In view of the decision on the merits, the Government's dispositive motion is denied as moot.

IT IS SO ORDERED.

GILA RIVER PIMA-MARICOPA INDIAN COMMUNITY, et al.

v.

The UNITED STATES.

No. 228.

United States Claims Court.

Oct. 29, 1982.

Plaintiffs, identifiable group of American Indians, brought claim for compensation for taking of tribal lands of Indian community in Arizona as of November 15, 1883. The Claims Court, Harkins, J., held that: (1) 10,400 acres of plaintiff's aboriginal territory which was used as Indian Reservation for unrelated group of Indians would be included in award area; (2) all of 478,950 acres of land which was not patented and was part of plaintiff's aboriginal territory which Government held for nearly 100 years subject to such uses as United States might designate would also be included in award area; (3) measure of compensation to be paid plaintiffs was value of award area on November 15, 1883, including enhancement for value of subsurface minerals; (4) evidence of sales of Mexican and Spanish land grants and of railroad land in and around area was of little value in determining valuation of award area; (5) fair market value of agricultural lands on date of taking was $9.75 per acre; (6) value of townsite land at date of taking was approximately $1 million; (7) grazing land at time of taking had value of 60¢ per acre; and (8) minerals known to be present and marketable in 1883 enhanced value of award area by $50,000.

Order accordingly.

1. Evidence ⇐570

Neither acceptance and use of evidence provided by experts, nor consideration of their opinions, requires court to reach same conclusions as expert, nor must court accept or reject expert's opinion in toto.

2. United States ⇐105

Where aboriginal title to area composed of 10,409 acres was in plaintiffs, who were identifiable group of American Indians, land was taken by United States and used for benefit of unrelated group of Indians, tract of land would be included in award area to be valued in plaintiffs' claim for taking of tribal lands. Indian Claims Commission Act of 1946, § 2, as amended, 25 U.S.C. (1976 Ed.) § 70a.

3. Indians ⇐10
United States ⇐105

Where 478,950 acres of land, administered by Bureau of Land Management, was held by United States for almost 100 years for undesignated use, aboriginal title to that land was extinguished; thus, land would be included in award area to be valued in Indians' claim for taking of tribal lands. Indian Claims Commission Act of 1946, § 2, as amended, 25 U.S.C. (1976 Ed.) § 70a.

4. United States ⇐105

Measure of compensation for taking of tribal lands to be paid plaintiffs, who were identifiable group of American Indians, was value of award area on November 15, 1883, which was date of taking as established by stipulation of parties.

5. United States ⇐105

Where fair market value of large tract of Indian land is to be found at remote date in past, without active, open market, Indian Claims Commission and court have considered variety of factors, including evidence of private sales or auction sales, location and physical characteristics of land, climate, type of settlers, history and development of area, economic conditions, natural resources of area, and size of area; furthermore, Indian land is valued with due regard to highest and best use of resources. Indian Claims Commission Act of 1946, § 2, as amended, 25 U.S.C. (1976 Ed.) § 70a.

6. United States ⇐105

In valuing Indian lands, highest and best potential uses are those which are possible and probable in context of land as it stood on taking date with knowledge then available, and intent is to find value that is realistic market price, by taking into account actual market, if any, for land, actual sales, and settlement trends in area, with final result being estimated value, not actual value.

7. Evidence ⇐570

Conclusions of expert are no better than soundness of reasons that stand in support of them.

8. Evidence ⇐142(1)

Use of actual sales in open market is preferred method to value land.

9. Evidence ⇐142(1)

Where sellers of Mexican and Spanish land grants could not guarantee title, and this was known to purchasers, evidence of sales of those lands were of little value in determination of value of aboriginal tribal land taken from Indians on November 15, 1883.

10. Evidence ⇐142(4)

In absence of showing that land available throughout western United States was comparable and competitive to aboriginal land taken from tribal community on November 15, 1883, evidence of value of that land was not relevant in determination of value of tribal land taken from Indian community.

11. Evidence ⇐142(1)

Where public land sales were nominal, and Government controlled prices to further public migration policy, prices at which nearby comparable government land, or railroad land, sold were not sufficient to establish value of lands taken from Indian community as of November 15, 1883.

12. Evidence ⇐113(1)

Reliance on statutory prices is act of last resort, when no other evidence is available to make valuation of Indian land.

13. Evidence ⇐142(1)

Value of prices of railroad land was not sufficient to establish value of land taken from Indians as of November 15, 1883, since land had been given to railroads and any selling price was profitable and acceptable to railroad.

14. United States ⇐105

Based on historical documents in record and in consideration of deficiencies in analysis proposed by respective experts for Indians and Government, Claims Court determined that 300,000 acres of land in award area of total area of tribal land taken from Indians as of November 15, 1883, had value of $13 per acre, inclusive of water rights; furthermore, after appropriate deduction were made for discounts for size of purchase and for purchaser's expenses, fair market value of agricultural land was determined to be $9.75 per acre.

15. Evidence ⇐571(7)
United States ⇐105

On basis of Indians' expert report, and consideration of record as whole in Indians' claim for compensation for taking of aboriginal tribal lands, it was established that award area had total of 3,760 acres of potential townsite land as of November 15, 1883, which was date of taking, and that total value of those lands was approximately $1 million at that time.

16. United States ⇐105

Method for determining rangeland area of award area of tribal lands taken from Indians as of November 15, 1883 by deducting from total award area agricultural land, townsites, and land physically unsuitable for grazing was accepted by Claims Court and used to determine that grazing area was 2,590,565 acres valued at 75¢ per acre at time of taking, with net value of 60¢ per acre after 20% discount was applied.

due to relatively large size of area to be sold.

17. Evidence ⇐555.6(2)

Failure to establish prospective profits by acceptable proof results in mere speculation about future use, which is no basis for valuing property.

18. Eminent Domain ⇐131

Mere presence of mineral does not prove market or value for it, but, rather, mineral must be shown to have use and be worth mining economically at time that land was taken in order to entitle plaintiff to recover fair market value of mineral content of land taken.

19. Evidence ⇐113(21)

In valuation of Indian lands, to propose value for minerals not demonstrably present is impermissible speculation.

20. United States ⇐105

In valuation of Indian land taken as of November 15, 1883, Claims Court concluded, based on record in case, that minerals known to be present and marketable in award area on date of taking had value of $50,000.

Z. Simpson Cox, Phoenix, Ariz., for plaintiffs; Cox & Cox, Phoenix, Ariz., Ira I. Schneier, Tucson, Ariz., and Sandra L. Massetto, Phoenix, Ariz., of counsel.

George R. Hyde, Washington, D.C., with whom was Asst. Atty. Gen. James W. Moorman, Washington, D.C., for defendant.

OPINION

HARKINS, Judge.

This claim for compensation for taking the tribal lands of the Gila River Pima-Maricopa Indian Community was filed on August 8, 1951, under Section 2 of the Indian Claims Commission Act.[1] The Indian Claims Commission, after trial in July and August, 1962, determined on December 17, 1970, that plaintiffs, an identifiable group of American Indians, held Indian title based on use and occupancy to a defined area of 3,751,000 acres in south-central Arizona. On January 20, 1972, the Commission decided that aboriginal title was extinguished on November 15, 1883, for lands not entered by settlers prior to that date.[2] In July 1976, the Commission took evidence on the value of the aboriginal lands as of November 15, 1883. On June 10, 1977, the Commission excluded from the record certain items in the report of defendant's appraisal expert. On May 8, 1978, the Commission by order certified and transferred the case to the United States Court of Claims.[3] Proof was closed on March 2, 1979, and posttrial briefing was completed on June 22, 1981.

Plaintiffs assert the total fair market value of the award area as of November 15, 1883, was $270,814,334. Defendant, on the other hand, says the fair market value as of that date was $2,418,484. On the basis of the record made before the Indian Claims Commission and the post-transfer briefing, the total fair market value as of November 15, 1883, of plaintiffs' aboriginal territory subject to valuation in this proceeding is determined at $5,529,339.[4]

The record on valuation consists of the testimony of nine expert witnesses at a

1. Indian Claims Commission Act of 1946, § 2, 25 U.S.C. § 70a (1976).

2. *Gila River Pima-Maricopa Indian Community v. United States*, 27 Ind.Cl.Comm. 11, 20 (1972), *aff'd*, 204 Ct.Cl. 137, 494 F.2d 1386, *cert. denied*, 419 U.S. 1021, 95 S.Ct. 497, 42 L.Ed.2d 295 (1974). For lands entered prior to 1883, the date of taking was the date of entry subject to stipulation as to an average entry date. The parties have agreed to use Nov. 15, 1883, as the date of taking of all lands taken prior to that date.

3. Pursuant to Indian Claims Commission Act of 1946, § 23, 25 U.S.C. § 70v (1976).

4. Plaintiffs' total market value amounts to $72.20 per acre for the entire aboriginal area of 3,750,000 acres and $81.75 per acre for the 3,312,858 net acres in the award area. Defendant's total market value amounts to $0.64 per acre for the gross area and $0.73 per acre for the award area. The value determined amounts to $1.47 per acre for the gross aboriginal territory and $1.67 per acre for the award area.

5-day trial in Scottsdale, Arizona, in July 1976, formal comprehensive reports prepared by the experts, and voluminous documentary evidence, including maps, charts, official reports, histories, and a variety of miscellaneous publications and writings contemporaneous with the taking date. Plaintiffs' appraisal testimony and evidence on farm and grazing land values was based on a two-volume report prepared by W.S. Gookin and Associates.[5] Plaintiffs' appraisal expert for a valuation of potential townsite lands was Neil A Thomas, M.A.I., an experienced professional in real estate appraisals and financing. Plaintiffs' expert on mineral values was Hale C. Tognoni, a lawyer, a geologist and mining engineer. Plaintiffs also presented testimony and a letter report of Thomas W. Patterson of Riverside, California, on the value and condition in 1883 of agricultural land in the Riverside area. Mr. Patterson is a recognized authority on California history and has a specialized knowledge of the Riverside locale.

Defendant's primary appraisal expert was Mervin J. Christensen, a recognized authority and consultant on land valuation matters. M.J. Christensen has been an expert witness for defendant in a number of Indian Claims Commission cases involving appraisal of Arizona lands.[6] On June 10, 1977, on plaintiff's motion, the Commission excluded parts of M.J. Christensen's report relating to the value of irrigable lands as evidence "on the ground that the data upon which the valuation was reached was based upon illegal transactions." Defendant's appraisal of the capacity of grazing lands was made by Joe T. Fallini, a range management specialist who had been an employee for 28 years of the United States Grazing Service and Bureau of Land Management. M.J. Christensen computed the value of rangeland recommended by defendant. Defendant's experts on mineral values were Ernest Overbillig, who prepared defendant's basic mineral valuation report, and Robert A. McColly, who testified as a rebuttal witness.

The experts of each party were recognized as expert witnesses and were qualified professionally to provide testimony and opinion on the respective subjects they addressed. The record reflects a wide variation in theory, methodology, and application of appraisal techniques among the experts which accounts for the extreme differences in the final recommendations of the parties. The experts agreed on the categories of highest and best use for tracts in the award area (agricultural, townsite and grazing) but on little else. The total amount of land in the award area, the amount suitable for each purpose, and the values for agriculture, townsite, grazing and mineral enhancement, all are subject to vigorous dispute. The case is further complicated by plaintiffs' rejection, in the final statement of its claim, of significant parts of its own experts' reports, opinions and conclusions. The final position that plaintiffs recommend is based on values that were not used by their experts.[7]

In this case, the factual material presented by the experts and their treatment of such material has been informative and of assistance. With the exception of the information and conclusions of plaintiffs' townsite expert (N.A. Thomas), whose report

5. This firm includes William S. Gookin, Sr., President, a civil engineer specializing in hydrology who was primarily responsible for determining the amount of land to be valued as agricultural land, and William S. Gookin, Jr., a civil engineer and a licensed real estate salesman, who was responsible for the portion of the report that valued farmland. Work on the report was shared, with both responsible for land classifications and conclusions. Valuation of land for this report was W.S. Gookin, Jr.'s first experience in land appraisals.

6. *e.g.* Apache Docket Nos. 22-D and 22-J, Papago Docket No. 345, and Mohave Docket No 295-A.

7. Plaintiffs assert they have not abandoned their expert witnesses' testimony or their methods, and cites *Tillamook Tribe of Indians v United States*, 4 Ind.Cl.Comm. 57, 62-63 (1955) for the proposition that information provided by experts as to conditions at valuation date, contemporary sales, and statistics on natural resources may be used although the experts' conclusions are not accepted.

reflects high professional standards in the application of recognized appraisal techniques, little credit has been given to the reports and conclusions of the various experts. In some particulars, they have been rejected for error, unreliability, or inconsistency with, or not justified by, other evidence in the record.

[1] Resolution of the disputes and contradictions among the expert witnesses, and the ultimate conclusion on value, is based on an analysis of the experts' opinions and a culling of relevant facts from the entire record. Neither the acceptance and use of evidence provided by experts, nor a consideration of their opinions, requires a court to reach the same conclusion as the experts. Nor must a court accept or reject an expert's opinion *in toto*.[8]

FACTS

29.** The perimeter of plaintiffs' aboriginal territory described in finding No. 23 contains a total area of 3,751,000 acres. The following tracts within the aboriginal lands contain tribal owned lands that are excluded from the area to be compensated in this proceeding:

Gila River Indian Reservation	372,022 acres
Salt River Indian Reservation	44,200 acres
Ak Chin Indian Reservation	21,840 acres
A tract described as the S ½ NW ¼, Sec. 10, T.5S, R.8E	80 acres
	438,142 acres

The net acreage (award area) to be valued in this proceeding is 3,312,858 acres.

[2] 30. (a) The Gila Bend Indian Reservation, 10,409 acres, also is within plaintiffs' aboriginal area. The Indians on the Gila Bend Indian Reservation are enrolled members of the Papago tribe, which is a recognized tribe distinct from the Pima-Maricopa tribes. The land in the Gila Bend Indian Reservation historically was not used exclusively by the Papago tribe. Aboriginal title to the area surrounding and including the Gila Bend Indian Reservation was in plaintiffs. The land for the Gila Bend Indian Reservation has been taken by the United States, but it has not been given or used for the benefit of plaintiffs. Accordingly, this tract of 10,409 acres is included in the award area to be valued.

[3] (b) Defendant's exhibits designate 478,950 acres, which as of 1973 were not patented. This land, administered by the Bureau of Land Management, includes 294,600 acres that are held without designated purpose. All of the land not patented is held by the United States for such uses as it may designate and plaintiffs' aboriginal title has been extinguished. Accordingly, the 478,950 acres of unpatented land are included in the award area to be valued.

31. Physical Characteristics

(a) The award area is in the Sonoran Desert in southcentral Arizona, in present day Maricopa and Pinal counties. Much of the area is plains or valleys with uniform grade or gentle slope. The grade is interrupted by isolated peaks and short ranges of mountains that rise abruptly from the plains. The area lies astraddle portions of the Salt and Gila Rivers and comprises an area about 175 miles in the east-west direction and 100 miles in the north-south direction. Populated communities include Phoenix, Florence, Tempe, Casa Grande, and Buckeye.

(b) Precipitation in the award area varies from a low of approximately 5 inches to a high of approximately 11 inches annually; 5 to 7.5 inches per year is typical for most of the area. Elevations between 1,000 and 2,000 feet have an annual rainfall of approximately 9 inches and at 2,000 to 4,000 feet there are about 12 inches per year. Rain falls in two seasons, late summer (July—Sept.) and winter (Dec.—Mar.).

(c) The average July temperature in the award area is 90° F and the average January temperature is 50° F. During the summer the temperature often will exceed 100° F. The dry atmosphere and the cooling effect of intense evaporation causes the sensible temperature to appear substantially lower than that indicated by the thermometer. The frost-free period is not uniform throughout the award area. The average date of the first killing frost in the fall varies from November 15 in Casa Grande to December 11 in Gila Bend. The average date of the last killing frost in spring varies from February 8 in Gila Bend to March 1 in Casa Grande.

(d) Most of the award area is covered with soil suitable for cultivation if provided with sufficient water. Although the soil in the area is not rich in nitrogen or humus and there are tendencies in some areas for alkali buildup, availability of water is the most important limitation on agricultural use of land. Irrigated land is capable of bearing fruit, grain and alfalfa crops.

(e) Rivers and streams flowing into and through the award area furnish the primary water supply for agricultural irrigation. The major streams are the Gila River and the Salt River; other streams include the Agua Fria River, the Hassayampa River, the New River, the Santa Cruz River, Cave Creek, Queen Creek, Skunk Creek and minor drainages called washes. The Gila and the Salt Rivers were the major sources of water for irrigation in 1883. The amount of water available from these rivers and streams in 1883 was erratic. During the late summer and winter rains, flooding would occur and in the early summer, parts of even the largest rivers would be dry. The water supply in the award area includes underground sources of water as well as rainfall. The Salt River, as an example, in 1883, would have, in areas, a dry bed but flow underground part of the year. Residents in the award area in 1883 tapped the underground water by wells for domestic use and for livestock. Irrigation had brought the level of underground water closer to the surface in some parts of the award area.

(f) Native vegetation of the award area was varied according to the altitude, availability of water, and alkaline content of the soil. At the higher elevations (3,000–5,000 feet) grasslands composed of gamma grasses were common. In the majority of the award area the virgin cover was a diverse combination of vegetation, including mesquite, cholla, creosote bushes, saguaros cactus, century plants, agave, yuccas, ocotillo, mescal, prickly pears, pink berries, screwbeans, and ironwood. Native vegetation also served as forage for livestock. The period 1870–90 saw a great increase in the demand for grazing land and overstocking resulted in depletion of forage and cover. Semi-desert conditions in the award area, when coupled with overstocking, produced a severe depletion and destruction in forage value.

32. General Economic Factors

(a) The Southern Pacific Railroad opened service in the Arizona Territory in 1877; and was operating in the award area at Gila Bend, Maricopa (now Heaton), and Casa Grande by May 1879. The first transcontinental railroad through the southwest was completed in 1881 at Deming, New Mexico. Stage lines connected Phoenix to the Maricopa station and Florence to the Casa Grande station. Numerous shortline railroads were started, primarily to mining camps. As of November 15, 1883, there was no railroad connection between Phoenix and the Southern Pacific Railroad. By November 15, 1883, transcontinental rail service was available to the award area for shipments to and from United States markets on both east and west coasts.

(b) Arizona became a territory in February 1863 and on November 15, 1883, it was in that status; it became a state on February 14, 1912. In the first territorial census in 1864, the total population was 4,575. The first capital was at Prescott; the fourth

8. *Yankton Sioux Tribe v. United States*, 224 Ct.Cl. 62, 623 F.2d 159 (1980); *United States v. Northern Paiute Nation*, 183 Ct.Cl. 321, 393 F.2d 786 (1968).

** Findings of fact Nos. 1–25 were made by the Indian Claims Commission on Dec. 17, 1970 (24 Ind.Cl.Comm. 301, 311–36); and findings of fact Nos. 26–28 were made by the Commission on Jan. 20, 1972 (27 Ind.Cl.Comm. 11, 17–20). Finding No. 23 described the boundary of plaintiffs' aboriginal lands; finding No. 28 established the date of taking as Nov. 15, 1883, for lands not entered by settlers prior to that date (*aff'd*, 204 Ct.Cl. 137, 494 F.2d 1386, *cert. denied*, 419 U.S. 1021, 95 S.Ct. 497, 42 L.Ed.2d 295 (1974)). The parties have stipulated Nov. 15, 1883, is the date of taking for all lands for purposes of valuation. The findings of the Indian Claims Commission are adopted.

territorial legislature moved the capital to Tucson, where, in November 1868, the fifth territorial legislature met. The ninth territorial legislature again moved the capital back to Prescott. In 1889, the capital was moved to Phoenix. The county of Maricopa was created in 1871, at which time doubt was expressed as to the ability of the Phoenix settlement to maintain a county government.

A special census in 1874 showed a total white population of Arizona at 11,480, divided among the five counties as follows: Pima, 5,598; Yuma, 1,926; Yavapai, 2,588; Maricopa, 834; Mohave, 534.

The 1880 census showed the total population of the territory to be 40,440, divided among the various counties as follows: Apache, 5,282; Maricopa, 5,689; Mohave, 1,190; Pima, 17,006; Pinal, 3,044; Yavapai, 5,013; Yuma, 3,215. Of the 24,267 male population, 10 years and over, 3,423 were engaged in agriculture; 7,272 were engaged in manufacturing, mechanical and mining industries.

On July 3, 1882, a census of Maricopa county showed a total of 6,408 people with 2,764 in Phoenix, 958 in Phoenix Valley, 674 in Tempe Valley, 173 in Lower Tempe Valley, and 451 in Mesa City. A total of 5,020 people, almost 80 percent of the county population, were within the award area in the Salt River Valley.

In 1874, Pima and Pinal counties were not separate entities; the population of Pima County was 5,598. In 1875 Pinal county was formed by dividing Pima county. The combined population in 1880 was 20,050, more than 3½ times the 1874 number.

(c) Interest rates throughout the United States in the post-Civil War period varied by reason of locality, current financial conditions, the nature of the security pledged, and the borrower—his character, ability to pay, and if his collateral were cattle, its condition. On loans made on cattle in the 1870's, interest frequently was at 15 percent. On the average, loans made during the 1880's were at 8½ percent interest regardless of the type of loan. The Atlantic and Pacific Railroad Company sold land throughout New Mexico and Arizona in 1880–83 on a 10-year payment period at 6 percent. Contemporary publications cite 6 percent interest rates for southern Arizona; in 1886, floating warrants were quoted at 10 percent for Pinal county. Interest rates on outstanding territorial bonds in 1890, for bonds issued since 1870, varied from 6 to 10 percent. The Union Pacific Railroad paid as high as 18 percent and 19 percent on capital in 1869.

(d) In 1859 the Pimas and Maricopas had over 15,000 acres under fence and in cultivation. Non-Indians began irrigation agriculture in the award area shortly after the Civil War, in 1867, with the Swilling Ditch diversion from the Salt River. The following canals were constructed prior to November 15, 1883:

1867—Swilling Irrigation Canal Company
1875—Salt River Valley Canal Company (South Branch of Swilling Ditch)
1875—Maricopa Canal Company (North Branch of Swilling Ditch)
1870—Tempe Irrigation Canal Company
1871—San Francisco Canal Company
1877—Utah Irrigation Ditch
1878—Grand Canal Company
1879—Mesa Canal Company
1883—Arizona Canal Company

Acreage of land cultivated by irrigation in the award area in November 1883 is unknown. Public documents in the record indicate that the bulk of irrigated land was in the Salt River Valley and amounted from 30,000 to 40,000 acres. Estimates for the Gila River Valley vary from 6,000 to 10,000 acres.

The annual report of the Governor of Arizona for the year ending June 30, 1887, estimates there were 400 miles of irrigating canals in Arizona, constructed at a total cost of over $1 million which would reclaim 215,000 acres.

33. Highest and Best Use

The 3,312,858 acres in the award area are valued as a unit, taking into consideration the most profitable use that could be made of separate tracts within the award area. On November 15, 1883, the highest and best uses for various tracts would have been for (1) agriculture, (2) town sites, and (3) grazing. The overall value includes an enhancement to account for the potential value of minerals within the award area.

34. Agricultural Land Area

(a) The factor limiting the amount of land in the award area that actually could be used as agricultural land was the availability of water. Plaintiffs' hydrology expert concluded, and defendant does not object, that there were approximately 1,265,728 acres in the award area that had soils suitable for agricultural production and could have been irrigated by means of gravity if water had been available.

(b) On the basis of Bureau of Reclamation reports covering 1914–45 data, plaintiffs' hydrology expert (W.S. Gookin, Sr.) calculated the Gila River, Santa Cruz River, Salt River, Agua Fria River, Hassayampa River and miscellaneous unmeasured tributaries, in 1883, in the award area had a total virgin flow of 2,271,900 acre-feet. This was adjusted for upstream depletions (mainly from irrigation farming) calculated to be present in 1883, to derive a figure of 2,239,000 acre-feet per annum as the virgin flow into the award area adjusted to 1883 conditions. Average monthly flows and median monthly flows were calculated to determine the water available at necessary times in the farming year. To determine the consumptive use of water by crops, selected cropping patterns were derived from the 1886 *Report of the Governor of Arizona to the Secretary of the Interior*, which showed that 45,200 acres were irrigated in the Salt River Valley, with 16,000 acres in barley, 14,000 in wheat, 10,000 in alfalfa, 700 in grapes, 500 in fruit trees, and 4,000 in miscellaneous products. The hydrology expert also developed a hypothetical cropping pattern which he believed would more fully utilize existing water supplies. On the basis of these cropping patterns and known rainfall, an average consumptive use of water was calculated for the award area of 2.5990 acre-feet of water per acre using the actual 1885 cropping pattern, and 2.0928 acre-feet of water per acre using the hypothetical cropping pattern. Adjustments for historical changes to obtain data reflecting 1885 consumptive use standards by species, and other corrections, produced a computation that showed 400,000 acres could be irrigated each year under actual 1885 cropping patterns, and that 575,000 acres could be irrigated if the hypothetical cropping pattern were used.

More than half the water available for irrigation, when the flow is unregulated, was said not to be utilized, because the water was available at the wrong time for the crops. With 400,000 acres irrigated, unused flow was calculated to amount to approximately 1¼ million acre-feet annually; and with 575,000 acres irrigated, the unused flow amounted to approximately 1 million acre-feet annually.

Plaintiffs' hydrology expert also computed the irrigable area if the streamflow in the award area had been partially regulated in the 1880's by two hydroelectric dams: one on the Gila River at Buttes and one on the Salt River at Orme. Use of the same methodology as for unregulated water resulted in a calculation where a total of 796,000 acres would be irrigable under the hypothetical cropping pattern with the two dams regulating the available water.

(c) Plaintiffs' hydrology expert adjusted his annual average irrigated acreage by an addition (20 percent) for fallow land—land subjugated but not irrigated. His conclusions were:

	Irrigated	Fallow	Total
Unregulated Flow			
Actual 1885 cropping pattern	400,000	100,000	500,000
Hypothetical cropping pattern	575,000	143,750	718,750
Partially Regulated Flow			
Hypothetical cropping pattern	796,000	199,000	995,000

(d) Plaintiffs' final claim is that the highest and best use for agriculture would have been achieved with a partially regulated streamflow, and that on November 15, 1883, there would have been 995,000 acres of farmland consisting of 796,000 irrigated acres and 199,000 fallow acres.

(e) Defendant's appraisal expert (W.J. Christensen) concluded that there were a total of 137,500 acres of land having a potential for irrigated agriculture in the award area as of November 15, 1883. These areas were identified as follows:

Salt River Valley	110,000 acres
Gila Bend Area	3,000 acres
Florence/Casa Grande Area	7,000 acres
Buckeye Area	17,500 acres

(f) The estimate for the 110,000 irrigable acres in the Salt River Valley was derived from a report published in 1902 by the University of Arizona Agricultural Experiment Station, Bulletin No. 43. This report, *Utilizing Our Water Supply*, prepared by Alfred J. McClatchie, was based on statistics for the period 1888–1902. It used as the available water supply 550,000 acre-feet per year, and 5 acre-feet as the average amount needed per acre per year for its conclusion that 110,000 acres could be "properly irrigated with the available supply under existing conditions." The report acknowledged that in many years more than 550,000 acre-feet of water was available, and that while alfalfa needs 4 to 6 acre-feet per acre per year, 2.0 to 2.5 acre-feet per acre is sufficient to grow grain. The 110,000 acre estimate was acknowledged to be "considerably less than the area the cultivation of which is being, or has been, attempted, and less than half the area under the canals of the Valley..."

Defendant's expert did not specifically identify the sources for the estimates for the Gila Bend area, Florence/Casa Grande area and the Buckeye area.

35. Townsite Area

(a) By November 15, 1883, towns and townsites in the award area included Phoenix, Tempe, Mesa, Florence, Casa Grande and Maricopa.

(b) Plaintiffs' principal appraisal expert for townsites (N.A. Thomas) analyzed 822 qualified sales involving 2,153 lots in Phoenix, its subdivisions, and in Florence, Tempe and Maricopa. Based on plat records, he determined that 2,640 acres near Phoenix and 1,120 acres near Tempe and in Pinal county, a total of 3,760 acres, had potential as townsites on November 15, 1883.

(c) Plaintiffs offered a secondary appraisal as independent confirmation of the Thomas valuation. This appraisal, by W.S. Gookin, Jr., valued 1,920 acres as townsites.

(d) Defendant's appraisal expert used the platted areas of Phoenix (1,900 acres), Tempe (500 acres), and Mesa (400 acres), rounded, to determine that the townsite areas on November 15, 1883, amounted to 3,000 acres.

36. Grazing Area

(a) Horses and cattle had been introduced into the award area by the beginning of the 18th century. By November 15, 1883, stock raising, principally cattle and sheep, had become leading enterprises. Thousands of head of sheep and cattle had been driven into Arizona during the 1870's. The completion of the Southern Pacific Railroad through Arizona in 1881 opened up the country, and thousands of cattle were subsequently imported from Mexico, Utah, and Texas.

(b) The methodology used by plaintiffs' appraisal expert (W.S. Gookin, Jr.) to determine the area of grazing lands was to exclude from plaintiffs' total award area (3,312,938 acres), agricultural lands (995,000 acres) townsites (1,920 acres), highways (2,720 acres), railways (2,279 acres), and rivers, streams, washes, and mountains (413,534 acres) to arrive at 1,897,485 acres of grazing land.

(c) Plaintiffs' final claim follows the same methodology, but substitutes 3,760 acres for townsites and does not exclude the acreage used for highways (2,720) and railroads (2,279). Plaintiffs' final computation for grazing area is: total award area acres (3,312,938), less agricultural acres (995,000), less townsites (3,760 acres), less rivers, streams, washes, and mountains (413,534 acres) to obtain 1,900,644 acres suitable for grazing.

(d) Defendant's grazing area appraisal expert (Joe Fallini) determined that 3,156,758 acres in the award area was the approximate potential range acreage on November 15, 1883, by excluding from defendant's total award area (3,927,258) the acreage that defendant's other expert (M.J. Christensen) found tillable (137,500) or suitable for townsites (3,000). The potential rangeland was further reduced by 866,000 acres because 184,000 acres were too steep, rocky, and mountainous for grazing and 682,000 acres were 10 or more miles from livestock water, to give a total grazing area for valuation of 2,290,758 acres.

37. Other Areas

Some of the lands in the award area are not classified as suitable for agriculture, for townsites, or for grazing and are given no independent value. The value of these lands is reflected in the increased worth of the agricultural areas, the townsites and grazing ranges, as well as in the mineral enhancement attributed to the entire award area.

Plaintiffs' expert (W.S. Gookin, Jr.) identified but made no independent valuation for lands of limited utility such as rivers, streams, washes and mountains (413,534 acres), highways (2,720 acres), and for railroads (2,279 acres), a total of 418,533 acres.

Defendant's appraisal experts made no independent valuation for the 866,000 acres of "barren land" considered to be too steep (184,000 acres) or too arid (682,000 acres) for use as grazing land.

38. Land Area Determinations

For purposes of valuation as of November 15, 1883, the highest and best use of tracts in the award area was as follows:

Use	Area
Agriculture	300,000 acres
Townsites	3,760 acres
Grazing	2,590,565 acres
Lands of Limited Utility	418,534 acres
Highways	2,720 acres
Railroads	2,279 acres
Total Award Area	*3,312,858 acres*

39. Agricultural Area Value

(a) Evidence relative to actual, legal sales of agricultural land in the award area is limited. Plaintiffs' principal expert on agricultural land values (W.S. Gookin, Jr.) rejected market comparison prices because Federal Government programs for land grants and policies to encourage settlement prevented a free land market in the 1880's and depressed land prices. By order on June 10, 1977, the Indian Claims Commission excluded the evidence and testimony of defendant's appraisal expert (M.J. Christensen) on the value of farmland in the award area "on the ground that the data upon which the valuation was reached was based on illegal transactions."

Historical documents in the record contain statements about farmland prices in the award area near the valuation date. The 1881 *Report of the Acting Governor of Arizona to the Secretary of the Interior* (H.R.Exec.Doc. No. 1, 47th Cong. 1st Sess. 924) stated that land in the Salt River Valley, with a water right, could be bought for $5 and $10 per acre, according to quality and station. Patrick Hamilton in 1883 reported that lands in the Salt River Valley that had not been improved were worth from $5 to $10 per acre and that improved land, with water rights sufficient for crop raising, was worth $15 to $30 per acre, according to the character of the soil and location (P. Hamilton, *The Resources of Arizona*, at 154 (1883)).

In 1887 Patrick Hamilton stated that patented land including a water right from 2 to 4 miles from Phoenix was priced from $40 to $100 per acre. Farther out, lands equally as good could be bought for from $20 to $30 per acre. To show the rapid increase in the value of lands near Phoenix, he stated that "tracts which are now selling at $500 per acre, could be bought three years ago for $25 and $40 per acre." (P. Hamilton, *What the Salt River Valley Offers to the Immigrant, Capitalist, and Invalid*, at 32 (1887)).

(b) The appraisal of farmlands in the report of plaintiffs' expert (W.S. Gookin, Jr.) presented values based on (1) the market comparison method of appraisal and (2) on the capitalization of income method. The market comparison analysis produced an 1883 present worth of an acre of improved land at $30.25. This amount was reduced

by deductions of 20 percent for profit, 5 percent for administrative costs, and $7.12 for costs of improvements ($1 for clearing, $3.62 for fencing, and $2.50 for water) to obtain a net price of $15.07 per acre for raw land based on sales prices. This method, and value, was rejected by the expert as being artificially low.

Plaintiffs' agricultural land appraisal also includes a comparison of similarities and differences between irrigated land in Riverside and Los Angeles counties, California in 1883 and land in the award area which could have been irrigated in 1883. The comparison generally was favorable to the award area, but the report contains no monetary value based on the comparison.

The report by plaintiffs' agricultural appraisal expert based on capitalization of income (income approach), found a net value per acre in 1883 for unimproved farmland in the award area of $61.88. This value was based on an assumed sale between a single willing buyer and a single willing seller, with financing available to the buyer at 6 percent annual interest, a plan to sell the land over a 10-year period in equal increments, administrative costs, exclusive of land development, of 5 percent, and an anticipated profit of 20 percent. Land improvement costs totaled $7.12 per acre (clearing $1, fencing $3.62, and water $2.50).

The methodology utilized by plaintiffs' appraisal expert was (1) to determine the per acre profit of crops grown: wheat ($16.63), barley ($16.88), alfalfa ($21), grapes ($179.52) and fruit ($381.34); (2) to allocate the 45,200 irrigated acres in the Salt River Valley on a permanent basis to each crop in accordance with the annual cropping pattern reported in the 1886 *Report of the Governor of Arizona to the Secretary of Interior*; (3) application of the annual profits per crop to the percentage weights to derive a composite annual profit of $25.44 per year, and (4) application of a present worth factor of 5 (a 20 percent annual rate of return) to obtain a land value of $127.20 per acre. Next, plaintiffs' appraisal expert computed an 1883 farmland value by application of the George Barr crop price/land price analogy (G. Barr, *Production, Income, and Costs* (1951)). This relationship produced an 1883 value of farmland at $125.22 per acre. These two values were rounded to $125 per acre, which value then was discounted as follows:

Value Per Acre	$125.00
Present Worth on 10-Yr. Sale (6 percent interest)	$ 92.00
Administrative Cost (5 percent)	(4.60)
Profit (20 percent)	(18.40)
Land Improvement Cost	(7.12)
NET VALUE	$ 61.88

(d) Plaintiffs' final claim uses the capitalization of income approach but abandons some of the elements used by its appraisal expert: the capitalization rate was changed from 20 percent to 10 percent; 1883 net income from wheat was raised from $16.63 to $18.42 per acre. These changes, on the basis of crops grown in 1883, raised the appraiser's $127.20 per acre value to $254.40 per acre. Plaintiffs' final claim also computes an income approach value on the basis of the contention that the highest and best agricultural use would change the cropping pattern to more profitable crops such as fruit trees, grapes and vegetables. Plaintiffs' cropping changes for the highest and best farming use increased the value to at least $500 per acre, which was adjusted by deduction of $10 per acre for improvement costs (in lieu of the appraiser's $7.12 per acre improvement cost) to produce a value of $490 per acre. Plaintiffs' final claim is further adjusted to provide a value if the entire award area were to be purchased by a corporation that could put it to the highest and best use, on the basis of long term master planning that included complete knowledge of all assets and potentials for hydroelectric and irrigation developments. This adjustment provided for alternative values based on purchase by (1) a corporate purchaser that would retain and develop the entire award area, (2) a promoter-speculator that would require "payment be made only upon an acreage release basis or at the end of the 10 year period," and (3) a purchaser-speculator that purchased for cash for resale over a 10-year period. Plaintiffs made further adjustments in the discount rates and calculated values based on adoption of (a) the 1883 cropping pattern or (b) the cropping pattern that would realize the highest and best agricultural use. Values per acre for agricultural lands in plaintiffs' final claim are summarized:

	1883 Cropping Pattern	Best Cropping Pattern
1. Purchaser to Retain and Develop	$250	$490
2. Promoter-Speculator Purchase on Delayed Payment Basis for Resale	$200	$392
3. Promoter-Speculator Purchase for Cash for Resale	$146.20	$288.51

(e) By order of the Indian Claims Commission on June 10, 1977, the opinion of defendant's appraisal expert on the value of agricultural lands was stricken from the record. Defendant's final estimate of the fair market value of 137,500 acres in the award area having potential on November 15, 1883, for irrigation is $7.50 per acre. This estimate is based primarily on historical documents, and on evidence of the price of land in the award area or nearby, held under Spanish or Mexican land grants, sales by railroads in northern Arizona, and distributions or sales by United States Government of lands in the public domain.

40. Townsite Values

(a) Plaintiffs' townsite appraisal expert (N.A. Thomas) made a well documented appraisal utilizing the market data approach to determine that the total 3,760 acres in the award area suitable for townsites had a potential gross sale value of $2,009,600, which a series of discounts totaling 51 percent reduced to $1,000,500 (rounded to $1 million), an amount an investor was believed most likely to pay. This appraisal considered 800 sales from four towns in 21 subdivisions in the award area. Sales data were analyzed in four categories: (1) key townsite (original Phoenix), (2) secondary subdivisions (platted areas surrounding Phoenix), (3) homestead acreage (subdivisions with small acreage homesites), and (4) additional Maricopa and Pinal county townsites. Discounts necessary to attract a buyer of a large area for subdivision purposes were applied for terms and improvements (10 percent); size (time) at 8 percent interest—(4-year sellout—17 percent; 8-year—28 percent; 10-year—33 percent); administrative and survey (5 percent); and profit (20 percent). Total discount on a 4-year sellout period was 43 percent; for an 8-year sellout period, 51 percent; and for a 10-year period, 54 percent. Townsite appraisal values produced by plaintiffs' expert by application of a discounted cashflow analysis of three subdivisions and additional townsites in Maricopa and Pinal counties are summarized (lots 90 percent saleable and acreage at 90 percent efficiency):

	Area	Gross Retail Value	Discounted Present Worth
1. Key Townsites (4-year sellout)	320 acres in 1,224 lots (1,102 lots at 90 percent)	$350/lot	$199/lot
2. Secondary Subdivisions (8-year sellout)	640 acres; (2,160 lots at 90 percent)	$225/lot	$111/lot
3. Homestead Acreage (10-year sellout)	1,680 acres (1,512 acres at 90 percent)	$350/acre	$160/acre
4. Additional Maricopa and Pinal county townsites (8-year sellout)	1,120 acres (1,890 lots; 454 acres at 90 percent)	$250/lot $300/acre	$122/lot $148/acre

(b) Plaintiffs' final claim abandons parts of its expert's analysis to eliminate discounts for terms and improvements and all size (time) discounts and to apply a 28 percent cumulative discount. Gross retail values for each of the four townsite categories were totaled and the 28 percent cumulative discount applied to that total. Plaintiffs' final claim values the 3,760 townsite acres as of November 15, 1883, at $1,446,800 as follows:

	Area	Gross Price
1. Key Townsite	1,124 lots	$350/lot
2. Secondary Subdivisions	2,160 lots	$225/lot
3. Homestead Acreage	1,512 acres	$350/acre
4. Additional Townsites	1,890 lots 454 acres	$250/lot $300/acre
TOTAL RETAIL VALUE		$2,009,500
Less 28 percent cumulative discount		562,700
DISCOUNTED WORTH		$1,446,800

(c) Defendant's townsite appraiser (M.J. Christensen) valued 3,000 acres as townsites at $53.68 per acre as of November 15, 1883. This value was based on an examination of approximately 800 lot transactions from the Phoenix, Mesa, Florence, and Tempe areas, 300 of which were listed in the appraisal report, covering the period from 1877–83, from which the appraiser found a mean sale price for all lots of approximately $112 per lot ($414 per acre, at 3.7 lots per acre). Application of an 80 percent factor for costs, improvements, and other risks, resulted in a per acre value of $80, which was then reduced $26.32 for holding costs over a 10-year period at 8 percent interest.

41. (a) Plaintiffs' grazing land valuation expert (W.S. Gookin, Jr.) applied the income approach to determine that the fair market value of an acre of rangeland on November 15, 1883, was $0.83. From historical data, the expert's report placed the average carrying capacity in 1883 of rangeland in the award area at 25 acres per head annually (25 AU). An annual profit of $0.22 per acre was calculated from historical data: 1883 fair market value of cattle was $20.42 per head; cattle losses were 7½ percent of herd; cost of breeding stock was $9,740; costs of raising cattle were $0.70 per head labor; taxes were $0.20 per head; fencing costs were $0.61 per head; and miscellaneous costs were $0.10; rental costs per acre per year of rangeland were $0.05. The computation assumed an initial startup cost of $24,900 for a 25,000 acre ranch, with a net income in the second and succeeding years of $7,519; and an interest rate of 6 percent per year. The annual profit was capitalized at 20 percent, giving an 1883 present worth of $1.11, from which was deducted 20 percent profit and 5 percent administrative and promotional costs, to give the net per acre value of $0.83.

(b) Plaintiffs' final claim utilized the same methodology to reach a per acre fair market value in 1883 of $0.83.

(c) Defendant's rangeland valuation appraisal expert (M.J. Christensen) utilized the range resources and livestock data prepared by defendant's grazing land expert (Joe Fallini) and applied a market data approach to reach a fair market value for rangeland of $0.52 per acre. In his report, Joe Fallini used virgin condition carrying capacities for rangeland in the award area obtained from 1936 data in *The Western Range* (S.Doc. No. 199, 74th Cong., 2d Sess., at 75–104), which were decreased 25 percent to reflect estimates for vegetation depletion from overstocking by 1883. The rangeland value appraiser considered seven sales with carrying capacities ranging from 34 AU to 42 AU, and ranging in price from $0.50/acre to $1.00/acre. He concluded that an average price per acre of $0.70 was representative, applied a 25 percent discount for size (time), to reach the $0.52 per acre value.

42. Value Determinations

On November 15, 1883, the market value of the various tracts in the award area, on the basis of their highest and best use, was as follows:

	Acres	Value Per Acre
Agricultural Lands	300,000	$ 9.75
Townsites		
Key Townsites	320	$684.
Secondary Subdivisions	640	$374.
Homestead Subdivisions	1,680	$144.
Additional Maricopa and Pinal Counties	1,120	$268.
Total Acreage	3,760	Average $266.

	Acres	Value Per Acre
Grazing	2,590,566	$ .60
Other Lands (Limited Utility, Highways, Railroads)	418,533	No independent value

43. Mineral Enhancement

(a) Until 1880, on completion of a transcontinental railroad, there was little development of Arizona Territory mineral deposits. Early mining in Arizona Territory was done by individual miners who worked alone or in small groups, and until the return of federal troops after the Civil War, hostile Indians made work in remote mine locations dangerous.

Investment capital became available with railroad transportation and the territory's mineral production increased dramatically. Bullion output doubled between 1879 and 1880 and again in 1881. The 1883 *Report of the Governor of the Arizona Territory to the Secretary of the Interior* gave the following statistics:

"According to the best information at hand, the production of Arizona in gold and silver for the four years ending December 31, 1882, was as follows:

1879	$1,942,403
1880	$4,472,471
1881	$8,198,766
1882	$9,298,267"

The 1884 *Report of the Governor* contained the following statement:

"Our industries have improved with development, although the product of our mines has been considerably less for the past year than for the preceding twelve months. Several large bullion producing properties have been lying idle a considerable portion of the year, owing, it is stated, to the heavy expense of operating, high transportation rates, and depreciation in the grade of the ore being treated. While the ores of Arizona are undoubtedly of a higher average grade than those of Colorado or other localities with which comparisons can be made, the expense of mining, and especially of transportation, is much greater."

(b) Plaintiffs' mineral expert (H.C. Tognoni) discussed mineral wealth in the "Gila and Salt River Basin Mineral Province" (Mineral Province), an area that encompassed the award area and parts of an additional 11 mining districts. The Mineral Province contained a number of large mines and mining areas not within the award area, and most of the discussion in the expert's report concerns the Mineral Province and not the award area specifically. None of plaintiffs' evidence shows exceptional mining activity in the award area at or near November 15, 1883. Plaintiffs' expert, and plaintiffs' final claim, estimate the mineral enhancement value of the award area as of November 15, 1883, at a total of $19,040,000. Plaintiffs' expert listed the following:

SUMMARY OF ESTIMATED MINERAL VALUES FOR THE MINERAL PROVINCE

Item	Value
1. Sand, gravel and crushed rock	$ 6,300,000.00
2. Iron ore	5,400,000.00
3. Large low grade copper deposits	5,000,000.00
4. Small gold and silver mines (10 at $100,000 each)	1,000,000.00
5. Mining claim values	1,000,000.00
6. Clays	100,000.00
7. Building stone	100,000.00
8. Mercury	50,000.00
9. Mica, barite and fluorite	50,000.00
10. Titanium and kyanite	10,000.00
11. Building material (primarily lime kiln products	10,000.00
12. Manganese and miscellaneous materials	20,000.00
TOTAL ESTIMATED VALUE	$19,040,000.00

(c) Defendant's mineral expert (E. Oberbillig) noted and discussed 14 mining districts that were contained in or crossed the award area. Defendant's expert considered that only two districts (Winifred and Mineral Hill) had sufficient information available to justify an opinion on value. The other 12 mining districts were found to have no mineral value on November 15, 1883.

The Winifred district was reported to have been discovered in 1879 or 1880, and to have several small properties opened and ready for a mill in 1883. The report found that 4,000 tons of gold ore at $25 per ton could be available for mining in 1883, and assumed 2 years to mill out the 4,000 ton

reserves. The report estimates $6 per ton mining cost, $4 per ton hauling cost, and $10 per ton milling cost, with $5 resulting per ton profit, or $10,000 per year net profit for 2 years. This was discounted 25 percent, for the hazards of mining, to produce a present value on November 15, 1883, of $14,400 which, was rounded to $15,000. Mercury deposits were said not to be discovered until after 1883 in the Winifred district, and the low grade, small, ore veinlets would not permit any mineral value to be assigned.

In the Mineral Hill district, 80–95 percent of the patented mines were reported to be outside the award area. Two mines, the Specie Pay and the Alice, were principal locations that were discovered in approximately 1877. Historical data (P. Hamilton, *Resources of Arizona*, at 206–07 (1884)) shows that the Alice was operating with a five-stamp mill in 1883 and was turning out over $12,000 per month, with ore averaging $30 per ton silver.

Defendant's expert assumed a sustained capacity of 250 tons per month of $30 silver ore. Costs were $10 to mine and $10 to mill, with the remaining $10 for mill installation, mine transportation, roads and profit. For 3,000 tons of ore per year, gross profit was $30,000, which, when discounted for 2 years at 25 percent, gave a gross profit of $43,200. Deduction of $15,000 for cost of mills, roads, and mine work resulted in a net value of $28,200. Defendant's expert added $20,000 for lead-silver ores that would require smelting processing, to give a total value for the Mineral Hill district of $48,200, which he rounded to $50,000. Defendant's expert determined that 40 percent of the producing area of lead-zinc-silver veins was within the award area. With 40 percent applied to the $50,000 total value, the value of Mineral Hill within the award area became $20,000.

Defendant's expert concluded that the two districts, and the entire award area, had a total mineral value on November 15, 1883, of $35,000.

44. Mineral Enhancement Determination

On November 15, 1883, the value of known and marketable minerals in the award area added $50,000 to the value of the land.

ANALYSIS

Although the parties agree as to the approximate total size of plaintiffs' aboriginal lands within the boundary delineated by the Commission,[9] they disagree on the amount of land to be valued in this proceeding (award area). Plaintiffs originally claimed the award area contained 3,312,938 acres, and later revised this figure to 3,018,338 acres. Defendant places the net volume of the award area at 3,297,258 acres.

The 10,409 acres of the Gila Bend Indian Reservation sought to be excluded by defendant, are included in the award area because defendant has taken and given that part of plaintiffs' aboriginal territory for the use of an unrelated group of Papago Indians.

9. Finding No. 23 (24 Ind.Cl.Comm. 301, at 335) describes the boundary of the lands exclusively used and occupied in Indian fashion by the Pima and Maricopa Indians as follows:

"Commencing at the town of Gila Bend, Arizona; thence northwesterly in a straight line to the peak of Face Mountain; thence northeasterly in a straight line to the town of Wintersburg; thence northeasterly in a straight line to the northernmost edge of the White Tank Mountains; thence northeasterly in a straight line to the most southern edge of Lake Pleasant; thence southeasterly in a straight line to the juncture of the Salt and Verde Rivers; thence southeasterly in a straight line to Dromedary Peak; thence southerly in a straight line to the town of Price on the Gila River; thence south-southeasterly in a straight line to the peak of Black Mountain; thence west-southwesterly in a straight line to the town of Redrock; thence west-northwesterly in a straight line to Picacho Peak; thence west-northwesterly in a straight line to the northernmost northeast corner of the Papago Indian Reservation; thence west along the northern border of that reservation to its northwest corner; thence west to the peak of Table Top Mountain; thence west-northwesterly through Lost Horse Tank to the point of beginning at Gila Bend."

Plaintiffs' latest award area revision would exclude 294,600 acres of federally administered land that are unpatented and held without a designated purpose. Plaintiffs rely on Indian Claims Commission finding No. 25 for its contention that these acres were never taken and beneficial ownership of the lands was never lost.[10] The Commission's determination that November 15, 1883, was the date of taking was based on the finding that enlargement of the Gila River Reservation "manifested the Government's intention to assert dominion over the entire subject tract." The record is barren of any indication of Government action that is contrary to such intention. Of the total 478,950 acres of land not patented, 184,450 acres are federally held for designated purposes. All of the remaining 294,600 acres, however, have been held for nearly 100 years subject to such uses as the United States may designate. In these circumstances, plaintiffs' aboriginal title has been extinguished. All of the unpatented land, accordingly, is included in the 3,312,858 acres of the award area.

[4] The measure of compensation to be paid to plaintiffs is the value of the award area on November 15, 1883, including an enhancement for the value of subsurface minerals.[11] What is sought is the "fair market value," subject to the gloss given that term by the Commission and by courts in Indian cases.

Fair market value is defined as the

"highest price estimated in terms of money which land will bring if exposed for sale in the open market with a reasonable time allowed to find a purchaser buying with knowledge of all the uses and purposes to which it is best adapted and for which it is capable of being used." [12]

[5] Where the fair market value of a large tract of land is to be found at a remote date in the past, without an active, open market, the Commission and the court have considered a variety of factors, including evidence of private sales or auction sales, the location and physical characteristics of the land, climate, the type of settlers, the history and development of the area, economic conditions, natural resources of the area, and size of the area.[13] Indian land is valued with due regard to the highest and best use of the resources of the award area.[14]

Defendant argues that the fair market value of the award area is not a theoretical or hypothetical concept but represents an actual selling price. A price that "a purchaser in fair market conditions would have given for it in fact,—not what a tribunal at a later date may think a purchaser would have been wise to give. . ." [15]

Plaintiffs value the award area on the basis of a realization of an ideal buyer operating in a perfect market. Plaintiff postulates a single corporate buyer of the entire award area who had complete knowledge of all contemporary information and access to professional advice that accurately could predict all future economic trends and technological developments and at the same

10. 24 Ind.Cl.Comm. 301, at 336. Finding No. 25 issued Dec. 17, 1970, clearly defers determination until a subsequent hearing. It reads:

"25. *Areas Not Taken.* It appears that some areas within the perimeter of the subject tract may be the subject of Spanish-Mexican land grants, or were never taken from the plaintiffs, so the determination of such areas will be reserved for the next proceeding in this case."

11. *United States v. Northern Paiute Nation*, *supra* note 8, 183 Ct.Cl. at 339, 393 F.2d at 796.

12. *Miami Tribe of Oklahoma v. United States*, 146 Ct.Cl. 421, 450, 175 F.Supp. 926, 943 (1959). *Osage Nation v. United States*, 3 Ind. Cl.Comm. 231, 235–6 (1954).

13. *Miami Tribe of Oklahoma v. United States*, *supra* note 12, 146 Ct.Cl. at 450–51, 175 F.Supp. at 943; *Nez Perce Tribe v. United States*, 176 Ct.Cl. 815, 825 (1966), *cert. denied*, 386 U.S. 984, 87 S.Ct. 1285, 18 L.Ed.2d 233 (1967); *Otoe and Missouria Tribe v. United States*, 131 Ct.Cl. 593, 633, 131 F.Supp. 265, 290, *cert. denied*, 350 U.S. 848, 76 S.Ct. 82, 100 L.Ed. 755 (1955).

14. *Tlingit and Haida Indians v. United States*, 182 Ct.Cl. 130, 137, 389 F.2d 778, 783 (1968).

15. *City of New York v. Sage*, 239 U.S. 57, 61, 36 S.Ct. 25, 26, 60 L.Ed. 143 (1915).

time avoid unnecessary or development costs and wasteful duplication of facilities. Such a buyer would realize through master planning, with knowledge of all assets and potentials to be developed or found in the future, the highest and best uses of the agricultural, townsite, mineral and hydroelectrical resources so as to reap the highest long-term profits for its stockholders. In short, plaintiffs indulge in a speculative fantasy that assumes there was a buyer on November 15, 1883, that had $270,814,334 and was willing to pay that amount for 3,312,858 acres of the Sonoran Desert in south central Arizona.

Plaintiffs cite comments, in decisions involving valuation of mineral resources in Indian lands, to the effect that a hypothetical purchaser could have the ability to avoid, through common ownership, the wasteful exploitation of mineral resources that had been observed when sites were mismanaged by several unrelated and uncoordinated owners who operated without good geologic advice.[16] Plaintiffs misread these cases.

The assumption of a single purchaser is a convenience to facilitate decision, "a figment at best like the ordinary prudent man."[17] Both this court, and the Commission, have noted that piecemeal exploitation of a large mineral resource, such as the Comstock Lode in Nevada, may have been wasteful. Neither, however, has imposed a large scale, unified exploitation system in valuing a resource. In the cases plaintiffs cite, there is no indication that the value of the land was adjusted to represent a corporate purchaser or a unified development.[18] Imagination of a corporate colossus to exploit the award area as urged by plaintiffs, including the building in 1883 of hydroelectric dams in the south central Arizona territory, can neither be supported by the record nor by reason.

[6] Plaintiffs misunderstand the application of the highest and best use standard. In valuing Indian lands, the court has required the land to be valued as a whole in the light of its highest and best potential use, rather than by a separate appraisal of component resources such as timber, fisheries, townsites and bare land. This is to avoid duplication when the tract is subject to multiple uses.[19] This does not preclude, however, the valuation of separate tracts within a larger area, with each tract being valued at its most profitable use.[20] No case justifies the imagination of technological improvements that could not reasonably have been foreseen to reach an idealized highest and best use. The highest and best potential uses are those which are possible and probable in the context of land as it stands on the taking date and knowledge then available. The intent is to find a value that is a realistic market price, by taking into account the actual market, if any, for the land, actual sales, and settlement trends in the area.[21]

The final result is an estimated value, not an actual value. There could be no actual buyer and no actual seller of the award area; there is no actual selling price for the award area that needs only to be ferreted out by a court. The task in this case is to estimate what a single, hypothetical, well-informed purchaser would have paid a hypothetical, well-informed seller for 3,312,858 acres of Arizona land on November 15, 1883, when each of the hypothetical dealers valued the land as a whole, with a recognition that different tracts in the award area could have different most profitable uses.

16. *United States v. Northern Paiute Nation*, supra note 8, 183 Ct.Cl. at 342–44, 393 F.2d at 798–99; *Hualapai Tribe v. United States*, 17 Ind.Cl.Comm. 500, 513 (1966).

17. *United States v. Northern Paiute Nation*, supra note 8, 183 Ct.Cl. at 345, 393 F.2d at 800.

18. *United States v. Northern Paiute Nation*, supra note 8; *Hualapi Tribe v. United States*, supra note 16.

19. *See Yakima Tribe v. United States*, 158 Ct.Cl. 672, 696 (1962). *Citizen Band of Potawatomi Indians of Oklahoma v. United States*, 179 Ct.Cl. 473, 391 F.2d 614 (1967), *cert. denied*, 389 U.S. 1046, 88 S.Ct. 771, 19 L.Ed.2d 839 (1968).

20. *See Tlingit and Haida Indians v. United States*, supra note 14, 182 Ct.Cl. at 137–38, 389 F.2d at 783–84; *Uintah and White River Bands of Ute Indians v. United States*, 139 Ct.Cl. 1, 152 F.Supp. 953 (1957).

21. *Otoe and Missouria Tribe v. United States*, supra note 13, 131 Ct.Cl. at 633, 131 F.Supp. at 290.

On the valuation date, the highest and best uses for various tracts in the award area would have been for agriculture, townsites, and for grazing. Land which can be valued as agricultural land in the award area is the most valuable.

Historically the Pima-Maricopas had developed and used highly sophisticated irrigated farming methods that, unless the water from the Gila and the Salt Rivers failed, yielded plentiful crops. The agricultural areas in the mid-19th century were concentrated along both sides of the Gila River from the confluence of the Gila and Salt to Sacaton. The Gila River Indian Reservation contains 372,022 acres that encompass much of the land adjacent to the banks of the Gila. It was established, and later enlarged, to protect the cultivated and irrigated lands of the Pima-Maricopa from encroachment by white settlers.[22]

The number of acres of agricultural land in the award area is determined by the amount of water available for irrigation, not the acreage of arable land. The experts generally agree that there were approximately 1,265,000 acres in the award area that could have been used for farming with irrigation by gravity if water had been available.

Plaintiffs' evidence on the amount of available agricultural land was prepared and presented by a hydrology expert who estimated the amount of water available in 1883 in the award area from Bureau of Reclamation reports covering 1914–45 data. He then calculated a consumptive use of water, by crops, using actual 1885 reported cropping patterns and a hypothetical cropping pattern that would more efficiently utilize available water supplies, and produced the conclusion that 400,000 acres could have been irrigated under 1885 cropping patterns and 575,000 acres could have been irrigated under an ideal cropping pattern.[23] Plaintiffs' hydrology expert adjusted his computations of agricultural acreage by the addition of 20 percent for fallow land—land that had been subjugated but was not irrigated because of crop rotation practices. To the 400,000 acres available under 1885 actual cropping patterns, the expert added 100,000 acres for fallow land.

It may be valid that in 1883 a hypothetical purchaser might expect 20 percent of the farming land would have to lie fallow each year. Such a purchaser, however, would not add it to the total acreage for which water could be expected to be available. The hydrology expert's calculations of water availability for 400,000 acres rest on a tenuous analysis of 1885 cropping patterns and assumes ideal irrigation and farming practices. To give effect to these uncertainties, a purchaser would subtract the 100,000 acres for fallow land from the total for which water could be expected to be available.

Defendant's appraisals were presented in a report by the Idaho Land & Appraisal Service, which included three separate reports by different individuals on: (1) the quantity and value of agricultural land in the award area; (2) range resources and livestock data; and (3) minerals in Gila River—Pima-Maricopa tract. The Commission's June 10, 1977, Order excluded parts of the report of defendant's farming expert pertaining to the value of irrigable land in

22. *Gila River Pima-Maricopa Indian Community v. United States*, 27 Ind.Cl.Comm. 11, 18 (1972), *aff'd*, 204 Ct.Cl. 137, 494 F.2d 1386 (1974), *cert. denied*, 419 U.S. 1021, 95 S.Ct. 497, 42 L.Ed.2d 295 (1974).

23. Plaintiffs' expert also made a computation based on partial regulations of streamflow if two hydroelectric dams were erected on the Gila, at Buttes, and on the Salt, at Orme. This exercise resulted in the conclusion adopted by plaintiffs in their final claim, that 995,000 acres would be recognized as farmlands. These computations, however mathematically artistic, are pure speculation, as are the calculations based on a hypothetical cropping pattern, and are without merit in a determination of available farming acreage for purposes of a sale in 1883.

the award area.[24] Plaintiffs' motion to strike all of the agricultural land expert's opinion testimony and his report in its entirety was denied. The excluded material is limited to the actual conclusions of a dollar value for the farmland based on illegal or noncomparable sales, it does not extend to the expert's conclusion on the amount of irrigable land.[25]

Defendant's expert presented a compilation of historical data on agricultural lands in the area, but there is no indication in his report or testimony that his opinion is based upon any personal studies or examination of the award area, or that he performed an independent analysis of the documents he cited. The report fails to synthesize any of the data presented or to explain in any manner the reasoning used to reach the conclusion that there were 137,500 irrigable acres. This failing in the report was not rectified by the expert's testimony.

[7] The conclusions of an expert are no better than the soundness of the reasons that stand in support of them.[26] The conclusion that there were a total of 137,500 irrigable acres, was derived from a 1902 University of Arizona Agricultural Experiment Station report on the Salt River Valley that estimated 110,000 acres there could be "properly irrigated." The 1902 report acknowledged that its conclusion was subject to the following: (a) many years of the covered period (1888–1902) had more water per year than the amount used in the report; (b) the report was based on water requirements to grow alfalfa (4–6 acre-feet per year) rather than the amount required to grow grain (2.0–2.5 acre-feet per year); and (c) the 110,000 acre estimate was "considerably less than the area the cultivation of which is being, or has been, attempted, and less than half the area under the canals of the Valley."[27]

Contemporary reports in the record agree that the award area in the 1883–1902 period was not being farmed to its full potential. Water usage rights in Arizona encouraged wasteful applications on irrigated land, which waste was compounded by the system of small, inefficient, private canal companies.

The 400,000 acre estimate of plaintiffs' hydrology expert is the maximum irrigable area for farmlands that could be justified in the record. Although the expert factored into his estimate waste in application of water, and an allowance for water shortfall, his estimate of the minimum acreage remains overly optimistic. No recognition was given to the small population in the territory in 1883, and no allowance was made for the lack of rail transportation directly into the Salt River Valley. Although there was recognition in contemporary writings of the untapped farming potential of the area, the more popular image of this part of Arizona was of a desert wasteland. Even a well-informed buyer would be conservative in estimating the amount of agricultural land in the area.

24. The Order stated in part:
"2. The following portions of defendant's exhibit No. P–M 107 be, and the same hereby are, excluded as evidence in this docket: all of pages 128 and 129 except the conclusion of the paragraph beginning on page 127; the first two paragraphs on page 150; all of page 151 except the last two paragraphs; the thirteenth through eighteenth and twenty-first printed lines on page 155; all of page 156 except the third printed line; the third printed line on page 164; and Addenda pages 21 through 30. Counsel for defendant shall, within 20 days of this order, conform all copies filed with the Commission of said Exhibit No. P–M 107."

25. The Commission's Order was not a final order, and is not binding in this proceeding. *Confederated Tribes of the Warm Springs Reservation of Oregon v. United States*, 177 Ct.Cl. 184, 193 (1967). *American Indians Residing on the Maricopa-Ak Chin Reservation*, 667 F.2d 980 at 985 (Ct.Cl.1981), *cert. denied*, 456 U.S. 989, 102 S.Ct. 2269, 73 L.Ed.2d 1284, 1982; *Navajo Tribe of Indians v. United States*, 220 Ct.Cl. 117, 123–25, 597 F.2d 1362, 1365–66 (1979). Review of the record discloses that the Order was carefully tailored to meet the objection of improper reliance on noncomparable sales and was correct as a matter of law. It is adopted.

26. *Fehrs v. United States*, 223 Ct.Cl. 488, 508, 620 F.2d 255, 265 (1980).

27. A.J. McClatchie, *Utilizing Our Water Supply*, Univ. of Arizona Agricultural Experiment Station, Bull. No. 43, at 105–06 (1902).

The final determination that 300,000 acres in the award area is to be valued as agricultural land, takes into account the exaggerations in the mathematics of plaintiffs' expert and makes an appropriate adjustment for 100,000 acres of fallow land. The 300,000 acre figure is not inconsistent with the 137,500 acre estimate of defendant's expert when that figure is adjusted for water requirements to grow grains rather than to grow alfalfa.

The record contains a wide range of possible prices per acre for farmland. Plaintiffs' appraiser found a net per acre price of $15.07 by the market comparison method, and a net price of $61.88 on an income approach appraisal. Plaintiffs' final claim uses an "adjusted" income approach to derive six different per acre values ranging from $490 to $146.20.

Evidence in the record on the value of the agricultural land includes contemporary publications, historical analyses, and the reports of plaintiffs' appraisal experts. Plaintiffs also adduced information on the value of land in Riverside, California. Plaintiffs' theory is that Riverside, California, and the award area in 1883 physically and economically were comparable, and that the price of land in Riverside was what land in the award area would have sold for if Government interference were absent.

The opinion on agricultural land value of defendant's appraisal expert was stricken; defendant's final estimate was $7.50 per acre. Defendant relied on historical documents offered by both parties and on evidence of sales of land in and around the award area of Mexican and Spanish land grants, railroad land sales, and land sold by the United States Government.

[8] Use of actual sales in an open market is the preferred method to value land.[28] Evidence relative to actual, legal sales of agricultural land in the award area prior to November 15, 1883, and of sales of comparable land adjacent to or nearby the award area is limited. In these circumstances resort must be made to other relevant factors.[29] Comment on the relevance and usefulness of the available evidence is in order.

[9, 10] Evidence of sales of Mexican and Spanish land grants and of railroad land in and around the award area is of little value because the sellers could not guarantee title. This was known to purchasers at the time. Defendant's evidence of land available throughout the western United States, in the absence of a showing that such land was comparable and competitive to land in the award area, is irrelevant in this valuation.[30] There is no evidence that the land market in southern Arizona was saturated, and that there would be no market for land in the award area.[31]

[11–13] Standing alone, prices at which nearby comparable government land, or railroad land, sold are not sufficient to establish the value of lands in the award area. Public land sales were at nominal, government controlled prices to further public migration policy.[32] Reliance on statutory prices is an act of last resort, when no other evidence is available to make a valuation.[33]

28. *Nez Perce Tribe v. United States*, supra note 13, 176 Ct.Cl. at 822–23; *Sac and Fox Tribe of Indians of Oklahoma v. United States*, 167 Ct.Cl. 710, 714–15, 340 F.2d 368, 370 (1964); *Yankton Sioux Tribe v. United States*, supra note 8.

29. *Otoe and Missouria Tribe v. United States*, supra note 13, 131 Ct.Cl. at 634, 131 F.Supp. at 290–91.

30. *Miami Tribe of Oklahoma v. United States*, supra note 12.

31. *Miami Tribe of Oklahoma v. United States*, supra note 12; *Miami Tribe of Oklahoma v. United States*, 150 Ct.Cl. 725, 733, 281 F.2d 202, 206–07 (1960), *cert. denied*, 366 U.S. 924, 81 S.Ct. 1350, 6 L.Ed.2d 383 (1961).

32. *Otoe and Missouria Tribe v. United States*, supra note 13; *Miami Tribe of Oklahoma v. United States*, supra note 12; *Absentee Shawnee v. United States*, 6 Ind.Cl.Comm. 377, 406 (1958), *modified and aff'd*, 151 Ct.Cl. 700 (1960), *cert. denied*, 366 U.S. 924, 81 S.Ct. 1350, 6 L.Ed.2d 383 (1961).

33. *New York Indians v. United States*, 170 U.S. 1, 18 S.Ct. 531, 42 L.Ed. 927, and 614 (1897); *Miami Tribe of Oklahoma v. United States*, supra note 12.

Prices at which railroad lands sold do not reflect an open market. The land had been given to the railroads and any selling price was profitable, and acceptable, to the railroads.[34] In addition, the selling price was depressed because the purchaser of railroad lands in some instances could not be assured complete title.

Irrigation farming was practiced in 1883 in Riverside, California. Plaintiffs presented evidence to compare the similarities and the relative advantages of the award area and Riverside. This comparison is not apt. The price at which land was selling at in Riverside, California is not useful to determine the price of land in the award area. The differences between sales of land in the territory of Arizona in 1883 and sales in the State of California far outweigh any similarities in the climate, soil, growing season, and type of farming in each area.

Plaintiffs' final claim used the same methodology but substantially changed the conclusions of its appraisal experts. The capitalization rate was reduced from 20 percent to 10 percent and a discount for resale was eliminated. The 1883 cropping pattern of barley and grain was changed to an ideal pattern based on increased percentages of high profit fruit, grapes and other vegetables. By these alterations plaintiffs arrived at a value of not less than $490 per acre. Plaintiffs' calculations transport their claim from the realities of southern Arizona in 1883 to an unreal world in which the scientific knowledge developed in the interval between the taking and the preparation of plaintiffs' brief instantly applied.

Reports of 1883 current land prices are not to be ignored simply because Government settlement policies may have affected prices. Plaintiffs urge a valuation, not on the taking date, but on a fantasy date in a world that did not exist. Plaintiffs' claim assumes a world where the maximum amount of water was available and utilized, state-of-the-art hydroelectric dams were built, and electricity utilized. The corporate purchaser would develop over 3 million acres of farmland, grazing land, and townsites over an extended period after a payment in full, or without a discount for size or time of holding. The purchaser, further, would pay a price based on estimated income from producing the most profitable crops the area could produce.

The Court of Claims repeatedly has rejected claims that were inflated by unrealistic and enthusiastic disregard of recognized appraisal techniques. The Court of Claims specifically has rejected previous attempts by plaintiffs' counsel to secure valuations that would have included compensation for lost potential profits and would have permitted consequential damages.[35]

[14] Based on historical documents in the record and in consideration of the deficiencies in the analyses proposed by the respective experts, it is determined that the 300,000 acres of land in the award area suitable for agricultural purposes, on November 15, 1883, had a value of $13 per acre, inclusive of water rights. Appropriate deductions must be made for discounts for the size of the purchase and for a purchaser's expenses,[36] which should be a cummulative total of 25 percent. The fair market value of the agricultural lands, accordingly, on the taking date is determined at $9.75 per acre.

Land that has the highest and best use as townsites must be valued accordingly.[37]

34. *Yakima Tribe v. United States*, 4 Ind.Cl. Comm. 294, 298–99 (1956).

35. *United States v. Northern Paiute Nation*, *supra* note 8, 183 Ct.Cl. at 349–50, 393 F.2d at 802; *Gila River Pima-Maricopa Indian Community v. United States*, 199 Ct.Cl. 586, 467 F.2d 1351 (1972); *American Indians Residing on the Maricopa-Ak Chin Reservation v. United States*, *supra* note 25. The crop price/land value analogy developed by Dr. George Barr and used by plaintiffs' appraisal expert was rejected specifically in *Ak Chin*.

36. *Nez Perce Tribe of Indians v. United States*, *supra* note 13, 176 Ct.Cl. at 824–25; *United States v. Northern Paiute Nation*, *supra* note 8, 183 Ct.Cl. at 349–50, 393 F.2d at 802; *Yankton Sioux Tribe v. United States*, *supra* note 8, 224 Ct.Cl. at 94–8, 623 F.2d at 175–78.

37. *Tlingit and Haida Indians v. United States*, *supra* note 14, 182 Ct.Cl. at 136–37, 389 F.2d at 783; *Wyandotte Tribe and Nation v. United States*, 38 Ind.Cl.Comm. 561, 566 (1976).

The report and testimony of plaintiffs' townsite appraisal expert, N.A. Thomas, recommended a valuation that was based upon recognized appraisal techniques and reflects high professional standards. His report locates townsites by platting records and sales activity; it analyzes 822 qualified sales involving 2,153 lots in Phoenix, its subdivisions, and in Florence, Tempe, and Maricopa.

Plaintiffs' townsite appraisal expert applied discounts to gross retail values in order to reach the value that would be necessary to attract a buyer. These discounts were reasonable and within the range approved by the Commission and the Court of Claims in other land valuation proceedings.[38]

Defendant's appraiser examined town lot sales in the period 1877–83 and derived a mean sale price per lot of $112, equivalent to $414 per acre. This price was discounted 80 percent for costs, improvements, and other risks, then further discounted by $26.32 per acre for holding costs based on a 10-year selling period at 8 percent. Discounts taken by defendant's appraiser are excessive.[39]

[15] On the basis of the N.A. Thomas report, and in consideration of the record as a whole, the conclusion that the award area had a total of 3,760 acres of potential townsite lands on November 15, 1883, is accepted, as is the conclusion that the total value of those lands was approximately $1 million at that time.

[16] Appraisers for both parties used the same method to arrive at the amount of grazing or rangeland in the award area. From the total award area, deductions are made to remove agricultural land, townsites, and land physically unsuitable for grazing.[40] This method for determining the rangeland area is acceptable and is used to determine the grazing area at 2,590,565 acres.

The area to be excluded, in addition to agricultural land and townsites, amounts to 418,533 acres, the amount recommended by plaintiffs' appraisal expert for rivers, streams, washes, mountains, highways and railroads. Defendant's total exclusion of 866,000 acres as barren land is not accepted. The 184,000 acres of mountainous area described by defendant's expert are subsumed in the 418,533 acres excluded. The record is not clear as to the location of the areas defendant's expert found to be too arid to support cattle.

The 418,533 acres that are not included in agricultural land, townsites, or grazing areas are not given an independent market value. These lands are not worthless. They are given no independent market value because their value is reflected in the increased worth of the agricultural areas, the townsites, and the grazing area. Mineral wealth present in the excluded acreage is reflected in the additional value for mineral enhancement attributed to the entire award area.

Plaintiffs' appraisal expert and plaintiffs' final claim apply an income approach to value the grazing area. This was an interesting mathematical game but has little contact with reality. Defendant's appraisal expert used sales from periods long before and after the actual award date.

The valuation must relate to the time the land was taken and the sales considered and the discounts applied must be related to the particular case.[41] The record in this case supports the conclusion that the grazing

38. *Yankton Sioux Tribe v. United States*, *supra* note 8; *United States v. Mascelero Apache Tribe*, 207 Ct.Cl. 369, 518 F.2d 1309 (1975), *cert. denied*, 425 U.S. 911, 96 S.Ct. 1506, 47 L.Ed.2d 761 (1976).

39. *Yankton Sioux Tribe v. United States*, *supra* note 8, 224 Ct.Cl. at 92, 623 F.2d at 174.

40. Plaintiffs' appraiser excluded riverbottoms, mountains, railroads, and highways; plaintiffs' final claim does not exclude highways and railroads. Defendant's appraiser described excluded areas as barren land—land too steep or too arid for grazing.

41. *Nez Perce Tribe of Indians v. United States*, *supra* note 13, 176 Ct.Cl. at 823–25.

lands had a fair market value on the taking date of $0.75 per acre. This gives effect to the slightly better quality forage that was available in 1883, and to sales nearer in time to November 15, 1883. After a 20 percent discount is applied because of the relatively large size of the area to be sold, the net value is determined to be $0.60 per acre.

[17] Plaintiffs are entitled to recover the fair market value of the mineral content of the award area.[42] Plaintiffs have the burden, however, to establish by factual proof that removal of the minerals in the award area on the award date would be a profitable venture not involving exorbitant expense. Mining in unexplored areas is speculative in nature, and factors to be considered are (1) the absence or presence of existing production, and the (2) cost of development, removal and transportation of the minerals.[43] Failure to establish prospective profits by acceptable proof results in mere speculation about future use, which is no basis for valuing property.[44]

[18] The mere presence of a mineral does not prove a market or a value for it.[45] The mineral must be shown to have a use and be worth mining economically at the award date.

Plaintiffs' mineral value expert ignores 1883 market conditions and erects a structure based largely on mining activity that occurred largely outside the award area and substantially after the relevant valuation date. His report assumes use of processes not available in 1883, and the existence of markets far beyond those in being at that time. Values were derived by multiplying tons times dollars, a practice which gives a value to the owner but does not necessarily give a measure of market value. Of the minerals discussed, many were not shown to be mined in the award area in 1883, and a market in the award area for other minerals prior to the turn of the century was not established. Valuations appear to rest on a modern knowledge of mineral uses and mining.[46] While substantial discounts were applied, no basis was offered to support such discounts.

[19] Plaintiffs' expert assumes the existence of minerals in the award area from the presence of certain geographic features. The presence of these features in the award area is questionable. Moreover, existence of potential mineral sites or conditions favorable to mineral presence is an insufficient basis to establish mineral value. To propose a value for minerals not demonstrably present, is impermissible speculation.[47]

Defendant's mineral value expert relied on reports of actual mineral production, which is a better indicator of the extra value a knowledgeable purchaser would pay for the mineral wealth of the area. Defendant's appraisal, however, is limited by a lack of a clearly stated rational for its conclusions on the amount of ore present and the costs of mining.

[20] On the basis of the record in this case, it is concluded that the minerals known to be present and marketable in 1883 enhanced the value of the award area by $50,000.

The total value of the award area, accordingly, on November 15, 1883, was:

Agricultural lands	$2,925,000
Townsites	1,000,000
Rangelands	1,554,339
Other Lands (Limited Utility, Highways, Railroads)	(no independent value)
Mineral Enhancement	$ 50,000
TOTAL	$5,529,339

42. *Citizen Band of Potawatomi Indians of Oklahoma v. United States*, supra note 19.

43. *Tlingit and Haida Indians v. United States*, supra note 14, 182 Ct.Cl. at 148, 389 F.2d at 790.

44. *Olsen v. United States*, 292 U.S. 246, 54 S.Ct. 704, 78 L.Ed. 1236 (1934).

45. *Mills v. United States*, 363 F.2d 78, 81 (C.A.8, 1966).

46. *United States v. Land in Dry Bed of Rosamond Lake, California*, 143 F.Supp. 314, 322 (S.D.Cal.1956).

47. *Georgia Kaolin Co. v. United States*, 214 F.2d 284, 286 (C.A.5), *cert. denied*, 348 U.S. 914, 75 S.Ct. 294, 99 L.Ed. 716 (1954).

CONCLUSION

Upon the foregoing findings of fact and opinion, the court concludes as a matter of law that plaintiffs are entitled to recover and that, as of November 15, 1883, the total value of plaintiffs' aboriginal lands was five million five hundred and twenty-nine thousand three hundred and thirty-nine dollars ($5,529,339). This award is subject to any offsets defendant may establish in subsequent proceedings.

Right of the parties to obtain review of this decision is complicated by the statutory changes involved in the transfer of the claims in this case from the Indian Claims Commission to the United States Court of Claims and the subsequent transfer to this court.[48] In view of this ambiguity, it is ordered that this is an interlocutory decision and, pursuant to 28 U.S.C. § 1292(d)(2), it is found that this proceeding involves a controlling question of law with respect to which there is a substantial ground for difference of opinion and an immediate appeal may materially advance the ultimate termination of this litigation.

48. *See* Indian Claims Commission Act of 1946, 25 U.S.C. §§ 70s, 70v and 70v–3, *as amended* by Pub.L. No. 94–465, § 2, 90 Stat. 1990, and *further amended*, by Federal Courts Improvement Act of 1982, Pub.L. No. 97–164, § 149 and 403, 96 Stat. 46; *see also* 28 U.S.C. §§ 1292(d)(2), 1295(a)(3), 2505, and 2517(b), *as amended* by the Federal Courts Improvement Act of 1982, §§ 125(a), 127(a), 139(d) and (k), 96 Stat. 36, 37, 38, 42, 43.

T.W.P. COMPANY, Plaintiff,

v.

The UNITED STATES, Defendant.

No. 484–80C.

United States Claims Court.

Dec. 9, 1982.

Contractor, who was awarded contract for painting dormitories at Air Force base, brought claim for additional work for applying second coat of paint to certain areas and for painting window frames and bathroom doors. The Claims Court, Kozinski, Chief Judge, held that read as a whole, contract did not limit contractor's obligation to apply only one coat of paint or to exclude window frames and bathroom doors.

Judgment for Government.

United States ⇐70(21)

Under contract for painting Air Force base dormitories, contracting officer did not abuse his discretion in requiring contractor to apply second coat of paint in certain areas and in requiring contractor to paint window frames and bathroom doors without additional compensation where contract, read as a whole, did not limit contractor's obligation merely to apply one coat of paint and where exclusion of certain surfaces from painting did not include window frames and bathroom doors, and thus contractor was not entitled to additional compensation for the work.

Horst Bendzulla, T.W.P. Co., pro se.

Kathleen A. Flynn, with whom was Asst. Atty. Gen., J. Paul McGrath, Washington, D.C., for defendant.

MEMORANDUM OF DECISION

KOZINSKI, Chief Judge.

This is a case of contract interpretation. At issue is whether contract FO4699 78 C0214, which called for painting certain dormitories at McClellan Air Force Base, required plaintiff T.W.P. (1) to provide a second coat of paint where complete coverage was not achieved with the first coat, and (2) to paint window frames and doors in addition to walls and ceilings. Plaintiff