

WALKER MINE REPORT
OCTOBER 5, 1957
L. E. TRUMBULL

SUMMARY

WALKER MINE, PLUMAS COUNTY, HAS BEEN INOPERATIVE SINCE 1942, BUT CONTINUES TO IMPAIR WATERS OF LITTLE GRIZZLY CREEK AND INDIAN CREEK THROUGH DISCHARGES OF TOXIC MATERIALS AND SILT. RESTORATION OF LITTLE GRIZZLY CREEK, AS A RECREATIONAL AREA, AND PROTECTION OF IRRIGATION AND RECREATIONAL WATER USES IN INDIAN VALLEY MAY BE APPROACHED BY A) ESTABLISHMENT OF JURISDICTIONS; B) SETTING OF REQUIREMENTS; AND C) COOPERATIVE ACTION AMONG THE SEVERAL INTERESTED PARTIES.

WALKER MINE, PLUMAS COUNTY
WATER POLLUTION STUDY

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Insert 3.

1. DESCRIPTION OF AREA:

WALKER MINE LIES IN PLUMAS COUNTY ABOVE TAYLORSVILLE. IT IS SITUATED NEAR THE TOP OF A MOUNTAIN AT AN ELEVATION OF 6200 FEET. MINE PORTAL AND STRUCTURES LIE IN A SLOPING BOWL WHICH IS THE SOURCE OF "WALKER" CREEK. NUMEROUS SPRINGS ORIGINATE AROUND THE PERIPHERY OF THIS BOWL, WITH ALL WATERS BEING OF EXCELLENT QUALITY.

THIS REGION IS GENERALLY FORESTED WITH PINE AND FIR, WITH ROCK OUTCROPS SHOWING ON MOUNTAIN TOPS. MUCH OF THE TIMBER IS SECOND GROWTH, AS THE MINE OPERATIONS CONSUMED MUCH OF THE AVAILABLE TIMBER. ALSO A SAW MILL WAS OPERATING ON MINE PROPERTY UP TO 1952, SAWING TIMBER TAKEN FROM MINE PROPERTIES.

COUNTY RECORDS SHOW THAT 764 ACRES OF PATENTED LAND ARE LISTED IN THE WALKER MINE HOLDINGS, WITH SEVERAL TIMES THIS ACREAGE HELD IN ADJOINING MINING CLAIMS. THE REGION IS FAIRLY ISOLATED AND FINDS ITS MAJOR USE AS A RECREATIONAL AREA, PARTICULARLY FOR DEER HUNTING. LITTLE GRIZZLY CREEK, DRAINING THE AREA, IS GENERALLY REGARDED AS BARREN, AND FEW FISHERMEN NOW PLY THE STREAM.

2. WATERS OF THE AREA:

Streams affected by mine drainage.

WALKER MINE AREA IS THE SOURCE OF NUMEROUS SPRINGS WHICH FORM A TRIBUTARY TO LITTLE GRIZZLY CREEK. FOR WANT OF A BETTER NAME, THIS TRIBUTARY IS HEREIN CALLED "WALKER CREEK". WALKER CREEK TRAVERSES THE TAILINGS DEPOSIT AND JOINS LITTLE GRIZZLY CREEK JUST ABOVE BROWNS CABIN, ABOUT 1.5 MILES BELOW THE MINE PORTAL. LITTLE GRIZZLY CREEK TUMBLES THROUGH SOME 10 MILES OF NARROW CANYON TO JOIN INDIAN CREEK ABOUT 5 MILES ABOVE TAYLORSVILLE. WATER IS DIVERTED FROM INDIAN CREEK, JUST ABOVE TAYLORSVILLE INTO THE IRRIGATION CANALS OF THE AMERICAN AND INDIAN VALLEY SOIL CONSERVATION DISTRICT.

MR. HUMPHREY OF GREENVILLE, IS A MEMBER OF THE BOARD OF DIRECTORS OF THIS DISTRICT AND PROVIDED INFORMATION ON THE DISTRICTS OPERATION. HE INDICATED THAT, AT THE PRESENT TIME, SILTATION IN DISTRICT CANALS IS NOT SEVERE. HE ALSO NOTED THAT, DURING THE HIGH WATER PERIOD, INDIAN CREEK IS QUITE TURBID ABOVE LITTLE GRIZZLY CREEK, AND THE DISTRICT DOES NOT FEEL THAT WALKER MINE TAILINGS ARE PRESENTLY A MAJOR FACTOR IN CANAL SILTATION. HE DID NOT FEEL THE DISTRICT WOULD CONTRIBUTE TOWARDS A COOPERATIVE SOLUTION OF WALKER MINE AREA PROBLEMS.

FISH AND GAME AND SPORTSMANS ORGANIZATIONS ARE INTERESTED IN RESTORING FISH POPULATION TO LITTLE GRIZZLY CREEK, SAID TO HAVE BEEN EXCELLENT TROUT WATERS AT ONE TIME. THE STREAM CURRENTLY SUPPORTS TROUT ABOVE THE WALKER MINE BUT IS BARREN MOST OF THE YEAR IN THE LOWER REACHES. TROUT DO MOVE UP INTO THIS CREEK DURING THE LATE FALL MONTHS WHEN TOXIC MINE WASTES ARE AT MINIMUM FLOW.

A NUMBER OF FISH KILLS HAVE BEEN REPORTED IN INDIAN CREEK BELOW THE CONFLUENCE OF LITTLE GRIZZLY CREEK. MEAGER DATA AVAILABLE INDICATE

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FISH DEATHS WERE PROBABLY DUE TO SUSPENDED MATERIALS, POSSIBLE ABRASIVE SOLIDS FROM THE WALKER MINE TAILINGS DUMP. CATFISH AND CARP APPARENTLY SUFFER GREATEST MORTALITY, WITH TROUT POPULATION IN INDIAN CREEK NOT SHOWING ANY PARTICULAR DISTRESS.

IN JULY, 1947, DEPARTMENT OF FISH AND GAME PLANTED 5000 TROUT IN LITTLE GRIZZLY CREEK, SOME 5 MILES DOWNSTREAM FROM WALKER MINE. ALL FISH DIED WITHIN 24 HOURS. AGAIN IN 1949, TROUT IN A CAGE WERE PLACED IN LITTLE GRIZZLY CREEK AT BROWNS CABIN; THESE TROUT WERE ALL DEAD WITHIN THE SPACE OF 1 HOUR.

INSPECTION OF LITTLE GRIZZLY CREEK INDICATES THE COMBINATION OF SAND DEPOSITS AND TOXIC MINE DRAINAGE HAS CAUSED A STERILE STREAM CONDITION. PLANT AND AQUATIC LIFE APPEAR TO BE ALMOST TOTALLY ABSENT, ALTHOUGH SHRUBBERY AND TREES LINING THE STREAMS APPEAR HEALTHY.

WALKER MINE WORKINGS SURFACE ON THE OTHER SIDE OF THE RIDGE FROM LITTLE GRIZZLY CREEK, WHERE DRAINAGE IS INTO WARD CREEK. WARD CREEK EMPTIES INTO INDIAN CREEK ABOUT 2 MILES ABOVE THE CONFLUENCE OF LITTLE GRIZZLY CREEK. IT IS REPORTED THAT MINE WATERS WERE PUMPED INTO WARD CREEK DURING MINE OPERATIONS, AND THAT WARD CREEK WAS BARREN OF FISH LIFE DURING THIS PERIOD. THERE IS NO INDICATION THAT MINE WASTES HAVE OVERFLOWED INTO THIS DRAINAGE IN RECENT TIMES.

Drainage
MINE WATERS:

3.

MINE OWNERSHIP:

OWNERSHIP OF MINE PROPERTIES IS QUITE CONFUSED AT THE PRESENT TIME, ALTHOUGH IT CURRENTLY WOULD APPEAR THE ROBERT E. BARRY, 29 HEREFORD ROAD, BRONXVILLE, NEW YORK, REPRESENTS THE PROPERTY OWNERS.

TITLE TO THE PROPERTY APPEARED TO RESIDE CLEARLY WITH ANACONDA COPPER UP TO 1942, WHEN THE OPERATION OF THE MINE CEASED. IT IS REPORTED THAT ANACONDA SOLD TO AN INVESTMENT GROUP WHO AUCTIONED OFF THE PROPERTIES ABOUT 1946. ROBERT E. WILSON, APPARENTLY BID IN MOST OF THE ASSETS, USING THE FINANCIAL BACKING OF A MR. CAREY, SAID TO HAVE BEEN PRESIDENT OF THE YALE AND TOWNE COMPANY.

AT THIS POINT, THE TRANSACTIONS BECAME QUITE COMPLICATED AND CONFUSED. IT IS REPORTED WILSON FAILED TO MEET ALL PURCHASE COMMITMENTS, BUT PROCEEDED TO ESTABLISH SUBSIDIARY ORGANIZATIONS, INCLUDING PLUMAS LAND CORPORATION, PLUMAS MINING CORPORATION, AND PLUMAS LUMBER CORPORATION.

IT IS REPORTED THAT THE MORE VALUABLE LANDS, BUILDINGS, EQUIPMENT AND HOUSING WERE TRANSFERRED TO THESE CORPORATIONS, WHOSE CONTROLLING OWNERSHIP WAS REPORTEDLY ESTABLISHED BY WILSON, WITH DUBIOUS AUTHORITY, AS WILSON AND MRS. WILSON.

ABOUT 1948, CAREY MOVED TO TAKE OVER OPERATION FROM WILSON, BUT DIED IN AN AUTO ACCIDENT SHORTLY THEREAFTER. ROBERT R. BARRY, AND WILFORD CAREY, CAME ONTO THE SCENE AT THIS POINT AS ADMINISTRATORS FOR THE ESTATES OF W. GIBSON CAREY, JR., PLUMAS LAND CORPORATION, ETAL.

3A.

IN 1948, WILSON ENTERED SUIT IN SUPERIOR COURT TO DETERMINE RIGHTS AND INTERESTS IN WALKER MINE PROPERTIES. LATER IN 1948, WILSON BY AFFIDAVIT RELEASED HIS INTERESTS IN TIMBER RIGHTS ON THE PATENTED LANDS.

IN MAY, 1957, THE SUPERIOR COURT DISMISSED WILSON'S SUIT (OF 1948) FOR FAILURE TO PROSECUTE WITH REASONABLE DILIGENCE, AND RULED A JUDGEMENT OF DISMISSAL BE FILED AGAINST R. P. WILSON.

ON MAY 31, 1957, R. P. WILSON, APPEALED THIS DECISION TO THE DISTRICT COURT OF APPEALS, THUS OWNERSHIP AND INTERESTS OF SEVERAL PARTIES REMAINS IN LITIGATION.

BASED UPON THE MAY 1957, DECISION OF THE COURT, AND UPON PERUSAL OF WILSON'S CHARGES AGAINST BARRY, IT APPEARS THAT BARRY MUST BE LOGICALLY CONSIDERED THE LEGAL OWNER OF WALKER MINE PROPERTY. IT IS TO BE NOTED, HOWEVER, THAT SALE OF TIMBER AND A PROPOSED TUNNEL TO TAP WALKER MINE DEPOSITS (TO BE DRIVEN FROM GENESSEE) ARE CURRENTLY HELD UP BECAUSE TITLE GUARANTEE COMPANIES WILL HAVE NOTHING TO DO WITH WALKER MINE PROPERTIES.

COUNTY RECORDS INDICATE THAT BARRY HAS BEEN PAYING TAXES ON THE 764 ACRES OF PATENTED GROUND WHICH INCLUDES THE MILL SITE AND MAJOR DEPOSIT AREAS.

IN A LETTER DATED SEPTEMBER 15, 1957, MR. R. R. BARRY HAS ACKNOWLEDGED THAT HE REPRESENTS THE WALKER MINE OWNERS.

3B. MINE DESCRIPTION AND SOURCE OF WATERS:

WALKER MINE WAS ORIGINALLY LOCATED AS AN ORE OUTCROP ON TOP OF THE RIDGE. RATHER EXTENSIVE MINING WAS CARRIED ON AT THIS POINT, WITH ORE BEING TRAMMED TO THE MILL AT WALKER MINE. THIS MINING AREA IS LOCATED ABOVE THE SO-CALLED "CENTRAL ORE-BODY" AND MAY BE IDENTIFIED BY THE "GLORY-HOLE". IT WOULD APPEAR THAT SNOW MELT IN THIS AREA WILL CONTRIBUTE CONSIDERABLE WATER TO THE WALKER MINE UNDERGROUND SYSTEM.

AT A LATER DATE, A TUNNEL WAS DRIVEN FROM THE MILL SITE TO TAP THE ORE BODIES. THIS TUNNEL IS REPORTED TO HAVE ENCOUNTERED 200 FEET OF CLAY AND DECOMPOSED GRANITE, WHICH SECTION WAS TIMBERED, PRIOR TO ENTERING SOLID ROCK. THIS TUNNEL THEN TRAVELLED SOME 2000 FEET TO TIE INTO THE WORKING LATERAL, SOME 8000 FEET LONG, WHICH CROSSED THROUGH THE 5 MAJOR ORE BODIES, THE SOUTH, CENTRAL, NORTH, 712, AND PIUTE.

THREE OTHER LATERALS ARE REPORTED, ONE 300 AND ONE 700 FEET BELOW THE MAIN TUNNEL, AND ANOTHER 600 FEET ABOVE THE MAIN TUNNEL. IN ALL, SOME 15 TO 20 MILES OF TUNNEL ARE SAID TO EXIST. IN 1928, A RAISE WAS DRIVEN FROM THE PIUTE ORE BODY TO THE SURFACE, AND VENTILATION EQUIPMENT PROVIDED AT THIS POINT.

THE 5 ORE BODIES WERE EXTENSIVELY STOPED, WITH RATHER TREMENDOUS CAVITIES LEFT IN THE BOWELS OF THE EARTH. ESTIMATED CAVITY VOLUMES ARE:

SOUTH ORE BODY:	2.0	MILLION CU. FEET.
CENTRAL:	17.0	MILLION CU. FEET.
NORTH:	192	MILLION CU. FEET.
712:	20.	MILLION CU. FEET.
PIUTE:	300	MILLION CU. FEET
TOTAL	531	MILLION CUBIC FEET.

IN MORE UNDERSTANDABLE FIGURES, THIS REPRESENTS A ROOM 1 SQUARE MILE IN AREA AND ABOUT 20 FEET HIGH. MUCH OF THIS SPACE MAY BE FILLED WITH WASTE ROCK, BUT IT IS EVIDENT FROM THESE FIGURES THAT A TREMENDOUS EXPOSURE OF ORES TO OXIDATIVE CONDITIONS DOES EXIST.

FORMER MINE EMPLOYEES REPORT THAT UNDERGROUND AREA HAD MANY DRIPS AND SEEPS FROM OVERHEAD. GROUND SURFACE VARIED FROM 400 TO 900 FEET ABOVE THE MAIN TUNNEL, THUS WATER DRIPS WERE RATHER CLOSELY ASSOCIATED WITH SNOW MELT AND SURFACE RUN-OFF. APPARENTLY WORKINGS WERE FAIRLY DRY IN LATE FALL AND EARLY WINTER.

PUMPS WERE REQUIRED TO KEEP LOWER LEVELS EXPOSED, AND CONTINUOUS PUMPING OF LARGE VOLUMES OF WATER IS REPORTED. THIS PUMPING WAS OF SUCH EXTREME IMPORTANCE THAT THE UTILITY COMPANY SUPPLYING THE MINE WAS FACED WITH A SEVERE COST PENALTY FOR EVEN SHORT INTERRUPTIONS OF POWER.

TWO VENTILATION FANS WERE PROVIDED, ONE AT THE MILL END OF THE TUNNEL AND THE OTHER AT THE PIUTE OR FAR END OF THE TUNNEL. VENTILATOR SHAFTS WERE SIMILAR IN NATURE, EACH STARTING SEVERAL HUNDRED FEET ABOVE THE TUNNEL AND ANGLING DOWN TO MEET THE MAIN TUNNEL SOME 300 FEET BACK FROM THE PORTAL. PIUTE WAS LOCATED SOME 400 FEET ABOVE THE MAIN TUNNEL WHILE THE MILL SITE WAS POSSIBLY 100 FEET ABOVE THE TUNNEL.

ABOVE DATA MAY BE USED TO GAIN A PICTURE OF WATER CONDITIONS IN THE MINE. IN THE FALL AND WINTER, SURFACE SUPPLY OF WATER DWINDLES AND WATER LEVEL IN MINE WORKINGS DROPS BELOW THE MILLSITE VENTILATOR OPENING. SEALING OF PORTAL WITH CLAY AND GRANITE ALLOWS A CONTINUED SEEPAGE FROM THE POOL IN THE MINE. MAIN TUNNEL AND ALL LOWER WORKINGS MAY BE CONSIDERED COMPLETELY FLOODED. LEAKAGE FROM MINE PORTAL IS DILUTED WITH SHALLOW SUB-SURFACE SPRING WATER AND CONCENTRATIONS OF CHEMICALS ARE NOT REPRESENTATIVE OF MAIN BODY OF WATER IN THE MINE.

IN THE SPRING, FISSURES AND SURFACE OPENINGS, SUCH AS ON THE CENTRAL AND PIUTE ORE BODIES, CONTRIBUTE SNOW MELT WATERS WHICH BRING UP THE LEVEL OF MINE WATER UNTIL OVERFLOW OCCURS AT THE MILL SITE VENTILATOR SHAFT. FIRST SPRING FLOW WILL BE WATER WHICH HAS BEEN IN CONTACT WITH ORE FOR SOME TIME, AND CHEMICALS SHOULD BE AT THE HIGHEST CONCENTRATION. ALSO INITIAL LEACHING OF SUB-SURFACE OXIDIZED ORES WILL CONTRIBUTE A MAXIMUM OF ACID SOLUBLE MINERALS. CONTINUED DILUTION WITH PERCOLATION WATERS WILL RESULT IN SOMEWHAT DIMINISHED CHEMICAL CONCENTRATIONS. AS SUMMER PROCEEDS, AND SNOW DISAPPEARS, SUPPLY OF WATER IS CUT OFF AND THE MINE POOL WILL EVENTUALLY DRAIN DOWN TO VENTILATOR SHAFT LEVEL, AND OUTFLOW WILL ESSENTIALLY CEASE.

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30. QUALITY OF MINE WATERS:

WATERS IN THE WALKER MINE AREA WERE SAMPLED ON JUNE 17 AND 25, 1957, WITH THE FOLLOWING RESULTS:

DATE	SAMPLE LOCATION	FLOW		COND.		APPEAR.	CU	ZN	SO ₄	A1	CLASSIFICATION
		CFS	PH	MMHO							
6-25	UPPER SPRINGS	1.0	7.6	107		CLEAR	.01	.02	0.0	0.00	EXCELLENT ✓
6-25	MINE TUNNEL	0.1	4.6	259		CLEAR	12	3.2	105	0.94	TOXIC
6-25	VENTILATOR SHAFT	0.5	3.7	328		CLEAR	22	5.5	125	3.1	TOXIC
6-25	WALKER CREEK- ABOVE MINE WASTE	0.5	7.8	96		CLEAR	.01	.02	0.0	0.00	EXCELLENT
6-25	WALKER CREEK- BELOW MINE WASTE	2.0	7.5	135		SLIGHT TURBID BLUE CAST	0.27	.12	37	0.00	TOXIC
6-25	L. GRIZZLY CRK. @ BROWNS CABIN	4.5	7.8	102		SLIGHT TURBID	0.32	.08	9.6	0.00	TOXIC ✓
6-17	INDIAN CREEK 1 MI. BELOW L. G. CRK.	30	7.1	113		CLEAR	0.05	.03	6.7	0.08	EXCELLENT

IT WILL BE NOTED THAT VENTILATOR SHAFT DISCHARGES THE MAJOR PORTION OF MINE WASTES, WITH THE HIGHEST CONCENTRATION OF COPPER, NAMELY 22 PPM. UNITED STATES PUBLIC HEALTH SERVICE LIMIT ON COPPER, DRINKING WATER STANDARDS, IS NOW 3 PPM, BUT COPPER AT 0.1 PPM MAY SERIOUSLY DAMAGE MICROORGANISMS IN WATERS. WATERS IN THE AREA MAY GENERALLY BE CLASSIFIED AS SOFT, WHICH IS UNFORTUNATE AS HARD WATERS TEND TO NEUTRALIZE THE TOXIC EFFECTS OF COPPER. COPPER CARBONATE (MALACHITE OR AZURITE) IS QUITE INSOLUBLE.

IT IS INTERESTING TO NOTE THE FORMATION OF THESE MINERALS BELOW THE WASTE ROCK PILE AT THE MINE, WHERE SPRING WATERS AND MINE WATERS COMBINE. THE COATING OF THESE BLUE MINERALS ON THE STREAM BOTTOM PROVIDES A STRIKING EFFECT.

SAMPLES OF AREA WATERS WERE AGAIN COLLECTED ON OCTOBER 5, 1957. AT THIS TIME THE VENTILATOR SHAFT FLOW HAD DRIED UP AND ONLY 5 TO 10 GPM WASTES WERE OBSERVED AT TUNNEL PORTAL. DATA FROM THESE SAMPLES WILL BE AVAILABLE AT A LATER DATE.

show little or no change from June conditions

TO PROVIDE A COMPLETE PICTURE OF MINE WATER QUALITY, PERIODIC SAMPLING, AT LEAST ON A MONTHLY BASIS, SHOULD BE MADE THROUGH ONE CALENDAR YEAR. SAMPLER SHOULD ESTIMATE FLOW FROM THE TUNNEL, VENTILATOR SHAFT, AND GRIZZLY CREEK AT THE TIME OF SAMPLING. THESE SAMPLES MAY BE OBTAINED BY LOCAL WARDENS AND TRANSMITTED TO THIS OFFICE FOR FURTHER HANDLING.

Insert & put

but

3D:

POSSIBLE CONTROL MEASURES

selection
for mine drainage

CONTROL MEASURES MUST BE AIMED AT MAINTAINING CONCENTRATIONS OF TOXIC MATERIALS BELOW THRESHOLD LEVEL OF DAMAGE TO AQUATIC LIFE. IN THE CASE OF COPPER MINES, THIS NORMALLY RESOLVES INTO CONTROL OF COPPER, ZINC, IRON AND ACID VALUES. CONTROL MEASURES MAY BE GROUPED INTO THREE GENERAL CATEGORIES:

- A) PREVENT OUTFLOW OF MINE WATER;
- B) MINIMIZE SOLUTION OF TOXIC MATERIALS;
- C) TREAT MINE OUTFLOW.

ITEM ¹A MAY BE REALIZED BY SEALING OFF EXITS AND PREVENTING ACCESS OF WATERS TO MINERAL DEPOSITS. NEITHER OF THESE SEEMS FEASIBLE IN THE WALKER MINE CASE, THE MAIN ROCK TUNNEL BEING INACCESSIBLE AT THE PRESENT TIME, AND WATERS ENTERING THE MINE THROUGH NUMEROUS FISSURES AND OPENINGS.

ITEM ²B IS USUALLY ACCOMPLISHED BY LIMITING AIR CONTACT AND PROVIDING A GAS-TIGHT WATER DRAIN SYSTEM. DUE TO THE TREMENDOUS UNDERGROUND WORKINGS, AND THE POSSIBILITY OF MYRIAD OPENINGS FOR ENTRANCE OF AERATED SURFACE WATERS, LIMITING OF AIR CONTACT DOES NOT APPEAR WORKABLE.

^C TREATMENT OF MINE WASTES THUS APPEARS TO BE THE ONLY FEASIBLE APPROACH. ECONOMIC RECOVERY OF COPPER IS NOT CURRENTLY POSSIBLE, AT MARKET PRICES FOR COPPER. IT MAY BE STATED THAT THE AGE-OLD RECOVERY OF COPPER BY IRON CONTACT LEAVES AN EFFLUENT LADEN WITH IRON AND ZINC, AND IS NOT ALWAYS A SATISFACTORY SOLUTION TO THE WATER POLLUTION PROBLEM.

ISOLATION OF MINE WATERS AND DISSIPATION OF TOXIC MATERIALS BY PERCOLATION, EVAPORATION, AND AIR OXIDATION APPEAR TO MERIT FURTHER STUDY IN THIS CASE. TASK WOULD APPEAR TO BE ACCOMPLISHED WITH MINIMUM OUTLAY THROUGH UTILIZATION OF AN OLD DIVERSION CHANNEL. THIS UNDERTAKING WOULD PRODUCE NO DIRECT BENEFITS TO MINE OWNERS, BUT WOULD RESTORE CONSIDERABLE RECREATION VALUES TO PLUMAS COUNTY.

CONSIDERING THE RESPONSIBILITY OF MINE OWNERS UNDER CALIFORNIA LAW, AND THE BENEFIT TO PLUMAS COUNTY RESULTING FROM RESTORATION OF LITTLE GRIZZLY CREEK TO A RECREATIONAL AREA, IT IS LOGICAL THAT THESE TWO COULD COOPERATIVELY ACT TO REMOVE TOXIC WASTES FROM LITTLE GRIZZLY. MINE OWNERS COULD PROVIDE FLUME OR PIPE TO CONVEY ACID WATERS SOME 1000 FEET TO THE CANAL, AND COUNTY COULD ASSUME YEARLY MAINTENANCE OF FACILITIES, USING THE FINE FUND ACCUMULATED FOR JUST SUCH PURPOSES.

SUPERVISOR HUMPHREY HAS INDICATED THE PLUMAS COUNTY BOARD WOULD LOOK FAVORABLY ON SUCH A PROGRAM. THE FINE FUND, WHICH MAY BE USED FOR SUCH PURPOSES, CURRENTLY SHOWS A TOTAL OF \$9000.00.

Walker Mine
4. TAILINGS AREA:

4A. DESCRIPTION: *of area*

TAILINGS FROM THE MILL WERE IMPOUNDED IN A NATURAL BASIN ABOUT 0.5 MILE BELOW THE MINE PORTAL. AREA IS A BROAD FAN COVERING SOME 100 ACRES, WITH TAILINGS DEPTH ESTIMATED AT 0 TO 20 FEET.

LITTLE GRIZZLY CREEK IS HELD AGAINST THE SOUTHWESTERN BOUNDARY OF THIS BASIN BY A LEVEE SOME 1/2 MILE IN LENGTH. LEVEE ALSO CONTAINS THE TAILINGS, EXCEPT FOR ONE MAJOR BREAK IN THE CENTRAL PORTION. WALKER CREEK SPREADS OUT ON THE WESTERN PORTION OF THE TAILINGS AND THEN COLLECTS TO SPILL OVER A RETAINING DAM LOCATED AGAINST THE NORTHERN HILLSIDE AND AT THE FAR WESTERN REACH OF THE TAILINGS AREA.

TAILINGS POND DAM CONSISTS OF A 10 FOOT HIGH CONCRETE WALL SOME 20 FEET ACROSS SURMOUNTED BY 3 FEET OF WOOD TIMBERS. ENTIRE STRUCTURE IS TILTED OUTWARD AND APPEARS IN DANGER OF COLLAPSING.

EFFORTS MADE IN 1952 TO REPAIR THE BREAK IN THE CENTRAL LEVEE WALL FAILED TO HOLD, AND RUN-OFF WATERS HAVE ERODED SEVERAL RAVINES IN THE TAILINGS AT THIS POINT. TROUT AND BEAVER EXIST BELOW THIS POINT, HOWEVER, INDICATING THAT SILT AND WASH WATER THEREFROM ARE NOT TOXIC TO AQUATIC LIFE. THUS PRIMARY POLLUTANT WOULD APPEAR TO BE TOXIC CHEMICALS CONTRIBUTED BY MINE WATERS.

MAJOR ADVERSE EFFECTS OF SILTATION WOULD APPEAR TO BE THE SMOTHERING OF TROUT EGGS AND BOTTOM LIFE, AND THE DESTRUCTION OF ADEQUATE COVER FOR FISH. BEAVER HAVE NOW DESERTED THE AREA, APPARENTLY UNABLE TO COPE WITH THE YEARLY SILTATION OF THEIR PONDS.

TO COMPLETE THE CHEMICAL BACKGROUND OF AREA WATERS, A HIGH SPOT WAS LOCATED ON THE TAILINGS BED, AND A SAMPLE COLLECTED SOME 12 INCHES UNDER THE SURFACE. SAMPLE WILL BE LEACHED AND THE FILTRATE ASSAYED FOR HEAVY METALS PLUS XANTHATES AND CYANIDE.

POTASSIUM XANTHATE IS A FLOTATION CHEMICAL, AND ALONG WITH CYANIDE AND LIME, WAS USED DURING THE OPERATION OF THE WALKER MINE MILL. XANTHATE IS TOXIC TO PLANKTON AT 0.01 PPM, BUT IS SUBJECT TO DECOMPOSITION UPON AGING. IT IS NOT EXPECTED TO FIND ANY OF THIS REAGENT IN THE TAILINGS. U.S.G.S. WILL ATTEMPT A COLORIMETRIC QUALITATIVE DETERMINATION FOR THIS MATERIAL.

ATTEMPTS TO ESTABLISH PLANT GROWTH, ON THIS MATERIAL, BY THE UNIVERSITY OF CALIFORNIA, FAILED, EVEN WITH FERTILIZATION. AN ANALYSIS OF SOLUBLE CHEMICALS MAY BE OF ASSISTANCE TO THE U.S. FOREST SERVICE IN ESTABLISHING A STABILIZING GROUND COVER ON THE TAILINGS AREA.

4B B OWNERSHIP: Tailings

MR. R. L. ALLEN, POST OFFICE BOX 347, PORTOLA, CURRENTLY CLAIMS TO OWN MINING CLAIMS COVERING THE ENTIRE TAILINGS AREA. HE STATES THAT AFTER SEVERAL YEARS EXPERIMENTATION, HE NOW HAS A PROCESS CAPABLE OF RECOVERING GOLD AND SILVER VALUES FROM THIS MATERIAL, AND PLANS TO SET UP OPERATIONS IN 1958. MR. ALLEN WAS INFORMED THAT, UNDER CALIFORNIA LAW, THE OWNER OF A PROPERTY WAS RESPONSIBLE FOR DISCHARGES THEREFROM. A COPY OF THE LAW AND DISCHARGE REPORT FORMS WERE LEFT WITH MR. ALLEN.

SURVEY OF RECORDS IN PLUMAS COURTHOUSE FAILED TO SHOW ALLEN AS OWNER ON CLAIMS, BUT IT IS INDICATED HE HAS LEASED CLAIMS FROM ROBERT R. BARRY. IN A DISCUSSION WITH R. P. WILSON, WILSON INDICATED THAT HE CONSIDERS THE TAILINGS AS HIS PROPERTY, AND THAT BARRY DOES NOT HAVE THE AUTHORITY TO LEASE A CLAIM THEREON.

CONSULTATION OF COUNTY RECORDS AGAIN REVEALED THAT BOTH BARRY AND WILSON HAVE CONSISTENTLY FILED SEPARATE ASSESSMENT WORK NOTICES ON WALKER MINE CLAIMS. SOME 300 OR MORE CLAIMS ARE LISTED, AND IT WAS PRESUMED THAT THE TAILINGS AREA IS INCLUDED AMONG THESE CLAIMS.

MR. GEORGE A. FISHER, IN CHARGE OF LAND USES, RANGE AND WILDLIFE SERVICE, PLUMAS NATIONAL FOREST, WAS CONSULTED. HE RECOGNIZES A LIMITED RESPONSIBILITY OF THE FOREST SERVICE IN CONTROLLING DISCHARGES FROM THE TAILINGS AREA. WASTES WERE APPARENTLY ORIGINALLY DEPOSITED HERE THROUGH A "USE PERMIT" ISSUED BY THE NATIONAL FOREST SERVICE. LAND SHOWS ON COUNTY ASSESSORS MAP AS BELONGING TO THE FOREST SERVICE.

IN THE ABSENCE OF ACTIVE UTILIZATION OF DEPOSITS, IT WOULD APPEAR THAT AREA JURISDICTION AND RESPONSIBILITY FOR CONTROL OF SILT DISCHARGE RESIDE WITH THE PLUMAS NATIONAL FOREST ADMINISTRATION.

40 C ^{possible} SILT CONTROL MEASURES:

IT WOULD APPEAR THAT SILT OUTFLOW MIGHT BE CONTROLLED BY CONSTRUCTION OF AN ADEQUATE DAM AT THE LOWER END OF THE POND, AND BY THOROUGH REPAIR OF LEVEE BREAKS WITH PROVISION FOR DISPOSAL OF STORM WATERS TO WALKER CREEK, OR PERHAPS SOUTHEASTERLY TO LITTLE GRIZZLY CREEK ABOVE THE TAILINGS AREA. INITIAL COST OF SUCH PROGRAM ESTIMATES AT \$30,000.00 WITH YEARLY MAINTENANCE COSTS AT PERHAPS 500 TO \$1,000. THIS METHOD WOULD INTERFERE WITH ANY ATTEMPT TO PROCESS TAILINGS.

ANOTHER POSSIBILITY, AS OUTLINED BY MR. FISHER, WOULD BE TO EMPLOY A BULL-DOZER AND CARRY-ALL TO EXCAVATE TAILINGS DOWN TO THE ORIGINAL SOIL, AND TO THEN REMOVE THE EXISTING DAM COMPLETELY. STABILIZATION OF STREAM BANKS WOULD REQUIRE ROCK RIP-RAP, PLANT COVER, OR CONCRETING TO PREVENT SLOUGHING OFF OF TAILINGS INTO WALKER CREEK. TAILINGS THEMSELVES WOULD SUPPLY MIX FOR CEMENTING, A SIMILAR TAILINGS MATERIAL NOW BEING USED FOR GROUTING OF WATER TRANSPORT TUNNELS.

SOLUTION OF THIS PROBLEM WOULD APPEAR TO REQUIRE A COOPERATIVE APPROACH BETWEEN THE FOREST SERVICE AND PLUMAS COUNTY.

5.

*Insert #5*PROGRAM FOR WALKER-MINE ~~CLEAN-UP~~*Solution*

RESTORATION OF LITTLE GRIZZLY CREEK AS A RECREATIONAL AREA, AND PROTECTION OF IRRIGATION AND RECREATIONAL WATER USES IN INDIAN VALLEY, REQUIRES ACTION ON TWO SEPARATE PROBLEMS.

A) CONTROL OF TOXIC MINE WASTES:

TOXIC MINE WASTE APPEARS TO BE THE PRIMARY AND MAJOR POLLUTANT AT THIS TIME. ABATEMENT SHOULD PROCEED ON SEVERAL FRONTS:

- A) ESTABLISH SAMPLING PROGRAM TO MORE FULLY ASCERTAIN EXTENT OF COPPER POLLUTION PROBLEM.
- B) PROCEED WITH REQUIREMENTS AND NEGOTIATIONS WITH CURRENT OWNERS OF MINE (ROBERT R. BARRY) TO DIVERT MINE WATERS TO IRRIGATION CANAL.
- C) MEET WITH PLUMAS COUNTY BOARD OF SUPERVISORS, AND THE NATIONAL FOREST SERVICE WHO OWN THE CANAL, TO ESTABLISH A CANAL AND DIVERSION MAINTENANCE SCHEDULE.

B) CONTROL OF SILT DISCHARGE:

PRIMARY PROBLEM HERE APPEARS TO BE THE ESTABLISHMENT OF AUTHORITIES AND LIABILITIES INVOLVED IN THE TAILINGS AREA. ATTORNEY-GENERAL'S OPINION WOULD SEEM TO BE REQUIRED TO ESTABLISH PRIMARY RESPONSIBILITY FOR AREA EITHER WITH FOREST SERVICE OR WITH CLAIM HOLDER; AND IF FOREST SERVICE HAS JURISDICTION, WHAT ARE ITS DUTIES AND OBLIGATIONS TOWARDS CLAIM HOLDERS?

REQUIREMENTS SHOULD BE ESTABLISHED UPON TAILINGS AREA, AND THE RESPONSIBLE PARTY, AS DESIGNATED BY ATTORNEY-GENERAL, BE SERVED THEREWITH. AS SEVERAL PARTIES BENEFIT FROM SILT CONTROL, AND CONTROL MAY PROVE RATHER COSTLY, JOINT DISCUSSIONS SHOULD BE HELD TOWARDS DEVELOPING COOPERATIVE CONTROL ACTION.

10-10-57

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