



United States v. E. K. LEHMANN & ASSOCIATES OF MONTANA, INC., ET AL.

161 IBLA 40

Decided March 16, 2004

Editor's Note: Ernest K. Lehmann & Assoc. of Montana et al. v. Ken Salazar Civ. No. 07-00762 (HHK) affd. March 16, 2009; 602 F. Supp 2d 146; appeal filed No. 09-5148 (D.C. Cir. Apr. 24, 2009), aff'd (May 24, 2010), 2010 WL 2203266



United States Department of the Interior
Office of Hearings and Appeals
Interior Board of Land Appeals
801 N. Quincy St., Suite 300
Arlington, VA 22203

UNITED STATES

v.

E. K. LEHMANN & ASSOCIATES OF MONTANA, INC., ET AL.

IBLA 99-348

Decided March 16, 2004

Appeal from a decision by Administrative Law Judge Harvey C. Sweitzer, declaring six lode mining claims null and void for failure to show the discovery of a valuable mineral deposit. MTM 84834.

Affirmed as modified.

1. Administrative Procedure: Administrative Review--Board of Land Appeals--Mining Claims: Contests--Rules of Practice: Appeals: Generally

After a hearing considering a mining claim contest complaint, the Board may review the decision of the administrative law judge to determine whether it is consistent with law and whether conclusions regarding the evidence are consistent with the facts of record. If not, the Board may exercise its de novo review authority to review and consider the evidence of record and issue a decision consistent with applicable law.

2. Mining Claims: Discovery: Generally--Mining Claims: Determination of Validity--Mining Claims: Lode Claims

To be valid, a mining claim must be supported by the discovery of a valuable mineral deposit within its boundaries. The existence of a discovery is a question of fact to be determined by the trier of fact. Cutoff grades may be relevant to a party's factual presentation in a mining contest hearing, but a cutoff grade minimum does not substitute for the statutory requirement of discovery as a matter of law.

3. Administrative Procedure: Administrative Review--Board of Land Appeals--Mining Claims: Contests--Rules of Practice: Appeals: Generally

In a mining contest, the Government establishes a prima facie case when a mineral examiner testifies that he has examined a claim and found the mineral values insufficient to support a finding of discovery. The determination of whether or not the Government has presented a prima facie case is to be made solely on the evidence adduced during the Government's case-in-chief. When the Government presents a prima facie case, the burden shifts to the contestee to rebut that case by a preponderance of the evidence. Where the issue is the validity of a mining claim, and not a patent, a contestee must preponderate on the matters placed at issue by the Government's case.

4. Mining Claims: Generally--Withdrawals and Reservations: Effect of--Public Records

The notation on public records of a request for withdrawal has a segregative effect on land contained within the boundaries of a previously located mining claim. While the notation does not preclude the taking of samples of pre-existing discoveries to demonstrate validity of the claims, it does prevent activity that constitutes further exploration to expose a valuable mineral deposit not exposed prior to segregation or withdrawal. A segregation does not grant a mining claimant a perpetual right to explore within the boundaries of its mining claims.

APPEARANCES: William L. MacBride, Jr., Esq., Helena, Montana, for appellants; Karen L. Dunnigan, Esq., Office of the Field Solicitor, Billings, Montana, for the Bureau of Land Management.

OPINION BY ADMINISTRATIVE JUDGE HEMMER

This case pertains to a mining contest complaint filed on behalf of the United States by the Bureau of Land Management (BLM), alleging that six lode mining claims on public lands in the Sweet Grass Hills of Liberty County, Montana, are invalid for lack of a discovery of a valuable mineral deposit. The six mining claims are located in an area named for Tootsie Creek which, with its drainages, branches through the East Butte area of the Sweet Grass Hills. This area consists of patented and public lands. Along with eight additional lode mining claims, the six mining claims are owned or controlled by E.K. Lehmann & Associates of Montana, Inc. (EK

Lehmann), Mount Royal Joint Venture (Mount Royal or MRJV), the King Mining Company, and the Jennifer Mining Company (collectively, contestees or appellants). (Govt. Ex. 3, Table 3 at 3 (claimants of record).)^{1/} BLM did not contest the validity of the eight additional mining claims and concedes that each of them contains within its boundaries a discovery of a valuable low-grade, disseminated gold and silver deposit. See Pre-Hearing Order, Stipulated Facts 1-3.

BLM presented the contest complaint in March and April 1998 at a hearing before Administrative Law Judge Harvey C. Sweitzer. On April 28, 1999, Judge Sweitzer issued a decision declaring the six subject mining claims “null and void for failure to discover a valuable mineral deposit.” (Apr. 28, 1999, Decision at 64.) Appellants, contestees in that proceeding, timely appealed.

I. Legal Background

The Mining Law of 1872, as amended, permits location of valuable mineral deposits on the public lands of the United States. See generally 30 U.S.C. §§ 21-47 (2000). The Mining Law permits location of lode claims along veins or lodes of “rock in place bearing gold, silver, * * * or other valuable deposits.” 30 U.S.C. § 23 (2000). The validity of a lode mining claim depends on the discovery of an exposure of a valuable mineral deposit in place within the boundaries of the claim. “[A]ll valuable mineral deposits in lands belonging to the United States * * * shall be free and open to exploration and purchase, and the lands in which they are found to occupation and purchase * * *.” 30 U.S.C. § 22 (2000).

The Supreme Court has confirmed this statutory requirement. Best v. Humboldt Placer Mining Co., 371 U.S. 334, 335 (1963); Cameron v. United States, 252 U.S. 450, 459 (1920); see also 30 U.S.C. § 29 (2000) (patenting process for valid mining claims); United States v. Clouser, 144 IBLA 110, 113 (1998); United States v. Williamson, 45 IBLA 264, 277-78, 87 I.D. 34, 41-42 (1980). The test of whether a mining claim is supported by a discovery is objective and is framed in terms of what a “prudent person” would do knowing all the facts. Assumptions regarding a prudent person are based on objective standards related to the nature of the mineral deposit disclosed on the claim, rather than attributes or circumstances of the claimant. United States v. Waters (On Reconsideration), 159 IBLA 248, 254 n.8 (2003); United States v. Oneida Perlite, 57 IBLA 167, 190, 88 I.D. 772, 785 (1981).

A discovery has been made when “minerals have been found and the evidence is of such a character that a person of ordinary prudence would be justified in the

^{1/} EK Lehmann is “agent and operator of Mount Royal.” (Answer to Contest Complaint at 2 ¶ 2.) As used herein, “Lehmann” refers to the individual and “EK Lehmann” to the corporation.

further expenditure of his labor and means, with a reasonable prospect of success, in developing a paying mine.” Castle v. Womble, 19 L.D. 455, 457 (1894). This test was approved by the Supreme Court in Chrisman v. Miller, 197 U.S. 313, 322 (1905). See also United States v. Clouser, 144 IBLA at 113. A mining claimant must show, as an objective matter and “as a present fact, considering historic price and cost factors and assuming that they will continue, there is a reasonable likelihood of success that a paying mine can be developed.” In re Pacific Coast Molybdenum, 75 IBLA 16, 29, 90 I.D. 352, 360 (1983).

The test of discovery has been considered to include a “marketability rule.” The Supreme Court adopted this refinement of the rules regarding discovery in United States v. Coleman, 390 U.S. 599, 600, 602-03 (1968), declaring that the discovery of a valuable mineral deposit requires a showing that the deposit is ultimately marketable at a profit. The “prudent-man test and the marketability test are not distinct standards, but are complementary in that the latter is a refinement of the former.” Id. at 603. Subsequent Board decisions have reconciled the notion of profitability articulated in Coleman with the lesser requirement of a “reasonable prospect of success” as adopted by the Supreme Court in Chrisman v. Miller, 197 U.S. at 322. Discovery requires a showing of a reasonable prospect that the deposit can be mined, removed, and marketed at a profit. United States v. New York Mines, Inc., 105 IBLA 171, 182, 95 I.D. 223, 229-30 (1989).

Determining that a prudent individual would be justified in attempting to develop a paying mine necessarily involves consideration of whether a mineral deposit has been exposed within the limits of a claim and, if so, whether the evidence is such that an individual would be justified in concluding that the mineral exposed exists in sufficient quantity and quality as to make expectations of its profitable extraction reasonable under the facts of record.

United States v. Bush, 157 IBLA 359, 362 (2003), citing Chrisman v. Miller, 197 U.S. at 322; Thomas v. Morton, 408 F. Supp. 1361, 1371-72 (D. Ariz. 1976), aff'd, 552 F.2d 871 (9th Cir. 1977); Converse v. Udall, 399 F.2d 616, 620-21 (9th Cir. 1968), cert. denied, 393 U.S. 1025 (1969).

In United States v. Clouser, the Board identified the nature of the costs and receipts that are to be considered in making a validity determination:

[A] mineral deposit will be considered valuable where there is a reasonable likelihood that the value of the deposit exceeds the costs of extracting, transporting, processing, and marketing it. See United States v. Coleman, 390 U.S. [at 600, 602-03]; In Re Pacific Coast Molybdenum Co., 75 IBLA [at 29, 90 I.D. at 360]. A deposit of

sufficient size and value need not be actually “blocked out.” See United States v. Hooker, 48 IBLA 22, 30 (1980); United States v. Pressentin, 71 I.D. 447, 451 (1964), affd, Pressentin v. Udall, No. 1194-65 (D.D.C. Mar. 19, 1969). Nor must the deposit be actually mined and milled at a profit or the profitability of mining and milling that deposit be guaranteed. See Barton v. Morton, 498 F.2d 288, 289, 291-92 (9th Cir.), cert. denied, 419 U.S. 1021 (1974); Barrows v. Hickel, 447 F.2d 80, 82 (9th Cir. 1971); United States v. Mannix, 50 IBLA 110, 117, 119 (1980); United States v. Hooker, [48 IBLA] at 29.

144 IBLA at 113.

Mining claims located on lands withdrawn from mineral entry at the time of location are null and void ab initio. William Dunn, 157 IBLA 354, 357 (2002); Tri-Star Holdings, Ltd., 153 IBLA 201, 203 (2000). Conversely, if land on which a mining claim is located is withdrawn or segregated from mineral entry after location, the government has the authority to determine the existence of valid rights within the land so withdrawn. “BLM may raise any applicable deficiency in the location, recordation, or maintenance of a mining claim so that the Department of the Interior may properly fulfill its duty to see that ‘valid claims [are] recognized, invalid ones eliminated, and the rights of the public preserved.’” Allen C. Kroeze, 153 IBLA 140, 144 (2000), citing Cameron v. United States, 252 U.S. at 460; see also United States v. Knoblock, 131 IBLA 48, 78, 101 I.D. 123, 139 (1994). “Until the United States surrenders the last vestiges of title by issuing patent to the ground, ‘it does have the power, after proper notice and upon adequate hearing, to determine whether the claim is valid, and if it be found invalid, to declare it null and void.’” Sigma M. Explorations, Inc., 145 IBLA 182, 191 (1998), quoting Best v. Humboldt Placer Mining Co., 371 U.S. at 337-38. When BLM contests the validity of a mining claim on lands later withdrawn from mineral entry, the evidence must show that a discovery existed within the boundaries of the claim both at the time of withdrawal and at the time of a hearing. United States v. Boucher, 147 IBLA 236, 242-43 (1999), citing Cameron v. United States, 252 U.S. at 456; Clear Gravel Enterprises v. Keil, 505 F.2d 180 (9th Cir. 1974); United States v. Feezor, 130 IBLA 146, 190 (1994); and United States v. Wirz, 89 IBLA 350, 352-53 (1985); see United States v. Lara, 67 IBLA 48, 53 (1982); United States v. Wichner, 35 IBLA 240, 243 (1978).

In a mining contest, the contestant bears the burden of making a prima facie case in support of its allegations that the contested claims are invalid. United States v. Boucher, 147 IBLA at 248-49. “The well-established rule is that the Government establishes a prima facie case when a mineral examiner testifies that he has examined a claim and found the mineral values insufficient to support a finding of discovery.” United States v. Dresselhaus, 81 IBLA 252, 257 (1984); Hallenbeck v. Kleppe,

590 F.2d 852, 859 (10th Cir. 1979). The determination of whether or not the Government has presented a prima facie case is to be made solely on the evidence adduced during the Government's case-in-chief. United States v. Miller, 138 IBLA 246, 269 (1997); United States v. Knoblock, 131 IBLA 48, 101 I.D. 123.

If a prima facie case is established, the burden shifts to the contestee (the mining claimant) to overcome that case by a preponderance of evidence.

Once a prima facie case is presented, the burden then shifts to the claimant and it is incumbent upon the claimant to present evidence which is sufficient to overcome the Government's case on the issues raised. United States v. Springer, 491 F.2d 239, 242 (9th Cir.), cert. denied, 419 U.S. 834 (1974); Foster v. Seaton, 271 F.2d 836 (D.C. Cir. 1959); Cactus Mines, Ltd., 79 IBLA 20 (1984); United States v. Rice, 73 IBLA 128 (1983).

United States v. Gillette, 104 IBLA 269, 274 (1988).

The Board has drawn a distinction between the burden placed on a claimant seeking a patent to the land on which his or her claim is located and that placed on a claimant defending against a Government initiated contest. A claimant seeking patented title to public land must prove all elements of validity. In the latter case, the burden is on a claimant to defend only against the elements raised in the Government's prima facie case. "[M]atters not placed in issue by the Government case need not be disproved by the claimant." United States v. Dresselhaus, 81 IBLA at 257, citing United States v. Cactus Mines Limited, 79 IBLA 20.

II. Factual Background

A. Relevant Mining Claims

This contest arose after a segregation from mineral entry of public land in the Sweet Grass Hills, East Butte area. The 14 relevant mining claims are located within the segregated area in secs. 19, 20, and 30, T. 36 N., R. 5 E., Principal Meridian, Montana. BLM contested the validity of six claims: the Patricia 14, Patricia 15, and Patricia 16 lode mining claims (P 14, P 15, P 16), the East Butte No. 6 lode claim (EB 6), and the Royal East No. 1 (RE 1) and Royal East No. 2 (RE 2) lode claims. BLM conceded the validity of eight additional claims, which are identified as the Patricia 7, Patricia 8, Patricia 18, Patricia 20 (P 7, P 8, P 18, and P 20), the Butte 47, East Butte No. 4 (EB 4), East Butte No. 5 (EB 5), and Butte 48 claims.

Maps show that the eight lode claims in the western portion of the claim block, in secs. 19 and 30, are primarily stand-alone claims (the Patricia claims and RE 1).

(Contestees' Ex. G, Figure (Fig.) 4.3.)^{2/} The other claims substantially overlap each other and two existing patented claims entitled the Malvina No. 4963 (Malvina) and to a lesser extent the MS3380 No. 1 Placer (No. 1 Placer) patents.^{3/} *Id.* Generally speaking, an exposure on overlapping mining claims belongs to the senior claim, depending on the date of location. *E.g.*, Marilyn Dutton Hansen, 79 IBLA 214, 216 (1984). Because of their configuration, only tiny portions of the EB 6 and RE 2 contested mining claims are relevant to the validity determination here.

The contested mining claims were located between 1983 and 1991. The P 14 (MMC 108501), P 15 (MMC 108502), and P 16 (MMC 108503) lode mining claims were located on November 10, 1983, by Contract Surveyors, Ltd. (Contest Complaint ¶ 3; Contest Answer ¶ 3.) They are located in the E½ of sec. 30. *Id.* On January 3, 1984, Contract Surveyors, Ltd., conveyed these three mining claims to EK Lehmann by quit claim deed. *Id.*

On July 21, 1989, Cominco American Resources Inc. (Cominco) located the EB 6 (MMC 170766) lode mining claim in Lots 4 and 5 of sec. 20. On November 30, 1989, Cominco conveyed that mining claim to Mount Royal. On December 17, 1991, EK Lehmann located the RE 1 (MMC 188489) and RE 2 (MMC 188490) lode mining claims in the SE1/4 sec. 19.

The eight mining claims in the Tootsie Creek area conceded by BLM to be valid were located between 1983 and 1989. The P 7 (MMC 108494), P 8 (MMC 108495), P 18 (MMC 108505), and P 20 (MMC 108507) claims were located on the same date as the P 14-16 claims, on November 10, 1983. The Butte 47 (MMC 119609) and Butte 48 (MMC 119610) lode claims were located on May 23, 1985. The EB 4 (MMC 170764) and EB 5 (MMC 170765) were located on July 21, 1989, on the same date as the EB 6 claim. (Serial Register Pages, Apr. 16, 2003; see also Notices of Location, Govt. Ex. 3, Attachment (Att.) 7.)

To assist the reader in visualizing the mining claims and lands in dispute we attach contestees' Figure 4.3 hereto. Considering this figure, the time line for location of these claims is apparent. All the Patricia claims at issue in this block were located in 1983. *See*, generally, Govt. Ex. 3, Att. 6. EK Lehmann located additional Patricia claims through 1985. By 1985, EK Lehmann had located the Patricia 2-8 claims in sec. 19, and the Patricia 10-20 mining claims in sec. 30. However, at that time, maps in the record indicate that "Clement/Shellman" had located the Tootsie

^{2/} Contestees' exhibits presented for purposes of the hearing will be identified as Contestees' Ex. and the contestant's exhibits will be identified as Govt. Ex.

^{3/} These patents were issued in the late 19th century. (Govt. Ex. 3 at 8.) They are currently within the control of appellants. (Contestees' Ex. G, Fig. 3.1.)

Group claims, Tootsie mining claims 1-8, in a line roughly parallel to the Malvina patent, running through parts of secs. 19, 20, 29, and 30. See Sept. 25, 1985, letter from EK Lehmann to BLM and Map 1 attached thereto.

The Butte 47 and 48 claims, located in 1985, are quadrangles with a common corner, each overlying in part the Malvina patented claim. To its northeast, the Butte 47 claim also overlaps in part the No. 1 Placer patent. These mining claims were located to the northwest of the Clement/Shellman Tootsie Group mining claims.

The EB 4, EB 5, and EB 6 claims were located next in 1989. The EB 4 claim covered in part the Malvina claim, and overlapped the Butte 47 and P 20 mining claims, and the Tootsie claims as well.^{4/} The EB 6 mining claim had a western boundary common with the eastern boundary of the EB 4 claim and stretched to the east, overlapping the entire northern majority of the Butte 48 claim. The EB 5 mining claim is a quadrangle, the southern boundary of which constitutes the northern boundary of the EB 6 mining claim; it overlaps the eastern edge of the Butte 47 claim and a small triangle of the Malvina patent. It appears that the EB claims were located to cover an area of land in sec. 20 that was outside the No. 1 Placer and Malvina patents. Because EB 4 and Butte 48 and the Malvina patent pre-date EB 6, the contested portion of the EB 6 claim is a triangular sliver on its northern boundary between the Butte 48 and EB 5 claims.

The RE 1 and 2 claims were located last in 1991, in areas covered in part by the prior Tootsie Group. The RE 1 mining claim is north of the P 18 claim, east of the P 8 claim, and overlaps a small triangle of the Malvina patent. The RE 2 mining claim lies due east of the RE 1 claim and north of the P 20. The RE 2 overlaps the Malvina patent, and the EB 4 and the Butte 47 mining claims. The Malvina patent bifurcates the RE 2 claim.

The parties agree that the land on which the mining claims were located has been subject to mineral exploration since the 19th century. The exploration focused along branches of Tootsie Creek that flowed generally through what later was located as the P 7 and 8 claims, the RE 1 and RE 2 claims, the Malvina patent, the EB 4, the Butte 47 and Butte 48 claims, and to a lesser extent the western third of the EB 5 and EB 6 claims. See Figure 4.3. Exploration also occurred along a southern branch of Tootsie Creek that flows through the P 18 and 20 claims.

The parties' competing mineral reports describe exploration conducted by EK Lehmann, Mount Royal and various joint venture partners. (Contestees' Ex. G,

^{4/} The history of the Tootsie claims is not clear from the record, though EK Lehmann indicates that it consolidated interests in mining claims in the region. (Contestees' Ex. G, Figs. 3.1 and 4.1.)

“Report on the Geology and Mineral Development of the Tootsie Creek Gold Deposit, Sweet Grass Hills, Liberty County, Montana, Ernest K. Lehmann (Lehmann), CPG #583, Dec. 1996” (Lehmann Rpt.) at 24-26; Govt. Ex. 3, “Tootsie Creek Validity Report for Mining Claims by James R. Gruber, Jr., Montana State Office, 1995” (Gruber Rpt.) at 9-15.) The contestees’ exploration activity predating 1991 is depicted on both parties’ maps. (Contestees’ Ex. G, Fig. 9.4; Govt. Ex. 3, Plate 3.)

The parties agree that in 1983, EK Lehmann took 288 stream sediment samples in a large area encompassing approximately 55 square miles within the Sweet Grass Hills, including, inter alia, the East Butte Tootsie Creek area. (Lehmann Rpt. at 25, 43, and Table 6.1; Gruber Rpt. at 9-20.) In addition, the 1983 sampling program took 26 soil samples, three rock-chip samples, and 17 rock samples for comparison. (Gruber Rpt. at 9.)

The result of this “reconnaissance” sampling program (Lehmann Rpt. at 43), was the identification of an anomaly for gold, lead and silver in the upper Tootsie Creek area. (Gruber Rpt. at 10.) “As a result of this program, MRJV decided to acquire lands in all of the potential target areas” comprising West, East, and Middle Buttes. (Lehmann Rpt. at 43.) “MRJV established land positions on all three buttes in 1983-84.” Id.

In 1984 Mount Royal and Santa Fe Pacific Mining Company (Santa Fe) entered into the Gold Buttes Joint Venture. (Lehmann Rpt. at 43.) In 1985, Gold Buttes carried out geologic mapping and took soil and rock geochemical samples in the general area of Tootsie Creek. Id.; see also Gruber Rpt. at 10. This exploration program included 441 geochemical samples (“about 300 soil samples and 140 rock samples” (Lehmann Rpt. at 43)), in a 250 by 250 foot grid at Tootsie Creek. (Gruber Rpt. at 10; Lehmann Rpt. at 43.)

This information was used by Manhattan Minerals Corp. in 1992 to compile a geologic map on a topographic basis. (Gruber Rpt. at Fig. 8.) The contour map shows gold values above 100 parts per billion (ppb). A concentration of such values appears in the West Tootsie Creek Contact Area running through the Contact Zone Anomaly within the boundaries of what now comprises the P 7 and 8 claims, the RE 1 and 2 claims, the Butte 47 and 48 claims, and the EB 5 and 6 claims. Another concentration of anomalous values appears in the “Lower Tootsie Creek Area” on what is now within the P 18 and 20 claims. Smaller isolated contours above 100 ppb appear in what may be the P 14-16 claims, but correlation with any particular claim is unclear. The map contains handwritten arrows to the “Main Gold Zone” within the P 7 and 8 claims, the “East Gold Zone” near the Malvina Patent, the EB 5, EB 6, and the Butte 47 and 48 claims, and the “South Fork Gold Zone” in the P 18 and 20 and the EB 4 claims.

In 1986, the Gold Buttes Joint Venture submitted a plan of operations (MT-068-86-PO2), which was approved by BLM for mining exploration in the Sweet Grass Hills. (Lehmann Rpt. at 25.) This plan of operations covered only the P 7, P 8, RE 1, and RE 2 mining claims within sec. 19. (Sept. 20, 1985, letter to BLM from EK Lehmann and attached Map 2; Feb. 10, 1986, letter from Santa Fe to BLM (“Gold Buttes Project located in T36N, R5E, Sec. 19, Liberty County, MT”).) See The Blackfeet Tribe, 103 IBLA 228 (1988). In this 1986 plan, Gold Buttes undertook a “second campaign of soil sampling” and trenching on a 125 by 125 foot grid. (Lehmann Rpt. at 43, Fig. 9.4; see also Figs. 9.1, 9.2, and 9.3.) According to BLM this exploration constituted 119,000 linear feet of surveying in the “Main, East and South Fork Gold Zones.” (Gruber Rpt. at 11, citing Fig. 8.) BLM states that the joint venture took 339 soil samples and 994 samples of exposed bedrock in roadcuts in the Main and East Gold zones. Id. at 11 and Plate 1.

BLM describes the three gold zones as follows. The Main Gold Zone “is located in the southeast quarter of Section 19, T36N, R5E, mostly on a steep, grass- and small tree-covered slope rising to the north of the Tootsie Creek drainage.” (Gruber Rpt. at 11, citing Plate 1. According to BLM’s analysis, the Main Gold Zone corresponds to the P 7 and 8 mining claims. Id. at 11. The East Gold Zone is located in the SW1/4 sec. 20. Id. at 12. Plate 1 shows the deposits in the East Gold Zone as located on the Malvina patent, the Butte 47 and Butte 48 claims, as well as the sliver of land at issue in the EB 6 claim. Plate 4 of the Gruber Report also shows a “defined ore deposit” under each of these claims. The South Fork Zone is located in the NE1/4 sec. 20. Id. at 12, Fig. 8, Plate 1. It covers land in the EB 4 claim, the P 18 and 20 claims, and the southeast corner of the RE 2 mining claim. Id. at Plate 1.

In 1987, the Gold Buttes Joint Venture undertook a drilling project based upon information derived to date and, presumably, on the 1986 plan of operations.^{5/} (Gruber Rpt. at 13, Lehmann Rpt. at 43-44.) The Lehmann Report states that drilling took place in the Main and East gold zones and that four additional “Winkie” drill holes were drilled “in the South Fork.” (Lehmann Rpt. at 43-44.)^{6/} According to Lehmann’s exhibits, the 1987 drill holes are described as follows: the TCM-1 hole drilled on the surface in the RE 1 claim and laterally beneath the surface contours of the RE 2 mining claim, id. at Fig. 9.5; the TCM 2 (2A) drilled in the P 7 claim,^{7/} id. at Fig. 9.5; the TSF 1, 2, 3, and 4 drill holes in the P 18 and 20 mining claims, id. at Fig. 9.6; the TCE 3, 4, and 5 drill holes either in the Malvina claim or drilled from the

^{5/} We find no map regarding approved drill holes for the 1986 plan of operations.

^{6/} Winkie drills are portable, lightweight, diamond drills which can be transported by helicopter, but “the cores are very small diameter, depth penetration is limited and recoveries are frequently unsatisfactory.” Id. at 44 n.7.

^{7/} Gruber says the “TCM-2 was lost and twinned with TCM-2a.” (Gruber Rpt. at 13.)

surface of the EB 5 claim laterally beneath the surface contours of the Malvina claim, id. at Fig. 9.7; and the TCE 1 and 2 drill holes both drilled in the same place on the surface but laterally through the subsurface beneath the EB 6 mining claim to the subsurface below the Butte 48 (TCE 2), and less vertically through the subsurface below the EB 6 and Butte 48 into the subsurface of the Malvina patent (TCE 1), id. See also Gruber Rpt. at 13-14.

Subsequently, Santa Fe exploration geologist B.J. Suchomel prepared a memorandum regarding the “Gold Buttes JV Summary of Core Drilling.” (Suchomel memorandum.) He found mineralization at East Butte to be a disappointment.

The strongest gold mineralization occurs in TSF-1 (20 ft. averaging 0.054 opt Au [ounces per ton gold]). This zone is characterized by limonitic augite syenite with local sericitization and silicification and 3-5% disseminate pyrite. * * * The mineralization quickly weakens with depth, yielding to fresh syenite. The geochemistry of holes TSF-3 and TSF-4 is particularly disappointing in that abundant strong gold mineralization is present in outcrop, subcrop, and float in the area. Identical mineral assemblages occur in the core, but lack the strength and frequency noted in many surface samples.

SUMMARY/DISCUSSION

Sampling of float and limited available outcrop and subcrop combined with grid soil sampling delineated a potential broad area of near-ore to ore grade gold mineralization in the south fork of Tootsie Creek. Four Winkie core holes were positioned and drilled * * *. No significant structural elements were revealed by the drilling and, with the exception of 20 ft. in TSF-1, only weakly to moderately anomalous gold was detected.

* * * * *

The conclusion is drawn that small, widely-spaced, gold-bearing quartz-flourite-pyrite veins or zones of veinlets in augite syenite and syenite porphyry are responsible for most of the anomalies detected in float and outcrop. Some strongly anomalous gold occurs in moderately fractured, limonitic syenite with no trace of q-f-p, but generally poor structural preparation in the syenites precludes widespread strong gold mineralization. * * * Lack of structural preparation is the key limiting factor at Tootsie Creek. Gold is certainly present in a significant quantity overall, but the possibility of a viable deposit of 5 million tons or greater is virtually eliminated. Sufficient untested ground remains

that smaller deposits might be found. However, there is no impelling evidence to suggest the presence of a better structurally prepared area anywhere at Tootsie Creek.

(Govt. Ex. 8, Nov. 23, 1987, Suchomel memorandum at 2-3.) At the end of the 1987 field season, Santa Fe terminated the joint venture and extricated itself from the project. (Gruber Rpt. at 14; Lehmann Rpt. at 44.) Santa Fe “relinquished its interests” to Mount Royal. Id. at 26.

In 1988, Mount Royal entered into a “new joint venture” (CARI) with Cominco. (Lehmann Rpt. at 44; Gruber Rpt. at 14.) During 1988, CARI collected and analyzed 39 rock samples and re-assayed samples collected by Santa Fe. Id. CARI proposed amendments to the mining plan of operations approved for the Gold Buttes Joint Venture (MT-068-86-PO2), seeking approval to drill nine holes on public lands and to construct 3000 feet of road trenches (Lehmann Rpt. at 26), within the South Tootsie Creek location identified as the South Fork Gold Zone and covered by the P 18 and 20 mining claims.

According to BLM, the primary interest of the CARI joint venture was the South Fork Gold Zone. (Gruber Rpt. at 14.) In fact, the 1989 amendment to operating plan MT-068-86-P02, considered in Environmental Assessment (EA) MT068-9-16, focused on roads in the Main and East Gold Zones and drilling in the South Gold Zones. While the maps in the EA do not contain an overlay with the mining claims at issue, a comparison of contour lines on those maps with those in the Lehmann Report reveals that the drilling plan corresponded exclusively to the East and South Fork Gold Zones and did not include exploration in any form within the P 14, 15, or 16 mining claims. (EA MT068-9-16, Fig. 3.) Figure 1 of the EA specifies a project that was in the far upper northwest portion of sec. 30. See also Fig. 2. Of 11 drill holes proposed, two were in the Malvina patent, and the remaining nine extended along the east side of, and further east of, the South Fork of Tootsie Creek to a point in the P 18 claim. Some of these drill hole locations were in the EB 4 mining claim and what was to become the RE 2 mining claim in 1991. Compare EA MT068-9-16, Fig. 3, with Lehmann Rpt. Fig. 4.3.

BLM approved the amended plan and EA. See Original Chippewa Cree Tribe, IBLA 89-561, Order dated Jan. 23, 1992 (appeal dismissed). Under the approved amended plan, the new joint venture constructed 2125 feet of road trenches and drilled three reverse circulation drill holes. (Lehmann Rpt. at 26.) These were the EBR 1 drill hole in the EB 4 mining claim, the EBR 2 drill hole in the P 20 mining claim, and the EBR 3 drill hole drilled in the EB 4 claim and laterally into the RE 2 mining claim. Id. at Fig. 9.8. All of the surface locations were in the South Fork Gold Zone. (Gruber Rpt. Fig. 8; Lehmann Rpt. Fig. 9.4.) From the three drill holes CARI collected 180 samples at 5 foot intervals. (Gruber Rpt. at 14-15.)

Cominco terminated the joint venture in 1989. (Gruber Rpt. at 15.) Lehmann reports that Cominco withdrew from the project, failing to drill the additional six drill holes approved by BLM, “[c]iting budgetary overruns and drilling problems.” (Lehmann Rpt. at 26, 44.)

In 1991, Mount Royal entered into another joint venture with Manhattan Minerals (U.S.), Ltd. (Gruber Rpt. at 15; Lehmann Rpt. at 26, 44.) Manhattan Minerals conducted field work in 1991, collecting 49 float, talus, and outcrop samples. (Gruber Rpt. at 15; see also Lehmann Rpt. at 26.) According to EK Lehmann, at this point in 1991 some claims were re-staked, id.; this reference may include the RE 1 and RE 2 mining claims located that year.

On February 25, 1992, Manhattan Minerals submitted an exploration proposal for the Royal East Joint Venture to build 28,000 feet of road for 39 in-road drill sites to expose bedrock for sampling. (Gruber Rpt. at 15.) On March 23, 1992, BLM sent EK Lehmann a set of “questions, mitigation measures or deficiencies that require your commitment or response.” (Govt. Ex. 23, Mar. 23, 1992, Letter from BLM to Brian Gavin, EK Lehmann, and attachment.) BLM stated that on receipt of a response, it would prepare an EA for what it designated as MTM-78411 “and release it for public comment.” Id.

On April 4, 1992, Manhattan Minerals sent a “Response to March 23rd, Completeness Review #1 on Manhattan Minerals Proposed Plan of Operations -- Royal East Project, Liberty County, Montana.” (Govt. Ex. 23, Apr. 4, 1992, Letter from Manhattan Minerals to BLM, and attached Addendum 1992-1, Response to Completeness Review #1.) In the addendum, Manhattan Minerals explained:

The Royal East joint-venture property is in an early stage of exploration. Although both Santa Fe and Cominco ended their exploration efforts with drilling, vast areas of anomalous gold concentrations defined by a comprehensive gold-in-soil survey have never been adequately examined. Manhattan’s initial road/trench program is designed to obtain the required surface data needed to assess the property as a whole, and to determine the best locations/ suitability for subsequent drilling.

Id. at 1 (emphasis added). The addendum projected that road/trench sampling would take under three months, and that drilling would be conducted after 3 months of interpreting initial data. The addendum attaches a map dated April 6, 1992, with 38 potential drilling locations and planned road construction. This 1992 proposal includes proposed drilling in the P 15 and 16 mining claims. Compare BLM Ex. 23 (Addendum 1992-1, Response to Completeness Review #1, Map) with Gruber Rpt.

Plate 1; see also Lehmann Rpt., Fig. 8.2. Figure 8.2 shows two drill holes in each of the P 15 and 16 mining claims, but none in the P 14 mining claim.

BLM issued a draft EA for the exploration project on July 7, 1992. While the various exploration projects described above had generated legal challenges before, the 1992 proposed EA was the catalyst for the set of events that led to this appeal. The draft EA generated considerable public opposition such that BLM undertook to prepare a full environmental impact statement (EIS) under the National Environmental Policy Act (NEPA).^{8/} A draft EIS was published in January of 1993. This is documented in an internal BLM memorandum prepared in 1993:

BLM released [the EA] on July 7, 1992[,] which identified significant impacts from the proposed exploration on culturally sensitive Native American resources, namely the Sweet Grass Hills. The hills are a place of traditional religious activity and are considered sacred by tribes throughout Montana, including the Blackfeet, Creek, Gros Ventre, Salish, Kootenai, and Assiniboine. The tribes feel that there can be no mitigation of the development of this sacred area; the only acceptable alternative is no action. Based on the EA, the BLM withheld approval of the plan of operations pending the completion and approval of an EIS.

(Contestees' Ex. B, June 8, 1993, BLM Memorandum.)

The memorandum went on to explain the public concern with exploration in a region which could only support "heap leaching." The Lehmann Report describes this recently developed mining methodology and technique for obtaining silver and gold from "[l]arge low-grade deposits" utilizing open pit methods. (Lehmann Rpt. at 55.)^{2/} The report explains that the miners drill ore and waste rock, hauling the latter to "waste dumps and the ore to a processing area." Id.

[Heap leaching] may be carried out on either run-of-mine ore (ore that is not further crushed or otherwise prepared prior to treatment) or the ore may be crushed and * * * mixed with lime and/or cement and then agglomerated. The run-of-mine ore or the crushed and agglomerated

^{8/} Section 102(2)(C) of NEPA, 42 U.S.C. § 4332(2)(C) (2000), requires an agency to prepare an EIS for a major federal action significantly affecting the quality of the human environment. The purpose of an EA is to permit the agency to make an informed determination as to whether the environmental impacts are insignificant or are so significant as to require preparation of an EIS.

^{2/} The process, including its affect on water resources, is described in some detail by the Board in Kendall's Concerned Area Residents, 129 IBLA 130, 133-134 (1994).

product are stacked on an impervious pad. A dilute cyanide solution is then sprinkled on the heap. The cyanide solution reacts with the gold and silver forming soluble gold and silver cyanide compounds. This “pregnant” solution is collected on an impervious membrane at the bottom of the heap, piped to a treatment facility where gold and silver are precipitated from the solution using either zinc dust or carbon. The precipitated gold-silver mixture is then melted and cast into ingots of “doré” metal. This doré metal is further refined, often offsite, to separate gold and silver and to remove impurities. The cyanide solution is recovered, regenerated and recirculated.

Id. (footnote omitted).

The 1993 BLM memorandum discussed public opposition to heap leaching mining in the Tootsie Creek area.

The Hills are the sole source of ground and surface water recharge for the surrounding area. Anticipating mineral discovery and the prospect of full-scale cyanide heap leaching, local residents are concerned about the profound effects seepage into area aquifers could have on ranching and farming, to say nothing about individual health. The Liberty County Conservation District has just commissioned the Sweetgrass Hills East Butte Groundwater Study. * * * Petitions are being circulated throughout the state requesting a stay or withdrawal of mining exploration in the Hills until the study is completed.

* * * * *

A third major component of this issue involves the requirements of the National Historic Preservation Act (NHPA), [16 U.S.C. §§ 470-470w-6], which regulates actions that affect traditional cultural and religious practices. [^{10/}] The Sweet Grass Hills proposal falls within the NHPA mandate, which stipulates that under these circumstances the BLM must consult with the Advisory Council on Historic Preservation (ACHP) regarding adverse impacts on the historic area. * * *

^{10/} Section 106, 16 U.S.C. § 470(f) (2000), of the NHPA provides: “The head of any * * * department or independent agency having authority to license any undertaking shall, prior to the * * * issuance of any license, * * * take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or is eligible for inclusion in the National Register.” See Legal and Safety Employer Research Inc., 154 IBLA 167, 190-91 (2001); see also Sharon Long, 83 IBLA 304, 312-15 (1983).

(Contestees' Ex. B, June 8, 1993, BLM Memorandum at 1-2.)

The memorandum explained the public response to the Draft EIS.

BLM issued the DEIS in February, 1993. Although groups such as the Mineral Policy Center have criticized it to the point of ridicule, noting its length and content are nearly identical to that of the EA, the BLM feels the DEIS is adequate. * * * The timeline for resolving this issue is flexible. The earliest the plan of operations could be approved would be September; in fact, State director Bob Lawton assured the applicant that this would be the case. With careful handling, the approval could be delayed many months or even years.

This mining proposal is uncommon, if not unique, in that it has little or no support from the community.

Id. at 2. The memorandum discussed the fact that the Federal Land Policy and Management Act (FLPMA), 43 U.S.C. § 1732(b) (2000), prohibits unnecessary or undue degradation of public lands, but that regulations implementing that provision defined that term as impacts greater than those brought about by a prudent operator. Id. at 2; see 43 CFR Subpart 3809; 3809.0-5(k) (1999). The memorandum noted that exploration, or a potential heap leach operation, is unlikely to violate that test. The memorandum went on to describe political opposition to the proposal and to discuss the potential for a negotiated settlement.

Options for achieving this include: strengthen the FLPMA regulations, particularly the [unnecessary or undue] degradation standards; ^{11/} withdraw the land from mineral activity, either legislatively or administratively; attempt to buy out the private owners, and either contest or buy out other claims in the Hills, of which there are a few; or, work out some sort of land swap or exchange of mineral rights or trade of leases for tax write-offs, or some other creative alternative. There may be other courses of action, but these are the options which are receiving various degrees of consideration.

Clearly, the idea of a creative solution is most appealing. It may also be the least difficult to accomplish. * * * Ernest Lehmann and the tribes have shown a definite willingness to consider creative options. These discussions, which are mainly possible because the Hills are not

^{11/} BLM has subsequently amended 43 CFR Subpart 3809 in two rulemakings. See 65 Fed. Reg. 69998 (Nov. 21, 2000); 66 Fed. Reg. 54834 (Oct. 30, 2001). We refer here to the Subpart 3809 regulations in effect before Nov. 21, 2000.

particularly rich in mineral deposits, have not progressed because of the unwillingness of Montana BLM representatives to consider the non-mining alternatives.

(Contestees' Ex. B, June 8, 1993, BLM Memorandum at 3.)

On August 3, 1993, BLM segregated subject to valid existing rights 19,685 acres of public land "within the Sweet Grass Hills Area of Critical Environmental Concern" in Liberty and Toole Counties, Montana. 58 Fed. Reg. 41289, 41290. The stated purpose was to protect species habitat, areas of importance to Native Americans, and aquifers which provide potable water to the region. Section 204(b) of FLPMA, 43 U.S.C. § 1714(b) (2000), permits the Secretary to publish applications for withdrawals in the Federal Register, for a final decision to implement the withdrawal or reject the application within two years of the date of publication in the Federal Register.^{12/} The FLPMA process for achieving such a segregation in general and in particular relating to the segregation of the Sweet Grass Hills is discussed in Mount Royal Joint Venture, 144 IBLA 277, 280-81 (1998).

By letter dated August 9, 1993, BLM advised Lehmann and Manhattan Minerals that the segregation had occurred. It stated that during the 2-year period in which the segregation would be effective, BLM would "[reassess] long-term management options for the Sweet Grass Hills through preparation of an amendment to the West HiLine Resource Management Plan (RMP)." (Contestees' Ex. I; Gruber Rpt. Att. 4, Aug. 9, 1993, BLM letter re: "Processing the Royal East Joint Venture Exploration Plan of Operation, Liberty County, Montana.") FLPMA section 202, 43 U.S.C. § 1712 (2000), requires the Secretary to develop, maintain and revise comprehensive land use plans for the public lands. The West HiLine RMP was the land use plan covering the relevant lands in Liberty County.

BLM advised Lehmann and Manhattan Minerals that it was suspending consideration of the exploration plan of operations, and that it would undertake validity examinations to identify valid existing rights within the mining claims.

As part of interim management during RMP preparation BLM is hereby suspending processing of Manhattan Minerals' exploration Plan of Operations MTM-78411. This includes suspending preparation of the final [EIS] and suspending project-specific consultation with interested parties under Section 106 of the [NHPA]. In addition, the BLM will be

^{12/} BLM extended the 2-year period of the segregation for an additional 2 years at 60 Fed. Reg. 38852-53 (July 28, 1995), *inter alia*, "to preserve the status quo for the above described lands which are either located within or border the Sweet Grass Hills [ACEC]" pending potential Congressional action.

examining the affected unpatented mining claims in your project area to determine their validity. Long-term management formulated during the RMP amendment process, along with claim validity information, will then be factored into the permitting process and used by BLM to reach a final decision on your proposed exploration plan.

(Contestees' Ex. I; Gruber Rpt. Att. 4.)

In September 1993, BLM contacted EK Lehmann by telephone and in writing to discuss the impending validity examination. (Gruber Rpt. Att. 5, Sept. 21, 1993, Letter from BLM to EK Lehmann.) BLM asked EK Lehmann to provide any information about the subject 14 mining claims which might "confirm the existence of the discovery of a valuable mineral deposit." *Id.* at 1-2, citing BLM Manual Handbook Section 3891.22D. The parties agree that EK Lehmann provided considerable information regarding the previous exploration of the claims. (Gruber Rpt. at 1; Contestees' Ex. C ("EKL info to be returned – J. Gruber, 11/6/93").)

BLM conducted its own "reconnaissance work" during the fall of 1993 and spring of 1994, to verify data or obtain new information. (Gruber Rpt. at 1.) BLM conducted a field examination in June 1994, during which time Lehmann and various participants from EK Lehmann were present. *Id.* at 1 and photograph 1. In addition, BLM took various samples during the field examination with Lehmann, and took an additional 30 samples of rock for analysis and comparison with EK Lehmann's information. (Gruber Rpt. at 20, Plate 3, photographs, Table 5 (assay results).) BLM proceeded to conduct its validity examination during 1994 and 1995.
^{13/}

On September 15, 1995, BLM concluded the mineral examination, the result of which is found in the Gruber Report. (Govt. Exs. 3 and 12.) The Report received technical approval by Roger Haskins on October 31, 1995, and the Area Manager on November 2, 1995. As a result of the validity examination, BLM concluded that six of the 14 mining claims did not contain a valid discovery: the EB 6, RE 1, RE 2, and the P 14, 15, and 16 mining claims. See Fig. 4.3 hereto. Gruber concluded that only the eight claims he found to be valid contained mineral levels above "cutoff grade," or a grade of ore which, considering mining costs, would produce income.

Using geologic inference, based on supportable data and acceptable

^{13/} On Aug. 3 and 4, 1995, Mount Royal located the Jennifer 1, Jennifer 2, P 5, and P 6 lode mining claims in sec. 19, and the P 12 and P 13 lode mining claims in sec. 30. On Oct. 4, 1995, BLM issued a decision concluding that all six claims were null and void ab initio, because they lay within lands segregated from mineral location and entry by the 1993 and 1995 segregations. Mount Royal appealed and the Board affirmed BLM's decision. Mount Royal Joint Venture, 144 IBLA at 281.

grade control, the reserve base, which includes both measured and indicated resources, was computed using a weighted average grade of the combined tonnage for the minable deposits within the claim group. From the reserve base and the expected combined market value for gold and silver at both the date of the mineral examination and segregation decision an economic evaluation of the selected mining scenario was performed. Due to the short life of the mining operation a cash flow/internal rate of return analysis was determined to be unnecessary. Combining capital and operating costs, the average unit cost of extraction and ore cutoff grade were determined. Within the ore deposit(s), the cutoff grade was then applied to each mining claim.

(Gruber Rpt. Summary, Conclusions, and Recommendations at 2.) He concluded that there was no valuable mineral deposit depicted by an exposure above cutoff grade on the six contested mining claims and, therefore, that they did not contain a discovery.

BLM submitted the contest complaint and answer to the Hearings Division of the Office of Hearings and Appeals on March 6, 1996. The contest complaint was premised on the conclusion of the Gruber Report at Table 1 (claims containing a discovery) and Table 2 (claims subject to contest). Gruber amended the report in March 1998 to reflect appropriate project costs and commodity prices for the period covering the April 1998 date of hearing. (Govt. Ex. 12.)

At the same time BLM conducted the validity examination, it prepared an EIS for amendments to the RMP with respect to the Sweet Grass Hills. Confusing matters considerably, in April 1996 BLM concluded a “Final Sweet Grass Hills Amendment and [EIS]” as amendments to the relevant portions of the RMP. (Contestees’ Ex. D.) EK Lehmann’s attorneys received this on May 23, 1996. Figure 2 of this report shows the EB 4 and Butte 48 mining claims to be invalid while the RE 2 and EB 6 are shown as valid. *Id.* Though neither party has submitted it into the record, the Sweet Grass Hills RMP Amendment dated January 30, 1997, apparently corrected this error and reflected BLM’s view of the validity of the various mining claims. (Govt. Ex. 24, Feb. 6, 1997, Letter from BLM to contestees’ attorney at 2.)

After processing the Sweet Grass Hills RMP Amendment and while the contest action was pending, BLM reopened consideration of the suspended Royal East Project plan of operations, MTM-78411. *Id.* BLM explained the status of its consideration and set out four options for the Royal East Joint Venture to consider:

Six out of the 14 claims involved in the project are not valid and are involved in a contest action, and the federal minerals in the project area are segregated from operation of the Mining Law.

On August 9, 1993, BLM advised the joint venture that it was suspending processing of the Plan of Operations, including suspending preparation of the final EIS and consultation under Section 106 of the [NHPA]. This suspension was to be in effect during the period BLM examined the involved mining claims for validity and amended the [RMP] to formulate long-term management for the Sweet Grass Hills.

With completion of the mining claim validity examination and signing of the Record of Decision for the Sweet Grass Hills RMP Amendment on January 30, 1997, the BLM has completed the tasks necessary to continue processing the Plan of Operations. Therefore, BLM is lifting the suspension of August 9, 1993, and will continue processing the Plan of Operations in cooperation with the Montana Department of Environmental Quality.

However, before we proceed further it is necessary that we get your input regarding what Plan of Operations to consider. As noted, BLM does not recognize any valid existing rights on six of the unpatented mining claims in the original Plan of Operations. * * * [T]here are four approaches open at this time regarding the Plan of Operations.

Option 1) Request that BLM continue processing the original proposed Plan of Operations. This will most certainly lead to rejection of those portions of the exploration plan on lands where BLM has not identified any valid existing rights. This in turn could cause the entire plan to be unworkable and rejected in its current form.

Option 2) Submit a modified proposed Plan of Operations for exploration only on those lands where BLM has identified valid existing rights. Reasonable access construction (but not exploration) could be proposed to occur on the closed lands.

Option 3) Wait until discussions have been completed regarding Mr. Lehmann relinquishing his valid claims through purchase, exchange or conservation easement, as discussed in the RMP Amendment.

Option 4) Wait until the contest action is resolved before deciding on any specific exploration plan you would like BLM to process.

(Govt. Ex. 24, Feb. 6, 1997, Letter from BLM to contestees' attorneys at 2-3.)

EK Lehmann appealed the letter to the Director of the Montana State Office, BLM. BLM issued a decision stating that "BLM cannot process the Plan of Operation

in its present form.” (Contestees’ Ex. Q, May 2, 1997, Decision at 2.) BLM stated that “until pending challenges to the segregation order, the withdrawal decision, and the mineral contest action are resolved, the BLM can only analyze proposals on those eight mining claims with valid existing rights.” *Id.* The referenced “pending challenges” were those at issue in the contest and also in IBLA 99-77, decided in 1998. Mount Royal Joint Venture, 144 IBLA at 277. BLM requested within 30 days EK Lehmann’s “intent to modify Plan of Operation MTM 78411 or * * * desire to discuss reasonable options.” *Id.* EK Lehmann appealed the May 2, 1997, BLM decision to this Board. The Board affirmed BLM’s decision in Mount Royal Joint Venture, 153 IBLA 90 (2000).

B. The Contest

On October 20, 1997, contestees submitted a document entitled “Motion for Partial Summary Judgment” with regard to the EB 6 and RE 2 mining claims, alleging that BLM’s validity report verified the validity of the two claims. Contestees cited the Gruber Report, Plates 1, 2, 3, and 6, and page 29, and noted, correctly, that it identified “gold zones” crossing portions of both the disputed sliver of the EB 6 mining claim and the southeastern corner of the RE 2 mining claim. *See* Gruber Rpt. Plates 1-3, 5A-B, and 6; Exs. 1-2 to Contestees’ Brief in Support of Summary Judgment, Oct. 20, 1997. Contestees pointed out that Plates 4-6 demonstrate the various gold zones and that Gruber states that “[o]re is present in 6 deposits in 3 gold zones. Diagrams and calculations used to estimate ore reserves are shown in [Att.] 16.” (Gruber Rpt. at 29, Att. 16; Exs. 3-4 to Contestees’ Brief in Support of Summary Judgment, Oct. 20, 1997.) Contestees argued that this evidence would make it impossible for BLM to demonstrate that the RE 2 and EB 6 mining claims are invalid.

Opposing the motion, BLM argued that contestees misunderstood the Gruber Report and its diagrams and calculations. (Nov. 10, 1997, Contestant’s Brief in Opposition to Contestees’ Motion for Partial Summary Judgment at 5-7.) BLM stated that the only cutoff grade exposures on the EB 6 and RE 2 mining claims occurred on those portions of the claims which overlapped a senior claim: the Butte 48 in the case of the EB 6 mining claim and the EB 4 in the case of the RE 2 mining claim.

Even though the RE #2 and EB #6 claims each contain one in-place physical exposure of mineralized rock at or above the established cutoff grade, the exposure is shared with a senior claim. No other exposure on the RE #2 and EB #6 claims is at or above cutoff grade. * * * [O]nly one of two overlapping claims sharing a common discovery location contains ore reserves for the purpose of satisfying the test of discovery, and the senior location is the valid claim.

Id. at 7, citing Belk v. Meagher, 104 U.S. 279, 284 (1881).

Contestees responded that portions of both the RE 2 and EB 6 claims which did not overlap senior claims contained above cutoff grade exposures. (Nov. 25, 1997, Contestees' Reply Brief at 2-3.) Specifically, they argued that sample number 260110 on the RE 2 mining claim contained 2388 ppb of gold, above BLM's cutoff grade. *Id.* at 3; Contestees' Reply Brief Ex. 6 ("1989 Drill Road Rock Samples (CARI)"). They stated that BLM's Plate 7 ignored this rock chip channel sample. They asserted as well that drill hole TCE 2 "traversed the disputed sliver of land occupied exclusively by claim EB #6" and that sample TCE 2 150-155 contained a gold assay value above cutoff grade. (Contestees' Reply Brief at 3, citing Gruber Rpt. Plate 4, attached as Ex. 9, and Ex. 8 (June 20, 1990, Barringer Laboratories Inc. Report to EK Lehmann regarding drill hole TCE 2); *see also* Nov. 24, 1997, Lehmann Affidavit at ¶¶ 8-10 and attachments.) They also cited a handwritten sample identified by Gruber at TCE 2 230-235 as above BLM's cutoff grade. *Id.* Contestees went on to argue that BLM's requirement of an above cutoff grade exposure violated the law of discovery. (Contestees' Reply Brief at 3-8.)

Judge Sweitzer denied the Motion for Partial Summary Judgment. He accepted BLM's argument that the exposures above cutoff grade were also on senior mining claims, and contrary statements in Lehmann's Affidavit as evidence of a disputed issue of fact. (Jan. 7, 1998, Order at 2.) He also concluded:

While relevant precedents do not definitely hold that the requirement of an exposure of valuable mineral mandates at least a cutoff grade exposure, they strongly suggest such a mandate. *See Cactus Mines Ltd.*, 79 IBLA [at 32 (concurring opinion)]; *United States v. Dresselhaus*, 81 IBLA 252, 267-68 (1984); *cf. United States v. Mavros*, 122 IBLA 297, 313 (1992) * * *.

(Jan. 7, 1998, Order at 2.) He found, consequently, that "the law does require an exposure of at least cutoff grade mineralization on each claim." *Id.*

The parties submitted pre-hearing briefs on March 20, 1998. Thereafter, Judge Sweitzer conducted a 5-day hearing from March 30 through April 3, 1998.

The parties generally agreed that East Butte contains disseminated, low-grade gold deposits that could be developed only by heap leaching. (Pre-Hearing Order, Stipulated Fact 6.) Likewise, they agreed as to the general geology of the region. They agreed that the gold concentrated principally in three (Main, East, and South Fork) gold zones. Their disagreement lay in the conclusion of what a prudent person would do with the information available. BLM contended that a prudent miner would only mine in the three gold zones where gold was most concentrated, and that the values found outside those zones were so low and the deposits contained so much sulfide that a prudent miner would not invest resources. Contestees argued that the

incremental return on investment in mining the three gold zones identified by Gruber would well justify investment in the remainder of a larger mine incorporating the area of all 14 mining claims, and that the additional investment would produce an economy of scale that would further reduce the per ounce cost of recovery.

The Government's evidence consisted of the validity reports, various exhibits cited above, and the testimony of Gruber and Haskins regarding their conclusions and analysis as presented in the mineral evaluation. The Government also presented the testimony of Richard Marshall, a mineral economist with the U.S. Forest Service, who testified regarding gold and silver prices. (Transcript at (Tr.) 383.) The contestees presented evidence in the form of the Lehmann Report, Lehmann's testimony, and that of several mineral experts. Specifically, John Soma, a registered professional engineer testified regarding the manner of development of mining plans and objected to Gruber's mineral examination. (Tr. 754, 767.) Soma objected to Gruber's mine development plans as overestimating the pit slope within the South Fork Gold Zone, and also testified that Gruber's mining equipment and labor cost estimates were too high. (Tr. 772, 777.) David Abbott, geologist, testified for contestees regarding the use of sampling and against use by Gruber of Circular 831 prepared by the United States Geological Survey (USGS). (Tr. 813, 822.)

In its prima facie case, the Government presented written and testimonial evidence regarding the Government's validity examination. Gruber set forth a description of the regional geology, testifying that the Sweet Grass Hills form a southwest-northeast trending group of five "intrusive-cored" buttes which formed from doming of sedimentary rock by the intrusion of igneous bodies. (Gruber Rpt. at 6-7, Fig. 4.) Gruber cited recent work (Lopez, 1994) describing the igneous intrusions as "stocks" or "stockworks" which contained radiating dikes and sills reaching up to several hundred feet in thickness. *Id.* at 7.

With respect to the Tootsie Creek area, Gruber explains that the intrusive rocks consist of "two main phases: an early fine grained equigranular augite syenite and a later porphyry syenite which may have either augite or hornblende as the dominant mafic material." *Id.* The sedimentary formations form a domed roof to the igneous intrusions. Within the roof are dikes and sills and thermal contact metamorphism, displayed most prominently in the Madison Limestone which abuts the intrusives. *Id.*

Gold-bearing carbonate solution breccia can be traced within and parallel to the Madison Limestone structure. * * * This secondary feature is thought to represent infilling along a concentric fracture or fault zone created by uplifting. Presumably syenitic magma and hydrothermal fluids invaded the fault zone and these fluids formed silicified limestone breccia and deposited disseminated metals, including gold and silver.

Id. at 8. In addition, Gruber describes typical karst development formations which are present in “complex distribution”; Gruber reports that their mineralization is not well understood. Id. at 7-8. Figure 7 of the Gruber Report depicts these formations and shows two lines of solution breccia running from sec. 19 through sec. 20 into sec. 29. It also shows an area of “syenite-hosted quartz-calcite-flourite pyrite stockwork” in the area identified as the South Fork Gold Zone, in the northeast corner of sec. 20, spilling in small part into the corners where secs. 19, 20, and 29 come together. See also Fig. 8. Critical to his analysis, Gruber states that the entire area of Tootsie Creek contains a thin veneer of talus deposit from the “later, more resistant, porphyritic syenite intrusions” which migrated downslope; he states that this talus layer confounds interpretation of geological and geochemical data. Id. at 8.

Gruber describes the development of each particular gold zone. With respect to the Main Gold Zone, he states:

Peralkaline syenitic intrusive rocks associated with the main intrusive masses composing East Butte invaded and tilted Mission Canyon limestone in the Main Gold Zone. The intrusive phases are closely related in composition and time and likely represent a relatively dry, passively-emplaced magma, as evidenced by a general lack of hydraulic fracturing, shattering, and brecciation, and little example of forceful emplacement such as marginal brecciation, stoping, or abundant xenoliths. Limestone was recrystallized adjacent to intrusive rocks. Build-up of volatiles and interacting meteoric waters resulted in the formation of a hydrothermal cell that circulated fluids through fractures in stages, producing weak to moderate sericite-quartz-pyrite-kaolinite alteration and depositing weakly concentrated gold and silver and minor base metals. Slightly later, fluorine-rich fluids deposited flourite-calcite-pyrite-quartz in localized fractures, minor fault zones, and as wholesale replacement of limestone. Highly variable amounts of gold and silver may have accompanied fluorite mineralization locally. Gold likely occurs as auriferous pyrite and with limonite in oxidized fractures. Although limonite is common in mineralized fractures and zones, the general abundance of relatively fresh pyrite, particularly in stronger-mineralized zones near the bottom of the steep slope indicates that oxidation is not well-developed at depth at Tootsie Creek.

(Gruber Rpt. at 11-12 (emphasis added).)

According to Gruber, rock samples and trenching data show mineralization in the “flourite-silica mineralization within the marble, and sericite-quartz-pyrite altered zones in the intrusives.” Id. at 13. “Most mineralization is in augite syenite” and a great deal is “evident in the marble.” Id. Gruber describes the “best intercepts,”

ranging from .013 to .039 ounces per ton (opt), in the drill holes at a depth of 20 to over 30 feet. Id. The area exhibits “fluorite-silica mineralization within the carbonates and sericite-quartz pyrite mineralization in the intrusives. * * * Syenite and syenite porphyry are the predominant host rocks.” Id. at 25. Gruber testified that a “shear zone” is dominant in the Main Gold Zone, shown by indications of a fault gouge dipping 60 degrees east. (Tr. 120-123.) He testified that the outcrop and trench data showed values that “are confined and significantly higher than, than any other gold values in the areas, and there appears to be a trend that, along this shear zone that you can pick up in the trench sampling to the north that was conducted by the Claimant.” Id. at 122.

Gruber reports that the development of the East Gold Zone was “similar to the Main Gold Zone in overall geology and timing of events. Intrusives and later hydrothermal fluids encountered a more permeable and possibly more reactive section of limestone in the East Gold Zone, resulting in more intense and extensive alteration and mineralization in the carbonate rocks.” (Gruber Rpt. at 12.) Gruber concludes that this zone, “like the Main Gold Zone shows a great deal of massive fluorite and silica mineralization in the marble near the intrusive contact. Best gold values in the surface appear in marble breccias and in augite syenite.” Id. at 13. The “best intercepts range” from .041 to .146 opt from trenching and drilling, at 40-85 feet. Id. Gruber testified that the East Gold Zone was made up of a well-defined carbonate strataform structure of “vuggy marble” also known as “solution breccia.” (Tr. 124-28.) According to Gruber, the structure “has mineral values within that particular strata that can be identified both in terms of, of length, width, and depth.” Id. at 124, citing Gruber Rpt. Plate 5B.

The South Fork Gold Zone is located in the northeast quarter of sec. 20 “along a scree and tree covered ridge and saddle southeast of the Mt. Royal summit.” (Gruber Rpt. at 12.) Gruber identifies a gold (Au-in-soil) anomaly centered on the ridge and identified by a subtle color anomaly “located at or near the contact between the Mt. Royal syenite porphyry mass and the large body of syenite to the east. Mineralization is likely associated with fault and/or fracture zones along the contact.” Id. According to Gruber, the anomaly is weak with the best intercepts ranging from .029 to .054 opt in the drill holes, and .029 to .146 opt in rock chip samples. Id. at 13-14. Gruber testified regarding his conclusions that the South Fork Gold Zone presented a “stockwork structure” of intersecting faults around which high gold values concentrated. (Tr. 131-132.) He stated that “stockworks provided a more readily available area for * * * high-grade mineralization.” Id. at 133.

In discussing the general structure of the deposit, Gruber testified:

[T]he approximate location of the, the contact between the intrusives and the carbonate, if you * * * began in, on the * * * north side of the

Patricia 7 Claim, you can see that the, the trend of that contact as it continues to the east and roughly goes through the middle of the Malvina patented Claim, and, in fact, has, has been identified beyond and to the, to the east of the * * * Malvina Claim. * * * [T]hat represents a, a structure and a, a target area for evaluating minerals.

Also, there's a, the solution breccia, which is considered a fracture, fracture-filled area in the carbonate rock. * * * [I]t's to the north [of] the contact that I just identified, and roughly parallels that contact from the area just north of the Patricia 7 Claim.

(Tr. 136.) However, Gruber testified that the mineral values found were "low and spotty [and] discontinuous" and that, compared to other analogous gold deposits, the mineral grades are significantly less because the other deposits had ore that was higher in oxidation value. (Tr. 138-39.)

The issue of oxidation of the mineral deposit was the central aspect of Gruber's analysis. He testified that the value of the mineral deposit at Tootsie Creek would depend on the extent of oxidation of the resource, which bears a link to structural preparation. See Tr. 39-40, 139. Gruber testified that based on his review of drill hole data and recovery rates from cyanide leach tests on igneous and carbonate rocks in the Tootsie Creek area, oxidation was a "controlling factor on obtaining high gold recoveries." Id. at 87; see also at 60-87. Gruber testified that this conclusion was consistent with the experience at the existing Zortman and Landusky heap leach mines owned by Pegasus Gold, Inc. Gruber noted that Pegasus mined only oxidized zones in the case of those mines, which extended to 800 feet. Id. at 91-92. Likewise, Gruber testified about the Kendall mine, where only the oxide zones were mined and the sulfide zones were bypassed. Id. at 93.

Gruber testified that oxidation was poorly developed in the area, and that the heavy concentration of pyrites in drill hole data showed the presence of sulfides, not oxidation, at depths generally below 20 feet. (Tr. 88-90.) Gruber testified, id. at 91, that recovery would "drop off at a significant but undetermined rate" in the sulfide zones, which were confirmed at depth by drill hole data. Gruber explained drill hole data showing oxidation at the uppermost levels in all drill holes, with the deepest oxidation in drill holes TSF 2 and TCE 2, in the South Fork and East Gold Zones, respectively. (Govt. Ex. 6.) These showed oxidation from above 5340 feet above sea level to the approximately 5500 foot surface in both cases. The TCM 2 and 2A drill holes in the Main Gold zone showed a narrower band of oxidation. Id. Gruber testified that the prudent miner could only justify a selective pattern of mining in the three gold zones where oxidation and associated gold values were highest. (Tr. 91.)

Gruber based these conclusions on data collected by the various joint venture exploration programs. He found the data to be “within the expected range of accuracy.” (Gruber Rpt. at 16; see also Tr. 48.) He considered samples taken from bedrock in trenches, drill core data, and outcrop data. Id. at 49. However, Gruber excluded “high-grade outcrop samples at suspected points of mineralization, composite grab samples in abandoned prospect pits, float samples, and subcrop samples” and soil samples because “none [is] representative rock data to be used for ‘discovery’ purposes.” Id. at 50-51, 53; Gruber Rpt. at 17. ^{14/} In addition to employing extensive data provided by EK Lehmann, BLM conducted its own sampling, including at two sites requested by EK Lehman. Id. at 20.

Gruber described his method for evaluating the Tootsie Creek deposit. See Tr. 142. The “following ore parameters need to be examined in order to evaluate the mineral deposit: 1) intensity and extent of mineralization; 2) oxidation of auriferous rock and leachability of gold and silver; and 3) structural setting and control of high grade metal localization.” (Gruber Rpt. at 23.) Considering these factors, Gruber concluded that “[e]ach unpatented mining claim contains a physical exposure of in-place mineralized rock - a prerequisite for satisfying the ‘test of discovery.’” Id. However, he explained his view that such exposures did not justify a person of ordinary prudence in developing gold on all of the mining claims.

[T]he representative grade of a low grade/large volume bulk gold deposit cannot be defined without reasonably close lateral sample coverage that can be verified at depth. In addition, the type of low-grade gold that is present in the Tootsie Creek area cannot be economically extracted by conventional milling methods and needs to have undergone sufficient oxidation to be amendable to cyanide leaching technology. Finally, structural preparation (i.e., stockworks, shears, brecciation, etc.) that provided conduits to localize high grade metals needs to be identified [to] define the geometry of the project.

(Gruber Rpt. at 23 (emphasis added).)

Gruber determined “the Identified Resource Subset Reserve Base,” as set forth in USGS Circular 831 to define the “geometry and extent of the mineral deposits within the claimant’s property.” (Gruber Rpt. at 25.) USGS Circular 831 defines “identified resources” as

[r]esources whose location, grade, quality, and quantity are known or

^{14/} Gruber testified that float samples would, most notably, consist of rock that has been eroded from an outcrop, or scree or talus, whereas subcrop would exist downslope from an outcrop. (Tr. 51.)

estimated from specific geologic evidence. *Identified resources* include economic, marginally economic, and subeconomic components. To reflect varying degrees of geologic certainty, these economic divisions can be subdivided into *measured*, *indicated*, and *inferred*.

(Govt. Ex. 9, USGS Circular 831, “Principles of the mineral resource classification system of the U.S. Bureau of Mines and the U.S. Geological Survey,” 1976, at 1-2.) See Vanderbilt Gold Corp., 126 IBLA 72, 77-81 (1993) (discussion of various resource and reserve classifications).

According to the Circular, “measured reserves” are those where “quantity is computed from dimensions revealed in outcrops, trenches, workings or drill holes; grade and (or) quality is computed from the results of detailed sampling. The sites for inspection, sampling, and measurement are spaced so closely and the geologic character is so well defined that size, shape, depth, and mineral content of the resource are well established.” Id. at 2. “Indicated reserves” are those where quality and quantity “are computed from information similar” to that used for measured reserves but where measurement sites are “farther apart or are otherwise less adequately spaced.” The degree of assurance is “high enough to assume continuity between points of observation.” Id. “Inferred reserves” are “estimates based on an assumed continuity beyond measured and (or) indicated resources, for which there is geologic evidence.” Id. The “reserve base” is that part of indicated reserves that includes measured and indicated reserves. Id. It is the “part of an identified resource that meets specified minimum physical and chemical criteria related to current mining and production practices, including those for grade, quality, thickness, and depth.” It “may encompass * * * resources that have a reasonable potential for becoming economically available within planning horizons beyond those that assume proven technology and current economics” and include subeconomic resources. Id.

Gruber testified that he followed the design plans for the Zortman and Landusky Mines in order to determine identified reserves. See Govt. Ex. 4, “Design of the Geologic Program at the Zortman and Landusky Mines, Little Rocky Mountains, Montana,” Enders and Rogers, 1983 (Enders/Rogers Report); Tr. 146. Enders and Rogers identified 400-foot diameter circles around drill holes from which they could “make reasonable decisions within a data set.” Id.^{15/} Gruber proceeded to indicate identified resources as 400-foot diameter circles around each of the reported drill holes. (Tr. 147-148; Govt. Ex. 10.) Exhibit 10 shows these circular patterns focused

^{15/} In explaining the “exploration and development drilling” plan of the Zortman and Landusky properties, Enders and Rogers stated that exploration holes “are drilled on 120-meter (400-foot) centers for target definition and on 60-meter (200-foot) centers within target areas.” (Govt. Ex. 4, Enders/Rogers Report at 4.) The report explains that “[d]evelopment holes are drilled on a maximum spacing of 30 m (100 ft).” Id.

around drill holes at the East, South Fork and Main Gold Zones, and around drill hole TCM 1, crossing between the RE 1 and RE 2 mining claims. Gruber explained:

[M]y initial approach was to glean from the geologic design at the Zortman Mine the maximum areas of influence around drill holes for what are considered, or what are thought to be areas where conclusions can be drawn about making geologic and mineral decisions. Its identified resources, * * * are areas whose location, grade, quantity, and quality are known or estimated from specific geologic evidence.

So, for the disseminated deposits, and the fact that establishing an equivalency between surface samples [and] down-hole data, in my opinion these were logical areas to begin in defining mineral deposits that eventually lead to ore deposits. * * * Circular 831 specifies that in order to carry a resource into an ore reserve it has to be done using reasonable degrees of certainty in arriving at that conclusion, and that if, you follow their definitions [and] classification system you'll note that resources can be broken * * * out into different categories, but identified resources are * * * a requisite in arriving at ore, and because of the need to have reasonable degrees of certainty before you can start making more refined decisions.

(Tr. 149-50; see also at 150-151.)

Gruber testified that once he established resource zones shown as overlapping green arcs identified on Exhibit 10, he could “conclude that there are trends associated with mineralization within these identified resources,” allowing him to “use geologic inference to extend beyond the area of the arcs.” (Tr. 152.) He depicted such an inference in the Main, East, and South Fork Gold Zones by drawing an area of “reserve base.” (Govt. Ex. 10.) The reserve base colored in pink on Exhibit 10 is defined there as “the part of the Identified Resource that (a) meets the criteria for current mining and production practices, i.e., grade, quality (leachability), thickness, & depth and (b) is used to define the geometry and extent of a mineral deposit.” *Id.*; Tr. 173 (“reserve base * * * meets the criteria for current mining and production practices”). ^{16/}

^{16/} Gruber stated that he first determined “Identified Reserves, that part of the resource that meets minimum criteria related to current mining and production practices that could be economically extracted at the time of determination.” (Gruber Rpt. at 24-25.) He stated that the subset Reserve Base would be used to define the geometry and extent of the mineral deposits; from this “an evaluation of the economics of extraction, processing and marketing gold and silver within the deposit

(continued . . .)

Gruber testified that he calculated the reserve base by “combining * * * the tonnage from the various deposits [and] weighting the average,” concluding that the “reserve base totaled 604,915 short tons averaging .042 ounces per ton gold with a silver to gold ratio of 5-to-1.” (Tr. 176.) His report states in short tons reserve bases for each of the Main, East and South Fork Gold Zones; they were combined to achieve the 604,915 short ton total. (Gruber Rpt. at 25-29.) With respect to the Main Gold Zone, the report states:

In-place mineralized rock has been exposed on all claims within the Main Gold Zone (claims Patricia 7 & 8 and Royal East 1 & 2). The general abundance of relatively fresh pyrite, particularly in the stronger-mineralized area near the bottom of the steep slope (close to the creek) indicates that oxidation is probably not well developed at depth (Suchomel, 1987). Intense high grade mineralization, noted in surface samples, along the shear-fracture has been verified at depth in drill holes TCM-2 & 2A (Plate 4). Average gold and silver values exceed 1000 ppb (0.03 opt) and 8000 ppb (0.23 opt), respectively, where these drill holes intercept the shear-fracture. Drillers’ logs indicate limonite staining exists and oxidation is present within the shear-fracture. Leachability is confirmed by cyanide bottle-rol tests that indicate gold recovery rates of 45 percent where the drill hole intercepts the structure at 110 feet depth. Based on these tests, the author interprets this depth to represent a sulfide/oxide transition zone. Oxidation (i.e., recovery) is expected to be greater in mineralized rock closer to the surface.

Based on the ore parameters and the above evaluation criteria, Identified Resources in the reserve base category total 104,042 short tons with an average Au content of 0.031 opt (1053 ppb) and an average ratio of Ag:Au [silver:gold] approximating 8:1. These resources are present in two narrow-width (less than 30 ft. each) zones within the previously discussed shear-fracture for a mapped distance of 500 feet and a depth of 110 feet. The reserve base is blocked out into 5 separate parcels. Grade and volume were calculated using the half-distance from known points method (Attachment 1).

(Gruber Rpt. at 25-26.)

^{16/} (. . . continued)

will determine the Demonstrated Reserves (i.e., Ore Reserves).” Id. at 25. Like the “reserve base,” “demonstrated reserves” are measured plus indicated resources. (Govt. Ex. 9, OMB Circular at 2.)

Gruber divided the gold zones into blocks. Id., Attachment 1. Using samples taken in prior exploration programs and gold values derived from assays, Gruber established anticipated dimensions of various deposits and derived a tonnage figure, explaining his procedure and conclusions for all three zones.

Within 2 shear-fractures * * * resources are delineated in 8 blocks using the “half distance from known points” calculation method (fig 1). Reserve Base, a combination of measured & indicated resources, will be used to define ore reserves. The degree of assurance used to arrive at Reserve Base is predicated on 2 or 3 sides of a block containing reliable data (samples) that can be reasonabl[y] extrapolated based on geologic inference. Inferred Resource blocks are delineated as such based on uncertainty due to distance from data points or limited data (Plate 4). These resources are not sufficiently defined & will not be carried any further through the report.

The dimensions & grade of all blocks are defined by data points (table 1) on the west and east (in plan view) and at depth by drillhole (Plate 4).

(Gruber Rpt. Att. 1.) Plate 4 shows the manner in which Gruber extrapolated the depth and dimensions for the Main Gold Zone from drill hole data. (The figure and table referred to in Attachment 1 do not correspond to those in the Gruber Report. See Gruber Report at Fig. 1 and Table 1.) Gruber followed the same procedures for the East Gold Zone and the South Fork Gold Zone. See Gruber Rpt. at 26-28, Atts. 2 (East Gold Zone) and 3 (South Fork Gold Zone).

After determining the Reserve Base, Gruber applied leachability factors to determine ore recovery. (Tr. 176.) The leachability factor of 76 percent was a “weighted average from the combined tonnage of, of the three separate zones” based on leach tests in the oxide portions of the deposits. Id. The 76 percent factor is the resulting figure derived from applying zone-based leachability factors resulting from leach testing to “ore reserves” within the three separate zones (46% (Main), 72% (East), and 78% (South Fork)). The total ore reserves were calculated to be 387,942 short tons. After applying the separate leachability factors to each zone, based on the tonnage of “ore reserves” within each zone, Gruber made a fraction of that figure over the total of 387,942 short tons of ore reserves for all zones resulting in an average factor of 76%. See Gruber Rpt. at 30, Table 6 (total ore reserves and ore reserves per zone); Table 7 (factors of 46, 72 and 78% related to each gold zone).

The manner in which Gruber derived the figure of 387,942 short tons for “ore reserves” is discernable from the record. His report states that the “portion of the Reserve Base which could be economically extracted at the present time is

determined demonstrated reserves and hereafter referred to as ore reserves.” Ore reserves total 387,942 short tons and “average 0.044 opt gold with an Ag:Au ratio of 5:1 (Table 6).” (Gruber Rpt. at 29.) The ensuing discussion presumes ore reserves of 387,942 short tons. See also Atts. 14-20. In his testimony, Gruber explains that he developed a mine model first and determined costs. Then he stated that “what I settled on in looking at the eight separate deposits that contained reserve base was 387,942 tons within six of those eight deposits.” (Tr. 183.) Later, he explained:

Q. Why did you reduce the reserve base from approximately 600,000 tons to 376,000 tons [sic] in doing your economic analysis?

A. Well, I was * * * trying to develop the most efficient and least costly model, or least costly way of utilizing that model, and in doing so I also felt that by not including a larger part of the tonnage, that there would be no effect on, on my determination.

It * * * was also my feeling that * * * in mining a larger tonnage it, the costs would most likely go up, mainly because my model deals with time constraints relating to seasonal operations and the use of contract heavy equipment, and it seemed to be most expedient and least costly to get most of the contract equipment offsite in one year.

There [are] a few other considerations relating to increased stripping ratios if we included some other reserve base in the * * * ore reserve, and * * * that was the thought process that went into why I settled on that 387,000 tons.

(Tr. 192-93.)

Gruber testified that he had to develop a mine scenario to determine whether the reserve base could be economically mined. Id. at 178. To develop the mine plan economic model, Gruber turned to a document entitled “Gold Heap Leaching Plans and Costs for Mining and Heap Leaching a Small Gold Deposit,” authored by Douglas Jaynes in 1986 (Jaynes’ Model). (Govt. Ex. 11, Tr. 179-81.) Jaynes’ Model sets forth typical capital costs, equipment, supply and manpower requirements and costs for a heap leach mine and leach plant. Id. Using this model, and confirmation from Western Mining Engineers and phone conversations with vendors, Gruber established a mine model for the three gold zones, and established costs for each portion of the operation including reclamation. (Gruber Rpt. at 30-40, see Tables 6, 9-12.)

Using this model, and based upon his testimony, we understand that Gruber derived the total figure of 387,942 tons of ore reserves by reducing the reserve base by that amount of tonnage which must be left in the ground, considering the

maximum possible stripping ratio. See Gruber Rpt. Att. 16. This attachment contains Gruber's notes showing the reserve base per block in the three zones, and subtracting waste and unminable ore per block.

Gruber concluded that the total project cost was \$4,302,600. Id.; see also Table 7. To determine the receipts from the three-part mine, Gruber took the ore reserves from each zone (out of the total of 387,942 short tons), and multiplied that tonnage factor by the silver and gold grades on a 5:1 ratio, as determined per zone. See Gruber Rpt. Table 7; Tr. 184. He multiplied that by the recovery rate per zone. Id. He determined that the recovery should be 13,018 ounces (oz.) of gold, with 294 oz. deriving from the Main Gold Zone, 504 oz. from the East Gold Zone, and 12,220 oz. from the South Fork Gold Zone. Gruber also determined the amount of recovery from the project as a whole. Multiplying the average grade factor (0.044 oz./ton) times the ore reserves of 387,942 tons times the average recovery factor of 76%, Gruber determined that the project as planned according to his mining model would recover a total of 12,973 oz. of gold. Table 7; see also Table 13. Considering a 5:1 silver:gold ratio and an expected 50 percent recovery rate for silver, he also calculated silver recovery for each zone. Multiplying 5 times the number of ounces of gold recovered before the leaching process, he determined that the silver recovery would be 42,672 oz.

Gruber identified gold and silver prices as of the date of withdrawal. He found the price of gold to be \$387/oz. and silver to be \$5.40/oz. (Gruber Rpt. Att. 21, Average Metal Prices, Western Mining Engineering, Inc.) The prices were identified for the month of June 1994, though the segregation occurred in August 1993, at a time when historic prices were lower than those chosen by Gruber. U.S. Forest Service mineral economist Marshall testified as to gold and silver commodity prices. (Tr. 387-94.)

Multiplying the recovered ounces of gold and silver by these prices, Gruber determined that the revenues from the project would be \$5,250,980. Subtracting costs from revenues, he determined that the mine project that he envisioned would produce a before-tax income of \$948,380, and an after (40% rate) tax income of \$569,028, or a 13% after-tax recovery. (Gruber Rpt. at 41, Table 13.)

Gruber then established a "cutoff" grade which he defined to be the "lowest grade that will meet total project costs." (Gruber Rpt. at 41.) Backing out the cost for the total mine of \$4,302,600, and considering the prices of silver and gold and their 5:1 ratio, Gruber concluded that the cutoff grade would be .034 oz./ton of gold, or 1163 ppb. Id. With this recovery, the miner would obtain $387,942 \times .034 = 13,190$ oz., times a leach recovery rate of 76% = 10,024 oz. for a total value (\times \$387) of \$3,879,288. Silver likewise would be 5 times the pre-leachate ounces (13,190 \times 5) or 65,950 oz. At a 50 percent recovery rate, the miner would recover

32,975 oz. at a value of \$5.40/oz. The miner would thus recover \$178,065 for silver for a total \$4,057,353.

Gruber also prepared an amended mining plan to reflect conditions at the date of the hearing. (Govt. Ex. 12, Addendum to Mineral Report.) Gruber amended the cost figures to reflect a trend of higher prices; the total cost of Gruber's mine model was \$4,646,900. According to Gruber, the price of gold had decreased to \$350 and silver had remained stable. *Id.* at 2-3. Based on the same calculations described above, to reflect the changed price and cost figures, Gruber calculated the cutoff grade to be .045 oz./ton or 1539 ppb.^{17/}

Gruber concluded that a prudent miner would not mine below this cutoff grade at the time of the withdrawal or at the time of the hearing. He thus excluded the six mining claims at issue from a validity determination because he stated that there were no "above-cutoff grade" exposures in any place on those claims which did not also pertain to a pre-existing mining claim. (Gruber Rpt. at 41; Tr. 190-92.)

With respect to specific claims, Gruber testified that he included no "identified reserves" in the P 14, 15, or 16 claims on Exhibit 10, because he had no verification at depth of mineral values, and no ability to extrapolate information from known data points. (Tr. 154-59.) He identified "undiscovered resources" on those claims, "the existence of which are only postulated, comprising deposits that are separate from identified resources," and which include speculative resources, hypothetical resources and restricted resources. (Govt. Ex. 9, USGS Circular 831 at 2-3.)

Gruber testified that he did not find the exposure of a valuable deposit on the RE 1 or RE 2 claims because the gold values were significantly low throughout the area and in the drill hole data for the TCE 1 drill hole. (Tr. 166, 159-66.) Gruber testified that the Tootsie Creek drainage transects the mining claims but the exposures were poorly oxidized and contained considerable pyrite (sulfide). *Id.* at 160. He testified that he could not establish trends across the claims above gold averages of 172 ppb. *Id.* at 161. He stated that higher value assays of approximately 500 ppb were isolated at best. *Id.* at 162, 167. With respect to the EB 6 mining claim, Gruber testified that there was an exposure above cutoff grade but that it was at an elevation well below a defined mineral deposit. *Id.* at 195.

To refute the Government's prima facie case, contestees presented their own mine plan. While contestees did not substantially disagree with BLM's interpretation regarding the geology of the Sweet Grass Hills, they argued that the area was little different from the economically successful Zortman and Landusky mines, and that BLM's focus on oxidation was irrelevant. (Lehmann Rpt. at 52.) They argued that

^{17/} Both cutoff grade figures are based on project costs before taxes. (Tr. 191.)

drill hole data ranging to a depth of 500 feet showed that “the vertical extent of mineralization is over 1200 feet.” *Id.* at 54. They concluded that the Sweet Grass Hills area contains a “large-tonnage, low-grade stockwork gold deposit analogous to the deposits at Zortman Landusky successfully mined by Pegasus Gold” and a “carbonate-hosted contact metamorphic gold deposit closely analogous to ores mined until recently in the Kendall district.” *Id.* The report concluded that “the close proximity of the two ore types suggests that bulk mining could mine both those ore types in a single, well-planned operation.” *Id.*

Conceding that the recoveries of gold from bottle roll tests were lower than at the Zortman/Landusky complexes, EK Lehmann stated that it chose to “use as an operational model, a more expensive, conservative and complicated mine model” wherein the higher-grade material (which contains the bulk of the recoverable ounces) would be crushed and agglomerated (“crush & agglomerate” or “C&A” ores) prior to heap leaching, thereby increasing anticipated recoveries, while the lower-grade material would be placed on the heaps as “run-of-mine” (“ROM”) ore. (Lehmann Rpt. at 56.) EK Lehmann chose a model similar to that of the Florida Canyon mine operated by Pegasus Gold in Nevada. *Id.*

EK Lehmann chose a mine model using conventional open pit mining, which would operate for 10.89 years, mining 9350 tons of C&A ore, 15,900 tons of ROM ore, and 25,900 tons of waste per day. (Lehmann Rpt. at 71.) The costs figures were based on those from the Florida Canyon Mine. *Id.* at 70, *see also* Table 10.1. According to the report, EK Lehmann developed data from Pegasus Gold’s 10K report. It “compensated for differences between Florida Canyon and Tootsie Creek by increasing capital and operating costs appropriately to reflect local conditions.” *Id.* at 70. The mine model projected a five percent dilution of non-gold material, a ninety percent recovery of the in-place, diluted resource, and metallurgical recoveries of 50 percent for ROM rock and 75 percent for C&A rock. *Id.* at 70. The plan called for an overall stripping ratio of 1.03 tons waste/ton leached material. *Id.* The plan projected an overall recovery of 901,000 ounces of gold from the C&A rock, and 186,000 ounces from ROM rock, for a total recovery of 1,087,000 ounces. *Id.*

EK Lehmann proposed a far larger mine, with greater recovery from lower value ore, on the basis of “geologic inference.” Stating that the Government and Gruber concede the existence of a valuable mineral deposit on each mining claim, contestees state: “Thus, it is appropriate, permissible and prudent to utilize other geologic data and geologic inference to estimate the size and extent of the indicated mineral deposit on the claim group.” (Lehmann Rpt. at 60.) The report explains that Lehmann inferred minerals over a 1200-foot vertical range based on the existence of “above cut-off grade values” in outcrop, trenches and drill holes, and on a comparison of the deposit to those found at other mines.

For the Tootsie Creek deposit, a number of analogous deposits have already been cited; Zortman-Landusky is the closest example geographically and probably geologically for the stockwork mineralization present at Tootsie Creek. Kendall provides an excellent analogy for the carbonate-hosted contact-metamorphic mineralization. Other analogous deposits are further afield and include Cripple Creek, and Gold Hill, Colorado, the Empire Mine in Fiji, Lahir in New Guinea and other alkalic hosted gold systems. Examples abound for carbonate-hosted contact metamorphic deposits including, in Montana, Bannock and Marysville.

A second line of reasoning useful in applying geologic inference is the geologic evidence from the area itself. From the general geologic literature on mineral deposits, we know that stockwork deposits can be very large and extensive. Evidence of stockwork mineralization is present both within and adjacent to the claim group, suggesting that the relatively few outcrops that occur within the valley of Tootsie Creek are the fortuitous exposures of much more widespread mineralization. That this is the case is confirmed by the widespread occurrence of geochemically anomalous amounts of gold in soils (Figure 9.3) that occur on every claim and outside the claim group. These geochemical anomalies are compelling evidence of the widespread distribution of gold over the entire claim group and on adjacent lands.

Not only is gold in geologically and economically significant amounts widely distributed laterally over an area of nearly one square mile, but it is also extensively distributed vertically. Above cut-off grade values occur in outcrop, trenches and drill holes over a vertical range of 1200 feet or more. An examination of the drill holes indicates no significant diminution of values downward from the surface and no evidence of significant near-surface secondary concentration. (Figures 9.5, 9.6, 9.7, 9.8 and 9.13a-e).

Thus it can be concluded that the valuable mineral discoveries on each claim are part of a very large body of mineralization extending over the entire claim group and * * * adjacent [lands].

(Lehmann Rpt. at 60-61 (emphasis added).) Figures 9.5 through 9.8 represent drill hole data. Figures 9.13a-e do not appear in the record.

EK Lehmann calculated volumes by “assuming an area of influence of half the distance to the next section (in this case 200 feet) on either side. (See Figure 9.11 and Table 9.1).” Id. at 61. Figure 9.11 is a “schematic” showing cross-sections which

it states are “used to calculate mineable deposit reserves.” It appears to be a cross-section of a mine pit divided into 400-foot segments. The report estimates “mineable tonnage” in short tons based on a factor of 12.5 cubic feet/ton. (Lehmann Rpt. at 61-62; Fig. 9.1.) Figure 9.1 appears to apply a mathematical formula to a pre-chosen pit configuration resulting in 206 million “mineable” tons.

“The entire tonnage of the material within the rational pit was then multiplied by the factors determined in section 9.3.4. above, resulting in an estimate of” 37.7 million tons of C&A ore and 64 million tons of ROM ore. (Lehmann Rpt. at 62.) The reference to “factors in section 9.3.4.” appears to be EK Lehmann’s conclusion based on 1,928 samples that 18.31% of the total linear feet of sample constituted C&A ore, and 31.07% constituted ROM ore. Id. at 59. EK Lehmann made these findings using “cut-off grades” of 400 ppb for C&A and 114 ppb for ROM ore.

Lehmann defined the term cutoff grade as “the minimum mineralization of minimum grade required * * * to cover costs, above which there would be a contribution to the cash flow of an operation.” (Tr. 598.) EK Lehmann concluded that two cutoff grades were necessary to account for the C&A and ROM ore. “The break between C&A material and [ROM] material was selected at 400 ppb equivalent gold through a series of iterations of the overall economics as the point which appeared to approximately maximize the overall return of the project.” (Lehmann Rpt. at 57.) Lehmann testified:

Well, it’s [an] iterative process because at the same time I made an estimate for the run-of-mine ore, which was based on the fact that I was going to assign all the mining costs, mining of crush-and-agglomerate ore, the mining of waste, and the mining of run-of-mine ore, I was going to assign all that to the crush and agglomerate ore so that, in essence, then all that below the grade of crush and agglomerate ore, in the material that is already being mined, the cost of mining has already been borne by the crush-and-agglomerate ore, so the only additional cost for determining, for that ore is the cost of leaching.

* * * [Y]ou’ve got to mine it. You’ve got to move it somewhere and get rid of it.

So, if it’s got enough gold in it, let’s put it on a heap and get the gold out. So, on the basis of that, on the run-of-mine ore, I can’t simply take the gold content, but I have to modify the gold content to account for recovery, mine dilution, leaching costs, and the variable costs.

In this case, the two important * * * variable costs are what I refer to in the report as the “Montana gold tax,” * * * and an estimate of royalty to some underlying landowners.

Doing that equation, which is set out in the report * * * at Page 58, I calculated the cutoff grade for the * * * run-of-mine ore at 114 parts per billion. And with that iterative process, the maximum cash flow I would generate would, for the, varying the C&A ore, was about 400 [ppb], so those are the two cutoff grades that I established.

(Tr. 599-600.) Lehmann testified that on an operation of this scale, the cost per unit is necessarily much lower than that established by Gruber’s mine plan. (Tr. 601.)

Lehmann testified that after establishing the cutoff grade of 400 ppb, he then determined leaching costs of \$.60/ton for ROM ore. He concluded that any additional ore leached which produced greater than \$.60/ton would be valuable and mined as ROM ore. He calculated that cutoff grade at 114 ppb. (Lehmann Rpt. at 58.) The Lehmann Report states that to determine cut-off grades,

an analysis must first be made of the operating economics of the deposit; that is, an estimate must be made of the potential revenue and operating costs, utilizing appropriate assumptions of stripping ratios, mining recoveries, dilution, metallurgical recoveries and ore grades. In practice, this becomes an iterative process. In our analysis of the Tootsie Creek deposit, based on the example of Florida Canyon, we constructed such a model, modifying Pegasus’ Florida Canyon capital and operating costs experience by appropriate factors to reflect local conditions.

Thus, any material that, after application of mine dilution and metallurgical recovery factors, can return this or a greater amount constitutes ROM ore.

Id. at 57.

In constructing his mine costs and revenues, Lehmann used a gold price per ounce of \$400. (Lehmann Rpt. at 58.) He explained: “the spot price at the time of withdrawal was approximately \$387 per ounce. However, most of the producers at that time had actually contracted forward gold sales [at] well over \$400 per ounce.” (Tr. 637-38.) His testimony included examples of hedging strategies used by gold companies, and he testified that the \$400 price is what “most companies were basing their reserves numbers on at the time.” The “Examples of Hedging Strategies” referred to in this testimony appear in the Lehmann Report at Exhibit 10.1. The

“Hedging Strategies” Report for Placer Dome, prepared in 1996, refers to gold prices for 1996-2006. In its “Hedging Strategies Report,” Santa Fe Pacific Gold Report, January 31, 1996, Santa Fe explains that the company’s “Average Realized Price” for 1993, the year of the segregation in this case, was \$387. Table 8.1 of the Lehmann Report reports gold prices for 1993 as \$378.52. See also Lehmann Rpt. at 69 (price in Aug. 1993 is \$379.) Nonetheless, the report used \$400 as the gold price for both the withdrawal and hearing dates. Lehmann reports silver prices as \$4.84/oz. in 1993, but ranging from \$3.94 to \$4.19 from 1992 to 1995. Id.

EK Lehmann used costs established at Table 10.1. The report explains, at 71:

Capital and pre-production costs include the following: delineation drilling, permitting and environmental studies, land purchase for leach pads, access roads, haul roads, power line construction, water supply development, construction of leach pads and gold recovery plant and ancillary facilities. We have estimated these costs at \$70 million, but have been advised that our estimate may be substantially overly conservative by as much as \$20 million (Erickson, R., personal communication, 1995). Since the mining and stripping are done by a contractor, the capital costs for the mining equipment are the cost of the contractor. The contractor’s depreciation and profit are included in the operating costs.

Based on the factors summarized above, and outlined in Table 9.2 we estimate that cash mining and treatment costs will be \$2.82 per overall ton of ore. This is equivalent to a cash cost of \$250 per ounce gold equivalent. Other costs will include the Montana gold tax, estimated at 1.6%, and royalty to certain private owners, estimated at an average of 2%, for a total of \$0.16 per ton. The cash flow before tax and depreciation is estimated at \$1.54 per ton, providing a return of capital and before-tax profit of approximately \$147.7 million over the 10.89 year life of the operation at a gold price of \$400 per ounce and a silver price of \$4.15. Of this amount, \$70 million represents return of capital and \$77.7 million represents before-tax profit.

The Lehmann Report proposed the mining plan depicted in Figure 9.9. The plan proposed a mine that generally conforms to the boundaries of all the mining claims at issue, along with the Malvina and No. 1 Placer patents, with the exception of the P 15 mining claim. Lehmann testified: “[W]e have not extended the proposed pit into P-15 because it doesn’t make good mining sense. The area would be too narrow for us to extend the pit in here unless and until we acquire the claims shown in blue.” (Tr. 630.) He acknowledged that under his mining plan, he would produce only from 13 of the mining claims. Id. at 648.

Lehmann conceded that the project had no drill hole data on the P 14, 15, or 16 mining claims, but explained that the mining plan and assumptions regarding lateral and vertical extent of mineralization on those claims was based on geologic inference from drill holes in other areas. (Tr. 703-05.) He testified that he did not have an outcrop on the P 14 or 16 claims, and therefore he had no current evidence of structural breaks in the bedrock there. (Tr. 692.) In describing geologic inference used, Lehmann testified to a large stockwork justifying large scale mining operations.

Q. Is there anything in the, on the Patricia -7/8, the lower Patricia 7/8, the Royal East 1 and 2 or the Patricia 15/16?

A. There's certainly deformation exposed, or that was exposed in the trenches on P-7 and P-8 that I can personally recall when I visited the project. I would have to go back to the field data and the detailed maps which were available to Mr. Gruber, and we haven't bothered to go back on that, on that basis to those maps, but I would have to go back to tell you.

But generally speaking, this rock [has] what I referred to earlier as freatic brecciation, which is a, is brecciated, was brecciate when it was exposed in the trenches.

Q. Mr. Lehmann, you've used this, your idea of a large stockworks structure to infer a lot about the geology in this area, haven't you?

A. [W]ell, I've, I've used reasonable geologic inference based on analogy, based on the local geology, based on the structure, based on the geochemistry, based on the rock exposures and the trenches and the, the drill holes.

(Tr. 696-97.) He explained his belief in a large stockwork structure in the claims.

I believe that the fracture pattern is such, structural pattern is such that with the evidence of stockwork in this little area down here along the South Fork, that there is probably stockwork developed generally through this area that includes RE-1, RE-2, P-14, 16, P-18 and 20.

(Tr. 695.)

EK Lehmann disputed Gruber's reliance on oxidation as a critical element of recovery. Lehmann conceded that the deposit was not well oxidized. "I think that's almost a no-brainer that [oxidation] is not well-developed." (Tr. 568.) He disagreed that oxidation was significant to the leachability of the gold. *Id.* He stated that the

Zortman project proposed “to mine substantial amounts of sulfide ore.” Id. He cited three BLM bottle roll tests and noted that the recovery from sulfide (non-oxidized) material was between 42 and 48 percent. Id. at 569. He noted another bottle roll test that resulted in a 78 percent recovery rate. Id. at 569. He chose rates of 75 percent for C&A and 50 percent for ROM ore. Id. at 591.

On cross-examination, Lehmann testified that he was aware that a Zortman-Landusky extension project into sulfide deposits had been cancelled.

Q. [A]re you aware that Zortman-Landusky’s extension project has been canceled and they’re not proceeding with it because they put it on hold when the price of gold dropped at the beginning of 1997?

* * * * *

A. [T]hat is a public statement that they made, but I also know enough about Pegasus to know that they have some other internal problems and financial problems, and they are now in Chapter 11.

Q. Is it your testimony that you do not need an oxide model to economically mine this deposit in the Tootsie Creek area?

A. That’s my testimony.

Q. Based on the information that you have, is there any way that you know how much oxide ore that you will be mining, and how much sulfide ore you will be mining in this deposit?

A. I would estimate that the oxide portion will be relatively small.

Q. Can you, I mean, when you say “relatively small,” is that ten percent, 20 percent?

A. I, I, I won’t try to quantify it at this point.

Q. So, how are you able to do the economics on your, your deposit if, if you don’t know whether you’ll be mining mostly sulfides, mostly oxides?

A. I think the economics are based on reasonable assumptions. They’re based on reasonable estimates of recovery that are supported by the test the BLM ran, and, and so we can do a first-cut on the economics on that basis.

(Tr. 708-10.)

On behalf of contestees, mining engineer Soma testified to refute Gruber's proposed mine model. Soma testified that in developing a mine plan, the most important attribute of the mineral property was the "configuration of the ore." (Tr. 759.) "Going beyond the configuration, the depth of the ore, the structure of the ore, the strength of it, the structure and strength of the waste rock around it, the grades of the ore." Id. He testified that mine modelers today use computers in an "iterative process," inserting data to obtain results and adding data as it becomes available, for revision. Id. at 764-65. He stated: "The basic project [is] to go through and evaluate each block within the model as to its economic viability to support itself and the waste material that must be mined in conjunction with it." Id. at 765.

He testified as to the mine development approach in the Lehmann Report, but on cross examination affirmed it only as a plan for delineation drilling:

Q. Do you feel Mr. Lehmann's approach is an appropriate approach for constructing a mine plan for this property at this stage?

A. At this stage for delineation drilling it is the appropriate approach, and it is really the only approach to it.

(Tr. 766 (emphasis added).)

With respect to the mining model in the Government's mineral examination, Soma testified that Gruber's report "eliminated the scientific and logical approach to * * * eliminating those waste areas that are not economic, and concentrating on the areas that are economic." (Tr. 767.) He testified that a major error regarding the South Fork ore body occurred when Gruber assumed the pit slope would lie within the ore body, an assumption that would leave ore in the ground. (Tr. 767-72; see Contestees' Ex. V (depiction of South Fork pit slope).) He testified that his own calculations were based only on "the average of the areas for the volume times the thickness," taking no apparent account of pit slope. (Tr. 775.) Elsewhere, though, Soma testified that gold mining operations must have a pit wall with a slope of between 45 and 55 degrees. See Tr. 789-92.

Soma testified that cost estimates in the Gruber Report were overstated. Soma stated that Gruber projected operating costs of \$72.75/hour for trucks that should be costed at \$25-45/hour.^{18/} Id. at 777-78. Soma stated that Gruber's proposed mining costs employed an excavator that would not be used for a small deposit, and

^{18/} The transcript alludes to "472.75 per hour." Id. at 777. We assume the typist failed to capitalize a "4" which would have produced the \$ symbol.

that the cost of a five-yard excavator proposed by Gruber was overstated by \$45/hour. (Tr. 777.) Soma testified that end-loader costs would be \$225/ton while Gruber projected \$360/ton. (Tr. 778.) Soma testified that Gruber mistakenly charged labor at two 8-hour shifts/day, while the equipment was costed for one such shift/day, thus doubling labor costs. Id. He stated that Gruber’s contractor costs were double what was reasonable. Id. at 779. Soma testified that he would find the total mining costs to be \$1.27 to \$1.88 per ton while Gruber’s projections were far higher. He concluded that Gruber’s cutoff grades were thus inflated. Id. at 779-81.

While Soma objected to Gruber’s cost figures, he testified on cross-examination that relating Lehmann’s figures to the facts was “out of his field.”

Q. Now, Mr. Lehmann’s costing model that he discusses in the December, 1996, report, [his] plan, his model are written up as an oxide-ore model or assuming that he’s going to be mining oxide ore. But, is it your recollection of Mr. Lehmann[’]s testimony that actually he was going to be mining primarily sulfide ore?

A. Yes, I believe so.

Q. Did you do any revisions of Mr. Lehmann’s costs as a result of a sulfide mine model, or using a sulfide mine model as opposed to an oxide –

A. No, I did not.

* * * * *

You’re getting a little bit out of my mining field now. That’s getting into the metallurgy of the project.

(Tr. 784-85.) He testified that he would not concern himself with the oxide issue because he was only looking at the project as one of “delineation drilling.”

Q. At what stage of the game would it affect what you do?

A. Well, if input from the metallurgist to give me whether he thinks there would be a difference in cost. Of course, the final costs would come into there, but at this stage of delineation drilling I wouldn’t worry about it.

Q. * * * And I assume that’s because at this stage of the game the costs you’re working with are not really that detailed or that accurate.

A. That's correct.

(Tr. 786 (emphasis added).) He testified:

Q. [Has] there been sufficient delineation drilling at this point in time in order to produce this particular deposit * * * I'm [talking about] the deposit that Mr. Lehmann has described?

A. No, sir, there's not been sufficient delineation.

Q. * * * [C]an you point to any particular spot on the Claims that we're talking about and tell me whether it's ore or whether it's waste?

* * * * *

A. Whether or not we have set down and stated, "this is where our ore deposits," no. The delineation project will sit down and outline where the ore deposit is * * *.

Q. On, on – Gosh. Specifically on Claim P-14, or Claim P-15, can you show me on the chart what, where the ore is and where the waste is?

A. We haven't had, do not have a model for that.

Q. And, and what would you need in order to have a model?

A. More delineation drilling.

Q. Okay. Given, the, the current data that, that you have on Tootsie Creek, would, would you counsel [your] client to proceed to further develop this deposit only with additional drilling, or would you recommend proceeding into the mine operating stage and mine development at this point with the data that you have?

A. You should continue to, the delineation drilling on the deposit.

Q. So, at this point in time you would not recommend proceeding into mine permitting and developments with the data that you have?

A. No, to go to permitting and development you have to have a mine plan. This would be developed from delineation drilling.

(Tr. 791-73.)

Soma stated: “As far as exploration data that we have, again, we need more of it before we can do actual detailed operable mine plan.” (Tr. 794.) “We don’t have a model of the ore body.” (Tr. 795.)

Q. [K]nowing what you have in terms of an ore body, how do you know at this point whether it’s going to be economic to develop a mine?

A. The ultimate economics? Again, that is the purpose of going through an iterative process: to evaluate at each stage what the value of this process is.

We start off with an assumed value, and if we start massaging that value as we get more and more information until ultimately we come to a conclusion what we’re going to do about it.

Q. So, at this point we’re working with an assumed volume?

A. I shouldn’t say “assumed.” It’s an estimated value.

Q. Okay. At this point we’re working with [an] estimated volume that is, is estimated primarily on soil and surface samples.

A. True.

(Tr. 794-95.)

Geologist Abbott testified for contestees regarding the use of sampling and against use by Gruber of USGS Circular 831. He stated that assumptions regarding the size of the mine affected the types of equipment, labor, and costs and thereby affect cutoff grades. (Tr. 832.) He conceded on cross-examination that values assumed on the P 14, 15, and 16 claims were based on geologic inference. (Tr. 825.)

C. Judge Sweitzer’s Ruling

After post-hearing briefing, Judge Sweitzer issued his April 28, 1998, decision in favor of the Government, finding the six contested mining claims invalid as a matter of law. Judge Sweitzer scrutinized the arguments and contentions of the parties and sought to verify the mathematical basis on which the parties reached their conclusions.^{19/} He found that the Government established a prima facie case that the six mining claims did not contain a discovery of a valuable mineral deposit.

^{19/} July 17, 1998, Contestees’ Proposed Findings and Brief, and Govt. Post-Hearing Brief and Proposed Findings; Aug. 14, 1998, Contestees’ Reply, and Govt. Reply.

Judge Sweitzer turned to contestees' case to determine whether they had overcome the Government's case. Judge Sweitzer rejected contestees' use of the \$400 gold price for the date of the hearing, finding that Gruber's \$350 price for that date was substantiated in the record. (Decision at 34-35.) Judge Sweitzer rejected in some part both parties' cost analyses. Based on some of EK Lehmann's projected costs and Soma's testimony, he concluded that contestees had rebutted BLM's costs, finding that "Gruber's total cost and operating cost estimates for the date of withdrawal might be too high by as much as 12 and 10 percent, respectively, but Contestees' cost estimates are generally entitled to limited weight for lack of supporting detail, specificity and explanation." *Id.* at 39.

Judge Sweitzer concluded that contestees did not sufficiently establish the existence of a high volume deposit, and rejected their challenge to Gruber's mineral report for its failure to consider float, soil, subcrop, and composite grab samples from old prospect pits. (Decision at 39-40.) He concluded that contestees' evidence of mineralogy was insufficient to establish that the large volume deposit they proposed to develop would be a profitable venture. *Id.* at 42.

Judge Sweitzer rejected contestees' assertion that the Government's case was premised on an improper reading of the "group claim" rule in that it allegedly ignored that a prudent miner would mine a large volume deposit. (Decision at 43.) The judge held that, irrespective of whether the claims could be mined as a group, "the deposit on each claim must be sufficient to bear at least a proportionate share of the development and capital costs," and that contestees failed to show this. *Id.* at 44, citing United States v. Collord, 128 IBLA 266, 287-88 (1994), aff'd in relevant part, rev'd in part, Civ. No. 94-0432-S-EJL (D. Idaho Sept. 28, 1994), aff'd 154 F.3d 933 (9th Cir. 1998) (on remand for attorneys' fees.)

Judge Sweitzer rejected contestees' cutoff grades for a number of reasons. He stated that they are "unreliable and far too low because Mr. Lehmann used too high a gold price for the date of hearing, did not support his cost estimates with sufficient itemizations and explanation as to their derivation, relied upon nonrepresentative samples, and greatly overestimated the total amount of reserves in light of the lack of evidence supporting his estimates of leachability and his use of geologic inference." (Decision at 44-45.) Second, he rejected the notion of using the C&A grade ore to "carry" the ROM ore, as a violation of the group claim rule and Collard, 128 IBLA at 302 (Burski, A.J., concurring). (Decision at 45.) Third, he stated that "Lehmann has provided no estimates of the amount of reserves within each claim." *Id.* Fourth, he indicated that the use of averages across the claim block made it impossible to determine the validity of a particular claim.

Judge Sweitzer rejected contestees' extensive use of geologic inference. (Decision at 46-52.) Claim by claim, he rejected the notion that individual samples

on each of the claims represented the requisite exposure of a valuable mineral deposit. Id. at 52-57. Finally, he dismissed contestees' charges that BLM had acted unfairly or had been impermissibly motivated by political considerations, and their claims of undue surprise as a result of BLM's amending its mineral report to account for the price of gold at the date of hearing. Id. at 57-62.

Notably, Judge Sweitzer identified a critical issue as one of first impression. Considering the debate between the parties about the necessity of a finding that an exposure on each mining claim must exceed a cutoff grade, as described in the contestees' preliminary motion for summary judgment, he acknowledged that his January 7, 1998, pre-hearing order may have made the difference between whether the Government met its burden of establishing a prima facie case with respect to the RE 2 and the EB 6 mining claims.

The law is simply not clear whether the requisite exposure of the valuable mineral deposit on each claim must be at least cutoff grade, especially where, as here, there is sufficient continuity of high values in adjacent claims bracketing a thin expanse of the subject claim to extend those values over that thin expanse. * * *

The best course of action, given the uncertainty, is to follow the law of the case, as determined in the January 7, 1998, prehearing order, requiring on each claim an exposure of at least cutoff grade mineralization within a mineral deposit found to be valuable. Application of this requirement is determinative of whether a prima facie case was established with respect to only two claims: the RE2 and EB6 claim. The Government established a prima facie case that neither of those two claims contains the requisite exposure of at least cutoff grade mineralization within a valuable mineral deposit.

In the absence of such a requirement, Contestant would have failed to establish a prima facie case with respect to those two claims. For each of the remaining contested [RE 1, and P 14, 15, and 16 mining] claims the Government established a prima facie case that it lacks an exposure of mineralization of any grade within a valuable mineral deposit.

(Decision at 33.)

III. Arguments on Appeal

Appellants' central argument is that the mineral examination established by Gruber "high-graded" the mineral deposit with a cutoff grade that is unrealistically high and resulted in discarding the bulk of the deposit by isolating high-grade, small

mineral zones for potential mining. (Appellants' Statement of Reasons (SOR) at 7-8.) They argue that Judge Sweitzer exhibited a fundamental error in concluding that the deposit must "contain an above cut-off grade exposure of mineralization within that mineral deposit." (SOR at 14, citing Decision at 30.) They argue that this conclusion violates the "group claim rule" in failing to allow the claims to be considered as a group of claims contributing to a single mine. (SOR at 15.) They assert that Judge Sweitzer erred in refusing to accept contestees' use of geologic inference to support the existence of their proposed mine. Id. at 16.

Appellants contend that the Government's prima facie case must fail because Gruber erred in relying on oxidation as a critical element of leachability and particularly in relying on the Enders/Rogers Report. (SOR at 16-20.) They argue that Gruber's analysis of the "area of influence" of a drill hole was inappropriate. Id. at 21. They challenge any reliance on Santa Fe's Suchomel memorandum for conclusions regarding structural preparation or extent of the deposit. Id. at 22. Appellants challenge the mineral examiner's rejection of "surface samples" from his analysis. Id. at 26. Appellants criticize Gruber's pit slope as located within the ore body, his calculation of volume for the pit slope, his estimates of mining costs, his alleged "doubling of labor costs," his alleged failure to use "a dilution factor and mine recovery factor," and his failure "to use all data available to him." Id. at 27-29. Appellants challenge Gruber's use of USGS Circular 831 because they assert that it was developed only to "evaluate national resources, to allow for appropriate national planning for future resources needs." Id. at 30-31.

Appellants cite to the Lehmann Report and their testimony in support of the assertions that their gold mining model is the preferable one. (SOR at 33-35.) They detail in particular what they contend to be the evidence in support of the discovery of a valuable mineral on the EB 6 mining claim and the RE 2 mining claim.

They allege that principles of fundamental fairness were violated in this case. They assert that the amendment of the Gruber Report to account for factors on the date of the hearing was unfair because they were not prepared to rebut it on the date of the hearing. (SOR at 39-40.) They argue that there is no basis for relying on the hearing date as a date for determining the validity of the mining claim. (Appellants' Reply to Government's Answer (Reply) at 6-7.) Finally, they challenge BLM's decision to segregate the land and thereby prohibit appellants from validating their discoveries. (SOR at 41.)

Finally, appellants challenge "recent IBLA case law." They state that IBLA requires a mine plan of assured profitability, which is contrary to fundamental tenets established by the Supreme Court in determining validity. (SOR at 31-32.)

ANALYSIS

[1] Considering the burdens on the parties, we look first to see whether BLM has presented a prima facie case, and then to see whether appellants have preponderated against it. This Board has authority to undertake de novo review of the record in a case pending before it, including an appeal of an ALJ's decision considering a mining contest.

[IBLA] * * * has the authority to make decisions concerning appeals relating to the use and disposition of the public lands and their resources as fully and finally as might the Secretary himself. 43 [CFR] 4.1. We have previously held that:

This authority includes the power to make a de novo review of the entire administrative record and to make findings of fact based thereon. While we recognize the propriety of deferring to the Administrative Law Judge's findings where a witness' demeanor affects his credibility, our authority to make findings of fact which may differ from the former's is not limited by the substantial evidence rule * * *. "On appeal from or review of the initial decision, the agency has all the powers which it would have in making the initial decision * * *." 5 U.S.C. § 557 * * * .

United States v. Willsie, 152 IBLA 241, 264-65 (2000) (reconsideration denied by Order, Feb. 20, 2001) (citations omitted). In United States v. Feezor, we stated:

We recognize that the Board has long noted that substantial deference is accorded to findings of Administrative Law Judges on conflicting evidence, based on the reality that the trier of fact has a unique opportunity to observe the various witnesses and judge the weight to be accorded their testimony. * * * But, we have also cautioned that this deference is not absolute, particularly where the Judge's determination of credibility is not premised on demeanor evidence. See Bureau of Land Management v. Ericsson, 88 IBLA 248, 262-64 (1985) (separate opinion). More particularly, with reference to expert opinion, we have cautioned, in denying a request for a fact-finding hearing, that:

Where, as in the instant case, what is involved is not a judgment as to the veracity or believability of a witness's testimony, but rather the consistency of a party's ultimate conclusions with the facts of record, little weight would be accorded to an administrative law judge's

determination beyond that which it would command by the force of its analysis and the clarity of its exposition.

* * * * *

[While an ALJ's] conclusions on these questions are certainly deserving of respectful consideration by this Board, they are not preclusive of the exercise of the Board's delegated plenary authority, which includes the authority to undertake a de novo review of the entire record and make findings of fact thereon as fully and finally as might the Secretary * * *.

130 IBLA at 200-201 (citations omitted).

Consistent with the above-stated authority, our focus will be on issues of law, and the consistency of the parties' and Judge Sweitzer's conclusions with the facts of record. If a portion of the decision does not conform to principles of law or facts of record, we will exercise our de novo review authority to decide the issue, if possible, on the facts provided.

[2] We turn first to the question raised by Judge Sweitzer regarding whether the Government presented a prima facie case with respect to the EB 6 and RE 2 claims. In deciding to follow his 1997 pre-hearing order, Judge Sweitzer determined that, as a matter of law, to be valid, the mineral deposit on a mining claim must "contain an above cut-off grade exposure of mineralization within that mineral deposit." (Decision at 30.) Finding no such exposure, Judge Sweitzer concluded that BLM had made its prima facie case and that contestees did not rebut it. He flagged a concern that his decision may be one of first impression, and that he might be wrong. Appellants argue that he was wrong and that this error requires reversal.

In his 1997 Pre-Hearing Order in response to contestees' motion for summary judgment, Judge Sweitzer concluded:

Applicable law dictates that each of the contested claims must be supported by a discovery of a valuable mineral deposit, and, therefore, there must be an actual exposure of valuable mineral within the claim. United States v. Multiple Use, Inc., 120 IBLA 63, 109 (1991); see also United States v. Foresyth, 100 IBLA 185, 94 I.D. 453, 489 (1987); Schlosser v. Pierce, 92 IBLA 109, 93 I.D. 211, 223-34 (1986); Cactus Mines Ltd., 79 IBLA [at 32-33 n.2] (concurring opinion); United States v. Collard, 128 IBLA 266, 285 (1994). The claims may be considered together for purposes of determining whether there exists on each of the claims a valuable mineral deposit. Id. So long as valuable locatable minerals are exposed on each of the claims, it has been assumed that

their quality and quantity may be aggregated to determine if they might be extracted, removed and marketed at a profit. Id.

The parties are in dispute as to whether the law requires an exposure of at least cutoff grade mineralization on each claim and whether such an exposure exists on each of the Royal East #2 and East Butte #6 claims. While relevant precedents do not definitely hold that the requirement of an exposure of valuable mineral mandates at least a cutoff grade exposure, they strongly suggest such a mandate. See Cactus Mines, Ltd., 79 IBLA at 32; United States v. Dresselhaus, 81 IBLA [at 267-68]; cf. United States v. Mavros, 122 IBLA 297, 313 (1992) (“The existence of an exposure of valuable minerals that would support a discovery if quantity and continuous quality of these minerals continues for a reasonably projectable distance is critical to the right to enter withdrawn land for the purpose of drilling to confirm a discovery.”). Consequently, I find that the law does require an exposure of at least cutoff grade mineralization on each claim.

Furthermore, this exposure must be within a mineral deposit which is valuable; it must not be within a nonvaluable deposit or merely an isolated bit of mineralization. See 2 Am. L. of Mining § 35.11(3)(c). “The particular deposit actually disclosed within the limits of the claim must be the one as to which there is a reasonable prospect of success in developing a paying mine.” Id.

For purposes of Contestees’ partial summary judgment motion, the [Validity Report/Mineral Examination] VR/ME demonstrates that, on each of the Royal East #2 and East Butte #6 claims, there is only one above-cutoff-grade exposure that lies within a mineral deposit shown to be valuable. On each claim, this exposure is located on land covered by another valid and subsisting location that predates location of the claim. That portion of a mining claim located over a valid existing location has no effect and is void. Belk v. Meagher, 104 U.S. [at 284]. Consequently, that portion of each mining claim containing the qualifying above-cutoff-grade exposure identified in the VR/ME is void.

(Jan. 7, 1998, Order at 1-2.)

In his final decision, Judge Sweitzer reiterated this conclusion, and expressed reservations about the effect of his decision, which was to hold invalid portions of the EB 6 and RE 2 mining claims the mineral examiner had determined by inference to enclose a valuable mineral deposit which a prudent miner would mine.

[A]fter a full development of the unique facts of this case at hearing, the potential pitfalls of universally applying such a requirement were highlighted. For each of the EB6 and RE2 claims, a very small portion lies within an area where Mr. Gruber found the values to be adequately high and consistent to infer or project a sufficient quantity of similar quality mineralization constituting a valuable mineral deposit. The southeast corner of the RE2 claim lies within the South Fork deposit and a sliver of the EB6 claim lies within Block 3 of the East Gold Zone.

This use of geologic inference is consistent with guiding precedent.

In essence, and in practice, geologic inference is primarily applicable as a basis upon which to show continuity of values. Thus, where values have been high and relatively consistent, geologic inference can be used to infer sufficient quantity of similar quality mineralization beyond the actual exposed areas, such that a prudent man would be justified in expending labor and means with a reasonable prospect of success in developing a paying mine.

United States v. Feezor, 74 IBLA 56, 90 I.D. 262, 274-75 (1983).

For each claim, if the valuable mineral deposit is actually exposed within that claim, such an exposure may constitute a valid discovery under relevant precedent. See, e.g., Solicitor's Op., "Apex & Extralateral Rights—Mining Claims: Lode Claims," 93 I.D. 369, 382 (1986). The law is simply not clear whether the requisite exposure of the valuable mineral deposit on each claim must be at least cutoff grade, especially where, as here, there is sufficient continuity of high values in adjacent claims bracketing a thin expanse of the subject claim to extend those values over that thin expanse. See, e.g., id.; United States v. Hines Gilbert Gold Mines Co., 1 IBLA 296, 299-300 (1971) (Where only slight mineral values are found on a claim, inference of the presence of valuable minerals, drawn from the proved existence of mineral deposits outside the limits of the claim or from the geology of the area, is not sufficient and cannot be substituted for the actual exposure of a valuable mineral deposit.); United States v. Arizona Mining and Refining Co., Inc., 27 IBLA 99, 105 (1976) ("While geologic inference based upon knowledge of the degree of mineralization prevalent within the surrounding area cannot substitute for the actual exposure of a vein or lode within a claim, it may be relied upon as an aid to calculate the extent and potential value of the mineral deposit,

once a continuous vein or lode bearing mineable mineral material has been exposed.”).

(Decision at 32-33.)

The dilemma identified by Judge Sweitzer was that BLM admitted that a valuable mineral deposit existed, and even that an exposure of mineral was found on the RE 2 and EB 6 claims. Yet, BLM contended that because the exposures were either below cutoff grade or, even if above cutoff grade, outside the valuable mineral deposit, there was no discovery. We think the confusion derives from an attempt to follow “the law of the case” and thereby construct a legal rule about “cutoff” grade rather than considering the case presented.

The requirement that an exposure actually be found within the boundaries of the lode mining claim at issue is statutory. See 30 U.S.C. § 23 (2000) (no location until discovery of a vein). Within the limits of such a mining claim, a claimant must find a vein or lode of quartz, or other rock in place, bearing mineral of such quantity and quality that a prudent person would expend time and means with a reasonable prospect of success in developing a valuable mine. Converse v. Udall, 399 F.2d at 621; Barton v. Morton, 498 F.2d at 288.

This statutory requirement remains true notwithstanding whether the mining claim at issue stands alone or lies within a group of claims to be mined together. No “independent mine” rule requires a mining claimant to show that each claim alone justifies a mine. Schlosser v. Pierce, 92 IBLA 109, 122 (1986). Nonetheless, the “law of discovery in the 1872 Mining Law has on numerous occasions been construed to require each claim in a group to contain valuable mineral within the limits of the claim.” Id. at 127. The statutory requirement insists that the claimant show a discovery on each mining claim. In United States v. Foresyth, 15 IBLA 43, 58 (1974), the Board stated that the parties

contend that if any of the claims are valid, all of the claims are valid. We expressly reject such a theory of bulk validation. In order for any claim to be valid, it must be shown that not only a mineral deposit has been found on a claim, but that the deposit on that claim is reasonably perceived as marketable at a profit. To put it more plainly, each claim must independently support a discovery.

The statute also prevents a claimant from establishing the validity of a mining claim by inference from evidence derived from surrounding mining claims. An “inference of the presence of valuable minerals, drawn from the proved existence of mineral deposits outside the limits of the claim or from the geology of the area, is not sufficient and cannot be substituted for the actual exposure of the mineral deposit

within these limits under the mining laws.” United States v. Hines Gilbert Gold Mines Co., 1 IBLA at 298, citing State of California v. E. O. Rodeffer, 75 I.D. 176 (1968).

Each claim must be supported by a discovery of a valuable mineral deposit within its own boundaries. United States v. Melluzzo, 32 IBLA 46, 59 (1976), aff'd sub nom. Melluzzo v. Watt, 674 F.2d 819 (9th Cir. 1982). The sine qua non of such discovery is an exposure of a valuable mineral deposit on a claim. United States v. Weber Oil Co., 68 IBLA 37, 43, 89 I.D. 538, 540-41 (1982). The existence of valuable minerals on a claim, based solely on geologic inference, cannot serve as a predicate for a finding of quantity and quality sufficient to support a discovery on that claim. United States v. Feezor, 74 IBLA [at 85], 90 I.D. [at 278].

United States v. Dresselhaus, 81 IBLA at 265. Thus, if the Government can show that, despite the inferred existence of a valuable mineral deposit, there was never an exposure of it on the relevant mining claim, there would be no discovery.

Neither the statutory requirement nor the Board’s analysis of it compels, as a matter of law, the adoption of a minimum cutoff grade requirement to make that determination. “Whether a discovery has been made according to the requirements of these tests is a question of fact.” Schlosser v. Pierce, 92 IBLA at 124. “The question of the existence of a discovery is a question of fact to be determined by the trier of fact.” 2 American Law of Mining § 34.14[1] (citations, footnotes omitted). Thus, we find that Judge Sweitzer went too far in adopting cutoff grade as if it were a rule of law. The use of a cutoff grade is an indicator of fact and this opinion is not to be construed in any way as rejecting the notion of establishing a cutoff grade for purposes of determining and assessing facts regarding a mining claim or group of them. See, e.g., United States v. Clouser, 144 IBLA at 199; United States v. Dresselhaus, 81 IBLA at 264. Indeed, both parties found cutoff grades to be meaningful in presenting their cases. Rather, where he adopted BLM’s cutoff grade as a rule of law, Judge Sweitzer missed the significance of his other factual analysis.

Thus, while generally disagreeing with contestees’ evidence, Judge Sweitzer found Soma’s testimony to sufficiently refute some of Gruber’s contentions.

[Soma] testified that Mr. Gruber underestimated the reserves in the South Fork Gold Zone by 51,000 tons (Tr. 767-776). This testimony is sensible and stands un rebutted. The addition of those reserves would reduce capital costs from \$2.22 per ton of ore to approximately \$1.96 per ton of ore for the date of withdrawal under Mr. Gruber’s mining scenario (see Ex. 3, p. 40).

The evidence leads to the conclusion that Mr. Gruber's total cost and operating cost estimates for the date of withdrawal might be too high by as much as 12 and 10 percent, respectively, but Contestees' cost estimates are generally entitled to limited weight for lack of supporting detail, specificity, and explanation.

(Decision at 38-39.)

Nonetheless, considering the contestees' case, Judge Sweitzer remained focused on Gruber's cutoff grade of 1,163 ppb. (Decision at 56-57.)^{20/} His own view that contestees had shown Gruber's cost and operating estimates to be too high by as much as 10 percent necessarily meant that the cutoff grade was overstated. To the extent Judge Sweitzer failed to consider this necessary mathematical result of his conclusions because he had adopted the requirement that the mineral exceed the BLM cutoff grade as law of the case, this was error. We proceed to conduct the analysis as the factual inquiry it should have been.^{21/}

[3] The trier of fact must determine first whether the Government has established a prima facie case. "The well-established rule is that the Government establishes a prima facie case when a mineral examiner testifies that he has examined a claim and found the mineral values insufficient to support a finding of discovery." United States v. Boucher, 147 IBLA at 248 (citations omitted). Even if the Government merely shows that one essential criterion of the discovery test was not met, it has established a prima facie case as to that criterion. United States v. Dresselhaus, 81 IBLA at 257.

The Government's case with respect to the EB 6 and RE 2 mining claims displays the difficulty faced by Judge Sweitzer. In both cases, the Government identified by inference from surrounding values a "valuable mineral deposit" crossing a portion, albeit narrow, of the mining claim which does not overlap a pre-existing valid mining claim. (Gruber Report Plate 1.) BLM concedes that an actual exposure of mineral exists on the EB 6 and RE 2 claims, as on each of the other mining claims. (Gruber Report at 23; see also Plate 3; Nov. 10, 1997, Contestant's Brief in Opposition to Contestees' Motion for Partial Summary Judgment at 7.) But BLM argues that to the extent there is an exposure it is random and fails to expose a valuable mineral deposit, or to correlate with the valuable mineral deposit the existence of which is inferred from exposures on surrounding mining claims.

^{20/} BLM established a higher cutoff grade for purposes of the date of the hearing. We focus here only on the lower cutoff grade more favorable to appellants.

^{21/} This conclusion in no way implicates Judge Sweitzer's ultimate denial of the summary judgment motion. The outcome should have been the same on the basis of the Government's prima facie case as described below.

We find that the Government's inference of a valuable mineral deposit across the sliver of EB 6 and the southeasternmost corner of the RE 2 claim does not suffice as appellant's proof of discovery. A claimant must demonstrate an exposure of a valuable mineral deposit. E.g., United States v. Weber Oil Co., 68 IBLA at 43, 89 I.D. at 540-41. In this, Judge Sweitzer accurately identified the problem as whether an exposure is within a mineral deposit which is valuable; it must not be within a nonvaluable deposit or merely an isolated bit of mineralization. See 2 American Law of Mining § 35.11(3)(b).

Mere indications or belief in the existence of a vein or lode within the boundaries of a [claim] is not sufficient. To constitute a valid discovery there must be actually and physically exposed within the limits of a claim a vein or lode of mineral-bearing rock in place, possessing in and of itself a present or prospective value for mining purposes. In referring to the discovery of "the vein or lode" the statute refers to the vein or lode which is expected to be developed. The particular deposit actually disclosed within the limits of the claim must be the one as to which there is a reasonable prospect of success in developing a paying mine. A discovery cannot be predicted upon (1) the exposure of * * * isolated bits of mineral on the surface of the claim, not connected with ore leading to substantial values, (2) the finding of mere surface indications of mineral within the limits of the claim, (3) the discovery of valuable mineral deposits outside [the] claim, or (4) inferences from established geological facts relating to the claim. The mere hope or expectation that values will increase at depth is not sufficient to constitute a discovery. Geological inferences drawn from the discovery of the vein outside the limits of the claim located cannot be used as a substitute for the actual discovery of the vein or lode within the boundaries of the claim.

Id. at 35-40 to 35-41 (footnotes and citations omitted).

Appellants' arguments fundamentally misperceive this requirement. 30 U.S.C. § 23 (2000). They argue that "[i]f there is an exposure of the valuable mineral on a claim, geologic inference may be used to establish that the extent of mineralization of the claim is sufficient to meet the Prudent Man rule." (SOR at 16.) The statement is correct only insofar as the exposure of the mineral on the claim is the source of the geologic inference. A claimant may not prove a discovery of a valuable mineral deposit solely by geologic inference based on exposures off the claim. Thus, an exposure of high mineral value, which lateral or vertical samples do not confirm and which does not justify geologic inference, cannot support a discovery.

With this construction of the relevant issue, we look first to the Government's proof to determine whether it met its burden to establish a prima facie case that no

such exposure of a valuable mineral deposit exists within the contested claims. With respect to the EB 6 claim, the Government stated:

The only physical exposure of a mineral deposit on the East Butte 6 claim is shared by the Butte 48 claim. [Tr.] 195-96. In-place physical exposure of mineralization above cut-off grade exists on the East Butte 6 claim outside the area of overlap with Butte 48. However, it is not an exposure of a valuable mineral deposit because it could not be economically mined.

(Proposed Findings of Fact at 27.) In the transcript, Gruber acknowledged another exposure above cut-off grade.

Q. Other than the exposure shared by the Butte 48 Claim on East Butte 6, is there another physical exposure above cutoff grade?

* * * * *

A. Yes, there is * * * in the drill hole there is [an] exposure above cutoff grade at a, at a depth below the deposit that I have defined.

* * * * *

Q. The only other exposure on the East Butte 6 claim, then[,] that's above cutoff grade, is it your professional opinion that it is not an exposure of valuable mineral deposit?

A. That's my professional opinion.

(Tr. 195-96.)

With respect to the RE 2 mining claim, Gruber testified that there were two "high grade" samples, but that they were outside the South Fork Gold Zone. (Tr. at 336-37.) Gruber concluded that they were nonrepresentative high grade samples that did not indicate the presence of a valuable mineral deposit. Id.

Considering the Government's case in detail as described in the factual portion of this decision and the above-stated facts, we agree with Judge Sweitzer that the Government has succeeded in establishing a prima facie case with respect to the P 14, P 15, P 16, and RE 1 mining claims. We find that it was met as well with respect to the EB 6 and RE 2 claims, notwithstanding Gruber's inference of of mineral deposits across portions of those claims. The prima facie case was presented when Gruber

“testifie[d] that he has examined a claim and found the mineral values insufficient to support a finding of discovery.” United States v. Boucher, 147 IBLA at 248.

At this juncture, the burden shifted to the contestees to overcome that case by a preponderance of evidence. United States v. Willsie, 152 IBLA at 265. We find that contestees did not sufficiently overcome BLM’s prima facie case with respect to specific facts regarding the EB 6 mining claim. The evidence presented by EK Lehmann included drill hole data from the TCE 2 drill hole, showing at two intervals anomalous drill hole samples. See Ex. G, Lehmann Report at Appendix 9.2a, 215a (2615 ppb, 1397 ppb); see also at Appendix 9.2, “Key to Properties.” Thus, Lehmann presented evidence of high values within the limits of a claim. However, these values occurred at a depth of approximately 230-240 feet in the drill hole, corresponding to an elevation of at most 5260 feet. (Lehmann Rpt., Fig. 9.7, “Drillhole cross-sections: TCE holes, Tootsie Creek Deposit.”) Undoubtedly, these two samples are located below the mineral deposit identified by Gruber as a result of geologic evidence from the surrounding claims, which deposit went to a depth within the oxide zone, at a corresponding elevation of 5340 feet.

In deciding whether these data points are sufficient to rebut the Government’s prima facie case, the issue of oxidation is critical. Gruber presented information showing oxidation at the uppermost levels in all drill holes, with the deepest oxidation in drill holes TSF 2 and TCE 2, in the South Fork and East Gold Zones, respectively. (Govt. Ex. 6.) These showed oxidation in both cases from above 5340 feet above sea level to the surface at approximately 5500 feet. Gruber testified that below these zones the values indicated that the rock was sulfide, a factor which he claimed would severely reduce the recoverability of the mineral. For these reasons and the extremely low values found surrounding the anomalies, Gruber concluded that a prudent miner would not mine below the oxidized level. His mine model and costs were based on this conclusion. The Government unequivocally contended that mining in sulfide zones would increase costs and reduce recovery rendering them uneconomic. Thus, had Gruber’s mineral examination included mining within the sulfide zone, these cost factors necessarily would have increased, reducing the significance of the anomalous samples.

Contestees failed to refute this evidence. They agreed wholeheartedly that the Tootsie Creek region contained primarily sulfide material (Tr. 713 (Lehmann)), and that information about oxidation would be taken into account as a metallurgical issue (Tr. 784-85 (Soma)). Contestees simply argued that oxidation would not matter at this stage of mine development to a prudent miner. To accept this argument would require us to accept, based on an admitted lack of knowledge of the extent and nature of the deposits by contestees’ witnesses, that when mining sulfide deposits, as opposed to oxidized deposits, there would be no significant change in the costs of mining or rate of recovery.

The record does not support this notion, and appellants simply did not refute the Government's evidence on this point.^{22/} Nor does our precedent. The Board's decision in Red Thunder, Inc., 129 IBLA 219, 101 I.D. 52 (1994), discusses effects of sulfide waste materials from mining at the very Zortman and Landusky gold mines which contestees compare with the deposit at Tootsie Creek. Based on the evidence regarding those mines, the Board noted the increased potential for acid mine drainage which could cause unnecessary and undue degradation under 43 CFR Subpart 3809 (1999), and which at the least would impose reclamation costs not accounted for by contestees. In this we take judicial notice of the Supplemental Draft EIS for Reclamation of the Zortman and Landusky Mines, April 2001, see at 3-6. In United States v. Page, 119 IBLA 12, 19 n.10 (1991), the Board discussed effects of oxidation on a copper property and testimony regarding the "metallurgical problem involved with the sulfide ore as opposed to the oxide ore."

To accept contestees' case, we would turn a blind eye to this information. Likewise, we would ignore Soma's testimony. Soma conceded that the nature of the ore as a sulfide ore was a metallurgical issue, and that he would consider that information at the point in the iterative process when it was provided to him by the metallurgist. (Tr. 784.) While Soma refused to testify as to what would happen when data regarding the oxide/sulfide nature of the ore was introduced, he clearly presumed the outcome would be affected. Further, he testified that, at the stage in the process to which his testimony pertained, a miner would conduct more delineation drilling to obtain more information about the contours of the deposit, not that the miner would engage in mine planning. (Tr. 791-93.)

^{22/} Appellants contest the Government's case regarding sulfide materials, noting that the Pegasus Gold Form 10-K (Gruber Rpt., Att. 17), identified recovery of gold from sulfide zones at 40% and that tests from two drill holes in what appellants identify as non-oxide materials averaged 45.8%. (SOR at 19-20.) Despite the fact that the Lehmann Report asserted that it adjusted its reliance on the Zortman and Landusky mines to account for local conditions (Lehmann Rpt. at 70), it projected recoveries of 50% for ROM and 75% for C&A rock, while failing to distinguish oxide and sulfide ores. Id. Appellants' admissions in the SOR that the recovery from sulfide ores in the Zortman Landusky project is lower (40%) than their own projected recovery even from low-value ROM deposits (50%) severely undercuts their assertions that they considered local conditions. Appellants concede that the Zortman-Landusky project mined significant oxide ore. (SOR at 18.) We find no justification in appellants' arguments for their failure to distinguish between recovery rates for oxidized and non-oxidized ore. To the extent appellants challenge Gruber's average recovery rate from sulfide zones, it is premised on objections to BLM's use of cyanide shake tests. Id. at 20 n.29. Considering that appellants propose instead to premise their analysis on recovery rates exceeding the evidence from the mines on which they rely, we find no reason to consider that issue further.

Considering all of this, we find that contestees did not rebut the Government's prima facie case as to the EB 6 mining claim. The Government's case acknowledged the two data points relied on by appellants and found them to be isolated examples within a sulfide zone such that the data points, standing alone, did not disclose a valuable mineral deposit. Contestees' rebuttal consisted of Gruber's inference of a narrow band of mineral deposit extending across the EB 6 claim within the shallow oxide zone. But the isolated samples are not related to the inferred oxide deposit, and so cannot be used to support a discovery, as described above. We find that the two anomalous data points at approximately 230-240 feet in drill hole depth at approximately 5260 feet in elevation are isolated samples that do not reflect a valuable mineral deposit. Contestees did not overcome the Government's prima facie case that a prudent miner would not likely mine gold at that depth given such limited values within sulfide ore. See Chrisman v. Miller, 197 U.S. at 322.

Appellants find unfairness in the fact that they have a high value which does not coincide with the Government's inference of a vertically separate, narrow mineral deposit across the EB 6 mining claim. That result, however, is not a matter of creating new law but derives from the configuration of the mining claims located by contestees. In a disseminated low grade ore deposit, the likelihood of finding an exposure of a clearly defined valuable mineral deposit necessarily decreases with decreasing size of the mining claim. While appellants clearly feel that demanding precision in the test of discovery is unfair, it has been a statutory requirement for well over a century. We do not question appellants' decisions in locating and maintaining the mining claims, but they assume a consequent risk of failing to expose a valuable mineral deposit within such a small sliver of a mining claim.

Examination of the RE 2 claim leads to the same result. The evidence submitted by contestees regarding that mining claim shows anomalous values in a circular fashion through the tiny southeast corner of the RE 2 mining claim, which does not overlap another claim, some distance from the South Fork Gold Zone and from BLM's inference of that zone. See Govt. Ex. 3, Gruber Rpt., Plate 1. Plate 1 shows the South Fork Gold Zone to extend slightly into the southeast limits of the RE 2 mining claim, but the majority of that extension occurs on land which was previously located as the EB 4 mining claim, which BLM concedes to be valid. In its sample data, the Lehmann Report identifies the RE 2 claim as property number 4. (Lehmann Report at Appendix 9.1.) The data from drill holes EBR 3 and TCM 4 show notably low values. The highest value for property 4 (665 ppb at 295 feet) appears isolated among values ranging from 30 to 485 ppb, with only three values above 400 ppb within 130 feet in any direction. Id. at Appendix 9.2a at 199a-201a.

We agree with Judge Sweitzer that the EBR 3 drill hole evidence located within the RE 2 mining claim does not confirm an exposure within a valuable mineral deposit. Judge Sweitzer points out that the

average gold equivalent grades for the EBR-3 drill hole and that portion of the hole within the RE 2 claim are 345 ppb and 161 ppb, respectively (calculated from Ex. G., app. 9.2b), but those averages overstate the quantity of mineralization because they do not include 16 samples for which there are no grades listed because their grades are below the minimum grade detectable by the assay technique employed: 156 ppb (Tr. 67-68; Ex. 6).

(Decision at 55 n.7.) These 16 samples within drill hole EBR 3 for which no significant values were reported are identified at the Lehmann Report, Appendix 9.2a, 199a.

Contestees argue, however, that another exposure on the RE 2 mining claim proves its validity. Two samples, 260110 and 260114 (2388 ppb and 3389 ppb, respectively) taken by CARI, are reflected in the record. (Contestees' Ex. G, Lehmann Rpt. at Appendix 9.1b, 160a.) Contestees argue that sample 260110 is excavated from a rock chip channel, and should be considered as evidence of an exposure. See Contestees' Ex. G, Lehmann Report, Figures 9.4 and 9.4a.) Admitting that it is northwest of the inferred South Fork Gold Zone, id., contestees nonetheless argue that it was an "obvious arbitrary omission" and query "would a reasonably prudent man leave this grade of material there because it does not fit the Government's model?" (SOR at 38.) The proper inquiry, however, is whether contestees rebutted the Government's case that the sample information did not constitute the exposure of a valuable mineral deposit, as required by law.

Gruber testified that he rejected samples 260110 and 260114 as unrepresentative of the surrounding area.^{23/} (Tr. 336-37.) An examination of Figures 9.4 and 9.4a justifies this view. Samples from the EBR 3 drill hole, the closest drill hole, do not reflect significant values, nor is the drill hole located within the South Fork Gold Zone. Nearby outcrop and trench samples identified by CARI contain values in the range of 100-200 ppb. See Lehmann Report at Appendix 9.1b. Contestees can only argue unconvincingly that a prudent miner would extend the line of the South Fork Gold Zone to "catch" an anomalous rock chip sample some distance away randomly interspersed with low value samples. (SOR at 24, 37-38.) Such conjecture is not probative of whether appellants have made the requisite exposure of a valuable mineral deposit. Contestees have not preponderated in their efforts to overcome the Government's prima facie case with this argument.

Appellants argue that the group claim rule nevertheless justifies a finding of validity, notwithstanding the conclusion that they have found no exposure of a

^{23/} Contestees do not appear to rely on sample 260114, see SOR at 58, and Figures 9.4 and 9.4a. Nonetheless, the comments here relate to both samples.

valuable mineral deposit on the RE 2 and EB 6 mining claims. They cite Schlosser v. Pierce, 93 I.D. at 224-25, for the conclusion that “[o]nce mineral is demonstrated to be present, the proof of sufficient quality and quantity of mineral to warrant development can take into consideration the overall mining operation.” (SOR at 14.) Appellants’ analysis of the group claim rule is too simplistic. Nothing in the Board’s rejection in Schlosser of the theory that each claim must support an “independent mine” did away with the statutory obligation to prove an exposure of a valuable mineral deposit.^{24/}

We turn to the remaining claims. For the reasons stated above and in Judge Sweitzer’s decision we find that the Government presented a prima facie case with respect to the P 14, 15, and 16, and RE 1 mining claims. Again, the question is whether contestees successfully rebutted the Government’s case. We agree with Judge Sweitzer that they did not.

While claimants located the three Patricia claims in 1983, they did little to explore them in the ensuing 9 years. The broad exploration of the Sweet Grass Hills and the smaller region surrounding Tootsie Creek led the various co-ventures to focus their more detailed exploration, including drilling, around the Main, East, and South Fork Gold Zones. According to the Lehmann Report the initial exploration of the area in 1983 led to a strong anomaly for gold in Tootsie Creek. The subsequent surface sampling led to plans of operation to explore within sec. 19 and the Main, East, and South Fork gold zones, not within the P 14-16 claims. The Santa Fe exploration plan and the 1989 exploration plan approved by BLM excluded the areas covered by the three contested Patricia mining claims from proposed drilling. See EA MT068-9-16, Fig. 3. Thus, the subsequent exploration to examine the anomaly for gold took place in areas outside the P 14-16 mining claims. See also Fig. 9.4 (comparison of data points between P 14-16 claims and remainder of project area).

The only data presented in the record strongly supports this conclusion. For claim numbers 7, 8, and 9, which correspond to the P 14, 15, and 16 mining claims (Lehmann Rpt. Appendix 9.1, “Key to Properties”), data appears at Appendix 9.1a at 147. See id. claim numbers 7-9. Samples taken from these claims yielded values between 2 and 425 ppb, with the exception of three samples: HBT R at 1470 ppb and HBT R at 915 ppb on the P 15 mining claim; and RER at 2037 ppb on the P 14 mining claim. Lehmann’s map depicting the locations of these three samples shows them to be widely dispersed as random surface samples, among few other sample data points. (Lehmann Rpt., Fig. 9.4.) To the extent we could identify these samples as high values, they are erratic at best.

^{24/} Contestees object to Judge Sweitzer’s conclusion (Decision at 14), that each claim must bear its proportionate cost of a combined operation. This is an element of the argument about cutoff grade and that aspect of the decision which we rejected above.

Figure 9.4 and Appendix 9.1a show that the joint venturers reasonably focused their efforts where areas of high values were uncovered, in the three identified gold zones. See Figure 9.4. The map shows that the three Patricia claims in dispute were apparently of little interest to the joint venturers.

Any question as to whether a valuable mineral deposit was actually exposed on these mining claims was answered at the hearing. Lehmann conceded in his testimony that his conclusions with respect to a mineral deposit on the P 14, 15, and 16 claims were based on geologic inference, and that the existence of a stockwork north of the claims in the Main Gold Zone “probably” supported the notion of such a formation within the limits of those mining claims. (Tr. 695-97.) Soma testified that, in order to find “where the ore is and where the waste is” on the P 14 and P 16 mining claims, a miner would have to conduct delineation drilling. (Tr. 791-73.) This drilling was never done. Contestee witness Abbott conceded on cross examination that a discovery on the P 14, 15, and 16 mining claims was based on geologic inference. (Tr. 825.) Lehmann acknowledged that a prudent miner would not, based on available information, choose to mine the P 15 mining claim. (Tr. 630.) With this testimony, we find no basis for revisiting Judge Sweitzer’s conclusion that contestees failed to rebut the Government’s prima facie case with a showing of an exposure of a valuable mineral deposit on those claims.

Finally, we consider whether contestees rebutted the Government’s case with respect to the RE 1 mining claim. Appellants focus on their general challenges to Judge Sweitzer’s analysis of the law or facts relating to oxidation and the cutoff grade, see infra, rather than on particular facts relating to that mining claim as supporting a discovery. Thus, we turn to the facts of record.

In Appendix 9.1a, the Lehmann Report identified dozens of outcrop and trench samples of low value. (Lehmann Rpt. Appendix 9.1a, 130-136a.) This data shows approximately 190 samples. See also Appendix 9.1b, sorted by sample ID. Of these, only 20 contain values above Lehmann’s own cutoff grade for C&A ore, 9 of which exceed 500 ppb, and 2 of which exceed 1000 ppb. These are depicted with no apparent pattern on Lehmann’s map at Figure 9.4, along trenches across the northern middle of the mining claim. The sample sites bear no relation to any of the three gold zones identified, and any value above 500 ppb appears to be surrounded by samples of markedly lower value. The only data from drill holes for the RE 1 claim appears in the TCM 1 drill hole. (Lehmann Rpt., Appendix 9.2b, 198a-199a.) One sample at the 80-85 foot depth interval valued 520 ppb. No other sample exceeded 240 ppb, and 12 drill hole data points out of 20 were below recognizable assay limits. “A discovery cannot be predicated upon * * * the exposure of * * * isolated bits of mineral on the surface of the claim, not connected with or leading to substantial values.” 2 American Law of Mining § 35.11[3][b]. We find nothing in contestees’ presentation to have refuted the Government’s case as to the lack of a discovery of a

valuable mineral deposit on the RE 1 mining claim. Nor do appellants sufficiently challenge Judge Sweitzer's conclusions with respect to that mining claim on appeal. See Decision at 54-55.

All that remains is to query whether contestees sufficiently rebutted the Government's case by advancing broader project-based arguments that Gruber's conclusions should be rejected for various reasons and that their own proposed plan was the more accurate representation of what a prudent miner would do. Appellants argue that Gruber's Report should be rejected, and that the Government did not properly establish its prima facie case, because Gruber refused to consider contestees' samples taken from float and talus. Ultimately, as demonstrated above, Judge Sweitzer considered all of the contestees' samples in determining whether appellants overcame the Government's case with respect to each mining claim. We have done the same. We must reject appellants' contention that the Gruber Report must be discounted because Gruber failed to consider such samples. While float or talus samples may be relevant to future exploration, such samples cannot form the basis for discovery of a valuable mineral deposit on a lode claim. United States v. White, 118 IBLA 266, 315, (1991); see also United States v. Highsmith, 137 IBLA 262, 269 (1996), aff'd, 198 F.3d 1072 (9th Cir. 1999).

Further, we endorse Judge Sweitzer's conclusions with respect to contestees' evidence of cutoff grade. He found their cutoff grades to be unreliable and far too low based on questionable gold prices, on insufficient cost information, on nonrepresentative and selective use of higher grade samples, and on overestimated reserves without evidence to support them. (Decision at 44-45.) He stated that contestees "provided no estimates of the amount of reserves within each claim" and he objected to the use of averages across the claim block. Id. at 45. We agree. Having considered the entire record, we find contestees' case to be speculative and lacking sufficient proof of the points identified by Judge Sweitzer. Likewise, their case is not "consistent with the facts of record" which indicate that appellants were still attempting to explore for more evidence of a mineral deposit.

Appellants argue that Gruber erred in employing Circular 831 and ask the Board to overrule United States v. Feezor, 74 IBLA at 83-85 n. 8, to the extent it relied on that circular. (SOR at 30.) We find no support for finding that errors that allegedly may have resulted from use of the Circular are material. More to the point, we see no basis for concluding that Gruber's assumptions regarding areas of influence (SOR at 21), which coincided with contestees', or the size of the ore body itself are refuted by contestees' speculative conclusions. Like Judge Sweitzer, we find contestees' assertions of 1200-foot vertical mineralization (Lehmann Rpt. at 54), to be speculative and factually unsupported, particularly given their lack of specificity regarding the effects of oxidation. To the extent appellants argue that Gruber's cost data was erroneous, even accepting Judge Sweitzer's modifications of it, we agree

with the Judge's conclusions that contestees' cost data was entirely unpersuasive. We note in particular our conclusion that contestees' data is based on an oxide mine model and that contestees' assertion that the data was modified in unspecified ways to reflect the facts of the Tootsie Creek deposit is entirely unexplained. The Lehmann Report states vaguely that it "increas[ed] capital and operating costs appropriately to reflect local conditions." *Id.* at 70. We cannot accept this contention given contestees' testimony that the facts with respect to the location of ore and waste are unknown. (Tr. 792-93).^{25/}

Appellants argue that Judge Sweitzer erred in agreeing with Gruber's mining plan because the plan refused to permit the C&A grade ore to "carry" the ROM ore. The decision stated that the revenues from mining ore within each claim must justify the costs of mining it. (Decision at 45, citing *Collard*, 128 IBLA at 302 (Burski, A.J., concurring).) Appellants argue that if the incremental return on investment in mining the three gold zones identified by Gruber would justify lower cost investment in less valuable ore, a prudent miner would do so and therefore would not consider a single cutoff grade. We need not address this difficult issue because we find that appellants have not overcome the Government's prima facie case with probative evidence of more than isolated, random gold values.

[4] Finally, we turn to the aspects of the case which appellants label as the unfairness of the process. Appellants challenge FLPMA's segregation provision at section 204(b) of FLPMA. 43 U.S.C. § 1714(b) (2000). They argue that the 1993 withdrawal was a "tactic" to keep them from further exploration leading to eventual mining. (July 17, 1998, Contestees' Proposed Findings at 46 ¶ 194.)

FLPMA vests in the Secretary of the Interior the authority to manage public lands; this includes the authority to segregate lands from operation of the public land laws. 43 U.S.C. § 1714(a) (2000). To the extent appellants challenge the segregation process enacted by FLPMA as unfair, the Board is in no position to

^{25/} We also reject contestees' cost figures because they failure to consider costs of reclamation. It is well-established that the costs of compliance with all applicable Federal and State laws (including environmental laws) are properly considered in determining whether or not the mineral deposit is presently marketable at a profit. *United States v. Pittsburgh Pacific Co.*, 30 IBLA 388, 405, 84 I.D. 282, 290 (1977), *aff'd sub nom. South Dakota v. Andrus*, 614 F.2d 1190 (8th Cir.), *cert. denied* 449 U.S. 822 (1980); *United States v. Kosanke Sand Corp. (On Reconsideration)*, 12 IBLA 282, 298-99, 80 I.D. 538, 546-47 (1973). "Under no circumstances can compliance be waived merely because failing to do so would make mining of the claim unprofitable." *Great Basin Mine Watch*, 146 IBLA 246, 256 (1998). EK Lehmann may not inflate the value of a mining claim with artificially low cutoff grades established by ignoring critical cost elements of mining.

reconsider legislation enacted by the U.S. Congress. Our authority derives from the executive; it does not coincide with that of the judicial branch. Mack Energy Corp., 153 IBLA 277, 293 (2000), citing Amerada Hess Corp., 128 IBLA 94, 98 (1993); William B. Wray, 129 IBLA 173, 178 (1994). Nor do we find reason to reconsider the Board's prior decision in Mount Royal Joint Venture, 144 IBLA at 280-81, upholding the process challenged here.

Moreover, a FLPMA segregation does not grant a mining claimant a perpetual right to explore within the boundaries of its mining claims, as appellants implicitly argue. A mining claim, to be valid, must be supported by the discovery of a valuable mineral deposit. Cameron v. United States, 252 U.S. at 459. "BLM may raise any applicable deficiency in the location, recordation, or maintenance of a mining claim so that the Department of the Interior may properly fulfill its duty to see that 'valid claims [are] recognized, invalid ones eliminated, and the rights of the public preserved'." Id. at 460. When it does so, if they wish to prevail contestees must defend against a contest even if the contest is initiated as a result of a withdrawal.

The record reveals that appellants spent 8-9 years exploring Tootsie Creek, during which they discovered exposures of a valuable mineral deposit along geologic formations associated with the Tootsie Creek stream system. See Lehmann Rpt., Figs. 4.3 and 9.4. They located some mining claims (the P 14, 15, and 16) early, in 1983, but did little to explore them for 9 years. By 1991, they located other claims in the three principal gold zones based on results of focused exploration in those areas. They explain in testimony and briefs that it was an "iterative" process. They began by exploring the Sweet Grass Hills. They focused their exploration on areas with promising initial results at the Tootsie Creek location within the Main, East, and South Fork Gold Zones, and exposed valuable mineral deposits there.

Various joint ventures with appellants formed and departed. Santa Fe expressly stated that the potential for a large operation was "virtually eliminated." (Suchomel memorandum at 2-3.) In 1989, CARI obtained approval from BLM for a drilling exploration plan which it did not complete.^{26/}

This was the status when BLM segregated the land. BLM provided options to permit limited exploration under the 1992 plan of operations, but EK Lehmann refused them. See Govt. Ex. 24, Feb. 6, 1997, Letter from BLM, Lewiston District Manager, to appellants' attorneys at 2-3 (options to explore "valid existing rights").

^{26/} Appellants argue that it was improper for Judge Sweitzer to rely on the Suchomel memorandum because Santa Fe departed in 1987, before subsequent exploration was done. (Aug. 29, 1998, Contestees' Reply at 3.) We do not construe the Suchomel memorandum as evidence of a validity examination. But appellants do not sustain their claim that it was error for Judge Sweitzer to consider such facts of record.

In the face of admissions by party witnesses that they could not identify ore in the alleged deposit and that the deposit under the contested claims was inferred (Lehmann, Soma), appellants' contention amounts to a challenge that the segregation deprived them of their rights to conduct exploration to identify whether the deposit extended into areas where a deposit was inferred. Their argument is based on the assumption that an exposure of a valuable mineral deposit could have been proven by further exploration on all the contested claims.

Appellants misread what is necessary to prove validity. To be valid a claim must be more than an interest justifying further examination. In one of its earliest decisions, the Board examined this issue, stating that a "distinct difference exists between evidence of mineralization which will induce men to engage in further prospecting or exploration in search of valuable mineral deposits and that which will induce them to expend their means in attempting to develop a valuable mine. Only the latter constitutes a valid discovery." United States v. Jones, 2 IBLA 140, 149 (1971) (citations omitted). There, the Board found that

all that the appellant's evidence amounts to is an unsubstantiated hope that pursuit of the exposed veins on the claims will disclose richer ore, and, viewed most optimistically, the evidence shows no more than a possibility that further exploration may disclose the existence of valuable mineral deposits somewhere on the claims. Such a showing does not constitute a discovery.

Id. (citations omitted). Thus, appellants err in suggesting that their claims are valid because they anticipate that drilling might verify their desired outcome.

Appellants assert that the Government cannot declare the six mining claims invalid because BLM prohibited them from exploring for the deposit in the 1992 exploration plan. (SOR at 41.) In their post-hearing brief, contestees argued that the Government may not declare invalid a mining claim "when it is shown that the Government prevented the claimant from entering their claims to gather information necessary to prove the existence of a discovery." (July 17, 1998, Contestees' Proposed Findings of Fact and Conclusions of Law and Brief in Support Thereof at 62, citing United States v. Mavros, 122 IBLA at 310-313.) They assert that "[f]urther delineation and testing of the ore by MRJV to determine recoveries was prevented because of the failure of the BLM to approve the Plan of Operations submitted in 1992." (SOR at 40-41.)

In fact, this assertion misstates the facts. BLM extended the opportunity to MRJV to amend its plan to conduct further exploration within the eight mining claims conceded to contain pre-existing discoveries; this information necessarily would have assisted appellants in determining recoveries in a deposit both parties concede to

have been exposed on those eight claims. (Govt. Ex. 24, Feb. 6, 1997, Letter from BLM to contestees' attorneys at 2-3.)

In any event, appellants' selected quote from Mavros does not reflect the substance of the decision in that case. There the Board held:

An Administrative Law Judge is precluded from declaring a mining claim void for lack of a discovery when it is shown that the Government prevented the claimant from entering their claim to gather the information necessary to prove the existence of a discovery. See United States v. Parker, [82 IBLA 344, 383, 91 I.D. 271, 294 (1984)]; United States v. Pool, 78 IBLA 215, 225 (1984). The critical question here is whether claimants were kept from doing the work necessary to prepare and present their case.

122 IBLA at 310. The Board distinguished between permitting a party to conduct sufficient exploration to prove its case that it had found a discovery within the meaning of the mining law prior to withdrawal, and exploring to find a discovery in the first place.

Following the withdrawal of land from mineral entry, a claimant may enter the claims to gather evidence that a discovery existed on the date of withdrawal * * *. On the other hand, the claimant may not drive an adit on what appears to be a promising structure in hopes of finding valuable mineral, as that activity would be considered further exploration to disclose a deposit not exposed prior to withdrawal.

Id. at 310-11 (citations omitted).

The ruling in Mavros derived from that in United States v. Foresyth, 15 IBLA 43 (1974), where appellant was denied an opportunity to obtain evidence that would prove a discovery made before the land had been withdrawn. The Board held:

There can be no question that for the claims to be valid a discovery of a valuable mineral deposit must be shown to have existed prior to a valid withdrawal. Cases so holding are legion. See e.g., Palmer v. Dredge Corp., 398 F.2d 791 (9th Cir. 1968), cert. denied, 393 U.S. 1066 (1969); United States v. Charleston Stone Products, Inc., 9 IBLA 94, 99 (1973), United States v. Gunsight Mining Co., 5 IBLA 62, 64 (1972), United States v. Clear Gravel Enterprises, Inc., 2 IBLA 285 (1971). A proper application for withdrawal has the same segregative effect, 43 CFR 2091.2-5(a). There is, however, a great difference between requiring that a discovery be shown to have existed prior to a

withdrawal and requiring that the discovery must be proven prior to the withdrawal.

United States v. Foresyth, 15 IBLA at 47-48.

The Board has subsequently acknowledged the proposition that claimants may not be prevented, “following withdrawal, from proving a pre-existing discovery on [a] mining claim.” United States v. Collord, 128 IBLA at 290. As the Board noted in United States v. Conner, 139 IBLA 361, 364 (1997), aff’d, 73 F.Supp.2d 1215 (D. Nev. 1999), “a crucial requirement is that the deposit be physically exposed as of the date of segregation from mineral entry. No further exploration to obtain such an exposure may be permitted after that date.” See also United States v. Waters, 146 IBLA at 182, reconsideration denied, 159 IBLA at 248.

Considering such precedent, it is clear from testimony of appellants’ witnesses that the purpose of the 1992 proposed exploration was to explore to obtain geologic information in order to identify future drilling targets:

The Royal East joint-venture property is in an early stage of exploration. Although both Santa Fe and Cominco ended their exploration efforts with drilling, vast areas of anomalous gold concentrations defined by a comprehensive gold-in-soil survey have never been adequately examined. Manhattan’s initial road/trench program is designed to obtain the required surface data needed to assess the property as a whole, and to determine the best locations/ suitability for subsequent drilling.

* * * It is Manhattan’s belief that for a successful exploration drilling campaign, we must first gather as much surface information as possible. While the soil data are encouraging, wildcat drilling the anomalies without adequate baseline geologic/rock geochemical information is not practical nor recommended.

Experience has shown total road/trench construction and reclamation costs are about a third of rotary drilling even in areas of steep topography (helicopter-supported core drilling would be even more expensive). Road/trench provides a cost effective exploration tool for defining drill targets in areas of poor exposure.

(Govt. Ex. 23, Apr. 4, 1992, Letter from Manhattan Minerals to BLM, and attached Addendum 1992-1, Response to Completeness Review #1 at 1 (emphasis added).) With this record evidence, we find no basis for concluding that a purpose of the 1992 plan was to confirm a pre-existing discovery on any of the contested mining claims.

This is further confirmed by the 1992 plan of operations itself. It did not propose drill hole exploration of the RE 2 or P 14 mining claims, or the relevant sliver of EB 6. (Lehmann Rpt. Fig. 8.2.) Thus, appellants have no argument that the Government precluded them from drilling to confirm discoveries existing on the RE 2, P 14, or the relevant portion of the EB 6 mining claim, as they presented no evidence that they they intended to do so.

Moreover, the Royal East Joint Venture proposed for the first time to drill in the P 15 and 16 mining claims and in a portion of the EB 6 mining claim which had never been explored. See id. at Figs. 8 and 9.4. Appellants' concessions that any deposit on the P 15 and 16 mining claims were based solely on geologic inference and the lack of any prior sampling on the portion of the EB 6 claim proposed to be drilled in the 1992 plan demonstrate that the purpose of the proposed plan was to explore there for exposures of valuable mineral deposits, not to certify pre-existing discoveries.

Finally, while the 1992 plan proposed three new drill holes in areas of the RE 1 mining claim, the evidence shows that the claimants were attempting to expand their exploration based upon "encouraging" soil data "to assess the property as a whole." We cannot endorse the notion that BLM's failure to approve this exploration deprived contestees of a right to gather information to prove the existence of a pre-existing discovery.

While appellants have raised a number of additional arguments, we find that none of them affects our conclusion that appellants have failed to rebut the Government's prima facie case by a preponderance of the evidence. To the extent these arguments are not expressly addressed herein they are rejected.

Therefore, pursuant to the authority delegated to the Board of Land Appeals by the Secretary of the Interior, 43 CFR 4.1, the decision appealed from is affirmed as modified.

Lisa Hemmer
Administrative Judge

I concur:

H. Barry Holt
Chief Administrative Judge

