Dark grayish brown (10YR 4/2) dry silty clay loam, few fine faint yellowish brown (10YR 5/6) mottles; few coarse black concretions; moderately sticky when wet; sub-angular blocky structure; many fine to very fine roots; common fine tubular pores; diffused smooth horizon boundary.
446	37-89	Very dark grayish brown (10YR 3/2) dry fine sandy clay loam; common fine distinct dark yellowish brown (10YR 4/4) mottles; slightly sticky when wet, non-plastic; moderately weak angular blocky structure; few fine to very fine roots; few fine pores; presence of lime precipitates and disintegrating materials; diffused irregular horizon boundary.
447	89-131	Dark grayish brown (10YR 4/2) moist clay loam, common fine distinct dark yellowish brown (10YR 4/4) mottles; slightly sticky, slightly plastic, friable granular structure; common fine to medium tubular pores; presence of few eathworm burrows and patchy thin layer of clay cutans along pores lining; diffused smooth horizon boundary.
448	131-150	Grayish brown (10YR 5/2) moist silty clay loam, common fine distinct yellowish brown (10YR 5/6) mottles; slightly sticky, slightly plastic; weak angular structure; common fine pores; patch to continuous thin layer of clay cutans along ped faces.

Described by: R.A. Umagat

Date: April 4, 1984

Table F-56 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (1/10)

A. Master Pit No. and Location: No. 1, Macalong, Asingan

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
401	0— 26	5.8	400	11.5	1.94	3.33
402	— 54	6.2	100	23.5	1.39	2.38
403	— 87	6.8	60	25.0	1.59	2.74
404	—113	6.9	50	29.0	0.94	1.62
405	—153	7.0	70	25.0	0.71	1.22

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
401	20.59	0.13	0.26	12.00	3.68	4.52
402	27.74	0.16	0.26	19.78	3.52	4.02
403	25.96	0.13	0.26	17.69	3.86	4.02
404	16.54	0.08	0.26	11.23	2.46	2.51
405	23.40	0.09	0.26	16.53	4.01	2.51

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
401	0— 26	41	51	8	SiL
402	— 54	37	50	13	L, SiL
403	— 87	35	55	10	SiL
404	—113	89	8	3	S
405	—153	58	37	5	SL

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-57 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (2/10)

A. Master Pit No. and Location: No. 2, Pias, Villasis

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
406	0—22	5.6	320	21.0	2.27	3.91
407	— 48	6.9	80	18.0	1.81	3.12
408	— 81	6.9	110	32.0	1.29	2.22
409	—120	6.9	130	30.0	0.66	1.13
410	—150	7.0	160	37.5	1.07	1.84

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
406	29.79	0.35	0.26	20.41	4.75	4.52
407	31.47	0.20	0.39	20.40	6.46	4.02
408	25.71	0.26	0.40	19.68	2.35	3.02
409	29.96	0.16	0.40	20.35	6.03	3.02
410	28.30	0.12	0.26	18.21	6.69	3.02

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
406	— 22	33	55	12	SiL
407	— 48	35	48	17	L
408	— 81	30	50	20	L, SiL
409	—120	28	56	16	SiL
410	—150	16	71	13	SiL

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-58 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (3/10)

A. Master Pit No. and Location: No. 3, Pinmaludpod, Urdaneta

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
411	0— 18	6.4	490	13.0	2.19	3.77
412	— 52	6.5	180	13.0	0.86	1.49
413	— 79	6.9	130	23.0	0 86	1.49
414	—125	7.0	120	17.5	0.24	0.41

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
411	26.14	0.22	0.52	15.37	6.51	3.52
412	27.27	0.14	0.39	16.14	7.08	3.52
413	36.28	0.15	0.40	21.79	10.42	3.52
414	35.17	0.02	0.40	21.39	9.84	3.52

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
411	0— 18	30	54	16	SiL
412	— 52	34	49	17	L
413	— 79	27	60	13	SiL
414	—120	20	71	9	SiL

Remarks;
- pH : Soil-water ratio is 1:1.
- EC : Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
- P_2O_5 : Available phosphorus on Olsen method.
- OC & OM : Organic carbon and organic matter, respectively.
- CEC : Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
- Exchangeable cations : Expressed by milligram equivalent per 100 g dry soil.
- Ex-Ac : Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-59 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (4/10)

A. Master Pit No. and Location: No. 4, Flores, San Manuel

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
415	0— 11	6.7	360	17.5	1.78	2.06
416	— 52	7.1	210	12.5	1.24	2.17
417	— 75	7.0	160	14.0	1.21	2.09
418	— 83	7.1	110	11.0	1.21	2.09
419	—120	7.1	60	8.0	0.99	1.70

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
415	25.31	0.41	0.26	17.14	4.48	3.02
416	35.82	0.47	0.13	20.46	12.25	2.51
417	26.99	0.45	0.13	18.04	5.86	2.51
418	17.96	0.33	0.13	10.90	5.09	1.51
419	9.21	0.20	0.08	5.81	2.11	1.01

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
415	0— 11	28	56	16	SiL
416	— 52	30	49	21	L
417	— 72	53	29	18	SL
418	— 83	44	30	26	L
419	—120	45	39	16	L

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-60 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (5/10)

A. Master Pit No. and Location: No. 5, Malanay, Santa Barbara

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
420	0— 18	6.1	470	17.5	2.00	3.44
421	— 42	7.0	250	17.5	1.05	1.81
422	— 59	6.9	240	14.0	1.54	2.66
423	— 98	6.8	160	7.5	1.24	2.14
424	—145	6.9	150	11.0	0.79	1.35

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
420	48.18	0.26	0.27	28.62	8.48	10.55
421	44.85	0.11	0.41	30.69	10.12	3.52
422	44.80	0.12	0.41	29.99	10.76	3.52
423	44.85	0.08	0.27	31.36	10.12	3.02
424	41.88	0.08	0.27	30.43	8.08	3.02

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
420	0— 18	82	14	4	LS
421	— 42	79	14	7	LS
422	— 59	45	32	23	L
423	— 98	62	30	8	SL
424	—145	59	26	15	SL

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-61 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (6/10)

A. Master Pit No. and Location: No. 6, Santiago, Binalonan

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
425	0— 15	6.9	230	18.5	2.52	4.32
426	— 64	7.3	50	23.0	1.67	2.87
427	— 98	7.6	40	24.5	1.61	2.77
428	—119	8.2	110	23.0	1.53	2.63
429	—150	8.0	60	17.0	1.39	2.39

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
425	45.23	0.24	0.40	31.99	9.08	3.52
426	42.11	0.13	0.27	31.97	7.23	2.51
427	37.98	0.08	0.27	29.26	7.36	1.01
428	41.94	0.09	0.27	32.78	8.30	0.50
429	31.09	0.07	0.26	24.16	6.10	0.50

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
425	0— 15	99	<2	<2	S
426	— 64	38	43	19	L
427	— 98	62	30	8	SL
428	—119	52	30	18	SL, L
429	—150	37	38	25	L

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-62 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (7/10)

A. Master Pit No. and Location: No. 7, Unsad, Villasis

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
430	0— 12	5.1	30	12.5	2.07	3.56
431	— 25	5.1	20	11.0	2.25	3.87
432	— 87	6.4	20	10.0	1.74	3.00
433	—110	6.6	20	24.0	1.74	3.00

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
430	13.56	0.06	0.13	6.25	1.59	5.53
431	13.47	0.13	0.13	5.16	2.52	5.53
432	20.29	0.07	0.13	12.20	3.37	4.52
433	23.38	0.07	0.16	14.30	4.33	4.52

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
430	0— 12	36	45	19	L
431	— 25	52	40	8	SL, L
432	— 87	40	20	40	C, CL
433	—110	34	23	43	C

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-63 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (8/10)

A. Master Pit No. and Location: No. 8, Bo, Mangayaw, Bayambang

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
434	0— 17	6.6	250	79.0	2.55	4.39
435	— 47	6.7	90	37.5	2.47	4.25
436	— 62	7.1	40	33.0	2.02	3.49
437	—110	7.2	50	30.5	1.98	3.41
438	—153	7.8	120	30.5	1.83	3.15

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
434	20.53	0.77	0.13	12.56	3.55	3.52
435	27.42	0.37	0.16	16.47	6.90	3.52
436	21.79	0.15	0.18	14.20	4.24	3.02
437	22.96	0.02	0.39	14.13	5.40	3.02
438	24.74	0.06	0.52	15.12	7.03	2.01

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
434	0— 17	40	52	8	SiL
435	— 47	33	51	16	SiL
436	— 62	40	54	6	SiL
437	—110	36	60	4	SiL
438	—153	22	73	5	SiL

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-64 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (9/10)

A. Master Pit No. and Location: No. 9, Salcedo, San Manuel

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
439	0— 11	6.1	590	57.0	2.82	4.86
440	— 25	6.7	80	49.0	2.71	4.65
441	— 54	6.9	70	30.5	2.53	4.35
442	— 78	7.0	60	29.5	2.43	4.17
443	—110	7.1	70	35.0	1.98	3.41

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
439	25.85	0.39	0.39	14.27	5.27	5.53
440	28.69	0.39	0.39	17.46	5.93	4.52
441	29.48	0.31	0.19	18.89	5.37	4.52
442	27.15	0.23	0.26	17.87	5.27	3.52
443	23.19	0.14	0.26	14.88	4.89	3.02

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
439	0— 11	40	45	15	L
440	— 25	30	52	18	SiL
441	— 54	42	41	17	L
442	— 78	51	35	14	L
443	—110	57	34	9	SL

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-65 RESULTS OF LABORATORY ANALYSIS ON SOIL SAMPLES OF MASTER PIT SURVEY IN PROPOSED SAN ROQUE PROJECT AREA (10/10)

A. Master Pit No. and Location: No. 10, San Roque, San Nicolas

B. Chemical Analysis

Sample No.	Depth (cm)	pH	EC (umho)	P_2O_5 (ppm)	OC (%)	OM (%)
444	0— 15	6.7	180	37.0	2.45	4.21
445	— 37	7.0	30	23.0	2.41	4.15
446	— 89	7.3	30	17.0	2.33	4.02
447	—131	7.4	30	30.0	2.31	3.97
448	—150	7.1	40	24.0	1.57	2.69

Sample No.	CEC (me)	Exchangeable Cations (me)				Ex-Ac (me)
		K^+	Na^+	Ca^{++}	Mg^{++}	
444	39.64	0.15	0.26	19.80	7.87	11.56
445	31.43	0.17	0.40	19.51	6.32	5.03
446	34.36	0.08	0.26	20.04	8.95	5.03
447	33.79	0.13	0.26	21.38	6.99	5.03
448	34.89	0.15	0.26	21.95	8.01	4.52

C. Physical Analysis

Sample No.	Depth (cm)	Sand (%)	Silt (%)	Clay (%)	Soil Texture
444	0— 15	43	42	15	L
445	— 37	49	36	15	L
446	— 89	54	29	16	SL
447	—113	54	29	17	SL
448	—150	45	36	19	L

Remarks;

pH	:	Soil-water ratio is 1:1.
EC	:	Electric conductivity, at 25°C for sample with soil-water ratio of 1:1, expressed by umho/cm.
P_2O_5	:	Available phosphorus on Olsen method.
OC & OM	:	Organic carbon and organic matter, respectively.
CEC	:	Cation exchange capacity on summation method, expressed by approximate milligram equivalent per 100 g dry soil.
Exchangeable cations	:	Expressed by milligram equivalent per 100 g dry soil.
Ex-Ac	:	Exchangeable acidity on $BaCl_2$-TEA method, expressed by milligram equivalent per 100 g dry soil.

Table F-66 RESULTS OF COMPLETE ANALYSIS ON TYPICAL SOIL SAMPLES OF MASTER PIT SURVEY AND SEDMENTS ON CANAL BED IN PROPOSED SAN ROQUE PROJECT AREA

Unit: mg/kg dry soil

Location	Sample No.	Depth (cm)	Total Heavy Metal				
			Cu	Zn	Cd	Pb	As
(1) Master Pit							
No. 4	415	0— 11	473	187	+	121	9.0
	416	11— 52	518	176	+	154	5.6
	417	52— 75	133	92	1.6	410	9.1
	418	75— 83	169	85	0.5	12	1.4
	419	83—120	102	76	+	34	13.0
No. 6	425	0— 15	216	70	+	178	5.7
	426	15— 64	136	81	+	66	12.2
	427	64— 98	67	64	1.6	122	1.4
	428	98—119	76	75	+	61	2.9
	429	119—150	107	81	1.6	51	24.1
No. 7	430	0— 12	140	76	+	214	12.0
	431	12— 25	156	67	+	24	1.4
	432	25— 87	167	54	+	126	5.5
	433	87—110	136	79	+	50	0.4
(2) Monitoring Point on ARIS Main Canal							
No. 1	Particle size						
	2.0 — 0.2 mm		945	65	+	236	10.5
	0.2 — 0.02 mm		1,640	87	+	672	3.7
No. 3	Particle size						
	2.0 — 0.2 mm		3,200	59	+	90	21.7
	0.2 — 0.02 mm		1,020	112	2.0	95	2.1
No. 12	Particle size						
	2.0 — 0.2 mm		1,020	145	+	84	12.2
	0.2 — 0.02 mm		740	73	1.0	243	1.6

Remarks; + : Below 0.1 mg

Table F-67 VERTICAL CHANGE IN TOTAL SOLUBLE HEAVY METAL CONTENTS OF SOILS TAKEN AT MASTER PIT

Unit: mg/kg dry soil

Pit No.	Sample No.	Depth (cm)	Extractable Heavy Metal				
			Cu	Zn	Cd	Pb	As
1	401	0 — 26	45.2	61.8	0.1*	3.2	12.5
	402	26 — 54	72.1	83.2	0.1*	7.6	8.4
	403	54 — 87	65.2	61.4	0.1*	6.8	8.4
	404	87 — 113	39.8	73.4	0.1*	24.0	4.5
	405	113 — 153	57.6	72.6	0.6	4.0	5.0
2	406	0 — 22	149.6	99.6	1.0	0.8	8.4
	407	22 — 48	73.0	92.4	0.4	5.2	10.6
	408	48 — 81	66.2	95.6	0.1	123.6	8.5
	409	81 — 120	70.8	92.2	0.1	3.2	13.1
	410	120 — 150	74.0	58.2	0.3	7.6	10.5
3	411	0 — 18	35.2	73.2	0.4	31.2	6.3
	412	18 — 52	52.2	89.3	1.0	2.4	8.9
	413	52 — 79	65.7	89.2	1.4	4.8	6.9
	414	79 — 125	64.4	83.2	0.8	2.0	6.8
4	415	0 — 11	474.0	281.8	1.4	90.0	29.0
	416	11 — 52	571.2	264.2	1.0	96.8	16.8
	417	52 — 75	83.0	163.7	0.7	45.6	21.7
	418	75 — 83	31.2	68.5	1.0	10.4	10.7
	419	83 — 120	30.6	46.2	0.7	2.4	10.1
5	420	0 — 18	102.8	97.4	1.9	14.4	4.8
	421	18 — 42	83.8	89.7	1.0	10.0	6.7
	422	42 — 59	74.8	59.8	1.0	11.2	2.2
	423	59 — 98	71.6	76.6	0.6	7.6	4.5
	424	98 — 145	63.5	66.8	0.6	8.8	6.6
6	425	0 — 15	46.4	62.5	1.6	9.2	4.3
	426	15 — 64	55.2	56.4	1.8	7.6	6.5
	427	64 — 98	54.6	48.8	1.2	36.4	2.1
	428	98 — 119	61.0	60.4	1.0	8.0	6.5
	429	119 — 150	40.0	48.0	0.7	7.6	8.4
7	430	0 — 12	29.6	32.6	1.0	10.0	4.1
	431	12 — 25	33.4	35.5	1.2	10.4	6.2
	432	25 — 87	60.9	47.0	2.4	13.6	6.5
	433	87 — 110	56.8	56.0	2.5	14.0	10.8
8	434	0 — 17	47.6	72.6	1.8	11.2	18.4
	435	17 — 47	67.2	83.2	1.6	28.4	21.0
	436	47 — 62	58.0	74.8	1.2	10.8	12.3
	437	62 — 110	61.8	77.6	1.3	18.8	18.5
	438	110 — 153	67.8	82.6	1.3	31.2	8.3
9	439	0 — 11	50.4	68.8	2.4	8.4	10.3
	440	11 — 25	49.6	67.0	1.6	8.0	8.4
	441	25 — 54	58.6	75.9	1.5	9.2	12.6
	442	54 — 78	55.5	75.6	1.5	8.4	10.5
	443	78 — 110	47.5	66.6	1.5	6.8	27.1
10	444	0 — 15	38.2	70.0	1.5	6.0	8.5
	445	15 — 37	34.2	63.9	2.3	5.6	8.5
	446	37 — 89	38.2	66.8	2.5	4.8	19.0
	447	89 — 131	41.9	72.5	2.5	9.2	14.9
	448	131 — 150	44.2	73.3	1.8	6.4	8.7

Remarks; 0.1* : Below 0.1mg

Table F-68 VERTICAL CHANGE IN SOLUBLE HEAVY METAL CONTENTS OF SOILS TAKEN AT MASTER PIT

Unit: mg/kg dry soil

Pit No.	Sample No.	Depth (cm)	Soluble Heavy Metal				
			Cu	Zn	Cd	Pb	As
1	401	0 — 26	7.9	2.9	0.1*	2.9	2.0
	402	26 — 54	4.5	2.2	0.1*	2.5	1.1
	403	54 — 87	3.7	2.6	0.1*	3.0	1.1
	404	87 — 113	2.0	2.4	0.1*	2.5	0.6
	405	113 — 153	2.9	2.3	0.1*	2.5	0.7
2	406	0 — 22	29.9	4.9	0.1*	3.0	1.1
	407	22 — 48	4.2	2.4	0.1*	2.7	1.4
	408	48 — 81	2.9	2.0	0.1*	2.3	1.1
	409	81 — 120	2.7	2.3	0.1*	3.0	1.7
	410	120 — 150	3.1	3.4	0.1*	3.0	1.4
3	411	0 — 18	6.0	4.0	0.1*	12.0	0.8
	412	18 — 52	3.0	2.6	0.1*	2.5	1.2
	413	52 — 79	1.7	2.3	0.1*	2.9	0.9
	414	79 — 125	1.3	2.1	0.1*	3.0	0.9
4	415	0 — 11	148.8	31.8	0.5	11.8	3.8
	416	11 — 52	136.2	28.0	0.3	14.0	2.2
	417	52 — 75	11.4	20.8	0.1*	4.6	2.8
	418	75 — 83	5.8	4.2	0.1*	3.8	1.4
	419	83 — 120	2.0	1.1	0.1*	2.8	1.3
5	420	0 — 18	18.0	5.9	0.1*	3.8	0.6
	421	18 — 42	4.8	2.8	0.1*	3.6	0.8
	422	42 — 59	3.5	2.8	0.1*	3.5	0.1
	423	59 — 98	2.5	2.6	0.1*	3.4	0.3
	424	98 — 145	2.4	2.6	0.1*	3.5	0.3
6	425	0 — 15	3.8	2.7	0.1*	3.2	0.2
	426	15 — 64	2.5	1.5	0.1*	3.4	0.6
	427	64 — 98	2.3	1.6	0.1*	3.7	0.2
	428	98 — 119	1.0	0.9	0.1*	3.8	0.6
	429	119 — 150	1.3	1.3	0.1*	4.0	1.0
7	430	0 — 12	1.7	1.3	0.1*	3.4	0.5
	431	12 — 25	1.9	1.2	0.1*	3.7	0.6
	432	25 — 87	1.3	0.7	0.1*	3.7	0.6
	433	87 — 110	1.5	1.2	0.1*	3.9	1.7
8	434	0 — 17	3.6	4.8	0.1*	3.7	2.1
	435	17 — 47	5.4	3.0	0.1*	3.8	2.7
	436	47 — 62	4.1	2.6	0.1*	3.6	1.6
	437	62 — 110	4.5	2.6	0.1*	3.3	2.1
	438	110 — 153	4.7	2.6	0.1*	3.8	1.1
9	439	0 — 11	4.5	2.6	0.1*	3.6	1.2
	440	11 — 25	3.5	2.1	0.1*	4.0	0.8
	441	25 — 54	3.4	2.0	0.1*	3.6	1.5
	442	54 — 78	3.1	2.2	0.1*	4.0	1.4
	443	78 — 110	2.5	2.1	0.1*	4.2	3.3
10	444	0 — 15	3.5	2.8	0.1*	3.8	1.1
	445	15 — 37	1.8	1.7	0.1*	3.8	1.0
	446	37 — 89	1.7	1.4	0.1*	3.7	2.2
	447	89 — 131	1.5	1.4	0.1*	3.7	1.8
	448	131 — 150	1.6	1.4	0.1*	4.1	1.1

Remarks; 0.1* : Below 0.1 mg

Table F-69 SOLUBLE HEAVY METAL CONTENTS OF SURFACE SOILS SAMPLED AT INLET OF PADDY FIELDS IN AND AROUND ARIS (1/6)

Unit: mg/kg dry soil

Sample No.	Location	0.1 N-HCl Soluble			N-NH_4Ac Soluble	N-HCl Soluble
		Cu	Zn	Cd	Pb	As
1	Along Main Canal	265.1	5.4	0.1	1.3	2.6
2	Along Main Canal	228.0	6.1	0.1	1.3	6.8
3	Along Main Canal	127.2	3.4	0.1*	1.9	1.4
4	Along Main Canal	159.6	8.9	0.1*	3.6	2.0
5	Along Main Canal	287.4	6.0	0.1	1.3	5.3
6	Along Main Canal	287.3	13.9	0.2	6.1	4.5
7	Along Main Canal	230.3	23.5	0.3	13.2	4.7
8	Along Main Canal	128.1	30.0	0.3	11.0	0.9
9	Along Main Canal	104.4	36.6	0.4	8.5	5.9
10	Along Main Canal	138.0	8.7	0.2	4.0	7.3
11	Along Main Canal	205.6	10.8	0.3	2.9	5.8
12	Along Main Canal	203.3	9.0	0.3	3.0	5.9
13	Along Main Canal	120.3	24.4	0.5	3.4	7.0
14	Along Main Canal	144.0	14.3	0.1	3.7	1.4
15	Along Main Canal	174.6	7.0	0.1	1.3	4.9
16	Along Main Canal	102.4	8.4	0.1	3.2	1.8
17	Along Main Canal	171.4	24.2	0.3	2.0	8.7
18	Along Main Canal	151.4	16.9	0.1	4.0	5.4
19	Along Main Canal	149.0	12.6	0.4	3.9	5.8
20	Along Main Canal	272.9	7.9	0.1	1.5	22.3
21	Along Main Canal	176.4	10.2	0.2	1.8	4.3
22	Along Main Canal	23.1	6.1	0.1*	2.4	0.9
23	Along Lateral A	301.0	8.2	0.2	3.4	5.6
24	Along Lateral A	270.3	8.1	0.2	2.8	4.9
25	Along Lateral A	259.1	7.5	0.1	1.8	7.1
26	Along Lateral A	283.3	12.8	0.2	3.4	92.0
27	Along Lateral A	217.0	12.7	0.2	2.9	7.4
28	Along Lateral A	221.3	24.0	0.3	0.9	8.2
29	Along Lateral A	183.9	10.4	0.2	1.0	5.3
30	Along Lateral A	226.0	9.2	0.2	1.4	6.7
31	Along Lateral A-2	191.4	4.8	0.1	0.8	5.1
32	Along Lateral A-2	283.4	7.3	0.2	0.8	6.3
33	Along Lateral B	176.6	6.5	0.1	0.5	3.9
34	Along Lateral B	221.7	8.7	0.2	2.4	3.0
35	Along Lateral B	198.7	8.3	0.3	4.4	4.5
36	Along Lateral B	81.0	5.9	0.1	0.3	5.0
37	Along Lateral B	20.6	5.0	0.1	1.8	2.9
38	Along Lateral C	274.3	8.1	0.2	2.1	7.0
39	Along Lateral C	204.0	12.5	0.2	3.4	7.8
40	Along Lateral C	31.1	8.1	0.3	0.3	3.5
41	Along Lateral C	62.2	9.5	0.2	1.3	5.2
42	Along Lateral D	187.7	7.1	0.2	2.5	5.1
43	Along Lateral D	143.9	11.5	0.3	1.0	6.3

Remarks; 0.1* : Below 0.1 mg

Table F-70 SOLUBLE HEAVY METAL CONTENTS OF SURFACE SOILS SAMPLED AT INLET OF PADDY FIELDS IN AND AROUND ARIS (2/6)

Unit: mg/kg dry soil

Sample No.	Location	0.1 N-HCl Soluble			N-NH_4Ac Soluble	N-HCl Soluble
		Cu	Zn	Cd	Pb	As
44	Along Lateral D	170.0	9.7	0.2	0.7	12.1
45	Along Lateral D	49.5	14.5	0.3	1.0	3.5
46	Along Lateral D	67.7	14.0	0.3	1.5	4.6
47	Along Lateral D	49.5	13.1	0.4	6.6	6.6
48	Along Lateral D	171.0	16.7	0.3	1.0	5.4
49	Along Lateral D	161.5	15.6	0.1	4.5	1.6
50	Along Lateral D	167.7	17.8	0.3	1.9	8.6
51	Along Lateral D	138.8	11.5	0.2	1.5	6.9
52	Along Lateral D	195.6	19.7	0.3	1.4	7.0
53	Along Lateral D	106.9	10.9	0.3	0.3	4.5
54	Along Lateral E	352.2	10.2	0.2	2.0	5.8
55	Along Lateral E	126.7	12.5	0.2	1.0	5.5
56	Along Lateral E	132.2	16.4	0.3	6.0	7.4
57	Along Lateral E	187.1	25.1	0.3	1.7	5.2
58	Along Lateral E	123.0	42.6	0.5	5.1	4.4
59	Along Lateral E	51.3	7.3	0.3	1.4	3.4
60	Along Lateral E	15.7	3.3	0.1	0.5	2.1
61	Along Lateral F	185.9	31.9	0.6	9.0	4.8
62	Along Lateral F	279.5	11.7	0.2	1.9	6.0
63	Along Lateral F	243.2	9.2	0.2	4.1	5.0
64	Along Lateral F	135.9	15.4	0.3	1.9	4.8
65	Along Lateral F	210.5	6.8	0.1*	0.8	8.1
66	Along Lateral F	199.3	9.9	0.2	1.5	4.8
67	Along Lateral F	281.4	10.2	0.1	1.8	8.4
68	Along Lateral F	206.9	9.3	0.1	0.9	6.4
69	Along Lateral F	177.3	4.9	0.1	0.5	6.0
70	Along Lateral F	135.8	10.1	0.2	0.6	3.5
71	Along Lateral F	197.6	7.7	0.2	0.3	5.2
72	Along Lateral F-1	214.4	8.2	0.3	1.3	5.3
73	Along Lateral F-1	185.8	11.1	0.3	1.0	8.0
74	Along Lateral F-1	24.6	3.7	0.2	0.8	3.2
75	Along Lateral F-1	145.9	8.5	0.2	0.3	4.8
76	Along Lateral F-1	193.6	4.4	0.2	1.0	5.5
77	Along Lateral F-1	27.6	4.9	0.3	0.9	3.9
78	Along Lateral F-1a	161.6	7.3	0.1	1.0	4.3
79	Along Lateral F-1a	12.3	3.6	0.1	0.3*	2.7
80	Along Lateral F-1a	22.4	4.6	0.3	0.3*	4.2
81	Along Lateral G	285.5	14.3	0.2	2.3	3.6
82	Along Lateral G	22.8	6.8	0.2	0.3	3.4
83	Along Lateral G	13.0	4.2	0.1	0.5	2.5
84	Along Lateral G	16.7	5.1	0.1	0.5	3.5
85	Along Lateral G	16.7	5.1	0.1	0.5	3.5
86	Along Lateral G	16.5	9.4	0.2	0.3*	3.8

Remarks; 0.1* : Below 0.1 mg
0.3* : Below 0.3 mg

Table F-71 SOLUBLE HEAVY METAL CONTENTS OF SURFACE SOILS SAMPLED AT INLET OF PADDY FIELDS IN AND AROUND ARIS (3/6)

Unit: mg/kg dry soil

Sample No.	Location	0.1 N-HCl Soluble			N-NH_4Ac Soluble	N-HCl Soluble
		Cu	Zn	Cd	Pb	As
87	Along Lateral G	10.8	2.2	0.1	0.3*	3.4
88	Along Lateral G	4.3	2.0	0.1	0.8	4.5
89	Along Lateral G	0.5	1.2	0.1	2.9	5.0
90	Along Lateral G -Ex	186.6	9.5	0.1	1.3	4.0
91	Along Lateral G -Ex	148.4	7.3	0.1*	1.7	2.2
92	Along Lateral H	206.2	8.9	0.2	3.2	5.1
93	Along Lateral H	155.6	17.9	0.2	3.1	4.9
94	Along Lateral H	101.4	8.3	0.1	1.9	5.6
95	Along Lateral I	144.9	14.8	0.1	3.7	3.2
96	Along Lateral I	10.7	5.5	0.1*	2.2	1.4
97	—	—	—	—	—	
98	Along Lateral I	15.7	5.7	0.2	1.8	7.6
99	Along Lateral J	227.0	10.6	0.1	1.9	3.8
100	Along Lateral J	200.1	17.1	0.2	2.6	5.8
101	Along Lateral J	158.3	14.7	0.2	2.2	7.5
102	Along Lateral K	159.1	32.8	0.1	1.5	6.7
103	Along Lateral K	177.8	8.7	0.2	2.1	5.3
104	Along Lateral K	148.0	13.8	0.1*	4.4	6.0
105	Along Lateral K	19.0	6.0	0.2	1.8	4.3
106	Along Lateral L	138.9	8.9	0.1*	3.7	0.5
107	Along Lateral L	146.2	9.0	0.2	1.3	4.1
108	Along Lateral L	156.7	17.0	0.1*	3.8	6.8
109	Along Lateral L	119.1	15.1	0.2	2.2	3.1
110	Along Lateral L	78.2	17.2	0.4	4.5	3.3
111	Along Lateral L	146.4	12.9	0.2	3.2	2.1
112	Along Lateral L-1	30.6	14.8	0.2	3.6	0.9
113	Along Lateral L-1	98.6	10.7	0.2	1.3	4.1
114	Along Lateral L-1	103.1	27.8	0.4	3.1	5.4
115	Along Lateral L-1	0.7	3.9	0.3	6.2	3.7
116	Along Lateral L-1	76.7	22.5	0.2	3.7	0.5
117	Along Lateral L-1	23.0	10.1	0.4	3.7	1.7
118	Along Lateral L-la	14.8	7.3	0.1	1.6	1.5
119	Along Lateral L-la	47.4	8.4	0.2	4.6	2.1
120	Along Lateral L-la	28.4	7.9	0.1	3.0	0.9
121	Along Lateral L-la	19.3	9.7	0.2	4.8	2.4
122	Along Lateral L-2	129.2	13.0	0.2	4.9	3.1
123	Along Lateral L-2	103.5	13.0	0.3	5.6	4.2
124	Along Lateral L-2	94.0	10.9	0.2	5.1	2.7
125	Along Lateral L-2	68.1	15.6	0.3	5.6	2.7
126	Along Lateral L-2	26.9	5.2	0.1	4.6	1.7
127	Along Lateral L-2	6.0	2.5	0.1*	3.1	0.8
128	Along Lateral M	104.4	6.9	0.2	4.5	2.2
129	Along Lateral M	118.8	11.0	0.2	4.9	5.0

Remarks; 0.1* : Below 0.1 mg
0.3* : Below 0.3 mg

Table F-72 SOLUBLE HEAVY METAL CONTENTS OF SURFACE SOILS SAMPLED AT INLET OF PADDY FIELDS IN AND AROUND ARIS (4/6)

Unit: mg/kg dry soil

Sample No.	Location	0.1 N-HCl Soluble			N-NH_4Ac Soluble	N-HCl Soluble
		Cu	Zn	Cd	Pb	As
130	Along Lateral M	134.4	5.3	0.1*	4.4	6.5
131	Along Lateral M	32.3	3.6	0.1*	3.1	2.7
132	Along Lateral M	144.5	7.7	0.1	4.5	3.1
133	Along Lateral M	54.2	8.6	0.4	7.7	4.4
134	Along Lateral M	135.2	8.2	0.2	4.6	3.3
135	Along Lateral M -1	130.5	22.6	0.3	8.3	6.7
136	Along Lateral M -1	21.0	5.6	0.1	3.6	3.4
137	— —	—	—	—	—	—
138	Along Lateral M-1	9.0	2.2	0.1	3.1	1.1
139	Along Lateral M-2	35.0	9.3	0.4	6.7	4.0
140	Along Lateral M-2	38.3	5.4	0.2	3.5	3.0
141	Along Lateral M-2	14.9	3.3	0.1	3.5	1.8
142	Main Canal-Lateral A	217.2	6.2	0.1	6.0	4.8
143	Main Canal-Lateral A	18.0	4.0	0.1	4.2	1.3
144	Main Canal-Lateral B	104.3	10.5	0.1	4.7	0.3
145	Lateral C-Lateral E	21.1	5.5	0.2	5.2	2.4
146	Lateral A-Lateral A -2	73.3	11.6	0.3	5.5	4.1
147	Main Canal-Lateral A	168.7	10.5	0.2	6.0	2.7
148	Main Canal-Lateral A	158.7	6.1	0.1	4.1	4.0
149	Main Canal-Lateral A	166.9	15.0	0.1	5.4	5.7
150	Lateral C-Lateral E	118.3	4.4	0.1	5.1	2.1
151	Lateral C-Lateral E	148.9	6.1	0.2	3.9	2.8
152	Lateral C-Lateral E	123.7	5.1	0.1	3.9	2.9
153	Lateral C-Lateral E	16.4	3.8	0.1	3.1	1.5
154	Lateral E-Lateral G	105.7	10.4	0.2	3.5	2.6
155	Lateral E-Lateral G	15.8	7.5	0.1*	2.4	1.4
156	Lateral E-Lateral G	4.2	1.6	0.2	3.9	1.2
157	Lateral E-Lateral G	27.6	5.3	0.1*	3.1	3.7
158	Lateral E-Lateral G	3.9	1.7	0.1*	3.0	1.5
159	Lateral E-Lateral G	1.8	1.6	0.1	3.8	2.4
160	Along B-M Road	4.5	1.7	0.1*	0.3*	1.0
161	Along B-M Road	3.7	2.2	0.1*	0.3*	0.1
162	Along B-M Road	1.0	2.1	0.1*	0.3*	0.5
163	—	—	—	—	—	—
164	—	—	—	—	—	—
165	—	—	—	—	—	—
166	Along B-M Road	2.4	2.9	0.1*	0.3*	1.3
167	Lateral A-Lateral D	129.5	8.5	0.1	3.0	2.4
168	Main Canal-Lateral E	28.7	7.8	0.2	4.7	2.3
169	Lateral E-Lateral G	16.9	2.9	0.1	2.6	1.3
170	Main Canal-Lateral G	19.7	4.6	0.1	3.0	1.0
171	Main Canal-Lateral G	14.8	2.7	0.1	3.1	1.9
172	Main Canal-Lateral G	8.7	2.5	0.1	2.6	2.3

Remarks; B-M Road : Binalonan-Manaoag Road
0.1* : Below 0.1 mg
0.3* : Below 0.3 mg

Table F-73 SOLUBLE HEAVY METAL CONTENTS OF SURFACE SOILS SAMPLED AT INLET OF PADDY FIELDS IN AND AROUND ARIS (5/6)

Unit: mg/kg dry soil

Sample No.	Location	0.1 N-HCl Soluble			N-NH_4Ac Soluble	N-HCl Soluble
		Cu	Zn	Cd	Pb	As
173	Main Canal-Lateral G	9.4	2.5	0.1	3.6	3.4
174	Main Canal-Lateral G	0.1	0.1*	0.1*	3.0	0.6
175	Main Canal-Lateral G	8.3	1.6	0.1	3.0	2.6
176	Main Canal-Lateral G	2.9	1.7	0.1	4.2	3.5
177	Lateral G-Lateral H	0.1	0.9	0.1	4.7	2.9
178	Lateral G-Lateral H	3.5	0.9	0.1	3.9	2.9
179	Lateral G-Lateral H	4.4	1.7	0.1	3.6	4.3
180	Lateral D-Lateral F	16.3	2.7	0.1*	2.4	1.0
181	Main Canal-Lateral F	11.0	2.2	0.1	3.2	1.6
182	Main Canal-Lateral F	25.7	2.6	0.1	2.1	1.7
183	Main Canal-Lateral F	48.8	5.6	0.1	2.7	1.3
184	Main Canal-Lateral G	15.6	7.5	0.1*	3.0	1.3
185	Main Canal-Lateral F	9.9	2.7	0.1	2.4	0.8
186	Main Canal-Lateral F	41.6	8.2	0.1*	3.0	0.4
187	Lateral G-Lateral H	3.2	2.3	0.1*	2.3	2.9
188	Main Canal-Lateral K	13.7	3.7	0.1	2.5	1.9
189	Main Canal-Lateral K	8.1	2.7	0.1	3.1	1.9
190	Main Canal-Lateral K	14.9	3.8	0.1	2.6	4.9
191	Main Canal-Lateral K	4.7	3.2	0.1*	3.0	2.5
192	Main Canal-Lateral K	4.0	1.5	0.1*	2.0	1.0
193	Lateral M-Lateral M-1	9.6	3.2	0.1	2.1	1.5
194	Lateral D-Lateral F	13.8	5.7	0.1	1.8	1.4
195	Main Canal-Lateral F	21.9	4.1	0.1	1.9	1.1
196	Main Canal-Lateral F	17.7	3.2	0.1	1.3	0.8
197	Main Canal-Lateral L	5.1	4.3	0.1*	3.1	1.7
198	Main Canal-Lateral L	139.6	9.5	0.2	2.4	2.5
199	Main Canal-Lateral L	15.4	3.6	0.1	1.9	2.1
200	Lateral L-1-Lateral L-2	4.1	1.9	0.1*	1.9	0.8
201	Lateral L-1-Lateral L-2	4.0	1.5	0.1*	1.8	0.7
202	Lateral L-1-Lateral L-2	7.4	4.6	0.1	3.3	2.2
203	Lateral D-Lateral F	11.7	2.2	0.1	1.9	2.3
204	Lateral L-1-Lateral L-2	13.7	0.5	0.1*	3.2	3.5
205	Lateral L-1-Lateral L-2	6.8	3.0	0.1	1.6	1.7
206	Lateral D-Lateral F	12.2	2.2	0.2	1.6	4.9
207	Lateral D-Lateral F	86.9	5.9	0.1	4.2	3.6
208	Lateral F-Lateral F1-a	6.6	3.6	0.1*	3.3	3.1
209	Lateral F-Lateral F-1	7.4	3.7	0.1	2.8	5.0
210	Lateral F-Lateral F-1	10.7	3.1	0.2	1.6	2.8
211	Lateral L-Lateral L-2	3.2	1.7	0.1*	0.8	0.6
212	Lateral F-Lateral F-1	9.3	3.8	0.1	3.1	3.7
301	Along Lateral L-3	29.7	6.4	0.1	3.2	5.1
302	Along Lateral L-3	40.1	5.6	0.1	1.0	3.7
303	Along La teral L-3	27.5	10.3	0.3	5.0	3.0

Remarks; 0.1*: Below 0.1 mg

Table F-74 SOLUBLE HEAVY METAL CONTENTS OF SURFACE SOILS SAMPLED AT INLET OF PADDY FIELDS IN AND AROUND ARIS (6/6)

Unit: mg/kg dry soil

Sample No.	Location	0.1 N-HCl Soluble			N-NH_4Ac Soluble	N-HCl Soluble
		Cu	Zn	Cd	Pb	As
304	Along Lateral L-3	22.9	6.6	0.3	5.0	6.7
305	Along Lateral L-3	15.5	5.1	0.1	2.1	9.6
310	Main Canal-Agno River	185.2	4.4	0.1*	1.0	5.1
311	Lateral A-Agno River	207.0	6.6	0.1*	0.2*	3.8
312	Lateral A-Agno River	208.6	6.5	0.1*	0.3*	4.7
313	Lateral A-Agno River	80.1	8.8	0.2	6.2	1.8
314	Lateral A-2-Agno River	179.4	22.5	0.4	3.4	3.0
315	—	—	—	—	—	—
316	—	—	—	—	—	—
317	Lateral A-2-Agno River	108.4	6.7	0.1*	4.8	1.9
318	Lateral A-2-Agno River	68.5	3.9	0.1*	3.8	4.6
319	Lateral A-1-Agno River	12.4	7.6	0.1*	2.3	4.5
320	Lateral A-1-Agno River	22.7	4.2	0.1*	4.1	3.6
321	Lateral A-1-Agno River	82.9	12.3	0.2	5.1	3.4
322	Lateral A-1-Agno River	150.1	9.1	0.2	2.9	4.5
323	Lateral D-Agno River	24.2	6.3	0.2	1.5	3.1
324	Lateral D-Agno River	24.6	6.0	0.1*	1.6	3.7
325	Lateral A-Agno River	36.4	7.9	0.1	3.9	4.6
326	—	—	—	—	—	—
327	Lateral A-Agno River	16.4	0.9	0.1*	2.4	4.7
328	Lateral A-Agno River	33.1	6.0	0.2	2.9	2.5
329	Lateral A-Agno River	11.8	4.0	0.2	1.5	4.8
330	Lateral D-Agno River	27.3	3.3	0.1	2.2	3.7
331	Lateral D-Agno River	64.1	9.3	0.2	3.2	3.8
332	Lateral D-Agno River	41.3	9.9	0.3	3.7	5.2
333	Lateral D-Agno River	12.3	3.5	0.2	2.9	3.8
334	Lateral D-Agno River	7.3	4.2	0.2	2.4	8.5
335	Lateral D-Agno River	7.8	3.8	0.2	1.9	3.9
336	Lateral D-Agno River	6.7	5.2	0.3	1.3	5.7
337	Lateral A-2-Agno River	121.0	4.0	0.3	4.2	9.8
338	Lateral A-2-Agno River	150.8	5.3	0.1*	3.4	8.1
339	Lateral A-2-Agno River	43.1	9.5	0.1*	1.0	4.8
340	Lateral A-1-Agno River	78.2	6.1	0.1*	1.0	5.3
341	Lateral A-1-Agno River	39.3	8.4	0.1*	0.6	5.8
342	Lateral A-Agno River	111.0	16.5	0.2	0.3*	5.2
343	Lateral A-Agno River	30.3	7.1	0.1	0.3*	5.0
344	Lateral D-Agno River	11.3	3.5	0.2	0.3	3.4
345	Urdaneta CIS	15.8	3.5	0.3	3.6	1.8
346	Urdaneta CIS	8.2	2.7	0.2	2.8	1.0
347	Urdaneta CIS	20.0	5.5	0.3	1.6	1.0
348	—	—	—	—	—	—
349	Urdaneta CIS	5.2	2.1	0.1*	2.1	1.7
350	Urdaneta CIS	7.5	2.8	0.1*	0.7	0.1

Remarks; CIS: Communal irrigation system
0.1*: Below 0.1 mg
0.3*: Below 0.3 mg

Table F-75 HORIZONTAL CHANGE IN EXTRACTABLE AND SOLUBLE COPPER CONTENTS OF SURFACE SOILS AT MONITORING PADDY FIELDS

Unit: ppm

Plot of Paddy Field and Sampling Place	Monitoring Point No. 4		Monitoring Point No. 6		Monitoring Point No. 8		Monitoring Point No. 10	
	E-Cu	S-Cu	E-Cu	S-Cu	E-Cu	S-Cu	E-Cu	S-Cu
Plot I								
Inlet								
0—15cm	1,053	262	823	163	837	165	—	12
15—30cm	773	207	507	138	569	125	—	8
Middle								
0—15cm	874	250	538	170	606	159	—	9
15—30cm	786	221	160	31	379	76	—	5
Outlet								
0—15cm	799	166	426	112	362	167	—	8
15—30cm	826	217	139	25	194	86	—	6
Plot II								
Inlet								
0—15cm	816	194	293	87	405	121	—	10
15—30cm	763	197	190	33	282	36	—	8
Middle								
0—15cm	803	198	239	70	384	113	—	7
15—30cm	740	159	90	13	348	48	—	4
Outlet								
0—15cm	775	197	213	53	287	67	—	9
15—30cm	773	189	112	11	220	26	—	5
Plot III								
Inlet								
0—15cm	684	169	150	53	241	38	—	8
15—30cm	601	154	87	6	229	27	—	5
Middle								
0—15cm	589	161	146	34	222	29	—	9
15—30cm	327	10	84	8	146	15	—	5
Outlet								
0—15cm	550	163	140	31	182	28	—	7
15—30cm	422	12	69	5	183	20	—	4
Plot IV								
Inlet								
0—15cm	562	158	112	28	183	24	—	7
15—30cm	306	73	72	6	233	31	—	5
Middle								
0—15cm	359	103	165	49	—	—	—	7
15—30cm	244	38	87	4	—	—	—	4
Outlet								
0—15cm	414	94	134	36	—	—	—	7
15—30cm	353	81	79	7	—	—	—	5

Remarks ; E-Cu: Extractable copper extracted by mixture of perchloric, nitric and sulfuric acids
S-Cu: Soluble copper extracted by 0.1 N HCl.

Table F-76 EXTRACTABLE AND SOLUBLE COPPER CONTENTS OF SEDIMENTS ON CANAL BED BY PARTICLE SIZE IN ARIS

Unit: ppm

Sampling Point	Particle Size (mm)					
	2.0—0.2		0.2—0.02		Below 0.02	
	E-Cu	S-Cu	E-Cu	S-Cu	E-Cu	S-Cu
Monitoring Point No. 1 (Main canal at station 0+320)						
	1,178	89	1,855	140	1,512	364
Monitoring Point No. 2 (Lateral D at station 0+000)						
	810	179	1,794	196	1,621	334
Monitoring Point No. 3 (Don Moteo Ditch at station 0+000)						
	1,320	118	3,834	234	3,324	276
Monitoring Point No. 4 (Don Moteo Ditch at station 2+100)						
	982	161	1,374	144	1,660	282
Monitoring Point No. 5 (Lateral F at station 0+000)						
	808	133	891	120	1,236	199
Monitoring Point No. 6 (Lateral F at station 2+100)						
	671	119	810	101	1,409	223
Monitoring Point No. 7 (Main canal at station 15+000)						
	834	164	1,110	141	1,289	203
Monitoring Point No. 8 (Lateral J at station 0+000)						
	649	132	795	130	1,299	217
Monitoring Point No.11 (Lateral L at station 5+050)						
	590	109	657	94	1,365	177
Monitoring Point No.12 (Lateral M at station 0+000)						
	627	135	674	96	995	184

Remarks ; E-Cu: Extractable copper extracted by mixture of perchloric, nitric and sulfuric acids
S-Cu: Soluble copper extracted by 0.1 N HCl.

Table F-77 EXTRACTABLE LEAD ZINC AND CADMIUM CONTENTS OF SEDIMENTS ON CANAL BED BY PARTICLE SIZE IN ARIS

Unit: ppm

Sampling Point	Particle Size (mm)								
	2.0—0.2			0.2—0.02			Below 0.02		
	Pb	Zn	Cd	Pb	Zn	Cd	Pb	Zn	Cd
Monitoring Point No. 1 (Main canal at station 0+320)									
	1.7	52.7	+	1.2	76.0	+	16.2	106.4	+
Monitoring Point No. 2 (Lateral D at station 0+000)									
	3.1	41.4	+	1.6	59.4	+	7.5	87.7	+
Monitoring Point No. 3 (Don Moteo Ditch at station 0+000)									
	3.8	34.3	+	7.7	97.1	+	2.0	96.4	+
Monitoring Point No. 4 (Don Moteo Ditch at station 2+100)									
	2.8	30.1	+	3.1	44.2	+	2.4	89.5	+
Monitoring Point No. 5 (Lateral F at station 0+000)									
	5.0	37.8	+	5.0	45.4	+	4.8	87.7	+
Monitoring Point No. 6 (Lateral F at station 2+100)									
	7.5	38.3	+	6.2	51.5	+	25.9	86.8	+
Monitoring Point No. 7 (Main canal at station 15+000)									
	8.7	39.1	+	6.7	53.1	+	47.2	89.1	+
Monitoring Point No. 8 (Lateral J at station 0+000)									
	8.6	70.2	+	5.5	54.1	+	48.7	105.1	+
Monitoring Point No. 11 (Lateral L at station 5+050)									
	6.2	49.0	+	6.5	44.2	+	30.4	89.8	1.1
Monitoring Point No. 12 (Lateral M at station 0+000)									
	10.7	59.0	+	8.1	53.8	+	35.1	82.4	+

Remarks ; + : Trace

Table F-78 RECORDS OF FARM MANAGEMENT BY FARMERS IN MONITORING PADDY FIELDS

	Monitoring Point	Location	Variety	Trans-Planting Date	Harvesting Date	Dosage of Fertilizer
(1)	Dry Season					
	ARIS No. 2	San Bonifacio, San Manuel (Lateral B)	IR 42	Feb. 5-10, 1984	May 24, 1984	1. 9 kg of urea for nursery 2. 100 kg of urea for basal (0.5 ha)
	ARIS No. 4	Macalong, Asingan (Lateral D)	UPL-RI4	Dec. 9-10, 1983	Feb. 24, 1984	1. 100 kg of complete for basal (0.4 ha)
	ARIS No. 4	San Roque, San Manuel (Don Meteo Ditch)	IR 58	Feb. 28, 1984	May 3, 1984	1. 15 kg of urea for nursery 2. 50 kg of urea and 50 kg of complete for basal 3. 100 kg of urea for additional (0.74 ha)
	ADRIS No. 10	San Roque, San Nicolas (Lateral A-3)	IR 36	Dec. 30, 1983	Mar. 20, 1984	1. 100 kg of complete for basal 2. 100 kg of urea for additional (0.48 ha)
(2)	Wet Season					
	ARIS No. 2	Macalong, Asingan (Lateral D)	UPL-RI 4	Jul. 6-7, 1984	Sep. 20-30, 1984	1. 5 kg of urea for nursary 2. 75 kg of urea for basal (0.4 ha)
	ARIS No. 4	San Roque, San Manuel (Don Moteo Ditch)	IR 42	Jul. 24, 1984	Nov. 11, 1984	1. 4 kg of urea for nursery 2. 50 kg of urea and 50 kg of complete for basal (0.74 ha)
	ARIS No. 6	Bactad, Asingan (Lateral F)	IR 58	Aug. 1, 1984	Nov. 3, 1984	1. 100 kg of urea for basal
	ARIS No. 8	Lelemaan Manaoag (Lateral J)	IR 42	Aug.16, 1984	Oct. 26, 1984	1. 5 kg of urea for nursery 2. 50 kg of urea for basal (0.35 ha)
	ARIS No. 12	Leci, Santa Barbara (Lateral M)	IR 42	Jul. 14, 1984	Oct. 26, 1984	1. 4 kg of ammonium sulfate for nursery 2. 100 kg of urea for basal
	ADRIS No. 10	San Roque, San Nicolas (Lateral A-3)	IR 36	Aug. 14, 1984	Nov. 4, 1984	1. 6 kg of urea for nursery 2. 25 kg of urea and 50 kg of complete for basal (0.48 ha)

Remarks; Urea contains 46% of nitrogen.
Complete fertilizer contains 14% of nitrogen, 14% of P_2O_5 and 14% of K_2O.

Table F-79 OBSERVATION RECORDS ON PADDY GROWTH IN DRY SEASON AT MONITORING POINT NO. 2 IN ARIS

Plot No.	Items Measured	Feb. 15	Feb. 23	Feb. 29	Mar. 6	Mar. 14	Mar. 22	Mar. 30	Apr. 3	Apr. 10	Apr. 25	May 3	May 11	May 17
I'-1	Plant height (cm)	—	—	—	22	33	40	45	48	56	64	—	—	—
	No. of tillers	—	—	—	10	23	28	26	24	22	20	—	—	—
I'-2	Plant height (cm)	—	—	—	27	38	43	58	58	65	70	—	—	—
	No. of tillers	—	—	—	6	11	11	12	14	19	12	—	—	—
I'-3	Plant height (cm)	—	—	—	21	30	41	49	49	55	61	—	—	—
	No. of tillers	—	—	—	9	12	15	16	17	18	14	—	—	—
II'-1	Plant height (cm)	—	—	—	35	44	47	52	56	64	68	—	—	—
	No. of tillers	—	—	—	18	24	24	24	26	30	27	—	—	—
II'-2	Plant height (cm)	—	—	—	37	49	50	55	56	62	64	—	—	—
	No. of tillers	—	—	—	36	40	40	46	49	53	38	—	—	—
II'-3	Plant height (cm)	—	—	—	35	47	50	56	58	66	81	—	—	—
	No. of tillers	—	—	—	16	25	27	27	28	33	25	—	—	—
I-1	Plant height (cm)	—	24	37	39	50	62	71	71	72	73	—	—	—
	No. of tillers	—	9	13	29	43	48	45	40	38	30	—	—	—
I-2	Plant height (cm)	—	26	29	47	57	70	76	76	76	79	—	—	—
	No. of tillers	—	16	23	37	48	34	33	30	25	23	—	—	—
I-3	Plant height (cm)	—	26	28	44	60	65	69	74	75	76	—	—	—
	No. of tillers	—	6	7	25	37	36	35	31	30	26	—	—	—
II-1	Plant height (cm)	21	30	30	34	52	51	61	65	69	83	86	87	88
	No. of tillers	8	8	17	27	35	35	32	28	20	17	17	16	16
II-2	Plant height (cm)	24	31	32	34	47	54	61	63	66	82	85	87	87
	No. of tillers	8	11	15	28	35	34	33	31	25	17	18	18	18
II-3	Plant height (cm)	23	33	33	39	45	50	60	62	66	77	88	90	92
	No. of tillers	6	8	8	14	23	24	21	19	16	10	10	10	9
III-1	Plant height (cm)	18	26	30	31	38	47	51	52	54	67	75	77	80
	No. of tillers	7	8	17	19	28	29	22	21	16	15	14	13	13
III-2	Plant height (cm)	21	29	33	40	49	53	57	57	60	79	80	81	82
	No. of tillers	7	9	16	20	25	26	20	23	19	16	14	13	12
III-3	Plant height (cm)	23	29	33	35	42	49	55	54	54	68	75	83	86
	No. of tillers	6	8	13	20	24	24	23	20	19	15	15	14	14
IV-1	Plant height (cm)	21	26	29	30	35	36	45	46	49	56	65	74	79
	No. of tillers	7	7	15	15	27	20	21	19	16	13	14	14	14
IV-2	Plant height (cm)	18	26	29	30	36	44	51	53	54	58	70	77	81
	No. of tillers	6	5	8	14	20	22	14	13	13	10	10	4	4
IV-3	Plant height (cm)	20	26	30	30	36	43	51	51	53	66	75	78	80
	No. of tillers	6	9	11	21	29	27	25	21	18	15	14	13	13

Note; Variety: IR 42

Table F-80 OBSERVATION RECORDS ON PADDY GROWTH IN DRY SEASON AT MONITORING POINT NO. 4 (LATERAL D) IN ARIS

Plot No.	Items Measured	Dec. 26	Jan. 5	Jan. 12	Jan. 19	Jan. 26	Feb. 2	Feb. 9	Feb. 15
I-1	Plant height (cm)	22	26	35	46	49	49	49	49
	No. of tillers	12	13	13	13	13	9	9	9
I-2	Plant height (cm)	21	24	37	43	49	50	51	51
	No. of tillers	11	11	12	12	12	12	9	9
I-3	Plant height (cm)	16	20	30	32	37	37	38	38
	No. of tillers	8	8	10	12	12	11	11	11
II-1	Plant height (cm)	36	43	49	57	59	62	63	63
	No. of tillers	9	14	15	14	13	10	9	9
II-2	Plant height (cm)	42	44	45	48	52	52	52	52
	No. of tillers	9	9	9	9	10	8	7	7
II-3	Plant height (cm)	41	41	44	47	52	52	52	52
	No. of tillers	11	12	12	11	11	11	11	11
III-1	Plant height (cm)	30	44	57	59	63	63	66	66
	No. of tillers	13	18	18	18	17	16	16	16
III-2	Plant height (cm)	27	45	57	64	69	69	69	69
	No. of tillers	11	11	13	14	13	12	11	11
III-3	Plant height (cm)	35	47	54	62	68	68	68	68
	No. of tillers	13	15	18	15	15	14	13	13
IV-1	Plant height (cm)	29	46	48	57	58	58	58	58
	No. of tillers	19	20	19	17	16	16	14	14
IV-2	Plant height (cm)	25	50	57	62	62	62	62	62
	No. of tillers	18	18	19	20	20	17	15	15
IV-3	Plant height (cm)	31	55	35	62	64	65	65	65
	No. of tillers	13	14	15	16	17	16	16	16

Note; Variety: UPL-RI4

Table F-81 OBSERVATION RECORDS ON PADDY GROWTH IN DRY SEASON AT MONITORING POINT NO. 4 (DON MOTEO DITCH) IN ARIS

Plot No.	Items Measured	Feb. 10	Feb 15	Feb. 23	Feb. 29	Mar. 6	Mar. 14	Mar. 22	Mar. 30	Apr 10	Apr. 20	Apr. 28
I-1	Plant height (cm)	20	22	28	35	45	60	68	83	94	94	95
	No. of tillers	5	5	7	17	19	19	28	27	26	21	19
I-2	Plant height (cm)	19	24	32	40	47	62	76	83	99	99	99
	No. of tillers	4	4	7	10	14	20	20	21	19	16	14
I-3	Plant height (cm)	20	25	26	37	46	54	63	75	85	92	96
	No. of tillers	4	5	9	11	13	17	18	19	18	16	15
II-1	Plant height (cm)	28	29	36	41	52	61	77	85	103	103	103
	No. of tillers	4	5	10	18	23	22	21	21	20	18	18
II-2	Plant height (cm)	29	31	37	44	53	62	73	85	101	101	101
	No. of tillers	3	4	9	19	21	23	24	20	17	14	14
II-3	Plant height (cm)	26	26	32	41	53	67	81	89	104	104	104
	No. of tillers	5	7	14	15	22	25	31	30	30	17	16
III-1	Plant height (cm)	28	28	28	34	41	51	68	78	94	95	98
	No. of tillers	5	7	14	20	24	25	26	29	24	21	21
III-2	Plant height (cm)	23	26	35	41	48	59	67	82	94	97	97
	No. of tillers	6	8	18	22	22	24	27	32	29	28	27
III-3	Plant height (cm)	25	29	39	45	51	67	81	89	90	91	91
	No. of tillers	5	7	17	21	23	28	34	35	30	30	30
IV-1	Plant height (cm)	27	30	40	47	54	58	75	87	98	98	98
	No. of tillers	10	19	42	50	50	55	55	51	42	34	33
IV-2	Plant height (cm)	30	32	40	52	62	66	77	98	113	113	113
	No. of tillers	7	8	16	23	23	23	23	25	23	20	20
IV-3	Plant height (cm)	29	32	43	44	57	64	74	86	92	92	92
	No. of tillers	7	13	24	34	37	37	38	39	34	32	30

Note; Variety: IR 58

Table F-82 OBSERVATION RECORDS ON PADDY GROWTH IN DRY SEASON AT MONITORING POINT NO. 10 IN ADRIS

Plot No.	Items Measured	Jan. 11	Jan. 20	Jan. 26	Feb. 2	Feb. 9	Feb. 15	Feb. 23	Mar. 6	Mar. 15
I-1	Plant height (cm)	27	36	41	59	63	71	80	81	82
	No. of tillers	5	12	17	29	37	42	42	43	41
I-2	Plant height (cm)	27	35	42	51	64	69	80	85	91
	No. of tillers	9	18	28	35	43	47	47	43	43
I-3	Plant height (cm)	21	38	45	48	56	62	71	72	74
	No. of tillers	15	23	27	32	46	47	47	40	39
II-1	Plant height (cm)	31	42	49	67	75	79	88	89	89
	No. of tillers	17	30	32	38	40	39	38	37	34
II-2	Plant height (cm)	30	44	49	66	73	80	91	91	91
	No. of tillers	14	25	33	42	46	47	41	40	39
II-3	Plant height (cm)	30	43	53	63	71	78	85	90	90
	No. of tillers	11	27	31	39	39	39	38	35	34
III-1	Plant height (cm)	28	40	40	55	67	73	80	80	88
	No. of tillers	8	16	17	38	47	46	43	42	38
III-2	Plant height (cm)	30	37	45	57	68	73	84	87	89
	No. of tillers	10	22	24	49	51	48	46	39	36
III-3	Plant height (cm)	28	40	43	62	65	74	84	84	89
	No. of tillers	10	22	24	44	53	53	50	48	34
IV-1	Plant height (cm)	33	36	42	59	77	78	83	88	90
	No. of tillers	13	25	24	50	56	55	50	43	38
IV-2	Plant height (cm)	26	31	36	48	57	61	71	71	72
	No. of tillers	10	20	21	46	48	50	44	41	33
IV-3	Plant height (cm)	29	30	37	47	56	62	65	70	71
	No. of tillers	7	17	18	29	31	33	32	27	25

Note; Variety : IR-36

Table F-83 RESULT OF ANALYSIS ON YIELD COMPONENTS OF DRY SEASON PADDY AT MONITORING POINT NO. 2 IN ARIS AND NO. 10 IN ADRIS

Sample No.	No. of Panicles per Hill	No. of Panicles per m²	No. of Grains per Panicle	No. of Grains per m²	Percent of Ripened Grains (%)	Weight of 1,000 Ripened Grains (g)	Unit Yield (ton/ha)
(1) Monitoring Point No. 2 in ARIS							
P-1	19.0	533	49.4	26,300	58.4	19.6	3.0
P-2	16.5	379	45.5	17,200	67.2	21.1	2.4
P-3	16.4	459	48.3	22,200	66.5	20.8	3.1
IP-1	15.3	534	45.9	24,500	74.3	21.6	3.9
I-1	23.6	801	42.7	34,200	65.8	21.5	4.8
I-2	18.6	522	48.6	25,400	67.0	21.6	3.7
I-3	16.3	571	59.5	34,000	73.3	22.1	5.5
II-1	14.3	442	54.5	24,100	77.4	20.5	3.8
II-2	12.1	314	57.8	18,100	80.4	19.0	2.8
II-3	14.2	441	52.4	23,100	78.3	19.7	3.6
III-1	14.1	437	56.3	24,600	76.0	19.6	3.7
III-2	14.3	457	51.2	23,400	79.9	18.9	3.5
III-3	10.7	322	50.5	16,300	73.3	19.3	2.3
IV-1	11.4	341	51.7	17,600	65.8	19.4	2.3
IV-2	11.3	350	39.1	13,700	55.4	18.5	1.4
(2) Monitoring Point No. 10 in ADRIS							
I-1	28.8	720	76.2	54,900	43.5	22.7	5.4
I-2	25.2	630	60.3	38,000	65.4	22.9	5.7
I-3	23.5	611	67.9	41,500	67.2	23.1	6.4
II-1	24.1	554	81.0	44,900	63.8	23.4	6.7
II-2	23.4	608	73.4	44,600	66.4	22.7	6.7
II-3	23.2	580	72.6	42,100	71.3	22.4	6.7
III-1	30.4	760	74.0	56,200	65.5	22.1	8.1
III-2	21.7	608	65.6	39,900	67.5	22.1	5.9
III-3	31.0	806	60.0	48,400	51.2	22.0	6.5
IV-1	25.7	694	68.9	47,800	58.5	21.5	6.0
IV-2	23.8	500	74.1	37,100	55.6	21.1	4.3
IV-3	24.4	610	70.4	42,900	54.9	21.7	5.1

Table F-84 RESULT OF ANALYSIS ON YIELD COMPONENTS OF DRY SEASON PADDY AT MONITORING POINT NO. 4 IN ARIS

Sample No.	No. of Panicles per Hill	No. of Panicles per m²	No. of Grains per Panicle	No. of Grains per m²	Percent of Ripened Grains (%)	Weight of 1,000 Ripened Grains (g)	Unit Yield (ton/ha)
(1) Monitoring Point No. 4 (Lateral D)							
I-1	6.7	208	55.4	11,500	14.8	17.5	0.30
I-2	9.2	277	33.2	9,200	19.9	18.1	0.33
I-3	8.3	180	34.4	6,200	18.6	17.0	0.20
II-1	7.4	215	37.8	8,100	17.2	18.6	0.26
II-2	4.1	144	73.2	10,500	7.3	19.1	0.15
II-3	6.2	181	51.5	9,300	15.0	17.6	0.25
III-1	7.1	199	46.9	9,300	13.2	17.2	0.21
III-2	6.3	177	51.2	9,100	12.7	17.7	0.20
III-3	9.0	225	62.9	14,200	10.2	17.4	0.25
IV-1	9.9	247	49.6	12,300	18.9	18.5	0.43
IV-2	9.1	254	65.7	16,700	13.4	16.9	0.38
IV-3	8.4	210	52.1	10,900	19.4	18.0	0.38
(2) Monitoring Point No. 4 (Don Moteo Ditch)							
I-1	14.0	279	83.1	23,200	45.9	22.3	2.4
I-2	7.7	154	105.4	16,200	57.5	21.3	2.0
I-3	20.6	392	85.3	33,400	65.3	22.7	5.0
II-1	14.7	339	99.6	33,800	62.5	23.3	4.9
II-2	15.2	303	79.7	24,100	63.0	22.5	3.4
II-3	20.3	427	87.5	37,400	57.1	22.7	4.8
III-1	16.0	353	96.7	34,100	59.3	22.0	4.5
III-2	17.4	401	65.7	26,300	71.7	22.0	4.2
III-3	20.1	462	85.0	39,300	61.6	22.0	5.3
IV-1	19.3	444	96.9	43,000	63.6	22.4	6.1
IV-2	25.5	611	71.4	43,600	67.9	22.5	5.7
IV-3	19.6	470	83.4	39,200	64.7	22.4	5.7

Table F-85 LIST OF DRY SEASON PADDY SAMPLES COLLECTED IN ARIS FOR YIELD ANALYSIS

Sample No.	Location	Variety	Harvesting Date
1.	San Roque, San Manuel	IR 56	June 5, 1984
2.	San Roque, San Manuel	Malagkit	June 15-20, 1984
3.	Narra, San Manuel	IR 36	June 27, 1984
4.	Namangonan, San Manuel	IR 36	June 28, 1984
5.	Narra, San Manuel	IR 32	June 29, 1984
6.	Narra, San Manuel	IR 32	June 29, 1984
7.	Narra, San Manuel	IR 42	July 3, 1984
8.	Namangonan, San Manuel	IR 42	July 4, 1984

Table F-86 RESULT OF ANALYSIS OF YIELD COMPONENTS OF DRY SEASON PADDY IN ARIS (1/3)

Sample No.	No. of Panicles per Hill	No. of Panicles per m^2	No. of Grains per Panicle	No. of Grains per m^2	Percent of Ripened Grains (%)	Weight of 1,000 Ripened Grains (g)	Unit Yield (ton/ha)
Sampling Point No. 1							
I-1	3.2	81	44.4	3,600	39.3	20.1	0.28
I-2	7.5	194	34.8	6,800	66.2	21.6	0.97
Average	5.4	138	39.6	5,200	52.8	20.9	0.63
II-1	11.8	272	52.5	14,300	72.8	21.9	2.3
II-2	17.9	429	53.9	23,100	56.6	21.6	2.8
II-3	20.1	422	46.6	19,700	75.4	21.4	3.2
Average	16.6	374	51.0	19,000	68.3	21.6	2.8

Table F-87 RESULT OF ANALYSIS ON YIELD COMPONENTS OF DRY SEASON PADDY IN ARIS (2/3)

Sample No.	No. of Panicles per Hill	No. of Panicles per m²	No. of Grains per Panicle	No. of Grains per m²	Percent of Ripened Grains (%)	Weight of 1,000 Ripened Grains (g)	Unit Yield (ton/ha)
Sampling Point No. 2							
I-1	11.6	349	66.5	23,400	3.1	23.0	0.17
I-2	15.2	395	62.8	24,900	33.7	26.9	2.3
I-3	15.1	392	69.1	27,000	50.6	28.5	3.9
Average	14.0	379	66.1	25,100	29.1	26.1	2.1
II-1	13.4	401	59.3	23,700	45.4	28.6	3.1
II-2	11.8	378	69.6	26,500	50.7	29.3	3.9
II-3	14.0	407	81.3	33,000	61.2	28.8	5.8
II-4	12.0	360	70.2	25,200	47.7	29.6	3.6
II-5	12.1	363	66.4	24,000	51.4	27.6	3.4
Average	12.6	382	69.4	26,400	51.3	28.8	4.0
Sampling Point No.3							
I-1	14.5	376	48.0	18,000	39.8	20.6	1.5
I-2	12.4	361	42.3	15,200	63.9	21.6	2.1
I-3	12.6	314	32.0	10,000	58.4	21.9	1.3
Average	13.2	350	40.8	14,400	54.0	21.4	1.6
II-1	17.5	543	48.9	26,600	65.5	23.6	4.1
II-2	16.1	355	48.1	17,000	66.7	24.1	2.7
II-3	18.5	443	40.9	18,200	62.7	23.1	2.6
II-4	16.7	501	45.7	23,000	65.6	22.0	3.3
Average	17.2	461	45.9	21,200	65.1	23.2	3.2
Sampling Point No. 4							
I-1	16.4	427	26.8	11,500	48.0	21.3	1.2
I-2	14.9	431	33.8	14,700	58.3	21.5	1.8
I-3	17.6	475	36.6	17,600	39.8	21.4	1.5
Average	16.3	444	32.4	14,600	48.7	21.4	1.5
II-1	17.0	476	34.8	16,700	68.3	22.9	2.6
II-2	18.5	463	38.3	17,600	58.0	23.4	2.4
II-3	18.7	431	35.7	15,500	62.3	23.1	2.2
Average	18.1	457	36.3	16,600	62.9	23.1	2.4
III-1	16.3	359	37.3	13,300	58.2	22.8	1.8
III-2	15.0	449	39.8	18,000	73.8	23.3	3.1
Average	15.7	404	38.6	15,600	66.0	23.1	2.5

Table F-88 RESULT OF ANALYSIS ON YIELD COMPONENTS OF DRY SEASON PADDY IN ARIS (3/3)

Sample No.	No. of Panicles per Hill	No. of Panicles per m^2	No. of Grains per Panicle	No. of Grains per m^2	Percent of Ripened Grains (%)	Weight of 1,000 Ripened Grains (g)	Unit Yield (ton/ha)
Sampling Point No. 5							
I-1	9.4	281	62.4	17,500	73.1	23.9	3.1
I-2	12.3	345	34.0	11,700	69.1	22.8	1.8
I-3	11.0	265	49.8	13,200	75.8	23.4	2.3
I-4	10.7	341	39.0	13,300	82.3	24.3	2.7
I-5	13.3	399	45.7	18,200	82.2	24.6	3.7
Average	11.3	326	46.2	14,800	76.5	23.8	2.7
Sampling Point No. 6							
I-1	8.5	206	52.1	10,700	58.0	23.4	1.5
I-2	10.1	213	75.5	16,100	58.0	23.7	2.2
I-3	9.9	257	84.8	21,800	80.3	24.6	4.3
Average	9.5	225	70.8	16,200	65.4	23.9	2.7
Sampling Point No. 7							
I-1	15.6	475	49.4	23,300	68.9	21.8	3.5
I-2	11.7	363	36.1	13,100	72.6	22.3	2.1
I-3	12.8	447	37.8	17,000	65.0	22.7	2.5
Average	13.4	428	41.1	17,800	68.8	22.3	2.7
II-1	14.8	428	47.3	20,100	76.8	23.3	3.6
II-2	15.1	484	43.9	21,300	62.7	23.4	3.1
II-3	18.2	528	42.1	22,200	71.3	23.3	3.7
Average	16.0	480	44.4	21,200	70.3	23.3	3.5
Sampling Point No. 8							
I-1	14.2	368	54.3	19,900	48.3	21.3	2.0
I-2	14.8	399	62.9	25,100	64.9	20.5	3.3
I-3	17.7	371	64.4	23,700	79.9	21.2	4.0
Average	15.6	379	60.5	22,900	64.4	21.0	3.1
II-1	17.4	417	71.7	30,000	78.1	20.8	4.9
II-2	14.3	400	62.5	25,200	70.5	20.7	3.7
II-3	17.5	419	83.9	35,200	67.1	21.1	5.0
Average	16.4	412	72.7	30,100	71.9	20.9	4.5

Table F-89 NUTRIENT UPTAKE BY DRY SEASON PADDY GROWN AT MONITORING POINT NO. 2 IN ARIS

Unit: %

Plant Part	Plot No.	N	P	K	SiO_2
Leaf	I'	1.50	0.051	0.96	17.7
	II'	0.93	0.060	0.59	24.7
	I	0.90	0.075	1.16	19.9
	II	0.58	0.029	0.35	18.7
	III	0.67	0.045	0.57	19.0
	IV	0.84	0.048	0.57	21.5
Stem	I'	0.41	0.043	1.32	11.1
	II'	0.49	0.046	1.39	13.7
	I	0.64	0.055	1.22	16.8
	II	0.45	0.067	1.39	17.3
	III	0.58	0.058	1.95	13.7
	IV	0.37	0.062	0.94	13.8
Brown rice	I'	1.62	0.136	0.17	0.1
	II'	1.34	0.181	0.17	0.1
	I	2.07	0.220	0.19	0.2
	II	1.04	0.178	0.15	0.1
	III	1.08	0.246	0.18	0.1
	IV	1.11	0.287	0.19	0.1
Chaff	I'	1.14	0.096	0.34	11.5
	II'	0.67	0.089	0.38	14.5
	I	1.47	0.150	0.40	12.2
	II	0.66	0.085	0.35	14.3
	III	0.41	0.069	0.29	18.8
	IV	0.40	0.093	0.33	19.0

Table F-90 NUTRIENT UPTAKE BY DRY SEASON PADDY GROWN AT MONITORING POINT NO. 4 (LATERAL D) IN ARIS

Unit: %

Plant Part	Plot No.	N	P	K	SiO_2
Leaf	I	1.69	0.076	1.48	13.4
	II	1.20	0.080	1.16	15.7
	III	1.20	0.078	1.50	15.1
	IV	1.21	0.069	0.88	15.2
Stem	I	0.93	0.109	1.81	7.7
	II	0.96	0.119	2.12	10.2
	III	0.64	0.157	1.73	10.8
	IV	0.75	0.104	1.87	9.5
Brown rice	I	*	*	*	*
	II	2.01	0.289	0.22	0.1
	III	1.53	0.283	0.21	0.1
	IV	1.08	0.237	0.19	0.1
Chaff	I	1.23	0.139	0.59	3.6
	II	0.44	0.151	0.53	7.3
	III	1.23	0.172	0.44	5.7
	IV	1.14	0.144	0.47	5.9

Remarks; * : Samples are not available.

Table F-91 NUTRIENT UPTAKE BY DRY SEASON PADDY GROWN AT MONITORING POINT NO. 4 (DON MOTEO DITCH) IN ARIS

Unit: %

Plant Part	Plot No.	N	P	K	SiO_2
Leaf	I	1.26	0.064	0.86	22.3
	II	1.21	0.061	0.65	23.8
	III	1.62	0.071	1.13	20.1
	IV	1.80	0.086	1.01	18.3
Stem	I	0.63	0.041	1.17	19.8
	II	0.57	0.053	1.36	19.1
	III	0.50	0.051	1.54	15.3
	IV	0.99	0.063	1.58	13.1
Brown rice	I	2.03	0.251	0.20	0.3
	II	1.18	0.243	0.18	0.6
	III	1.57	0.215	0.16	0.3
	IV	2.02	0.209	0.16	0.1
Chaff	I	1.52	0.163	0.47	15.8
	II	1.03	0.146	0.64	15.1
	III	1.32	0.123	0.39	15.4
	IV	1.38	0.120	0.38	18.3

Table F-92 NUTRIENT UPTAKE BY DRY SEASON PADDY GROWN AT MONITORING POINT NO. 10 IN ADRIS

Unit: %

Plant Part	Plot No.	N	P	K	SiO_2
Leaf	I	3.73	0.235	1.13	17.0
	II	3.08	0.225	1.01	21.0
	III	1.67	0.133	0.63	24.7
	IV	1.51	0.051	0.80	21.4
Stem	I	1.51	0.265	1.65	13.0
	II	1.55	0.185	1.11	16.8
	III	1.28	0.178	1.25	14.5
	IV	1.06	0.077	0.88	13.4
Brown rice	I	2.63	0.251	0.22	0.3
	II	2.60	0.243	0.21	0.1
	III	2.14	0.215	0.22	0.2
	IV	1.99	0.209	0.21	0.1
Chaff	I	1.18	0.179	0.45	14.6
	II	1.19	0.107	0.47	21.5
	III	2.00	0.090	0.46	20.8
	IV	1.34	0.194	0.59	9.7

Table F-93 HEAVY METALS ABSORBED BY DRY SEASON PADDY GROWN AT MONITORING POINT NO. 2 IN ARIS

Unit: ppm

Plant Part	Plot No.	Cu	Pb	Zn	Cd	As
Leaf	I'	50.5	1.16	19.5	0.06	—
	II'	170.5	3.69	38.5	+	—
	I	75.5	2.60	33.7	0.04	—
	II	33.8	2.47	20.8	0.06	—
	III	35.8	1.58	75.1	0.04	—
	IV	23.3	0.77	19.3	0.07	—
Stem	I'	84.3	+	33.4	0.24	—
	II'	46.8	2.30	64.5	0.52	—
	I	53.5	2.16	45.6	0.13	—
	II	151.5	4.27	46.0	0.21	—
	III	34.2	0.21	45.0	0.45	—
	IV	34.3	+	49.1	0.38	—
Brown rice	I'	9.0	0.81	33.0	0.18	—
	II'	6.8	0.54	29.2	0.23	—
	I	7.3	0.29	33.7	0.18	—
	II	4.3	1.31	24.2	0.37	—
	III	3.0	0.84	23.9	0.31	—
	IV	3.5	1.35	24.1	0.24	—
Chaff	I'	9.8	1.15	43.2	+	—
	II'	10.5	0.83	57.0	0.02	—
	I	10.8	1.32	41.7	+1	—
	II	4.0	3.75	42.6	0.08	—
	III	3.0	2.60	46.5	0.08	—
	IV	9.8	2.56	48.7	+	—
Root	I'	732	11.0	63.6	0.59	0.002
	II'	676	23.6	86.9	1.12	0.005
	I	845	22.4	81.3	0.92	0.008
	II	534	41.5	101	1.65	0.008
	III	384	26.8	95.6	1.97	0.007
	IV	304	12.5	102	1.37	0.005

Remarks; + : Trace
- : Not analyzed

Table F-94 HEAVY METALS ABSORBED BY DRY SEASON PADDY GROWN AT MONITORING POINT NO. 4 (LATERAL D) IN ARIS

Unit: ppm

Plant Part	Plot No.	Cu	Pb	Zn	Cd	As
Leaf	I	21.3	1.78	17.9	+	—
	II	23.5	2.05	20.1	0.09	—
	III	16.3	1.86	17.9	0.02	—
	IV	23.5	1.39	21.5	0.02	—
Stem	I	63.5	0.97	42.9	0.34	—
	II	50.0	1.36	74.0	1.21	—
	III	36.3	2.51	69.0	1.57	—
	IV	74.8	2.49	69.1	1.53	—
Brown rice	I	*	*	*	*	*
	II	4.8	4.83	31.9	0.57	—
	III	11.3	0.69	38.2	0.82	—
	IV	5.5	0.60	35.8	0.77	—
Chaff	I	10.5	5.90	32.8	+	—
	II	7.3	3.97	47.0	0.09	—
	III	6.5	1.92	49.4	0.28	—
	IV	6.3	1.39	51.1	0.25	—
Root	I	336	14.3	80.4	1.93	0.056
	II	306	25.8	141	3.95	0.011
	III	467	29.6	117	3.59	0.009
	IV	407	29.8	123	4.14	0.007

Remarks; + : Trace
— : Not analyzed
* : Samples are not available

Table F-95 HEAVY METALS ABSORBED BY DRY SEASON PADDY GROWN AT MONITORING POINT NO. 4 (DON MOTEO DITCH) IN ARIS

Unit: ppm

Plant Part	Plot No.	Cu	Pb	Zn	Cd	As
Leaf	I	26.5	1.46	18.1	0.06	—
	II	94.8	7.41	28.6	0.11	—
	III	26.0	4.55	26.3	0.09	—
	IV	17.5	6.65	27.0	0.11	—
Stem	I	97.0	3.78	52.6	0.55	—
	II	141.8	3.05	103	0.28	—
	III	42.5	4.27	72	0.92	—
	IV	24.3	2.88	75	1.16	—
Brown rice	I	8.3	2.33	32.4	+	—
	II	6.3	0.82	38.4	+	—
	III	7.3	1.16	40.9	0.05	—
	IV	6.8	1.30	36.0	0.06	—
Chaff	I	9.3	1.57	35.0	+	—
	II	7.3	0.79	48.2	+	—
	III	8.0	0.70	52.1	0.09	—
	IV	7.0	1.07	42.7	0.08	—
Root	I	928	16.7	78.1	1.25	0.002
	II	703	24.7	90.9	1.86	0.009
	III	665	32.5	105	2.55	0.002
	IV	356	55.6	86.0	2.28	0.002

Remarks; + : Trace
- : Not analyzed

Table F-96 HEAVY METALS ABSORBED BY DRY SEASON PADDY GROWN AT MONITORING POINT NO. 10 IN ADRIS

Unit: ppm

Plant Part	Plot No.	Cu	Pb	Zn	Cd	As
Leaf	I	5.3	1.35	25.4	0.09	—
	II	7.8	1.66	114	+	—
	III	3.8	0.82	26.0	0.06	—
	IV	3.5	1.49	20.2	+	—
Stem	I	6.5	2.37	59.2	0.11	—
	II	5.0	1.16	58.7	0.17	—
	III	8.0	1.18	53.5	0.19	—
	IV	8.5	1.90	56.0	0.27	—
Brown rice	I	1.8	0.85	27.4	+	—
	II	3.5	0.98	32.8	+	—
	III	3.5	0.59	29.4	+	—
	IV	4.8	1.65	36.5	+	—
Chaff	I	2.8	1.50	47.4	+	—
	II	3.5	2.23	65.2	+	—
	III	3.5	1.51	77.5	+	—
	IV	5.3	2.02	68.4	+	—
Root	I	16.4	11.00	123	0.16	0.003
	II	20.2	5.31	103	0.19	0.015
	III	16.2	7.34	96.3	0.14	0.001
	IV	26.2	4.30	226	0.40	0.029

Remarks; + : Trace
- : Not analyzed

Table F-97 OBSERVATION RECORDS ON PADDY GROWTH IN WET SEASON AT MONITORING POINT NO. 2 IN ARIS

Plot No.	Items Measured	July 18	July 25	July 30	Aug. 8	Aug. 15	Aug. 21	Aug. 29	Sept. 5	Sept. 10	Sept. 21	Sept. 26
I-1	Plant height (cm)	—	44	44	68	76	80	95	96	96	96	—
	No. of tillers	—	7	7	16	20	21	16	17	18	20	—
-2	Plant height (cm)	—	46	54	68	78	86	99	101	101	101	—
	No. of tillers	—	8	8	11	14	16	14	14	14	16	—
-3	Plant height (cm)	—	56	62	72	81	95	105	106	106	106	—
	No. of tillers	—	5	5	11	14	15	15	14	14	14	—
II-1	Plant height (cm)	32	38	43	65	64	82	82	82	86	88	88
	No. of tillers	7	17	20	30	23	20	17	16	18	18	16
-2	Plant height (cm)	35	38	41	61	64	70	71	73	84	81	81
	No. of tillers	6	16	21	25	19	21	18	18	18	17	16
-3	Plant height (cm)	33	33	40	55	50	66	72	80	83	85	85
	No. of tillers	8	17	21	23	16	19	16	15	16	21	21
III-1	Plant height (cm)	30	31	31	53	65	72	72	75	83	86	86
	No. of tillers	7	15	17	35	31	29	23	20	26	26	21
-2	Plant height (cm)	23	29	30	56	65	74	75	75	83	89	90
	No. of tillers	8	15	18	38	28	30	21	20	26	26	22
-3	Plant height (cm)	27	28	34	54	66	72	77	86	95	97	98
	No. of tillers	8	13	17	28	26	28	20	17	24	23	18
IV-1	Plant height (cm)	25	31	34	46	60	72	77	80	92	92	92
	No. of tillers	7	15	22	24	22	22	19	17	21	16	15
-2	Plant height (cm)	27	33	39	47	61	74	79	81	93	93	93
	No. of tillers	13	25	28	29	26	28	24	23	23	21	20
-3	Plant height (cm)	27	32	37	47	64	72	80	82	89	91	91
	No. of tillers	7	19	24	25	24	25	19	19	20	18	19

Note; Variety : UPL-R14

Table F-98 OBSERVATION RECORDS ON PADDY GROWTH IN WET SEASON AT MONITORING POINT NO. 4 IN ARIS

Plot No.	Items Measured	July 25	July 30	Aug. 8	Aug. 15	Aug. 21	Aug. 29	Sept. 5	Sept. 10	Sept. 21	Sept. 27	Oct. 5	Oct. 12	Oct. 16	Oct. 24
I-1	Plant height (cm)	26	26	39	46	64	73	73	73	73	79	88	94	103	103
	No. of tillers	7	8	10	9	22	26	27	26	26	29	24	24	24	21
-2	Plant height (cm)	24	27	34	40	56	65	65	66	74	77	82	95	104	105
	No. of tillers	6	7	7	7	17	24	28	34	26	25	26	26	31	29
-3	Plant height (cm)	23	25	32	36	56	63	63	63	71	76	81	95	95	102
	No. of tillers	9	9	9	9	14	23	23	19	25	24	24	23	21	20
II-1	Plant height (cm)	24	28	42	52	69	79	80	81	83	85	93	101	106	107
	No. of tillers	9	9	9	9	14	14	14	16	16	15	14	13	13	11
-2	Plant height (cm)	28	29	45	61	66	80	80	80	89	91	98	102	103	105
	No. of tillers	8	8	11	12	15	15	15	18	17	15	14	13	14	12
-3	Plant height (cm)	25	25	44	60	79	87	88	89	89	92	95	118	119	121
	No. of tillers	5	5	9	11	15	14	14	17	19	18	18	16	15	14
III-1	Plant height (cm)	25	25	35	46	59	68	67	78	81	84	86	105	109	109
	No. of tillers	8	12	14	18	27	22	23	26	31	28	27	24	23	23
-2	Plant height (cm)	21	23	40	48	63	68	68	78	84	87	94	107	108	107
	No. of tillers	12	20	20	20	30	31	27	35	37	31	31	30	29	28
-3	Plant height (cm)	23	23	38	46	65	65	65	77	85	88	89	103	109	109
	No. of tillers	10	11	13	14	26	22	25	37	34	30	29	25	24	23
IV-1	Plant height (cm)	20	23	37	45	61	74	74	81	89	90	91	101	106	106
	No. of tillers	12	15	15	17	20	19	17	19	21	19	19	18	17	17
-2	Plant height (cm)	27	29	45	56	72	83	85	86	92	92	101	112	113	113
	No. of tillers	9	9	18	18	23	22	23	25	24	24	24	22	22	21
-3	Plant height (cm)	22	23	45	66	85	88	92	92	92	92	96	107	109	110
	No. of tillers	15	15	16	18	20	21	21	25	19*	21**	21	21	21	20

Remarks; * : Four tillers were damaged by birds.
** : Five tillers were damaged by birds.

Note; Variety : IR-42

Table F-99 OBSERVATION RECORDS ON PADDY GROWTH IN WET SEASON AT MONITORING POINT NO. 6 IN ARIS

Plot No.	Items Measured	Aug. 9	Aug. 15	Aug. 21	Aug. 29	Sept. 5	Sept. 10	Sept. 21	Sept. 26	Oct. 5	Oct. 12	Oct. 16	Oct. 24
I-1	Plant height (cm)	18	24	29	45	56	56	56	61	88	90	94	94
	No. of tillers	7	7	8	14	16	16	19	22	26	25	24	21
-2	Plant height (cm)	23	23	27	40	47	50	52	58	72	76	78	78
	No. of tillers	6	7	9	8	8	8	9	9	9	10	10	12
-3	Plant height (cm)	19	26	32	47	54	59	63	65	82	82	83	83
	No. of tillers	4	8	11	10	10	11	10	11	15	14	14	14
II-1	Plant height (cm)	31	40	49	60	64	69	75	78	101	103	104	104
	No. on tillers	8	14	17	21	21	22	22	22	18	15	15	14
-2	Plant height (cm)	25	27	40	57	60	68	71	72	89	103	103	105
	No. of tillers	7	14	15	14	13	15	12	10*	10	10	10	9
-3	Plant height (cm)	25	29	39	50	62	67	73	78	84	98	98	99
	No. of tillers	6	12	14	16	16	17	14	13	12	12	11	10
III-1	Plant height (cm)	31	35	41	51	60	66	70	75	88	104	105	105
	No. of tillers	4	8	13	16	16	19	18	17	15	14	13	11
-2	Plant height (cm)	28	29	39	54	62	68	72	76	89	98	98	99
	No. of tillers	5	12	16	20	19	21	19	18	15	15	15	14
-3	Plant height (cm)	27	35	43	54	63	67	73	78	90	101	101	101
	No. of tillers	6	8	14	19	20	20	20	20	15	14	12	12
IV-1	Plant height (cm)	24	26	41	45	56	64	69	71	88	94	95	95
	No. of tillers	7	15	19	20	19	21	20	21	17	16	16	16
-2	Plant height (cm)	24	34	41	50	60	65	73	76	96	96	98	98
	No. of tillers	8	14	15	16	16	18	20	16	14	14	13	12
-3	Plant height (cm)	19	29	43	48	61	67	75	75	92	97	98	98
	No. of tillers	10	16	19	16	17	21	19	17	16	14	12	10

Remarks; * : Two tillers were damaged by birds.
Note; Variety : IR-54

Table F-100 OBSERVATION RECORDS ON PADDY GROWTH IN WET SEASON AT MONITORING POINT NO. 8 IN ARIS

Plot No.	Items Measured	July 19	July 25	July 30	Aug. 8	Aug. 15	Aug. 21	Aug. 30	Sept. 5	Sept. 10	Sept. 20	Sept. 26	Oct. 5	Oct. 12	Oct. 16	Oct. 24
I-1	Plant height (cm)	26	26	29	39	48	56	64	77	78	88	89	95	100	100	100
	No. of tillers	6	7	7	7	7	8	10	12	12	13	10	9	9	8	8
-2	Plant height (cm)	33	35	36	43	50	55	60	71	76	81	81	89	92	92	92
	No. of tillers	4	5	7	8	8	8	9	11	11	11	11	10	10	9	8
-3	Plant height (cm)	29	29	37	48	56	60	68	76	79	84	84	92	98	99	99
	No. of tillers	3	3	7	8	7	7	8	9	8	9	8	8	8	8	8
II-1	Plant height (cm)	17	17	19	35	45	53	64	77	82	86	89	89	93	111	111
	No. of tillers	9	9	12	12	13	14	26	28	28	28	30	28	21	19	18
-2	Plant height (cm)	20	20	22	39	43	44	69	79	85	87	90	90	96	108	110
	No. of tillers	5	9	10	12	15	16	30	29	33	33	28	25	20	19	17
-3	Plant height (cm)	25	25	29	43	51	57	84	93	104	109	110	110	132	133	135
	No. of tillers	8	9	13	16	22	22	33	32	36	33	31	28	24	21	19
III-1	Plant height (cm)	35	35	40	53	61	68	80	90	95	98	98	110	118	119	119
	No. of tillers	8	11	20	27	26	26	27	34	39	38	44	41	35	35	33
-2	Plant height (cm)	35	35	37	45	54	60	74	88	90	98	92	100	111	112	113
	No. of tillers	7	8	19	21	22	21	27	30	33	35	30	18	18	16	15
-3	Plant height (cm)	36	36	37	44	47	57	70	85	86	91	91	101	114	114	115
	No. of tillers	5	10	17	18	17	20	29	31	34	34	31	26	24	24	24
IV-1	Plant height (cm)	30	30	35	51	53	60	81	93	94	100	102	108	118	120	120
	No. of tillers	8	9	16	20	18	20	30	31	34	35	31	27	26	24	24
-2	Plant height (cm)	32	33	39	50	52	54	79	89	94	99	99	107	112	114	114
	No. of tillers	4	5	11	14	12	12	25	34	35	34	33	28	27	26	25
-3	Plant height (cm)	31	31	39	49	54	60	86	91	94	104	102	103	114	114	114
	No. of tillers	8	8	16	19	17	17	36	39	43	40	39	35	32	32	29

Note; Variety : IR-42

Table F-101 OBSERVATION RECORDS ON PADDY GROWTH IN WET SEASON AT MONITORING POINT NO. 12 IN ARIS

Plot No.	Items Measured	July 18	July 25	July 30	Aug. 8	Aug. 15	Aug. 21	Sept. 3	Sept. 11	Sept. 20	Sept. 26	Oct. 7	Oct. 12	Oct. 16	Oct. 24
I-1	Plant height (cm)	23	23	31	49	60	75	89	93	93	93	104	114	115	115
	No. of tillers	3	4	6	7	6	7	6	7	7	7	7	8	8	8
-2	Plant height (cm)	31	32	41	50	62	75	93	93	93	96	113	114	117	117
	No. of tillers	6	7	8	9	8	9	7	9	9	9	12	12	12	12
-3	Plant height (cm)	25	25	32	44	62	72	85	86	86	86	108	109	112	112
	No. of tillers	2	2	3	3	5	5	4	4	5	5	5	5	5	5
II-1	Plant height (cm)	25	33	46	61	72	86	99	99	99	99	107	117	117	117
	No. of tillers	3	5	6	8	8	8	7	8	9	8	8	7	7	7
-2	Plant height (cm)	25	37	45	57	67	76	92	93	96	100	108	108	109	111
	No. of tillers	5	7	10	10	8	8	7	9	8	8	8	8	8	8
-3	Plant height (cm)	31	34	43	62	70	77	94	95	97	101	103	113	113	113
	No. of tillers	5	8	8	9	8	8	7	9	9	9	9	9	9	8
III-1	Plant height (cm)	23	28	39	56	73	83	104	102	112	113	123	123	123	123
	No. of tillers	5	13	13	12	10	9	6	9	9	9	9	9	9	9
-2	Plant height (cm)	26	38	41	65	75	81	98	102	111	116	102	107	109	109
	No. of tillers	5	12	12	13	11	12	8	11	11	12	8*	10	10	10
-3	Plant height (cm)	23	30	41	57	70	82	99	101	103	105	110	110	110	110
	No. of tillers	4	5	6	7	6	6	5	6	6	6	6	6	6	6
IV-1	Plant height (cm)	—	50	58	68	84	93	108	118	121	118	125	125	127	128
	No. of tillers	—	15	17	16	13	9	10	10	11	10	10	10	10	10
-2	Plant height (cm)	—	51	61	63	81	93	115	115	116	123	129	130	130	131
	No. of tillers	—	8	8	8	4*	4	3	4	4	4	3	3	3	3
-3	Plant height (cm)	—	55	61	69	86	95	114	114	118	121	128	129	129	130
	No. of tillers	—	9	11	11	9	9	9	9	9	9	9	9	9	9

Remarks; * : Four tillers were damaged by bird.
Note; Variety : IR-42