MEMORANDUM

Department of Natural Resources

P.O. Box 107005

State of Alaska

Division of Land
Suite 814
Anchorage, AK 99510-7005

TO: Elizabeth Barry
Assistant Attorney General

DATE: 7 Sep 94

TELEPHONE NO: 762-2692

SUBJECT: Solicitor Opinion Regarding Avulsion

FROM: Ron Swanson
Director

Land avulsion and subsidence resulting from the 1964 earthquake continue to raise technical, legal and management issues that we must address in our land management functions.

Federal surveys of riparian land affected by avulsion have failed to address the location of the pre-quake line of mean high water which would in turn allow the legal issue of ownership to be answered.

The Department of Interior, Office of the Solicitor, recently responded to a BLM request for policy guidance relative to the 1964 avulsion. A copy of this memorandum, dated May 9, 1994, "Crustal Deformation and Uplift - Boswell Bay, Alaska" (copy enclosed) significantly furthers the state's objectives for resolving avulsion issues.

We are requesting that you review the memorandum from the state's perspective and concur with or reject conclusions contained in it.

cc: Clyde Stoltzfus, DOT/PF
Bob Walsh, DCRA
Frank Rue, DF&G
Dennis Daigger, TDMU

United States Department of the Interior
OFFICE OF THE SOLICITOR
ALASKA REGION
4230 University Drive
Suite 300
Anchorage, Alaska 99508-4626

TAKE PRIDE IN AMERICA

BLM.AK.1726

May 9, 1994

MEMORANDUM

TO: State Director
Alaska State Office
Bureau of Land Management

FROM: Deputy Regional Solicitor
Alaska Region

SUBJECT: Crustal Deformation and Uplift - Boswell Bay, Alaska

INTRODUCTION

You requested written guidance on several significant issues of first impression pertaining to surveys of land affected by the 1964 Alaska earthquake. You first want to be sure that "avulsion" is the best term to use in conjunction with land uplifted by the earthquake. You then want us to review and provide advice on existing BLM policy which provides that if there is no pre-quake survey BLM will survey based on the present day meander lines. Finally, you want to know if BLM is justified in doing a resurvey of particular lands, at Boswell Bay, Alaska, affected by the 1964 earthquake.

SHORT ANSWERS

Avulsion is the proper term to apply to lands uplifted by the 1964 Alaska earthquake. BLM's existing practice of surveying present day meander lines is essentially sound and requires only minor modification. However, a resurvey of land at Boswell Bay, Alaska, is appropriate.

BACKGROUND

Your questions arise in the factual context of the Boswell Bay survey. Boswell Bay is part of Hinchinbrook Island, in Prince William Sound, near Cordova, Alaska. The survey was commenced in 1989 so that a patent could be issued to the Native corporation entitled to the land under the Alaska Native Claims Settlement Act.[1] During the 1964 earthquake some of the land in this area of

[1] 43 U.S.C. § 1601 et seq.

Alaska was uplifted substantially, in some instances over 30 feet.[2] Based on available evidence, it appears that land included in the Boswell Bay survey was in fact uplifted during the earthquake.

The exact extent of the uplift is, however, difficult to determine at this point in time. Surveys of some private lands along Boswell Bay were done before the 1964 earthquake and establish the meander lines as they existed at the time of those surveys. However, it is known that a certain amount of accretion occurred after the private lands were surveyed and prior to the 1964 earthquake. Therefore, it is difficult to determine what part of the land that now exists between the pre-earthquake survey meander lines and the current meanders is due to accretion prior to the earthquake and what part was uplifted by the earthquake. As will be discussed below, the question is an important one because accreted lands belong to the adjoining upland owners while avulsed lands remain in their former ownership.

Since so much of Alaska was unsurveyed at the time Alaska was admitted as a state, in 1959, and at the time of the earthquake, in 1964, BLM and the State of Alaska have had policies allowing for survey of the current meander lines. The BLM's policy was a matter of actual practice and the state's position was set out in a 1964 opinion of the Alaska Attorney General.[3] In the Boswell Bay instance, however, the State protested the survey and asserted that the evidence showed that submerged lands had been uplifted after statehood by the earthquake and that those uplifted lands continued to be state lands.[4]

DEFINITIONS AND RULES

The term "accretion" has been "applied both to the gradual and imperceptible deposition of material along the bank of a body of

---

[2]U. S. Geological Survey Professional Paper 543-1, "The Alaska Earthquake, March 27, 1964, Regional Effects, Tectonics" (1969).

[3]1964 Opinion of the Attorney General No. 6, "Effect of Earthquake on Tideland Boundaries," (September 14, 1964).

[4]While it might be argued that the State's protest of the Boswell Bay survey was neither timely nor complete, BLM has decided on its own to review that survey to be sure it is correct. This is in keeping with BLM's general duty to ensure that it makes correct decisions concerning entitlement to land. See Knight v. United States Land Association, 142 U.S. 161, 176-182 (1891).

water and the lands formed by this process."[5] "Avulsion," on the other hand, has been defined as "a sudden and perceptible change in the shoreline."[6] While accretion occurs slowly over time, avulsion is generally the result of some violent and distinct occurrence, most frequently a flood or storm.[7] The key difference is that one is gradual and imperceptible and the other is sudden and perceptible.[8] As said in one case:

> The test as to what is gradual or sudden - i.e., accretion or avulsion is, that although the witnesses may see from time to time that progress has been made in the changing of the course, still if it could not be perceived while the process was going on, then the change is an accretion and not an avulsion ...[9]

The definitions and rules for accretion and avulsion apply with

---

[5]Bureau of Land Management's Manual of Instructions for the Survey of Public Lands of the United States (1973) (hereinafter "BLM Manual of Surveying Instructions"), § 7-62, 170; Honsinger v. State, 642 P.2d 1352, 1353 (Alaska 1982); 2 Shalowitz, Shore and Sea Boundaries (hereinafter "Shalowitz"), § 4423 (1964), 537; 1 Waters and Water Rights, § 6.03(b)(2) (Beck, 1991 ed.), 188; 1964 Opinion of the Attorney General No.6., supra.

[6]Honsinger v. State, supra; 2 Shalowitz, supra at 537; 1 Water and Water Rights, supra at 189; 1964 Opinion of the Attorney General No. 6, supra. The BLM Manual of Surveying Instructions, § 7-71, defines avulsion as "the sudden and rapid change of channel of a boundary stream, or a comparable change in some other body of water forming a boundary, by which an area of land is cut off." While the BLM definition is not inaccurate, it is a little too narrow. It is important to include the aspect of perceptible change in the definition of avulsion and avulsion can occur by other means than the cutting off of an area.

[7]Murray v. State, 596 P.2d 805 (Kansas 1979); State by Kobayashi v. Zimring, 566 P.2d 725, 734 (Hawaii 1977); Schwarzstein v. B. B. Bathing Park, Inc., 197 N.Y. Supp. 490, 492 (1922); Morgenthaler, "Surveys of Riparian Real Property: Omitted Lands Make Rights Precarious," 30 Rocky Mt. Min. L. Inst. (1984) 19-14.

[8]2 Shalowitz, supra at 537; Cherokee South Corp. v. Ledford, 603 P.2d 351, 352 (Okl. App. 1979).

[9]Goforth v. Wilson, 184 S.W. 2d 814 (Ark. 1945) (citing for authority, Philadelphia Co. v. Stimson, 223 U.S. 605, 613 (1911)).

equal force to tidal areas as to other water bodies.[10]

Changes in land due to an earthquake meet the definition of avulsion and that term is, consequently, the best term to use. While it has not come up often, cases dealing with the issue have found that earthquakes are avulsive occurrences.[11] In specific, the IBLA addressed the effects of the 1964 Alaska earthquake and held:

> We think it clear that if the lands involved herein are now considered filled tidelands as a result of the 1964 earthquake, such a change is clearly avulsive ... The survey should be conducted with this in mind. (Emphasis in original).[12]

While the BLM opinion request points out that the effects of the earthquake could be more correctly characterized as "avulsive tectonic uplift or subsidence," the effects fall squarely within the existing legal definitions and rules concerning avulsion and there is no need to use a different term. As demonstrated in one of the leading Alaska cases, courts will use the familiar and existing terms and rules regardless of the more correct technical label.[13]

In regard to the related question of land ownership, the general rule, followed in Alaska, is that: "The benefits of accretion inure to the shoreline owner, while avulsion does not

---

[10]1 Water and Water Rights, supra at § 6.03(b), 194; 2 Shalowitz, supra at 539; Honsinger v. State, supra.

[11]Lough and Blackburn, 25 IBLA 96, 101 (1976) (applying the rules of avulsion to land that subsided during the 1964 earthquake); State v. West Tennessee Land Co., 158 S.W. 746, 752 (Tenn. 1913) (treating changes in the bed of a lake due to an earthquake as avulsion that did not change boundary lines); 1964 Opinion of the Attorney General No. 6 (dealing expressly with the effects of the 1964 earthquake).

[12]Lough and Blackburn, supra.

[13]Honsinger v. State, supra, where the court applied existing terminology and rules to deal with the gradual rise of the earth's crust due to a receding glacier and did not create new rules or definitions for the scientific term "glacio-isostatic uplift" offered by the State.

change the legal boundary."[14] In short, accretion causes boundary lines to change and avulsion does not change boundaries. What this means in the Boswell Bay type of situation is that the upland owner would own any additional lands accreted to the shoreline side of his property but his boundary would not expand to include any land increases caused by avulsion. In such a situation, the line of ownership would follow the meander line as it existed prior to the avulsive action of the 1964 earthquake.[15]

The rationale behind these differing rules is important for full understanding of how the rules apply. As many as seven policy reasons have been identified for the rule that accretion benefits the adjoining land owner.[16] The chief reason is the desirability of maintaining the riparian nature of the land.[17] This recognizes that a major component of the value of water front land is its continued access to the water.[18] However, the singular reason behind the different rule for avulsion is that such a sudden and unexpected change of boundaries would cause unfairness to the

---

[14]Honsinger v. State, supra at 1353-4; See Also 1 Waters and Water Rights, supra at 188-9; 1964 Opinion of the Attorney General No. 6, supra.

[15]In many instances the uplands were included in a federal withdrawal and accretion attached to the withdrawal. Palo Verde Valley Color of Title Claims, Solicitor's Opinion M-36684, 72 I.D. 409, 411 (1965); Margaret C. More, 5 IBLA 252; also see Beaver v. U.S., 350 F.2d 4, 8 (9th Cir. 1965), cert. denied 383 U.S. 937. In some instances, submerged lands were withdrawn by the federal government in such a way that title to the submerged lands did not pass to the State of Alaska when it became a state. Utah Division of State Lands v. U.S., 482 U.S. 193 (1987). In those instances, submerged lands uplifted by avulsion would not belong to the upland owner but would still belong to the United States. Where both the uplands and adjoining submerged lands were withdrawn, the underlying ownership is unaffected and the current meander lines can be surveyed.

[16]1 Waters and Water Rights, supra at 190-1.

[17]Bonelli Cattle Co. v. Arizona, 414 U.S. 313, 326 (1973), overruled on other grounds, Oregon v. Corvallis, 429 U.S. 363 (1911).; 1 Waters and Water Rights, § 6.03(b)(2), 190-1; State by Kobayashi, supra at 734.

[18]Bonelli Cattle Co. v. Arizona, supra at 326; Strom v. Sheldon, 527 P.2d 1382, 1383 (Wash. App. 1974); 1 Waters and Water Rights, supra at 190;

affected parties.[19] It is the reasonable expectancy of the change that is the crucial difference - landowners expect to gain land due to the effects of accretion (or to lose land by erosion) but no one can expect or anticipate the sudden changes caused by an avulsive action such as a flood, storm or earthquake.[20]

SURVEY PRACTICES

While the above definitions and rules are easy enough to understand in the abstract, their application to lands affected by the 1964 earthquake is problematic. Even where it can be agreed that land was raised by the earthquake, it may be exceedingly difficult to prove where the boundary line was at the time of the earthquake. Due to this difficulty and the lack of available evidence, BLM has generally surveyed the existing meanders and has not attempted to establish the 1964 boundary line. The Boswell Bay situation is unusual from the standpoint that there are some older surveys that establish pre-quake meander lines although those surveys do not answer the question of where pre-quake accretion ended and avulsion began.

Existing Practice

As set out in your request for a written opinion, the BLM has not generally attempted to establish the actual meander lines at the time the State of Alaska was admitted into the union in 1959. Rather, BLM has recognized uplift and subsidence caused by the 1964 earthquake only where there are pre-existing meander line surveys. In such cases, BLM segregates the newly formed uplands and does not treat them as having attached to the upland owner. Where no pre-quake survey exists, BLM meanders the present day contours of the land and adjacent water body.

The State of Alaska has historically agreed with BLM's practice. The State's official position has been the one expressed in an Opinion of the Attorney General, which considered the rules discussed above and concluded:

> Where old tideland boundaries were surveyed and known, they must be followed. Presumably, unsurveyed tideland boundaries may now be surveyed and specified according to presently existing land contours, as there are no

---

[19] Bonelli Cattle Co. v. Arizona, supra at 539-40; 1 Waters and Water Rights, supra at 191.

[20] Cherokee South Corp. v. Ledford, supra at 352.

previously established boundaries to recognize.[21]

The Boswell Bay situation, however, does not fall squarely into these existing practices and brings the practices into question. There are pre-quake surveys of some land along Boswell Bay that show the meander lines at the time of those surveys. Due to pre-quake accretion, those surveys still do not establish the 1964 meander lines. In addition, there is no dispute that land in this vicinity was uplifted by the 1964 earthquake. Thus, the question arises as to whether BLM can and should continue its existing practice.

Applicable Presumptions and Relevant Burdens of Proof

We think that BLM's existing practice is essentially sound due to applicable presumptions and relevant burdens of proof. If it cannot be proven one way or the other, the increase of land must be presumed to be accretion.[22] The party asserting that the increase of land is due to avulsion and not accretion bears the burden to prove that claim.[23] This general rule is accurately and

---

[21]1964 Opinion of the Attorney General No. 6, supra.

[22]Murray v. State, supra at 815 (" ... there is a presumption that changes are by erosion and accretion unless the contrary is shown."); Cherokee South Corp. v. Ledford, supra at 352 ("... there is a presumption in favor of accretion."); State of Oklahoma v. Seelke, 568 P.2d 650, 654 (Okl. App. 1977) ("Absent clear evidence to the contrary, the law will presume accretion not avulsion; however, the presumption does not apply where the evidence sufficiently shows an avulsive change."); Roe v. Newman, 509 P.2d 844, 847 (Mont. 1973), (quoting from 65 C.J.S. Navigable Waters § 86(c) (1966), "In the event of a dispute as to whether land changes resulted from avulsion or otherwise, the presumption is that it resulted from accretion or erosion."); Robinson v. Humble Oil & Refining Co., 176 So.2d 307, 317 (Miss. 1965) ("In the absence of countervailing evidence, the presumption of gradual erosion and accretion prevails ... [cite omitted]"); Muni. Liquidators, Inc. v. Tench, 153 So.2d 728, 730 (Fla. App. 1963) ("... the law presumes in the absence of evidence to the contrary, that changes to riparian land occur 'by accretion and not be a sudden and violent force.'").

[23]Murray v. State, supra ("The party claiming avulsion has the burden of proof on that issue."); Cherokee South Corp. v. Ledford, supra ("... failure to prove avulsion results in the conclusion that the change was due to accretion."); Roe v. Newman, supra ("One claiming a change was by avulsion rather than by accretion has the burden of proving avulsion."); Muni. Liquidators, Inc. v. Tench,

concisely stated in the BLM Survey Manual as:

> An avulsive change cannot be assumed to have occurred without positive evidence. When no such showing can be made, it must be presumed that the changes have been caused by gradual erosion and accretion.[24]

This rule is in keeping with the general rule that one seeking to quiet title bears the burden of proof.[25]

The applicable presumptions and burdens of proof are also consistent with the policies behind the rules concerning accretion and avulsion. As explained in one treatise:

> The different treatment for avulsion is justified simply because to permit avulsive change to carry the boundary would be unduly harsh to the one who would lose land as a result. Because of the strong social policies at work in the doctrine of accretion, and the weak policy involved in the doctrine of avulsion, courts often presume that a change is accretive, leaving the burden of proving avulsive change on the party who would benefit from that finding. [footnotes omitted][26]

Review of Existing Practice

In accordance with the above, if there is evidence that the earthquake caused avulsion and it can reasonably be determined where the boundary was at the time of the earthquake, then BLM should survey the boundary line as it existed at the time of the earthquake whether or not there is a pre-quake meander line survey. Sufficient evidence of avulsion would include review of available physical and documentary evidence including USGS maps and reports, aerial photos and statements from individuals with first hand

---

supra ("The principle is repeated in 93 C.J.S. Waters § 83: 'One claiming that the change ... was by avulsion rather than accretion has the burden of showing the avulsion, by showing a sudden change, or by a preponderance of evidence by showing that the changes were violent and subject to being perceived while they were going on.'").

[24]BLM Manual of Surveying Instructions, § 7-73, 172.

[25]See 74 C.J.S. Quieting Title § 76 (1951).

[26]1 Waters and Water Rights, supra at 191.

knowledge.[27] While the party claiming avulsion has the ultimate burden of proof, the BLM needs to make a reasonable effort to determine the amount of avulsion where physical observations and available evidence indicates probable avulsion. This does not mean that BLM must research the matter exhaustively. However, in areas such as Prince William Sound, where it is known that the 1964 earthquake caused avulsion, BLM must make a reasonable effort to determine the existence and amount of avulsion. It would not be appropriate to survey the existing meanders in cases, like Boswell Bay, where it is certain that some of the lands were uplifted by the 1964 earthquake.

Where available evidence indicates avulsion and it is difficult to determine where the pre-quake boundary line was located, BLM must reach the most reasonable conclusion possible and survey accordingly. If the most reasonable conclusion is that the 1964 boundary closely resembles the existing meander lines or it is simply impossible to determine a 1964 boundary line (e.g., a steep cliff or rock face), BLM would be justified in surveying the existing meander lines. Any party challenging the survey would have the burden of proving that there was avulsion and that the survey was incorrect.[28]

In applying these legal principles, BLM is not precluded from reaching agreements with affected parties or from using an alternative dispute or conflict resolution process. Such procedures cannot be used to change the controlling principles of law but they may be used for determining such factual matters as the location of the 1964 meander lines. For example, nothing prevents the BLM and the State of Alaska from applying applicable law by reaching an agreement on the most reasonable location of the 1964 meander lines. Of course, in utilizing such approaches, BLM will have to be cognizant of the rights of all parties and be sure that all affected parties are included in any agreement or dispute resolution.

APPLICATION TO BOSWELL BAY SURVEY

When the above definitions, rules and analysis are applied to

---

[27]E.g., U.S. Geological Survey Professional Paper 543-1, supra. That paper notes, at page I 19, that the personal observations of local residents are both relevant and fairly accurate.

[28]Carter, 90 IBLA 286, 290 (1986); State of Oregon, 78 IBLA 13, 21 (1983); Robert J. Wickenden, 73 IBLA 394, 396-7 (1983) (U.S. surveys, after acceptance, are presumed to be correct and an appellant has the burden of establishing err by clear and convincing evidence.).

the Boswell Bay survey, it is clear that BLM is warranted in redoing the Boswell Bay survey. Even though there are pre-quake surveys establishing meander lines prior to the 1964 earthquake, those pre-quake surveys were done from 1935 to 1951 and simply do not depict what accretion occurred between the time of survey and the 1964 earthquake. Therefore, BLM should use available evidence to establish a line that best denotes the boundary line at the time of the 1964 earthquake.

CONCLUSION

Avulsion is the proper term to apply to lands uplifted by the 1964 Alaska earthquake. The practice of surveying existing meanders except for those instances where there are pre-quake meander line surveys is essentially sound but needs to be modified to provide for survey of the 1964 boundary line where the facts sufficiently establish the existence of avulsion and the location of such a boundary. In the absence of sufficient evidence, accretion must be presumed and the existing meanders should be surveyed. Since there is sufficient evidence of earthquake caused avulsion at Boswell Bay, the survey of that area should be redone to establish the 1964 boundary lines.

Dennis J. Hopewell

Dennis J. Hopewell