BEFORE THE NUCLEAR CLAIMS TRIBUNAL

REPUBLIC OF THE MARSHALL ISLANDS

In the Matter of the People of Bikini, et al., Claimants for Compensation	NCT No. 23-04134

MEMORANDUM OF DECISION AND ORDER

Summary

This claim is a class action for and on behalf of the People of Bikini for damage to property resulting from the U.S. Nuclear Testing Program brought pursuant to §123 of the Nuclear Claims Tribunal Act of 1987, as amended.

Bikini Atoll is located in the northwestern Marshall Islands and was used by the Government of the United States as a testing site for nuclear weapons from 1946 to 1958. The People of Bikini were removed from Bikini Atoll on March 7, 1946. Subsequently 23 atomic and hydrogen bombs were detonated there over the course of the next 12 years changing the atoll's topography and leaving it in a highly contaminated condition from residual radioactivity.

Damages arising from the results of those tests have been awarded to the People of Bikini in three general categories: loss of use; costs to restore; and consequential damages for hardship suffered by the Bikinians resulting from their removal.

The Bikinians have not had use of their atoll since March 7, 1946, and this loss of use will continue on into the future until the necessary remediation takes place to restore full use and habitability. Despite this long period of time, it was never the intention of the United States or any governmental authority to permanently preclude the Bikinians from returning to

their home atoll. Rather, the use of Bikini as a nuclear testing site has always been considered "temporary" by all parties. Accordingly, the Tribunal finds that these facts support a "temporary taking" under applicable case law. Expert appraisal witnesses provided reports and gave testimony on the fair market rental value of the land for the period of denied use. After setting off prior compensation paid to the People of Bikini, the Tribunal has determined that the value for loss of use both past and into the future is $278,000,000.

Radiological conditions at Bikini today remain in excess of radiation protection standards established by the U.S. Environmental Protection Authority applied to severely contaminated sites in the United States. Thus, radiological clean up remains necessary so that Bikini can support human habitation again with access to and use of the atoll's resources. The Tribunal received detailed written reports and heard expert testimony with respect to various remediation strategies to accomplish the required clean up. Over 20 different strategies were considered ranging in cost from $217.7 million to $1.419.6 billion. From this list, four strategies were identified which would best accomplish the required clean up in a cost effective manner. These four remediation strategies were evaluated utilizing U.S. EPA clean-up criteria and further assessed and balanced in view of Tribunal concerns, which resulted in the final selection of a remediation strategy consisting of potassium treatment and soil removal with the waste utilized for construction of a causeway. After deducting prior compensation received by the People of Bikini, the Tribunal has determined that the net award for restoration costs is $251,500,000.

The People of Bikini have also suffered many hardships through their years in exile from Bikini Atoll. These hardships, consisting of severe food shortages and hunger, disease, loss of culture and other types of pain and discomfort, were more severe at certain times than at other times. The period of relocation to Rongerik Atoll from 1946 to 1947 was the most severe with the Bikini community suffering from starvation. The period of habitation in Kili up to 1982 also presented severe hardships to the People of Bikini with frequent food shortages and no available lagoon resources. Consequently, the Tribunal has devised a

scheme of compensation based on the level of hardship during those two periods on the Bikini community. The total compensation per individual for the periods specified is consistent with the parameters and compensation paid by the Tribunal under its personal injury compensation program and with the award made to the People of Enewetak[1], hereinafter, *Enewetak.* The Tribunal has awarded the People of Bikini $33,814,500 for consequential damages resulting from the Nuclear Testing Program.

The Tribunal has determined that the total net amount of compensation due to claimants in this case for the categories of damages described above is $563,315,500.

I. Procedural History

On September 13, 1993, The People of Bikini filed this class action claim with the Marshall Islands Nuclear Claims Tribunal (Tribunal), for damages to land resulting from or arising out of the Nuclear Testing Program (NTP), conducted by the United States between 1946 and 1958. The Tribunal has jurisdiction to hear this claim under Section 105(a) of the Marshall Islands Nuclear Claims Tribunal Act 1987, as amended (NCTA)[2] which gives the Tribunal the responsibility to "decide claims by and disburse compensation to the Government and citizens and nationals of the Marshall Islands under Section 123 for existing and prospective loss or damage to person and property which are based on, arise out of or are in any way related to the Nuclear Testing Program..."[3]

The question of damages was heard in stages, with the loss of use portion of the claim being heard on May 6 and 7, 1998, the rehabilitation and other consequential damages portion being heard from September 29, through October 1, 1999**.**

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1 MEMORANDUM OF DECISION AND ORDER In the Matter of the People of Enewetak, et al. NCT No. 23-0902, April 13, 2000.

2 42 MIRC §105(a)

3 This language substantially tracks the provisions of Article IV, Section 1(a) of the "Agreement Between the Government of the United States and the Government of the Marshall Islands for the Implementation of Section 177 of the Compact of Free Association", commonly referred to as the Section 177 Agreement.

The issues of fact and law were narrowed in this class action claim through an extended process of motions and the filings of prehearing statements which formed the basis for establishing contested and uncontested issues. Based upon that process, the following uncontested factual background has been established.

II. Factual Background

Bikini Atoll is a low-lying coral atoll in the northwestern Marshall Islands approximately 400 miles from the capitol, Majuro, and has a geographical bearing at latitude 11 degrees 35 minutes north, longitude 165 degrees 25 minutes east. Bikini has a lagoon area of approximately 240 square miles, and prior to the NTP, contained 25 islands with a total dry land area of approximately 2.94 square miles.

On March 29, 1944, American forces landed on Bikini and captured it from the Japanese. In December, 1945, following the close of World War II, the United States Joint Chiefs of Staff selected Bikini as the site for "Operation Crossroads", the first post World War II test of atomic weapons. U.S. President Truman approved Operation Crossroads on January 10, 1946.

On March 7, 1946, the People of Bikini were removed from Bikini and transported to Rongerik Atoll prior to the commencement of Operation Crossroads. At the time of their removal from Bikini, representatives of the U.S. government informed the Bikinians that they could return to Bikini following the conclusion of Operation Crossroads which was scheduled to be complete in early 1947.

Subsequently, starting on July 1, 1946, through July 23, 1958, the United States detonated 23 atomic and hydrogen bombs at Bikini. The largest and most destructive of these tests was the detonation of the second U.S. hydrogen bomb on March 1, 1954, referred to as the Bravo shot. This single detonation had an explosive force of approximately 15 megatons, equivalent to the force of about 750 Hiroshima bombs. At the conclusion of the NTP in 1958, several islands of Bikini Atoll were completely or partially vaporized, and fallout from the tests heavily contaminated many islands in the atoll.

In the early 1970's, following a limited cleanup of Bikini, some of the Bikini community returned to Bikini to live there again. However, in 1978, following medical examinations of Bikinians residing on Bikini, it was learned that the people living there were ingesting high amounts of radioactive cesium-137, and needed to be removed immediately.

III. Framework of Compensation Analysis

In the Compact of Free Association, the Government of the United States accepted responsibility for compensation owing to citizens of the Marshall Islands for loss or damage to persons and property resulting from the NTP.[4] Accordingly, the Government of the United States and the Government of the Marshall Islands made provision for the "just and adequate" settlement of claims of Marshallese citizens arising from the NTP.[5] The framework for this settlement was more fully set out in the related agreement (Section 177 Agreement) to implement this section of the Compact.[6] Article IV, Section 1(a) of the Section 177 Agreement required the establishment of a Claims Tribunal to "render final determination upon all claims past, present, and future, of the Government, citizens and nationals of the Marshall Islands which are related to the Nuclear Testing Program" and to make awards taking into account "the validity of the claim, any prior compensation –made as a result of such claim, and such other factors as it may deem appropriate."[7] This language is mirrored at Section 123(12) of the NCTA.[8]

"In determining any legal issue, the Claims Tribunal may have reference to the laws of

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4 Compact of Free Association, Section 177(a)

5 Compact of Free Association, Section 177(b)

6 Agreement between the Government of the United States and the Government of the Marshall Islands for the Implementation of Section 177 of the Compact of Free Association.

7 Article IV, Section 2, Section 177 Agreement.

8 42 MIRC §123(12)

the Marshall Islands, including traditional law, to international law and, in the absence of domestic and international law, to the laws of the United States."[9] "The amount of compensation shall be determined on a case by case basis, taking into consideration, among other things, the amount of property owned, the nature of the ownership interest, and the extent of the loss or damage".[10] In the event that the Tribunal determines the claimants suffered loss or damage to person or property,- the award order shall "*fully compensate"* the people for loss or damage to person or property[11] (emphasis added).

Although this is not an eminent domain proceeding nor a claim under constitutional provisions for just compensation for a taking of property for public use, since neither the U. S. or Republic of the Marshall Islands (RMI) government is a party to this proceeding, principles of "just compensation" to the extent that they aid in a determination of what is necessary to make claimants whole, should be referenced by this Tribunal where appropriate.

Both the United States and Marshall Islands Constitutions prohibit the taking of private property for public use without just compensation. In the U.S. Constitution this prohibition is found in the Fifth Amendment, where it states in relevant part: "...nor shall private property be taken for public use without just compensation."[12] The U.S. Constitution Fifth Amendment right

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9 Section 177 Agreement, Article IV, Section 3.

10 42 MIRC §123(15)

11 42 MIRC §123(17)(b)(iii)

12 The Fifth Amendment to the U.S. Constitution in its entirety reads:

> No person shall be held to answer for a capital, or otherwise infamous crime, unless on a presentment or indictment of a Grand Jury, except in cases arising in the land or naval forces, or in the Militia, when in actual service at the time of War or public danger; nor shall any person be subject for the same offense to be twice put in jeopardy of life or limb; nor shall be compelled in any criminal case to be a witness against himself, nor be deprived of life, liberty, or property, without due process of law; *nor shall private property be taken for public use, without just compensation.* (Emphasis added)

to "just compensation" has even been held by U.S. Courts to apply to claimants when the Marshall Islands were under a United Nations Trusteeship administered by the United States.[13] In the Marshall Islands Constitution, this prohibition is found in Article II, Section 5, where it states in part: "Before any land right or other form of private property is taken, there must be a determination by the High Court that such taking is lawful and an order by the High Court providing for prompt and just compensation." That section of the Marshall Islands Constitution[14]

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13 See Juda v. United States, 6 Cl.Ct. 441 (1984)

14 Article II, Section 5 of the Marshall Islands Constitution reads in its entirety:

> (1) No land right or other private property may be taken unless a law authorizes such taking; and any such taking must be by the Government of the Republic of the Marshall Islands, for public use, and in accord with all safeguards provided by law.
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> (2) A use primarily to generate profits or revenues and not primarily to provide a public service shall not be deemed a "public use".
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> (3) Land rights shall not be taken if there exists alternative means, by landfill or otherwise, of achieving at non-prohibitive expense the purpose to be served by such taking.
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> (4) Before any land rights or other form of private property is taken, there must be a determination by the High Court that such taking is lawful and an order by the High Court providing for prompt and just compensation.
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> (5) Where any land rights are taken, just compensation shall include reasonably equivalent land rights for all interest holders or the means to obtain the subsistence and benefits that such and rights provide.
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> (6) Whenever the taking of land rights forces those who are dispossessed to live in circumstances reasonably requiring a higher level of support, that fact shall be considered in assessing whether the compensation provided is just.
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> (7) In determining whether compensation for land rights is just, the High Court shall refer the matter to the Traditional Rights Court and shall give substantial weight to the opinion of the latter.
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> (8) An interest in land or other property shall not be deemed "taken" if it is forfeited pursuant to law for nonpayment of taxes or debt or for commission of crime, or if it is subjected only to reasonable regulation to protect public welfare.
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> (9) In construing this Section, a court shall have due regard for the unique place of land rights in the life and law of the Republic.

provides additional protection for land rights and provides how a determination of "just compensation" is to be made, based in part on the "unique place land rights have in the life and law of the Republic." Thus, the law of eminent domain and the concept of "just compensation" enshrined in both the Marshall Islands and U.S. Constitutions are appropriate for the Tribunal to reference, given its charge to render "final determinations" to "fully compensate" and provide "just and adequate" compensation in accordance with the Section 177 Agreement and the NCTA.

The goal of compensation, where there has been harm to property, should be to make the owner whole through the award of proper damages. A general statement for determination of damages to land may be found at the Restatement (Second) Torts §929 Harm to Land from Past Invasions:

> (1) If one is entitled to a judgment for harm to land resulting from a past invasion and not amounting to a total destruction of value, the damages include compensation for
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> (a) the difference between the value of the land before the harm and after the harm, or at his election in an appropriate case, the cost of restoration that has been or may be reasonably incurred,
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> (b) the loss of use of the land, and
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> (c) the discomfort and annoyance to him as an occupant.

IV. Loss of Use

The People of Bikini have been denied the use of their property for a period of years. No claim has been made nor is there anything in the record to suggest that there was a permanent taking or that the United States took ownership of the property in question. Indeed, the record unequivocally supports the proposition that use of Bikini by the United States was temporary in nature and that provision would be made to return the Bikinians to their homeland.[15] As a

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15 See "Factual Background" - statements made by U.S. officials to the Bikinians at the time of their removal from Bikini and the aborted resettlement of Bikini in the early 1970's. In addition, the Section 177 Agreement recognized that Bikini belongs to the People of Bikini and the U.S. commitment to allow the Bikinians to safely return to Bikini. Article VI, Section 1 of the Section 177 Agreement provides: "The Government of the United States reaffirms its

result,

commitment to provide funds for the resettlement of Bikini Atoll by the people of Bikini at a time which cannot now be determined”

it is appropriate to analyze the damage in terms of loss of use to claimants. The U.S. Supreme Court examined the question of the appropriate measure of damages for such lost use in Kimball Laundry Co. v United States, 338 US 1 (1949). That case involved the damages suffered by the owners of a laundry taken on a temporary basis by the government during World War II. The U.S. Supreme Court determined:

> But it was known from the outset that this taking was to be temporary, and determination of the value of occupancy can be approached only on the supposition that free bargaining between petitioner and a hypothetical lessee of that temporary interest would have taken place in the usual framework of such negotiations. We agree with both lower courts, therefore, that *the proper measure of compensation is the rental value that could have been obtained*, and so this Court has held in two recent cases dealing with temporary takings. United States v. General Motors Corp. 323 US 373, 89 L Ed 311, 65 S Ct 357, 156 ALR 390; United States v. Petty Motor Co., 327 US 372, 90 L Ed 729, 66 S Ct 596.[16] (Emphasis added)

To address the value of this lost use, Claimants and Defender of the Fund each submitted separate appraisal reports conducted by professional real estate appraisers of their own choosing.[17] Both appraisers were found to be qualified as experts on the matter of valuation of the property in question. Both appraisers examined over five hundred real estate transactions in the Marshall Islands to select the real estate data bases used in their appraisals. These real estate transactions showed that average annual rental rates per acre per year varied from $39/per acre per year in

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16 Kimball Laundry Co. v United States 338 US 1, 93 L Ed 1765, 69 S Ct 1434 (7ALR2d 1280,1287-8). (1949)

17 Unlike the situation in In the Matter of Enewetak *et* al, NCT No. 23-0902, where Claimants and Defender of the Fund submitted a "Joint Appraisal," the Defender opted to do a separate appraisal in this claim, although the Defender was admonished by the Tribunal that the methodology used in this claim be "consistent" with the methodology utilized by the Defender in the Enewetak Claim. ORDER, March 30, 1998.

1946, to as much as $4,167/per acre per year in 1997.[18] There were, however, differences between the two appraisal reports both on issues of periods of denied use, and in appraisal methodology.

A. Period of Denied Use

There is no dispute between Claimants and the Defender of the Fund with respect to the time as to when the period of denied use began, that being the date of claimants' removal from Bikini Atoll on March 7, 1946, and both appraisal reports contained calculations of future denied use starting November, 1997, (the date of the appraisal reports) taken thirty years into the future. The difference is that while Claimants take the position that there has been a continuous and uninterrupted loss of use of Bikini Atoll from the time of their initial removal from Bikini, the Defender maintains that there was no loss of use for the period June 1, 1969, through July 31, 1978.[19]

The Defender's reasoning for this position is based primarily on the fact that some Bikinians were physically present on Bikini during this time, and were free to dwell there and eat some local food, provided that they followed certain dietary restrictions[20], and although the record was clear that the Bikinians' use of their atoll during this period was confined to Bikini and Eneu Islands,[21] Defender nonetheless submits that Claimants had full use of Bikini Atoll during this period.[22] Thus, even if Claimants had use of Bikini Atoll from June, 1969 to July, 1978, it is clear that said use was limited to only two islands within the atoll.

The main issue here is whether there should be any allowance for the use of Bikini Atoll

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18 Claimants Exhibit 7.

19 Defender of the Fund's Exhibit 1 *Valuation for Compensation Purposes for BIKINI ATOLL, Republic of the Marshall Islands*, Darroch, April 15, 1998, at p. 5

20 Defender of the Fund's "Memorandum of Points and Authorities" dated July 27, 1998, at page 31.

21 Report of the Ad Hoc Committee to Evaluate the Radiological Hazards of Resettlement of the Bikini Atoll, 1968.

22 DoF Exhibit 1, at page 5.

during this time given the fact that the Bikinians were removed in 1978 by the United States Government after it was determined that the people residing in Bikini were receiving excessive doses of cesium-137, strontium-90, and plutonium which necessitated their immediate removal.[23] Under these circumstances, the Defender claims that Claimants had use of Bikini when in fact the record indicates that a serious error and miscalculation had been made by the United States Government at the time endangering the health and welfare of the Bikinians who returned to Bikini.

The personal injury claims experience of the Tribunal also comports with the determination to remove the Bikinians from Bikini in 1978 due to the excessive radiation exposures they were receiving. In one personal injury claim filed on behalf of an individual child who resided in Bikini during that period and developed lymphoma resulting in his death, the Tribunal found that the individual child received sufficient exposure and doses of radiation to determine that there was a connection between the individual's exposure to radiation and the onset of lymphoma.[24]

In light of the foregoing, the Tribunal finds that use of Bikini Atoll was not restored to the people of Bikini from 1969 to 1978. Mere physical presence on land which remained highly contaminated does not result in a restoration of use during this period.

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23 Claimants' Memorandum of Points and Authorities, June 29, 1998.

24 See In the Matter of Dial Leviticus NCT No. 23-03872. This claim was made by the father on behalf of his child who lived at Bikini Island during the 1970's; developed a very aggressive lymphoma; and died as a result at the age of 11 years. Under applicable Tribunal regulations, the medical condition of lymphoma is presumed to be caused by exposure to radiation for Marshallese who were physically present in the Marshall Islands during the Nuclear Testing Program which ended in 1958. However, for those born after the end of the Nuclear Testing Program, a 50 % reduction is made in awards, unless it can be shown [*sic*] that actual and measured exposure to excessive radiation likely resulted in the onset of the condition. Although born after the end of the Nuclear Testing Program (1971) evidence was submitted that Dial Leviticus was exposed to approximately 1600 mrem over a 2.3 year period above background levels. The Tribunal found that in the absence of other contributing factors, this exposure was sufficient to determine that Dial's exposure to radiation more likely than not was the cause of his lymphoma, qualifying his estate for the full amount of his award.

The Defender also claims that Claimants had use of Eneu Island since 1985, and use of Bikini Island since 1989.[25] In this case, the Defender is relying on a number of BARC[26] Reports stating the "Eneu was ready for resettlement" prior to 1985, and that Bikini could be resettled subject to some conditions on use of plants and ground water.[27]

Claimants respond to these assertions by the Defender by pointing out that there has never been a full clearance that the Bikinians would enjoy free and unrestricted use to these islands by U. S. Government officials during the period of denied use.[28] Claimants further point out that in the case of Bikini Island safe habitation will only be possible with ongoing remediation in the form of soil scraping and potassium treatment and with continuing dietary restrictions on consumption of local foods and ground water.[29]

The Tribunal finds that although the situation in respect to Eneu is less clear for determining loss of use, the fact that substantial remediation continues to be necessary at Bikini Island suggests that loss of use has continued beyond the dates provided by the Defender.

B. Appraisal Methodology

Aside from the issues of periods of denied use, there were also some differences in the methodologies employed by Claimants' appraiser and Defender's appraiser. These differences consisted of: (1) a one year rent escalation factor by Claimants appraisers versus a five year rent escalation factor by Defender's appraiser; (2) use of 30 year Treasury Bond rate by Claimants' appraiser to determine lost interest on the actual unpaid and accrued lost of use estimates; (3) use of purported "sales" transaction of land in the Marshall Islands in real estate transaction database

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25 DoF Exhibit 1 at page 5.

26 Bikini Atoll Rehabilitation Commitee

27 DoF Memorandum of Points and Authorities, July 27, 1998, at pp. 33-34.

28 Claimants' Memorandum of Points and Authorities, June 29, 1998, at pp.32-33.

29 Ibid, at p. 33.

by Defender's appraiser (as opposed to relying strictly on lease or term of years transactions); (4)

different views of the "government rate" (for government leased land) and use of an "average annual rate" with regard to their respective reliability and applicability; and (5) different statistical analysis of the data.[30]

Bikini Claimants employed the same approach, methodology, and analysis that was used in the joint appraisal for *Enewetak.* The value of the loss of use may be calculated by multiplying the relevant annual rent times the affected acreage for each year of the period of lost use, and summing up the annual values. The period of loss has two elements: 1) past loss, which began on March 7, 1946, and ran until the date of the valuation, and 2) future loss, which began on the date of valuation and continues until such time in the future as the affected property is returned to the people of Bikini in usable condition, determined by the parties to be 30 years from the effective date of the valuation or November 18, 2027. Additionally, adjustment must be made for the deferred nature of the compensation for past loss and a discount for future loss.

Both appraisers acknowledged that there are circumstances in the Marshall Islands property ownership situation that create challenges to traditional appraisal methods. These include a customary system of land tenure that is collective in nature and does not include the concept of market value. Ownership of land by foreigners is forbidden by law. Nonetheless, as time has gone by, the transfer of use rights or possessory interests in land for money has gained a measure of social acceptance and from these transfers the appraisers developed a data base of comparable transactions.

As a result, both appraisers were able to determine that a sufficient database of Marshall Islands real estate transactions exist in order to conduct their respective appraisals with

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30 Claimants' Memorandum in Response to Nuclear Claims Tribunal's Order of August 5, 1998, Exhibit "F"

reference to such comparable real estate transactions and to determine market value over the relevant period of time.

Both appraisers also determined that the islands should be categorized as rural, with a highest and best use of agricultural and residential uses. In addition, both appraisers examined a complete database of several hundred transactions from which they selected real estate transactions they believed to be most appropriate for use in their analysis. One major difference between the two appraisal reports, as noted *supra*, is that the Defender's appraiser included a number of "bill of sale" transactions for use in his database while Claimants' appraiser rejected these transactions.

The Tribunal questions the use of these "bills of sale" for inclusion in the database for two reasons. First, the Tribunal believes that comparison with lease transactions for a period of years is more appropriate given that use of Bikini by the United States was always considered by all parties to be temporary as opposed to a conveyance of ownership rights in and to Bikini Atoll. Thus, it would follow that leasehold transactions in the Marshall Islands provide a better comparison to determine loss of use values. Second, serious questions were raised with respect to the reliability and legality of bill of sale real estate transactions in terms of whether these transactions were "arms length"[31] as well as the extent and propriety of "ownership" interests purportedly conveyed.[32] Claimants' appraiser did not use the bill of sale transactions as part of the database relied on in reaching his conclusions. These transactions were also not considered in the appraisal in *Enewetak*.

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31 Appraiser for Claimants, James E. Hallstrom,Jr., MAI, SRA testified that during his investigations he determined that many of the bill of sale transactions were made under circumstances which could not lead to a conclusion that the transactions were "arms length". For example, many of the bill of sale transactions consisted of a landowner(s) who were deeply in debt under threat of legal action to collect the debt, conveying their land interests to their creditors.

32 The Marshall Islands Constitution requires that in order to effect a valid conveyance of land, all interest holders, namely the Iroijlaplap, Iroij Erik (where applicable), Alab, and Senior Dri Jerbal must give their consent. Artcle X, Section 1(2). During the course of the hearing on loss of use damages, it was revealed that many of the bill of sale transactions were not signed by all interest holders necessary under the Constitution to create a valid conveyance.

Another significant difference between the two appraisals is the importance of the "government rate" in determining the loss of use damage for Bikini Atoll. Approximately 38% of the lease transactions in the Marshall Islands involve the government, primarily as Lessee.[33] The Hallstrom Report goes on to state:

> The national government of the Marshall Islands continues to actively lease land throughout the area for a variety of public purposes, and has played an important role in establishing an active market and prices. Prior to the establishment of the "government rate" relatively little activity was observed in the Marshall Islands. However, upon providing businesses and private individuals a basis of land value, a marked increase in transactions ensued with over 72 percent of the database involving transactions from 1980 to current. Further as discussed below, the market has tracked the government rate with each adjustment and in a manner that is analogous to the U.S. Federal Reserve Board's lending rates (e.g., discount rate). This is supported by many cases of leases that adopt the then government rate as a standard or basis for ground rent negotiations.

The Defender's appraiser acknowledges the importance and dominance of the government rate[34], (110 government transactions out of a total of 201) but chose not to adopt the government rate as a benchmark in his analysis of the data, relying instead on development of what is termed "average land rental rates" for the period between 1944 and 1997.[35]

Finally, there was a difference between the two appraisal reports in the statistical analysis employed to interpret the data. Claimants' appraiser utilized the same approach used in the report submitted into evidence in *Enewetak*. Over 500 transactions were collected to be reviewed for comparability with the property at issue. Of these, some 196 of the properties were determined to be comparable to the subject. Despite this extensive database, there was a relative scarcity of transactions in the early years of the lost use. This problem was addressed through trending

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33 *Appraisal Report of the Aggregate Loss in Use Value in the Bikini Atoll, March 7, 1946 through November 18, 2027,* The Hallstrom Group, April 24, 1997. Claimants' Exhibit A, at page 19.

34 DoF Exhibit 1 at pp. 46-50.

35 Ibid, at page 51.

analysis from which the annual rates could be derived. This analysis combined two different approaches. One approach, (Method A), utilized a pure exponential trend fit to the database. The other approach, (Method B), excluding certain transactions, utilized an exponential fit for the first twenty years of the period of lost use and subsequently incorporated the government rental rate because of its acceptance as a fairly determined rate of rent and its widespread use as a benchmark for private lease agreements. A combination of these two approaches was utilized by Claimants' appraiser consistent with the Tribunal's ORDER of October 24, 1997.

The valuation must additionally recognize the effect of the lost use of the proceeds from the annual rentals. Adjustment for past loss is made by adding an interest component to the annual proceeds, which was compounded using the average annual U.S. Treasury 30-year bond rate as the benchmark rate of investment.[36]

Notwithstanding the Tribunal's admonishment to the contrary,[37] the Defender's appraiser did not follow this approach when analyzing the real estate transaction database. Instead, the Defender's appraiser employed what was referred to as an "average annual rate," as noted above, with five year, as opposed to one year, rent reviews of lease rates.[38] The Defender's appraiser also employed a different statistical analysis of the data in arriving at his conclusions.

The Tribunal finds that aside from the greater consistency with the *Enewetak* appraisal presented by Claimants' appraiser, there are other reasons for adopting Claimants' evidence regarding loss of use values in this case. First is the inclusion of a number of "bill of sale" transactions in the real estate transaction database utilized by the Defender's expert. The Tribunal finds that these transactions may be of questionable validity and lack the basic elements of "arms length" transactions. In addition, the Tribunal believes that leasehold transactions are more comparable than sales transactions when considering a "temporary" loss of use situation as is

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36 Claimants' Exhibit 1 (Hallstrom): *Enewetak,* at page 8.

37 ORDER, March 30, 1998.

38 DoF Exhibit 1, at p. 8; Claimants' Exhibit A at p. 21 & 32.

presented in this case. Second, the Defender's expert does not adequately take into account the role of the "official government rate" starting in the late 1970's, notwithstanding the fact that the majority of both Defender's and Claimants' databases consisted of government leases. Instead the Defender's use of an "average annual rate" was ill defined and appeared be designed to reach a foregone conclusion.

Accordingly, for the foregoing reasons, the Tribunal adopts the evidence provided by Claimants and their expert, The Hallstrom Group, in determining loss of use periods and values in this claim.

C. Acreage

Claimants and the Defender of the Fund were unable to agree on total acreage of Bikini Atoll, each relying on several past surveys of the atoll and its various islands. The Defender's appraiser started out with a total acreage of 1,848.34 acres as of March 7, 1946, with adjustments thereafter based on instructions from the Defender as to the periods of denied use.[39] Claimants' appraiser based his report on a total acreage of 1,889.36 acres for Bikini Atoll, a difference of just over 41 acres. Both Claimants and Defender of the Fund provided a credible basis for their acreage figures based on past surveys. Nonetheless, no live testimony was taken from any witness with respect to acreage or why the numerous surveys taken for Bikini Atoll over the years contained different numbers.[40] Thus for purposes of consistency with other issues addressed in this loss of use analysis, the Tribunal will adopt the acreage figures for Bikini Atoll proffered by Claimants.

D. Loss of Use Totals

In light of the foregoing, the relevant land areas and period of lost use are as follows:

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39 DoF Exhibit 1 at page 5.

40 Some of the differences in acreage figures may be attributed to the names and phonetic spelling of different islands and the sources used for the names of islands at different times. In any event, despite the numerous surveys available, the Defender and Claimants were unable to stipulate on acreage.

03/07/1946 to 11/18/1997	1,889.36 acres
11/19/1997 to 11/18/2027	1,889.36 acres[41]

Included in the loss of use calculations is the acreage of the vaporized islands, approximately 69.67 acres. Although arguably these islands were permanently lost upon their vaporization, the Tribunal is persuaded to treat them as temporarily lost for the following reasons. First, in the context of this class action, the vaporized islands must be regarded as a part of an environmental whole which consists of the entire atoll ecosystem. Thus, although a portion of the atoll was damaged through the destruction of the vaporized islands, the atoll as a whole is the relevant unit for characterization of the loss. Secondly, the problems with determining a fee simple value in the Marshall Islands where such transactions are virtually unknown and not subject to market analysis preclude the evaluation of such a loss. This is consistent with the approach taken by the Tribunal in *Enewetak*.

Based upon the average rental rates, the affected acreage and number of years to the date of Claimants' appraisal the rental value for past loss of use is $336,000,000 (rounded).[42]

These values must be further adjusted for compensation already received by the People of Bikini. The issue of prior compensation was addressed by Claimants and the Defender of the Fund in a stipulation on the subject setting forth the specific prior compensation, the time which it was made, and amounts and valuation of the items.[43] In respect to loss of use damages, prior compensation to be set off against aggregate damages for past lost of use consists of the following:

(1) use of Rongerik Atoll from March 7, 1946, to March 14, 1948, valued at 100% of the Bikini Atoll per acre per year loss of use evaluations for the March 7, 1946, to March 14, 1948 period;

(2) Kili Island per acre per year use values from November 2, 1948, to December 31, 1982,

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41 Claimants' Exhibit A at page 2

42 Claimants Exhibit A at page 40.

43 "Stipulation" dated May 15, 2000.

valued at 58% of the Bikini Atoll per acre per year of use valuations for the November 2, 1948, to December 31, 1982, time period;

(3) the Kili Island per acre per year use value from January 1, 1983, to November 20, 1997, time period valued at 75% of the Bikini Atoll per acre per year loss of use valuation and from November 20, 1997 into perpetuity;

(4) payment made on or about November 22, 1956, in the sum of $325,000.00 ("Agreement in Principle Regarding the Use of Bikini Atoll");

(5) payment made on or about February 14, 1977, in the amount of $3,000,000.00, (U.S. Public Law 94-34);

(6) Ejit Island per acre per year use value from September 1, 1978, to November 20, 1997, valued at 100% of the Bikini Atoll per acre per year loss of use valuation for the September 1, 1978, to November 20, 1997, time period and valued at 100% of the Bikini Atoll per acre per year valuation from November 20, 1997, into perpetuity;

(7) payment made on or about November 15, 1978, in the amount of $3,000,000.00, (U.S. Public Law 95-348 and U.S. Public Law 95-467);

(8) payment made on or about February 1, 1980, in the amount of $1,400,000.00, (U.S. Public Law 96-126);

(9) payment made on or about September 10, 1982, in the amount of $3,000,000.00, (U.S. Public Law 97-257); annual payments of $5,000,000.00 from 1987 to 1997, (§177 Agreement, Compact of Free Association).

The value of past lost use adjusted for prior compensation is $163,730,737.[44]

E. Compensation for Future Denied Use

Consistent with the methodology utilized in *Enewetak*, compensation for future loss of use was calculated using an income capitalization approach. This calculation involved converting a single year's income into an indication of present value by dividing the most

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44 Stipulation of May 15, 2000, Exhibit A, Table 6A, at page 4.

current stabilized income by an appropriate rate of return.[45] Based on data from Marshall Islands transactions and with reference to the rate used in other Pacific Islands, this rate of return was determined to be eight (8) per cent.[46] Although the Tribunal has previously considered adopting the government rate of $3,000 per acre per year plus interest on into the future until the lands become fully useable, this approach was rejected in *Enewetak* since such an approach would result in an open ended decision. In *Enewetak,* the Tribunal stated: "The Tribunal is charged with the final determination of all claims past, present and future arising out of the nuclear testing program. Leaving undecided the question of how long the future lost use would last, is not consistent with the Tribunal's responsibility to make a final determination in this claim."[47]

Claimants' appraisal report states the present value of future rents for 1,889.36 acres to be $98,342,763, (escalating values to May 1, 2000, based on a 7% per annum interest rate) for the period of November 19, 1997- November 18, 2027.[48] Similarly, the Defender's appraiser has also calculated a present value of future rents for an analogous period into the future.[49]

Set off against the present value of future rents are the present value for future rents for Kili Island in the amount of $8,985,094 and the present value of future rents for Ejit Island in the amount of $937,575.[50] Finally there is the issue of annual Section 177 Agreement payments since 1997. Although Claimants' appraiser did not consider monetary credits after November 19, 1997,

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45 Claimants Exhibit A (Hallstrom), at page 41.

46 *Ibid.*

47 *Enewetak* MEMORANDUM OF DECISION AND ORDER at page 12.

48 Stipulation of May 15, 2000, Hallstrom Letter of May 3, 2000, and Exhibit A, Table 6A, at page 4.

49 *Ibid,* Darroch letter of 8 May 2000 and Exhibit B

50 *Ibid,* Exhibit A (Hallstrom) at page 4.

($20,000,000)[51] the Tribunal believes that since 2001 is the final year for those payments, they should be credited at this time notwithstanding the fact that a few quarterly payments remain to be made during the year.

Thus, the value for loss of use both past and into the future is $278,000,000 (rounded).

V. Restoration

A. Restoration as appropriate remedy

Under the Restatement (Second) Torts analysis at §929(1)(a), the injured party who suffered damage to land is entitled to compensation for "the difference between the value of the land before the harm and after the harm, or at his election in an appropriate case, the cost of restoration that has been or may be reasonably incurred." Accordingly, an initial issue is whether the appropriate measure under this subsection is the cost of restoration or the difference in value of the land before and after the harm. The commentary to the cited Restatement provision notes:

> Even in the absence of value arising from personal use, the reasonable cost of replacing the land in its original position is ordinarily allowable as the measure of recovery. . . . If, however, the cost of replacing the land in its original condition is disproportionate to the diminution in the value of the land caused by the trespass, unless there is a reason personal to the owner for restoring the original condition, damages are measured only by the difference between the value of the land before and after the harm. . . . [I]f a building such as a homestead is used for a purpose personal to the owner, the damages ordinarily include an amount for repairs, even though this might be greater than the entire value of the building. So, when a garden has been maintained in a city in connection with a dwelling house, the owner is entitled to recover the expense of putting the garden in its original condition, even though the market value of the premises has not been decreased by the defendant's invasion.[52]

This suggests that unless the cost of restoration is disproportionate to the difference in value before and after the injury to the land, such cost is an allowable measure of damage.

Even when such disproportionality exists, if there is a personal reason for the cost of

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51 *Ibid,* Exhibit A (Hallstrom) at page 4, Footnote (9)

52 *Restatement (Second) Torts*, Comment on Subsection (1), Clause (a), *b. Restoration.*

repair, these costs may be allowed. Case law supports this approach. See Heninger v. Dunn (Cal. App. 1980) 162 Cal. Rptr. 104, Orndorff v. Christiana Community Builders (Cal. App. 1980) 217 Cal. App. 3d 683. Further, if market value does not adequately capture the value or if is not possible to ascertain the market value of the land, the diminution in market value is not an appropriate measure of damage. See Trinity Church v. John Hancock Mutual Life Insurance Co. (Mass. 1987) 502 N.E. 2d 532, Denoyer v. Lamb (Ohio App. 1984) 490 N.E. 2d 615, Feather River Lumber Co. v. United States (9th Cir. 1929) 30 F.2d 642, 644.

The Tribunal determined that both of these conditions were met in the *Enewetak* claim.[53] Similarly, these conditions are met in the Bikini claim as well. There are very compelling personal reasons for the restoration of damaged land. Claimants' expert Dr. Robert C. Kiste sets forth some of these reasons in his report to the Tribunal:

> The Bikinians did not desire relocation, but they felt that they had no alternative but to comply with the most powerful nation on earth. The significance and meaning of land to the people of Bikini has been described. Much of the Bikinians' culture, society, and identity were rooted in their ancestral home: the islands, reefs, and lagoon of Bikini Atoll. Its lands and waters provided sustenance and connections with the ancestors. The peoples' identity, the very essence of their perceptions of themselves, was intimately tied to their home atoll. The system of land rights provided much of the underlying structure for the organization of the community. It is probably no exaggeration to suggest that short of loss of life itself, the loss of their ancestral homeland represented the worst calamity imaginable for the Bikinians or other atoll dwelling peoples.[54]

The shortcomings of a market approach to value, particularly with reference to fee simple rights, are set out in the appraisal report filed in *Enewetak*:

> Traditionally, Marshallese do not sell land rights which are acquired by birthright. Hence, there is an absence of a real estate market, and while the Marshallese customary system of land tenure has not only precluded the development of a normal market, it fosters an attitude about land which does not include the concept of market value.[55]

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53 *Enewetak* MEMORANDUM OF DECISION AND ORDER, at page 14.

54 Claimants Exhibit 20, *The Bikini Community The Consequences of Relocation The First 25 Years*, Dr. Robert C. Kiste, at page 12.

55 *Enewetak* MEMORANDUM OF DECISION AND ORDER at pp. 14-15.

The Tribunal has rejected the inclusion of so called "fee-simple" transactions *supra* used by the Defender's appraiser. In the history of the Marshall Islands, there has never been any kind of established real estate market to justify such an approach. 'Fee simple' value cannot be derived, nor could anyone sell their birthright ownership.[56] Thus, the diminution in value approach to damages cannot be applied because there is no market in fee simple property to provide comparable values to assess the loss. Further, such a market approach would not provide a true measure of loss because it would not account for the deeply personal reasons of the Bikini people for restoring their land. Additional support for the cost of restoration approach is found in U.S. environmental statutes. Although these laws may not be applicable by their terms to the Marshall Islands, the Section 177 Agreement provides "In determining any legal issue, the Claims Tribunal may have reference to the laws of the Marshall Islands, including traditional law, to international law and, in the absence of domestic or international law, to the laws of the United States."[57] The Tribunal has referenced U.S. law in a variety of contexts in the past. It has modeled its personal injury compensation program on the "Downwinders Program," devised to compensate civilians affected by the nuclear testing in Nevada and references the U.S. directly in its regulations for the purposes of determining conditions deemed caused by the Nuclear Testing Program.[58] It has

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56 *Ibid*.

57 Section 177 Agreement, Article IV, Section 3.

58 NCT Regulation, Section 224(a), *Comparability with United States Compensation Schemes:*

> Section 220 shall be deemed to include any medical condition(s) not otherwise specifically listed or described for which a claimants would be entitled to compensation in the United States under either the Radiation-Exposed Veterans Compensation Act of 1988, as amended 38 U.S.C. 101 et seq. Note and/or the Radiation Exposure Compensation Act of 1990, as amended.

adopted certain policies and criteria of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in setting a radiation clean-up standard in the land claims consolidated for that purpose.[59] The Tribunal notes this for the purpose of observing the predisposition toward clean up as a remedy in dealing with hazardous waste in the U.S.[60] The preference for restoration by the U.S. is evidenced in the past U.S. attempts to restore the atoll for the claimants' use.

B. Establishment of Radiation Protection Standard for Restoration

The Tribunal considered the issue of radiation protection standards for application in clean up and restoration of lands contaminated by the Nuclear Testing Program in a special proceeding which consolidated the various class action claims for damage to property. The Tribunal accepted the position of the IAEA[61] that

> As a basic principle, policies and criteria for radiation protection of populations outside national borders from releases of radioactive substances should be at least as stringent as those for the population within the country of release.[62]

Under this reasoning, the Tribunal adopted the current standards[63] of the U.S. that would apply to

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59 MEMORANDUM OF DECISION AND ORDER, filed December 21, 1998.

60 For a discussion of this legislative concern for restoration as a remedy in U.S. environmental statutes, see Cross, Natural Resource Damage Valuation, 42 Vanderbilt Law Review 269, 327-334.

61 The International Atomic Energy Agency (IAEA) operates under the auspices of the United Nations. It serves as an international forum for scientific and technical cooperation for the peaceful development and safety of nuclear power. While one of its most important responsibilities is to monitor nuclear materials that pass internationally, it is also charged with establishing safety standards for health and property.

62 Claimants' Exhibit 1 (filed for the consolidated hearing on radiation protection standards on November 18, 1998).

63 These standards have undergone significant development over time, based in part upon a greater understanding of the health effects of radiation. This enhancement in scientific knowledge is a circumstance which has changed, particularly since the time the Compact of Free Association was negotiated.

Bikini, were it within the United States. Those standards, established by the U.S. Environmental Protection Agency, are described in an EPA document entitled "Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination," wherein it is stated:

> Cleanup should generally achieve a level of risk with the 10^{-4} to 10^{-6} carcinogenic risk range based on the reasonable maximum exposure for an individual. . . .
>
> If a dose assessment is conducted at the site (footnote omitted) then 15 millirem per year (mrem/yr) effective dose equivalent (EDE) should generally be the maximum dose limit for humans.[64]

This standard addresses the additional risk created by the contamination, so the 15 millirem level is over and above existing background levels of radiation.

C. Application of Standard

The parties introduced evidence relating to whether this 15 mrem standard is currently exceeded in Bikini Atoll. The expert testimony[65] of both sides was in agreement that the major pathway or source of radiation exposure to residents of Bikini would be ingestion of locally grown foods. This pathway is of particular significance in Bikini because the soil of the atoll allows a relatively high uptake of certain radionuclides by local plants. Both sides agreed that the primary radionuclide of concern was Cesium 137. Application of U.S. standard computer analysis provided that a concentration of cesium in the soil between .32 and .35 picocuries/cubic gram (including background) would result in an annual effective dose

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64 Claimants' Exhibit 1 (filed for the consolidated hearing on radiation protection standards on November 18, 1998), p. 5.

65 The expert witnesses for claimants were Dr. John Mauro,PhD CHP, Dr. Hans Behling, PhD, and Dr. Robert Anigstein, PhD from Sanford Cohen and Associates (hereafter "SCA".) In addition to their testimony, claimants filed a two volume report, *Regarding The Potential Radiation Doses and Health Risks to a Resettled Population of Bikini Atoll and An Evaluation of the Costs and Effectiveness of Alternative Strategies for Reducing the Doses and Risks* by Drs. Mauro, Behling and Anigstein. *Part 1: Statement Before the Nuclear Claims Tribunal* was admitted as Claimants' Exhibit 1, (SCA) while *Part 2: Technical Background Document* was admitted as Claimants's Exhibit 2 (SCA). The expert witnesses for the Defender of the Fund were Dr. Reginald L. Gotchy and Dr. Michael Uziel (hereafter "Enviropro.) In addition to their testimony, the Defender filed *A Conceptual Assessment of Radiological Issues and Remediation Alternatives Related to Possible Resettlement of Bikini Atoll the Republic of the Marshall Islands* authored by Dr. Uziel of Enviropro, Inc. and Dr. Reginald L. Gotchy, PhD, CHP which was admitted as Defender of the Fund's Exhibit A.

equivalent of 15 millirem assuming a local only diet.. The Tribunal believes a local diet is an appropriate assumption for this determination. While the Tribunal recognizes that it may not be likely that the entire population will adhere to a local food only diet, even if available, the Tribunal accepts the EPA reasoning that protection should be extended not just to the average member of the community, but to those who could be characterized as having "high end risk." This concept is captured by the "reasonably maximally exposed individual."[66]

Utilizing past survey data and the radiological assessment methodologies recommended by the U.S. Environmental Protection Agency, potential radiation doses were derived for a resettled population on each of the islands of Bikini Atoll for which measurements exist.[67] These assessments revealed that should the islands of Bikini Atoll be resettled in the near future without any additional remediation of the contaminated soil or the implementation of institutional controls, radiation doses could be several hundred mrem/tr effective dose equivalent (EDE) above background, and, at many locations exposures could exceed several thousand mrem/yr EDE.[68]

D. Radiological Cleanup Strategies and Costs

Both parties presented a number of alternative strategies and approaches to how the standard could be met. These strategies consisted of removal of contaminated soil with and without soil replacement; application of potassium to the soil to reduce the plant uptake of cesium; soil strata inversion by taking the top layer of soil and inverting it in something of a "communal garden"; phytoremediation (the use of plants to uptake the radioactive contaminants from the soil), and soil washing. These various strategies had costs ranging from $217.7 million to $1.419.6

66 Claimants' Exhibit 1 (SCA) at page S-21, Footnote 2.
67 *Ibid* at page S-3.
68 *Ibid* at page S-6

billion.[69]

In the *Enewetak* award, the Tribunal determined:

> While phytoremediation is a promising, developing technology, its effectiveness in Enewetak cannot be evaluated. It is clear that the concept is valid, because the uptake of Cs-137 from the soil by food plants is the major pathway for exposure to residents. However, the application for cleanup of radioactive contaminants has not been demonstrated in the coral atoll environment and there is no reliable data to assess costs associated with such a clean up effort.[70]

Accordingly, for these same reasons and for other evidence produced at the hearing, the Tribunal finds that phytoremediation should not be a predominant cleanup strategy for Bikini either.[71]

The overall objective in considering remediation strategies are that they be: (1) protective of public health and the environment, and in compliance with EPA and Tribunal cleanup criteria for sites contaminated with radioactive material; (2) compatible with establishing a self-sustainable ecosystem and minimizing ecological damage; and, (3) cost effective.[72] Applying this objective to the various remediation strategies, SCA determined that four different options would best satisfy this objective. First was soil removal and replacement and construction of a partially elevated causeway at a cost of $504.7 million, referred to as "Option 2".[73] This option would scrape approximately 1.99 cubic meters of topsoil to be replaced with clean soil. Second is a combination of potassium application and soil excavation and replacement with causeway construction as the waste management option, at a cost of $360.5 million, referred to as

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69 Claimants Exhibit 1 (SCA), Table S-6.

70 *Enewetak* MEMORANDUM OF DECISION AND ORDER, at page 18.

71 At the close of the Enewetak hearing on restoration and remediation strategies and costs, Claimants and Defender of the Fund stipulated as to clean up costs and methodology providing simply that phytoremediation may be considered and utilized where appropriate. No such stipulation was forthcoming in the Bikini claim as the Defender's expert continued to advocate phytoremediation over other clean up methods to the point where Claimants' experts were able to point out serious flaws in Dr. Uziel's calculations and assumptions for application of other clean up methodologies.

72 Claimants Exhibit 1 (SCA) at page S-19.

73 *Ibid.*

"Option 3".[74] This option would combine potassium application with soil scraping at a reduced volume, approximately 1.31 million cubic meters, and would also involve the construction of a partially elevated causeway. Third is a combination of clay-like additives (such as zeolite or vermiculite), and soil excavation and replacement, with causeway construction as the waste management option, at a cost of approximately $319.4 million, referred to as "Option 6"[75] Finally, SCA developed what was referred to as a "diversified land alternative" at a cost of approximately $365.7 million.[76] This approach would involve the replacement of food-bearing trees on Bikini Island with non-food bearing trees; excavation of contaminated soil in residential areas; construction of a causeway between Eneu and Bikini Islands; potassium treatment of food-producing areas on Eneu Island and other moderately contaminated islands; avoidance of other selected islands; and establishment of a comprehensive surveillance program.

One strategy that all of these options have in common is construction of a partially elevated causeway between Bikini and Eneu Islands utilizing excavated soil. This disposal option should be given serious consideration because a causeway would serve the needs of the resettled population, and, by using the excavated material for its construction, would be a cost-effective use of fill material.[77] Similarly, in the *Enewetak* claim, the Tribunal determined that in addition to receiving community support, "the most effective disposal alternative is the causeway option..."[78]

E. Application of CERCLA Criteria

In its POST HEARING ORDER of October 5, 1999, the Tribunal ordered the parties to file additional briefing on the "preferable method or combination of methods based on the evidence presented at the hearing for the restoration of Bikini and cost figures for purposes of

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74 *Ibid*

75 *Ibid* at page S-20.

76 *Ibid.*.

77 *Ibid* at page S-15.

78 *Enewetak* MEMORANDUM OF DECISION AND ORDER, at page 23.

an award taking into account the Implementing Regulations under CERCLA at 40 CFR §300.430(9)(iii)(A-1). The Tribunal believes that application of the CERCLA Implementing Regulations is appropriate and consistent with the U.S. EPA radiation protection standard for radiological clean up activities adopted by it in this and other similar claims.

Title 40 C.F.R. §300.430(9)(iii)(A-1) sets forth nine criteria to take into account for the identification and selection of remediation alternatives for the clean up of sites on the National Priorities List (NPL).[79] The criteria are divided into two threshold criteria and five "primary balancing" criteria:

Threshold criteria

overall protection of human health and the environment

Compliance with ARARs (applicable or relevant appropriate regulations)

Primary Balancing Criteria used to make comparisons and to identify the major trade-offs between the remedial alternatives. Alternatives that satisfy the threshold criteria are evaluated further using the following five balancing criteria:

Long-term effectiveness and permanence;

Reduction of toxicity, mobility, or volume of contaminated media;

Short-term effectiveness;

Implementability; and

Cost

The final two criteria are state and community acceptance which are considered "modifying factors".

The four remediation strategies discussed above all meet the first two threshold criteria.[80]

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79 *Overview of the CERCLA Evaluation Process,* John Mauro, Ph.D. November 18, 1999, Attachment H to 'Post Hearing Memorandum of Claimants", December 1, 1999.

80 *Ibid* at page 7

Thus, these strategies should be evaluated in light of the five balancing criteria and modifying factors. Counsel for Claimants presents such an analysis on pp.42-45 in the "Post Hearing Memorandum of Claimants" as does Dr. Mauro in his "Overview of the CERCLA Evaluation Process" pp. 7-10. Their analysis provides that Option 2, (soil removal and replacement) although relatively expensive, provides both long and short term effectiveness; the virtual elimination of toxicity; and implementability. Option 3, (combination of potassium treatment and soil removal) is less expensive and otherwise effective, however, will require institutional controls for over the next 100 years. Option 4, (zeolite application in combination with soil removal) likewise is less expensive and effective, and will require minimum institutional controls once implemented. However, unlike potassium treatment, this technology is not well tested at Bikini. Option 9. (diversified land use) requires the least amount of soil removal, but is most intrusive in terms of the intensive long term institutional controls which would be necessary for over 100 years.

In applying the two modifying criteria of "state" and "community" acceptance the Tribunal will deem "state" in this case to mean the national government of the Republic of the Marshall Islands, and "community" to mean the local government council for Bikini. In respect to community acceptance and preference, Counsel for Claimants has ranked the various options in order of preference by the Bikinians with Option 2, (soil removal and replacement) the first choice, followed by Option 3, (combination potassium treatment and soil removal); Option 4 (zeolite application in combination with soil removal); and finally, Option 9 (diversified land use).[81]

The Defender of the Fund's response to the preferable method or combination of methods taking into account the Implementing Regulations under CERCLA consisted of a combination method referred to as alternative 3 presented in Table 8.2.6-1 of the Enviropro report.[82] In making this recommendation, the Defender admits that "...Enviropro has <u>not</u> measured their

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81 Post Hearing Memorandum of Claimants, December 1, 1999, at page 45.

82 Defender's Post Hearing Submission Re: Nuclear Claims Tribunal Order Dated October 5, 1999, filed December 1, 1999, at page 32.

remediation alternatives against the 'EPA nine criteria'..." (emphasis added).[83] The combined alternative approach recommended by Enviropro consists of a combination of soil inversion, potassium treatment, and soil removal and replacement.[84] Although intrigued with the concept of soil inversion as a remediation strategy, the Tribunal must reject this alternative since by Enviropro's own admission, the nine criteria of the CERCLA Implementing Regulations were not considered, and the remediation strategy is limited only to the islands of Bikini and Eneu.[85]

Consequently, the Tribunal finds that the two preferred remediation strategies applying the CERCLA Implementing Regulations are Option 2 (soil removal and replacement) and Option 3 (combination potassium treatment and soil removal). Both strategies would utilize a waste management system consisting of construction of an elevated causeway. Both options would also involve substantial removal of topsoil involving a significant ecological disruption. Both options would also be effective in the short and long term once implemented, and both would achieve the desired reduction in toxicity, mobility, or volume of contaminated material, although Cs-137 would remain in soil treated with potassium.[86]

This leaves the two remaining "primary balancing" criteria of implementability and cost. Option 3 is clearly more cost effective than Option 2 with a cost of $360.5 million compared to $504.7 million, a difference of $144.2 million.[87] Option 2, however, may be preferable in terms of implementability. Although the massive soil removal and replacement with clean soil would initially be very disruptive, it would not require the long term institutional monitoring for over the next 100 years. The People of Bikini have expressed their preference under the CERCLA "modifying criteria" for Option 2 followed by Option 3.[88] There is nothing on the

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83 *Ibid.*

84 *Ibid,* Attachment A.

85 *Ibid.*

86 Post Hearing Memorandum of Claimants, December 1, 1999, Attachment H, pp.4-10.

87 Claimants Exhibit 1 (SCA), Table S-6.

88 Attachment H at page 7.

record to indicate any preference among the remediation strategies by the national government.[89]

In determining which remediation strategy the Tribunal will adopt for awarding costs to restore, additional analysis is necessary. First there is the very large difference in cost between Option 2 and Option 3. Both of these strategies meet the first two threshold criteria, and both should provide an effective and proven method to restore Bikini to a productive and safely habitable state. In the foregoing analysis, the trade-off really boils down to whether eliminating the long term institutional monitoring necessary for the potassium treatment is worth an additional $144.2 million.[90] In this respect, Claimants' experts have noted that: "The combination of potassium application with soil scraping appears to be a relatively desirable alternative based on cost, its demonstrated effectiveness at Bikini Atoll, and the reduced volume of soil that would have to be excavated (1.31 million cubic meters)".[91]

Another factor warranting the Tribunal's consideration in awarding restoration costs is consistency with other Tribunal decisions claims in terms of remediation strategies and their costs. Costs based on a combination soil removal/potassium treatment remediation strategy were awarded in *Enewetak* and a similar remediation strategy has been adopted by the parties in the currently pending Rongelap claims consolidated NCT Nos.(23-2440); (23-501);(23-5443B); and (23-5445B).[92] This is not to suggest that the Tribunal is taking a "cookie-cutter" approach to the issue of remediation strategy. The Tribunal has learned in its experience that while there are many similarities in respect to residual contamination in the Marshall Islands resulting from the NTP, there are also many differences with respect to the histories of affected

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89 The RMI Government was not a party to this proceeding, but there is nothing in the record to suggest that the national government has a preference for any particular remediation strategy.

90 Although the soil removal/replacement option would not require the institutional controls required for potassium treatment, some institutional controls will nonetheless be required for over the next 100 years for the on-island disposal option of the causeway. Claimants Exhibit 1 (SCA) at 9-24.

91 Claimants' Exhibit 1 (SCA) at page S-14.

92 *Enewetak* MEMORANDUM OF DECISION AND ORDER, and Stipulation (23-2440) et al. dated September 22, 2000, Claimants' Exhibit 4; Defender's Exhibit C.

communities and the precise amount and location of residual contamination requiring clean up. Nonetheless, in the absence of more compelling reasons in this claim, the Tribunal finds that the soil removal/potassium treatment strategy (Option 3) will achieve the required clean up objectives; be most cost effective; and consistent with remediation strategies adopted in similar claims.

F. Resettlement

In its POST HEARING ORDER of October 5, 1999, the Tribunal ordered that the parties include in their briefs the "legal basis and standard to apply to an award for 'resettlement costs' by the Tribunal including costs for housing and infrastructure". Since that time the Tribunal, in making its award in *Enewetak*, addressed the issue of the Tribunal's position with respect to an award for resettlement costs. After discussing the appropriate baseline for establishing resettlement costs, (whether it should be based on a modern community with complete infrastructure or based on the condition of the community immediately prior to their removal), the Tribunal went on to state:

> The Tribunal agrees with claimants that the economic situation of the community is an important element of consideration in the overall structure of compensation in this case. However, it disagrees that this element of damage should be addressed through the type of resettlement costs proposed by claimants. The economic values inherent in the request for claimants' resettlement costs are addressed through the award for loss of use. As stated in the joint appraisal report, the loss of use value addresses "compensation for the economic loss to the people of Enewetak for the period that use of their land has been denied.." Claimants assert they have no way to pay for housing and other infrastructure because their exile on Ujelang denied them the opportunity to conduct economic activity and thus precludes them from paying resettlement costs. This acknowledges that in the absence of this denial of economic activity,

> the people would expect to pay for their own housing, as is the normal course of events. The loss of use award provides compensation for this loss of economic opportunity. While the lands of the atoll may not be fully productive, claimants' award for loss of use includes compensation not only for past loss, but also for loss of future use. To allow additional compensation for resettlement costs on the order of those requested by claimants would amount to a duplicative award.
>
> Claimants argue that these costs have already been approved by the U.S. and that consequently sets the legal standard for resettlement costs. However, to the extent that the resettlement program is an element of the overall U.S. program of direct compensation to the Enewetak people, that approach does not include compensation identified for denial of use of the land by the people. The two approaches are exclusive of each other, at least to the extent that resettlement is proposed by claimants. Claimants may not receive compensation for the economic loss attendant to the denial of use of their land, and then receive resettlement costs which are justified by those same economic losses.[93]

Similarly, Claimants proffered a resettlement plan with costs of approximately $83 million which include infrastructure (roads, docks, power, sewage, communications, etc.) and housing.[94] Counsel for Claimants maintains that case law, CERCLA, and U.S. Government commitments all support a separate award from the Tribunal for resettlement costs.[95] There is nothing in Claimants arguments or authority which causes the Tribunal to depart from its ruling in *Enewetak*. The cases cited by counsel dealing with CERCLA requirements primarily involve restoration to damaged natural resources, and even though there may be authority to award additional sums under CERCLA,[96] such authority still doesn't address the problem raised by the Tribunal when an award

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93 *Enewetak* MEMORANDUM OF DECISION AND ORDER, at pp. 26-27.

94 Claimants' Exhibit 17.

95 Post Hearing Memorandum of Claimants, December 1, 1999, at pp. 4-9.

96 To the extent that CERCLA would provide some authority to make an award for resettlement costs, it is likely that the appropriate baseline would be the conditions in the Bikini community prior to removal from their atoll, and not the modern fully developed infrastructure and housing sought by Claimants. CERCLA is designed to provide for clean up and restoration of damaged and contaminated land and natural resources and is intended to restore the land to its condition prior to the contamination.

has been made for loss of use, past, present, and future to address economic losses. To make an additional award for resettlement costs under these circumstances, would be duplicative.

The fact that the U.S. Government has committed to fund resettlement as part of overall compensation to the People of Bikini does not change the Tribunal's view since compensation for loss of use has not been part of U.S. compensation. Accordingly, Claimants' request for separate resettlement costs as part of this award is denied.

F. Restoration Damages

To summarize, the reasonable costs of clean up and rehabilitation are as follows: $360,500,000 which shall include (1) soil excavation and removal; (2) periodic clearing of land of underbrush prior to potassium applications; (3) purchase and periodic application of potassium/potassium fertilizer; (4) soil management that ensures proper dosage of potassium/potassium fertilizer; (5) a comprehensive surveillance program involving soil and crop samples analyses and boiassays; and (6) disposal of contaminated soil through construction of an elevated and sealed causeway. This total must be adjusted by the amount of $19,000,000 (U.S. Public Law 97-257) and $90,000,000 (U.S. Public Law 100-446). Restoration damages for clean up and rehabilitation of Bikini total $251,500,000.

VI. Hardship

A. Legal Framework

The people of Bikini have requested compensation for damages which were a consequence of the harm to their property. The Tribunal has previously recognized this class of damages in the class action claim of *Enewetak*.. In that case, the Tribunal adopted as a framework for analysis §929 of the Restatement (Second) Torts, Harm to Land from Past Invasions *supra,* at page 8.

Subsection 1(c) speaks to this issue, allowing compensation for "discomfort and annoyance."[97] The scope of such discomfort and annoyance is suggested by the application of this section of the Restatement in the case of Ayers v. Township of Jackson, 525 A.2d 289 (Sup. Ct. N.J. 1987), where damages were allowed for emotional distress, deterioration in the quality of life, and medical monitoring, where plaintiffs' water supply had been tainted by toxic chemicals. In the present case, claimants have requested compensation for uprooting from their traditional home, subsistence problems, changes in their subsistence pattern from marine to agriculture, loss of control over their lives, loss of the pleasures of life on an atoll as opposed to an island, and the undermining of traditional authority.

B. Background and Description

The description of the hardships suffered by the people of Bikini attendant to their relocation and occupancy of replacement lands is described by Claimants' expert, Dr. Robert C. Kiste, in two exhibits admitted into evidence; by the testimony before the Tribunal of Hosea Kerong, a Bikini elder; and by the testimony and report of Dr. Nancy Pollock, the Defender of the Fund's expert witness. The Bikini people's initial relocation was in 1946 to Rongerik Atoll.

Although U.S. officials regarded Rongerik and Bikini as alike as "two Idaho potatoes,"[98] this proved to be a mistaken appraisal, as the resources available were inadequate to the people's needs. Kiste reports: "The situation on Rongerik steadily deteriorated over the next two years. In July, 1947, a medical officer visited the atoll and reported that the Bikinians were 'visibly

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97 Though it could be argued that the time spent on Rongerik and Kili did not constitute occupancy of the land actually harmed, to the extent that occupancy was offered as a replacement of Bikini, those lands stand in as a proxy for Bikini, justifying application of this section. In any case, the Tribunal finds that the harm attendant to relocation from Bikini resulted from the Nuclear Testing Program and this class action claim is an appropriate vehicle for consideration of these consequential damages for the reasons set out in *Enewetak* (see pp. 31-32.)

98 Kiste, Exhibit 20, p 3.

suffering from malnutrition' (Mason 1954:314)."[99] Later, in 1948, anthropologist Leonard Mason found "a desperate people whose food supplies were on the verge of complete exhaustion. The household groups had ceased to function as effective work units, and the Bikinians had organized a communal effort to gather and share the little food that was available . . . A navy physician examined the Bikinians and found them to be 'a starving people.'"[100] In mid-March, the people were evacuated to Kwajalein Atoll. Although the seven and a half month stay of the Bikinians in Kwajalein was "in terms of their material well-being, . . . never more prosperous," Kiste states:

> The consequences of their relocation were abundantly evident. In less than three years, the once self-sufficient people had been transformed into dependant wards of the United States. . . . Their very existence had been threatened, and the little confidence that they had in themselves was diminished. With good reason, they were anxious and uncertain about their future.[101]

The Bikini people were subsequently relocated to Kili Island, in November of 1948. Kiste reports: "The first five and a half years on the island were marked by despair. The second year began with a food shortage. The people were reduced to immature coconuts, and an emergency air drop of food was required."[102] Beyond the dietary inadequacies, the quality of people's lives suffered.

> The tiny island was compared to a jail, and the people felt confined. Men, women, and children alike sorely missed the ability to move about an atoll, engage in fishing expeditions across the lagoon or in the open sea, and sail and vacation on other islands for the sheer pleasure of the activities in themselves. . . The structure of mens's lives had been radically altered, and the time previously spent on canoes was replaced with boredom and meaningless activity.[103]

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99 Kiste, Exhibit 20, p 4

100 *Ibid*

101 Kiste, Exhibit 20, p. 4.

102 Kiste, Exhibit 20, p. 7.

103 Kiste, Exhibit 20, p. 8.

Much of the problem related to the physical characteristics of Kili Island. Although it had richer soil and greater rainfall than Bikini, it had a much smaller land area than Bikini. It was a single island, with no sheltered lagoon for fishing, and relatively poor marine resources. It did not have a protected anchorage or good beaches.[104]

By late 1957, "the progress on Kili, the Jaluit colony, the agreement with the United States, and the trust fund had created a cautious optimism."[105] With the typhoons in 1957 and 1958, "[t]he vessel was lost, food stocks on Kili were critically low, and for all practical purposes the project was ended. The administration had no alternative but to provide relief foods, and the Bikinians were little better off than during their initial years on Kili."[106] This was exacerbated by

> a serious food shortage . . . during the months of rough seas in 1963-64. Immature coconuts and bread made from spoiled and bug infested flour were part of the diet. With simple poles and lines, men attempted to fish the heavy surf from shore, but results were nil. On calmer days, small groups of men swam through the surf to the open sea where they treaded water while fishing with weighted drop lines. The results were more productive, but the method was not without risk. . . . Community morale was low.[107]

Dr. Pollock in her paper and testimony before the Tribunal suggested that changes experienced by the Bikini people were already underway in 1946, that the degree of hardship suffered by the Bikini people must be viewed in relation to that of other Marshall Island atolls, and that cash payments to the Bikini people must considered in evaluating their hardship. Dr. Pollock observed that "the Bikini people were used to times of hunger, and food shortage" from pre-1946 times and that "on the whole the food supply was quantitatively greater than it had been on Bikini."[108] Claimants' counsel took issue with these statements, and on cross examination established that Dr. Pollock had never been to Bikini, had spent one day on Kili, and had not interviewed Bikini people in connection with this report. Testimony was received

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104 Kiste, Exhibit 20, p. 6.
105 Kiste, Exhibit 20, p. 11.
106 Kiste, Exhibit 20, p. 11.
107 Kiste, Exhibit 20, p. 12.
108 Pollock, Defender's Exhibit F.

from Hosea Kerong, an elder from Bikini, that he never remembered being hungry on Bikini and that there was never a shortage of fish on Bikini. Sometimes it was so easy, they could collect fish from the reef at low tide. Fish were important on Kili, but they were hard to catch because there was rough surf and no lagoon or small islands. He also testified there was not more food on Kili than on Bikini.[109]

In his written response to Dr. Pollock's paper,[110] Dr. Kiste addressed some of Dr. Pollock's views. He took issue with the suggestion that because Bikini patterns of land tenure differed from certain general features of Marshallese land tenure, that this was evidence of changing custom prior to 1946. His position was that within the Marshalls there are localized variations in land tenure which result in significant variations among the atolls, and the fact of such variation was not evidence of changes in social organization prior to 1946. Within the context of Bikini practice, Dr. Kiste found significant change as a result of their relocation to Kili, which created a new order. He also disputed Dr. Pollock's observation that the Bikini people had a history of mobility. Dr. Kiste found that travel outside of Bikini was limited and that no regular contacts were maintained with other communities. However, he did not address her conclusions relating to dietary information.

With the declaration of the U.S. in 1985 that Eneu was safe for habitation, plans began for resettlement, and some families returned to Bikini. In 1978, it was determined that the resettled population was being exposed to unsafe levels of radioactivity and were removed again. In 1982, an airport was built on Kili, easing problems associated with inaccessibility during winter months.

C. Compensation Analysis and Methodology

In *Enewetak*, the Tribunal adopted an approach to quantification of these damages which paid an annual amount for each person on Ujelang during the period of hardship. The annual amount was adjusted to reflect what the Tribunal considered to be the relative severity of

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109 Dr. Kiste notes that "Bikini was viewed as a time and place of milk and honey." (Kiste, Claimants' Exhibit 20, p. 12.)

110 Claimants' Exhibit 21.

hardship. Claimants in the present case have not proposed an alternative means of quantification, and the Tribunal will utilize this same procedure. While the record is rich in evaluation of social changes suffered by the people of Bikini in relation to their relocation to Rongerik and Kili, it is sparse in regard to the quantitative information necessary for the Tribunal's analysis, particularly population numbers. In determining annual population, the Tribunal will utilize numbers reflected in the record where possible. For years where no annual population is reflected in the record, the Tribunal will extrapolate from numbers in the record by taking an average value from populations for those years bracketing the unrecorded period. Where this results in a fractional value, the Tribunal will round up to the next whole number. For example, Dr. Kiste and Dr. Pollock both report the population for 1964 on Kili as 282. There are no population figures in the record for 1965 or1966. The Marshall Islands Statistical Abstract, referenced in both Claimants' and Defender's appraisal reports, reports the population for 1967 as 309. The average of the 1964 and 1967 numbers is 295.5 which is rounded up to 296, which is applied for the two intervening years. This methodology yields the following annual populations:

Year	Population	Source
1946	170	Kiste[111], Pollock[112]
1947	189	extrapolation[113]
1948	208	Kiste, Pollock
1949	200	extrapolation
1950	200	extrapolation
1951	200	extrapolation
1952	200	extrapolation
1953	191	Pollock

111 Claimants' Exhibit 20.

112 Defender's Exhibit F

113 Computed in the manner described in the text.

1954	229	extrapolation
1955	229	extrapolation
1956	229	extrapolation
1957	229	extrapolation
1958	267	RMI Statistical Abstract[114]
1959	275	extrapolation
1960	275	extrapolation
1961	275	extrapolation
1962	275	extrapolation
1963	275	extrapolation
1964	282	Kiste, Pollock
1965	296	extrapolation
1966	296	extrapolation
1967	309	RMI Statistical Abstract
1968	327	extrapolation
1969	344	Kiste, Pollock
1970	352	extrapolation
1971	352	extrapolation
1973	360	RMI Statistical Abstract
1974	360	Pollock
1975	425	extrapolation
1976	425	extrapolation
1977	425	extrapolation
1978	425	extrapolation
1979	425	extrapolation
1980	489	RMI Statistical Abstract
1981	520	extrapolation
1982	520	extrapolation
1983	520	extrapolation
1984	520	extrapolation
1985	550	Pollock

In determining the annual per person amount in *Enewetak*, the Tribunal acknowledged that "this amount is somewhat arbitrary and cannot fully repay those who suffered on Ujelang."[115] The Tribunal made reference to the court's decision in Mochizuki v. US:

> No compensation is ever equivalent to a serious human loss. Who among us would ever trade our eyes or legs for $5,000 or $20,000 of a hundred times that much? Money damages can never undo the loss of life, false imprisonment or the passage of years. Money, however, is the medium which the law must use as it seeks to right the wrongs. It must use this medium with the full recognition that it is never truly adequate.[116]

Those concerns are equally valid in the present case.

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114 Marshall Islands Statistical Abstract 1996, RMI Office of Planning and Statistics, cited in Claimants' Exhibit 20, and Defender's Exhibit F, Appendix C.

115 *Enewetak* MEMORANDUM OF DECISION AND ORDER at p. 32.

116 Mochizuki v. US, 43 Fed.Cl. 97 (1999) at p. 97.

In *Enewetak*, the Tribunal recognized two levels of hardship, determining that the period from 1956 to 1972 was that of the greater suffering. In that case, claimants' expert, Dr. Carrucci observed:

> There are a number of forms of evidence that show how serious the suffering was on Ujelang during these years. First, are many similar versions of the stories that elders told on the atoll in the mid-1970's. While stories of suffering are virtually innumerable, those that are repeated again and again focus on a number of core incidents including famine and hunger, near starvation and death from illness, food shortage and the limitations of the environment on Ujelang (fishing/collecting), the polio epidemic, the measles epidemic, the rat infestation, the time of the strike, and easing of suffering during the 1970s but with continued homesickness and desire to return to Enewetak.[117]

Likewise, in the current claim, claimants' expert Dr. Kiste noted: "With the exception of their sojourn at Kwajalein, the Bikinians experienced serious subsistence problems most years since their initial relocation. Their ordeal at Rongerik was one of basic survival. At Kili, food shortages routinely occurred during the annual period of rough seas."[118] The Tribunal is cognizant that serious food shortages are only one aspect of the "annoyance and discomfort" suffered by the Bikini people. Nonetheless, it believes this is reflective of the relative level of hardship endured. In this manner, the Tribunal assigns two levels of annual compensation, $4,500 per person per year for the period on Rongerik (1946-1947) and $3,000 per person per year for the period on Kili up until 1982 (1949-1982.) In light of the relative physical comfort provided on Kwajalein in 1948, no compensation is provided for that period. In 1982, the combination of a new airport on Kili and money available from the trust fund suggests that the worst of the hardship as a result of inaccessability had been eased. The airport would allow importation of food during the periods of high seas. The Tribunal recognizes that the damage to culture and social structure resulting from the Nuclear Testing Program and attendant relocation may well be ongoing. However, quantification of those damages is a task which is beyond the scope of monetary compensation. To the extent that the damage to social order occurred during the pre-1982 period, the compensation for that time addresses those damages.

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117 *Enewetak* MEMORANDUM OF DECISION AND ORDER at p. 28.

118 Kiste, p. 14.

D. Consequential Damages from Hardship

Therefore, based on the foregoing, the Tribunal awards the people of Bikini $33,814,500 for consequential damages resulting from the Nuclear Testing Program.

VI. Conclusion

This decision will be the second award the Tribunal has made for damages to property, and while there are many similarities with award made in *Enewetak*, there are also some significant differences.

Through the process of several hearings, submission of briefs, and testimony, the Tribunal has heard from various experts and from the People of Bikini themselves. It has reviewed voluminous reports and documents totaling thousands of pages and has had the benefit of arguments of counsel. The process has been a long and difficult one as the Tribunal has grappled with many issues in need of resolution in the decision process. However, none of what has transpired before the Tribunal can begin to compare with the stark reality that the People of Bikini have remained in exile for some 55 years now. Although the Tribunal has determined that the People of Bikini have suffered loss and injury to their person and property, nothing can compensate for that simple fact and all of the attendant intangible damage, loss, and hardship suffered by the Bikini community over the years. In this respect, the Tribunal hopes this award will help bring closure to this tragic legacy, and allow the Bikini community to move forward empowered to make their own future.

The Tribunal has determined that the amount of compensation due to claimants in this case is **$563,315,500**. This includes $278,000,000 for past and future loss of Bikini Atoll to claimants. It further includes $251,500,000 to restore Bikini to a safe and productive state. Finally, it includes $33,815,500 for the hardships suffered by the People of Bikini as a result of their relocation attendant to their loss of use.

ORDER

Based on this decision, it is hereby ORDERED that a hearing shall be set for post judgment proceeding, including a determination of annual funding pursuant to 42 MIRC 123(17)(b)(iii)(B).

Dated this 5th day of March, 2001, at Majuro, Marshall Islands.

_____
Oscar de Brum
Chairman

_____
James H Plasman
Member

_____
Gregory J Danz
Member